

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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Table of Contents

1	Screening	1
2	Existing and Planned Conditions.....	1
2.1	Proposed Development.....	1
2.2	Existing Conditions.....	3
2.2.1	Area Road Network.....	3
2.2.2	Existing Intersections.....	4
2.2.3	Existing Driveways	5
2.2.4	Cycling and Pedestrian Facilities.....	5
2.2.5	Existing Transit.....	8
2.2.6	Existing Area Traffic Management Measures.....	10
2.2.7	Existing Peak Hour Travel Demand.....	10
2.2.8	Collision Analysis.....	13
2.3	Planned Conditions.....	16
2.3.1	Changes to the Area Transportation Network.....	16
2.3.2	Other Study Area Developments	16
3	Study Area and Time Periods.....	17
3.1	Study Area	17
3.2	Time Periods	17
3.3	Horizon Years.....	17
4	Exemption Review	17
5	Development-Generated Travel Demand	18
5.1	Mode Shares.....	18
5.2	Trip Generation.....	18
5.3	Trip Distribution.....	19
5.4	Trip Assignment.....	19
6	Background Network Travel Demands	20
6.1	Transportation Network Plans.....	20
6.2	Background Growth.....	20
6.3	Other Developments	21
7	Demand Rationalization	21
7.1	2026 Future Background Operations.....	21
7.2	2031 Future Background Operations.....	23
7.3	2026 Future Total Operations.....	26
7.4	2031 Future Total Operations.....	28
7.5	Modal Share Sensitivity and Demand Rationalization Conclusions.....	30
8	Transportation Demand Management.....	30
8.1	Context for TDM	30
8.2	Need and Opportunity.....	30
8.3	TDM Program	30
9	Neighbourhood Traffic Management.....	31
10	Transit.....	31
10.1	Route Capacity.....	31

10.2	Transit Priority	31
11	Network Intersection Design	31
11.1	Network Intersection Control	31
11.2	Network Intersection Design	32
11.2.1	Future Total Network Intersection Operations	32
11.2.2	Network Intersection MMLOS	32
11.2.3	Recommended Design Elements	33
12	Summary of Improvements Indicated and Modifications Options	33
13	Conclusion	35

List of Figures

Figure 1:	Area Context Plan	1
Figure 2:	Concept Plan	2
Figure 3:	Existing Driveways	5
Figure 4:	Study Area Pedestrian Facilities	6
Figure 5:	Study Area Cycling Facilities	6
Figure 6:	Existing Pedestrian Counts	7
Figure 7:	Existing Cyclist Counts	8
Figure 8:	Existing Study Area Transit Service	9
Figure 9:	Existing Study Area Transit Stops	9
Figure 10:	Existing Traffic Counts	11
Figure 11:	Study Area Collision Records	14
Figure 12:	New Site Generation Auto Volumes	20
Figure 13:	2026 Future Background Volumes	22
Figure 14:	2031 Future Background Volumes	24
Figure 15:	2026 Future Total Volumes	26
Figure 16:	2031 Future Total Volumes	28

Table of Tables

Table 1:	Intersection Count Date	10
Table 2:	Existing Intersection Operations	11
Table 3:	Study Area Collision Summary, 2016-2020	13
Table 4:	Summary of Collision Locations, 2016-2020	14
Table 5:	Bronson Avenue at Catherine Street/Raymond Street Collision Summary	14
Table 6:	Booth Street at Raymond Street Collision Summary	15
Table 7:	Exemption Review	17
Table 8:	TRANS Trip Generation Manual Recommended Mode Shares – Ottawa Inner	18
Table 9:	Trip Generation Person Trip Rates by Peak Period	18
Table 10:	Total Residential Person Trip Generation by Peak Period	19
Table 11:	Trip Generation by Mode	19
Table 12:	OD Survey Distribution – Ottawa Inner	19
Table 13:	Trip Assignment	19

Table 14: TRANS Regional Model Projections – Study Area Growth Rates21
Table 15: TRANS Regional Model Projections – Study Area Growth Rates21
Table 16: 2026 Future Background Intersection Operations22
Table 17: 2031 Future Background Intersection Operations24
Table 18: 2026 Future Total Intersection Operations27
Table 19: 2031 Future Total Intersection Operations29
Table 20: Trip Generation by Transit Mode.....31
Table 21: Forecasted Site-Generated Transit Ridership31
Table 22: Study Area Intersection MMLOS Analysis.....32

List of Appendices

Appendix A – TIA Screening Form and Certification Form
Appendix B – Turning Movement Count Data
Appendix C – Synchro Intersection Worksheets – Existing Conditions
Appendix D – Collision Data
Appendix E – TRANS Model Plots
Appendix F – Background Development Volumes
Appendix G – Synchro Intersection Worksheets – 2026 Future Background Conditions
Appendix H – Synchro Intersection Worksheets – 2031 Future Background Conditions
Appendix I – Synchro Intersection Worksheets – 2026 Future Total Conditions
Appendix J – Synchro Intersection Worksheets – 2031 Future Total Conditions
Appendix K – TDM Checklist
Appendix L – MMLOS Worksheets

SITE PLAN

1:400



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 Catherine 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-turn 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

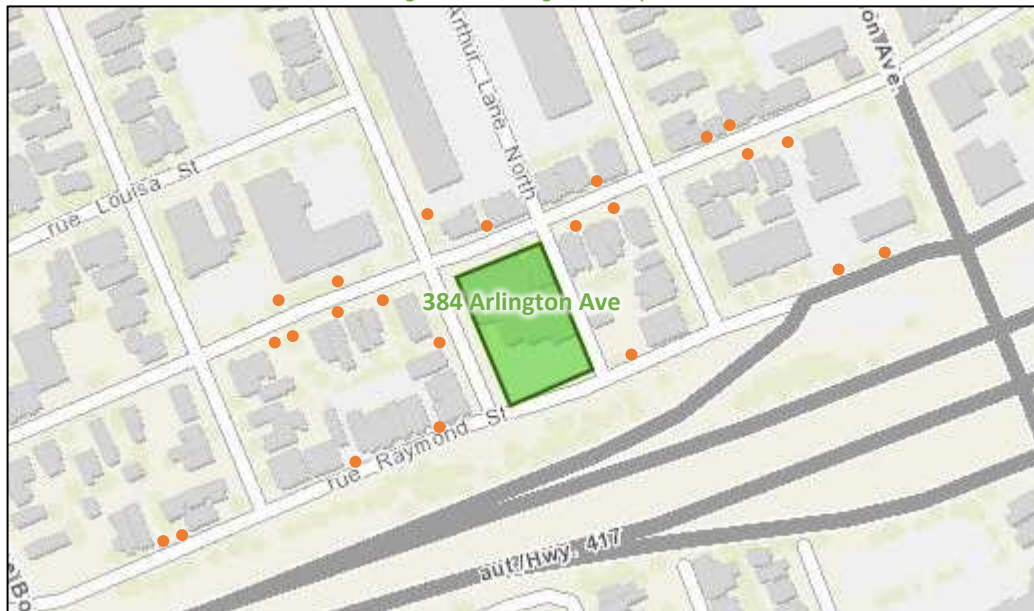
The intersection of Booth Street at Raymond Street is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a through lane, the southbound approach consists of a shared through/right-turn lane, and the westbound approach consists of a shared left-turn/through 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

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

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

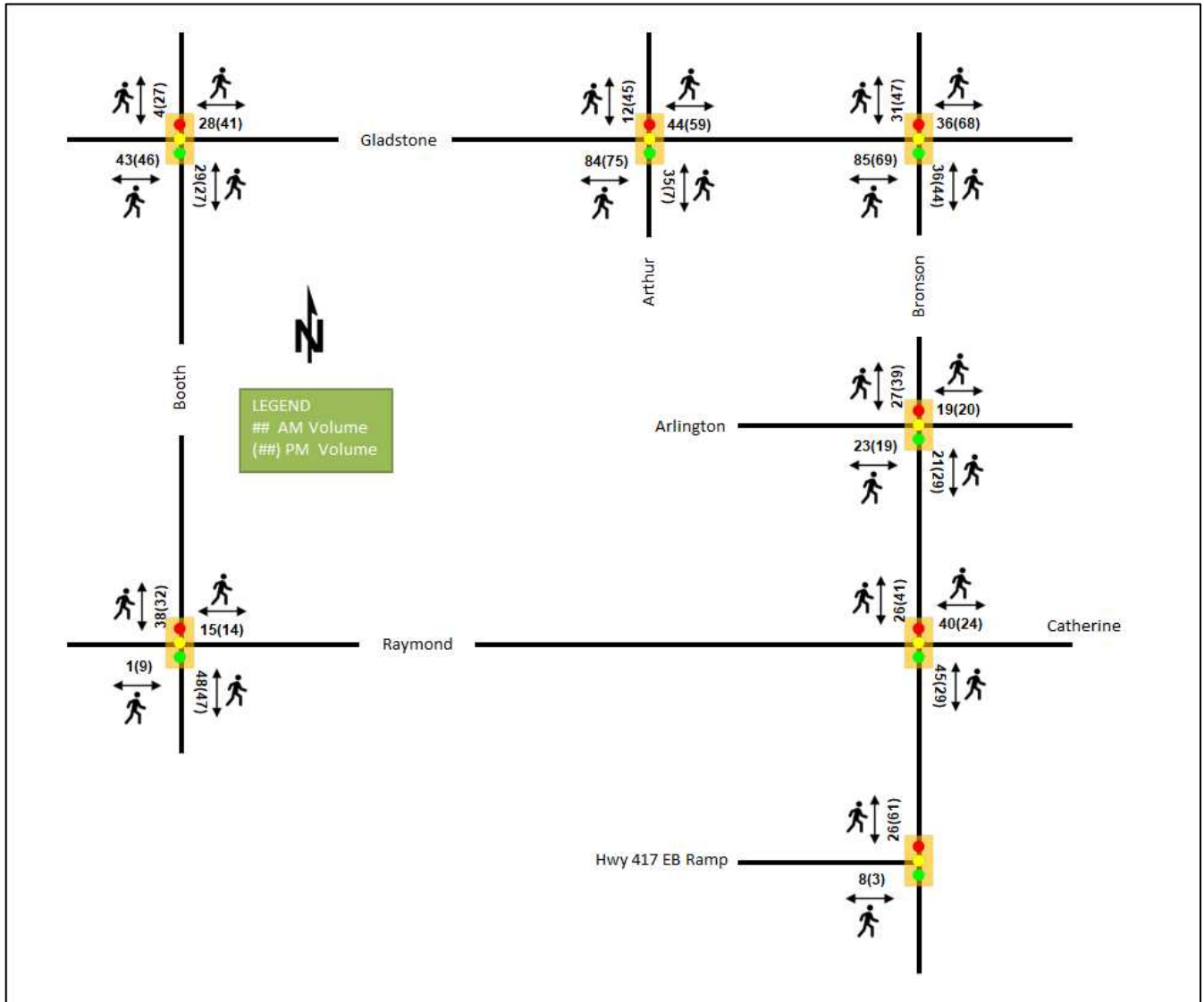
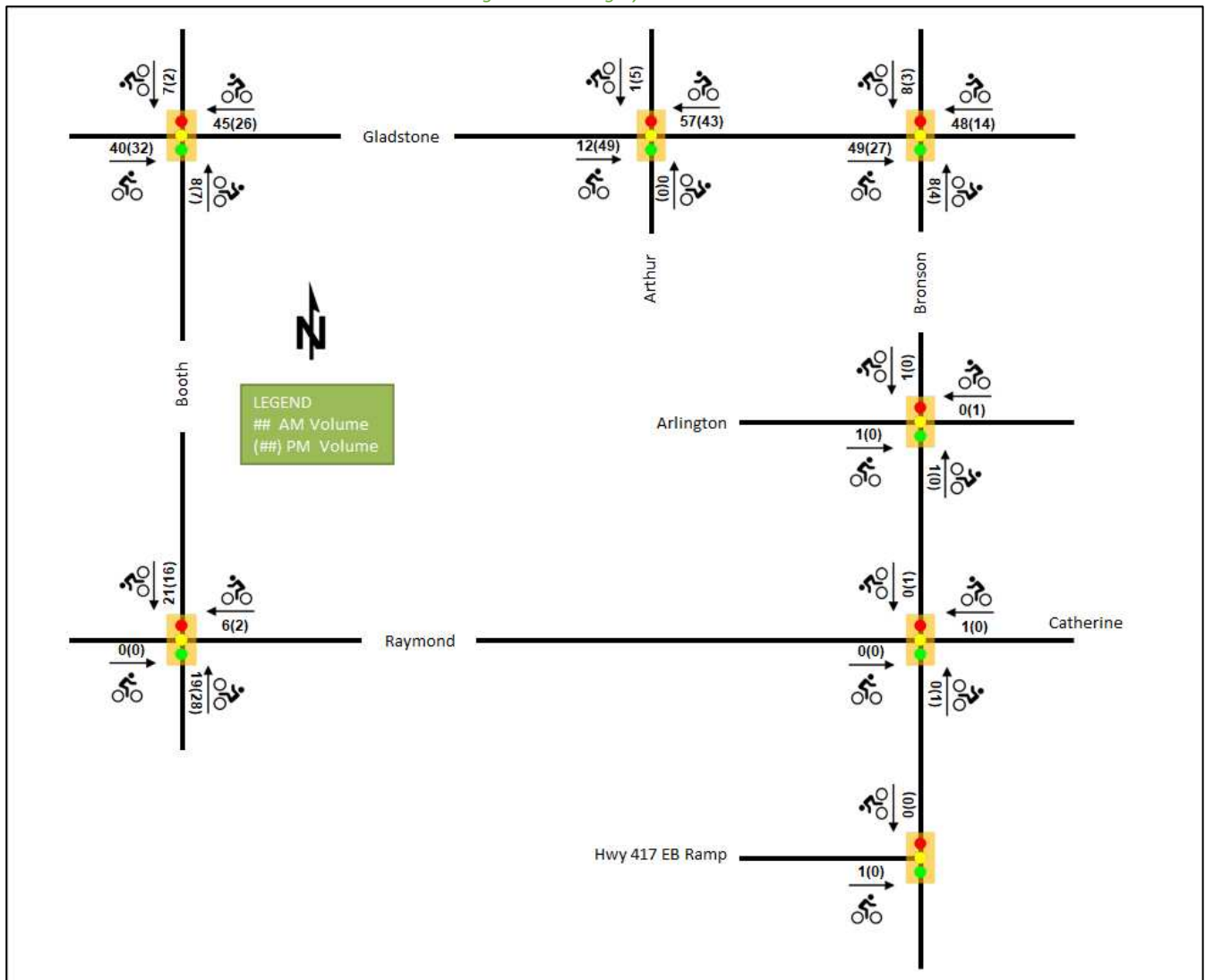


Figure 7: Existing Cyclist Counts



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 AM, 30-minute service during the 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 Carlington in the PM

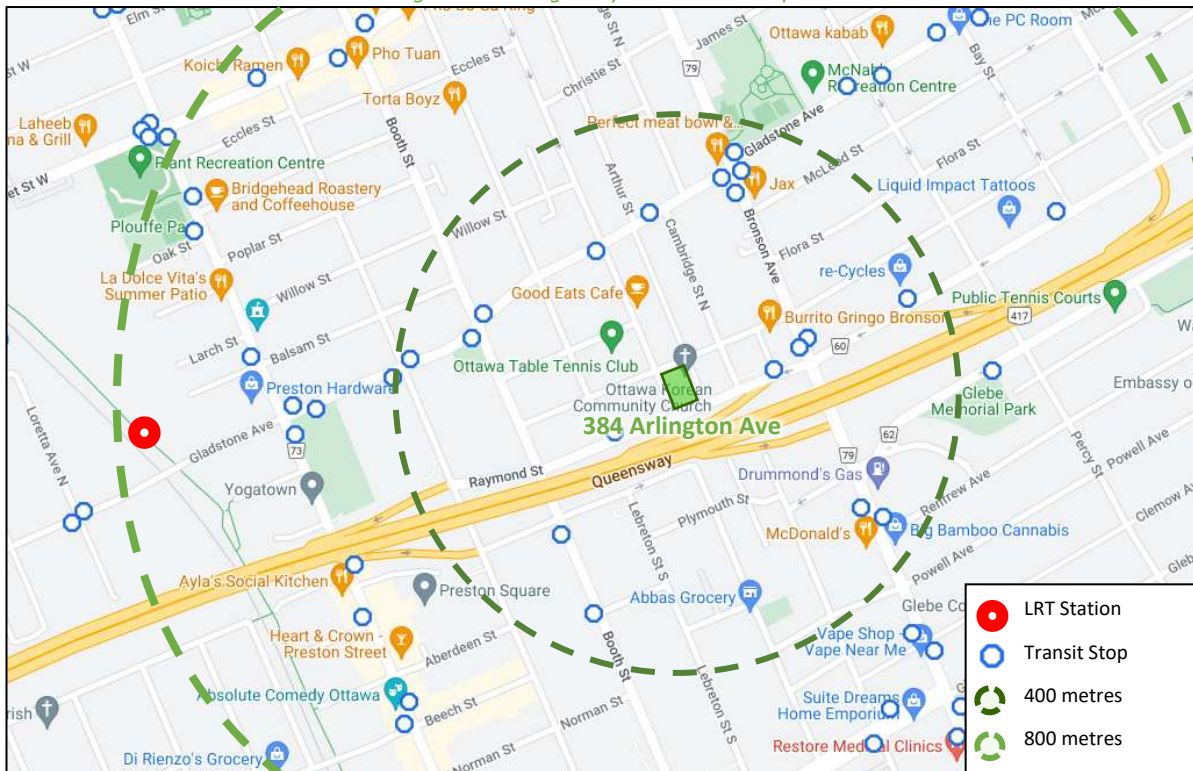
Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is per April 20, 2022, and for general context of the area.

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: March 29, 2023

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

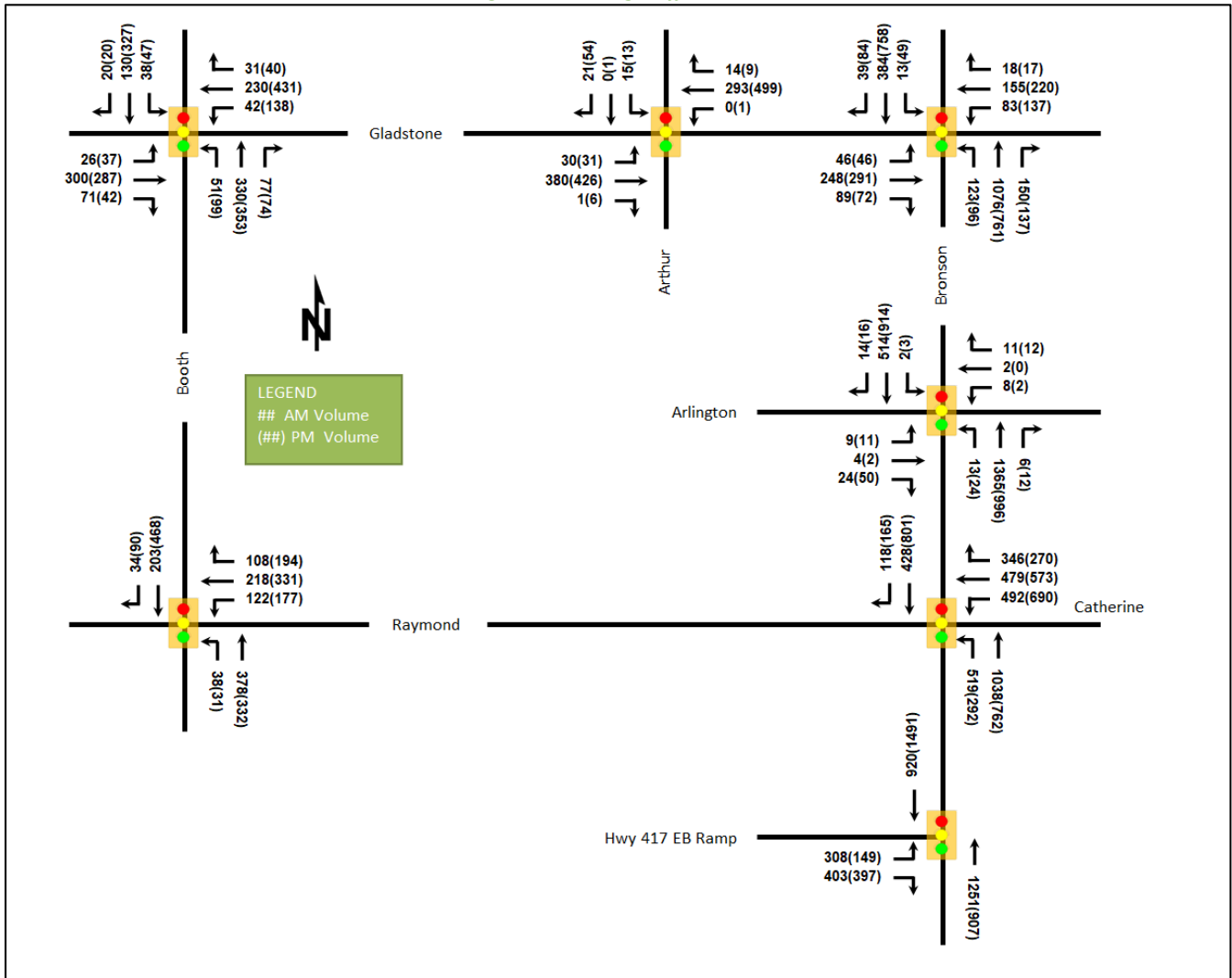


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
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 (95 th)	LOS	V/C	Delay (s)	Q (95 th)
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 area 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

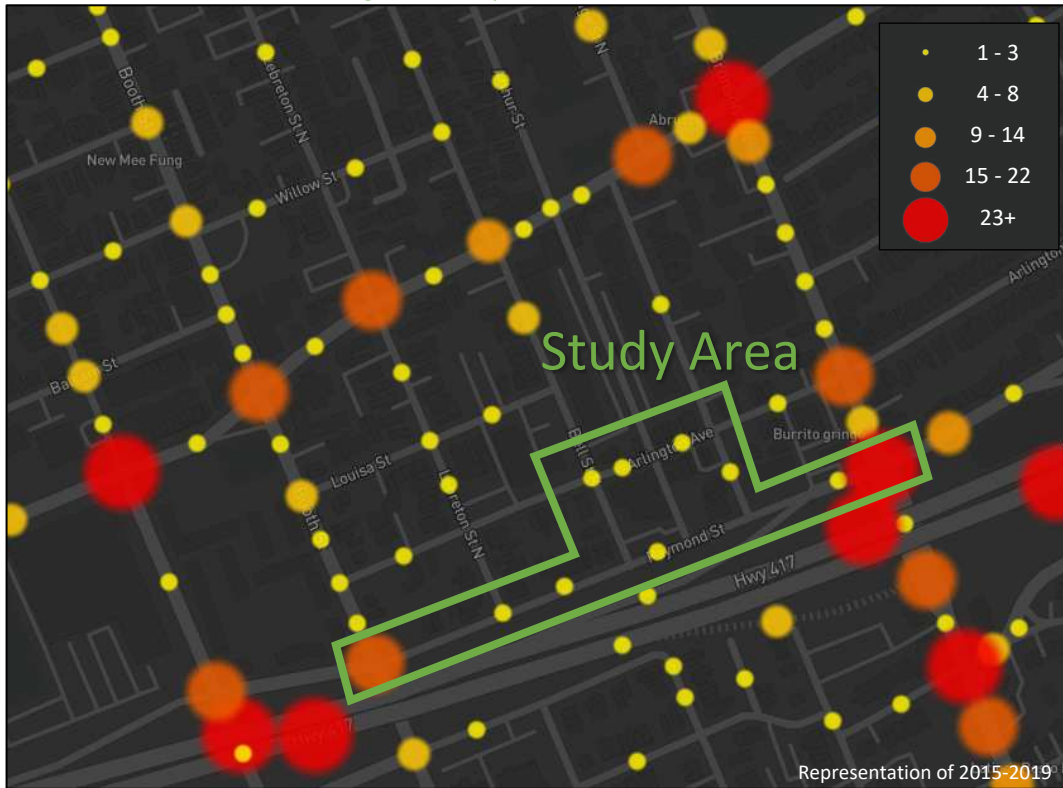


Table 4: Summary of Collision Locations, 2016-2020

Intersections / Segments	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 2023 or 2024.

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 required 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	300	74	166	240	157	113	270

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	21	30	25%	17	12	29
	Auto Passenger	6%	2	5	7	8%	6	4	10
	Transit	28%	12	25	37	21%	16	11	27
	Cycling	5%	2	5	7	6%	4	3	7
	Walking	35%	15	34	49	40%	33	23	56
	Total	100%	40	90	130	100%	76	53	129

As shown above, a total of 30 AM and 29 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%

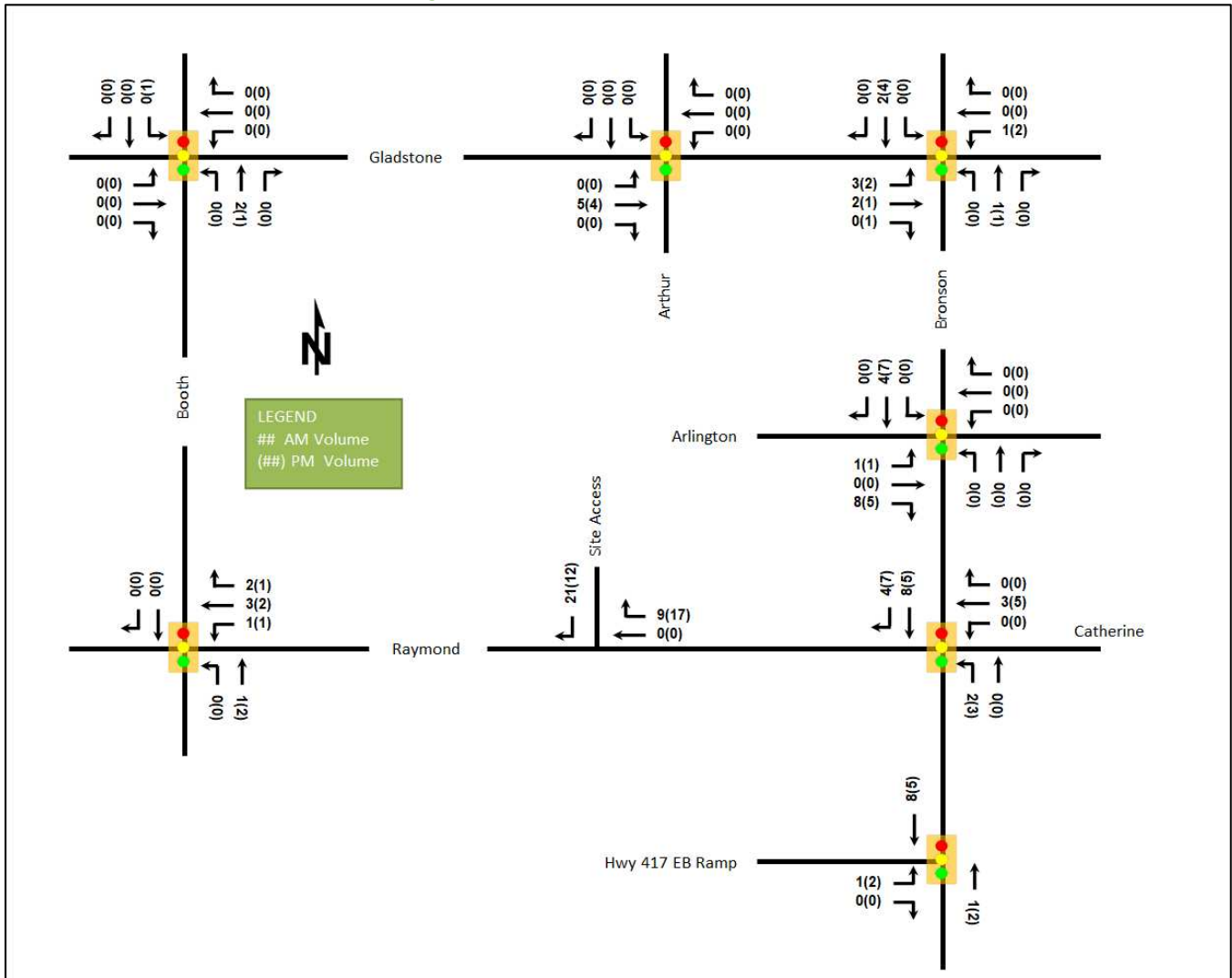
5.4 Trip Assignment

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

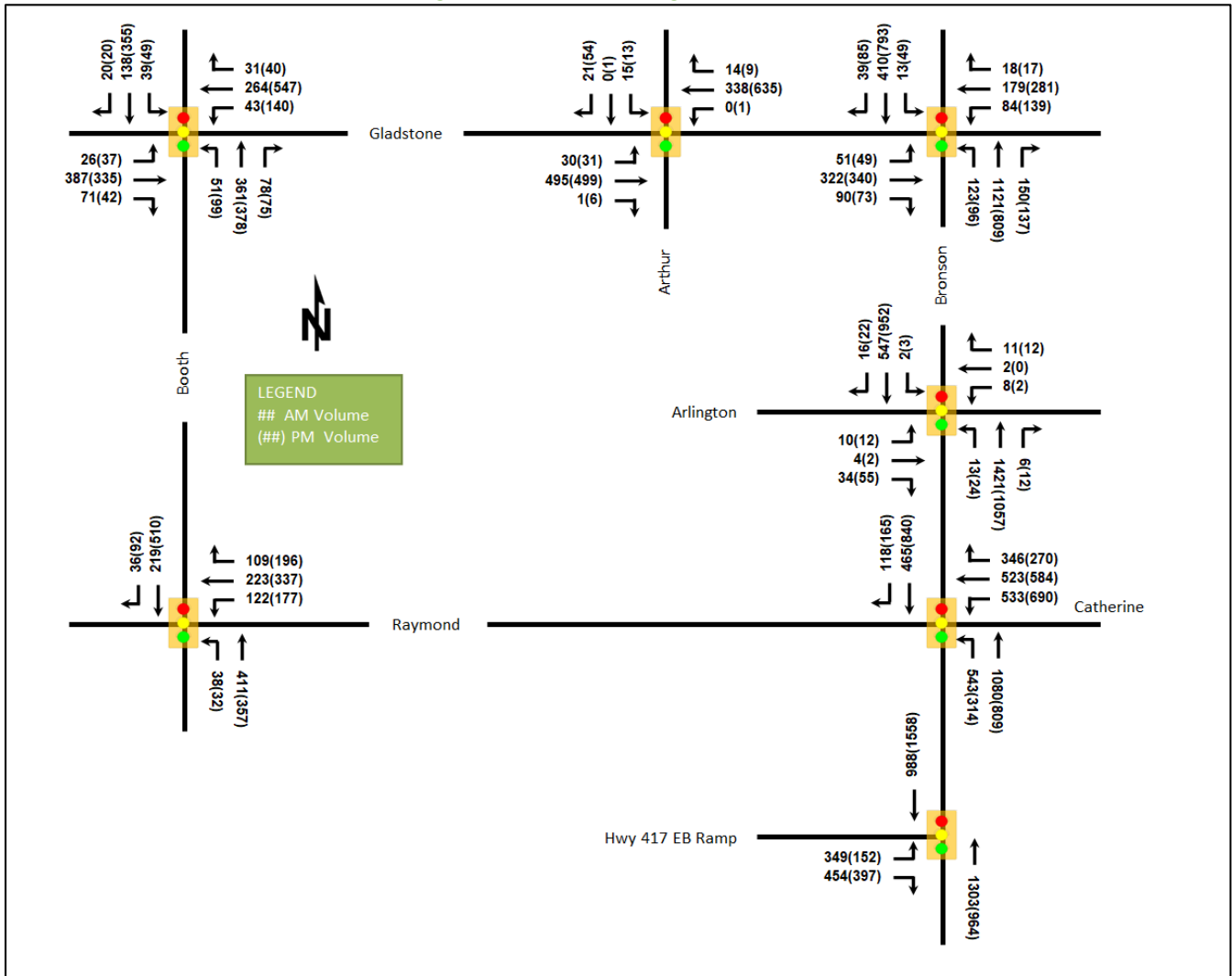


Table 16: 2026 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bronson Avenue at Highway 417 EB Ramp <i>Signalized</i>	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 <i>Signalized</i>	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
	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 (95 th)	LOS	V/C	Delay (s)	Q (95 th)
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

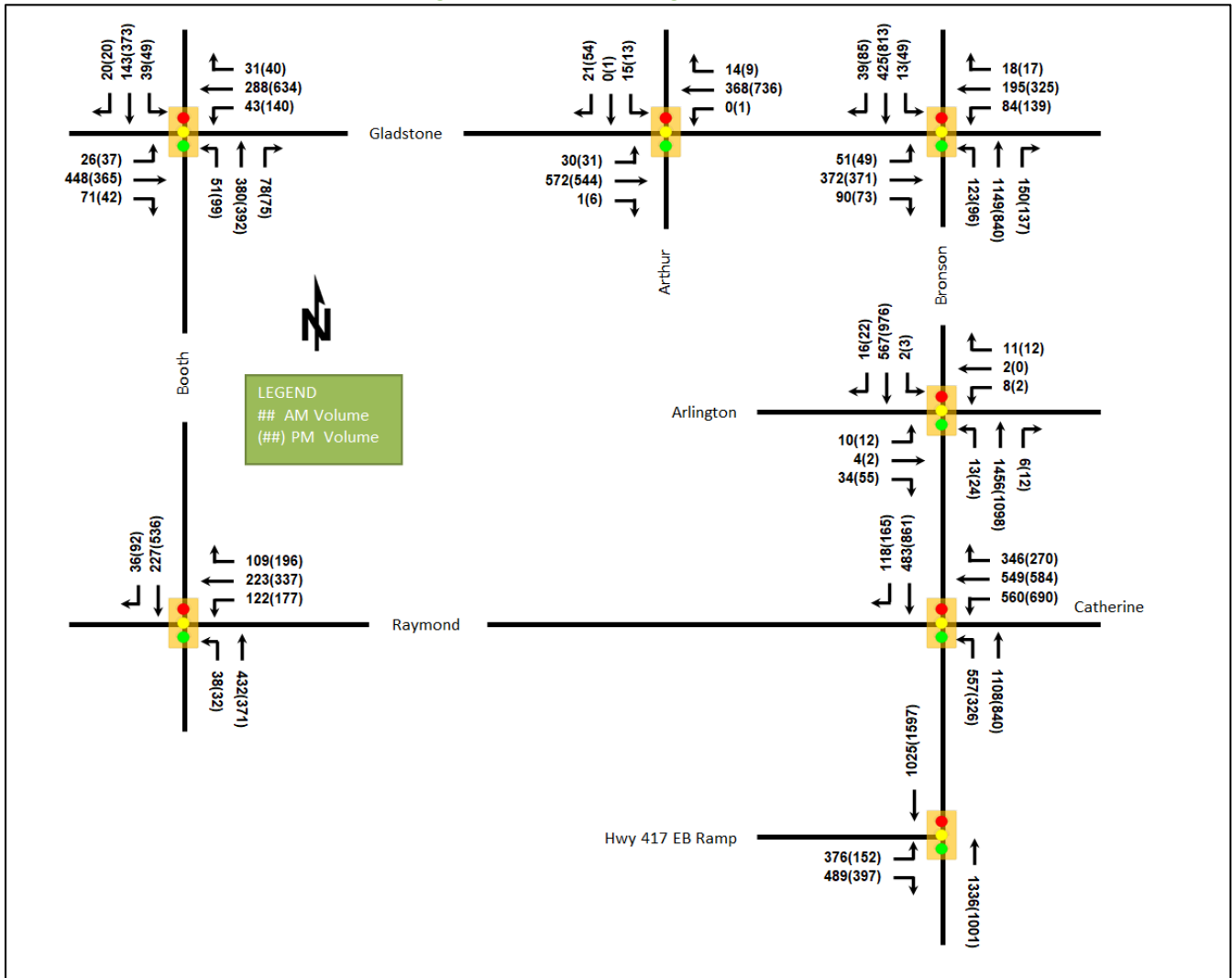


Table 17: 2031 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
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 (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bronson Avenue at Arlington Avenue <i>Signalized</i>	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 <i>Signalized</i>	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 <i>Signalized</i>	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 <i>Signalized</i>	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 <i>Signalized</i>	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

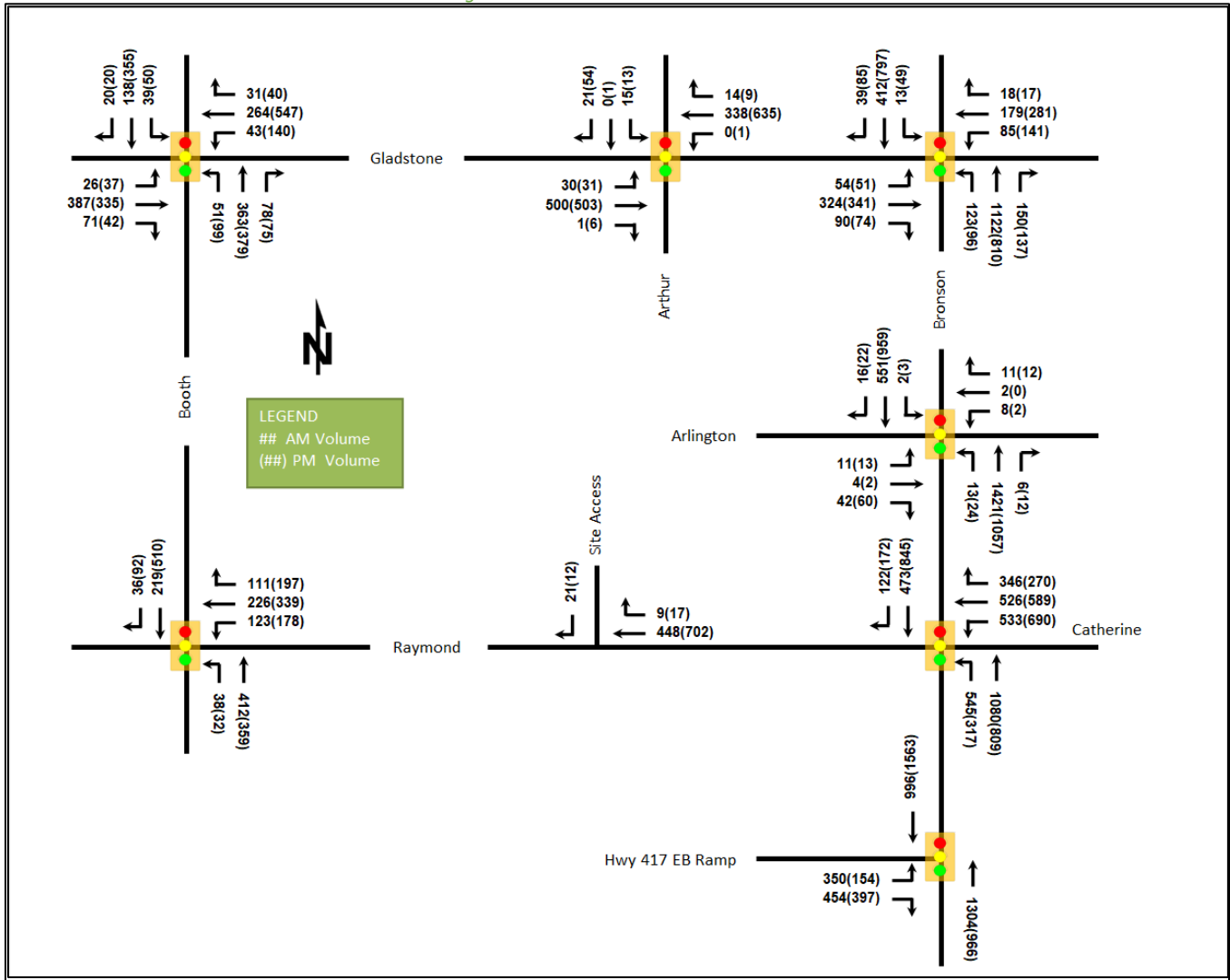


Table 18: 2026 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bronson Avenue at Highway 417 EB Ramp <i>Signalized</i>	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	m81.0	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 <i>Signalized</i>	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	0.89	45.5	#88.6
	NBT	A	0.52	11.7	59.3	A	0.41	18.8	81.2
	Overall	E	1.00	50.5	-	E	0.96	70.9	-
Bronson Avenue at Arlington Avenue <i>Signalized</i>	EB	A	0.28	21.6	14.2	A	0.33	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 <i>Signalized</i>	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	42.1	#42.1
	NBT/R	D	0.81	25.4	128.0	C	0.78	17.0	36.2
	SBL	A	0.14	17.7	5.3	A	0.43	36.8	19.3
	Overall	C	0.79	32.6	-	B	0.67	26.0	-
Booth Street at Gladstone Avenue <i>Signalized</i>	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
	Overall	B	0.68	17.8	-	C	0.72	26.7	-
Arthur Street / Arthur Lane at Gladstone Avenue <i>Signalized</i>	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 <i>Signalized</i>	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
	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 queuing 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.

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

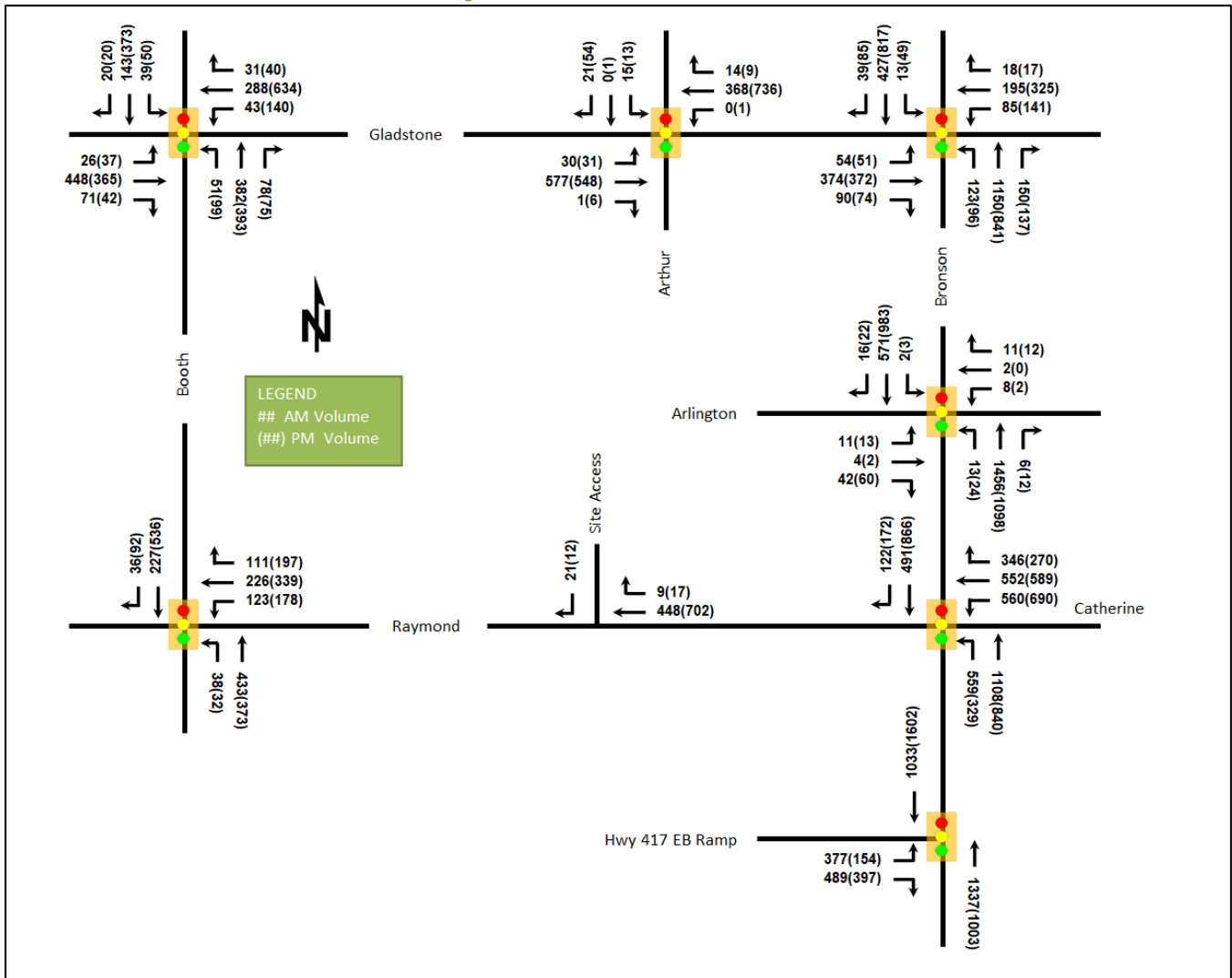


Table 19: 2031 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bronson Avenue at Highway 417 EB Ramp <i>Signalized</i>	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	m188.6
	Overall	C	0.78	43.6	-	D	0.84	51.2	-
Bronson Avenue at Catherine Street/Raymond Street <i>Signalized</i>	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	54.0	#97.5
	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	73.0	#131.3
Overall	F	1.03	55.5	-	E	0.99	71.7	-	
Bronson Avenue at Arlington Avenue <i>Signalized</i>	EB	A	0.28	21.6	14.2	A	0.33	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 <i>Signalized</i>	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	27.8	-	
Booth Street at Gladstone Avenue <i>Signalized</i>	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 <i>Signalized</i>	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 <i>Signalized</i>	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 subject to the final unit breakdown.

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:

- Conduct surveys to identify post-occupancy travel-related behaviours, attitudes, challenges and solutions
- Offer on-site cycling courses for residents, or subsidize off-site courses
- 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-month 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
- Contract with provider to install on-site bikeshare (or other micromobility) station
- Provide residents with bikeshare (or other micromobility) memberships, either free or subsidized
- Contract with provider to install on-site carshare vehicles and promote their use by residents
- Provide residents with carshare memberships, either free or subsidized
- 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 is forecast to be 30 two-way trips or fewer in the peak hours. As it will be distributed across a number of roadways, the overall impact will be negligible to the road 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%)	12	25	37	16	11	27

The proposed development is anticipated to generate an additional 37 AM and 27 PM peak hour two-way transit trips. From the trip distribution found in section 5.3, these values can be further broken down. Table 21 summarizes forecasted site-generated transit ridership trips by direction and the equivalent bus loads.

Table 21: Forecasted Site-Generated Transit Ridership

Direction	AM Peak Hour		PM Peak Hour		Transit Routes	Approximate Equivalent Peak Hour/Direction Bus Loads
	In	Out	In	Out		
North	4	8	5	3	#10	Negligible
South	2	5	3	2	#10	Negligible
East	5	10	6	5	#10, #14, #55, #114	One-fifth of a standard bus
West	1	2	2	1	#14, #55, #114	Negligible

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 22: 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, for the bicycle LOS at all intersections except Bronson Avenue at Arlington Avenue. The MMLOS targets will not be met for the 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 intersections. Additionally, the truck LOS targets will not be met at the Bronson Avenue at Gladstone Avenue intersection and the auto LOS targets will not be met at the Bronson Avenue at Catherine Street/Raymond Street intersection.

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 will include up to 300 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 to establish R5 zoning for the site

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 130 two-way people trips during the AM peak hour and 129 two-way people trips during the PM peak hour
- Of the forecasted people trips, 30 two-way trips will be vehicle trips during the AM peak hour and 29 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 at 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:
 - Conduct surveys to identify post-occupancy travel-related behaviours, attitudes, challenges and solutions
 - Offer on-site cycling courses for residents, or subsidize off-site courses
 - 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-month 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
 - Contract with provider to install on-site bikeshare (or other micromobility) station
 - Provide residents with bikeshare (or other micromobility) memberships, either free or subsidized
 - Contract with provider to install on-site carshare vehicles and promote their use by residents
 - Provide residents with carshare memberships, either free or subsidized
 - 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 37 new AM and 27 new PM peak hour two-way transit trips
- Peak hour increases in transit ridership resulting from the site equate to one-fifth of a standard bus load easterly of the site and negligible impact northerly, southerly, and westerly of the site

- 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 anticipated on 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,
- The MMLOS targets will not be met for the 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 intersections, for the truck LOS at the Bronson Avenue at Gladstone Avenue intersection, and for the auto LOS at the Bronson Avenue at Catherine Street/Raymond Street intersection
- Overall, 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.

Prepared By:



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Transportation Engineering-Intern

Reviewed By:



Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

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 licensed¹ or registered² professional in good standing, whose field of expertise [check appropriate field(s)] is either transportation engineering or transportation planning .

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


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Télécopieur: 613-560-6006

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

Name: Andrew Harte
(Please Print)

Professional Title: Professional Engineer


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

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Appendix B

Turning Movement Counts



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

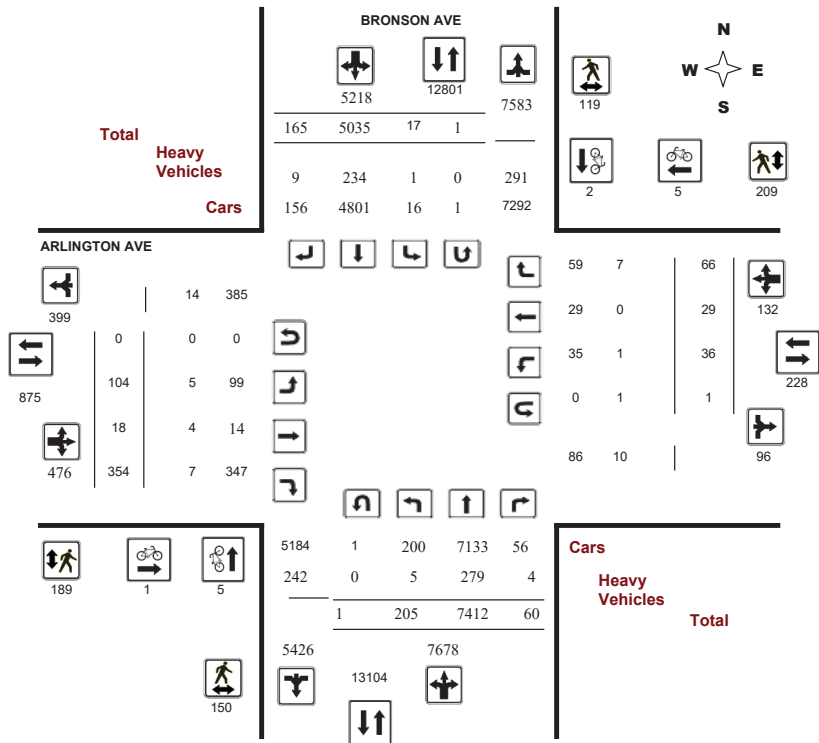
Survey Date: Wednesday, December 13, 2017

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

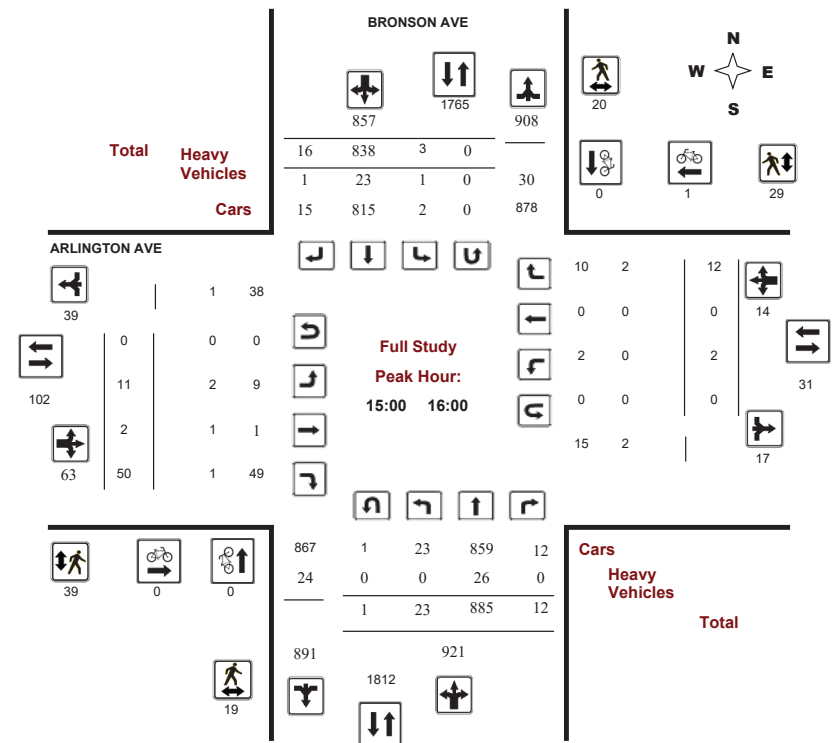
Survey Date: Wednesday, December 13, 2017

WO No: 37368

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





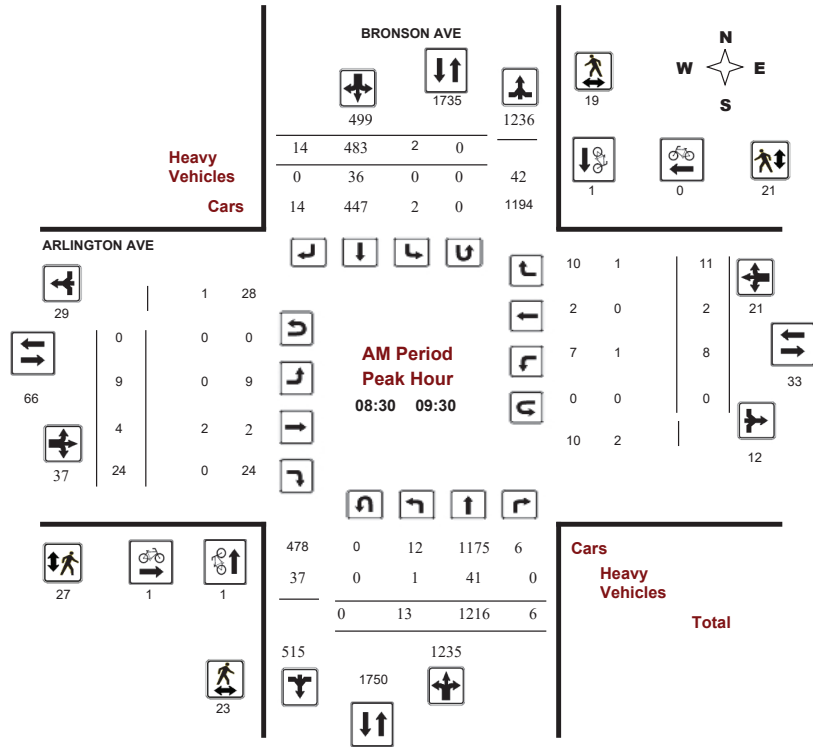
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017
Start Time: 07:00

WO No: 37368
Device: Miovision



Comments



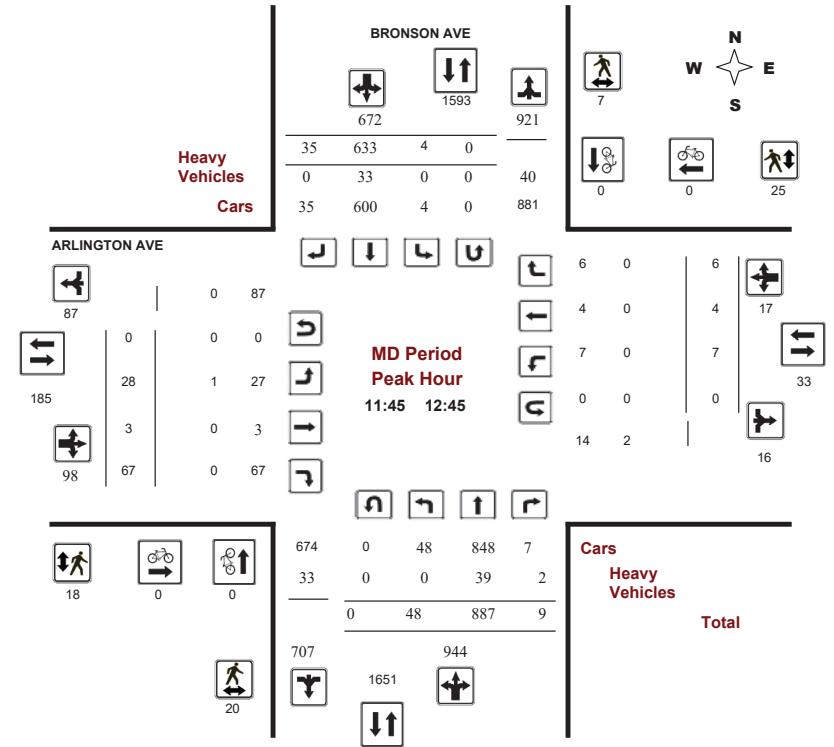
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017
Start Time: 07:00

WO No: 37368
Device: Miovision



Comments



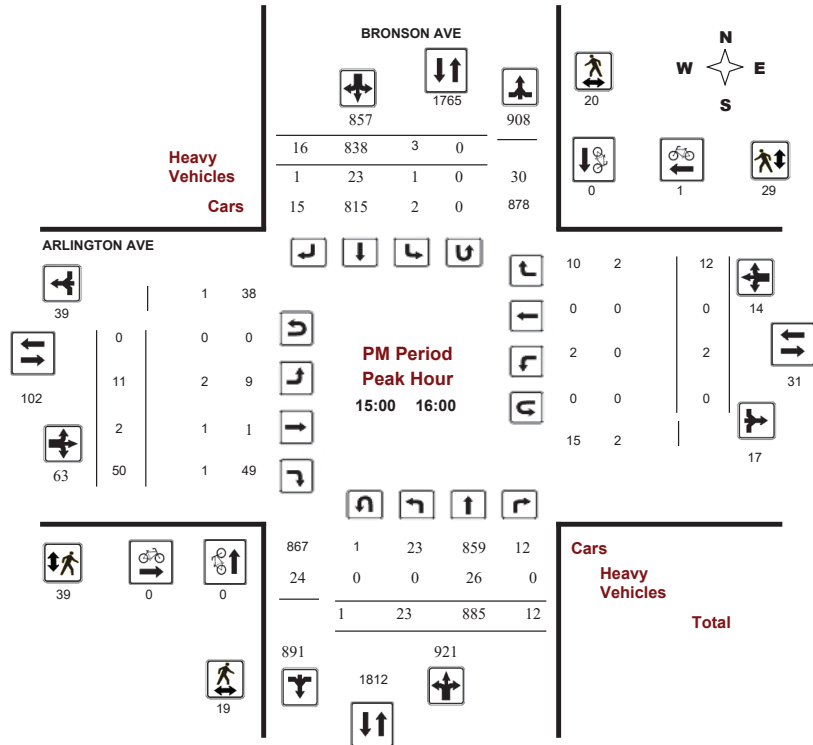
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017
Start Time: 07:00

WO No: 37368
Device: Miovision



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ARLINGTON AVE @ BRONSON AVE

Survey Date: Wednesday, December 13, 2017
Start Time: 07:00

WO No: 37368
Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 13, 2017

Total Observed U-Turns		AADT Factor
Northbound: 1	Southbound: 1	1.00
Eastbound: 0	Westbound: 1	

Period	BRONSON AVE				ARLINGTON AVE				Grand Total										
	Northbound		Southbound		Eastbound		Westbound												
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	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

Table with columns for Time Period, Northbound, Southbound, Eastbound, Westbound, and Grand Total. Rows show 15-minute intervals from 07:00 to 18:00.

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

Table with columns for Time Period, Northbound, Southbound, Street Total, Eastbound, Westbound, Street Total, and Grand Total. Rows show 15-minute intervals from 07:00 to 18:00.



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

Table with 8 columns: Time Period, NB Approach, SB Approach, Total, EB Approach, WB Approach, Total, Grand Total. Rows show pedestrian counts for various time intervals from 07:00 to 18:00.



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

Table with 21 columns: Time Period, Northbound (LT, ST, RT, N TOT), Southbound (LT, ST, RT, S TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT), STR TOT, Grand Total. Rows show heavy vehicle counts for various time intervals from 07:00 to 18:00.



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		ARLINGTON AVE		Total
	Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn 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

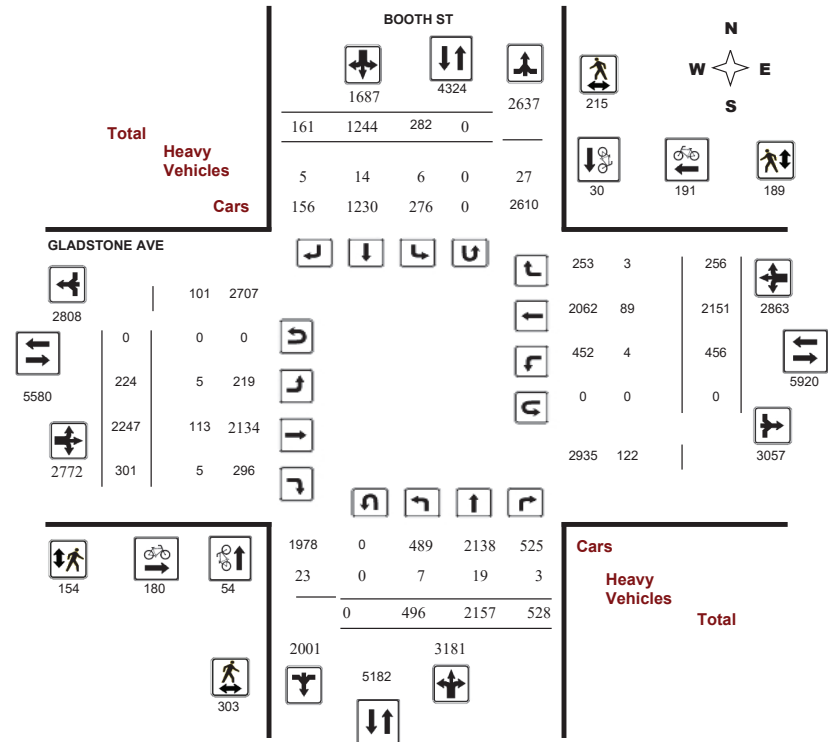
Survey Date: Wednesday, July 27, 2016

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

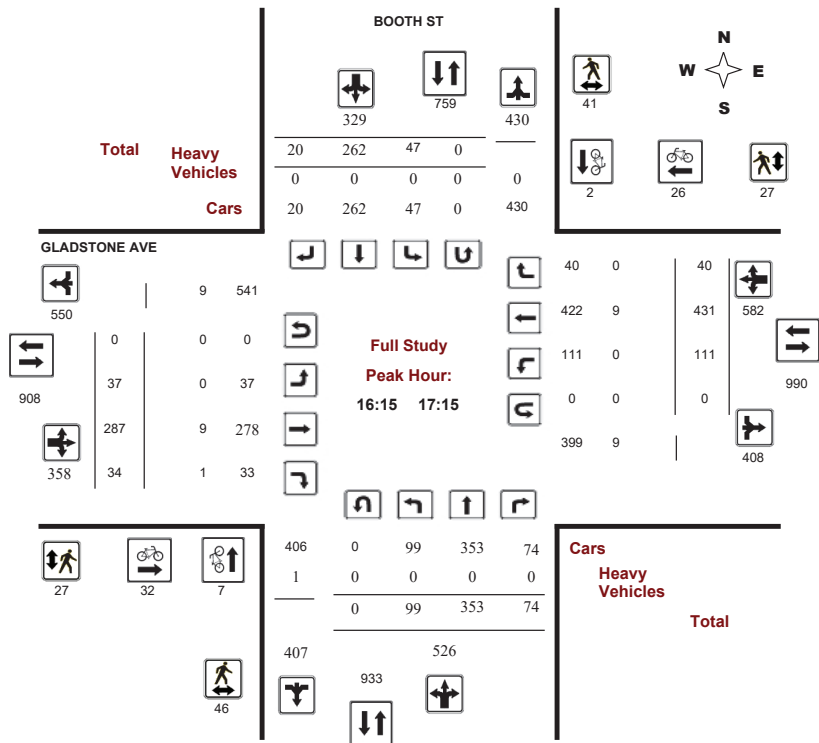
Survey Date: Wednesday, July 27, 2016

WO No: 36092

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

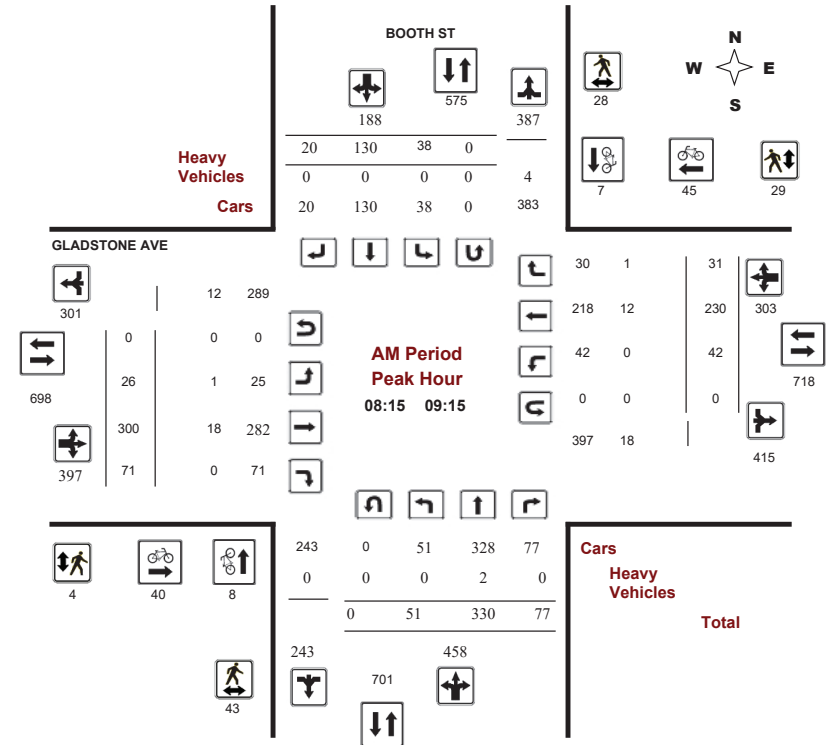
BOOTH ST @ GLADSTONE AVE

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

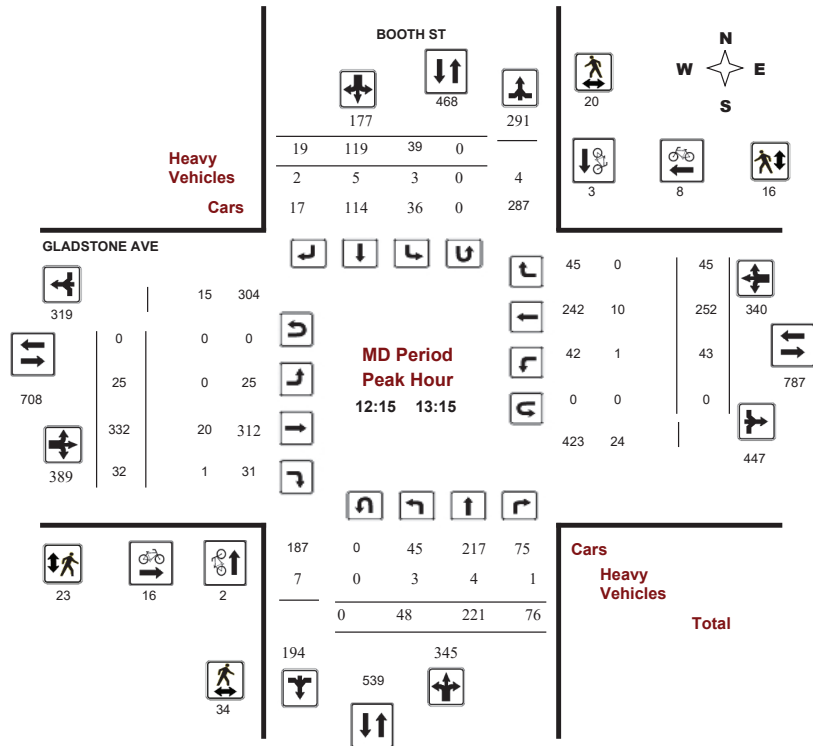
BOOTH ST @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016

Start Time: 07:00

WO No: 36092

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

AADT Factor

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

Period	BOOTH ST								GLADSTONE AVE								WB TOT	STR TOT	Grand Total
	Northbound				Southbound				Eastbound				Westbound						
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT			
07:00-08:00	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	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

Time Period	BOOTH ST				GLADSTONE AVE				STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
	Northbound		Southbound		Eastbound		Westbound												
	LT	ST	RT	N TOT	LT	ST	RT	S TOT											
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			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street 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			Grand Total
	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	
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			
		Northbound	Southbound	Eastbound	Westbound		
Time Period		U-Turn Total	U-Turn Total	U-Turn Total	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	
13:30	13:45	0	0	0	0	0	
13:45	14:00	0	0	0	0	0	
14:00	14:15	0	0	0	0	0	
14:15	14:30	0	0	0	0	0	
14:30	14:45	0	0	0	0	0	
14:45	15:00	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

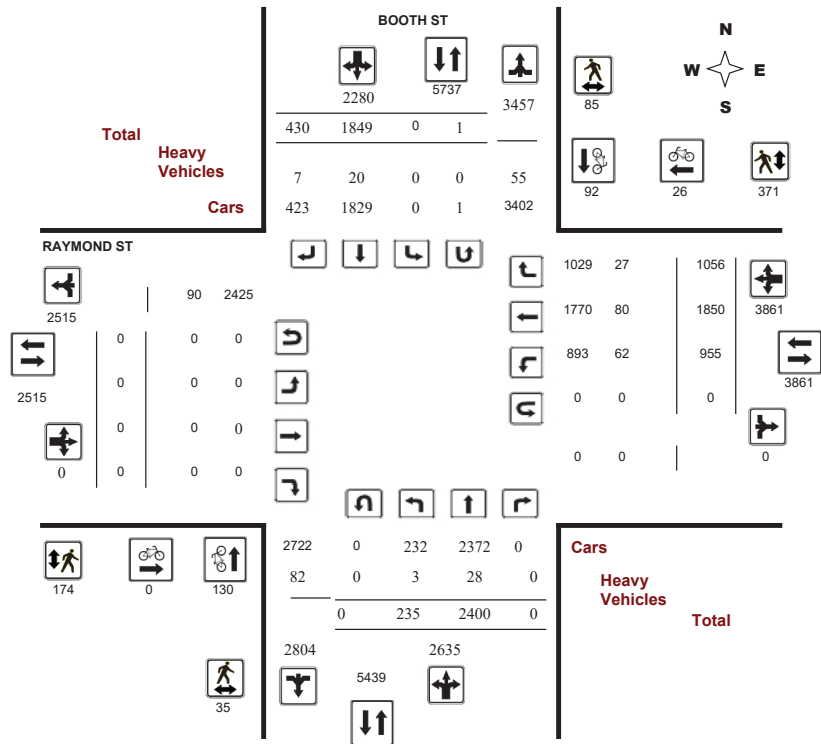
Survey Date: Thursday, September 01, 2016

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

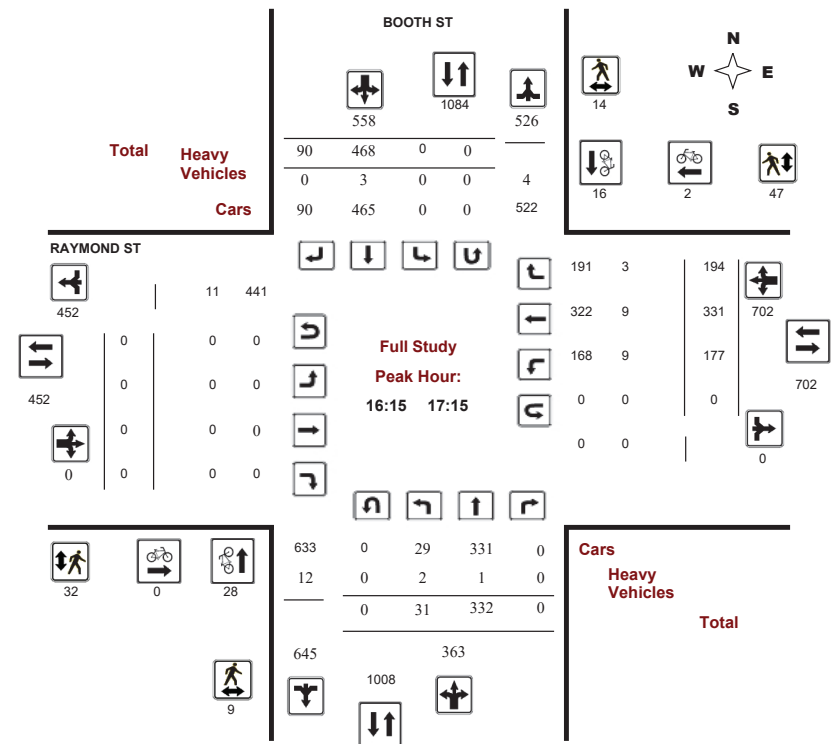
Survey Date: Thursday, September 01, 2016

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 **AADT Factor**

Northbound: 0 Southbound: 1

Eastbound: 0 Westbound: 0

1.00

Period	BOOTH ST								RAYMOND ST								Grand Total							
	Northbound				Southbound				Eastbound				Westbound											
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT						
07:00 08:00	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				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

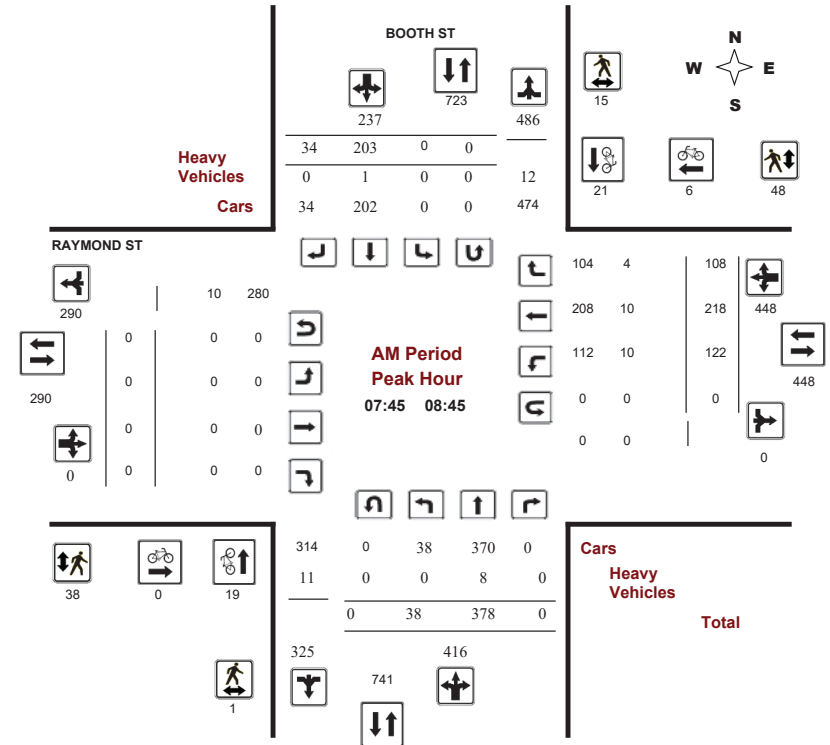
BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016

WO No: 36266

Start Time: 07:00

Device: Miovision





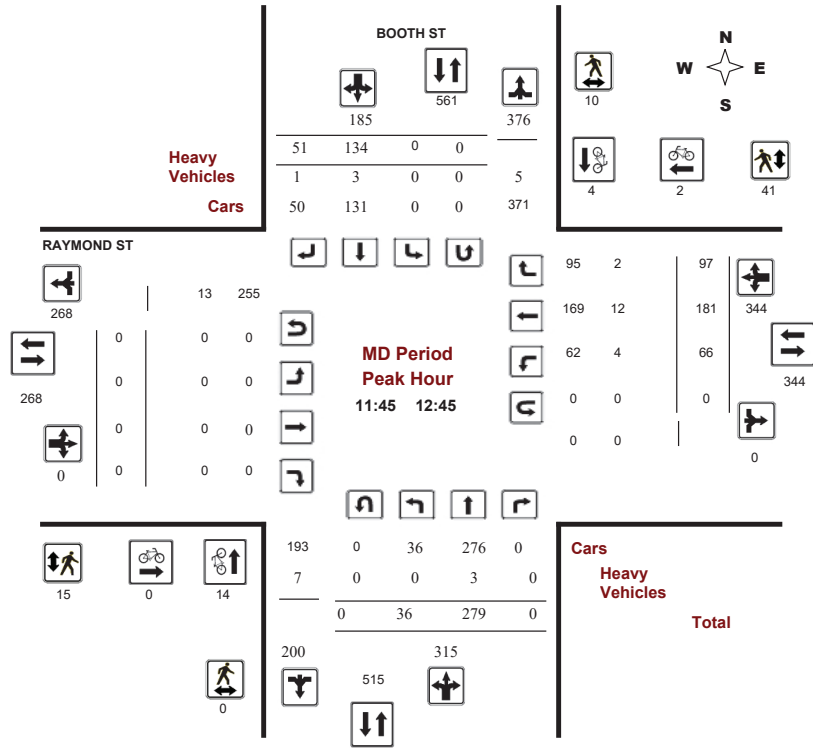
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016
Start Time: 07:00

WO No: 36266
Device: Miovision



Comments



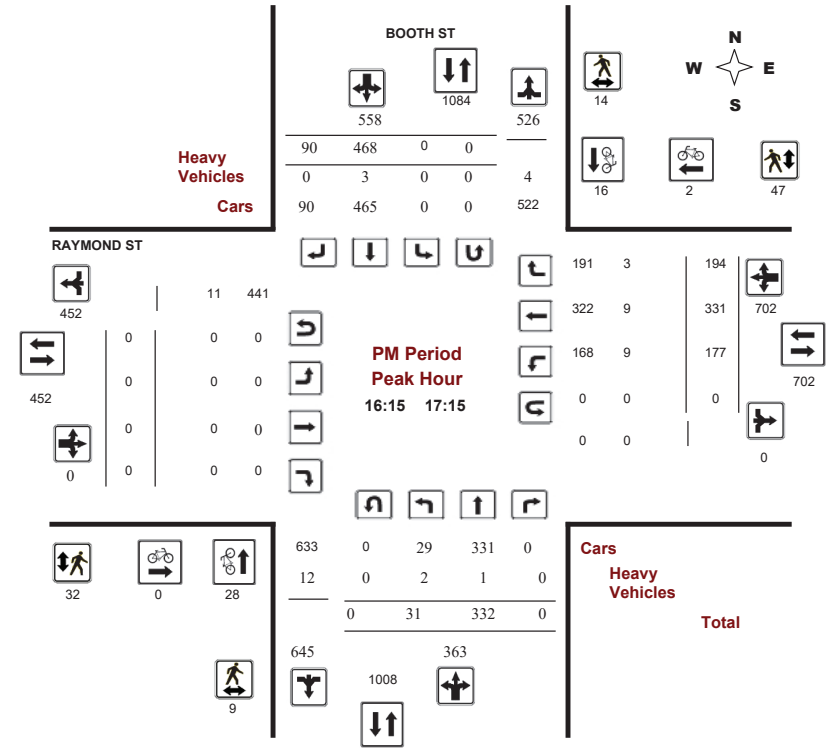
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BOOTH ST @ RAYMOND ST

Survey Date: Thursday, September 01, 2016
Start Time: 07:00

WO No: 36266
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

Table with columns for Time Period, Northbound, Southbound, Eastbound, Westbound, and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.

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

Table with columns for Time Period, Northbound, Southbound, Street Total, Eastbound, Westbound, Street Total, and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.



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

Table with columns: 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. Rows show pedestrian counts for various time intervals from 07:00 to 18:00.



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

Table with columns: Time Period, Northbound (LT, ST, RT, N TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), Grand Total. Rows show heavy vehicle counts for various time intervals from 07:00 to 18:00.



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 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

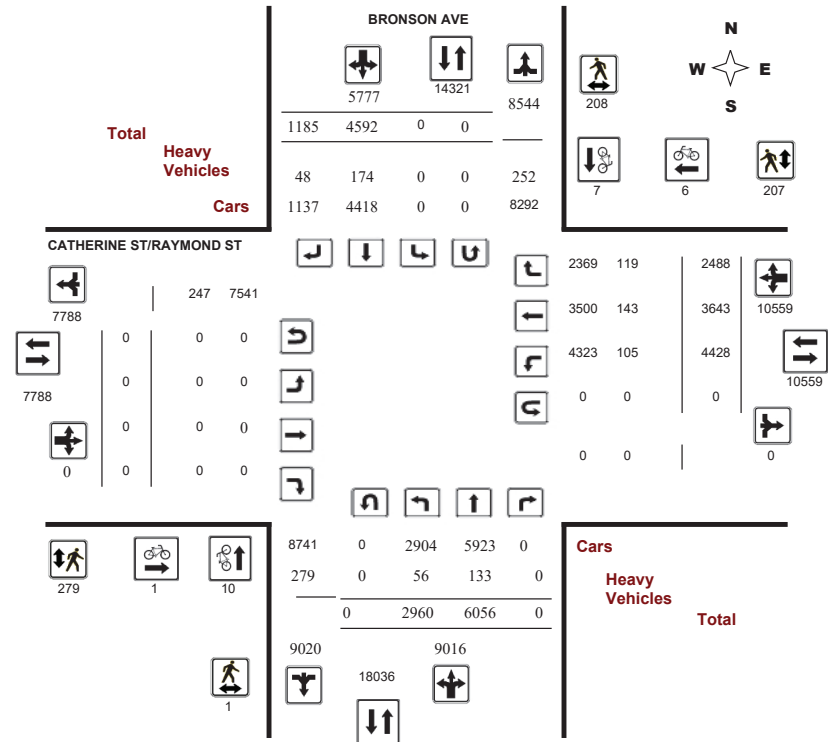
Survey Date: Thursday, April 19, 2018

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

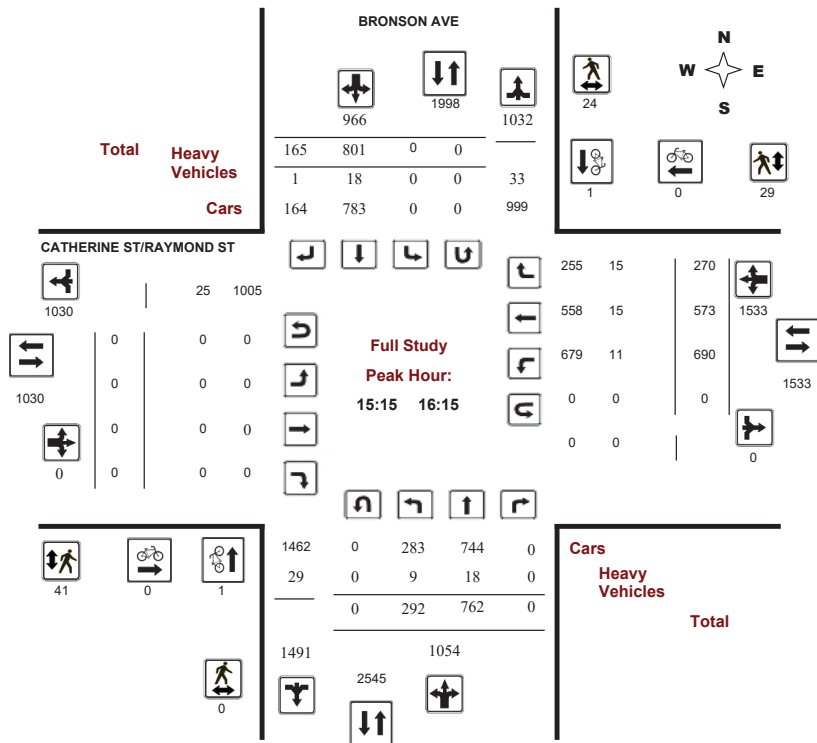
Survey Date: Thursday, April 19, 2018

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

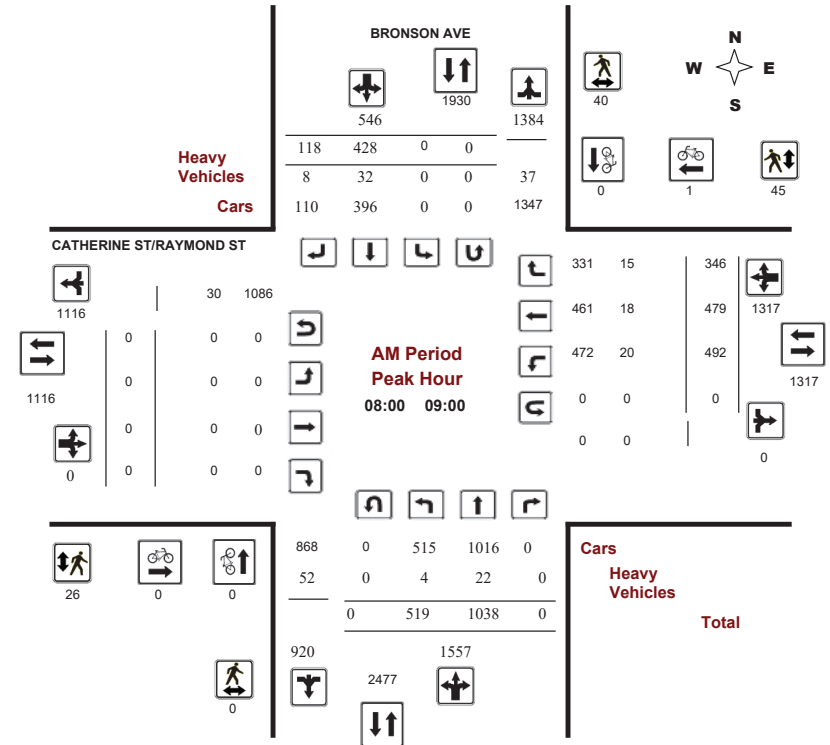
BRONSON AVE @ CATHERINE ST/RAYMOND ST

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



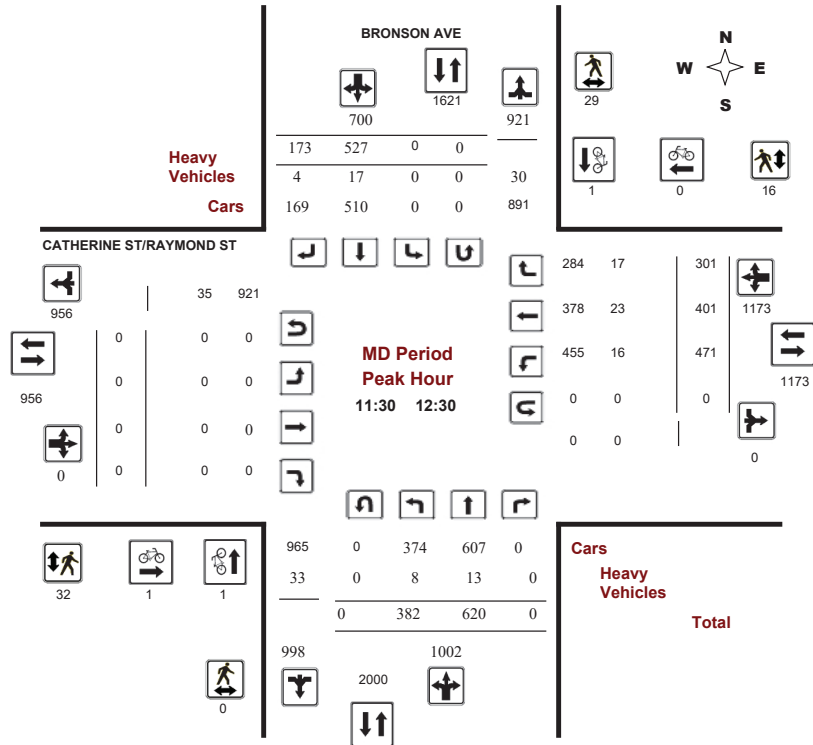
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018
Start Time: 07:00

WO No: 39598
Device: Miovision



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



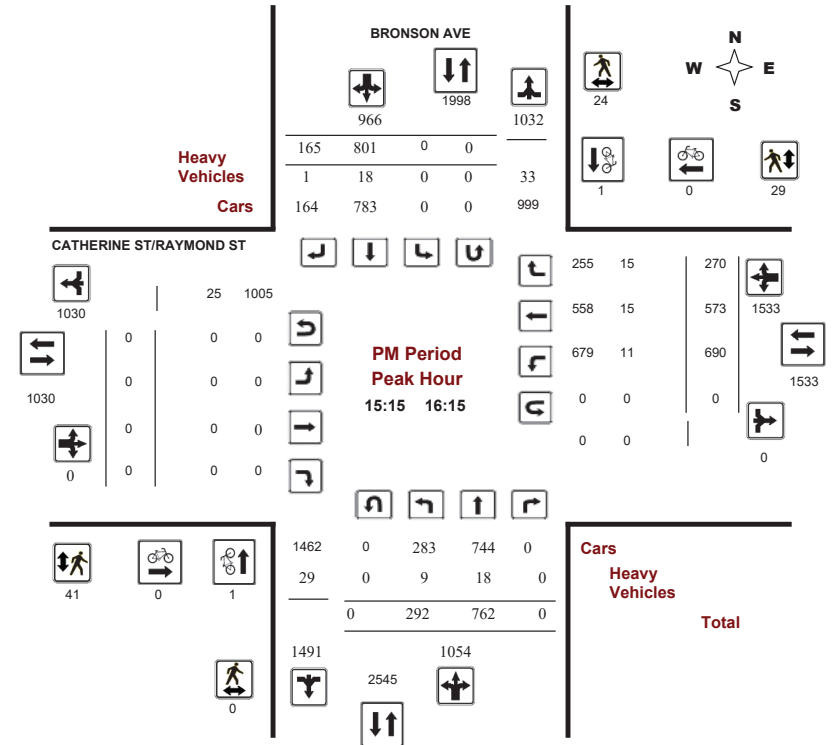
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ CATHERINE ST/RAYMOND ST

Survey Date: Thursday, April 19, 2018
Start Time: 07:00

WO No: 39598
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 AADT Factor
Northbound: 0 Southbound: 0 Eastbound: 0 Westbound: 0 .90

Table with columns for Period, Northbound, Southbound, Eastbound, Westbound, and Grand Total. Includes sub-totals for U-Turns, EQ 12Hr, and AVG 24Hr.

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

Table with columns for Time Period, Northbound, Southbound, Eastbound, Westbound, and Grand Total. Shows 15-minute increments from 07:00 to 17:45.

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

Table with columns: Time Period, Northbound, Southbound, Street Total, Eastbound, Westbound, Street Total, Grand Total. Rows show cyclist volume data for Bronson Ave and Catherine St/Raymond St from 07:00 to 18:00.



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

Table with columns: Time Period, NB Approach, SB Approach, Total, EB Approach, WB Approach, Total, Grand Total. Rows show pedestrian volume data for Bronson Ave and Catherine St/Raymond St from 07:00 to 18:00.

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

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



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

Table with columns for Time Period, Northbound U-Turn Total, Southbound U-Turn Total, Eastbound U-Turn Total, Westbound U-Turn Total, and Total. Rows represent 15-minute intervals from 07:00 to 18:00.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

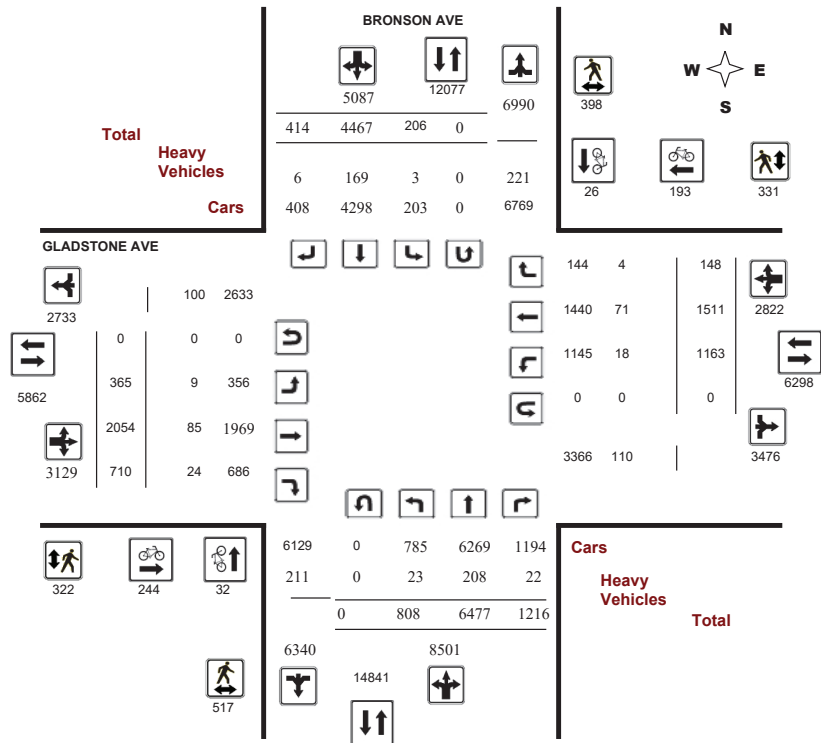
Survey Date: Wednesday, July 27, 2016

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

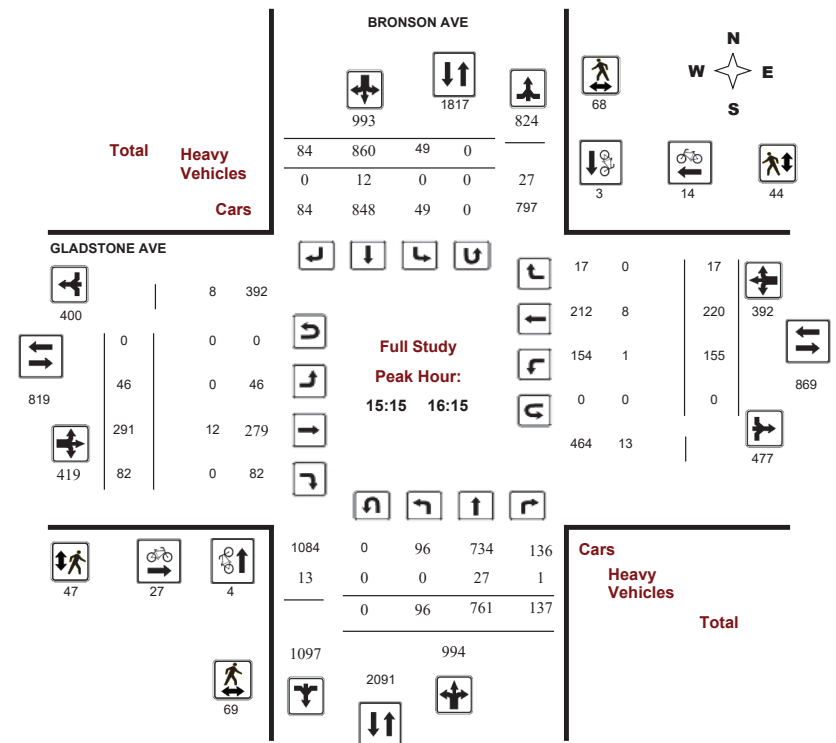
Survey Date: Wednesday, July 27, 2016

WO No: 36090

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





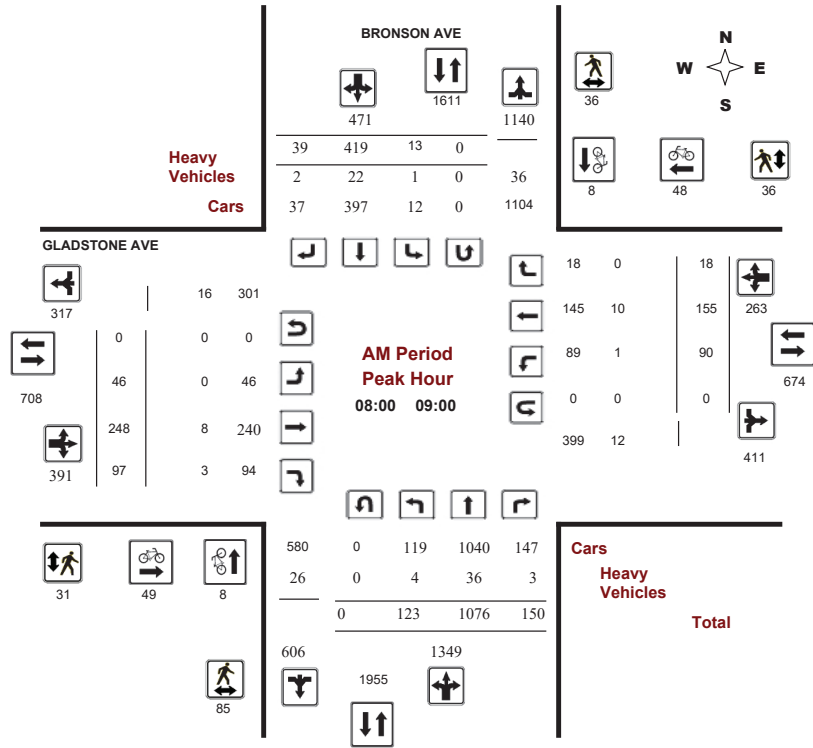
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36090
Device: Miovision



Comments



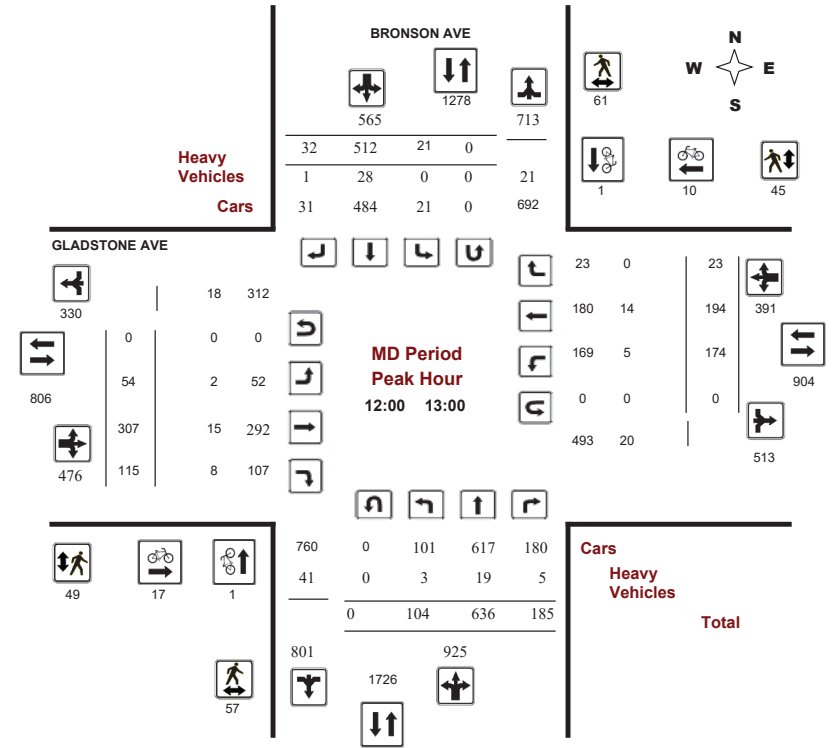
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36090
Device: Miovision



Comments



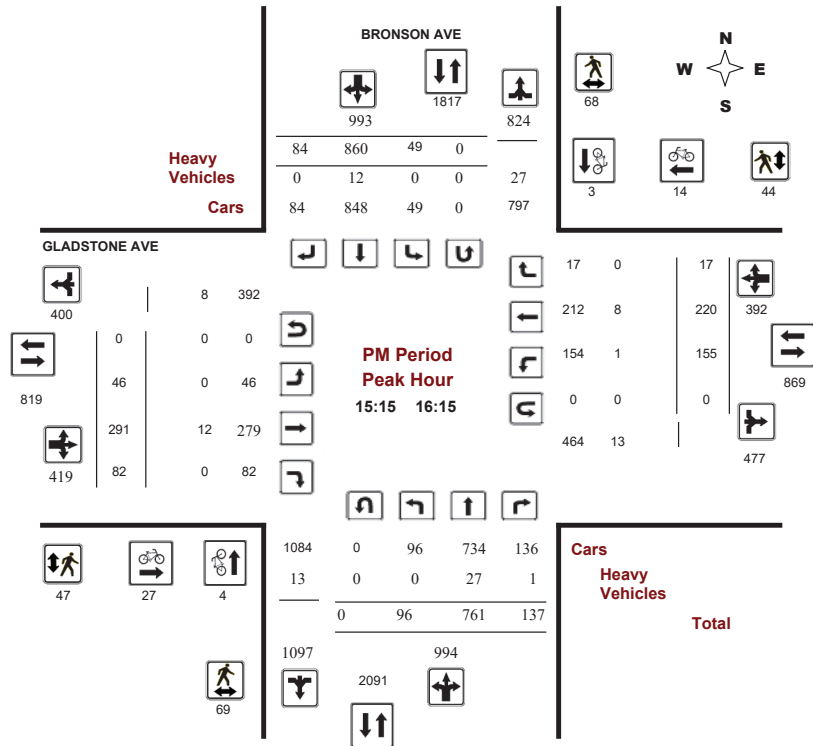
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36090
Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BRONSON AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36090
Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, July 27, 2016

Total Observed U-Turns **AADT Factor**

Northbound: 0 Southbound: 0 .90

Eastbound: 0 Westbound: 0

Period	BRONSON AVE								GLADSTONE AVE								Grand Total		
	Northbound				Southbound				Eastbound				Westbound						
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT		WB TOT	STR TOT
07:00-08:00	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	1638	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	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

Table with columns for Time Period, Northbound, Southbound, Eastbound, Westbound, and Grand Total. Rows show 15-minute intervals from 07:00 to 18:00.

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

Table with columns for Time Period, Northbound, Southbound, Street Total, Eastbound, Westbound, Street Total, and Grand Total. Rows show 15-minute intervals from 07:00 to 18:00.



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

Table with columns: 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. Rows show pedestrian counts for various time intervals from 07:00 to 18:00.



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

Table with columns: Time Period, Northbound (LT, ST, RT, N TOT, STR TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), Grand Total. Rows show heavy vehicle counts for various time intervals from 07:00 to 18:00.



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 BRONSON AVE 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

BRONSON AVE @ HWY 417 BRONSON IC121AR51

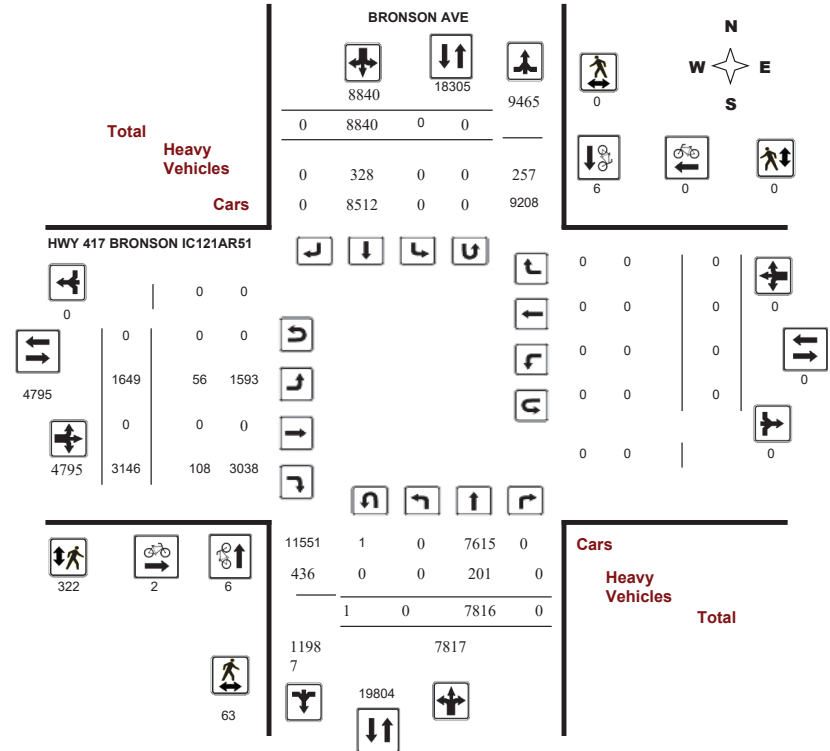
Survey Date: Thursday, October 27, 2016

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

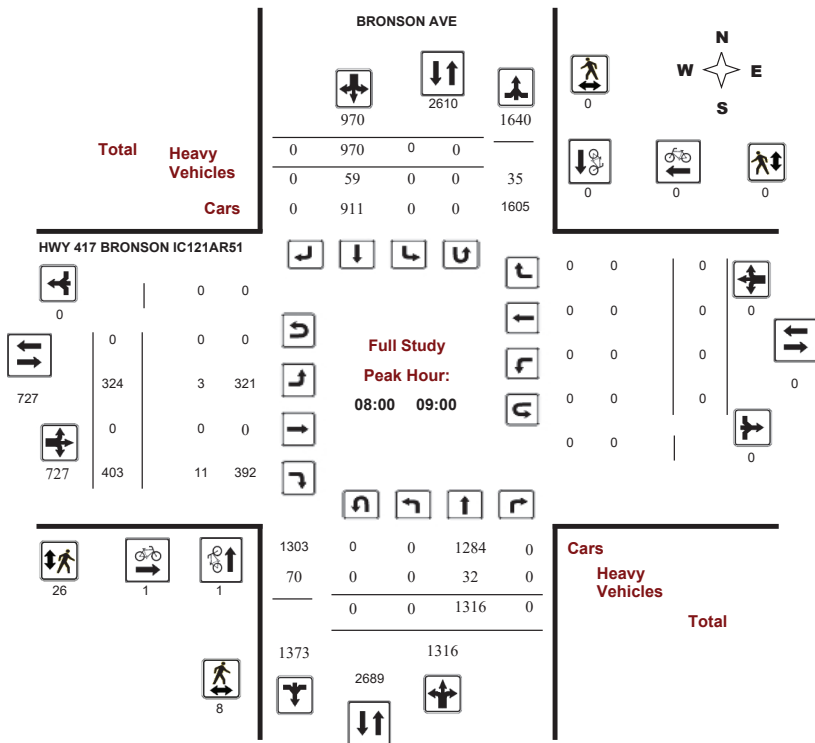
Survey Date: Thursday, October 27, 2016

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

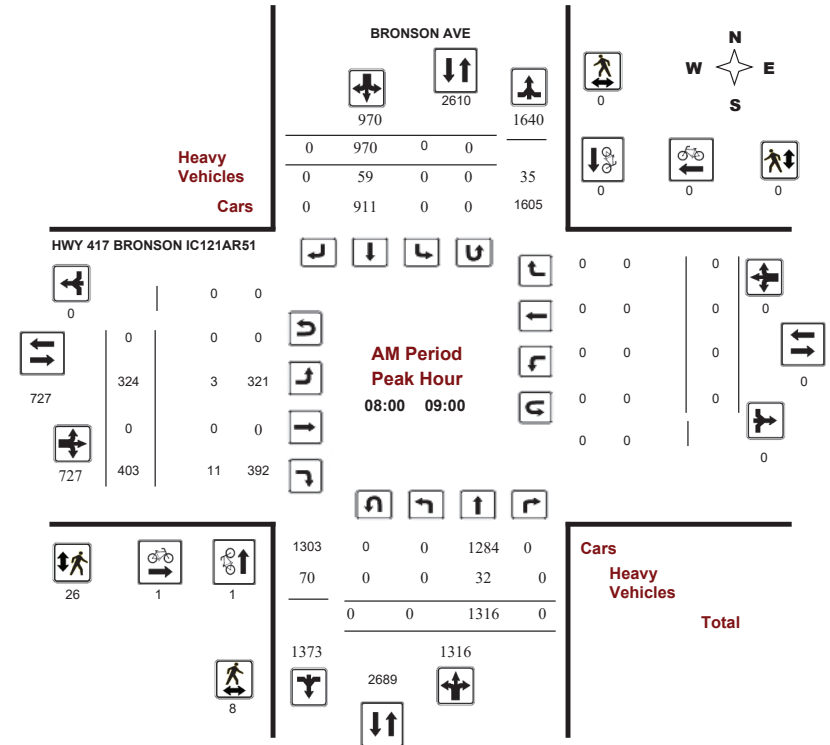
BRONSON AVE @ HWY 417 BRONSON IC121AR51

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

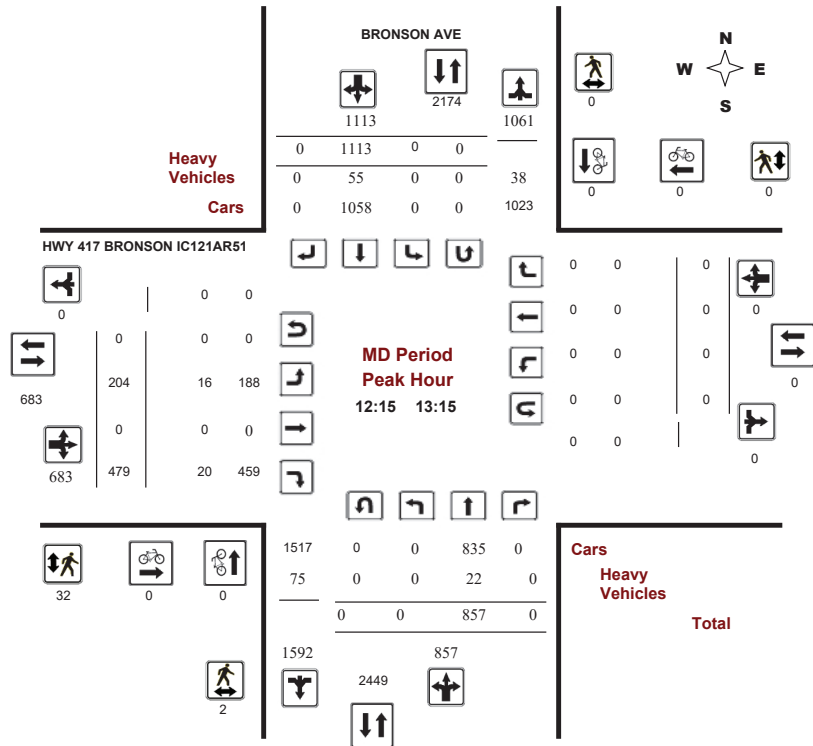
BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016

Start Time: 07:00

WO No: 39602

Device: Miovision



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



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

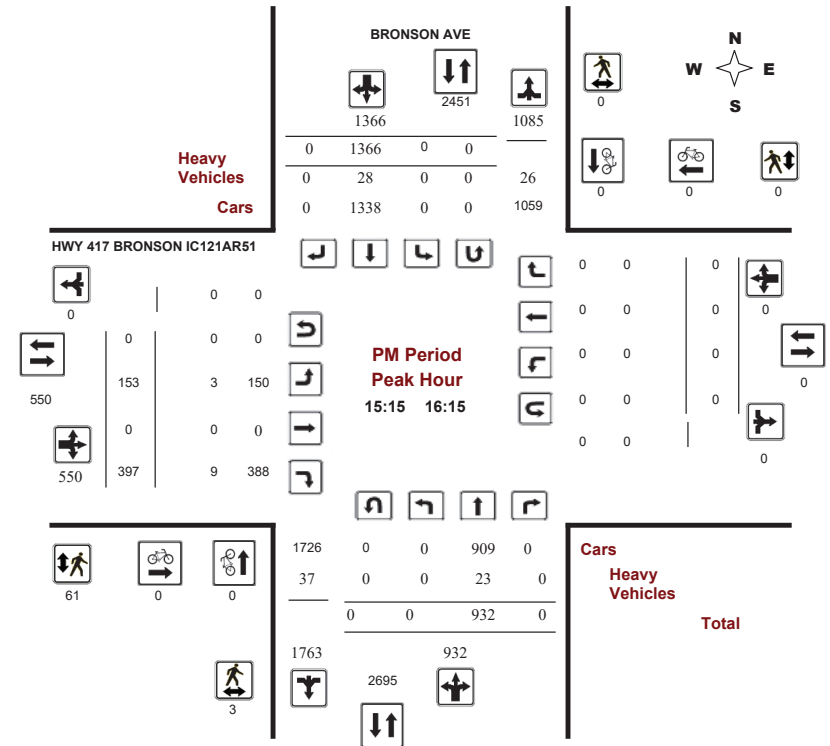
BRONSON AVE @ HWY 417 BRONSON IC121AR51

Survey Date: Thursday, October 27, 2016

Start Time: 07:00

WO No: 39602

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

Table with columns for Period, Northbound (LT, ST, RT, NB TOT), Southbound (LT, ST, RT, SB TOT), Eastbound (LT, ST, RT, EB TOT), Westbound (LT, ST, RT, WB TOT), STR TOT, Grand Total. Includes sub-totals for U Turns, EQ 12Hr, and AVG 24Hr.



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

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

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

Table with columns: Time Period, Northbound, Southbound, Street Total, Eastbound, Westbound, Street Total, Grand Total. Rows show cyclist counts for various time intervals from 07:00 to 17:45.



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

Table with columns: Time Period, NB Approach, SB Approach, Total, EB Approach, WB Approach, Total, Grand Total. Rows show pedestrian counts for various time intervals from 07:00 to 17:45.

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

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



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

Table with columns for Time Period, Northbound U-Turn Total, Southbound U-Turn Total, Eastbound U-Turn Total, Westbound U-Turn Total, and Total. Rows represent 15-minute intervals from 07:00 to 18:00.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

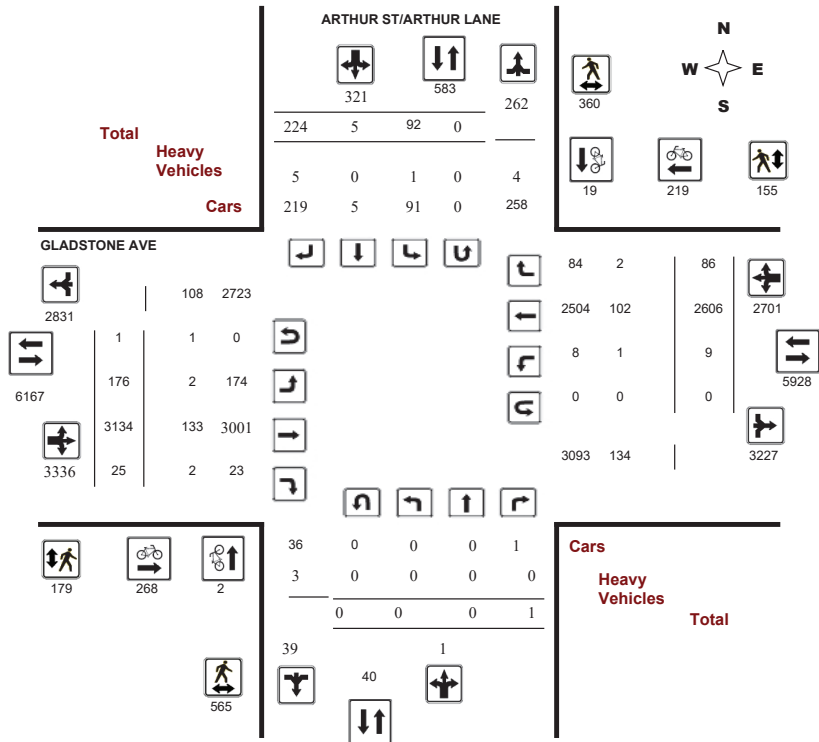
Survey Date: Wednesday, July 27, 2016

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

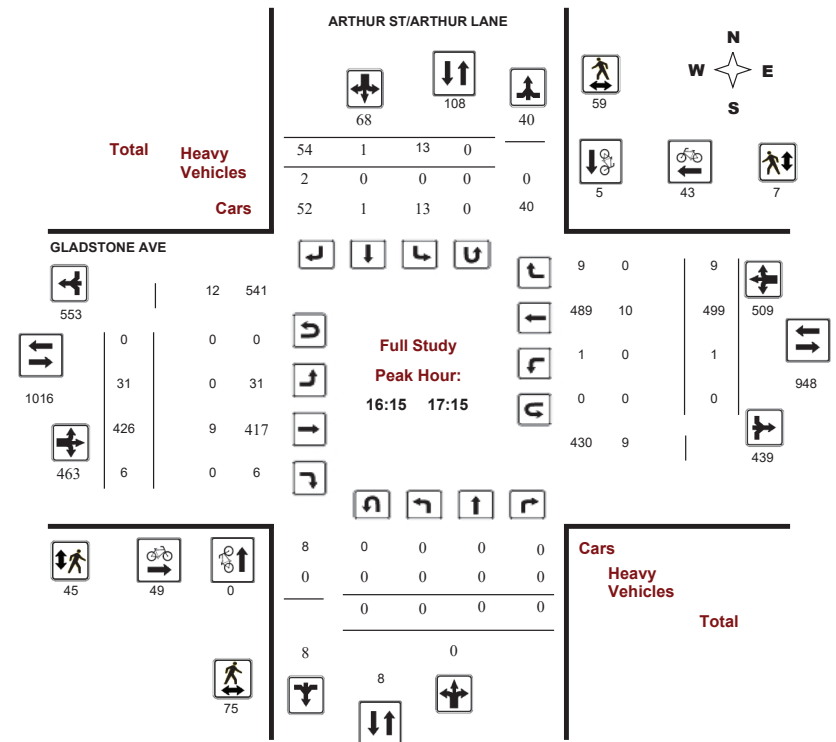
Survey Date: Wednesday, July 27, 2016

WO No: 36094

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





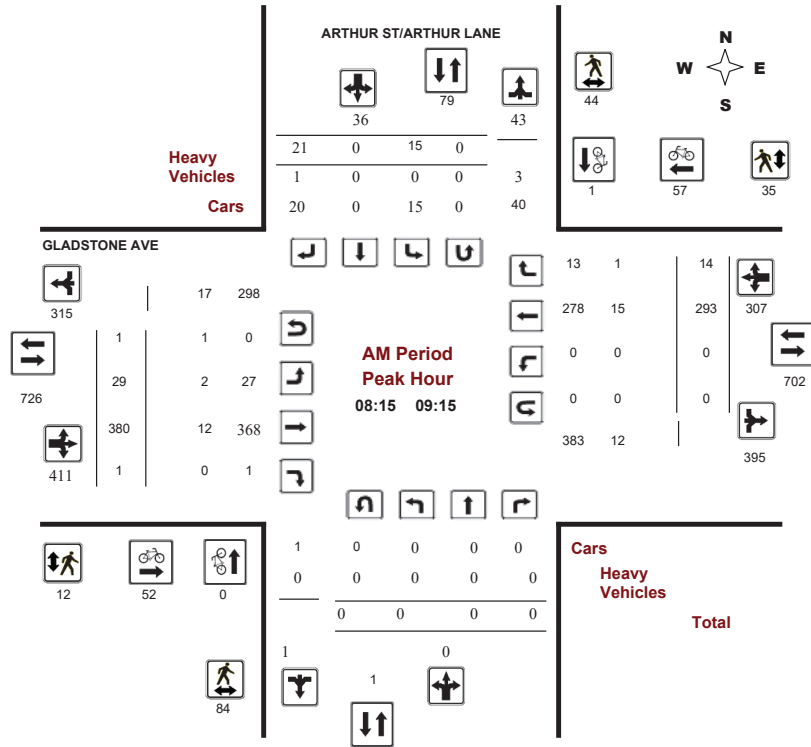
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36094
Device: Miovision



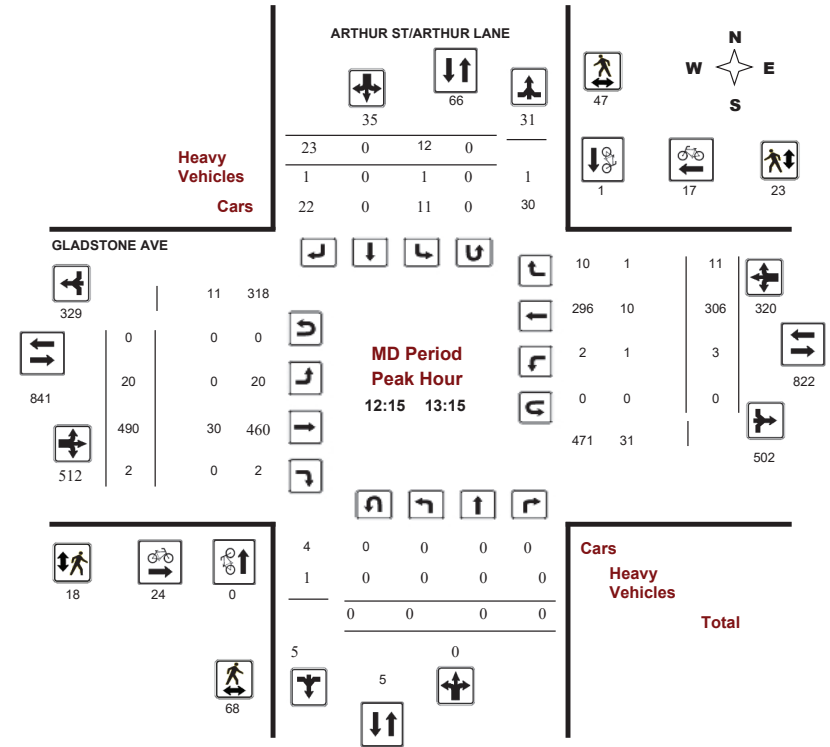
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36094
Device: Miovision





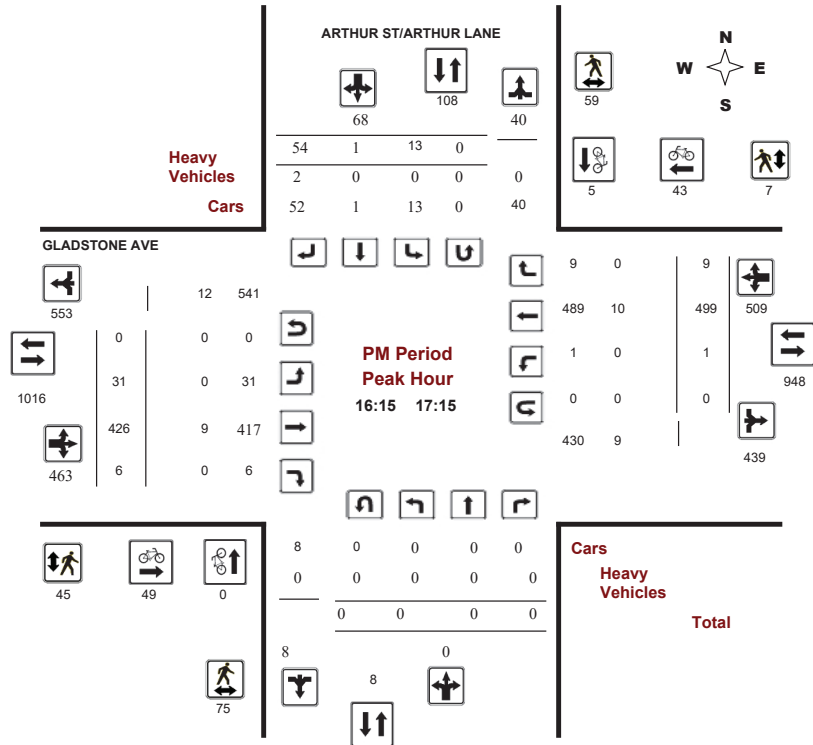
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36094
Device: Miovision



Transportation Services - Traffic Services

Turning Movement Count - Study Results

GLADSTONE AVE @ ARTHUR ST/ARTHUR LANE

Survey Date: Wednesday, July 27, 2016
Start Time: 07:00

WO No: 36094
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

Period	ARTHUR ST/ARTHUR LANE									GLADSTONE AVE									Grand Total
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT				
	LT	ST	RT	LT	ST	RT		LT	ST	RT	LT	ST	RT						
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	0	0	0	0	1	0	0	1	0	0	0	1	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

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

Note: U-Turns are included in Totals.



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

Table with columns for Time Period, Northbound, Southbound, Street Total, Eastbound, Westbound, Street Total, and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.



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

Table with columns: Time Period, NB Approach, SB Approach, Total, EB Approach, WB Approach, Grand Total. Rows show pedestrian counts for various time intervals from 07:00 to 17:45.



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

Table with columns: Time Period, Northbound (LT, ST, RT, N TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), Grand Total. Rows show heavy vehicle counts for various time intervals from 07:00 to 17:45.



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

ARTHUR ST/ARTHUR LANE 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	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

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

Existing AM Peak Hour
384 Arlington Ave

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

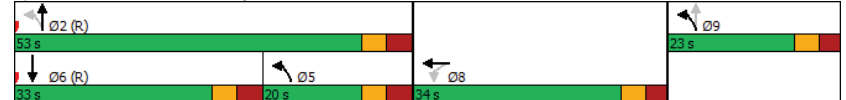
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

Existing AM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
2: Bronson & Arlington

Existing AM Peak Hour
384 Arlington Ave

	↖	→	↗	←	↖	↑	↗	↓
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

Lanes, Volumes, Timings
2: Bronson & Arlington

Existing AM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
3: Bronson & Gladstone

Existing AM Peak Hour
384 Arlington Ave

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		8		2		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				

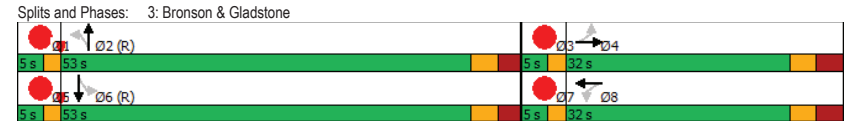
Intersection Summary

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

Lanes, Volumes, Timings
3: Bronson & Gladstone

Existing AM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
4: Booth & Gladstone

Existing AM Peak Hour
384 Arlington Ave

	↖	→	↗	←	↖	↑	↗	↓
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

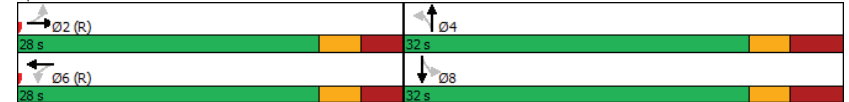
Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 50

Lanes, Volumes, Timings
4: Booth & Gladstone

Existing AM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
5: Arthur & Gladstone

Existing AM Peak Hour
384 Arlington Ave

	↖	→	←	↓
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

Lanes, Volumes, Timings
5: Arthur & Gladstone

Existing AM Peak Hour
384 Arlington Ave

Maximum v/c Ratio: 0.37	Intersection LOS: A
Intersection Signal Delay: 7.3	ICU Level of Service C
Intersection Capacity Utilization 67.6%	
Analysis Period (min) 15	

Splits and Phases: 5: Arthur & Gladstone



Lanes, Volumes, Timings
6: Booth & Raymond

Existing AM Peak Hour
384 Arlington Ave

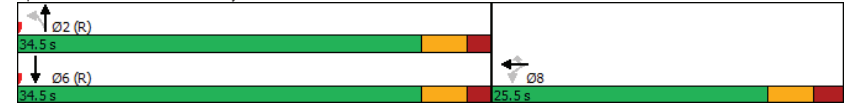
	←	↙	↘	↑	↓
Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↔	↔	↔	↔	↔
Traffic Volume (vph)	218	108	38	378	203
Future Volume (vph)	218	108	38	378	203
Lane Group Flow (vph)	378	120	42	420	264
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	8			2	6
Permitted Phases		8	2		
Detector Phase	8	8	2	2	6
Switch 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					

Lanes, Volumes, Timings
6: Booth & Raymond

Existing AM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

Existing AM Peak Hour
384 Arlington Ave

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

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

Existing AM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

Existing PM Peak Hour
384 Arlington

	↖	←	↙	↑	↓
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:NBT and 6:SBT, Start of Green
 Natural Cycle: 100

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

Existing PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
2: Bronson & Arlington

Existing PM Peak Hour
384 Arlington

	↖	→	↗	←	↖	↑	↗	↓
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

Lanes, Volumes, Timings
2: Bronson & Arlington

Existing PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
3: Bronson & Gladstone

Existing PM Peak Hour
384 Arlington

	↖	→	↗	←	↖	↑	↗	↓	Ø1	Ø3	Ø5	Ø7
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
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				

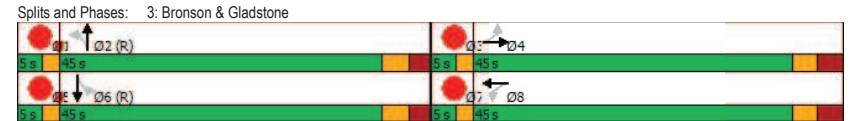
Intersection Summary

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

Lanes, Volumes, Timings
3: Bronson & Gladstone

Existing PM Peak Hour
384 Arlington

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.



Lanes, Volumes, Timings
4: Booth & Gladstone

Existing PM Peak Hour
384 Arlington

	↖	→	↗	←	↖	↑	↗	↓
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

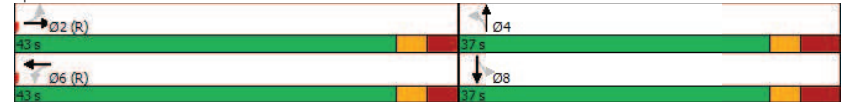
Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 55

Lanes, Volumes, Timings
4: Booth & Gladstone

Existing PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
5: Arthur & Gladstone

Existing PM Peak Hour
384 Arlington

	↖	→	↙	←	↓
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:WBT, Start of Green					
Natural Cycle: 55					

Lanes, Volumes, Timings
5: Arthur & Gladstone

Existing PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
6: Booth & Raymond

Existing PM Peak Hour
384 Arlington

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

Lanes, Volumes, Timings
6: Booth & Raymond

Existing PM Peak Hour
384 Arlington









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



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

Existing PM Peak Hour
384 Arlington

				
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

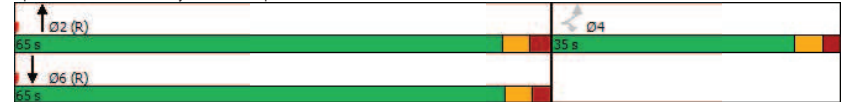
Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

Existing PM Peak Hour
384 Arlington

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

2020-08-25	2020	15:11	RAYMOND ST btwn HWY417 K121A 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 K121A 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 LEBRETTON ST N & BELL ST N (_32AAIL)	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

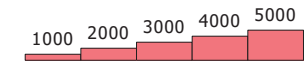
N/A

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



Legend

AM Peak Hour Total Traffic Volume



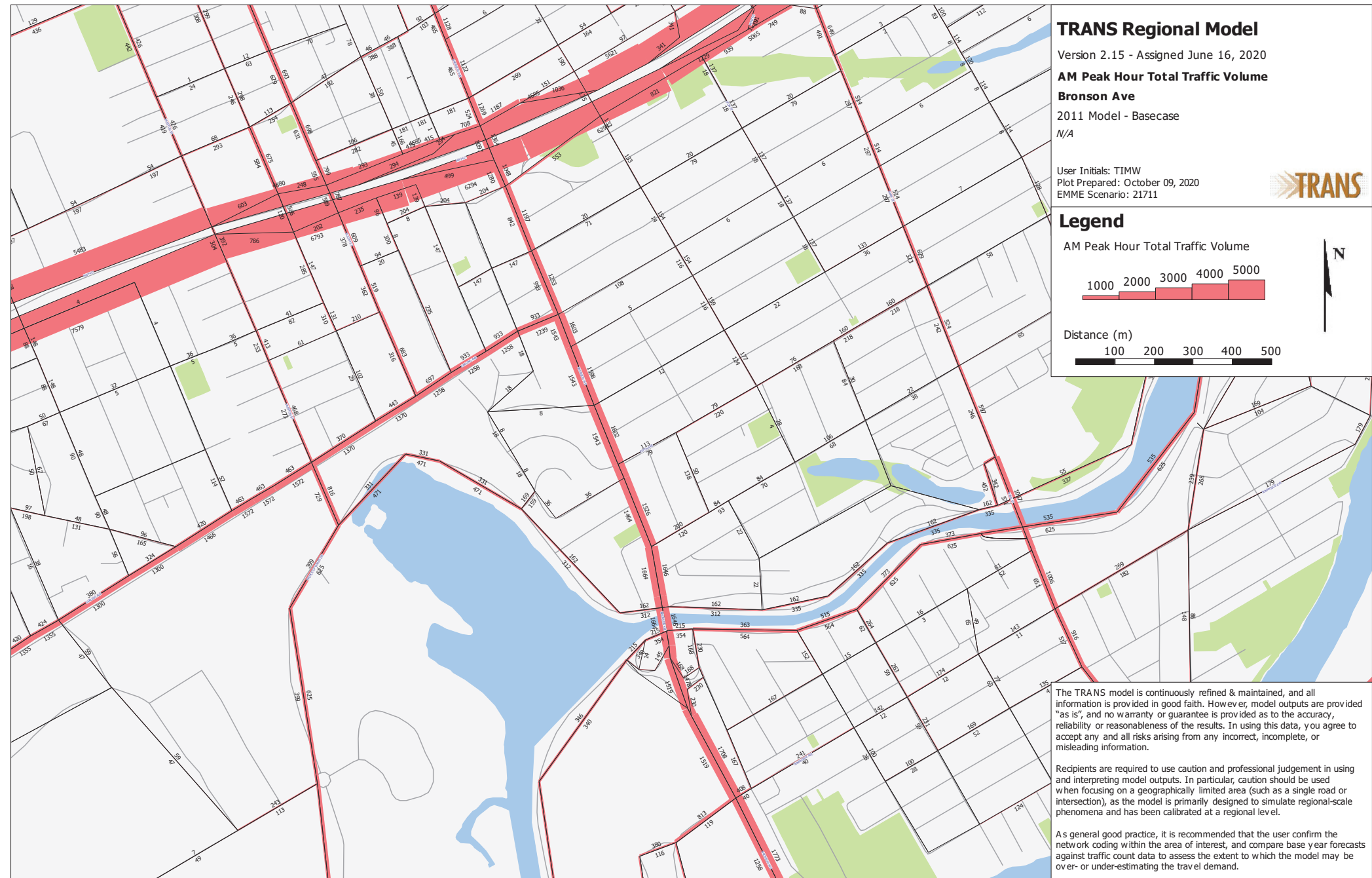
Distance (m)



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

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

As a 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

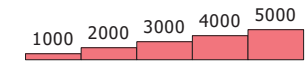
N/A

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



Legend

AM Peak Hour Total Traffic Volume



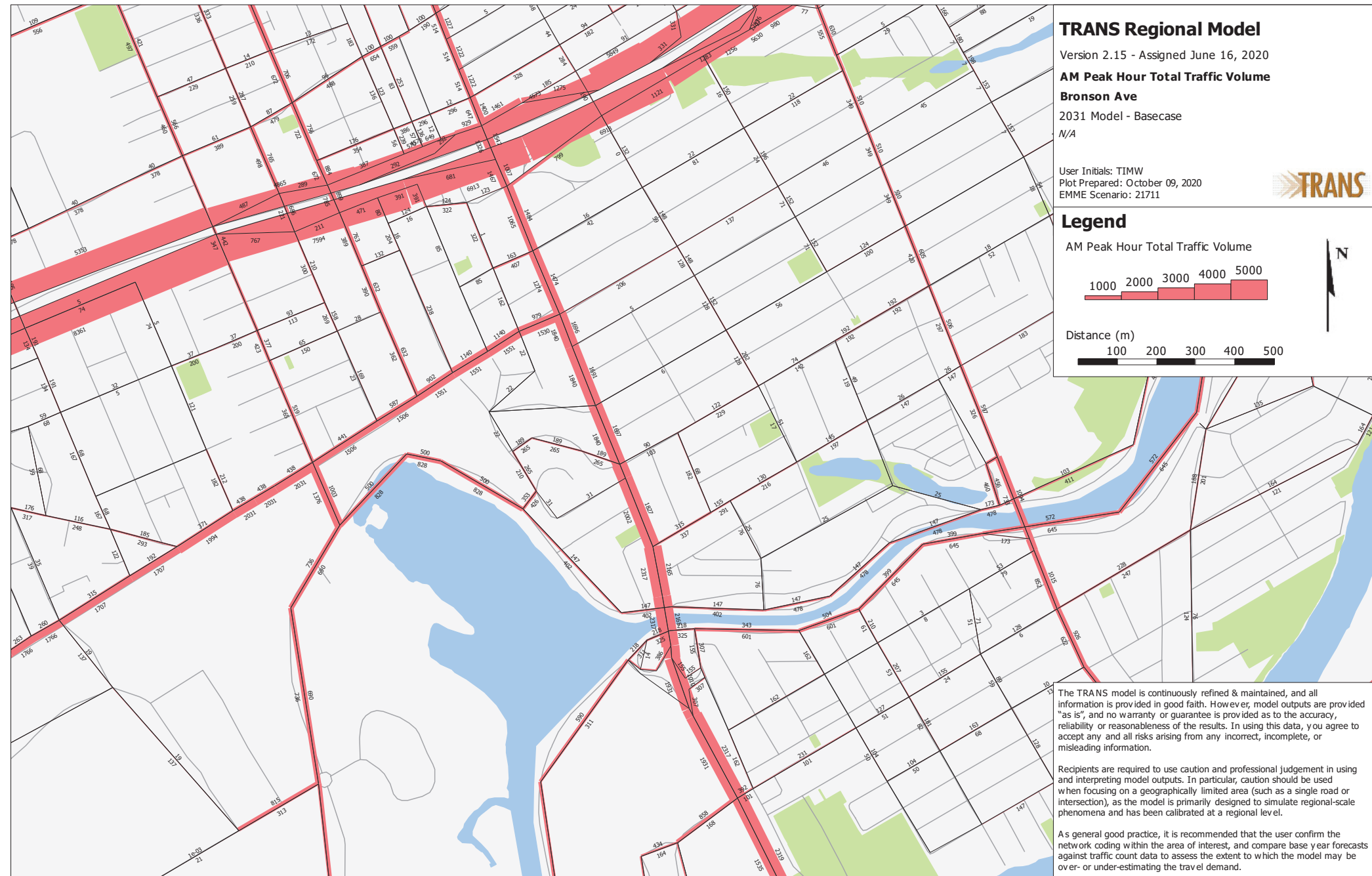
Distance (m)



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

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TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

18 Louisa Street

2011 Model - Basecase

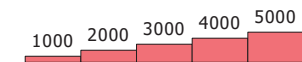
N/A

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

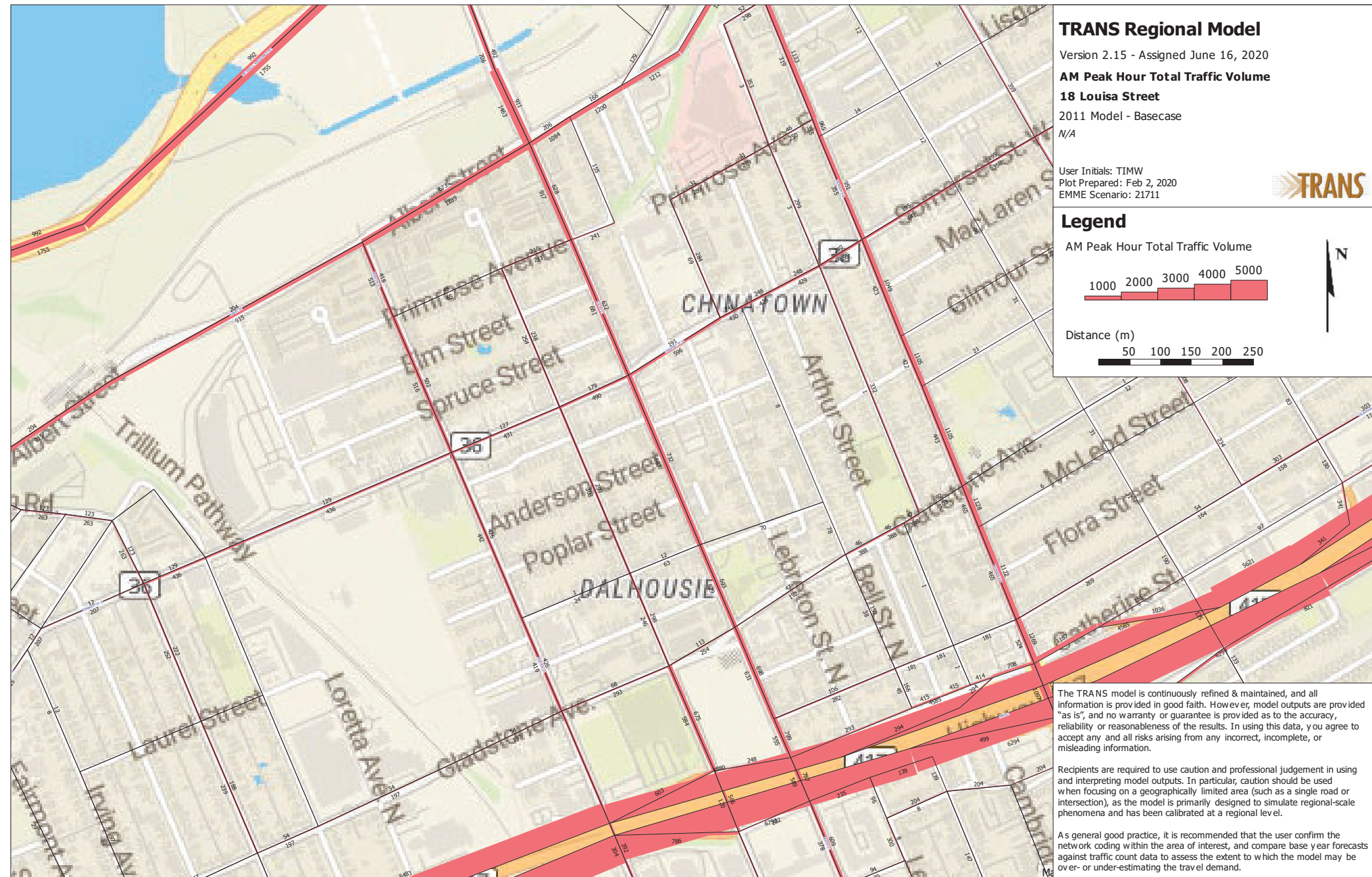
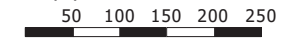


Legend

AM Peak Hour Total Traffic Volume



Distance (m)



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As a 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

2031 Model - Basecase

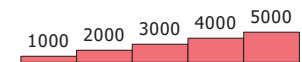
N/A

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

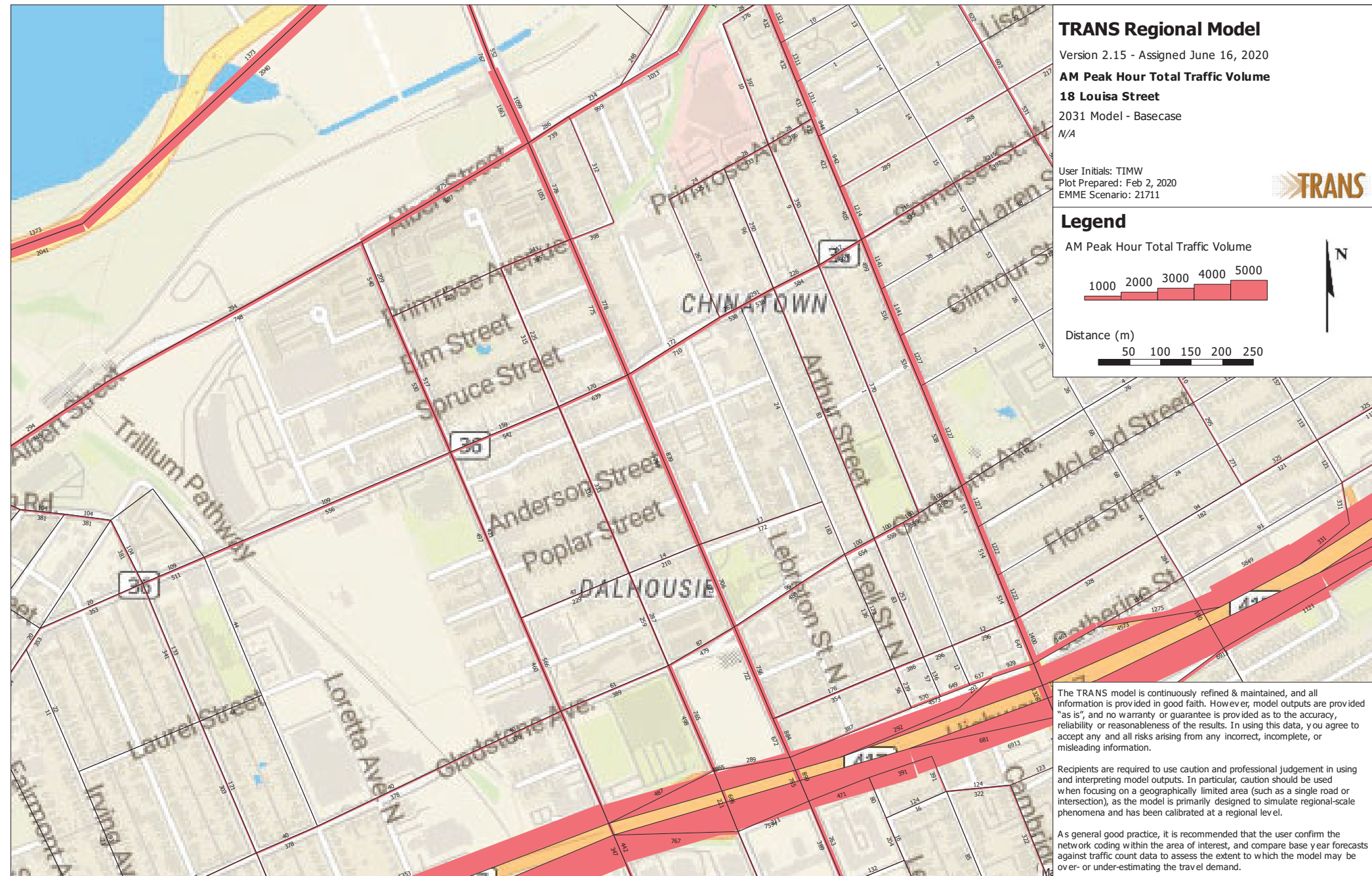


Legend

AM Peak Hour Total Traffic Volume



Distance (m)



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

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

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

Appendix F

Background Development Volumes

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

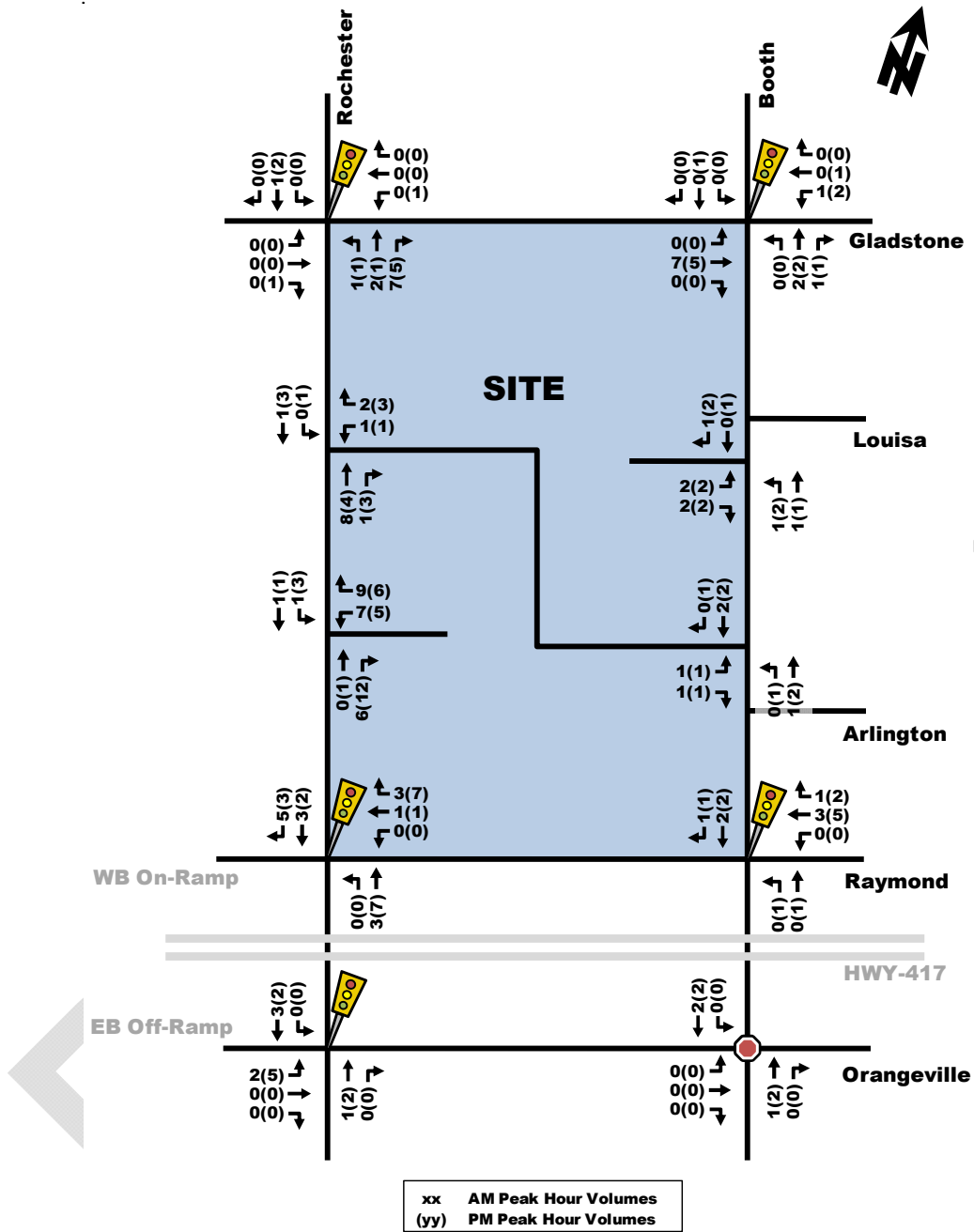
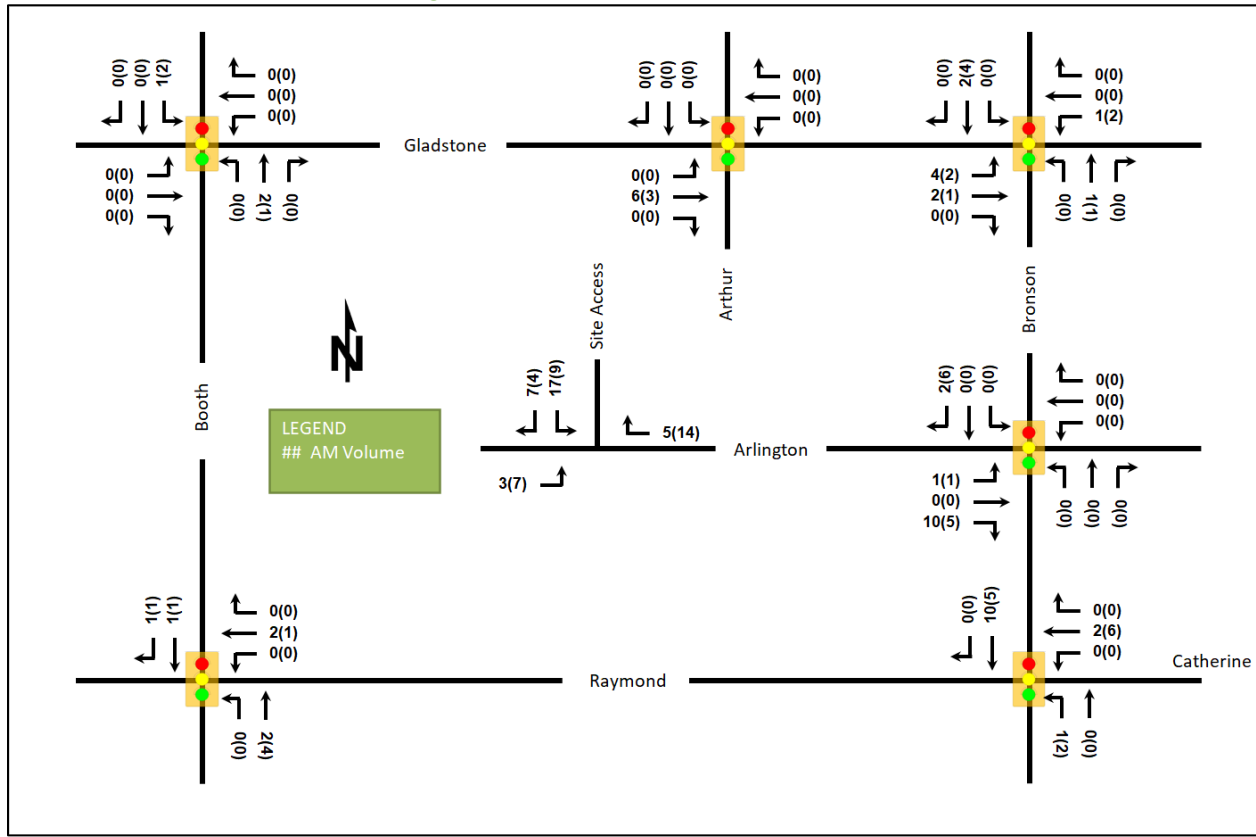


Figure 11: New Site Generation Auto Volumes



Appendix G

Synchro Intersection Worksheets – 2026 Future Background Conditions

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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

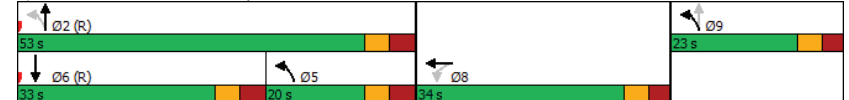
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

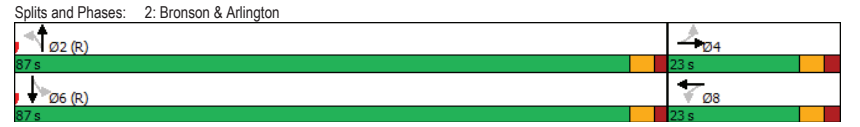
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Traffic Volume (vph)	10	4	8	2	13	1421	2	547
Future Volume (vph)	10	4	8	2	13	1421	2	547
Lane Group Flow (vph)	0	48	0	21	0	1440	0	565
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		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

Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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		8		2		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				

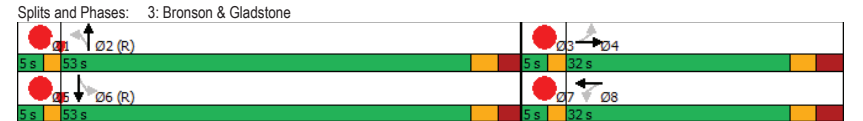
Intersection Summary

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

Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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

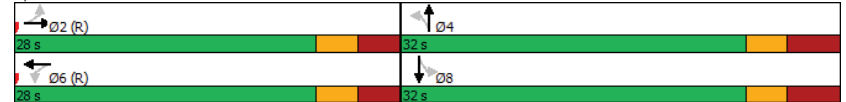
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55

Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future Background AM Peak Hour
384 Arlington Ave

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

Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future Background AM Peak Hour
384 Arlington Ave

Maximum v/c Ratio: 0.42	Intersection LOS: A
Intersection Signal Delay: 7.6	ICU Level of Service D
Intersection Capacity Utilization 73.8%	
Analysis Period (min) 15	

Splits and Phases: 5: Arthur & Gladstone



Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

	←	↖	↗	↑	↓
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:NBT and 6:SBT, Start of Green
 Natural Cycle: 55

Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

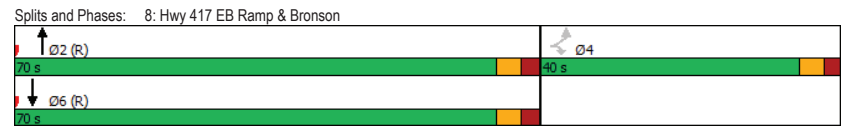
Lane Group	EBL	EBR	NBT	SBT
Lane Configurations	↘	↗	↕	↕
Traffic Volume (vph)	349	454	1303	988
Future Volume (vph)	349	454	1303	988
Lane Group Flow (vph)	349	454	1303	988
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (s)	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

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future BackgroundAM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future Background PM Peak Hour
384 Arlington

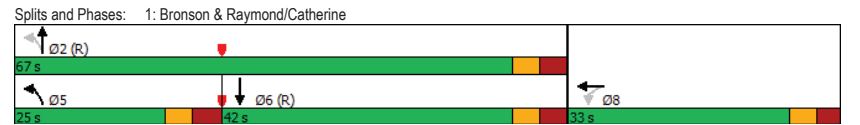
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↔	↔↔↔	↔	↔↔	↔↔
Traffic Volume (vph)	690	584	314	809	840
Future Volume (vph)	690	584	314	809	840
Lane Group Flow (vph)	386	1158	314	809	1005
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch 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:NBL and 6:SBT, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future Background PM Peak Hour
384 Arlington

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.



Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future Background PM Peak Hour
384 Arlington

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:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55

Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future Background PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future Background PM Peak Hour
384 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				

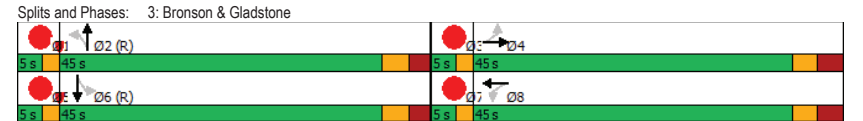
Intersection Summary

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

Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future Background PM Peak Hour
384 Arlington

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.



Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future Background PM Peak Hour
384 Arlington

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

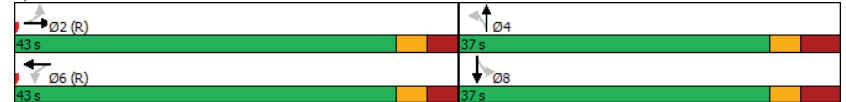
Intersection Summary
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60

Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future Background PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future BackgroundPM Peak Hour
384 Arlington

	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					

Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future BackgroundPM Peak Hour
384 Arlington

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	

Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future Background PM Peak Hour
384 Arlington

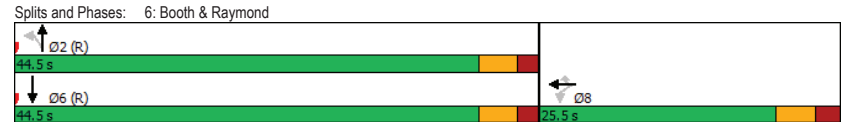
Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↔	↔	↔	↔	↔
Traffic Volume (vph)	337	196	32	357	510
Future Volume (vph)	337	196	32	357	510
Lane Group Flow (vph)	514	196	32	357	602
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	8			2	6
Permitted Phases		8	2		
Detector Phase	8	8	2	2	6
Switch Phase					
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:NBL and 6:SBT, Start of Green
 Natural Cycle: 60

Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future Background PM Peak Hour
384 Arlington

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.



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future BackgroundPM Peak Hour
384 Arlington

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

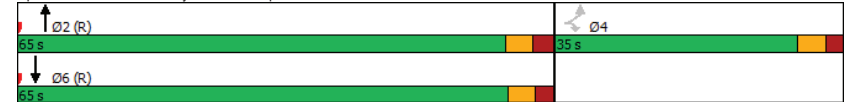
Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 75

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future BackgroundPM Peak Hour
384 Arlington

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

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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

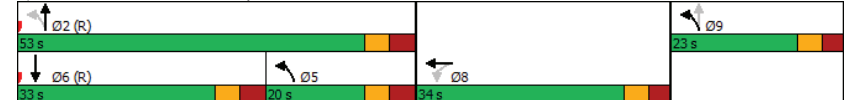
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

	↖	→	↗	←	↖	↑	↗	↓
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

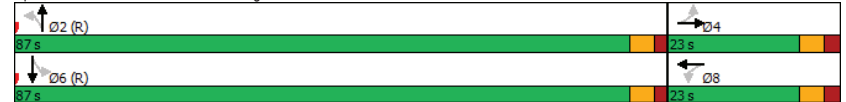
Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 11 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60

Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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

Splits and Phases: 2: Bronson & Arlington



Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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

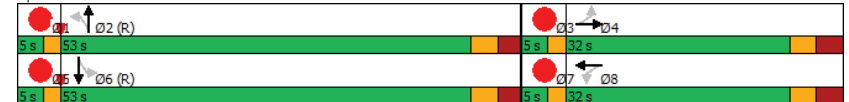
Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 26 (27%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.15
 Intersection Signal Delay: 40.8
 Intersection Capacity Utilization 103.4%
 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



Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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

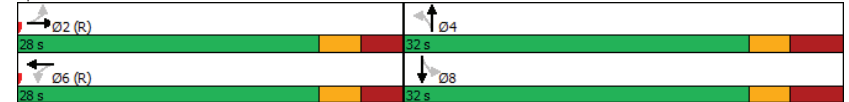
Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 55

Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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				

Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

Maximum v/c Ratio: 0.48	Intersection LOS: A
Intersection Signal Delay: 8.5	ICU Level of Service D
Intersection Capacity Utilization 78.0%	
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



Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

	←	↙	↘	↑	↓
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:NBT and 6:SBT, Start of Green
Natural Cycle: 55

Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

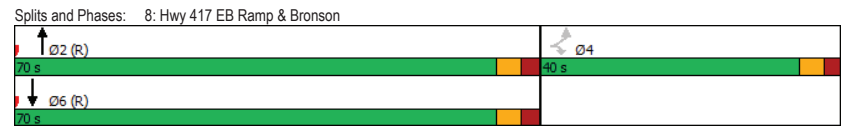
Lane Group	EBL	EBR	NBT	SBT
Lane Configurations	↖ ↗	↖ ↗	↕	↕
Traffic Volume (vph)	376	489	1336	1025
Future Volume (vph)	376	489	1336	1025
Lane Group Flow (vph)	376	489	1336	1025
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	4		
Detector Phase	4	4	2	6
Switch Phase				
Minimum Initial (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

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future BackgroundAM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future Background PM Peak Hour
384 Arlington

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:NBT and 6:SBT, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future Background PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future Background PM Peak Hour
384 Arlington

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

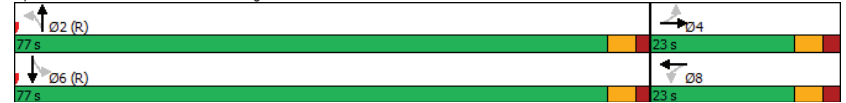
Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 29 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55

Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future Background PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future BackgroundPM Peak Hour
384 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				

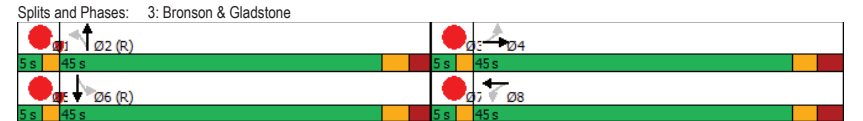
Intersection Summary

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

Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future BackgroundPM Peak Hour
384 Arlington

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.



Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future Background PM Peak Hour
384 Arlington

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

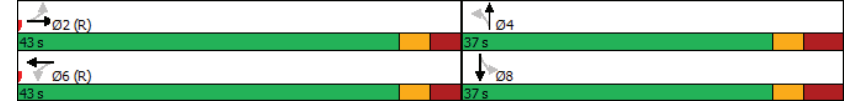
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65

Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future Background PM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future BackgroundPM Peak Hour
384 Arlington

	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					

Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future BackgroundPM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future Background PM Peak Hour
384 Arlington

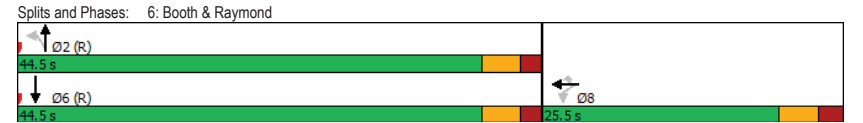
Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↔	↔	↔	↔	↔
Traffic Volume (vph)	337	196	32	371	536
Future Volume (vph)	337	196	32	371	536
Lane Group Flow (vph)	514	196	32	371	628
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	8			2	6
Permitted Phases		8	2		
Detector Phase	8	8	2	2	6
Switch Phase					
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:NBL and 6:SBT, Start of Green
 Natural Cycle: 60

Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future Background PM Peak Hour
384 Arlington

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.



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future Background PM Peak Hour
384 Arlington

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

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future Background PM Peak Hour
384 Arlington

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.



Appendix I

Synchro Intersection Worksheets – 2026 Future Total Conditions

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future TotalAM Peak Hour
384 Arlington Ave

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

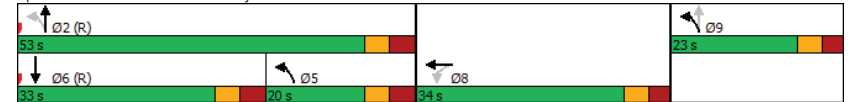
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future TotalAM Peak Hour
384 Arlington Ave

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



HCM Signalized Intersection Capacity Analysis
1: Bronson & Raymond/Catherine

2026 Future TotalAM Peak Hour
384 Arlington Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔↔↔		↔	↔↔			↔↔	
Traffic Volume (vph)	0	0	0	533	526	346	545	1080	0	0	473	122
Future Volume (vph)	0	0	0	533	526	346	545	1080	0	0	473	122
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)				6.3	6.3		6.8	6.8			6.8	
Lane Util. Factor				0.86	0.86		1.00	0.95			0.95	
Frbp, ped/bikes				1.00	0.98		1.00	1.00			0.99	
Flpb, ped/bikes				1.00	1.00		1.00	1.00			1.00	
Frt				1.00	0.95		1.00	1.00			0.97	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1398	4064		1652	3316			3025	
Flt Permitted				0.95	0.99		0.29	1.00			1.00	
Satd. Flow (perm)				1398	4064		499	3316			3025	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	533	526	346	545	1080	0	0	473	122
RTOR Reduction (vph)	0	0	0	0	69	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	0	0	357	979	0	545	1080	0	0	574	0
Confl. Peds. (#/hr)	40					40	26		45	45		26
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	2%	7%	7%
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2	9				
Actuated Green, G (s)				27.7	27.7		63.0	63.0			26.2	
Effective Green, g (s)				27.7	27.7		63.0	63.0			26.2	
Actuated g/C Ratio				0.25	0.25		0.57	0.57			0.24	
Clearance Time (s)				6.3	6.3		6.8	6.8			6.8	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				352	1023		600	1899			720	
v/s Ratio Prot							c0.25	0.24			0.19	
v/s Ratio Perm				c0.26	0.24		c0.27	0.09				
v/c Ratio				1.01	0.96		0.91	0.57			0.80	
Uniform Delay, d1				41.1	40.6		18.7	14.9			39.4	
Progression Factor				1.00	1.00		0.79	0.76			0.94	
Incremental Delay, d2				51.6	19.5		15.7	0.9			8.9	
Delay (s)				92.8	60.1		30.6	12.2			45.8	
Level of Service				F	E		C	B			D	
Approach Delay (s)	0.0				68.4			18.4			45.8	
Approach LOS	A				E			B			D	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	26.1
Intersection Capacity Utilization	120.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future TotalAM Peak Hour
384 Arlington Ave

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

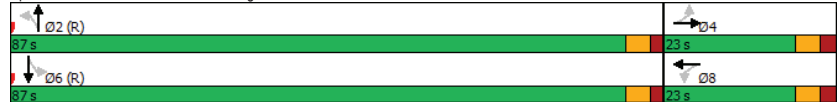
Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 11 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 60	

Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future TotalAM Peak Hour
384 Arlington Ave

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



HCM Signalized Intersection Capacity Analysis
2: Bronson & Arlington

2026 Future TotalAM Peak Hour
384 Arlington Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	11	4	42	8	2	11	13	1421	6	2	551	16
Future Volume (vph)	11	4	42	8	2	11	13	1421	6	2	551	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.6			5.6			5.2			5.2	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frbp, ped/bikes		0.96			0.97			1.00			1.00	
Flpb, ped/bikes		0.99			0.98			1.00			1.00	
Frt		0.90			0.93			1.00			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1480			1418			3275			3139	
Flt Permitted		0.94			0.88			0.95			0.95	
Satd. Flow (perm)		1400			1269			3108			2988	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	4	42	8	2	11	13	1421	6	2	551	16
RTOR Reduction (vph)	0	38	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	19	0	0	11	0	0	1440	0	0	568	0
Confl. Peds. (#/hr)	19		23	23		19	27		21	21		27
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)		2%	2%	13%	2%	9%	8%	3%	2%	2%	7%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.8			10.8			88.4			88.4	
Effective Green, g (s)		10.8			10.8			88.4			88.4	
Actuated g/C Ratio		0.10			0.10			0.80			0.80	
Clearance Time (s)		5.6			5.6			5.2			5.2	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		137			124			2497			2401	
v/s Ratio Prot												
v/s Ratio Perm		c0.01			0.01			c0.46			0.19	
v/c Ratio		0.14			0.09			0.58			0.24	
Uniform Delay, d1		45.4			45.1			4.0			2.6	
Progression Factor		1.00			1.00			0.69			1.00	
Incremental Delay, d2		0.5			0.3			0.8			0.2	
Delay (s)		45.8			45.4			3.5			2.9	
Level of Service		D			D			A			A	
Approach Delay (s)		45.8			45.4			3.5			2.9	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			4.9					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			110.0					Sum of lost time (s)			10.8	
Intersection Capacity Utilization			71.8%					ICU Level of Service			C	
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

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

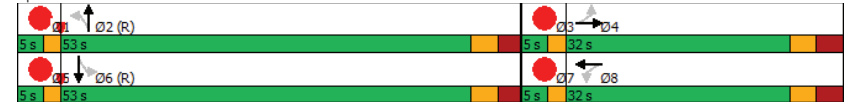
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 26 (27%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

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



HCM Signalized Intersection Capacity Analysis
3: Bronson & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	54	324	90	85	179	18	123	1122	150	13	412	39
Future Volume (vph)	54	324	90	85	179	18	123	1122	150	13	412	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.96	1.00	0.99	1.00	0.98	1.00	0.98	1.00	0.99	1.00	0.99
Flpb, ped/bikes	0.96	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.99	1.00	0.98	1.00	0.98	1.00	0.99	1.00	0.99
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1587	1606	1581	1646	1554	3174	1566	3144	1566	3144	1566	3144
Flt Permitted	0.58	1.00	0.23	1.00	0.48	1.00	0.11	1.00	0.11	1.00	0.11	1.00
Satd. Flow (perm)	964	1606	380	1646	782	3174	188	3144	188	3144	188	3144
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	324	90	85	179	18	123	1122	150	13	412	39
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	414	0	85	197	0	123	1272	0	13	451	0
Confl. Peds. (#/hr)	36		85	85		36	31		36	36		31
Confl. Bikes (#/hr)			49		48				8			8
Heavy Vehicles (%)	2%	3%	3%	2%	6%	2%	3%	3%	2%	8%	5%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.8	25.8		25.8	25.8		47.0	47.0		47.0	47.0	
Effective Green, g (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	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	261	436		103	447		386	1570		93	1555	
v/s Ratio Prot		c0.26			0.12			c0.40			0.14	
v/s Ratio Perm	0.06			0.22			0.16			0.07		
v/c Ratio	0.21	0.95		0.83	0.44		0.32	0.81		0.14	0.29	
Uniform Delay, d1	26.7	34.0		32.5	28.6		14.4	20.2		13.0	14.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	32.2		50.3	3.1		2.2	4.6		3.1	0.5	
Delay (s)	28.5	66.1		82.8	31.8		16.6	24.9		16.1	14.6	
Level of Service	C	E		F	C		B	C		B	B	
Approach Delay (s)		61.8			47.1			24.1			14.7	
Approach LOS		E			D			C			B	

Intersection Summary				
HCM 2000 Control Delay		31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio		0.79		
Actuated Cycle Length (s)		95.0	Sum of lost time (s)	16.2
Intersection Capacity Utilization		100.1%	ICU Level of Service	G
Analysis Period (min)		15		
c Critical Lane Group				

Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

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

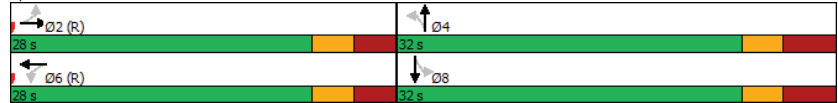
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 55	

Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

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.

Splts and Phases: 4: Booth & Gladstone



HCM Signalized Intersection Capacity Analysis
4: Booth & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (vph)	26	387	71	43	264	31	51	363	78	39	138	20
Future Volume (vph)	26	387	71	43	264	31	51	363	78	39	138	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.1	6.1		6.1	6.1		6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.97	1.00		0.97	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1572	1615		1602	1652		1648	1676		1618	1705	
Flt Permitted	0.54	1.00		0.34	1.00		0.66	1.00		0.42	1.00	
Satd. Flow (perm)	899	1615		577	1652		1140	1676		711	1705	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	387	71	43	264	31	51	363	78	39	138	20
RTOR Reduction (vph)	0	11	0	0	7	0	0	13	0	0	9	0
Lane Group Flow (vph)	26	447	0	43	288	0	51	428	0	39	149	0
Confl. Peds. (#/hr)	28		43	43		28	4		29	29		4
Confl. Bikes (#/hr)			40			45			8			7
Heavy Vehicles (%)	4%	6%	2%	2%	5%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	21.9	21.9		21.9	21.9		25.1	25.1		25.1	25.1	
Effective Green, g (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	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.9	6.9		6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	328	589		210	602		476	701		297	713	
v/s Ratio Prot		c0.28			0.17			c0.26			0.09	
v/s Ratio Perm	0.03			0.07			0.04			0.05		
v/c Ratio	0.08	0.76		0.20	0.48		0.11	0.61		0.13	0.21	
Uniform Delay, d1	12.5	16.7		13.1	14.7		10.6	13.6		10.7	11.1	
Progression Factor	1.00	1.00		1.00	1.00		0.85	0.68		1.00	1.00	
Incremental Delay, d2	0.5	8.9		2.2	2.7		0.4	3.6		0.9	0.7	
Delay (s)	12.9	25.6		15.3	17.4		9.4	12.9		11.7	11.8	
Level of Service	B	C		B	B		A	B		B	B	
Approach Delay (s)		25.0			17.1			12.5			11.8	
Approach LOS		C			B			B			B	
Intersection Summary												
HCM 2000 Control Delay		17.4					HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio		0.68										
Actuated Cycle Length (s)		60.0					Sum of lost time (s)			13.0		
Intersection Capacity Utilization		88.3%					ICU Level of Service			E		
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

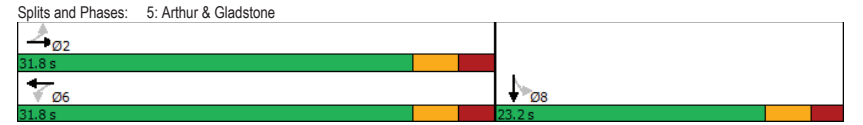
Lane Group	EBL	EBT	WBT	SBT
Lane Configurations		↔	↔	↔
Traffic Volume (vph)	30	500	338	0
Future Volume (vph)	30	500	338	0
Lane Group Flow (vph)	0	531	352	36
Turn Type	Perm	NA	NA	NA
Protected Phases		2	6	8
Permitted Phases	2			
Detector Phase	2	2	6	8
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	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

Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

Maximum v/c Ratio: 0.43	Intersection LOS: A
Intersection Signal Delay: 7.6	ICU Level of Service D
Intersection Capacity Utilization 74.1%	
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis
5: Arthur & Gladstone

2026 Future TotalAM Peak Hour
384 Arlington Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔	
Traffic Volume (vph)	30	500	1	0	338	14	0	0	0	15	0	21
Future Volume (vph)	30	500	1	0	338	14	0	0	0	15	0	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5			5.5						5.2	
Lane Util. Factor		1.00			1.00						1.00	
Frbp, ped/bikes		1.00			1.00						0.98	
Flpb, ped/bikes		1.00			1.00						0.98	
Frt		1.00			0.99						0.92	
Flt Protected		1.00			1.00						0.98	
Satd. Flow (prot)		1716			1678						1475	
Flt Permitted		0.97			1.00						0.98	
Satd. Flow (perm)		1670			1678						1475	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	500	1	0	338	14	0	0	0	15	0	21
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	531	0	0	350	0	0	0	0	0	5	0
Confl. Peds. (#/hr)	44		84	84		44	12		35	35		12
Confl. Bikes (#/hr)			12			57						1
Heavy Vehicles (%)	7%	3%	2%	2%	5%	7%	2%	2%	2%	2%	2%	5%
Turn Type	Perm	NA			NA					Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2			6						8		
Actuated Green, G (s)		39.4			39.4						8.4	
Effective Green, g (s)		39.4			39.4						8.4	
Actuated g/C Ratio		0.67			0.67						0.14	
Clearance Time (s)		5.5			5.5						5.2	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		1124			1130						211	
v/s Ratio Prot					0.21							
v/s Ratio Perm		c0.32									0.00	
v/c Ratio		0.47			0.31						0.02	
Uniform Delay, d1		4.6			3.9						21.5	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		1.4			0.7						0.0	
Delay (s)		6.0			4.7						21.6	
Level of Service		A			A						C	
Approach Delay (s)		6.0			4.7			0.0			21.6	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	10.7
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future TotalAM Peak Hour
384 Arlington Ave

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:NBT and 6:SBT, Start of Green	
Natural Cycle: 55	

Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future TotalAM Peak Hour
384 Arlington Ave

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



HCM Signalized Intersection Capacity Analysis
6: Booth & Raymond

2026 Future TotalAM Peak Hour
384 Arlington Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↔	↔	↔				↔
Traffic Volume (vph)	0	0	0	123	226	111	38	412	0	0	219	36
Future Volume (vph)	0	0	0	123	226	111	38	412	0	0	219	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)					5.5	5.5	5.2	5.2				5.2
Lane Util. Factor					1.00	1.00	1.00	1.00				1.00
Frbp, ped/bikes					1.00	0.95	1.00	1.00				0.99
Fipb, ped/bikes					1.00	1.00	0.96	1.00				1.00
Frt					1.00	0.85	1.00	1.00				0.98
Flt Protected					0.98	1.00	0.95	1.00				1.00
Satd. Flow (prot)					1648	1384	1592	1745				1690
Flt Permitted					0.98	1.00	0.60	1.00				1.00
Satd. Flow (perm)					1648	1384	1007	1745				1690
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	123	226	111	38	412	0	0	219	36
RTOR Reduction (vph)	0	0	0	0	0	74	0	0	0	0	10	0
Lane Group Flow (vph)	0	0	0	0	349	37	38	412	0	0	245	0
Confl. Peds. (#/hr)	15		1	1		15	38		48	48		38
Confl. Bikes (#/hr)						6			19			21
Heavy Vehicles (%)	2%	2%	2%	8%	5%	4%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Perm	Perm	NA				NA
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Actuated Green, G (s)					20.0	20.0	29.3	29.3				29.3
Effective Green, g (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
Clearance Time (s)					5.5	5.5	5.2	5.2				5.2
Vehicle Extension (s)					3.0	3.0	3.0	3.0				3.0
Lane Grp Cap (vph)					549	461	491	852				825
v/s Ratio Prot								0.24				0.15
v/s Ratio Perm					0.21	0.03	0.04					
v/c Ratio					0.64	0.08	0.08	0.48				0.30
Uniform Delay, d1					16.9	13.7	8.2	10.3				9.2
Progression Factor					1.00	1.00	1.00	1.00				1.53
Incremental Delay, d2					5.5	0.3	0.3	2.0				0.9
Delay (s)					22.5	14.0	8.5	12.2				14.9
Level of Service					C	B	A	B				B
Approach Delay (s)		0.0			20.4			11.9				14.9
Approach LOS		A			C			B				B
Intersection Summary												
HCM 2000 Control Delay					15.9							B
HCM 2000 Volume to Capacity ratio					0.55							
Actuated Cycle Length (s)				60.0					10.7			
Intersection Capacity Utilization				64.7%								C
Analysis Period (min)				15								
c Critical Lane Group												

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future TotalAM Peak Hour
384 Arlington Ave

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

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future TotalAM Peak Hour
384 Arlington Ave

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.



HCM Signalized Intersection Capacity Analysis
8: Hwy 417 EB Ramp & Bronson

2026 Future TotalAM Peak Hour
384 Arlington Ave

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗		↕	↕	
Traffic Volume (vph)	350	454	0	1304	996	0
Future Volume (vph)	350	454	0	1304	996	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.6	5.6		5.9	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1658	1434		3316	3191	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1658	1434		3316	3191	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	350	454	0	1304	996	0
RTOR Reduction (vph)	0	69	0	0	0	0
Lane Group Flow (vph)	350	385	0	1304	996	0
Conf. Peds. (#/hr)		8	26			26
Conf. Bikes (#/hr)		1				
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	34.4	34.4		64.1	64.1	
Effective Green, g (s)	34.4	34.4		64.1	64.1	
Actuated g/C Ratio	0.31	0.31		0.58	0.58	
Clearance Time (s)	5.6	5.6		5.9	5.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	518	448		1932	1859	
v/s Ratio Prot				c0.39	0.31	
v/s Ratio Perm	0.21	c0.27				
v/c Ratio	0.68	0.86		0.67	0.54	
Uniform Delay, d1	32.9	35.5		15.8	13.9	
Progression Factor	1.00	1.00		1.00	1.07	
Incremental Delay, d2	6.9	19.0		1.9	0.5	
Delay (s)	39.9	54.5		17.7	15.3	
Level of Service	D	D		B	B	
Approach Delay (s)	48.1			17.7	15.3	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	120.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future TotalPM Peak Hour
384 Arlington

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↖↗	↖	↕	↕
Traffic Volume (vph)	690	589	317	809	845
Future Volume (vph)	690	589	317	809	845
Lane Group Flow (vph)	386	1163	317	809	1017
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	36.4
Actuated g/C Ratio	0.27	0.27	0.60	0.60	0.36
v/c Ratio	1.02	0.99	0.89	0.41	0.87
Control Delay	88.2	59.8	43.2	17.3	22.1
Queue Delay	32.8	37.2	2.3	1.5	49.4
Total Delay	121.0	97.0	45.5	18.8	71.5
LOS	F	F	D	B	E
Approach Delay		103.0		26.3	71.5
Approach LOS		F		C	E
Queue Length 50th (m)	~89.1	82.6	44.7	63.2	40.0
Queue Length 95th (m)	#156.3	#116.3	#88.6	81.2	#127.7
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	1175
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:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2026 Future TotalPM Peak Hour
384 Arlington

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 70.9	Intersection LOS: E
Intersection Capacity Utilization 120.8%	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.	



HCM Signalized Intersection Capacity Analysis
1: Bronson & Raymond/Catherine

2026 Future TotalPM Peak Hour
384 Arlington

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	0	0	690	589	270	317	809	0	0	845	172
Future Volume (vph)	0	0	0	690	589	270	317	809	0	0	845	172
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)				6.3	6.3		6.8	6.8			6.8	
Lane Util. Factor				0.86	0.86		1.00	0.95			0.95	
Frbp, ped/bikes				1.00	0.99		1.00	1.00			0.99	
Fipb, ped/bikes				1.00	1.00		1.00	1.00			1.00	
Frt				1.00	0.97		1.00	1.00			0.97	
Flt Protected				0.95	0.99		0.95	1.00			1.00	
Satd. Flow (prot)				1426	4187		1642	3316			3186	
Flt Permitted				0.95	0.99		0.11	1.00			1.00	
Satd. Flow (perm)				1426	4187		184	3316			3186	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	690	589	270	317	809	0	0	845	172
RTOR Reduction (vph)	0	0	0	0	54	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	0	0	386	1109	0	317	809	0	0	1000	0
Confl. Peds. (#/hr)	24					24	41		29	29		41
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	2%	2%	2%	2%	3%	6%	3%	2%	2%	2%	2%	2%
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Actuated Green, G (s)				26.7	26.7		60.2	60.2			36.4	
Effective Green, g (s)				26.7	26.7		60.2	60.2			36.4	
Actuated g/C Ratio				0.27	0.27		0.60	0.60			0.36	
Clearance Time (s)				6.3	6.3		6.8	6.8			6.8	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				380	1117		358	1996			1159	
v/s Ratio Prot							c0.15	0.24			0.31	
v/s Ratio Perm				c0.27	0.27		c0.38					
v/c Ratio				1.02	0.99		0.89	0.41			0.86	
Uniform Delay, d1				36.6	36.6		26.5	10.5			29.5	
Progression Factor				1.00	1.00		0.78	1.58			0.44	
Incremental Delay, d2				50.2	25.4		20.3	0.6			8.1	
Delay (s)				86.9	61.9		40.9	17.1			21.1	
Level of Service				F	E		D	B			C	
Approach Delay (s)	0.0				68.1			23.8			21.1	
Approach LOS	A				E			C			C	
Intersection Summary												
HCM 2000 Control Delay				41.7			HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio				0.96								
Actuated Cycle Length (s)				100.0			Sum of lost time (s)				19.9	
Intersection Capacity Utilization				120.8%			ICU Level of Service				H	
Analysis Period (min)				15								
c Critical Lane Group												

Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future TotalPM Peak Hour
384 Arlington

	↖	→	↗	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Traffic Volume (vph)	13	2	2	0	24	1057	3	959
Future Volume (vph)	13	2	2	0	24	1057	3	959
Lane Group Flow (vph)	0	75	0	14	0	1093	0	984
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		0.33		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)		291		253		2416		2502
Starvation Cap Reductn		0		0		226		0
Spillback Cap Reductn		3		0		0		193
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

Lanes, Volumes, Timings
2: Bronson & Arlington

2026 Future TotalPM Peak Hour
384 Arlington

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



HCM Signalized Intersection Capacity Analysis
2: Bronson & Arlington

2026 Future TotalPM Peak Hour
384 Arlington

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔				↔			↔	
Traffic Volume (vph)	13	2	60	2	0	12	24	1057	12	3	959	22
Future Volume (vph)	13	2	60	2	0	12	24	1057	12	3	959	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.6			5.6			5.2			5.2	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frbp, ped/bikes		0.96			0.96			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.89			0.88			1.00			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1462			1392			3268			3257	
Flt Permitted		0.94			0.96			0.92			0.95	
Satd. Flow (perm)		1391			1343			3001			3104	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	2	60	2	0	12	24	1057	12	3	959	22
RTOR Reduction (vph)	0	54	0	0	12	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	21	0	0	2	0	0	1092	0	0	983	0
Confl. Peds. (#/hr)	20		19	19		20	39		29	29		39
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	9%	2%	2%	2%	2%	8%	2%	3%	2%	2%	3%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.8			10.8			78.4			78.4	
Effective Green, g (s)		10.8			10.8			78.4			78.4	
Actuated g/C Ratio		0.11			0.11			0.78			0.78	
Clearance Time (s)		5.6			5.6			5.2			5.2	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		150			145			2352			2433	
v/s Ratio Prot												
v/s Ratio Perm		c0.02			0.00			c0.36			0.32	
v/c Ratio		0.14			0.01			0.46			0.40	
Uniform Delay, d1		40.4			39.8			3.7			3.4	
Progression Factor		1.00			1.00			0.60			0.37	
Incremental Delay, d2		0.4			0.0			0.6			0.4	
Delay (s)		40.8			39.9			2.7			1.6	
Level of Service		D			D			A			A	
Approach Delay (s)		40.8			39.9			2.7			1.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

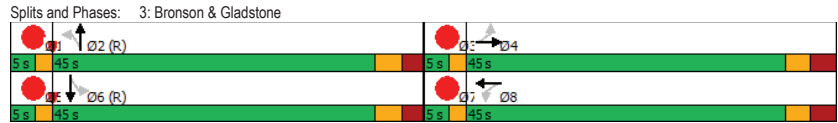
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	51	341	141	281	96	810	49	797				
Future Volume (vph)	51	341	141	281	96	810	49	797				
Lane Group Flow (vph)	51	415	141	298	96	947	49	882				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
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
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	42.1	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	42.1	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	#42.1	36.2	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			

Lanes, Volumes, Timings
3: Bronson & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

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.



HCM Signalized Intersection Capacity Analysis
3: Bronson & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	51	341	74	141	281	17	96	810	137	49	797	85
Future Volume (vph)	51	341	74	141	281	17	96	810	137	49	797	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.97		1.00	0.98	
Fipb, ped/bikes	0.93	1.00		0.96	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1549	1629		1585	1686		1658	3108		1658	3209	
Flt Permitted	0.49	1.00		0.36	1.00		0.20	1.00		0.17	1.00	
Satd. Flow (perm)	798	1629		595	1686		343	3108		293	3209	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	341	74	141	281	17	96	810	137	49	797	85
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	51	415	0	141	298	0	96	947	0	49	882	0
Confl. Peds. (#/hr)	68		69	69		68	47		44	44		47
Confl. Bikes (#/hr)			27			14			4			3
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	4%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.8	38.8		38.8	38.8		39.0	39.0		39.0	39.0	
Effective Green, g (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	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	309	632		230	654		133	1212		114	1251	
v/s Ratio Prot		c0.25			0.18			c0.30			0.27	
v/s Ratio Perm	0.06			0.24			0.28			0.17		
v/c Ratio	0.17	0.66		0.61	0.46		0.72	0.78		0.43	0.71	
Uniform Delay, d1	20.0	25.1		24.6	22.7		25.9	26.8		22.4	25.7	
Progression Factor	1.00	1.00		1.00	1.00		0.47	0.45		1.00	1.00	
Incremental Delay, d2	1.1	5.3		11.6	2.3		26.4	4.6		11.4	3.4	
Delay (s)	21.2	30.4		36.2	25.0		38.5	16.7		33.7	29.0	
Level of Service	C	C		D	C		D	B		C	C	
Approach Delay (s)		29.4			28.6			18.7			29.3	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay		25.4					HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)			16.2			
Intersection Capacity Utilization		90.3%				ICU Level of Service			E			
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

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

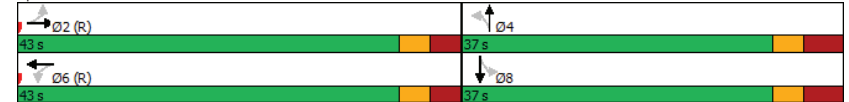
Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60

Lanes, Volumes, Timings
4: Booth & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

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



HCM Signalized Intersection Capacity Analysis
4: Booth & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Traffic Volume (vph)	37	335	42	140	547	40	99	379	75	50	355	20
Future Volume (vph)	37	335	42	140	547	40	99	379	75	50	355	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.1	6.1		6.1	6.1		6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.98	1.00		0.94	1.00		0.97	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1617	1670		1564	1711		1607	1677		1618	1723	
Flt Permitted	0.27	1.00		0.46	1.00		0.43	1.00		0.34	1.00	
Satd. Flow (perm)	453	1670		758	1711		722	1677		572	1723	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	335	42	140	547	40	99	379	75	50	355	20
RTOR Reduction (vph)	0	5	0	0	3	0	0	9	0	0	2	0
Lane Group Flow (vph)	37	372	0	140	584	0	99	445	0	50	373	0
Confl. Peds. (#/hr)	41		46	46		41	27		27	27		27
Confl. Bikes (#/hr)			32			26			7			2
Heavy Vehicles (%)	2%	3%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	36.9	36.9		36.9	36.9		30.1	30.1		30.1	30.1	
Effective Green, g (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	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.9	6.9		6.9	6.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	208	770		349	789		271	630		215	648	
v/s Ratio Prot		0.22			c0.34			c0.27			0.22	
v/s Ratio Perm	0.08			0.18			0.14			0.09		
v/c Ratio	0.18	0.48		0.40	0.74		0.37	0.71		0.23	0.57	
Uniform Delay, d1	12.6	14.9		14.2	17.6		18.0	21.2		17.1	19.9	
Progression Factor	1.00	1.00		1.72	1.60		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	2.2		3.1	5.6		3.8	6.6		2.5	3.7	
Delay (s)	14.5	17.1		27.6	33.9		21.8	27.8		19.6	23.5	
Level of Service	B	B		C	C		C	C		B	C	
Approach Delay (s)		16.9			32.7			26.7			23.1	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

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	

Lanes, Volumes, Timings
5: Arthur & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 7.8
Intersection Capacity Utilization 77.8%

Intersection LOS: A
ICU Level of Service D

Splits and Phases: 5: Arthur & Gladstone



HCM Signalized Intersection Capacity Analysis
5: Arthur & Gladstone

2026 Future TotalPM Peak Hour
384 Arlington

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔							↔
Traffic Volume (vph)	31	503	6	1	635	9	0	0	0	13	1	54
Future Volume (vph)	31	503	6	1	635	9	0	0	0	13	1	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5			5.5							5.2
Lane Util. Factor		1.00			1.00							1.00
Frbp, ped/bikes		1.00			1.00							0.90
Fipb, ped/bikes		1.00			1.00							1.00
Frt		1.00			1.00							0.89
Flt Protected		1.00			1.00							0.99
Satd. Flow (prot)		1731			1738							1361
Flt Permitted		0.95			1.00							0.99
Satd. Flow (perm)		1647			1738							1361
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	31	503	6	1	635	9	0	0	0	13	1	54
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	540	0	0	644	0	0	0	0	0	0	23
Confl. Peds. (#/hr)	59		75	75		59	45		7	7		45
Confl. Bikes (#/hr)			49			43						5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2			6						8		
Actuated Green, G (s)		56.5			56.5							12.8
Effective Green, g (s)		56.5			56.5							12.8
Actuated g/C Ratio		0.71			0.71							0.16
Clearance Time (s)		5.5			5.5							5.2
Vehicle Extension (s)		3.0			3.0							3.0
Lane Grp Cap (vph)		1163			1227							217
v/s Ratio Prot												
v/s Ratio Perm		0.33			0.37							0.02
v/c Ratio		0.46			0.53							0.10
Uniform Delay, d1		5.1			5.5							28.7
Progression Factor		0.74			1.00							1.00
Incremental Delay, d2		1.2			1.6							0.2
Delay (s)		5.0			7.1							28.9
Level of Service		A			A							C
Approach Delay (s)		5.0			7.1			0.0				28.9
Approach LOS		A			A			A				C
Intersection Summary												
HCM 2000 Control Delay					7.4							HCM 2000 Level of Service A
HCM 2000 Volume to Capacity ratio					0.45							
Actuated Cycle Length (s)					80.0							Sum of lost time (s) 10.7
Intersection Capacity Utilization					77.8%							ICU Level of Service D
Analysis Period (min)					15							
c Critical Lane Group												

Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future TotalPM Peak Hour
384 Arlington

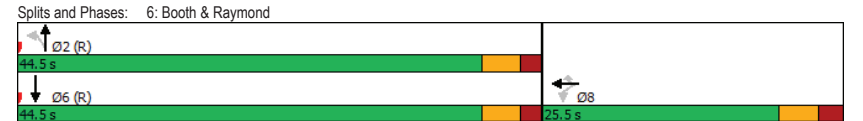
Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↔	↔	↔	↔	↔
Traffic Volume (vph)	339	197	32	359	510
Future Volume (vph)	339	197	32	359	510
Lane Group Flow (vph)	517	197	32	359	602
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	8			2	6
Permitted Phases		8	2		
Detector Phase	8	8	2	2	6
Switch Phase					
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

Lanes, Volumes, Timings
6: Booth & Raymond

2026 Future TotalPM Peak Hour
384 Arlington

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.



HCM Signalized Intersection Capacity Analysis
6: Booth & Raymond

2026 Future TotalPM Peak Hour
384 Arlington

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	178	339	197	32	359	0	0	510	92
Future Volume (vph)	0	0	0	178	339	197	32	359	0	0	510	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)					5.5	5.5	5.2	5.2				5.2
Lane Util. Factor					1.00	1.00	1.00	1.00				1.00
Frbp, ped/bikes					1.00	0.95	1.00	1.00				0.99
Flpb, ped/bikes					0.99	1.00	0.98	1.00				1.00
Frt					1.00	0.85	1.00	1.00				0.98
Flt Protected					0.98	1.00	0.95	1.00				1.00
Satd. Flow (prot)					1678	1414	1566	1745				1687
Flt Permitted					0.98	1.00	0.32	1.00				1.00
Satd. Flow (perm)					1678	1414	533	1745				1687
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	178	339	197	32	359	0	0	510	92
RTOR Reduction (vph)	0	0	0	0	0	141	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	0	517	56	32	359	0	0	593	0
Confl. Peds. (#/hr)	14		9	9		14	32		47	47		32
Confl. Bikes (#/hr)						2			28			16
Heavy Vehicles (%)	2%	2%	2%	5%	3%	2%	6%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Perm	NA				NA	
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Actuated Green, G (s)					20.0	20.0	39.3	39.3				39.3
Effective Green, g (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
Clearance Time (s)					5.5	5.5	5.2	5.2				5.2
Vehicle Extension (s)					3.0	3.0	3.0	3.0				3.0
Lane Grp Cap (vph)					479	404	299	979				947
v/s Ratio Prot								0.21				c0.35
v/s Ratio Perm					0.31	0.04	0.06					
v/c Ratio					1.08	0.14	0.11	0.37				0.63
Uniform Delay, d1					25.0	18.6	7.2	8.5				10.4
Progression Factor					1.00	1.00	1.00	1.00				1.00
Incremental Delay, d2					64.2	0.7	0.7	1.1				3.1
Delay (s)					89.2	19.3	7.9	9.5				13.5
Level of Service					F	B	A	A				B
Approach Delay (s)		0.0			69.9			9.4				13.5
Approach LOS		A			E			A				B

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future TotalPM Peak Hour
384 Arlington

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	154	397	966	1563
Future Volume (vph)	154	397	966	1563
Lane Group Flow (vph)	154	397	966	1563
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	25.9
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	m184.3
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

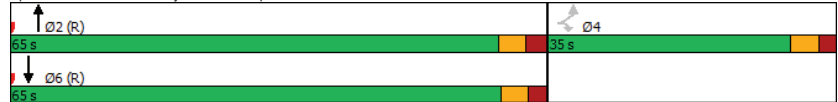
Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 75			

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2026 Future TotalPM Peak Hour
384 Arlington

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 50.9 Intersection LOS: D
 Intersection Capacity Utilization 120.8% 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



HCM Signalized Intersection Capacity Analysis
8: Hwy 417 EB Ramp & Bronson

2026 Future TotalPM Peak Hour
384 Arlington

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗		↕	↕	
Traffic Volume (vph)	154	397	0	966	1563	0
Future Volume (vph)	154	397	0	966	1563	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.6	5.6		5.9	5.6	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1658	1460		3316	3316	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1658	1460		3316	3316	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	154	397	0	966	1563	0
RTOR Reduction (vph)	0	16	0	0	0	0
Lane Group Flow (vph)	154	381	0	966	1563	0
Confl. Peds. (#/hr)		3	61			61
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	29.4	29.4		59.1	59.4	
Effective Green, g (s)	29.4	29.4		59.1	59.4	
Actuated g/C Ratio	0.29	0.29		0.59	0.59	
Clearance Time (s)	5.6	5.6		5.9	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	487	429		1959	1969	
v/s Ratio Prot				0.29	0.47	
v/s Ratio Perm	0.09	0.26				
v/c Ratio	0.32	0.89		0.49	0.79	
Uniform Delay, d1	27.5	33.7		11.8	15.6	
Progression Factor	1.00	1.00		1.00	1.53	
Incremental Delay, d2	1.7	22.8		0.9	1.4	
Delay (s)	29.2	56.5		12.7	25.2	
Level of Service	C	E		B	C	
Approach Delay (s)	48.9			12.7	25.2	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	120.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Appendix J

Synchro Intersection Worksheets – 2031 Future Total Conditions

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future TotalAM Peak Hour
384 Arlington Ave

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

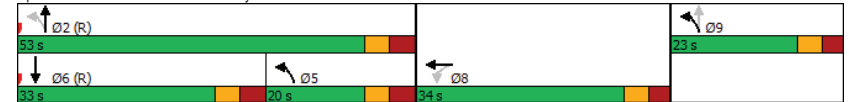
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 100

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future TotalAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future TotalAM Peak Hour
384 Arlington Ave

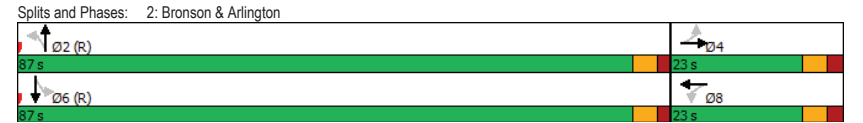
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔		↔
Traffic Volume (vph)	11	4	8	2	13	1456	2	571
Future Volume (vph)	11	4	8	2	13	1456	2	571
Lane Group Flow (vph)	0	57	0	21	0	1475	0	589
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		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

Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future TotalAM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future TotalAM Peak Hour
384 Arlington Ave

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

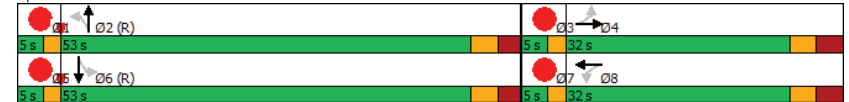
Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 26 (27%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90

Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future TotalAM Peak Hour
384 Arlington Ave

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

Splits and Phases: 3: Bronson & Gladstone



Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future TotalAM Peak Hour
384 Arlington Ave

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

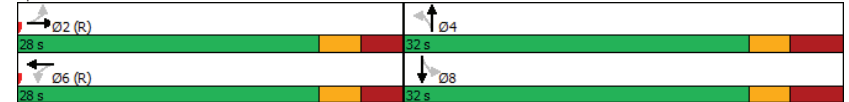
Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 16 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 55

Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future TotalAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future TotalAM Peak Hour
384 Arlington Ave

	↖	→	←	↓
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

Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future TotalAM Peak Hour
384 Arlington Ave

Maximum v/c Ratio: 0.49	Intersection LOS: A
Intersection Signal Delay: 8.5	ICU Level of Service D
Intersection Capacity Utilization 78.3%	
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



Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future TotalAM Peak Hour
384 Arlington Ave

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	0.0
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

Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future TotalAM Peak Hour
384 Arlington Ave

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.



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future TotalAM Peak Hour
384 Arlington Ave

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

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future TotalAM Peak Hour
384 Arlington Ave

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



Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future TotalPM Peak Hour
384 Arlington

Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↔	↔↔↔	↔	↔↔	↔↔
Traffic Volume (vph)	690	589	329	840	866
Future Volume (vph)	690	589	329	840	866
Lane Group Flow (vph)	386	1163	329	840	1038
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	50.3	17.6	24.1
Queue Delay	32.8	37.2	3.8	1.7	48.9
Total Delay	121.0	97.0	54.0	19.3	73.0
LOS	F	F	D	B	E
Approach Delay		103.0		29.1	73.0
Approach LOS		F		C	E
Queue Length 50th (m)	~89.1	82.6	48.6	66.5	41.8
Queue Length 95th (m)	#156.3	#116.3	#97.5	85.2	#131.3
Internal Link Dist (m)		247.5		63.3	56.5
Turn Bay Length (m)	110.0		45.0		
Base Capacity (vph)	380	1171	368	1996	1164
Starvation Cap Reductn	0	0	14	937	119
Spillback Cap Reductn	128	131	0	0	478
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.53	1.12	0.93	0.79	1.51

Intersection Summary

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

Lanes, Volumes, Timings
1: Bronson & Raymond/Catherine

2031 Future TotalPM Peak Hour
384 Arlington

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 71.7	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



Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future TotalPM Peak Hour
384 Arlington

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↕		↕
Traffic Volume (vph)	13	2	2	0	24	1098	3	983
Future Volume (vph)	13	2	2	0	24	1098	3	983
Lane Group Flow (vph)	0	75	0	14	0	1134	0	1008
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		0.33		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)		291		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

Lanes, Volumes, Timings
2: Bronson & Arlington

2031 Future TotalPM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future TotalPM Peak Hour
384 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	44	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				
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				

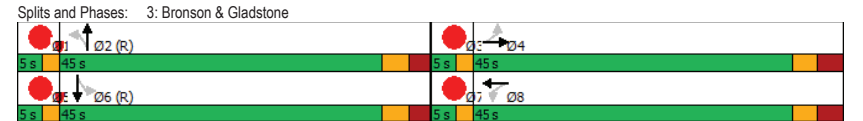
Intersection Summary

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

Lanes, Volumes, Timings
3: Bronson & Gladstone

2031 Future TotalPM Peak Hour
384 Arlington

Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 27.8
 Intersection Capacity Utilization 92.9%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future TotalPM Peak Hour
384 Arlington

	↖	→	↗	←	↖	↑	↗	↓
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

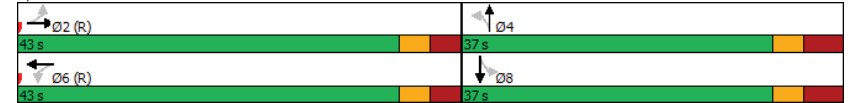
Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 51 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 65

Lanes, Volumes, Timings
4: Booth & Gladstone

2031 Future TotalPM Peak Hour
384 Arlington

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.

Spits and Phases: 4: Booth & Gladstone



Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future TotalPM Peak Hour
384 Arlington

	↖	→	↗	←	↓
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

Lanes, Volumes, Timings
5: Arthur & Gladstone

2031 Future TotalPM Peak Hour
384 Arlington

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



Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future TotalPM Peak Hour
384 Arlington

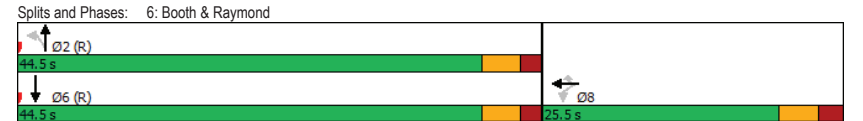
Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↔	↔	↔	↔	↔
Traffic Volume (vph)	339	197	32	373	536
Future Volume (vph)	339	197	32	373	536
Lane Group Flow (vph)	517	197	32	373	628
Turn Type	NA	Perm	Perm	NA	NA
Protected Phases	8			2	6
Permitted Phases		8	2		
Detector Phase	8	8	2	2	6
Switch Phase					
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

Lanes, Volumes, Timings
6: Booth & Raymond

2031 Future TotalPM Peak Hour
384 Arlington

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.



Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future TotalPM Peak Hour
384 Arlington

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations	↘	↗	↕	↕
Traffic Volume (vph)	154	397	1003	1602
Future Volume (vph)	154	397	1003	1602
Lane Group Flow (vph)	154	397	1003	1602
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	176.4
Queue Length 95th (m)	39.8	#124.6	71.5	m188.6
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

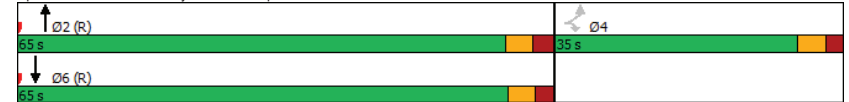
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80

Lanes, Volumes, Timings
8: Hwy 417 EB Ramp & Bronson

2031 Future TotalPM Peak Hour
384 Arlington

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

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	<input type="checkbox"/>
1.2 Travel surveys		
BETTER	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input checked="" type="checkbox"/>
2. WALKING AND CYCLING		
2.1 Information on walking/cycling routes & destinations		
BASIC	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances (<i>multi-family, condominium</i>)	<input checked="" type="checkbox"/>
2.2 Bicycle skills training		
BETTER	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	<input checked="" type="checkbox"/>

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

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

Appendix L

MMLOS Worksheets

Multi-Modal Level of Service - Intersections Form

Consultant
Scenario
Comments

CGH Transportation Inc.
Existing/Future

Project
Date

2021-137
2022-05-27

INTERSECTIONS															
Crossing Side		Bronson Ave @ Catherine St/Raymond St				Bronson Ave @ Arlington Ave				Bronson Ave @ Gladstone Ave					
		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST		
Pedestrian	Lanes	5		5		4		0 - 2		5		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			
	Conflicting Left Turns	No left turn / Prohib.		No left turn / Prohib.		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			
	Right Turns on Red (RTor) ?	RTOR allowed		RTOR allowed		RTOR prohibited		RTOR allowed		RTOR allowed		RTOR prohibited			
	Ped Signal Leading Interval?	No		No		No		No		Yes		Yes			
	Right Turn Channel	No Channel		No Right Turn		No Channel		No Channel		No Channel		No Channel			
	Corner Radius	10-15m		No Right Turn		5-10m		3-5m		3-5m		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			
	PETSI Score	48		63		44		58		58		90		90	
	Ped. Exposure to Traffic LoS	D		-		C		E		D		D		C	
	Cycle Length	100		100		110		100		100		100		100	
Effective Walk Time	9		38		16		7		7		52		52		
Average Pedestrian Delay	41		19		40		43		43		12		12		
Pedestrian Delay LoS	E		-		B		E		E		B		B		
Level of Service	E		-		C		E		E		B		B		
		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			
	Right Turn Lane Configuration														
	Right Turning Speed														
	Cyclist relative to RT motorists	-		-		-		-		-		-			
	Separated or 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			
	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			
Left Turning Cyclist	-		F		E		-		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			
	Number of Receiving Lanes on Departure from Intersection	≥ 2		≥ 2						1		1			
Level of Service	B		-		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				Booth St @ Gladstone Ave				Booth St @ Raymond St				Bronson Ave @ Hwy 417 EB Ramp			
NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
0 - 2	0 - 2	3	3	3	4	4	4	3	4	0 - 2	3		6		4
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	No Median - 2.4 m		Median > 2.4 m		No Median - 2.4 m
Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive	Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive	No left turn / Prohib.	Permissive		No left turn / Prohib.		No left turn / Prohib.
Permissive or yield control	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	No right turn	No right turn	Permissive or yield control		Permissive or yield control		No right turn
RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR prohibited		RTOR prohibited		RTOR allowed
No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No		No		No
No Channel	No Channel	No Right Turn	No Channel	No Channel	Smart Channel	No Channel	No Channel	No Channel	No Right Turn	No Right Turn	No Channel		No Channel		No Right Turn
3-5m	0-3m	No Right Turn	3-5m	5-10m	5-10m	5-10m	5-10m	3-5m	No Right Turn	No Right Turn	5-10m		10-15m		No Right Turn
Std transverse markings	Textured/coloured pavement	Std transverse markings	Std transverse markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings		Std transverse markings
87	94	85	80	76	65	59	62	80	71	108	74		36		76
B	A	B	B	B	C	D	C	B	C	A	C	-	E	-	B
60	60	80	80	60	60	60	60	70	70	60	60		100		110
47	47	10	10	28	28	20	20	11	11	25	25		13		49
1	1	31	31	9	9	13	13	25	25	10	10		38		17
A	A	D	D	A	A	B	B	C	C	B	B	-	D	-	B
B	A	D	D	B	C	D	C	C	C	B	C	-	E	-	B
D				D				C				E			
NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic		Mixed Traffic		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	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	No lane crossed	No lane crossed	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	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h		> 50 to < 60 km/h	> 50 to < 60 km/h					
B	B	C	C	C	C	C	C	-	C	C	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C				C				C				-			
		≤ 20 sec	≤ 10 sec			> 40 sec	≤ 40 sec			> 40 sec		> 40 sec	≤ 20 sec		
-	-	C	B	-	-	F	E	-	-	F	-	F	C	-	-
C				F				F				F			
															10 - 15 m
															≥ 2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B
															B
	0.0 - 0.60				0.71 - 0.80				0.71 - 0.80				0.81 - 0.90		
A				C				C				D			