384 Arlington Avenue

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

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PN: 2021-137

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1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required including the Network Impact Component. This report is in support of a zoning by-law amendment.

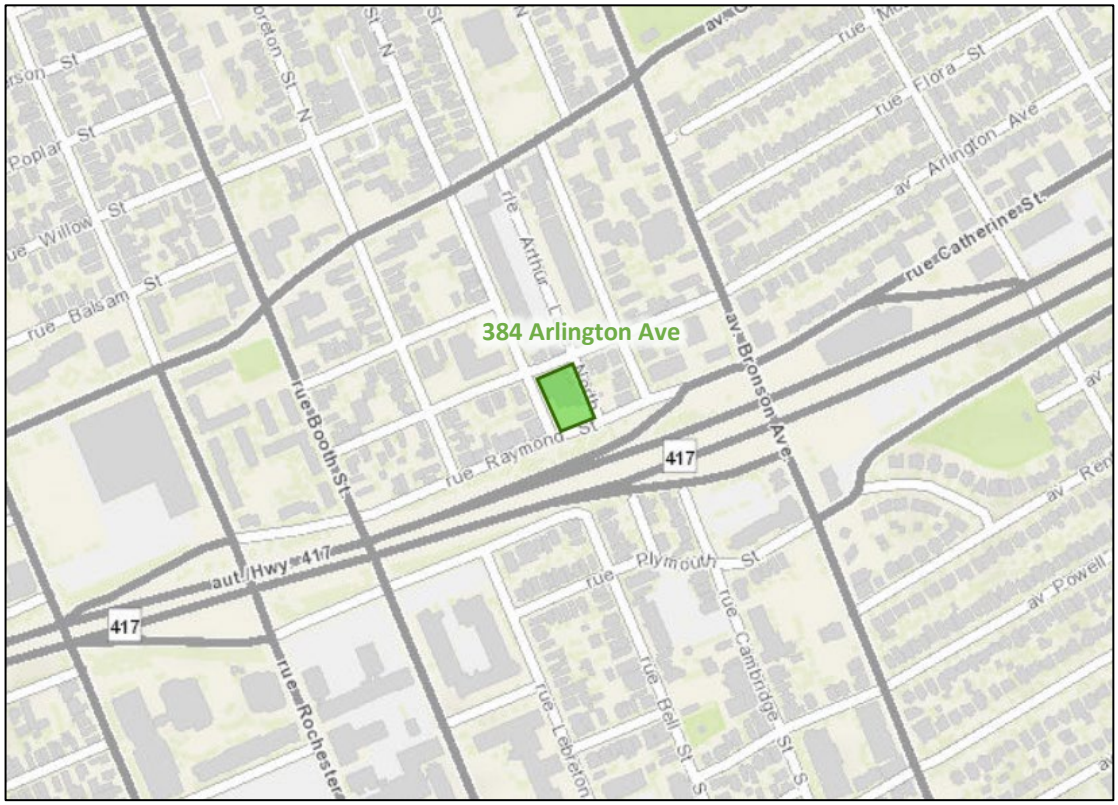
2 Existing and Planned Conditions

2.1 Proposed Development

The existing site is the Ottawa Korean Community Church building and surface parking lot and is zoned as Minor Institutional (I1A). The proposed residential development includes a 24-storey tower fronting the highway stepping down to an 8-storey building on a four-storey podium fronting Arthur Lane North and a three-storey podium fronting Bell Street North. The development is to comprise 275 residential dwelling units and to include 91 parking spaces in an underground garage. Vehicular access is proposed via a right-in/right-out access on Raymond Street, and the development is anticipated to be built-out in a single phase by 2026.

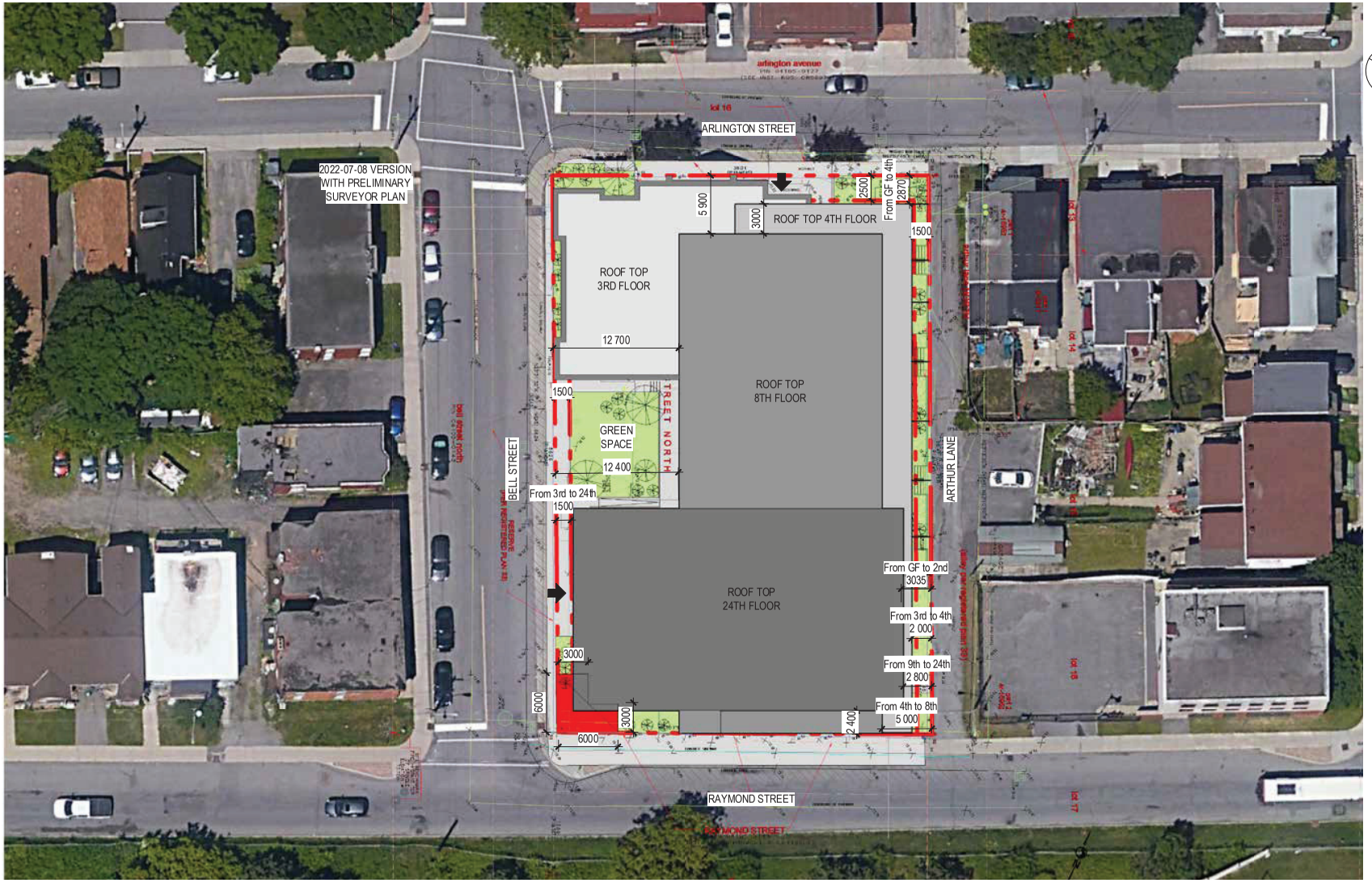
Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: April 20, 2022

SITE PLAN


ARLINGTON STREET
2022-07-08 VERSION
WITH PRELIMINARY
SURVEYOR PLAN
ROOF TOP
3RD FLOOR
ROOF TOP 4TH FLOOR
ROOF TOP
8TH FLOOR
ROOF TOP
24TH FLOOR
GREEN
SPACE
BELL STREET
ARTHUR LANE
TREET NORTH
RAYMOND STREET
5 900
3000
2500
From GF to 4th
2870
1500
12 700
1500
12 400
From 3rd to 24th
1500
From GF to 2nd
3035
From 3rd to 4th
2 000
3000
From 9th to 24th
2 800
6000
3000
From 4th to 8th
5 000
2 400
6000

2.2 Existing Conditions

2.2.1 Area Road Network

Highway 417: Highway 417 is a Ministry of Transportation of Ontario urban freeway with a divided eight-lane urban cross-section within the study area. The posted speed limit is 100 km/h and the right-of-way is variable.

Bronson Avenue: Bronson Avenue is a City of Ottawa arterial road with a four-lane urban cross-section, sidewalks on both sides of the road, and no stopping is permitted during the peak hours. The posted speed limit is 50 km/h and the City-protected right-of-way is 23.0 metres. Bronson Avenue is a truck route.

Catherine Street: Catherine Street is a City of Ottawa arterial one-way road with a three-lane urban cross-section, sidewalks on both sides of the road, and no stopping is permitted during the peak hours. The posted speed limit is 50 km/h and the City-protected right-of-way is 23.0 metres. Catherine Street is a truck route.

Raymond Street: Raymond Street is a City of Ottawa arterial one-way road between Bronson Avenue and the Highway 417 on-ramp, and a one-way local road to the west of the on-ramp. The urban cross-section reduces from a three-lane width to a single lane west of the Highway 417 on-ramp with framed parking lanes located on the north side. Parking is restricted to one-hour between 7AM and 7PM. The unposted speed limit is 50 km/h and the existing right-of-way varies between 12.5 to 20.0 metres. Raymond Street is a truck route east of the Highway 417 on-ramp and west of Booth Street.

Booth Street: Booth Street is a City of Ottawa major collector road with a 2-lane urban cross-section, sidewalks on both sides of the road, and parking bays provided on the east side of the road. The posted speed limit is 40 km/h and the existing right-of-way is 20.0 metres.

Gladstone Avenue: Gladstone Avenue is a City of Ottawa City of Ottawa major collector road with a two-lane urban cross-section, sidewalks on both sides of the road and a parking lane located on the north side. The posted speed limit is 40 km/h and the existing right-of-way varies from 20.0 to approximately 36.0 metres. Gladstone Avenue is a truck route.

Arlington Avenue: Arlington Avenue is a City of Ottawa local road with a two-lane urban cross-section, sidewalks on both sides of the road and on-street parking is permitted on the north side of the road. The unposted speed limit is 50 km/h and the existing right-of-way is 15.5 metres.

Bell Street North: Bell Street North is a City of Ottawa local road with a two-lane urban cross-section, sidewalks on both sides of the road and on-street parking is permitted on the west side of the road, with a winter restriction between December 1st and March 31st. Between Arlington Street and Gladstone Avenue, the east side of the road is reserved for permit parking and valet service for the LIV apartments at 207 Bell Street. The unposted speed limit is 50 km/h and the existing right-of-way is 10.5 metres.

Lebreton Street North: Lebreton Street North is a City of Ottawa local road with a two-lane urban cross-section, sidewalks on both sides of the road. on-street parking, signed 1-hour between 7AM and 7PM, is permitted on the west side of the road north of Willow Street within the study area, between Louisa Street and Gladstone Avenue, and south of Arlington Avenue and on the east side of the road between Gladstone Avenue and Willow Street, and between Louisa Street and Arlington Avenue. The posted speed limit is 30 km/h north of Gladstone Avenue and the unposted speed limit is 50 km/h to the south, and the existing right-of-way is 20.0 metres.

Louisa Street: Louisa Street is a City of Ottawa local road with a two-lane urban cross-section, sidewalks on both sides of the road and on-street parking is permitted on the south side of the road to the east of Lebreton Street

North and on the north side to the west. The parking is signed 1-hour between 7AM and 7PM. The unposted speed limit is 50 km/h and the existing right-of-way is 20.0 metres.

2.2.2 Existing Intersections

The key signalized area intersections within 400 metres of the site have been summarized below:

Bronson Avenue at Catherine Street/Raymond Street	The intersection of Bronson Avenue at Catherin Street/Raymond Street is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and two through lanes, the southbound approach consists of a through and shared through/right-tun lane and the westbound approach consists of an auxiliary left-turn lane, an auxiliary shared left-turn/through lane, a through lane and a shared through/right-turn lane. No turn restrictions are noted beyond the one-way on Catherine Street/Raymond Street does not permit any movements from the west side of the intersection.
Bronson Avenue at Arlington Avenue	The intersection of Bronson Avenue at Arlington Avenue is a signalized intersection. The northbound and southbound approaches each consist of a shared left-turn/through lane and shared through/right-turn lane, and the eastbound and westbound approaches each consist of a shared all movements lane. No turn restrictions are noted.
Bronson Avenue at Gladstone Avenue	The intersection of Bronson Avenue at Gladstone Avenue is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, through lane and shared through/right-turn lane, and the eastbound and westbound approaches each consist of an auxiliary left-turn lane and a shared through/right-turn lane. Right turns on red are restricted at all approaches weekdays between 7:00AM and 7:00PM.
Bronson Avenue at Highway 417 EB Ramp	The intersection of Bronson Avenue at the Highway 417 eastbound off-ramp is a signalized intersection. The northbound and southbound approaches each consist of two through lanes. The eastbound approach consists of an auxiliary left-turn lane and a right-turn lane.
Booth Street at Gladstone Avenue	The intersection of Booth Street at Gladstone Avenue is a signalized intersection. The northbound and southbound approaches each consist of a shared all movement lanes of over five metres which operate as an auxiliary left-turn movement and a shared through/right turn movement. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary smart channel right-turn lane and the westbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane. No right-turns are permitted on the eastbound approach from the through lane.
Arthur Street/Arthur Lane at Gladstone Avenue	The intersection of Arthur Street/Arthur Lane at Gladstone Avenue is a signalized intersection. The southbound, eastbound and westbound approaches all consist of a shared all movements lane. No turn restrictions are noted beyond the one-way on Arthur Lane south of

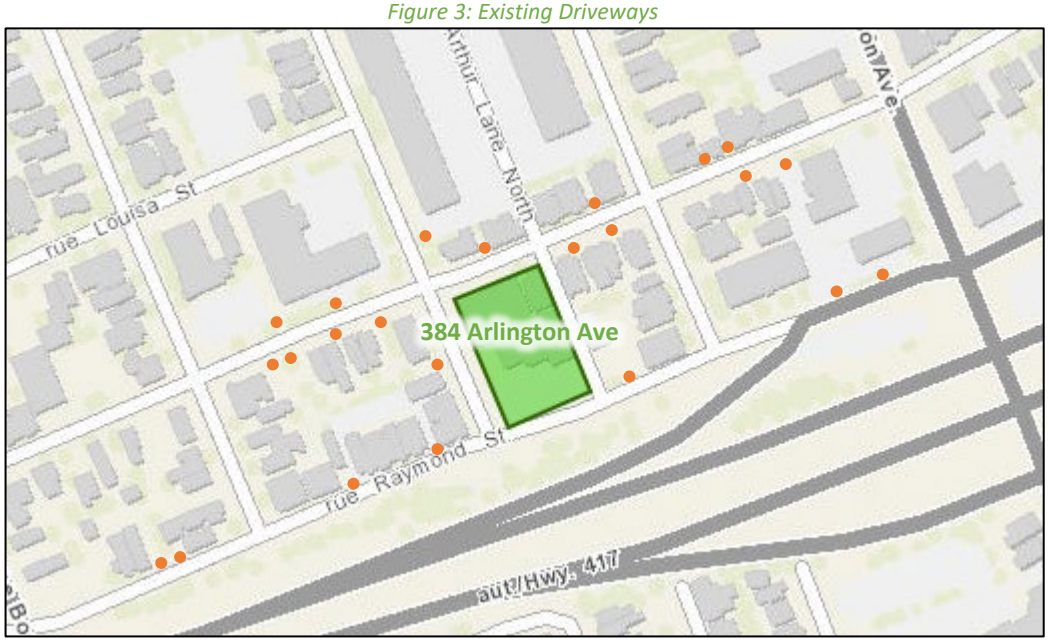
	Gladstone Avenue does not permit any movements from the south side of the intersection.
Booth Street at Raymond Street	The intersection of Booth Street at Raymond Street is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a through lane, the southbound approach consists of a shared through/right-turn lane, and the westbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane. No turn restrictions are noted beyond the one-way on Catherine Street/Raymond Street does not permit any movements from the west side of the intersection.

2.2.3 Existing Driveways

Within 200 metres of the site access on the boundary streets, driveways to attached, detached, and low-rise residential land uses are generally present. Twelve such residential driveways are present on Arlington Avenue, one on Bell Street North, and four on Raymond Street are present.

On Bell Street North, a driveway to a high-rise residential building is additionally present. On Arlington Avenue, two driveways to a sport and health centre are present, and on Raymond Street, a driveway to an embassy and two driveways to low-rise commercial land uses are present. All driveways to the subject site are proposed as being removed as part of redevelopment. Figure 3 illustrates the existing area driveways.

Figure 3: Existing Driveways



2.2.4 Cycling and Pedestrian Facilities

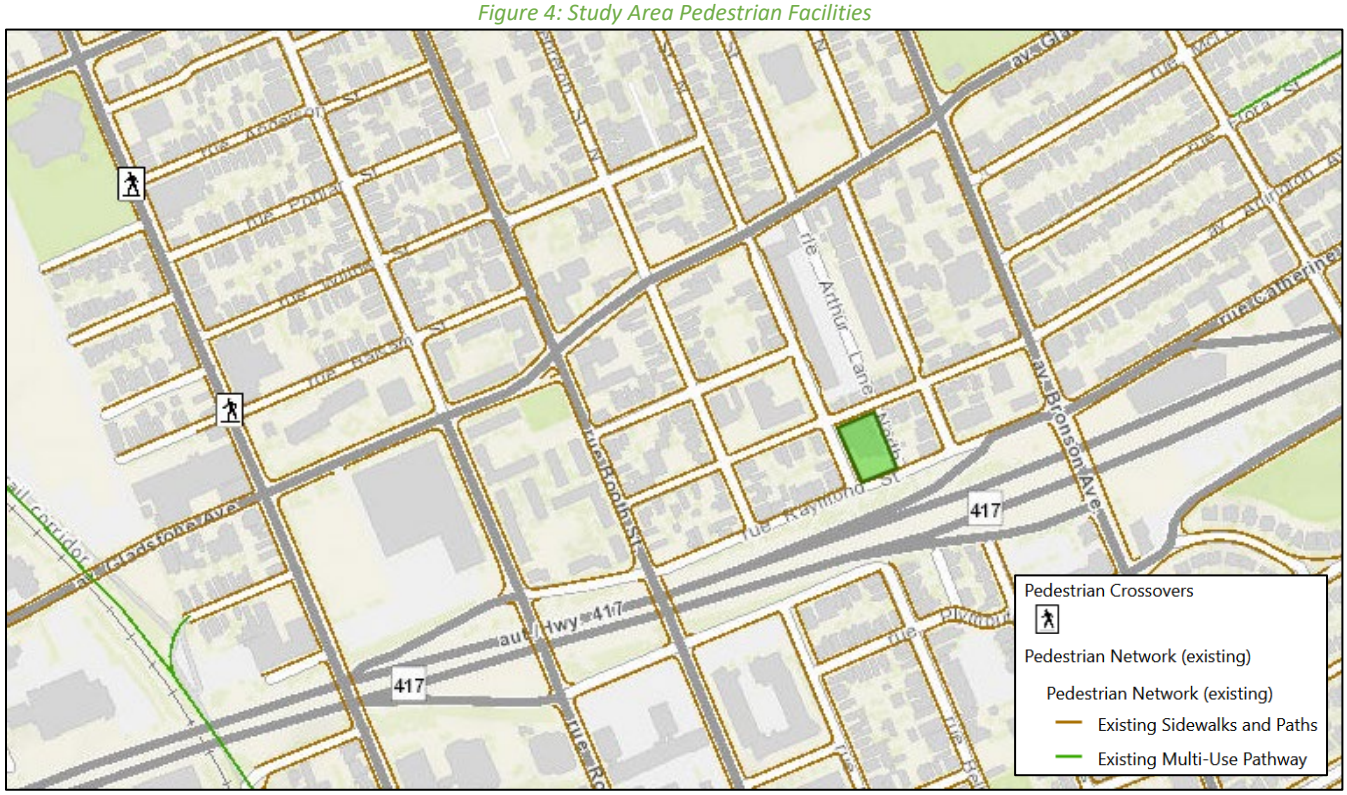
Figure 4 illustrates the pedestrian facilities in the study area and Figure 5 illustrates the cycling facilities.

Sidewalks are generally provided along both sides of the study area roadways, with the exception of Raymond Street where a sidewalk is provided on the north side only.

Cycling facilities include the designations of Gladstone Avenue, Booth Street and Arlington Avenue as spine routes, and Arthur Lane as a local route north of Arlington Avenue. Arthur Lane north of Arlington Avenue and Arlington

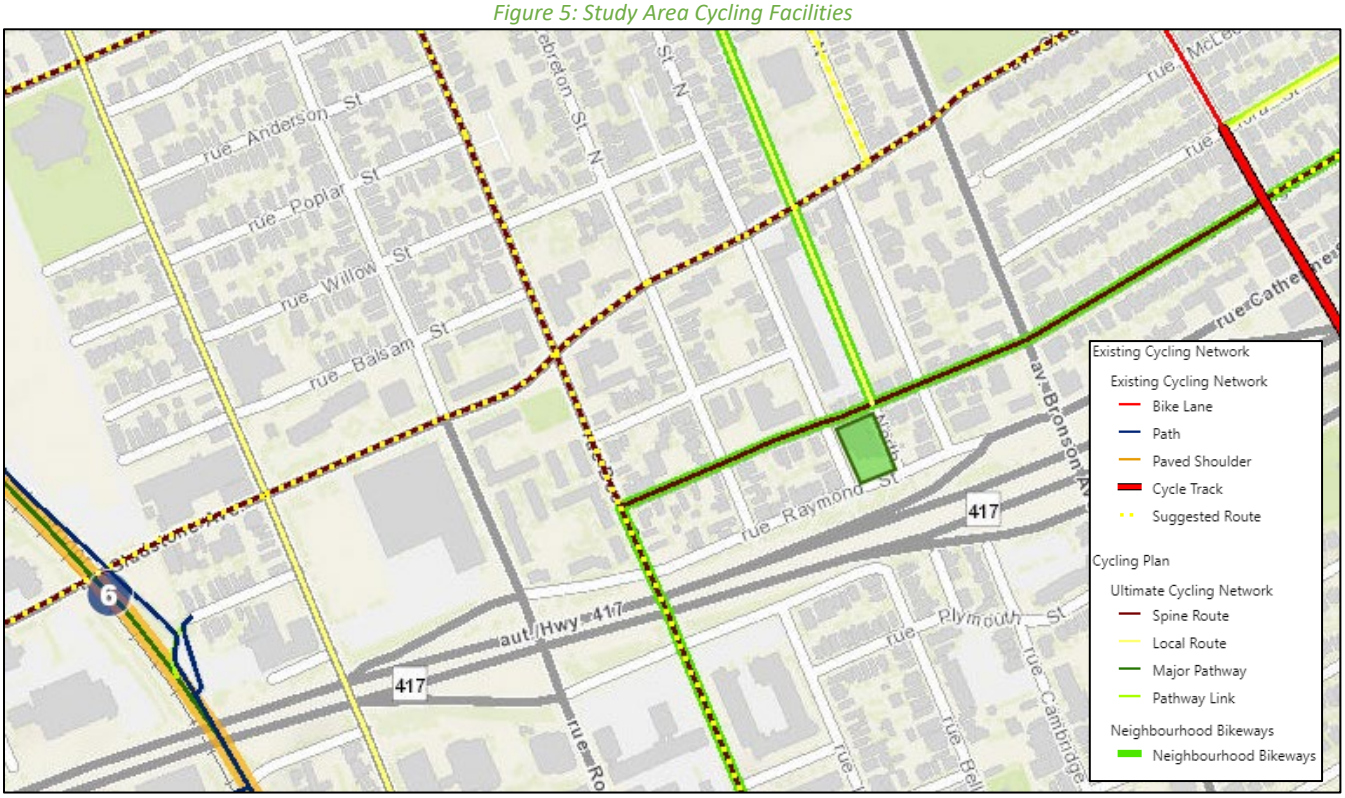
Avenue through the study area form the Centretown Neighbourhood Bikeway, which continues south on Booth Street from the intersection at Arlington Avenue.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: April 20, 2022

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: April 20, 2022

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7 respectively.

Figure 6: Existing Pedestrian Counts

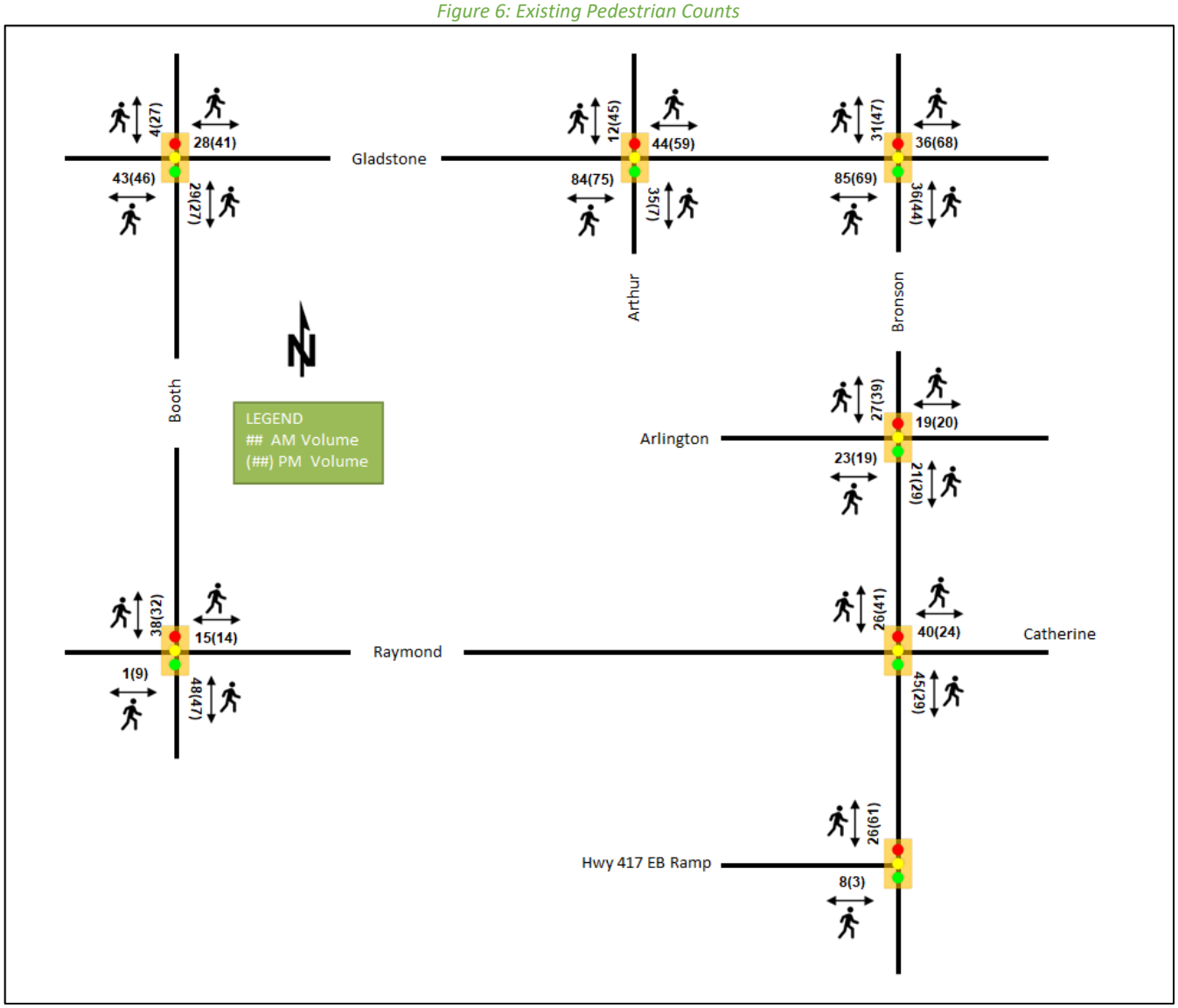
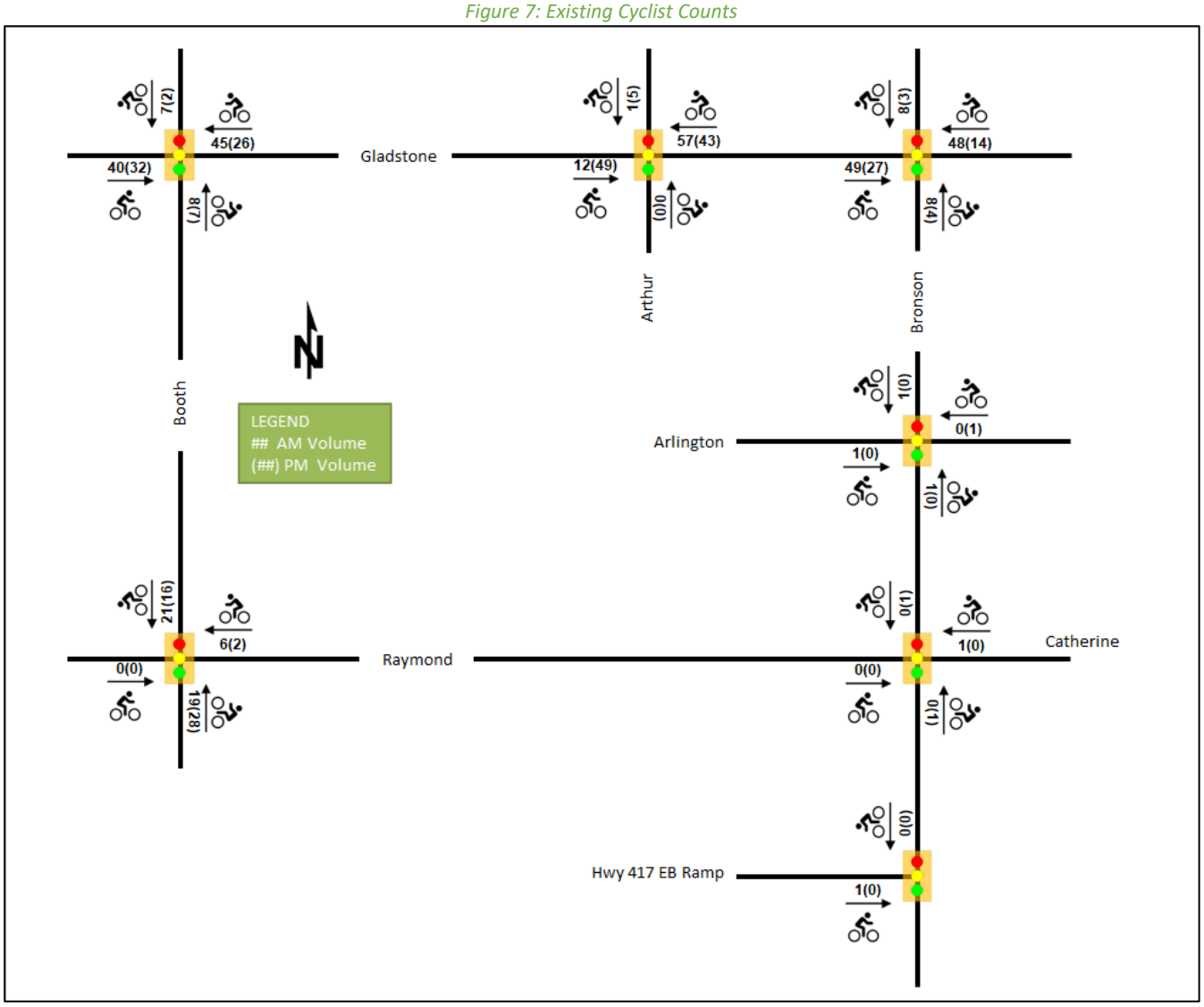


Figure 7: Existing Cyclist Counts



2.2.5 Existing Transit

Within the study area, the routes #10, 14, 55 and 114 area travel in proximity of the proposed site. The frequency of these routes within proximity of the proposed site currently are:

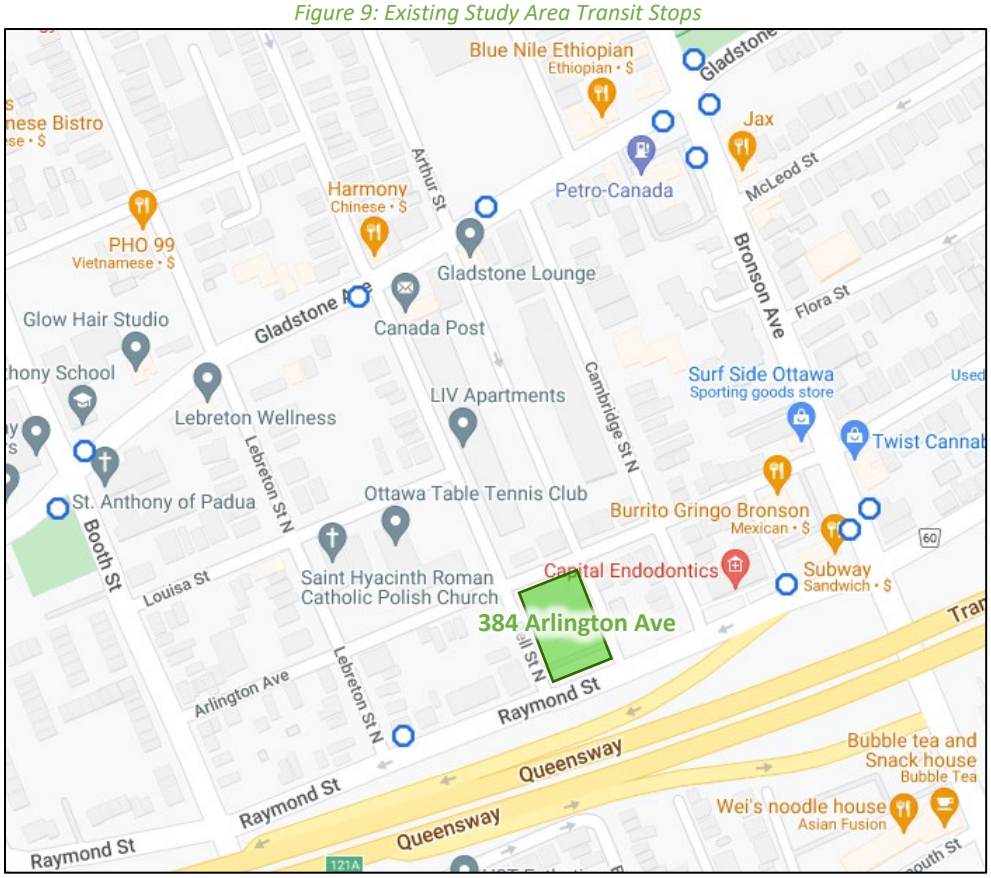
- Route #10 – 15-minute service during the day, 30-minute service during the early morning and evenings
- Route #14 – 15-minute service during the day, 30-minute service during the early morning and evenings
- Route #55 – 15-minute service during the day, 30-minute service during the evenings
- Route #114 – two trips downtown in the AM, and two trips to Clarington in the PM

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is per April 20, 2022, and for general context of the area.

Figure 8: Existing Study Area Transit Service

Source: http://www.octranspo.com/ Accessed: April 20, 2022

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: April 20, 2022

2.2.6 Existing Area Traffic Management Measures

Traffic management measures within the study area include on-street parking on local roads and bulb-outs at intersections along Booth Street, Raymond Street, Bell Street, and Gladstone Avenue.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa for the study area intersections. Historic traffic counts have been used given the ongoing construction and detours present in the area. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date
Bronson Avenue at Highway 417 EB Ramp	Thursday, October 27, 2016
Bronson Avenue at Catherine Street/Raymond Street	Thursday, April 19,2018
Bronson Avenue at Arlington Avenue	Wednesday, December 13, 2017
Bronson Avenue at Gladstone Avenue	Wednesday, July 27, 2016
Booth Street at Gladstone Avenue	Wednesday, July 27, 2016
Arthur Street/Arthur Lane at Gladstone Avenue	Wednesday, July 27, 2016
Booth Street at Raymond Street	Thursday, September 1, 2016

Figure 10 illustrates the existing traffic counts, balanced along the Bronson Avenue and Booth Street corridors, and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

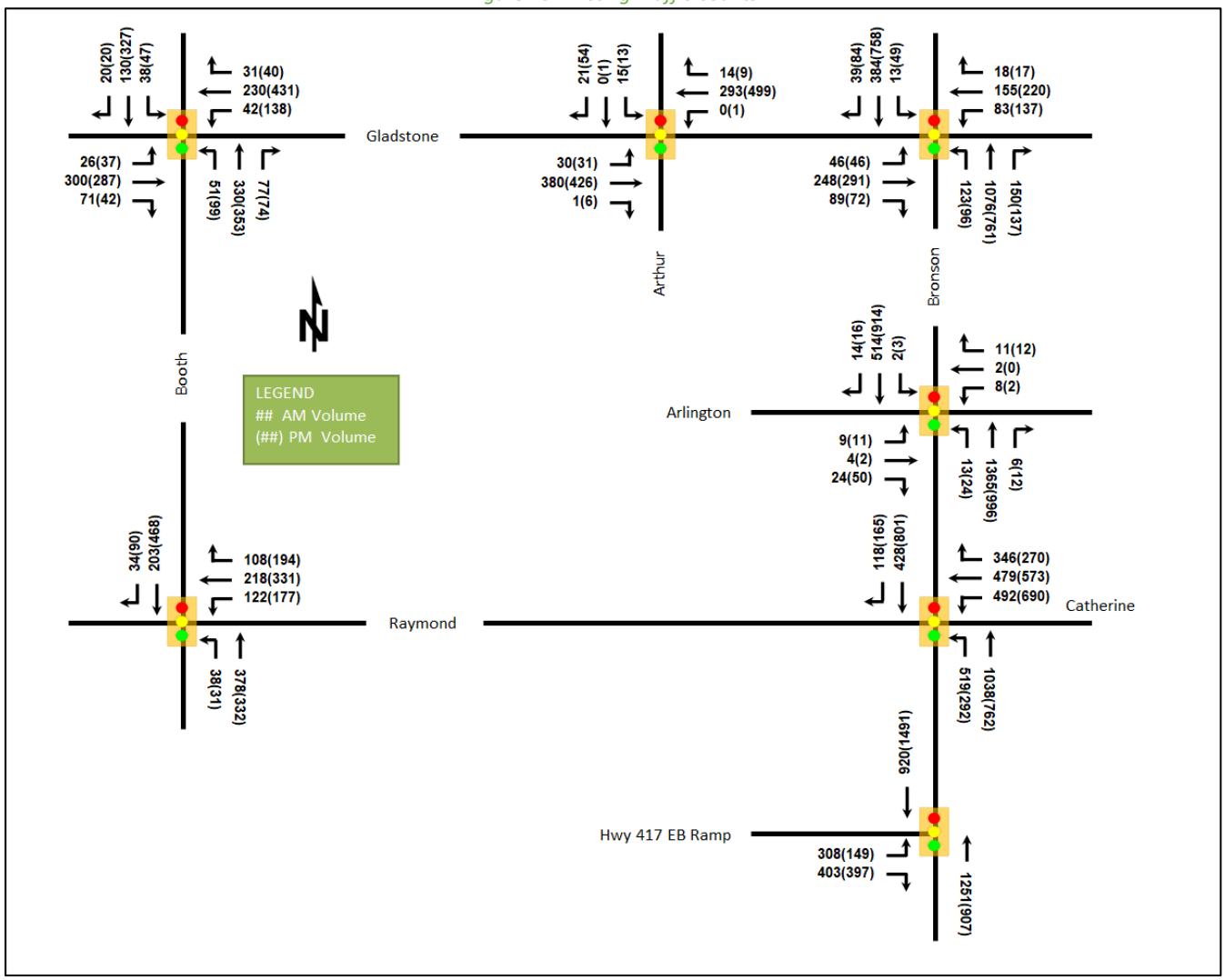


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Highway 417 EB Ramp ***Signalized***	EBL	B	0.66	43.1	94.7	A	0.34	30.1	42.8
	EBR	D	0.87	47.4	**#131.3**	E	1.00	78.3	**#145.3**
	NBT	C	0.72	19.5	131.8	A	0.51	13.6	71.9
	SBT	A	0.55	66.7	m81.0	D	0.84	74.3	m183.6
	Overall	**C**	**0.77**	**41.0**	-	**D**	**0.90**	**53.9**	-
Bronson Avenue at Catherine Street/Raymond Street ***Signalized***	WBL	**F**	**1.06**	**104.4**	**#168.1**	**F**	**1.13**	**127.3**	**#180.0**
	WBT/R	**F**	**1.01**	**69.6**	**#120.8**	**F**	**1.09**	**92.9**	**#134.1**
	NBL	E	0.98	49.6	**#120.3**	E	0.92	53.1	**#96.1**
	NBT	A	0.55	14.3	70.6	A	0.42	19.1	85.5
	SBT/R	D	0.82	**98.2**	**#85.8**	E	0.92	75.2	**#139.3**
	Overall	**F**	**1.06**	**57.8**	-	**F**	**1.02**	**72.8**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Arlington Avenue *Signalized*	EB	A	0.22	23.9	12.3	A	0.31	17.4	14.2
	WB	A	0.15	28.6	9.4	A	0.08	10.1	4.0
	NB	A	0.60	4.6	m48.3	A	0.48	3.4	m32.4
	SB	A	0.24	3.4	23.3	A	0.41	1.9	16.3
	Overall	**A**	**0.56**	**4.9**	-	**A**	**0.45**	**3.2**	-
Bronson Avenue at Gladstone Avenue *Signalized*	EBL	A	0.19	29.0	16.7	A	0.15	21.6	14.5
	EBT/R	D	0.88	56.1	**#115.2**	B	0.64	30.7	94.7
	WBL	C	0.71	63.3	**#40.6**	B	0.64	39.2	**#51.7**
	WBT/R	A	0.43	32.2	48.8	A	0.40	24.6	57.4
	NBL	A	0.36	18.3	29.2	E	0.91	**80.4**	**#51.2**
	NBT/R	D	0.87	28.8	143.8	D	0.83	19.6	45.8
	SBL	A	0.19	21.5	6.1	A	0.55	48.1	**#26.1**
	SBT/R	A	0.30	14.9	36.1	C	0.75	30.9	104.3
	Overall	**C**	**0.80**	**31.0**	-	**C**	**0.72**	**28.8**	-
Booth Street at Gladstone Avenue *Signalized*	EBL	A	0.09	13.5	6.6	A	0.16	14.7	9.7
	EBT/R	B	0.69	22.7	**#64.4**	A	0.47	16.9	57.6
	WBL	A	0.19	15.6	10.0	A	0.43	29.4	42.3
	WBT/R	A	0.48	17.2	41.3	B	0.66	31.5	114.6
	NBL	A	0.12	9.9	m6.7	A	0.42	24.5	26.5
	NBT/R	B	0.64	13.3	37.1	C	0.74	29.5	**#95.4**
	SBL	A	0.15	12.5	8.3	A	0.26	21.6	14.2
	SBT/R	A	0.23	11.2	20.6	A	0.59	24.4	72.8
	Overall	**B**	**0.65**	**16.3**	-	**B**	**0.70**	**26.1**	-
Arthur Street / Arthur Lane at Gladstone Avenue *Signalized*	EB	A	0.37	7.8	53.5	A	0.43	6.2	32.6
	WB	A	0.27	6.8	36.6	A	0.44	7.9	62.2
	SB	A	0.10	5.0	4.2	A	0.25	12.1	11.9
	Overall	**A**	**0.34**	**7.3**	-	**A**	**0.40**	**7.4**	-
Booth Street at Raymond Street *Signalized*	WBL/T	B	0.69	25.4	**#63.8**	**F**	**1.18**	**127.5**	**#145.4**
	WBR	A	0.22	4.6	8.9	A	0.39	5.5	13.8
	NBL	A	0.09	8.9	6.6	A	0.12	8.5	5.9
	NBT	A	0.49	12.9	49.4	A	0.38	9.9	40.5
	SBT/R	A	0.32	14.2	m26.2	B	0.65	14.2	81.1
	Overall	**A**	**0.57**	**16.1**	-	**D**	**0.82**	**47.6**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

Capacity issues are noted on several specific movements throughout the study area and generally at the intersection of Bronson Avenue at Catherine Street/Raymond Street.

At the intersection of Bronson Avenue at the Highway 417 eastbound off-ramp the eastbound right movement may exhibit extended queues during the AM peak hour and is at its theoretical capacity and may exhibit extended queues during the PM peak hour.

During both peak hours at the intersection of Bronson Avenue at Catherine Street/Raymond Street, the westbound left and westbound through/right movements are over theoretical capacity and may be subject to high delays and extended queues, the southbound through/right movement may be subject to high delays and extended queues, and the northbound left movement may exhibit extended queues. The overall intersection is also operating over its theoretical capacity during both peak hours.

At the intersection of Bronson Avenue at Gladstone Avenue, extended queues may be exhibited on the eastbound through/right and westbound left movements during the AM peak hour. During the PM peak hour, the westbound left and northbound through/right movements may exhibit extended queues and the northbound left movement may be subject to high delays and extended queues at this intersection.

At the intersection of Booth Street and Gladstone Avenue, the eastbound through movement may exhibit extended queues during the AM peak hour, and the northbound through/right movement may exhibit extended queues during the PM peak hour.

At the intersection of Booth Street at Raymond Street, the westbound left movement may exhibit extended queues during the AM peak hour and is operating over theoretical capacity and may be subject to high delays and extended queues during the PM peak hour.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study are road network. Table 3 summarizes the collisions types and conditions in the study area, Figure 11 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2016-2020

		Number	%
Total Collisions		**109**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	19	17%
	Property Damage Only	90	83%
Initial Impact Type	**Angle**	21	19%
	Rear end	26	24%
	Sideswipe	32	29%
	Turning Movement	13	12%
	SMV Unattended	5	5%
	SMV Other	9	8%
	Other	3	3%
Road Surface Condition	**Dry**	75	69%
	Wet	24	22%
	Loose Snow	4	4%
	Slush	3	3%
	Packed Snow	1	1%
	Ice	2	2%
Pedestrian Involved		7	6%
Cyclists Involved		2	2%

Figure 11: Study Area Collision Records

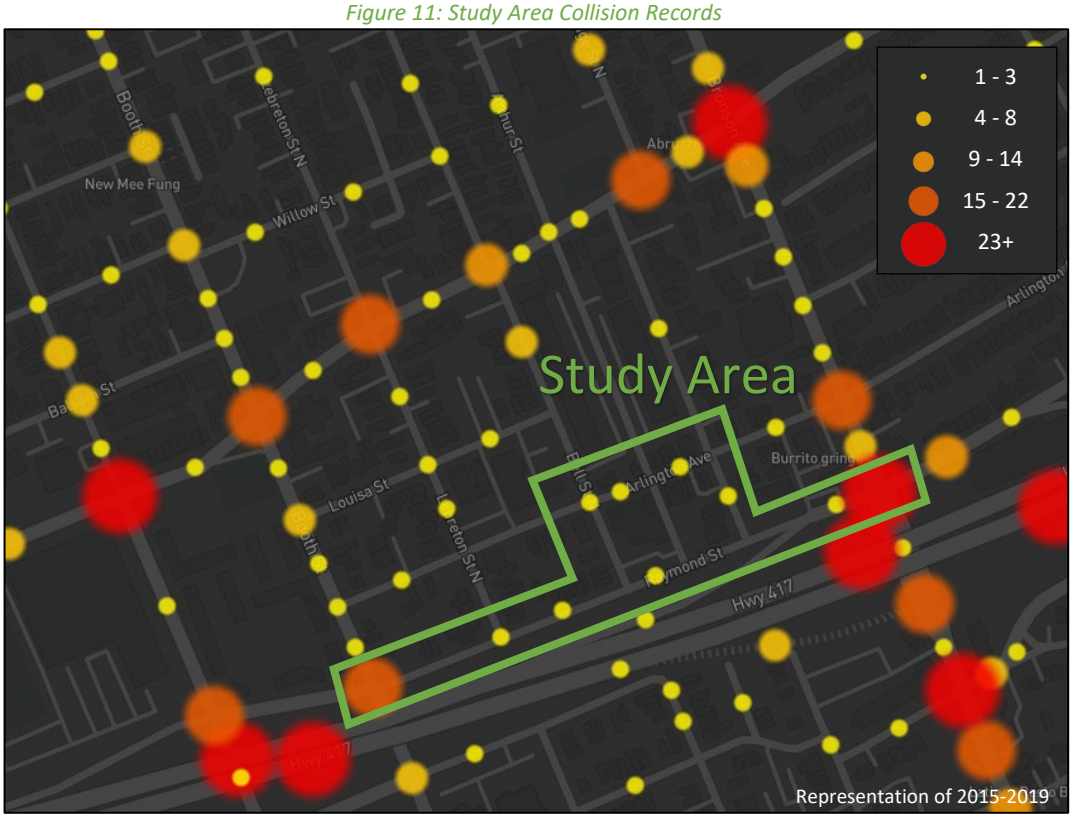


Table 4: Summary of Collision Locations, 2016-2020

	Number	%
Intersections / Segments	**109**	**100%**
Bronson Ave at Catherine St/Raymond St	75	69%
Booth St at Raymond St	19	17%
Raymond St btwn Hwy417 Ic121a Ramp16 & Bronson Ave	6	6%
Lebreton St at Raymond St	2	2%
Arlington Ave btwn Bell St N & Arthur Lane N	2	2%
Arlington Ave btwn Arthur Lane N & Cambridge St N	2	2%
Cambridge St N btwn Arlington Ave & Raymond St	1	1%
Raymond St btwn Lebreton St N & Bell St N	1	1%
Arlington Ave at Bell St	1	1%

Within the study area, the intersections of Bronson Avenue at Catherine Street/Raymond Street and Booth Street at Raymond Street are noted to have experienced higher collisions than other locations. Table 5 and Table 6 summarize the collision types and conditions for each of these intersections, respectively.

Table 5: Bronson Avenue at Catherine Street/Raymond Street Collision Summary

		Number	%
Total Collisions		**75**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	11	15%
	Property Damage Only	64	85%
Initial Impact Type	**Angle**	12	16%
	Rear end	19	25%
	Sideswipe	25	33%

		Number	%
Total Collisions		**75**	**100%**
	Turning Movement	13	17%
	SMV Other	4	5%
	Other	2	3%
Road Surface Condition	**Dry**	53	71%
	Wet	16	21%
	Loose Snow	1	1%
	Slush	2	3%
	Packed Snow	1	1%
	Ice	2	3%
Pedestrian Involved		4	5%
Cyclists Involved		1	1%

The Bronson Avenue at Catherine Street/Raymond Street intersection had a total of 75 collisions during the 2016-2020 time period, with 64 involving property damage only and the remaining 11 having non-fatal injuries. The collision types are most represented by sideswipe with 25 collisions, followed by rear end with 19, turning movement with 13, angle with 12, SMV (other) with four, and other with two. Sideswipe and rear end collisions are typical of congested conditions, although the sideswipe collisions on the northbound approach may be influenced by the short left-turn lane developing from the upstream intersection. Ten of the 13 turning movement collisions were a result of drivers attempting northbound left turns in conflict with drivers completing a southbound through movement. Seven of these ten collisions occurred at night, thus are not considered to be associated with congestion. This collision pattern may be influenced by the advanced stop line for the northbound approach where northbound left-turning vehicles are required to drive over 20 metres to enter the intersection and speeds along Bronson Avenue. The majority of angle collisions are a result of non-compliance with traffic control and these collisions occur on the northbound, southbound and westbound approaches. Weather conditions do not affect collisions at this location. No further review is required to support this study.

Table 6: Booth Street at Raymond Street Collision Summary

		Number	%
Total Collisions		**19**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	3	16%
	Property Damage Only	16	84%
Initial Impact Type	**Angle**	9	47%
	Rear end	3	16%
	Sideswipe	3	16%
	SMV Unattended	1	5%
	SMV Other	2	11%
	Other	1	5%
Road Surface Condition	**Dry**	13	68%
	Wet	4	21%
	Loose Snow	1	5%
	Slush	1	5%
Pedestrian Involved		1	5%
Cyclists Involved		1	5%

The Booth Street at Raymond Street intersection had a total of 19 collisions during the 2016-2020 time period, with 16 involving property damage only and the remaining three having non-fatal injuries. The collision types are

most represented by angle with nine collisions, followed by rear end and sideswipe with three collisions each, and two or fewer as SMV (unattended), SMV (other), and other. Five of the nine angle collisions were a result of northbound through drivers not complying with traffic control in conflict with westbound drivers. The highway overpass over the northbound approach does not obscure the traffic signal on the approach and furthermore an additional lowered signal head is located over the sidewalk on the east side of the intersection to ensure signal visibility. No other patterns in the collisions were noted, and weather conditions do not affect collisions at this location. No further review is required to support this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

The subject development is not within a CDP or design priority area.

Within the Transportation Master Plan (TMP), the Road Transit and Transit Priority Affordable Network diagram shows a new station, Corso Italia Station, along the Trillium LRT line at Gladstone Avenue which is expected to be completed in 2022.

From the Planned Construction Projects portal, Gladstone Avenue is due to receive traffic safety improvements along the corridor to commence within three-to-five years.

The Chamberlain Avenue, Catherine Street, and Isabella Street Functional Design Study, conducted in 2019, is currently planned for implementation after the build-out horizon, but does not propose any notable improvements for the intersection of Bronson Avenue at Catherine Street/Raymond Street.

The Centretown Neighbourhood Bikeway – Arthur Street/Arlington Avenue is a phase 3 (2026-2031) project from the Ottawa Cycling Plan which includes shared use lanes on Arlington Avenue and on Arthur Lane north of Arlington Avenue.

2.3.2 Other Study Area Developments

13 Balsam Street

The application includes a site plan for the construction of a low-rise building with eight dwelling units. No TIA was required for this application.

249-267 Rochester Street, 27-29 Balsam Street

The application includes the site plan for the construction of a three-storey 23-unit residential development with an internal private road. No TIA is available for this application.

818 Gladstone Avenue

The application includes a site plan for the construction of a mixed-use development comprising 270 residential dwelling units and 5,125 square feet of commercial space. The development is anticipated to be built-out by 2024 and to generate 35 new AM and 40 new PM peak hour two-way auto trips. (Parsons, 2021)

811 Gladstone Avenue

The application includes a site plan for the construction of a residential development comprising 140 residential dwelling units. The development was recently completed and is anticipated to generate 15 new AM and 16 new PM peak hour two-way auto trips. (Parsons, 2019)

18 Louisa Street

The application includes a site plan for the redevelopment of a portion of a three-storey building and surface parking lot into a ten-storey residential building consisting of 139 residential dwelling units. The development is

anticipated to be built-out in 2025 and to generate 90 new AM and 97 new PM peak hour two-way vehicles trips. (CGH, 2021)

448-460 Bronson Avenue

The application includes a zoning by-law amendment to permit the construction of a nine-storey mixed-use building comprising 92 residential dwelling units and 534 square metres of ground floor commercial space. The development was initially anticipated to be built-out in 2022. No traffic generation forecasting has been done to date for the development. (BTE, 2021)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Bronson Avenue at:
  - Catherine Street/Raymond Street
  - Arlington Avenue
  - Gladstone Avenue
  - Highway 417 EB Ramp
- Booth Street at:
  - Gladstone Avenue
  - Raymond Street
- Arthur Street/Arthur Lane at Gladstone Avenue

The boundary roads will be Raymond Street, Bell Street, Arthur Lane, and Arlington Avenue and no screenlines are present within proximity to the site.

3.2 Time Periods

As the proposed development is composed entirely of residential units the AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2026. As a result, the full build-out plus five years horizon year is 2031.

4 Exemption Review

Table 7 summarizes the exemptions for this TIA.

Table 7: Exemption Review

Module	Element	Explanation	Exempt/Required
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Exempt. Will be required at site plan application.
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Exempt. Will be required at site plan application.
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Exempt. May be required at site plan application.

Module	Element	Explanation	Exempt/Required
Network Impact Component			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	Required
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	Required
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

5 Development-Generated Travel Demand

5.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Ottawa Inner have been summarized in Table 8.

Table 8: TRANS Trip Generation Manual Recommended Mode Shares – Ottawa Inner

Travel Mode	Multi-Unit (High-Rise)	
	AM	PM
Auto Driver	26%	25%
Auto Passenger	6%	8%
Transit	28%	21%
Cycling	5%	6%
Walking	35%	40%
Total	**100%**	**100%**

The proposed development is approximately a one-kilometre-walk from the future Corso Italia LRT station on the Trillium line. The Ottawa Inner district includes a high share of walking trips which are not anticipated to be replaced by transit, and a relatively low share of auto trips. While further shifts towards transit from auto modes may ultimately be realized, any shift is anticipated to be minor. Therefore, the recommended district mode shares will be applied as they are likely to be achieved, if slightly conservative.

5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020). Table 9 summarizes the person trip rates for the proposed residential land use for each peak period.

Table 9: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Person Trip Rates
Multi-Unit High-Rise	221 & 222 (TRANS)	AM	0.80
		PM	0.90

Using the above person trip rates, the total person trip generation has been estimated. Table 10 summarizes the total person trip generation for the residential land use.

Table 10: Total Residential Person Trip Generation by Peak Period

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit High-Rise	275	68	152	220	144	104	248

Using the above mode share targets and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 11 summarizes the residential trip generation by mode and peak hour.

Table 11: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**26%**	9	19	27	**25%**	16	11	27
	Auto Passenger	**6%**	2	4	6	**8%**	5	4	9
	Transit	**28%**	10	24	34	**21%**	14	10	24
	Cycling	**5%**	2	5	6	**6%**	4	3	7
	Walking	**35%**	14	31	45	**40%**	30	22	51
	Total	**100%**	**37**	**83**	**118**	**100%**	**69**	**50**	**118**

As shown above, a total of 27 AM and 27 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential development, and these patterns were applied based on the build-out of Ottawa Inner. Table 12 below summarizes the distributions.

Table 12: OD Survey Distribution – Ottawa Inner

To/From	% of Trips
North	30%
South	20%
East	40%
West	10%
Total	**100%**

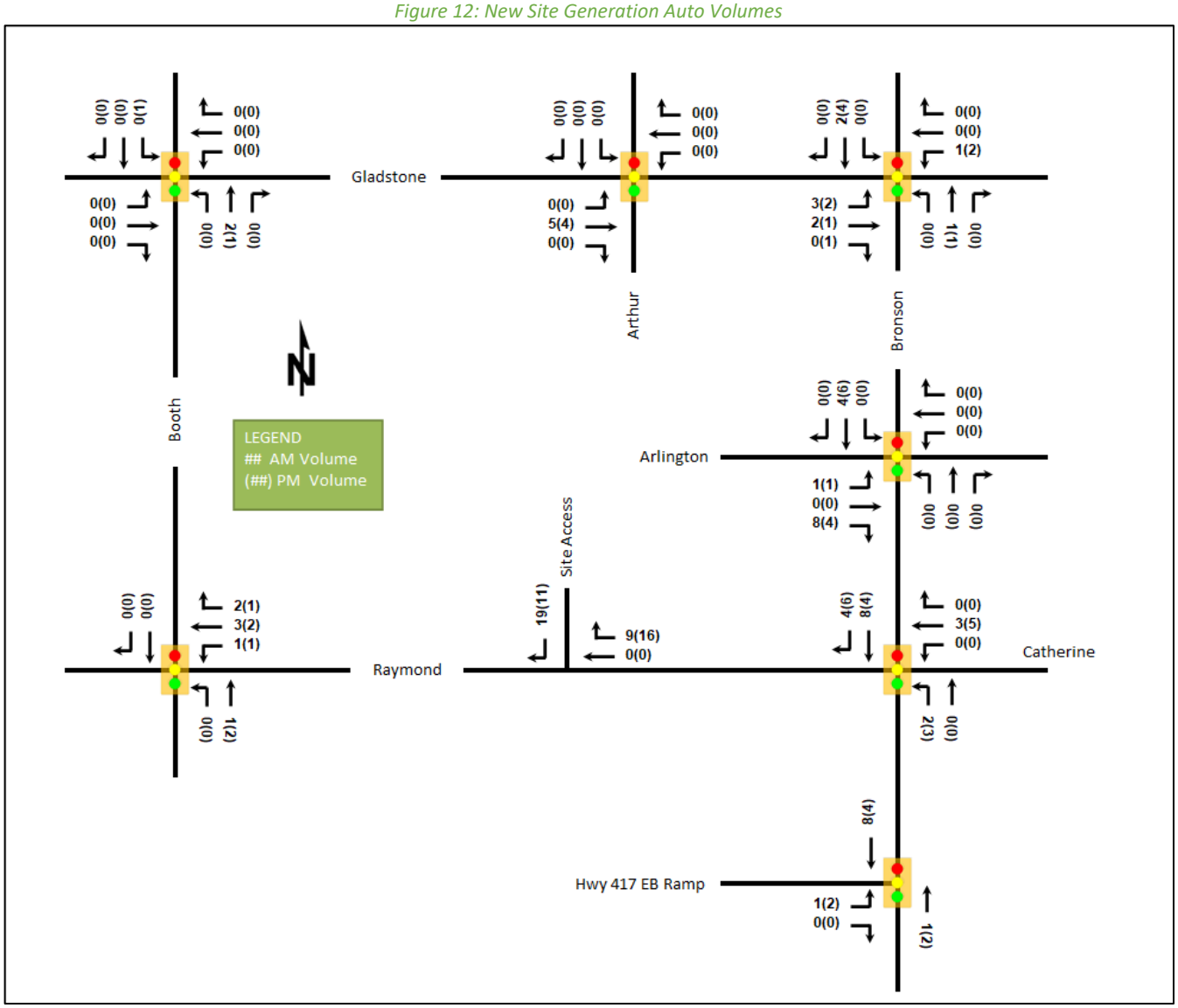
5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 13 summarizes the proportional assignment to the study area roadways, and Figure 12 illustrates the new site generated volumes.

Table 13: Trip Assignment

To/From	Inbound Via	Outbound Via
North	5% Booth St, 25% Bronson Ave	10% Booth St, 20% Bronson Ave
South	10% Booth St, 10% Bronson Ave	5% Raymond, 5% Booth St, 10% Bronson Ave
East	10% Gladstone Ave, 30% Catherine St	10% Gladstone Ave, 30% Bronson Ave (S)
West	10% Hwy 417 EB Ramp	10% Raymond St
Total	**100%**	**100%**

Figure 12: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The Gladstone Avenue safety improvements are assumed not to change the lane and intersection arrangements.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. Table 15 summarizes the results of the model, and the projections are provided in Appendix E. The nominal westbound rates for Highway 417 eastbound ramp were calculated from the ramp volumes on Raymond Street west of Bronson Avenue.

Table 14: TRANS Regional Model Projections – Study Area Growth Rates

Street	Direction Growth % from 2011 to 2031	
	Eastbound	Westbound
Gladstone Ave	2.95%	1.70%
Catherine St	-	1.04%
Hwy 417 EB Ramp	1.47%	-0.03%
	Northbound	**Southbound**
Booth St	0.97%	0.86%
Bronson Ave	0.51%	0.86%

Within the study area, growth within the range of 0.5% to 3.0% is forecasted by the TRANS model on all roads. The mainline arterial and major collector volumes throughout the study area, both turning movements from the Highway 417 eastbound off-ramp, and the northbound and westbound left-turn volumes at the intersection of Bronson Avenue at Catherine Street/Raymond Street will be grown at the annual rates identified in Table 15, rounded the nearest 0.25%. Growth will be applied in the appropriate directions during the AM peak hour and reversed during the PM peak hour. Table 15 summarizes the growth rates applied within the study area.

Table 15: TRANS Regional Model Projections – Study Area Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Gladstone Ave	3.00%	1.75%	1.75%	3.00%
Catherine St	-	1.00%	-	-
Hwy 417 EB Ramp	1.50%	-	-	-
	Northbound	**Southbound**	**Northbound**	**Southbound**
Booth St	1.00%	0.75%	0.75%	1.00%
Bronson Ave	0.50%	0.75%	0.75%	0.50%

6.3 Other Developments

As the only area developments with TIAs that did not forecast negligible volumes, The background developments explicitly considered in the background conditions (Section 6.2) include:

- 818 Gladstone Avenue
- 18 Louisa Street

The background development volumes within the study area have been provided in Appendix F.

7 Demand Rationalization

7.1 2026 Future Background Operations

Figure 13 illustrates the 2026 future background volumes and Table 16 summarizes the 2026 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2026 future background horizon are provided in Appendix G.

Figure 13: 2026 Future Background Volumes

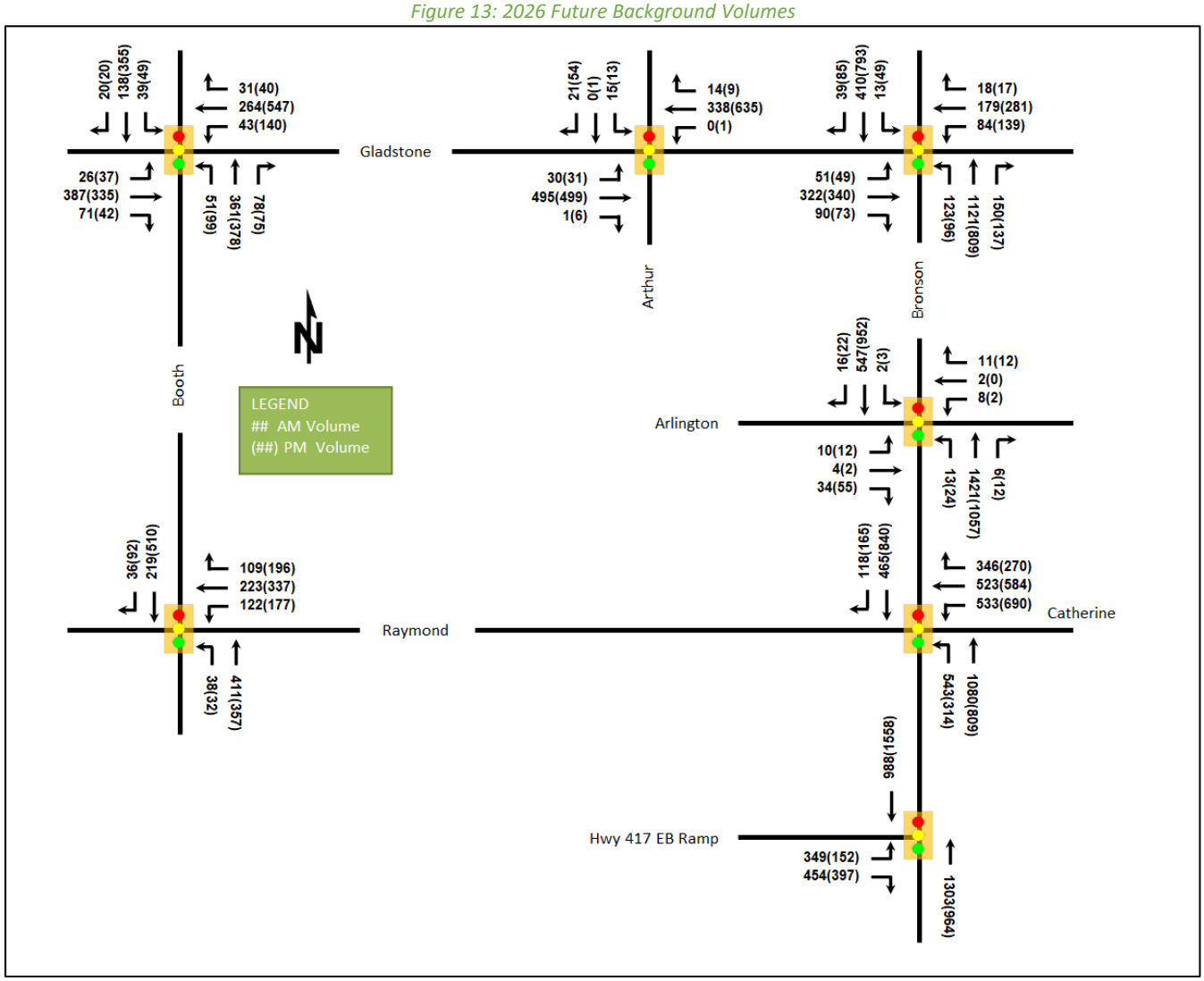


Table 16: 2026 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Highway 417 EB Ramp ***Signalized***	EBL	B	0.67	41.9	97.2	A	0.31	29.6	39.6
	EBR	D	0.88	47.1	**#132.4**	D	0.89	56.0	**#124.0**
	NBT	B	0.67	18.1	118.4	A	0.49	13.1	67.7
	SBT	A	0.53	66.2	m79.3	C	0.79	75.0	m184.0
	Overall	**C**	**0.74**	**40.4**	-	**D**	**0.83**	**50.9**	-
Bronson Avenue at Catherine Street/Raymond Street ***Signalized***	WBL	**F**	**1.01**	**93.5**	**#159.3**	**F**	**1.02**	**121.0**	**#156.3**
	WBT/R	E	0.96	56.5	**#110.1**	E	0.99	**96.8**	**#115.4**
	NBL	E	0.91	33.1	**#94.0**	D	0.87	42.5	**#86.3**
	NBT	A	0.52	11.7	59.1	A	0.41	18.9	81.4
	SBT/R	C	0.79	**96.6**	80.2	D	0.86	70.9	**#125.3**
	Overall	**E**	**0.99**	**49.7**	-	**E**	**0.95**	**70.4**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Arlington Avenue *Signalized*	EB	A	0.25	22.6	13.1	A	0.31	17.5	14.0
	WB	A	0.13	29.0	9.0	A	0.07	9.4	3.7
	NB	A	0.56	4.0	m44.6	A	0.45	3.2	m29.1
	SB	A	0.23	3.3	22.3	A	0.39	1.9	14.7
	Overall	**A**	**0.53**	**4.5**	-	**A**	**0.42**	**3.1**	-
Bronson Avenue at Gladstone Avenue *Signalized*	EBL	A	0.19	29.1	16.7	A	0.16	21.7	14.2
	EBT/R	E	0.95	67.4	**#130.0**	B	0.65	31.0	97.5
	WBL	D	0.81	**84.0**	**#41.1**	A	0.60	37.3	43.6
	WBT/R	A	0.44	32.4	50.0	A	0.46	25.6	65.4
	NBL	A	0.32	17.2	25.7	C	0.72	42.1	**#41.9**
	NBT/R	D	0.81	25.4	127.7	C	0.78	16.9	36.1
	SBL	A	0.14	17.7	5.3	A	0.43	36.8	19.3
	SBT/R	A	0.29	14.8	34.4	B	0.70	29.3	95.8
	Overall	**C**	**0.79**	**32.3**	-	**B**	**0.67**	**25.9**	-
Booth Street at Gladstone Avenue *Signalized*	EBL	A	0.08	13.4	6.1	A	0.17	15.3	9.2
	EBT/R	C	0.76	26.8	**#83.8**	A	0.49	17.2	59.8
	WBL	A	0.20	16.2	9.7	A	0.40	29.4	40.1
	WBT/R	A	0.48	17.4	42.4	C	0.74	34.9	128.2
	NBL	A	0.11	9.7	m6.0	A	0.36	22.9	23.5
	NBT/R	B	0.62	12.9	35.0	C	0.71	27.8	88.6
	SBL	A	0.13	12.2	7.7	A	0.23	20.6	13.0
	SBT/R	A	0.22	11.1	19.7	A	0.58	24.0	70.5
	Overall	**B**	**0.68**	**17.8**	-	**C**	**0.72**	**26.7**	-
Arthur Street / Arthur Lane at Gladstone Avenue *Signalized*	EB	A	0.42	8.3	64.9	A	0.44	5.9	31.3
	WB	A	0.28	6.8	37.9	A	0.51	8.8	76.5
	SB	A	0.09	4.5	3.7	A	0.23	12.3	11.3
	Overall	**A**	**0.39**	**7.6**	-	**A**	**0.45**	**7.7**	-
Booth Street at Raymond Street *Signalized*	WBL/T	B	0.63	23.0	55.2	**F**	**1.07**	**89.9**	**#129.2**
	WBR	A	0.20	4.7	8.5	A	0.36	5.5	13.2
	NBL	A	0.08	8.8	6.1	A	0.11	8.3	5.6
	NBT	A	0.48	12.7	48.0	A	0.36	9.8	39.0
	SBT/R	A	0.31	14.3	m25.4	B	0.63	13.7	77.3
	Overall	**A**	**0.54**	**15.2**	-	**C**	**0.78**	**34.9**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2026 future background horizon are forecasted to operate similarly to the existing conditions. Minor improvements may be noted on various movements with the peak hour factor increasing to 1.00 for future conditions. The westbound left movement at the intersection of Bronson Avenue and Gladstone Avenue may be subject to high delays during the AM peak hour at this horizon.

7.2 2031 Future Background Operations

Figure 14 illustrates the 2031 future background volumes and Table 17 summarizes the 2031 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2031 future background horizon are provided in Appendix H.

Figure 14: 2031 Future Background Volumes

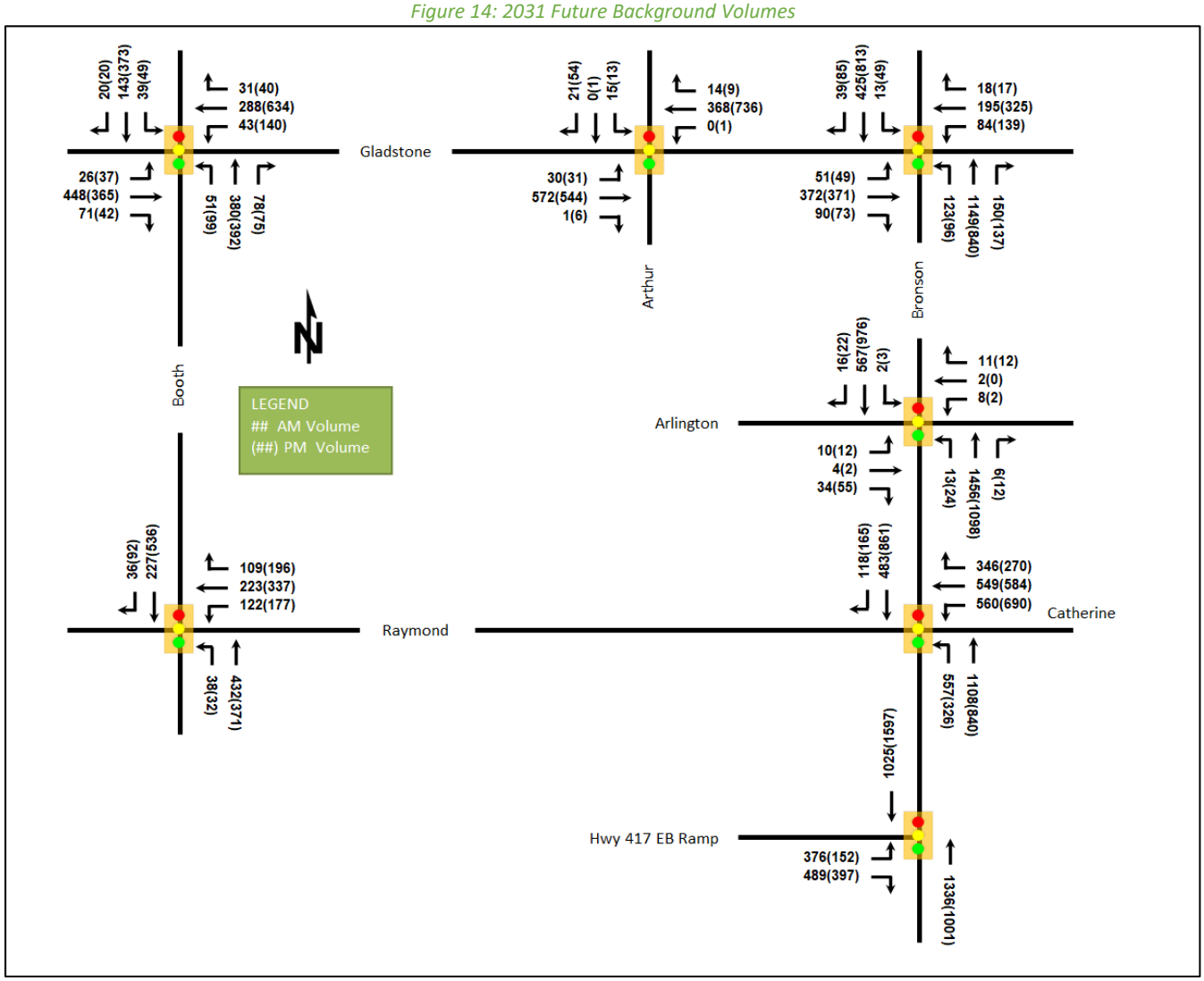


Table 17: 2031 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Highway 417 EB Ramp ***Signalized***	EBL	C	0.73	46.0	105.8	A	0.31	29.6	39.6
	EBR	E	0.95	60.6	**#151.8**	D	0.89	56.5	**#124.6**
	NBT	B	0.69	18.5	123.2	A	0.51	13.5	71.2
	SBT	A	0.55	66.7	m82.6	D	0.81	75.6	m188.4
	Overall	**D**	**0.78**	**43.4**	-	**D**	**0.84**	**51.2**	-
Bronson Avenue at Catherine Street/Raymond Street ***Signalized***	WBL	**F**	**1.05**	**102.8**	**#166.6**	**F**	**1.02**	**121.0**	**#156.3**
	WBT/R	E	1.00	64.9	**#118.0**	E	0.99	**96.8**	**#115.4**
	NBL	E	0.95	39.5	**#104.7**	E	0.91	50.6	**#94.2**
	NBT	A	0.53	12.6	62.3	A	0.42	19.3	85.4
	SBT/R	D	0.81	**98.2**	**#84.5**	D	0.88	71.9	**#128.6**
	Overall	**F**	**1.03**	**54.7**	-	**E**	**0.98**	**71.0**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Arlington Avenue *Signalized*	EB	A	0.25	22.6	13.1	A	0.31	17.5	14.0
	WB	A	0.13	29.0	9.0	A	0.07	9.4	3.7
	NB	A	0.58	4.0	m44.5	A	0.47	3.2	m29.5
	SB	A	0.24	3.4	23.2	A	0.40	1.7	14.2
	Overall	**A**	**0.54**	**4.5**	-	**A**	**0.44**	**3.0**	-
Bronson Avenue at Gladstone Avenue *Signalized*	EBL	A	0.20	29.4	16.9	A	0.18	22.3	14.5
	EBT/R	**F**	**1.05**	**92.8**	**#150.8**	B	0.70	32.9	106.8
	WBL	**F**	**1.15**	**188.4**	**#46.9**	B	0.66	42.7	**#50.4**
	WBT/R	A	0.48	33.2	54.0	A	0.52	27.0	76.5
	NBL	A	0.32	17.5	26.0	C	0.75	48.3	**#43.3**
	NBT/R	D	0.83	26.2	132.4	C	0.80	18.8	44.2
	SBL	A	0.15	18.4	5.4	A	0.47	40.4	**#20.5**
	SBT/R	A	0.30	14.9	35.6	C	0.72	29.8	98.7
	Overall	**D**	**0.86**	**40.8**	-	**B**	**0.70**	**27.6**	-
Booth Street at Gladstone Avenue *Signalized*	EBL	A	0.08	13.5	6.2	A	0.25	18.5	10.4
	EBT/R	D	0.86	34.9	**#101.0**	A	0.52	17.9	65.8
	WBL	A	0.26	18.3	10.3	A	0.43	30.0	m39.5
	WBT/R	A	0.52	18.2	46.4	D	0.85	40.8	**#156.8**
	NBL	A	0.11	10.1	m6.0	A	0.38	23.7	24.0
	NBT/R	B	0.64	13.5	38.0	C	0.73	28.9	92.3
	SBL	A	0.14	12.4	7.8	A	0.24	21.0	13.2
	SBT/R	A	0.23	11.3	20.4	A	0.60	24.7	74.4
	Overall	**C**	**0.74**	**21.1**	-	**C**	**0.79**	**29.2**	-
Arthur Street / Arthur Lane at Gladstone Avenue *Signalized*	EB	A	0.48	9.7	**#85.9**	A	0.48	6.2	32.4
	WB	A	0.30	7.0	41.7	A	0.59	10.2	98.4
	SB	A	0.09	4.5	3.7	A	0.23	12.3	11.3
	Overall	**A**	**0.45**	**8.5**	-	**A**	**0.51**	**8.6**	-
Booth Street at Raymond Street *Signalized*	WBL/T	B	0.63	23.0	55.2	**F**	**1.07**	**89.9**	**#129.2**
	WBR	A	0.20	4.7	8.5	A	0.36	5.5	13.2
	NBL	A	0.08	8.8	6.1	A	0.11	8.5	5.7
	NBT	A	0.51	13.1	51.2	A	0.38	10.0	40.6
	SBT/R	A	0.31	14.6	m26.0	B	0.66	14.4	83.1
	Overall	**A**	**0.56**	**15.4**	-	**C**	**0.79**	**34.6**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2031 future background conditions are forecasted to operate similarly to the existing and 2026 background conditions.

At the intersection of Bronson Avenue at Gladstone Avenue, the eastbound through/right movement is anticipated to operate over theoretical capacity and may be subject to high delays, and the westbound left movement is anticipated to operate over theoretical capacity both during the AM peak hour at this horizon.

During the AM peak hour, the eastbound movement at the intersection of Arthur Street/Arthur Lane at Gladstone Avenue may exhibit extended queuing, and during the PM peak hour, the westbound through/right movement at the intersection of Booth Street at Gladstone Avenue may exhibit extended queuing at this horizon.

Given the residual capacity at the intersection of Bronson Avenue at Gladstone Avenue during the AM peak hour, shifting two seconds of split from the north-south phases to the east-west phases would reduce v/c on all movements at the intersection to 1.00 or below.

At the intersection of Bronson Avenue at Catherine Street/Raymond Street, shifting two seconds of split during the AM peak hour and one second of split during the PM peak hour from the northbound/southbound through phase to the westbound through phase would reduce v/c on all movements at the intersection to 1.00 or below.

At the intersection of Booth Street at Raymond Street, shifting two seconds of split from the north-south phases to the westbound phase would reduce v/c on all movements at the intersection to 1.00 or below during the PM peak hour.

7.3 2026 Future Total Operations

Figure 13 illustrates the 2026 future total volumes and Table 16 summarizes the 2026 future total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2026 future total horizon are provided in Appendix I.

Figure 15: 2026 Future Total Volumes

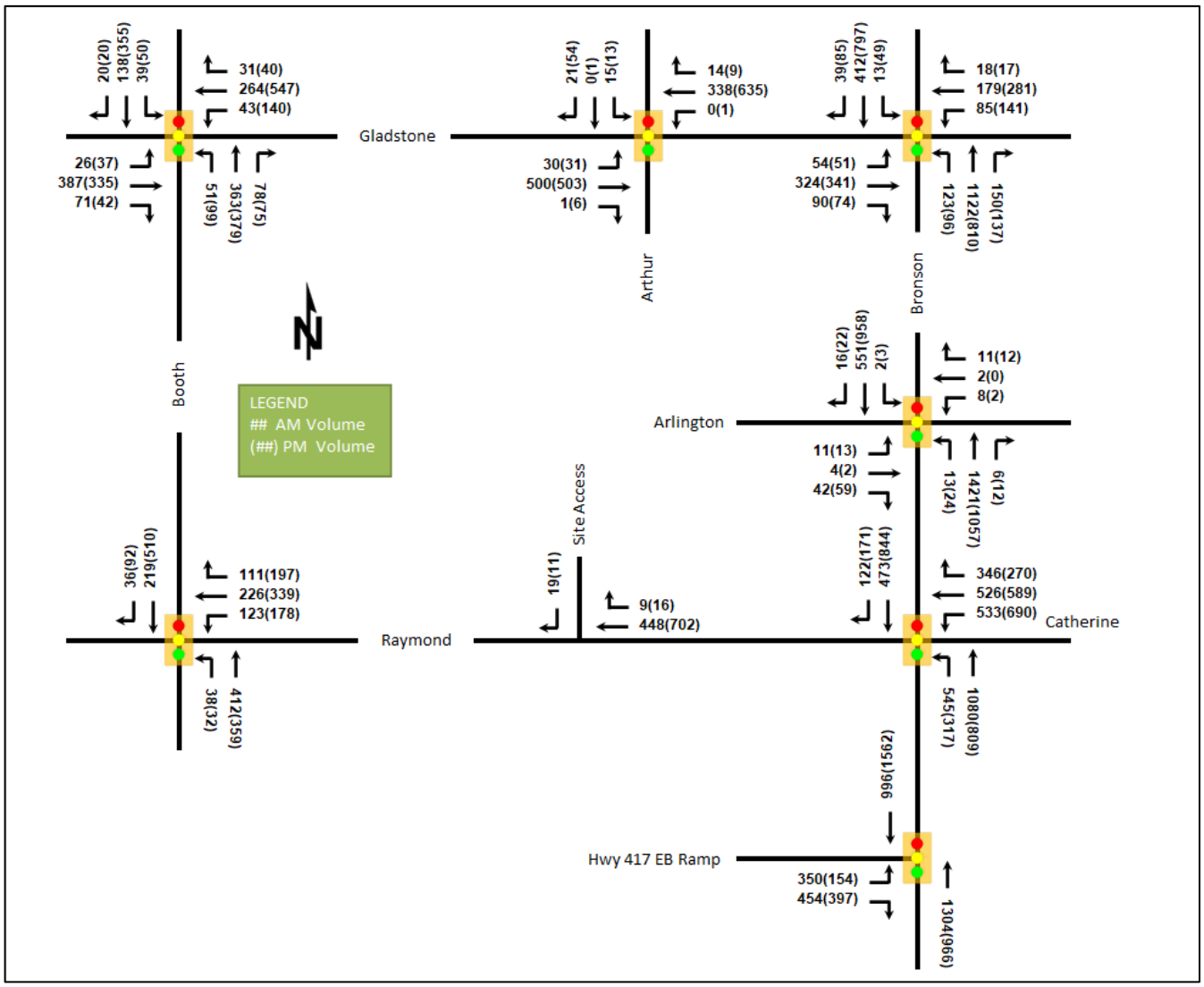


Table 18: 2026 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Highway 417 EB Ramp ***Signalized***	EBL	B	0.68	42.0	97.2	A	0.32	29.7	39.8
	EBR	D	0.88	47.5	**#133.0**	D	0.89	56.0	**#124.0**
	NBT	B	0.67	18.1	118.6	A	0.49	13.1	67.9
	SBT	A	0.54	66.1	m81.8	C	0.79	75.0	m184.3
	Overall	**C**	**0.74**	**40.5**	-	**D**	**0.83**	**50.9**	-
Bronson Avenue at Catherine Street/Raymond Street ***Signalized***	WBL	**F**	**1.01**	**93.5**	**#159.3**	**F**	**1.02**	**121.0**	**#156.3**
	WBT/R	E	0.96	57.0	**#110.8**	E	0.99	**97.0**	**#116.3**
	NBL	E	0.92	35.2	**#97.1**	D	0.88	45.2	**#88.6**
	NBT	A	0.52	11.7	59.3	A	0.41	18.8	81.2
	SBT/R	C	0.80	**97.5**	**#82.8**	D	0.87	71.5	**#126.8**
	Overall	**E**	**1.00**	**50.5**	-	**E**	**0.96**	**70.9**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Arlington Avenue *Signalized*	EB	A	0.28	21.6	14.2	A	0.32	17.4	14.5
	WB	A	0.13	29.0	9.0	A	0.07	9.4	3.7
	NB	A	0.56	4.0	m44.5	A	0.45	3.2	m29.3
	SB	A	0.23	3.3	22.4	A	0.39	1.9	14.8
	Overall	**A**	**0.53**	**4.6**	-	**A**	**0.43**	**3.1**	-
Bronson Avenue at Gladstone Avenue *Signalized*	EBL	A	0.21	29.3	17.4	A	0.16	21.9	14.7
	EBT/R	E	0.95	68.4	**#130.7**	B	0.66	31.2	97.8
	WBL	D	0.83	**87.6**	**#41.7**	B	0.61	38.0	**#44.6**
	WBT/R	A	0.44	32.4	50.0	A	0.46	25.6	65.4
	NBL	A	0.32	17.3	25.8	C	0.72	42.2	**#42.0**
	NBT/R	D	0.81	25.4	128.0	C	0.78	17.0	36.1
	SBL	A	0.14	17.7	5.3	A	0.43	36.8	19.3
	SBT/R	A	0.29	14.8	34.5	C	0.71	29.4	96.4
	Overall	**C**	**0.79**	**32.6**	-	**B**	**0.67**	**26.1**	-
Booth Street at Gladstone Avenue *Signalized*	EBL	A	0.08	13.4	6.1	A	0.18	15.4	9.3
	EBT/R	C	0.76	26.8	**#83.8**	A	0.49	17.2	59.8
	WBL	A	0.20	16.2	9.7	A	0.40	29.4	40.1
	WBT/R	A	0.48	17.4	42.4	C	0.74	34.9	128.2
	NBL	A	0.11	9.7	m6.0	A	0.37	23.0	23.6
	NBT/R	B	0.62	12.9	35.3	C	0.71	27.9	88.9
	SBL	A	0.13	12.3	7.7	A	0.23	20.7	13.4
	SBT/R	A	0.22	11.1	19.7	A	0.58	24.0	70.5
	Overall	**B**	**0.68**	**17.8**	-	**C**	**0.72**	**26.7**	-
Arthur Street / Arthur Lane at Gladstone Avenue *Signalized*	EB	A	0.43	8.3	65.9	A	0.45	6.0	31.7
	WB	A	0.28	6.8	37.9	A	0.51	8.8	76.5
	SB	A	0.09	4.5	3.7	A	0.23	12.3	11.3
	Overall	**A**	**0.39**	**7.6**	-	**A**	**0.45**	**7.8**	-
Booth Street at Raymond Street *Signalized*	WBL/T	B	0.64	23.2	55.8	**F**	**1.08**	**91.9**	**#130.3**
	WBR	A	0.21	4.7	8.6	A	0.36	5.5	13.3
	NBL	A	0.08	8.8	6.1	A	0.11	8.3	5.6
	NBT	A	0.48	12.7	48.3	A	0.37	9.8	39.3
	SBT/R	A	0.31	14.3	m25.4	B	0.63	13.7	77.3
	Overall	**A**	**0.55**	**15.3**	-	**C**	**0.78**	**35.5**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2026 future total horizon are forecasted to operate similarly to the 2026 future background conditions. Extended queueing may be exhibited on the southbound through/right movement at the intersection of Bronson Avenue at Catherine Street/Raymond Street during the AM peak hour, and on the westbound left movement at the intersection of Bronson Avenue at Gladstone Avenue during the PM peak hour. No new capacity issues are noted.

7.4 2031 Future Total Operations

Figure 14 illustrates the 2031 future total volumes and Table 17 summarizes the 2031 future total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2031 future total horizon are provided in Appendix J.

Figure 16: 2031 Future Total Volumes

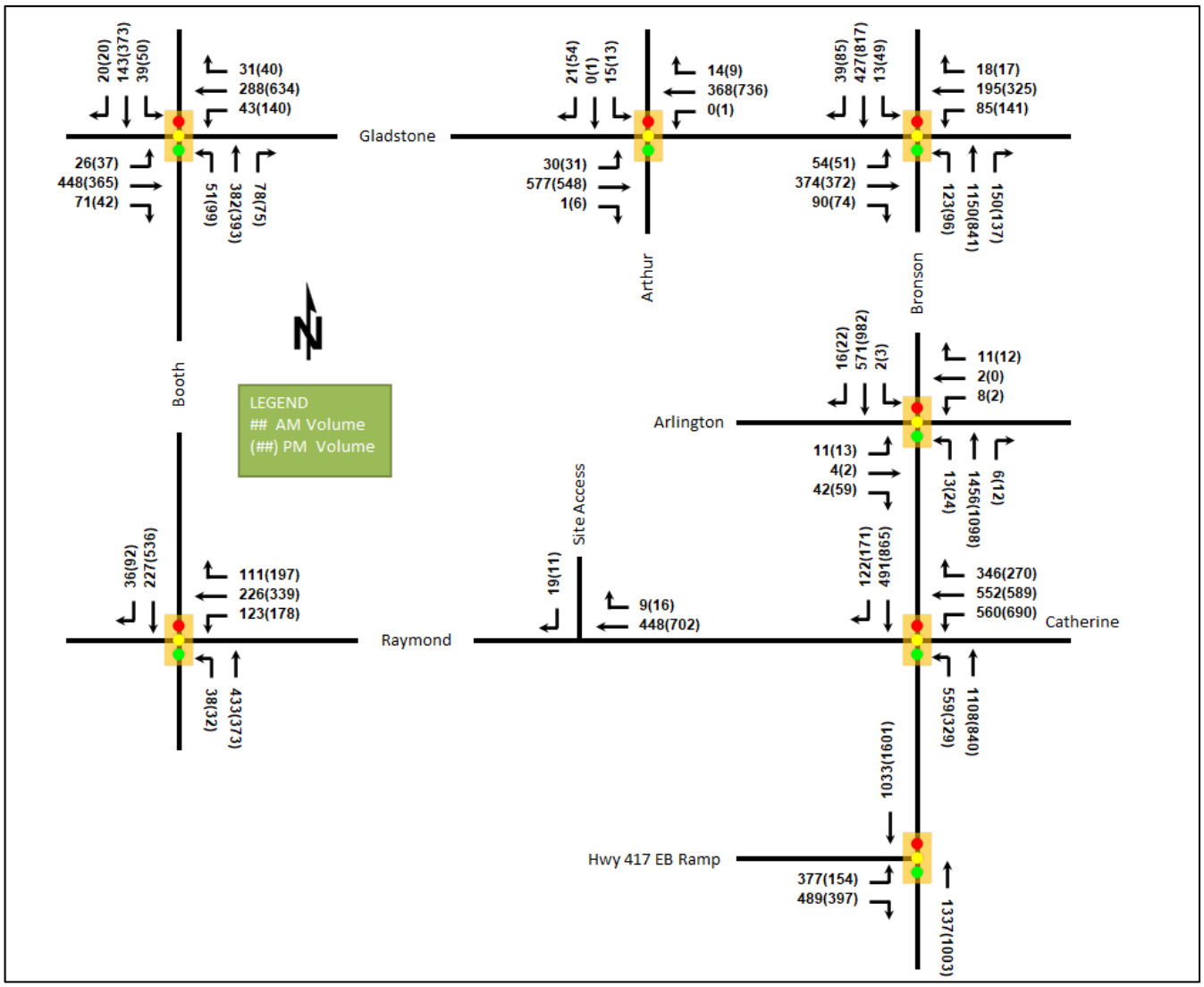


Table 19: 2031 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Highway 417 EB Ramp ***Signalized***	EBL	C	0.73	46.1	106.5	A	0.32	29.7	39.8
	EBR	E	0.96	61.6	**#152.5**	D	0.89	56.5	**#124.6**
	NBT	B	0.69	18.6	123.4	A	0.51	13.5	71.5
	SBT	A	0.56	66.6	m85.2	D	0.81	75.5	m188.5
	Overall	**C**	**0.78**	**43.6**	-	**D**	**0.84**	**51.2**	-
Bronson Avenue at Catherine Street/Raymond Street ***Signalized***	WBL	**F**	**1.05**	**102.8**	**#166.6**	**F**	**1.02**	**121.0**	**#156.3**
	WBT/R	E	1.00	65.6	**#118.4**	E	0.99	**97.0**	**#116.3**
	NBL	E	0.96	42.0	**#107.0**	E	0.92	53.4	**#97.1**
	NBT	A	0.53	12.7	62.2	A	0.42	19.3	85.2
	SBT/R	D	0.83	**99.0**	**#90.0**	D	0.89	72.9	**#131.0**
	Overall	**F**	**1.04**	**55.5**	-	**E**	**0.99**	**71.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Bronson Avenue at Arlington Avenue *Signalized*	EB	A	0.28	21.6	14.2	A	0.32	17.4	14.5
	WB	A	0.13	29.0	9.0	A	0.07	9.4	3.7
	NB	A	0.58	4.0	m44.5	A	0.47	3.3	m29.7
	SB	A	0.24	3.4	23.3	A	0.40	1.7	14.4
	Overall	**A**	**0.54**	**4.6**	-	**A**	**0.44**	**3.1**	-
Bronson Avenue at Gladstone Avenue *Signalized*	EBL	A	0.22	29.6	17.6	A	0.18	22.4	15.0
	EBT/R	**F**	**1.06**	**94.1**	**#151.5**	B	0.70	33.0	107.4
	WBL	**F**	**1.16**	**192.8**	**#47.4**	B	0.67	43.8	**#51.4**
	WBT/R	A	0.48	33.2	54.0	A	0.52	27.0	76.5
	NBL	A	0.32	17.5	26.0	C	0.76	49.3	**#43.5**
	NBT/R	D	0.83	26.2	132.4	D	0.81	18.8	44.8
	SBL	A	0.15	18.5	5.4	A	0.47	40.4	**#20.5**
	SBT/R	A	0.30	14.9	35.8	C	0.72	29.9	99.2
	Overall	**D**	**0.87**	**41.3**	-	**B**	**0.70**	**27.7**	-
Booth Street at Gladstone Avenue *Signalized*	EBL	A	0.08	13.5	6.2	A	0.24	18.2	10.3
	EBT/R	D	0.86	34.9	**#101.0**	A	0.52	17.9	65.8
	WBL	A	0.26	18.3	10.3	A	0.43	30.0	m39.5
	WBT/R	A	0.52	18.2	46.4	D	0.85	40.8	**#156.8**
	NBL	A	0.11	10.1	m6.0	A	0.38	23.7	24.0
	NBT/R	B	0.64	13.6	38.3	C	0.73	28.9	92.6
	SBL	A	0.14	12.4	7.8	A	0.24	21.1	13.5
	SBT/R	A	0.23	11.3	20.4	A	0.60	24.7	74.4
	Overall	**C**	**0.74**	**21.1**	-	**C**	**0.79**	**29.2**	-
Arthur Street / Arthur Lane at Gladstone Avenue *Signalized*	EB	A	0.49	9.8	**#95.2**	A	0.49	6.3	33.0
	WB	A	0.30	7.0	41.7	A	0.59	10.2	98.4
	SB	A	0.09	4.5	3.7	A	0.23	12.3	11.3
	Overall	**A**	**0.45**	**8.5**	-	**A**	**0.51**	**8.7**	-
Booth Street at Raymond Street *Signalized*	WBL/T	B	0.64	23.2	55.8	**F**	**1.08**	**91.9**	**#130.3**
	WBR	A	0.21	4.7	8.6	A	0.36	5.5	13.3
	NBL	A	0.08	8.8	6.1	A	0.11	8.5	5.7
	NBT	A	0.51	13.1	51.3	A	0.38	10.0	40.8
	SBT/R	A	0.31	14.6	m26.0	B	0.66	14.4	83.1
	Overall	**A**	**0.56**	**15.5**	-	**C**	**0.80**	**35.3**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2031 future total horizon are forecasted to operate similarly to the 2031 future background conditions. No new capacity issues are noted.

The same signal timing adjustments discussed in the background conditions could reduce the v/c of all movements at the study area intersections to 1.00 or below.

7.5 Modal Share Sensitivity and Demand Rationalization Conclusions

Signal timing adjustments may be explored to address existing capacity issues throughout the study area. The area modal share targets are anticipated to be achieved given the proximity to the future Corso Italia Station on the Trillium LRT line, and negligible impacts are anticipated as a result of site-generated traffic. Further rationalization for the proposed development travel demand is not required.

8 Transportation Demand Management

8.1 Context for TDM

The mode shares used within the TIA represent the unmodified, recommended district mode shares. Overall, the modal shares are likely to be achieved, especially given the proximity of LRT, and supporting TDM measures should be provided to encourage further shifts to sustainable modes.

The subject site is not within a design priority area, and no age restrictions are noted. The total bedroom count within the development is anticipated to be 369 with 181 one-bedroom or bachelor units and 94 two-bedroom units.

8.2 Need and Opportunity

The subject site has been assumed to rely predominantly on walking with roughly proportional levels of auto travel with and transit, and those assumptions have been carried through the analysis. The study area intersections may have residual capacity with signal timing adjustments.

Risks associated with failing to meet mode share targets are likely to be increased auto volumes which may impact the westbound approach at the intersection of Bronson Avenue at Catherine Street/Raymond Street and the westbound approach of the intersection of Raymond Street at Booth Street. However, as previously noted, the modal share targets are considered somewhat conservative, and a TDM program will serve to mitigate these risks.

8.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix K. The key TDM measures recommended include:

- Display local area information with walking/cycling maps and relevant transit schedules and route maps
- Provide a multimodal travel option information package to new residents
- Inclusion of a 1-year Presto card for first time new condo purchase and apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
- Unbundle parking cost from purchase or rental costs

9 Neighbourhood Traffic Management

The proposed development will connect to the arterial road network through the local roads of Arlington Avenue, and Raymond Street, and the major collector roads of Gladstone Avenue and Booth Street. It is noted that the neighbourhood traffic management thresholds outlined in the TIA guidelines are too low for the purposes of this analysis and that these thresholds are currently being reviewed by the City.

The site-generated trips on all the local and collector roads will be less than 30 two-way trips in the peak hours. As it will be distributed across a number of roadways, the overall impact will be negligible to the roadway classification.

It is noted from the volumes along Booth Street and Gladstone Avenue support high levels of traffic as major collector roads, although this is typical of the Ottawa context and no change to their classification will result from minor increases.

10 Transit

10.1 Route Capacity

In Section 5.1, the trip generation was estimated by mode and the anticipated number of transit trips that will be generated by the proposed development was outlined. Table 20 summarizes the transit trip generation.

Table 20: Trip Generation by Transit Mode

Travel Mode	Mode Share AM(PM)	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	28%(21%)	10	24	34	14	10	24

The proposed development is anticipated to generate an additional 34 AM peak hour transit trips and 24 PM peak hour transit trips. Of these trips, 24 outbound AM trips and 14 inbound PM trips are anticipated.

From the trip distribution presented in Section 5.3, seven transit trips to the north, five trips to the south, ten trips to the east, and two trips to the west are forecasted during the AM peak hour and four trips from the north, three transit trips from the south, six trips from the east, and one trip from the west are forecasted during the PM peak hour. Given the minimum 15-minute service in each direction and access to Corso Italia Station on the Trillium LRT line, the resultant increase in ridership is anticipated to be an averaged two or fewer riders per bus during peak hours and no impacts on existing transit service are forecasted from site ridership.

10.2 Transit Priority

A one second or less increase in delay is anticipated on the isolated transit priority corridor of Gladstone Avenue as a result of site traffic, and a two second increase is anticipated on the westbound left turn transit movement at the intersection of Booth Street at Raymond Street. No change in transit LOS is anticipated as a result of site-generated traffic volumes and no transit priority is required for consideration as part of the subject site.

11 Network Intersection Design

11.1 Network Intersection Control

No change to the existing signalized control is recommended for the network intersections.

11.2 Network Intersection Design

11.2.1 Future Total Network Intersection Operations

The operations are noted in Sections 7.3 and 7.4 are considered to be acceptable given the residual capacity with signal timing adjustments. The development is targeted for transit focus and the modal share is considered to be somewhat conservative. No further analysis based upon a change in modal share targets is proposed, or rationalization of network or site traffic is required.

11.2.2 Network Intersection MMLOS

Table 21 summarizes the MMLOS analysis for the network intersections. The existing and future conditions for all intersections will be the same and are considered in one row. The intersection analysis is based on the policy area of “Within 300m of a school” (as being within this distance of either St. Anthony School or Cambridge Street Community Public School) for all but the Bronson Avenue at the Highway 417 eastbound ramp and Bronson Avenue at Catherine Street/Raymond Street intersections which will be based upon the land use designation of “Traditional Main Street”. The MMLOS worksheets have been provided in Appendix L.

Table 21: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Bronson Ave at Hwy 417 EB Ramp	E	B	-	-	F	D	B	D	D	D
Bronson Ave at Catherine St / Raymond St	E	B	F	D	F	D	D	D	F	D
Bronson Ave at Arlington Ave	E	A	C	C	B	D	-	-	A	E
Bronson Ave at Gladstone Ave	D	A	F	C	F	D	F	D	D	E
Arthur St / Arthur Ln at Gladstone Ave	D	A	C	B	C	D	-	-	A	E
Booth St at Gladstone Ave	D	A	C	B	F	D	-	-	C	E
Booth St at Raymond St	C	A	C	B	-	-	-	-	C	E

The MMLOS targets will not be met for the pedestrian LOS at all study area network intersections, bicycle LOS at all intersections except Bronson Avenue at Arlington Avenue, transit LOS at the Bronson Avenue at the Highway 417 eastbound ramp, Bronson Avenue at Catherine Street/Raymond Street, Bronson Avenue at Gladstone Avenue, and Booth Street at Gladstone Avenue intersection, truck LOS at the Bronson Avenue at Gladstone Avenue intersection, and auto LOS at the Bronson Avenue at Catherine Street/Raymond Street and Booth Street at Gladstone Avenue intersections.

For pedestrian LOS, a maximum crossing distance of two lane-widths at each crossing would be required to meet LOS A and a maximum crossing distance of three lane-widths would be required to meet LOS B. Pedestrian delay LOS is not considered in the PLOS calculation as it is not a suitable metric for the assessment of pedestrian LOS as formulated.

Left-turn configurations govern the bicycle LOS on all approaches, and two-stage left turns or left-turn boxes would be required to meet LOS targets on all below-target approaches under the existing and planned lane arrangements.

To meet transit LOS, delay on all transit movements on Bronson Avenue and Gladstone Avenue would need to be reduced to 30 seconds or less.

To meet the truck LOS targets would require two receiving lanes on the Gladstone Avenue legs at its intersection with Bronson Avenue.

The responsibility for exploring the above options for addressing the area MMLOS targets is that of the City, and not of the subject development.

11.2.3 Recommended Design Elements

No study area intersection design elements are proposed as part of this study.

12 Summary of Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIA report:

Proposed Site and Screening

- The proposed site includes 236 residential dwelling units

- Accesses will be provided on the Raymond Street via a right-in/right-out access
- The development is proposed to be completed as a single phase by 2026
- The Trip Generation and Safety Triggers were met for the TIA Screening
- This report is in support of a zoning by-law amendment

Existing Conditions

- Bronson Avenue, Catherine Street, and Raymond Street east of the 417 on-ramp are arterial roads, and Booth Street and Gladstone Avenue are major collector roads in the study area
- Sidewalks are generally provided on both sides of the study area roadways, Gladstone Avenue, Booth Street, and Arlington Avenue are spine cycling routes, Arthur Street/Arthur Lane north of Arlington Avenue is a local route, and Arlington Avenue and Arthur Street/Arthur Lane north of Arlington Avenue are neighbourhood bikeways
- The high volumes roadways have produced a high number of collisions at the intersection of Bronson Avenue at Catherine Street/Raymond Street and at Booth Street at Raymond Street
- The collision types are mostly sideswipe and rear end, indicating that they may be associated with congestion
- Some high delays and capacity issues are noted at the intersection of Bronson Avenue at Catherine Street/Raymond Street during both peak hours, and on the westbound movement at the intersection of Booth Street at Raymond Street during the PM peak hour

Development Generated Travel Demand

- The proposed development is forecasted produce 117 two-way people trips during the AM peak hour and 117 two-way people trips during the PM peak hour
- Of the forecasted people trips, 27 two-way trips will be vehicle trips during the AM peak hour and 27 two-way trips will be vehicle trips during the PM peak hour based on a 26% AM and 25% PM auto share target
- Of the forecasted trips, 30% are anticipated to travel north, 20% to travel south, 40% to travel east, and 10% to travel west

Background Conditions

- The background developments were explicitly included in the background conditions, along with annual background growth rates for each road derived from the TRANS model volume plots at the 2011 and 2031 horizons rounded to the nearest 0.25%
- The study area intersections at the 2026 future background horizon will operate similarly to the existing conditions
- At the 2031 future background horizon, the intersection of Bronson Avenue ate Gladstone Avenue may experience capacity and delay issues on the eastbound and westbound approaches during the AM peak hour, the intersection of Booth Street at Raymond Street may experience capacity and delay issues on the westbound left/through movement during the PM peak hour, and the westbound approach of the intersection of Bronson Avenue at Catherine Street/Raymond Street may experience capacity and delay issues during both peak hours
- Capacity issues at the study area intersections may be alleviate by reallocating no more than two seconds of split at any overcapacity movements at intersections during either peak hour

Total Conditions

- Both future total horizons operate similarly to the future background horizons during both peak hours
- No additional signal timing adjustments beyond those recommended to address the background conditions would be required to mitigate capacity issues in the future total conditions

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Display local area information with walking/cycling maps and relevant transit schedules and route maps
    - Provide a multimodal travel option information package to new residents
    - Inclusion of a 1-year Presto card for first time new condo purchase and apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
    - Unbundle parking cost from purchase or rental costs

NTM

- Site traffic comprising approximately 30 two-way peak hour vehicles and the resultant distribution across the study area road network will not be associated with changes in role or function of study area roads

Transit

- The site is forecast to generate 34 new AM and 24 new PM peak hour two-way transit trips, of which 24 outbound AM and 14 inbound PM peak hour trips are anticipated
- Given the number of routes and frequency of service, and the proximity to the LRT station, no impacts to transit routes are anticipated from site-generated ridership
- A one second or less increase in delay is anticipated on transit movements on Gladstone Avenue and Bronson Avenue, and a two second increase in delay is anticipate don the westbound left-turn movement at the intersection of Boot Street at Raymond Street, and no transit priority was required for consideration for the subject development

Network Intersection Design

- Operations at network intersections are considered to be acceptable given residual capacity may be available with signal timing adjustments
- The MMLOS targets will not be met for the pedestrian LOS at all study area network intersections, bicycle LOS at all intersections except Bronson Avenue at Arlington Avenue, transit LOS at the Bronson Avenue at the Highway 417 eastbound ramp, Bronson Avenue at Catherine Street/Raymond Street, Bronson Avenue at Gladstone Avenue, and Booth Street at Gladstone Avenue intersection, truck LOS at the Bronson Avenue at Gladstone Avenue intersection, and auto LOS at the Bronson Avenue at Catherine Street/Raymond Street and Booth Street at Gladstone Avenue intersections
- Improved cycling facilities, including left-turn configurations out of mixed flow would meet the LOS targets but due to the nature of arterial and major collector roadways, the pedestrian and transit LOS cannot be met; any improvements to area MMLOS are the responsibility of the City and no improvements are recommended as part of this study

13 Conclusion

It is recommended that, from a transportation perspective, the proposed development applications proceed.

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Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 07-Dec-21
Project Number: 2021-137
Project Reference: 384 Arlington

1.1 Description of Proposed Development	
Municipal Address	384 Arlington Avenue
Description of Location	Block fronting Raymond St, Bell St N, Arlington Ave, Arthur Ln N
Land Use Classification	Institutional – I1A
Development Size	223 high-rise dwelling units
Accesses	One full-moves on Raymond St
Phase of Development	Single
Buildout Year	2026
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	223	Units
Trip Generation Trigger	Yes	

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

1.4. Safety Triggers		
Are posted speed limits on a boundary street 80 km/hr or greater?	No	
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No	
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	No	
Is the proposed driveway within auxiliary lanes of an intersection?	No	
Does the proposed driveway make use of an existing median break that serves an existing site?	No	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	Yes	Bronson Ave at Catherine St/Raymond St 80 collisions from 2015-2019
Does the development include a drive-thru facility?	No	
Safety Trigger	Yes	

TIA Plan Reports

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

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

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

CERTIFICATION

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 licensed[1] or registered[2] 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.

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

Ville d'Ottawa
Services d 'infrastructure et Viabilité des collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at Ottawa (City) this 20 day of September, 2018.

Name: Andrew Harte
(Please Print)

Professional Title: Professional Engineer

Signature of Individual certifier that s/he meets the above four criteria

Office Contact Information (Please Print)
Address: 6 Plaza Court
City / Postal Code: Ottawa / K2H 7W1
Telephone / Extension: (613) 697-3797
E-Mail Address: Andrew.Harte@CGHTransportation.com

Appendix B

Turning Movement Counts

Transportation Services - Traffic Services

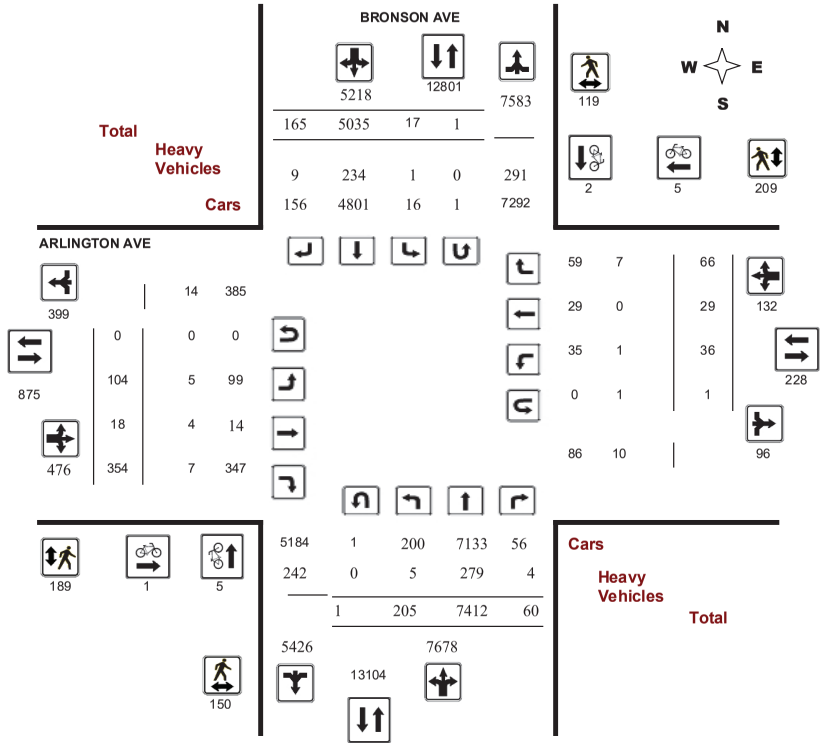
Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study Diagram



Transportation Services - Traffic Services

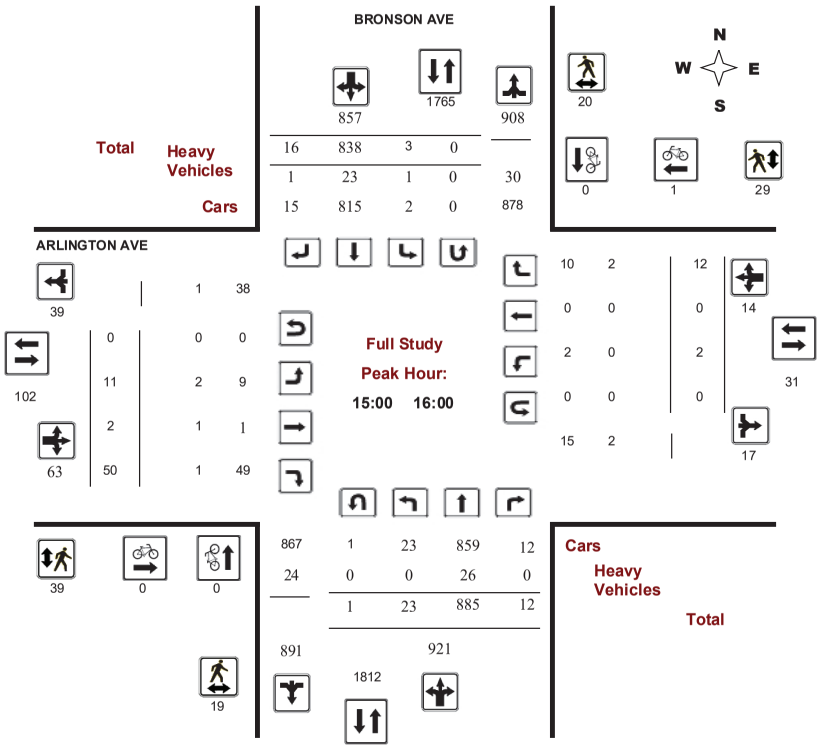
Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study Peak Hour Diagram



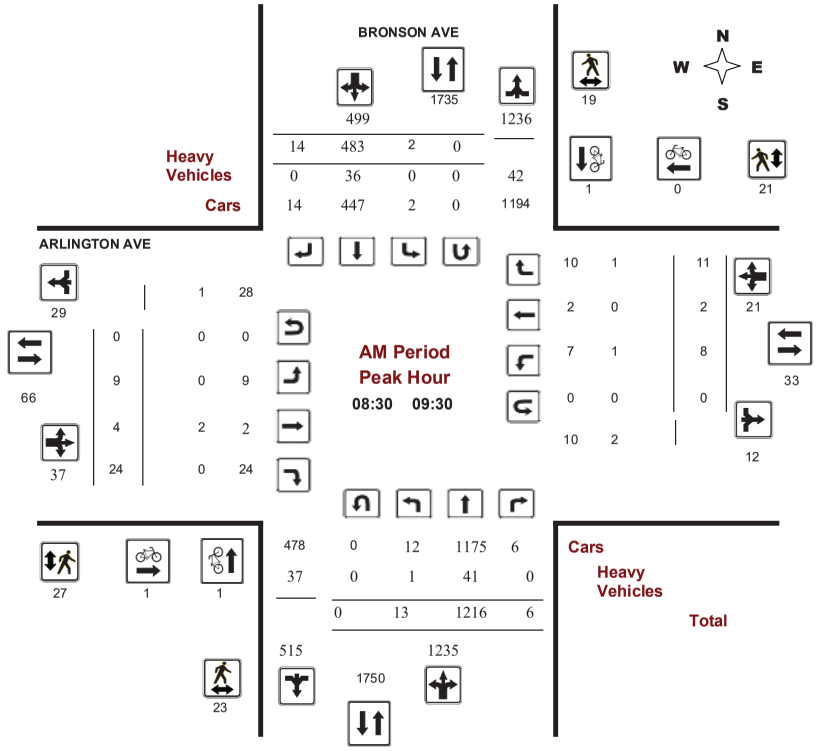
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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



Comments

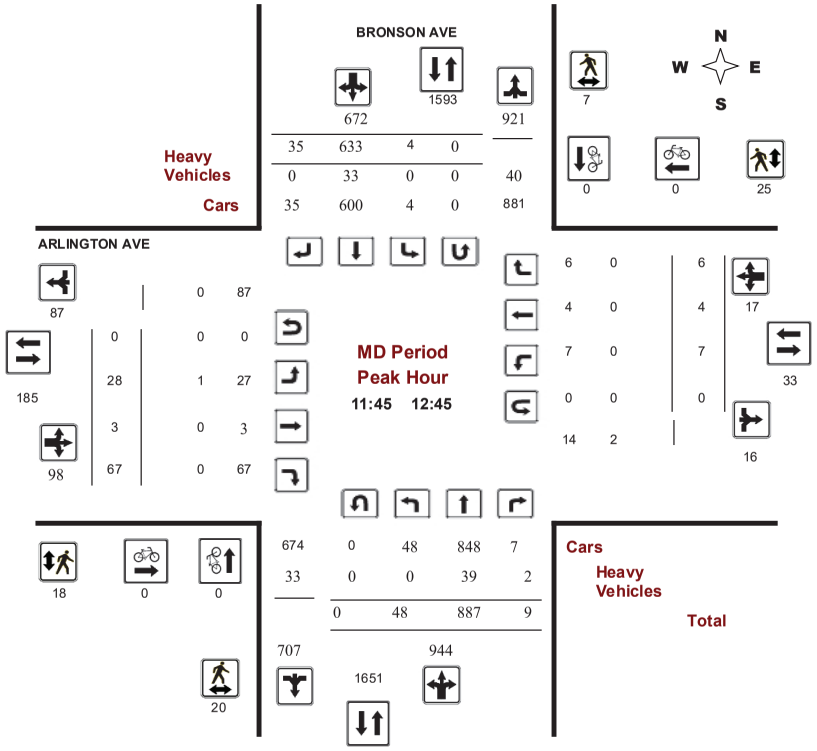
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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



Comments

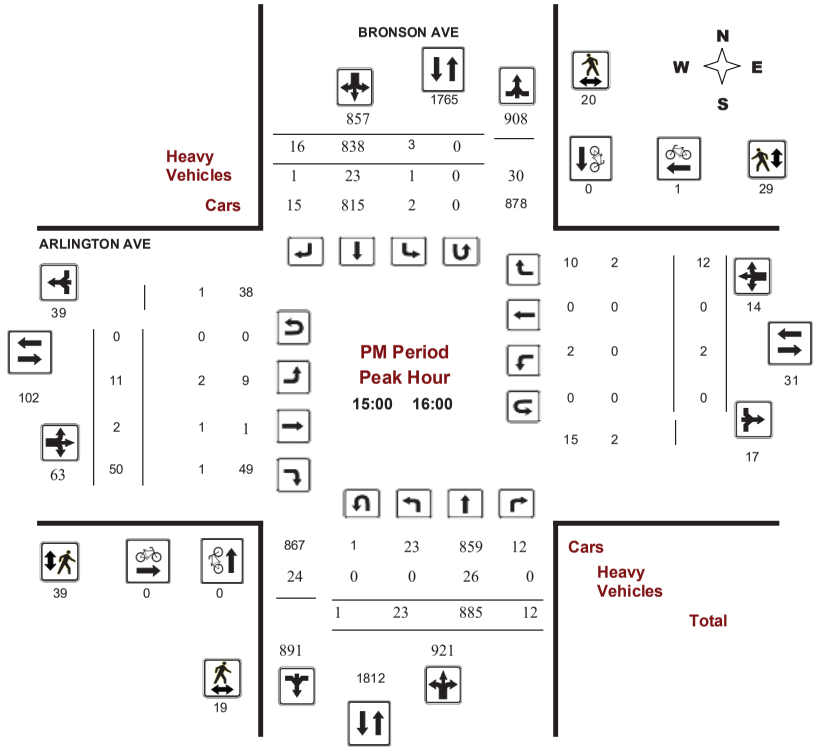
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 13, 2017

Total Observed U-Turns

Northbound: 1 Southbound: 1

Eastbound: 0 Westbound: 1

AADT Factor 1.00

	BRONSON AVE								ARLINGTON AVE								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	7	962	6	**975**	1	507	6	**514**	**1489**	0	1	29	**30**	2	1	6	**9**	**39**	**1528**
08:00 09:00	7	1159	4	**1170**	0	484	17	**501**	**1671**	7	3	30	**40**	6	3	6	**15**	**55**	**1726**
09:00 10:00	24	1144	9	**1177**	3	481	10	**494**	**1671**	11	3	25	**39**	4	0	11	**15**	**54**	**1725**
11:30 12:30	46	858	9	**913**	5	607	37	**649**	**1562**	23	3	64	**90**	6	4	9	**19**	**109**	**1671**
12:30 13:30	37	840	7	**884**	3	596	33	**632**	**1516**	24	2	66	**92**	4	3	5	**12**	**104**	**1620**
15:00 16:00	23	885	12	**920**	3	838	16	**857**	**1777**	11	2	50	**63**	2	0	12	**14**	**77**	**1854**
16:00 17:00	23	791	9	**823**	1	772	19	**792**	**1615**	10	3	40	**53**	6	7	8	**21**	**74**	**1689**
17:00 18:00	38	773	4	**815**	1	750	27	**778**	**1593**	18	1	50	**69**	6	11	9	**26**	**95**	**1688**
Sub Total	205	7412	60	**7677**	17	5035	165	**5217**	**12894**	104	18	354	**476**	36	29	66	**131**	**607**	**13501**
U Turns	1			**1**	1			**1**	**2**	**0**			**0**	1			**1**	**1**	**3**
Total	206	7412	60	**7678**	18	5035	165	**5218**	**12896**	104	18	354	**476**	37	29	66	**132**	**608**	**13504**
EQ 12Hr	286	10303	83	**10672**	25	6999	229	**7253**	**17925**	145	25	492	**662**	51	40	92	**183**	**845**	**18770**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	286	10303	83	**10672**	25	6999	229	**7253**	**17925**	145	25	492	**662**	51	40	92	**183**	**845**	**18770**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	375	13497	109	**13981**	33	9169	300	**9502**	**23483**	190	33	645	**868**	67	52	121	**240**	**1108**	**24591**
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

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study 15 Minute Increments

		BRONSON AVE									ARLINGTON AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	2	222	3	227	0	117	0	117	**344**	0	0	5	5	0	0	2	2	**7**	**351**
07:15	07:30	3	206	0	209	0	139	4	143	**352**	0	0	6	6	0	0	2	2	**8**	**360**
07:30	07:45	2	262	2	266	1	117	0	118	**384**	0	0	9	9	0	0	2	2	**11**	**395**
07:45	08:00	0	272	1	273	0	134	2	136	**409**	0	1	9	10	2	1	0	3	**13**	**422**
08:00	08:15	2	273	0	275	0	120	3	123	**398**	1	0	3	4	1	0	0	1	**5**	**403**
08:15	08:30	3	269	2	274	0	117	5	122	**396**	3	0	13	16	1	1	1	3	**19**	**415**
08:30	08:45	2	292	1	295	0	125	1	126	**421**	2	3	10	15	3	0	2	5	**20**	**441**
08:45	09:00	0	325	1	326	0	122	8	130	**456**	1	0	4	5	1	2	3	6	**11**	**467**
09:00	09:15	5	303	2	310	1	119	5	125	**435**	1	1	9	11	3	0	4	7	**18**	**453**
09:15	09:30	6	296	2	304	1	117	0	118	**422**	5	0	1	6	1	0	2	3	**9**	**431**
09:30	09:45	4	288	2	294	1	130	2	133	**427**	1	0	7	8	0	0	3	3	**11**	**438**
09:45	10:00	9	257	3	269	0	115	3	118	**387**	4	2	8	14	0	0	2	2	**16**	**403**
11:30	11:45	7	200	2	209	2	128	8	138	**347**	2	1	12	15	0	1	5	6	**21**	**368**
11:45	12:00	12	227	3	242	2	156	7	165	**407**	5	0	13	18	3	2	3	8	**26**	**433**
12:00	12:15	15	226	2	243	1	163	12	176	**419**	8	2	26	36	2	0	1	3	**39**	**458**
12:15	12:30	12	205	2	219	0	160	10	170	**389**	8	0	13	21	1	1	0	2	**23**	**412**
12:30	12:45	9	229	2	240	1	154	6	161	**401**	7	1	15	23	1	1	2	4	**27**	**428**
12:45	13:00	10	202	2	214	0	140	7	147	**361**	6	1	21	28	1	0	1	2	**30**	**391**
13:00	13:15	11	197	1	209	1	150	11	162	**371**	8	0	13	21	1	2	2	5	**26**	**397**
13:15	13:30	7	212	2	221	1	152	9	162	**383**	3	0	17	20	1	0	0	1	**21**	**404**
15:00	15:15	10	198	4	212	1	225	3	229	**441**	1	1	11	13	1	0	4	5	**18**	**459**
15:15	15:30	5	225	1	231	1	213	5	219	**450**	3	1	13	17	1	0	1	2	**19**	**469**
15:30	15:45	3	231	3	237	1	206	2	209	**446**	3	0	10	13	0	0	4	4	**17**	**463**
15:45	16:00	6	231	4	241	0	194	6	200	**441**	4	0	16	20	0	0	3	3	**23**	**464**
16:00	16:15	3	192	3	198	0	209	2	211	**409**	3	1	8	12	3	1	2	6	**18**	**427**
16:15	16:30	6	216	2	224	0	199	10	209	**433**	2	0	9	11	2	1	1	4	**15**	**448**
16:30	16:45	4	179	2	185	0	170	3	173	**358**	1	2	13	16	1	3	1	5	**21**	**379**
16:45	17:00	10	204	2	216	1	194	4	199	**415**	4	0	10	14	1	2	4	7	**21**	**436**
17:00	17:15	3	189	0	192	0	214	6	220	**412**	4	0	11	15	1	3	2	6	**21**	**433**
17:15	17:30	9	193	0	202	1	207	3	211	**413**	4	1	10	15	0	3	4	7	**22**	**435**
17:30	17:45	6	187	1	194	1	169	6	176	**370**	6	0	10	16	1	3	1	5	**21**	**391**
17:45	18:00	20	204	3	227	0	160	12	172	**399**	4	0	19	23	4	2	2	8	**31**	**430**
Total:		206	7412	60	7678	18	5035	165	5218	**12896**	104	18	354	476	37	29	66	132	**12896**	**13,504**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study Cyclist Volume

		BRONSON AVE			ARLINGTON AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	2	0	**2**	0	0	**0**	**2**
07:15	07:30	0	0	**0**	0	1	**1**	**1**
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	0	1	**1**	0	0	**0**	**1**
09:00	09:15	0	0	**0**	1	0	**1**	**1**
09:15	09:30	1	0	**1**	0	0	**0**	**1**
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	1	0	**1**	0	0	**0**	**1**
16:15	16:30	0	0	**0**	0	1	**1**	**1**
16:30	16:45	0	1	**1**	0	2	**2**	**3**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		5	2	**7**	1	5	**6**	**13**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study Pedestrian Volume

	BRONSON AVE			ARLINGTON AVE			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	2	0	**2**	4	3	**7**	**9**
07:15 07:30	0	0	**0**	4	2	**6**	**6**
07:30 07:45	3	3	**6**	5	7	**12**	**18**
07:45 08:00	3	1	**4**	5	6	**11**	**15**
08:00 08:15	4	1	**5**	5	4	**9**	**14**
08:15 08:30	4	3	**7**	10	8	**18**	**25**
08:30 08:45	8	5	**13**	8	12	**20**	**33**
08:45 09:00	5	5	**10**	10	5	**15**	**25**
09:00 09:15	7	4	**11**	2	2	**4**	**15**
09:15 09:30	3	5	**8**	7	2	**9**	**17**
09:30 09:45	5	5	**10**	5	5	**10**	**20**
09:45 10:00	2	1	**3**	3	3	**6**	**9**
11:30 11:45	7	3	**10**	4	10	**14**	**24**
11:45 12:00	11	2	**13**	6	6	**12**	**25**
12:00 12:15	3	1	**4**	7	7	**14**	**18**
12:15 12:30	3	2	**5**	2	7	**9**	**14**
12:30 12:45	3	2	**5**	3	5	**8**	**13**
12:45 13:00	6	8	**14**	3	3	**6**	**20**
13:00 13:15	0	3	**3**	1	3	**4**	**7**
13:15 13:30	2	3	**5**	5	1	**6**	**11**
15:00 15:15	5	2	**7**	10	5	**15**	**22**
15:15 15:30	5	4	**9**	20	14	**34**	**43**
15:30 15:45	7	7	**14**	5	4	**9**	**23**
15:45 16:00	2	7	**9**	4	6	**10**	**19**
16:00 16:15	5	7	**12**	3	7	**10**	**22**
16:15 16:30	7	7	**14**	7	9	**16**	**30**
16:30 16:45	0	2	**2**	1	5	**6**	**8**
16:45 17:00	5	7	**12**	6	9	**15**	**27**
17:00 17:15	6	1	**7**	6	26	**32**	**39**
17:15 17:30	1	6	**7**	7	5	**12**	**19**
17:30 17:45	13	7	**20**	14	7	**21**	**41**
17:45 18:00	13	5	**18**	7	11	**18**	**36**
Total	150	119	**269**	189	209	**398**	**667**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study Heavy Vehicles

		BRONSON AVE									ARLINGTON 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	4	0	**4**	0	12	0	**12**	**16**	0	0	0	**0**	0	0	0	**0**	**0**	**16**
07:15	07:30	0	10	0	**10**	0	8	2	**10**	**20**	0	0	0	**0**	0	0	0	**0**	**0**	**20**
07:30	07:45	0	17	0	**17**	0	11	0	**11**	**28**	0	0	0	**0**	0	0	0	**0**	**0**	**28**
07:45	08:00	0	9	0	**9**	0	12	0	**12**	**21**	0	0	1	**1**	0	0	0	**0**	**1**	**22**
08:00	08:15	0	10	0	**10**	0	12	0	**12**	**22**	0	0	0	**0**	0	0	0	**0**	**0**	**22**
08:15	08:30	0	4	0	**4**	0	10	0	**10**	**14**	0	0	1	**1**	0	0	0	**0**	**1**	**15**
08:30	08:45	0	11	0	**11**	0	9	0	**9**	**20**	0	2	0	**2**	1	0	0	**1**	**3**	**23**
08:45	09:00	0	16	0	**16**	0	12	0	**12**	**28**	0	0	0	**0**	0	0	0	**0**	**0**	**28**
09:00	09:15	0	7	0	**7**	0	5	0	**5**	**12**	0	0	0	**0**	0	0	1	**1**	**1**	**13**
09:15	09:30	1	7	0	**8**	0	10	0	**10**	**18**	0	0	0	**0**	0	0	0	**0**	**0**	**18**
09:30	09:45	0	17	0	**17**	0	10	1	**11**	**28**	0	0	0	**0**	0	0	0	**0**	**0**	**28**
09:45	10:00	1	18	0	**19**	0	8	1	**9**	**28**	2	0	0	**2**	0	0	1	**1**	**3**	**31**
11:30	11:45	0	14	0	**14**	0	11	0	**11**	**25**	0	1	1	**2**	0	0	1	**1**	**3**	**28**
11:45	12:00	0	7	1	**8**	0	14	0	**14**	**22**	0	0	0	**0**	0	0	0	**0**	**0**	**22**
12:00	12:15	0	8	0	**8**	0	6	0	**6**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
12:15	12:30	0	12	1	**13**	0	7	0	**7**	**20**	1	0	0	**1**	0	0	0	**0**	**1**	**21**
12:30	12:45	0	12	0	**12**	0	6	0	**6**	**18**	0	0	0	**0**	0	0	0	**0**	**0**	**18**
12:45	13:00	1	10	1	**12**	0	8	0	**8**	**20**	0	0	0	**0**	0	0	0	**0**	**0**	**20**
13:00	13:15	2	12	0	**14**	0	5	1	**6**	**20**	0	0	0	**0**	0	0	0	**0**	**0**	**20**
13:15	13:30	0	11	0	**11**	0	8	0	**8**	**19**	0	0	0	**0**	0	0	0	**0**	**0**	**19**
15:00	15:15	0	4	0	**4**	1	8	0	**9**	**13**	1	0	0	**1**	0	0	0	**0**	**1**	**14**
15:15	15:30	0	7	0	**7**	0	6	1	**7**	**14**	0	1	0	**1**	0	0	0	**0**	**1**	**15**
15:30	15:45	0	7	0	**7**	0	4	0	**4**	**11**	1	0	1	**2**	0	0	2	**2**	**4**	**15**
15:45	16:00	0	8	0	**8**	0	5	0	**5**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
16:00	16:15	0	4	0	**4**	0	3	0	**3**	**7**	0	0	0	**0**	0	0	1	**1**	**1**	**8**
16:15	16:30	0	7	0	**7**	0	3	1	**4**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**12**
16:30	16:45	0	2	0	**2**	0	1	2	**3**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
16:45	17:00	0	7	0	**7**	0	2	0	**2**	**9**	0	0	2	**2**	0	0	0	**0**	**2**	**11**
17:00	17:15	0	3	0	**3**	0	8	0	**8**	**11**	0	0	0	**0**	0	0	1	**1**	**1**	**12**
17:15	17:30	0	6	0	**6**	0	5	0	**5**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
17:30	17:45	0	6	0	**6**	0	2	0	**2**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
17:45	18:00	0	2	1	**3**	0	3	0	**3**	**6**	0	0	1	**1**	0	0	0	**0**	**1**	**7**
Total:	None	5	279	4	**288**	1	234	9	**244**	**532**	5	4	7	**16**	1	0	7	**8**	**24**	**557**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017 **WO No:** 37368

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

Full Study 15 Minute U-Turn Total

Time Period		BRONSON AVE Northbound U-Turn Total	BRONSON AVE Southbound U-Turn Total	ARLINGTON AVE Eastbound U-Turn Total	ARLINGTON AVE Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	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	1	0	0	0	**1**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	1	**1**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	1	0	0	**1**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		1	1	0	1	**3**

Transportation Services - Traffic Services

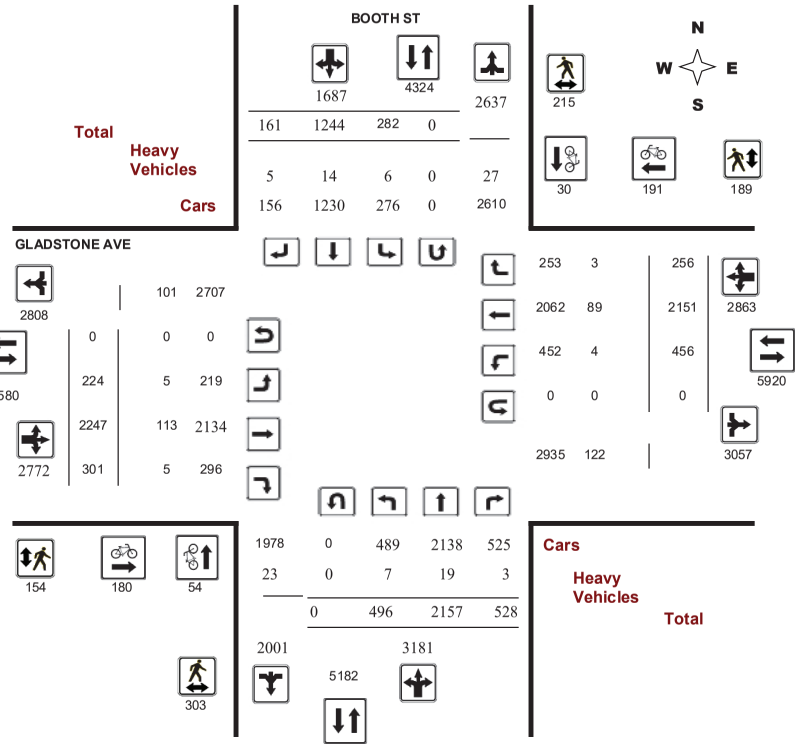
Turning Movement Count - Study Results

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study Diagram



Transportation Services - Traffic Services

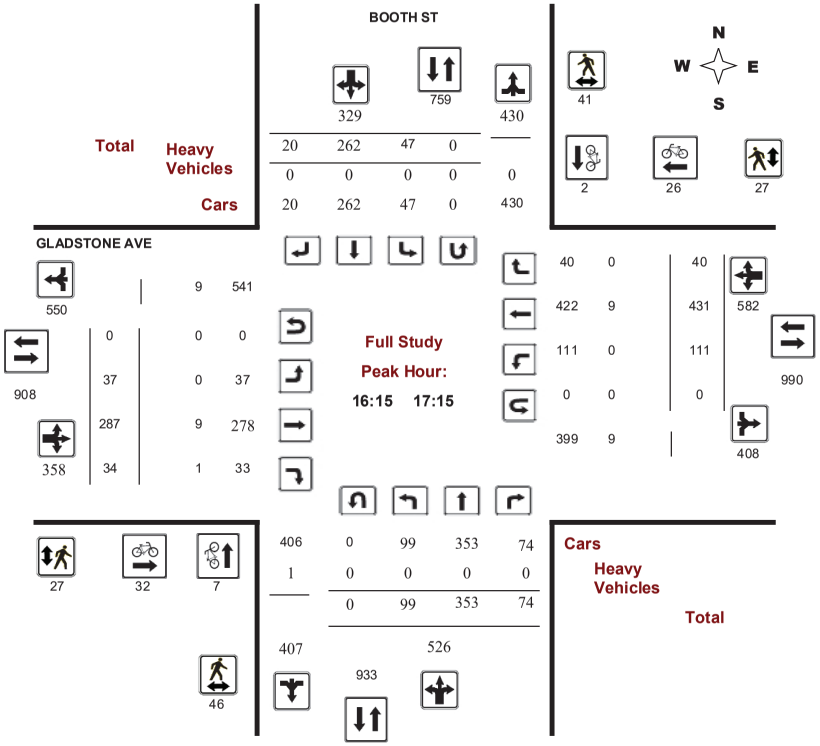
Turning Movement Count - Study Results

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study Peak Hour Diagram



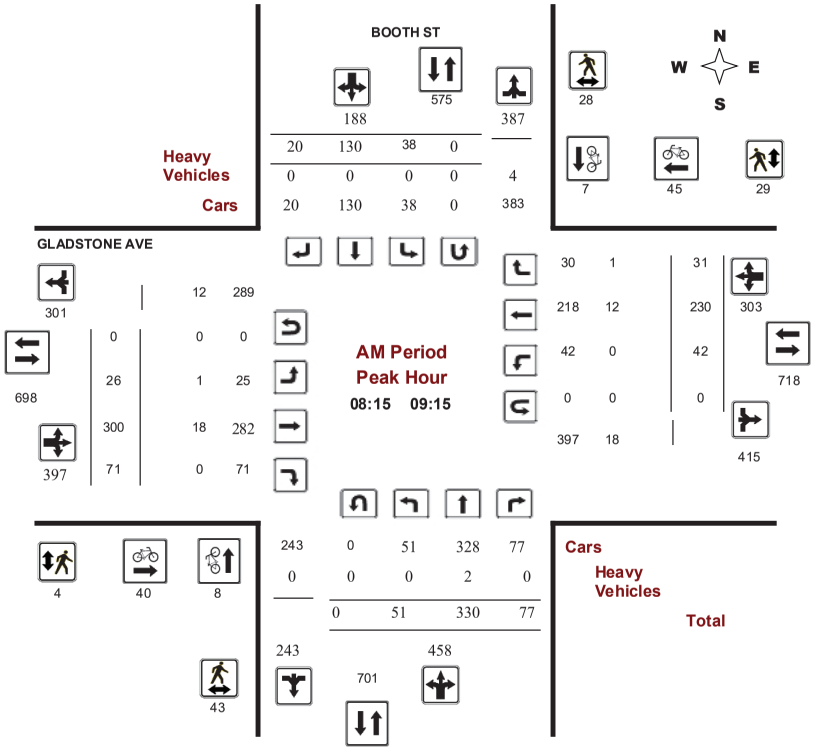
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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



Comments

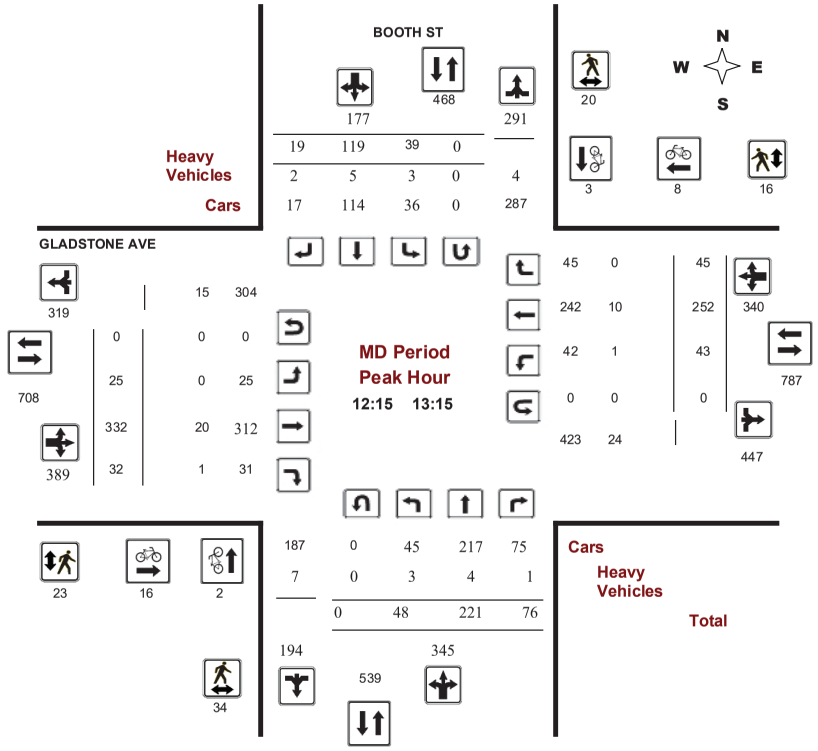
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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



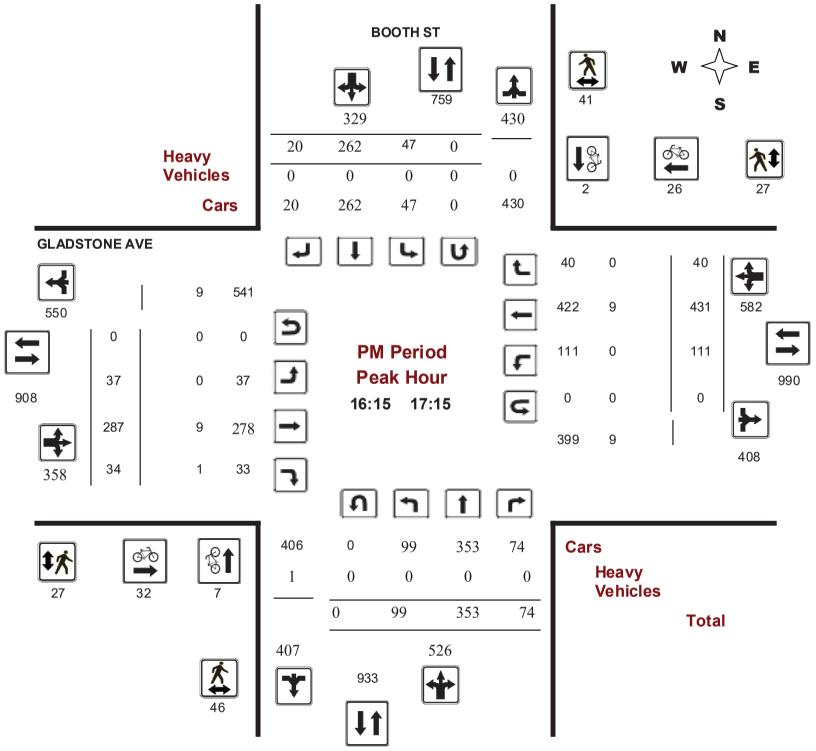
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, July 27, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

.90

	BOOTH ST									GLADSTONE AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	26	220	37	**283**	23	136	12	**171**	**454**	15	196	28	**239**	26	136	24	**186**	**425**	**879**
08:00 09:00	57	312	80	**449**	37	141	15	**193**	**642**	27	318	73	**418**	34	228	24	**286**	**704**	**1346**
09:00 10:00	33	236	84	**353**	38	91	20	**149**	**502**	21	253	33	**307**	35	199	30	**264**	**571**	**1073**
11:30 12:30	60	192	61	**313**	38	90	22	**150**	**463**	42	300	37	**379**	41	253	45	**339**	**718**	**1181**
12:30 13:30	44	207	71	**322**	37	120	17	**174**	**496**	19	335	33	**387**	40	267	37	**344**	**731**	**1227**
15:00 16:00	109	325	51	**485**	38	193	28	**259**	**744**	30	291	37	**358**	67	278	29	**374**	**732**	**1476**
16:00 17:00	105	352	59	**516**	40	253	24	**317**	**833**	33	267	27	**327**	109	443	35	**587**	**914**	**1747**
17:00 18:00	62	313	85	**460**	31	220	23	**274**	**734**	37	287	33	**357**	104	347	32	**483**	**840**	**1574**
Sub Total	496	2157	528	**3181**	282	1244	161	**1687**	**4868**	224	2247	301	**2772**	456	2151	256	**2863**	**5635**	**10503**
U Turns	0			**0**	0			**0**	**0**	**0**			**0**	0			**0**	**0**	**0**
Total	496	2157	528	**3181**	282	1244	161	**1687**	**4868**	224	2247	301	**2772**	456	2151	256	**2863**	**5635**	**10503**
EQ 12Hr	689	2998	734	**4421**	392	1729	224	**2345**	**6766**	311	3123	418	**3852**	634	2990	356	**3980**	**7832**	**14598**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	620	2698	661	**3979**	353	1556	202	**2111**	**6090**	280	2811	376	**3467**	571	2691	320	**3582**	**7049**	**13139**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	812	3534	866	**5212**	462	2038	265	**2765**	**7977**	367	3682	493	**4542**	748	3525	419	**4692**	**9234**	**17211**
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

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study 15 Minute Increments

		BOOTH ST									GLADSTONE 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	6	38	7	51	6	23	1	30	**81**	1	34	9	44	3	31	5	39	**83**	**164**
07:15	07:30	1	47	13	61	8	31	3	42	**103**	3	58	7	68	10	29	5	44	**112**	**215**
07:30	07:45	10	64	8	82	4	41	4	49	**131**	5	50	6	61	6	36	7	49	**110**	**241**
07:45	08:00	9	71	9	89	5	41	4	50	**139**	6	54	6	66	7	40	7	54	**120**	**259**
08:00	08:15	14	53	21	88	11	34	3	48	**136**	6	74	12	92	10	58	4	72	**164**	**300**
08:15	08:30	15	83	18	116	2	29	4	35	**151**	12	78	29	119	4	54	3	61	**180**	**331**
08:30	08:45	16	85	23	124	9	35	1	45	**169**	4	87	19	110	7	47	8	62	**172**	**341**
08:45	09:00	12	91	18	121	15	43	7	65	**186**	5	79	13	97	13	69	9	91	**188**	**374**
09:00	09:15	8	71	18	97	12	23	8	43	**140**	5	56	10	71	18	60	11	89	**160**	**300**
09:15	09:30	10	61	20	91	8	28	1	37	**128**	3	56	6	65	7	51	4	62	**127**	**255**
09:30	09:45	5	53	22	80	13	21	4	38	**118**	6	75	7	88	4	45	8	57	**145**	**263**
09:45	10:00	10	51	24	85	5	19	7	31	**116**	7	66	10	83	6	43	7	56	**139**	**255**
11:30	11:45	14	46	22	82	12	22	7	41	**123**	10	63	10	83	7	60	10	77	**160**	**283**
11:45	12:00	18	51	9	78	8	19	4	31	**109**	10	69	9	88	11	73	13	97	**185**	**294**
12:00	12:15	15	36	14	65	10	23	6	39	**104**	14	85	10	109	9	57	7	73	**182**	**286**
12:15	12:30	13	59	16	88	8	26	5	39	**127**	8	83	8	99	14	63	15	92	**191**	**318**
12:30	12:45	14	49	15	78	13	29	5	47	**125**	5	76	4	85	10	65	8	83	**168**	**293**
12:45	13:00	8	65	23	96	10	30	4	44	**140**	7	93	13	113	11	58	13	82	**195**	**335**
13:00	13:15	13	48	22	83	8	34	5	47	**130**	5	80	7	92	8	66	9	83	**175**	**305**
13:15	13:30	9	45	11	65	6	27	3	36	**101**	2	86	9	97	11	78	7	96	**193**	**294**
15:00	15:15	27	73	7	107	12	41	9	62	**169**	9	62	11	82	11	64	6	81	**163**	**332**
15:15	15:30	21	86	12	119	14	43	6	63	**182**	7	91	9	107	13	62	5	80	**187**	**369**
15:30	15:45	40	82	12	134	8	57	7	72	**206**	3	74	9	86	19	79	10	108	**194**	**400**
15:45	16:00	21	84	20	125	4	52	6	62	**187**	11	64	8	83	24	73	8	105	**188**	**375**
16:00	16:15	22	85	16	123	7	62	9	78	**201**	8	63	6	77	25	102	7	134	**211**	**412**
16:15	16:30	29	92	9	130	10	63	4	77	**207**	13	60	10	83	21	122	9	152	**235**	**442**
16:30	16:45	33	91	16	140	14	61	7	82	**222**	5	74	2	81	32	109	6	147	**228**	**450**
16:45	17:00	21	84	18	123	9	67	4	80	**203**	7	70	9	86	31	110	13	154	**240**	**443**
17:00	17:15	16	86	31	133	14	71	5	90	**223**	12	83	13	108	27	90	12	129	**237**	**460**
17:15	17:30	20	87	18	125	3	58	8	69	**194**	12	73	6	91	30	103	6	139	**230**	**424**
17:30	17:45	12	80	21	113	6	55	3	64	**177**	7	64	9	80	27	90	7	124	**204**	**381**
17:45	18:00	14	60	15	89	8	36	7	51	**140**	6	67	5	78	20	64	7	91	**169**	**309**
Total:		496	2157	528	3181	282	1244	161	1687	**4868**	224	2247	301	2772	456	2151	256	2863	**4868**	**10,503**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study Cyclist Volume

Time Period		BOOTH ST			GLADSTONE AVE			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	3	2	**5**	4	0	**4**	**9**
07:15	07:30	1	2	**3**	5	5	**10**	**13**
07:30	07:45	5	3	**8**	13	8	**21**	**29**
07:45	08:00	4	2	**6**	8	8	**16**	**22**
08:00	08:15	0	1	**1**	13	6	**19**	**20**
08:15	08:30	0	2	**2**	8	17	**25**	**27**
08:30	08:45	3	0	**3**	12	10	**22**	**25**
08:45	09:00	2	0	**2**	16	10	**26**	**28**
09:00	09:15	3	5	**8**	4	8	**12**	**20**
09:15	09:30	3	0	**3**	2	11	**13**	**16**
09:30	09:45	0	0	**0**	1	6	**7**	**7**
09:45	10:00	1	0	**1**	3	4	**7**	**8**
11:30	11:45	2	0	**2**	0	4	**4**	**6**
11:45	12:00	1	0	**1**	4	2	**6**	**7**
12:00	12:15	2	0	**2**	3	2	**5**	**7**
12:15	12:30	1	1	**2**	3	4	**7**	**9**
12:30	12:45	1	0	**1**	7	0	**7**	**8**
12:45	13:00	0	2	**2**	3	1	**4**	**6**
13:00	13:15	0	0	**0**	3	3	**6**	**6**
13:15	13:30	0	0	**0**	2	2	**4**	**4**
15:00	15:15	0	0	**0**	2	6	**8**	**8**
15:15	15:30	1	1	**2**	0	3	**3**	**5**
15:30	15:45	1	0	**1**	4	5	**9**	**10**
15:45	16:00	2	2	**4**	0	9	**9**	**13**
16:00	16:15	1	0	**1**	8	2	**10**	**11**
16:15	16:30	1	0	**1**	4	3	**7**	**8**
16:30	16:45	1	0	**1**	8	8	**16**	**17**
16:45	17:00	4	0	**4**	9	10	**19**	**23**
17:00	17:15	1	2	**3**	11	5	**16**	**19**
17:15	17:30	5	1	**6**	6	15	**21**	**27**
17:30	17:45	4	2	**6**	9	6	**15**	**21**
17:45	18:00	1	2	**3**	5	8	**13**	**16**
Total		54	30	**84**	180	191	**371**	**455**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study Pedestrian Volume

Time Period		BOOTH ST			GLADSTONE AVE			
		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**	5	3	**8**	**12**
07:15	07:30	2	3	**5**	4	5	**9**	**14**
07:30	07:45	8	9	**17**	7	4	**11**	**28**
07:45	08:00	6	8	**14**	4	12	**16**	**30**
08:00	08:15	9	7	**16**	2	10	**12**	**28**
08:15	08:30	17	6	**23**	0	6	**6**	**29**
08:30	08:45	9	8	**17**	0	15	**15**	**32**
08:45	09:00	9	10	**19**	0	6	**6**	**25**
09:00	09:15	8	4	**12**	4	2	**6**	**18**
09:15	09:30	7	5	**12**	7	6	**13**	**25**
09:30	09:45	22	16	**38**	17	18	**35**	**73**
09:45	10:00	12	9	**21**	6	9	**15**	**36**
11:30	11:45	7	4	**11**	4	1	**5**	**16**
11:45	12:00	10	5	**15**	5	4	**9**	**24**
12:00	12:15	18	0	**18**	9	1	**10**	**28**
12:15	12:30	7	3	**10**	11	1	**12**	**22**
12:30	12:45	18	8	**26**	3	12	**15**	**41**
12:45	13:00	5	7	**12**	4	1	**5**	**17**
13:00	13:15	4	2	**6**	5	2	**7**	**13**
13:15	13:30	11	4	**15**	1	1	**2**	**17**
15:00	15:15	3	5	**8**	3	3	**6**	**14**
15:15	15:30	4	6	**10**	4	2	**6**	**16**
15:30	15:45	9	2	**11**	1	9	**10**	**21**
15:45	16:00	11	7	**18**	3	9	**12**	**30**
16:00	16:15	11	10	**21**	6	5	**11**	**32**
16:15	16:30	9	7	**16**	11	3	**14**	**30**
16:30	16:45	9	10	**19**	4	4	**8**	**27**
16:45	17:00	18	9	**27**	9	9	**18**	**45**
17:00	17:15	10	15	**25**	3	11	**14**	**39**
17:15	17:30	11	11	**22**	5	8	**13**	**35**
17:30	17:45	12	6	**18**	5	4	**9**	**27**
17:45	18:00	5	7	**12**	2	3	**5**	**17**
Total	.....	303	215	**518**	154	189	**343**	**861**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study Heavy Vehicles

		BOOTH ST									GLADSTONE AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	1	**3**	0	4	0	**4**	**7**	**7**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	4	0	**4**	**8**	**8**
07:30	07:45	0	1	0	**1**	1	1	0	**2**	**3**	0	3	0	**3**	0	2	0	**2**	**5**	**8**
07:45	08:00	0	1	0	**1**	0	0	0	**0**	**1**	0	3	0	**3**	0	0	0	**0**	**3**	**4**
08:00	08:15	1	0	1	**2**	0	0	0	**0**	**2**	1	4	0	**5**	0	5	1	**6**	**11**	**13**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	9	0	**9**	0	3	0	**3**	**12**	**12**
08:30	08:45	0	1	0	**1**	0	0	0	**0**	**1**	1	4	0	**5**	0	3	1	**4**	**9**	**10**
08:45	09:00	0	1	0	**1**	0	0	0	**0**	**1**	0	2	0	**2**	0	4	0	**4**	**6**	**7**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	2	0	**2**	**5**	**5**
09:15	09:30	0	2	0	**2**	0	1	0	**1**	**3**	0	6	0	**6**	0	3	0	**3**	**9**	**12**
09:30	09:45	1	3	0	**4**	0	0	0	**0**	**4**	0	2	0	**2**	0	1	0	**1**	**3**	**7**
09:45	10:00	0	0	0	**0**	0	1	0	**1**	**1**	0	4	0	**4**	0	3	0	**3**	**7**	**8**
11:30	11:45	0	1	0	**1**	1	0	0	**1**	**2**	0	1	1	**2**	0	5	0	**5**	**7**	**9**
11:45	12:00	0	0	0	**0**	0	1	0	**1**	**1**	0	1	0	**1**	0	4	0	**4**	**5**	**6**
12:00	12:15	0	0	0	**0**	0	1	0	**1**	**1**	1	4	0	**5**	1	4	0	**5**	**10**	**11**
12:15	12:30	0	1	0	**1**	0	1	0	**1**	**2**	0	8	0	**8**	0	5	0	**5**	**13**	**15**
12:30	12:45	1	0	0	**1**	2	0	1	**3**	**4**	0	3	1	**4**	0	2	0	**2**	**6**	**10**
12:45	13:00	0	3	0	**3**	1	0	1	**2**	**5**	0	4	0	**4**	0	2	0	**2**	**6**	**11**
13:00	13:15	2	0	1	**3**	0	4	0	**4**	**7**	0	5	0	**5**	1	1	0	**2**	**7**	**14**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	1	5	0	**6**	1	5	0	**6**	**12**	**12**
15:00	15:15	0	1	0	**1**	1	0	0	**1**	**2**	0	3	1	**4**	0	1	0	**1**	**5**	**7**
15:15	15:30	0	0	0	**0**	0	0	1	**1**	**1**	0	4	0	**4**	0	4	0	**4**	**8**	**9**
15:30	15:45	2	0	0	**2**	0	1	0	**1**	**3**	0	5	0	**5**	1	0	0	**1**	**6**	**9**
15:45	16:00	0	0	1	**1**	0	0	1	**1**	**2**	1	3	0	**4**	0	1	1	**2**	**6**	**8**
16:00	16:15	0	1	0	**1**	0	3	1	**4**	**5**	0	3	0	**3**	0	1	0	**1**	**4**	**9**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	2	0	**2**	**4**	**4**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	1	0	**1**	**5**	**5**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	1	**2**	0	5	0	**5**	**7**	**7**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	1	0	**1**	**3**	**3**
17:15	17:30	0	2	0	**2**	0	0	0	**0**	**2**	0	5	0	**5**	0	2	0	**2**	**7**	**9**
17:30	17:45	0	1	0	**1**	0	0	0	**0**	**1**	0	3	0	**3**	0	5	0	**5**	**8**	**9**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	0	**4**	**5**	**5**
Total:	None	7	19	3	**29**	6	14	5	**25**	**54**	5	113	5	**123**	4	89	3	**96**	**219**	**273**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36092

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

Full Study 15 Minute U-Turn Total

		BOOTH ST		GLADSTONE AVE		
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	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**

Transportation Services - Traffic Services

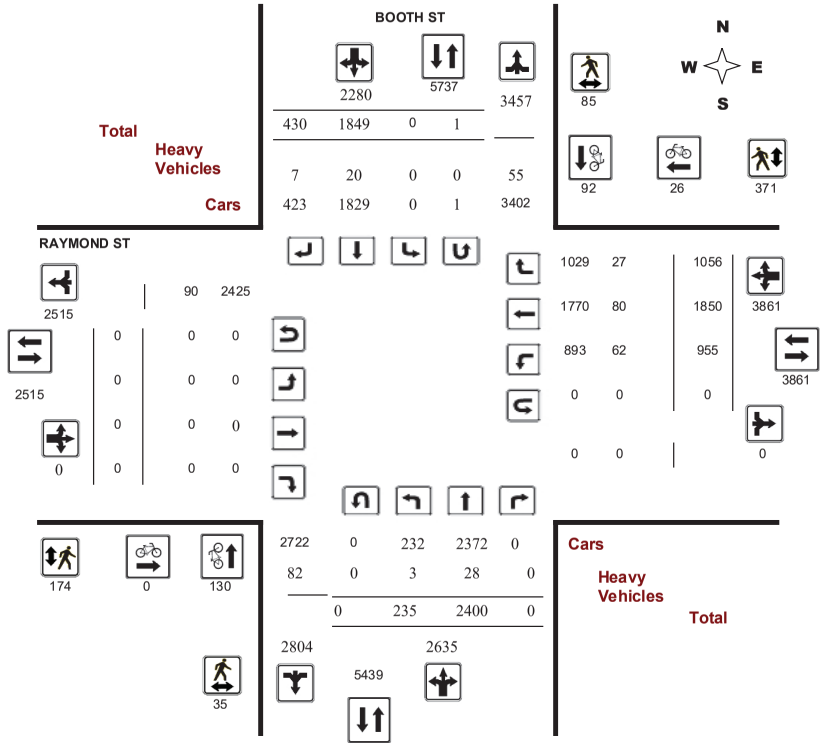
Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study Diagram



Transportation Services - Traffic Services

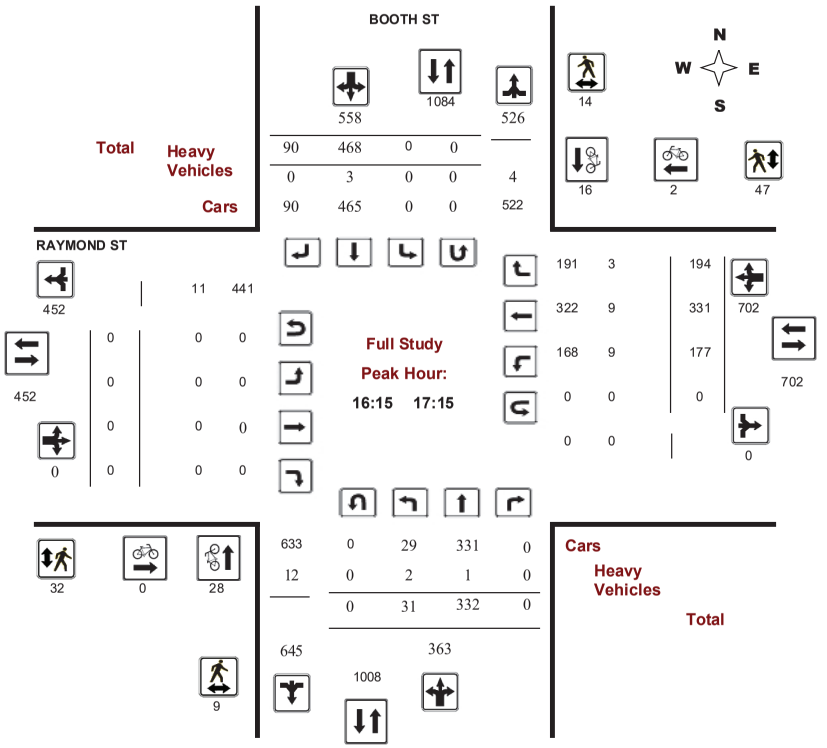
Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, September 01, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 1

Eastbound: 0 Westbound: 0

AADT Factor

1.00

	BOOTH ST								RAYMOND ST								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	19	251	0	**270**	0	149	25	**174**	**444**	0	0	0	**0**	94	190	99	**383**	**383**	**827**
08:00 09:00	37	373	0	**410**	0	186	32	**218**	**628**	0	0	0	**0**	124	218	108	**450**	**450**	**1078**
09:00 10:00	29	250	0	**279**	0	144	31	**175**	**454**	0	0	0	**0**	106	201	102	**409**	**409**	**863**
11:30 12:30	33	264	0	**297**	0	128	45	**173**	**470**	0	0	0	**0**	69	172	105	**346**	**346**	**816**
12:30 13:30	28	268	0	**296**	0	145	55	**200**	**496**	0	0	0	**0**	69	156	101	**326**	**326**	**822**
15:00 16:00	35	323	0	**358**	0	284	84	**368**	**726**	0	0	0	**0**	160	273	163	**596**	**596**	**1322**
16:00 17:00	38	343	0	**381**	0	427	89	**516**	**897**	0	0	0	**0**	160	341	170	**671**	**671**	**1568**
17:00 18:00	16	328	0	**344**	0	386	69	**455**	**799**	0	0	0	**0**	173	299	208	**680**	**680**	**1479**
Sub Total	235	2400	0	**2635**	0	1849	430	**2279**	**4914**	0	0	0	**0**	955	1850	1056	**3861**	**3861**	**8775**
U Turns				**0**				**1**	**1**				**0**				**0**	**0**	**1**
Total	235	2400	0	**2635**	0	1849	430	**2280**	**4915**	0	0	0	**0**	955	1850	1056	**3861**	**3861**	**8776**
EQ 12Hr	327	3336	0	**3663**	0	2570	598	**3169**	**6832**	0	0	0	**0**	1327	2572	1468	**5367**	**5367**	**12199**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	308	3144	0	**3452**	0	2422	563	**2987**	**6832**	0	0	0	**0**	1251	2424	1383	**5058**	**5367**	**12199**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	403	4119	0	**4522**	0	3173	738	**3913**	**8435**	0	0	0	**0**	1639	3175	1812	**6626**	**6626**	**15061**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

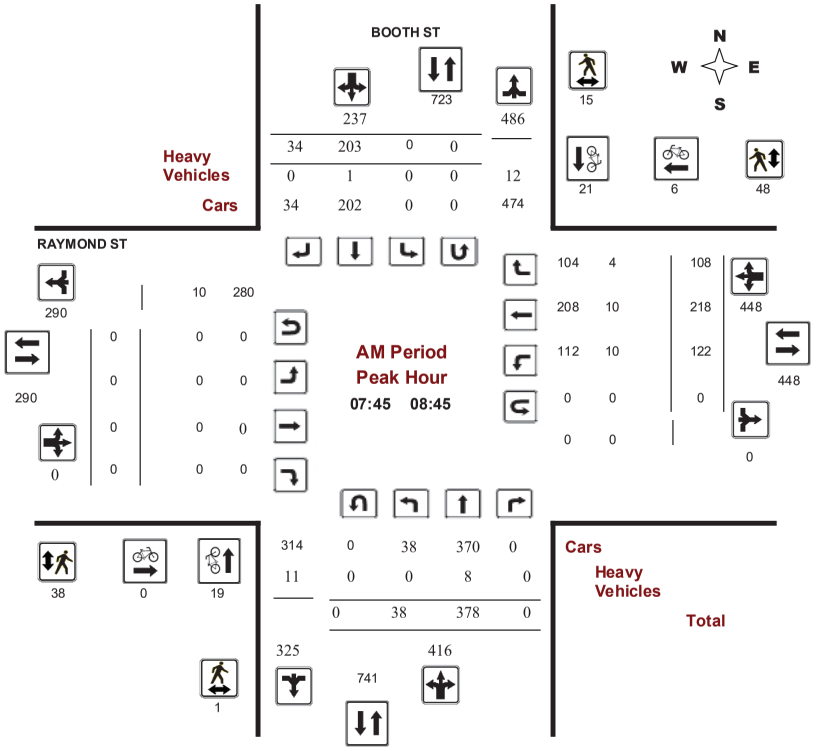
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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



Comments

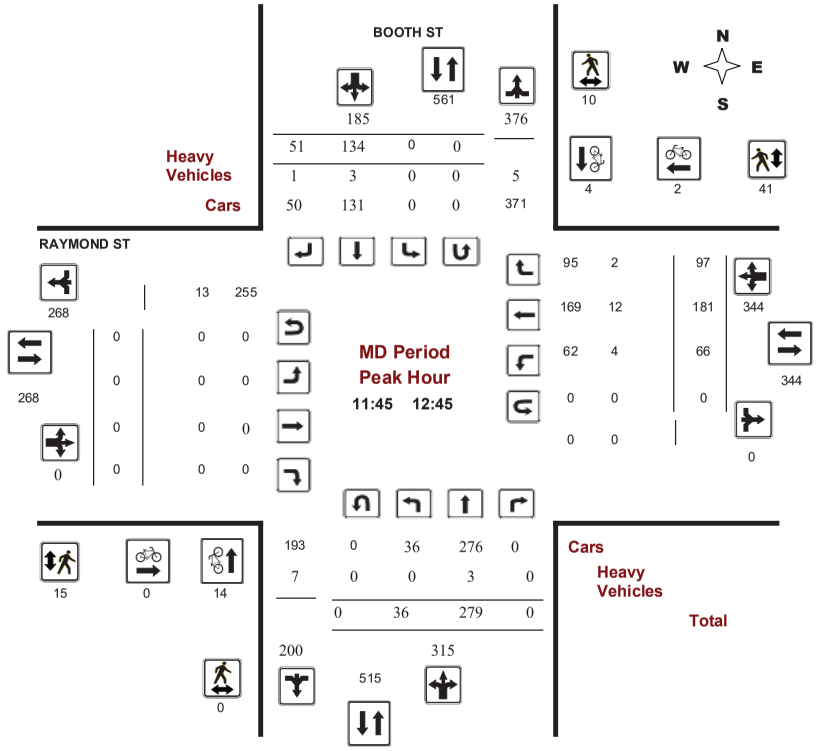
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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



Comments

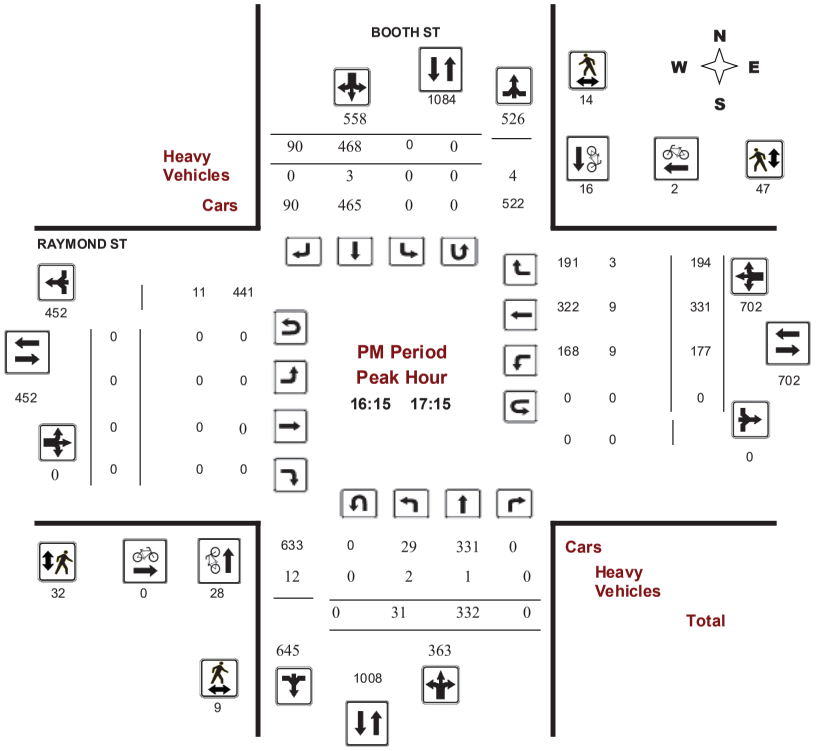
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study 15 Minute Increments

		BOOTH ST									RAYMOND 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	4	54	0	58	0	24	4	28	0	0	0	0	0	16	37	23	76	0	162
07:15	07:30	3	58	0	61	0	27	9	37	6	0	0	0	0	24	40	22	86	6	184
07:30	07:45	4	52	0	56	0	44	4	48	0	0	0	0	0	26	53	26	105	0	209
07:45	08:00	8	87	0	95	0	54	8	62	6	0	0	0	0	28	60	28	116	6	273
08:00	08:15	7	83	0	90	0	49	12	61	0	0	0	0	0	39	36	34	109	0	260
08:15	08:30	9	111	0	120	0	51	7	58	0	0	0	0	0	31	64	25	120	0	298
08:30	08:45	14	97	0	111	0	49	7	56	3	0	0	0	0	24	58	21	103	3	270
08:45	09:00	7	82	0	89	0	37	6	43	0	0	0	0	0	30	60	28	118	0	250
09:00	09:15	12	65	0	77	0	37	12	49	1	0	0	0	0	28	59	26	113	1	239
09:15	09:30	6	75	0	81	0	42	5	47	5	0	0	0	0	26	53	28	107	5	235
09:30	09:45	7	52	0	59	0	31	6	37	0	0	0	0	0	31	43	24	98	0	194
09:45	10:00	4	58	0	62	0	34	8	42	5	0	0	0	0	21	46	24	91	5	195
11:30	11:45	10	58	0	68	0	27	5	32	1	0	0	0	0	17	37	24	78	1	178
11:45	12:00	7	70	0	77	0	27	14	41	3	0	0	0	0	19	44	27	90	3	208
12:00	12:15	8	74	0	82	0	41	14	55	1	0	0	0	0	17	52	27	96	1	233
12:15	12:30	8	62	0	70	0	33	12	45	0	0	0	0	0	16	39	27	82	0	197
12:30	12:45	13	73	0	86	0	33	11	44	3	0	0	0	0	14	46	16	76	3	206
12:45	13:00	4	65	0	69	0	36	10	46	3	0	0	0	0	15	37	21	73	3	188
13:00	13:15	6	66	0	72	0	38	17	55	3	0	0	0	0	20	35	37	92	3	219
13:15	13:30	5	64	0	69	0	38	17	55	4	0	0	0	0	20	38	27	85	4	209
15:00	15:15	18	86	0	104	0	53	18	71	2	0	0	0	0	45	75	49	169	2	344
15:15	15:30	5	65	0	70	0	87	25	112	0	0	0	0	0	45	72	39	156	0	338
15:30	15:45	8	84	0	92	0	61	22	83	0	0	0	0	0	24	64	36	124	0	299
15:45	16:00	4	88	0	92	0	83	19	102	2	0	0	0	0	46	62	39	147	2	341
16:00	16:15	10	95	0	105	0	75	18	93	1	0	0	0	0	30	86	36	152	1	350
16:15	16:30	10	98	0	108	0	112	19	131	2	0	0	0	0	44	84	50	178	2	417
16:30	16:45	8	67	0	75	0	120	27	147	1	0	0	0	0	40	79	38	157	1	379
16:45	17:00	10	83	0	93	0	120	25	145	2	0	0	0	0	46	92	46	184	2	422
17:00	17:15	3	84	0	87	0	116	19	135	1	0	0	0	0	47	76	60	183	1	405
17:15	17:30	3	78	0	81	0	104	12	116	0	0	0	0	0	53	76	47	176	0	373
17:30	17:45	5	70	0	75	0	83	12	95	0	0	0	0	0	43	74	48	165	0	335
17:45	18:00	5	96	0	101	0	83	26	109	3	0	0	0	0	30	73	53	156	3	366
Total:		235	2400	0	2635	0	1849	430	2280	58	0	0	0	0	955	1850	1056	3861	58	8,776

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study Cyclist Volume

		BOOTH ST			RAYMOND ST			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	6	1	7	0	1	1	8
07:15	07:30	1	5	6	0	0	0	6
07:30	07:45	2	3	5	0	0	0	5
07:45	08:00	5	8	13	0	0	0	13
08:00	08:15	6	6	12	0	3	3	15
08:15	08:30	5	6	11	0	2	2	13
08:30	08:45	3	1	4	0	1	1	5
08:45	09:00	3	5	8	0	2	2	10
09:00	09:15	4	7	11	0	3	3	14
09:15	09:30	0	2	2	0	0	0	2
09:30	09:45	1	2	3	0	1	1	4
09:45	10:00	1	1	2	0	0	0	2
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	2	1	3	0	0	0	3
12:00	12:15	6	2	8	0	1	1	9
12:15	12:30	3	0	3	0	0	0	3
12:30	12:45	3	1	4	0	1	1	5
12:45	13:00	5	4	9	0	2	2	11
13:00	13:15	2	2	4	0	1	1	5
13:15	13:30	3	0	3	0	0	0	3
15:00	15:15	5	0	5	0	0	0	5
15:15	15:30	5	1	6	0	0	0	6
15:30	15:45	5	2	7	0	0	0	7
15:45	16:00	3	4	7	0	0	0	7
16:00	16:15	5	5	10	0	1	1	11
16:15	16:30	5	3	8	0	1	1	9
16:30	16:45	9	7	16	0	1	1	17
16:45	17:00	8	3	11	0	0	0	11
17:00	17:15	6	3	9	0	0	0	9
17:15	17:30	5	2	7	0	0	0	7
17:30	17:45	7	2	9	0	4	4	13
17:45	18:00	6	3	9	0	1	1	10
Total		130	92	**222**	0	26	26	248

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study Pedestrian Volume

	BOOTH ST			RAYMOND 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**	3	12	**15**	**15**
07:15 07:30	2	4	**6**	2	13	**15**	**21**
07:30 07:45	0	3	**3**	5	8	**13**	**16**
07:45 08:00	0	4	**4**	13	12	**25**	**29**
08:00 08:15	0	2	**2**	8	9	**17**	**19**
08:15 08:30	0	6	**6**	11	15	**26**	**32**
08:30 08:45	1	3	**4**	6	12	**18**	**22**
08:45 09:00	1	3	**4**	1	23	**24**	**28**
09:00 09:15	2	0	**2**	2	11	**13**	**15**
09:15 09:30	0	9	**9**	6	17	**23**	**32**
09:30 09:45	2	4	**6**	9	7	**16**	**22**
09:45 10:00	1	1	**2**	4	7	**11**	**13**
11:30 11:45	1	0	**1**	4	11	**15**	**16**
11:45 12:00	0	1	**1**	3	13	**16**	**17**
12:00 12:15	0	3	**3**	5	11	**16**	**19**
12:15 12:30	0	4	**4**	5	7	**12**	**16**
12:30 12:45	0	2	**2**	2	10	**12**	**14**
12:45 13:00	1	3	**4**	9	9	**18**	**22**
13:00 13:15	1	2	**3**	5	5	**10**	**13**
13:15 13:30	2	2	**4**	4	11	**15**	**19**
15:00 15:15	3	2	**5**	5	16	**21**	**26**
15:15 15:30	2	1	**3**	2	12	**14**	**17**
15:30 15:45	3	2	**5**	2	17	**19**	**24**
15:45 16:00	1	1	**2**	0	17	**17**	**19**
16:00 16:15	0	1	**1**	8	11	**19**	**20**
16:15 16:30	3	2	**5**	8	9	**17**	**22**
16:30 16:45	2	1	**3**	5	16	**21**	**24**
16:45 17:00	2	4	**6**	13	8	**21**	**27**
17:00 17:15	2	7	**9**	6	14	**20**	**29**
17:15 17:30	2	4	**6**	6	10	**16**	**22**
17:30 17:45	0	4	**4**	7	13	**20**	**24**
17:45 18:00	1	0	**1**	5	5	**10**	**11**
Total	35	85	**120**	174	371	**545**	**665**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study Heavy Vehicles

		BOOTH ST									RAYMOND ST									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	1	2	1	**4**	**4**	**4**
07:15	07:30	0	1	0	**1**	0	1	4	**5**	**6**	0	0	0	**0**	3	3	1	**7**	**7**	**13**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	1	3	1	**5**	**5**	**5**
07:45	08:00	0	5	0	**5**	0	1	0	**1**	**6**	0	0	0	**0**	2	3	0	**5**	**5**	**11**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	3	0	2	**5**	**5**	**5**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	2	2	2	**6**	**6**	**6**
08:30	08:45	0	3	0	**3**	0	0	0	**0**	**3**	0	0	0	**0**	3	5	0	**8**	**8**	**11**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	1	0	1	**2**	**2**	**2**
09:00	09:15	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	2	1	1	**4**	**4**	**5**
09:15	09:30	1	2	0	**3**	0	1	1	**2**	**5**	0	0	0	**0**	4	4	0	**8**	**8**	**13**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	2	2	2	**6**	**6**	**6**
09:45	10:00	0	2	0	**2**	0	3	0	**3**	**5**	0	0	0	**0**	4	5	1	**10**	**10**	**15**
11:30	11:45	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	2	2	0	**4**	**4**	**5**
11:45	12:00	0	2	0	**2**	0	1	0	**1**	**3**	0	0	0	**0**	2	3	1	**6**	**6**	**9**
12:00	12:15	0	0	0	**0**	0	0	1	**1**	**1**	0	0	0	**0**	1	3	1	**5**	**5**	**6**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	2	0	**2**	**2**	**2**
12:30	12:45	0	1	0	**1**	0	2	0	**2**	**3**	0	0	0	**0**	1	4	0	**5**	**5**	**8**
12:45	13:00	0	1	0	**1**	0	1	1	**2**	**3**	0	0	0	**0**	1	2	0	**3**	**3**	**6**
13:00	13:15	0	3	0	**3**	0	0	0	**0**	**3**	0	0	0	**0**	1	5	1	**7**	**7**	**10**
13:15	13:30	0	2	0	**2**	0	2	0	**2**	**4**	0	0	0	**0**	3	2	1	**6**	**6**	**10**
15:00	15:15	0	1	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	2	2	0	**4**	**4**	**6**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	3	4	0	**7**	**7**	**7**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	2	0	**2**	**2**	**2**
15:45	16:00	0	2	0	**2**	0	0	0	**0**	**2**	0	0	0	**0**	2	2	1	**5**	**5**	**7**
16:00	16:15	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	3	4	2	**9**	**9**	**10**
16:15	16:30	2	0	0	**2**	0	0	0	**0**	**2**	0	0	0	**0**	2	3	2	**7**	**7**	**9**
16:30	16:45	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	3	3	0	**6**	**6**	**7**
16:45	17:00	0	0	0	**0**	0	2	0	**2**	**2**	0	0	0	**0**	3	2	0	**5**	**5**	**7**
17:00	17:15	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	1	1	1	**3**	**3**	**4**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	1	**2**	**2**	**2**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	2	2	2	**6**	**6**	**6**
17:45	18:00	0	1	0	**1**	0	2	0	**2**	**3**	0	0	0	**0**	2	1	2	**5**	**5**	**8**
Total:	None	3	28	0	**31**	0	20	7	**27**	**58**	0	0	0	**0**	62	80	27	**169**	**169**	**227**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016 **WO No:** 36266

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

Full Study 15 Minute U-Turn Total

		BOOTH ST	BOOTH ST	RAYMOND ST	RAYMOND 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	1	0	0	1
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	1	0	0	1

Transportation Services - Traffic Services

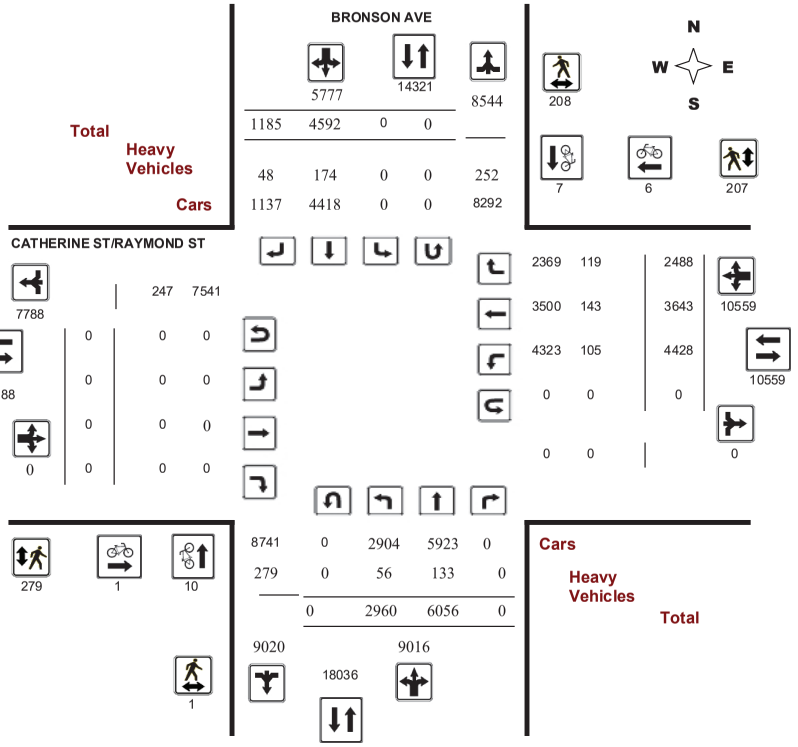
Turning Movement Count - Study Results

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study Diagram



W.O. 5365004 - THURS APR 19TH - CONSULTANT - 48 HRS (REIMPORT - 8HR STANDARD)

Transportation Services - Traffic Services

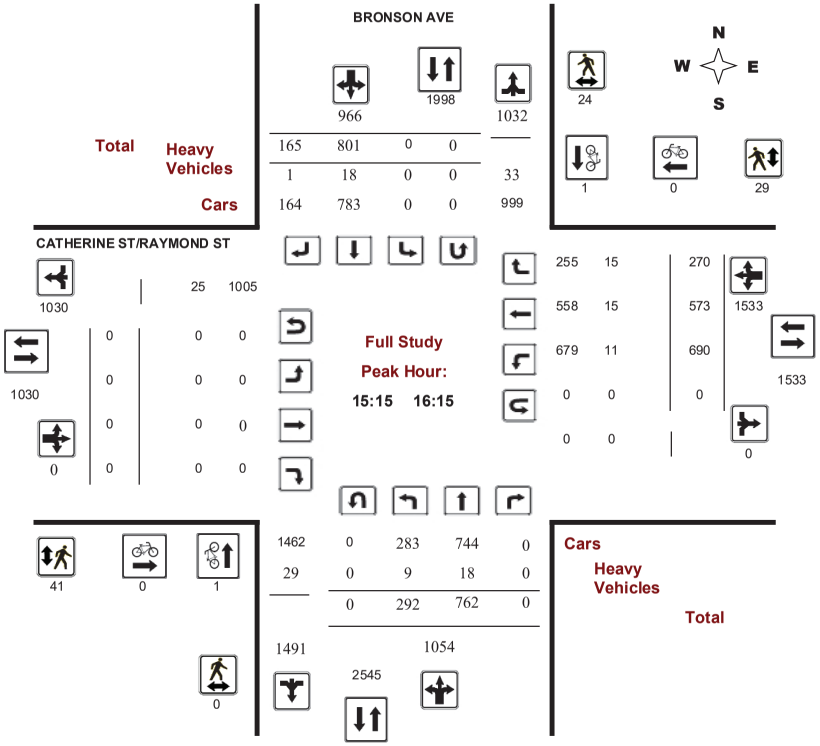
Turning Movement Count - Study Results

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study Peak Hour Diagram



W.O. 5365004 - THURS APR 19TH - CONSULTANT - 48 HRS (REIMPORT - 8HR STANDARD)

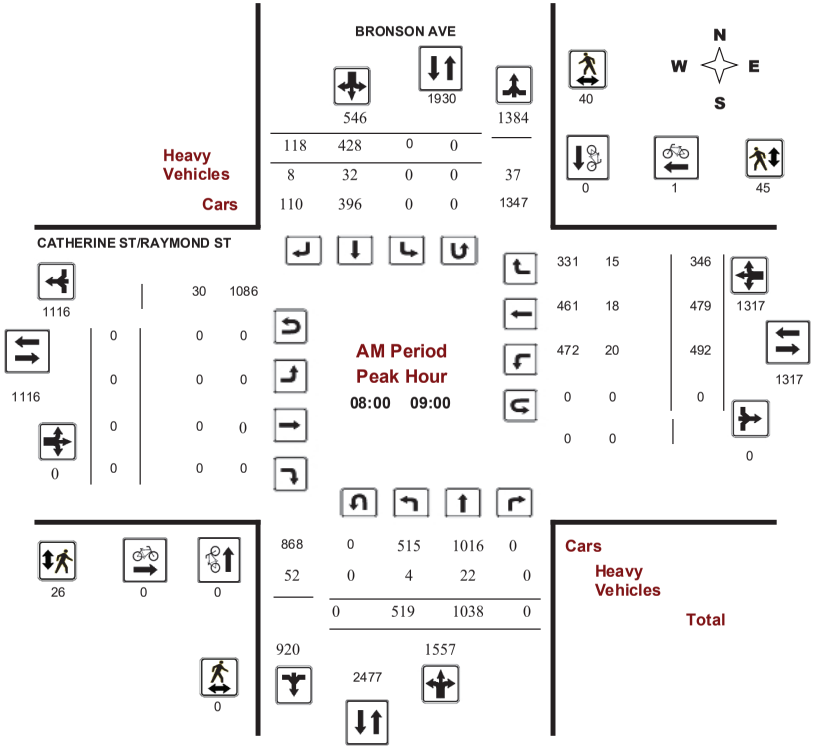
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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



Comments W.O. 5365004 - THURS APR 19TH - CONSULTANT - 48 HRS (REIMPORT - 8HR STANDAR

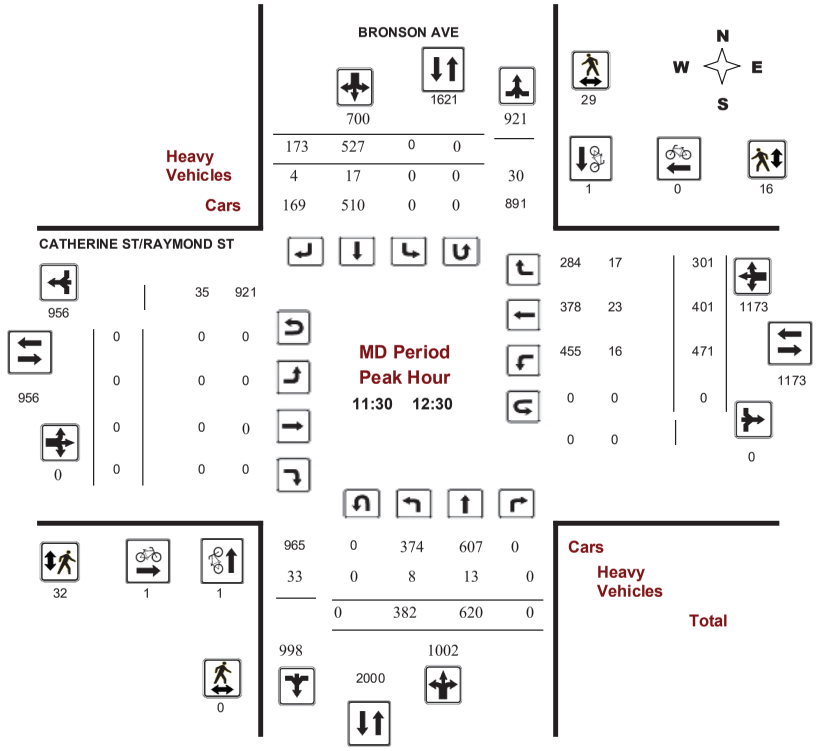
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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



Comments W.O. 5365004 - THURS APR 19TH - CONSULTANT - 48 HRS (REIMPORT - 8HR STANDAR

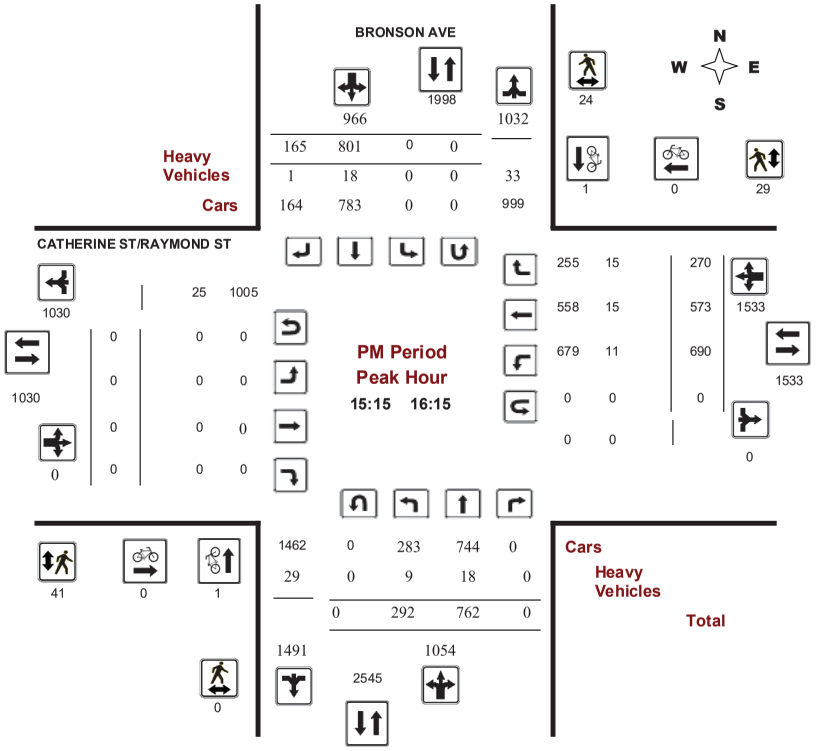
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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



Comments W.O. 5365004 - THURS APR 19TH - CONSULTANT - 48 HRS (REIMPORT - 8HR STANDAR

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, April 19, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

	BRONSON AVE								CATHERINE ST/RAYMOND ST									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	478	846	0	**1324**	0	428	140	**568**	**1892**	0	0	0	**0**	465	446	345	**1256**	**1256**	**3148**
08:00 09:00	519	1038	0	**1557**	0	428	118	**546**	**2103**	0	0	0	**0**	492	479	346	**1317**	**1317**	**3420**
09:00 10:00	387	699	0	**1086**	0	406	133	**539**	**1625**	0	0	0	**0**	480	403	329	**1212**	**1212**	**2837**
11:30 12:30	382	620	0	**1002**	0	527	173	**700**	**1702**	0	0	0	**0**	471	401	301	**1173**	**1173**	**2875**
12:30 13:30	349	568	0	**917**	0	560	167	**727**	**1644**	0	0	0	**0**	484	321	310	**1115**	**1115**	**2759**
15:00 16:00	299	747	0	**1046**	0	783	177	**960**	**2006**	0	0	0	**0**	697	517	299	**1513**	**1513**	**3519**
16:00 17:00	265	813	0	**1078**	0	733	130	**863**	**1941**	0	0	0	**0**	677	638	248	**1563**	**1563**	**3504**
17:00 18:00	281	725	0	**1006**	0	727	147	**874**	**1880**	0	0	0	**0**	662	438	310	**1410**	**1410**	**3290**
Sub Total	2960	6056	0	**9016**	0	4592	1185	**5777**	**14793**	0	0	0	**0**	4428	3643	2488	**10559**	**10559**	**25352**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	2960	6056	0	**9016**	0	4592	1185	**5777**	**14793**	0	0	0	**0**	4428	3643	2488	**10559**	**10559**	**25352**
EQ 12Hr	4114	8418	0	**12532**	0	6383	1647	**8030**	**20562**	0	0	0	**0**	6155	5064	3458	**14677**	**14677**	**35239**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	3490	7140	0	**10630**	0	5414	1397	**6811**	**18506**	0	0	0	**0**	5221	4295	2933	**12449**	**13209**	**31715**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**0.9**					
AVG 24Hr	4572	9353	0	**13925**	0	7092	1830	**8923**	**22848**	0	0	0	**0**	6839	5627	3843	**16308**	**16308**	**39156**
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

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study 15 Minute Increments

		BRONSON AVE									CATHERINE ST/RAYMOND 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	92	184	0	276	0	99	31	130	883	0	0	0	0	103	112	91	306	883	712
07:15	07:30	120	223	0	343	0	115	38	153	1036	0	0	0	0	113	99	89	301	1036	797
07:30	07:45	143	228	0	371	0	107	41	148	1061	0	0	0	0	118	115	89	322	1061	841
07:45	08:00	123	211	0	334	0	107	30	137	996	0	0	0	0	131	120	76	327	996	798
08:00	08:15	129	244	0	373	0	106	31	137	1064	0	0	0	0	131	122	73	326	1064	836
08:15	08:30	124	267	0	391	0	104	31	135	1119	0	0	0	0	132	125	90	347	1119	873
08:30	08:45	125	262	0	387	0	109	23	132	1118	0	0	0	0	136	128	92	356	1118	875
08:45	09:00	141	265	0	406	0	109	33	142	1106	0	0	0	0	93	104	91	288	1106	836
09:00	09:15	129	207	0	336	0	87	25	112	967	0	0	0	0	120	128	105	353	967	801
09:15	09:30	88	179	0	267	0	124	37	161	942	0	0	0	0	132	107	79	318	942	746
09:30	09:45	81	164	0	245	0	107	39	146	838	0	0	0	0	106	90	70	266	838	657
09:45	10:00	89	149	0	238	0	88	32	120	792	0	0	0	0	122	78	75	275	792	633
11:30	11:45	97	165	0	262	0	104	40	144	874	0	0	0	0	117	107	82	306	874	712
11:45	12:00	93	134	0	227	0	109	48	157	829	0	0	0	0	117	108	85	310	829	694
12:00	12:15	99	143	0	242	0	167	42	209	934	0	0	0	0	104	98	69	271	934	722
12:15	12:30	93	178	0	271	0	147	43	190	984	0	0	0	0	133	88	65	286	984	747
12:30	12:45	90	140	0	230	0	139	33	172	895	0	0	0	0	124	87	90	301	895	703
12:45	13:00	84	139	0	223	0	103	45	148	806	0	0	0	0	126	78	67	271	806	642
13:00	13:15	84	148	0	232	0	168	46	214	957	0	0	0	0	118	71	77	266	957	712
13:15	13:30	91	141	0	232	0	150	43	193	908	0	0	0	0	116	85	76	277	908	702
15:00	15:15	73	192	0	265	0	174	47	221	1117	0	0	0	0	184	104	81	369	1117	855
15:15	15:30	77	183	0	260	0	195	41	236	1124	0	0	0	0	169	136	81	386	1124	882
15:30	15:45	69	175	0	244	0	214	48	262	1156	0	0	0	0	191	139	70	400	1156	906
15:45	16:00	80	197	0	277	0	200	41	241	1135	0	0	0	0	153	138	67	358	1135	876
16:00	16:15	66	207	0	273	0	192	35	227	1128	0	0	0	0	177	160	52	389	1128	889
16:15	16:30	78	190	0	268	0	184	28	212	1084	0	0	0	0	183	170	47	400	1084	880
16:30	16:45	63	203	0	266	0	191	40	231	1122	0	0	0	0	157	162	74	393	1122	890
16:45	17:00	58	213	0	271	0	166	27	193	1078	0	0	0	0	160	146	75	381	1078	845
17:00	17:15	51	179	0	230	0	185	30	215	1066	0	0	0	0	174	138	83	395	1066	840
17:15	17:30	73	199	0	272	0	178	36	214	1121	0	0	0	0	173	119	85	377	1121	863
17:30	17:45	76	174	0	250	0	208	39	247	1103	0	0	0	0	150	89	74	313	1103	810
17:45	18:00	81	173	0	254	0	156	42	198	1014	0	0	0	0	165	92	68	325	1014	777
Total:		2960	6056	0	9016	0	4592	1185	5777	32357	0	0	0	0	4428	3643	2488	10559	32357	25,352

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study Cyclist Volume

Time Period		BRONSON AVE			CATHERINE ST/RAYMOND ST			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	1	0	1	0	0	0	1
07:15	07:30	1	0	1	0	0	0	1
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	1	1	1
08:00	08:15	0	0	0	0	1	1	1
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	1	0	1	0	0	0	1
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	1	0	1	1
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	1	1	2	0	0	0	2
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	2	1	3	0	0	0	3
12:45	13:00	0	0	0	0	2	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	0	0	0	0	0	0	0
16:00	16:15	1	1	2	0	0	0	2
16:15	16:30	1	1	2	0	0	0	2
16:30	16:45	1	0	1	0	0	0	1
16:45	17:00	0	2	2	0	0	0	2
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	1	1	2	0	1	1	3
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	1	1	1
Total		10	7	**17**	1	6	7	24

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study Pedestrian Volume

Time Period	BRONSON AVE			CATHERINE ST/RAYMOND ST			
	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	2	**2**	3	6	**9**	**11**
07:15 07:30	0	6	**6**	5	6	**11**	**17**
07:30 07:45	0	6	**6**	4	5	**9**	**15**
07:45 08:00	0	2	**2**	4	9	**13**	**15**
08:00 08:15	0	6	**6**	7	7	**14**	**20**
08:15 08:30	0	11	**11**	8	15	**23**	**34**
08:30 08:45	0	12	**12**	4	8	**12**	**24**
08:45 09:00	0	11	**11**	7	15	**22**	**33**
09:00 09:15	0	8	**8**	9	11	**20**	**28**
09:15 09:30	0	4	**4**	4	1	**5**	**9**
09:30 09:45	0	6	**6**	8	1	**9**	**15**
09:45 10:00	0	4	**4**	10	2	**12**	**16**
11:30 11:45	0	5	**5**	9	6	**15**	**20**
11:45 12:00	0	11	**11**	7	3	**10**	**21**
12:00 12:15	0	12	**12**	6	5	**11**	**23**
12:15 12:30	0	1	**1**	10	2	**12**	**13**
12:30 12:45	0	9	**9**	13	8	**21**	**30**
12:45 13:00	0	5	**5**	10	2	**12**	**17**
13:00 13:15	0	7	**7**	8	8	**16**	**23**
13:15 13:30	0	2	**2**	5	4	**9**	**11**
15:00 15:15	0	8	**8**	20	12	**32**	**40**
15:15 15:30	0	14	**14**	11	18	**29**	**43**
15:30 15:45	0	4	**4**	12	3	**15**	**19**
15:45 16:00	0	1	**1**	8	3	**11**	**12**
16:00 16:15	0	5	**5**	10	5	**15**	**20**
16:15 16:30	0	7	**7**	7	10	**17**	**24**
16:30 16:45	0	7	**7**	6	4	**10**	**17**
16:45 17:00	0	4	**4**	8	8	**16**	**20**
17:00 17:15	0	12	**12**	14	8	**22**	**34**
17:15 17:30	0	5	**5**	11	3	**14**	**19**
17:30 17:45	1	5	**6**	18	5	**23**	**29**
17:45 18:00	0	6	**6**	13	4	**17**	**23**
Total	1	208	**209**	279	207	**486**	**695**

W.O. 5365004 - THURS APR 19TH - CONSULTANT - 48 HRS (REIMPORT - 8HR STANDARD)

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study Heavy Vehicles

		BRONSON AVE									CATHERINE ST/RAYMOND ST									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	1	1	0	**10**	0	6	8	**18**	**28**	0	0	0	**17**	2	8	3	**13**	**30**	**29**
07:15	07:30	2	3	0	**14**	0	7	4	**18**	**32**	0	0	0	**11**	2	5	4	**11**	**22**	**27**
07:30	07:45	2	5	0	**13**	0	4	5	**16**	**29**	0	0	0	**11**	2	4	2	**8**	**19**	**24**
07:45	08:00	4	2	0	**15**	0	6	6	**18**	**33**	0	0	0	**15**	3	5	4	**12**	**27**	**30**
08:00	08:15	2	2	0	**13**	0	5	2	**13**	**26**	0	0	0	**12**	4	8	4	**16**	**28**	**27**
08:15	08:30	1	9	0	**21**	0	7	1	**18**	**39**	0	0	0	**4**	4	2	1	**7**	**11**	**25**
08:30	08:45	1	8	0	**23**	0	9	2	**23**	**46**	0	0	0	**7**	5	4	4	**13**	**20**	**33**
08:45	09:00	0	3	0	**21**	0	11	3	**23**	**44**	0	0	0	**7**	7	4	6	**17**	**24**	**34**
09:00	09:15	8	6	0	**25**	0	7	2	**26**	**51**	0	0	0	**17**	4	7	11	**22**	**39**	**45**
09:15	09:30	1	7	0	**23**	0	10	1	**26**	**49**	0	0	0	**11**	5	9	8	**22**	**33**	**41**
09:30	09:45	2	5	0	**15**	0	4	2	**14**	**29**	0	0	0	**9**	4	5	3	**12**	**21**	**25**
09:45	10:00	3	5	0	**22**	0	5	0	**21**	**43**	0	0	0	**9**	9	6	11	**26**	**35**	**39**
11:30	11:45	2	3	0	**13**	0	2	0	**10**	**23**	0	0	0	**8**	6	6	5	**17**	**25**	**24**
11:45	12:00	3	4	0	**17**	0	6	4	**20**	**37**	0	0	0	**14**	4	7	6	**17**	**31**	**34**
12:00	12:15	2	3	0	**12**	0	6	0	**13**	**25**	0	0	0	**7**	1	5	4	**10**	**17**	**21**
12:15	12:30	1	3	0	**12**	0	3	0	**8**	**20**	0	0	0	**6**	5	5	2	**12**	**18**	**19**
12:30	12:45	2	6	0	**15**	0	6	1	**18**	**33**	0	0	0	**9**	1	6	5	**12**	**21**	**27**
12:45	13:00	0	3	0	**10**	0	3	1	**10**	**20**	0	0	0	**3**	4	2	3	**9**	**12**	**16**
13:00	13:15	1	5	0	**15**	0	6	0	**15**	**30**	0	0	0	**8**	3	7	4	**14**	**22**	**26**
13:15	13:30	4	4	0	**15**	0	4	0	**11**	**26**	0	0	0	**10**	3	6	3	**12**	**22**	**24**
15:00	15:15	0	6	0	**18**	0	9	2	**21**	**39**	0	0	0	**4**	3	2	4	**9**	**13**	**26**
15:15	15:30	2	8	0	**15**	0	2	0	**13**	**28**	0	0	0	**5**	3	3	3	**9**	**14**	**21**
15:30	15:45	2	4	0	**13**	0	5	1	**16**	**29**	0	0	0	**6**	2	3	6	**11**	**17**	**23**
15:45	16:00	4	3	0	**14**	0	5	0	**10**	**24**	0	0	0	**7**	2	3	2	**7**	**14**	**19**
16:00	16:15	1	3	0	**14**	0	6	0	**13**	**27**	0	0	0	**7**	4	6	4	**14**	**21**	**24**
16:15	16:30	1	4	0	**14**	0	7	1	**13**	**27**	0	0	0	**3**	2	1	1	**4**	**7**	**17**
16:30	16:45	1	1	0	**9**	0	6	0	**11**	**20**	0	0	0	**4**	1	3	4	**8**	**12**	**16**
16:45	17:00	0	4	0	**11**	0	4	0	**9**	**20**	0	0	0	**4**	3	4	1	**8**	**12**	**16**
17:00	17:15	0	3	0	**11**	0	5	0	**9**	**20**	0	0	0	**2**	3	2	1	**6**	**8**	**14**
17:15	17:30	0	2	0	**6**	0	2	0	**4**	**10**	0	0	0	**1**	2	1	0	**3**	**4**	**7**
17:30	17:45	2	5	0	**10**	0	2	2	**9**	**19**	0	0	0	**6**	1	2	0	**3**	**9**	**14**
17:45	18:00	1	3	0	**9**	0	4	0	**7**	**16**	0	0	0	**3**	1	2	0	**3**	**6**	**11**
Total:	None	56	133	0	**468**	0	174	48	**474**	**942**	0	0	0	**247**	105	143	119	**367**	**614**	**778**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018 **WO No:** 39598

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

Full Study 15 Minute U-Turn Total

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

Transportation Services - Traffic Services

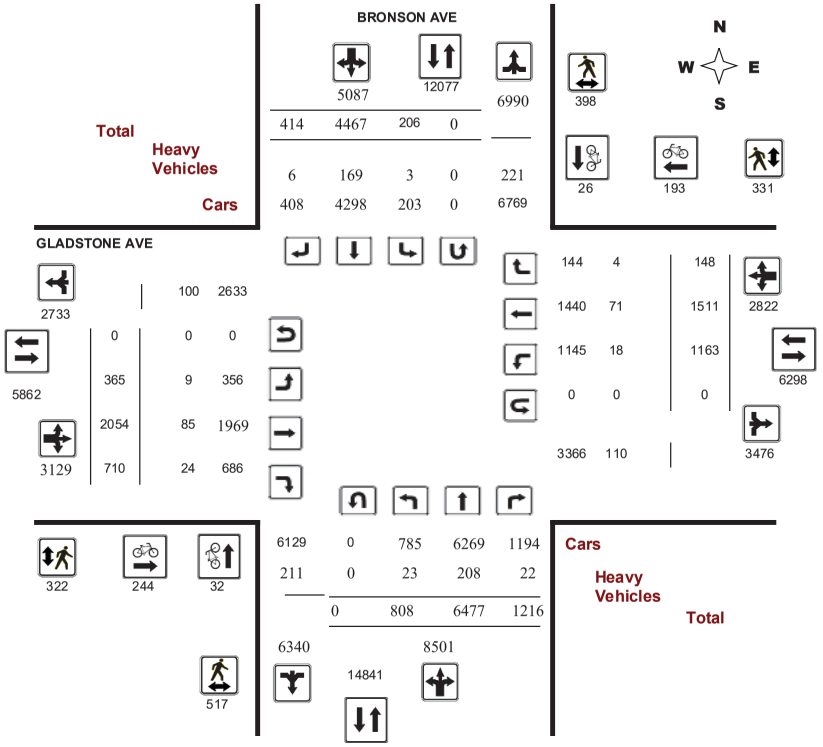
Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study Diagram



Transportation Services - Traffic Services

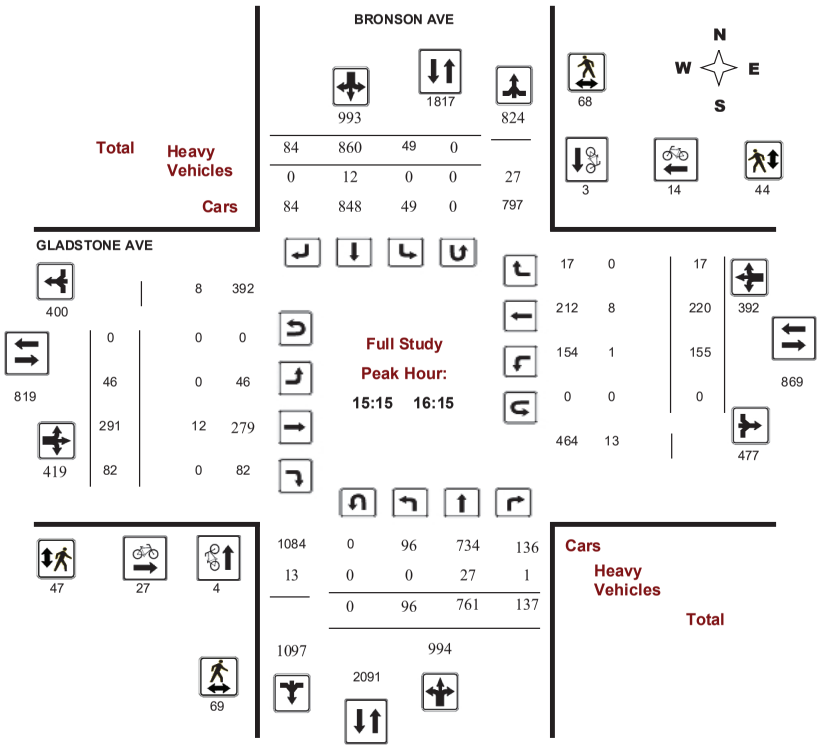
Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study Peak Hour Diagram



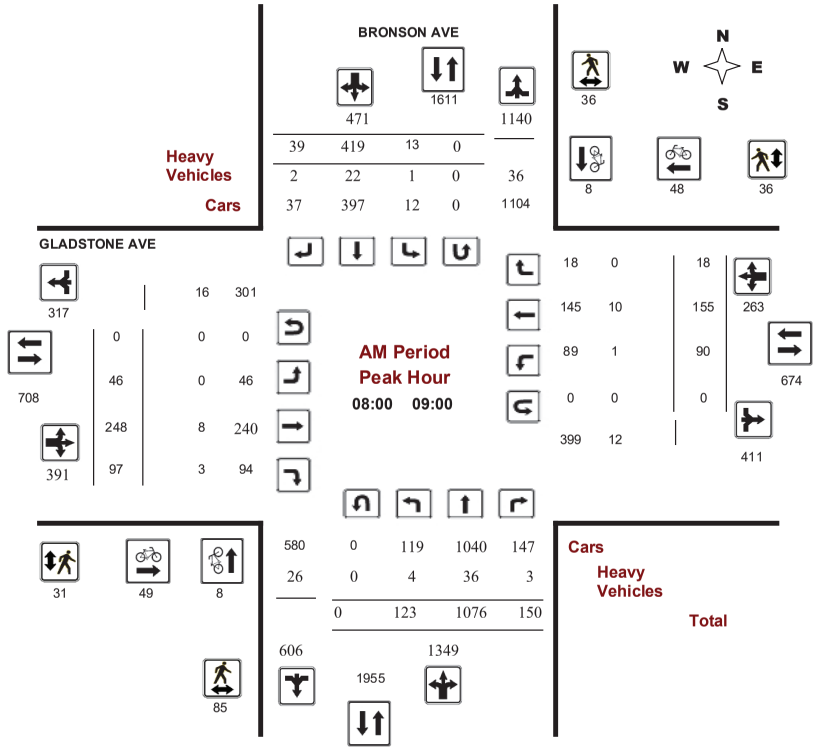
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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



Comments

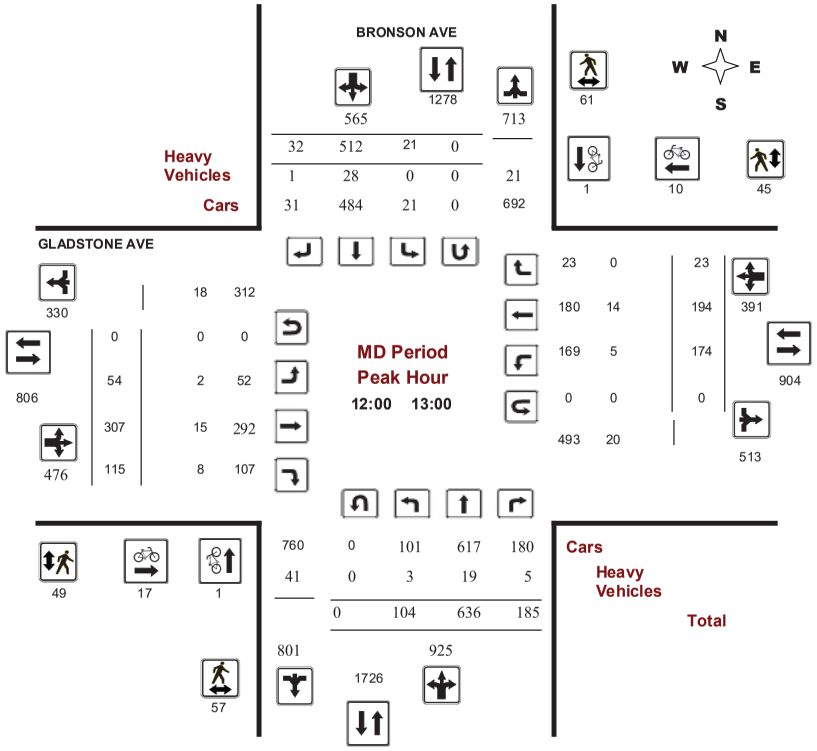
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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



Comments

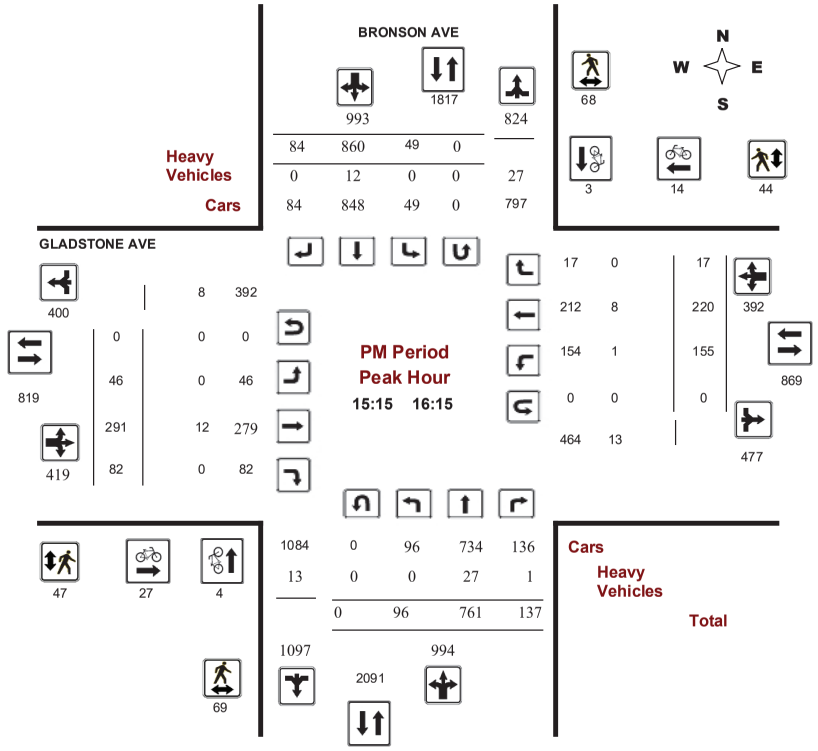
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, July 27, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

	BRONSON AVE								GLADSTONE AVE								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	76	1075	109	**1260**	13	441	21	**475**	**1735**	37	190	58	**285**	112	103	8	**223**	**508**	**2243**
08:00 09:00	123	1076	150	**1349**	13	419	39	**471**	**1820**	46	248	97	**391**	90	155	18	**263**	**654**	**2474**
09:00 10:00	103	794	144	**1041**	10	419	32	**461**	**1502**	38	215	81	**334**	122	132	18	**272**	**606**	**2108**
11:30 12:30	103	625	186	**914**	28	485	30	**543**	**1457**	39	262	122	**423**	177	189	17	**383**	**806**	**2263**
12:30 13:30	108	621	181	**910**	25	494	28	**547**	**1457**	67	300	110	**477**	175	198	28	**401**	**878**	**2335**
15:00 16:00	86	757	145	**988**	50	862	70	**982**	**1970**	52	283	85	**420**	172	193	17	**382**	**802**	**2772**
16:00 17:00	108	757	150	**1015**	38	676	109	**823**	**1838**	39	273	80	**392**	144	311	25	**480**	**872**	**2710**
17:00 18:00	101	772	151	**1024**	29	671	85	**785**	**1809**	47	283	77	**407**	171	230	17	**418**	**825**	**2634**
Sub Total	808	6477	1216	**8501**	206	4467	414	**5087**	**13588**	365	2054	710	**3129**	1163	1511	148	**2822**	**5951**	**19539**
U Turns	0			**0**	0			**0**	**0**	**0**			**0**	0			**0**	**0**	**0**
Total	808	6477	1216	**8501**	206	4467	414	**5087**	**13588**	365	2054	710	**3129**	1163	1511	148	**2822**	**5951**	**19539**
EQ 12Hr	1123	9003	1690	**11816**	286	6209	575	**7070**	**18886**	507	2855	987	**4349**	1617	2100	206	**3923**	**8272**	**27158**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1011	8103	1521	**10635**	257	5588	518	**6363**	**16998**	456	2570	888	**3914**	1455	1890	185	**3530**	**7444**	**24442**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	1324	10615	1993	**13932**	337	7320	679	**8336**	**22268**	597	3367	1163	**5127**	1906	2476	242	**4624**	**9751**	**32019**
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

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study 15 Minute Increments

		BRONSON AVE									GLADSTONE 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	17	265	21	303	2	94	6	102	**405**	8	36	12	56	32	20	2	54	**110**	**515**
07:15	07:30	14	262	29	305	4	106	5	115	**420**	13	52	15	80	28	28	2	58	**138**	**558**
07:30	07:45	22	267	33	322	2	126	5	133	**455**	6	52	13	71	23	27	0	50	**121**	**576**
07:45	08:00	23	281	26	330	5	115	5	125	**455**	10	50	18	78	29	28	4	61	**139**	**594**
08:00	08:15	34	271	25	330	2	118	8	128	**458**	8	53	28	89	22	36	3	61	**150**	**608**
08:15	08:30	28	268	50	346	4	73	7	84	**430**	10	63	28	101	25	26	5	56	**157**	**587**
08:30	08:45	23	270	37	330	3	115	11	129	**459**	14	65	22	101	16	30	2	48	**149**	**608**
08:45	09:00	38	267	38	343	4	113	13	130	**473**	14	67	19	100	27	63	8	98	**198**	**671**
09:00	09:15	29	223	31	283	3	104	12	119	**402**	14	45	25	84	32	41	3	76	**160**	**562**
09:15	09:30	24	218	40	282	2	105	7	114	**396**	9	57	20	86	21	30	6	57	**143**	**539**
09:30	09:45	26	169	39	234	3	96	7	106	**340**	8	55	19	82	28	33	5	66	**148**	**488**
09:45	10:00	24	184	34	242	2	114	6	122	**364**	7	58	17	82	41	28	4	73	**155**	**519**
11:30	11:45	31	160	42	233	7	128	10	145	**378**	9	62	34	105	34	41	2	77	**182**	**560**
11:45	12:00	30	160	50	240	11	112	4	127	**367**	10	51	27	88	57	50	5	112	**200**	**567**
12:00	12:15	24	136	43	203	5	143	10	158	**361**	8	74	26	108	44	43	3	90	**198**	**559**
12:15	12:30	18	169	51	238	5	102	6	113	**351**	12	75	35	122	42	55	7	104	**226**	**577**
12:30	12:45	32	150	47	229	5	139	11	155	**384**	16	68	27	111	47	42	7	96	**207**	**591**
12:45	13:00	30	181	44	255	6	128	5	139	**394**	18	90	27	135	41	54	6	101	**236**	**630**
13:00	13:15	22	137	51	210	9	114	8	131	**341**	24	77	26	127	40	39	6	85	**212**	**553**
13:15	13:30	24	153	39	216	5	113	4	122	**338**	9	65	30	104	47	63	9	119	**223**	**561**
15:00	15:15	12	193	34	239	8	202	17	227	**466**	13	59	26	98	52	41	2	95	**193**	**659**
15:15	15:30	23	177	35	235	9	224	11	244	**479**	16	82	23	121	35	48	7	90	**211**	**690**
15:30	15:45	25	197	40	262	12	237	25	274	**536**	16	62	17	95	47	55	5	107	**202**	**738**
15:45	16:00	26	190	36	252	21	199	17	237	**489**	7	80	19	106	38	49	3	90	**196**	**685**
16:00	16:15	22	197	26	245	7	200	31	238	**483**	7	67	23	97	35	68	2	105	**202**	**685**
16:15	16:30	27	172	32	231	6	188	25	219	**450**	8	56	15	79	43	96	10	149	**228**	**678**
16:30	16:45	30	204	42	276	9	162	26	197	**473**	14	77	21	112	35	71	7	113	**225**	**698**
16:45	17:00	29	184	50	263	16	126	27	169	**432**	10	73	21	104	31	76	6	113	**217**	**649**
17:00	17:15	25	209	44	278	10	201	23	234	**512**	13	88	16	117	32	56	1	89	**206**	**718**
17:15	17:30	26	203	39	268	11	176	29	216	**484**	10	83	18	111	34	59	4	97	**208**	**692**
17:30	17:45	25	179	40	244	6	154	23	183	**427**	13	62	20	95	50	63	4	117	**212**	**639**
17:45	18:00	25	181	28	234	2	140	10	152	**386**	11	50	23	84	55	52	8	115	**199**	**585**
Total:		808	6477	1216	8501	206	4467	414	5087	**13588**	365	2054	710	3129	1163	1511	148	2822	**13588**	**19,539**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study Cyclist Volume

		BRONSON AVE			GLADSTONE AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	2	**2**	4	2	**6**	**8**
07:15	07:30	0	1	**1**	5	5	**10**	**11**
07:30	07:45	0	0	**0**	11	6	**17**	**17**
07:45	08:00	0	1	**1**	6	7	**13**	**14**
08:00	08:15	0	2	**2**	12	7	**19**	**21**
08:15	08:30	2	5	**7**	12	18	**30**	**37**
08:30	08:45	3	1	**4**	11	7	**18**	**22**
08:45	09:00	3	0	**3**	14	16	**30**	**33**
09:00	09:15	0	0	**0**	5	10	**15**	**15**
09:15	09:30	0	0	**0**	7	6	**13**	**13**
09:30	09:45	1	0	**1**	4	6	**10**	**11**
09:45	10:00	1	1	**2**	8	3	**11**	**13**
11:30	11:45	1	0	**1**	4	3	**7**	**8**
11:45	12:00	0	0	**0**	5	4	**9**	**9**
12:00	12:15	0	0	**0**	2	0	**2**	**2**
12:15	12:30	0	1	**1**	6	7	**13**	**14**
12:30	12:45	0	0	**0**	5	1	**6**	**6**
12:45	13:00	1	0	**1**	4	2	**6**	**7**
13:00	13:15	1	0	**1**	2	5	**7**	**8**
13:15	13:30	4	0	**4**	5	3	**8**	**12**
15:00	15:15	2	0	**2**	6	3	**9**	**11**
15:15	15:30	0	2	**2**	4	1	**5**	**7**
15:30	15:45	1	1	**2**	3	5	**8**	**10**
15:45	16:00	1	0	**1**	7	6	**13**	**14**
16:00	16:15	2	0	**2**	13	2	**15**	**17**
16:15	16:30	1	1	**2**	8	2	**10**	**12**
16:30	16:45	0	5	**5**	11	11	**22**	**27**
16:45	17:00	2	1	**3**	11	11	**22**	**25**
17:00	17:15	2	1	**3**	14	5	**19**	**22**
17:15	17:30	2	0	**2**	18	10	**28**	**30**
17:30	17:45	2	1	**3**	6	9	**15**	**18**
17:45	18:00	0	0	**0**	11	10	**21**	**21**
Total		32	26	**58**	244	193	**437**	**495**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study Pedestrian Volume

		BRONSON AVE			GLADSTONE 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	3	**5**	4	9	**13**	**18**
07:15	07:30	9	4	**13**	5	7	**12**	**25**
07:30	07:45	14	6	**20**	9	9	**18**	**38**
07:45	08:00	20	7	**27**	9	7	**16**	**43**
08:00	08:15	16	10	**26**	3	8	**11**	**37**
08:15	08:30	22	10	**32**	7	9	**16**	**48**
08:30	08:45	21	5	**26**	7	10	**17**	**43**
08:45	09:00	26	11	**37**	14	9	**23**	**60**
09:00	09:15	11	7	**18**	6	9	**15**	**33**
09:15	09:30	8	4	**12**	4	6	**10**	**22**
09:30	09:45	7	8	**15**	8	2	**10**	**25**
09:45	10:00	11	6	**17**	1	10	**11**	**28**
11:30	11:45	8	26	**34**	16	4	**20**	**54**
11:45	12:00	16	16	**32**	5	14	**19**	**51**
12:00	12:15	13	9	**22**	16	11	**27**	**49**
12:15	12:30	9	28	**37**	14	7	**21**	**58**
12:30	12:45	20	9	**29**	10	14	**24**	**53**
12:45	13:00	15	15	**30**	9	13	**22**	**52**
13:00	13:15	15	4	**19**	8	5	**13**	**32**
13:15	13:30	16	18	**34**	9	14	**23**	**57**
15:00	15:15	6	12	**18**	9	11	**20**	**38**
15:15	15:30	15	21	**36**	16	9	**25**	**61**
15:30	15:45	16	14	**30**	10	11	**21**	**51**
15:45	16:00	19	10	**29**	10	8	**18**	**47**
16:00	16:15	19	23	**42**	11	16	**27**	**69**
16:15	16:30	21	19	**40**	13	12	**25**	**65**
16:30	16:45	21	7	**28**	13	20	**33**	**61**
16:45	17:00	17	15	**32**	13	13	**26**	**58**
17:00	17:15	34	15	**49**	7	10	**17**	**66**
17:15	17:30	25	27	**52**	25	13	**38**	**90**
17:30	17:45	22	21	**43**	20	13	**33**	**76**
17:45	18:00	23	8	**31**	11	18	**29**	**60**
Total	.....	517	398	**915**	322	331	**653**	**1568**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study Heavy Vehicles

		BRONSON AVE									GLADSTONE 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	1	8	1	**10**	0	9	0	**9**	**19**	0	4	0	**4**	0	3	0	**3**	**7**	**26**
07:15	07:30	0	15	1	**16**	0	9	0	**9**	**25**	0	3	0	**3**	1	2	0	**3**	**6**	**31**
07:30	07:45	0	10	1	**11**	0	7	1	**8**	**19**	1	4	1	**6**	2	1	0	**3**	**9**	**28**
07:45	08:00	2	3	0	**5**	1	14	0	**15**	**20**	1	5	0	**6**	0	1	0	**1**	**7**	**27**
08:00	08:15	1	8	0	**9**	0	7	1	**8**	**17**	0	1	1	**2**	0	2	0	**2**	**4**	**21**
08:15	08:30	2	11	1	**14**	1	5	0	**6**	**20**	0	3	2	**5**	0	2	0	**2**	**7**	**27**
08:30	08:45	1	8	1	**10**	0	8	0	**8**	**18**	0	2	0	**2**	1	3	0	**4**	**6**	**24**
08:45	09:00	0	9	1	**10**	0	2	1	**3**	**13**	0	2	0	**2**	0	3	0	**3**	**5**	**18**
09:00	09:15	1	11	2	**14**	0	12	0	**12**	**26**	1	1	1	**3**	1	2	0	**3**	**6**	**32**
09:15	09:30	1	8	0	**9**	0	6	1	**7**	**16**	1	3	2	**6**	2	2	1	**5**	**11**	**27**
09:30	09:45	1	5	2	**8**	0	6	0	**6**	**14**	0	1	0	**1**	1	3	1	**5**	**6**	**20**
09:45	10:00	2	5	3	**10**	0	9	0	**9**	**19**	1	5	0	**6**	2	0	1	**3**	**9**	**28**
11:30	11:45	1	7	2	**10**	1	4	1	**6**	**16**	0	1	2	**3**	0	4	0	**4**	**7**	**23**
11:45	12:00	2	7	0	**9**	0	7	0	**7**	**16**	0	1	1	**2**	2	2	0	**4**	**6**	**22**
12:00	12:15	0	5	1	**6**	0	10	1	**11**	**17**	1	2	1	**4**	3	4	0	**7**	**11**	**28**
12:15	12:30	0	8	2	**10**	0	7	0	**7**	**17**	1	6	2	**9**	0	5	0	**5**	**14**	**31**
12:30	12:45	2	3	1	**6**	0	7	0	**7**	**13**	0	3	4	**7**	2	1	0	**3**	**10**	**23**
12:45	13:00	1	3	1	**5**	0	4	0	**4**	**9**	0	4	1	**5**	0	4	0	**4**	**9**	**18**
13:00	13:15	1	1	0	**2**	0	3	0	**3**	**5**	1	4	1	**6**	0	1	0	**1**	**7**	**12**
13:15	13:30	1	3	0	**4**	0	3	0	**3**	**7**	0	3	2	**5**	0	2	1	**3**	**8**	**15**
15:00	15:15	0	16	0	**16**	0	3	0	**3**	**19**	0	4	1	**5**	0	4	0	**4**	**9**	**28**
15:15	15:30	0	7	1	**8**	0	4	0	**4**	**12**	0	5	0	**5**	0	1	0	**1**	**6**	**18**
15:30	15:45	0	7	0	**7**	0	4	0	**4**	**11**	0	2	0	**2**	0	1	0	**1**	**3**	**14**
15:45	16:00	0	8	0	**8**	0	3	0	**3**	**11**	0	3	0	**3**	0	5	0	**5**	**8**	**19**
16:00	16:15	0	5	0	**5**	0	1	0	**1**	**6**	0	2	0	**2**	1	1	0	**2**	**4**	**10**
16:15	16:30	1	4	0	**5**	0	1	0	**1**	**6**	0	2	0	**2**	0	2	0	**2**	**4**	**10**
16:30	16:45	0	5	0	**5**	0	3	0	**3**	**8**	0	3	0	**3**	0	1	0	**1**	**4**	**12**
16:45	17:00	1	4	0	**5**	0	3	0	**3**	**8**	0	1	0	**1**	0	1	0	**1**	**2**	**10**
17:00	17:15	0	4	0	**4**	0	3	0	**3**	**7**	1	1	0	**2**	0	0	0	**0**	**2**	**9**
17:15	17:30	0	6	0	**6**	0	1	0	**1**	**7**	0	2	0	**2**	0	1	0	**1**	**3**	**10**
17:30	17:45	1	2	1	**4**	0	3	0	**3**	**7**	0	1	1	**2**	0	4	0	**4**	**6**	**13**
17:45	18:00	0	2	0	**2**	0	1	0	**1**	**3**	0	1	1	**2**	0	3	0	**3**	**5**	**8**
Total:	None	23	208	22	**253**	3	169	6	**178**	**431**	9	85	24	**118**	18	71	4	**93**	**211**	**642**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36090

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

Full Study 15 Minute U-Turn Total

Time Period		BRONSON AVE Northbound U-Turn Total	BRONSON AVE Southbound U-Turn Total	GLADSTONE AVE Eastbound U-Turn Total	GLADSTONE AVE Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	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**

Transportation Services - Traffic Services

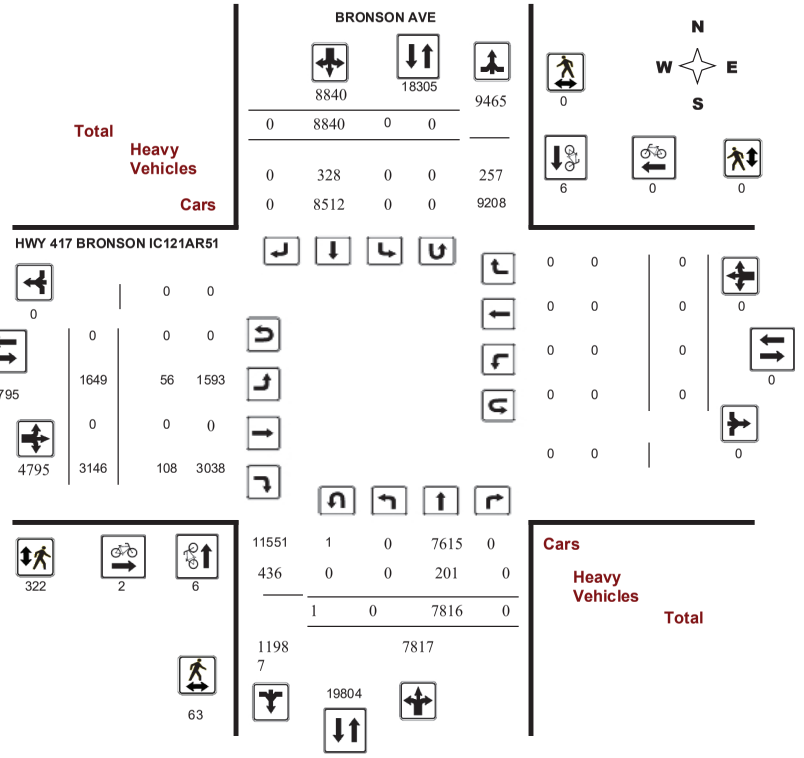
Turning Movement Count - Study Results

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study Diagram



W.O. 5279134 October 27th (8HR STANDARD REIMPORT)

Transportation Services - Traffic Services

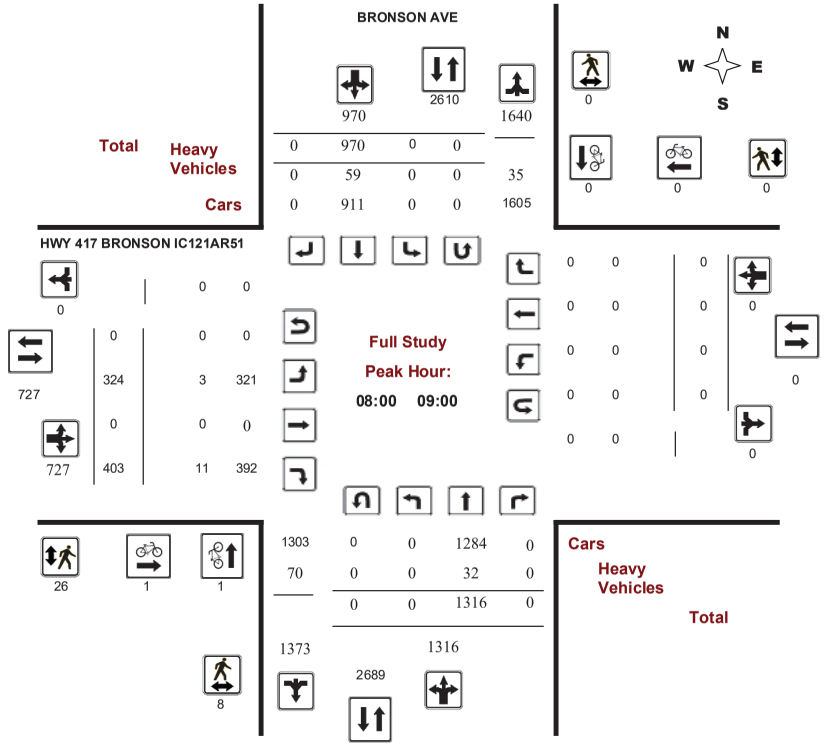
Turning Movement Count - Study Results

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study Peak Hour Diagram



W.O. 5279134 October 27th (8HR STANDARD REIMPORT)

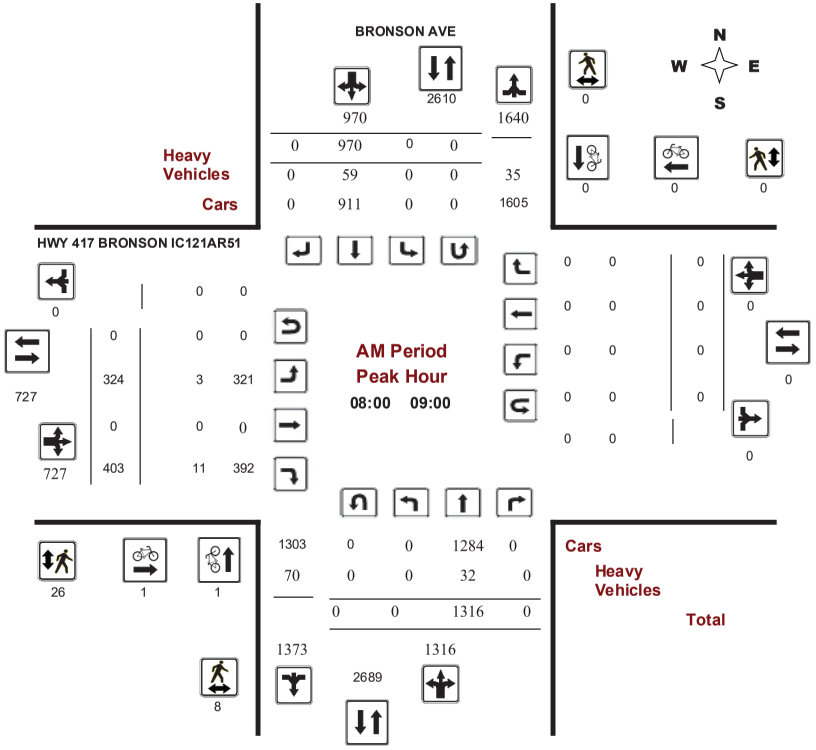
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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



Comments W.O. 5279134 October 27th (8HR STANDARD REIMPORT)

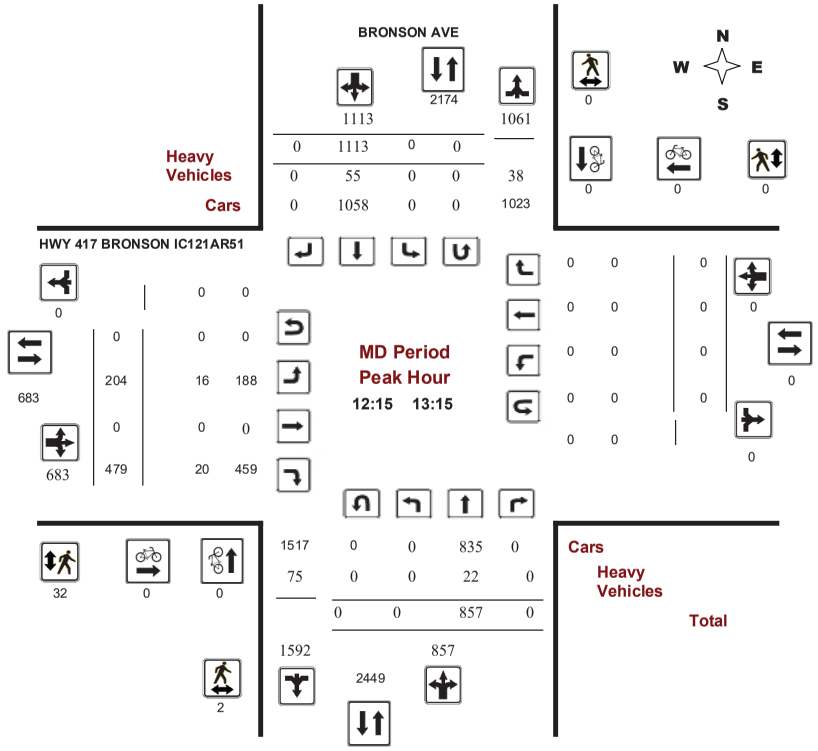
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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



Comments W.O. 5279134 October 27th (8HR STANDARD REIMPORT)

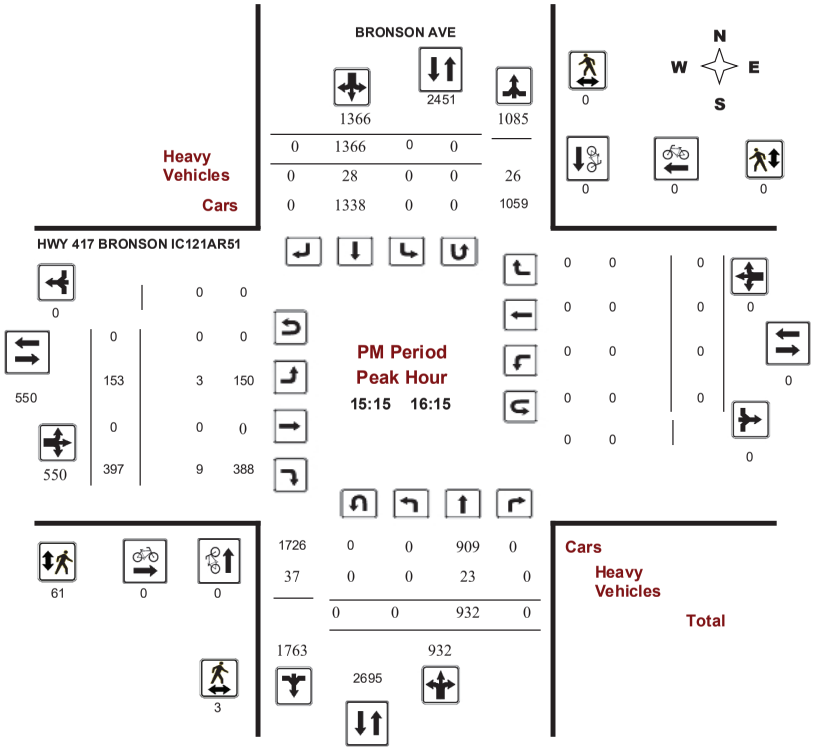
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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



Comments W.O. 5279134 October 27th (8HR STANDARD REIMPORT)

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, October 27, 2016

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

	BRONSON AVE									HWY 417 BRONSON IC121AR51									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	1124	0	**1124**	0	801	0	**801**	**1925**	239	0	374	**613**	0	0	0	**0**	**613**	**2538**
08:00 09:00	0	1316	0	**1316**	0	970	0	**970**	**2286**	324	0	403	**727**	0	0	0	**0**	**727**	**3013**
09:00 10:00	0	1029	0	**1029**	0	868	0	**868**	**1897**	289	0	496	**785**	0	0	0	**0**	**785**	**2682**
11:30 12:30	0	835	0	**835**	0	1007	0	**1007**	**1842**	219	0	482	**701**	0	0	0	**0**	**701**	**2543**
12:30 13:30	0	799	0	**799**	0	1111	0	**1111**	**1910**	200	0	497	**697**	0	0	0	**0**	**697**	**2607**
15:00 16:00	0	940	0	**940**	0	1319	0	**1319**	**2259**	152	0	429	**581**	0	0	0	**0**	**581**	**2840**
16:00 17:00	0	919	0	**919**	0	1380	0	**1380**	**2299**	122	0	261	**383**	0	0	0	**0**	**383**	**2682**
17:00 18:00	0	854	0	**854**	0	1384	0	**1384**	**2238**	104	0	204	**308**	0	0	0	**0**	**308**	**2546**
Sub Total	0	7816	0	**7816**	0	8840	0	**8840**	**16656**	1649	0	3146	**4795**	0	0	0	**0**	**4795**	**21451**
U Turns	1			**1**	0			**0**	**1**	**0**			**0**	0			**0**	**0**	**1**
Total	1	7816	0	**7817**	0	8840	0	**8840**	**16657**	1649	0	3146	**4795**	0	0	0	**0**	**4795**	**21452**
EQ 12Hr	1	10864	0	**10865**	0	12288	0	**12288**	**23153**	2292	0	4373	**6665**	0	0	0	**0**	**6665**	**29818**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	1	9778	0	**9779**	0	11059	0	**11059**	**20838**	2063	0	3936	**5999**	0	0	0	**0**	**5999**	**26837**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	1	12809	0	**12810**	0	14487	0	**14487**	**27297**	2703	0	5156	**7859**	0	0	0	**0**	**7859**	**35156**
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

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study 15 Minute Increments

		BRONSON AVE									HWY 417 BRONSON IC121AR51									
		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	245	0	245	0	183	0	183	**428**	38	0	103	141	0	0	0	0	**141**	**569**
07:15	07:30	0	233	0	233	0	212	0	212	**445**	63	0	97	160	0	0	0	0	**160**	**605**
07:30	07:45	0	312	0	312	0	208	0	208	**520**	56	0	92	148	0	0	0	0	**148**	**668**
07:45	08:00	0	334	0	334	0	198	0	198	**532**	82	0	82	164	0	0	0	0	**164**	**696**
08:00	08:15	0	327	0	327	0	232	0	232	**559**	81	0	104	185	0	0	0	0	**185**	**744**
08:15	08:30	0	313	0	313	0	237	0	237	**550**	79	0	102	181	0	0	0	0	**181**	**731**
08:30	08:45	0	352	0	352	0	248	0	248	**600**	87	0	106	193	0	0	0	0	**193**	**793**
08:45	09:00	0	324	0	324	0	253	0	253	**577**	77	0	91	168	0	0	0	0	**168**	**745**
09:00	09:15	0	310	0	310	0	235	0	235	**545**	77	0	117	194	0	0	0	0	**194**	**739**
09:15	09:30	0	264	0	264	0	211	0	211	**475**	81	0	134	215	0	0	0	0	**215**	**690**
09:30	09:45	0	224	0	224	0	209	0	209	**433**	68	0	137	205	0	0	0	0	**205**	**638**
09:45	10:00	0	231	0	231	0	213	0	213	**444**	63	0	108	171	0	0	0	0	**171**	**615**
11:30	11:45	0	217	0	217	0	233	0	233	**450**	42	0	123	165	0	0	0	0	**165**	**615**
11:45	12:00	0	196	0	196	0	235	0	235	**431**	60	0	121	181	0	0	0	0	**181**	**612**
12:00	12:15	0	194	0	194	0	269	0	269	**463**	65	0	125	190	0	0	0	0	**190**	**653**
12:15	12:30	0	228	0	228	0	270	0	270	**498**	52	0	113	165	0	0	0	0	**165**	**663**
12:30	12:45	0	212	0	212	0	267	0	267	**479**	56	0	124	180	0	0	0	0	**180**	**659**
12:45	13:00	0	220	0	220	0	280	0	280	**500**	52	0	120	172	0	0	0	0	**172**	**672**
13:00	13:15	0	197	0	197	0	296	0	296	**493**	44	0	122	166	0	0	0	0	**166**	**659**
13:15	13:30	0	170	0	170	0	268	0	268	**438**	48	0	131	179	0	0	0	0	**179**	**617**
15:00	15:15	0	240	0	240	0	291	0	291	**531**	37	0	100	137	0	0	0	0	**137**	**668**
15:15	15:30	0	227	0	227	0	327	0	327	**554**	34	0	129	163	0	0	0	0	**163**	**717**
15:30	15:45	0	255	0	255	0	340	0	340	**595**	43	0	102	145	0	0	0	0	**145**	**740**
15:45	16:00	0	218	0	218	0	361	0	361	**579**	38	0	98	136	0	0	0	0	**136**	**715**
16:00	16:15	0	232	0	232	0	338	0	338	**570**	38	0	68	106	0	0	0	0	**106**	**676**
16:15	16:30	0	220	0	220	0	346	0	346	**566**	25	0	77	102	0	0	0	0	**102**	**668**
16:30	16:45	0	240	0	240	0	338	0	338	**578**	27	0	57	84	0	0	0	0	**84**	**662**
16:45	17:00	0	227	0	227	0	358	0	358	**585**	32	0	59	91	0	0	0	0	**91**	**676**
17:00	17:15	0	218	0	218	0	351	0	351	**569**	24	0	49	73	0	0	0	0	**73**	**642**
17:15	17:30	0	240	0	240	0	372	0	372	**612**	29	0	49	78	0	0	0	0	**78**	**690**
17:30	17:45	0	189	0	189	0	327	0	327	**516**	31	0	48	79	0	0	0	0	**79**	**595**
17:45	18:00	1	207	0	208	0	334	0	334	**542**	20	0	58	78	0	0	0	0	**78**	**620**
Total:		1	7816	0	7817	0	8840	0	8840	**16657**	1649	0	3146	4795	0	0	0	0	**16657**	**21,452**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study Cyclist Volume

Time Period		BRONSON AVE			HWY 417 BRONSON IC121AR51			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	1	0	**1**	0	0	**0**	**1**
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	1	0	**1**	1	0	**1**	**2**
09:00	09:15	0	1	**1**	0	0	**0**	**1**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	1	**1**	0	0	**0**	**1**
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	1	**1**	0	0	**0**	**1**
12:00	12:15	0	1	**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	0	**0**	**0**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	1	0	**1**	**1**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	1	0	**1**	0	0	**0**	**1**
16:30	16:45	0	1	**1**	0	0	**0**	**1**
16:45	17:00	1	1	**2**	0	0	**0**	**2**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	1	0	**1**	0	0	**0**	**1**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		6	6	**12**	2	0	**2**	**14**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study Pedestrian Volume

Time Period		BRONSON AVE			HWY 417 BRONSON IC121AR51			
		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	0	**1**	3	0	**3**	**4**
07:15	07:30	1	0	**1**	2	0	**2**	**3**
07:30	07:45	3	0	**3**	9	0	**9**	**12**
07:45	08:00	2	0	**2**	8	0	**8**	**10**
08:00	08:15	3	0	**3**	4	0	**4**	**7**
08:15	08:30	4	0	**4**	5	0	**5**	**9**
08:30	08:45	1	0	**1**	9	0	**9**	**10**
08:45	09:00	0	0	**0**	8	0	**8**	**8**
09:00	09:15	8	0	**8**	5	0	**5**	**13**
09:15	09:30	2	0	**2**	3	0	**3**	**5**
09:30	09:45	3	0	**3**	3	0	**3**	**6**
09:45	10:00	0	0	**0**	7	0	**7**	**7**
11:30	11:45	0	0	**0**	21	0	**21**	**21**
11:45	12:00	7	0	**7**	20	0	**20**	**27**
12:00	12:15	2	0	**2**	22	0	**22**	**24**
12:15	12:30	0	0	**0**	12	0	**12**	**12**
12:30	12:45	0	0	**0**	5	0	**5**	**5**
12:45	13:00	2	0	**2**	10	0	**10**	**12**
13:00	13:15	0	0	**0**	5	0	**5**	**5**
13:15	13:30	1	0	**1**	17	0	**17**	**18**
15:00	15:15	3	0	**3**	14	0	**14**	**17**
15:15	15:30	0	0	**0**	19	0	**19**	**19**
15:30	15:45	0	0	**0**	16	0	**16**	**16**
15:45	16:00	3	0	**3**	12	0	**12**	**15**
16:00	16:15	0	0	**0**	14	0	**14**	**14**
16:15	16:30	0	0	**0**	8	0	**8**	**8**
16:30	16:45	6	0	**6**	12	0	**12**	**18**
16:45	17:00	1	0	**1**	11	0	**11**	**12**
17:00	17:15	3	0	**3**	9	0	**9**	**12**
17:15	17:30	1	0	**1**	10	0	**10**	**11**
17:30	17:45	4	0	**4**	7	0	**7**	**11**
17:45	18:00	2	0	**2**	12	0	**12**	**14**
Total		63	0	**63**	322	0	**322**	**385**

W.O. 5279134 October 27th (8HR STANDARD REIMPORT)

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study Heavy Vehicles

		BRONSON AVE									HWY 417 BRONSON IC121AR51									
		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	4	0	**4**	0	11	0	**11**	**15**	0	0	3	**3**	0	0	0	**0**	**3**	**18**
07:15	07:30	0	4	0	**4**	0	14	0	**14**	**18**	3	0	5	**8**	0	0	0	**0**	**8**	**26**
07:30	07:45	0	5	0	**5**	0	8	0	**8**	**13**	3	0	1	**4**	0	0	0	**0**	**4**	**17**
07:45	08:00	0	8	0	**8**	0	18	0	**18**	**26**	2	0	3	**5**	0	0	0	**0**	**5**	**31**
08:00	08:15	0	9	0	**9**	0	17	0	**17**	**26**	1	0	4	**5**	0	0	0	**0**	**5**	**31**
08:15	08:30	0	8	0	**8**	0	12	0	**12**	**20**	0	0	4	**4**	0	0	0	**0**	**4**	**24**
08:30	08:45	0	8	0	**8**	0	15	0	**15**	**23**	1	0	2	**3**	0	0	0	**0**	**3**	**26**
08:45	09:00	0	7	0	**7**	0	15	0	**15**	**22**	1	0	1	**2**	0	0	0	**0**	**2**	**24**
09:00	09:15	0	12	0	**12**	0	13	0	**13**	**25**	5	0	3	**8**	0	0	0	**0**	**8**	**33**
09:15	09:30	0	12	0	**12**	0	14	0	**14**	**26**	2	0	7	**9**	0	0	0	**0**	**9**	**35**
09:30	09:45	0	9	0	**9**	0	8	0	**8**	**17**	4	0	6	**10**	0	0	0	**0**	**10**	**27**
09:45	10:00	0	7	0	**7**	0	9	0	**9**	**16**	1	0	7	**8**	0	0	0	**0**	**8**	**24**
11:30	11:45	0	4	0	**4**	0	15	0	**15**	**19**	4	0	5	**9**	0	0	0	**0**	**9**	**28**
11:45	12:00	0	10	0	**10**	0	13	0	**13**	**23**	1	0	4	**5**	0	0	0	**0**	**5**	**28**
12:00	12:15	0	7	0	**7**	0	11	0	**11**	**18**	2	0	3	**5**	0	0	0	**0**	**5**	**23**
12:15	12:30	0	7	0	**7**	0	7	0	**7**	**14**	3	0	5	**8**	0	0	0	**0**	**8**	**22**
12:30	12:45	0	8	0	**8**	0	18	0	**18**	**26**	9	0	3	**12**	0	0	0	**0**	**12**	**38**
12:45	13:00	0	3	0	**3**	0	15	0	**15**	**18**	2	0	8	**10**	0	0	0	**0**	**10**	**28**
13:00	13:15	0	4	0	**4**	0	15	0	**15**	**19**	2	0	4	**6**	0	0	0	**0**	**6**	**25**
13:15	13:30	0	10	0	**10**	0	9	0	**9**	**19**	0	0	6	**6**	0	0	0	**0**	**6**	**25**
15:00	15:15	0	4	0	**4**	0	11	0	**11**	**15**	1	0	5	**6**	0	0	0	**0**	**6**	**21**
15:15	15:30	0	9	0	**9**	0	8	0	**8**	**17**	1	0	3	**4**	0	0	0	**0**	**4**	**21**
15:30	15:45	0	4	0	**4**	0	8	0	**8**	**12**	2	0	5	**7**	0	0	0	**0**	**7**	**19**
15:45	16:00	0	7	0	**7**	0	4	0	**4**	**11**	0	0	1	**1**	0	0	0	**0**	**1**	**12**
16:00	16:15	0	3	0	**3**	0	8	0	**8**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
16:15	16:30	0	4	0	**4**	0	4	0	**4**	**8**	1	0	1	**2**	0	0	0	**0**	**2**	**10**
16:30	16:45	0	2	0	**2**	0	5	0	**5**	**7**	3	0	0	**3**	0	0	0	**0**	**3**	**10**
16:45	17:00	0	6	0	**6**	0	5	0	**5**	**11**	0	0	2	**2**	0	0	0	**0**	**2**	**13**
17:00	17:15	0	4	0	**4**	0	5	0	**5**	**9**	1	0	2	**3**	0	0	0	**0**	**3**	**12**
17:15	17:30	0	2	0	**2**	0	2	0	**2**	**4**	0	0	1	**1**	0	0	0	**0**	**1**	**5**
17:30	17:45	0	5	0	**5**	0	7	0	**7**	**12**	1	0	1	**2**	0	0	0	**0**	**2**	**14**
17:45	18:00	0	5	0	**5**	0	4	0	**4**	**9**	0	0	3	**3**	0	0	0	**0**	**3**	**12**
Total:	None	0	201	0	**201**	0	328	0	**328**	**529**	56	0	108	**164**	0	0	0	**0**	**164**	**693**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016 **WO No:** 39602

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

Full Study 15 Minute U-Turn Total

		BRONSON AVE		HWY 417 BRONSON IC121AR51		
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	1	0	0	0	**1**
Total		1	0	0	0	**1**

Transportation Services - Traffic Services

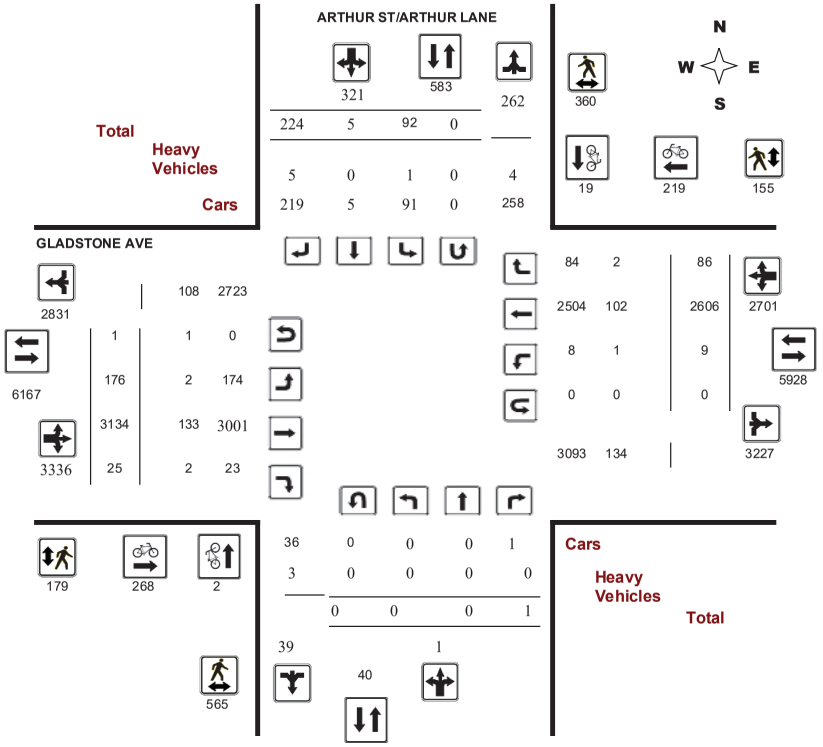
Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study Diagram



Transportation Services - Traffic Services

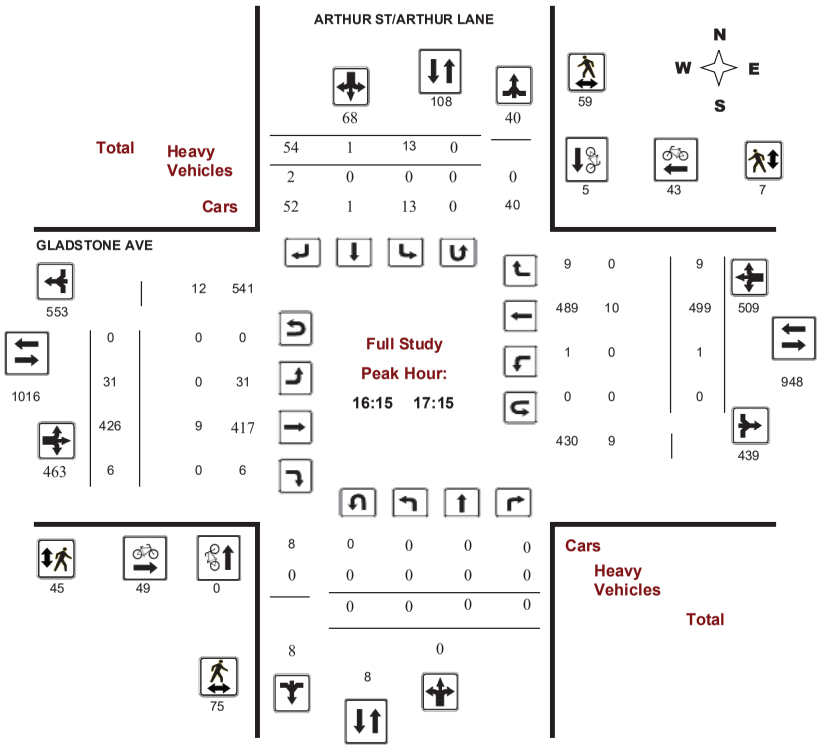
Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study Peak Hour Diagram



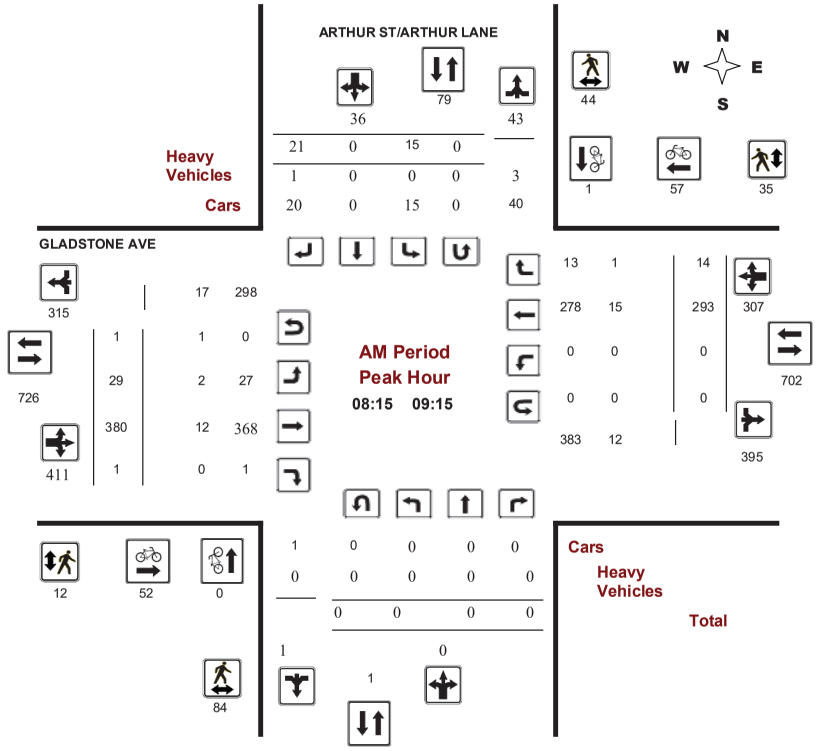
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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



Comments

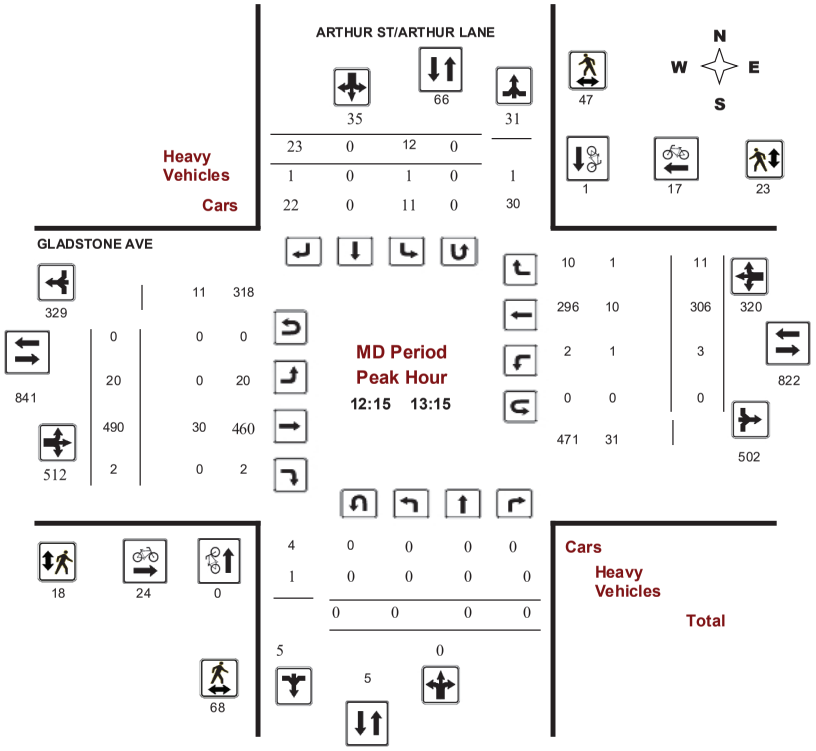
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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



Comments

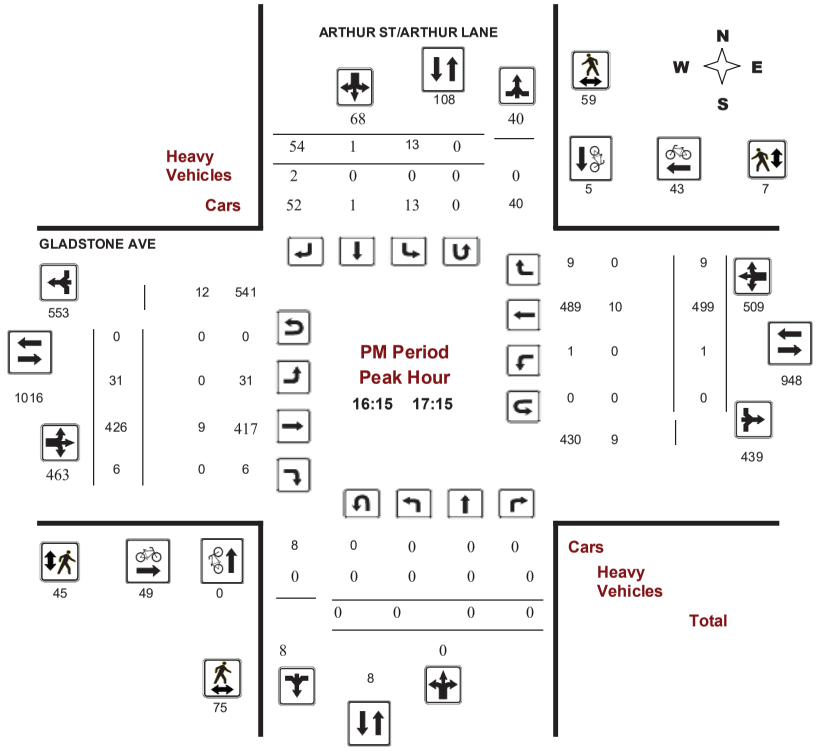
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, July 27, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 1 Westbound: 0

AADT Factor .90

	ARTHUR ST/ARTHUR LANE									GLADSTONE AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	0	0	**0**	1	0	8	**9**	**9**	9	291	1	**301**	0	195	4	**199**	**500**	**509**
08:00 09:00	0	0	0	**0**	11	0	13	**24**	**24**	24	405	2	**431**	1	287	9	**297**	**728**	**752**
09:00 10:00	0	0	0	**0**	9	0	24	**33**	**33**	27	339	6	**372**	1	246	15	**262**	**634**	**667**
11:30 12:30	0	0	0	**0**	16	0	38	**54**	**54**	25	422	4	**451**	3	301	10	**314**	**765**	**819**
12:30 13:30	0	0	1	**1**	9	0	26	**35**	**36**	20	475	2	**497**	2	315	14	**331**	**828**	**864**
15:00 16:00	0	0	0	**0**	16	1	28	**45**	**45**	18	403	4	**425**	0	340	12	**352**	**777**	**822**
16:00 17:00	0	0	0	**0**	11	2	50	**63**	**63**	26	393	6	**425**	1	516	11	**528**	**953**	**1016**
17:00 18:00	0	0	0	**0**	19	2	37	**58**	**58**	27	406	0	**433**	1	406	11	**418**	**851**	**909**
Sub Total	0	0	1	**1**	92	5	224	**321**	**322**	176	3134	25	**3335**	9	2606	86	**2701**	**6036**	**6358**
U Turns	0			**0**	0			**0**	**0**	**1**			**1**	0			**0**	**1**	**1**
Total	0	0	1	**1**	92	5	224	**321**	**322**	177	3134	25	**3336**	9	2606	86	**2701**	**6037**	**6359**
EQ 12Hr	0	0	1	**1**	128	7	311	**446**	**447**	246	4356	35	**4637**	13	3622	120	**3755**	**8392**	**8839**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	0	1	**1**	115	6	280	**401**	**402**	221	3920	32	**4173**	12	3260	108	**3380**	**7553**	**7955**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	0	0	1	**1**	151	8	367	**526**	**527**	290	5135	42	**5467**	16	4271	141	**4428**	**9895**	**10422**
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

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study 15 Minute Increments

		ARTHUR ST/ARTHUR LANE									GLADSTONE AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	0	0	0	2	2	**2**	2	57	0	59	0	44	0	44	**103**	**105**
07:15	07:30	0	0	0	0	0	0	1	1	**1**	0	79	0	79	0	46	1	47	**126**	**127**
07:30	07:45	0	0	0	0	0	0	0	0	**0**	3	69	1	73	0	53	1	54	**127**	**127**
07:45	08:00	0	0	0	0	1	0	5	6	**6**	4	86	0	90	0	52	2	54	**144**	**150**
08:00	08:15	0	0	0	0	2	0	1	3	**3**	4	103	1	108	1	63	1	65	**173**	**176**
08:15	08:30	0	0	0	0	2	0	1	3	**3**	5	91	0	96	0	64	2	66	**162**	**165**
08:30	08:45	0	0	0	0	3	0	4	7	**7**	9	112	0	121	0	57	3	60	**181**	**188**
08:45	09:00	0	0	0	0	4	0	7	11	**11**	7	99	1	107	0	103	3	106	**213**	**224**
09:00	09:15	0	0	0	0	6	0	9	15	**15**	9	78	0	87	0	69	6	75	**162**	**177**
09:15	09:30	0	0	0	0	0	0	7	7	**7**	4	87	1	92	1	57	1	59	**151**	**158**
09:30	09:45	0	0	0	0	1	0	4	5	**5**	5	88	4	97	0	63	4	67	**164**	**169**
09:45	10:00	0	0	0	0	2	0	4	6	**6**	9	86	1	96	0	57	4	61	**157**	**163**
11:30	11:45	0	0	0	0	3	0	16	19	**19**	7	109	1	117	0	71	1	72	**189**	**208**
11:45	12:00	0	0	0	0	1	0	9	10	**10**	9	92	1	102	1	83	3	87	**189**	**199**
12:00	12:15	0	0	0	0	6	0	6	12	**12**	6	105	1	112	0	72	5	77	**189**	**201**
12:15	12:30	0	0	0	0	6	0	7	13	**13**	3	116	1	120	2	75	1	78	**198**	**211**
12:30	12:45	0	0	0	0	0	0	4	4	**4**	5	120	1	126	0	67	6	73	**199**	**203**
12:45	13:00	0	0	0	0	4	0	7	11	**11**	5	134	0	139	1	86	3	90	**229**	**240**
13:00	13:15	0	0	0	0	2	0	5	7	**7**	7	120	0	127	0	78	1	79	**206**	**213**
13:15	13:30	0	0	1	1	3	0	10	13	**14**	3	101	1	105	1	84	4	89	**194**	**208**
15:00	15:15	0	0	0	0	6	0	9	15	**15**	7	94	0	101	0	67	4	71	**172**	**187**
15:15	15:30	0	0	0	0	5	1	4	10	**10**	6	114	3	123	0	73	3	76	**199**	**209**
15:30	15:45	0	0	0	0	2	0	11	13	**13**	2	83	1	86	0	111	3	114	**200**	**213**
15:45	16:00	0	0	0	0	3	0	4	7	**7**	3	112	0	115	0	89	2	91	**206**	**213**
16:00	16:15	0	0	0	0	3	1	14	18	**18**	4	94	0	98	0	122	2	124	**222**	**240**
16:15	16:30	0	0	0	0	3	0	14	17	**17**	6	81	4	91	0	141	2	143	**234**	**251**
16:30	16:45	0	0	0	0	3	1	11	15	**15**	6	113	1	120	0	133	2	135	**255**	**270**
16:45	17:00	0	0	0	0	2	0	11	13	**13**	10	105	1	116	1	120	5	126	**242**	**255**
17:00	17:15	0	0	0	0	5	0	18	23	**23**	9	127	0	136	0	105	0	105	**241**	**264**
17:15	17:30	0	0	0	0	5	1	8	14	**14**	7	96	0	103	0	118	3	121	**224**	**238**
17:30	17:45	0	0	0	0	6	1	7	14	**14**	7	90	0	97	1	99	3	103	**200**	**214**
17:45	18:00	0	0	0	0	3	0	4	7	**7**	4	93	0	97	0	84	5	89	**186**	**193**
Total:		0	0	1	1	92	5	224	321	**322**	177	3134	25	3336	9	2606	86	2701	**322**	**6,359**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study Cyclist Volume

		ARTHUR ST/ARTHUR LANE			GLADSTONE AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	7	3	**10**	**10**
07:15	07:30	0	1	**1**	6	5	**11**	**12**
07:30	07:45	0	0	**0**	16	9	**25**	**25**
07:45	08:00	0	1	**1**	7	8	**15**	**16**
08:00	08:15	1	1	**2**	12	2	**14**	**16**
08:15	08:30	0	0	**0**	11	20	**31**	**31**
08:30	08:45	0	0	**0**	13	8	**21**	**21**
08:45	09:00	0	1	**1**	18	14	**32**	**33**
09:00	09:15	0	0	**0**	10	15	**25**	**25**
09:15	09:30	0	0	**0**	4	7	**11**	**11**
09:30	09:45	0	0	**0**	8	5	**13**	**13**
09:45	10:00	0	0	**0**	7	3	**10**	**10**
11:30	11:45	0	0	**0**	2	3	**5**	**5**
11:45	12:00	0	0	**0**	5	2	**7**	**7**
12:00	12:15	0	1	**1**	4	2	**6**	**7**
12:15	12:30	0	1	**1**	8	4	**12**	**13**
12:30	12:45	0	0	**0**	6	1	**7**	**7**
12:45	13:00	0	0	**0**	9	5	**14**	**14**
13:00	13:15	0	0	**0**	1	7	**8**	**8**
13:15	13:30	0	0	**0**	5	5	**10**	**10**
15:00	15:15	0	0	**0**	6	5	**11**	**11**
15:15	15:30	0	0	**0**	4	2	**6**	**6**
15:30	15:45	0	3	**3**	3	4	**7**	**10**
15:45	16:00	0	1	**1**	8	6	**14**	**15**
16:00	16:15	1	3	**4**	13	6	**19**	**23**
16:15	16:30	0	2	**2**	9	8	**17**	**19**
16:30	16:45	0	3	**3**	17	13	**30**	**33**
16:45	17:00	0	0	**0**	8	16	**24**	**24**
17:00	17:15	0	0	**0**	15	6	**21**	**21**
17:15	17:30	0	1	**1**	11	9	**20**	**21**
17:30	17:45	0	0	**0**	7	8	**15**	**15**
17:45	18:00	0	0	**0**	8	8	**16**	**16**
Total		2	19	**21**	268	219	**487**	**508**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study Pedestrian Volume

	ARTHUR ST/ARTHUR LANE			GLADSTONE 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	8	7	**15**	1	2	**3**	**18**
07:15 07:30	13	2	**15**	1	1	**2**	**17**
07:30 07:45	19	7	**26**	2	1	**3**	**29**
07:45 08:00	13	7	**20**	3	0	**3**	**23**
08:00 08:15	18	10	**28**	3	4	**7**	**35**
08:15 08:30	24	6	**30**	6	3	**9**	**39**
08:30 08:45	24	10	**34**	1	11	**12**	**46**
08:45 09:00	23	18	**41**	2	13	**15**	**56**
09:00 09:15	13	10	**23**	3	8	**11**	**34**
09:15 09:30	17	10	**27**	5	6	**11**	**38**
09:30 09:45	10	9	**19**	3	5	**8**	**27**
09:45 10:00	8	15	**23**	4	7	**11**	**34**
11:30 11:45	27	7	**34**	13	7	**20**	**54**
11:45 12:00	21	19	**40**	6	4	**10**	**50**
12:00 12:15	23	10	**33**	9	10	**19**	**52**
12:15 12:30	26	13	**39**	4	11	**15**	**54**
12:30 12:45	15	13	**28**	3	2	**5**	**33**
12:45 13:00	11	13	**24**	3	4	**7**	**31**
13:00 13:15	16	8	**24**	8	6	**14**	**38**
13:15 13:30	22	18	**40**	11	8	**19**	**59**
15:00 15:15	9	1	**10**	0	1	**1**	**11**
15:15 15:30	10	7	**17**	5	1	**6**	**23**
15:30 15:45	16	6	**22**	2	6	**8**	**30**
15:45 16:00	10	13	**23**	2	6	**8**	**31**
16:00 16:15	19	20	**39**	14	7	**21**	**60**
16:15 16:30	20	13	**33**	9	3	**12**	**45**
16:30 16:45	19	13	**32**	7	2	**9**	**41**
16:45 17:00	14	13	**27**	13	0	**13**	**40**
17:00 17:15	22	20	**42**	16	2	**18**	**60**
17:15 17:30	22	12	**34**	4	6	**10**	**44**
17:30 17:45	29	14	**43**	9	5	**14**	**57**
17:45 18:00	24	16	**40**	7	3	**10**	**50**
Total	565	360	**925**	179	155	**334**	**1259**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study Heavy Vehicles

		ARTHUR ST/ARTHUR LANE									GLADSTONE AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	4	0	**4**	**7**	**7**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	5	0	**5**	**8**	**8**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	1	0	**1**	**5**	**5**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	3	0	**3**	**7**	**7**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	1	0	**1**	**6**	**6**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	1	6	0	**7**	0	5	1	**6**	**13**	**14**
08:30	08:45	0	0	0	**0**	0	0	1	**1**	**1**	1	3	0	**4**	0	2	0	**2**	**6**	**7**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	8	0	**8**	**9**	**9**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	0	0	**0**	**2**	**2**
09:15	09:30	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**7**	0	4	0	**4**	**11**	**11**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	2	**5**	0	5	0	**5**	**10**	**10**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**7**	0	3	0	**3**	**10**	**10**
11:30	11:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	4	0	**4**	**7**	**7**
11:45	12:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	2	0	**2**	**4**	**4**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	8	0	**8**	**13**	**13**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	11	0	**11**	1	4	0	**5**	**16**	**16**
12:30	12:45	0	0	0	**0**	0	0	0	**0**	**0**	0	8	0	**8**	0	2	1	**3**	**11**	**11**
12:45	13:00	0	0	0	**0**	1	0	0	**1**	**1**	0	5	0	**5**	0	3	0	**3**	**8**	**9**
13:00	13:15	0	0	0	**0**	0	0	1	**1**	**1**	0	6	0	**6**	0	1	0	**1**	**7**	**8**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	5	0	**5**	**10**	**10**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**6**	0	3	0	**3**	**9**	**9**
15:15	15:30	0	0	0	**0**	0	0	1	**1**	**1**	0	5	0	**5**	0	3	0	**3**	**8**	**9**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	4	0	**4**	**7**	**7**
15:45	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**7**	0	3	0	**3**	**10**	**10**
16:00	16:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	2	0	**2**	**4**	**4**
16:15	16:30	0	0	0	**0**	0	0	2	**2**	**2**	0	2	0	**2**	0	3	0	**3**	**5**	**7**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	2	0	**2**	**6**	**6**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	0	**4**	**5**	**5**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	1	0	**1**	**3**	**3**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	1	0	**1**	**4**	**4**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	3	0	**3**	**5**	**5**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	3	0	**3**	**6**	**6**
Total:	None	0	0	0	**0**	1	0	5	**6**	**6**	2	133	2	**137**	1	102	2	**105**	**242**	**249**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016 **WO No:** 36094

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

Full Study 15 Minute U-Turn Total

Time Period		ARTHUR ST/ARTHUR LANE		GLADSTONE AVE		
		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	1	0	**1**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	0	0	**0**
12:15	12:30	0	0	0	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	1	0	**1**

Appendix C

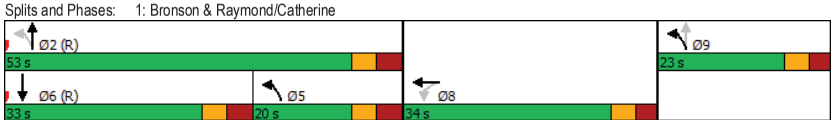
Synchro Intersection Worksheets – Existing Conditions

Lane Group	WBL	WBT	NBL	NBT	SBT	Ø5	Ø9
Lane Configurations							
Traffic Volume (vph)	492	479	519	1038	428		
Future Volume (vph)	492	479	519	1038	428		
Lane Group Flow (vph)	372	1091	577	1153	607		
Turn Type	Perm	NA	pm+pt	NA	NA		
Protected Phases		8	5 9	2	6	5	9
Permitted Phases	8		2	9			
Detector Phase	8	8	5 9	2	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0
Minimum Split (s)	28.3	28.3		24.8	24.8	11.8	11.8
Total Split (s)	34.0	34.0		53.0	33.0	20.0	23.0
Total Split (%)	30.9%	30.9%		48.2%	30.0%	18%	21%
Maximum Green (s)	27.7	27.7		46.2	26.2	13.2	16.8
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0		3.5	3.5	3.5	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	6.3	6.3		6.8	6.8		
Lead/Lag					Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max		C-Max	C-Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		
Flash Dont Walk (s)	15.0	15.0		10.0	10.0		
Pedestrian Calls (#/hr)	40	40		45	26		
Act Effct Green (s)	27.7	27.7	62.4	69.2	26.2		
Actuated g/C Ratio	0.25	0.25	0.57	0.63	0.24		
v/c Ratio	1.06	1.01	0.98	0.55	0.82		
Control Delay	104.4	69.0	45.7	10.6	45.3		
Queue Delay	0.0	0.5	3.9	3.7	52.9		
Total Delay	104.4	69.6	49.6	14.3	98.2		
LOS	F	E	D	B	F		
Approach Delay		78.4		26.1	98.2		
Approach LOS		E		C	F		
Queue Length 50th (m)	~102.0	~87.7	58.1	46.0	62.4		
Queue Length 95th (m)	#168.1	#120.8	#120.3	70.6	#85.8		
Internal Link Dist (m)		247.5		60.4	56.5		
Turn Bay Length (m)	110.0		45.0				
Base Capacity (vph)	352	1077	586	2086	741		
Starvation Cap Reductn	0	0	10	823	136		
Spillback Cap Reductn	0	2	0	52	309		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	1.06	1.01	1.00	0.91	1.41		

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 110

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 57.8 — Intersection LOS: E
Intersection Capacity Utilization 113.3% — 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.

Splits and Phases: 1: Bronson & Raymond/Catherine



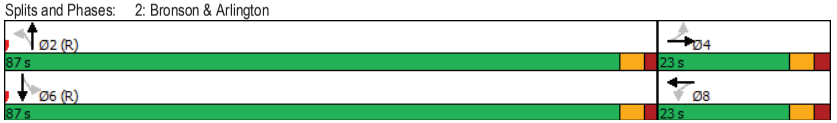
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	9	4	8	2	13	1365	2	514
Future Volume (vph)	9	4	8	2	13	1365	2	514
Lane Group Flow (vph)	0	41	0	23	0	1538	0	589
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	87.0	87.0	87.0	87.0
Total Split (%)	20.9%	20.9%	20.9%	20.9%	79.1%	79.1%	79.1%	79.1%
Maximum Green (s)	17.4	17.4	17.4	17.4	81.8	81.8	81.8	81.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	23	23	19	19	21	21	27	27
Act Effct Green (s)		12.8		12.8		90.6		90.6
Actuated g/C Ratio		0.12		0.12		0.82		0.82
v/c Ratio		0.22		0.15		0.60		0.24
Control Delay		23.9		28.6		4.5		3.3
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		23.9		28.6		4.6		3.4
LOS		C		C		A		A
Approach Delay		23.9		28.6		4.6		3.4
Approach LOS		C		C		A		A
Queue Length 50th (m)		2.8		2.2		32.8		11.9
Queue Length 95th (m)		12.3		9.4		m48.3		23.3
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		243		210		2556		2462
Starvation Cap Reductn		0		0		97		0
Spillback Cap Reductn		3		1		0		456
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.17		0.11		0.63		0.29

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 11 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 4.9 Intersection LOS: A
Intersection Capacity Utilization 70.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



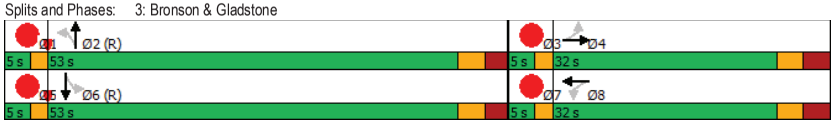
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	46	248	83	155	123	1076	13	384				
Future Volume (vph)	46	248	83	155	123	1076	13	384				
Lane Group Flow (vph)	51	375	92	192	137	1363	14	470				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	32.0	32.0	32.0	32.0	53.0	53.0	53.0	53.0	5.0	5.0	5.0	5.0
Total Split (%)	33.7%	33.7%	33.7%	33.7%	55.8%	55.8%	55.8%	55.8%	5%	5%	5%	5%
Maximum Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	85	85	36	36	36	36	31	31	36	85	31	36
Act Effct Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0				
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.49	0.49	0.49	0.49				
v/c Ratio	0.19	0.88	0.71	0.43	0.36	0.87	0.19	0.30				
Control Delay	29.0	56.1	63.3	32.2	18.3	28.8	21.5	14.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	29.0	56.1	63.3	32.2	18.3	28.8	21.5	14.9				
LOS	C	E	E	C	B	C	C	B				
Approach Delay		52.8		42.3		27.9		15.1				
Approach LOS		D		D		C		B				
Queue Length 50th (m)	7.2	65.7	15.2	29.0	14.8	111.5	1.4	25.8				
Queue Length 95th (m)	16.7	#115.2	#40.6	48.8	29.2	143.8	6.1	36.1				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	265	428	129	445	377	1568	73	1552				
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	0.19	0.88	0.71	0.43	0.36	0.87	0.19	0.30				

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 95
Offset: 26 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 31.0 — Intersection LOS: C
Intersection Capacity Utilization 94.8% — ICU Level of Service F
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



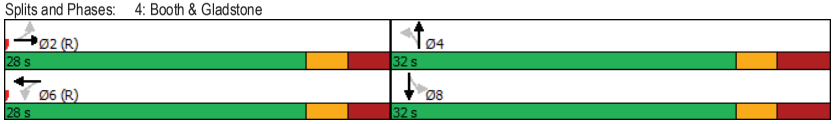
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	300	42	230	51	330	38	130
Future Volume (vph)	26	300	42	230	51	330	38	130
Lane Group Flow (vph)	29	412	47	290	57	453	42	166
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	43	43	28	28	29	29	0	0
Act Effct Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.42	0.42	0.42	0.42
v/c Ratio	0.09	0.69	0.19	0.48	0.12	0.64	0.15	0.23
Control Delay	13.5	22.7	15.6	17.2	9.9	13.3	12.5	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	22.7	15.6	17.2	9.9	13.3	12.5	11.2
LOS	B	C	B	B	A	B	B	B
Approach Delay		22.1		16.9		12.9		11.4
Approach LOS		C		B		B		B
Queue Length 50th (m)	2.0	35.3	3.4	22.6	2.3	17.3	2.7	10.1
Queue Length 95th (m)	6.6	#64.4	10.0	41.3	m6.7	37.1	8.3	20.6
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	332	597	243	609	473	712	288	721
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	0.09	0.69	0.19	0.48	0.12	0.64	0.15	0.23

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 50

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 16.3 Intersection LOS: B
Intersection Capacity Utilization 84.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBT	SBT
Lane Configurations				
Traffic Volume (vph)	30	380	293	0
Future Volume (vph)	30	380	293	0
Lane Group Flow (vph)	0	456	342	40
Turn Type	Perm	NA	NA	NA
Protected Phases		2	6	8
Permitted Phases	2			
Detector Phase	2	2	6	8
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	23.2
Total Split (s)	31.8	31.8	31.8	23.2
Total Split (%)	57.8%	57.8%	57.8%	42.2%
Maximum Green (s)	26.3	26.3	26.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5	5.2
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None
Walk Time (s)	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	84	84	44	35
Act Effct Green (s)		41.3	41.3	13.1
Actuated g/C Ratio		0.74	0.74	0.24
v/c Ratio		0.37	0.27	0.10
Control Delay		7.8	6.8	5.0
Queue Delay		0.0	0.0	0.0
Total Delay		7.8	6.8	5.0
LOS		A	A	A
Approach Delay		7.8	6.8	5.0
Approach LOS		A	A	A
Queue Length 50th (m)		19.5	13.1	0.0
Queue Length 95th (m)		53.5	36.6	4.2
Internal Link Dist (m)		246.0	139.3	183.9
Turn Bay Length (m)				
Base Capacity (vph)		1229	1246	523
Starvation Cap Reductn		0	0	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.37	0.27	0.08

Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 55.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 7.3	Intersection LOS: A
Intersection Capacity Utilization 67.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	218	108	38	378	203
Future Volume (vph)	218	108	38	378	203
Lane Group Flow (vph)	378	120	42	420	264
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%
Maximum Green (s)	20.0	20.0	29.3	29.3	29.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	15	15	48	48	38
Act Effct Green (s)	20.0	20.0	29.3	29.3	29.3
Actuated g/C Ratio	0.33	0.33	0.49	0.49	0.49
v/c Ratio	0.69	0.22	0.09	0.49	0.32
Control Delay	25.4	4.6	8.9	12.9	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	4.6	8.9	12.9	14.2
LOS	C	A	A	B	B
Approach Delay	20.4			12.5	14.2
Approach LOS	C			B	B
Queue Length 50th (m)	35.3	0.0	2.3	28.9	15.7
Queue Length 95th (m)	#63.8	8.9	6.6	49.4	m26.2
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	549	541	486	852	835
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	0.69	0.22	0.09	0.49	0.32

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 35 (58%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 64.2% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Booth & Raymond

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	308	403	1251	920
Future Volume (vph)	308	403	1251	920
Lane Group Flow (vph)	342	448	1390	1022
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	31.9	31.9
Total Split (s)	40.0	40.0	70.0	70.0
Total Split (%)	36.4%	36.4%	63.6%	63.6%
Maximum Green (s)	34.4	34.4	64.1	64.1
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	8	8	0	26
Act Effct Green (s)	34.4	34.4	64.1	64.1
Actuated g/C Ratio	0.31	0.31	0.58	0.58
v/c Ratio	0.66	0.87	0.72	0.55
Control Delay	40.0	47.4	19.2	16.1
Queue Delay	3.1	0.0	0.3	50.6
Total Delay	43.1	47.4	19.5	66.7
LOS	D	D	B	E
Approach Delay	45.5		19.5	66.7
Approach LOS	D		B	E
Queue Length 50th (m)	63.4	74.0	106.2	90.0
Queue Length 95th (m)	94.7	#131.3	131.8	m81.0
Internal Link Dist (m)	243.0		56.2	60.4
Turn Bay Length (m)	42.0			
Base Capacity (vph)	518	513	1932	1859
Starvation Cap Reductn	0	0	0	973
Spillback Cap Reductn	95	0	125	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.87	0.77	1.15

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 46 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 41.0 Intersection LOS: D
Intersection Capacity Utilization 113.3% 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: 8: Hwy 417 EB Ramp & Bronson

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	690	573	292	762	801
Future Volume (vph)	690	573	292	762	801
Lane Group Flow (vph)	430	1274	324	847	1073
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.3	28.3	11.8	24.8	24.8
Total Split (s)	33.0	33.0	25.0	67.0	42.0
Total Split (%)	33.0%	33.0%	25.0%	67.0%	42.0%
Maximum Green (s)	26.7	26.7	18.2	60.2	35.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.8	6.8	6.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0		10.0	10.0
Pedestrian Calls (#/hr)	24	24		29	41
Act Effct Green (s)	26.7	26.7	60.2	60.2	36.1
Actuated g/C Ratio	0.27	0.27	0.60	0.60	0.36
v/c Ratio	1.13	1.09	0.92	0.42	0.92
Control Delay	122.4	86.7	49.7	17.5	27.7
Queue Delay	4.8	6.2	3.4	1.7	47.6
Total Delay	127.3	92.9	53.1	19.1	75.2
LOS	F	F	D	B	E
Approach Delay		101.6		28.5	75.2
Approach LOS		F		C	E
Queue Length 50th (m)	~113.0	~103.8	48.2	66.8	54.7
Queue Length 95th (m)	#180.0	#134.1	#96.1	85.5	#139.3
Internal Link Dist (m)		247.5		63.3	56.5
Turn Bay Length (m)	110.0		45.0		
Base Capacity (vph)	380	1173	366	1996	1166
Starvation Cap Reductn	0	0	14	925	100
Spillback Cap Reductn	128	130	0	0	464
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.71	1.22	0.92	0.79	1.53

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 100

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.13
Intersection Signal Delay: 72.8 — Intersection LOS: E
Intersection Capacity Utilization 117.3% — 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.

Splits and Phases: 1: Bronson & Raymond/Catherine

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	2	2	0	24	996	3	914
Future Volume (vph)	11	2	2	0	24	996	3	914
Lane Group Flow (vph)	0	70	0	15	0	1147	0	1037
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	77.0	77.0	77.0	77.0
Total Split (%)	23.0%	23.0%	23.0%	23.0%	77.0%	77.0%	77.0%	77.0%
Maximum Green (s)	17.4	17.4	17.4	17.4	71.8	71.8	71.8	71.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	19	19	20	20	29	29	39	39
Act Effct Green (s)		12.8		12.8		80.6		80.6
Actuated g/C Ratio		0.13		0.13		0.81		0.81
v/c Ratio		0.31		0.08		0.48		0.41
Control Delay		17.3		10.1		3.4		1.9
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		17.4		10.1		3.4		1.9
LOS		B		B		A		A
Approach Delay		17.4		10.1		3.4		1.9
Approach LOS		B		B		A		A
Queue Length 50th (m)		2.5		0.0		14.7		12.8
Queue Length 95th (m)		14.2		4.0		m32.4		16.3
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		288		253		2395		2504
Starvation Cap Reductn		0		0		140		0
Spillback Cap Reductn		3		0		0		224
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.25		0.06		0.51		0.45

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 29 (29%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.48
Intersection Signal Delay: 3.2 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: 2: Bronson & Arlington

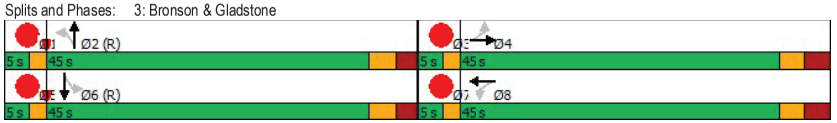
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	46	291	137	220	96	761	49	758				
Future Volume (vph)	46	291	137	220	96	761	49	758				
Lane Group Flow (vph)	51	403	152	263	107	998	54	935				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	5.0	5.0	5.0	5.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	5%	5%	5%	5%
Maximum Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	69	69	68	68	44	44	47	47	44	69	47	68
Act Effct Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0				
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39				
v/c Ratio	0.15	0.64	0.64	0.40	0.91	0.83	0.55	0.75				
Control Delay	21.6	30.7	39.2	24.6	80.4	19.6	48.1	30.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	21.6	30.7	39.2	24.6	80.4	19.6	48.1	30.9				
LOS	C	C	D	C	F	B	D	C				
Approach Delay		29.6		29.9		25.5		31.8				
Approach LOS		C		C		C		C				
Queue Length 50th (m)	6.3	62.5	23.5	36.3	9.6	45.3	8.0	80.7				
Queue Length 95th (m)	14.5	94.7	#51.7	57.4	#51.2	45.8	#26.1	104.3				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	333	628	239	651	117	1209	99	1249				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.15	0.64	0.64	0.40	0.91	0.83	0.55	0.75				

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 40 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 28.8 — Intersection LOS: C
Intersection Capacity Utilization 86.1% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



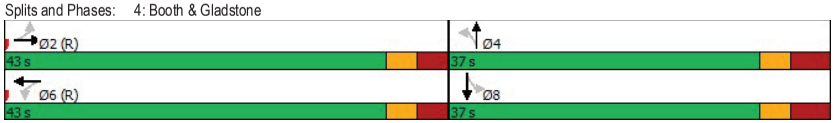
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	37	287	138	431	99	353	47	327
Future Volume (vph)	37	287	138	431	99	353	47	327
Lane Group Flow (vph)	41	366	153	523	110	474	52	385
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	43.0	43.0	43.0	43.0	37.0	37.0	37.0	37.0
Total Split (%)	53.8%	53.8%	53.8%	53.8%	46.3%	46.3%	46.3%	46.3%
Maximum Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	46	46	41	41	27	27	27	27
Act Effct Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.38	0.38	0.38	0.38
v/c Ratio	0.16	0.47	0.43	0.66	0.42	0.74	0.26	0.59
Control Delay	14.7	16.9	29.4	31.5	24.5	29.5	21.6	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	16.9	29.4	31.5	24.5	29.5	21.6	24.4
LOS	B	B	C	C	C	C	C	C
Approach Delay		16.7		31.0		28.5		24.1
Approach LOS		B		C		C		C
Queue Length 50th (m)	3.5	35.4	23.6	83.9	12.1	59.0	5.3	45.5
Queue Length 95th (m)	9.7	57.6	42.3	114.6	26.5	#95.4	14.2	72.8
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	251	772	357	789	264	639	200	650
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.47	0.43	0.66	0.42	0.74	0.26	0.59

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 26.1 Intersection LOS: C
Intersection Capacity Utilization 89.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	31	426	1	499	1
Future Volume (vph)	31	426	1	499	1
Lane Group Flow (vph)	0	514	0	565	75
Turn Type	Perm	NA	Perm	NA	NA
Protected Phases		2		6	8
Permitted Phases	2		6		
Detector Phase	2	2	6	6	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.5	23.2
Total Split (s)	56.8	56.8	56.8	56.8	23.2
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%
Maximum Green (s)	51.3	51.3	51.3	51.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0		0.0	0.0
Total Lost Time (s)		5.5		5.5	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None
Walk Time (s)	19.0	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	75	75	59	59	45
Act Effct Green (s)		58.6		58.6	14.8
Actuated g/C Ratio		0.73		0.73	0.18
v/c Ratio		0.43		0.44	0.25
Control Delay		6.2		7.6	12.1
Queue Delay		0.0		0.2	0.0
Total Delay		6.2		7.9	12.1
LOS		A		A	B
Approach Delay		6.2		7.9	12.1
Approach LOS		A		A	B
Queue Length 50th (m)		21.6		40.0	1.8
Queue Length 95th (m)		32.6		62.2	11.9
Internal Link Dist (m)		246.0		139.3	183.9
Turn Bay Length (m)					
Base Capacity (vph)		1202		1273	352
Starvation Cap Reductn		0		193	0
Spillback Cap Reductn		0		0	0
Storage Cap Reductn		0		0	0
Reduced v/c Ratio		0.43		0.52	0.21

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 7.4 — Intersection LOS: A
Intersection Capacity Utilization 73.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	331	194	31	332	468
Future Volume (vph)	331	194	31	332	468
Lane Group Flow (vph)	565	216	34	369	620
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	44.5	44.5	44.5
Total Split (%)	36.4%	36.4%	63.6%	63.6%	63.6%
Maximum Green (s)	20.0	20.0	39.3	39.3	39.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	14	14	47	47	32
Act Effct Green (s)	20.0	20.0	39.3	39.3	39.3
Actuated g/C Ratio	0.29	0.29	0.56	0.56	0.56
v/c Ratio	1.18	0.39	0.12	0.38	0.65
Control Delay	127.5	5.5	8.5	9.9	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	127.5	5.5	8.5	9.9	14.2
LOS	F	A	A	A	B
Approach Delay	93.7			9.8	14.2
Approach LOS	F			A	B
Queue Length 50th (m)	~90.7	0.0	1.9	24.4	49.0
Queue Length 95th (m)	#145.4	13.8	5.9	40.5	81.1
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	479	558	287	979	954
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	1.18	0.39	0.12	0.38	0.65

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 39 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 65

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 47.6 Intersection LOS: D
Intersection Capacity Utilization 76.5% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Booth & Raymond

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	149	397	907	1491
Future Volume (vph)	149	397	907	1491
Lane Group Flow (vph)	166	441	1008	1657
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	30.9	30.6
Total Split (s)	35.0	35.0	65.0	65.0
Total Split (%)	35.0%	35.0%	65.0%	65.0%
Maximum Green (s)	29.4	29.4	59.1	59.4
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.6
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	3	3	0	61
Act Effct Green (s)	29.4	29.4	59.1	59.4
Actuated g/C Ratio	0.29	0.29	0.59	0.59
v/c Ratio	0.34	1.00	0.51	0.84
Control Delay	30.1	78.3	13.2	25.6
Queue Delay	0.0	0.0	0.4	48.8
Total Delay	30.1	78.3	13.6	74.3
LOS	C	E	B	E
Approach Delay	65.1		13.6	74.3
Approach LOS	E		B	E
Queue Length 50th (m)	25.1	82.4	56.1	183.5
Queue Length 95th (m)	42.8	#145.3	71.9	m183.6
Internal Link Dist (m)	217.3		50.4	63.3
Turn Bay Length (m)	42.0			
Base Capacity (vph)	487	441	1959	1969
Starvation Cap Reductn	0	0	0	945
Spillback Cap Reductn	0	0	442	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	1.00	0.66	1.62

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 53.9 Intersection LOS: D
Intersection Capacity Utilization 117.3% 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: 8: Hwy 417 EB Ramp & Bronson

Appendix D

Collision Data

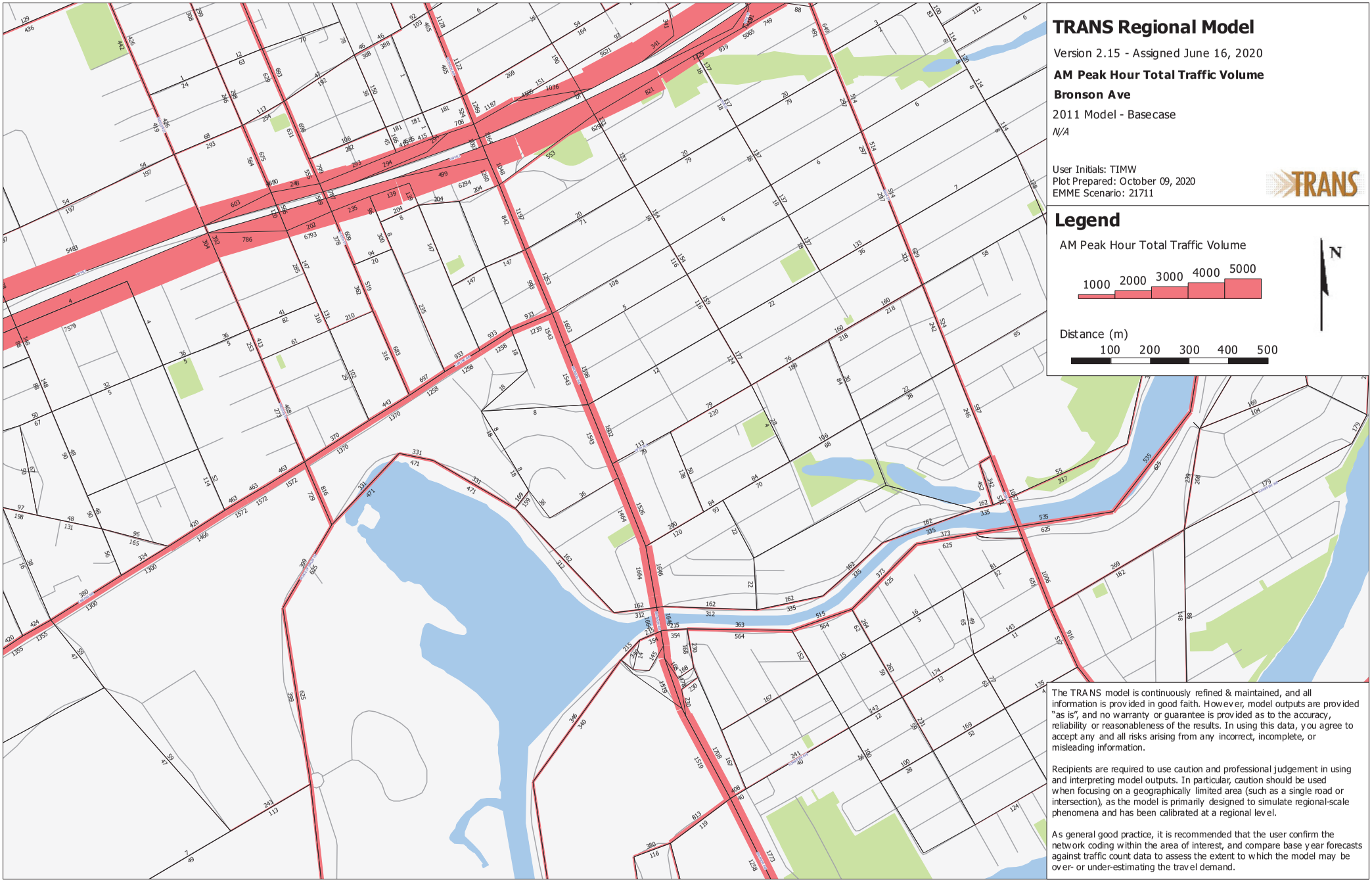
CGH TRANSPORTATION

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2018-01-24	2018	23:29	ARLINGTON AVE @ BELL ST (0005956)	01 - Clear	07 - Dark	02 - Stop sign	01 - Functioning	02 - Non-fatal injury	07 - SMV other	03 - Loose snow	2	0	0	0
2017-06-28	2017	19:56	ARLINGTON AVE btwn ARTHUR LANE N & CAMBRIDGE ST N (__3ZAZBY)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2018-04-03	2018	20:00	ARLINGTON AVE btwn ARTHUR LANE N & CAMBRIDGE ST N (__3ZAZBY)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	2	0	0	0
2018-01-07	2018	Unknown	ARLINGTON AVE btwn BELL ST N & ARTHUR LANE N (__3ZAAJI)	01 - Clear	00 - Unknown	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	03 - Loose snow	2	0	0	0
2020-12-18	2020	Unknown	ARLINGTON AVE btwn BELL ST N & ARTHUR LANE N (__3ZAAJI)	01 - Clear	00 - Unknown	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	2	0	0	0
2016-10-06	2016	14:58	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-02-05	2016	12:35	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2016-03-20	2016	9:06	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2017-01-28	2017	13:39	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	02 - Wet	2	0	0	0
2017-06-27	2017	7:59	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-07-19	2017	2:29	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2017-08-29	2017	10:00	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	2	0	0	0
2017-09-30	2017	23:34	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2018-11-20	2018	8:20	BOOTH ST @ RAYMOND ST (0006498)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	04 - Slush	2	0	1	0
2018-02-03	2018	20:36	BOOTH ST @ RAYMOND ST (0006498)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	03 - Loose snow	2	0	0	0
2018-08-21	2018	17:58	BOOTH ST @ RAYMOND ST (0006498)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	2	0	0	0
2018-09-12	2018	6:55	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-09-27	2019	15:42	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-03-16	2019	11:51	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	02 - Wet	1	0	0	1
2019-06-09	2019	10:50	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
2020-01-13	2020	17:08	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2020-07-03	2020	7:30	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	07 - SMV other	01 - Dry	2	0	0	0
2020-07-15	2020	8:29	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2020-11-10	2020	18:14	BOOTH ST @ RAYMOND ST (0006498)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2016-10-25	2016	13:15	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-11-10	2016	17:30	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-11-16	2016	7:22	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2016-01-06	2016	14:40	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	1	0	0	1
2016-02-16	2016	15:24	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	03 - Loose snow	2	0	0	0
2016-03-17	2016	15:00	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2016-04-05	2016	18:56	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-05-15	2016	20:31	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
2016-06-28	2016	12:35	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-06-22	2016	19:39	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2016-08-28	2016	21:06	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-08-12	2016	12:36	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-01-19	2016	19:28	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	04 - Slush	1	0	0	0
2016-09-02	2016	15:03	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2016-09-05	2016	8:23	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	01 - Dry	2	0	0	0
2017-09-30	2017	20:20	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-01-30	2017	9:43	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	06 - Ice	2	0	0	0
2017-12-13	2017	10:36	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	02 - Wet	2	0	0	0
2017-12-17	2017	12:28	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	02 - Wet	1	0	1	1
2017-02-20	2017	13:41	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2017-02-13	2017	5:50	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	06 - Ice	2	0	0	0
2017-02-25	2017	17:09	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2017-04-07	2017	0:01	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	0
2017-04-07	2017	0:11	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	02 - Wet	2	0	0	0
2017-06-11	2017	2:00	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-07-18	2017	18:53	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-08-23	2017	14:15	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
2017-08-10	2017	17:42	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-09-02	2017	18:53	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2018-10-08	2018	18:30	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2018-09-27	2018	21:59	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-10-29	2018	21:25	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2018-12-18	2018	0:34	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	1	0	0	1
2018-02-19	2018	14:00	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	07 - SMV other	01 - Dry	2	0	0	0
2018-03-05	2018	16:25	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-04-30	2018	16:36	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-05-03	2018	16:51	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2018-04-13	2018	23:12	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2018-01-09	2018	17:37	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	04 - Slush	2	0	0	0
2018-08-04	2018	6:48	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2018-07-30	2018	15:29	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2018-01-15	2018	13:11	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-08-22	2019	17:10	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-08-26	2019	16:30	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-09-09	2019	16:24	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-09-16	2019	8:20	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-09-29	2019	13:18	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-10-19	2019	12:09	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
2019-10-30	2019	15:05	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	4	0	0	0
2019-11-16	2019	13:10	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-11-27	2019	14:40	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2019-12-24	2019	11:28	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-04-03	2019	11:30	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-03-20	2019	11:24	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-05-03	2019	5:30	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	03 - Dawn	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2019-04-16	2019	14:01	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-06-22	2019	8:06	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-06-04	2019	8:45	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-07-10	2019	13:52	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	2	0	0	0
2019-08-12	2019	20:10	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-08-16	2019	8:11	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2020-01-21	2020	9:36	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2020-01-21	2020	14:20	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	05 - Packed snow	2	0	0	0
2020-03-09	2020	15:00	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	02 - Wet	1	0	0	1
2020-03-14	2020	20:53	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2020-04-30	2020	13:11	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	02 - Wet	1	0	0	0
2020-07-08	2020	8:59	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2020-01-15	2020	10:11	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Not functioning	03 - P.D. only	03 - Rear end	01 - Dry	4	0	0	0
2020-09-16	2020	7:30	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2020-10-27	2020	8:50	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2020-09-24	2020	21:25	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2020-10-20	2020	6:57	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	03 - Dawn	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2020-11-14	2020	20:37	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2020-11-01	2020	17:24	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	2	0	0	0
2020-12-29	2020	13:15	BRONSON AVE @ CATHERINE ST/RAYMOND ST (0007198)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2016-05-13	2016	10:30	CAMBRIDGE ST N btwn ARLINGTON AVE & RAYMOND ST (__3ZA0PN)	02 - Rain	01 - Daylight	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	02 - Wet	2	0	0	0
2016-10-20	2016	12:46	LEBRETON ST @ RAYMOND ST (0006550)	02 - Rain	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2017-07-25	2017	16:12	LEBRETON ST @ RAYMOND ST (0006550)	01 - Clear	01 - Daylight	02 - Stop sign	00 - Unknown	03 - P.D. only	04 - Sideswipe	01 - Dry	1	0	0	1
2018-08-08	2018	8:58	RAYMOND ST btwn HWY417 IC121A RAMP16 & BRONSON AVE (__3ZA890)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-08-29	2018	12:32	RAYMOND ST btwn HWY417 IC121A RAMP16 & BRONSON AVE (__3ZA890)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	1	0	0	0
2020-02-25	2020	13:47	RAYMOND ST btwn HWY417 IC121A RAMP16 & BRONSON AVE (__3ZA890)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2020-04-30	2020	23:59	RAYMOND ST btwn HWY417 IC121A RAMP16 & BRONSON AVE (__3ZA890)	02 - Rain	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	1

2020-08-25	2020	15:11	RAYMOND ST btwn HWY417 IC121A RAMP16 & BRONSON AVE (__3ZA890)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	1	0	0	0
2020-08-26	2020	17:51	RAYMOND ST btwn HWY417 IC121A RAMP16 & BRONSON AVE (__3ZA890)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	1	0	0	0
2018-10-24	2018	19:26	RAYMOND ST btwn LEBRETON ST N & BELL ST N (__3ZAAIL)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	0

Appendix E

TRANS Model Plots



TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Bronson Ave

2011 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: October 09, 2020
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

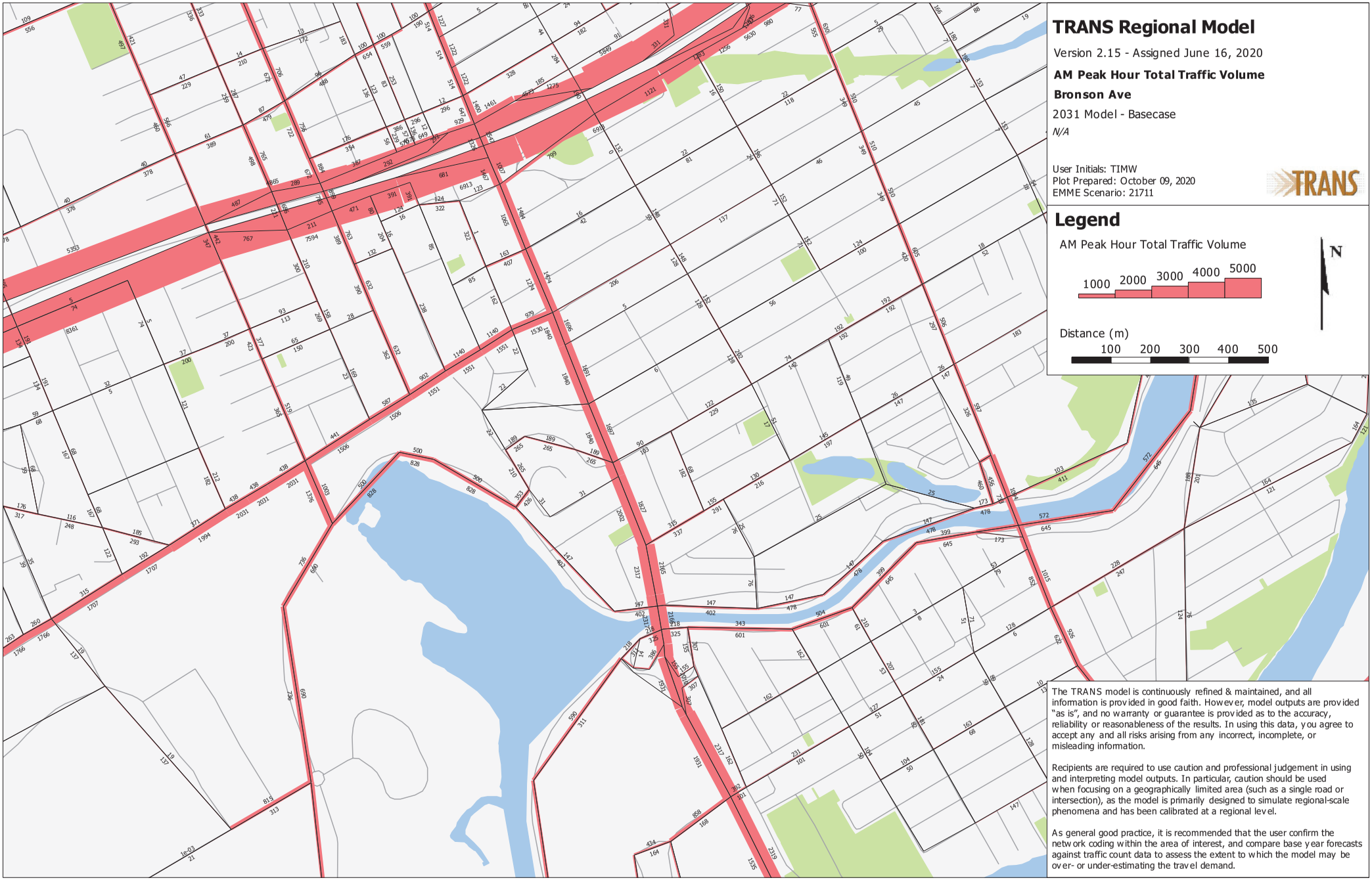
100 200 300 400 500

N

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

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

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



TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Bronson Ave

2031 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: October 09, 2020
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

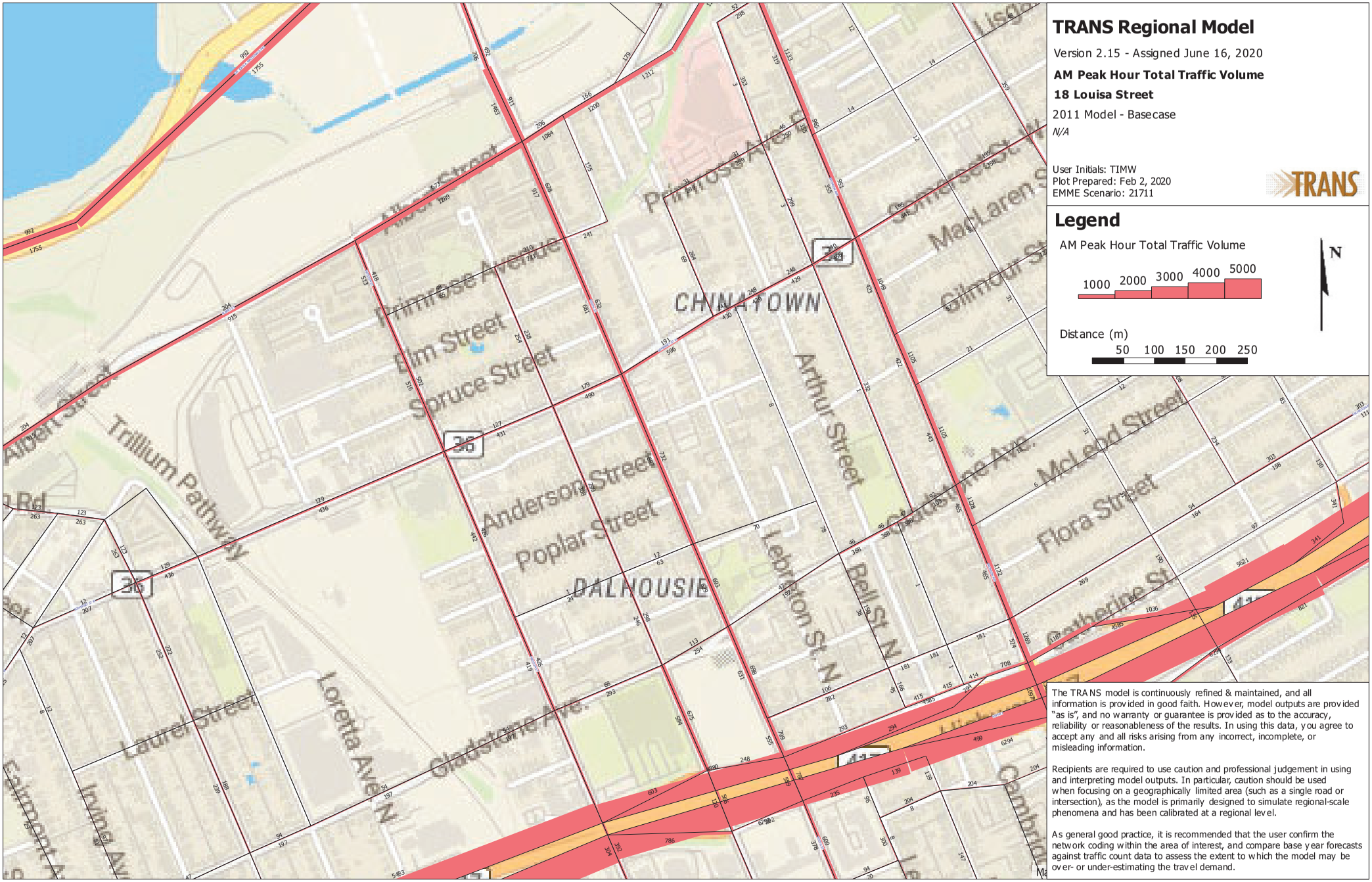
100 200 300 400 500

N

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

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

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



TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

18 Louisa Street

2011 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: Feb 2, 2020
EMME Scenario: 21711

TRANS

Legend

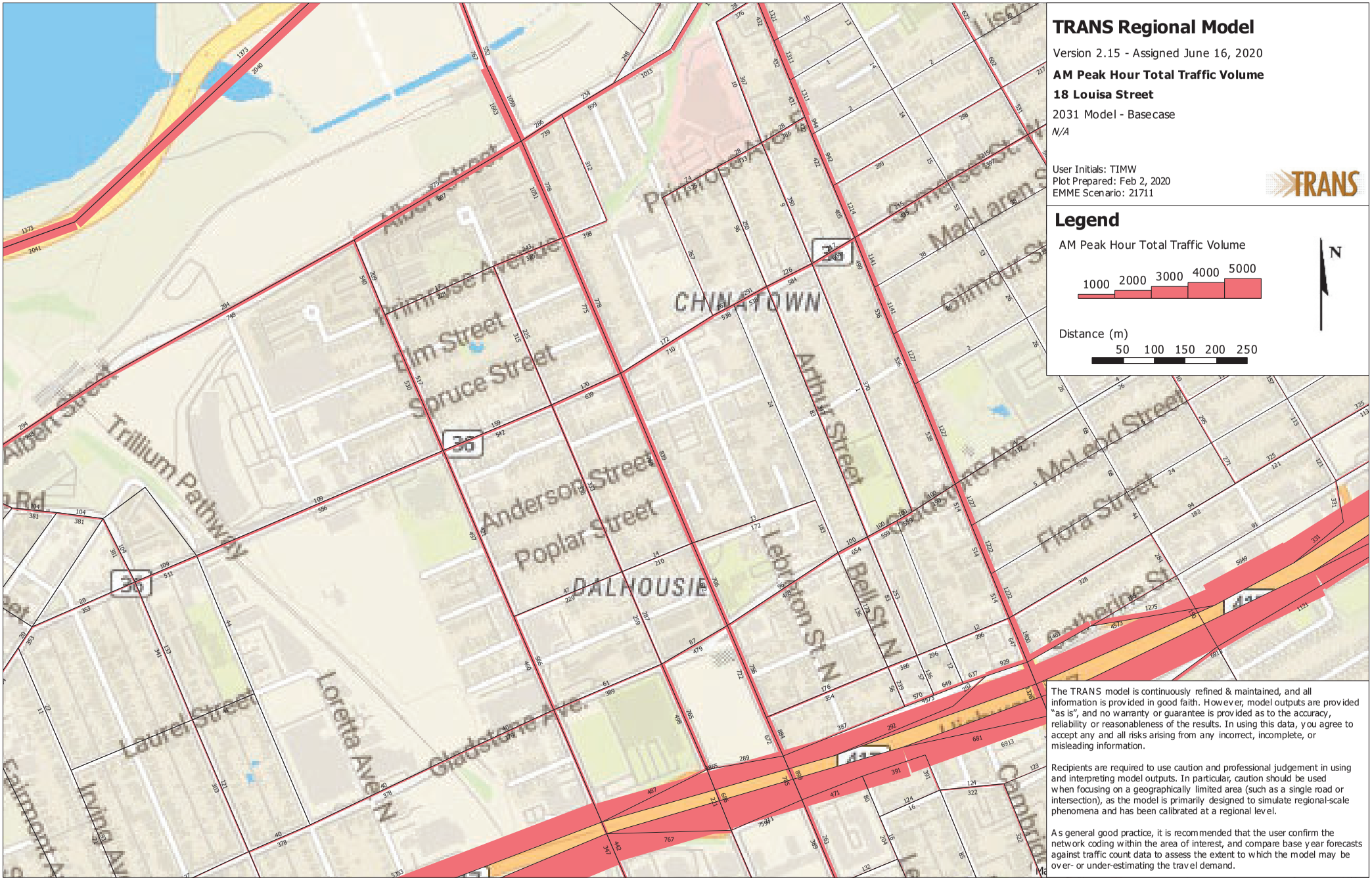
AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

50 100 150 200 250

N



TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

18 Louisa Street

2031 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: Feb 2, 2020
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

50 100 150 200 250

N

Appendix F

Background Development Volumes

CGH TRANSPORTATION

Figure 12: Total 'New' and 'Pass-By' Site-Generated Traffic

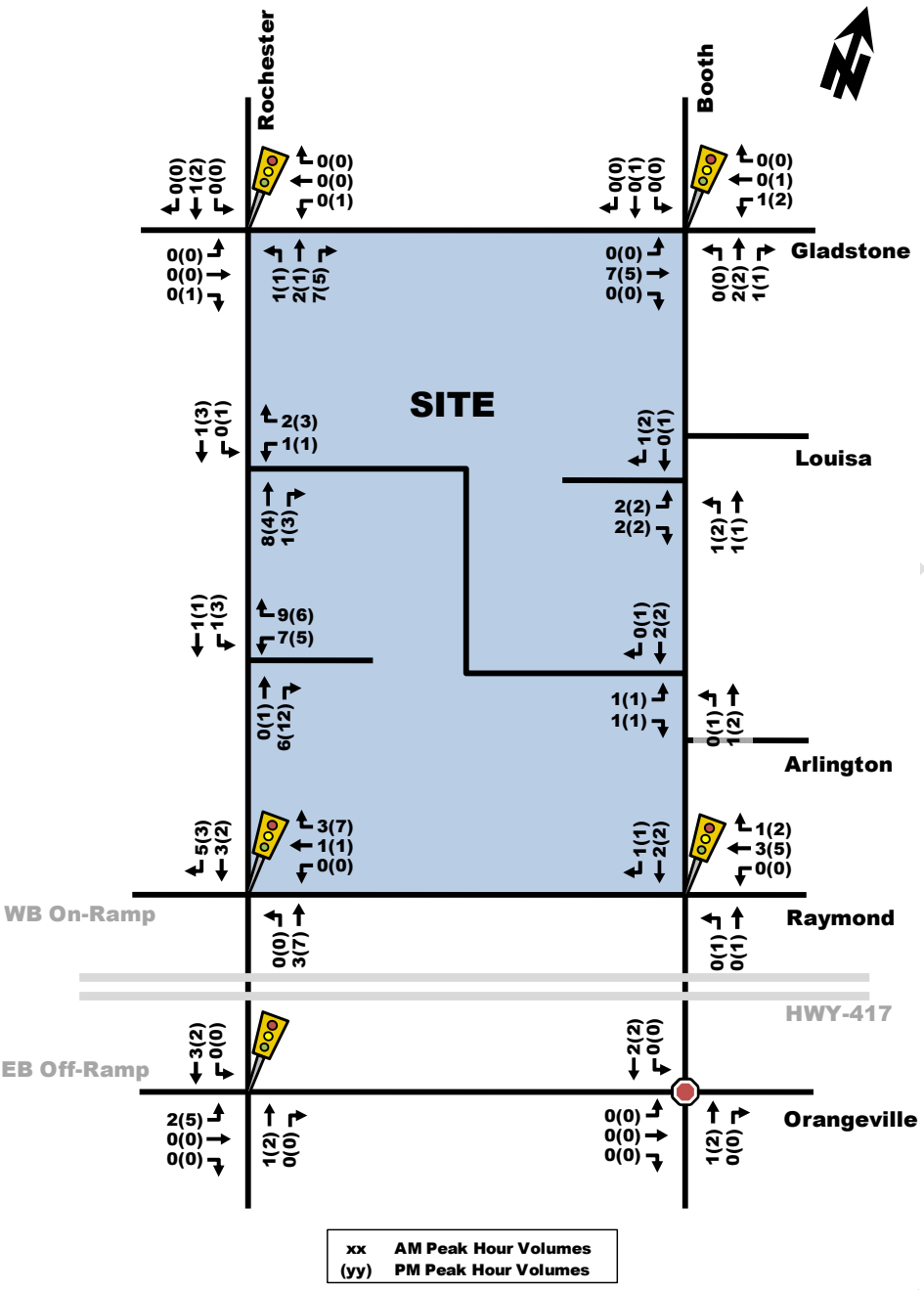
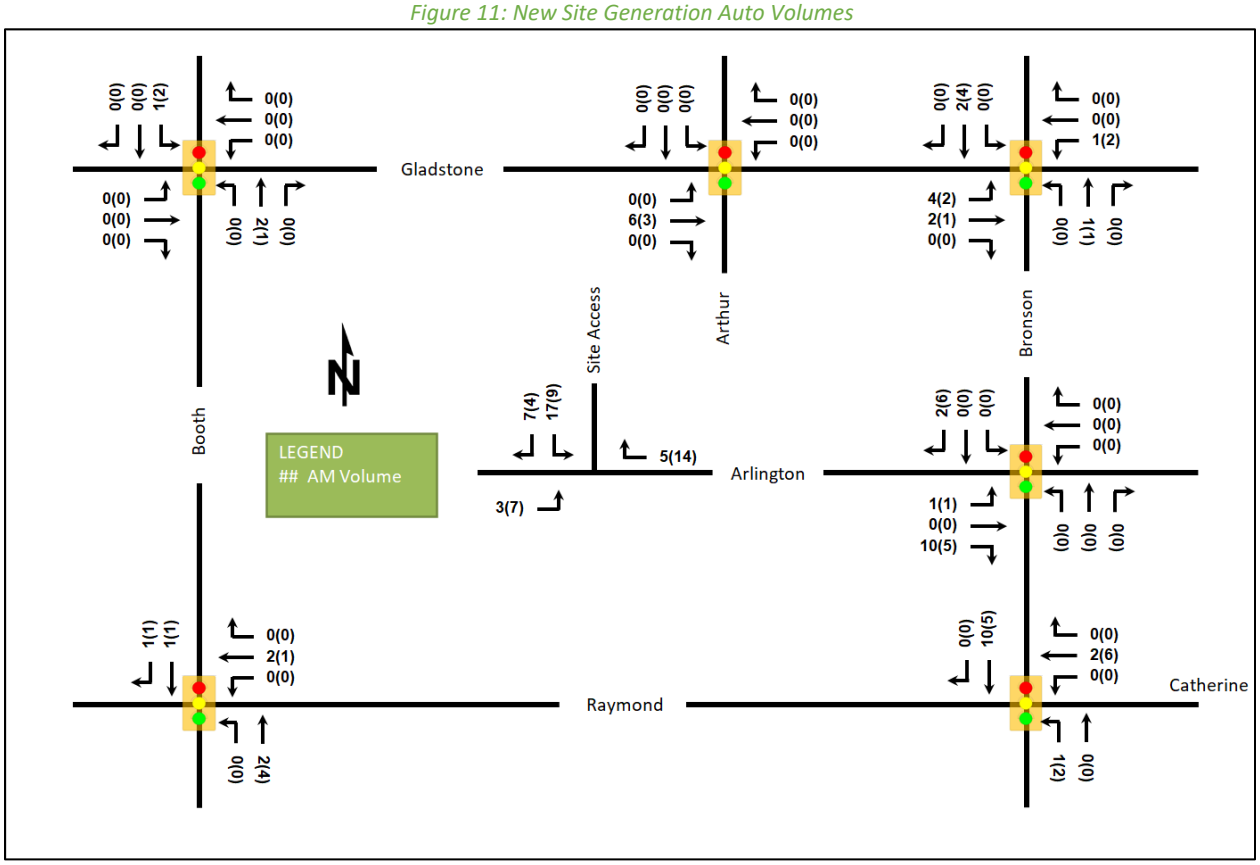


Figure 11: New Site Generation Auto Volumes



Appendix G

Synchro Intersection Worksheets – 2026 Future Background Conditions

CGH TRANSPORTATION

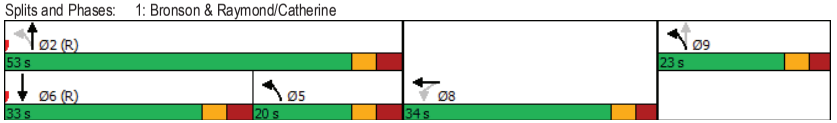
Lane Group	WBL	WBT	NBL	NBT	SBT	Ø5	Ø9
Lane Configurations							
Traffic Volume (vph)	533	523	543	1080	465		
Future Volume (vph)	533	523	543	1080	465		
Lane Group Flow (vph)	357	1045	543	1080	583		
Turn Type	Perm	NA	pm+pt	NA	NA		
Protected Phases		8	5 9	2	6	5	9
Permitted Phases	8		2	9			
Detector Phase	8	8	5 9	2	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0
Minimum Split (s)	28.3	28.3		24.8	24.8	11.8	11.8
Total Split (s)	34.0	34.0		53.0	33.0	20.0	23.0
Total Split (%)	30.9%	30.9%		48.2%	30.0%	18%	21%
Maximum Green (s)	27.7	27.7		46.2	26.2	13.2	16.8
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0		3.5	3.5	3.5	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	6.3	6.3		6.8	6.8		
Lead/Lag					Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max		C-Max	C-Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		
Flash Dont Walk (s)	15.0	15.0		10.0	10.0		
Pedestrian Calls (#/hr)	40	40		45	26		
Act Effct Green (s)	27.7	27.7	62.4	69.2	26.2		
Actuated g/C Ratio	0.25	0.25	0.57	0.63	0.24		
v/c Ratio	1.01	0.96	0.91	0.52	0.79		
Control Delay	93.5	56.3	31.8	9.3	43.6		
Queue Delay	0.0	0.2	1.5	2.4	53.1		
Total Delay	93.5	56.5	33.4	11.7	96.6		
LOS	F	E	C	B	F		
Approach Delay		65.9		19.0	96.6		
Approach LOS		E		B	F		
Queue Length 50th (m)	~91.6	79.4	44.1	39.5	59.6		
Queue Length 95th (m)	#159.3	#110.1	#94.2	59.1	80.2		
Internal Link Dist (m)		247.5		60.4	56.5		
Turn Bay Length (m)	110.0		45.0				
Base Capacity (vph)	352	1091	595	2086	741		
Starvation Cap Reductn	0	0	11	837	144		
Spillback Cap Reductn	0	2	0	39	291		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	1.01	0.96	0.93	0.86	1.30		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 49.8 Intersection LOS: D
Intersection Capacity Utilization 120.4% 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.

Splits and Phases: 1: Bronson & Raymond/Catherine



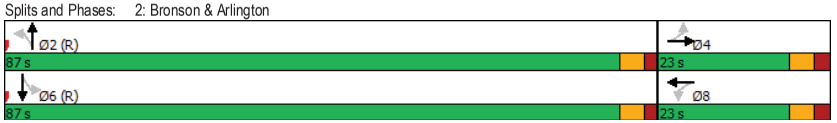
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	4	8	2	13	1421	2	547
Future Volume (vph)	10	4	8	2	13	1421	2	547
Lane Group Flow (vph)	0	48	0	21	0	1440	0	565
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	87.0	87.0	87.0	87.0
Total Split (%)	20.9%	20.9%	20.9%	20.9%	79.1%	79.1%	79.1%	79.1%
Maximum Green (s)	17.4	17.4	17.4	17.4	81.8	81.8	81.8	81.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	23	23	19	19	21	21	27	27
Act Effct Green (s)		12.8		12.8		90.6		90.6
Actuated g/C Ratio		0.12		0.12		0.82		0.82
v/c Ratio		0.25		0.13		0.56		0.23
Control Delay		22.6		29.0		4.0		3.3
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		22.6		29.0		4.0		3.3
LOS		C		C		A		A
Approach Delay		22.6		29.0		4.0		3.3
Approach LOS		C		C		A		A
Queue Length 50th (m)		2.8		2.0		29.4		11.2
Queue Length 95th (m)		13.1		9.0		m44.6		22.3
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		250		210		2559		2462
Starvation Cap Reductn		0		0		96		0
Spillback Cap Reductn		4		1		0		393
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.20		0.10		0.58		0.27

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 11 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 4.5 Intersection LOS: A
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



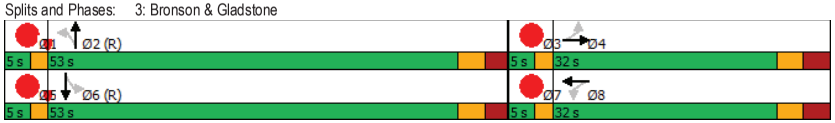
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	51	322	84	179	123	1121	13	410				
Future Volume (vph)	51	322	84	179	123	1121	13	410				
Lane Group Flow (vph)	51	412	84	197	123	1271	13	449				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	32.0	32.0	32.0	32.0	53.0	53.0	53.0	53.0	5.0	5.0	5.0	5.0
Total Split (%)	33.7%	33.7%	33.7%	33.7%	55.8%	55.8%	55.8%	55.8%	5%	5%	5%	5%
Maximum Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	85	85	36	36	36	36	31	31	36	85	31	36
Act Effct Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0				
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.49	0.49	0.49	0.49				
v/c Ratio	0.20	0.95	0.81	0.44	0.32	0.81	0.14	0.29				
Control Delay	29.1	67.4	84.0	32.4	17.3	25.4	17.7	14.8				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	29.1	67.4	84.0	32.4	17.3	25.4	17.7	14.8				
LOS	C	E	F	C	B	C	B	B				
Approach Delay		63.2		47.9		24.7		14.9				
Approach LOS		E		D		C		B				
Queue Length 50th (m)	7.2	74.0	14.3	29.9	13.0	98.9	1.2	24.4				
Queue Length 95th (m)	16.8	#130.0	#41.1	50.0	25.8	127.7	5.3	34.4				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	261	435	104	446	387	1569	93	1555				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.20	0.95	0.81	0.44	0.32	0.81	0.14	0.29				

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 95
Offset: 26 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 32.3 — Intersection LOS: C
Intersection Capacity Utilization 100.0% — ICU Level of Service F
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



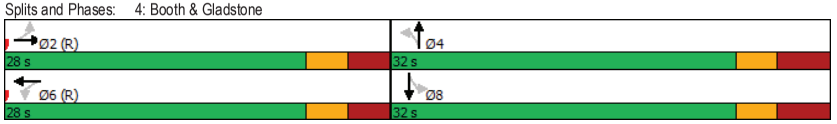
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	387	43	264	51	361	39	138
Future Volume (vph)	26	387	43	264	51	361	39	138
Lane Group Flow (vph)	26	458	43	295	51	439	39	158
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	43	43	28	28	29	29	0	0
Act Effct Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.42	0.42	0.42	0.42
v/c Ratio	0.08	0.76	0.20	0.48	0.11	0.62	0.13	0.22
Control Delay	13.4	26.8	16.2	17.4	9.7	12.9	12.2	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	26.8	16.2	17.4	9.7	12.9	12.2	11.1
LOS	B	C	B	B	A	B	B	B
Approach Delay		26.1		17.3		12.5		11.3
Approach LOS		C		B		B		B
Queue Length 50th (m)	1.8	41.4	3.2	23.3	2.1	16.7	2.5	9.5
Queue Length 95th (m)	6.1	#83.8	9.7	42.4	m6.0	35.0	7.7	19.7
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	327	600	210	609	476	713	299	721
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	0.08	0.76	0.20	0.48	0.11	0.62	0.13	0.22

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 88.2% 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: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBT	SBT
Lane Configurations				
Traffic Volume (vph)	30	495	338	0
Future Volume (vph)	30	495	338	0
Lane Group Flow (vph)	0	526	352	36
Turn Type	Perm	NA	NA	NA
Protected Phases		2	6	8
Permitted Phases	2			
Detector Phase	2	2	6	8
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	23.2
Total Split (s)	31.8	31.8	31.8	23.2
Total Split (%)	57.8%	57.8%	57.8%	42.2%
Maximum Green (s)	26.3	26.3	26.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5	5.2
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None
Walk Time (s)	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	84	84	44	35
Act Effct Green (s)		42.0	42.0	13.2
Actuated g/C Ratio		0.75	0.75	0.23
v/c Ratio		0.42	0.28	0.09
Control Delay		8.3	6.8	4.5
Queue Delay		0.0	0.0	0.0
Total Delay		8.3	6.8	4.5
LOS		A	A	A
Approach Delay		8.3	6.8	4.5
Approach LOS		A	A	A
Queue Length 50th (m)		23.8	13.6	0.0
Queue Length 95th (m)		64.9	37.9	3.7
Internal Link Dist (m)		246.0	139.3	183.9
Turn Bay Length (m)				
Base Capacity (vph)		1247	1256	519
Starvation Cap Reductn		0	0	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.42	0.28	0.07

Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 56.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 7.6	Intersection LOS: A
Intersection Capacity Utilization 73.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	223	109	38	411	219
Future Volume (vph)	223	109	38	411	219
Lane Group Flow (vph)	345	109	38	411	255
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%
Maximum Green (s)	20.0	20.0	29.3	29.3	29.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	15	15	48	48	38
Act Effct Green (s)	20.0	20.0	29.3	29.3	29.3
Actuated g/C Ratio	0.33	0.33	0.49	0.49	0.49
v/c Ratio	0.63	0.20	0.08	0.48	0.31
Control Delay	23.0	4.7	8.8	12.7	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	4.7	8.8	12.7	14.3
LOS	C	A	A	B	B
Approach Delay	18.6			12.3	14.3
Approach LOS	B			B	B
Queue Length 50th (m)	31.3	0.0	2.1	28.1	15.9
Queue Length 95th (m)	55.2	8.5	6.1	48.0	m25.4
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	549	534	491	852	835
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	0.63	0.20	0.08	0.48	0.31

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 35 (58%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 15.2 — Intersection LOS: B
Intersection Capacity Utilization 64.4% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Booth & Raymond

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	349	454	1303	988
Future Volume (vph)	349	454	1303	988
Lane Group Flow (vph)	349	454	1303	988
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	31.9	31.9
Total Split (s)	40.0	40.0	70.0	70.0
Total Split (%)	36.4%	36.4%	63.6%	63.6%
Maximum Green (s)	34.4	34.4	64.1	64.1
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	8	8	0	26
Act Effct Green (s)	34.4	34.4	64.1	64.1
Actuated g/C Ratio	0.31	0.31	0.58	0.58
v/c Ratio	0.67	0.88	0.67	0.53
Control Delay	40.6	47.1	18.0	15.6
Queue Delay	1.4	0.0	0.1	50.6
Total Delay	41.9	47.1	18.1	66.2
LOS	D	D	B	E
Approach Delay	44.8		18.1	66.2
Approach LOS	D		B	E
Queue Length 50th (m)	65.0	73.8	95.2	86.1
Queue Length 95th (m)	97.2	#132.4	118.4	m79.3
Internal Link Dist (m)	243.0		56.2	60.4
Turn Bay Length (m)	42.0			
Base Capacity (vph)	518	518	1932	1859
Starvation Cap Reductn	0	0	0	970
Spillback Cap Reductn	56	0	51	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.88	0.69	1.11

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 46 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 40.4 Intersection LOS: D
Intersection Capacity Utilization 120.4% 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.

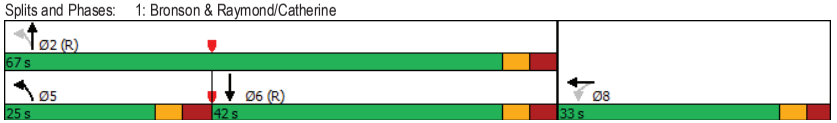
Splits and Phases: 8: Hwy 417 EB Ramp & Bronson

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	690	584	314	809	840
Future Volume (vph)	690	584	314	809	840
Lane Group Flow (vph)	386	1158	314	809	1005
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.3	28.3	11.8	24.8	24.8
Total Split (s)	33.0	33.0	25.0	67.0	42.0
Total Split (%)	33.0%	33.0%	25.0%	67.0%	42.0%
Maximum Green (s)	26.7	26.7	18.2	60.2	35.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.8	6.8	6.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0		10.0	10.0
Pedestrian Calls (#/hr)	24	24		29	41
Act Effct Green (s)	26.7	26.7	60.2	60.2	36.6
Actuated g/C Ratio	0.27	0.27	0.60	0.60	0.37
v/c Ratio	1.02	0.99	0.87	0.41	0.85
Control Delay	88.2	58.7	40.9	17.4	20.8
Queue Delay	32.9	38.1	1.8	1.5	49.6
Total Delay	121.0	96.8	42.7	18.9	70.5
LOS	F	F	D	B	E
Approach Delay		102.9		25.5	70.5
Approach LOS		F		C	E
Queue Length 50th (m)	~89.1	82.0	44.1	63.2	34.3
Queue Length 95th (m)	#156.3	#115.4	#85.6	81.4	#125.3
Internal Link Dist (m)		247.5		63.3	56.5
Turn Bay Length (m)	110.0		45.0		
Base Capacity (vph)	380	1171	380	1996	1182
Starvation Cap Reductn	0	0	15	944	134
Spillback Cap Reductn	129	132	0	0	465
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.54	1.11	0.86	0.77	1.40

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 70.4 Intersection LOS: E
Intersection Capacity Utilization 120.2% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Bronson & Raymond/Catherine



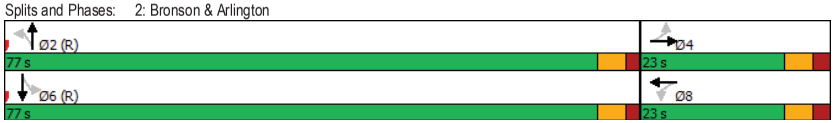
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	12	2	2	0	24	1057	3	952
Future Volume (vph)	12	2	2	0	24	1057	3	952
Lane Group Flow (vph)	0	69	0	14	0	1093	0	977
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	77.0	77.0	77.0	77.0
Total Split (%)	23.0%	23.0%	23.0%	23.0%	77.0%	77.0%	77.0%	77.0%
Maximum Green (s)	17.4	17.4	17.4	17.4	71.8	71.8	71.8	71.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	19	19	20	20	29	29	39	39
Act Effct Green (s)		12.8		12.8		80.6		80.6
Actuated g/C Ratio		0.13		0.13		0.81		0.81
v/c Ratio		0.31		0.07		0.45		0.39
Control Delay		17.5		9.4		3.1		1.8
Queue Delay		0.0		0.0		0.1		0.0
Total Delay		17.5		9.4		3.2		1.9
LOS		B		A		A		A
Approach Delay		17.5		9.4		3.2		1.9
Approach LOS		B		A		A		A
Queue Length 50th (m)		2.5		0.0		13.1		11.8
Queue Length 95th (m)		14.0		3.7		m29.1		14.7
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		287		253		2416		2502
Starvation Cap Reductn		0		0		226		0
Spillback Cap Reductn		2		0		0		183
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.24		0.06		0.50		0.42

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 29 (29%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 3.1 Intersection LOS: A
Intersection Capacity Utilization 69.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



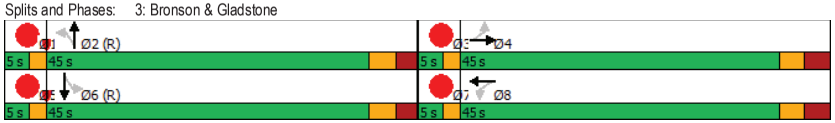
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	49	340	139	281	96	809	49	793				
Future Volume (vph)	49	340	139	281	96	809	49	793				
Lane Group Flow (vph)	49	413	139	298	96	946	49	878				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	5.0	5.0	5.0	5.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	5%	5%	5%	5%
Maximum Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	69	69	68	68	44	44	47	47	44	69	47	68
Act Effct Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0				
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39				
v/c Ratio	0.16	0.65	0.60	0.46	0.72	0.78	0.43	0.70				
Control Delay	21.8	31.0	37.3	25.6	42.1	16.9	36.8	29.3				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	21.8	31.0	37.3	25.6	42.1	16.9	36.8	29.3				
LOS	C	C	D	C	D	B	D	C				
Approach Delay		30.1		29.3		19.2		29.7				
Approach LOS		C		C		B		C				
Queue Length 50th (m)	6.1	64.5	21.1	42.2	5.1	37.4	6.8	73.8				
Queue Length 95th (m)	14.3	97.5	43.6	65.4	#41.9	36.1	19.3	95.8				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	310	632	232	653	134	1211	114	1250				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.16	0.65	0.60	0.46	0.72	0.78	0.43	0.70				

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 40 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 25.9 Intersection LOS: C
Intersection Capacity Utilization 90.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



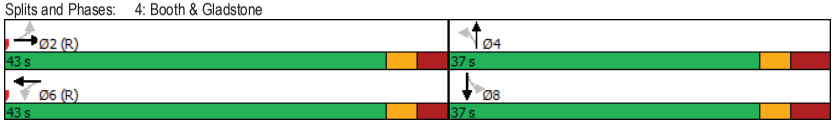
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	37	335	140	547	99	378	49	355
Future Volume (vph)	37	335	140	547	99	378	49	355
Lane Group Flow (vph)	37	377	140	587	99	453	49	375
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	43.0	43.0	43.0	43.0	37.0	37.0	37.0	37.0
Total Split (%)	53.8%	53.8%	53.8%	53.8%	46.3%	46.3%	46.3%	46.3%
Maximum Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	46	46	41	41	27	27	27	27
Act Effct Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.38	0.38	0.38	0.38
v/c Ratio	0.18	0.49	0.40	0.74	0.37	0.71	0.23	0.58
Control Delay	15.4	17.2	29.4	34.9	23.0	27.8	20.6	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	17.2	29.4	34.9	23.0	27.8	20.6	24.0
LOS	B	B	C	C	C	C	C	C
Approach Delay		17.0		33.8		27.0		23.6
Approach LOS		B		C		C		C
Queue Length 50th (m)	3.2	37.0	22.0	96.3	10.7	55.6	5.0	43.9
Queue Length 95th (m)	9.3	59.8	40.1	128.2	23.6	88.6	13.0	70.5
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	208	775	349	792	271	639	215	650
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	0.18	0.49	0.40	0.74	0.37	0.71	0.23	0.58

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 26.7 — Intersection LOS: C
Intersection Capacity Utilization 97.7% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	31	499	1	635	1
Future Volume (vph)	31	499	1	635	1
Lane Group Flow (vph)	0	536	0	645	68
Turn Type	Perm	NA	Perm	NA	NA
Protected Phases		2		6	8
Permitted Phases	2		6		
Detector Phase	2	2	6	6	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.5	23.2
Total Split (s)	56.8	56.8	56.8	56.8	23.2
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%
Maximum Green (s)	51.3	51.3	51.3	51.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0		0.0	0.0
Total Lost Time (s)		5.5		5.5	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None
Walk Time (s)	19.0	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	75	75	59	59	45
Act Effct Green (s)		58.6		58.6	14.8
Actuated g/C Ratio		0.73		0.73	0.18
v/c Ratio		0.44		0.51	0.23
Control Delay		5.9		8.5	12.3
Queue Delay		0.0		0.3	0.0
Total Delay		5.9		8.8	12.3
LOS		A		A	B
Approach Delay		5.9		8.8	12.3
Approach LOS		A		A	B
Queue Length 50th (m)		20.7		49.0	1.7
Queue Length 95th (m)		31.3		76.5	11.3
Internal Link Dist (m)		246.0		139.3	183.9
Turn Bay Length (m)					
Base Capacity (vph)		1206		1274	348
Starvation Cap Reductn		0		178	0
Spillback Cap Reductn		0		0	0
Storage Cap Reductn		0		0	0
Reduced v/c Ratio		0.44		0.59	0.20

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 7.7 Intersection LOS: A
Intersection Capacity Utilization 77.5% ICU Level of Service D
Analysis Period (min) 15

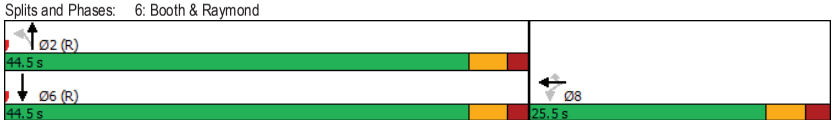
Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	337	196	32	357	510
Future Volume (vph)	337	196	32	357	510
Lane Group Flow (vph)	514	196	32	357	602
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	44.5	44.5	44.5
Total Split (%)	36.4%	36.4%	63.6%	63.6%	63.6%
Maximum Green (s)	20.0	20.0	39.3	39.3	39.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	14	14	47	47	32
Act Effct Green (s)	20.0	20.0	39.3	39.3	39.3
Actuated g/C Ratio	0.29	0.29	0.56	0.56	0.56
v/c Ratio	1.07	0.36	0.11	0.36	0.63
Control Delay	89.9	5.5	8.3	9.8	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	89.9	5.5	8.3	9.8	13.7
LOS	F	A	A	A	B
Approach Delay	66.6			9.7	13.7
Approach LOS	E			A	B
Queue Length 50th (m)	~76.5	0.0	1.8	23.4	46.8
Queue Length 95th (m)	#129.2	13.2	5.6	39.0	77.3
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	479	544	299	979	955
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	1.07	0.36	0.11	0.36	0.63

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 39 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 34.9 Intersection LOS: C
Intersection Capacity Utilization 79.3% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Booth & Raymond



Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	152	397	964	1558
Future Volume (vph)	152	397	964	1558
Lane Group Flow (vph)	152	397	964	1558
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	30.9	30.6
Total Split (s)	35.0	35.0	65.0	65.0
Total Split (%)	35.0%	35.0%	65.0%	65.0%
Maximum Green (s)	29.4	29.4	59.1	59.4
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.6
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	3	3	0	61
Act Effct Green (s)	29.4	29.4	59.1	59.4
Actuated g/C Ratio	0.29	0.29	0.59	0.59
v/c Ratio	0.31	0.89	0.49	0.79
Control Delay	29.6	56.0	12.9	25.9
Queue Delay	0.0	0.0	0.3	49.1
Total Delay	29.6	56.0	13.1	75.1
LOS	C	E	B	E
Approach Delay	48.7		13.1	75.1
Approach LOS	D		B	E
Queue Length 50th (m)	22.8	69.7	52.7	171.7
Queue Length 95th (m)	39.6	#124.0	67.7	m184.0
Internal Link Dist (m)	217.3		50.4	63.3
Turn Bay Length (m)	42.0			
Base Capacity (vph)	487	445	1959	1969
Starvation Cap Reductn	0	0	0	935
Spillback Cap Reductn	0	0	366	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.89	0.61	1.51

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 75

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 50.9 Intersection LOS: D
Intersection Capacity Utilization 120.2% 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: 8: Hwy 417 EB Ramp & Bronson

Appendix H

Synchro Intersection Worksheets – 2031 Future Background Conditions

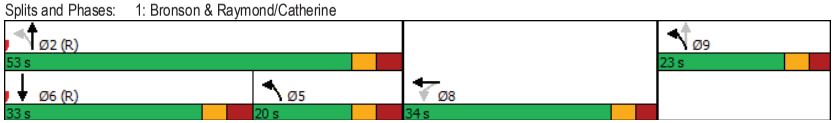
Lane Group	WBL	WBT	NBL	NBT	SBT	Ø5	Ø9
Lane Configurations							
Traffic Volume (vph)	560	549	557	1108	483		
Future Volume (vph)	560	549	557	1108	483		
Lane Group Flow (vph)	370	1085	557	1108	601		
Turn Type	Perm	NA	pm+pt	NA	NA		
Protected Phases		8	5 9	2	6	5	9
Permitted Phases	8		2	9			
Detector Phase	8	8	5 9	2	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0
Minimum Split (s)	28.3	28.3		24.8	24.8	11.8	11.8
Total Split (s)	34.0	34.0		53.0	33.0	20.0	23.0
Total Split (%)	30.9%	30.9%		48.2%	30.0%	18%	21%
Maximum Green (s)	27.7	27.7		46.2	26.2	13.2	16.8
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0		3.5	3.5	3.5	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	6.3	6.3		6.8	6.8		
Lead/Lag					Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max		C-Max	C-Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		
Flash Dont Walk (s)	15.0	15.0		10.0	10.0		
Pedestrian Calls (#/hr)	40	40		45	26		
Act Effct Green (s)	27.7	27.7	62.4	69.2	26.2		
Actuated g/C Ratio	0.25	0.25	0.57	0.63	0.24		
v/c Ratio	1.05	1.00	0.95	0.53	0.81		
Control Delay	102.8	64.5	36.9	9.6	45.1		
Queue Delay	0.0	0.4	2.6	3.1	53.1		
Total Delay	102.8	64.9	39.5	12.6	98.2		
LOS	F	E	D	B	F		
Approach Delay		74.5		21.6	98.2		
Approach LOS		E		C	F		
Queue Length 50th (m)	~101.0	84.3	47.5	40.1	62.1		
Queue Length 95th (m)	#166.6	#118.0	#104.7	62.3	#84.5		
Internal Link Dist (m)		247.5		60.4	56.5		
Turn Bay Length (m)	110.0		45.0				
Base Capacity (vph)	352	1090	588	2086	741		
Starvation Cap Reductn	0	0	11	844	141		
Spillback Cap Reductn	0	2	0	40	312		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	1.05	1.00	0.97	0.89	1.40		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 100

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 54.7 — Intersection LOS: D
Intersection Capacity Utilization 125.0% — 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.

Splits and Phases: 1: Bronson & Raymond/Catherine



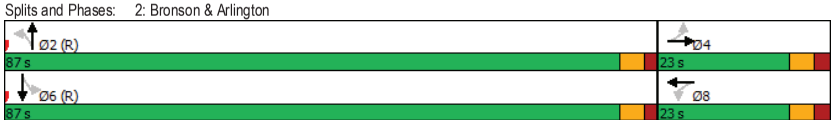
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	4	8	2	13	1456	2	567
Future Volume (vph)	10	4	8	2	13	1456	2	567
Lane Group Flow (vph)	0	48	0	21	0	1475	0	585
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	87.0	87.0	87.0	87.0
Total Split (%)	20.9%	20.9%	20.9%	20.9%	79.1%	79.1%	79.1%	79.1%
Maximum Green (s)	17.4	17.4	17.4	17.4	81.8	81.8	81.8	81.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	23	23	19	19	21	21	27	27
Act Effct Green (s)		12.8		12.8		90.6		90.6
Actuated g/C Ratio		0.12		0.12		0.82		0.82
v/c Ratio		0.25		0.13		0.58		0.24
Control Delay		22.6		29.0		4.0		3.3
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		22.6		29.0		4.0		3.4
LOS		C		C		A		A
Approach Delay		22.6		29.0		4.0		3.4
Approach LOS		C		C		A		A
Queue Length 50th (m)		2.8		2.0		27.8		11.7
Queue Length 95th (m)		13.1		9.0		m44.5		23.2
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		250		210		2559		2462
Starvation Cap Reductn		0		0		96		0
Spillback Cap Reductn		4		1		0		450
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.20		0.10		0.60		0.29

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 11 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 4.5 Intersection LOS: A
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



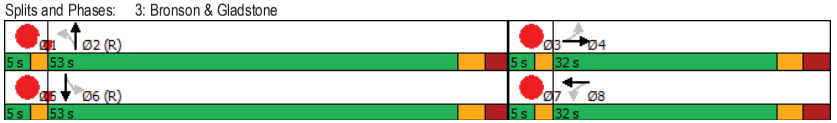
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	51	372	84	195	123	1149	13	425				
Future Volume (vph)	51	372	84	195	123	1149	13	425				
Lane Group Flow (vph)	51	462	84	213	123	1299	13	464				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	32.0	32.0	32.0	32.0	53.0	53.0	53.0	53.0	5.0	5.0	5.0	5.0
Total Split (%)	33.7%	33.7%	33.7%	33.7%	55.8%	55.8%	55.8%	55.8%	5%	5%	5%	5%
Maximum Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	85	85	36	36	36	36	31	31	36	85	31	36
Act Effct Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0				
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.49	0.49	0.49	0.49				
v/c Ratio	0.20	1.05	1.15	0.48	0.32	0.83	0.15	0.30				
Control Delay	29.4	92.8	188.4	33.2	17.5	26.2	18.4	14.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	29.4	92.8	188.4	33.2	17.5	26.2	18.4	14.9				
LOS	C	F	F	C	B	C	B	B				
Approach Delay		86.5		77.1		25.5		15.0				
Approach LOS		F		E		C		B				
Queue Length 50th (m)	7.2	~93.2	~18.1	32.6	13.0	102.6	1.3	25.4				
Queue Length 95th (m)	16.9	#150.8	#46.9	54.0	26.0	132.4	5.4	35.6				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	250	439	73	447	379	1571	87	1555				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.20	1.05	1.15	0.48	0.32	0.83	0.15	0.30				

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 95
Offset: 26 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 40.8 Intersection LOS: D
Intersection Capacity Utilization 103.4% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



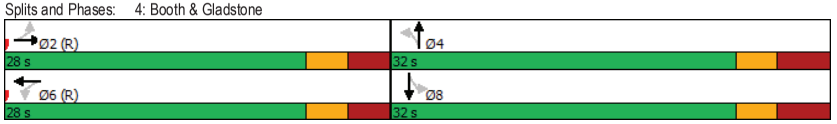
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	448	43	288	51	380	39	143
Future Volume (vph)	26	448	43	288	51	380	39	143
Lane Group Flow (vph)	26	519	43	319	51	458	39	163
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	43	43	28	28	29	29	0	0
Act Effct Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.42	0.42	0.42	0.42
v/c Ratio	0.08	0.86	0.26	0.52	0.11	0.64	0.14	0.23
Control Delay	13.5	34.9	18.3	18.2	10.1	13.5	12.4	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	34.9	18.3	18.2	10.1	13.5	12.4	11.3
LOS	B	C	B	B	B	B	B	B
Approach Delay		33.9		18.3		13.2		11.5
Approach LOS		C		B		B		B
Queue Length 50th (m)	1.8	50.0	3.2	25.8	2.0	17.4	2.5	10.0
Queue Length 95th (m)	6.2	#101.0	10.3	46.4	m6.0	38.0	7.8	20.4
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	310	601	167	610	474	713	284	722
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	0.08	0.86	0.26	0.52	0.11	0.64	0.14	0.23

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 21.1 Intersection LOS: C
Intersection Capacity Utilization 89.2% 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: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBT	SBT
Lane Configurations				
Traffic Volume (vph)	30	572	368	0
Future Volume (vph)	30	572	368	0
Lane Group Flow (vph)	0	603	382	36
Turn Type	Perm	NA	NA	NA
Protected Phases		2	6	8
Permitted Phases	2			
Detector Phase	2	2	6	8
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	23.2
Total Split (s)	31.8	31.8	31.8	23.2
Total Split (%)	57.8%	57.8%	57.8%	42.2%
Maximum Green (s)	26.3	26.3	26.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5	5.2
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None
Walk Time (s)	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	84	84	44	35
Act Effct Green (s)		42.0	42.0	13.2
Actuated g/C Ratio		0.75	0.75	0.23
v/c Ratio		0.48	0.30	0.09
Control Delay		9.7	7.0	4.5
Queue Delay		0.0	0.0	0.0
Total Delay		9.7	7.0	4.5
LOS		A	A	A
Approach Delay		9.7	7.0	4.5
Approach LOS		A	A	A
Queue Length 50th (m)		29.4	15.1	0.0
Queue Length 95th (m)		#85.9	41.7	3.7
Internal Link Dist (m)		246.0	139.3	183.9
Turn Bay Length (m)				
Base Capacity (vph)		1251	1256	519
Starvation Cap Reductn		0	0	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.48	0.30	0.07

Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 56.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	223	109	38	432	227
Future Volume (vph)	223	109	38	432	227
Lane Group Flow (vph)	345	109	38	432	263
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%
Maximum Green (s)	20.0	20.0	29.3	29.3	29.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	15	15	48	48	38
Act Effct Green (s)	20.0	20.0	29.3	29.3	29.3
Actuated g/C Ratio	0.33	0.33	0.49	0.49	0.49
v/c Ratio	0.63	0.20	0.08	0.51	0.31
Control Delay	23.0	4.7	8.8	13.1	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	4.7	8.8	13.1	14.6
LOS	C	A	A	B	B
Approach Delay	18.6			12.7	14.6
Approach LOS	B			B	B
Queue Length 50th (m)	31.3	0.0	2.1	30.1	0.0
Queue Length 95th (m)	55.2	8.5	6.1	51.2	m26.0
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	549	534	487	852	835
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	0.63	0.20	0.08	0.51	0.31

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 35 (58%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 15.4 — Intersection LOS: B
Intersection Capacity Utilization 64.4% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Booth & Raymond

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	376	489	1336	1025
Future Volume (vph)	376	489	1336	1025
Lane Group Flow (vph)	376	489	1336	1025
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	31.9	31.9
Total Split (s)	40.0	40.0	70.0	70.0
Total Split (%)	36.4%	36.4%	63.6%	63.6%
Maximum Green (s)	34.4	34.4	64.1	64.1
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	8	8	0	26
Act Effct Green (s)	34.4	34.4	64.1	64.1
Actuated g/C Ratio	0.31	0.31	0.58	0.58
v/c Ratio	0.73	0.95	0.69	0.55
Control Delay	43.0	60.6	18.4	16.1
Queue Delay	3.0	0.0	0.1	50.5
Total Delay	46.0	60.6	18.5	66.7
LOS	D	E	B	E
Approach Delay	54.3		18.5	66.7
Approach LOS	D		B	E
Queue Length 50th (m)	71.5	86.3	99.2	90.3
Queue Length 95th (m)	105.8	#151.8	123.2	m82.6
Internal Link Dist (m)	243.0		56.2	60.4
Turn Bay Length (m)	42.0			
Base Capacity (vph)	518	513	1932	1859
Starvation Cap Reductn	0	0	0	968
Spillback Cap Reductn	68	0	72	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.84	0.95	0.72	1.15

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 46 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 43.4 — Intersection LOS: D
Intersection Capacity Utilization 125.0% — 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: 8: Hwy 417 EB Ramp & Bronson

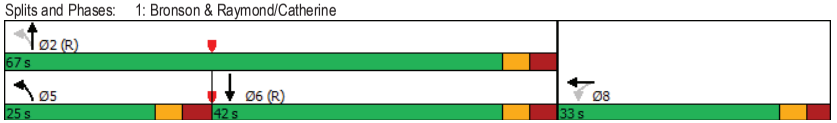
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	690	584	326	840	861
Future Volume (vph)	690	584	326	840	861
Lane Group Flow (vph)	386	1158	326	840	1026
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.3	28.3	11.8	24.8	24.8
Total Split (s)	33.0	33.0	25.0	67.0	42.0
Total Split (%)	33.0%	33.0%	25.0%	67.0%	42.0%
Maximum Green (s)	26.7	26.7	18.2	60.2	35.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.8	6.8	6.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0		10.0	10.0
Pedestrian Calls (#/hr)	24	24		29	41
Act Effct Green (s)	26.7	26.7	60.2	60.2	36.1
Actuated g/C Ratio	0.27	0.27	0.60	0.60	0.36
v/c Ratio	1.02	0.99	0.91	0.42	0.88
Control Delay	88.2	58.7	46.9	17.6	22.9
Queue Delay	32.8	38.1	3.0	1.7	49.2
Total Delay	121.0	96.8	49.9	19.3	72.1
LOS	F	F	D	B	E
Approach Delay		102.9		27.9	72.1
Approach LOS		F		C	E
Queue Length 50th (m)	~89.1	82.0	47.1	66.6	36.5
Queue Length 95th (m)	#156.3	#115.4	#94.3	85.4	#128.6
Internal Link Dist (m)		247.5		63.3	56.5
Turn Bay Length (m)	110.0		45.0		
Base Capacity (vph)	380	1171	372	1996	1166
Starvation Cap Reductn	0	0	14	937	124
Spillback Cap Reductn	128	130	0	0	479
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.53	1.11	0.91	0.79	1.49

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 71.0 Intersection LOS: E
Intersection Capacity Utilization 121.9% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Bronson & Raymond/Catherine



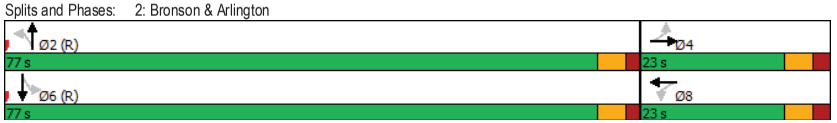
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	12	2	2	0	24	1098	3	976
Future Volume (vph)	12	2	2	0	24	1098	3	976
Lane Group Flow (vph)	0	69	0	14	0	1134	0	1001
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	77.0	77.0	77.0	77.0
Total Split (%)	23.0%	23.0%	23.0%	23.0%	77.0%	77.0%	77.0%	77.0%
Maximum Green (s)	17.4	17.4	17.4	17.4	71.8	71.8	71.8	71.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	19	19	20	20	29	29	39	39
Act Effct Green (s)		12.8		12.8		80.6		80.6
Actuated g/C Ratio		0.13		0.13		0.81		0.81
v/c Ratio		0.31		0.07		0.47		0.40
Control Delay		17.5		9.4		3.2		1.7
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		17.5		9.4		3.2		1.7
LOS		B		A		A		A
Approach Delay		17.5		9.4		3.2		1.7
Approach LOS		B		A		A		A
Queue Length 50th (m)		2.5		0.0		13.4		10.6
Queue Length 95th (m)		14.0		3.7		m29.5		14.2
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		287		253		2420		2502
Starvation Cap Reductn		0		0		161		0
Spillback Cap Reductn		2		0		0		190
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.24		0.06		0.50		0.43

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 29 (29%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 3.0 Intersection LOS: A
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



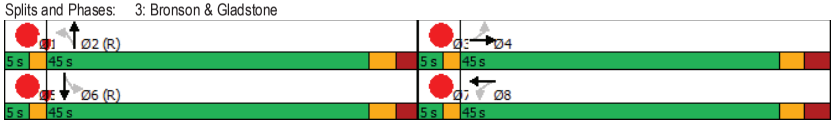
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	49	371	139	325	96	840	49	813				
Future Volume (vph)	49	371	139	325	96	840	49	813				
Lane Group Flow (vph)	49	444	139	342	96	977	49	898				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	5.0	5.0	5.0	5.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	5%	5%	5%	5%
Maximum Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	69	69	68	68	44	44	47	47	44	69	47	68
Act Effct Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0				
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39				
v/c Ratio	0.17	0.70	0.66	0.52	0.75	0.80	0.47	0.72				
Control Delay	22.3	32.9	42.7	27.0	48.3	18.8	40.4	29.8				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	22.3	32.9	42.7	27.0	48.3	18.8	40.4	29.8				
LOS	C	C	D	C	D	B	D	C				
Approach Delay		31.8		31.6		21.4		30.3				
Approach LOS		C		C		C		C				
Queue Length 50th (m)	6.1	71.1	21.8	50.0	7.6	42.7	7.0	76.2				
Queue Length 95th (m)	14.5	106.8	#50.4	76.5	#43.3	44.2	#20.5	98.7				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	280	634	211	655	128	1214	105	1252				
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	0.17	0.70	0.66	0.52	0.75	0.80	0.47	0.72				

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 40 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 27.6 Intersection LOS: C
Intersection Capacity Utilization 92.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



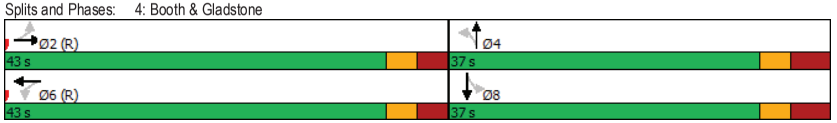
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	37	365	140	634	99	392	49	373
Future Volume (vph)	37	365	140	634	99	392	49	373
Lane Group Flow (vph)	37	407	140	674	99	467	49	393
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	43.0	43.0	43.0	43.0	37.0	37.0	37.0	37.0
Total Split (%)	53.8%	53.8%	53.8%	53.8%	46.3%	46.3%	46.3%	46.3%
Maximum Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	46	46	41	41	27	27	27	27
Act Effct Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.38	0.38	0.38	0.38
v/c Ratio	0.24	0.52	0.43	0.85	0.38	0.73	0.24	0.60
Control Delay	18.2	17.9	30.0	40.8	23.7	28.9	21.0	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	17.9	30.0	40.8	23.7	28.9	21.0	24.7
LOS	B	B	C	D	C	C	C	C
Approach Delay		17.9		38.9		28.0		24.3
Approach LOS		B		D		C		C
Queue Length 50th (m)	3.3	40.9	22.6	112.1	10.7	57.9	5.0	46.7
Queue Length 95th (m)	10.3	65.8	m39.5	#156.8	24.0	92.3	13.2	74.4
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	153	777	328	793	258	640	205	651
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.52	0.43	0.85	0.38	0.73	0.24	0.60

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 29.2 Intersection LOS: C
Intersection Capacity Utilization 103.3% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	31	544	1	736	1
Future Volume (vph)	31	544	1	736	1
Lane Group Flow (vph)	0	581	0	746	68
Turn Type	Perm	NA	Perm	NA	NA
Protected Phases		2		6	8
Permitted Phases	2		6		
Detector Phase	2	2	6	6	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.5	23.2
Total Split (s)	56.8	56.8	56.8	56.8	23.2
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%
Maximum Green (s)	51.3	51.3	51.3	51.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0		0.0	0.0
Total Lost Time (s)		5.5		5.5	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None
Walk Time (s)	19.0	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	75	75	59	59	45
Act Effct Green (s)		58.6		58.6	14.8
Actuated g/C Ratio		0.73		0.73	0.18
v/c Ratio		0.48		0.59	0.23
Control Delay		6.2		9.8	12.3
Queue Delay		0.0		0.4	0.0
Total Delay		6.2		10.2	12.3
LOS		A		B	B
Approach Delay		6.2		10.2	12.3
Approach LOS		A		B	B
Queue Length 50th (m)		21.9		62.5	1.7
Queue Length 95th (m)		32.4		98.4	11.3
Internal Link Dist (m)		246.0		139.3	183.9
Turn Bay Length (m)					
Base Capacity (vph)		1204		1275	348
Starvation Cap Reductn		0		160	0
Spillback Cap Reductn		0		0	0
Storage Cap Reductn		0		0	0
Reduced v/c Ratio		0.48		0.67	0.20

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 8.6 Intersection LOS: A
Intersection Capacity Utilization 80.1% ICU Level of Service D
Analysis Period (min) 15

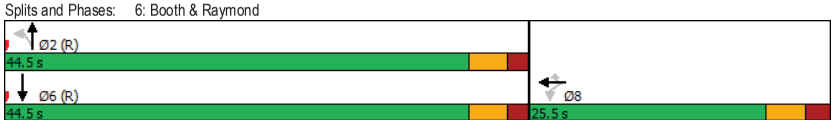
Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	337	196	32	371	536
Future Volume (vph)	337	196	32	371	536
Lane Group Flow (vph)	514	196	32	371	628
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	44.5	44.5	44.5
Total Split (%)	36.4%	36.4%	63.6%	63.6%	63.6%
Maximum Green (s)	20.0	20.0	39.3	39.3	39.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	14	14	47	47	32
Act Effct Green (s)	20.0	20.0	39.3	39.3	39.3
Actuated g/C Ratio	0.29	0.29	0.56	0.56	0.56
v/c Ratio	1.07	0.36	0.11	0.38	0.66
Control Delay	89.9	5.5	8.5	10.0	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	89.9	5.5	8.5	10.0	14.4
LOS	F	A	A	A	B
Approach Delay	66.6			9.9	14.4
Approach LOS	E			A	B
Queue Length 50th (m)	~76.5	0.0	1.8	24.6	50.1
Queue Length 95th (m)	#129.2	13.2	5.7	40.6	83.1
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	479	544	281	979	957
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	1.07	0.36	0.11	0.38	0.66

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 39 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 34.6 Intersection LOS: C
Intersection Capacity Utilization 80.7% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Booth & Raymond



Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	152	397	1001	1597
Future Volume (vph)	152	397	1001	1597
Lane Group Flow (vph)	152	397	1001	1597
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	30.9	30.6
Total Split (s)	35.0	35.0	65.0	65.0
Total Split (%)	35.0%	35.0%	65.0%	65.0%
Maximum Green (s)	29.4	29.4	59.1	59.4
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.6
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	3	3	0	61
Act Effct Green (s)	29.4	29.4	59.1	59.4
Actuated g/C Ratio	0.29	0.29	0.59	0.59
v/c Ratio	0.31	0.89	0.51	0.81
Control Delay	29.6	56.5	13.1	26.6
Queue Delay	0.0	0.0	0.4	49.0
Total Delay	29.6	56.5	13.5	75.5
LOS	C	E	B	E
Approach Delay	49.1		13.5	75.5
Approach LOS	D		B	E
Queue Length 50th (m)	22.8	70.1	55.5	175.8
Queue Length 95th (m)	39.6	#124.6	71.2	m188.4
Internal Link Dist (m)	217.3		50.4	63.3
Turn Bay Length (m)	42.0			
Base Capacity (vph)	487	444	1959	1969
Starvation Cap Reductn	0	0	0	928
Spillback Cap Reductn	0	0	438	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.89	0.66	1.53

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 51.2 — Intersection LOS: D
Intersection Capacity Utilization 121.9% — 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: 8: Hwy 417 EB Ramp & Bronson

Appendix I

Synchro Intersection Worksheets – 2026 Future Total Conditions

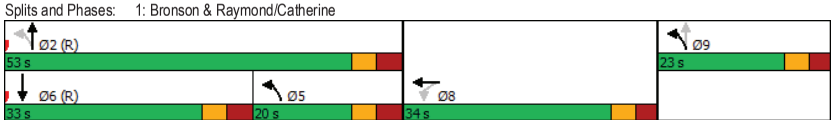
Lane Group	WBL	WBT	NBL	NBT	SBT	Ø5	Ø9
Lane Configurations							
Traffic Volume (vph)	533	526	545	1080	473		
Future Volume (vph)	533	526	545	1080	473		
Lane Group Flow (vph)	357	1048	545	1080	595		
Turn Type	Perm	NA	pm+pt	NA	NA		
Protected Phases		8	5 9	2	6	5	9
Permitted Phases	8		2	9			
Detector Phase	8	8	5 9	2	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0
Minimum Split (s)	28.3	28.3		24.8	24.8	11.8	11.8
Total Split (s)	34.0	34.0		53.0	33.0	20.0	23.0
Total Split (%)	30.9%	30.9%		48.2%	30.0%	18%	21%
Maximum Green (s)	27.7	27.7		46.2	26.2	13.2	16.8
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0		3.5	3.5	3.5	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	6.3	6.3		6.8	6.8		
Lead/Lag					Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max		C-Max	C-Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		
Flash Dont Walk (s)	15.0	15.0		10.0	10.0		
Pedestrian Calls (#/hr)	40	40		45	26		
Act Effct Green (s)	27.7	27.7	62.4	69.2	26.2		
Actuated g/C Ratio	0.25	0.25	0.57	0.63	0.24		
v/c Ratio	1.01	0.96	0.92	0.52	0.80		
Control Delay	93.5	56.8	33.4	9.4	44.7		
Queue Delay	0.0	0.2	1.8	2.4	52.8		
Total Delay	93.5	57.0	35.2	11.7	97.5		
LOS	F	E	D	B	F		
Approach Delay		66.3		19.6	97.5		
Approach LOS		E		B	F		
Queue Length 50th (m)	~91.6	79.7	45.3	39.5	61.2		
Queue Length 95th (m)	#159.3	#110.8	#97.1	59.3	#82.8		
Internal Link Dist (m)		247.5		60.4	56.5		
Turn Bay Length (m)	110.0		45.0				
Base Capacity (vph)	352	1091	591	2086	740		
Starvation Cap Reductn	0	0	11	838	140		
Spillback Cap Reductn	0	2	0	39	291		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	1.01	0.96	0.94	0.87	1.33		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 50.5 — Intersection LOS: D
Intersection Capacity Utilization 120.9% — ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Bronson & Raymond/Catherine



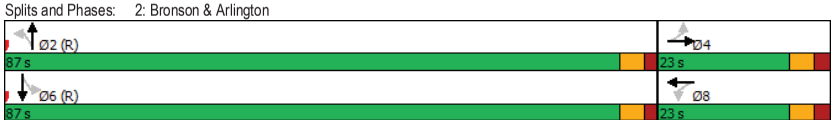
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	4	8	2	13	1421	2	551
Future Volume (vph)	11	4	8	2	13	1421	2	551
Lane Group Flow (vph)	0	57	0	21	0	1440	0	569
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	87.0	87.0	87.0	87.0
Total Split (%)	20.9%	20.9%	20.9%	20.9%	79.1%	79.1%	79.1%	79.1%
Maximum Green (s)	17.4	17.4	17.4	17.4	81.8	81.8	81.8	81.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	23	23	19	19	21	21	27	27
Act Effct Green (s)		12.8		12.8		90.6		90.6
Actuated g/C Ratio		0.12		0.12		0.82		0.82
v/c Ratio		0.28		0.13		0.56		0.23
Control Delay		21.5		29.0		4.0		3.3
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		21.6		29.0		4.0		3.3
LOS		C		C		A		A
Approach Delay		21.6		29.0		4.0		3.3
Approach LOS		C		C		A		A
Queue Length 50th (m)		3.0		2.0		29.4		11.4
Queue Length 95th (m)		14.2		9.0		m44.5		22.4
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		257		209		2559		2462
Starvation Cap Reductn		0		0		96		0
Spillback Cap Reductn		6		1		0		500
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.23		0.10		0.58		0.29

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 11 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 4.6 Intersection LOS: A
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



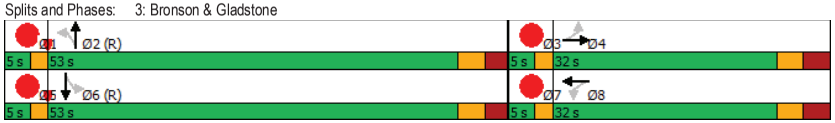
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	54	324	85	179	123	1122	13	412				
Future Volume (vph)	54	324	85	179	123	1122	13	412				
Lane Group Flow (vph)	54	414	85	197	123	1272	13	451				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	32.0	32.0	32.0	32.0	53.0	53.0	53.0	53.0	5.0	5.0	5.0	5.0
Total Split (%)	33.7%	33.7%	33.7%	33.7%	55.8%	55.8%	55.8%	55.8%	5%	5%	5%	5%
Maximum Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	85	85	36	36	36	36	31	31	36	85	31	36
Act Effct Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0				
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.49	0.49	0.49	0.49				
v/c Ratio	0.21	0.95	0.83	0.44	0.32	0.81	0.14	0.29				
Control Delay	29.3	68.4	87.6	32.4	17.3	25.4	17.7	14.8				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	29.3	68.4	87.6	32.4	17.3	25.4	17.7	14.8				
LOS	C	E	F	C	B	C	B	B				
Approach Delay		63.9		49.1		24.7		14.9				
Approach LOS		E		D		C		B				
Queue Length 50th (m)	7.6	74.4	14.6	29.9	13.0	99.1	1.2	24.5				
Queue Length 95th (m)	17.4	#130.7	#41.7	50.0	25.8	128.0	5.3	34.5				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	261	435	103	446	386	1569	93	1555				
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	0.21	0.95	0.83	0.44	0.32	0.81	0.14	0.29				

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 95
Offset: 26 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 32.6 — Intersection LOS: C
Intersection Capacity Utilization 100.1% — ICU Level of Service G
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



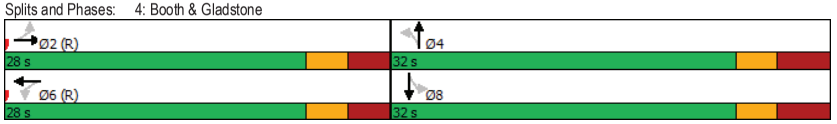
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	387	43	264	51	363	39	138
Future Volume (vph)	26	387	43	264	51	363	39	138
Lane Group Flow (vph)	26	458	43	295	51	441	39	158
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	43	43	28	28	29	29	0	0
Act Effct Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.42	0.42	0.42	0.42
v/c Ratio	0.08	0.76	0.20	0.48	0.11	0.62	0.13	0.22
Control Delay	13.4	26.8	16.2	17.4	9.7	12.9	12.3	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	26.8	16.2	17.4	9.7	12.9	12.3	11.1
LOS	B	C	B	B	A	B	B	B
Approach Delay		26.1		17.3		12.6		11.3
Approach LOS		C		B		B		B
Queue Length 50th (m)	1.8	41.4	3.2	23.3	2.0	16.8	2.5	9.5
Queue Length 95th (m)	6.1	#83.8	9.7	42.4	m6.0	35.3	7.7	19.7
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	327	600	210	609	476	713	297	721
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	0.08	0.76	0.20	0.48	0.11	0.62	0.13	0.22

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 17.8 — Intersection LOS: B
Intersection Capacity Utilization 88.3% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBT	SBT
Lane Configurations				
Traffic Volume (vph)	30	500	338	0
Future Volume (vph)	30	500	338	0
Lane Group Flow (vph)	0	531	352	36
Turn Type	Perm	NA	NA	NA
Protected Phases		2	6	8
Permitted Phases	2			
Detector Phase	2	2	6	8
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	23.2
Total Split (s)	31.8	31.8	31.8	23.2
Total Split (%)	57.8%	57.8%	57.8%	42.2%
Maximum Green (s)	26.3	26.3	26.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5	5.2
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None
Walk Time (s)	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	84	84	44	35
Act Effct Green (s)		42.0	42.0	13.2
Actuated g/C Ratio		0.75	0.75	0.23
v/c Ratio		0.43	0.28	0.09
Control Delay		8.3	6.8	4.5
Queue Delay		0.0	0.0	0.0
Total Delay		8.3	6.8	4.5
LOS		A	A	A
Approach Delay		8.3	6.8	4.5
Approach LOS		A	A	A
Queue Length 50th (m)		24.3	13.6	0.0
Queue Length 95th (m)		65.9	37.9	3.7
Internal Link Dist (m)		246.0	139.3	183.9
Turn Bay Length (m)				
Base Capacity (vph)		1247	1256	519
Starvation Cap Reductn		0	0	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.43	0.28	0.07

Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 56.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 7.6	Intersection LOS: A
Intersection Capacity Utilization 74.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	226	111	38	412	219
Future Volume (vph)	226	111	38	412	219
Lane Group Flow (vph)	349	111	38	412	255
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%
Maximum Green (s)	20.0	20.0	29.3	29.3	29.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	15	15	48	48	38
Act Effct Green (s)	20.0	20.0	29.3	29.3	29.3
Actuated g/C Ratio	0.33	0.33	0.49	0.49	0.49
v/c Ratio	0.64	0.21	0.08	0.48	0.31
Control Delay	23.2	4.7	8.8	12.7	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	4.7	8.8	12.7	14.3
LOS	C	A	A	B	B
Approach Delay	18.7			12.4	14.3
Approach LOS	B			B	B
Queue Length 50th (m)	31.8	0.0	2.1	28.1	15.9
Queue Length 95th (m)	55.8	8.6	6.1	48.3	m25.4
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	549	535	491	852	835
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	0.64	0.21	0.08	0.48	0.31

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 35 (58%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 64.7%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 6: Booth & Raymond

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	350	454	1304	996
Future Volume (vph)	350	454	1304	996
Lane Group Flow (vph)	350	454	1304	996
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	31.9	31.9
Total Split (s)	40.0	40.0	70.0	70.0
Total Split (%)	36.4%	36.4%	63.6%	63.6%
Maximum Green (s)	34.4	34.4	64.1	64.1
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	8	8	0	26
Act Effct Green (s)	34.4	34.4	64.1	64.1
Actuated g/C Ratio	0.31	0.31	0.58	0.58
v/c Ratio	0.68	0.88	0.67	0.54
Control Delay	40.6	47.5	18.0	15.5
Queue Delay	1.4	0.0	0.1	50.6
Total Delay	42.0	47.5	18.1	66.1
LOS	D	D	B	E
Approach Delay	45.1		18.1	66.1
Approach LOS	D		B	E
Queue Length 50th (m)	65.2	74.3	95.2	87.2
Queue Length 95th (m)	97.2	#133.0	118.6	m81.0
Internal Link Dist (m)	243.0		56.2	60.4
Turn Bay Length (m)	42.0			
Base Capacity (vph)	518	517	1932	1859
Starvation Cap Reductn	0	0	0	971
Spillback Cap Reductn	56	0	54	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.88	0.69	1.12

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 46 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 40.5 — Intersection LOS: D
Intersection Capacity Utilization 120.9% — 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: 8: Hwy 417 EB Ramp & Bronson

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	690	589	317	809	844
Future Volume (vph)	690	589	317	809	844
Lane Group Flow (vph)	386	1163	317	809	1015
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.3	28.3	11.8	24.8	24.8
Total Split (s)	33.0	33.0	25.0	67.0	42.0
Total Split (%)	33.0%	33.0%	25.0%	67.0%	42.0%
Maximum Green (s)	26.7	26.7	18.2	60.2	35.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.8	6.8	6.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0		10.0	10.0
Pedestrian Calls (#/hr)	24	24		29	41
Act Effct Green (s)	26.7	26.7	60.2	60.2	36.3
Actuated g/C Ratio	0.27	0.27	0.60	0.60	0.36
v/c Ratio	1.02	0.99	0.88	0.41	0.87
Control Delay	88.2	59.8	42.9	17.3	22.1
Queue Delay	32.8	37.2	2.3	1.5	49.4
Total Delay	121.0	97.0	45.2	18.8	71.5
LOS	F	F	D	B	E
Approach Delay		103.0		26.2	71.5
Approach LOS		F		C	E
Queue Length 50th (m)	~89.1	82.6	44.7	63.2	39.2
Queue Length 95th (m)	#156.3	#116.3	#88.6	81.2	#126.8
Internal Link Dist (m)		247.5		63.3	56.5
Turn Bay Length (m)	110.0		45.0		
Base Capacity (vph)	380	1171	375	1996	1173
Starvation Cap Reductn	0	0	15	943	130
Spillback Cap Reductn	128	130	0	0	464
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.53	1.12	0.88	0.77	1.43

Intersection Summary

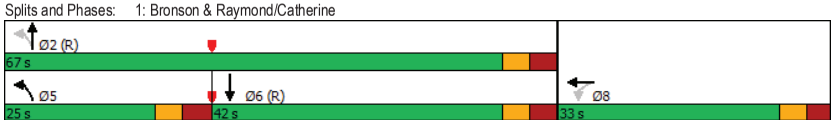
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 70.9 — Intersection LOS: E
Intersection Capacity Utilization 120.7% — ICU Level of Service H
Analysis Period (min) 15

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

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

Splits and Phases: 1: Bronson & Raymond/Catherine



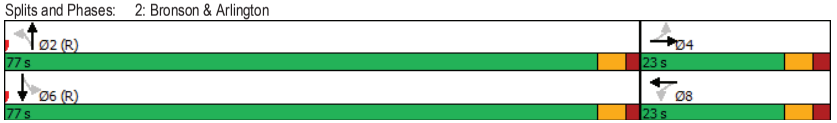
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	13	2	2	0	24	1057	3	958
Future Volume (vph)	13	2	2	0	24	1057	3	958
Lane Group Flow (vph)	0	74	0	14	0	1093	0	983
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	77.0	77.0	77.0	77.0
Total Split (%)	23.0%	23.0%	23.0%	23.0%	77.0%	77.0%	77.0%	77.0%
Maximum Green (s)	17.4	17.4	17.4	17.4	71.8	71.8	71.8	71.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	19	19	20	20	29	29	39	39
Act Effct Green (s)		12.8		12.8		80.6		80.6
Actuated g/C Ratio		0.13		0.13		0.81		0.81
v/c Ratio		0.32		0.07		0.45		0.39
Control Delay		17.4		9.4		3.1		1.8
Queue Delay		0.0		0.0		0.1		0.0
Total Delay		17.4		9.4		3.2		1.9
LOS		B		A		A		A
Approach Delay		17.4		9.4		3.2		1.9
Approach LOS		B		A		A		A
Queue Length 50th (m)		2.7		0.0		13.1		11.8
Queue Length 95th (m)		14.5		3.7		m29.3		14.8
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		290		253		2416		2502
Starvation Cap Reductn		0		0		226		0
Spillback Cap Reductn		3		0		0		191
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.26		0.06		0.50		0.43

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 29 (29%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 3.1 Intersection LOS: A
Intersection Capacity Utilization 69.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



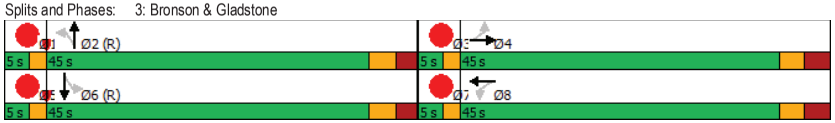
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	51	341	141	281	96	810	49	797				
Future Volume (vph)	51	341	141	281	96	810	49	797				
Lane Group Flow (vph)	51	415	141	298	96	947	49	882				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	5.0	5.0	5.0	5.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	5%	5%	5%	5%
Maximum Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	69	69	68	68	44	44	47	47	44	69	47	68
Act Effct Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0				
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39				
v/c Ratio	0.16	0.66	0.61	0.46	0.72	0.78	0.43	0.71				
Control Delay	21.9	31.2	38.0	25.6	42.2	17.0	36.8	29.4				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	21.9	31.2	38.0	25.6	42.2	17.0	36.8	29.4				
LOS	C	C	D	C	D	B	D	C				
Approach Delay		30.2		29.6		19.3		29.8				
Approach LOS		C		C		B		C				
Queue Length 50th (m)	6.4	65.0	21.5	42.2	5.3	37.7	6.8	74.4				
Queue Length 95th (m)	14.7	97.8	#44.6	65.4	#42.0	36.1	19.3	96.4				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	310	631	231	653	134	1211	114	1251				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.16	0.66	0.61	0.46	0.72	0.78	0.43	0.71				

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 40 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 26.0 — Intersection LOS: C
Intersection Capacity Utilization 90.3% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



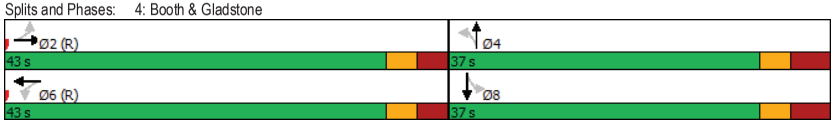
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	37	335	140	547	99	379	50	355
Future Volume (vph)	37	335	140	547	99	379	50	355
Lane Group Flow (vph)	37	377	140	587	99	454	50	375
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	43.0	43.0	43.0	43.0	37.0	37.0	37.0	37.0
Total Split (%)	53.8%	53.8%	53.8%	53.8%	46.3%	46.3%	46.3%	46.3%
Maximum Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	46	46	41	41	27	27	27	27
Act Effct Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.38	0.38	0.38	0.38
v/c Ratio	0.18	0.49	0.40	0.74	0.37	0.71	0.23	0.58
Control Delay	15.4	17.2	29.4	34.9	23.0	27.9	20.7	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	17.2	29.4	34.9	23.0	27.9	20.7	24.0
LOS	B	B	C	C	C	C	C	C
Approach Delay		17.0		33.8		27.0		23.6
Approach LOS		B		C		C		C
Queue Length 50th (m)	3.2	37.0	22.0	96.3	10.7	55.7	5.1	43.9
Queue Length 95th (m)	9.3	59.8	40.1	128.2	23.6	88.9	13.4	70.5
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	208	775	349	792	271	639	215	650
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	0.18	0.49	0.40	0.74	0.37	0.71	0.23	0.58

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 26.7 — Intersection LOS: C
Intersection Capacity Utilization 97.8% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	31	503	1	635	1
Future Volume (vph)	31	503	1	635	1
Lane Group Flow (vph)	0	540	0	645	68
Turn Type	Perm	NA	Perm	NA	NA
Protected Phases		2		6	8
Permitted Phases	2		6		
Detector Phase	2	2	6	6	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.5	23.2
Total Split (s)	56.8	56.8	56.8	56.8	23.2
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%
Maximum Green (s)	51.3	51.3	51.3	51.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0		0.0	0.0
Total Lost Time (s)		5.5		5.5	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None
Walk Time (s)	19.0	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	75	75	59	59	45
Act Effct Green (s)		58.6		58.6	14.8
Actuated g/C Ratio		0.73		0.73	0.18
v/c Ratio		0.45		0.51	0.23
Control Delay		6.0		8.5	12.3
Queue Delay		0.0		0.3	0.0
Total Delay		6.0		8.8	12.3
LOS		A		A	B
Approach Delay		6.0		8.8	12.3
Approach LOS		A		A	B
Queue Length 50th (m)		21.1		49.0	1.7
Queue Length 95th (m)		31.7		76.5	11.3
Internal Link Dist (m)		246.0		139.3	183.9
Turn Bay Length (m)					
Base Capacity (vph)		1206		1274	348
Starvation Cap Reductn		0		178	0
Spillback Cap Reductn		0		0	0
Storage Cap Reductn		0		0	0
Reduced v/c Ratio		0.45		0.59	0.20

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 7.8 — Intersection LOS: A
Intersection Capacity Utilization 77.8% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	339	197	32	359	510
Future Volume (vph)	339	197	32	359	510
Lane Group Flow (vph)	517	197	32	359	602
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	44.5	44.5	44.5
Total Split (%)	36.4%	36.4%	63.6%	63.6%	63.6%
Maximum Green (s)	20.0	20.0	39.3	39.3	39.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	14	14	47	47	32
Act Effct Green (s)	20.0	20.0	39.3	39.3	39.3
Actuated g/C Ratio	0.29	0.29	0.56	0.56	0.56
v/c Ratio	1.08	0.36	0.11	0.37	0.63
Control Delay	91.9	5.5	8.3	9.8	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	5.5	8.3	9.8	13.7
LOS	F	A	A	A	B
Approach Delay	68.1			9.7	13.7
Approach LOS	E			A	B
Queue Length 50th (m)	~77.3	0.0	1.8	23.6	46.8
Queue Length 95th (m)	#130.3	13.3	5.6	39.3	77.3
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	479	544	299	979	955
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	1.08	0.36	0.11	0.37	0.63

Intersection Summary

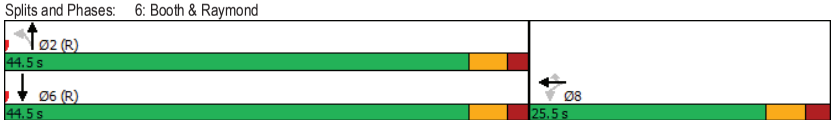
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 39 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 35.5 — Intersection LOS: D
Intersection Capacity Utilization 79.5% — ICU Level of Service D
Analysis Period (min) 15

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

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

Splits and Phases: 6: Booth & Raymond



Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	154	397	966	1562
Future Volume (vph)	154	397	966	1562
Lane Group Flow (vph)	154	397	966	1562
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	30.9	30.6
Total Split (s)	35.0	35.0	65.0	65.0
Total Split (%)	35.0%	35.0%	65.0%	65.0%
Maximum Green (s)	29.4	29.4	59.1	59.4
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.6
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	3	3	0	61
Act Effct Green (s)	29.4	29.4	59.1	59.4
Actuated g/C Ratio	0.29	0.29	0.59	0.59
v/c Ratio	0.32	0.89	0.49	0.79
Control Delay	29.7	56.0	12.9	25.8
Queue Delay	0.0	0.0	0.2	49.1
Total Delay	29.7	56.0	13.1	75.0
LOS	C	E	B	E
Approach Delay	48.6		13.1	75.0
Approach LOS	D		B	E
Queue Length 50th (m)	23.2	69.7	53.0	172.3
Queue Length 95th (m)	39.8	#124.0	67.9	m184.1
Internal Link Dist (m)	217.3		50.4	63.3
Turn Bay Length (m)	42.0			
Base Capacity (vph)	487	445	1959	1969
Starvation Cap Reductn	0	0	0	936
Spillback Cap Reductn	0	0	362	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.89	0.60	1.51

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 75

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 50.9 Intersection LOS: D
Intersection Capacity Utilization 120.7% 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: 8: Hwy 417 EB Ramp & Bronson

Appendix J

Synchro Intersection Worksheets – 2031 Future Total Conditions

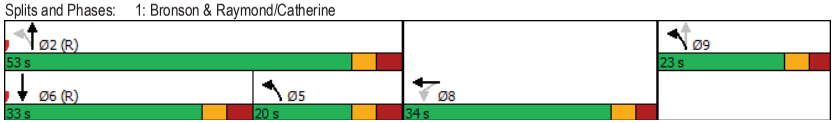
Lane Group	WBL	WBT	NBL	NBT	SBT	Ø5	Ø9
Lane Configurations							
Traffic Volume (vph)	560	552	559	1108	491		
Future Volume (vph)	560	552	559	1108	491		
Lane Group Flow (vph)	370	1088	559	1108	613		
Turn Type	Perm	NA	pm+pt	NA	NA		
Protected Phases		8	5 9	2	6	5	9
Permitted Phases	8		2	9			
Detector Phase	8	8	5 9	2	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	5.0
Minimum Split (s)	28.3	28.3		24.8	24.8	11.8	11.8
Total Split (s)	34.0	34.0		53.0	33.0	20.0	23.0
Total Split (%)	30.9%	30.9%		48.2%	30.0%	18%	21%
Maximum Green (s)	27.7	27.7		46.2	26.2	13.2	16.8
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0		3.5	3.5	3.5	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	6.3	6.3		6.8	6.8		
Lead/Lag					Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max		C-Max	C-Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		
Flash Dont Walk (s)	15.0	15.0		10.0	10.0		
Pedestrian Calls (#/hr)	40	40		45	26		
Act Effct Green (s)	27.7	27.7	62.4	69.2	26.2		
Actuated g/C Ratio	0.25	0.25	0.57	0.63	0.24		
v/c Ratio	1.05	1.00	0.96	0.53	0.83		
Control Delay	102.8	65.2	38.9	9.6	46.3		
Queue Delay	0.0	0.4	3.0	3.1	52.7		
Total Delay	102.8	65.6	42.0	12.7	99.0		
LOS	F	E	D	B	F		
Approach Delay		75.0		22.5	99.0		
Approach LOS		E		C	F		
Queue Length 50th (m)	~101.0	84.7	48.9	40.1	63.7		
Queue Length 95th (m)	#166.6	#118.4	#107.0	62.2	#90.0		
Internal Link Dist (m)		247.5		60.4	56.5		
Turn Bay Length (m)	110.0		45.0				
Base Capacity (vph)	352	1090	584	2086	741		
Starvation Cap Reductn	0	0	11	845	138		
Spillback Cap Reductn	0	2	0	40	310		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	1.05	1.00	0.98	0.89	1.42		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 100

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 55.5 — Intersection LOS: E
Intersection Capacity Utilization 125.4% — 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.

Splits and Phases: 1: Bronson & Raymond/Catherine



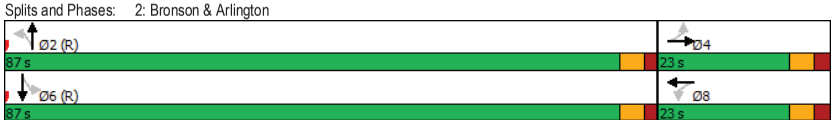
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	4	8	2	13	1456	2	571
Future Volume (vph)	11	4	8	2	13	1456	2	571
Lane Group Flow (vph)	0	57	0	21	0	1475	0	589
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	87.0	87.0	87.0	87.0
Total Split (%)	20.9%	20.9%	20.9%	20.9%	79.1%	79.1%	79.1%	79.1%
Maximum Green (s)	17.4	17.4	17.4	17.4	81.8	81.8	81.8	81.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	23	23	19	19	21	21	27	27
Act Effct Green (s)		12.8		12.8		90.6		90.6
Actuated g/C Ratio		0.12		0.12		0.82		0.82
v/c Ratio		0.28		0.13		0.58		0.24
Control Delay		21.5		29.0		4.0		3.3
Queue Delay		0.0		0.0		0.0		0.1
Total Delay		21.6		29.0		4.0		3.4
LOS		C		C		A		A
Approach Delay		21.6		29.0		4.0		3.4
Approach LOS		C		C		A		A
Queue Length 50th (m)		3.0		2.0		27.7		11.9
Queue Length 95th (m)		14.2		9.0		m44.5		23.3
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		257		209		2557		2462
Starvation Cap Reductn		0		0		96		0
Spillback Cap Reductn		7		1		0		552
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.23		0.10		0.60		0.31

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 11 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 4.6 Intersection LOS: A
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



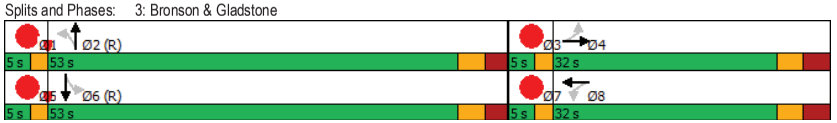
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	54	374	85	195	123	1150	13	427				
Future Volume (vph)	54	374	85	195	123	1150	13	427				
Lane Group Flow (vph)	54	464	85	213	123	1300	13	466				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	32.0	32.0	32.0	32.0	53.0	53.0	53.0	53.0	5.0	5.0	5.0	5.0
Total Split (%)	33.7%	33.7%	33.7%	33.7%	55.8%	55.8%	55.8%	55.8%	5%	5%	5%	5%
Maximum Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	85	85	36	36	36	36	31	31	36	85	31	36
Act Effct Green (s)	25.8	25.8	25.8	25.8	47.0	47.0	47.0	47.0				
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.49	0.49	0.49	0.49				
v/c Ratio	0.22	1.06	1.16	0.48	0.32	0.83	0.15	0.30				
Control Delay	29.6	94.1	192.8	33.2	17.5	26.2	18.5	14.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	29.6	94.1	192.8	33.2	17.5	26.2	18.5	14.9				
LOS	C	F	F	C	B	C	B	B				
Approach Delay		87.4		78.7		25.5		15.0				
Approach LOS		F		E		C		B				
Queue Length 50th (m)	7.7	~93.9	~18.6	32.6	13.0	102.7	1.3	25.5				
Queue Length 95th (m)	17.6	#151.5	#47.4	54.0	26.0	132.4	5.4	35.8				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	250	439	73	447	379	1571	86	1555				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.22	1.06	1.16	0.48	0.32	0.83	0.15	0.30				

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 95
Offset: 26 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 41.3 Intersection LOS: D
Intersection Capacity Utilization 103.6% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bronson & Gladstone



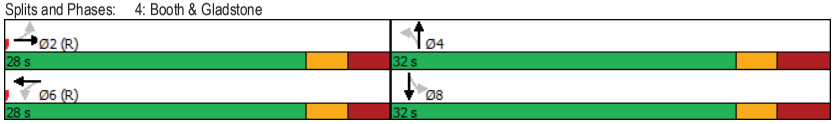
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	448	43	288	51	382	39	143
Future Volume (vph)	26	448	43	288	51	382	39	143
Lane Group Flow (vph)	26	519	43	319	51	460	39	163
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	43	43	28	28	29	29	0	0
Act Effct Green (s)	21.9	21.9	21.9	21.9	25.1	25.1	25.1	25.1
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.42	0.42	0.42	0.42
v/c Ratio	0.08	0.86	0.26	0.52	0.11	0.64	0.14	0.23
Control Delay	13.5	34.9	18.3	18.2	10.1	13.6	12.4	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	34.9	18.3	18.2	10.1	13.6	12.4	11.3
LOS	B	C	B	B	B	B	B	B
Approach Delay		33.9		18.3		13.2		11.5
Approach LOS		C		B		B		B
Queue Length 50th (m)	1.8	50.0	3.2	25.8	2.0	17.5	2.5	10.0
Queue Length 95th (m)	6.2	#101.0	10.3	46.4	m6.0	38.3	7.8	20.4
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	310	601	167	610	474	714	283	722
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	0.08	0.86	0.26	0.52	0.11	0.64	0.14	0.23

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 21.1 — Intersection LOS: C
Intersection Capacity Utilization 89.3% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBT	SBT
Lane Configurations				
Traffic Volume (vph)	30	577	368	0
Future Volume (vph)	30	577	368	0
Lane Group Flow (vph)	0	608	382	36
Turn Type	Perm	NA	NA	NA
Protected Phases		2	6	8
Permitted Phases	2			
Detector Phase	2	2	6	8
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	23.2
Total Split (s)	31.8	31.8	31.8	23.2
Total Split (%)	57.8%	57.8%	57.8%	42.2%
Maximum Green (s)	26.3	26.3	26.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5	5.2
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	None
Walk Time (s)	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	84	84	44	35
Act Effct Green (s)		42.0	42.0	13.2
Actuated g/C Ratio		0.75	0.75	0.23
v/c Ratio		0.49	0.30	0.09
Control Delay		9.8	7.0	4.5
Queue Delay		0.0	0.0	0.0
Total Delay		9.8	7.0	4.5
LOS		A	A	A
Approach Delay		9.8	7.0	4.5
Approach LOS		A	A	A
Queue Length 50th (m)		29.6	15.1	0.0
Queue Length 95th (m)		#95.2	41.7	3.7
Internal Link Dist (m)		246.0	139.3	183.9
Turn Bay Length (m)				
Base Capacity (vph)		1253	1256	519
Starvation Cap Reductn		0	0	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.49	0.30	0.07

Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 56.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	226	111	38	433	227
Future Volume (vph)	226	111	38	433	227
Lane Group Flow (vph)	349	111	38	433	263
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%
Maximum Green (s)	20.0	20.0	29.3	29.3	29.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	15	15	48	48	38
Act Effct Green (s)	20.0	20.0	29.3	29.3	29.3
Actuated g/C Ratio	0.33	0.33	0.49	0.49	0.49
v/c Ratio	0.64	0.21	0.08	0.51	0.31
Control Delay	23.2	4.7	8.8	13.1	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	4.7	8.8	13.1	14.6
LOS	C	A	A	B	B
Approach Delay	18.7			12.7	14.6
Approach LOS	B			B	B
Queue Length 50th (m)	31.8	0.0	2.1	30.1	0.0
Queue Length 95th (m)	55.8	8.6	6.1	51.3	m26.0
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	549	535	487	852	835
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	0.64	0.21	0.08	0.51	0.31

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 35 (58%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 15.5 — Intersection LOS: B
Intersection Capacity Utilization 64.7% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Booth & Raymond

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	377	489	1337	1033
Future Volume (vph)	377	489	1337	1033
Lane Group Flow (vph)	377	489	1337	1033
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	31.9	31.9
Total Split (s)	40.0	40.0	70.0	70.0
Total Split (%)	36.4%	36.4%	63.6%	63.6%
Maximum Green (s)	34.4	34.4	64.1	64.1
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	8	8	0	26
Act Effct Green (s)	34.4	34.4	64.1	64.1
Actuated g/C Ratio	0.31	0.31	0.58	0.58
v/c Ratio	0.73	0.96	0.69	0.56
Control Delay	43.1	61.6	18.4	16.1
Queue Delay	2.9	0.0	0.1	50.5
Total Delay	46.1	61.6	18.6	66.6
LOS	D	E	B	E
Approach Delay	54.8		18.6	66.6
Approach LOS	D		B	E
Queue Length 50th (m)	71.8	86.8	99.4	91.4
Queue Length 95th (m)	106.5	#152.5	123.4	m85.2
Internal Link Dist (m)	243.0		56.2	60.4
Turn Bay Length (m)	42.0			
Base Capacity (vph)	518	511	1932	1859
Starvation Cap Reductn	0	0	0	969
Spillback Cap Reductn	67	0	83	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.84	0.96	0.72	1.16

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 46 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 70

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 43.6 — Intersection LOS: D
Intersection Capacity Utilization 125.4% — 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: 8: Hwy 417 EB Ramp & Bronson

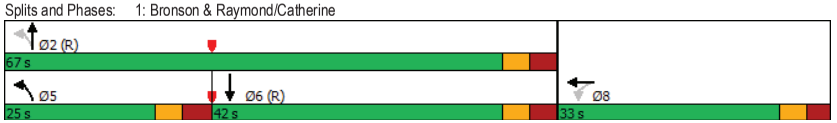
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	690	589	329	840	865
Future Volume (vph)	690	589	329	840	865
Lane Group Flow (vph)	386	1163	329	840	1036
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	28.3	28.3	11.8	24.8	24.8
Total Split (s)	33.0	33.0	25.0	67.0	42.0
Total Split (%)	33.0%	33.0%	25.0%	67.0%	42.0%
Maximum Green (s)	26.7	26.7	18.2	60.2	35.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.8	6.8	6.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0		10.0	10.0
Pedestrian Calls (#/hr)	24	24		29	41
Act Effct Green (s)	26.7	26.7	60.2	60.2	36.0
Actuated g/C Ratio	0.27	0.27	0.60	0.60	0.36
v/c Ratio	1.02	0.99	0.92	0.42	0.89
Control Delay	88.2	59.8	49.7	17.6	24.0
Queue Delay	32.9	37.2	3.6	1.7	48.9
Total Delay	121.0	97.0	53.4	19.3	72.9
LOS	F	F	D	B	E
Approach Delay		103.0		28.9	72.9
Approach LOS		F		C	E
Queue Length 50th (m)	~89.1	82.6	48.5	66.5	41.1
Queue Length 95th (m)	#156.3	#116.3	#97.1	85.2	#131.0
Internal Link Dist (m)		247.5		63.3	56.5
Turn Bay Length (m)	110.0		45.0		
Base Capacity (vph)	380	1171	369	1996	1163
Starvation Cap Reductn	0	0	14	937	119
Spillback Cap Reductn	129	132	0	0	477
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.54	1.12	0.93	0.79	1.51

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 71.6 — Intersection LOS: E
Intersection Capacity Utilization 122.4% — 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.

Splits and Phases: 1: Bronson & Raymond/Catherine



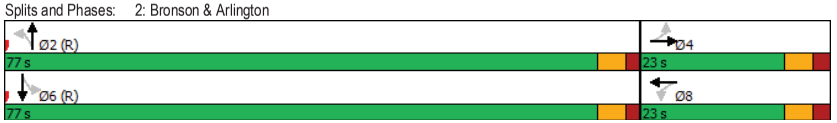
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	13	2	2	0	24	1098	3	982
Future Volume (vph)	13	2	2	0	24	1098	3	982
Lane Group Flow (vph)	0	74	0	14	0	1134	0	1007
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	22.6	17.2	17.2	17.2	17.2
Total Split (s)	23.0	23.0	23.0	23.0	77.0	77.0	77.0	77.0
Total Split (%)	23.0%	23.0%	23.0%	23.0%	77.0%	77.0%	77.0%	77.0%
Maximum Green (s)	17.4	17.4	17.4	17.4	71.8	71.8	71.8	71.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	1.9	1.9	1.9	1.9
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6		5.2		5.2
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	5.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	19	19	20	20	29	29	39	39
Act Effct Green (s)		12.8		12.8		80.6		80.6
Actuated g/C Ratio		0.13		0.13		0.81		0.81
v/c Ratio		0.32		0.07		0.47		0.40
Control Delay		17.4		9.4		3.2		1.7
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		17.4		9.4		3.3		1.7
LOS		B		A		A		A
Approach Delay		17.4		9.4		3.3		1.7
Approach LOS		B		A		A		A
Queue Length 50th (m)		2.7		0.0		13.4		10.6
Queue Length 95th (m)		14.5		3.7		m29.7		14.4
Internal Link Dist (m)		80.9		230.9		56.5		207.2
Turn Bay Length (m)								
Base Capacity (vph)		290		253		2417		2503
Starvation Cap Reductn		0		0		159		0
Spillback Cap Reductn		3		0		0		198
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.26		0.06		0.50		0.44

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 29 (29%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 55

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 3.1 Intersection LOS: A
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Arlington



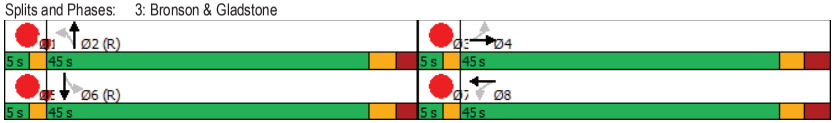
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	51	372	141	325	96	841	49	817				
Future Volume (vph)	51	372	141	325	96	841	49	817				
Lane Group Flow (vph)	51	446	141	342	96	978	49	902				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	28.2	28.2	28.2	28.2	25.0	25.0	25.0	25.0	5.0	5.0	5.0	5.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	5.0	5.0	5.0	5.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	5%	5%	5%	5%
Maximum Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	3.2	3.2	3.2	3.2	2.7	2.7	2.7	2.7	0.0	0.0	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)	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	69	69	68	68	44	44	47	47	44	69	47	68
Act Effct Green (s)	38.8	38.8	38.8	38.8	39.0	39.0	39.0	39.0				
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39				
v/c Ratio	0.18	0.70	0.67	0.52	0.76	0.81	0.47	0.72				
Control Delay	22.4	33.0	43.8	27.0	49.3	18.8	40.4	29.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	22.4	33.0	43.8	27.0	49.3	18.8	40.4	29.9				
LOS	C	C	D	C	D	B	D	C				
Approach Delay		32.0		31.9		21.6		30.4				
Approach LOS		C		C		C		C				
Queue Length 50th (m)	6.4	71.5	22.2	50.0	7.8	42.6	7.0	76.7				
Queue Length 95th (m)	15.0	107.4	#51.4	76.5	#43.5	44.8	#20.5	99.2				
Internal Link Dist (m)		139.3		203.3		207.2		176.5				
Turn Bay Length (m)	20.0		20.0		35.0		45.0					
Base Capacity (vph)	280	633	210	655	127	1214	105	1252				
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	0.18	0.70	0.67	0.52	0.76	0.81	0.47	0.72				

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 40 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 27.7 — 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.

Splits and Phases: 3: Bronson & Gladstone



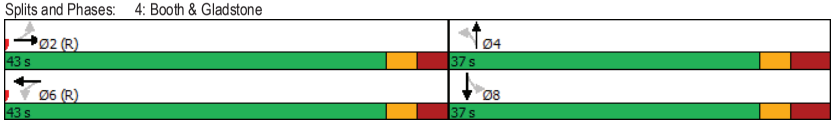
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	37	365	140	634	99	393	50	373
Future Volume (vph)	37	365	140	634	99	393	50	373
Lane Group Flow (vph)	37	407	140	674	99	468	50	393
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.1	22.1	22.1	22.1	23.9	23.9	23.9	23.9
Total Split (s)	43.0	43.0	43.0	43.0	37.0	37.0	37.0	37.0
Total Split (%)	53.8%	53.8%	53.8%	53.8%	46.3%	46.3%	46.3%	46.3%
Maximum Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.9	6.9	6.9	6.9
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	46	46	41	41	27	27	27	27
Act Effct Green (s)	36.9	36.9	36.9	36.9	30.1	30.1	30.1	30.1
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.38	0.38	0.38	0.38
v/c Ratio	0.24	0.52	0.43	0.85	0.38	0.73	0.24	0.60
Control Delay	18.2	17.9	30.0	40.8	23.7	28.9	21.1	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	17.9	30.0	40.8	23.7	28.9	21.1	24.7
LOS	B	B	C	D	C	C	C	C
Approach Delay		17.9		38.9		28.0		24.3
Approach LOS		B		D		C		C
Queue Length 50th (m)	3.3	40.9	22.6	112.1	10.7	58.2	5.1	46.7
Queue Length 95th (m)	10.3	65.8	m39.5	#156.8	24.0	92.6	13.5	74.4
Internal Link Dist (m)		79.0		246.0		206.0		98.4
Turn Bay Length (m)	40.0		25.0		8.0		8.0	
Base Capacity (vph)	153	777	328	793	258	640	205	651
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.52	0.43	0.85	0.38	0.73	0.24	0.60

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 29.2 Intersection LOS: C
Intersection Capacity Utilization 103.4% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Booth & Gladstone



Lane Group	EBL	EBT	WBL	WBT	SBT
Lane Configurations					
Traffic Volume (vph)	31	548	1	736	1
Future Volume (vph)	31	548	1	736	1
Lane Group Flow (vph)	0	585	0	746	68
Turn Type	Perm	NA	Perm	NA	NA
Protected Phases		2		6	8
Permitted Phases	2		6		
Detector Phase	2	2	6	6	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.5	23.2
Total Split (s)	56.8	56.8	56.8	56.8	23.2
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%
Maximum Green (s)	51.3	51.3	51.3	51.3	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.2
Lost Time Adjust (s)		0.0		0.0	0.0
Total Lost Time (s)		5.5		5.5	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None
Walk Time (s)	19.0	19.0	19.0	19.0	10.0
Flash Dont Walk (s)	5.0	5.0	5.0	5.0	8.0
Pedestrian Calls (#/hr)	75	75	59	59	45
Act Effct Green (s)		58.6		58.6	14.8
Actuated g/C Ratio		0.73		0.73	0.18
v/c Ratio		0.49		0.59	0.23
Control Delay		6.3		9.8	12.3
Queue Delay		0.0		0.4	0.0
Total Delay		6.3		10.2	12.3
LOS		A		B	B
Approach Delay		6.3		10.2	12.3
Approach LOS		A		B	B
Queue Length 50th (m)		22.3		62.5	1.7
Queue Length 95th (m)		33.0		98.4	11.3
Internal Link Dist (m)		246.0		139.3	183.9
Turn Bay Length (m)					
Base Capacity (vph)		1204		1275	348
Starvation Cap Reductn		0		160	0
Spillback Cap Reductn		0		0	0
Storage Cap Reductn		0		0	0
Reduced v/c Ratio		0.49		0.67	0.20

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 8.7 — Intersection LOS: A
Intersection Capacity Utilization 80.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: Arthur & Gladstone

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	339	197	32	373	536
Future Volume (vph)	339	197	32	373	536
Lane Group Flow (vph)	517	197	32	373	628
Turn Type	NA	Perm	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)	25.5	25.5	25.2	25.2	25.2
Total Split (s)	25.5	25.5	44.5	44.5	44.5
Total Split (%)	36.4%	36.4%	63.6%	63.6%	63.6%
Maximum Green (s)	20.0	20.0	39.3	39.3	39.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.2	2.2	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.2	5.2	5.2
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max	C-Max
Walk Time (s)	11.0	11.0	15.0	15.0	15.0
Flash Dont Walk (s)	9.0	9.0	5.0	5.0	5.0
Pedestrian Calls (#/hr)	14	14	47	47	32
Act Effct Green (s)	20.0	20.0	39.3	39.3	39.3
Actuated g/C Ratio	0.29	0.29	0.56	0.56	0.56
v/c Ratio	1.08	0.36	0.11	0.38	0.66
Control Delay	91.9	5.5	8.5	10.0	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	5.5	8.5	10.0	14.4
LOS	F	A	A	A	B
Approach Delay	68.1			9.9	14.4
Approach LOS	E			A	B
Queue Length 50th (m)	~77.3	0.0	1.8	24.8	50.1
Queue Length 95th (m)	#130.3	13.3	5.7	40.8	83.1
Internal Link Dist (m)	302.1			65.0	206.0
Turn Bay Length (m)		75.0	25.0		
Base Capacity (vph)	479	544	281	979	957
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	1.08	0.36	0.11	0.38	0.66

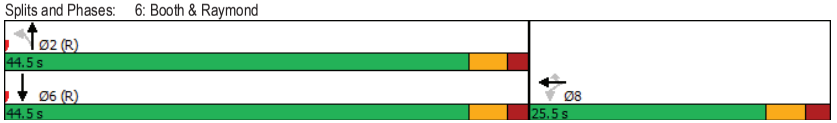
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 39 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 35.3 — Intersection LOS: D
Intersection Capacity Utilization 80.9% — ICU Level of Service D
Analysis Period (min) 15

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

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

Splits and Phases: 6: Booth & Raymond



Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	154	397	1003	1601
Future Volume (vph)	154	397	1003	1601
Lane Group Flow (vph)	154	397	1003	1601
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	28.6	28.6	30.9	30.6
Total Split (s)	35.0	35.0	65.0	65.0
Total Split (%)	35.0%	35.0%	65.0%	65.0%
Maximum Green (s)	29.4	29.4	59.1	59.4
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.6
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	15.0	15.0
Flash Dont Walk (s)	16.0	16.0	10.0	10.0
Pedestrian Calls (#/hr)	3	3	0	61
Act Effct Green (s)	29.4	29.4	59.1	59.4
Actuated g/C Ratio	0.29	0.29	0.59	0.59
v/c Ratio	0.32	0.89	0.51	0.81
Control Delay	29.7	56.5	13.1	26.6
Queue Delay	0.0	0.0	0.4	48.9
Total Delay	29.7	56.5	13.5	75.5
LOS	C	E	B	E
Approach Delay	49.0		13.5	75.5
Approach LOS	D		B	E
Queue Length 50th (m)	23.2	70.1	55.7	176.3
Queue Length 95th (m)	39.8	#124.6	71.5	m188.5
Internal Link Dist (m)	217.3		50.4	63.3
Turn Bay Length (m)	42.0			
Base Capacity (vph)	487	444	1959	1969
Starvation Cap Reductn	0	0	0	928
Spillback Cap Reductn	0	0	437	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.89	0.66	1.54

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 51.2 — Intersection LOS: D
Intersection Capacity Utilization 122.4% — 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: 8: Hwy 417 EB Ramp & Bronson

Appendix K

TDM Checklist

CGH TRANSPORTATION

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

Legend

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

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

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

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

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

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

Appendix L

MMLOS Worksheets

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation Inc.**	**Project**	**2021-137**
Scenario	**Existing/Future**	**Date**	**2022-05-27**
Comments			

INTERSECTIONS		**Bronson Ave @ Catherine St/Raymond St**				**Bronson Ave @ Arlington Ave**				**Bronson Ave @ Gladstone Ave**			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	5		5	5	4	4	0 - 2	0 - 2	5	5	4	4
	Median	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	No left turn / Prohib.		No left turn / Prohib.	Protected/ Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield control		No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed		RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited
	Ped Signal Leading Interval?	No		No	No	No	No	No	No	Yes	Yes	Yes	Yes
	Right Turn Channel	No Channel		No Right Turn	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	10-15m		No Right Turn	5-10m	3-5m	3-5m	3-5m	3-5m	5-10m	5-10m	5-10m	5-10m
	Crosswalk Type	Zebra stripe hi-vis markings		Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement
	PETSI Score	**48**		**63**	**44**	**58**	**58**	**90**	**90**	**46**	**46**	**62**	**62**
	Ped. Exposure to Traffic LoS	**D**	**-**	**C**	**E**	**D**	**D**	**A**	**A**	**D**	**D**	**C**	**C**
	Cycle Length	100		100	110	100	100	100	100	95	95	100	100
	Effective Walk Time	9		38	16	7	7	52	52	29	29	32	32
	Average Pedestrian Delay	**41**		**19**	**40**	**43**	**43**	**12**	**12**	**23**	**23**	**23**	**23**
	Pedestrian Delay LoS	**E**	**-**	**B**	**E**	**E**	**E**	**B**	**B**	**C**	**C**	**C**	**C**
	Level of Service	**E**	**-**	**C**	**E**	**E**	**E**	**B**	**B**	**D**	**D**	**C**	**C**
		E				**E**				**D**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic		Mixed Traffic		Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration												
	Right Turning Speed												
	Cyclist relative to RT motorists	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Separated or Mixed Traffic	**Mixed Traffic**	**-**	**Mixed Traffic**	**-**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**
	Left Turn Approach		One lane crossed	One lane crossed		No lane crossed	No lane crossed	No lane crossed	No lane crossed	One lane crossed	One lane crossed	No lane crossed	No lane crossed
	Operating Speed		≥ 60 km/h	> 50 to < 60 km/h		≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h
	Left Turning Cyclist	**-**	**F**	**E**	**-**	**C**	**C**	**B**	**B**	**F**	**F**	**C**	**C**
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		F				**C**				**F**			
Transit	Average Signal Delay	> 40 sec	≤ 20 sec	> 40 sec		≤ 10 sec	≤ 10 sec			≤ 30 sec	≤ 30 sec	≤ 40 sec	> 40 sec
	Level of Service	**F**	**C**	**F**	**-**	**B**	**B**	**-**	**-**	**D**	**D**	**E**	**F**
		F				**B**				**F**			
Truck	Effective Corner Radius	10 - 15 m		< 10 m						< 10 m	< 10 m		< 10 m
	Number of Receiving Lanes on Departure from Intersection	≥ 2		≥ 2						1	1		≥ 2
	Level of Service	**B**	**-**	**D**	**-**	**-**	**-**	**-**	**-**	**F**	**F**	**-**	**D**
		D				**-**				**F**			
Auto	Volume to Capacity Ratio	> 1.00				0.0 - 0.60				0.81 - 0.90			
	Level of Service	**F**				**A**				**D**			

Arthur St/Arthur Ln @ Gladstone Ave			
NORTH	SOUTH	EAST	WEST
0 - 2	0 - 2	3	3
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
Permissive	Permissive	Permissive	No left turn / Prohib.
Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control
RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed
No	No	No	No
No Channel	No Channel	No Right Turn	No Channel
3-5m	0-3m	No Right Turn	3-5m
Std transverse markings	Textured/coloured pavement	Std transverse markings	Std transverse markings
87	**94**	**85**	**80**
B	**A**	**B**	**B**
60	60	80	80
47	47	10	10
1	**1**	**31**	**31**
A	**A**	**D**	**D**
B	**A**	**D**	**D**
D			
NORTH	SOUTH	EAST	WEST
Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
-	-	-	-
Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**
No lane crossed	No lane crossed	No lane crossed	No lane crossed
> 40 to ≤ 50 km/h	≤ 40 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h
B	**B**	**C**	**C**
-	**-**	**-**	**-**
C			
		≤ 20 sec	≤ 10 sec
-	**-**	**C**	**B**
C			
-	**-**	**-**	**-**
-			
0.0 - 0.60			
A			

Booth St @ Gladstone Ave			
NORTH	SOUTH	EAST	WEST
3	4	4	4
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
Permissive	Permissive	Permissive	Permissive
Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited
Yes	Yes	Yes	Yes
No Channel	Smart Channel	No Channel	No Channel
5-10m	5-10m	5-10m	5-10m
Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
76	**65**	**59**	**62**
B	**C**	**D**	**C**
60	60	60	60
28	28	20	20
9	**9**	**13**	**13**
A	**A**	**B**	**B**
B	**C**	**D**	**C**
D			
NORTH	SOUTH	EAST	WEST
Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
-	-	-	-
Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**
No lane crossed	No lane crossed	No lane crossed	No lane crossed
> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h
C	**C**	**C**	**C**
-	**-**	**-**	**-**
C			
		> 40 sec	≤ 40 sec
-	**-**	**F**	**E**
F			
-	**-**	**-**	**-**
-			
0.71 - 0.80			
C			

Booth St @ Raymond St			
NORTH	SOUTH	EAST	WEST
3	4	0 - 2	3
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
No left turn / Prohib.	Permissive	No left turn / Prohib.	Permissive
Permissive or yield control	No right turn	No right turn	Permissive or yield control
RTOR allowed	RTOR prohibited	RTOR allowed	RTOR prohibited
No	No	No	No
No Channel	No Right Turn	No Right Turn	No Channel
3-5m	No Right Turn	No Right Turn	5-10m
Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
80	**71**	**108**	**74**
B	**C**	**A**	**C**
70	70	60	60
11	11	25	25
25	**25**	**10**	**10**
C	**C**	**B**	**B**
C	**C**	**B**	**C**
C			
NORTH	SOUTH	EAST	WEST
Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
-	-	-	-
Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**
	No lane crossed	No lane crossed	
	> 50 to < 60 km/h	> 50 to < 60 km/h	
-	**C**	**C**	-
-	**-**	**-**	**-**
C			
		> 40 sec	
-	**-**	**F**	**-**
F			
-	**-**	**-**	**-**
-			
0.71 - 0.80			
C			

Bronson Ave @ Hwy 417 EB Ramp			
NORTH	SOUTH	EAST	WEST
	6		4
	Median > 2.4 m		No Median - 2.4 m
	No left turn / Prohib.		No left turn / Prohib.
	Permissive or yield control		No right turn
	RTOR prohibited		RTOR allowed
	No		No
	No Channel		No Right Turn
	10-15m		No Right Turn
	Std transverse markings		Std transverse markings
	36		**76**
-	**E**	**-**	**B**
	100		110
	13		49
	38		**17**
-	**D**	**-**	**B**
-	**E**	**-**	**B**
E			
NORTH	SOUTH	EAST	WEST
	Mixed Traffic		
-	-	-	-
-	**Mixed Traffic**	**-**	**-**
-	-	-	-
-	-	-	-
-			
> 40 sec	≤ 20 sec		
F	**C**	**-**	**-**
F			
			10 - 15 m
			≥ 2
-	-	-	**B**
B			
0.81 - 0.90			
D			