

4795 Bank Street

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report

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July 2026

PN: 2024-172

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1 Study Background

This study has been prepared according to the Transportation Terms of Reference – 4795 Bank Street Future Neighbourhood document prepared on July 3, 2026. Where not made explicit in the Terms of Reference, content City of Ottawa’s 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. A Step 1 Screening Form has been prepared and is included in Appendix A, along with the Certification Form for the TIA Study PM. The Terms of Reference is also provided in Appendix A. In addition to satisfying the removal of the Future Neighbourhood Overlay, this study has been prepared to support a Zoning Bylaw Amendment and Plan of Subdivision application.

2 Existing and Planned Conditions

2.1 Proposed Development

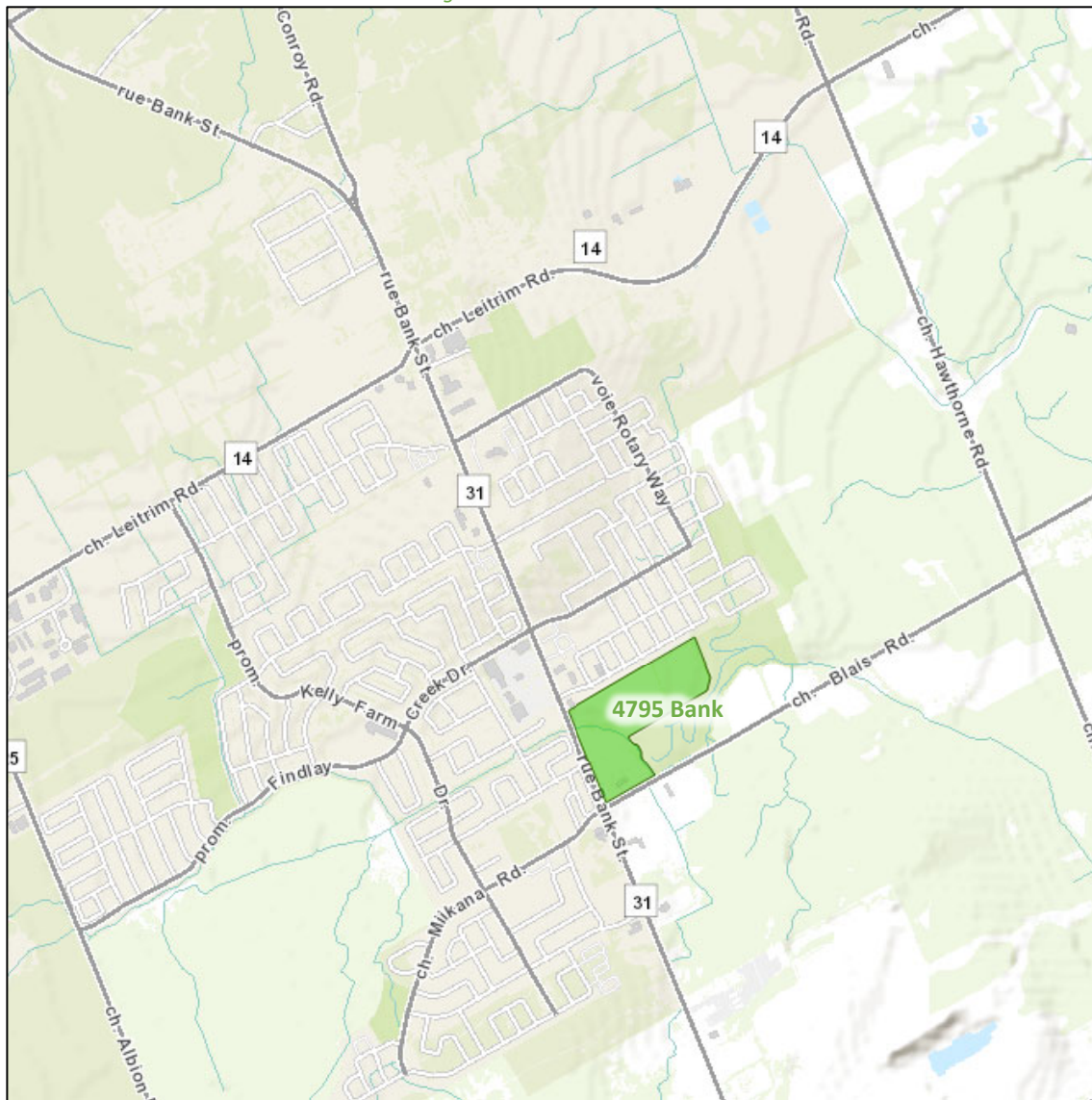
The subject lands, located at 4795 Bank Street, are currently classified as Development Reserve Zone (DR) under the City of Ottawa By-Law 2026-50, and were included as part of the most recent municipal urban boundary expansion exercise as the S-5 Expansion Lands. The site represents one instance of the Category 1 Future Neighbourhood Overlay of Ottawa’s Official Plan and a local terms of reference has been established to outline the transportation process for the expansion area. As the lot is isolated from the remainder of the overlay area, the goal of the application is to proceed with the lifting of the Overlay for these specific lands only.

The site, within the larger Findlay Creek neighbourhood, is generally bounded by Bank Street to the west, Blais Road to the south, Findlay Creek and SWM Pond at 3265 Blais Road to the east, and existing residential along Shuttleworth Drive to the north.

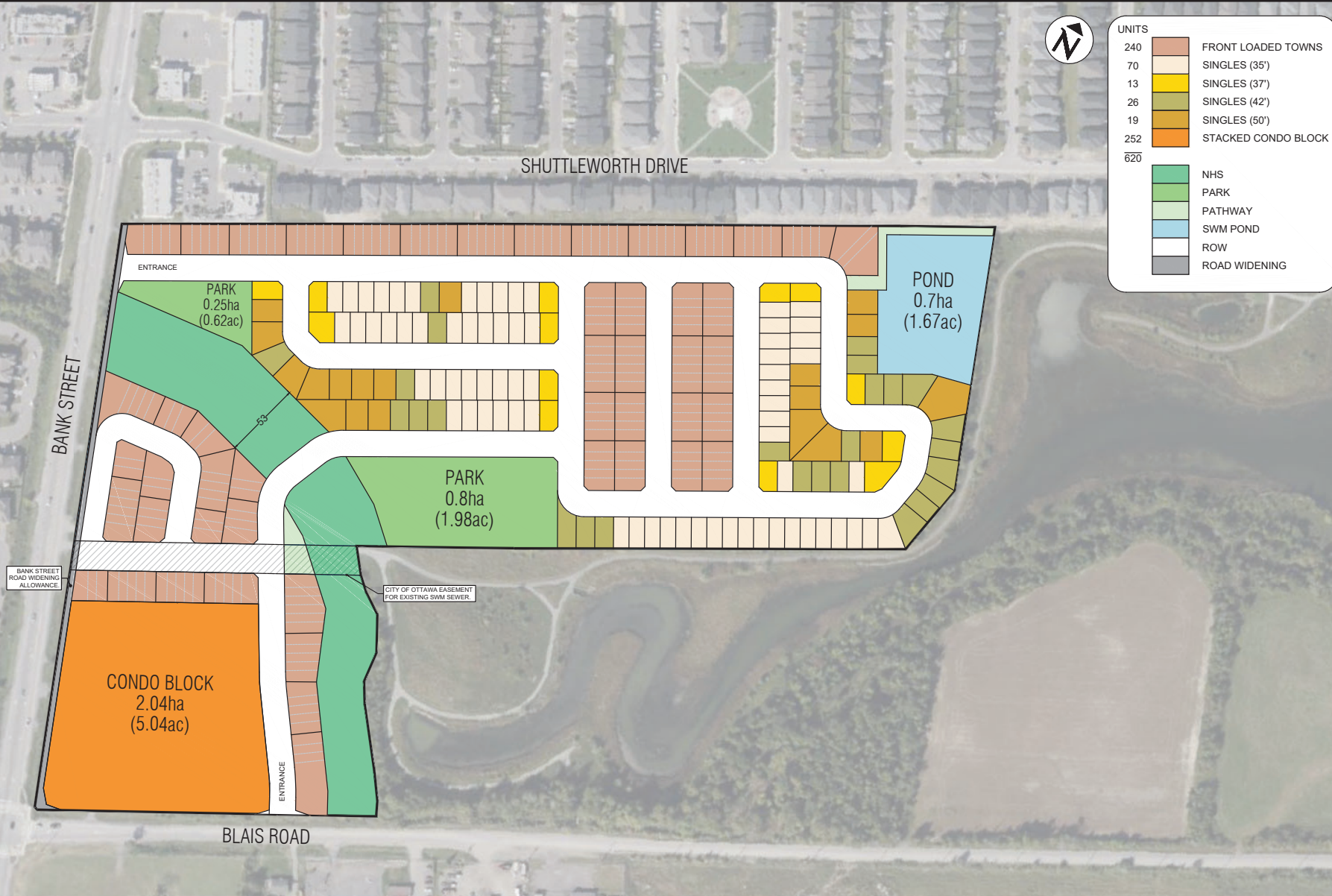
The proposed subdivision will consist of approximately 620 new units across a mix of single-family homes and various types of townhomes, both freehold throughout the community and condominium in a block on the southwest corner of the property. The proposed concept includes new local road connections to both Bank Street and Blais Road. North of the site frontage, Bank Street is a Mainstreet corridor within a Design Priority Area.

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

Figure 1: Area Context Plan



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: June 22, 2026



2.2 Existing Conditions

2.2.1 Area Road Network

Bank Street: Bank Street is a City of Ottawa arterial road with a four-lane rural cross-section north of Leitrim Road and two-lane rural cross-section south of Leitrim Road, with gravel shoulders on both sides. The posted speed limit is 70 km/h north of Leitrim Road, transiting to 50 km/h through the construction zone and continuing to approximately 100 metres south of Blais Road, where it transitions back to 70 km/h. The City protected right-of-way is subject to Greenbelt provisions between Lester Road and Leitrim Road and is 44.5 metre south of Leitrim Road within the study area. The segment south of Leitrim Road is additionally subject to the different varying widening requirements in accordance with the Bank Street Environmental Study Report and may require up to 5.0 metres of additional right-of-way on the rural side of the road. It is noted that at the time of the preparation of this study, Bank Street is undergoing reconstruction which is described further in Section 2.3.1.

Conroy Road: Conroy Road is a City of Ottawa arterial road with a two-lane rural cross-section including paved shoulders on both sides of the road. The posted speed limit is 70 km/h within the study area. The City protected right-of-way is subject to Greenbelt provisions north of Bank Street in the study area.

Leitrim Road: Leitrim Road is a City of Ottawa arterial road with a two-lane rural cross-section including gravel shoulders on both sides of the road. The posted speed limit is 60 km/h within the study area. The City protected right-of-way is 35.1 to 40.0 metres between Bank Street and 200 metre west of Kelly Farm Drive and is subject to Greenbelt provisions between Bank Street and Hawthorne Road. The right-of-way is subject to unequal widening requirements of the Leitrim Road and realignment and widening ESR and 5.0 metres on the Greenbelt side may be required to construct a rural cross-section.

Analdea Drive: Analdea Drive is a City of Ottawa collector road per Schedule C16 of the Official Plan, with a two-lane rural cross-section. The unposted speed limit is assumed to be 50 km/h. The City protected right-of-way is 24.0 metres.

Findlay Creek Drive: Findlay Creek Drive is a City of Ottawa collector road with a two-lane urban cross-section and sidewalks on both sides of the road. The posted speed limit is 50 km/h, and the measured right-of-way is 30.0 metre west of Bank Street and 24.0 metres east of Bank Street.

Rotary Way: Rotary Way is a City of Ottawa collector road with a two-lane urban cross-section with sidewalks on both sides of the road. The unposted speed limit is assumed to be 40km/h, and the measured right-of-way is 24.0 metres.

Miikana Road: Miikana Road is a City of Ottawa collector road with a two-lane urban cross-section with sidewalks on both sides of the road. The unposted speed limit is assumed to be 50 km/h, and the measured right-of-way is 20.0 metres.

Blais Road: Blais Road is a City of Ottawa collector road with a two-lane rural cross-section including gravel shoulders on both sides of the road. The posted speed limit is 60 km/h, and the City protected right-of-way is 30.0 metres.

Hawthorne Road: Hawthorne Road is a City of Ottawa collector road with a two-lane rural cross-section with gravel shoulders on both sides of the road. The posted speed limit is 80 km/h within the study area. The City protected right-of-way is 37.0 metres between Leitrim Road and approximately 600 metres south of Blais Road and 34.0 metres between that point and Rideau Road.

Kemp Drive: Kemp Drive is a City of Ottawa local road with a two-lane rural cross-section. The unposted speed limit is assumed to be 40 km/h, and the measured right-of-way is 21.0 metres.

White Alder Avenue: White Alder Avenue is a City of Ottawa local road with a two-lane urban cross-section with sidewalks on both sides of the road. The posted speed limit is 40 km/h, and the measured right-of-way is 24.0 metres.

Shuttleworth Drive: Shuttleworth Drive is a City of Ottawa local road with a two-lane urban cross-section with a sidewalk on the north side of the road. The posted speed limit is 40 km/h, and the measured right-of-way is 18.0 metres.

Dun Skipper Drive: Dun Skipper Drive is a City of Ottawa local road with a two-lane urban cross-section with sidewalks on both sides of the road. The unposted speed limit is assumed to be 40 km/h, and the measured right-of-way is 24.0 metres.

2.2.2 Existing Intersections

The key intersections within the study area have been summarized below. Based on the ongoing construction along Bank Street, the prior conditions will be noted for the intersection approaches, consistent with the traffic modeled at the existing horizon, presented in Section 2.2.7.

Bank Street at Conroy Road/Kemp Drive

The intersection of Bank Street at Conroy Road/Kemp Drive is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary channelized right-turn lane, and the southbound approach consists of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary right-turn lane. The eastbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane, and the westbound approach consists of a left-turn lane, an auxiliary left-turn lane, and an auxiliary shared through/right-turn lane. No turn restrictions were noted.

Bank Street at Leitrim Road

The intersection of Bank Street at Leitrim Road is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, a through lane, and a shared through/right-turn lane, and the southbound approach consists of an auxiliary left-turn lane, two through lanes, and an auxiliary right-turn lane. The eastbound approach consists of a shared all-movements lane, and the westbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary right-turn lane. The eastbound approach operates as a left-turn lane, and a short auxiliary shared through/right-turn lane given the width of the approach. No turn restrictions were noted.

Bank Street at Rotary Way

The intersection of Bank Street at Rotary Way is a signalized T-intersection. The northbound approach consists of a through lane, a bike lane, and an auxiliary right-turn lane, and the southbound approach consists of an auxiliary left-turn lane and a through lane. The westbound approach consists of an auxiliary left-turn lane and a right-turn lane. No turn restrictions were noted.

Bank Street at White Alder Avenue/Analdea Drive

The intersection of Bank Street at White Alder Avenue/Analdea Drive is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane, and the southbound approach consists of an auxiliary left-turn lane, a through lane, a bike lane, and an auxiliary right-turn lane. The eastbound and westbound approaches each consist of an auxiliary left-turn lane and a shared through/right-turn lane. No turn restrictions were noted.

Bank Street at Findlay Creek Drive

The intersection of Bank Street at Findlay Creek Drive is a signalized T-intersection. The northbound approach consists of an auxiliary left-turn lane and a through lane, and the southbound approach consists of a through lane, a bike lane, and an auxiliary right-turn lane. The eastbound approach consists of an auxiliary left-turn lane and a right-turn lane. No turn restrictions were noted.

Bank Street at Cowan's Grove Plaza Access

The intersection of Bank Street at the Cowan's Grove Plaza access is a signalized T-intersection. The northbound approach consists of an auxiliary left-turn lane and a through lane, and the southbound approach consists of a through lane, a bike lane, and an auxiliary right-turn lane. The eastbound approach consists of a left-turn lane and a right-turn lane. No turn restrictions were noted.

Bank Street at Blais Road

The intersection of Bank Street at Blais Road is a signalized T-intersection. The northbound approach consists of a through lane and an auxiliary right-turn lane, and the southbound approach consists of a shared left-turn/through lane. The westbound approach consists of a shared left-turn/right-turn lane. No turn restrictions were noted.

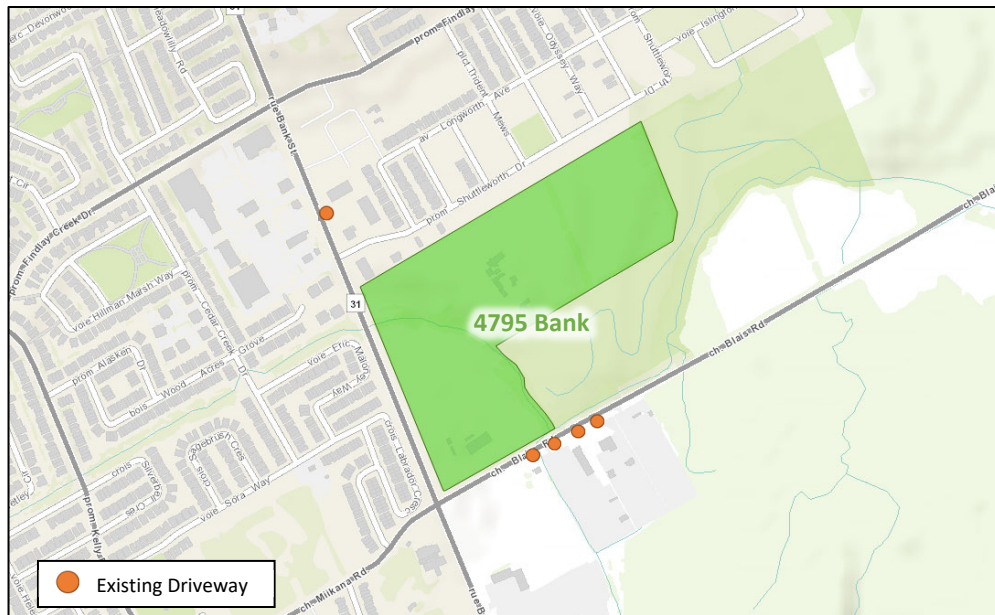
Blais Road at Hawthorne Road

The intersection of Blais Road at Hawthorne Road is an unsignalized T-intersection with stop control on the minor approach of Blais Road. The northbound approach consists of a shared left-turn/through lane, and the southbound approach consists of a shared through/right-turn lane. The eastbound approach consists of a shared left-turn/right-turn lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the proposed site access, one driveway to a commercial plaza is present on the east side of Bank Street north of the proposed site access. On Blais Road, a driveway to a detached dwelling, and three driveways to an auto repair yard are present on the south side of the road within 200 metres of the proposed site access. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: June 22, 2026

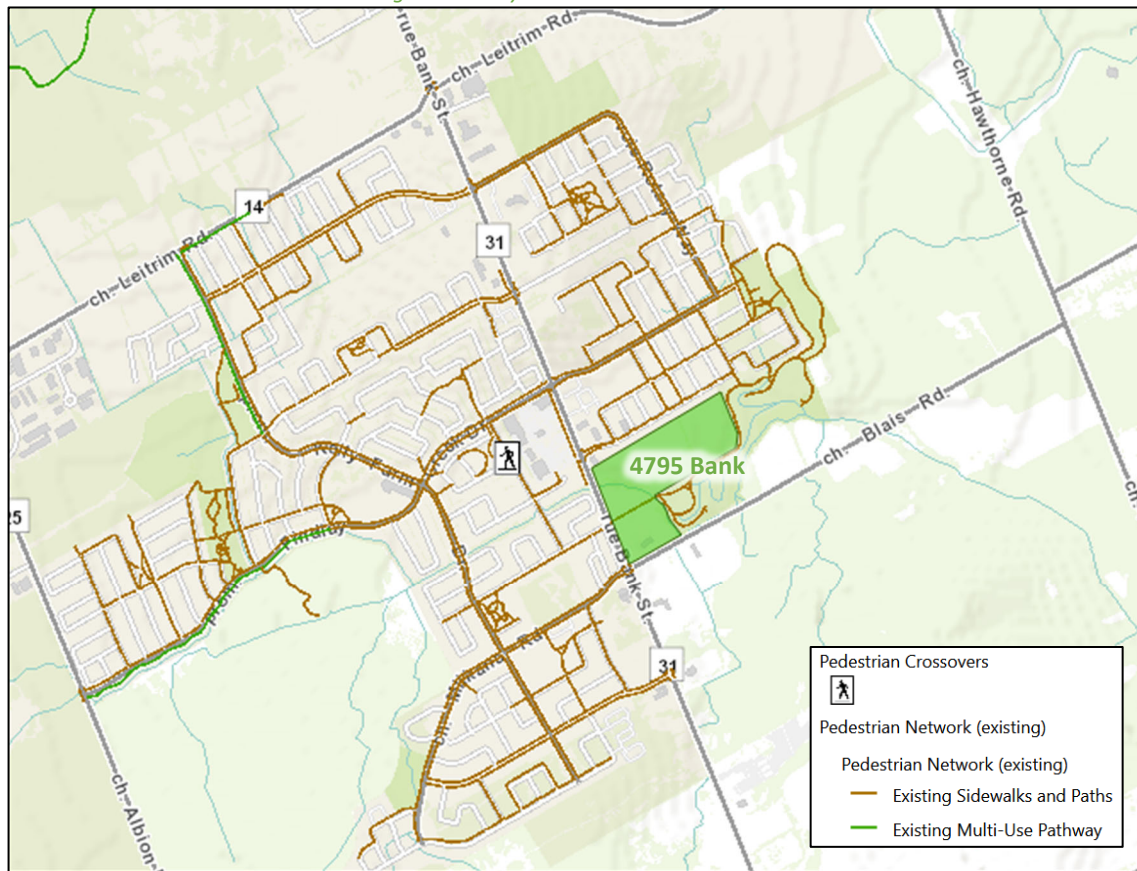
2.2.4 Cycling and Pedestrian Facilities

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

Sidewalks are provided along Findlay Creek Drive and Miikana Road and pedestrian paths are provided in the green space where the proposed site will be located at. Cycling facilities include paved shoulders on both sides of Bank Street, however these are being upgraded to cycletracks on both sides as part of its reconstruction.

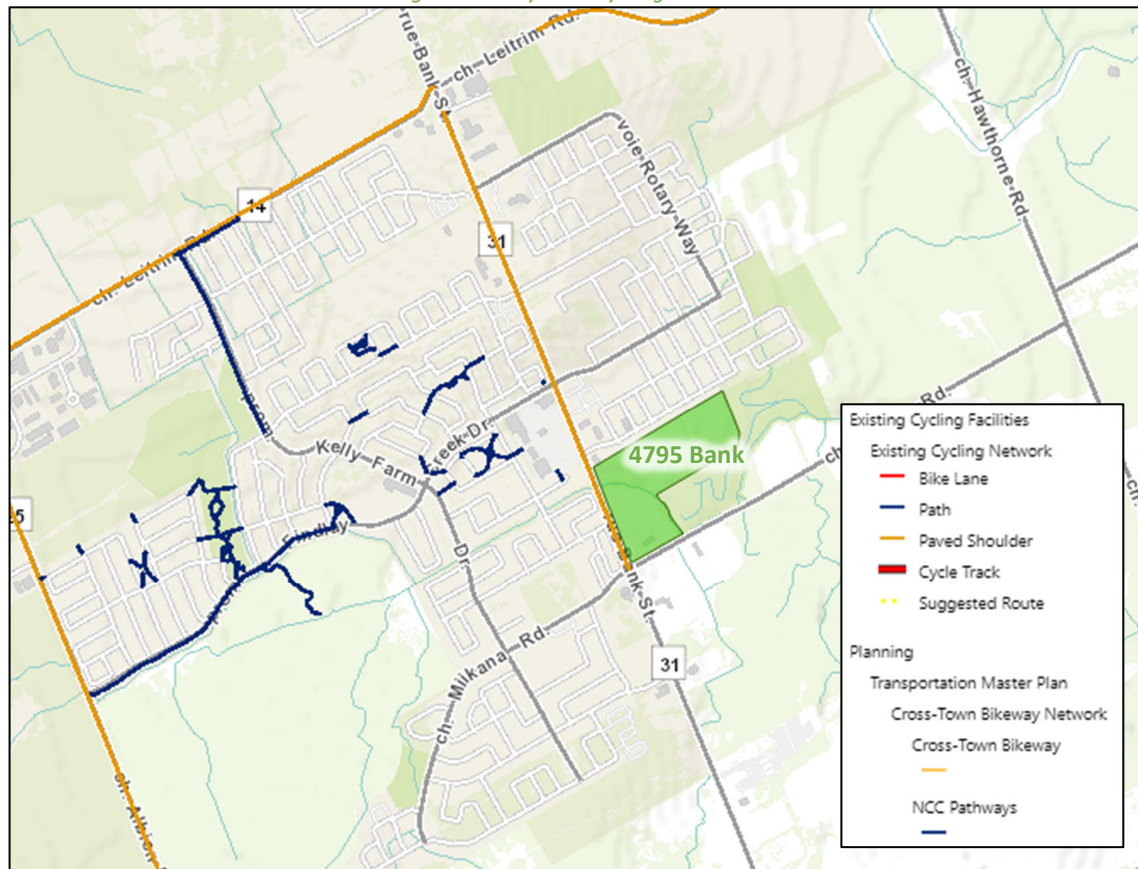
Pedestrian and cyclist volumes included in study area intersection counts have been compiled and are illustrated in Figure 6 and Figure 7, respectively.

Figure 4: Study Area Pedestrian Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: June 23, 2026

Figure 5: Study Area Cycling Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: April 28, 2026

Figure 6: Existing Pedestrian Volumes

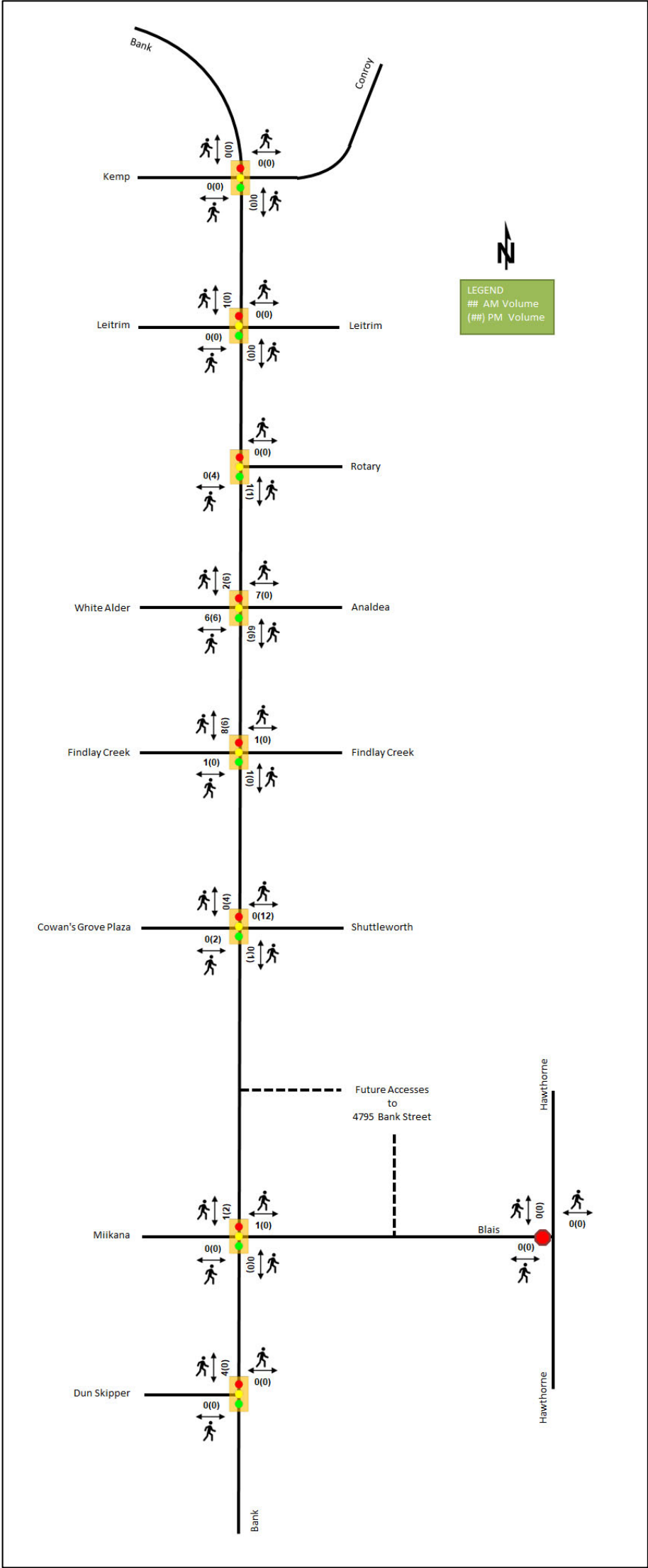
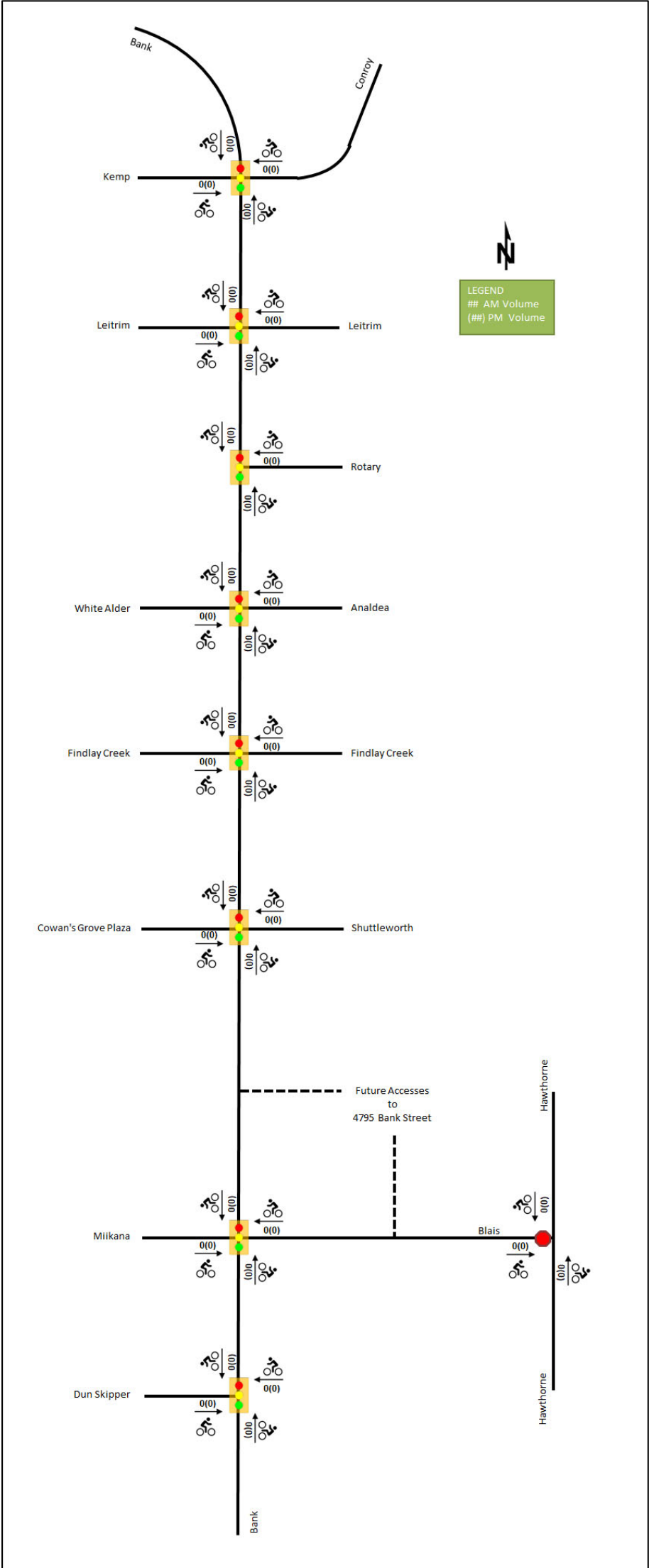


Figure 7: Existing Cyclist Volumes



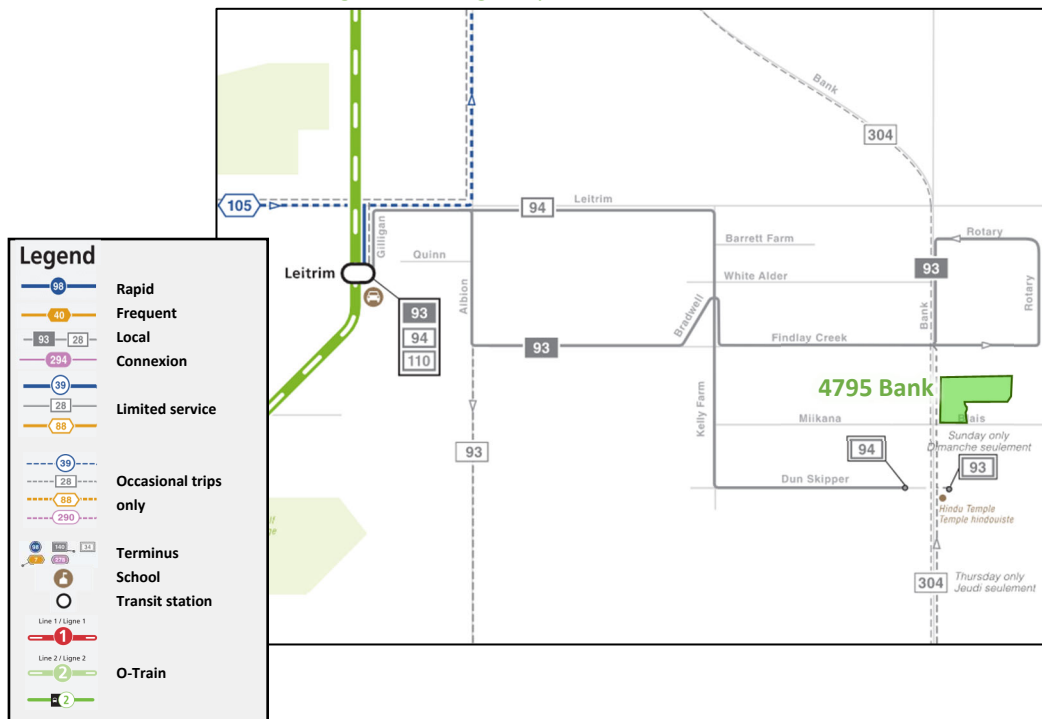
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from April 28, 2026, and is included for general information purposes and context to the surrounding area.

The frequency of these routes within proximity of the proposed site based on April 28, 2026, service levels are:

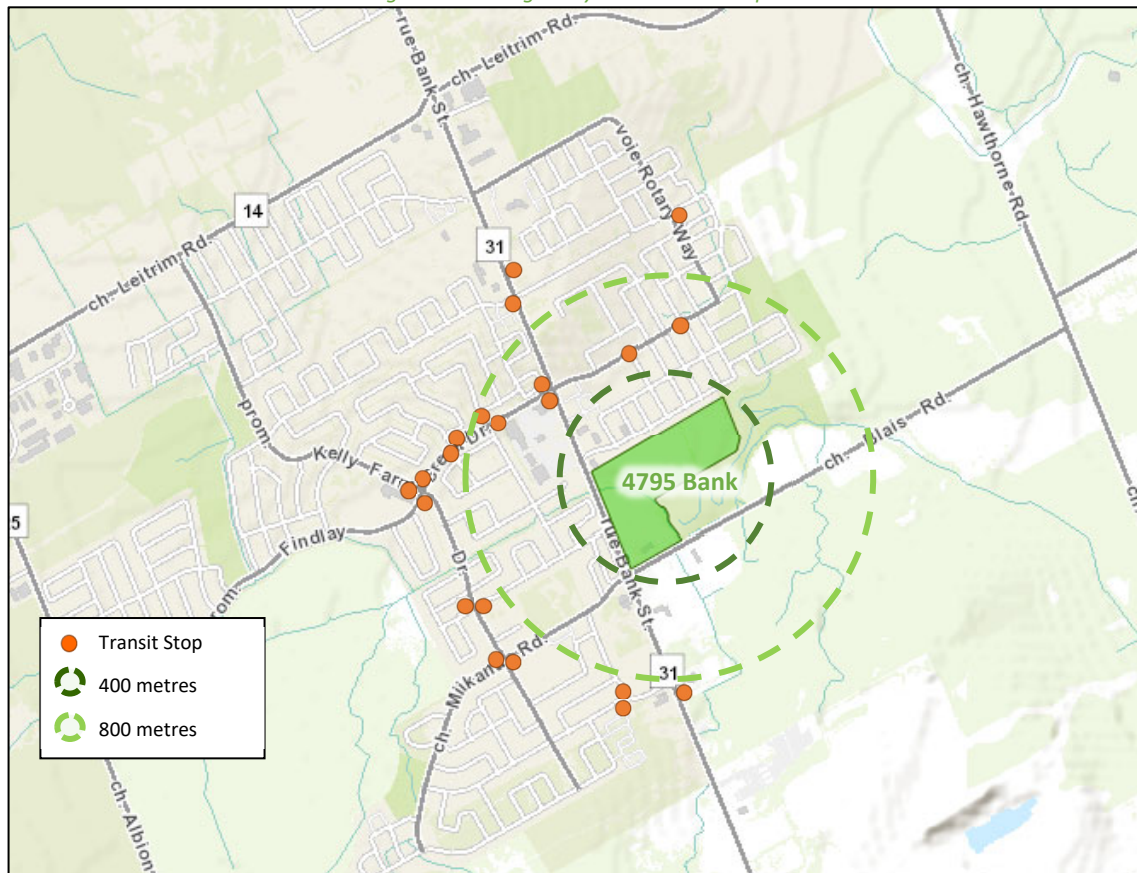
- Route #93 – 30-minute service all day, 45-minute service early mornings and 1-hour service late nights
- Route #94 – 30-minute service, operating during peak hours on workdays only
- Route #304 – One bus in the morning and one bus in the evening on Thursdays only

Figure 8: Existing Study Area Transit Service



Source: <http://www.octranspo.com/> Accessed: April 28, 2026

Figure 9: Existing Study Area Transit Stops



Source: <http://www.octranspo.com/> Accessed: June 23, 2026

2.2.6 Existing Area Traffic Management Measures

Flexible posts to narrow the functional lane width and on-road messaging of the speed limit are present along Kelly Farm Drive and along Findlay Creek Drive.

2.2.7 Existing Peak Hour Travel Demand

The Bank Street corridor was under construction at the time of the preparation of this report. As a result, existing turning movement counts were taken from the Leirtrim Community Master Transportation Study (MTS) from 2015 and 2016. The volumes at the intersection of Bank Street at Conroy Road from this time period were not included in the MTS network and were obtained from the City of Ottawa. Additionally, 2019 counts along Bank Street from Conroy Road to Findlay Creek Drive acquired to contextualize corridor volumes in an interim state of construction, and later counts were obtained from the City of Ottawa to derive active transportation volumes.

Through this review of the MTS, subsequent area traffic studies and the historic counts, the existing conditions have been developed and calibrated to estimate conditions without the recent construction disruptions. Table 1 summarizes the intersection count dates referenced for the study.

Figure 10 illustrates the existing traffic counts 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 MMLOS Guidelines weighted v/c methodology for the overall intersection, and average delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B, and the Synchro worksheets are provided in Appendix C.

Table 1: Intersection Count Dates

Intersection	Count Dates
Bank Street at Conroy Road/Kemp Drive	August 13, 2015 November 27, 2019, October 29, 2024
Bank Street at Leitrim Road	October 15, 2015, December 4, 2019, March 4, 2025
Bank Street at Rotary Way	June 5, 2015, December 4, 2019
Bank Street at White Alder Avenue/Analdea Drive	June 5, 2015, December 4, 2019, October 30, 2024
Bank Street at Findlay Creek Drive	June 5, 2015, December 4, 2019, February 23, 2023
Bank Street at Shuttleworth Drive/Cowan's Grove Plaza	May 27, 2015, February 23, 2023
Bank Street at Blais Road/Miikana Road	January 27, 2016, July 6, 2023
Bank Street at Dun Skipper Drive	September 14, 2023
Blais Road at Hawthorne Road	September 29, 2022

Figure 10: Existing Traffic Counts

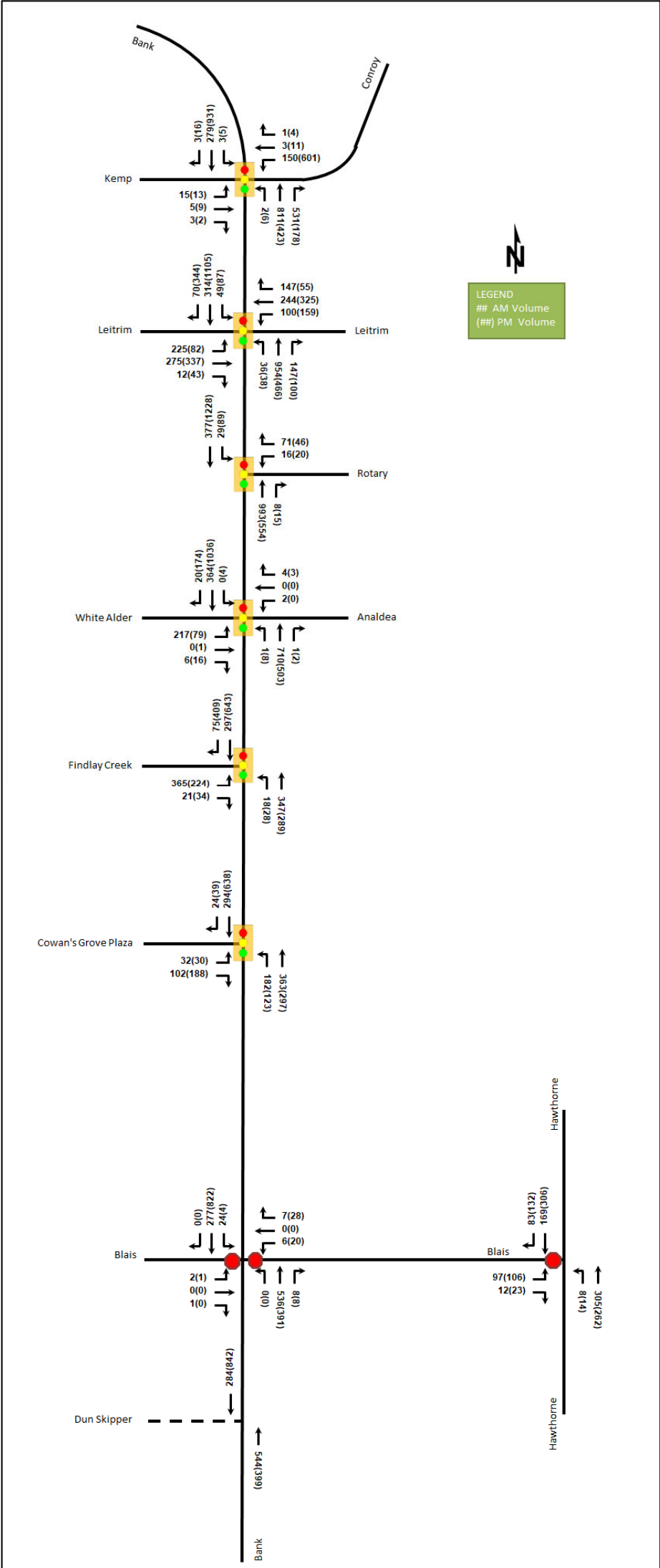


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Conroy Road/Kemp Drive <i>Signalized</i>	EBL	A	0.07	16.2	5.3	A	0.03	14.7	4.7
	EBT/R	A	0.02	13.8	3.3	A	0.02	13.5	4.1
	WBL	A	0.31	17.4	13.6	B	0.68	21.7	#60.4
	WBT/R	A	0.01	14.5	2.1	A	0.03	12.7	4.7
	NBL	A	0.00	6.0	0.8	A	0.06	12.3	2.6
	NBT	A	0.55	9.6	37.3	A	0.36	13.8	28.7
	NBR	A	0.58	3.3	11.0	A	0.29	3.2	9.5
	SBL	A	0.01	6.0	1.0	A	0.02	11.0	2.3
	SBT	A	0.19	6.9	11.8	C	0.78	20.9	72.7
	SBR	A	0.00	0.0	0.0	A	0.03	1.7	1.4
	Overall	A	0.52	8.0	-	C	0.74	18.0	-
Bank Street at Leitrim Road <i>Signalized</i>	EBL	F	1.20	141.6	#210.0	E	1.00	86.7	#200.1
	EBT/R	A	0.02	0.1	0.0	A	0.09	0.3	0.0
	WBL	C	0.71	54.3	#49.5	B	0.70	39.2	#46.6
	WBT	A	0.40	24.9	61.8	A	0.47	29.5	96.7
	WBR	A	0.23	4.3	12.7	A	0.09	3.7	6.2
	NBL	A	0.10	18.1	m7.8	A	0.32	27.4	13.3
	NBT/R	E	0.98	52.5	#189.8	A	0.55	36.9	89.8
	SBL	A	0.36	22.9	13.1	A	0.34	25.1	26.1
	SBT	A	0.27	23.8	39.7	E	0.97	62.1	#235.6
	SBR	A	0.14	3.9	7.1	A	0.48	5.0	21.9
	Overall	F	1.03	58.5	-	E	0.94	46.7	-
Bank Street at Rotary Way <i>Signalized</i>	WBL	A	0.12	47.9	10.6	A	0.16	54.2	13.2
	WBR	A	0.38	16.2	14.1	A	0.30	18.9	12.1
	NBT	C	0.77	8.8	149.0	A	0.42	6.1	88.1
	NBR	A	0.01	1.8	m0.4	A	0.01	1.4	m0.5
	SBL	A	0.12	2.2	m1.2	A	0.16	3.1	8.0
	SBT	A	0.31	3.6	30.3	E	0.92	21.6	#402.3
	Overall	C	0.74	8.1	-	D	0.90	16.5	-
Bank Street at White Alder Avenue/Analdea Drive <i>Signalized</i>	EBL	D	0.83	62.7	73.4	A	0.55	61.5	34.0
	EBT/R	A	0.01	0.0	0.0	A	0.10	19.5	6.7
	WBL	A	0.01	29.5	2.2	-	-	-	-
	WBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	NBL	A	0.00	5.0	m0.1	A	0.04	5.0	2.3
	NBT/R	B	0.70	8.6	129.1	A	0.40	5.7	72.6
	SBL	-	-	-	-	A	0.01	5.8	m0.3
	SBT	A	0.38	7.3	47.8	D	0.82	17.1	m#311.2
	SBR	A	0.02	1.7	1.5	A	0.16	2.2	m6.5
	Overall	C	0.73	16.9	-	C	0.80	14.4	-
Bank Street at Findlay Creek Drive <i>Signalized</i>	EBL	D	0.90	61.3	#129.7	C	0.76	55.6	71.6
	EBR	A	0.05	10.4	5.7	A	0.12	10.9	7.8
	NBL	A	0.04	10.8	5.3	A	0.09	8.3	6.8
	NBT	A	0.41	14.4	67.0	A	0.28	8.4	46.0
	SBT	A	0.36	3.9	3.5	B	0.62	13.6	137.5
	SBR	A	0.10	0.7	0.0	A	0.41	2.0	11.6
	Overall	B	0.66	25.8	-	B	0.66	15.4	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Cowan's Grove Plaza <i>Signalized</i>	EBL	A	0.26	56.0	18.4	A	0.20	50.3	15.7
	EBR	A	0.49	17.1	17.0	B	0.62	14.7	20.3
	NBL	A	0.60	51.5	66.9	B	0.66	64.7	49.5
	NBT	A	0.31	4.0	32.7	A	0.25	4.6	38.1
	SBT	A	0.38	17.9	67.9	B	0.69	22.7	#218.9
	SBR	A	0.04	5.1	4.6	A	0.05	4.5	6.1
	Overall	A	0.47	19.8	-	B	0.67	21.5	-
Bank Street at Blais Road <i>Unsignalized</i>	EB	C	0.01	17.6	0.0	E	0.01	36.6	0.0
	WB	C	0.05	17.1	0.8	D	0.24	25.9	6.8
	NBL/T	A	-	0.0	0.0	A	-	0.0	0.0
	NBR	-	-	-	-	-	-	-	-
	SB	A	0.03	8.8	0.8	A	0.00	8.3	0.0
	Overall	A	-	0.6	-	A	-	1.0	-
Blais Road at Hawthorne Road <i>Unsignalized</i>	EB	C	0.26	15.4	7.5	C	0.36	19.0	12.0
	NB	A	0.01	7.8	0.0	A	0.02	8.6	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	2.6	-	A	-	3.0	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90

Delay = average vehicle delay in seconds
m = metered queue
= volume for the 95th %ile cycle exceeds capacity

The study area intersections generally operate well during both peak hours except for the intersection of Bank Street at Leitrim Road.

At the intersection of Bank Street at Conroy Road/Kemp Drive, the westbound left movement may exhibit extended queues during the PM peak hour.

At the intersection of Bank Street at Leitrim Road, during the AM peak hour, the eastbound left movement and the overall intersection are over theoretical capacity, and the westbound left and northbound through/right movements may exhibit extended queues. During the PM peak hour, the eastbound left movement is at theoretical capacity and the westbound left and southbound through movements may exhibit extended queues.

At the intersection of Bank Street at Rotary Way, the southbound through movement may exhibit extended queues during the PM peak hour.

At the intersection of Bank Street at White Alder Avenue/Analdea Drive, the southbound through movement may exhibit extended queues during the PM peak hour.

At the intersection of Bank Street at Findlay Creek Drive, the eastbound left movement may exhibit extended queues during the AM peak hour.

At the intersection of Bank Street at Cowan's Grove Plaza, the southbound through movement may exhibit 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 (2018-2022). Table 3 summarizes the collision types and conditions in the study area, Figure 11 illustrates the area collisions, and Table 4 summarizes the total collisions for each of the locations analyzed. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		42	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	11	26%
	Property Damage Only	31	74%
Initial Impact Type	Approaching	2	5%
	Angle	6	14%
	Rear end	13	31%
	Sideswipe	1	2%
	Turning Movement	11	26%
	SMV Unattended	0	0%
	SMV Other	8	19%
	Other	1	2%
Road Surface Condition	Dry	33	79%
	Wet	4	10%
	Loose Snow	0	0%
	Slush	1	2%
	Packed Snow	1	2%
	Ice	3	7%
	Loose Sand or Gravel	0	0%
	Unknown	0	0%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

Figure 11: Study Area Collision Records



Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	42	100%
Bank Street at Blais Road	14	33%
Bank Street at Shuttleworth Drive/Findlay Creek Shopping Centre	12	29%
Blais Road between Bank Street and Hawthorne Road	9	21%
Blais Road at Hawthorne Road	5	12%
Bank Street between 310 south of Findlay Creek/Shuttleworth Drive and Blais Road	2	5%

Within the study area, the intersections of Bank Street at Blais Road and Bank Street at Shuttleworth Drive/Findlay Creek Shopping Centre were noted to have experienced higher collisions than other locations. Table 5 and Table 6 summarize the collision types and conditions for these intersections.

Table 5: Bank Street at Blais Road Collision Summary

		Number	%
Total Collisions		14	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	3	21%
	Property Damage Only	11	79%
Initial Impact Type	Approaching	0	0%
	Angle	3	21%
	Rear end	8	57%
	Sideswipe	1	7%
	Turning Movement	2	14%
	SMV Unattended	0	0%
	SMV Other	0	0%
	Other	0	0%
Road Surface Condition	Dry	10	71%
	Wet	3	21%
	Loose Snow	0	0%
	Slush	0	0%
	Packed Snow	1	7%
	Ice	0	0%
	Loose Sand or Gravel	0	0%
	Unknown	0	0%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Bank Street at Blais Road intersection had a total of 14 collisions during the 2018-2022 time period, with 11 involving property damage only and the remaining three having non-fatal injuries. The collision types are most represented by the rear end with eight, angle with three, turning movement with two and sideswipe with one collision. Weather conditions do not affect collisions at this location.

Based on detailed collision records from 2019-2022 and 2024 (representing a different analysis period than the publicly available data), rear end collisions predominantly involved southbound movements (3 of 6), followed by northbound movements (2 of 6). These collisions may be associated with congestion along the Bank Street corridor.

From the detailed collision records, angle collisions were observed on all approaches at the intersection. The collisions involved southbound/northbound through traffic conflicting with eastbound/westbound through traffic.

Given that these phases are conflicting, it is expected that these collisions were associated with drivers failing to obey traffic control.

Turning movement collisions involved an eastbound right-turning vehicle conflicting with a westbound left-turning vehicle, and an eastbound left-turning vehicle conflicting with a westbound through vehicle, which may be indicative of drivers pushing gaps in the traffic stream in congested conditions. This intersection is being reconstructed, and thus improvements to collisions would be expected with the updated design. No further collision review is required at this location as part of this study.

Table 6: Bank Street at Shuttleworth Drive/Findlay Creek Shopping Centre Collision Summary

Total Collisions		Number	%
		12	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	5	42%
	Property Damage Only	7	58%
Initial Impact Type	Approaching	0	0%
	Angle	1	8%
	Rear end	2	17%
	Sideswipe	0	0%
	Turning Movement	7	58%
	SMV Unattended	0	0%
	SMV Other	1	8%
	Other	1	8%
Road Surface Condition	Dry	12	100%
	Wet	0	0%
	Loose Snow	0	0%
	Slush	0	0%
	Packed Snow	0	0%
	Ice	0	0%
	Unknown	0	0%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Bank Street at Shuttleworth Drive/Findlay Creek Shopping Centre intersection had a total of 12 collisions during the 2018-2022 time period, with seven involving property damage only and the remaining five having non-fatal injuries. The collision types are most represented by turning movement collisions with seven, rear end with two, and angle, SMV other, and other collision types with one collision each. Weather conditions do not affect collisions at this location.

Based on detailed collision records from 2019-2022 and 2024 (representing a different analysis period than the publicly available data), turning movement collisions were predominantly involved southbound left-turning vehicles conflicting with northbound through (3 of 5), followed by northbound left-turning vehicles conflicting with southbound through (2 of 5), which may be indicative of drivers pushing gaps in the traffic stream in congested conditions.

From the detailed collision records, rear end collisions predominantly involved northbound movements (3 of 6), followed by southbound movements (2 of 6). These collisions in the northbound direction may be associated with congestion and in the southbound direction may be associated with congestion and varying lane arrangements. This intersection is being reconstructed, and thus improvements to collisions would be expected with the updated design. No further collision review is required at this location as part of this study.

2.3 Planned Conditions

2.3.1 Transportation Master Plan (2025)

The recently approved Transportation Master Plan includes a Capital Infrastructure Plan identifying transportation investments to support the forecasted growth and strategic connectivity and livability targets for the City. It also identifies committed projects, and a subset of priority projects that are expected to be implemented by 2046 based on current affordability assumptions. Area projects anticipated to impact travel in the study area that are included within the Capital Infrastructure Plan are:

- Active Transportation Network
 - Pedestrian Projects with Prioritization
 - Meadowlilly Road sidewalk
 - Cycling Projects with Prioritization
 - Bank Street South between Orville Kemp Street and Leitrim Road
 - Findlay Creek Drive
 - Cycling Network
 - Analdea Drive
- Transit Network
 - Priority Network
 - Transit Priority Corridors along:
 - Bank Street
 - Conroy Road
 - Continuous Bus Lanes
 - Bank Street between Leitrim Road and Conroy Road
 - Needs-Based Network
 - (No additional projects within the study area)
 - Ultimate Network
 - (No additional facilities within the study area)
- Road Network
 - Priority Network
 - Roadway Projects
 - Bank Street widening between Leitrim Road and Blais Road
 - Road Widening
 - Bank Street widening between Blais Road and future Earl Armstrong Road extension
 - Needs-Based Network
 - Roadway Projects
 - Leitrim Road Re-Alignment (Limebank Road to Bank Street)
 - Road Widening
 - Leitrim Road between Bank Street and Kelly Farm Drive
 - Ultimate Network
 - Upgrade to Collector Road
 - Findlay Creek Drive between Bank Street and Rotary Way
 - Rotary Road between Fernside Street and Findlay Creek Drive

2.3.2 Bank Street Widening and Reconstruction

Construction activities are currently underway to widen Bank Street to four lanes between Leitrim Road and Blais Road that will ultimately change the existing intersection configurations described in Section 2.2.2 by site buildout (2031). The design plan has been included in Appendix E. The upcoming changes in the study area have been summarized below:

Bank Street at Rotary Way/Barrett Farms Drive

The intersection will be changed from a T-intersection to a four-way intersection with a new west leg connection to Barrett Farms Drive. The northbound approach will consist of an auxiliary left lane, a through lane, and a shared through/right-turn lane. The southbound approach will consist of an auxiliary left lane, two through lanes, and an auxiliary right lane. The eastbound and westbound approaches will each consist of an auxiliary left lane and a shared through/right-turn lane. Unidirectional cross-rides will be provided on all approaches, with the inclusion of cycletracks on both sides of Bank Street. No turn restrictions are anticipated.

Bank Street at White Alder Ave/Analdea Drive

The northbound approach will consist of an auxiliary left-turn lane, a through lane, and a shared through/right-turn lane. The southbound approach will consist of an auxiliary left lane, two through lanes, and an auxiliary right lane. The eastbound and westbound approaches will each consist of an auxiliary left lane and a shared through/right-turn lane. Unidirectional cross-rides will be provided on all approaches, with the inclusion of cycletracks on both sides of Bank Street. No turn restrictions are anticipated.

Bank Street at Findlay Creek Drive

The northbound approach will consist of an auxiliary left-turn lane, a through lane, and a shared through/right-turn lane. The southbound approach will consist of an auxiliary left-turn lane, two through lanes, and an auxiliary channelized right-turn lane. The eastbound approach will consist of two auxiliary left-turn lanes and a shared through/right-turn lane, and the westbound approach will include an auxiliary left-turn lane and a shared through/right-turn lane. Unidirectional cross-rides will be provided on all approaches, with the inclusion of cycletracks on both sides of Bank Street. No turn restrictions are anticipated.

Bank Street at Shuttleworth Drive/Cowan's Grove Plaza

The northbound approach will consist of an auxiliary left-turn lane, a through lane, and a shared through/right-turn lane. The southbound approach will consist of an auxiliary left-turn lane, two through lanes, and an auxiliary right-turn lane. The eastbound and westbound approaches will each consist of an auxiliary left lane and a shared through/right-turn lane. Unidirectional cross-rides will be provided on all approaches, with the inclusion of cycletracks on both sides of Bank Street. No turn restrictions are anticipated.

Bank Street at Miikana Road/Blais Road

The northbound approach will consist of an auxiliary left-turn lane, a through lane, and an auxiliary shared through/right-turn lane. The southbound approach will consist of an auxiliary left lane, two through lanes, and an auxiliary channelized right-turn lane. The eastbound and westbound approaches will each consist of an auxiliary left lane and a shared through/right-turn lane. Unidirectional cross-rides will be provided on all approaches, with the inclusion of cycletracks on both sides of Bank Street. No turn restrictions are anticipated.

Bank Street at Dun Skipper Drive

While not part of the Bank Street widening scope, the intersection of Bank Street and Dun Skipper Drive has recently been constructed, after the publication of the Leitrim Community MTS. The intersection of Bank Street at Dun Skipper Drive is a signalized T-intersection. The northbound approach consists of an auxiliary left-turn lane

and a through lane, and the southbound approach consists of a through lane and an auxiliary right-turn lane. The eastbound approach consists of a left-turn lane and an auxiliary right-turn lane. No turn restrictions were noted.

2.3.3 Bank Street and Leitrim Road Intersection Modifications

The intersection of Bank Street at Leitrim Road is planned to be modified to include additional lanes on each approach. The implementation of this project is currently constrained by property acquisition, requiring National Capital Commission land. No timeline is known for the improvements. The preliminary design concept has been included in Appendix F.

2.3.4 Other Study Area Developments

2.3.4.1 Area Developments Outside of the Leitrim Community MTS Area

4850 Bank Street

The concept plan application proposes the development of the S-4 Leitrim West of Bank Lands as a new residential community consisting of approximately 300 dwelling units, including a mix of detached dwellings and townhomes. The proposed development will be supported by a new internal road network centered on an extension of Kelly Farm Drive and will include active transportation and transit connections to the surrounding community. The development is projected to generate approximately 111 to 121 two-way vehicle trips during the weekday peak hours. Access to the proposed development is planned via the future extension of Kelly Farm Drive, with no vehicular access proposed to Bank Street. The development is anticipated to proceed through a future draft plan of subdivision application. (Arcadis, 2025)

4835 Bank Street

The site plan control application proposes the construction of a new Assembly Hall associated with the existing Hindu Temple of Ottawa-Carleton located at 4835 Bank Street. The proposed Assembly Hall will have a gross floor area of 1,593 square metres and will be located east of the existing temple building. Access to the site will continue to be provided via the existing private access on Bank Street. (D. J. Halpenny & Associates Ltd., 2020)

4140 Kelly Farm Drive

The site plan control application proposes the development of a new elementary school and childcare centre at 4140 Kelly Farm Drive. The proposed development consists of a one-storey elementary school with a gross floor area of 4,630 square metres and a 275 square metre childcare facility. The site plan also identifies the potential for up to 18 portable classrooms. The development will provide 45 vehicle parking spaces for staff and daycare users, with an additional 17 spaces available if the portable classrooms are constructed. Bicycle parking will be provided through 48 bicycle parking spaces. Access to the staff parking area and childcare drop-off area will be provided from Kelly Farm Drive, while school bus and parent drop-off/pick-up areas will be accommodated on Kelly Farm Drive and Bradwell Way. The school opened in September 2024. (Dillon Consulting Limited, 2022)

4699 Bank Street

The site plan control application proposes the redevelopment of 4699 Bank Street to accommodate a new Saint Nicholas Romanian Orthodox Mission. The proposed development includes a new single-storey place of worship with a gross floor area of 820 square metres. The development will provide 62 vehicle parking spaces, including 5 accessible parking spaces. Access to the site will be provided via the existing full-movement driveway on Bank Street. The Transportation Overview concluded that the proposed development is expected to generate fewer than 20 weekday peak-hour vehicle trips and can be accommodated by the adjacent transportation network. (Ainley Graham & Associates Ltd., 2018)

4639 Bank Street

The combined Zoning By-law Amendment and Site Plan Control application proposes a residential development consisting of 112 stacked townhome units at 4639 Bank Street. The proposed development will provide 146 vehicle parking spaces, including 18 visitor parking spaces, and 58 bicycle parking spaces, of which 36 spaces will be sheltered within a bicycle enclosure. Access to the site will be provided via a full-movement access on Rotary Way. The development was initially anticipated to be constructed in a single phase and fully occupied by 2024 and is currently under construction. The proposed development will generate up to 111 and 130 two-way person-trips during the weekday morning and afternoon peak hours, respectively. (IBI Group, 2020)

*2.3.4.2 Area Developments Within the Leitrim Community MTS Area**4840 Bank Street*

The site plan control application proposes the development of three four-storey mid-rise apartment buildings at 4840 Bank Street. The proposed development will contain a total of 180 residential units and will provide 216 surface vehicle parking spaces, 45 indoor bicycle parking spaces, and 45 outdoor bicycle parking spaces. Access to the proposed development will be provided via an existing full-movement access on Dun Skipper Drive and an existing right-in/right-out access on Bank Street shared with the adjacent 4836 Bank Street development. The proposed development was fully built out and occupied by the end of 2025 as anticipated within the study. (IBI Group, 2022)

155 Dun Skipper Drive

The site plan control application proposes a mixed-use development at 155 Dun Skipper Drive consisting of a nine-storey seniors apartment building containing 141 residential units and 878 square metres of ground-floor retail space. The proposed development replaces a previously approved hotel building while retaining the existing hardware store and planned commercial uses on the remainder of the site. The development will provide 141 resident parking spaces and 53 shared visitor and retail parking spaces. Bicycle parking will be provided through 75 spaces, including 40 exterior spaces and 35 underground spaces. Access to the site will continue to be provided via the existing accesses on Bank Street and Dun Skipper Drive. (Arcadis, 2024)

150 Dun Skipper Drive

The site plan control application proposes a development consisting of two six-storey apartment buildings with a total of 237 residential units. The proposed development will provide 284 vehicle parking spaces, including 245 underground spaces and 39 surface spaces, as well as 119 bicycle parking spaces. Access to the proposed development will be provided via a single full-movement access on Cedar Creek Drive. The development is expected to be constructed in a single phase with a build-out year of 2027. The proposed development will generate 55 and 56 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively. (Novatech, 2025)

1055 Cedar Creek Drive

The zoning by-law amendment application proposes a planned unit development at 1055 Cedar Creek Drive consisting of two three-storey apartment buildings and five stacked townhouse buildings. The proposed development will contain a total of 104 dwelling units, including 48 apartment units and 56 stacked townhouse units. The development will provide 130 parking spaces, including 28 underground spaces and 102 surface spaces, as well as 52 bicycle parking spaces. The application seeks relief to reduce the required residential parking rate from 1.2 spaces per dwelling unit to 1.0 space per dwelling unit. No TIA is available for this development. (Fotenn, 2025)

820 Miikana Road

The site plan control application proposes the development of a new elementary school at 820 Miikana Road. The proposed development includes a surface parking lot with 101 vehicle parking spaces, a lay-by for student pick-up and drop-off activities on Miikana Road, and an on-site bus loading loop with access on Kelly Farm Drive. The development will also provide 56 bicycle parking spaces. Access to the proposed development will be provided via Miikana Road and Kelly Farm Drive. The proposed school was anticipated to be constructed in a single phase and open for the 2024–2025 school year and has been completed. The proposed development will generate 137 and 57 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively. (Novatech, 2022)

4791 Bank Street

The site plan control application proposes a mid-density residential development consisting of 102 stacked townhouse units at 4791 Bank Street. The proposed development will provide 137 vehicle parking spaces, including 19 visitor parking spaces, and 51 bicycle parking spaces, including 34 indoor spaces. Access to the proposed development will be provided via a right-in/right-out access on Bank Street and a full-movement access on Longworth Avenue. The proposed development was anticipated to be fully built out by 2021 and has been completed. (IBI Group, 2020)

3290 Findlay Creek Drive

The site plan control and zoning by-law amendment applications propose the development of a new French Catholic elementary school and childcare centre at 3290 Findlay Creek Drive. The proposed development will consist of an 18-classroom elementary school with a gross floor area of 2,560 square metres, a 303 square metre daycare facility, and space reserved for up to eight future portable classrooms. The development will provide 47 vehicle parking spaces, with an additional 10 spaces reserved for future expansion, and 42 bicycle parking spaces. Access to the proposed development will be provided via a new full-movement access at the Kugagami Road and Findlay Creek Drive intersection. The proposed development is anticipated to be fully built out by 2027. The proposed development will generate 208 and 129 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively. (Parsons, 2025)

4781 Bank Street

The site plan control application proposes a residential development consisting of 96 apartment dwelling units at the northeast corner of Bank Street and Findlay Creek Drive. The proposed development will be constructed in a single phase and will be accessed via two full-movement accesses on Findlay Creek Drive. The development was initially anticipated to be fully occupied by 2023; however construction has not commenced. The screening found that a TIA was not triggered under the city requirements.

4755 Bank Street

The site plan control application proposes the development of a five-storey retirement residence at 4755 Bank Street. The proposed development will contain 153 retirement home units and one level of underground parking. The development will provide 60 vehicle parking spaces, including four accessible spaces, and 60 bicycle parking spaces. Access to the proposed development will be provided via a new private driveway and internal cul-de-sac connection. No TIA is available for this development. (Novatech, 2021)

3100 Leitrim Road

The site plan control application proposes a residential development consisting of 15 townhouse units and 36 back-to-back townhouse units, for a total of 51 dwelling units, on Block 178 of Barrett Lands Phase 3. The proposed development will be accessed via two full-movement driveway connections on Barrett Farm Drive and is

anticipated to be constructed in a single phase with full build-out by 2024. The screening found that a TIA was not triggered under the city requirements.

3955 Kelly Farm Drive

The site plan control application proposes the development of a new French public elementary school and daycare facility at 3955 Kelly Farm Drive. The proposed development will consist of a two-storey elementary school containing 15 classrooms, including three kindergarten classrooms, and a daycare facility with a gross floor area of 413 square metres. The development will provide 51 vehicle parking spaces, including three accessible spaces, and 50 bicycle parking spaces. Access to the proposed development will be provided via a new two-way access from Barrett Farm Drive and a service access from Kelly Farm Drive. The proposed development is anticipated to be completed in a single phase with a build-out year of 2027. (WSP, 2025)

3 Study Area and Time Periods

3.1 Study Area

The study area, as confirmed through the Terms of Reference, will include the intersections of:

- Bank Street at:
 - Conroy Road/Kemp Drive
 - Leitrim Road
 - Barrett Farm Drive/Rotary Way
 - White Alder Avenue/Analdea Drive
 - Findlay Creek Drive
 - Shuttleworth Drive/Cowan's Grove Plaza,
 - Site Access (Future Conditions)
 - Blais Road/Miikana Road
 - Dun Skipper Drive
- Blais Road at:
 - Site Access (Future Conditions)
 - Hawthorne Road

The boundary streets are Bank Street and Blais Road, and TRANS Screenline SL8 is located north of Leitrim Road in the study area.

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 2031. As a result, the full build-out plus five years horizon year is 2036.

4 Development-Generated Travel Demand

4.1 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 South Gloucester/Leitrim have been summarized in Table 7.

Table 7: TRANS Trip Generation Manual Recommended Mode Shares – South Gloucester/Leitrim

Travel Mode	Single-Detached		Multi-Unit (Low-Rise)	
	AM	PM	AM	PM
Auto Driver	54%	55%	59%	62%
Auto Passenger	24%	25%	20%	18%
Transit	12%	9%	16%	17%
Cycling	1%	1%	1%	1%
Walking	9%	10%	4%	3%
Total	100%	100%	100%	100%

Based upon the site's context of being within 200 metres-walk to a major commercial plaza, having cycle tracks being added to the area, and improved transit service in the area with a critical mass of development coming online by 2031, providing increased service between Findlay Creek and Bowesville and Leitrim LRT Stations, mode share targets have been adjusted accordingly. Modified mode share targets proposed for the development and are summarized in Table 8.

Table 8: Proposed Development Mode Shares

Travel Mode	Single-Detached		Multi-Unit (Low-Rise)	
	AM	PM	AM	PM
Auto Driver	47%	48%	52%	55%
Auto Passenger	23%	24%	19%	17%
Transit	15%	12%	19%	20%
Cycling	2%	2%	2%	2%
Walking	13%	14%	8%	6%
Total	100%	100%	100%	100%

4.2 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 uses for each peak period.

Table 9: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Vehicle Trip Rate	Person Trip Rates
Single-Detached	210 (TRANS)	AM	-	2.05
		PM	-	2.48
Multi-Unit Low-Rise	220 (TRANS)	AM	-	1.35
		PM	-	1.58

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 uses.

Table 10: Total Residential Person Trip Generation by Peak Period/Hour

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Single-Detached	128	79	183	262	197	120	317
Multi-Unit Low-Rise	492	201	469	670	439	345	784

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
Single-Detached	Auto Driver	47%	18	41	59	48%	42	25	67
	Auto Passenger	23%	9	20	29	24%	20	13	33
	Transit	15%	6	15	21	12%	11	7	18
	Cycling	2%	1	2	3	2%	2	1	3
	Walking	13%	6	14	20	14%	14	9	23
	Total	100%	40	92	132	100%	89	55	144
Multi-Unit (Low-Rise)	Auto Driver	52%	50	116	166	55%	105	83	188
	Auto Passenger	19%	18	42	60	17%	32	26	58
	Transit	19%	21	48	69	20%	41	32	73
	Cycling	2%	2	6	8	2%	4	4	8
	Walking	8%	9	22	31	6%	13	11	24
	Total	100%	100	234	334	100%	195	156	351
Total	Auto Driver	-	68	157	225	-	147	108	255
	Auto Passenger	-	27	62	89	-	52	39	91
	Transit	-	27	63	90	-	52	39	91
	Cycling	-	3	8	11	-	6	5	11
	Walking	-	15	36	51	-	27	20	47
	Total	-	140	326	466	-	284	211	495

As shown above, a total of 225 AM and 255 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

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

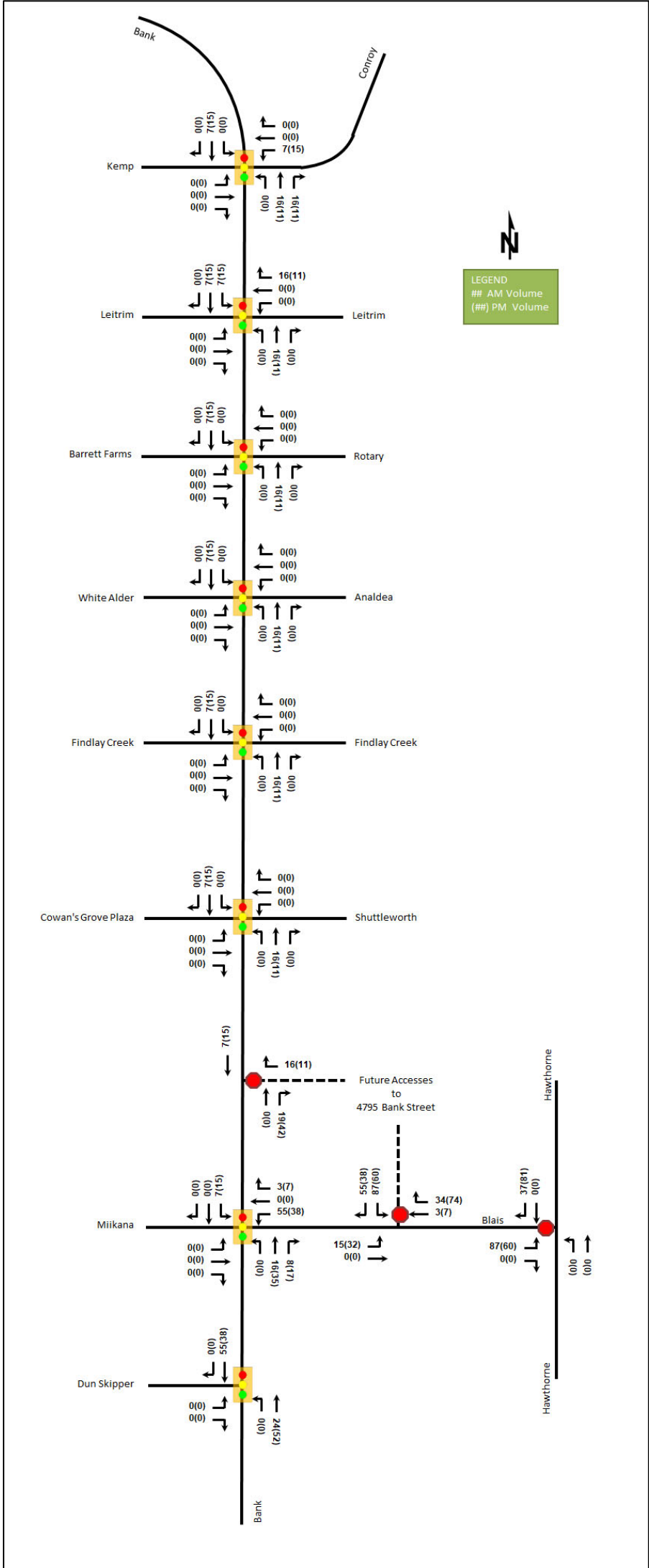
Table 12: OD Survey Distribution – South Gloucester/Leitrim

To/From	Residential % of Trips	Via
North	60%	40% Hawthorne Road (N) 10% Conroy Road (N) 10% Bank Street (N)
South	5%	5% Bank Street (S)
East	5%	5% Hawthorne Road (N)
West	30%	30% Bank Street (S)
Total	100%	100%

4.4 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. Figure 12 illustrates the new site generated volumes.

Figure 12: New Site Generation Auto Volumes

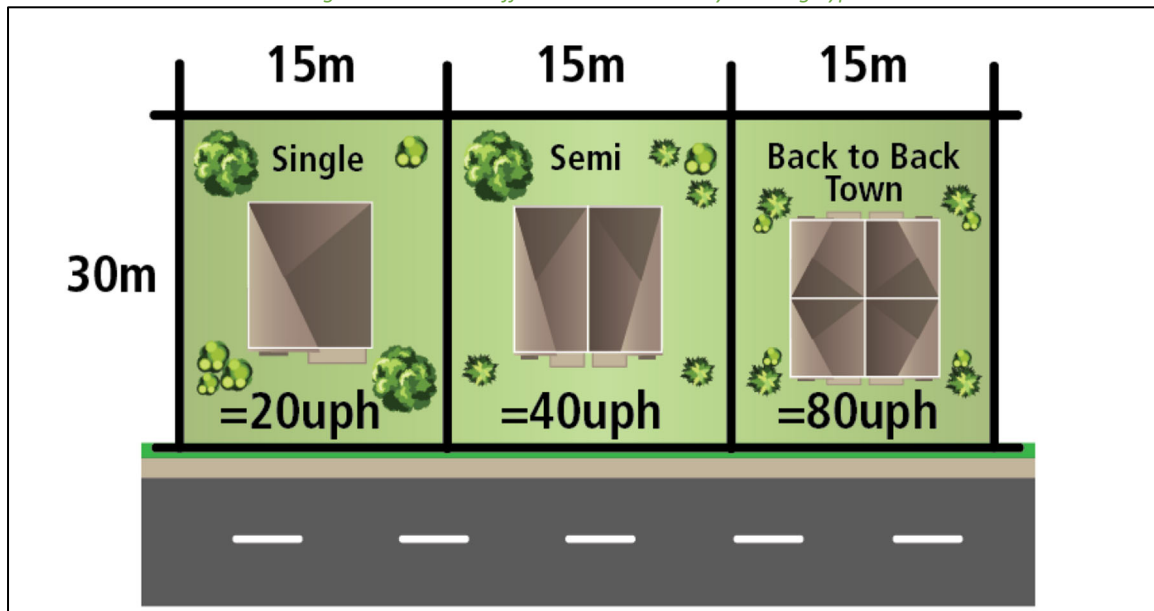


4.5 Travel Demand Comparison

The Official Plan provides a target minimum density of new urban expansion areas subject to Future Neighbourhood Overlays of 36 units per net hectare. The net area of the subject lands are approximately 9.2 hectares, and the resulting minimum density is therefore 331 residential dwelling units. The proposed 620 units would result in an approximate density of 67 units per net hectare.

The Official Plan density minimums are assumed to be predicated on lot efficiencies and potentially unit mixes that are less reflective of current market trends. More compact lotting and a higher proportion of townhome products has shifted the expected densities realized in subdivisions beyond these minimums. For context, purely townhome products can reach 70 units per hectare and the inclusion of condo developments with stacked home products will have densities above 100 units per hectare, which are higher realized densities than assumed for these types of housing products illustrated in Section 3.2 of the Official Plan, excerpted in Figure 13. Current subdivision developments throughout Ottawa are being constructed with densities ranging between 40-60 units per hectare, depending on the mix of single-family homes and townhomes. Condo block inclusions will increase this expected density.

Figure 13: Ottawa Official Plan Densities by Housing Type



Ultimately, despite the density of the subject lands being higher than the minimums contemplated by the Official Plan and the unit trip generation being lower, how this difference interacts with the network capacity will be further explored in Section 12 of this study.

5 Exemption Review

Table 13 summarizes the exemptions for this TIA.

Table 13: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Exempt
	4.1.3 New Street Networks	Only required for plans of subdivision	Required
Parking	4.2.1 Parking Supply	Only required for site plan and zoning by-law applications	Exempt
Boundary Street Design		All applications	Required
Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required
Network Impact			
Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered when the development generates more than 75 auto or transit trips	Required
Demand Rationalization		Only required when one or more other Network Impact Modules when the development generates more than 75 auto trips	Required
Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access: 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: • School (within 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced Child Care Centre; • Community Centre; or • 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	Exempt
Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Exempt for all applications

Module	Element	Explanation	Exempt/Required
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Required
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	Required
Intersection Design	4.4.1-2/4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Required
	4.4.3/4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Required

6 Development Design

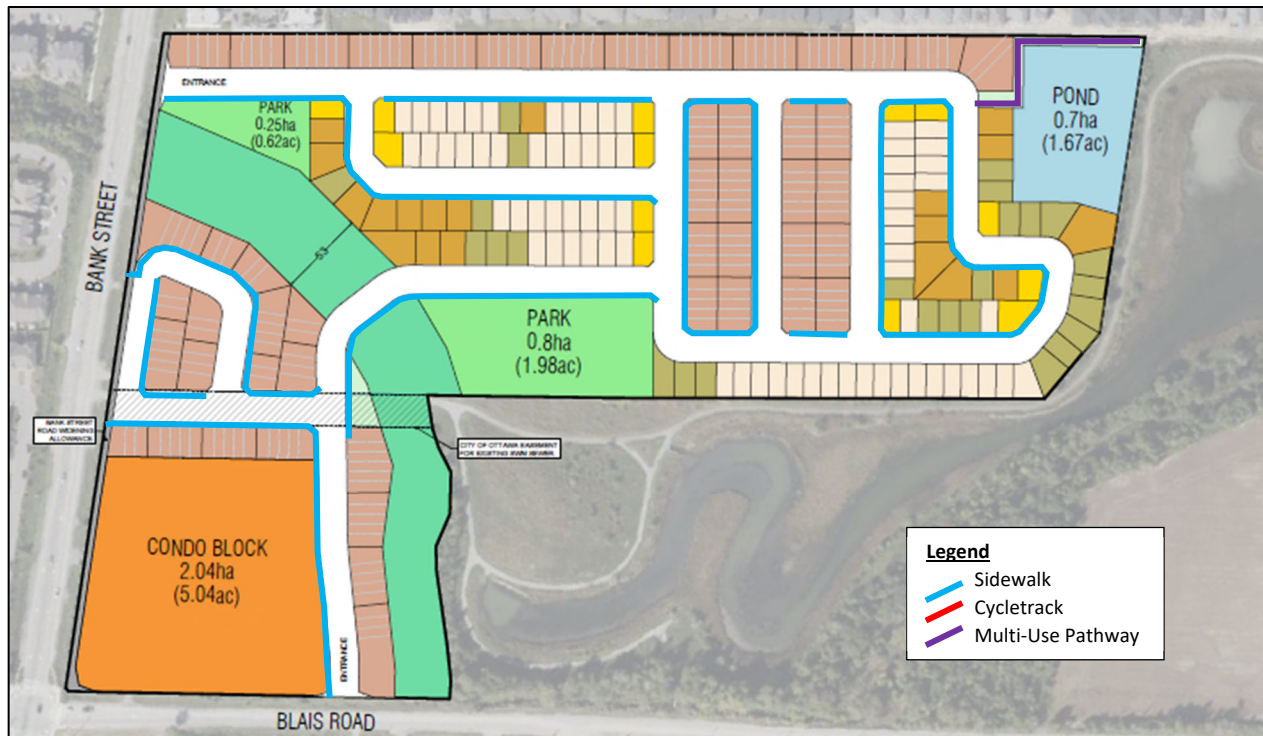
6.1 Design for Sustainable Modes

The proposed development is a residential subdivision featuring driveways for each dwelling and garages for typical single-family homes and townhomes, and surface parking for stacked townhomes. Bicycle parking is assumed to be within the individual units, and the stacked townhome block will include short term bike parking external to the buildings per the Zoning By-Law, whose details will be subject to a future site plan application for this parcel.

Given the development area is only 600 metres wide and is geographically contained, no transit service is recommended to be provided through the subdivision, and stops are recommended to be provided on Bank Street at each Shuttleworth Drive and Blais Road. The walking distance along the pedestrian network from the furthest units within the site to area transit stops accessing both directions is 800 metres.

A 1.8-metre sidewalk is proposed along one side of the local roads within the subdivision. A 3.0-metre multi-use pathway connection between the proposed stormwater pond and the local road network is also proposed which will extend eastward to tie into the pathways around the pond and continue to Shuttleworth Drive. The park will tie into and connect with the existing stormwater pond to the south. Pedestrian connections from all areas of the development site have provided to facilitate access to Bank Street and Blais Road, as well as to the condo block is expected to connect directly to the pedestrian facilities along both frontages. Figure 14 illustrates the conceptual pedestrian network.

Figure 14: Concept Pedestrian and Cycling Network



6.2 New Street Networks

The new local roads are proposed to connect to Bank Street and Blais Road. All but two of the local cross-sections are 18.0-metres-wide with a 1.8-metre sidewalk on one side. The east-west local roadway north of the condo block is a 20.0-metre-right-of-way, subject to an existing service easement and includes a 2.0-metre sidewalk on each side. One 14.75-metre-wide window street is present along Bank Street. Internal aisle design for the condo block will be subject to a future site plan application. The proposed speed limit will be 30 km/h throughout the community.

The local road connecting to Bank Street via a right-in/right-out intersection is aligned with the northern property line, which is 82 degrees off of the Bank Street alignment. The resulting angle between the new local road and Bank Street falls within the 80–110-degree desirable range for intersections from Section 9.7.2 of the Geometric Design Guide for Canadian Roads (TAC, 2017). The new local road is furthermore located approximately 95 metres south of intersection of Bank Street at Shuttleworth Drive/Cowan's Grove Plaza and approximately 397 metres north of the intersection of Bank Street at Blais Road/Miikana Road. The intersection offset is approximately five metres short of the minimum suggested intersection spacing of 100 metres for a right-in/right-out intersection along a divided arterial from an adjacent all-movement intersection from Section 9.4.2.1 of the TAC Geometric Design Guide. This nominal shortfall is considered negligible and the proposed location of the local road connection to Bank Street is recommended to be approved.

The local road connecting to Blais Road via a full-movement intersection is located approximately 191 metres east of the intersection of Bank Street at Blais Road/Miikana Road and exceeds the TAC's suggested minimum intersection spacing along collector roads of 60 metres from Section 9.4.2.2 of the Geometric Design Guide.

To support the pedestrian and cycling connectivity within the subdivision, traffic calming elements have been illustrated on the conceptual traffic calming plan, adhering to the philosophies of the Traffic Calming Guidelines

and preliminary input from the City. The plan has not been coordinated or reconciled with the civil design, utility requirements, grading requirements or streetscaping elements such as trees. The features include bulb-outs to narrow approaches to intersections (e.g. reduced crossing distance), speed humps, midblock narrowing to reduce vehicle speeds. Traffic calming elements for connections to the existing roadways will be coordinated with the adjacent existing roadway during the detailed design phase. A conceptual traffic calming plan has been provided in Appendix G.

7 Boundary Street Design

Table 14 summarizes the MMLOS analysis for the boundary streets of Bank Street and Blais Road. Bank Street is within a “Mainstreet Corridor Outside a Hub” area and Blais Road is within a “Suburban” area. The TMP identifies the widening of Bank Street as a committed project, which includes both sidewalks and cycletracks. The reconstructed conditions of Bank Street have been used as the basis of the assessment. The MMLOS worksheets has been provided in Appendix H.

Table 14: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Public Realm LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Bank Street	B	B	A	C	C	C	C	-
Blais Road	F	C	E	C	-	-	D	-
Internal 18.0 m Local Roads	C	C	B	C	-	-	C	-
Internal 20.0 m Local Road	B	C	A	C	-	-	A	-

Bank Street meets the MMLOS targets with the reconstructed conditions.

Blais Road does not meet the pedestrian and bicycle LOS targets in the existing conditions.

To meet the pedestrian LOS target from a scoring perspective, either a 1.8-metre sidewalk with 3.0-metre boulevard would be required, or alternatively, a 1.8-metre sidewalk combined with 0.5-1.49-metre boulevard and a reduction in the operating speed to 50 km/h would be required. The latter treatment would be consistent with an urban collector, reflecting an evolution of Blais Road beginning with the subject frontage and continuing to future urban boundary expansions.

To meet the bicycle LOS target from a scoring perspective, either a 1.2-metre paved shoulder with buffer with a 1.0-metre boulevard would be required, or alternatively, a 1.5-1.99-metre paved shoulder without buffer would be required. Alternatively, cycletracks would meet targets, again reflective of a future transition to an urban collector.

With respect to the elements along Blais Road, the cross-section of the road is consistent through the rural corridor. The corridor does not provide wider active mode connectivity, having limited potential active transportation origins and destinations between the site and the rest of the rural collector road network to the east. The cross-section is furthermore constrained across a number of sections along its length where guiderail is present on both sides in close proximity to the roadway edge, and thus no wider active transportation facility connectivity is expected be provided via this corridor in the future. Active mode connectivity between the site and the wider active transportation network via the intersection of Bank Street at Blais Road for will be provided through the condo block. Therefore, no improvements are considered to be required to Blais Road to support the proposed development or broader network objectives.

The internal local roads will meet all MMLOS targets and no changes to the proposed geometry are required based on this analysis.

8 Transportation Demand Management

8.1 Context for TDM

The mode shares used within the TIA represent a shift from auto modes to sustainable modes (transit and active modes) based on proximity to a major commercial plaza, having cycle tracks being added to the area, and improved transit in the area by site buildout with increased connectivity to the area LRT stations. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided.

The total bedroom count within the development is subject to the final unit count and product styles. No age restrictions are noted.

8.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel with an increase in transit ridership as a result of planned active transportation infrastructure and future transit service improvements in the area, and those assumptions have been carried through the analysis. Aside from the intersection of Bank Street at Leitrim Road, study area intersections are anticipated to have residual capacity, and the subject development has wider network access than the remainder of the developments oriented to Bank Street within Findlay Creek. Considering these factors, and that mode share shifts are considered achievable, risks from failing to meet mode shares are considered low for the subject development.

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 I. The key TDM measures recommended include:

- Provide a multimodal travel option information package to new residents
- Contract with OC Transpo to provide early servicing for site transit to provide “Day 1” service until buildout of the subdivision is completed

9 Background Network Travel Demands

9.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The Bank Street widening between Leitrim Road and Blais Road is the only committed project, is currently under construction, and is not considered to have any notable impact on the study area traffic volumes.

The widening of Bank Street from Blais Road southerly to the future Earl Armstrong Road extension will not be included in the future conditions of this study, and the adequacy of the network absent these improvements will be assessed at all horizons.

The improvements at the intersection of Bank Street and Leitrim Road are not modelled as part of the network in the future conditions given the unknowns associated with the land acquisition and no Leitrim Road projects being identified in the Priority Road Network improvements. It is acknowledged that this node is over capacity in the existing conditions and is forecast to worsen given the increase in traffic resultant from new background development. The subject site has direct access to the road network east of Bank Street and thus can largely avoid the impacts at this intersection for most site travel. Therefore, improvements required for this intersection to operate adequately will be assessed as mitigation measures at each future horizon, using the preliminary design as the basis of a minimum configuration for all approaches. Should additional capacity still be required beyond this minimum configuration, additional mitigations will be applied as part of the assessment of the forecasted

operations. Ultimately, it is incumbent on the detailed design team to provide the requisite design elements to accommodate all planned volumes for the City's desired horizons within their work.

Based on the traffic model being built on the Leitrim Community MTS work, and given the volumes at the existing horizon and forecast development volumes within the MTS are based on counted traffic circa 2015, a 10% reduction to all forecast and existing traffic between the residential areas and Bank Street north will be applied for the new access to Leitrim and Bowesville LRT Stations, and the future transit service to each, applied at both the 2031 and 2036 horizons. The reductions associated with this modal shift are illustrated in Figure 15.

The extension of Earl Armstrong Road will be included at the build-out plus five-year horizon of 2036 and will provide a more complete picture of the longer-term network layout. As a result of this link being constructed in the road network, reassignment of existing site traffic travelling to and from the north on Bank Street to ultimately travel to and from the west will be done for those areas that do not have direct access to Albion Road or Leitrim Road west. The resulting redistribution of 2036 traffic as a result of this project is illustrated in Figure 16.

9.2 Background Growth

All traffic generation within Findlay Creek will be explicitly included in the future background models, as discussed in the following section. Therefore, consistent with the MTS, an annual 1.00% growth rate representing increases in regional traffic through the study area has been applied to the northbound and southbound mainline volumes on Bank Street and on Hawthorne Avenue at the southern end of the study area and carried through the arterials to arrive at the future background traffic.

9.3 Other Developments

The future background horizons will explicitly include those study area developments with not included in the Leitrim Community MTS whose peak hour traffic is not negligible, including:

- 4850 Bank Street
- 4140 Kelly Farm Drive
- 4639 Bank Street

The development applications noted to be within the Leitrim Community MTS area are generally consistent with the planned traffic generation from their respective areas in the MTS. Therefore, the development-generated volumes forecast in the MTS will be applied as indicated in that study. However, minor adjustments to the traffic generated by those development areas in the vicinity of Miikana Road has been reassigned to continue onto Blais Road and Hawthorne Avenue to access highway 417 and the east Hunt Club district areas, and this reassignment is illustrated in Figure 17. The background development volumes within the study area have been provided in Appendix J.

Figure 15: Volume Reductions from Area Modal Shifts

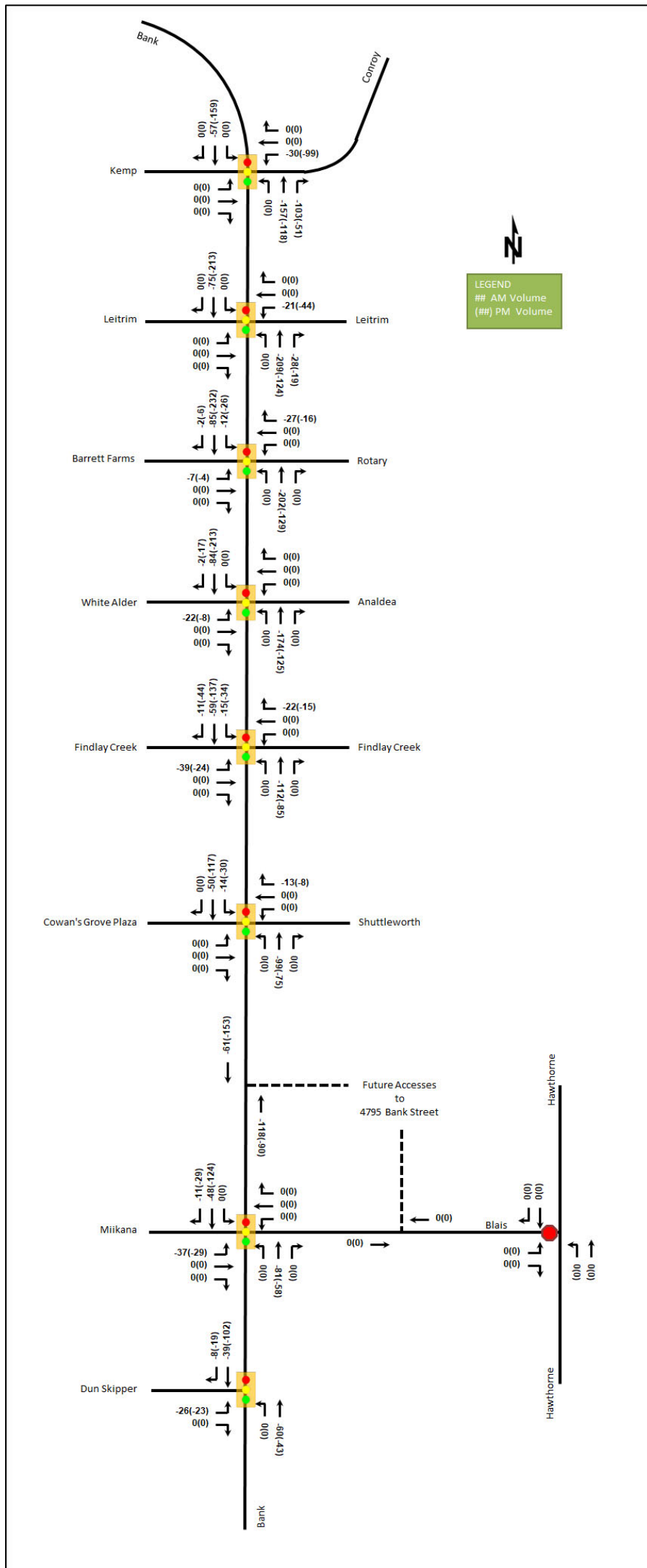


Figure 16: Volume Redistribution from Earl Armstrong Extension in 2036

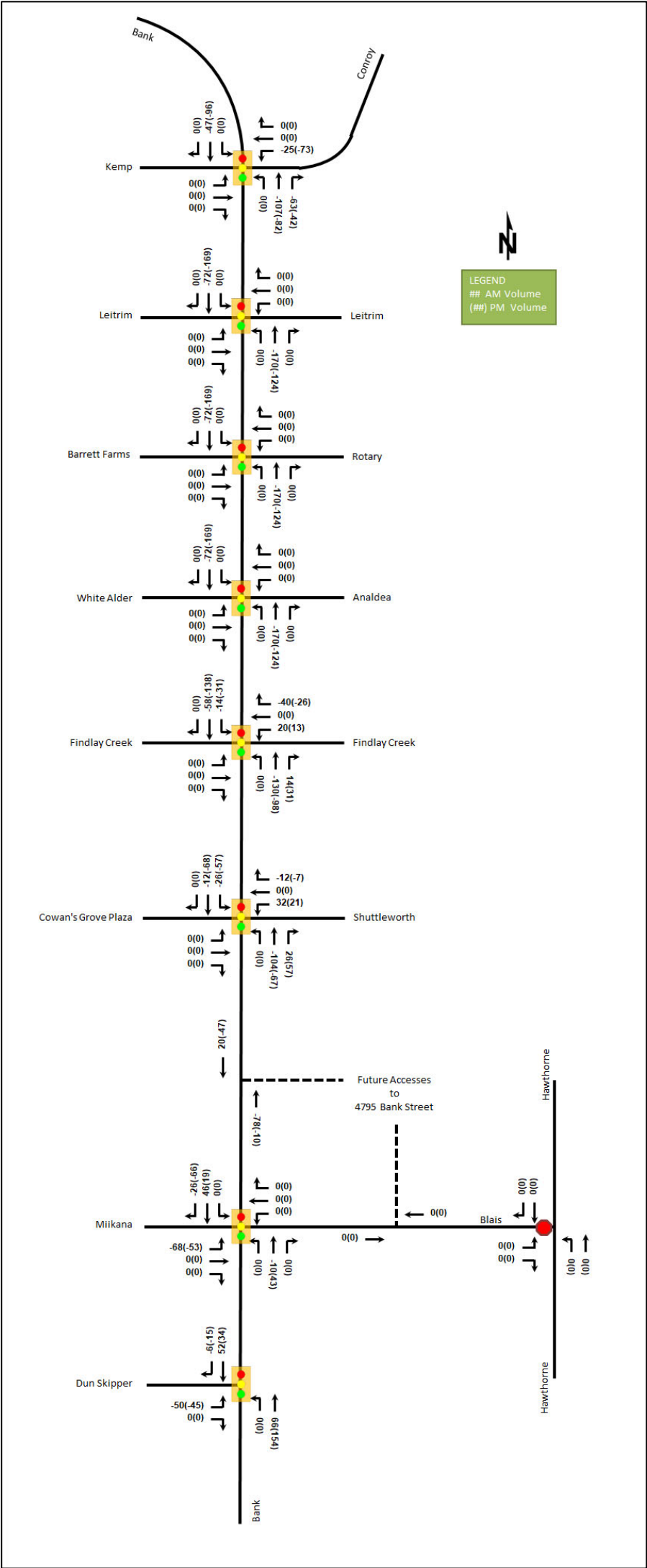
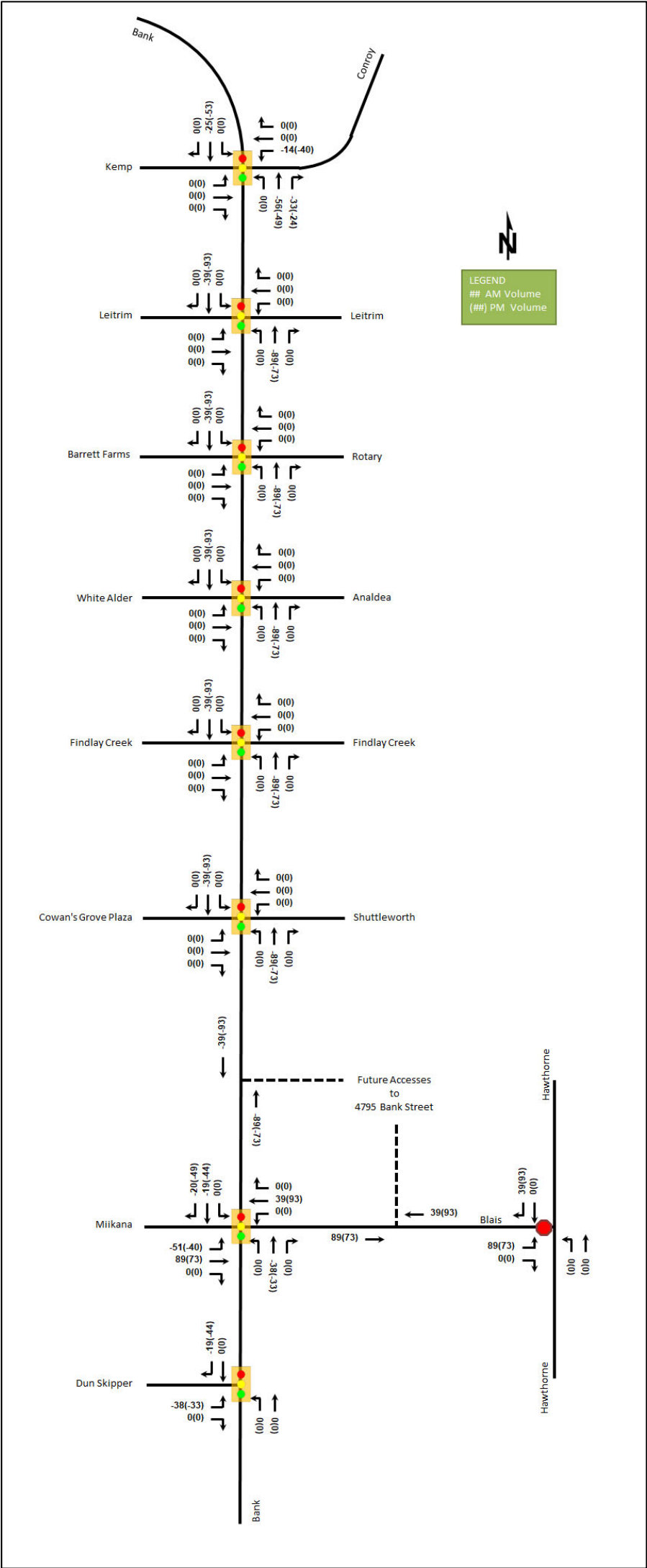


Figure 17: Volume Redistribution for Local Access to Blais Road



10 Demand Rationalization

10.1 2031 Future Background Intersection Operations

Figure 18 illustrates the 2031 background volumes and Table 15 summarizes the 2031 background intersection operations. Signal timing adjustments including cycle length, phasing, and splits have been adjusted at all intersections for the new geometry and a coordinated corridor. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services, and average delay for unsignalized intersections. The synchro worksheets for the 2031 future background horizon are provided in Appendix K.

Figure 18: 2031 Future Background Volumes

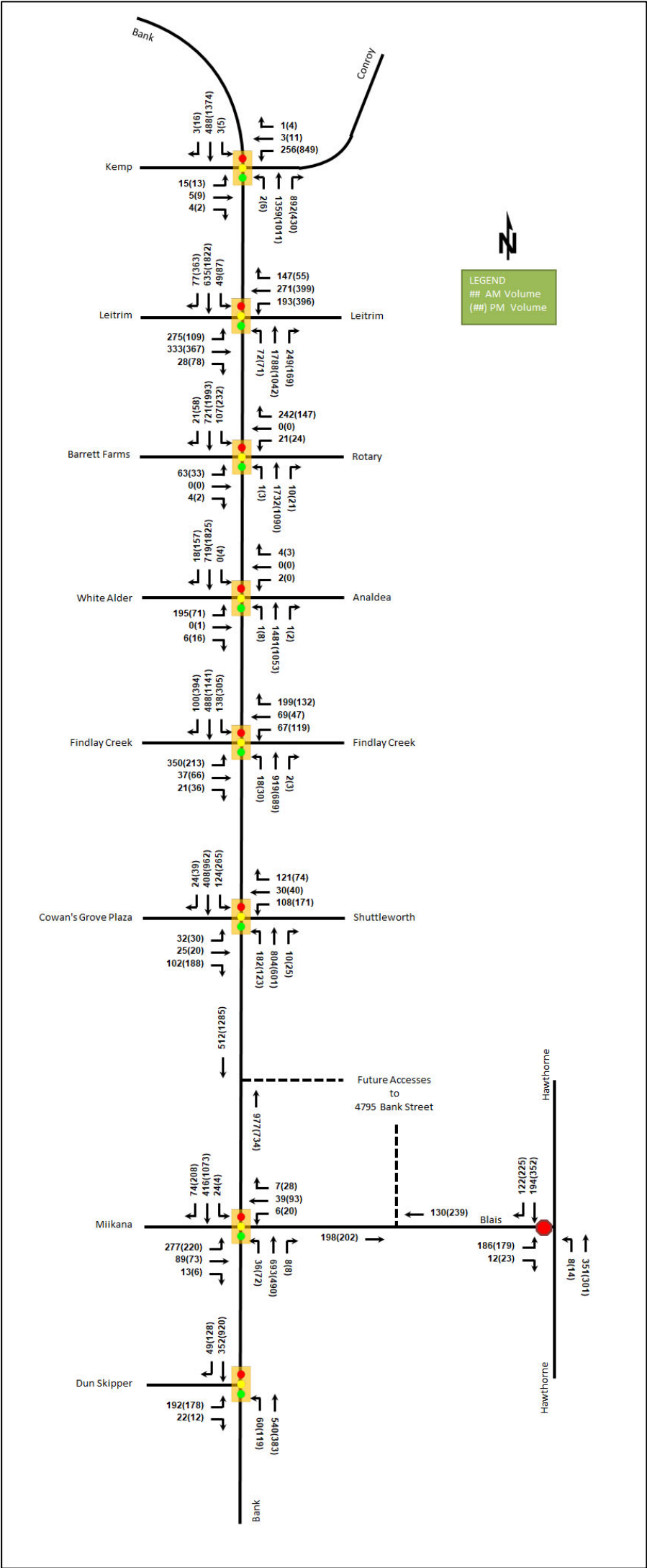


Table 15: 2031 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Conroy Road/Kemp Drive <i>Signalized</i>	EBL	A	0.09	47.0	9.6	A	0.03	21.1	5.6
	EBT/R	A	0.04	34.7	6.0	A	0.02	18.1	4.7
	WBL	C	0.73	65.1	45.2	D	0.86	44.8	114.1
	WBT/R	A	0.02	40.2	3.8	A	0.02	16.7	5.5
	NBL	A	0.00	2.0	m0.1	A	0.08	7.8	m0.3
	NBT	A	0.55	3.3	m16.5	B	0.61	9.8	m30.2
	NBR	B	0.69	10.3	m0.0	A	0.48	1.2	m0.0
	SBL	A	0.01	5.3	1.1	A	0.04	21.2	3.4
	SBT	A	0.20	5.2	26.4	D	0.82	33.9	#224.5
	SBR	A	0.00	0.0	0.0	A	0.02	3.2	2.5
	Overall	B	0.70	11.3	-	D	0.84	25.7	-
Bank Street at Leitrim Road <i>Signalized</i>	EBL	F	1.42	237.6	#279.6	F	1.23	162.3	#215.3
	EBT/R	A	0.06	0.2	0.0	A	0.15	1.1	1.1
	WBL	F	1.68	363.0	#107.1	F	1.81	403.4	#194.8
	WBT	A	0.38	26.9	68.9	A	0.53	30.2	104.6
	WBR	A	0.21	6.7	16.6	A	0.08	2.3	4.1
	NBL	A	0.29	12.4	m7.9	A	0.57	33.8	#18.8
	NBT/R	F	1.61	300.9	#445.6	E	1.00	65.4	#216.6
	SBL	A	0.39	31.0	m15.6	B	0.69	38.5	m16.5
	SBT	A	0.51	26.4	74.4	F	1.40	214.6	#382.9
	SBR	A	0.13	2.8	m2.9	A	0.48	9.2	m41.8
	Overall	F	1.55	207.7	-	F	1.41	146.9	-
Bank Street at Rotary Way/Barrett Farms <i>Signalized</i>	EBL	F	1.07	187.8	#44.6	A	0.36	62.6	17.9
	EBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	WBL	A	0.12	48.1	12.4	A	0.17	52.5	13.5
	WBT/R	C	0.80	47.2	#62.7	A	0.36	2.4	0.0
	NBL	A	0.00	3.0	m0.0	A	0.03	5.3	m0.3
	NBT/R	D	0.82	8.2	43.2	A	0.52	4.2	28.2
	SBL	B	0.64	28.2	m22.8	B	0.61	7.4	m3.4
	SBT	A	0.31	15.8	m79.7	C	0.76	12.5	m129.3
	SBR	A	0.02	7.2	m3.0	A	0.05	0.3	m0.3
	Overall	D	0.82	18.2	-	C	0.75	9.7	-
Bank Street at White Alder Avenue/Analdea Drive <i>Signalized</i>	EBL	C	0.80	71.9	69.3	A	0.46	60.6	30.8
	EBT/R	A	0.01	0.0	0.0	A	0.09	20.7	7.0
	WBL	A	0.01	37.5	2.5	-	-	-	-
	WBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	NBL	A	0.00	7.0	m0.1	A	0.06	4.2	m0.9
	NBT/R	B	0.64	17.0	m169.3	A	0.40	5.8	111.7
	SBL	-	-	-	-	A	0.01	2.0	m0.1
	SBT	A	0.33	1.9	7.2	B	0.68	2.0	27.6
	SBR	A	0.02	0.1	0.0	A	0.14	0.3	m0.3
	Overall	B	0.66	16.8	-	B	0.67	4.6	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Findlay Creek Drive <i>Signalized</i>	EBL	E	0.97	85.8	#74.0	C	0.80	72.9	39.8
	EBT/R	A	0.13	24.0	17.6	A	0.35	39.9	33.9
	WBL	A	0.20	37.0	25.2	B	0.61	62.4	47.1
	WBT/R	A	0.54	26.8	60.3	A	0.52	25.4	38.4
	NBL	A	0.05	8.4	m2.1	A	0.13	7.1	m2.8
	NBT/R	B	0.61	10.3	29.4	A	0.38	5.6	17.8
	SBL	A	0.43	11.1	12.5	A	0.58	6.7	26.8
	SBT	A	0.27	7.2	11.0	A	0.49	5.0	66.6
	SBR	A	0.11	1.0	0.0	A	0.35	1.4	7.6
	Overall	B	0.68	23.2	-	A	0.54	13.8	-
Bank Street at Shuttleworth Drive/Cowan's Grove Plaza <i>Signalized</i>	EBL	A	0.26	52.5	16.5	A	0.12	38.5	13.7
	EBT/R	A	0.44	18.0	22.8	A	0.45	10.2	23.3
	WBL	C	0.74	81.6	44.4	E	0.93	100.3	#74.9
	WBT/R	A	0.49	18.4	25.3	A	0.30	18.1	23.2
	NBL	C	0.73	76.3	67.2	C	0.72	83.8	#55.1
	NBT/R	A	0.45	10.7	52.7	A	0.46	30.6	81.5
	SBL	B	0.66	91.8	53.6	D	0.83	89.9	86.2
	SBT	A	0.24	4.6	11.5	A	0.57	10.1	73.8
	SBR	A	0.03	0.1	0.1	A	0.05	0.2	m0.2
	Overall	A	0.50	26.1	-	B	0.63	33.7	-
Bank Street at Blais Road/Miikana Road <i>Unsignalized</i>	EBL	D	0.81	60.7	87.1	D	0.81	68.1	74.2
	EBT/R	A	0.22	32.2	28.8	A	0.21	36.6	25.7
	WBL	A	0.02	29.3	4.0	A	0.08	35.2	9.6
	WBT/R	A	0.10	27.9	14.9	A	0.30	35.5	34.9
	NBL	A	0.07	11.5	9.0	A	0.28	10.2	12.4
	NBT/R	A	0.35	13.4	74.5	A	0.23	6.6	27.4
	SBL	A	0.06	12.4	m7.4	A	0.01	8.0	m0.5
	SBT	A	0.21	10.6	39.8	A	0.50	7.9	53.4
	SBR	A	0.09	3.3	6.5	A	0.23	0.9	m1.1
	Overall	A	0.48	21.6	-	A	0.55	15.5	-
Bank Street at Dun Skipper Drive <i>Signalized</i>	EBL	C	0.75	69.0	68.8	C	0.74	70.3	64.9
	EBR	A	0.09	16.2	7.2	A	0.06	20.2	5.4
	NBL	A	0.10	6.4	10.0	A	0.40	12.2	27.2
	NBT	A	0.45	9.1	86.3	A	0.31	6.9	51.7
	SBT	A	0.30	6.5	51.9	C	0.73	8.7	74.6
	SBR	A	0.06	1.5	4.4	A	0.12	0.3	0.0
	Overall	A	0.53	17.5	-	C	0.73	14.3	-
Blais Road at Hawthorne Road <i>Unsignalized</i>	EB	C	0.45	19.7	17.3	D	0.56	27.1	24.8
	NB	A	0.01	7.9	0.0	A	0.02	8.9	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	4.6	-	A	-	5.1	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

As in the existing conditions, in the 2031 future background conditions, the study area intersections generally operate satisfactorily with the exception of Bank Street at Leitrim Road.

At the intersection of Bank Street at Conroy Road/Kemp Drive at this horizon during the PM peak hour, the westbound left movement queues are expected to resolve at this horizon, and the southbound through movement is forecast to exhibit extended queues.

At the intersection of Bank Street at Leitrim Road at this horizon, the westbound left and northbound through/right movements are over theoretical capacity during the AM peak hour. During the PM peak hour, the eastbound left, westbound left, and southbound through movements and overall intersection are forecast to be over theoretical capacity, the northbound through/right movement is forecast to be at theoretical capacity, and the northbound left and northbound through/right movements are forecast to exhibit extended queues.

At the intersection of Bank Street at Rotary Way/Barrett Farms, the eastbound left movement is forecast to be over theoretical capacity during the AM peak hour at this horizon. Based on a review of the lane capacities and a range of potential movement splits within the cycle, this operational result is expected to be overly sensitive for the modest approaching left-turn volumes. Furthermore, this result is only observed with the Synchro v/c calculation methodology and is not present using other HCM signalized v/c calculation methods such as 6th Edition or 2010. To resolve the issue, either setting the phase's recall to maximum or introducing a protected left-turn phase on this movement could reduce all movements to a v/c of 1.00 or less, however this treatment would not be expected to be required for real-world operations, and it is recommended that the City monitor intersection performance to the extent that future turning movement counts at this intersection produce a similar analytical result. Also at this intersection at this horizon, the westbound through/right is forecast to exhibit extended queues during the AM peak hour, and queueing on the southbound right movement is forecast to resolve at the PM peak hour.

At the intersection of Bank Street at White Alder Avenue/Analdea Drive, queueing on the southbound through movement is forecast to resolve during the PM peak hour at this horizon.

At the intersection of Bank Street at Shuttleworth Drive/Cowan's Grove Plaza, the westbound left and northbound left movements may exhibit extended queues, and queueing on the southbound through movement is forecast to resolve, each during the PM peak hour.

10.1.1 Future Background 2031 Mitigation

To address the capacity issues at the intersection of Bank Street at Leitrim Road, the City's preliminary design will be used to model the 2031 future background volumes. Table 15 summarizes the 2031 background intersection operations with the City's design. Signal timing adjustments including cycle length, phasing, and splits have been adjusted for the new geometry. Given the need for fully-protected left-turns on the eastbound and westbound approaches, and the need for a protected left-turn phase on the northbound and southbound approaches (which has also been fully protected given the low volumes of turns and high volumes of conflicting through movements), and given the high volumes on all approaches at the intersection and minimum splits required for pedestrian crossings on lower-volume movements, a cycle length of 150 seconds, beyond the City's preferred 120 second maximum cycle length was modelled. The synchro worksheets for the 2031 future background conditions at the modified Bank Street at Leitrim Road intersection are provided in Appendix K.

Table 16: 2031 Future Background – Bank Street at Leitrim Road Preliminary Design 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)
Bank Street at Leitrim Road Signalized	EBL	E	0.93	104.3	#70.0	A	0.55	78.7	26.8
	EBT	B	0.68	67.0	60.8	C	0.74	68.7	67.6
	EBR	A	0.09	0.5	0.0	A	0.22	1.4	0.0
	WBL	C	0.74	83.9	42.8	F	1.15	154.1	#104.3
	WBT	A	0.60	64.8	50.4	A	0.58	56.6	68.5
	WBR	A	0.42	9.1	14.8	A	0.13	0.7	0.0
	NBL	B	0.62	88.0	37.5	A	0.51	77.8	#57.6
	NBT	F	1.03	63.1	#367.2	B	0.66	33.9	167.9
	NBR	A	0.31	12.0	42.3	A	0.22	5.0	16.0
	SBL	A	0.48	81.7	#41.5	B	0.65	89.0	#46.2
	SBT	A	0.39	24.9	90.8	F	1.16	116.2	#387.8
	SBR	A	0.11	0.3	0.0	A	0.42	5.1	25.0
	Overall	E	0.96	55.4	-	F	1.08	76.8	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

As shown above, the capacity issues are largely mitigated during the AM peak hour however are forecast to remain along mainline movements on Bank Street during the PM peak hour. This result is consistent with the fact that the forecasted mainline volumes on Bank Street exceed the expected lane capacities and maintaining the two through lanes through the intersection that have limited split within the overall cycle.

During the AM peak hour, reallocation of split to the northbound through movement from the conflicting phases results in the eastbound left movement becoming over theoretical capacity without resolving the capacity issues on the northbound through movement itself, and thus the signal timing is considered optimized based on the minimum splits. Increasing the cycle length beyond 150 seconds is the only means of resolving the AM capacity issues for the given geometry.

During the PM peak hour, capacity issues are present across conflicting phases, and no resolution is possible for the forecasted volumes with the given intersection geometry.

Resolving the issues would require the provision of additional capacity on the approaches, which would be expected to be able to be incorporated in a number of ways. For the purposes of this review of auto capacity, no trade-offs will be evaluated for the active modes, and therefore the following discussion merely considers the minimum geometry required to mitigate the forecasted capacity constraints. This minimum approach geometry would comprise a left-turn lane, two through lanes, and a shared through/right-turn lane on each the northbound and southbound approaches in addition to the planned configurations on the eastbound and westbound approaches from the preliminary design. Notwithstanding the active mode trade-offs, given the mixed flow conditions on the transit priority corridor, it is noted that the mitigation of auto delay and capacity issues along the mainline movements of Bank Street would also improve the transit level of service. The resulting operations are summarized in Table 17 and the Synchro worksheets are provided in Appendix K.

Table 17: 2031 Future Background – Mitigated 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)
Bank Street at Leitrim Road Signalized	EBL	D	0.84	87.6	#63.2	A	0.50	75.2	26.3
	EBT	B	0.68	66.7	60.8	C	0.74	68.7	67.6
	EBR	A	0.09	0.5	0.0	A	0.24	3.8	4.2
	WBL	B	0.68	78.4	42.1	E	1.00	110.1	#96.0
	WBT	B	0.62	65.6	50.4	A	0.55	54.7	68.4
	WBR	A	0.43	9.3	14.8	A	0.14	0.7	0.0
	NBL	B	0.62	88.0	37.5	B	0.61	88.8	#41.4
	NBT/R	D	0.84	35.0	#231.7	A	0.57	31.2	122.6
	SBL	A	0.48	81.7	#41.5	B	0.65	88.9	#46.5
	SBT/R	A	0.32	23.4	65.7	E	1.00	57.1	#305.7
Overall		D	0.81	43.4	-	E	0.96	55.7	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

As shown above, the capacity issues are largely mitigated with the revised northbound and southbound approach configurations. During the PM peak hour, the westbound left and southbound through/right movement are forecast to be at capacity. During both peak hours, extended queueing is still noted, especially on the peak direction's north-south through movement for the peak hour. This queueing is partly a result of the long cycle length required to accommodate the protected turns on all approaches given the minimum splits for each movement. Ultimately, however, the demands on the conflicting movements are high and the geometric needs at the intersection are accordingly high.

This analysis demonstrates what the background impacts would be at the 2031 horizon on the City's preliminary design in an interim condition before the Earl Armstrong Road extension is provided and reduces demands on the north-south travel through this intersection. The needs for the intersection will be reevaluated in light of the extension of Earl Armstrong Road to Bank Street as part of the 2036 conditions assessment.

10.2 2036 Future Background Intersection Operations

Figure 19 illustrates the 2036 background volumes and Table 18 summarizes the 2036 background intersection operations. Signal timing adjustments including cycle length, phasing, and splits have been adjusted at all intersections for the new geometry, redistribution of volumes, and a coordinated corridor. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2036 future background horizon are provided in Appendix L.

Figure 19: 2036 Future Background Volumes

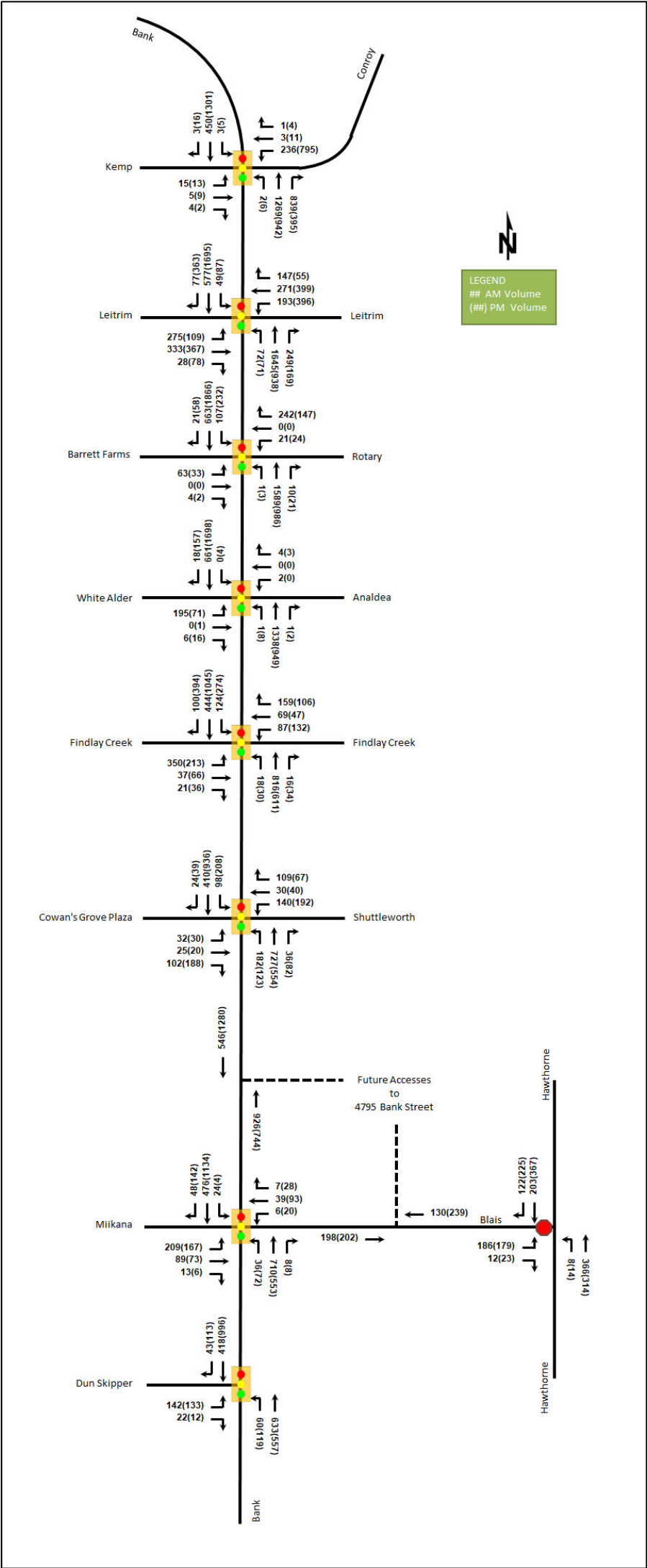


Table 18: 2036 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Conroy Road/Kemp Drive <i>Signalized</i>	EBL	A	0.09	48.1	9.7	A	0.03	21.3	5.5
	EBT/R	A	0.04	35.4	6.1	A	0.02	18.3	4.7
	WBL	C	0.71	65.1	42.1	D	0.82	43.0	103.1
	WBT/R	A	0.02	41.2	3.9	A	0.03	16.9	5.5
	NBL	A	0.00	2.0	m0.1	A	0.06	7.8	m0.5
	NBT	A	0.51	3.1	m17.0	A	0.56	7.2	m31.7
	NBR	B	0.66	3.6	m0.0	A	0.44	1.0	m0.0
	SBL	A	0.01	5.0	1.1	A	0.03	20.8	3.4
	SBT	A	0.19	4.8	23.4	C	0.77	30.7	#197.4
	SBR	A	0.00	0.0	0.0	A	0.02	3.3	2.5
	Overall	B	0.67	9.1	-	C	0.79	23.5	-
Bank Street at Leitrim Road <i>Signalized</i>	EBL	F	1.31	187.8	#269.3	F	1.20	150.1	#212.6
	EBT/R	A	0.06	0.2	0.0	A	0.15	1.0	1.1
	WBL	F	1.40	242.0	#90.1	F	1.64	330.3	#186.4
	WBT	A	0.36	24.0	64.9	A	0.51	28.5	101.5
	WBR	A	0.21	17.4	31.2	A	0.08	2.1	4.0
	NBL	A	0.30	12.6	m7.8	A	0.57	32.9	#18.0
	NBT/R	F	1.35	184.0	#372.1	E	0.96	56.6	#193.5
	SBL	E	0.91	130.5	m#37.1	B	0.69	41.6	m18.6
	SBT	A	0.42	19.5	58.1	F	1.35	196.9	#353.5
	SBR	A	0.13	4.6	7.6	A	0.49	9.7	m43.1
	Overall	F	1.34	137.2	-	F	1.34	131.1	-
Bank Street at Rotary Way/Barrett Farms <i>Signalized</i>	EBL	A	0.56	61.6	24.6	A	0.36	62.5	17.9
	EBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	WBL	A	0.15	51.4	12.4	A	0.17	52.4	13.5
	WBT/R	D	0.81	41.6	50.2	A	0.40	3.2	0.0
	NBL	A	0.00	7.0	m0.1	A	0.02	4.7	m0.3
	NBT/R	D	0.82	12.9	#96.5	A	0.46	3.8	21.8
	SBL	A	0.58	31.2	m28.7	A	0.56	5.9	m1.8
	SBT	A	0.30	17.5	m67.8	C	0.71	10.1	m63.3
	SBR	A	0.02	2.0	m1.0	A	0.05	0.2	m0.1
	Overall	C	0.80	18.6	-	B	0.69	8.2	-
Bank Street at White Alder Avenue/Analdea Drive <i>Signalized</i>	EBL	C	0.79	70.5	68.9	A	0.46	60.6	30.8
	EBT/R	A	0.01	0.0	0.0	A	0.09	20.6	7.0
	WBL	A	0.01	37.0	2.5	-	-	-	-
	WBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	NBL	A	0.00	7.0	m0.1	A	0.05	4.5	m1.4
	NBT/R	A	0.58	15.8	173.1	A	0.36	5.1	81.3
	SBL	-	-	-	-	A	0.01	1.0	m0.1
	SBT	A	0.30	3.1	16.5	B	0.63	1.4	10.5
	SBR	A	0.02	0.6	0.0	A	0.14	0.2	m0.1
	Overall	B	0.61	16.6	-	B	0.62	4.1	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Findlay Creek Drive <i>Signalized</i>	EBL	C	0.74	44.6	45.6	C	0.72	64.5	38.1
	EBT/R	A	0.11	20.4	15.8	A	0.36	40.2	33.5
	WBL	A	0.45	54.7	35.1	B	0.69	68.6	51.2
	WBT/R	C	0.74	46.5	61.4	A	0.48	26.6	34.7
	NBL	A	0.05	11.4	m2.6	A	0.11	6.0	m2.5
	NBT/R	A	0.59	12.7	30.9	A	0.35	4.6	16.6
	SBL	A	0.37	12.1	11.2	A	0.50	5.4	21.9
	SBT	A	0.26	11.6	31.0	A	0.44	4.7	55.1
	SBR	A	0.12	3.0	2.1	A	0.35	1.4	9.3
	Overall	B	0.63	22.2	-	A	0.49	13.7	-
Bank Street at Shuttleworth Drive/Cowan's Grove Plaza <i>Signalized</i>	EBL	A	0.20	46.6	15.6	A	0.20	50.9	15.8
	EBT/R	A	0.39	15.7	21.7	A	0.59	16.2	27.5
	WBL	C	0.80	81.1	54.1	C	0.76	55.5	#59.5
	WBT/R	A	0.42	16.4	23.5	A	0.22	14.5	20.4
	NBL	C	0.73	78.7	68.1	C	0.72	80.8	52.5
	NBT/R	A	0.43	11.2	50.1	A	0.51	26.3	78.1
	SBL	A	0.60	92.7	41.2	C	0.79	93.9	80.6
	SBT	A	0.26	3.9	14.7	B	0.64	15.2	114.5
	SBR	A	0.03	0.1	0.0	A	0.06	0.1	0.0
	Overall	A	0.50	26.5	-	B	0.66	31.3	-
Bank Street at Blais Road/Miikana Road <i>Unsignalized</i>	EBL	C	0.78	67.3	71.7	D	0.81	77.4	61.8
	EBT/R	A	0.28	39.6	32.8	A	0.27	43.8	28.7
	WBL	A	0.03	35.8	4.5	A	0.10	41.5	10.7
	WBT/R	A	0.13	33.9	16.9	A	0.38	43.6	39.3
	NBL	A	0.07	7.7	m6.5	A	0.26	8.8	m12.2
	NBT/R	A	0.33	9.5	62.0	A	0.24	5.7	30.2
	SBL	A	0.06	6.9	m5.2	A	0.01	5.8	m0.4
	SBT	A	0.22	6.1	34.0	A	0.49	6.2	43.8
	SBR	A	0.05	1.6	m2.8	A	0.15	0.8	m1.3
	Overall	A	0.43	18.1	-	A	0.53	14.6	-
Bank Street at Dun Skipper Drive <i>Signalized</i>	EBL	B	0.69	70.4	54.5	C	0.72	76.4	54.1
	EBR	A	0.11	18.1	7.6	A	0.07	23.4	5.9
	NBL	A	0.10	5.1	8.7	A	0.41	10.2	21.5
	NBT	A	0.51	8.2	94.7	A	0.43	6.3	63.3
	SBT	A	0.34	3.6	27.6	C	0.75	11.5	75.9
	SBR	A	0.05	0.3	0.0	A	0.10	0.4	0.0
	Overall	A	0.54	13.2	-	C	0.75	13.8	-
Blais Road at Hawthorne Road <i>Unsignalized</i>	EB	C	0.47	20.6	18.0	D	0.58	28.9	26.3
	NB	A	0.01	7.9	0.0	A	0.02	8.9	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	4.6	-	A	-	5.3	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

During both the AM and PM peak hours, the study area intersections at the 2036 future background conditions operate similarly to the 2031 future background conditions.

At the intersection of Bank Street at Leitrim Road at this horizon, the southbound left movement is forecast to exhibit extended queueing during the AM peak hour.

At the intersection of Bank Street at Rotary Way/Barrett Farms, during the AM peak hour, the northbound through/right movement is forecast to exhibit extended queueing and the queueing on the westbound through/right movement is forecast to resolve at this horizon with the reduction of through traffic on Bank Street.

At the intersection of Bank Street at Shuttleworth Drive/Cowan's Grove Plaza, queueing on the northbound left movement is forecast to resolve during the PM peak hour at this horizon.

No additional capacity issues were noted.

10.2.1 Future Background 2036 Mitigation

To address the capacity issues at the intersection of Bank Street at Leitrim Road, the City's preliminary design will be used to model the 2036 future background volumes. Table 19 summarizes the 2036 background intersection operations with the City's design. Signal timing adjustments including cycle length, phasing, and splits have been adjusted for the new geometry. Given the need for fully-protected left-turns on the eastbound and westbound approaches, and the need for a protected left-turn phase on the northbound and southbound approaches (which has also been fully protected given the low volumes of turns and high volumes of conflicting through movements), and given the high volumes on all approaches at the intersection, a cycle length of 150 seconds, beyond the City's preferred 120 second maximum cycle length was modelled. The synchro worksheets for the 2036 future background conditions at the modified Bank Street at Leitrim Road intersection are provided in Appendix L.

Table 19: 2036 Future Background – Bank Street at Leitrim Road Preliminary Design 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)
Bank Street at Leitrim Road Signalized	EBL	E	0.93	104.3	#70.0	A	0.55	78.7	26.8
	EBT	B	0.68	67.0	60.8	C	0.74	68.7	67.6
	EBR	A	0.09	0.5	0.0	A	0.22	1.4	0.0
	WBL	C	0.74	83.9	42.8	F	1.15	154.1	#104.3
	WBT	A	0.60	64.8	50.4	A	0.58	56.6	68.5
	WBR	A	0.42	9.1	14.8	A	0.13	0.7	0.0
	NBL	B	0.62	88.0	37.5	A	0.51	77.8	#57.6
	NBT	E	0.94	45.5	#321.4	A	0.60	31.9	145.6
	NBR	A	0.31	12.0	42.3	A	0.22	5.0	16.0
	SBL	A	0.48	81.7	#41.5	B	0.65	89.0	#46.2
	SBT	A	0.36	24.3	81.4	F	1.08	85.4	#347.3
	SBR	A	0.11	0.3	0.0	A	0.42	5.1	25.0
	Overall	D	0.89	48.1	-	F	1.03	65.2	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

As shown above, the inclusion of the Earl Armstrong Road extension is forecast to resolve the capacity issues during the AM peak hour, however, the capacity issues are forecast to persist during the PM peak hour. During the PM peak hour, the same pattern of capacity issues on conflicting movements are present, however the overall intersection is over theoretical capacity suggesting that increases to the cycle length could not resolve the individual movement's capacity issues. Additional lane capacity would be required to resolve the forecasted issues, again noted to be consistent with the through movements approaching lane capacity in the face of limited split of the overall cycle.

As in the 2031 background conditions, new approach configurations on the northbound and southbound approaches were evaluated as the minimum geometrical modification to the City's design. The resulting operations for the PM peak hour with a 150-second cycle length and optimized signal timing along the same

parameters as the previous operational evaluation are summarized in Table 26. The Synchro worksheets are provided in Appendix L.

Table 20: 2036 Future Background – Mitigated Intersection Operations

Intersection	Lane	PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Leitrim Road Signalized	EBL	A	0.55	78.4	26.8
	EBT	C	0.74	68.7	67.6
	EBR	A	0.22	1.4	0.0
	WBL	E	0.96	99.5	#93.4
	WBT	A	0.53	52.8	66.5
	WBR	A	0.13	0.7	0.0
	NBL	A	0.49	75.3	#60.5
	NBT/R	A	0.55	31.3	99.8
	SBL	A	0.54	76.0	#73.2
	SBT/R	E	0.99	57.3	#259.3
	Overall	E	0.94	54.8	-

Notes: Saturation flow rate of 1800
veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block
length

As shown above, the pattern of capacity issues is forecast to be resolved for the 2036 future background horizon with the mitigated configurations of the northbound and southbound approaches. It is noted that the southbound through/right movement is at its theoretical capacity even with these changes, and that the westbound left movement is approaching its theoretical capacity. Extended queueing is forecast on the westbound left, northbound left, southbound left, and southbound through/right movements in these conditions.

The ultimate needs for the intersection should be evaluated by the City's design team as part of the continued design process. The needs for the 2046 forecasted conditions including all additional impacts and all additional infrastructure improvements would be required as part of that assessment and fall outside of the scope of this review, which is only to identify impacts and mitigations for the purposes of the subject development horizons and study area.

10.3 Modal Share Sensitivity and Demand Rationalization Conclusions

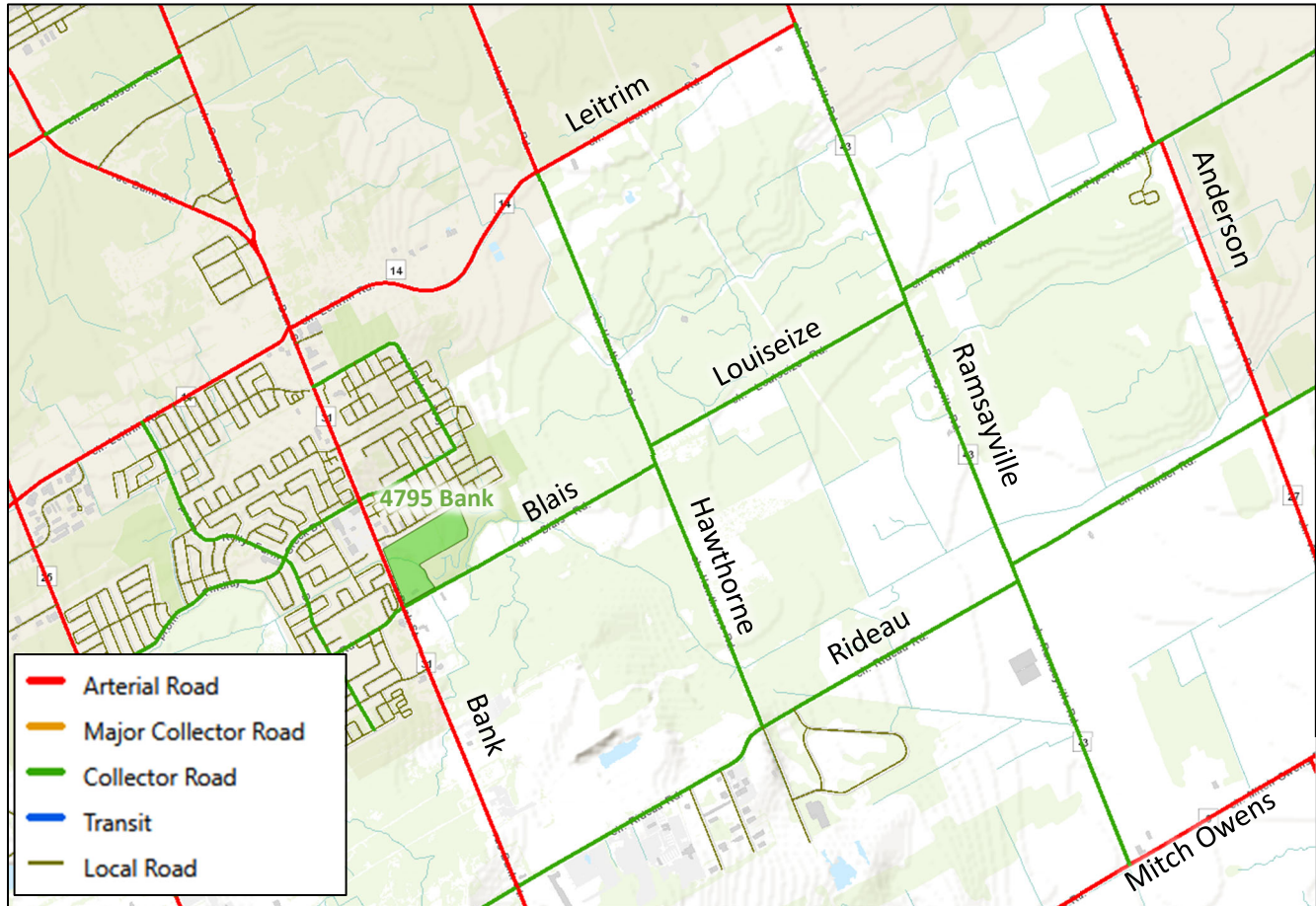
Capacity issues have been noted at the intersection of Bank Street at Leitrim Road. Persistent capacity issues and user delays are considered to drive transit adoption, where further modal shifts can potentially be accommodated in the area given the Findlay Creek community's proximity to LRT including Park and Rides. Additionally, the City is currently planning the design and construction of new intersection approach configurations for this intersection, and implementation timeline and design elements are the only considerations that are still required. The background traffic already included an area shift to transit and traffic redistribution for area capacity and connectivity improvements.

While further rationalization is not considered necessary as need for improvements to Bank Street at Leitrim Road are documented in the TMP and currently underway. The addition of the subject lands to the area travel do not necessitate deviation from the City's proposed network modifications, constraints inherent to the Bank Street at Leitrim Road intersection are expected to persist in the absence of a more auto-intensive design for the intersection. It is noted that peak direction travel demands on along the mainline of Bank Street are forecast to be approaching two lane capacity in the north-south direction in each peak hour, which is supported by the City's 2046 EMM model (provided in Appendix M), and discussed further in Section 12. This forecasted demand would require additional lane capacity through the Bank Street at Leitrim Road intersection due to being limited by the

available phase length of the overall signal cycle to process these volumes. Thus, in the absence of additional lanes permitting northbound and southbound through movements, conveyance of vehicles to and from or through Findlay Creek along the arterial Bank Street corridor will be inadequate to function as intended, from a network perspective.

Based on a constraint for north-south travel along Bank Street, traffic impacts along alternative routes would be expected, however the context in which these impacts would occur should first be evaluated. In order to frame the discussion of these impacts, the network classifications of the area roads will be reviewed against their assessed functions. The area network road classifications are illustrated in Figure 20.

Figure 20: Area Road Network Classifications



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: July 7, 2026

Reviewing the 2022 volume plot from the City's EMM model in the study area, Blais Road is conveying traffic from the arterial Bank Street to Hawthorne Road to travel to and from the northern arterial road network of Leirtrim Road and Hawthorne Road north of Leirtrim Road. On this basis, Blais Road and Hawthorne Road north of Blais Road may be operating in an arterial capacity due to the Bank Street at Leirtrim Road constraint. Furthermore, reviewing the 2046 volume plot, beyond this noted existing pattern Ramsayville Road may be operating as an arterial, conveying traffic to/from the arterial Mitch Owens Road to other area arterials such as Leirtrim Road or Ramsayville Road north of Leirtrim Road. Additionally, hundreds of AM peak hour vehicles are anticipated to turn each from Bank Street and from Ramsayville Road to Rideau Road to turn onto Hawthorne Road to continue northward to the arterial road network of Leirtrim Road or Hawthorne Road north of Leirtrim Road. Therefore, the

network designation of the rural road network in the larger area should be reviewed by the City in light of expected background travel patterns. In general, the change in function over time is expected and consistent with intensification and urbanization of formerly sparsely populated, low-intensity rural areas.

With respect to site traffic, the subject lands are located at the southern boundary of the Findlay Creek community and can largely be bypassed the constraints of Bank Street at Leitrim Road given the direct access to Blais Road which provides access to Hawthorne Road, connecting residents to Highway 417 via Hunt Club Avenue and to the larger Gloucester/Hunt Club east area and arterial road network. For site movements, this connection is from the internal local road to the collector Blais Road, to the collector Hawthorne Road, and to the arterial Hawthorne Road north of Leitrim Road. For site traffic specifically, these movements are consistent with the existing classifications and would be appropriate considering the potential reclassification of these roads to arterials. However, it is noted that if the constraints at the intersection of Bank Street and Leitrim Road were not present, that a larger proportion of site traffic could use Bank Street to travel north and thus the resulting assignment within the foregoing analysis account for the constrained nature of the network and Blais Road impacts are exaggerated versus an unconstrained one. The majority of existing Findlay Creek residents currently do not have this option, although travel to and from the west via the south from the wider community will become more attractive once Earl Armstrong Road is extended to Bank Street. Further support for the reclassification of Hawthorne Road in the fullness of time would be resultant from the extension of Earl Armstrong Drive to Hawthorne Road, as phase 2 of the EA plan. Therefore, the site mode shares and trip assignment are responsive to the area constraints and further rationalization for site travel demands is not required.

11 Transit

11.1 Transit Priority

Site traffic is anticipated to have only minor impact on what transit movements currently exist throughout the study area. Transit service is expected to increase with new routing in the future that is yet undetermined. As further detailed in Section 13.2.3, all study area intersections meet transit LOS targets with the exception of the intersection of Bank Street at Leitrim Road, which will be subject to further City design. Beyond meeting the City's desired transit LOS given trade-offs at this intersection through its redesign, no additional transit priority measures are required within the study area.

12 Network Concept

To determine the capacity of the road network to convey the anticipated regional volumes from and through Findlay Creek, a review of the local elements of TRANS Screenline 8 has been undertaken and is summarized in Table 21. It is noted that Screenline 8 includes one additional element, River Road, however given the distance to this element, it was not reviewed as part of the screenline assessment.

Volumes were estimated from the 2022 and 2046 TRANS model volume plots, which include the base density assumptions for the subject site as described in Section 4.5. Therefore, the site volumes represented in the below table have been proportionally adjusted to represent the increase over the assumed density and trip generation, where it is estimated only approximately 53% of site traffic (based on auto trips for assumed unit typologies) is unaccounted for in the model. It is additionally noted that the widening of Albion Road is noted to be a Needs-Based Network project, but not a Priority Network project, however the volume assumptions within the TRANS model appear to assume this project has been completed by 2046.

Table 21: Screenline Analysis – Local Elements

Screenline 8 Element	Direction	2022		2046		Total Site Volumes	Site Volumes Beyond 36 units/ha Density
		Capacity	Volume	Capacity	Volume		
Hawthorne Road	NB	800	987	800	777	0	0
Bank Street		2,000	1,404	2,000	1,968	32	15
Albion Road		800	397	800	1,639	71	33
Total		3,600	2,788	3,600	4,384	103	48
Hawthorne Road	SB	800	400	800	682	0	0
Bank Street		2,000	547	2,000	675	14	7
Albion Road		800	116	800	143	30	14
Total		3,600	1,063	3,600	1,500	44	21

As shown above, Screenline 8 is forecast to be locally overcapacity in the peak direction in the 2046 conditions absent the widening of Albion Road. Should this project be included in the network assumptions, then the screenline would be expected to have residual capacity.

The total forecasted site volumes constitute approximately 2.3% of the total volumes crossing the screenline and the increase from higher than a 36 unit/ha density constitute approximately 1.1% of the total volumes crossing the screenline. This increase in traffic across the screenline is considered negligible. It is recommended that the City include the updated density considerations for the subject parcel in the TRANS model and review the assumed area projects as it is maintained moving forward in future modelling updates.

13 Intersection Design

13.1 Intersection Control

No change to the existing control is recommended for the signalized network intersections. In the case of Hawthorne Road at Blais Road, while the results of a Justification 7 signalization warrant analysis indicates that a signal may be warranted (Case 2) from the perspective of minimum vehicular volume, and not warranted (Case 3) from the perspective of delay to cross traffic, it is assumed that the intersection will remain minor stop-controlled, and it will be assessed operationally on this basis. Signal warrants are provided in Appendix N.

The site accesses are proposed as having minor stop control, and the operations associated with this control will be evaluated in the following sections.

13.2 Intersection Design

13.2.1 2031 Future Total Intersection Operations

The 2031 future total intersection volumes are illustrated in Figure 21 and the intersection operations are summarized below in Table 22. Signal timing is consistent with the background conditions. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix O.

Figure 21: 2031 Future Total Volumes

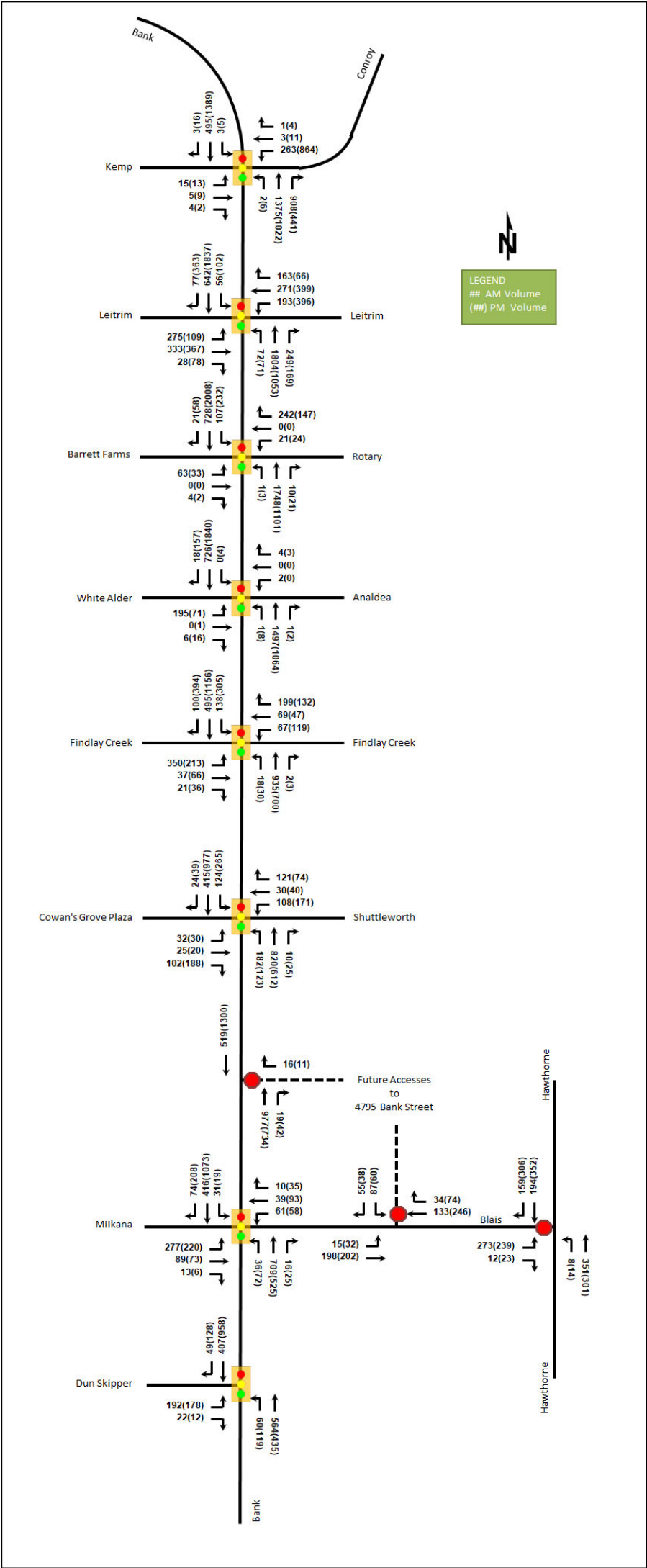


Table 22: 2031 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Conroy Road/Kemp Drive <i>Signalized</i>	EBL	A	0.09	46.6	9.6	A	0.02	20.7	5.5
	EBT/R	A	0.04	34.3	6.0	A	0.02	17.8	4.7
	WBL	C	0.73	64.9	46.0	D	0.86	44.6	116.3
	WBT/R	A	0.02	40.0	3.8	A	0.02	16.5	5.5
	NBL	A	0.00	2.0	m0.1	A	0.09	8.5	m0.3
	NBT	A	0.56	3.3	m17.0	B	0.63	9.3	m31.1
	NBR	B	0.70	10.6	m0.0	A	0.49	1.1	m0.0
	SBL	A	0.01	5.3	1.2	A	0.04	21.6	3.5
	SBT	A	0.21	5.3	27.3	D	0.84	35.2	#230.1
	SBR	A	0.00	0.0	0.0	A	0.02	3.3	2.5
	Overall	C	0.71	11.4	-	D	0.85	26.0	-
Bank Street at Leitrim Road <i>Signalized</i>	EBL	F	1.42	237.6	#279.6	F	1.23	162.3	#215.3
	EBT/R	A	0.06	0.2	0.0	A	0.15	1.1	1.1
	WBL	F	1.68	363.0	#107.1	F	1.81	403.4	#194.8
	WBT	A	0.38	26.9	68.9	A	0.53	30.2	104.6
	WBR	A	0.23	8.0	20.2	A	0.10	3.6	6.3
	NBL	A	0.30	12.4	m7.9	A	0.57	33.9	#20.3
	NBT/R	F	1.62	306.3	#449.1	F	1.01	67.2	#220.1
	SBL	A	0.44	33.8	m18.5	C	0.80	49.9	m#19.6
	SBT	A	0.52	28.3	79.4	F	1.41	219.6	#386.8
	SBR	A	0.13	3.2	m3.0	A	0.48	9.0	m40.8
	Overall	F	1.56	209.8	-	F	1.41	148.8	-
Bank Street at Rotary Way/Barrett Farms <i>Signalized</i>	EBL	F	1.07	187.8	#44.6	A	0.36	62.6	17.9
	EBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	WBL	A	0.12	48.1	12.4	A	0.17	52.5	13.5
	WBT/R	C	0.80	47.2	#62.7	A	0.36	2.4	0.0
	NBL	A	0.00	3.0	m0.0	A	0.03	5.3	m0.3
	NBT/R	D	0.83	8.5	44.1	A	0.52	4.1	28.2
	SBL	B	0.66	29.4	m24.3	B	0.61	7.7	m3.3
	SBT	A	0.31	16.2	m81.7	C	0.77	12.8	m131.9
	SBR	A	0.02	7.4	m3.2	A	0.05	0.3	m0.3
	Overall	D	0.83	18.4	-	C	0.76	9.9	-
Bank Street at White Alder Avenue/Analdea Drive <i>Signalized</i>	EBL	C	0.80	71.9	69.3	A	0.46	60.6	30.8
	EBT/R	A	0.01	0.0	0.0	A	0.09	20.7	7.0
	WBL	A	0.01	37.5	2.5	-	-	-	-
	WBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	NBL	A	0.00	7.0	m0.1	A	0.06	4.2	m0.9
	NBT/R	B	0.65	17.0	m176.4	A	0.40	5.4	98.0
	SBL	-	-	-	-	A	0.01	2.0	m0.1
	SBT	A	0.33	1.9	7.2	B	0.68	2.0	29.5
	SBR	A	0.02	0.1	0.0	A	0.14	0.3	m0.4
	Overall	B	0.67	16.7	-	B	0.67	4.5	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Findlay Creek Drive Signalized	EBL	E	0.97	85.8	#74.0	C	0.80	72.9	39.8
	EBT/R	A	0.13	24.0	17.6	A	0.35	39.9	33.9
	WBL	A	0.20	37.0	25.2	B	0.61	62.4	47.1
	WBT/R	A	0.54	26.8	60.3	A	0.52	25.4	38.4
	NBL	A	0.05	8.7	m2.2	A	0.13	7.2	m2.8
	NBT/R	B	0.62	10.0	31.4	A	0.38	5.6	18.1
	SBL	A	0.44	11.5	13.0	A	0.58	6.8	27.6
	SBT	A	0.27	7.1	11.0	A	0.49	5.1	70.4
	SBR	A	0.11	1.0	0.0	A	0.35	1.4	8.4
	Overall	B	0.69	23.0	-	A	0.54	13.8	-
Bank Street at Shuttleworth Drive/Cowan's Grove Plaza Signalized	EBL	A	0.23	49.5	16.3	A	0.12	38.1	13.7
	EBT/R	A	0.42	17.1	22.8	A	0.46	10.3	23.6
	WBL	B	0.67	70.9	44.3	E	0.93	98.7	#76.1
	WBT/R	A	0.46	17.2	25.1	A	0.30	17.9	23.2
	NBL	C	0.73	75.6	67.4	C	0.73	85.0	#56.1
	NBT/R	A	0.48	11.7	53.8	A	0.47	29.9	78.9
	SBL	B	0.66	93.7	53.6	D	0.83	89.9	86.5
	SBT	A	0.26	4.9	11.5	A	0.58	10.4	75.2
	SBR	A	0.03	0.1	0.0	A	0.05	0.2	m0.2
	Overall	A	0.52	25.6	-	B	0.64	33.4	-
Bank Street at Site Access Unsignalized	WB	B	0.04	13.6	0.8	B	0.02	12.2	0.8
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	0.1	-	A	-	0.1	-
Bank Street at Blais Road/Miikana Road Unsignalized	EBL	D	0.81	60.6	86.8	D	0.82	69.7	74.3
	EBT/R	A	0.21	31.4	28.3	A	0.20	35.8	25.4
	WBL	A	0.21	34.4	20.7	A	0.22	38.4	21.3
	WBT/R	A	0.10	25.7	14.9	A	0.31	34.5	35.8
	NBL	A	0.07	11.8	m8.8	A	0.28	11.8	15.0
	NBT/R	A	0.37	13.9	78.9	A	0.26	7.8	35.9
	SBL	A	0.09	12.3	m9.3	A	0.04	7.7	m2.7
	SBT	A	0.22	10.5	39.7	A	0.50	7.9	51.4
	SBR	A	0.10	3.0	6.9	A	0.24	0.9	m1.2
	Overall	A	0.49	21.9	-	A	0.55	16.1	-
Bank Street at Dun Skipper Drive Signalized	EBL	C	0.75	69.0	68.8	C	0.74	70.3	64.9
	EBR	A	0.09	16.2	7.2	A	0.06	20.2	5.4
	NBL	A	0.10	6.5	10.1	A	0.44	13.7	29.4
	NBT	A	0.47	9.4	92.2	A	0.35	7.3	60.5
	SBT	A	0.35	6.4	55.3	C	0.76	9.4	74.7
	SBR	A	0.06	1.4	4.1	A	0.12	0.3	0.0
	Overall	A	0.54	17.0	-	C	0.76	14.5	-
Blais Road at Site Access Unsignalized	EB	A	0.01	7.6	0.0	A	0.03	8.0	0.8
	WB	-	-	-	-	-	-	-	-
	SB	B	0.20	11.4	6.0	B	0.17	12.8	4.5
	Overall	A	-	3.3	-	A	-	2.3	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Blais Road at Hawthorne Road Unsignalized	EB	D	0.67	29.1	36.0	E	0.78	44.3	46.5
	NB	A	0.01	8.0	0.0	A	0.02	9.2	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	8.4	-	A	-	9.5	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

During both the AM and PM peak hours, the study area intersections at 2031 future total conditions are anticipated to operate similarly to the 2031 future background conditions. At the intersection of Bank Street at Leitrim Road, the southbound left movement is forecast to exhibit extended queues. No additional capacity issues were noted.

The site access intersections are anticipated to operate well at the 2031 future total conditions.

13.2.1.1 Future Total 2031 Mitigation

To address the capacity issues at the intersection of Bank Street at Leitrim Road, the City's preliminary design will be used to model the 2031 future total volumes, with all geometric and signal timing considerations consistent with the 2031 background horizon. Table 23 summarizes the 2031 future total intersection operations with the City's design. Signal timing adjustments including cycle length, phasing, and splits have been adjusted for the new geometry. The synchro worksheets for the 2031 future total conditions at the modified Bank Street at Leitrim Road intersection are provided in Appendix O.

Table 23: 2031 Future Total – Bank Street at Leitrim Road Preliminary Design 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)
Bank Street at Leitrim Road Signalized	EBL	E	0.93	104.3	#70.0	A	0.55	78.7	26.8
	EBT	B	0.68	67.0	60.8	C	0.74	68.7	67.6
	EBR	A	0.09	0.5	0.0	A	0.22	1.4	0.0
	WBL	C	0.74	83.9	42.8	F	1.15	154.1	#104.3
	WBT	A	0.60	64.8	50.4	A	0.58	56.6	68.5
	WBR	A	0.47	12.0	19.5	A	0.16	0.8	0.0
	NBL	B	0.62	88.0	37.5	A	0.51	77.8	#57.6
	NBT	F	1.05	72.1	#372.0	B	0.68	35.3	170.6
	NBR	A	0.31	12.3	42.3	A	0.22	5.1	16.0
	SBL	A	0.47	78.9	#47.1	B	0.69	88.7	#57.9
	SBT	A	0.40	25.0	91.8	F	1.17	120.1	#392.7
	SBR	A	0.11	0.3	0.0	A	0.42	5.1	25.0
	Overall	E	0.97	59.3	-	F	1.09	78.4	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

As shown above, the site volumes are forecast to have negligible impacts on the intersection of Bank Street at Leitrim Road with the City's preliminary design geometry at the 2031 future total horizon. No new capacity or queueing issues are noted.

As in the 2031 background conditions, revised geometry on the northbound and southbound approaches was evaluated to assess the site impacts on the potential mitigations. The resulting operations are summarized in Table 17 and the Synchro worksheets are provided in Appendix O.

Table 24: 2031 Future Total – Mitigated 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)
Bank Street at Leitrim Road Signalized	EBL	D	0.84	87.6	#63.2	A	0.50	75.2	26.3
	EBT	B	0.68	66.7	60.8	C	0.74	68.7	67.6
	EBR	A	0.09	0.5	0.0	A	0.24	3.8	4.2
	WBL	B	0.68	78.4	42.1	E	1.00	110.1	#96.0
	WBT	B	0.62	65.6	50.4	A	0.55	54.7	68.4
	WBR	A	0.48	12.2	19.5	A	0.17	1.0	0.4
	NBL	B	0.62	88.0	37.5	B	0.61	88.8	#41.4
	NBT/R	D	0.86	36.8	#237.8	A	0.58	32.4	124.1
	SBL	A	0.47	78.9	#47.1	B	0.69	88.9	#58.2
	SBT/R	A	0.32	23.5	66.5	E	1.00	58.8	#309.1
Overall		D	0.82	44.3	-	E	0.96	56.6	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

As shown above, the site volumes are forecast to have negligible impacts on the intersection of Bank Street at Leitrim Road with the mitigated geometry at the 2031 future total horizon. No new capacity issues are noted.

13.2.2 2036 Future Total Intersection Operations

The 2036 future total intersection volumes are illustrated in Figure 22 and the intersection operations are summarized below in Table 25. Signal timing is consistent with the background conditions. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services, and average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix P.

Figure 22: 2036 Future Total Volumes

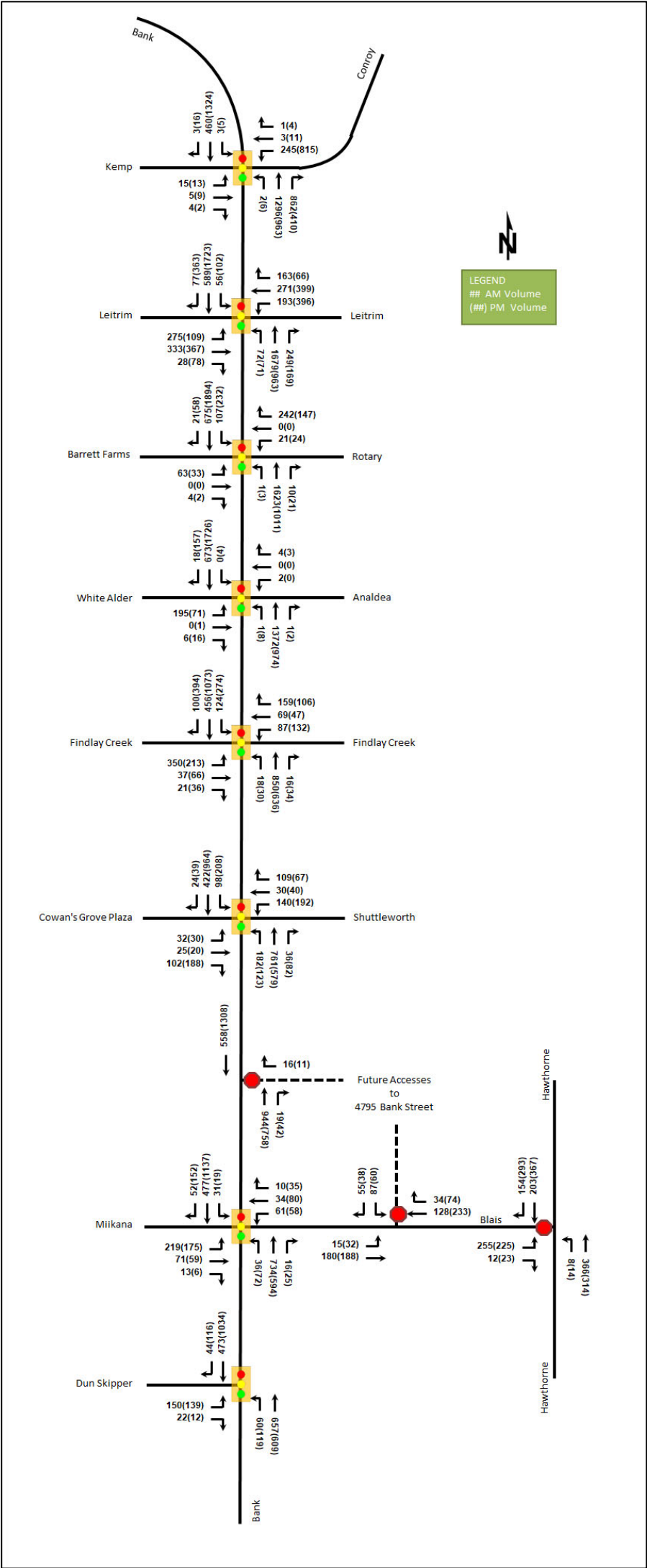


Table 25: 2036 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Conroy Road/Kemp Drive <i>Signalized</i>	EBL	A	0.09	47.6	9.7	A	0.03	20.8	5.5
	EBT/R	A	0.04	35.1	6.0	A	0.02	17.8	4.6
	WBL	C	0.72	65.1	43.4	D	0.83	42.5	105.4
	WBT/R	A	0.02	40.8	3.9	A	0.02	16.5	5.4
	NBL	A	0.00	2.0	m0.1	A	0.07	8.5	m0.5
	NBT	A	0.52	3.0	m17.7	A	0.58	7.5	m32.3
	NBR	B	0.67	4.0	m0.0	A	0.46	1.0	m0.0
	SBL	A	0.01	5.0	1.1	A	0.04	21.4	3.5
	SBT	A	0.19	5.0	24.4	C	0.79	32.3	#214.8
	SBR	A	0.00	0.0	0.0	A	0.02	3.4	2.5
	Overall	B	0.68	9.2	-	D	0.81	24.0	-
Bank Street at Leitrim Road <i>Signalized</i>	EBL	F	1.31	187.8	#269.3	F	1.20	150.1	#212.6
	EBT/R	A	0.06	0.2	0.0	A	0.15	1.0	1.1
	WBL	F	1.40	242.0	#90.1	F	1.64	330.3	#186.4
	WBT	A	0.36	24.0	64.9	A	0.51	28.5	101.5
	WBR	A	0.24	18.2	34.9	A	0.10	3.4	6.2
	NBL	A	0.30	12.5	m7.7	A	0.57	32.6	#18.3
	NBT/R	F	1.37	193.6	#380.8	E	0.98	60.6	#201.0
	SBL	F	1.04	166.5	m#41.2	C	0.80	53.3	m#26.6
	SBT	A	0.43	20.9	59.4	F	1.38	205.8	#361.8
	SBR	A	0.13	5.1	7.7	A	0.49	9.5	m41.7
	Overall	F	1.36	142.2	-	F	1.36	134.9	-
Bank Street at Rotary Way/Barrett Farms <i>Signalized</i>	EBL	A	0.56	61.5	24.6	A	0.36	62.6	17.9
	EBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	WBL	A	0.14	51.3	12.4	A	0.17	52.5	13.5
	WBT/R	D	0.81	41.8	50.5	A	0.41	3.3	0.0
	NBL	A	0.00	7.0	m0.1	A	0.03	4.7	m0.3
	NBT/R	D	0.84	13.4	#252.3	A	0.47	3.7	21.6
	SBL	B	0.61	33.1	m27.5	A	0.58	6.7	m1.8
	SBT	A	0.30	17.9	m72.2	C	0.72	10.6	m68.1
	SBR	A	0.02	2.1	m1.1	A	0.05	0.2	m0.1
	Overall	D	0.82	19.0	-	B	0.70	8.5	-
Bank Street at White Alder Avenue/Analdea Drive <i>Signalized</i>	EBL	C	0.79	70.5	68.9	A	0.46	60.6	30.8
	EBT/R	A	0.01	0.0	0.0	A	0.09	20.6	7.0
	WBL	A	0.01	37.0	2.5	-	-	-	-
	WBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	NBL	A	0.00	7.0	m0.1	A	0.05	4.4	m1.3
	NBT/R	A	0.60	15.9	179.4	A	0.37	4.3	83.4
	SBL	-	-	-	-	A	0.01	1.2	m0.1
	SBT	A	0.31	3.1	16.5	B	0.64	1.5	14.3
	SBR	A	0.02	0.6	0.0	A	0.14	0.2	m0.0
	Overall	B	0.62	16.6	-	B	0.63	3.9	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Findlay Creek Drive <i>Signalized</i>	EBL	C	0.74	44.6	45.6	B	0.70	62.7	38.1
	EBT/R	A	0.11	20.4	15.8	A	0.35	39.6	33.5
	WBL	A	0.45	54.7	35.1	B	0.68	66.7	51.2
	WBT/R	C	0.74	46.5	61.4	A	0.47	26.2	34.7
	NBL	A	0.05	11.3	m2.3	A	0.12	5.8	m2.2
	NBT/R	B	0.61	12.6	31.7	A	0.36	4.6	16.5
	SBL	A	0.39	12.4	10.9	A	0.52	5.9	23.6
	SBT	A	0.26	11.5	32.0	A	0.46	5.3	61.7
	SBR	A	0.12	2.9	2.0	A	0.35	1.5	9.0
	Overall	B	0.64	22.0	-	A	0.50	13.6	-
Bank Street at Shuttleworth Drive/Cowan's Grove Plaza <i>Signalized</i>	EBL	A	0.19	45.3	15.4	A	0.18	49.3	15.9
	EBT/R	A	0.39	15.4	21.6	A	0.57	15.4	27.9
	WBL	C	0.77	76.6	53.9	B	0.70	49.0	57.8
	WBT/R	A	0.41	16.0	23.3	A	0.21	14.2	20.4
	NBL	C	0.73	78.0	68.0	C	0.72	80.8	52.4
	NBT/R	A	0.46	11.8	52.7	A	0.56	28.1	79.5
	SBL	A	0.60	92.3	41.7	C	0.79	94.6	80.6
	SBT	A	0.27	4.2	14.8	B	0.69	16.7	117.8
	SBR	A	0.03	0.1	0.0	A	0.06	0.2	0.0
	Overall	A	0.52	25.9	-	B	0.68	31.6	-
Bank Street at Site Access <i>Unsignalized</i>	WB	B	0.04	13.4	0.8	B	0.02	12.3	0.8
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	0.1	-	A	-	0.1	-
Bank Street at Blais Road/Miikana Road <i>Unsignalized</i>	EBL	C	0.79	66.9	74.0	C	0.80	74.8	63.8
	EBT/R	A	0.22	35.4	26.6	A	0.21	40.4	24.0
	WBL	A	0.26	41.4	23.1	A	0.27	45.3	23.5
	WBT/R	A	0.12	30.2	15.1	A	0.35	39.1	35.7
	NBL	A	0.07	8.3	m6.6	A	0.27	9.8	m13.5
	NBT/R	A	0.35	10.4	67.6	A	0.27	6.5	36.9
	SBL	A	0.08	7.5	m6.8	A	0.04	5.9	m1.8
	SBT	A	0.23	6.6	34.7	A	0.50	6.5	43.2
	SBR	A	0.06	1.6	m3.7	A	0.17	0.8	m1.0
	Overall	A	0.45	18.8	-	A	0.54	14.6	-
Bank Street at Dun Skipper Drive <i>Signalized</i>	EBL	B	0.70	70.1	56.6	C	0.74	78.3	56.2
	EBR	A	0.11	17.8	7.6	A	0.07	23.4	5.9
	NBL	A	0.11	5.4	9.0	A	0.45	11.8	23.8
	NBT	A	0.53	8.8	103.6	A	0.47	6.8	72.7
	SBT	A	0.39	4.5	26.0	C	0.78	12.2	71.5
	SBR	A	0.06	0.4	0.0	A	0.11	0.3	0.0
	Overall	A	0.56	13.6	-	C	0.78	14.5	-
Blais Road at Site Access <i>Unsignalized</i>	EB	A	0.01	7.6	0.0	A	0.03	7.9	0.8
	WB	-	-	-	-	-	-	-	-
	SB	B	0.20	11.3	5.3	B	0.17	12.5	4.5
	Overall	A	-	3.5	-	A	-	2.4	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Blais Road at Hawthorne Road Unsignalized	EB	D	0.65	28.2	33.0	E	0.76	43.2	44.3
	NB	A	0.01	8.0	0.0	A	0.02	9.2	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	7.6	-	A	-	8.8	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

During both the AM and PM peak hours, the study area intersections at 2036 future total conditions are anticipated to operate similarly to the 2036 future background conditions.

At the intersection of Bank Street at Leitrim Road, the southbound left movement is forecast to have moved over its theoretical capacity during the AM peak hour with the addition of the seven site-generated vehicles, however given the general pattern of capacity issues at the intersection, this result is not anticipated to be meaningful. During the PM peak hour at the intersection, the northbound right movement may exhibit extended queues during the AM peak hour. Site impacts at this intersection will be assessed in the mitigated conditions.

The site access intersections are anticipated to operate well at the 2036 future total conditions.

13.2.2.1 Future Total 2036 Mitigation

To address the capacity issues at the intersection of Bank Street at Leitrim Road, the City's preliminary design will be used to model the 2036 future total volumes, with all geometric and signal timing considerations consistent with the 2036 background horizon. Table 26 summarizes the 2036 future total intersection operations with the City's design. Signal timing adjustments including cycle length, phasing, and splits have been adjusted for the new geometry. The synchro worksheets for the 2036 future total conditions at the modified Bank Street at Leitrim Road intersection are provided in Appendix P.

Table 26: 2036 Future Total – Bank Street at Leitrim Road Preliminary Design 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)
Bank Street at Leitrim Road Signalized	EBL	E	0.93	104.3	#70.0	A	0.55	78.7	26.8
	EBT	B	0.68	67.0	60.8	C	0.74	68.7	67.6
	EBR	A	0.09	0.5	0.0	A	0.22	1.4	0.0
	WBL	C	0.74	83.9	42.8	F	1.15	154.1	#104.3
	WBT	A	0.60	64.8	50.4	A	0.58	56.6	68.5
	WBR	A	0.47	12.0	19.5	A	0.16	0.8	0.0
	NBL	B	0.62	88.0	37.5	A	0.51	77.8	#57.6
	NBT	E	0.98	52.7	#332.1	B	0.63	33.5	150.7
	NBR	A	0.31	12.3	42.3	A	0.22	5.1	16.0
	SBL	A	0.47	78.9	#47.1	B	0.69	88.7	#57.9
	SBT	A	0.36	24.4	83.4	F	1.10	91.9	#356.4
	SBR	A	0.11	0.3	0.0	A	0.42	5.1	25.0
	Overall	E	0.92	51.0	-	F	1.04	67.7	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block length

As shown above, the site volumes are forecast to have negligible impacts on the intersection of Bank Street at Leitrim Road with the City's preliminary design geometry at the 2036 future total horizon. No new capacity or queueing issues are noted.

To understand the site impacts on the mitigated condition at the intersection with the revised northbound and southbound approach geometry, the resulting operations for the PM peak hour 2036 future total conditions with the same signal timing as the 2036 future background mitigated conditions and analyzed along the same parameters as the previous operational evaluation are summarized in Table 26. Synchro worksheets are provided in Appendix P.

Table 27: 2036 Future Total – Mitigated Intersection Operations

Intersection	Lane	PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)
Bank Street at Leitrim Road Signalized	EBL	A	0.55	78.4	26.8
	EBT	C	0.74	68.7	67.6
	EBR	A	0.22	1.4	0.0
	WBL	E	0.96	99.5	#93.4
	WBT	A	0.53	52.8	66.5
	WBR	A	0.16	1.0	0.4
	NBL	A	0.49	75.3	#60.5
	NBT/R	A	0.56	31.7	102.6
	SBL	B	0.63	81.1	#84.9
	SBT/R	E	1.00	60.5	#265.6
	Overall	E	0.95	56.2	-

Notes: Saturation flow rate of 1800
veh/h/lane
PHF = 1.00

m = metered queue
= queue exceeds storage or mid-block
length

As shown above, the site volumes are forecast to have negligible impacts on the intersection of Bank Street at Leitrim Road with the mitigated geometry at the 2036 future total horizon. No new capacity or queueing issues are noted.

13.2.3 Intersection MMLOS

Table 28 summarizes the MMLOS analysis for the signalized intersections within the study area. The intersection of Bank Street at Conroy Road/Kemp Drive is within “Greenbelt/Rural” area and all other intersections are within “Mainstreet Corridor (Outside Hub)” area. The analysis assumes the completion of the Bank Street widening project. The MMLOS worksheets has been provided in Appendix H.

Table 28: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	ALOS	Target
Bank Street at Conroy Road/Kemp Drive	C	D	E	D	B	B	D	D
Bank Street at Leitrim Road	C	B	F	C	F	B	F	E
Bank Street at Rotary Way	C	B	B	C	C	C	D	E
Bank Street at White Alder Avenue/Analdea Drive	C	B	B	C	A	C	B	E
Bank Street at Findlay Creek Drive	C	B	C	C	C	C	B	E
Bank Street at Shuttleworth Drive/Cowan's Grove Plaza	C	B	B	C	B	C	B	E
Bank Street at Blais Road/Miikana Road	B	B	C	C	A	C	A	E
Bank Street at Dun Skipper Drive	B	B	C	C	A	C	C	E

The cycling LOS targets will not be met at the intersection of Bank Street at Conroy Road/Kemp Drive in the existing and future conditions. To meet the bicycle LOS target, either a crossride on the north leg of the intersection would be required, or a bike lane on the east and west legs of the intersection would be required to raise the overall BLOS for the intersection.

The pedestrian, cycling, transit, and auto LOS targets will not be met at the intersection of Bank Street at Leitrim Road in the existing and future conditions. Pedestrian LOS targets cannot be met with the required lane crossings on all approaches, even if pedestrian refuges were provided. This pedestrian LOS condition is often associated with arterial-arterial intersections as in the case of Bank Street at Leitrim Road. To meet the bicycle LOS target, either a unidirectional crossside with a two-stage queue box would be required, or alternatively a bike lane with fully protected left-turn lanes at the intersection. To meet the transit LOS, the delay for transit movements would need to be reduced to 20 seconds.

The pedestrian LOS targets will not be met at the intersections of Bank Street at Rotary Way, Bank Street at Findlay Creek Drive, and Bank Street at Shuttleworth Drive/Cowan's Grove Plaza in the future conditions. The pedestrian LOS scoring is typically limited by the north and south legs across Bank Street given the widened conditions, trading off between transit and auto LOS and pedestrian LOS. No changes to the City's designs for these intersections are recommended.

Ultimately, the study area intersections are currently under construction are expected to meet the City's balance of MMLOS trade-offs. The design intersection of Bank Street at Leitrim Road will be subject to future detailed design by the City and will be incumbent on that design team to meet the City's goals.

13.2.4 Recommended Design Elements

13.2.4.1 Background Conditions

Signal warrants and the potential for signalization of the network intersection of Blais Road at Hawthorne Road were discussed in Section 13.1. While the warrants may be met (Case 2) as of the future background 2031 horizon, no signal is recommended to be provided at this intersection based on adequate operations.

Northbound left-turn lane warrants (which are provided in Appendix Q), and the potential inclusion of a southbound right-turn lane was evaluated for the network intersection of Blais Road at Hawthorne Road.

Left-turn lane warrants for the northbound left-turn were met in the PM peak hour at the 2036 future background horizon. Based on the low number of left-turning vehicles (14) and the high level of service (LOS A) on this movement at all horizons, despite met warrants indicating that a left-turn lane should be considered in this location, no such left-turn lane is recommended to be provided for any of the background study horizons.

With respect to the potential inclusion of a southbound right-turn lane, considerations for this lane are summarized in Table 29. The recommended storage lengths are based on equation 9.14.1 from the TAC Geometric Design Guide and the warrant is considered to be met where over 90 right-turning vehicles are present representing over 20% of the advancing volumes.

Table 29: Blais Road at Hawthorne Road – Background Southbound Right-Turn Lane Analysis

Horizon	Peak Hour	Volume of Right-Turns	Proportion of Advancing Volumes	Warranted?	Recommended Storage
Existing	AM	83	33%	Yes	35 m
	PM	132	30%		
FB 2031	AM	122	39%	Yes	55 m
	PM	225	39%		
FB 2036	AM	122	38%	Yes	55 m
	PM	225	38%		

As shown above, the southbound right-turn lane at the intersection is warranted in the existing conditions and at both future background horizons. The recommended storage length is 55 metres in both the 2031 and 2036 future background conditions. The feasibility of the inclusion of this lane should be examined by the City given the

drainage ditch adjacent to the wetland and hydro poles. While the additional lane would be expected to improve the operations at the intersection, the forecasted operations are adequate absent its inclusion, and it is not required for capacity in either the future background or total conditions.

No additional design elements are required for the study area network at the future background study horizons.

13.2.4.2 Future Total Conditions

No additional signalization warrants were noted for the future total conditions. The warrants are provided in Appendix N.

No additional left-turn warrants were noted for the future total conditions. The warrants are provided in Appendix Q.

With respect to the right-turn requirements at Blais Road at Hawthorne Road, Table 30 outlines the total volumes and storage length calculations. It is noted that, consistent with the discussion provided in Section 10.3, the site impacts to this movement are downstream of the background capacity constraints at the intersection of Bank Street at Leitrim Road and would be reduced if those issues were fully mitigated.

Table 30: Blais Road at Hawthorne Road – Future Total Southbound Right-Turn Lane Analysis

Horizon	Peak Hour	Volume of Right-Turns	Proportion of Advancing Volumes	Warranted?	Recommended Storage
FT 2031	AM	159	44%	Yes	75 m
	PM	306	45%		
FT 2036	AM	159	45%	Yes	75 m
	PM	306	47%		

As shown above, an additional 20 metres of storage beyond the background conditions is required to accommodate the constrained site traffic. While this change is site-generated, the responsibility for these upgrades is subject to the road classification of Hawthorne Road, which as discussed is potentially more appropriately classified as an arterial road.

No additional design elements are required for the study area network at the future total study horizons.

14 Implementation Strategy

14.1 Network Review and Identified Improvements

Based on the operational analysis for the forecasted conditions, in both the background and total conditions, network improvements have been identified for planning and possible implementation.

The following improvements have been identified as related to existing and background conditions and under the purview of the City of Ottawa to implement:

- The reconstruction of the intersection of Bank Street and Leitrim Road
 - It is noted that the preliminary design geometry is not forecasted to address the background capacity constraints within the study horizons
 - It is recommended that the City design team review all impacts and network mitigations planned for the 2046 horizon to implement a plan that adequately provides the necessary north-south capacity
- The provision of a southbound right-turn lane at the intersection of Blais Road at Hawthorne Road has also been identified as warranted in the forecasted background volumes, and would require an estimated storage length of 55 metres

The following improvements have been identified as related to the forecasted conditions of the 4795 Bank Street lands and are recommended to support the development of the urban expansion:

- Should the southbound right-turn lane at the intersection of Blais Road at Hawthorne Road be implemented, the storage should be increased from 55 metres to 75 metres by the 2031 horizon
 - The responsibility of the additional storage length is subject to a review of the road classifications of Blais Road and Hawthorne Road

15 Vision, Objectives and Targets

The proposed community's transportation network has been planned to support future mode shifts from auto and accommodate the objectives of a 15-minute neighbourhood. The proposed subdivision area falls within a 1.5-kilometre walking distance (or a 900-metre radial distance) of the Cowan's Grove Plaza, which includes a grocery store, a number of restaurants of varying service models, a gym, a bank, and a number of general merchandise retail locations. A large proportion of the daily needs of the residents of the subject development are anticipated to be met by interfacing with this commercial plaza. With respect to providing connectivity to Bank Street, the reconstructed conditions associated with the Bank Street Widening will result in a high-quality pedestrian connection between the site and Cowan's Grove Plaza, enabling 15-minute community needs for the existing area build-out via planned pedestrian connections to the sidewalk along the east side of Bank Street.

Concerning the internal considerations of 15-minute communities, the nature of the road cross-sections and City of Ottawa design standards already incorporates many of the aspirational aspects sought under the Official Plan and urban expansion framework such as high-quality traffic calming and limiting frontage on active mode corridors (as seen on Bank Street). Active mode connections internally to the site, as noted in Section 6.1, pedestrian connections have not only been oriented to Bank Street, but also to the internal condo block. Therefore, in addition to supporting the existing 15-minute neighbourhood context, site design is supportive of potential future land use contexts.

For example, if the neighbourhood undergoes future evolution to incorporate a mixed-use block with some commercial/retail components in the location of the present condo block, this conversion would not materially change the proposed transportation network and recommended road cross-section elements and the general grid/lotting would remain predominantly the same. The features would be relegated to the site-specific tie-in features to the adjacent network. No impediments are noted to the successful implementation in the current plan from such a future conversion of the condo block with respect to active mode access.

Overall, the transportation network is supportive of 15-minute Neighbourhoods and provides sufficient flexibility and resiliency to accommodate longer-term neighbourhood and community evolutions. Other community elements such as parks, land use zoning etc. are independent of transportation network.

16 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 development area is located within the S-5 urban boundary expansion area of the Category 1 Future Neighbourhood Overlay lands
- The proposed site includes a total of 620 dwelling units across a mix of townhouses, singles, and a condo block

- Accesses will be provided along the internal local road network, connecting to Bank Street on the northwest side of the site and to Blais Road on the south side of the site
- The development is proposed to be completed as across multiple phases by 2031
- The subject study was prepared consistent with the Terms of Reference for this Future Neighbourhood area, with reference to the City of Ottawa TIA Guidelines

Existing Conditions

- Bank Street, Conroy Road, and Leirrim Road are study area arterial roads, and Analdea Drive, Findlay Creek Drive, Rotary Way, Miikana Road, Blais Road, and Hawthorne Road are study area collector roads
- The Bank Street corridor is under construction for widening and intersection upgrades at the time of this study
- Sidewalks are generally provided on both sides of the study area arterial and collector roadways within the developed area of Findlay Creek, cycletracks will be provided on both sides of the reconstructed Bank Street corridor
- Given ongoing construction-related disruption, the study traffic horizons, including the existing conditions, are based on the Leirrim Master Transportation Study modelling, adjusted for later counts conducted within the study area at an interim state of buildout of those developments included within the MTS
- Capacity, delay, and queueing issues are noted primarily at the intersection of Bank Street at Leirrim Road in the existing conditions, where all other study areas operate satisfactorily with queueing noted on various movements throughout the study area during the peak hours
- The high volumes roadways have produced a moderate number of collisions in proximity to the proposed accesses
The collisions are predominantly rear end collisions indicating that they are lower speed and a result of congestions, but turning movement collisions were also noted, primarily at the signalized shopping centre access where limited gaps in the northbound traffic stream may influence this observed pattern
- Collision patterns along Bank Street are expected to remediate given the updated intersection design associated with the reconstruction of the corridor

Planned Conditions

- The Bank Street widening is anticipated to be completed by the site buildout
- No known timeline is available for the planned reconstruction of the intersection of Bank Street at Leirrim Road, and given property acquisition constraints, it is not forecast to be completed within the study horizons
- Earl Armstrong Road is planned to be extended to intersect Bank Street, and it is assumed that this project will be completed by 2036
- The widening of Bank Street between Blais Road and the future Earl Armstrong Road extension is assumed not to be completed within the study horizons
- Increases in transit uptake from the assumptions of the Leirrim MTS will be applied to study area based on its proximity to multiple LRT stations with Park and Rides, and future increases in transit service within the larger community

Development Generated Travel Demand

- Typical recommended area mode shares have been adjusted for the site context of being in close proximity of existing commercial development, the improvements in active transportation infrastructure associated with the Bank Street widening, and future improvements in transit connectivity to the nearby LRT stations
- The proposed development is forecasted produce 466 two-way people trips during the AM peak hour and 495 two-way people trips during the PM peak hour
- Of the forecasted people trips, 225 two-way trips will be vehicle trips during the AM peak hour and 255 two-way trips will be vehicle trips during the PM peak hour based on a 47%-55% auto modal share target
- Of the forecasted trips, 60% are anticipated to travel north, 5% to travel each east and south, and 30% to travel west
- The forecasted travel demands from the site are higher than assumed within the City's blanket density assumptions for new growth area

Development Design

- The proposed development is a residential subdivision featuring driveways for each dwelling and garages for typical single-family homes and townhomes, and surface parking for stacked townhomes Bicycle parking is assumed to be within the individual units and the stacked townhome block will include short term bike parking external to the buildings The site is recommended to be transit serviced by routes along Bank Street, where the walking distance to area transit stops is 800 metres or less from all dwellings
- Sidewalks are proposed along one side of all internal local roads, and a MUP connection is provided to the pathways circulating the nearby stormwater facilities
- The site is proposed to be accessed by local road connections to Bank Street and Blais Road
- Local roads are typically proposed as 18.0-metre rights-of-way with a 1.8-metre sidewalk on one side
- One local road is 20.0 metres with a 2.0-metre sidewalk on both sides, located consistent with an underground servicing easement, and one 14.75-metre window street is proposed along Bank Street
- The location of the right-in/right-out access intersection on Bank Street falls negligibly short of the suggested minimum offset from the TAC Geometric Design Guide and both access locations are recommended to be approved
- Traffic calming elements including bulb-outs to narrow approaches to intersections (e.g. reduced crossing distance), speed humps, midblock narrowing are proposed to reduce vehicle speeds

Boundary Street Design

- The internal local roads and the reconstructed Bank Street will meet the MMLOS targets, however Blais Road does not meet the pedestrian LOS or cycling LOS targets
- Active mode connectivity between the site and the wider active transportation network via the intersection of Bank Street at Blais Road for will be provided through the condo block
- The Blais Road corridor does not provide wider active transportation connectivity and the potential for provision of continuous facilities along the road is constrained
- No active transportation improvements are required along the site frontage of Blais Road to support the proposed site or broader network objectives

TDM

- Supportive TDM measures to be included within the proposed development should include:
 - Provide a multimodal travel option information package to new residents
 - Contract with OC Transpo to provide early servicing for site transit to provide “Day 1” service until buildout of the subdivision is completed

Background Conditions

- The background projects will include the Bank Street widening at the 2031 horizon and the Earl Amstrong Road extension at the 2036 horizon
- While not included in the base assumptions of the future network conditions, improvements at the intersection of Bank Street and Leitrim Road will be assessed as mitigation measures for operational issues noted at the various horizons
- The background developments from the Leitrim MTS were explicitly included in the background conditions, in addition to the volumes for area development traffic studies for sites outside of the Leitrim MTS area, along a total background growth of 1% per annum along the mainline volumes of Bank Street, Conroy Road, and Hawthorne Avenue
- The study area intersections, including those that are part of the Bank Street Widening project are forecast to generally operate satisfactorily with the exception of the intersection of Bank Street at Leitrim Road at both future horizons in the background conditions
- The intersection of Bank Street at Leitrim Road will operate better at the 2036 background horizon than at the 2031 background horizon due to the extension of Earl Armstrong Road, however both horizons would require intersection configurations that provide more capacity than planned as part of the intersection’s preliminary design to accommodate forecasted volumes
- It is recommended that the City review the needs for the Bank Street at Leitrim Road intersection as part of the continued design process considering all of the planned volumes and infrastructure projects at the 2046 planning horizon
- Reviewing network function, Blais Road and Hawthorne Road north of Blais Road may be operating in an arterial capacity, contrary to their collector classifications, as a result of constraints at the Bank Street at Leitrim Road intersection
- Other area roads such as Ramsayville Road, Hawthorne Road north of Rideau Road, and Rideau Road may also operate as arterials in the future conditions based on the forecasted EMMME volumes, and it is recommended that the City review the network classifications in this area
- Ultimately, site traffic is assigned consistent with the noted constraints, and a larger proportion of site traffic could use Bank Street if these constraints were mitigated, thus impacts to Blais Road are exaggerated as compared to an unconstrained assessment

Transit

- Site traffic is anticipated to have only minor impact on what transit movements currently exist throughout the study area
- Transit service is expected to increase with new routing in the future that is yet undetermined
- All study area intersections meet transit LOS targets with the exception of the intersection of Bank Street at Leitrim Road, which will be subject to further City design

Network Concept

- The local elements of TRANS Screenline 8 are forecast to be over theoretical capacity given the model assumes the widening of Albion Road, however the Transportation Master Plan Priority Road Network does not include this project
- While the overall site traffic crossing the screenline is minor, the subject development has been included in the EMME model volumes, and the marginal increase in density above typical Official Plan assumptions is negligible
- It is recommended that as part of maintaining their EMME model, the City review the area infrastructure assumptions and include the marginal increase in density for the site

Intersection Design

- No change to the network intersection control is recommended, consistent with signal warrant analysis
- Negligible change to the network intersection operations is forecast as a result of the addition of site traffic to the network—no new capacity issues are noted in the future total conditions, and no change to the recommended mitigations to address background conditions are required to address the future total conditions
- No signalization of the site access intersections is warranted or required to support operations, and no left-turn lane is warranted at the site access intersection on Blais Road
- A southbound right-turn lane at the intersection of Blais Road at Hawthorne Road is warranted as of the existing conditions, however is not required for capacity at any study horizon
- The feasibility of the inclusion of this lane should be examined by the City given geographical constraints, and the operations do not require its inclusion at the intersection
- Should one be provided, a storage length of 55 metres would be required for the future background volumes and an extension to 75 metres would be required for the addition of site traffic, based on the constraints at the intersection of Bank Street and Leitrim Road
- A northbound left-turn lane is warranted in the 2031 future total conditions and the 2036 future background and future total conditions, but based on the low turning volumes and the good level of service on the northbound movement at the intersection no lane is recommended to be provided
- The study area intersections that are currently under construction are expected to meet the City's balance of MMLOS trade-offs
- The intersection of Bank Street at Leitrim Road will be subject to future detailed design by the City and will be incumbent on the design team to meet the City's goals for the MMLOS trade-offs

Implementation Strategy

- Based on the requirements for the future background network, the following projects are the responsibility of the City:
 - The reconstruction of the intersection of Bank Street and Leitrim
 - The provision of a southbound right-turn lane at the intersection of Blais Road at Hawthorne Road has also been identified as warranted in the forecasted background volumes, and would require an estimated storage length of 55 metres

- Based on the additional requirements for the future total network, the following projects support the urban expansion:
 - Should the southbound right-turn lane at the intersection of Blais Road at Hawthorne Road be implemented, the storage should be increased from 55 metres to 75 metres by the 2031 horizon
 - The responsibility of the additional storage length is subject to a review of the road classifications of Blais Road and Hawthorne Road

17 Conclusion

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

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Appendix A

TIA Screening and Terms of Reference

City of Ottawa 2023 Revisions to 2017 TIA Guidelines
Step 1 - Screening Form

Date: 04-Feb-26
Project Number: 2024-172
Project Reference: 4795 Leitrim

1.1 Description of Proposed Development	
Municipal Address	4795 Bank Street
Description of Location	Irregular 17.1 ha parcel on east side of Bank St, north side of Blais Rd
Land Use Classification	Rural Countryside (RU)
Development Size	228 Stacked, 209 Town, and 141 Single units
Accesses	One two-way right-in/right-out local road connection to Bank St approx. 80 metres south of Shuttleworth Dr, one two way full-moves local road connection to Blais Rd approx. 170 m east of Bank St
Phase of Development	Multitple
Buildout Year	2030
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger	
Land Use Type	Multi-Family (Low-Rise)
Development Size	578 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 Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	No
Location Trigger	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)?	Yes
Is the proposed driveway within auxiliary lanes of an intersection?	Yes
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?	No
Does the development include a drive-thru facility?	No
Safety Trigger	Yes



Certification Form for TIA Study PM

TIA Plan Reports

On April 14, 2022, the Province's Bill 109 received Royal Assent providing legislative direction to implement the More Homes for Everyone Act, 2022 aiming to increase the supply of a range of housing options to make housing more affordable. Revisions have been made to the TIA guidelines to comply with Bill 109 and streamline the process for applicants and staff.

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 they meet the four criteria listed below.

CERTIFICATION



I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines; (Update effective July 2023)



I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;



I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and



I am either a licensed or registered¹ professional in good standing, whose field of expertise



is either transportation engineering



or transportation planning.

¹ 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.

Dated at Ottawa this 17 day of August, 20 23.
(City)

Name : Andrew Harte

Professional title: Senior Transportation Engineer / Vice-President Ottawa



Signature of individual certifier that s/he/they meet the above criteria

Office Contact Information (Please Print)
Address: <u>6 Plaza Court</u>
City / Postal Code: <u>Ottawa, K2H 7W1</u>
Telephone / Extension: <u>613-697-3797</u>
Email Address: <u>andrew.harte@cghtransportation.com</u>

Stamp



Revision Date: June 2023

Transportation Terms of Reference – 4795 Bank Street Future Neighborhood

The following Transportation Terms of Reference will support the creation of the Local Plans for the S-5 area, as designated as Future Neighborhoods in Schedule C17 of the Official Plan (OP). Through the pre-consultation and subsequent scoping meetings, these Terms of Reference have been developed based on the 2017 TIA Guidelines and reference to the directions in Annex 4: Local Plan Framework.

Plan Context

The Local Plans expand on existing and overarching policies for the community. This section aims to understand planned conditions and the policy framework for mobility.

- 1) Identify the future neighbourhood boundaries and the boundaries of the study area.
 - a. The boundary is Bank Street, Blais Road, the Findlay Creek Stormwater Ponds and the rear property line of the existing community along Shuttleworth Drive.
 - b. The study area generally includes Bank Street from Blais Road to Conroy Road, and Blais Road to Hawthorne Road. Each mode will be further defined below.
- 2) Describe the relationship of the future neighbourhood to the adjacent community.
- 3) Summarize approved projects, planned projects, and planning policies that will be considered within the context of the future neighbourhood and the broader mobility network.

Existing Conditions

The future neighbourhood must be woven into the existing built-up areas and connected to adjacent communities; understanding existing conditions will help inform future recommendations. This section will describe the following items:

- 4) Boundaries of the future neighbourhood and key access points for all modes of transportation.
- 5) Characteristics of the vehicular network of the defined study, including:
 - a. Road classifications, number of lanes, and intersection capacities.
- 6) Characteristics of the pedestrian and cycling networks within a 900m radius or 1,500m network distance, whichever is greatest from the boundary of the future neighbourhood, including:
 - a. Extent and type of facilities in the network; and
 - b. Critical missing links in the city's active transportation network.
- 7) Characteristics of the transit network within a distance of 1.9km from the future neighbourhood centroid, including:
 - a. Transit routes and alignment; and
 - b. Priority treatments, including connectivity to rapid transit.
- 8) Existing elements of a 15-minute neighborhood including schools, licensed childcare facilities, community centres, parks and other greenspaces, general retail, grocery stores, and other community infrastructure.
 - a. Network connectivity to key destinations and adjacent communities.

Forecasting & Analysis

This section is intended to facilitate the seamless integration of land use and transportation planning directions by evaluating and comparing the mobility network's performance and proposed development strategy in an integrated and holistic fashion. As the future neighbourhood is less than 75 hectares, the 2017 TIA Guidelines, as amended, will govern the scope of the analysis.

- 9) Forecast future travel demand generated by the future neighbourhood and total future demand, including background traffic growth and demand from other planned development. The forecasts should be prepared using accepted forecasting methodologies, including the TIA Guidelines and the use of the most recent TRANS Trip Generation Manual.
- 10) Identify existing mode shares and set future mode share targets for the future neighbourhood, taking into account the phasing and build-out horizon year, current and future maturity of the transportation network and different travel options, development type and location, and development design.
- 11) Assess the impacts on the transportation network's performance due to the trips generated by the development and identify any network modifications or other measures required to mitigate impacts on network performance.
- 12) Identify possible capacity changes to transit through comparison of total future transit passenger demands (i.e. background plus development-generated transit to the capacity of existing transit routes serving the study area. Determine if additional capacity is required, and assess the need for and benefit of possible transit priority measures to offset delays.
- 13) Assess consistency and design of pedestrian routes and cycling facilities, the location of transit amenities. Identify general walking distances for the future neighbourhood to adjacent amenities, including 15-minute community elements and transit stops. Identify opportunities to increase sustainable travel within the future neighbourhood.
- 14) Assess the planned street network to align with traffic calming guidelines, the street design results in demands and driver behaviour that is consistent with road classifications, features are included as necessary to support desired driver behaviour and encourages travel by sustainable modes
- 15) Assess mobility targets for the future neighbourhood through the MMLOS review of the internal streets, boundary streets and boundary intersections. Identify any gaps in the City's designated walking, cycling, transit and freight networks and identify preferred treatments at intersections.

Long Term Vision and Targets

In addition to the assessment of the future neighbourhood, recognition of development potential beyond lifting the future neighbourhood overlay and expected build-out is acknowledged. A long term lens will be applied to the plan to review possible barriers and outline opportunities to set the stage for future evolution of the community.

- 16) Describe and illustrate the mobility networks focusing on travel within the community:
 - a. Street layout and cross-section design;
 - b. Pedestrian and cycling corridors and connections to provide a more granular active transportation network compared to the general road network;
 - c. On- and off-street facilities to support deliveries, taxi/ride-hailing services, and other mobility needs;

- d. Other planning and design strategies, such as traffic calming or filtered permeability, to support the community's vision, objectives and targets.
 - e.
- 17) List and describe potential measures to achieve the objectives and targets for the the evolution to a 15-minute neighborhood. Amongst these measures, the following should be considered:
 - 18) Identify policy and zoning pain points and suggested amendments to encourage sustainable modes of transportation, such as limiting private approaches along active transportation corridors, permitting shallow setbacks, increasing bicycle parking requirements and reducing vehicle parking requirements.

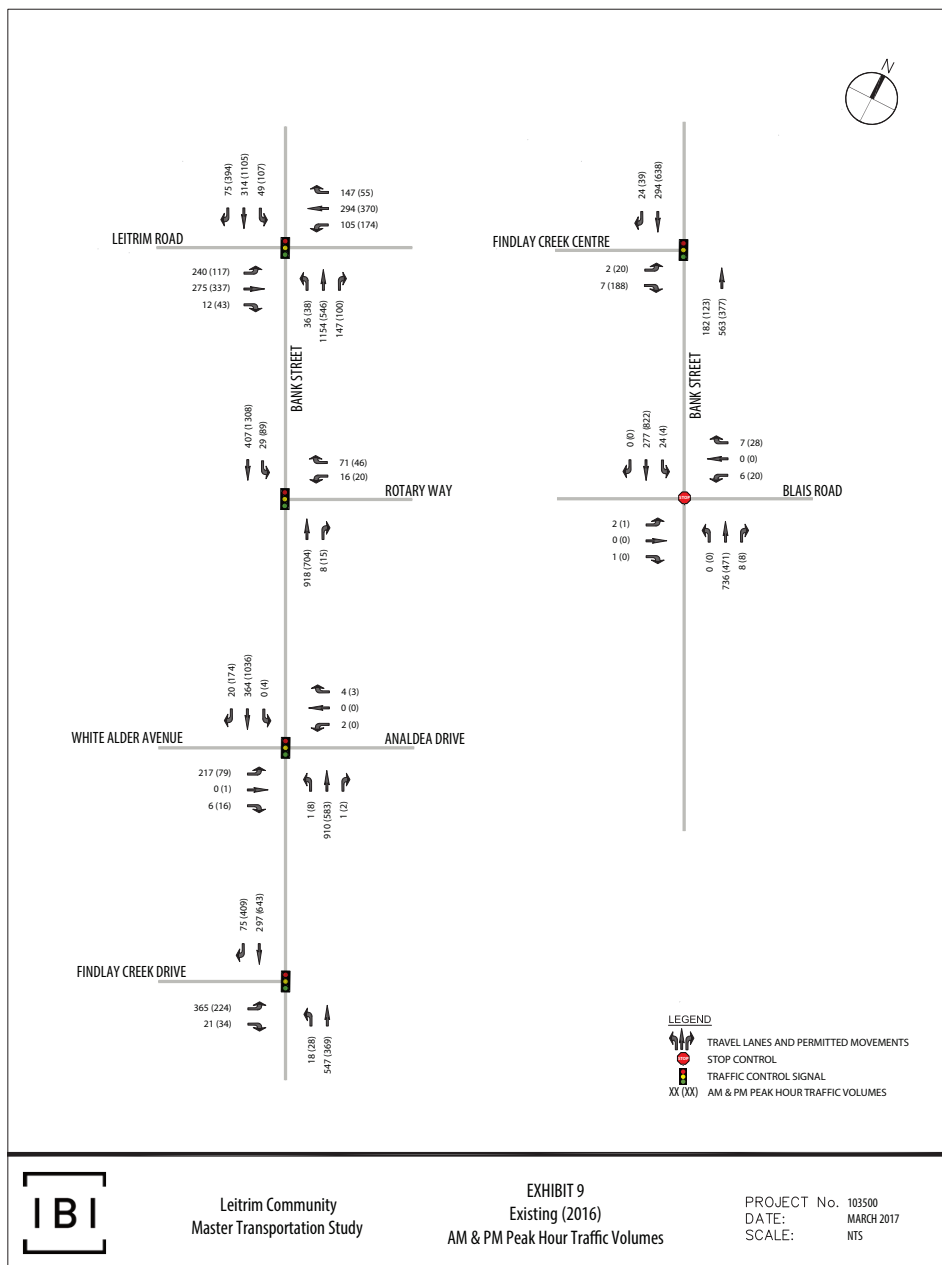
Implementation Strategy

The implementation strategy will identify the phasing and timing of development and associated infrastructure needs.

- 19) Identify a phasing strategy for the future neighborhood that supports the mobility objectives, constraints, and opportunities for the community, including associated timelines for transportation infrastructure and amenities.
- 20) Identify critical infrastructure for each phase and identify mitigation measures to maintain the mobility strategy if these infrastructure projects are delayed.
- 21) Identify where trade-offs between competing objectives are required.
- 22) Establish the implementation timeframes for each proposed transportation network modifications corresponding to the anticipated phasing of development.
- 23) Identify requirements for future transportation studies, including Environmental Assessment studies needed to implement the proposed transportation measures.

Appendix B

Turning Movement Counts



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

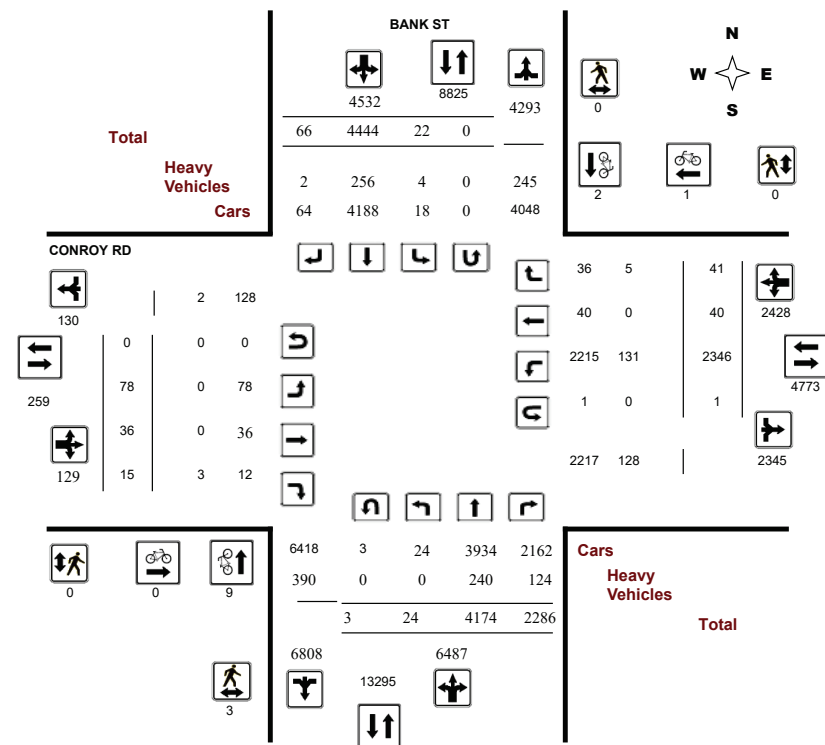
Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

Full Study Diagram



May 19, 2026

Page 1 of 11



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

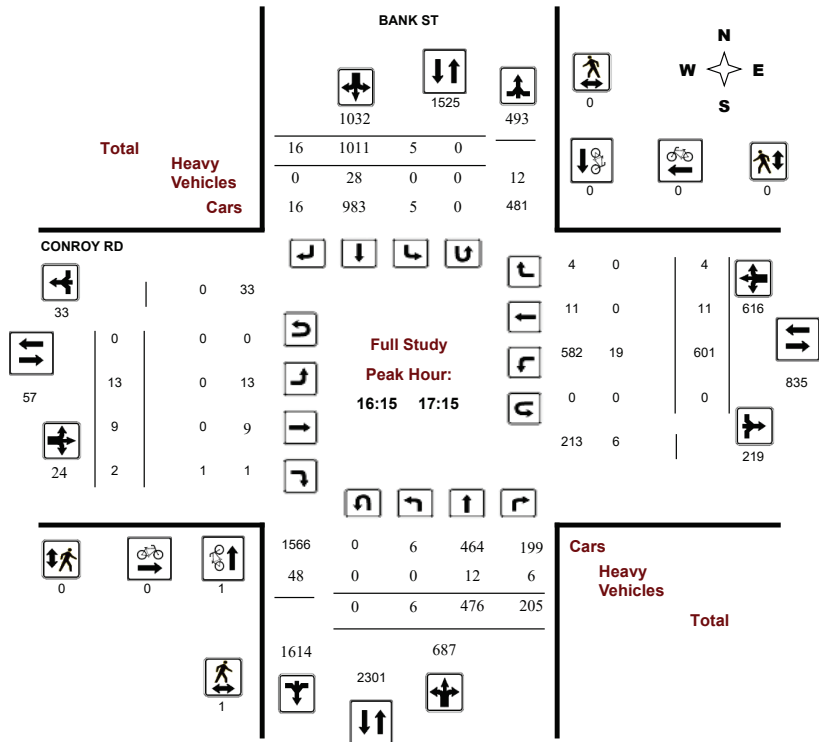
Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

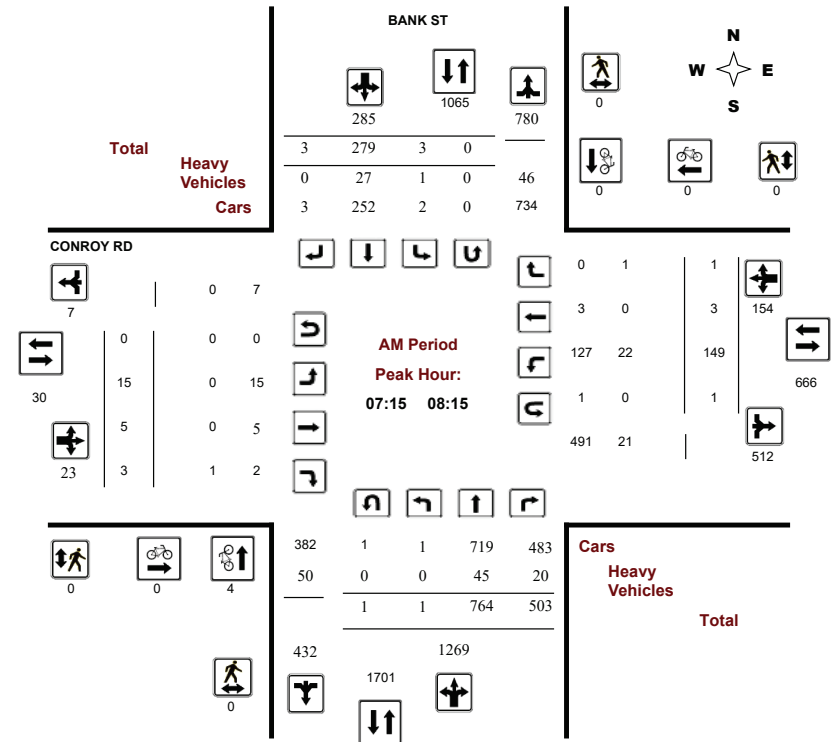
Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

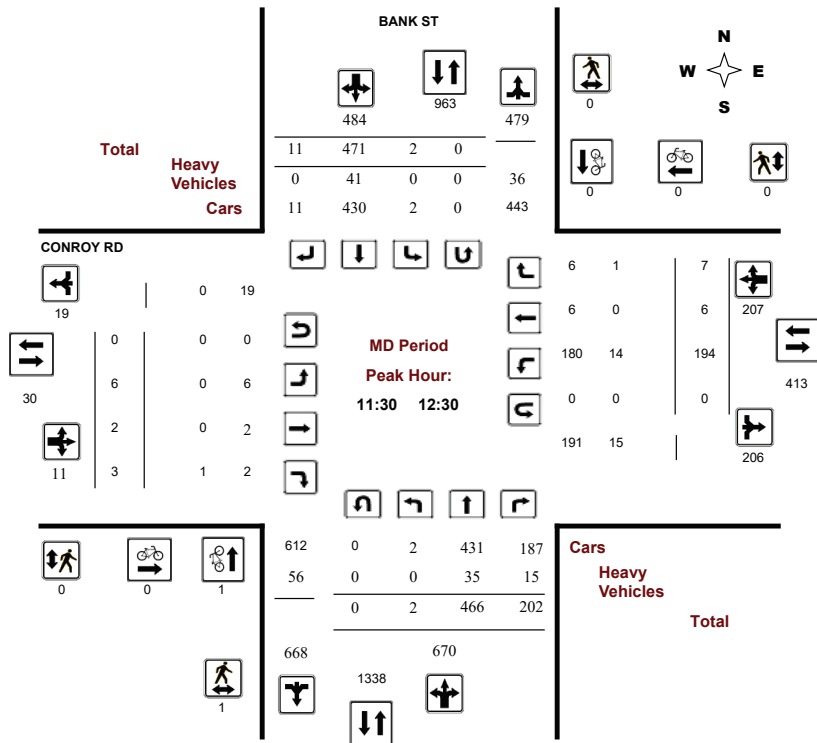
Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

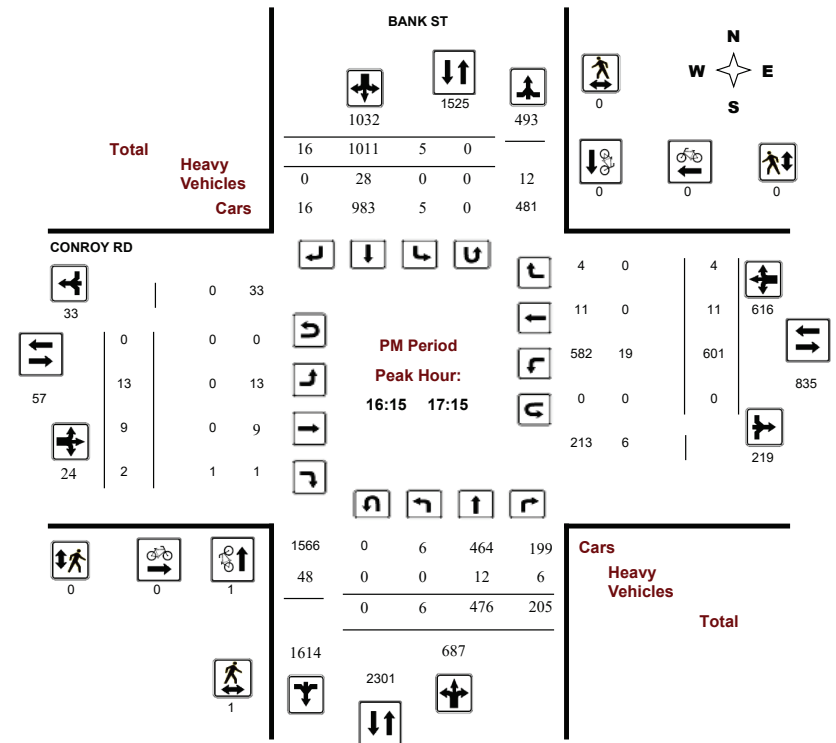
Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	BANK ST			CONROY RD			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	4	0	4	0	0	0	4
12:45 13:00	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	1	1	0	0	0	1
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	1	0	1	0	0	0	1
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
13:00 13:15	1	0	1	0	0	0	1
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	1	0	1	0	0	0	1
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	1	0	1	0	0	0	1
16:00 16:15	0	0	0	0	1	1	1
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	1	0	1	0	0	0	1
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	1	1	0	0	0	1
Total	9	2	11	0	1	1	12



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	BANK ST			CONROY RD			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	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	1	0	1	0	0	0	1
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	1	0	1	0	0	0	1
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	1	0	1	0	0	0	1
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
Total	3	0	3	0	0	0	3



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										CONROY RD											
Northbound					Southbound					Eastbound					Westbound						
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	0	12	3	15	0	6	0	6	21	0	0	0	0	4	0	0	4	4	25	
07:15	07:30	0	14	7	21	0	4	0	4	25	0	0	1	1	5	0	0	5	6	31	
07:30	07:45	0	8	6	14	0	7	0	7	21	0	0	0	0	8	0	0	8	8	29	
07:45	08:00	0	8	3	11	1	6	0	7	18	0	0	0	0	4	0	0	4	4	22	
12:45	13:00	0	2	4	6	0	6	0	6	12	0	0	0	0	4	0	0	4	4	16	
17:45	18:00	0	5	1	6	1	5	0	6	12	0	0	0	0	1	0	0	1	1	13	
08:00	08:15	0	15	4	19	0	10	0	10	29	0	0	0	0	5	0	1	6	6	35	
08:15	08:30	0	11	4	15	1	9	0	10	25	0	0	0	0	5	0	0	5	5	30	
08:30	08:45	0	9	4	13	0	8	0	8	21	0	0	0	0	4	0	1	5	5	26	
08:45	09:00	0	11	3	14	1	15	0	16	30	0	0	0	0	4	0	0	4	4	34	
09:00	09:15	0	10	9	19	0	10	0	10	29	0	0	0	0	4	0	0	4	4	33	
09:15	09:30	0	9	11	20	0	13	0	13	33	0	0	0	0	5	0	1	6	6	39	
09:30	09:45	0	8	2	10	0	11	0	11	21	0	0	0	0	7	0	0	7	7	28	
09:45	10:00	0	9	6	15	0	10	0	10	25	0	0	0	0	5	0	0	5	5	30	
11:30	11:45	0	4	4	8	0	8	0	8	16	0	0	0	0	6	0	0	6	6	22	
11:45	12:00	0	10	5	15	0	18	0	18	33	0	0	1	1	3	0	0	3	4	37	
12:00	12:15	0	7	4	11	0	6	0	6	17	0	0	0	0	3	0	1	4	4	21	
12:15	12:30	0	14	2	16	0	9	0	9	25	0	0	0	0	2	0	0	2	2	27	
12:30	12:45	0	7	3	10	0	10	0	10	20	0	0	0	0	3	0	0	3	3	23	
13:00	13:15	0	13	4	17	0	12	0	12	29	0	0	0	0	5	0	0	5	5	34	
13:15	13:30	0	8	3	11	0	3	1	4	15	0	0	0	0	3	0	0	3	3	18	
15:00	15:15	0	6	5	11	0	9	1	10	21	0	0	0	0	6	0	0	6	6	27	
15:15	15:30	0	5	7	12	0	7	0	7	19	0	0	0	0	5	0	1	6	6	25	
15:30	15:45	0	7	0	7	0	5	0	5	12	0	0	0	0	4	0	0	4	4	16	
15:45	16:00	0	3	2	5	0	8	0	8	13	0	0	0	0	1	0	0	1	1	14	
16:00	16:15	0	5	5	10	0	5	0	5	15	0	0	0	0	1	0	0	1	1	16	
16:15	16:30	0	2	3	5	0	6	0	6	11	0	0	1	1	4	0	0	4	5	16	
16:30	16:45	0	2	0	2	0	9	0	9	11	0	0	0	0	5	0	0	5	5	16	
16:45	17:00	0	6	2	8	0	8	0	8	16	0	0	0	0	4	0	0	4	4	20	
17:00	17:15	0	2	1	3	0	5	0	5	8	0	0	0	0	6	0	0	6	6	14	
17:15	17:30	0	4	3	7	0	3	0	3	10	0	0	0	0	3	0	0	3	3	13	
17:30	17:45	0	4	4	8	0	5	0	5	13	0	0	0	0	2	0	0	2	2	15	
Total:	None	0	240	124	364	4	256	2	262	626	0	0	3	3	131	0	5	136	139	765	



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Thursday, August 13, 2015

WO No: 35307

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

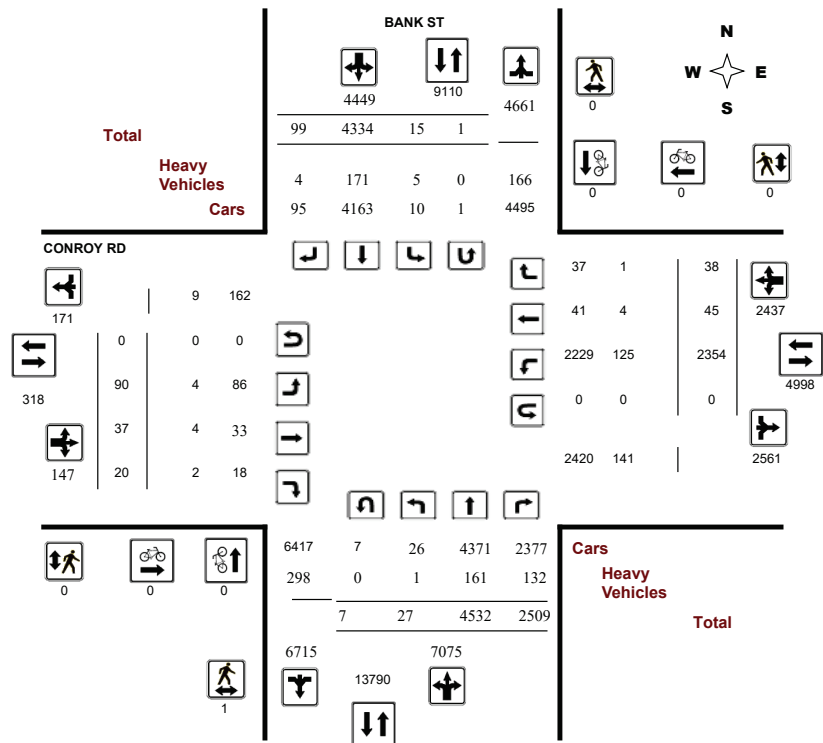
Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

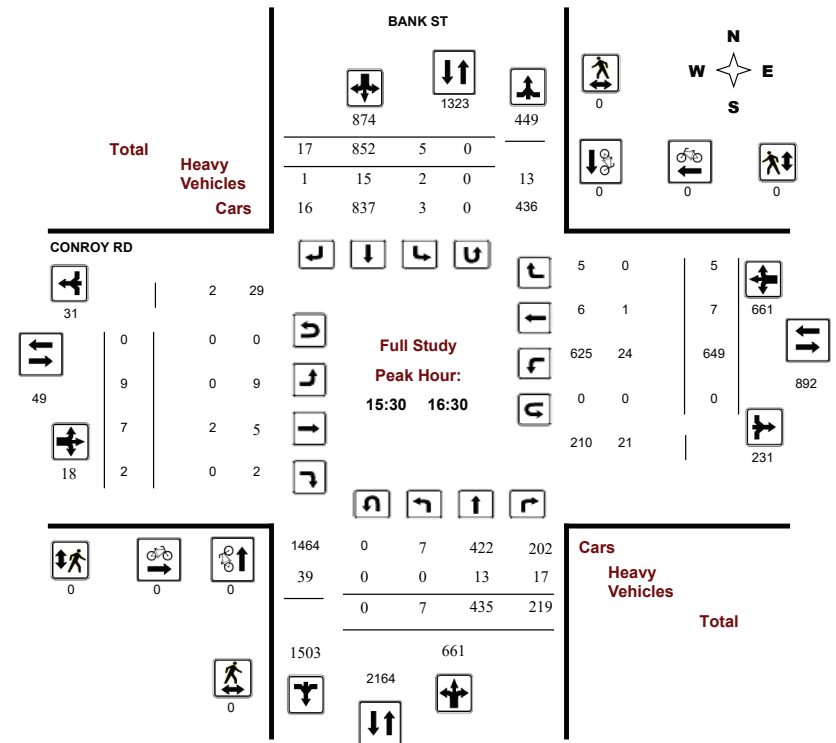
Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

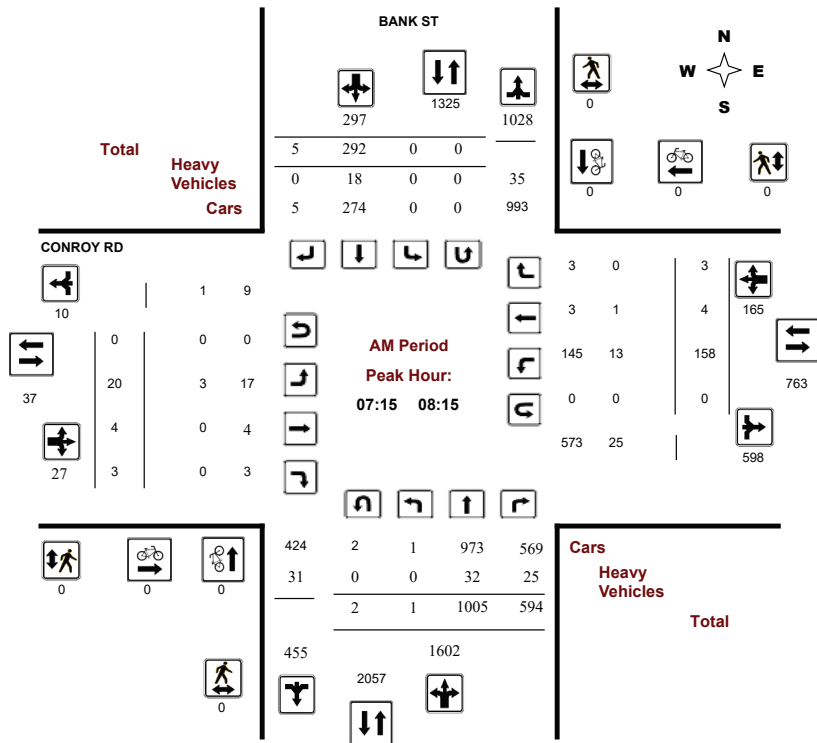
Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

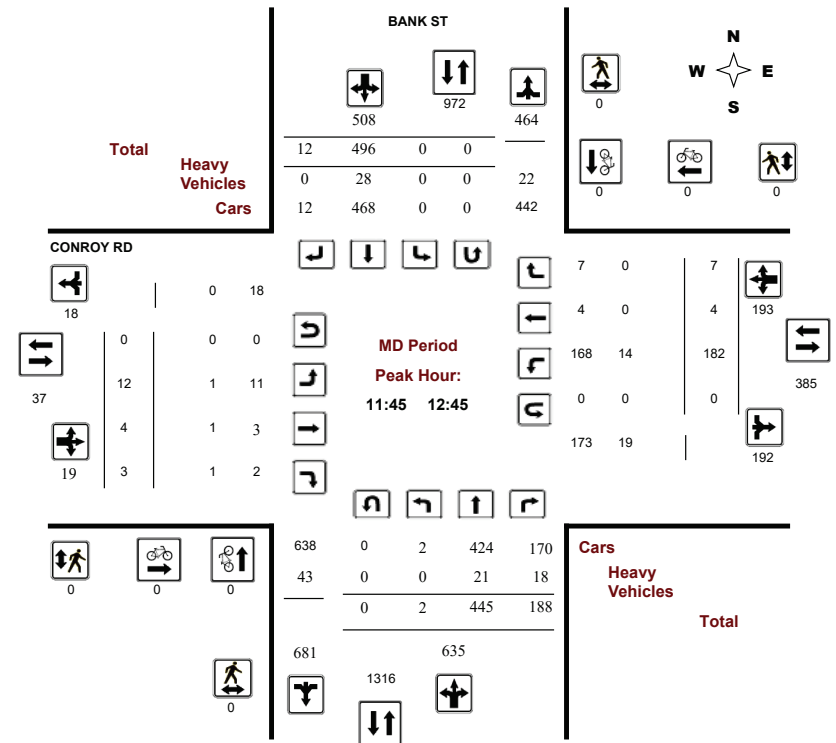
Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

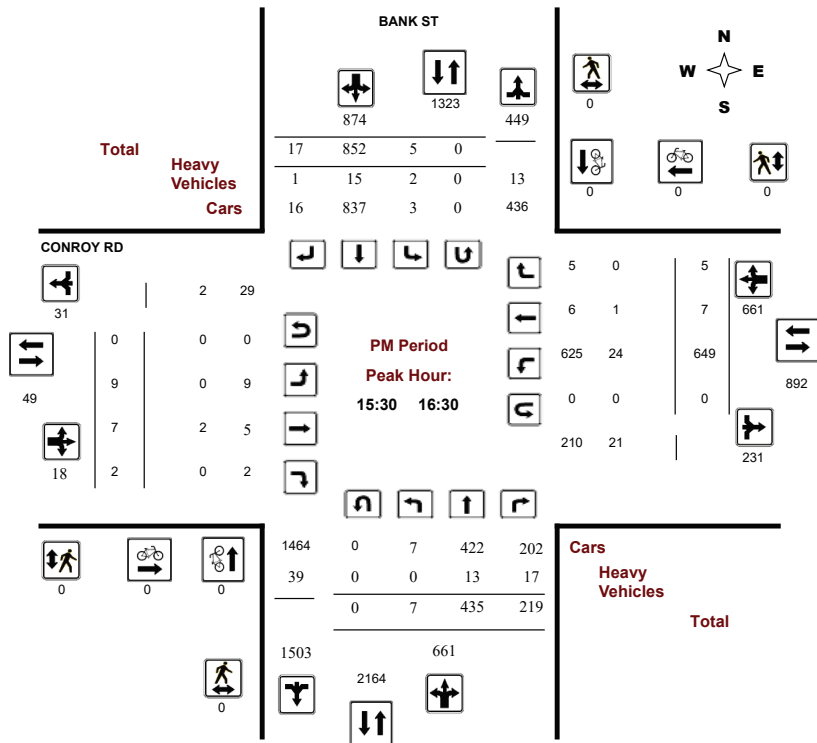
Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, November 27, 2019

Total Observed U-Turns

Direction	U-Turns
Northbound	7
Southbound	1
Eastbound	0
Westbound	0

AADT Factor

.90

BANK ST										CONROY RD											
		Northbound			Southbound						Eastbound			Westbound							
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total	
07:00	08:00	0	1019	530	1549	0	310	3	313	1862	15	5	3	23	160	3	2	165	188	2050	
08:00	09:00	4	867	643	1514	0	272	9	281	1795	16	9	2	27	186	4	4	194	221	2016	
09:00	10:00	2	530	335	867	2	293	6	301	1168	14	1	1	16	163	2	3	168	184	1352	
11:30	12:30	3	456	183	642	0	472	11	483	1125	11	5	2	18	170	5	7	182	200	1325	
12:30	13:30	1	392	190	583	3	469	9	481	1064	7	4	3	14	183	4	5	192	206	1270	
15:00	16:00	6	436	199	641	1	774	11	786	1427	11	3	1	15	547	3	6	556	571	1998	
16:00	17:00	4	410	227	641	6	853	28	887	1528	5	6	2	13	634	12	6	652	665	2193	
17:00	18:00	7	422	202	631	3	891	22	916	1547	11	4	6	21	311	12	5	328	349	1896	
Sub Total		27	4532	2509	7068	15	4334	99	4448	11516	90	37	20	147	2354	45	38	2437	2584	14100	
U Turns		7			1			8			0			0			0			8	
Total		27	4532	2509	7075	15	4334	99	4449	11524	90	37	20	147	2354	45	38	2437	2584	14108	
EQ 12Hr		38	6299	3488	9834	21	6024	138	6184	16018	125	51	28	204	3272	63	53	3387	3592	19610	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39							
AVG 12Hr		34	5669	3139	8851	19	7103	162	5566	14416	112	46	25	184	2945	57	48	3048	3233	17649	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														.90							
AVG 24Hr		45	7426	4112	11595	25	9305	212	7291	18885	147	60	33	241	3858	75	63	3993	4235	23120	
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

BANK ST @ CONROY RD

Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	BANK ST		Total	CONROY RD		Total	Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)		EB Approach (N or S Crossing)	WB Approach (N or S Crossing)		
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	1	0	1	0	0	0	1
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
Total	1	0	1	0	0	0	1



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										CONROY RD									
Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT
07:00 07:15	0	10	1	11	0	9	0	9	20	0	0	0	0	7	0	0	7	7	27
07:15 07:30	0	8	5	13	0	4	0	4	17	1	0	0	1	3	0	0	3	4	21
07:30 07:45	0	9	4	13	0	1	0	1	14	1	0	0	1	2	0	0	2	3	17
07:45 08:00	0	9	5	14	0	5	0	5	19	1	0	0	1	3	1	0	4	5	24
16:15 16:30	0	3	4	7	0	6	0	6	13	0	0	0	0	3	0	0	3	3	16
16:30 16:45	0	3	2	5	0	4	0	4	9	0	0	0	0	5	0	0	5	5	14
16:45 17:00	0	5	1	6	1	2	0	3	9	0	0	0	0	1	0	0	1	1	10
17:15 17:30	0	0	3	3	0	3	0	3	6	0	0	0	0	1	0	0	1	1	7
17:45 18:00	0	0	3	3	0	2	0	2	5	0	0	0	0	1	0	0	1	1	6
08:00 08:15	0	6	11	17	0	8	0	8	25	0	0	0	0	5	0	0	5	5	30
08:15 08:30	0	4	6	10	0	3	0	3	13	0	0	0	0	4	1	0	5	5	18
08:30 08:45	1	11	5	17	0	7	1	8	25	0	1	0	1	10	0	0	10	11	36
08:45 09:00	0	7	11	18	0	9	0	9	27	0	0	0	0	6	0	0	6	6	33
09:00 09:15	0	3	5	8	1	7	0	8	16	0	0	0	0	5	0	0	5	5	21
09:15 09:30	0	5	7	12	0	7	1	8	20	0	0	0	0	7	0	0	7	7	27
09:30 09:45	0	6	5	11	0	10	0	10	21	0	0	1	1	2	0	0	2	3	24
09:45 10:00	0	8	6	14	0	7	0	7	21	0	0	0	0	4	0	1	5	5	26
11:30 11:45	0	6	3	9	0	5	0	5	14	0	0	0	0	1	1	0	2	2	16
11:45 12:00	0	4	3	7	0	10	0	10	17	0	1	0	1	4	0	0	4	5	22
12:00 12:15	0	5	5	10	0	5	0	5	15	1	0	0	1	3	0	0	3	4	19
12:15 12:30	0	8	4	12	0	6	0	6	18	0	0	0	0	4	0	0	4	4	22
12:30 12:45	0	4	6	10	0	7	0	7	17	0	0	1	1	3	0	0	3	4	21
12:45 13:00	0	4	4	8	1	6	0	7	15	0	0	0	0	3	0	0	3	3	18
13:00 13:15	0	7	3	10	0	7	1	8	18	0	0	0	0	2	0	0	2	2	20
13:15 13:30	0	3	1	4	0	5	0	5	9	0	0	0	0	1	0	0	1	1	10
15:00 15:15	0	5	2	7	0	8	0	8	15	0	0	0	0	5	0	0	5	5	20
15:15 15:30	0	4	2	6	0	5	0	5	11	0	0	0	0	7	0	0	7	7	18
15:30 15:45	0	1	3	4	0	4	0	4	8	0	0	0	0	6	0	0	6	6	14
15:45 16:00	0	5	7	12	0	4	0	4	16	0	0	0	0	8	0	0	8	8	24
16:00 16:15	0	4	3	7	2	1	1	4	11	0	2	0	2	7	1	0	8	10	21
17:00 17:15	0	2	2	4	0	3	0	3	7	0	0	0	0	1	0	0	1	1	8
17:30 17:45	0	2	0	2	0	1	0	1	3	0	0	0	0	1	0	0	1	1	4
Total: None	1	161	132	294	5	171	4	180	474	4	4	2	10	125	4	1	130	140	614



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Wednesday, November 27, 2019

WO No: 39120

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST		CONROY RD		Total
Time Period		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	1	0	0	0	1
07:45	08:00	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
17:15	17:30	0	0	0	0	0
17:45	18:00	1	0	0	0	1
08:00	08:15	1	0	0	0	1
08:15	08:30	1	0	0	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	1	0	0	0	1
09:45	10:00	1	1	0	0	2
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	1	0	0	0	1
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
17:00	17:15	0	0	0	0	0
17:30	17:45	0	0	0	0	0
Total		7	1	0	0	8



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

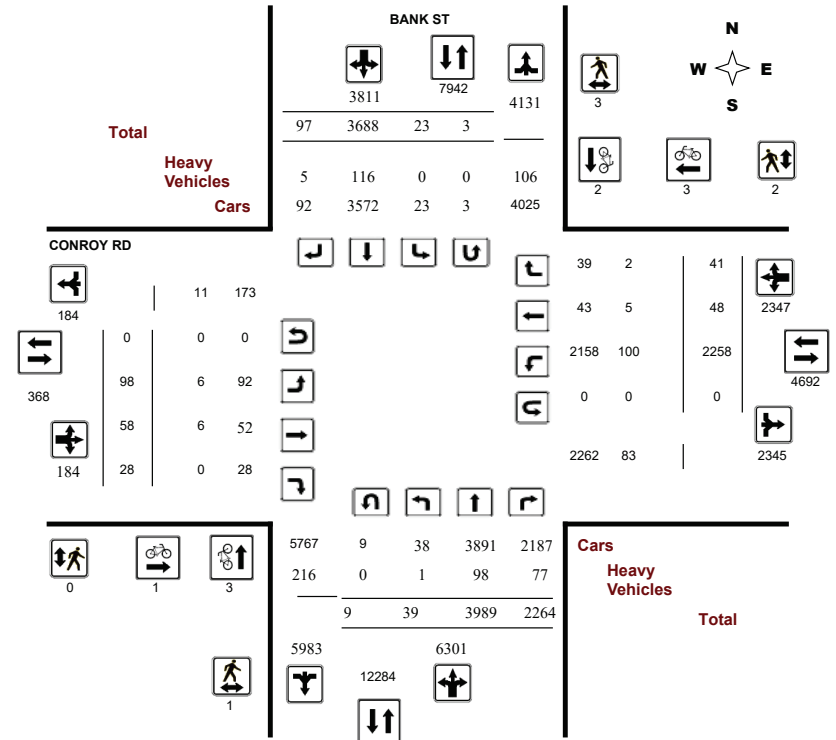
Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

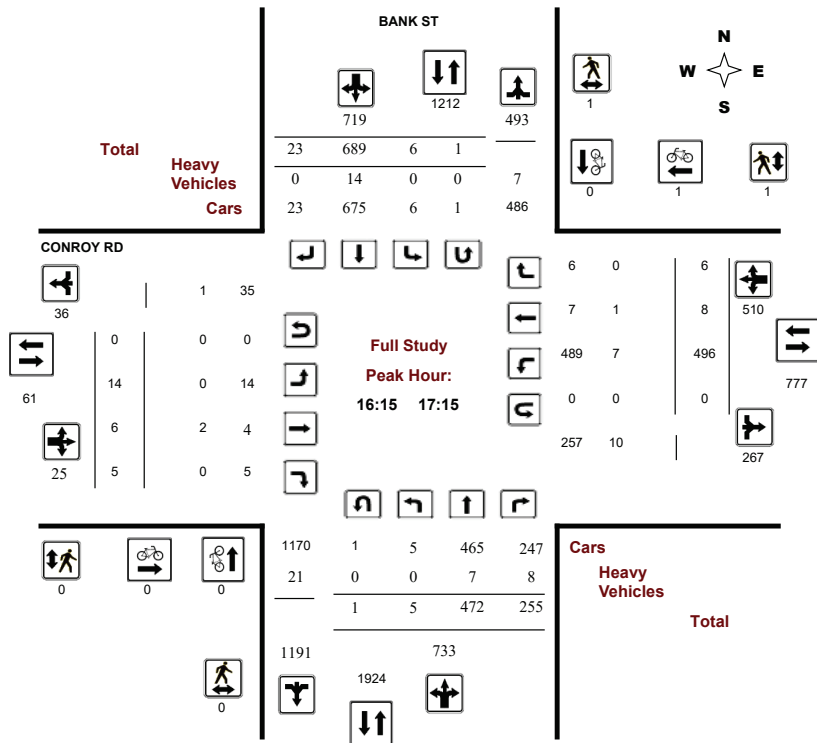
Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

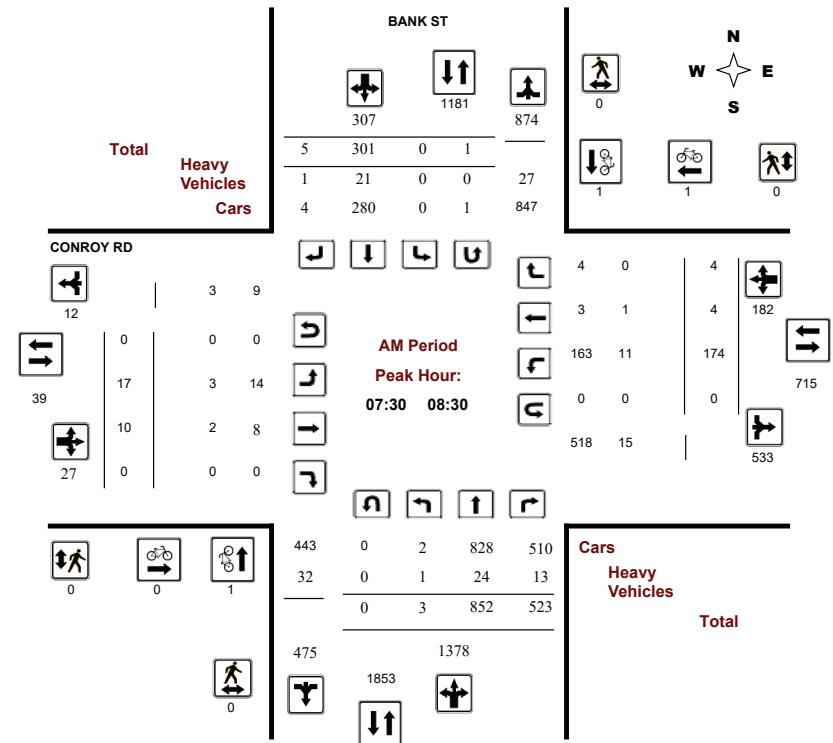
Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

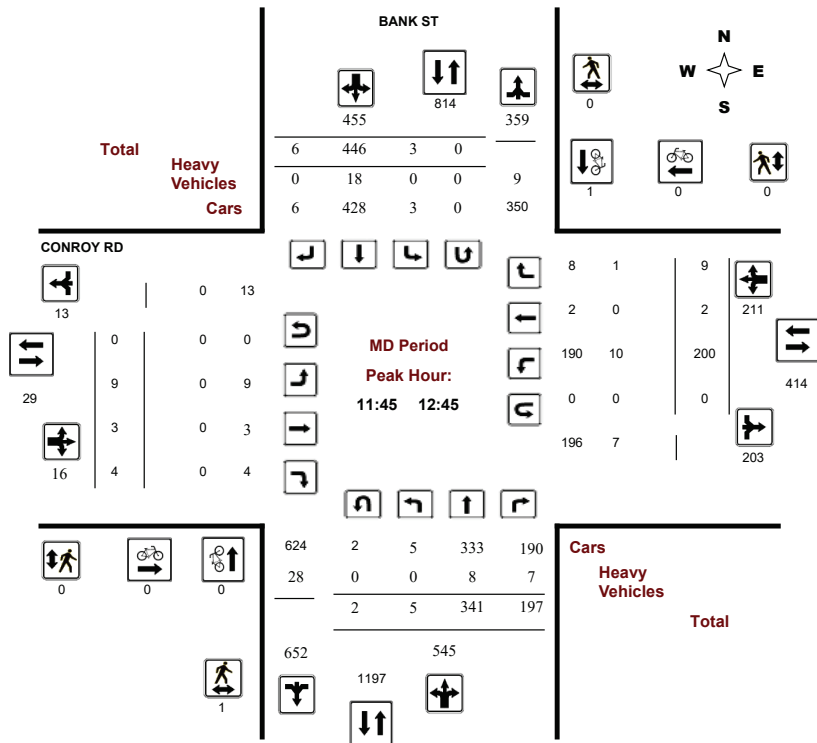
Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

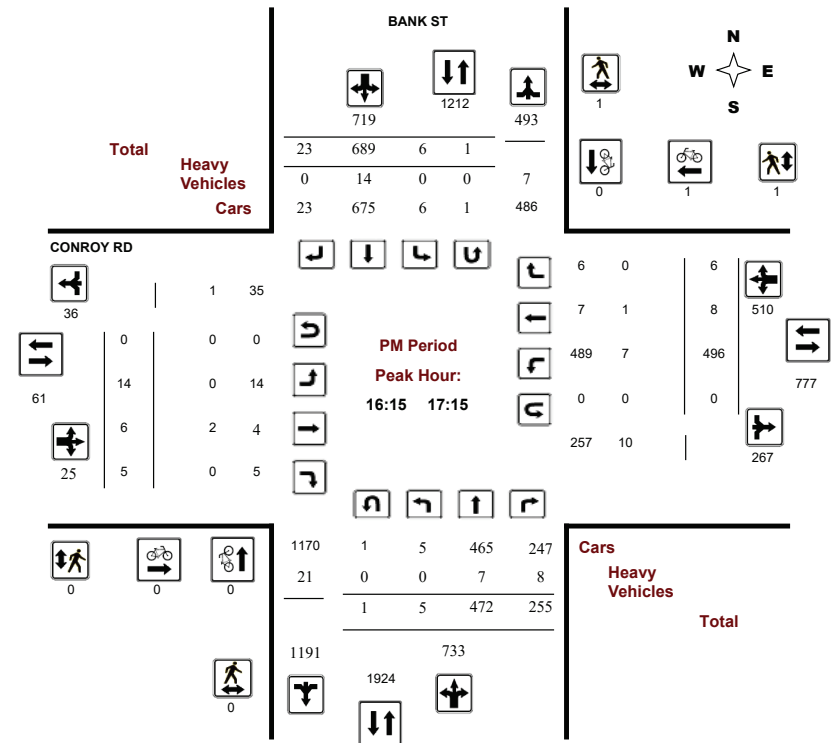
Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	BANK ST			CONROY RD			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	1	1	0	1	1	2
08:00 08:15	1	0	1	0	0	0	1
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	1	1	1
07:45 08:00	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	1	0	1	1
12:15 12:30	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:30 12:45	0	1	1	0	0	0	1
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	1	1	1
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	2	0	2	0	0	0	2
17:30 17:45	0	0	0	0	0	0	0
Total	3	2	5	1	3	4	9



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	BANK ST			CONROY RD			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	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
09:00 09:15	0	1	1	0	0	0	1
09:15 09:30	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:30 09:45	0	1	1	0	0	0	1
09:45 10:00	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:30 12:45	1	0	1	0	0	0	1
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	1	1	1
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:30 16:45	0	1	1	0	0	0	1
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	1	1	1
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
Total	1	3	4	0	2	2	6



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										CONROY RD										
Northbound					Southbound					Eastbound					Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	0	7	1	8	0	1	0	1	9	0	0	0	0	4	1	0	5	5	14
07:15	07:30	0	8	4	12	0	2	0	2	14	0	0	0	0	1	0	0	1	1	15
07:30	07:45	0	8	3	11	0	2	0	2	13	2	1	0	3	3	1	0	4	7	20
08:00	08:15	0	6	5	11	0	10	1	11	22	1	0	0	1	3	0	0	3	4	26
09:00	09:15	0	3	4	7	0	5	0	5	12	0	0	0	0	6	0	0	6	6	18
09:15	09:30	0	4	6	10	0	4	0	4	14	0	0	0	0	5	0	0	5	5	19
15:15	15:30	0	2	1	3	0	3	0	3	6	0	0	0	0	2	0	0	2	2	8
07:45	08:00	0	6	3	9	0	5	0	5	14	0	0	0	0	3	0	0	3	3	17
08:15	08:30	1	4	2	7	0	4	0	4	11	0	1	0	1	2	0	0	2	3	14
08:30	08:45	0	5	7	12	0	6	1	7	19	0	0	0	0	3	1	0	4	4	23
08:45	09:00	0	2	4	6	0	5	0	5	11	1	1	0	2	5	0	0	5	7	18
09:30	09:45	0	1	2	3	0	7	0	7	10	0	0	0	0	6	0	0	6	6	16
09:45	10:00	0	0	4	4	0	5	0	5	9	0	0	0	0	4	0	0	4	4	13
12:15	12:30	0	1	1	2	0	6	0	6	8	0	0	0	0	0	0	0	0	0	8
16:15	16:30	0	4	1	5	0	3	0	3	8	0	1	0	1	1	1	0	2	3	11
17:45	18:00	0	1	1	2	0	0	0	0	2	0	0	0	0	2	0	0	2	2	4
11:30	11:45	0	2	1	3	0	2	0	2	5	0	0	0	0	3	1	0	4	4	9
11:45	12:00	0	2	4	6	0	4	0	4	10	0	0	0	0	0	0	0	0	0	10
12:00	12:15	0	2	1	3	0	3	0	3	6	0	0	0	0	6	0	0	6	6	12
12:30	12:45	0	3	1	4	0	5	0	5	9	0	0	0	0	4	0	1	5	5	14
12:45	13:00	0	2	1	3	0	5	0	5	8	0	1	0	1	3	0	0	3	4	12
13:00	13:15	0	3	2	5	0	1	1	2	7	0	0	0	0	6	0	0	6	6	13
13:15	13:30	0	4	3	7	0	2	0	2	9	0	0	0	0	3	0	0	3	3	12
15:00	15:15	0	2	1	3	0	2	1	3	6	1	0	0	1	4	0	0	4	5	11
15:30	15:45	0	6	1	7	0	1	0	1	8	0	0	0	0	3	0	0	3	3	11
15:45	16:00	0	4	2	6	0	4	0	4	10	0	0	0	0	5	0	1	6	6	16
16:00	16:15	0	1	1	2	0	5	1	6	8	1	0	0	1	6	0	0	6	7	15
16:30	16:45	0	2	4	6	0	4	0	4	10	0	1	0	1	2	0	0	2	3	13
16:45	17:00	0	1	1	2	0	4	0	4	6	0	0	0	0	2	0	0	2	2	8
17:00	17:15	0	0	2	2	0	3	0	3	5	0	0	0	0	2	0	0	2	2	7
17:15	17:30	0	2	3	5	0	3	0	3	8	0	0	0	0	1	0	0	1	1	9
17:30	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total: None		1	98	77	176	0	116	5	121	297	6	6	0	12	100	5	2	107	119	416



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ CONROY RD

Survey Date: Tuesday, October 29, 2024

WO No: 42350

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST				CONROY RD					
		Northbound		Southbound		Eastbound		Westbound			
Time Period		U-Turn Total		U-Turn Total		U-Turn Total		U-Turn Total		Total	
07:00	07:15	1		0		0		0		1	
07:15	07:30	0		0		0		0		0	
07:30	07:45	0		0		0		0		0	
08:00	08:15	0		1		0		0		1	
09:00	09:15	0		0		0		0		0	
09:15	09:30	0		0		0		0		0	
15:15	15:30	0		0		0		0		0	
07:45	08:00	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	
09:30	09:45	0		0		0		0		0	
09:45	10:00	0		0		0		0		0	
12:15	12:30	0		0		0		0		0	
16:15	16:30	1		1		0		0		2	
17:45	18:00	1		0		0		0		2	
11:30	11:45	1		0		0		0		1	
11:45	12:00	2		0		0		0		2	
12:00	12:15	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		1		0		0		1	
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	
16:30	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	1		0		0		0		1	
17:30	17:45	1		0		0		0		1	
Total		9		3		0		0		12	



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

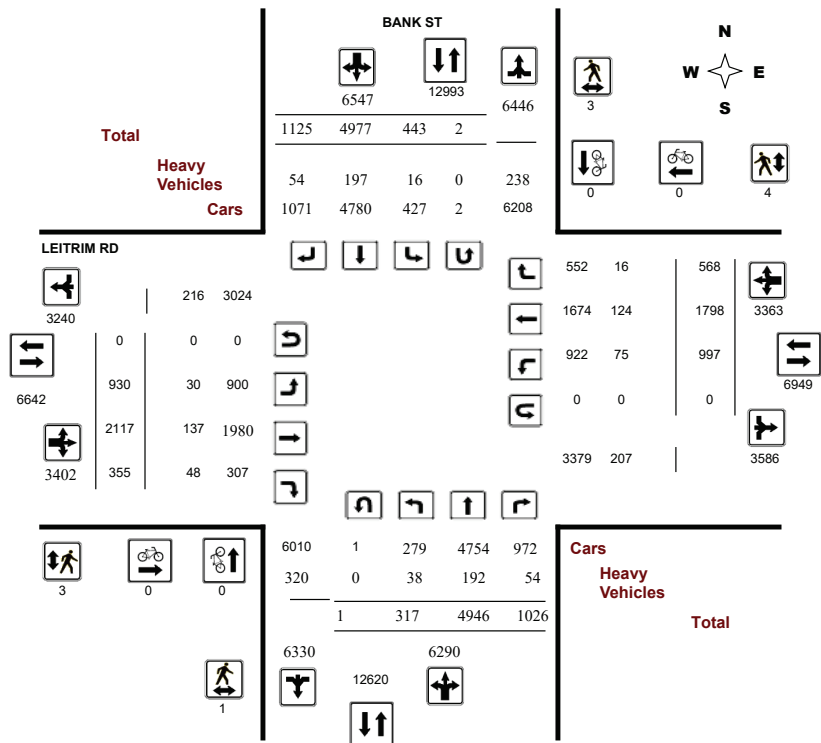
Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

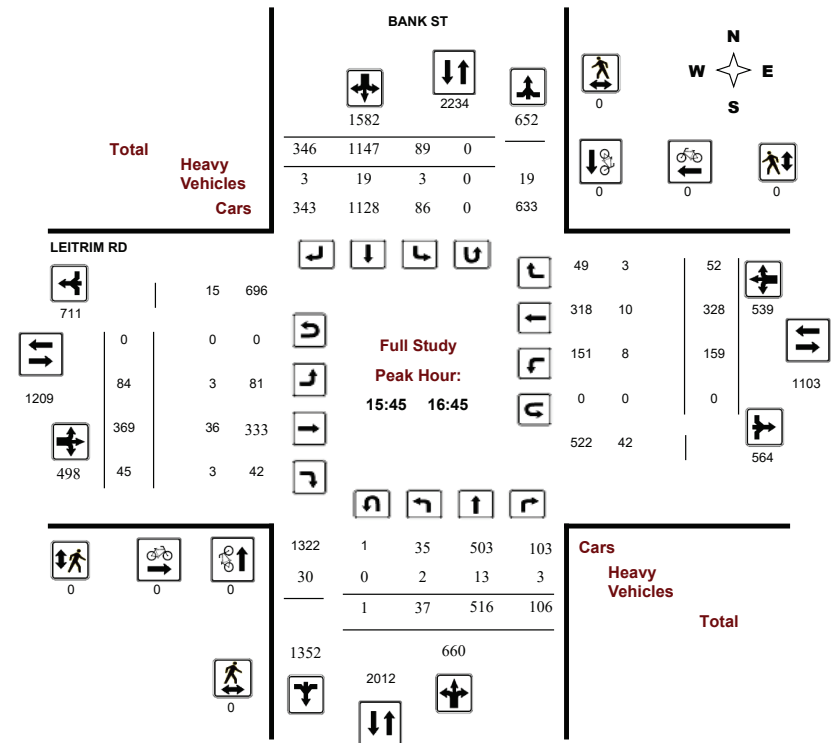
Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

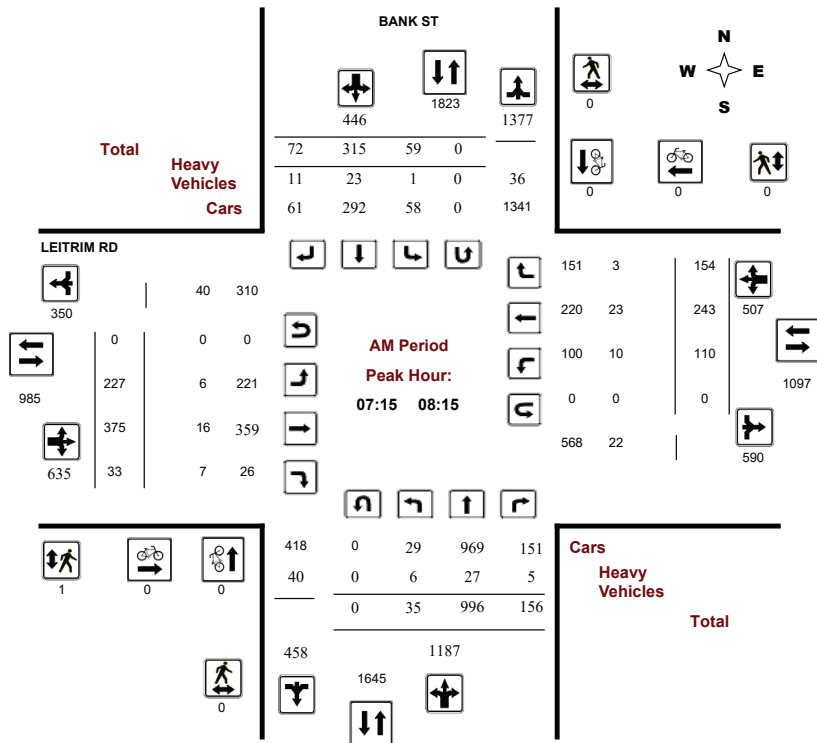
Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

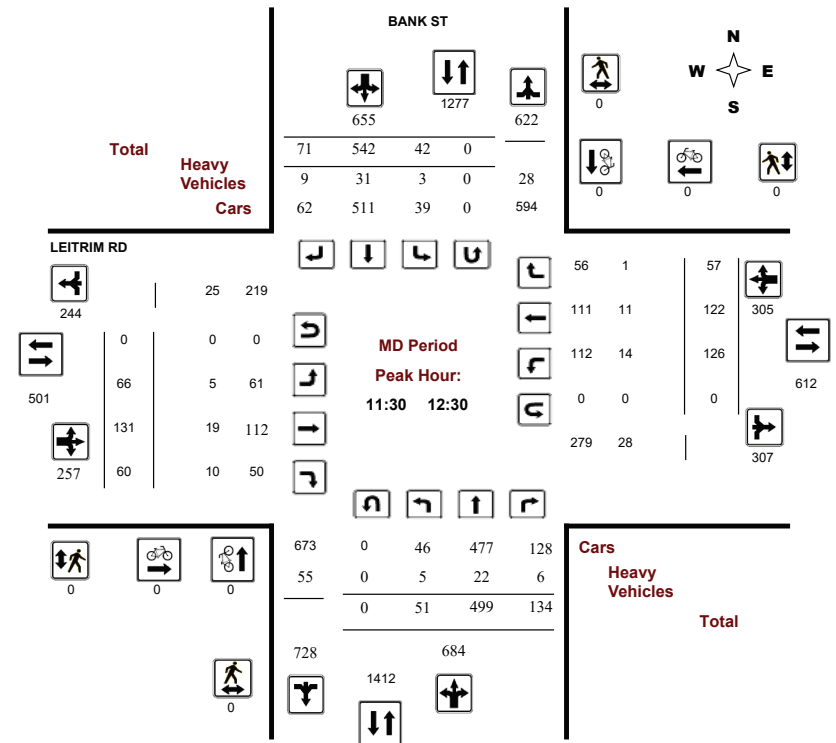
Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

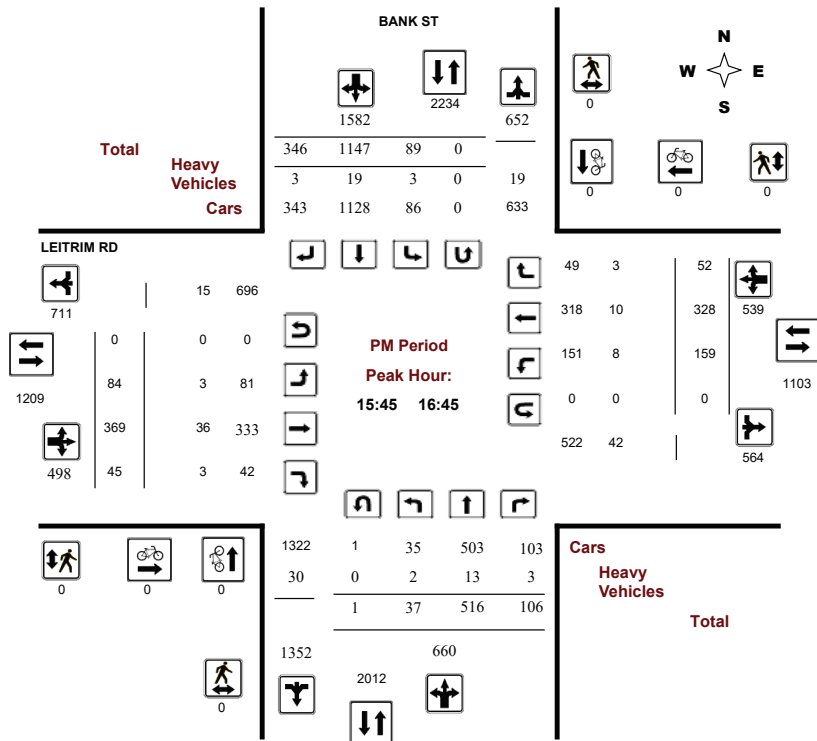
Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 04, 2019

Total Observed U-Turns
Northbound: 1 Southbound: 2
Eastbound: 0 Westbound: 0

AADT Factor

1.00

BANK ST											LEITRIM RD										WB TOT	STR TOT	Grand Total
Northbound					Southbound					Eastbound					Westbound								
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT							
07:00 08:00	32	1021	166	1219	59	286	68	413	1632	216	389	30	635	109	231	146	486	1121	2753				
08:00 09:00	44	853	158	1055	43	374	73	490	1545	212	330	45	587	109	202	109	420	1007	2552				
09:00 10:00	38	610	118	766	31	276	40	347	1113	116	202	50	368	61	141	46	248	616	1729				
11:30 12:30	51	499	134	684	42	542	71	655	1339	66	131	60	257	126	122	57	305	562	1901				
12:30 13:30	40	441	112	593	56	518	93	667	1260	73	126	48	247	105	123	48	276	523	1783				
15:00 16:00	61	513	147	721	90	903	272	1265	1986	77	315	55	447	167	351	74	592	1039	3025				
16:00 17:00	31	502	101	634	76	1162	334	1572	2206	92	386	37	515	152	326	51	529	1044	3250				
17:00 18:00	20	507	90	617	46	916	174	1136	1753	78	238	30	346	168	302	37	507	853	2606				
Sub Total	317	4946	1026	6289	443	4977	1125	6545	12834	930	2117	355	3402	997	1798	568	3363	6765	19599				
U Turns				1				2	3				0				0	0	3				
Total	317	4946	1026	6290	443	4977	1125	6547	12837	930	2117	355	3402	997	1798	568	3363	6765	19602				
EQ 12Hr	441	6875	1426	8743	616	6918	1564	9100	17843	1293	2943	493	4729	1386	2499	790	4675	9403	27247				
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39									
AVG 12Hr	441	6875	1426	8743	616	9063	2049	9100	17843	1293	2943	493	4729	1386	2499	790	4675	9403	27247				
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														1.00									
AVG 24Hr	578	9006	1868	11453	807	11873	2684	11921	23374	1694	3855	646	6195	1816	3274	1035	6124	12318	35694				



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	BANK ST			LEITRIM RD			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	0	2	2	2	0	2	4
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
15:15 15:30	1	0	1	0	1	1	2
15:30 15:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	1	0	1	1
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	1	1	1
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	1	1	0	0	0	1
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	2	0	2	2
Total	1	3	4	3	4	7	11



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										LEITRIM RD											
Time Period	Northbound				Southbound				Eastbound				Westbound				W TOT	STR TOT	Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT					
07:00 07:15	1	11	2	14	0	9	4	13	27	1	2	0	3	3	6	1	10	13	40		
07:15 07:30	1	10	1	12	0	3	2	5	17	0	3	2	5	5	4	1	10	15	32		
07:30 07:45	3	5	1	9	0	8	0	8	17	2	3	1	6	1	8	1	10	16	33		
13:00 13:15	4	9	6	19	0	7	2	9	28	0	0	0	0	3	7	0	10	10	38		
15:15 15:30	2	8	6	16	0	7	2	9	25	0	4	2	6	2	3	0	5	11	36		
15:30 15:45	1	5	3	9	0	3	3	6	15	1	5	1	7	1	6	0	7	14	29		
07:45 08:00	2	1	3	6	0	2	3	5	11	0	8	2	10	1	6	0	7	17	28		
08:00 08:15	0	11	0	11	1	10	6	17	28	4	2	2	8	3	5	1	9	17	45		
08:15 08:30	1	12	0	13	2	4	2	8	21	3	5	2	10	3	1	1	5	15	36		
08:30 08:45	2	14	4	20	0	15	2	17	37	0	2	3	5	2	6	0	8	13	50		
08:45 09:00	5	8	1	14	1	10	2	13	27	2	2	1	5	1	4	1	6	11	38		
09:00 09:15	2	8	0	10	1	5	0	6	16	0	5	1	6	4	6	0	10	16	32		
09:15 09:30	2	6	3	11	1	7	4	12	23	0	6	6	12	0	9	4	13	25	48		
09:30 09:45	0	6	2	8	1	4	1	6	14	1	4	0	5	5	5	1	11	16	30		
09:45 10:00	0	13	1	14	0	4	2	6	20	1	2	2	5	3	6	0	9	14	34		
11:30 11:45	0	7	2	9	1	10	3	14	23	1	6	3	10	5	2	0	7	17	40		
11:45 12:00	0	4	1	5	1	7	2	10	15	0	4	3	7	5	4	0	9	16	31		
12:00 12:15	3	4	1	8	0	9	2	11	19	1	5	2	8	2	5	1	8	16	35		
12:15 12:30	2	7	2	11	1	5	2	8	19	3	4	2	9	2	0	0	2	11	30		
12:30 12:45	0	8	2	10	1	10	0	11	21	2	3	2	7	4	2	0	6	13	34		
12:45 13:00	1	3	1	5	1	6	3	10	15	2	1	3	6	3	1	0	4	10	25		
13:15 13:30	2	7	4	13	0	7	3	10	23	0	2	2	4	0	8	1	9	13	36		
15:00 15:15	1	5	2	8	0	10	0	10	18	1	3	2	6	7	5	0	12	18	36		
15:45 16:00	2	2	0	4	1	6	1	8	12	0	8	0	8	4	7	0	11	19	31		
16:00 16:15	0	3	2	5	2	3	0	5	10	1	9	1	11	0	0	3	3	14	24		
16:15 16:30	0	3	1	4	0	6	0	6	10	1	12	2	15	2	2	0	4	19	29		
17:30 17:45	0	2	0	2	0	4	1	5	7	0	4	0	4	0	1	0	1	5	12		
17:45 18:00	0	1	1	2	0	2	0	2	4	1	4	0	5	0	0	0	0	5	9		
16:30 16:45	0	5	0	5	0	4	2	6	11	1	7	0	8	2	1	0	3	11	22		
16:45 17:00	1	1	1	3	0	5	0	5	8	1	4	1	6	1	1	0	2	8	16		
17:00 17:15	0	1	1	2	0	2	0	2	4	0	4	0	4	0	2	0	2	6	10		
17:15 17:30	0	2	0	2	1	3	0	4	6	0	4	0	4	1	1	0	2	6	12		
Total: None	38	192	54	284	16	197	54	267	551	30	137	48	215	75	124	16	215	430	981		



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Wednesday, December 04, 2019

WO No: 39159

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST		LEITRIM RD		Total
Time Period		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
13:00	13:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	1	0	0	1
12:45	13:00	0	1	0	0	1
13:15	13:30	0	0	0	0	0
15:00	15:15	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	1	0	0	0	1
17:30	17:45	0	0	0	0	0
17:45	18:00	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
Total		1	2	0	0	3



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

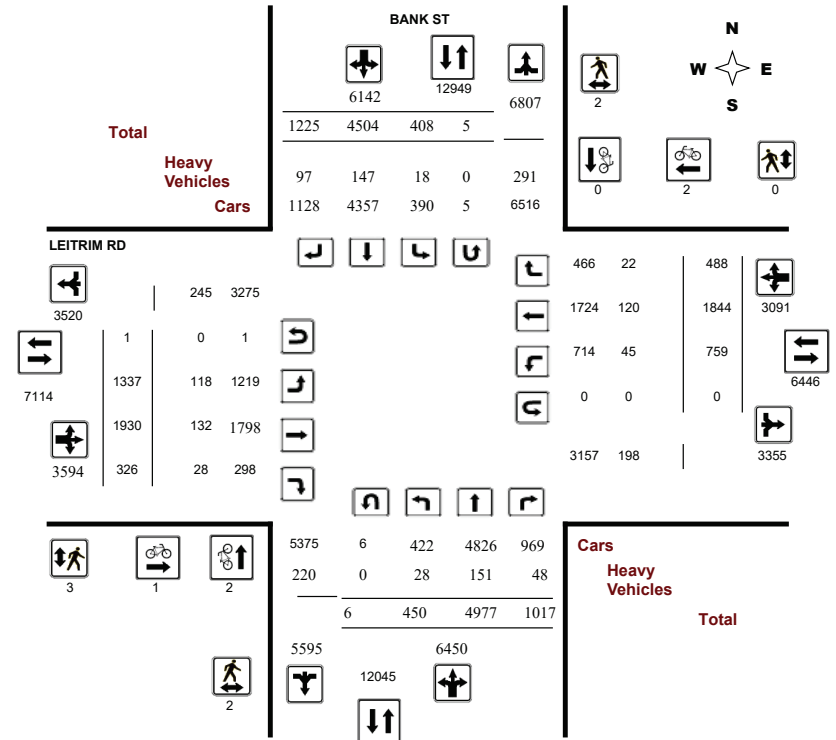
Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

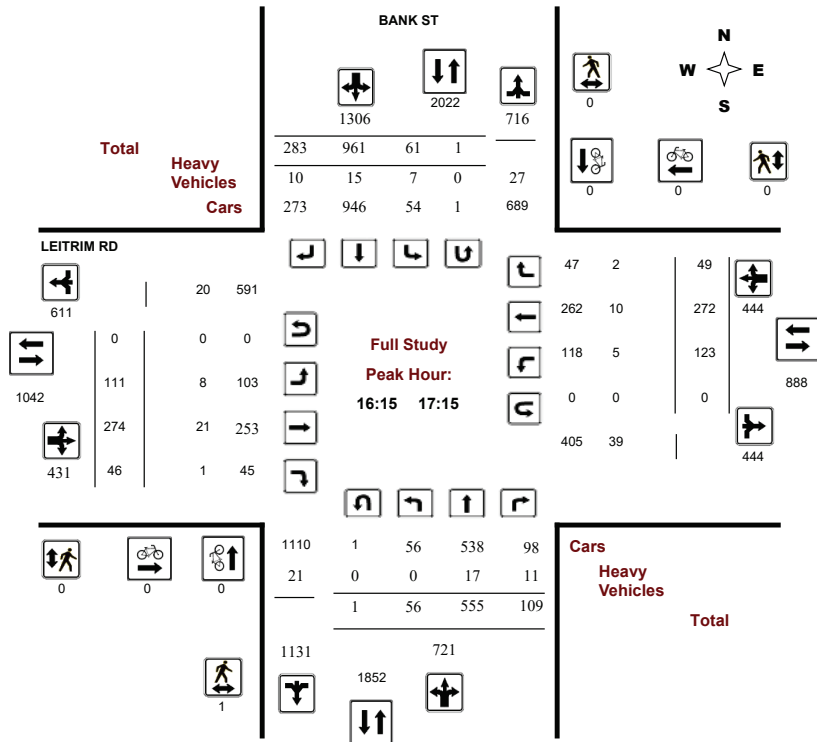
Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

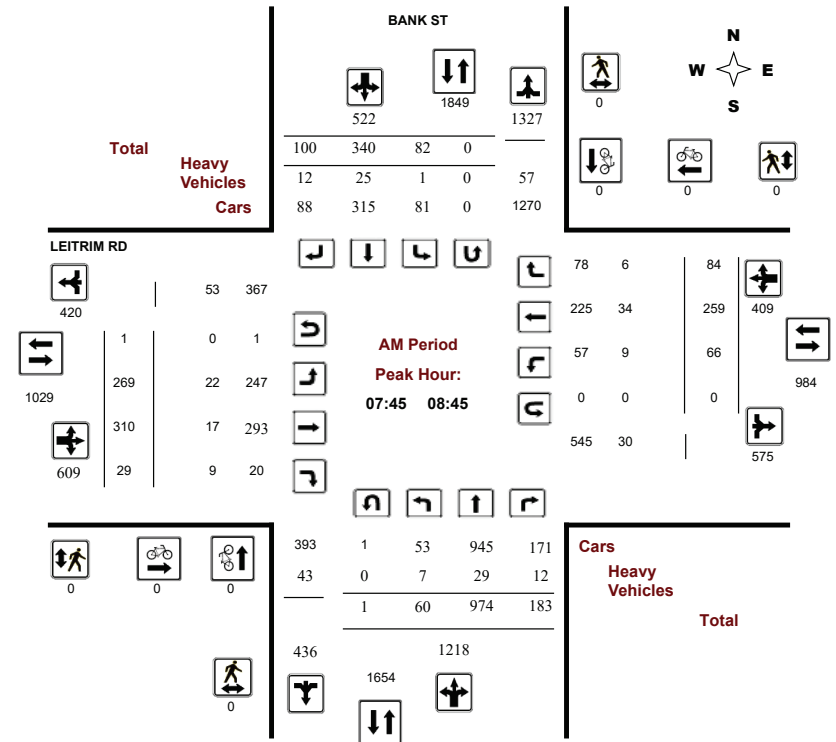
Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

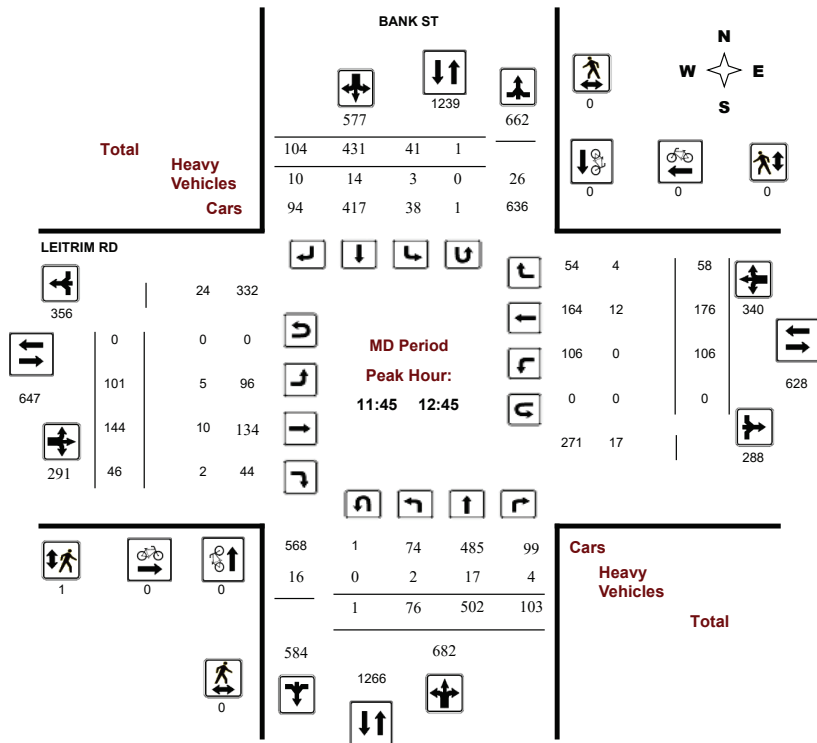
Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

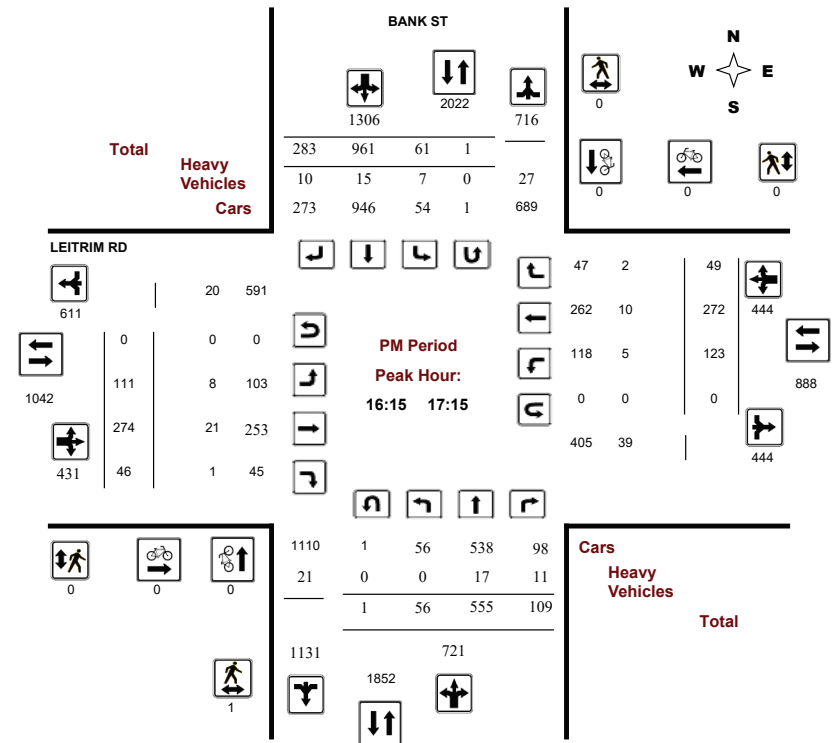
Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	BANK ST			LEITRIM RD			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	1	0	1	0	1	1	2
07:30 07:45	0	0	0	1	1	2	2
08:00 08:15	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	1	0	1	0	0	0	1
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
Total	2	0	2	1	2	3	5



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	BANK ST			LEITRIM RD			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	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	1	1	0	0	0	1
08:00 08:15	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	1	0	1	1
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	1	0	1	0	0	0	1
11:30 11:45	0	1	1	1	0	1	2
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	1	0	1	1
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	1	0	1	0	0	0	1
17:00 17:15	0	0	0	0	0	0	0
Total	2	2	4	3	0	3	7



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										LEITRIM RD										
Northbound					Southbound					Eastbound					Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	1	5	1	7	0	6	2	8	15	1	3	1	5	7	5	0	12	17	32
07:15	07:30	6	7	0	13	0	1	2	3	16	1	1	1	3	3	3	3	9	12	28
07:30	07:45	3	8	2	13	0	7	2	9	22	1	4	1	6	1	6	2	9	15	37
08:00	08:15	1	7	5	13	1	10	4	15	28	4	6	1	11	4	9	2	15	26	54
07:45	08:00	1	6	1	8	0	2	2	4	12	6	6	6	18	2	11	0	13	31	43
08:15	08:30	2	6	2	10	0	7	2	9	19	6	4	1	11	1	11	1	13	24	43
08:30	08:45	3	10	4	17	0	6	4	10	27	6	1	1	8	2	3	3	8	16	43
13:15	13:30	0	3	0	3	1	2	2	5	8	8	5	0	13	1	1	0	2	15	23
11:45	12:00	0	6	1	7	0	3	1	4	11	1	4	0	5	0	1	1	2	7	18
08:45	09:00	2	6	2	10	1	6	2	9	19	7	3	0	10	1	5	0	6	16	35
09:00	09:15	1	5	0	6	2	4	6	12	18	9	7	0	16	1	5	0	6	22	40
09:15	09:30	0	5	2	7	1	9	5	15	22	10	4	1	15	2	3	0	5	20	42
09:30	09:45	0	5	2	7	0	6	7	13	20	7	6	0	13	6	5	0	11	24	44
09:45	10:00	0	2	1	3	1	6	5	12	15	6	14	0	20	0	4	0	4	24	39
11:30	11:45	0	8	0	8	0	9	5	14	22	3	1	1	5	0	4	0	4	9	31
12:00	12:15	2	4	1	7	3	4	6	13	20	2	1	1	4	0	4	3	7	11	31
12:15	12:30	0	5	1	6	0	2	2	4	10	1	2	0	3	0	4	0	4	7	17
12:30	12:45	0	2	1	3	0	5	1	6	9	1	3	1	5	0	3	0	3	8	17
12:45	13:00	1	1	2	4	0	4	1	5	9	7	3	3	13	1	7	0	8	21	30
13:00	13:15	1	4	0	5	0	7	6	13	18	3	8	1	12	2	1	1	4	16	34
15:00	15:15	0	5	0	5	0	3	5	8	13	2	2	2	6	2	4	0	6	12	25
15:15	15:30	2	5	1	8	0	5	4	9	17	4	5	1	10	1	3	0	4	14	31
16:45	17:00	0	9	6	15	3	3	0	6	21	1	7	0	8	1	3	0	4	12	33
17:15	17:30	0	3	1	4	0	1	0	1	5	1	3	0	4	0	0	2	2	6	11
17:30	17:45	0	4	1	5	0	1	1	2	7	1	1	0	2	0	0	0	0	2	9
17:45	18:00	0	3	0	3	0	4	1	5	8	2	0	1	3	0	1	0	1	4	12
15:30	15:45	0	1	4	5	1	2	2	5	10	4	4	0	8	3	2	0	5	13	23
15:45	16:00	1	4	2	7	0	5	3	8	15	2	5	0	7	0	0	2	2	9	24
16:00	16:15	1	4	0	5	0	5	4	9	14	4	5	3	12	0	5	0	5	17	31
16:15	16:30	0	2	1	3	0	6	4	10	13	3	3	0	6	3	4	1	8	14	27
16:30	16:45	0	4	1	5	1	4	5	10	15	3	7	0	10	1	1	0	2	12	27
17:00	17:15	0	2	3	5	3	2	1	6	11	1	4	1	6	0	2	1	3	9	20
Total:	None	28	151	48	227	18	147	97	262	489	118	132	28	278	45	120	22	187	465	954



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ LEITRIM RD

Survey Date: Tuesday, March 04, 2025

WO No: 42566

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST				LEITRIM RD					
		Northbound		Southbound		Eastbound		Westbound			
Time Period		U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	Total	
07:00	07:15	0	0	0	0	0	0	0	0	0	
07:15	07:30	0	0	0	0	0	0	0	0	0	
07:30	07:45	0	0	0	0	0	0	0	0	0	
08:00	08:15	0	0	0	0	0	0	0	0	0	
07:45	08:00	0	0	0	0	0	0	0	0	0	
08:15	08:30	1	0	0	0	0	0	0	0	1	
08:30	08:45	0	0	1	0	0	0	0	0	1	
13:15	13:30	0	0	0	0	0	0	0	0	0	
11:45	12:00	0	0	0	0	0	0	0	0	0	
08:45	09:00	0	0	0	0	0	0	0	0	0	
09:00	09:15	0	0	0	0	0	0	0	0	0	
09:15	09:30	0	0	0	0	0	0	0	0	0	
09:30	09:45	0	0	0	0	0	0	0	0	0	
09:45	10:00	0	0	0	0	0	0	0	0	0	
11:30	11:45	0	1	0	0	0	0	0	0	1	
12:00	12:15	0	1	0	0	0	0	0	0	1	
12:15	12:30	0	0	0	0	0	0	0	0	0	
12:30	12:45	1	0	0	0	0	0	0	0	1	
12:45	13:00	0	0	0	0	0	0	0	0	0	
13:00	13:15	1	0	0	0	0	0	0	0	1	
15:00	15:15	0	1	0	0	0	0	0	0	1	
15:15	15:30	1	0	0	0	0	0	0	0	1	
16:45	17:00	1	0	0	0	0	0	0	0	1	
17:15	17:30	0	0	0	0	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	0	0	0	0	
17:45	18:00	1	0	0	0	0	0	0	0	1	
15:30	15:45	0	0	0	0	0	0	0	0	0	
15:45	16:00	0	1	0	0	0	0	0	0	1	
16:00	16:15	0	0	0	0	0	0	0	0	0	
16:15	16:30	0	1	0	0	0	0	0	0	1	
16:30	16:45	0	0	0	0	0	0	0	0	0	
17:00	17:15	0	0	0	0	0	0	0	0	0	
Total		6	5	1	0	0	0	0	0	12	

Turning Movement Count - Study Results

BANK ST @ ROTARY WAY

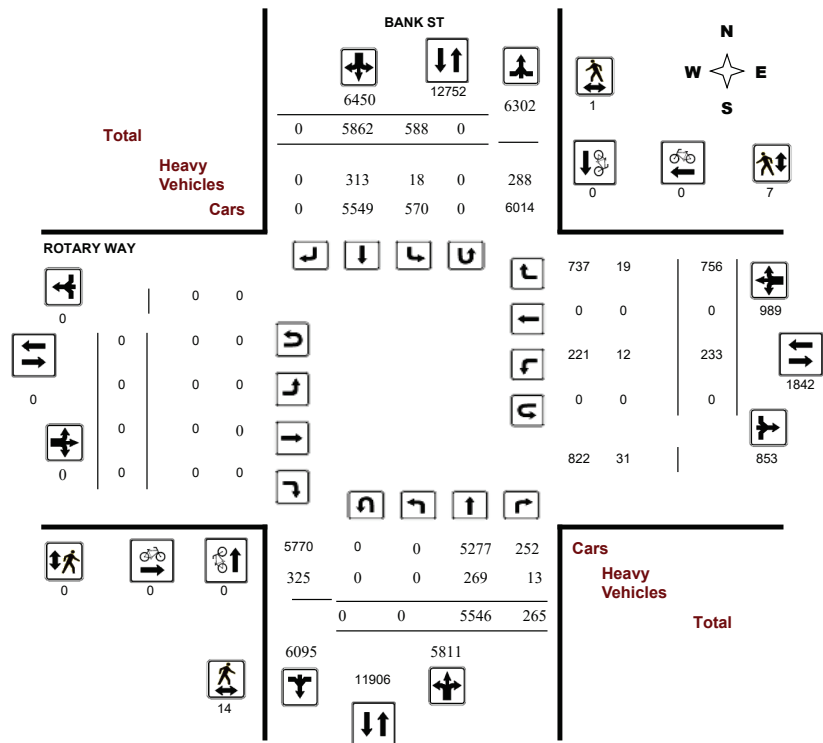
Survey Date: Wednesday, December 04, 2019

WO No: 39158

Start Time: 07:00

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

BANK ST @ ROTARY WAY

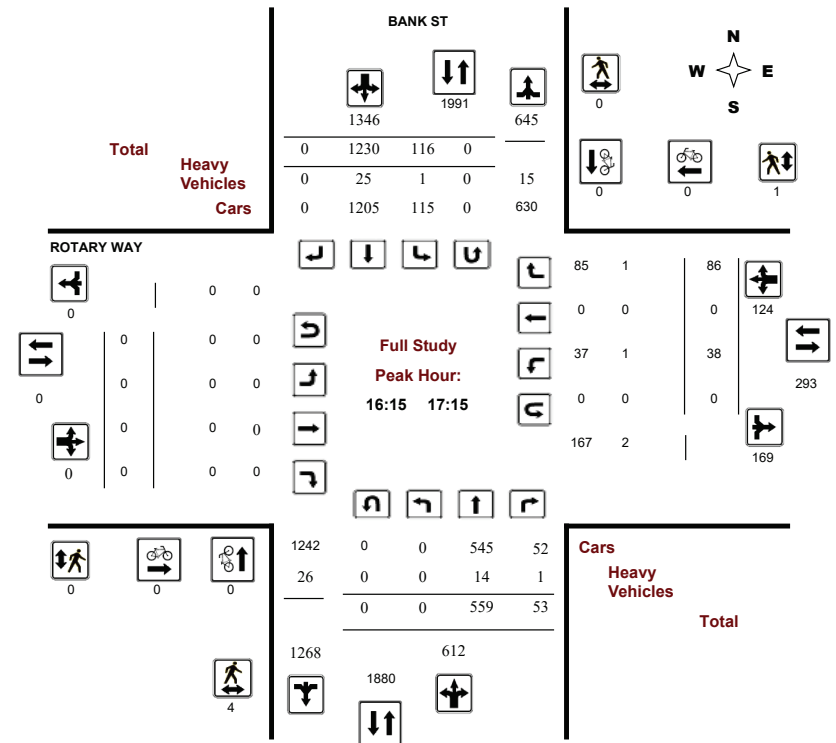
Survey Date: Wednesday, December 04, 2019

WO No: 39158

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ ROTARY WAY

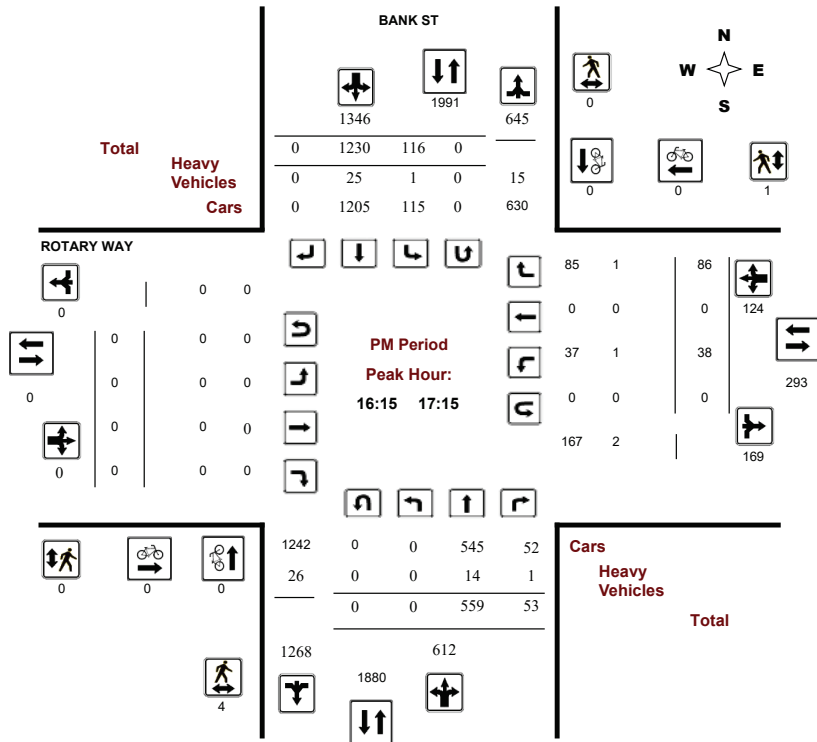
Survey Date: Wednesday, December 04, 2019

WO No: 39158

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ ROTARY WAY

Survey Date: Wednesday, December 04, 2019

WO No: 39158

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 04, 2019

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

AADT Factor

1.00

BANK ST										ROTARY WAY											
		Northbound			Southbound							Eastbound			Westbound						
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total	
07:00	08:00	0	1071	21	1092	49	381	0	430	1522	0	0	0	0	23	0	167	190	190	1712	
08:00	09:00	0	921	26	947	54	457	0	511	1458	0	0	0	0	27	0	142	169	169	1627	
09:00	10:00	0	691	14	705	37	372	0	409	1114	0	0	0	0	18	0	88	106	106	1220	
11:30	12:30	0	622	30	652	53	684	0	737	1389	0	0	0	0	29	0	68	97	97	1486	
12:30	13:30	0	537	32	569	60	630	0	690	1259	0	0	0	0	23	0	57	80	80	1339	
15:00	16:00	0	616	51	667	90	1015	0	1105	1772	0	0	0	0	43	0	90	133	133	1905	
16:00	17:00	0	538	47	585	114	1249	0	1363	1948	0	0	0	0	41	0	82	123	123	2071	
17:00	18:00	0	550	44	594	131	1074	0	1205	1799	0	0	0	0	29	0	62	91	91	1890	
Sub Total		0	5546	265	5811	588	5862	0	6450	12261	0	0	0	0	233	0	756	989	989	13250	
U Turns		0				0				0				0				0			
Total		0	5546	265	5811	588	5862	0	6450	12261	0	0	0	0	233	0	756	989	989	13250	
EQ 12Hr		0	7709	368	8077	817	8148	0	8966	17043	0	0	0	0	324	0	1051	1375	1375	18418	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39							
AVG 12Hr		0	7709	368	8077	817	10674	0	8966	17043	0	0	0	0	324	0	1051	1375	1375	18418	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														1.00							
AVG 24Hr		0	10099	482	10581	1070	13983	0	11745	22326	0	0	0	0	424	0	1377	1801	1801	24128	



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ ROTARY WAY

Survey Date: Wednesday, December 04, 2019

WO No: 39158

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	BANK ST		Total	ROTARY WAY		Total	Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)		EB Approach (N or S Crossing)	WB Approach (N or S Crossing)		
07:00 07:15	0	0	0	0	1	1	1
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	2	2	2
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	1	1	1
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	2	0	2	0	0	0	2
12:15 12:30	0	0	0	0	1	1	1
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	1	0	1	0	0	0	1
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	2	0	2	0	0	0	2
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	2	0	2	0	0	0	2
15:45 16:00	1	0	1	0	0	0	1
16:00 16:15	0	1	1	0	0	0	1
16:15 16:30	3	0	3	0	0	0	3
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	1	0	1	0	0	0	1
17:00 17:15	0	0	0	0	1	1	1
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	1	1	1
17:45 18:00	2	0	2	0	0	0	2
Total	14	1	15	0	7	7	22



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ ROTARY WAY

Survey Date: Wednesday, December 04, 2019

WO No: 39158

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										ROTARY WAY									
Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT	Grand Total	
	LT	ST	RT		LT	ST	RT			LT	ST	RT	E TOT	LT	ST				RT
07:00 07:15	0	13	0	13	3	11	0	14	27	0	0	0	0	0	0	0	27		
07:15 07:30	0	15	0	15	0	8	0	8	23	0	0	0	0	1	0	2	3		
07:30 07:45	0	12	0	12	0	11	0	11	23	0	0	0	0	0	0	0	23		
07:45 08:00	0	6	0	6	1	5	0	6	12	0	0	0	0	0	0	0	12		
08:00 08:15	0	9	0	9	0	15	0	15	24	0	0	0	0	0	0	0	24		
08:15 08:30	0	16	0	16	2	7	0	9	25	0	0	0	0	0	0	0	25		
08:30 08:45	0	15	1	16	0	14	0	14	30	0	0	0	0	0	0	2	32		
08:45 09:00	0	9	0	9	3	14	0	17	26	0	0	0	0	1	0	1	28		
09:00 09:15	0	13	0	13	0	10	0	10	23	0	0	0	0	2	0	1	3		
09:15 09:30	0	8	2	10	0	11	0	11	21	0	0	0	0	0	0	1	22		
09:30 09:45	0	8	1	9	0	9	0	9	18	0	0	0	0	0	0	1	19		
09:45 10:00	0	15	0	15	0	9	0	9	24	0	0	0	0	0	0	1	25		
11:30 11:45	0	11	0	11	0	18	0	18	29	0	0	0	0	0	0	0	29		
11:45 12:00	0	3	0	3	1	15	0	16	19	0	0	0	0	0	0	0	19		
12:00 12:15	0	7	2	9	1	11	0	12	21	0	0	0	0	1	0	3	4		
12:15 12:30	0	12	0	12	0	10	0	10	22	0	0	0	0	0	0	0	22		
12:30 12:45	0	10	0	10	1	13	0	14	24	0	0	0	0	1	0	0	25		
12:45 13:00	0	4	0	4	1	10	0	11	15	0	0	0	0	1	0	1	2		
13:00 13:15	0	14	1	15	0	13	0	13	28	0	0	0	0	0	0	0	28		
13:15 13:30	0	12	0	12	1	13	0	14	26	0	0	0	0	0	0	0	26		
15:00 15:15	0	7	1	8	0	19	0	19	27	0	0	0	0	0	0	2	29		
15:15 15:30	0	14	2	16	1	12	0	13	29	0	0	0	0	1	0	1	31		
15:30 15:45	0	9	0	9	1	6	0	7	16	0	0	0	0	1	0	0	17		
15:45 16:00	0	4	0	4	0	9	0	9	13	0	0	0	0	2	0	0	15		
16:00 16:15	0	3	0	3	1	4	0	5	8	0	0	0	0	0	0	1	9		
16:15 16:30	0	3	0	3	1	9	0	10	13	0	0	0	0	1	0	1	15		
16:30 16:45	0	7	0	7	0	7	0	7	14	0	0	0	0	0	0	0	14		
16:45 17:00	0	1	0	1	0	7	0	7	8	0	0	0	0	0	0	0	8		
17:00 17:15	0	3	1	4	0	2	0	2	6	0	0	0	0	0	0	0	6		
17:15 17:30	0	2	0	2	0	5	0	5	7	0	0	0	0	0	0	0	7		
17:30 17:45	0	2	0	2	0	4	0	4	6	0	0	0	0	0	0	0	6		
17:45 18:00	0	2	2	4	0	2	0	2	6	0	0	0	0	0	0	1	7		
Total: None	0	269	13	282	18	313	0	331	613	0	0	0	0	12	0	19	31		
																	644		



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ ROTARY WAY

Survey Date: Wednesday, December 04, 2019

WO No: 39158

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST		ROTARY WAY		Total
Time Period		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	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

ANALDEA DR/WHITE ALDER AVE @ BANK ST

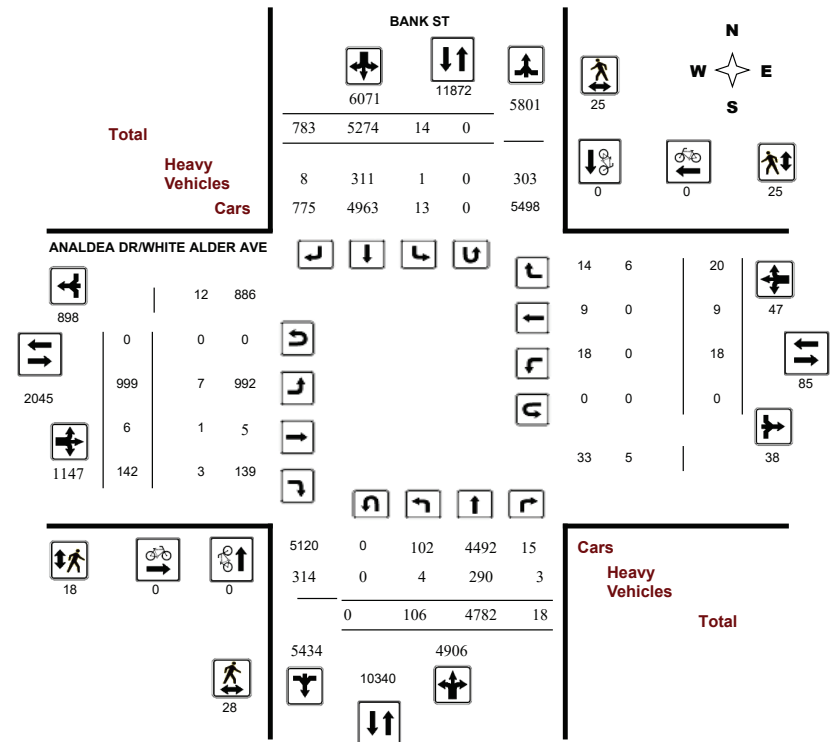
Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

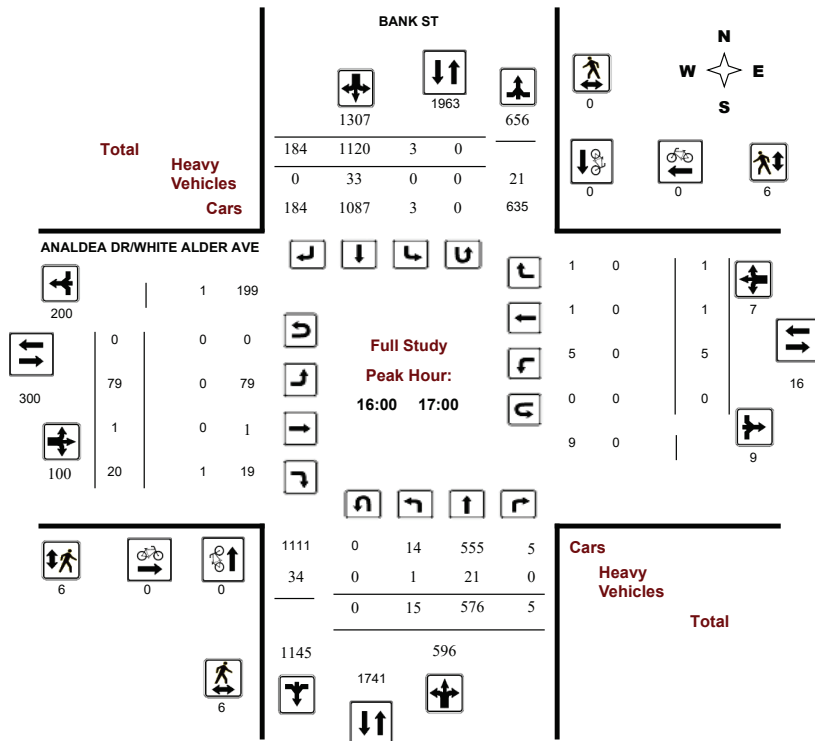
Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

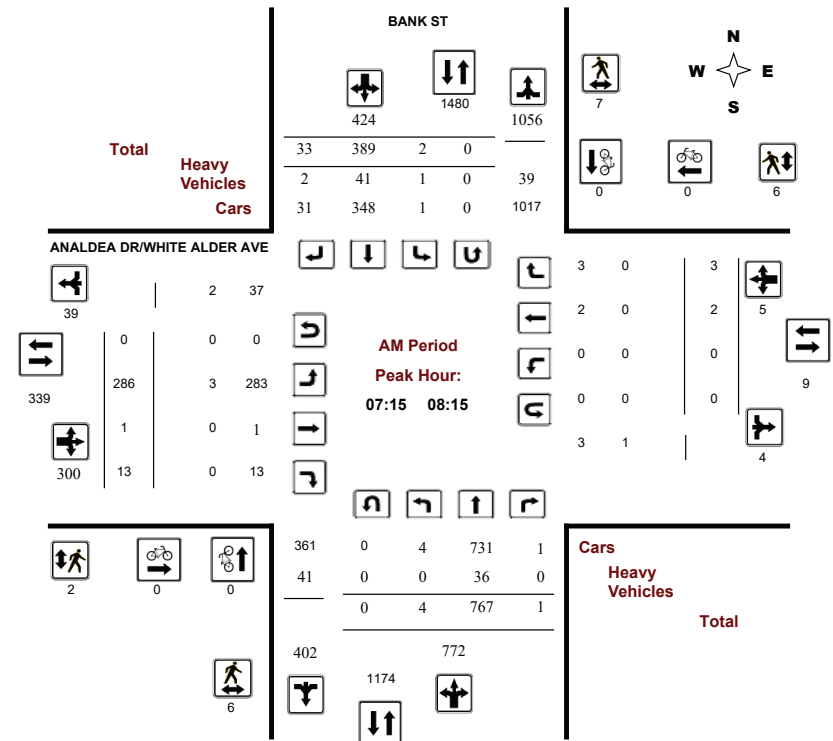
Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

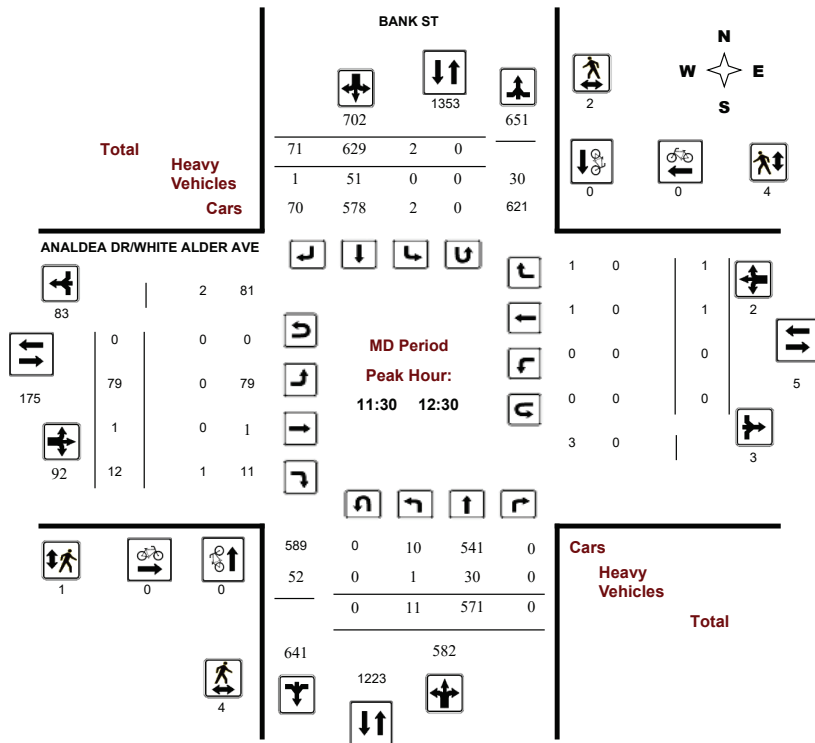
Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

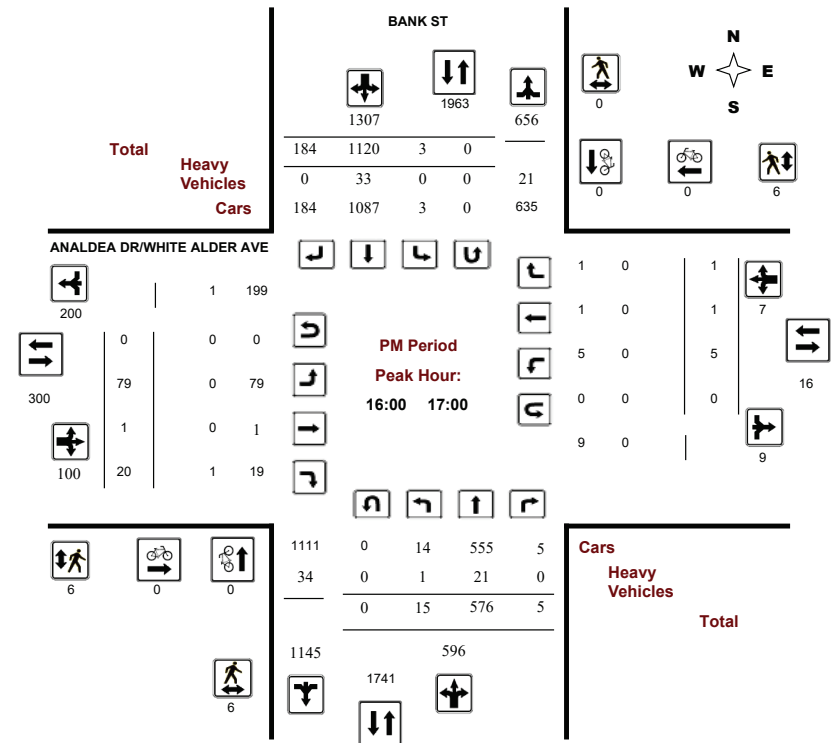
Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

		BANK ST			ANALDEA DR/WHITE ALDER AVE			Grand Total
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15		0	0	0	0	0	0	0
07:15 07:30		0	0	0	0	0	0	0
07:30 07:45		0	0	0	0	0	0	0
07:45 08:00		0	0	0	0	0	0	0
08:00 08:15		0	0	0	0	0	0	0
08:15 08:30		0	0	0	0	0	0	0
08:30 08:45		0	0	0	0	0	0	0
08:45 09:00		0	0	0	0	0	0	0
09:00 09:15		0	0	0	0	0	0	0
09:15 09:30		0	0	0	0	0	0	0
09:30 09:45		0	0	0	0	0	0	0
09:45 10:00		0	0	0	0	0	0	0
10:00 10:15		0	0	0	0	0	0	0
10:15 10:30		0	0	0	0	0	0	0
10:30 10:45		0	0	0	0	0	0	0
10:45 11:00		0	0	0	0	0	0	0
11:00 11:15		0	0	0	0	0	0	0
11:15 11:30		0	0	0	0	0	0	0
11:30 11:45		0	0	0	0	0	0	0
11:45 12:00		0	0	0	0	0	0	0
12:00 12:15		0	0	0	0	0	0	0
12:15 12:30		0	0	0	0	0	0	0
12:30 12:45		0	0	0	0	0	0	0
12:45 13:00		0	0	0	0	0	0	0
13:00 13:15		0	0	0	0	0	0	0
13:15 13:30		0	0	0	0	0	0	0
13:30 13:45		0	0	0	0	0	0	0
13:45 14:00		0	0	0	0	0	0	0
14:00 14:15		0	0	0	0	0	0	0
14:15 14:30		0	0	0	0	0	0	0
14:30 14:45		0	0	0	0	0	0	0
14:45 15:00		0	0	0	0	0	0	0
15:00 15:15		0	0	0	0	0	0	0
15:15 15:30		0	0	0	0	0	0	0
15:30 15:45		0	0	0	0	0	0	0
15:45 16:00		0	0	0	0	0	0	0
16:00 16:15		0	0	0	0	0	0	0
16:15 16:30		0	0	0	0	0	0	0
16:30 16:45		0	0	0	0	0	0	0
16:45 17:00		0	0	0	0	0	0	0
17:00 17:15		0	0	0	0	0	0	0
17:15 17:30		0	0	0	0	0	0	0
17:30 17:45		0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

		BANK ST			ANALDEA DR/WHITE ALDER AVE			Grand Total
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	
07:00 07:15		0	1	1	0	0	0	1
07:15 07:30		1	3	4	1	1	2	6
07:30 07:45		4	1	5	0	4	4	9
07:45 08:00		1	1	2	0	1	1	3
08:00 08:15		0	2	2	1	0	1	3
08:15 08:30		0	0	0	0	0	0	0
08:30 08:45		1	2	3	0	1	1	4
08:45 09:00		0	0	0	0	1	1	1
09:00 09:15		1	1	2	0	0	0	2
09:15 09:30		1	1	2	0	1	1	3
09:30 09:45		0	1	1	1	0	1	2
09:45 10:00		0	1	1	0	0	0	1
10:00 10:15		0	0	0	0	0	0	0
10:15 10:30		1	2	3	2	1	3	6
10:30 10:45		1	0	1	2	0	2	3
10:45 11:00		3	0	3	1	3	4	7
11:00 11:15		0	0	0	0	0	0	0
11:15 11:30		1	1	2	0	1	1	3
11:30 11:45		0	1	1	0	0	0	1
11:45 12:00		0	0	0	0	1	1	1
12:00 12:15		0	0	0	0	0	0	0
12:15 12:30		0	0	0	0	1	1	1
12:30 12:45		0	1	1	0	0	0	1
12:45 13:00		0	0	0	0	1	1	1
13:00 13:15		4	3	7	1	3	4	11
13:15 13:30		1	0	1	0	0	0	1
13:30 13:45		0	2	2	3	0	3	5
13:45 14:00		2	0	2	0	3	3	5
14:00 14:15		0	0	0	2	0	2	2
14:15 14:30		3	0	3	1	3	4	7
14:30 14:45		1	0	1	3	0	3	4
14:45 15:00		2	0	2	0	0	0	2
15:00 15:15		0	0	0	0	0	0	0
15:15 15:30		0	1	1	0	0	0	1
15:30 15:45		28	25	53	18	25	43	96



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										ANALDEA DR/WHITE ALDER AVE										
Northbound					Southbound					Eastbound					Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	1	12	0	13	0	7	0	7	20	0	0	0	0	0	0	0	0	20	
07:15	07:30	0	10	0	10	0	9	2	11	21	0	0	0	0	0	0	0	0	21	
07:30	07:45	0	12	0	12	1	11	0	12	24	0	0	0	0	0	0	0	0	24	
07:45	08:00	0	5	0	5	0	4	0	4	9	0	0	0	0	0	0	0	0	9	
08:00	08:15	0	9	0	9	0	17	0	17	26	3	0	0	3	0	0	0	3	29	
08:15	08:30	0	15	0	15	0	7	0	7	22	1	0	0	1	0	0	0	1	23	
08:30	08:45	0	15	0	15	0	17	0	17	32	0	0	0	0	0	0	0	0	32	
08:45	09:00	0	10	0	10	0	14	0	14	24	1	0	0	1	0	0	0	1	25	
09:00	09:15	0	11	1	12	0	13	0	13	25	0	0	0	0	0	0	0	0	25	
09:15	09:30	0	12	0	12	0	11	1	12	24	0	1	0	1	0	0	2	3	27	
09:30	09:45	0	12	0	12	0	11	0	11	23	0	0	0	0	0	0	0	0	23	
09:45	10:00	0	13	0	13	0	9	1	10	23	0	0	0	0	0	0	0	0	23	
13:00	13:15	0	14	0	14	0	11	0	11	25	2	0	0	2	0	0	1	1	3	28
17:45	18:00	0	4	0	4	0	2	0	2	6	0	0	0	0	0	0	0	0	6	
15:30	15:45	0	10	0	10	0	7	0	7	17	0	0	0	0	0	0	0	0	17	
11:30	11:45	0	8	0	8	0	17	0	17	25	0	0	0	0	0	0	0	0	25	
11:45	12:00	0	3	0	3	0	14	0	14	17	0	0	0	0	0	0	0	0	17	
12:00	12:15	0	11	0	11	0	10	1	11	22	0	0	0	0	0	0	0	0	22	
12:15	12:30	1	8	0	9	0	10	0	10	19	0	0	1	1	0	0	0	1	20	
12:30	12:45	0	12	0	12	0	15	0	15	27	0	0	0	0	0	0	0	0	27	
12:45	13:00	0	12	1	13	0	10	1	11	24	0	0	0	0	0	0	0	0	24	
13:15	13:30	0	18	0	18	0	10	0	10	28	0	0	0	0	0	0	0	0	28	
15:00	15:15	0	11	0	11	0	12	0	12	23	0	0	1	1	0	0	0	1	24	
15:15	15:30	0	12	1	13	0	11	2	13	26	0	0	0	0	0	0	3	3	29	
15:45	16:00	0	3	0	3	0	8	0	8	11	0	0	0	0	0	0	0	0	11	
16:00	16:15	1	4	0	5	0	6	0	6	11	0	0	1	1	0	0	0	1	12	
16:15	16:30	0	6	0	6	0	9	0	9	15	0	0	0	0	0	0	0	0	15	
16:30	16:45	0	9	0	9	0	6	0	6	15	0	0	0	0	0	0	0	0	15	
16:45	17:00	0	2	0	2	0	12	0	12	14	0	0	0	0	0	0	0	0	14	
17:00	17:15	1	3	0	4	0	2	0	2	6	0	0	0	0	0	0	0	0	6	
17:15	17:30	0	2	0	2	0	4	0	4	6	0	0	0	0	0	0	0	0	6	
17:30	17:45	0	2	0	2	0	5	0	5	7	0	0	0	0	0	0	0	0	7	
Total: None		4	290	3	297	1	311	8	320	617	7	1	3	11	0	0	6	6	634	



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39157

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST				ANALDEA DR/WHITE ALDER AVE					
		Northbound		Southbound		Eastbound		Westbound			
Time Period		U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	Total	
07:00	07:15	0	0	0	0	0	0	0	0	0	
07:15	07:30	0	0	0	0	0	0	0	0	0	
07:30	07:45	0	0	0	0	0	0	0	0	0	
07:45	08:00	0	0	0	0	0	0	0	0	0	
08:00	08:15	0	0	0	0	0	0	0	0	0	
08:15	08:30	0	0	0	0	0	0	0	0	0	
08:30	08:45	0	0	0	0	0	0	0	0	0	
08:45	09:00	0	0	0	0	0	0	0	0	0	
09:00	09:15	0	0	0	0	0	0	0	0	0	
09:15	09:30	0	0	0	0	0	0	0	0	0	
09:30	09:45	0	0	0	0	0	0	0	0	0	
09:45	10:00	0	0	0	0	0	0	0	0	0	
09:45	10:00	0	0	0	0	0	0	0	0	0	
13:00	13:15	0	0	0	0	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	0	0	0	0	
15:30	15:45	0	0	0	0	0	0	0	0	0	
11:30	11:45	0	0	0	0	0	0	0	0	0	
11:45	12:00	0	0	0	0	0	0	0	0	0	
12:00	12:15	0	0	0	0	0	0	0	0	0	
12:15	12:30	0	0	0	0	0	0	0	0	0	
12:30	12:45	0	0	0	0	0	0	0	0	0	
12:45	13:00	0	0	0	0	0	0	0	0	0	
13:15	13:30	0	0	0	0	0	0	0	0	0	
15:00	15:15	0	0	0	0	0	0	0	0	0	
15:15	15:30	0	0	0	0	0	0	0	0	0	
15:45	16:00	0	0	0	0	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	0	0	0	0	
16:15	16:30	0	0	0	0	0	0	0	0	0	
16:30	16:45	0	0	0	0	0	0	0	0	0	
16:45	17:00	0	0	0	0	0	0	0	0	0	
17:00	17:15	0	0	0	0	0	0	0	0	0	
17:15	17:30	0	0	0	0	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	0	0	0	0	
Total		0	0	0	0	0	0	0	0	0	



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

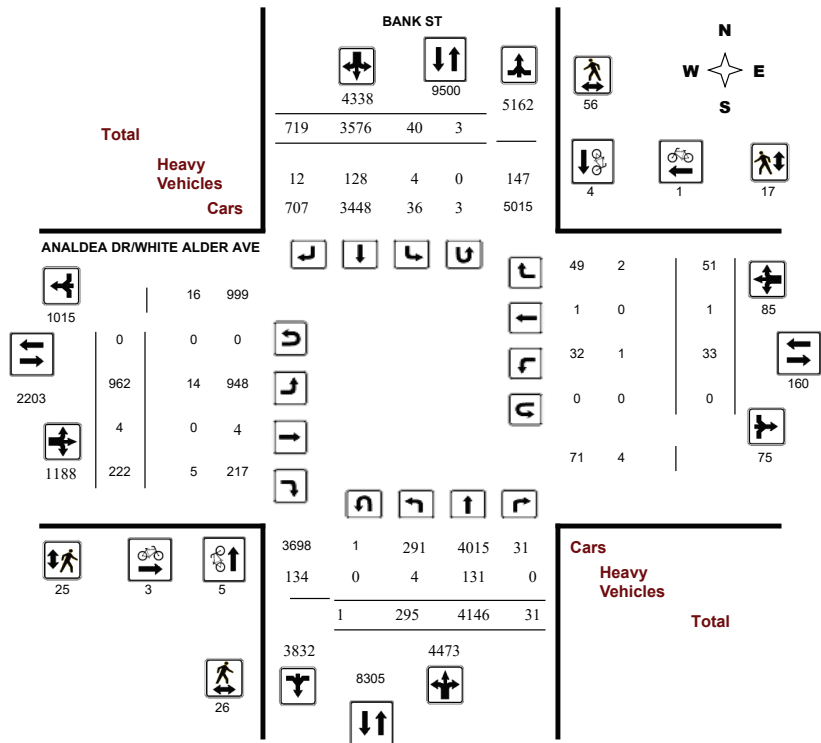
Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

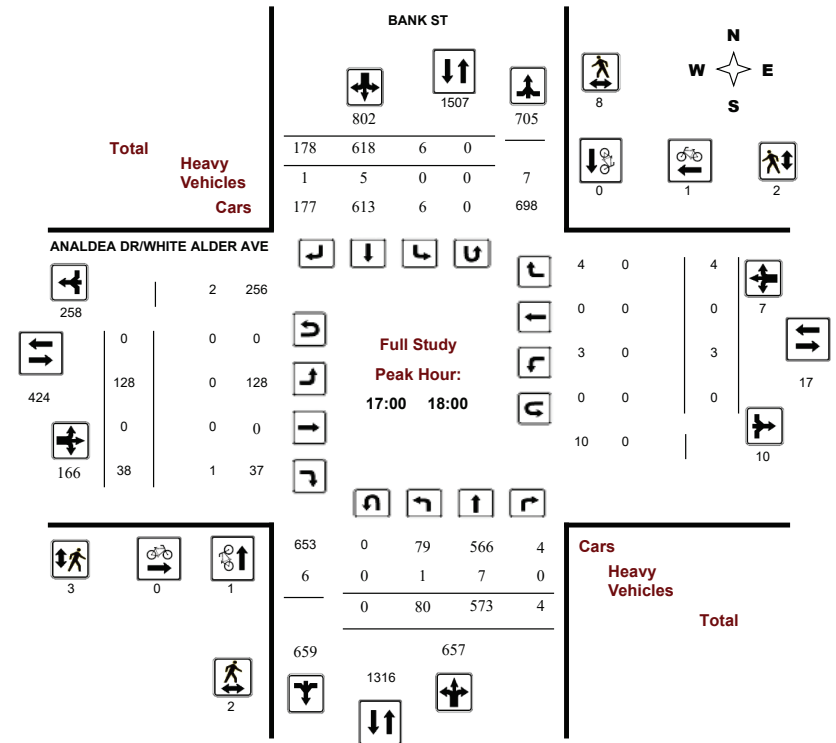
Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

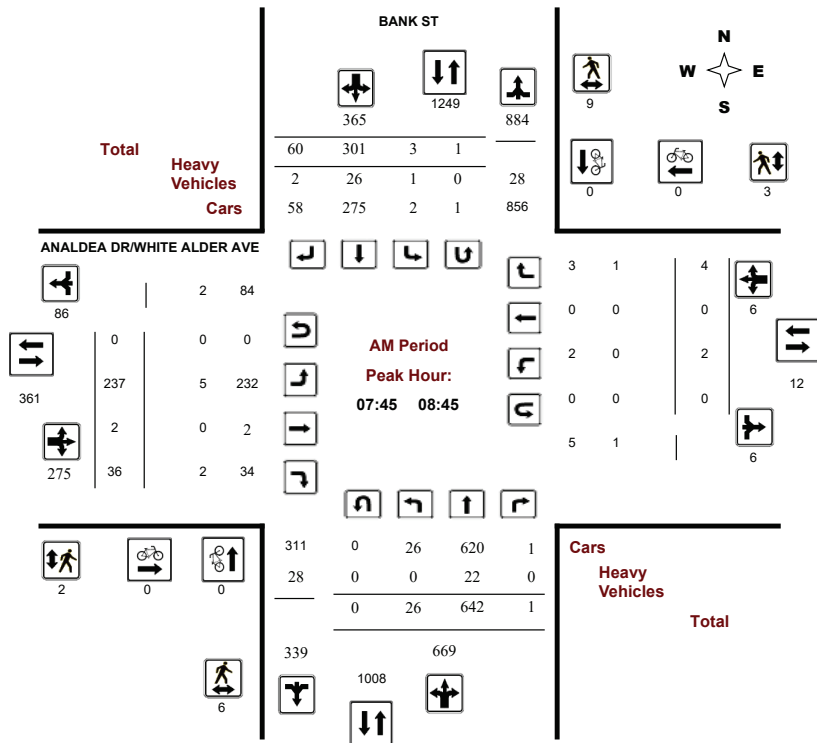
Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

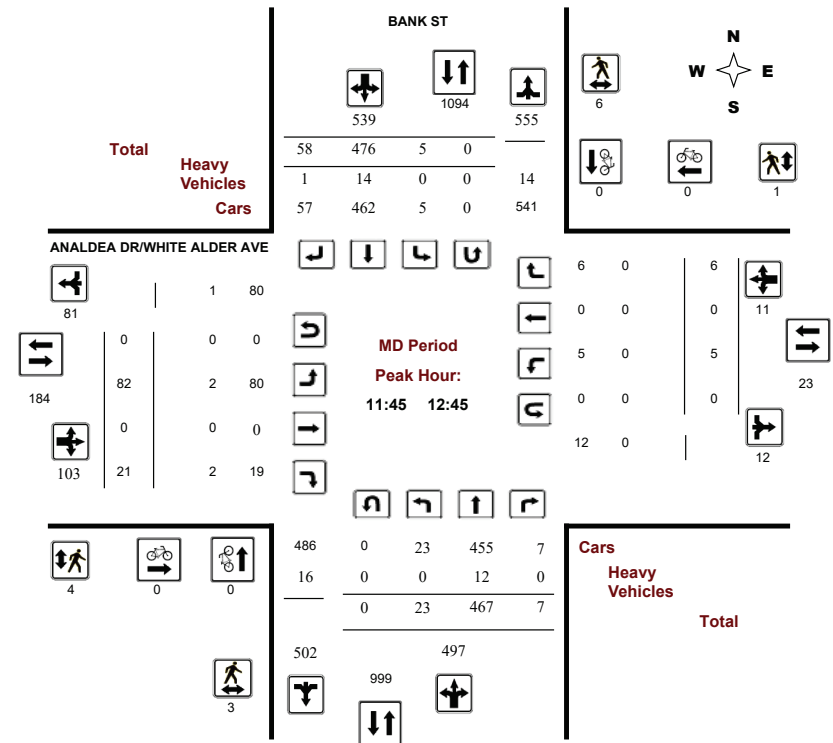
Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

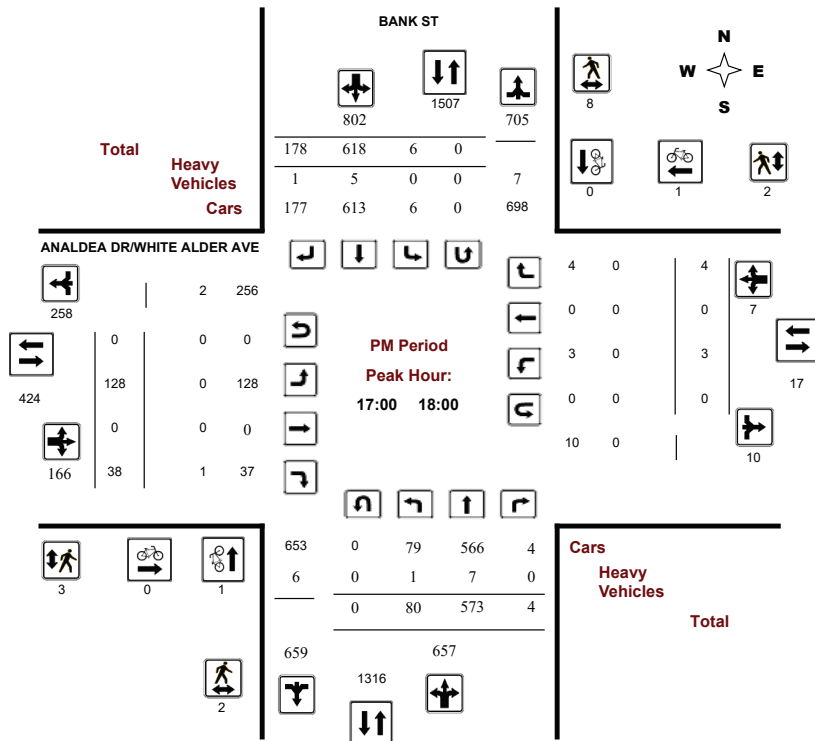
Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, October 30, 2024

Total Observed U-Turns

AADT Factor

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

.90

BANK ST										ANALDEA DR/WHITE ALDER AVE									
Northbound					Southbound					Eastbound					Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00-08:00	13	622	1	636	5	248	30	283	919	195	1	28	224	2	0	0	2	226	1145
08:00-09:00	27	601	2	630	3	312	65	380	1010	196	2	32	230	3	0	6	9	239	1249
09:00-10:00	14	469	3	486	4	360	45	409	895	99	0	10	109	4	0	6	10	119	1014
11:30-12:30	19	466	6	491	5	460	50	515	1006	78	0	21	99	5	0	5	10	109	1115
12:30-13:30	26	413	4	443	2	436	85	523	966	75	0	24	99	4	0	8	12	111	1077
15:00-16:00	40	517	6	563	12	568	118	698	1261	85	0	26	111	9	1	20	30	141	1402
16:00-17:00	76	485	5	566	3	574	148	725	1291	106	1	43	150	3	0	2	5	155	1446
17:00-18:00	80	573	4	657	6	618	178	802	1459	128	0	38	166	3	0	4	7	173	1632
Sub Total	295	4146	31	4472	40	3576	719	4335	8807	962	4	222	1188	33	1	51	85	1273	10080
U Turns	1				3				4	0				0				0	4
Total	295	4146	31	4473	40	3576	719	4338	8811	962	4	222	1188	33	1	51	85	1273	10084
EQ 12Hr	410	5763	43	6217	56	4971	999	6030	12247	1337	6	309	1651	46	1	71	118	1769	14017
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.										1.39									
AVG 12Hr	369	5187	39	5595	50	5860	1178	5427	11022	1203	5	278	1486	41	1	64	106	1592	12615
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.										.90									
AVG 24Hr	483	6795	51	7329	66	7677	1543	7109	14439	1576	7	364	1947	54	1	84	139	2086	16526
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

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	BANK ST		Total	ANALDEA DR/WHITE ALDER AVE		Total	Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)		EB Approach (N or S Crossing)	WB Approach (N or S Crossing)		
07:00 07:15	0	2	2	2	0	2	4
07:15 07:30	1	0	1	1	0	1	2
07:30 07:45	0	3	3	1	0	1	4
11:30 11:45	1	1	2	0	0	0	2
12:15 12:30	1	3	4	2	0	2	6
13:00 13:15	0	4	4	0	0	0	4
15:00 15:15	2	0	2	1	1	2	4
17:45 18:00	0	0	0	1	0	1	1
07:45 08:00	1	3	4	0	1	1	5
08:00 08:15	4	4	8	0	2	2	10
08:15 08:30	0	2	2	1	0	1	3
08:30 08:45	1	0	1	1	0	1	2
08:45 09:00	2	1	3	0	1	1	4
09:00 09:15	1	3	4	0	0	0	4
09:15 09:30	2	2	4	0	2	2	6
09:30 09:45	0	5	5	0	3	3	8
09:45 10:00	0	1	1	0	0	0	1
11:45 12:00	0	1	1	1	0	1	2
12:00 12:15	1	0	1	0	0	0	1
12:30 12:45	1	2	3	1	1	2	5
12:45 13:00	0	1	1	1	0	1	2
13:15 13:30	1	2	3	1	0	1	4
15:15 15:30	0	1	1	1	1	2	3
15:30 15:45	1	0	1	1	1	2	3
15:45 16:00	0	1	1	4	0	4	5
16:00 16:15	0	0	0	1	0	1	1
16:15 16:30	1	0	1	0	1	1	2
16:30 16:45	2	0	2	1	1	2	4
16:45 17:00	1	6	7	1	0	1	8
17:00 17:15	2	6	8	0	1	1	9
17:15 17:30	0	0	0	1	0	1	1
17:30 17:45	0	2	2	1	1	2	4
Total	26	56	82	25	17	42	124



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										ANALDEA DR/WHITE ALDER AVE										
Northbound					Southbound					Eastbound					Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00 07:15	0	2	0	2	1	7	0	8	10	0	0	0	0	1	1	0	0	1	2	15
07:15 07:30	1	1	0	2	0	8	3	11	13	1	0	0	0	1	0	0	0	1	0	8
07:30 07:45	0	6	0	6	0	2	0	2	8	0	0	0	0	0	0	0	0	0	0	8
11:30 11:45	0	4	0	4	0	5	0	5	9	0	0	0	0	0	0	0	0	0	0	9
12:15 12:30	0	5	0	5	0	4	1	5	10	1	0	0	1	0	0	0	0	1	0	11
13:00 13:15	0	4	0	4	0	4	0	4	8	0	0	0	0	0	0	0	0	0	0	8
15:00 15:15	0	6	0	6	0	1	0	1	7	2	0	0	2	0	0	0	0	2	0	9
17:45 18:00	1	1	0	2	0	0	1	1	3	0	0	0	0	0	0	0	0	0	0	3
07:45 08:00	0	7	0	7	0	6	0	6	13	2	0	0	2	0	0	0	0	2	0	15
08:00 08:15	0	5	0	5	0	12	1	13	18	1	0	2	3	0	0	0	0	3	3	21
08:15 08:30	0	2	0	2	0	7	1	8	10	0	0	0	0	0	0	0	0	0	0	10
08:30 08:45	0	8	0	8	1	1	0	2	10	2	0	0	2	0	0	1	1	3	1	13
08:45 09:00	0	3	0	3	0	2	0	2	5	0	0	0	0	0	0	0	0	0	0	5
09:00 09:15	0	4	0	4	1	7	0	8	12	0	0	0	0	0	0	1	1	1	1	13
09:15 09:30	0	1	0	1	0	6	0	6	7	0	0	0	0	0	0	0	0	0	0	7
09:30 09:45	0	11	0	11	0	10	0	10	21	0	0	0	0	0	0	0	0	0	0	21
09:45 10:00	0	6	0	6	0	2	0	2	8	0	0	0	0	0	0	0	0	0	0	8
11:45 12:00	0	1	0	1	0	3	0	3	4	0	0	1	1	0	0	0	0	1	0	5
12:00 12:15	0	3	0	3	0	5	0	5	8	1	0	0	1	0	0	0	0	1	0	9
12:30 12:45	0	3	0	3	0	2	0	2	5	0	0	1	1	0	0	0	0	1	1	6
12:45 13:00	0	2	0	2	0	3	0	3	5	0	0	0	0	0	0	0	0	0	0	5
13:15 13:30	0	4	0	4	0	6	1	7	11	0	0	0	0	0	0	0	0	0	0	11
15:15 15:30	0	9	0	9	1	2	0	3	12	2	0	0	2	0	0	0	0	2	1	14
15:30 15:45	1	5	0	6	0	2	0	2	8	0	0	0	0	0	0	0	0	0	0	8
15:45 16:00	0	1	0	1	0	2	0	2	3	0	0	0	0	0	0	0	0	0	0	3
16:00 16:15	0	3	0	3	0	5	2	7	10	0	0	0	0	0	0	0	0	0	0	10
16:15 16:30	1	9	0	10	0	3	0	3	13	1	0	0	1	0	0	0	0	1	1	14
16:30 16:45	0	6	0	6	0	4	1	5	11	1	0	0	1	0	0	0	0	1	0	12
16:45 17:00	0	3	0	3	0	2	1	3	6	0	0	0	0	0	0	0	0	0	0	6
17:00 17:15	0	3	0	3	0	2	0	2	5	0	0	0	0	0	0	0	0	0	0	5
17:15 17:30	0	3	0	3	0	1	0	1	4	0	0	0	0	0	0	0	0	0	0	4
17:30 17:45	0	0	0	0	0	2	0	2	2	0	0	1	1	0	0	0	0	1	0	3
Total: None	4	131	0	135	4	128	12	144	279	14	0	5	19	1	0	2	3	22	301	



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ANALDEA DR/WHITE ALDER AVE @ BANK ST

Survey Date: Wednesday, October 30, 2024

WO No: 42353

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST		ANALDEA DR/WHITE ALDER 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
11:30	11:45	0	0	0	0	0
12:15	12:30	0	0	0	0	0
13:00	13:15	0	0	0	0	0
15:00	15:15	0	0	0	0	0
17:45	18:00	0	0	0	0	0
07:45	08:00	0	1	0	0	1
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	1	0	0	1
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
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	1	0	0	0	1
13:15	13:30	0	1	0	0	1
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
Total		1	3	0	0	4



Transportation Services - Traffic Services

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

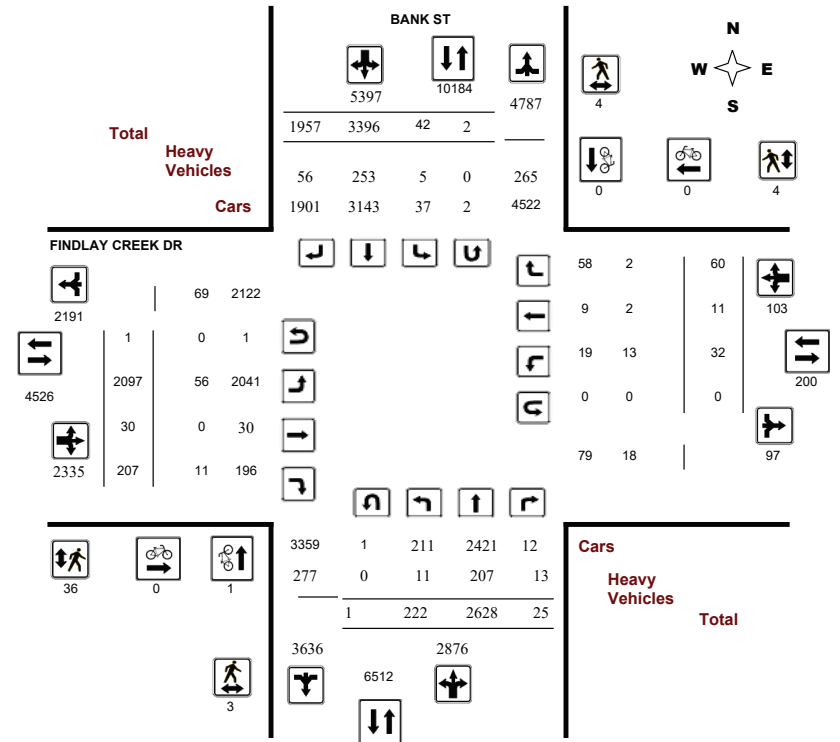
Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

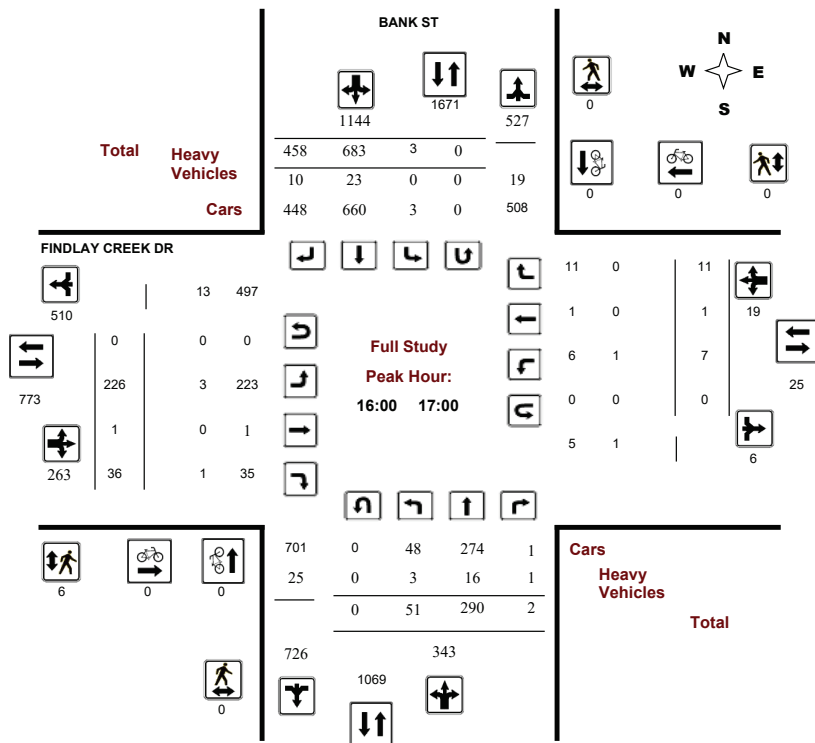
Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

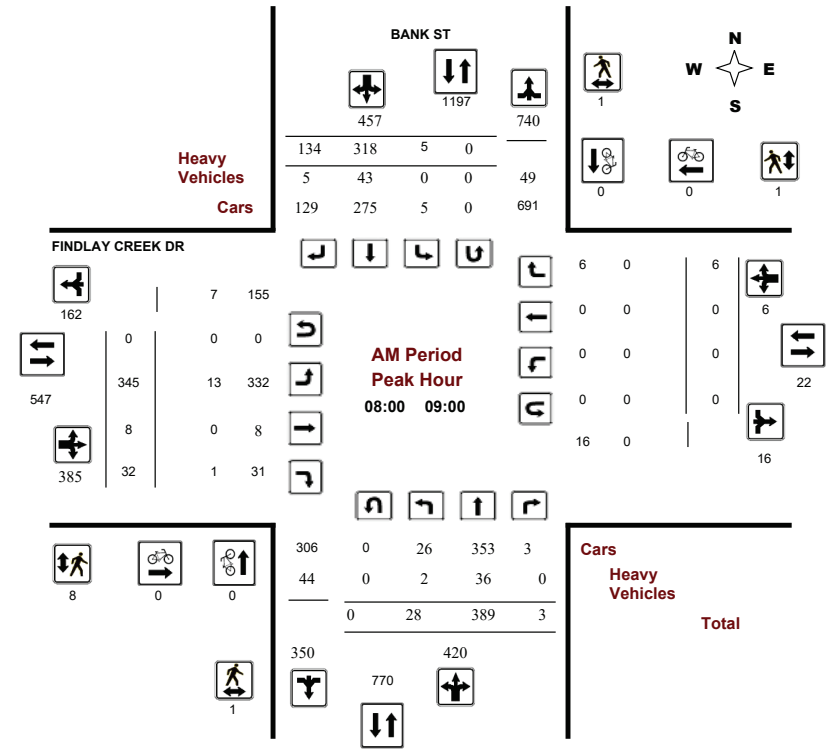
FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

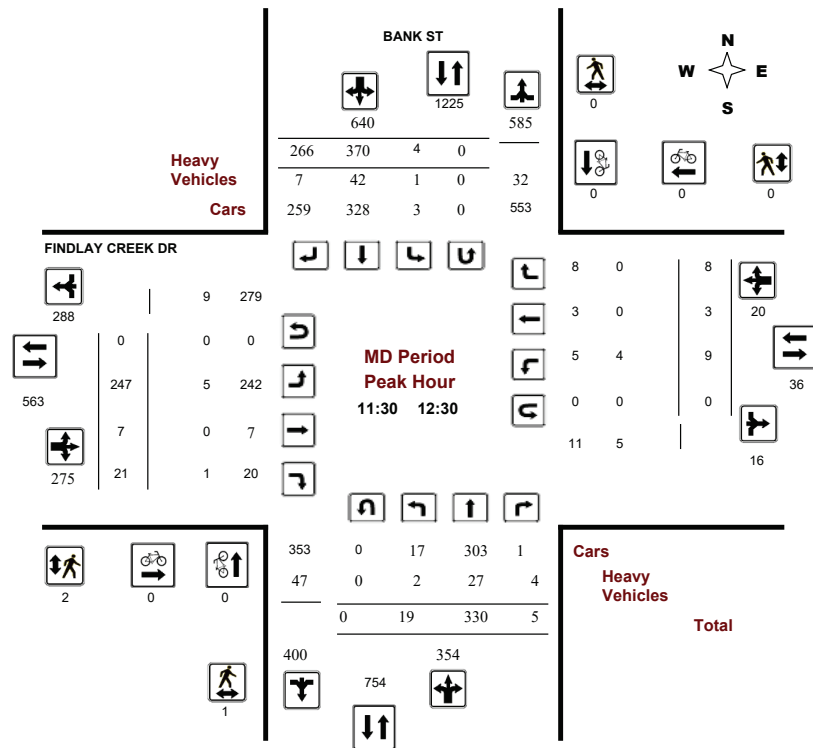
FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

Start Time: 07:00

WO No: 39205

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

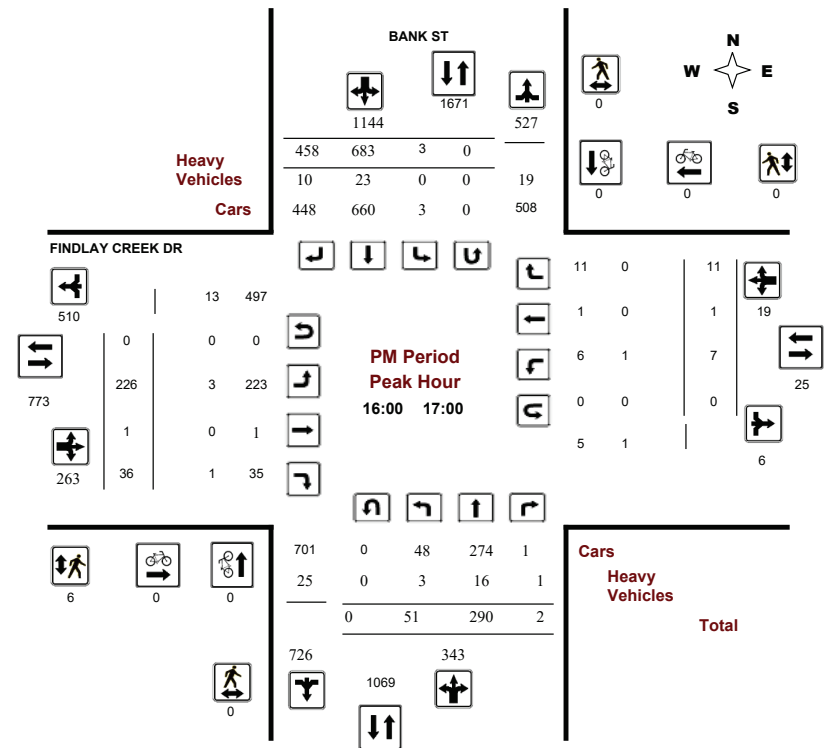
FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

Start Time: 07:00

WO No: 39205

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

		BANK ST			FINDLAY CREEK DR			Grand Total
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15		0	0	0	0	0	0	0
07:15 07:30		0	0	0	0	0	0	0
07:30 07:45		0	0	0	0	0	0	0
07:45 08:00		0	0	0	0	0	0	0
08:00 08:15		0	0	0	0	0	0	0
08:15 08:30		0	0	0	0	0	0	0
08:30 08:45		0	0	0	0	0	0	0
08:45 09:00		0	0	0	0	0	0	0
09:00 09:15		0	0	0	0	0	0	0
09:15 09:30		0	0	0	0	0	0	0
09:30 09:45		0	0	0	0	0	0	0
09:45 10:00		0	0	0	0	0	0	0
11:30 11:45		0	0	0	0	0	0	0
11:45 12:00		0	0	0	0	0	0	0
12:00 12:15		0	0	0	0	0	0	0
12:15 12:30		0	0	0	0	0	0	0
12:30 12:45		0	0	0	0	0	0	0
12:45 13:00		0	0	0	0	0	0	0
13:00 13:15		0	0	0	0	0	0	0
13:15 13:30		0	0	0	0	0	0	0
15:00 15:15		0	0	0	0	0	0	0
15:15 15:30		0	0	0	0	0	0	0
15:30 15:45		1	0	1	0	0	0	1
15:45 16:00		0	0	0	0	0	0	0
16:00 16:15		0	0	0	0	0	0	0
16:15 16:30		0	0	0	0	0	0	0
16:30 16:45		0	0	0	0	0	0	0
16:45 17:00		0	0	0	0	0	0	0
17:00 17:15		0	0	0	0	0	0	0
17:15 17:30		0	0	0	0	0	0	0
17:30 17:45		0	0	0	0	0	0	0
17:45 18:00		0	0	0	0	0	0	0
Total		1	0	1	0	0	0	1



Transportation Services - Traffic Services

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

		BANK ST			FINDLAY CREEK DR			Grand Total
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	
07:00 07:15		0	0	0	0	0	0	0
07:15 07:30		0	0	0	0	0	0	0
07:30 07:45		1	0	1	1	0	1	2
07:45 08:00		0	0	0	0	0	0	0
08:00 08:15		0	0	0	3	0	3	3
08:15 08:30		0	0	0	0	0	0	0
08:30 08:45		0	0	0	2	0	2	2
08:45 09:00		1	1	2	3	1	4	6
09:00 09:15		0	0	0	0	0	0	0
09:15 09:30		0	0	0	1	0	1	1
09:30 09:45		0	0	0	0	0	0	0
09:45 10:00		0	0	0	0	0	0	0
11:30 11:45		1	0	1	1	0	1	2
11:45 12:00		0	0	0	0	0	0	0
12:00 12:15		0	0	0	0	0	0	0
12:15 12:30		0	0	0	1	0	1	1
12:30 12:45		0	1	1	1	0	1	2
12:45 13:00		0	0	0	0	0	0	0
13:00 13:15		0	0	0	0	0	0	0
13:15 13:30		0	0	0	0	0	0	0
15:00 15:15		0	0	0	0	0	0	0
15:15 15:30		0	1	1	0	1	1	2
15:30 15:45		0	0	0	5	0	5	5
15:45 16:00		0	0	0	1	0	1	1
16:00 16:15		0	0	0	1	0	1	1
16:15 16:30		0	0	0	3	0	3	3
16:30 16:45		0	0	0	0	0	0	0
16:45 17:00		0	0	0	2	0	2	2
17:00 17:15		0	0	0	3	0	3	3
17:15 17:30		0	0	0	4	0	4	4
17:30 17:45		0	0	0	0	2	2	2
17:45 18:00		0	1	1	4	0	4	5
Total		3	4	7	36	4	40	47



Transportation Services - Traffic Services

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

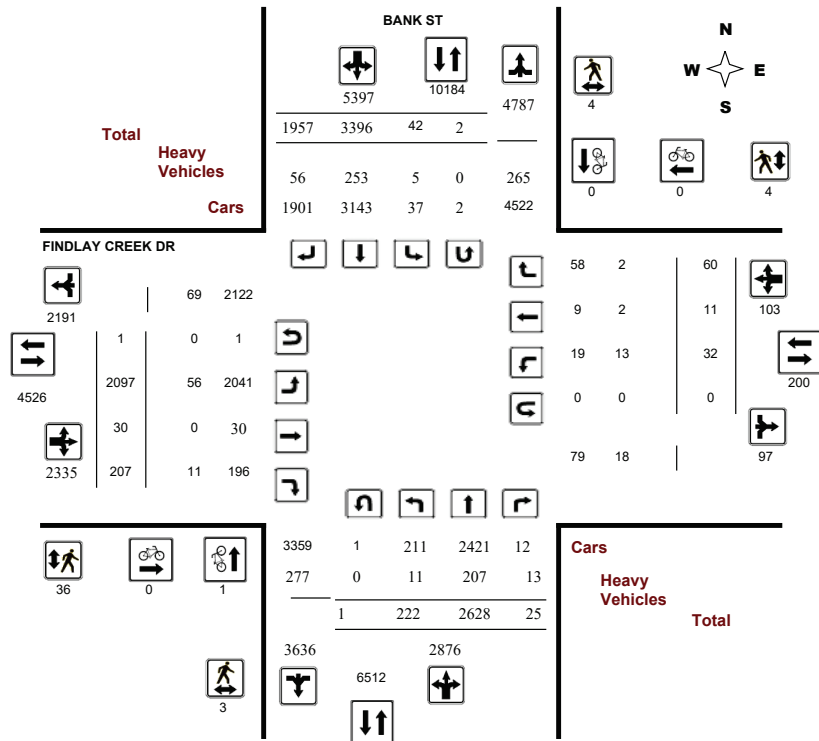
Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

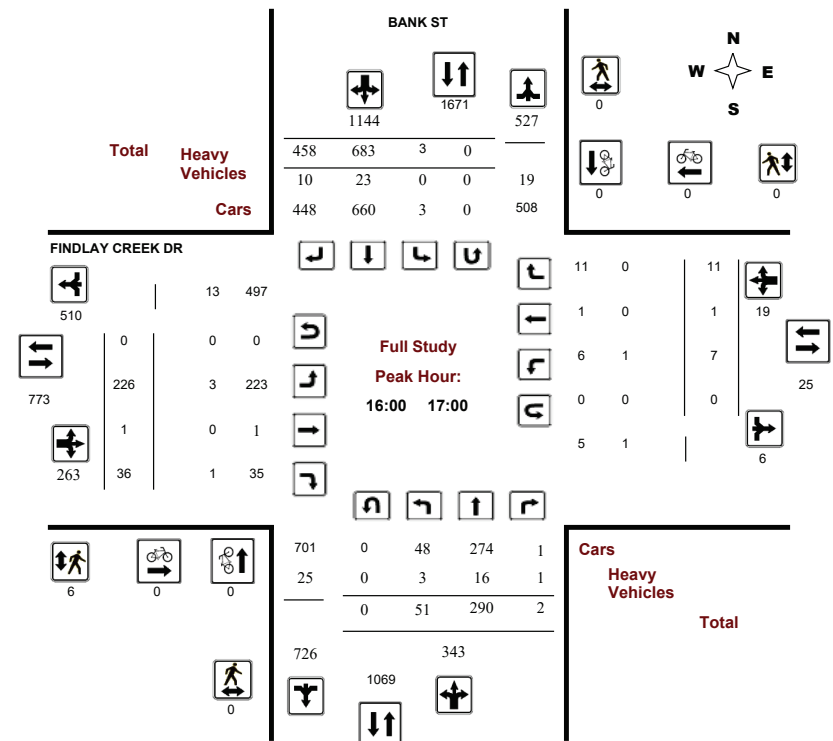
Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

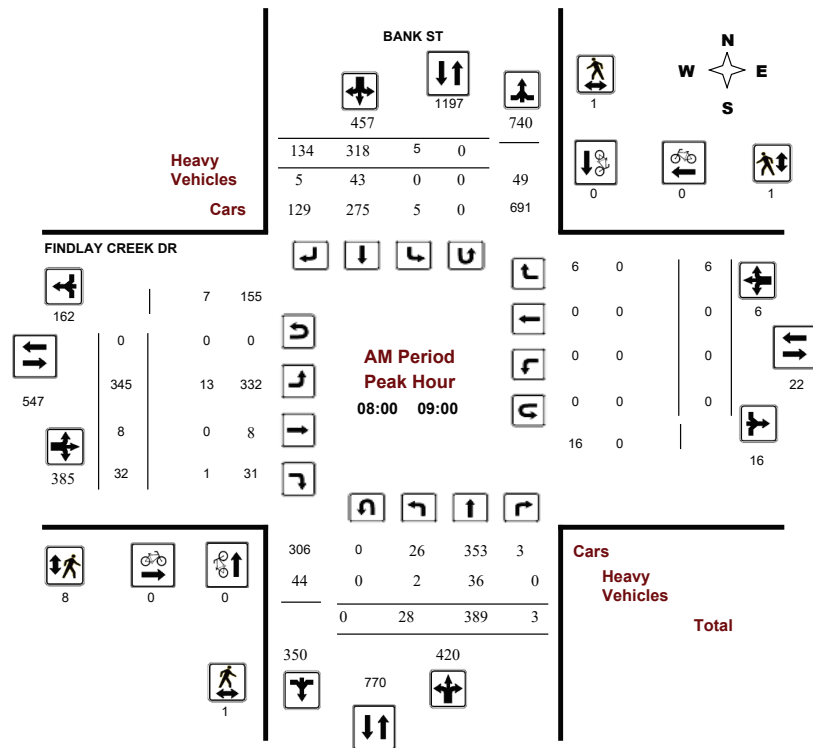
FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

Start Time: 07:00

WO No: 39205

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

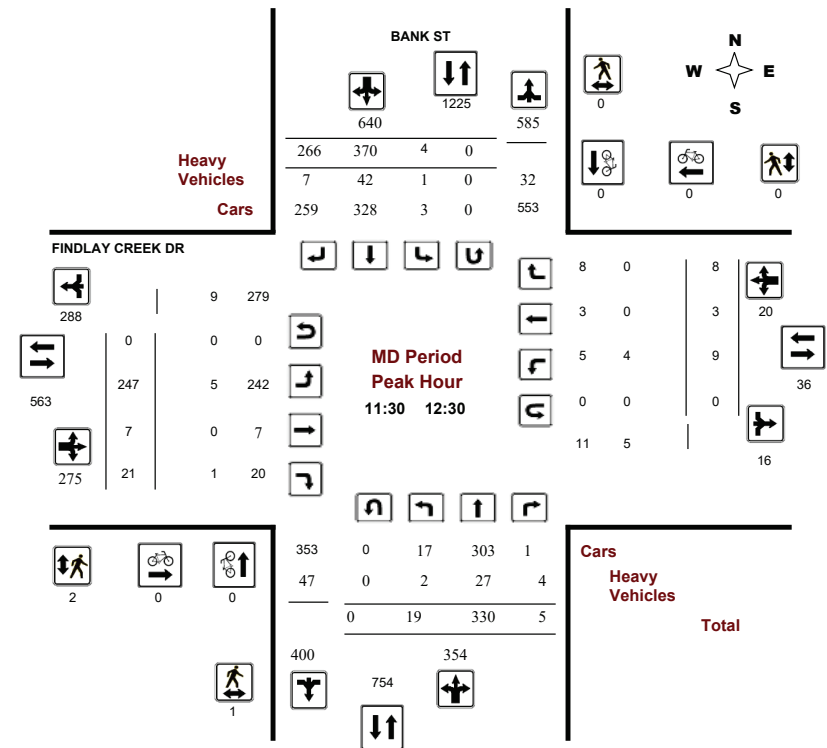
FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

Start Time: 07:00

WO No: 39205

Device: Miovision



Comments

Turning Movement Count - Peak Hour Diagram

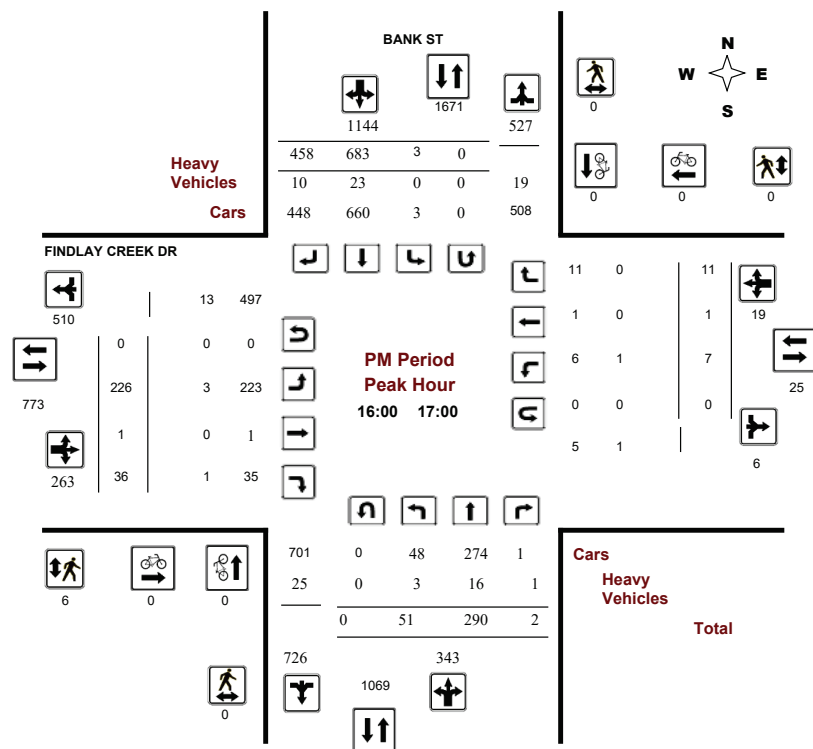
FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

Start Time: 07:00

WO No: 39205

Device: Miovision



Comments

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

Start Time: 07:00

WO No: 39205

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 04, 2019

Total Observed U-Turns

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

AADT Factor

1.00

BANK ST										FINDLAY CREEK DR											
Northbound					Southbound					Eastbound					Westbound						
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total		
07:00-08:00	15	406	1	422	14	289	73	376	798	372	4	22	398	0	1	4	5	403	1201		
08:00-09:00	28	389	3	420	5	318	134	457	877	345	8	32	385	0	0	6	6	391	1268		
09:00-10:00	14	358	3	375	2	261	104	367	742	237	5	20	262	2	3	6	11	273	1015		
11:30-12:30	19	330	5	354	4	370	266	640	994	247	7	21	275	9	3	8	20	295	1289		
12:30-13:30	22	272	9	303	6	377	209	592	895	220	3	23	246	7	1	12	20	266	1161		
15:00-16:00	34	298	2	334	5	577	331	913	1247	240	2	33	275	7	1	10	18	293	1540		
16:00-17:00	51	290	2	343	3	683	458	1144	1487	226	1	36	263	7	1	11	19	282	1769		
17:00-18:00	39	285	0	324	3	521	382	906	1230	210	0	20	230	0	1	3	4	234	1464		
Sub Total	222	2628	25	2875	42	3396	1957	5395	8270	2097	30	207	2334	32	11	60	103	2437	10707		
U Turns	1			1	2			2	3	1			1	0			0	1	4		
Total	223	2628	25	2876	44	3396	1957	5397	8273	2098	30	207	2335	32	11	60	103	2438	10711		
EQ 12Hr	310	3653	35	3998	61	4720	2720	7501	11499	2916	42	288	3246	44	15	83	142	3388	14887		
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39							
AVG 12Hr	310	3653	35	3998	61	4720	2720	7501	11499	2916	42	288	3246	44	15	83	142	3388	14887		
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														1.00							
AVG 24Hr	406	4785	46	5237	80	6183	3563	9826	15063	3820	55	377	4252	58	20	109	187	4439	19502		

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

1.39

AVG 12Hr	310	3653	35	3998	61	4720	2720	7501	11499	2916	4
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46	44
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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

FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period		BANK ST			FINDLAY CREEK DR			Grand Total
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	1	0	1	0	0	0	1
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		1	0	1	0	0	0	1



Transportation Services - Traffic Services

Turning Movement Count - Study Results

FINDLAY CREEK DR @ BANK ST

Survey Date: Wednesday, December 04, 2019

WO No: 39205

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period		BANK ST			FINDLAY CREEK DR			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	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	1	0	1	1	0	1	2
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	3	0	3	3
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	2	0	2	2
08:45	09:00	1	1	2	3	1	4	6
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	1	0	1	1
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	1	0	1	1	0	1	2
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	1	0	1	1
12:30	12:45	0	1	1	1	0	1	2
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	1	1	0	1	1	2
15:30	15:45	0	0	0	5	0	5	5
15:45	16:00	0	0	0	1	0	1	1
16:00	16:15	0	0	0	1	0	1	1
16:15	16:30	0	0	0	3	0	3	3
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	0	0	0	2	0	2	2
17:00	17:15	0	0	0	3	0	3	3
17:15	17:30	0	0	0	4	0	4	4
17:30	17:45	0	0	0	0	2	2	2
17:45	18:00	0	1	1	4	0	4	5
Total		3	4	7	36	4	40	47



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

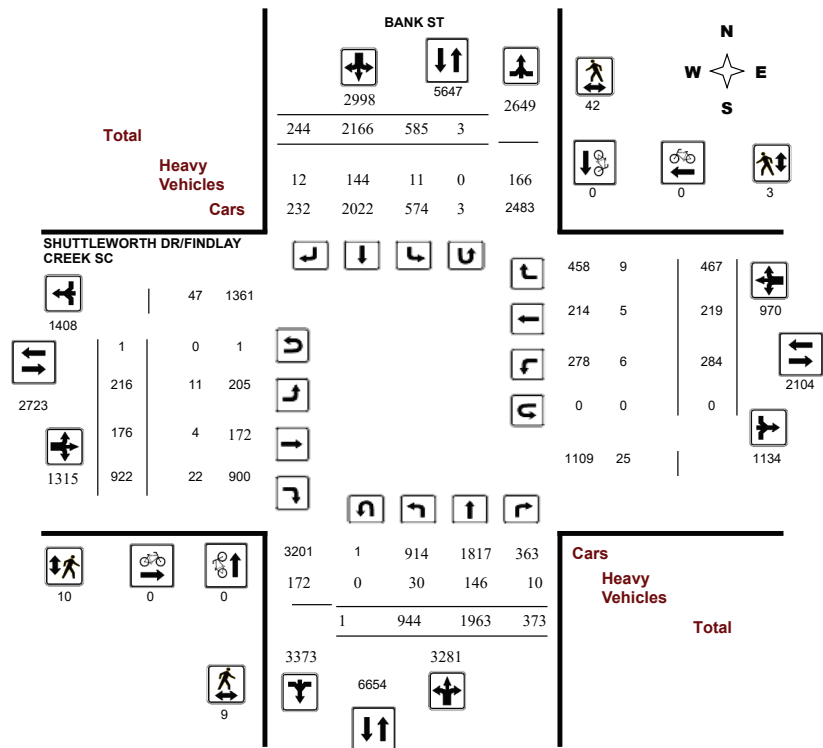
Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

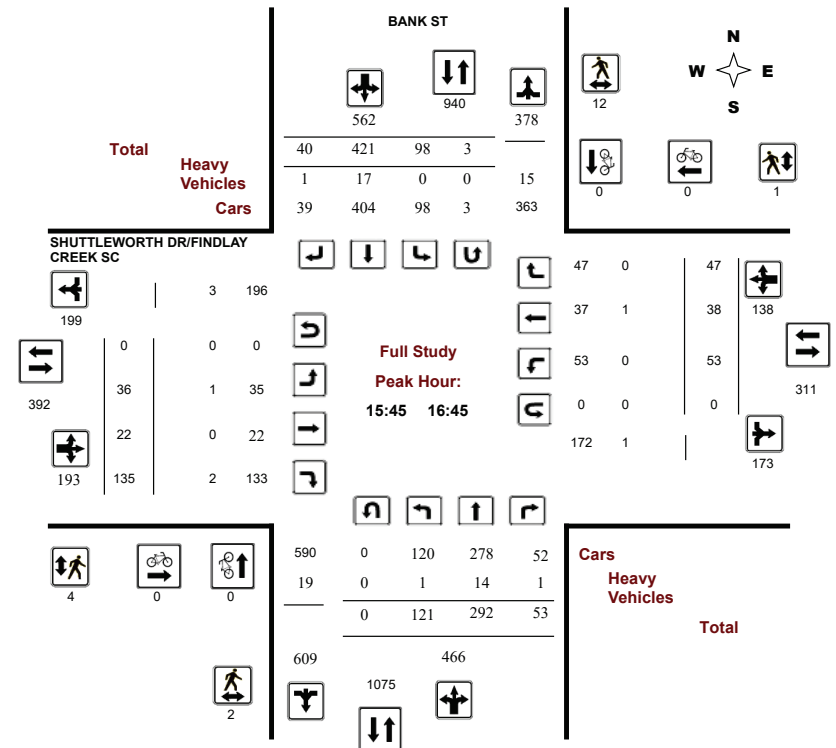
Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

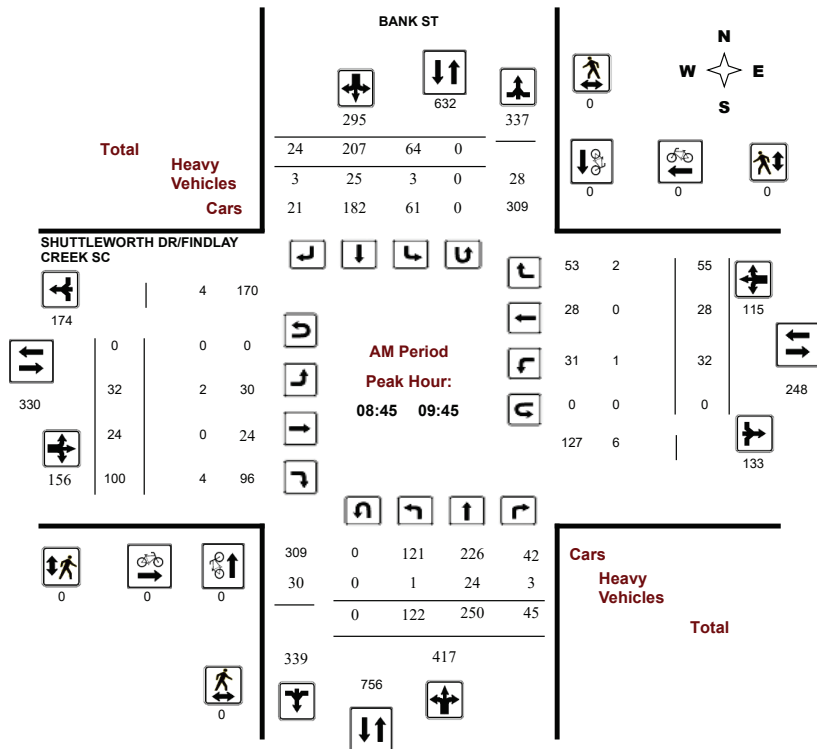
Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

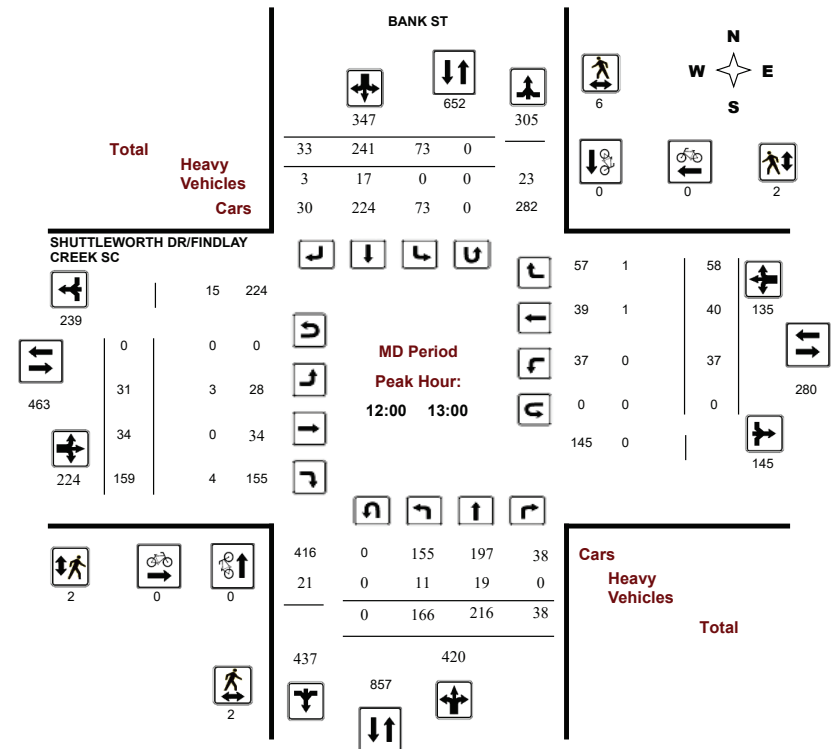
Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

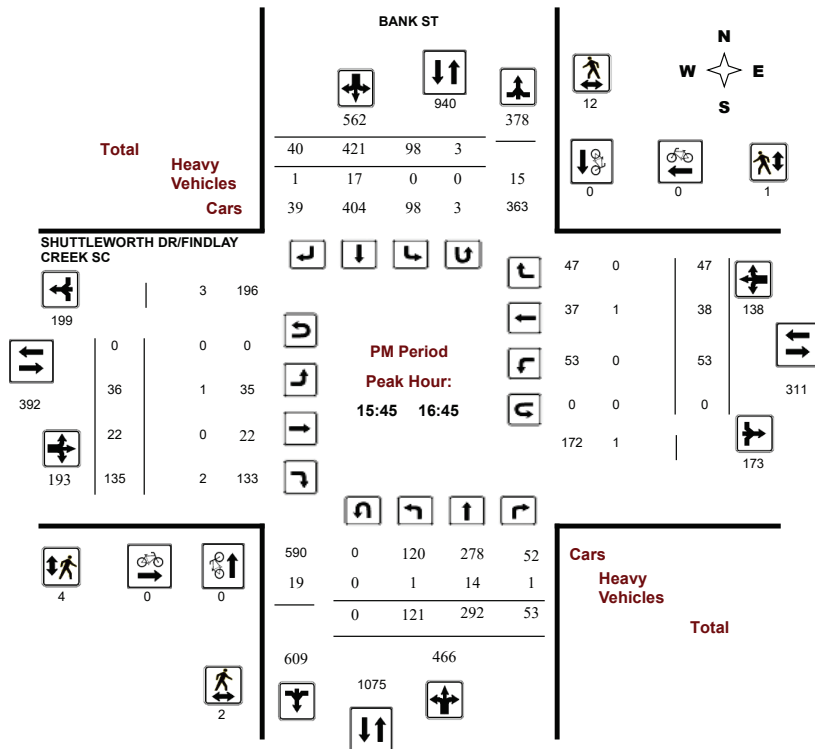
Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, February 23, 2023

Total Observed U-Turns

AADT Factor

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

.90

BANK ST										SHUTTLEWORTH DR/FINDLAY CREEK SC											
Northbound					Southbound					Eastbound						Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total		
07:00 08:00	106	286	44	436	53	162	27	242	678	20	10	71	101	13	12	65	90	191	869		
08:00 09:00	115	267	44	426	62	211	22	295	721	27	20	71	118	25	15	72	112	230	951		
09:00 10:00	105	233	45	383	62	198	18	278	661	23	19	117	159	33	27	49	109	268	929		
11:30 12:30	148	203	50	401	79	228	27	334	735	25	22	135	182	24	36	63	123	305	1040		
12:30 13:30	135	187	40	362	77	244	29	350	712	28	28	146	202	45	27	50	122	324	1036		
15:00 16:00	103	274	44	421	73	371	41	485	906	26	19	124	169	48	29	56	133	302	1208		
16:00 17:00	114	272	56	442	96	422	39	557	999	40	28	134	202	51	34	51	136	338	1337		
17:00 18:00	118	241	50	409	83	330	41	454	863	27	30	124	181	45	39	61	145	326	1189		
Sub Total	944	1963	373	3280	585	2166	244	2995	6275	216	176	922	1314	284	219	467	970	2284	8559		
U Turns				1				3	4				1				0	1	5		
Total	944	1963	373	3281	585	2166	244	2998	6279	216	176	922	1315	284	219	467	970	2285	8564		
EQ 12Hr	1312	2729	518	4561	813	3011	339	4167	8728	300	245	1282	1828	395	304	649	1348	3176	11904		
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39							
AVG 12Hr	1181	2456	466	4105	732	3550	400	3750	7855	270	220	1154	1645	356	274	584	1213	2858	10714		
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														.90							
AVG 24Hr	1547	3217	610	5378	959	4650	524	4912	10290	354	288	1512	2155	466	359	765	1589	3744	14035		



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

		BANK ST		SHUTTLEWORTH DR/FINDLAY CREEK SC			
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)	Grand Total
07:00 07:15		0	0	0	0	0	0
07:15 07:30		0	0	0	0	0	0
07:30 07:45		0	0	0	1	0	1
07:45 08:00		0	0	0	0	0	0
08:00 08:15		0	1	1	0	0	1
08:30 08:45		0	0	0	0	0	0
16:45 17:00		1	1	2	1	0	3
08:15 08:30		1	0	1	0	0	1
08:45 09:00		0	0	0	0	0	0
09:00 09:15		0	0	0	0	0	0
09:15 09:30		0	0	0	0	0	0
09:30 09:45		0	0	0	0	0	0
09:45 10:00		0	0	0	1	0	1
11:30 11:45		0	1	1	0	0	1
11:45 12:00		0	8	8	0	0	8
12:00 12:15		0	3	3	0	2	5
13:00 13:15		0	0	0	0	0	0
17:45 18:00		0	1	1	0	0	1
12:15 12:30		0	0	0	0	0	0
12:30 12:45		2	1	3	2	0	5
12:45 13:00		0	2	2	0	0	2
13:15 13:30		0	4	4	1	0	5
15:00 15:15		1	2	3	0	0	3
15:15 15:30		0	3	3	0	0	3
15:30 15:45		2	1	3	0	0	3
15:45 16:00		0	6	6	0	0	6
16:00 16:15		0	0	0	2	0	2
16:15 16:30		1	4	5	0	0	5
16:30 16:45		1	2	3	2	1	6
17:00 17:15		0	0	0	0	0	0
17:15 17:30		0	1	1	0	0	1
17:30 17:45		0	1	1	0	0	1
Total		9	42	51	10	3	64



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BANK ST										SHUTTLEWORTH DR/FINDLAY CREEK SC									
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	6	0	6	0	2	0	2	8	0	0	1	1	0	0	0	0	1	9
07:15-07:30	1	9	1	11	0	3	0	3	14	0	0	1	1	0	0	0	0	1	15
07:30-07:45	2	5	0	7	0	4	1	5	12	0	0	0	0	0	0	1	1	1	13
07:45-08:00	0	4	0	4	3	9	1	13	17	1	0	1	2	0	0	0	0	2	19
08:00-08:15	5	6	0	11	0	5	1	6	17	0	1	0	1	1	0	0	1	2	19
08:30-08:45	1	6	0	7	0	3	0	3	10	0	0	1	1	0	0	0	0	1	11
16:45-17:00	0	2	1	3	0	1	0	1	4	1	0	0	1	0	1	0	1	2	6
08:15-08:30	0	8	1	9	1	11	0	12	21	0	0	1	1	1	1	1	3	4	25
08:45-09:00	0	6	1	7	0	6	0	6	13	1	0	0	1	0	0	1	1	2	15
09:00-09:15	0	10	1	11	0	9	1	10	21	0	0	0	0	0	0	0	0	0	21
09:15-09:30	0	2	0	2	0	4	1	5	7	0	0	3	3	0	0	1	1	4	11
09:30-09:45	1	6	1	8	3	6	1	10	18	1	0	1	2	1	0	0	1	3	21
09:45-10:00	1	10	0	11	1	4	0	5	16	0	0	4	4	1	0	0	1	5	21
11:30-11:45	2	4	0	6	0	8	0	8	14	0	0	0	0	0	0	1	1	1	15
11:45-12:00	0	2	1	3	0	3	1	4	7	1	1	0	2	1	0	0	1	3	10
12:00-12:15	1	6	0	7	0	5	0	5	12	0	0	0	0	0	0	1	1	1	13
13:00-13:15	0	2	2	4	1	7	0	8	12	2	0	0	2	1	1	0	2	4	16
17:45-18:00	0	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
12:15-12:30	4	3	0	7	0	2	0	2	9	2	0	1	3	0	1	0	1	4	13
12:30-12:45	4	7	0	11	0	2	1	3	14	1	0	0	1	0	0	0	0	1	15
12:45-13:00	2	3	0	5	0	8	2	10	15	0	0	3	3	0	0	0	0	3	18
13:15-13:30	2	5	0	7	2	3	0	5	12	0	0	0	0	0	0	1	1	1	13
15:00-15:15	0	2	0	2	0	2	0	2	4	0	1	1	2	0	0	1	1	3	7
15:15-15:30	1	2	0	3	0	9	0	9	12	0	0	0	0	0	0	1	1	1	13
15:30-15:45	2	6	0	8	0	4	1	5	13	0	0	1	1	0	0	0	0	1	14
15:45-16:00	0	6	0	6	0	6	0	6	12	0	0	1	1	0	0	0	0	1	13
16:00-16:15	0	2	0	2	0	5	0	5	7	0	0	0	0	0	0	0	0	0	7
16:15-16:30	0	2	1	3	0	5	0	5	8	0	0	0	0	0	1	0	1	1	9
16:30-16:45	1	4	0	5	0	1	1	2	7	1	0	1	2	0	0	0	0	2	9
17:00-17:15	0	3	0	3	0	2	0	2	5	0	0	1	1	0	0	0	0	1	6
17:15-17:30	0	2	0	2	0	2	0	2	4	0	0	0	0	0	0	0	0	0	4
17:30-17:45	0	3	0	3	0	3	0	3	6	0	1	0	1	0	0	0	0	1	7
Total: None	30	146	10	186	11	144	12	167	353	11	4	22	37	6	5	9	20	57	410



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC

Survey Date: Thursday, February 23, 2023

WO No: 40800

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		BANK ST		SHUTTLEWORTH DR/FINDLAY CREEK SC		Total
Time Period		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	1	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
08:30	08:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
08:15	08:30	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
13:00	13:15	0	0	0	0	0
17:45	18:00	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
13:15	13:30	0	0	0	0	0
15:00	15:15	1	0	0	0	1
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	1	0	0	1
16:00	16:15	0	2	0	0	2
16:15	16:30	0	0	0	0	0
16:30	16:45	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
Total		1	3	1	0	5



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ BANK ST

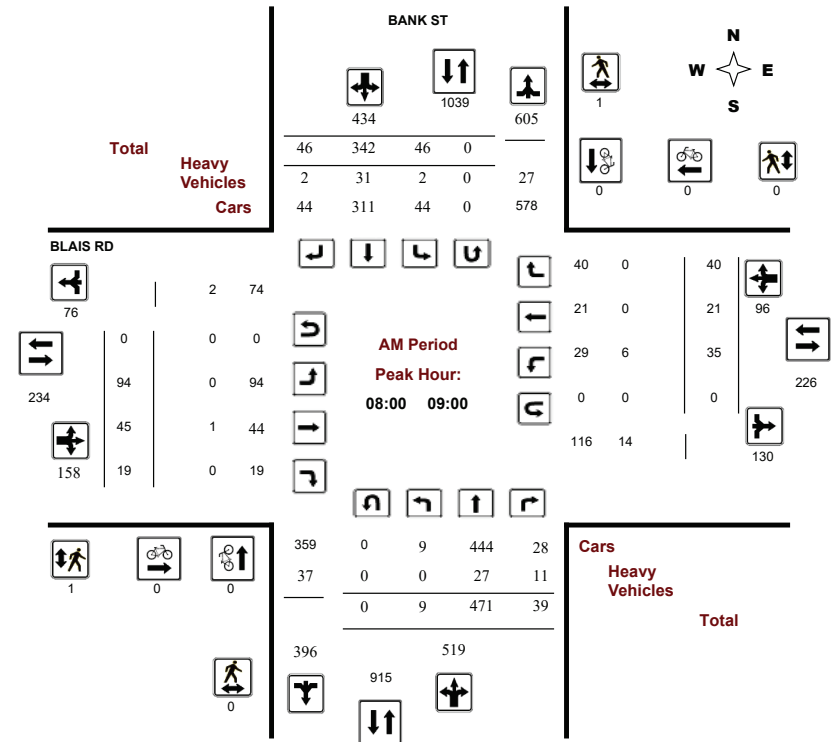
Survey Date: Thursday, July 06, 2023

WO No: 41064

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ BANK ST

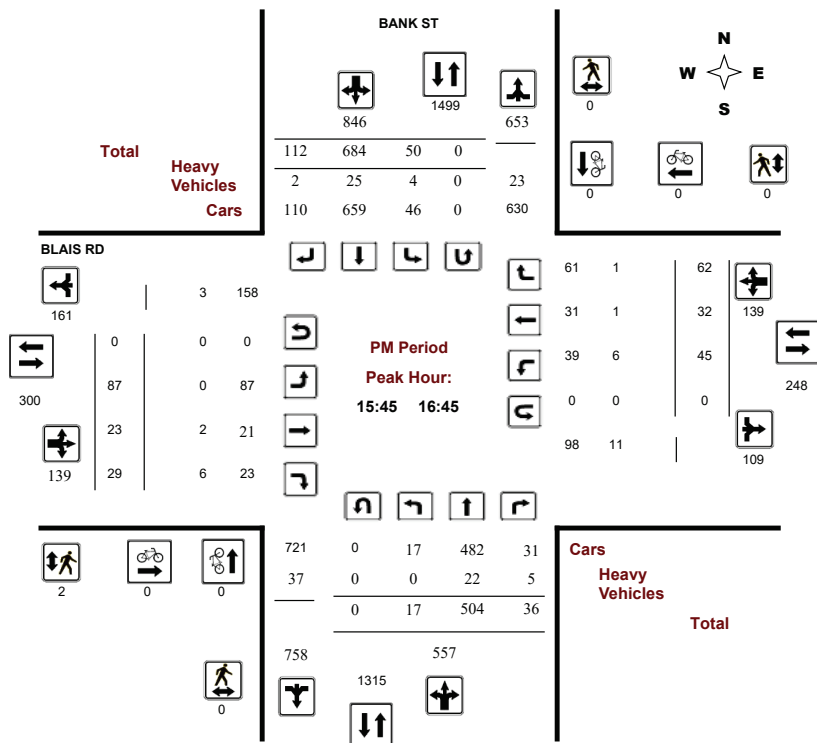
Survey Date: Thursday, July 06, 2023

WO No: 41064

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

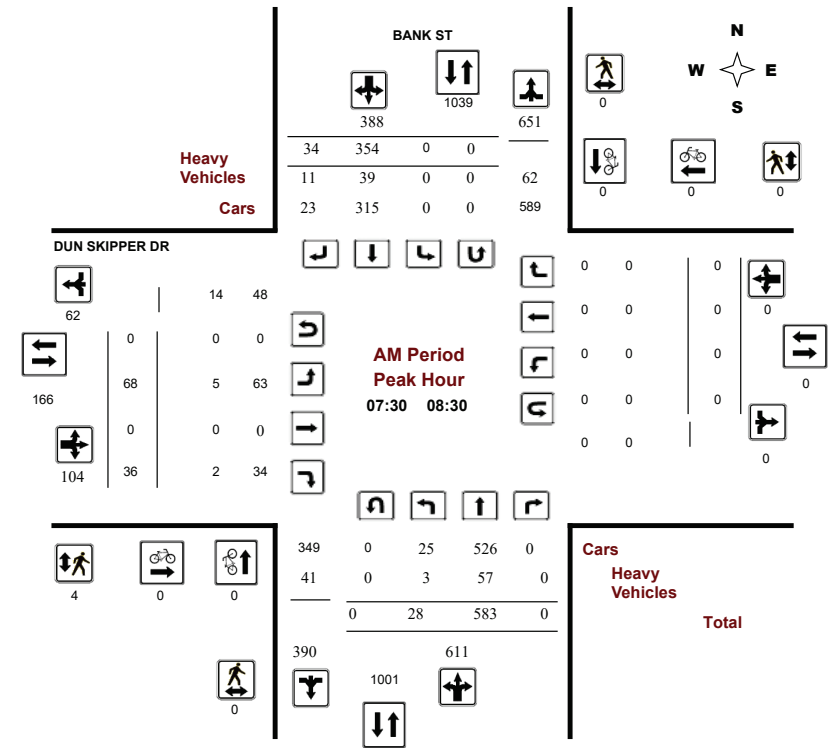
BANK ST @ DUN SKIPPER DR

Survey Date: Thursday, September 14, 2023

WO No: 41167

Start Time: 07:00

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

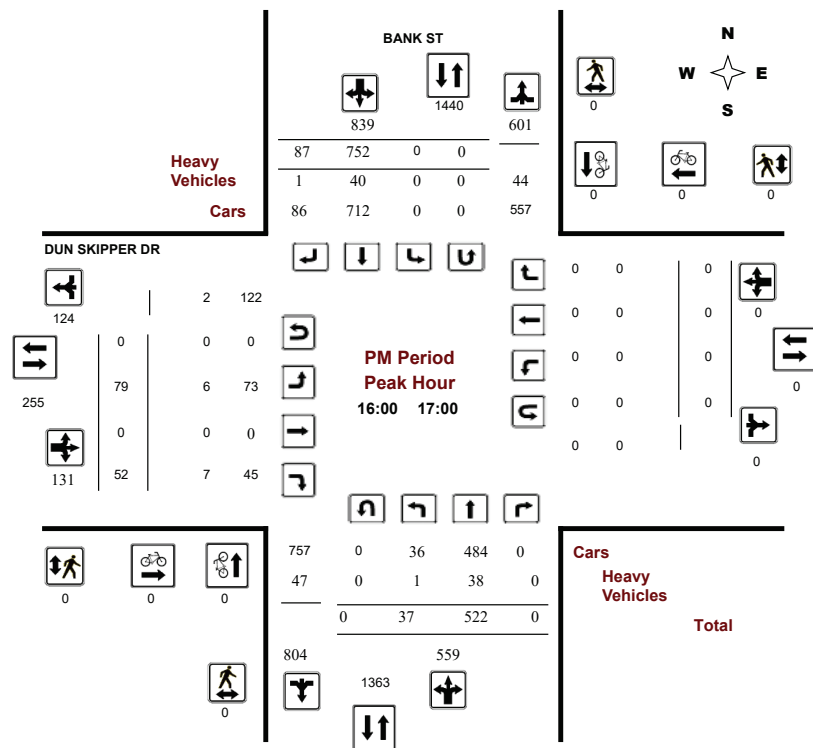
BANK ST @ DUN SKIPPER DR

Survey Date: Thursday, September 14, 2023

Start Time: 07:00

WO No: 41167

Device: Miovision



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

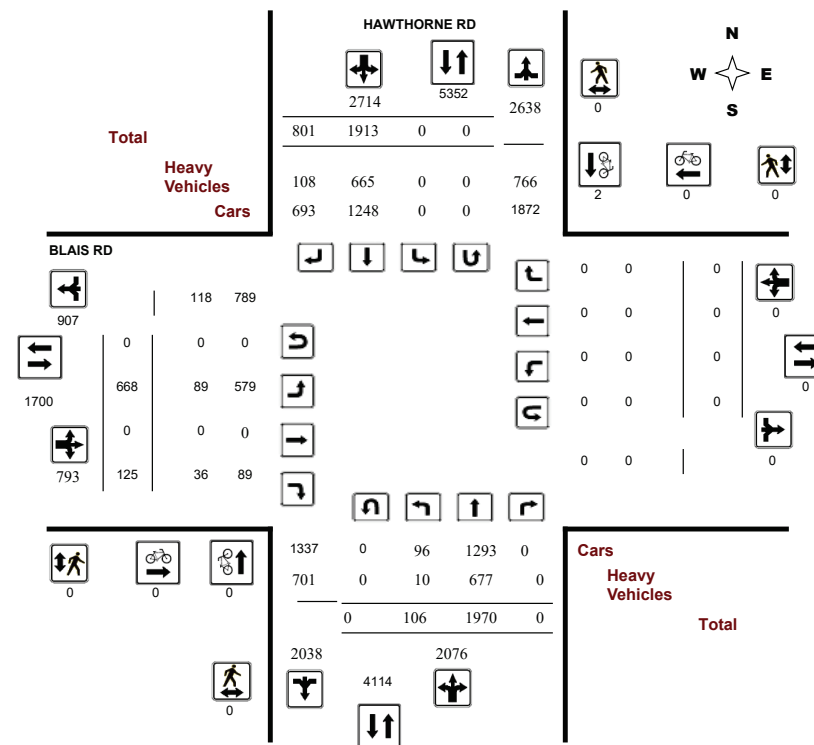
Survey Date: Thursday, September 29, 2022

Start Time: 07:00

WO No: 40589

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

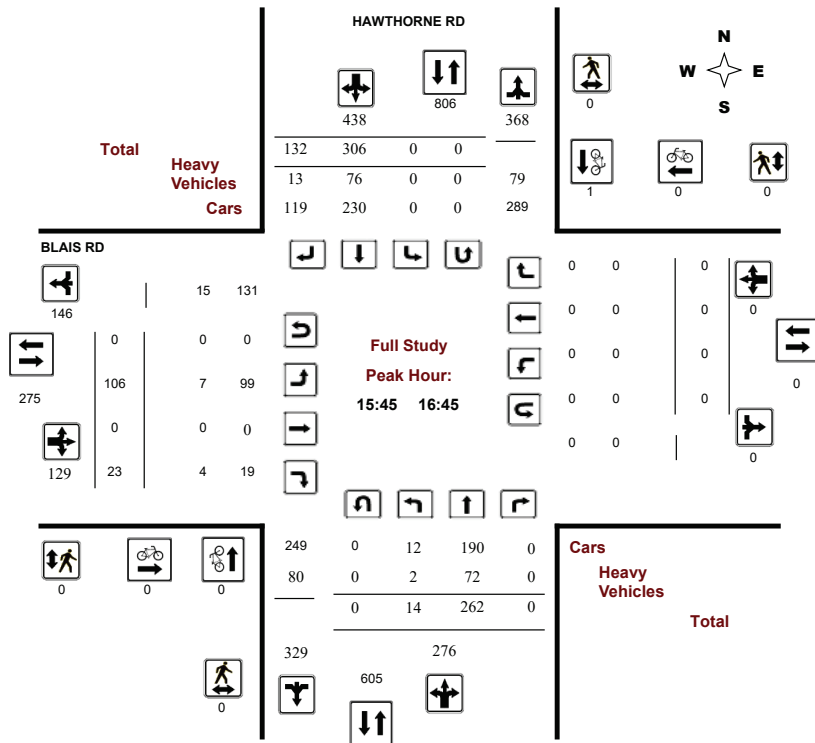
Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

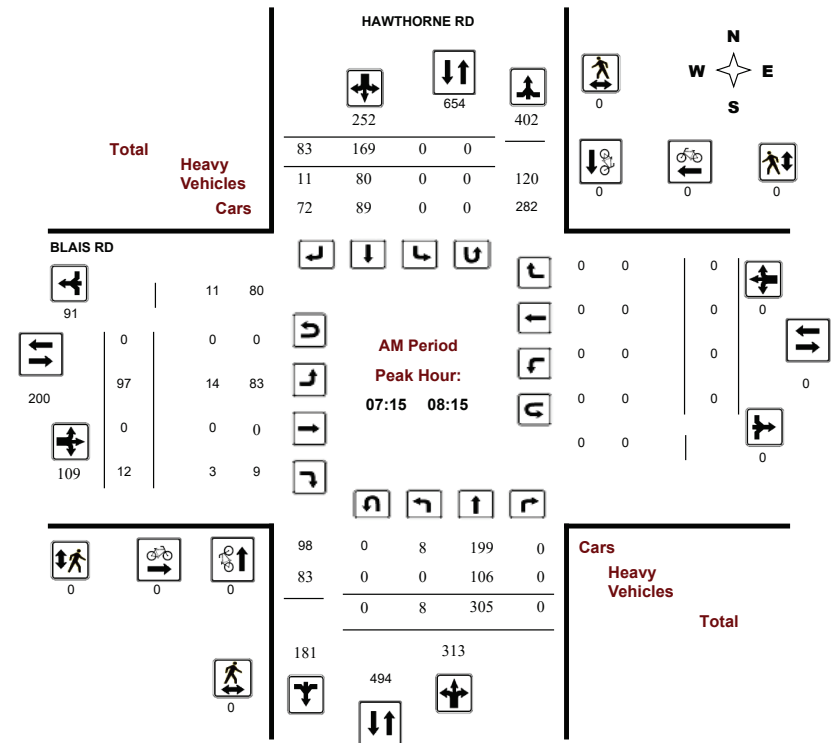
Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

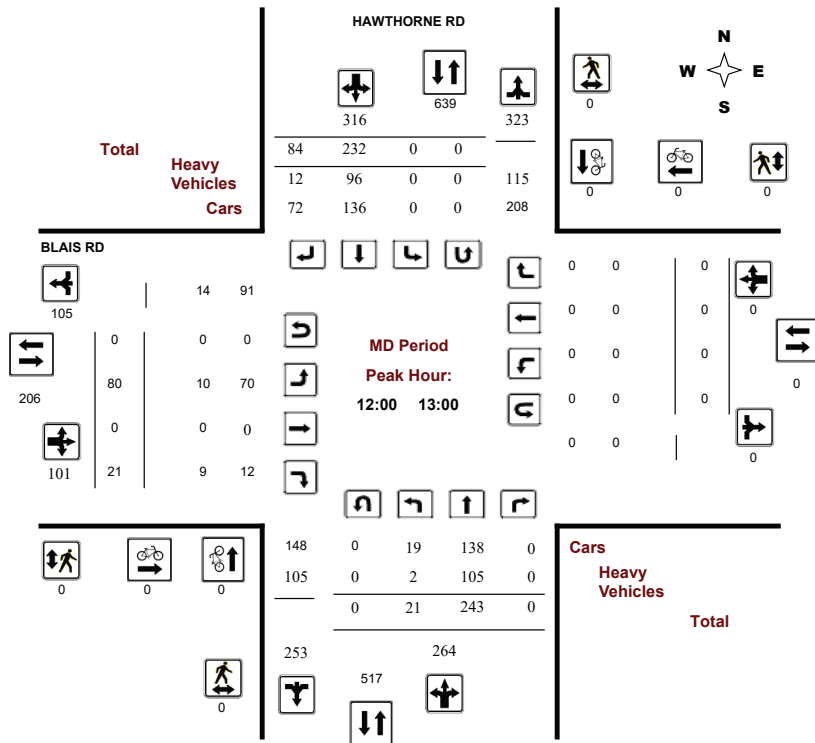
Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

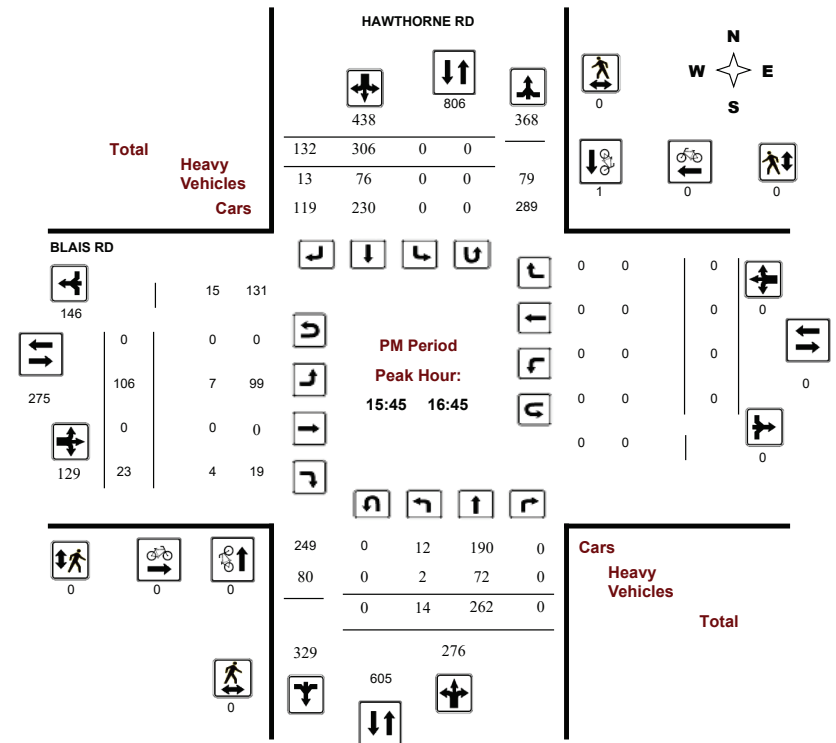
Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, September 29, 2022

Total Observed U-Turns

AADT Factor

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

1.00

HAWTHORNE RD										BLAIS RD												
Northbound					Southbound					Eastbound					Westbound					WB TOT	STR TOT	Grand Total
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT						
07:00 08:00	6	284	0	290	0	181	86	267	557	97	0	14	111	0	0	0	0	111	668			
08:00 09:00	13	275	0	288	0	196	81	277	565	77	0	12	89	0	0	0	0	89	654			
09:00 10:00	10	232	0	242	0	204	86	290	532	68	0	16	84	0	0	0	0	84	616			
11:30 12:30	14	235	0	249	0	229	94	323	572	66	0	17	83	0	0	0	0	83	655			
12:30 13:30	19	231	0	250	0	220	82	302	552	88	0	18	106	0	0	0	0	106	658			
15:00 16:00	9	236	0	245	0	295	132	427	672	91	0	14	105	0	0	0	0	105	777			
16:00 17:00	18	257	0	275	0	306	132	438	713	92	0	25	117	0	0	0	0	117	830			
17:00 18:00	17	220	0	237	0	282	108	390	627	89	0	9	98	0	0	0	0	98	725			
Sub Total	106	1970	0	2076	0	1913	801	2714	4790	668	0	125	793	0	0	0	0	793	5583			
U Turns				0				0	0				0					0	0			
Total	106	1970	0	2076	0	1913	801	2714	4790	668	0	125	793	0	0	0	0	793	5583			
EQ 12Hr	147	2738	0	2886	0	2659	1113	3772	6658	929	0	174	1102	0	0	0	0	1102	7760			
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39								
AVG 12Hr	147	2738	0	2886	0	3483	1459	3772	6658	929	0	174	1102	0	0	0	0	1102	7760			
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														1.00								
AVG 24Hr	193	3587	0	3781	0	4563	1911	4941	8722	1217	0	228	1444	0	0	0	0	1444	10166			
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

BLAIS RD @ HAWTHORNE RD

Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

HAWTHORNE RD										BLAIS RD									
Northbound				Southbound				Eastbound				Westbound				W TOT	STR TOT	Grand Total	
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT			
07:00 07:15	1	52	0	53	0	57	22	79	132	20	0	4	24	0	0	0	24	156	
07:15 07:30	1	79	0	80	0	52	21	73	153	26	0	4	30	0	0	0	30	183	
07:30 07:45	1	79	0	80	0	42	20	62	142	25	0	2	27	0	0	0	27	169	
09:45 10:00	1	58	0	59	0	52	15	67	126	15	0	7	22	0	0	0	22	148	
12:45 13:00	3	71	0	74	0	64	22	86	160	23	0	6	29	0	0	0	29	189	
15:30 15:45	4	58	0	62	0	71	30	101	163	21	0	6	27	0	0	0	27	190	
16:15 16:30	2	74	0	76	0	70	40	110	186	20	0	6	26	0	0	0	26	212	
17:45 18:00	7	34	0	41	0	53	28	81	122	14	0	2	16	0	0	0	16	138	
07:45 08:00	3	74	0	77	0	30	23	53	130	26	0	4	30	0	0	0	30	160	
08:00 08:15	3	73	0	76	0	45	19	64	140	20	0	2	22	0	0	0	22	162	
08:15 08:30	5	80	0	85	0	49	23	72	157	19	0	4	23	0	0	0	23	180	
08:30 08:45	2	63	0	65	0	41	25	66	131	20	0	5	25	0	0	0	25	156	
08:45 09:00	3	59	0	62	0	61	14	75	137	18	0	1	19	0	0	0	19	156	
09:00 09:15	1	55	0	56	0	61	27	88	144	19	0	3	22	0	0	0	22	166	
09:15 09:30	4	62	0	66	0	48	23	71	137	18	0	2	20	0	0	0	20	157	
09:30 09:45	4	57	0	61	0	43	21	64	125	16	0	4	20	0	0	0	20	145	
11:30 11:45	1	70	0	71	0	47	34	81	152	11	0	3	14	0	0	0	14	166	
11:45 12:00	0	53	0	53	0	65	22	87	140	14	0	2	16	0	0	0	16	156	
12:00 12:15	2	53	0	55	0	63	17	80	135	20	0	6	26	0	0	0	26	161	
12:15 12:30	11	59	0	70	0	54	21	75	145	21	0	6	27	0	0	0	27	172	
12:30 12:45	5	60	0	65	0	51	24	75	140	16	0	3	19	0	0	0	19	159	
13:00 13:15	7	47	0	54	0	51	23	74	128	24	0	6	30	0	0	0	30	158	
13:15 13:30	4	53	0	57	0	54	13	67	124	25	0	3	28	0	0	0	28	152	
15:00 15:15	1	58	0	59	0	63	35	98	157	23	0	3	26	0	0	0	26	183	
15:15 15:30	2	60	0	62	0	79	33	112	174	15	0	2	17	0	0	0	17	191	
15:45 16:00	2	60	0	62	0	82	34	116	178	32	0	3	35	0	0	0	35	213	
16:00 16:15	4	76	0	80	0	75	28	103	183	26	0	8	34	0	0	0	34	217	
16:30 16:45	6	52	0	58	0	79	30	109	167	28	0	6	34	0	0	0	34	201	
16:45 17:00	6	55	0	61	0	82	34	116	177	18	0	5	23	0	0	0	23	200	
17:00 17:15	2	69	0	71	0	84	28	112	183	32	0	4	36	0	0	0	36	219	
17:15 17:30	3	69	0	72	0	80	28	108	180	26	0	1	27	0	0	0	27	207	
17:30 17:45	5	48	0	53	0	65	24	89	142	17	0	2	19	0	0	0	19	161	
Total:	106	1970	0	2076	0	1913	801	2714	4790	668	0	125	793	0	0	0	793	5,583	

Note: U-Turns are included in Totals, cyclist volume is not included in totals. For cyclist volumes refer to Cyclist Volume report.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BLAIS RD @ HAWTHORNE RD

Survey Date: Thursday, September 29, 2022

WO No: 40589

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

HAWTHORNE RD				BLAIS RD			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

Existing
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	15	5	150	3	2	811	531	3	279	3
Future Volume (vph)	15	5	150	3	2	811	531	3	279	3
Lane Group Flow (vph)	17	9	167	4	2	901	590	3	310	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2		6		6
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.5	36.5	36.3	36.3	41.6	41.6	41.6	41.6	41.6	41.6
Total Split (s)	28.5	26.5	26.3	26.3	66.6	66.6	66.6	66.6	66.6	66.6
Total Split (%)	28.5%	28.5%	28.2%	28.2%	71.5%	71.5%	71.5%	71.5%	71.5%	71.5%
Maximum Green (s)	20.0	20.0	20.0	20.0	60.0	60.0	60.0	60.0	60.0	60.0
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	10.3	10.3	10.5	10.5	23.7	23.7	23.7	23.7	23.7	23.7
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.50	0.50	0.50	0.50	0.50	0.50
v/c Ratio	0.07	0.02	0.31	0.01	0.00	0.55	0.58	0.01	0.19	0.00
Control Delay	16.2	13.8	17.4	14.5	6.0	9.6	3.3	6.0	6.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	13.8	17.4	14.5	6.0	9.6	3.3	6.0	6.9	0.0
LOS	B	B	B	B	A	A	A	A	A	A
Approach Delay		15.4		17.3		7.1			6.8	
Approach LOS		B		B		A			A	
Queue Length 50th (m)	1.0	0.3	5.1	0.2	0.1	23.6	0.0	0.1	6.5	0.0
Queue Length 95th (m)	5.3	3.3	13.6	2.1	0.8	37.3	11.0	1.0	11.8	0.0
Internal Link Dist (m)		337.1		495.4		635.1		726.8		
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	499	710	1038	620	982	3283	1455	511	3191	1483
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.16	0.01	0.00	0.27	0.41	0.01	0.10	0.00

Intersection Summary

Cycle Length: 93.1
Actuated Cycle Length: 47.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
Page 1

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

Existing
AM Peak Hour

Maximum v/c Ratio: 0.58	Intersection LOS: A
Intersection Signal Delay: 8.0	ICU Level of Service C
Intersection Capacity Utilization 67.8%	
Analysis Period (min) 15	

Splits and Phases: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leitrin

Existing
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	225	275	12	100	244	147	36	954	49	314	70
Future Volume (vph)	225	275	12	100	244	147	36	954	49	314	70
Lane Group Flow (vph)	0	556	13	111	271	163	40	1223	54	349	78
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4			8		5	2	1	6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	8	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	40.5	40.5	40.5	11.1	31.3	11.1	31.3	31.3
Total Split (s)	52.0	52.0	52.0	52.0	52.0	52.0	12.0	46.0	12.0	46.0	46.0
Total Split (%)	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	10.9%	41.8%	10.9%	41.8%	41.8%
Maximum Green (s)	45.5	45.5	45.5	45.5	45.5	45.5	5.9	39.7	5.9	39.7	39.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3
Lead/Lag							Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							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
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0		7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0	27.0	27.0	27.0		18.0		18.0	18.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0		1	1
Act Effct Green (s)		45.5	45.5	45.5	45.5	45.5	47.0	42.1	48.2	44.5	44.5
Actuated g/C Ratio		0.41	0.41	0.41	0.41	0.41	0.43	0.38	0.44	0.40	0.40
v/c Ratio		1.20	0.02	0.71	0.40	0.23	0.10	0.98	0.36	0.27	0.14
Control Delay		141.6	0.1	54.3	24.9	4.3	18.1	52.5	22.9	23.8	3.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		141.6	0.1	54.3	24.9	4.3	18.1	52.5	22.9	23.8	3.9
LOS		F	A	D	C	A	B	D	C	C	A
Approach Delay		138.3			24.8			51.5		20.5	
Approach LOS		F			C			D		C	
Queue Length 50th (m)		~145.5	0.0	19.4	40.1	0.5	5.0	~147.6	6.1	28.0	0.0
Queue Length 95th (m)		#210.0	0.0	#49.5	61.8	12.7	m7.8	#189.8	13.1	39.7	7.1
Internal Link Dist (m)		294.2			585.8			270.9		635.1	
Turn Bay Length (m)			8.0	45.0		35.0	105.0		75.0		150.0
Base Capacity (vph)		462	571	156	675	706	383	1242	153	1278	577
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		1.20	0.02	0.71	0.40	0.23	0.10	0.98	0.35	0.27	0.14

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 52 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

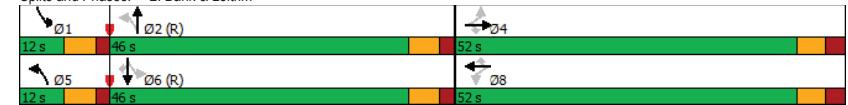
CGH Transportation
Page 3

Lanes, Volumes, Timings
2: Bank & Leitrin

Existing
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.20	
Intersection Signal Delay: 58.5	Intersection LOS: E
Intersection Capacity Utilization 100.1%	ICU Level of Service G
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Rotary

Existing
AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	16	71	993	8	29	377
Future Volume (vph)	16	71	993	8	29	377
Lane Group Flow (vph)	18	79	1103	9	32	419
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.3	27.3	26.6	26.6	26.6	26.6
Total Split (s)	34.0	34.0	76.0	76.0	76.0	76.0
Total Split (%)	30.9%	30.9%	69.1%	69.1%	69.1%	69.1%
Maximum Green (s)	27.7	27.7	69.4	69.4	69.4	69.4
Yellow Time (s)	3.3	3.3	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.6	6.6	6.6	6.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	14.0	14.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	0	0	1	1	0	0
Act Effct Green (s)	10.1	10.1	91.6	91.6	91.6	91.6
Actuated g/C Ratio	0.09	0.09	0.83	0.83	0.83	0.83
v/c Ratio	0.12	0.38	0.77	0.01	0.12	0.31
Control Delay	47.9	16.2	8.8	1.8	2.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	16.2	8.8	1.8	2.2	3.6
LOS	D	B	A	A	A	A
Approach Delay	22.1		8.7			3.5
Approach LOS	C		A			A
Queue Length 50th (m)	3.6	0.0	62.5	0.2	0.7	22.1
Queue Length 95th (m)	10.6	14.1	149.0	m0.4	m1.2	30.3
Internal Link Dist (m)	560.7		439.0			122.3
Turn Bay Length (m)	40.0			80.0	75.0	
Base Capacity (vph)	409	432	1425	1208	262	1360
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.18	0.77	0.01	0.12	0.31
Intersection Summary						
Cycle Length: 110						
Actuated Cycle Length: 110						
Offset: 50 (45%), Referenced to phase 2:NBT and 6:SBTL, Start of Green						
Natural Cycle: 90						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

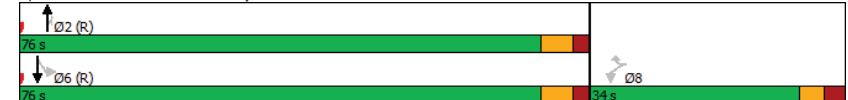
CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Rotary

Existing
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 8.1
Intersection LOS: A
Intersection Capacity Utilization 74.3%
ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank & Rotary



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

Existing
AM Peak Hour

	↖	→	↗	↖	↖	↑	↓	↗
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↑	↑	↗
Traffic Volume (vph)	217	0	2	0	1	710	364	20
Future Volume (vph)	217	0	2	0	1	710	364	20
Lane Group Flow (vph)	241	7	2	4	1	790	404	22
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
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)	29.0	29.0	29.0	29.0	25.2	25.2	25.2	25.2
Total Split (s)	37.0	37.0	37.0	37.0	73.0	73.0	73.0	73.0
Total Split (%)	33.6%	33.6%	33.6%	33.6%	66.4%	66.4%	66.4%	66.4%
Maximum Green (s)	31.0	31.0	31.0	31.0	66.8	66.8	66.8	66.8
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	2.7	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2	6.2	6.2
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)	16.0	16.0	16.0	16.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	6	6	7	7	6	6	2	2
Act Effct Green (s)	24.8	24.8	24.8	24.8	73.0	73.0	73.0	73.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.66	0.66	0.66	0.66
v/c Ratio	0.83	0.01	0.01	0.01	0.00	0.70	0.38	0.02
Control Delay	62.7	0.0	29.5	0.0	5.0	8.6	7.3	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	0.0	29.5	0.0	5.0	8.6	7.3	1.7
LOS	E	A	C	A	A	A	A	A
Approach Delay		61.0		9.8		8.6	7.0	
Approach LOS		E		A		A	A	
Queue Length 50th (m)	49.0	0.0	0.3	0.0	0.0	32.6	15.6	0.1
Queue Length 95th (m)	73.4	0.0	2.2	0.0	m0.1	129.1	47.8	1.5
Internal Link Dist (m)		264.9		519.4		373.7	439.0	
Turn Bay Length (m)	25.0		20.0		75.0			65.0
Base Capacity (vph)	365	734	364	542	568	1125	1064	933
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	0.66	0.01	0.01	0.01	0.00	0.70	0.38	0.02
Intersection Summary								
Cycle Length: 110								
Actuated Cycle Length: 110								
Offset: 58 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 75								

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

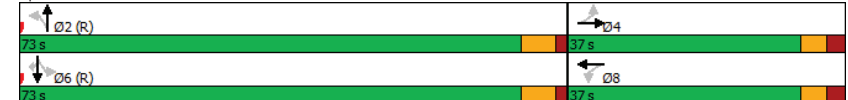
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

Existing
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 16.9
Intersection LOS: B
Intersection Capacity Utilization 69.0%
ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Bank & White Alder/Analdea



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

Existing
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	365	21	18	347	297	75
Future Volume (vph)	365	21	18	347	297	75
Lane Group Flow (vph)	406	23	20	386	330	83
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.3	32.3	36.7	36.7	36.7	36.7
Total Split (s)	41.0	41.0	69.0	69.0	69.0	69.0
Total Split (%)	37.3%	37.3%	62.7%	62.7%	62.7%	62.7%
Maximum Green (s)	34.7	34.7	62.3	62.3	62.3	62.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	19.0	19.0	23.0	23.0	23.0	23.0
Pedestrian Calls (#/hr)	1	1	1	1	8	8
Act Effct Green (s)	31.8	31.8	65.2	65.2	65.2	65.2
Actuated g/C Ratio	0.29	0.29	0.59	0.59	0.59	0.59
v/c Ratio	0.90	0.05	0.04	0.41	0.36	0.10
Control Delay	61.3	10.4	10.8	14.4	3.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	10.4	10.8	14.4	3.9	0.7
LOS	E	B	B	B	A	A
Approach Delay	58.6			14.2	3.3	
Approach LOS	E			B	A	
Queue Length 50th (m)	80.6	0.0	1.8	44.6	26.7	1.6
Queue Length 95th (m)	#129.7	5.7	5.3	67.0	3.5	0.0
Internal Link Dist (m)	430.4			298.5	373.7	
Turn Bay Length (m)		95.0	60.0			120.0
Base Capacity (vph)	492	473	529	941	908	866
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.05	0.04	0.41	0.36	0.10
Intersection Summary						
Cycle Length: 110						
Actuated Cycle Length: 110						
Offset: 82 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Green						
Natural Cycle: 70						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

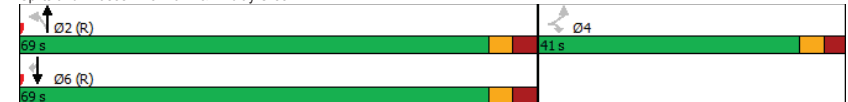
CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

Existing
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 25.8	Intersection LOS: C
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 5: Bank & Findlay Creek



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
6: Bank & Cowan's Grove Plaza

Existing
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	32	102	182	363	294	24
Future Volume (vph)	32	102	182	363	294	24
Lane Group Flow (vph)	36	113	202	403	327	27
Turn Type	Perm	Perm	Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	11.4	26.9	26.9	26.9
Total Split (s)	33.0	33.0	20.0	67.0	67.0	67.0
Total Split (%)	27.5%	27.5%	16.7%	55.8%	55.8%	55.8%
Maximum Green (s)	26.0	26.0	13.6	60.1	60.1	60.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.1	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	6.4	6.9	6.9	6.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		13.0	13.0	13.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	10.4	10.4	24.4	95.7	64.9	64.9
Actuated g/C Ratio	0.09	0.09	0.20	0.80	0.54	0.54
v/c Ratio	0.26	0.49	0.60	0.31	0.38	0.04
Control Delay	56.0	17.1	51.5	4.0	17.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	17.1	51.5	4.0	17.9	5.1
LOS	E	B	D	A	B	A
Approach Delay	26.5			19.9	16.9	
Approach LOS	C			B	B	
Queue Length 50th (m)	8.1	0.0	43.9	20.3	41.7	0.0
Queue Length 95th (m)	18.4	17.0	66.9	32.7	67.9	4.6
Internal Link Dist (m)	108.4			469.4	298.5	
Turn Bay Length (m)		150.0	80.0			130.0
Base Capacity (vph)	345	403	337	1290	859	736
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.28	0.60	0.31	0.38	0.04
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 104 (87%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 75						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

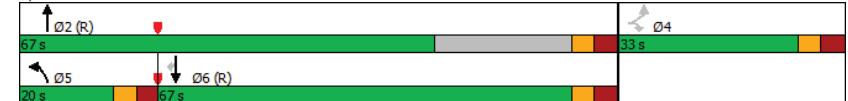
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Lanes, Volumes, Timings
6: Bank & Cowan's Grove Plaza

Existing
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Bank & Cowan's Grove Plaza



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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HCM 2010 TWSC
8: Bank & Blais

Existing
AM Peak Hour

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	2	0	1	6	0	7	0	536	8	24	277	0
Future Vol, veh/h	2	0	1	6	0	7	0	536	8	24	277	0
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	15	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	17	2	2	2	6	28	4	9	4
Mvmt Flow	2	0	1	7	0	8	0	596	9	27	308	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	969	968	309	959	959	597	309	0	0	605	0	0
Stage 1	363	363	-	596	596	-	-	-	-	-	-	-
Stage 2	606	605	-	363	363	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.27	6.52	6.22	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.27	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.27	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.653	4.018	3.318	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	233	254	731	222	257	503	1252	-	-	963	-	-
Stage 1	656	625	-	465	492	-	-	-	-	-	-	-
Stage 2	484	487	-	626	625	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	223	245	730	216	248	503	1251	-	-	963	-	-
Mov Cap-2 Maneuver	223	245	-	216	248	-	-	-	-	-	-	-
Stage 1	655	603	-	465	492	-	-	-	-	-	-	-
Stage 2	476	487	-	604	603	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.6		17.1		0		0.7	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1251	-	-	290	312	963	-	-
HCM Lane V/C Ratio	-	-	-	0.011	0.046	0.028	-	-
HCM Control Delay (s)	0	-	-	17.6	17.1	8.8	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0.1	-	-

HCM 2010 TWSC
10: Hawthorne & Blais

Existing
AM Peak Hour

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕			↕	↕	
Traffic Vol, veh/h	97	12	8	305	169	83
Future Vol, veh/h	97	12	8	305	169	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	25	2	35	47	13
Mvmt Flow	108	13	9	339	188	92

Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	591	234	280	0	-	0	
Stage 1	234	-	-	-	-	-	
Stage 2	357	-	-	-	-	-	
Critical Hdwy	6.54	6.45	4.12	-	-	-	
Critical Hdwy Stg 1	5.54	-	-	-	-	-	
Critical Hdwy Stg 2	5.54	-	-	-	-	-	
Follow-up Hdwy	3.626	3.525	2.218	-	-	-	
Pot Cap-1 Maneuver	450	751	1283	-	-	-	
Stage 1	777	-	-	-	-	-	
Stage 2	682	-	-	-	-	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	446	751	1283	-	-	-	
Mov Cap-2 Maneuver	446	-	-	-	-	-	
Stage 1	770	-	-	-	-	-	
Stage 2	682	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	15.4	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1283	-	467	-	-
HCM Lane V/C Ratio	0.007	-	0.259	-	-
HCM Control Delay (s)	7.8	0	15.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

Existing
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	13	9	601	11	6	423	178	5	931	16
Future Volume (vph)	13	9	601	11	6	423	178	5	931	16
Lane Group Flow (vph)	14	12	668	16	7	470	198	6	1034	18
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2		6		6
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.5	36.5	36.3	36.3	41.6	41.6	41.6	41.6	41.6	41.6
Total Split (s)	26.5	26.5	31.3	31.3	66.6	66.6	66.6	66.6	66.6	66.6
Total Split (%)	27.1%	27.1%	32.0%	32.0%	68.0%	68.0%	68.0%	68.0%	68.0%	68.0%
Maximum Green (s)	20.0	20.0	25.0	25.0	60.0	60.0	60.0	60.0	60.0	60.0
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	25.0	25.0	25.2	25.2	25.7	25.7	25.7	25.7	25.7	25.7
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.03	0.02	0.68	0.03	0.06	0.36	0.29	0.02	0.78	0.03
Control Delay	14.7	13.5	21.7	12.7	12.3	13.8	3.2	11.0	20.9	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	13.5	21.7	12.7	12.3	13.8	3.2	11.0	20.9	1.7
LOS	B	B	C	B	B	B	A	B	C	A
Approach Delay	14.1		21.5		10.7			20.5		
Approach LOS	B		C		B			C		
Queue Length 50th (m)	1.0	0.7	32.4	0.8	0.5	19.4	0.0	0.4	53.2	0.0
Queue Length 95th (m)	4.7	4.1	#60.4	4.7	2.6	28.7	9.5	2.3	72.7	1.4
Internal Link Dist (m)		337.1		495.4		635.1		726.8		
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	510	546	982	611	277	3071	1323	574	3102	1337
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.68	0.03	0.03	0.15	0.15	0.01	0.33	0.01

Intersection Summary

Cycle Length: 97.9
Actuated Cycle Length: 63.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

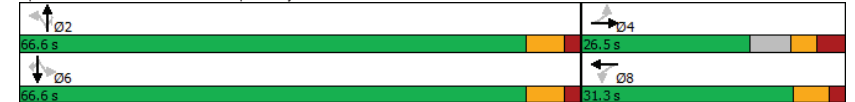
CGH Transportation
Page 1

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

Existing
PM Peak Hour

Maximum v/c Ratio: 0.78	Intersection LOS: B
Intersection Signal Delay: 18.0	ICU Level of Service B
Intersection Capacity Utilization 62.7%	
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leitrim

Existing
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	82	337	43	159	325	55	38	466	87	1105	344
Traffic Volume (vph)	82	337	43	159	325	55	38	466	87	1105	344
Future Volume (vph)	0	465	48	177	361	61	42	629	97	1228	382
Lane Group Flow (vph)	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	4	4	3	8	5	2	1	6	6		
Permitted Phases	4	4	4	8	8	2	6	6			
Detector Phase	4	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	9.5	40.5	40.5	11.1	31.3	11.1	31.3	31.3
Total Split (s)	54.0	54.0	54.0	15.0	54.0	54.0	15.0	56.0	15.0	56.0	56.0
Total Split (%)	38.6%	38.6%	38.6%	10.7%	38.6%	38.6%	10.7%	40.0%	10.7%	40.0%	40.0%
Maximum Green (s)	47.5	47.5	47.5	10.5	47.5	47.5	8.9	49.7	8.9	49.7	49.7
Yellow Time (s)	3.7	3.7	3.7	3.5	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	1.0	2.8	2.8	1.9	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	4.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	None	Max	None	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)	27.0	27.0	27.0		27.0	27.0		18.0		18.0	18.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0		0	0
Act Effct Green (s)	47.5	47.5	64.4	62.4	62.4	57.3	49.7	60.5	53.2	53.2	
Actuated g/C Ratio	0.34	0.34	0.46	0.45	0.45	0.41	0.36	0.43	0.38	0.38	
v/c Ratio	1.00	0.09	0.70	0.47	0.09	0.32	0.55	0.34	0.97	0.48	
Control Delay	86.7	0.3	39.2	29.5	3.7	27.4	36.9	25.1	62.1	5.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	86.7	0.3	39.2	29.5	3.7	27.4	36.9	25.1	62.1	5.0	
LOS	F	A	D	C	A	C	D	C	E	A	
Approach Delay	78.6			29.7			36.3		47.2		
Approach LOS	E			C			D		D		
Queue Length 50th (m)	128.5	0.0	29.2	68.9	0.0	6.3	70.8	15.1	~183.8	0.0	
Queue Length 95th (m)	#200.1	0.0	#46.6	96.7	6.2	13.3	89.8	26.1	#235.6	21.9	
Internal Link Dist (m)	294.2			585.8			270.9		635.1		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	467	552	255	774	679	150	1152	288	1264	801	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.00	0.09	0.69	0.47	0.09	0.28	0.55	0.34	0.97	0.48	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 139.5

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
Page 3

Lanes, Volumes, Timings
2: Bank & Leitrim

Existing
PM Peak Hour

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 46.7

Intersection LOS: D

Intersection Capacity Utilization 99.1%

ICU Level of Service F

Analysis Period (min) 15

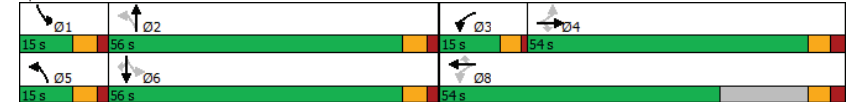
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leitrim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Rotary

Existing
PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	20	46	554	15	89	1228
Future Volume (vph)	20	46	554	15	89	1228
Lane Group Flow (vph)	22	51	616	17	99	1364
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.3	27.3	26.6	26.6	26.6	26.6
Total Split (s)	34.0	34.0	86.0	86.0	86.0	86.0
Total Split (%)	28.3%	28.3%	71.7%	71.7%	71.7%	71.7%
Maximum Green (s)	27.7	27.7	79.4	79.4	79.4	79.4
Yellow Time (s)	3.3	3.3	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.6	6.6	6.6	6.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	14.0	14.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	0	0	1	1	0	0
Act Effct Green (s)	10.0	10.0	101.7	101.7	101.7	101.7
Actuated g/C Ratio	0.08	0.08	0.85	0.85	0.85	0.85
v/c Ratio	0.16	0.30	0.42	0.01	0.16	0.92
Control Delay	54.2	18.9	6.1	1.4	3.1	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	18.9	6.1	1.4	3.1	21.6
LOS	D	B	A	A	A	C
Approach Delay	29.6		6.0			20.4
Approach LOS	C		A			C
Queue Length 50th (m)	4.9	0.0	62.7	0.4	4.1	223.6
Queue Length 95th (m)	13.2	12.1	88.1	m0.5	8.0	#402.3
Internal Link Dist (m)	560.7		439.0			122.3
Turn Bay Length (m)	40.0			80.0	75.0	
Base Capacity (vph)	374	381	1464	1230	610	1478
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.13	0.42	0.01	0.16	0.92
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 50 (42%), Referenced to phase 2:NBT, Start of Green						
Natural Cycle: 150						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

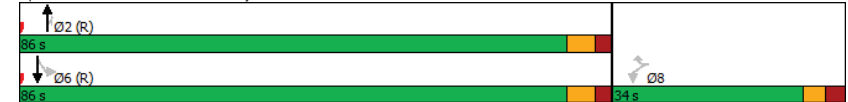
CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Rotary

Existing
PM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 16.5
Intersection LOS: B
Intersection Capacity Utilization 87.3%
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: 3: Bank & Rotary



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

Existing
PM Peak Hour

	↖	→	←	↗	↑	↘	↓	↙
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↑	↖	↑	↖
Traffic Volume (vph)	79	1	0	8	503	4	1036	174
Future Volume (vph)	79	1	0	8	503	4	1036	174
Lane Group Flow (vph)	88	19	3	9	561	4	1151	193
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	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)	29.0	29.0	29.0	25.2	25.2	25.2	25.2	25.2
Total Split (s)	30.0	30.0	30.0	90.0	90.0	90.0	90.0	90.0
Total Split (%)	25.0%	25.0%	25.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Maximum Green (s)	24.0	24.0	24.0	83.8	83.8	83.8	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	1.6	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.2	6.2	6.2	6.2	6.2
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	C-Max	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)	16.0	16.0	16.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	6	6	0	6	6	6	6	6
Act Effct Green (s)	14.6	14.6	14.6	97.7	97.7	97.7	97.7	97.7
Actuated g/C Ratio	0.12	0.12	0.12	0.81	0.81	0.81	0.81	0.81
v/c Ratio	0.55	0.10	0.01	0.04	0.40	0.01	0.82	0.16
Control Delay	61.5	19.5	0.0	5.0	5.7	5.8	17.1	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	19.5	0.0	5.0	5.7	5.8	17.1	2.2
LOS	E	B	A	A	A	A	B	A
Approach Delay	54.0			5.7			14.9	
Approach LOS	D			A			B	
Queue Length 50th (m)	20.1	0.2	0.0	0.4	34.4	0.2	202.3	3.7
Queue Length 95th (m)	34.0	6.7	0.0	2.3	72.6	m0.3 m#311.2	m6.5	
Internal Link Dist (m)	264.9			373.7			439.0	
Turn Bay Length (m)	25.0			75.0			65.0	
Base Capacity (vph)	263	296	599	212	1391	607	1406	1190
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	0.33	0.06	0.01	0.04	0.40	0.01	0.82	0.16
Intersection Summary								
Cycle Length: 120								
Actuated Cycle Length: 120								
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green								
Natural Cycle: 100								

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

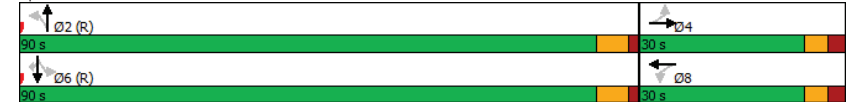
CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

Existing
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Bank & White Alder/Analdea



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

Existing
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	224	34	28	289	643	409
Future Volume (vph)	224	34	28	289	643	409
Lane Group Flow (vph)	249	38	31	321	714	454
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.3	32.3	36.7	36.7	36.7	36.7
Total Split (s)	41.0	41.0	69.0	69.0	69.0	69.0
Total Split (%)	37.3%	37.3%	62.7%	62.7%	62.7%	62.7%
Maximum Green (s)	34.7	34.7	62.3	62.3	62.3	62.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	19.0	19.0	23.0	23.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	6	6
Act Effct Green (s)	21.9	21.9	75.1	75.1	75.1	75.1
Actuated g/C Ratio	0.20	0.20	0.68	0.68	0.68	0.68
v/c Ratio	0.76	0.12	0.09	0.28	0.62	0.41
Control Delay	55.6	10.9	8.3	8.4	13.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.6	10.9	8.3	8.4	13.6	2.0
LOS	E	B	A	A	B	A
Approach Delay	49.7			8.4	9.1	
Approach LOS	D			A	A	
Queue Length 50th (m)	50.8	0.0	2.0	24.2	75.5	0.0
Queue Length 95th (m)	71.6	7.8	6.8	46.0	137.5	11.6
Internal Link Dist (m)	430.4			298.5	373.7	
Turn Bay Length (m)		95.0	60.0			120.0
Base Capacity (vph)	523	493	350	1157	1157	1106
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.08	0.09	0.28	0.62	0.41
Intersection Summary						
Cycle Length: 110						
Actuated Cycle Length: 110						
Offset: 82 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Green						
Natural Cycle: 75						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

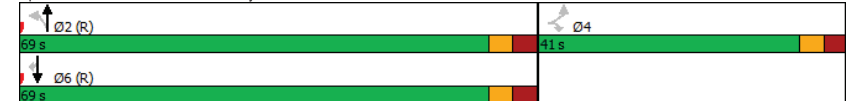
CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

Existing
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Bank & Findlay Creek



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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Lanes, Volumes, Timings
6: Bank & Cowan's Grove Plaza

Existing
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	30	188	123	297	638	39
Future Volume (vph)	30	188	123	297	638	39
Lane Group Flow (vph)	33	209	137	330	709	43
Turn Type	Perm	Perm	Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	11.4	26.9	26.9	26.9
Total Split (s)	33.0	33.0	23.0	64.0	64.0	64.0
Total Split (%)	27.5%	27.5%	19.2%	53.3%	53.3%	53.3%
Maximum Green (s)	26.0	26.0	16.6	57.1	57.1	57.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.1	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	6.4	6.9	6.9	6.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		13.0	13.0	13.0
Pedestrian Calls (#/hr)	2	2		1	4	4
Act Effct Green (s)	12.4	12.4	15.0	93.7	72.3	72.3
Actuated g/C Ratio	0.10	0.10	0.12	0.78	0.60	0.60
v/c Ratio	0.20	0.62	0.66	0.25	0.69	0.05
Control Delay	50.3	14.7	64.7	4.6	22.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	14.7	64.7	4.6	22.7	4.5
LOS	D	B	E	A	C	A
Approach Delay	19.6			22.2	21.7	
Approach LOS	B			C	C	
Queue Length 50th (m)	7.4	0.0	31.2	15.5	100.7	0.0
Queue Length 95th (m)	15.7	20.3	49.5	38.1	#218.9	6.1
Internal Link Dist (m)	108.4			469.4	298.5	
Turn Bay Length (m)		150.0	80.0			130.0
Base Capacity (vph)	344	477	242	1323	1031	873
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.44	0.57	0.25	0.69	0.05
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 52 (43%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 90						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

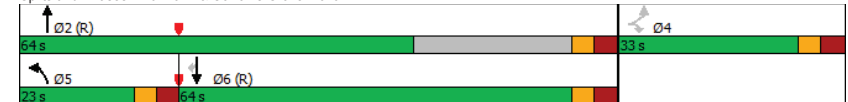
CGH Transportation
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Lanes, Volumes, Timings
6: Bank & Cowan's Grove Plaza

Existing
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 21.5	Intersection LOS: C
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 6: Bank & Cowan's Grove Plaza



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 Existing

CGH Transportation
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HCM 2010 TWSC
8: Bank & Blais

Existing
PM Peak Hour

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	1	0	0	20	0	28	0	391	8	4	822	0
Future Vol, veh/h	1	0	0	20	0	28	0	391	8	4	822	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	15	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	9	21	13	3	2	2	4	14	8	4	2
Mvmt Flow	1	0	0	22	0	31	0	434	9	4	913	0

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	1377	1366	915	1355	1357	434	915	0	0	443	0	0
Stage 1	923	923	-	434	434	-	-	-	-	-	-	-
Stage 2	454	443	-	921	923	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.59	6.41	7.23	6.53	6.22	4.12	-	-	4.18	-	-
Critical Hdwy Stg 1	6.12	5.59	-	6.23	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.59	-	6.23	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.081	3.489	3.617	4.027	3.318	2.218	-	-	2.272	-	-
Pot Cap-1 Maneuver	122	142	305	120	148	622	745	-	-	1086	-	-
Stage 1	323	339	-	579	579	-	-	-	-	-	-	-
Stage 2	586	564	-	310	347	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	115	141	305	119	147	622	744	-	-	1086	-	-
Mov Cap-2 Maneuver	115	141	-	119	147	-	-	-	-	-	-	-
Stage 1	322	336	-	579	579	-	-	-	-	-	-	-
Stage 2	557	564	-	308	344	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	36.6	25.9	0	0
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	744	-	-	115	225	1086	-	-
HCM Lane V/C Ratio	-	-	-	0.01	0.237	0.004	-	-
HCM Control Delay (s)	0	-	-	36.6	25.9	8.3	0	-
HCM Lane LOS	A	-	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.9	0	-	-

HCM 2010 TWSC
10: Hawthorne & Blais

Existing
PM Peak Hour

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕			↕	↕	
Traffic Vol, veh/h	106	23	14	262	306	132
Future Vol, veh/h	106	23	14	262	306	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	17	14	27	25	10
Mvmt Flow	118	26	16	291	340	147

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	737	414	487	0	-	0
Stage 1	414	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Critical Hdwy	6.47	6.37	4.24	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.453	2.326	-	-	-
Pot Cap-1 Maneuver	378	607	1017	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	371	607	1017	-	-	-
Mov Cap-2 Maneuver	371	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	723	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1017	-	399	-	-
HCM Lane V/C Ratio	0.015	-	0.359	-	-
HCM Control Delay (s)	8.6	0	19	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1.6	-	-

Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2018-09-26	2018	15:54	BANK ST btwn 310 S OF FINDLAY CREEK/SHUTTLEWORTH DR & BLAIS RD (_3208RMB)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2021-09-14	2021	10:45	BANK ST btwn 310 S OF FINDLAY CREEK/SHUTTLEWORTH DR & BLAIS RD (_3208RMB)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-04-12	2018	12:53	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
2018-07-25	2018	10:00	BLAIS RD @ BANK ST (0009264)	02 - Rain	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2019-05-24	2019	17:45	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-11-01	2019	21:57	BLAIS RD @ BANK ST (0009264)	01 - Clear	07 - Dark	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2020-01-09	2020	16:10	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2020-01-22	2020	10:59	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	02 - Wet	2	0	0	0
2020-04-09	2020	16:49	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2020-05-28	2020	12:45	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2020-10-01	2020	12:30	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2021-02-22	2021	11:22	BLAIS RD @ BANK ST (0009264)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	05 - Packed snow	2	0	0	0
2021-11-12	2021	12:40	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2022-03-29	2022	9:35	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2022-04-02	2022	17:30	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2022-06-16	2022	19:28	BLAIS RD @ BANK ST (0009264)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-03-17	2018	14:08	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-08-05	2018	9:30	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2019-02-28	2019	18:22	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-03-19	2019	13:34	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2019-12-09	2019	10:30	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
2020-01-09	2020	16:46	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	05 - Dusk	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
2020-05-15	2020	17:20	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
2020-06-30	2020	19:27	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2020-08-20	2020	11:34	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2020-09-28	2020	7:02	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2020-11-21	2020	18:13	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2020-12-11	2020	15:22	BANK ST @ SHUTTLEWORTH DR/FINDLAY CREEK SC (0013532)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-02-15	2018	8:56	BLAIS RD @ HAWTHORNE RD (0009404)	04 - Freezing Rain	01 - Daylight	02 - Stop sign	0	03 - P.D. only	07 - SMV other	06 - Ice	1	0	0	0
2018-02-15	2018	8:27	BLAIS RD @ HAWTHORNE RD (0009404)	02 - Rain	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	06 - Ice	2	0	0	0
2018-07-31	2018	21:13	BLAIS RD @ HAWTHORNE RD (0009404)	01 - Clear	07 - Dark	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2019-06-20	2019	12:15	BLAIS RD @ HAWTHORNE RD (0009404)	02 - Rain	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2021-10-20	2021	11:55	BLAIS RD @ HAWTHORNE RD (0009404)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-10-16	2018	8:03	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2018-12-05	2018	16:40	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	07 - Fog, mist, smoke, dust	05 - Dusk	10 - No control	0	03 - P.D. only	07 - SMV other	06 - Ice	1	0	0	0
2019-08-26	2019	8:00	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	01 - Approaching	01 - Dry	2	0	0	0
2019-09-17	2019	23:54	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	01 - Approaching	01 - Dry	2	0	0	0
2020-01-04	2020	6:22	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2020-06-21	2020	20:40	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2020-11-22	2020	23:43	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	04 - Slush	1	0	0	0
2021-08-23	2021	21:56	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2022-03-30	2022	12:53	BLAIS RD btwn BANK ST & HAWTHORNE RD (_3208GU)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0

Collision Summary Report

Location: BANK ST @ BLAIS RD							Geo ID: 0009264				
Municipality: Ottawa							Jurisdiction: Regional Municipality				
Traffic Control: Traffic signal							Total Collisions: 14				
Collision ID	Date/Time	Env	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle Type	First Event	Driver Action	No. Ped
240915734	2024-Nov-19, Tue, 12:18	Clear	Other	P.D. only	West	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Driving properly	0
Comments:					West	Unknown	Reversing	Truck - dump		Other	
240233302	2024-Aug-28, Wed, 23:51	Clear	SMV other	Non-fatal injury	North	Dry	Turning left	Automobile, station wagon	Ditch	Speed too fast for condition	0
Comments:									Pole (utility, power)		
220156414	2022-Jun-16, Thu, 19:28	Clear	Turning movement	P.D. only	East	Dry	Turning left	Pick-up truck	Other motor vehicle	Failed to yield right-of-way	0
Comments:					West	Dry	Going ahead	Pick-up truck		Driving properly	
220083046	2022-Apr-2, Sat, 17:30	Clear	Rear end	P.D. only	South	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close	0
Comments:					South	Dry	Stopped	Pick-up truck		Unknown	
220077224	2022-Mar-29, Tue, 9:35	Clear	Turning movement	P.D. only	East	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Unknown	0
Comments:					West	Dry	Turning left	Automobile, station wagon		Driving properly	
210291735	2021-Nov-12, Fri, 12:40	Clear	Rear end	P.D. only	South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	0
Comments:					South	Wet	Stopped	Automobile, station wagon		Driving properly	
210041667	2021-Feb-22, Mon, 11:22	Snow	Angle	P.D. only	South	Packed snow	Going ahead	Passenger van	Other motor vehicle	Disobeyed traffic control	0
Comments:					West	Packed snow	Going ahead	Pick-up truck		Driving properly	
200241125	2020-Oct-1, Thu, 12:30	Clear	Rear end	P.D. only	North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Following too close	0
Comments:					North	Dry	Stopped	Pick-up truck		Driving properly	
200128219	2020-May-28, Thu, 12:45	Clear	Rear end	P.D. only	South	Dry	Pulling away from shoulder or curb	Truck - closed	Other motor vehicle	Improper lane change	0
Comments:					South	Dry	Going ahead	Automobile, station wagon		Driving properly	

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200092109	2020-Apr-9, Thu, 16:49	Clear	Rear end	P.D. only	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	0
Comments:					North	Dry	Stopped	Pick-up truck		Driving properly	
200019795	2020-Jan-22, Wed, 10:59	Clear	Angle	Non-fatal injury	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	0
Comments:					East	Wet	Turning left	Pick-up truck		Driving properly	
200007810	2020-Jan-9, Thu, 16:10	Clear	Sideswipe	P.D. only	West	Dry	Going ahead	Pick-up truck	Other motor vehicle	Unknown	0
Comments:					West	Dry	Going ahead	Pick-up truck		Unknown	
190290189	2019-Nov-1, Fri, 21:57	Clear	Angle	Non-fatal injury	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	0
Comments:					North	Dry	Going ahead	Automobile, station wagon		Driving properly	
190128927	2019-May-24, Fri, 17:45	Clear	Rear end	P.D. only	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	0
Comments:					West	Dry	Stopped	Automobile, station wagon		Driving properly	

Location: BANK ST @ SHUTTLEWORTH DR		Geo ID: 0013532									
Municipality: Ottawa		Jurisdiction: Regional Municipality									
Traffic Control: Traffic signal		Total Collisions: 14									
Collision ID	Date/Time	Env	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle Type	First Event	Driver Action	No. Ped
240908014	2024-Jun-5, Wed, 15:40	Clear	Rear end	P.D. only	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					North	Dry	Going ahead	Automobile, station wagon		Unknown	
240905172	2024-Apr-11, Thu, 20:30	Rain	Rear end	P.D. only	North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					North	Wet	Stopped	Automobile, station wagon		Other	
240902599	2024-Feb-15, Thu, 8:00	Snow	Rear end	P.D. only	South	Slush	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					South	Slush	Stopped	Automobile, station wagon		Driving properly	
220283449	2022-Oct-5, Wed, 14:45	Clear	Rear end	Non-fatal injury	South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	0
Comments:					South	Dry	Stopped	Automobile, station wagon		Driving properly	
200299446	2020-Dec-11, Fri, 15:22	Clear	Turning movement	P.D. only	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	0
Comments:					North	Dry	Going ahead	Pick-up truck		Driving properly	

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200283859	2020-Nov-21, Sat, 18:13	Clear	Turning movement	Non-fatal injury	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way Driving properly	0
Comments:					South	Dry	Going ahead	Passenger van			
200238006	2020-Sep-28, Mon, 7:02	Clear	Turning movement	P.D. only	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way Driving properly	0
Comments:					North	Dry	Going ahead	Pick-up truck			
200203387	2020-Aug-20, Thu, 11:34	Clear	Turning movement	Non-fatal injury	South	Dry	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of-way Driving properly	0
Comments:					North	Dry	Going ahead	Automobile, station wagon			
200155857	2020-Jun-30, Tue, 19:27	Clear	SMV other	P.D. only	East	Dry	Turning right	Pick-up truck	Concrete guide rail	Lost control	0
Comments:											
200133685	2020-May-15, Fri, 17:20	Clear	Rear end	Non-fatal injury	East	Dry	Turning right	Pick-up truck	Other motor vehicle	Following too close Driving properly	0
Comments:					East	Dry	Turning right	Passenger van			
200007857	2020-Jan-9, Thu, 16:46	Clear	Rear end	Non-fatal injury	North	Dry	Turning left	Unknown	Other motor vehicle	Unknown	0
Comments:					North	Dry	Turning left	Pick-up truck		Driving properly	
190326335	2019-Dec-9, Mon, 10:30	Clear	Other	P.D. only	East	Dry	Reversing	Unknown	Other motor vehicle	Unknown	0
Comments:					West	Unknown	Stopped	Automobile, station wagon		Driving properly	
190067855	2019-Mar-19, Tue, 13:34	Clear	Turning movement	P.D. only	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way Driving properly	0
Comments:					South	Dry	Going ahead	Automobile, station wagon			
190051183	2019-Feb-28, Thu, 18:22	Clear	Angle	P.D. only	East	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way Driving properly	0
Comments:					South	Dry	Going ahead	Automobile, station wagon			

Appendix E

Bank Street Widening Plans

Bank Street Widening and Reconstruction
(South of Leirtrim Road to South of Blais Road)

Élargissement et réfection de la rue Bank
(du sud du chemin Leirtrim jusqu'au sud du chemin Blais)

LEGEND / LEGENDE

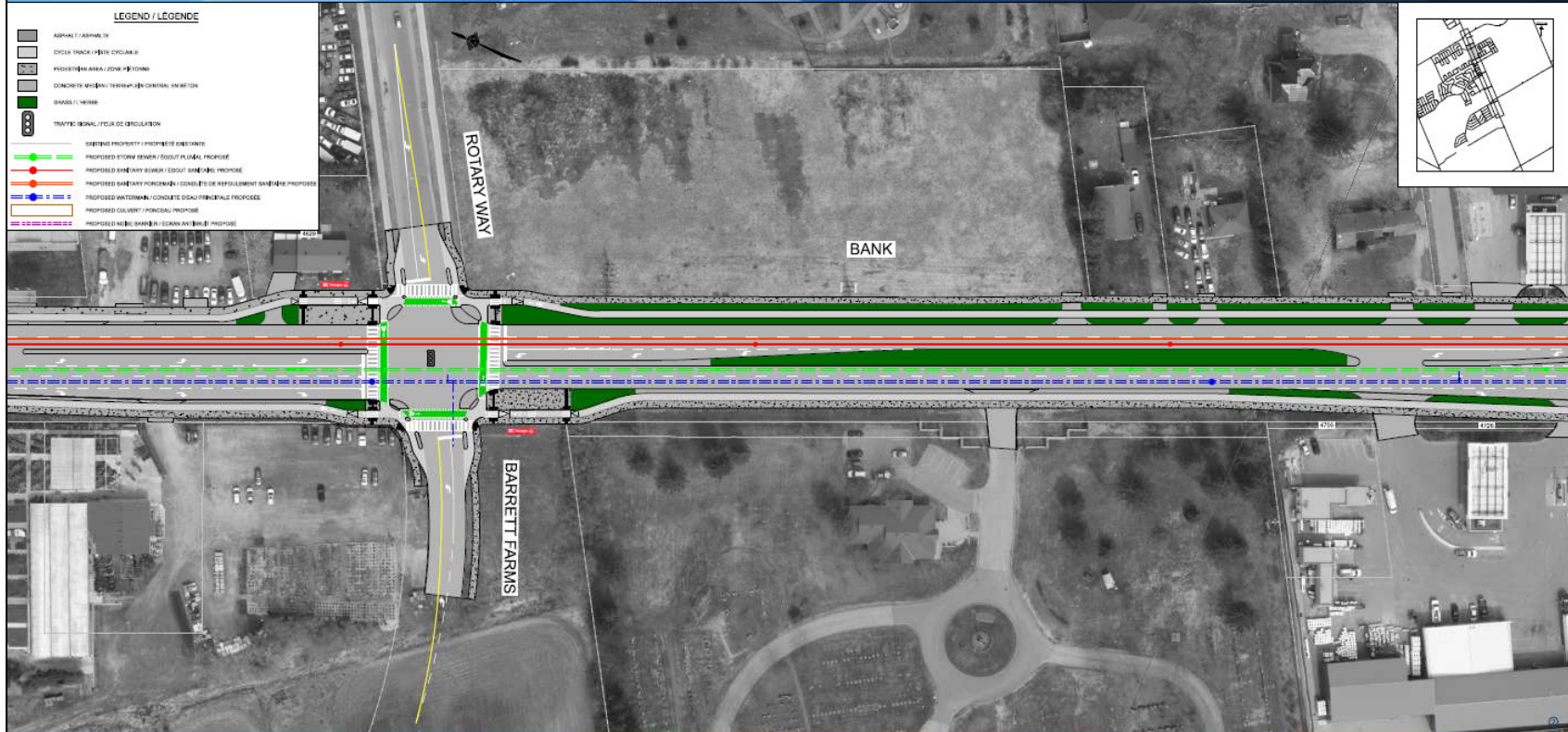
	ASPHALT / ASPHALTE
	CURB TRACK / BORDURE
	PROPOSED AREA / ZONE PROPOSÉE
	CONCRETE MEDIAN / TERRAPLEIN CENTRAL EN CONCRÉTÉ
	GRASS / HERBE
	TRAFFIC SIGNAL / FEUX DE CIRCULATION
	EXISTING PROPERTY / PROPRIÉTÉ EXISTANTE
	PROPOSED STORM SEWER / ÉGOUT PLUVIAL PROPOSÉ
	PROPOSED SANITARY SEWER / ÉGOUT SANITAIRE PROPOSÉ
	PROPOSED SANITARY SEWER / ÉGOUT SANITAIRE PROPOSÉ
	PROPOSED WATERMAIN / CONDUITE D'EAU POTABLE PROPOSÉE
	PROPOSED CULVERT / PASSAGE PROPOSÉ
	PROPOSED MANHOLE / CLOUVEAU PROPOSÉ



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Bank Street Widening and Reconstruction
(South of Leitrim Road to South of Blais Road)

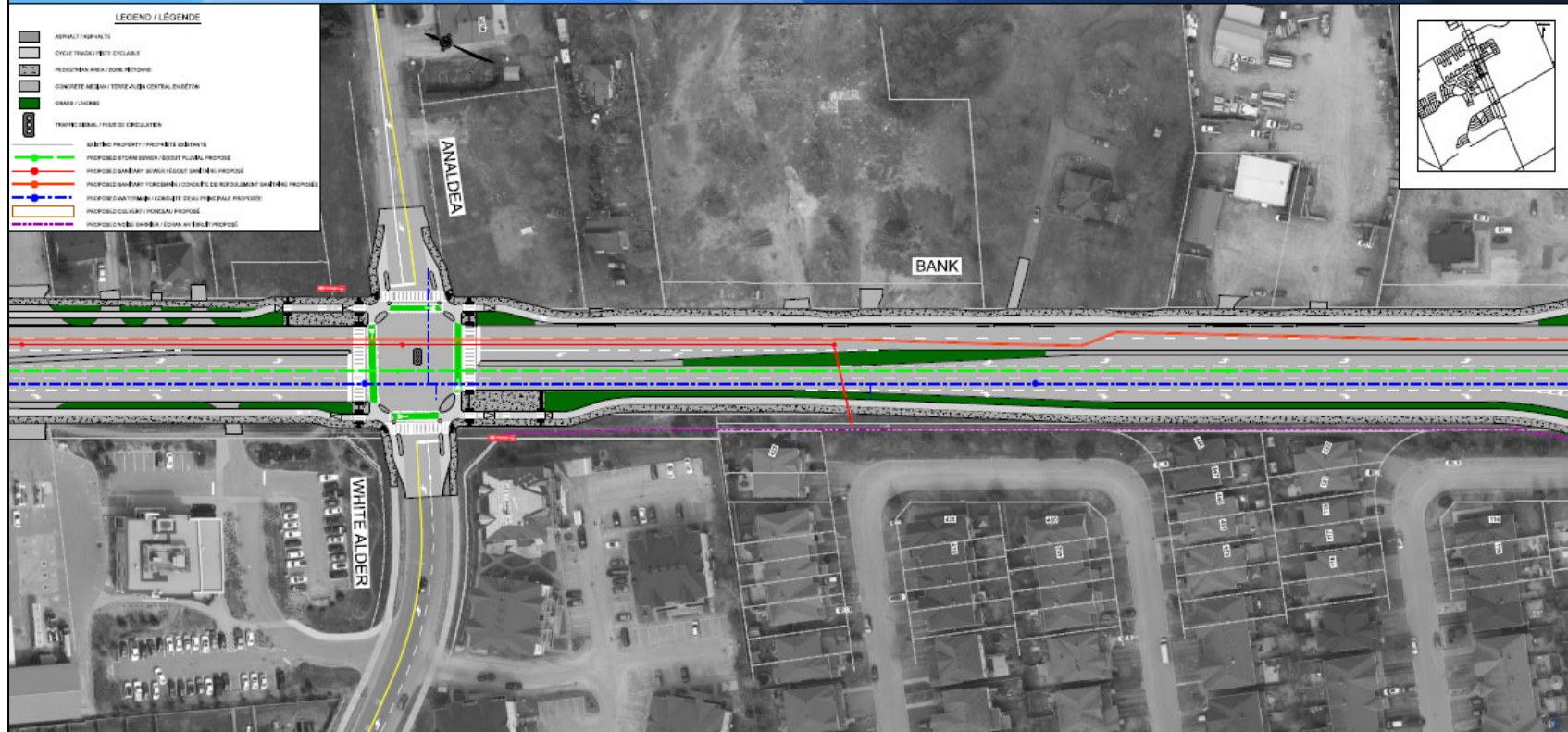
Élargissement et réfection de la rue Bank
(du sud du chemin Leitrim jusqu'au sud du chemin Blais)



Robinson
Consultants

Bank Street Widening and Reconstruction
(South of Leitrim Road to South of Blais Road)

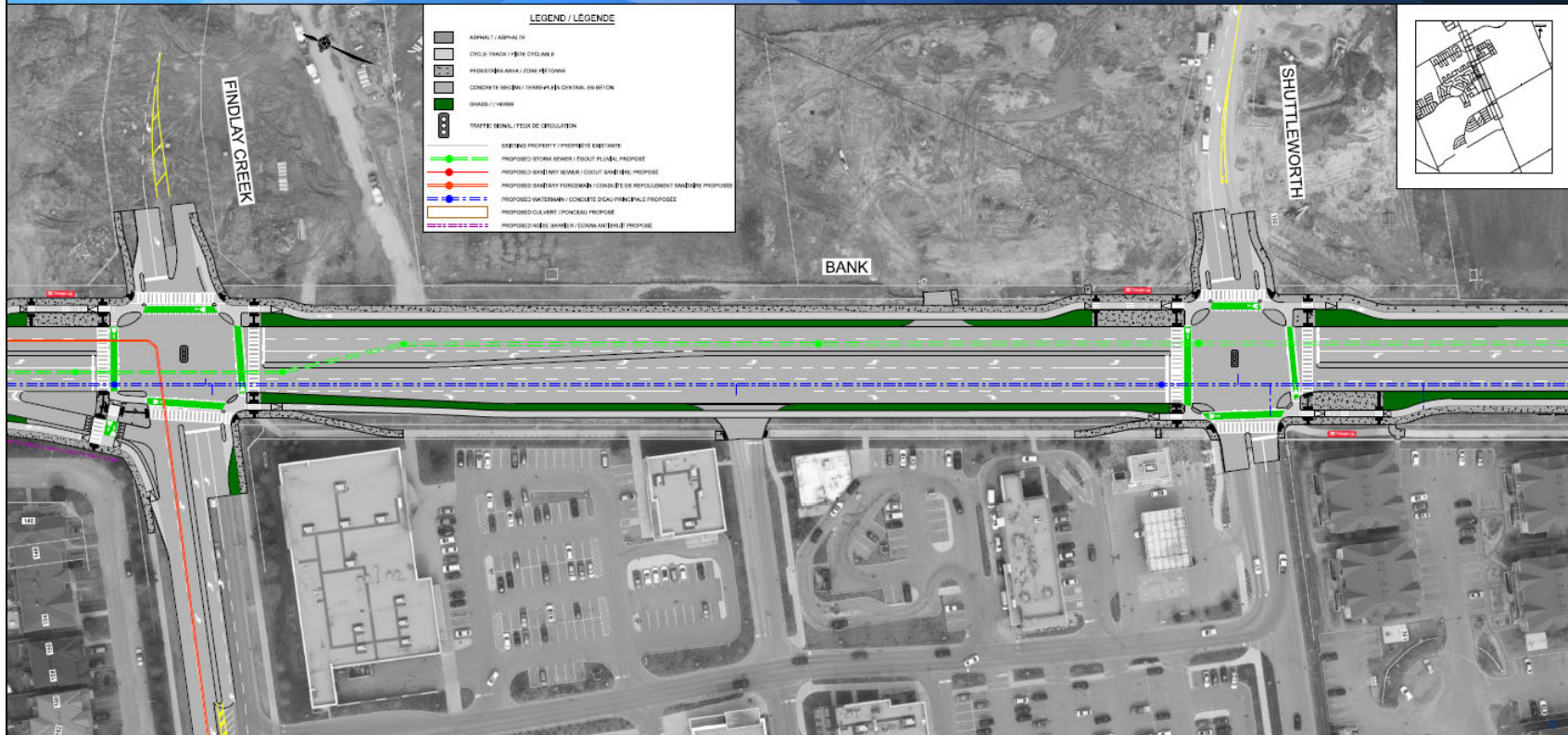
Élargissement et réfection de la rue Bank
(du sud du chemin Leitrim jusqu'au sud du chemin Blais)



Robinson
Consultants

Bank Street Widening and Reconstruction
(South of Leitrim Road to South of Blais Road)

Élargissement et réfection de la rue Bank
(du sud du chemin Leitrim jusqu'au sud du chemin Blais)



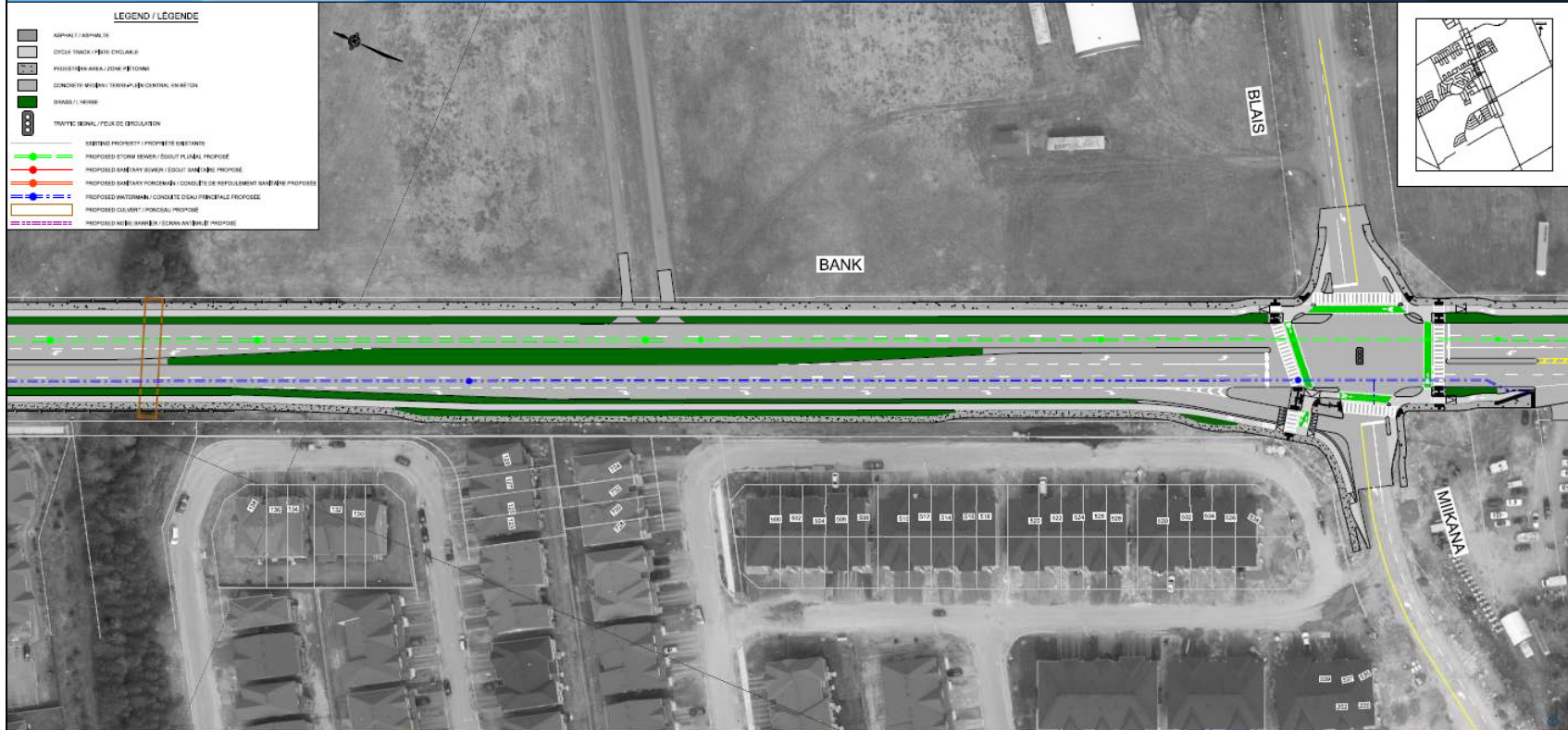
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Consultants

Bank Street Widening and Reconstruction
(South of Leitrim Road to South of Blais Road)

Élargissement et réfection de la rue Bank
(du sud du chemin Leitrim jusqu'au sud du chemin Blais)

LEGEND / LÉGENDE

	ASPHALT / ASPHALTE
	CURB TRACK / BOULEVARD
	PROPOSED AREA / ZONE PROPOSÉE
	CONCRETE MEDIAN / TERRAIN EN CÉMENT
	GRASS / HERBE
	TRAFFIC SIGNAL / FEUX DE TRAFIC
	EXISTING PROPERTY / PROPRIÉTÉ EXISTANTE
	PROPOSED STORM SEWER / EGOUT PLUVIAL PROPOSÉ
	PROPOSED SANITARY SEWER / EGOUT SANITAIRE PROPOSÉ
	PROPOSED WATER MAIN / CONDUITE D'EAU POTABLE PROPOSÉE
	PROPOSED GAS MAIN / CONDUITE DE GAZ PROPOSÉE
	PROPOSED CABLE / CÂBLE PROPOSÉ
	PROPOSED UTILITY / UTILITÉ PROPOSÉE



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Bank Street Widening and Reconstruction
(South of Leitrim Road to South of Blais Road)

Élargissement et réfection de la rue Bank
(du sud du chemin Leitrim jusqu'au sud du chemin Blais)



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Appendix F

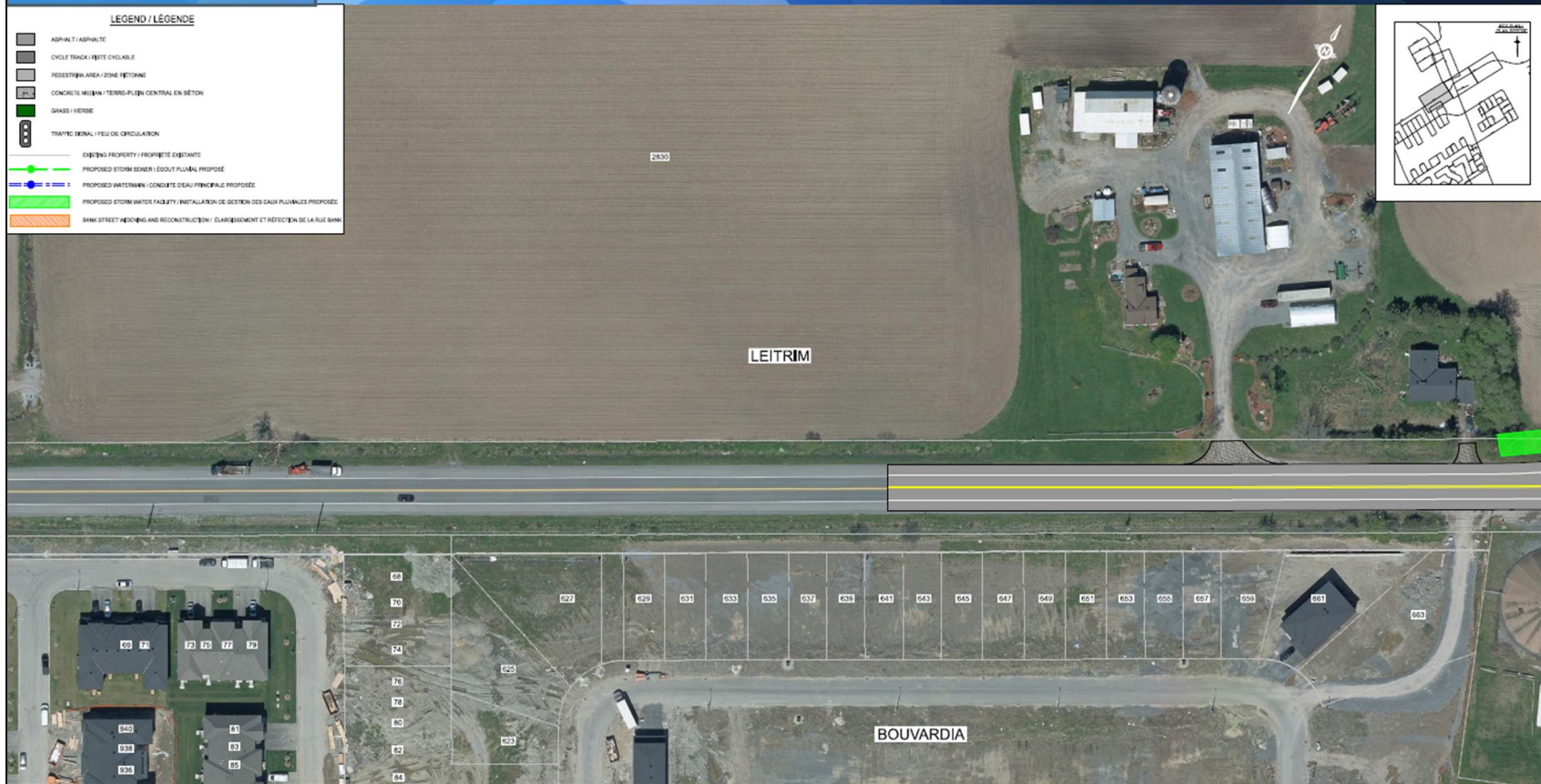
Bank Street at Leirim Road Intersection Preliminary Design

Bank Street and Leitrim Road Intersection Modifications

Modification de l'intersection entre la rue Bank et le chemin Leitrim

LEGEND / LÉGENDE

- ASPHALT / ASPHALTE
- CYCLE TRACK / PISTE CYCLABLE
- RECONSTRUCTION AREA / ZONE RÉCONSTRUCTION
- CONCRETE MEDIAN / TERRE-PIEN CENTRAL EN BÉTON
- GRASS / HERBE
- TRAFFIC SIGNAL / FEU DE CIRCULATION
- EXISTING PROPERTY / PROPRIÉTÉ EXISTANTE
- PROPOSED STORM SEWER / ÉGOUT PLUVIAL PROPOSÉ
- PROPOSED WATERMAIN / CONDUITE D'EAU PRINCIPALE PROPOSÉE
- PROPOSED STORM WATER FACILITY / INSTALLATION DE GESTION DES EAUX PLUVIALES PROPOSÉE
- BANK STREET WIDENING AND RECONSTRUCTION / ÉLARGISSEMENT ET RÉFECTON DE LA RUE BANK



Robinson
Consultants

1

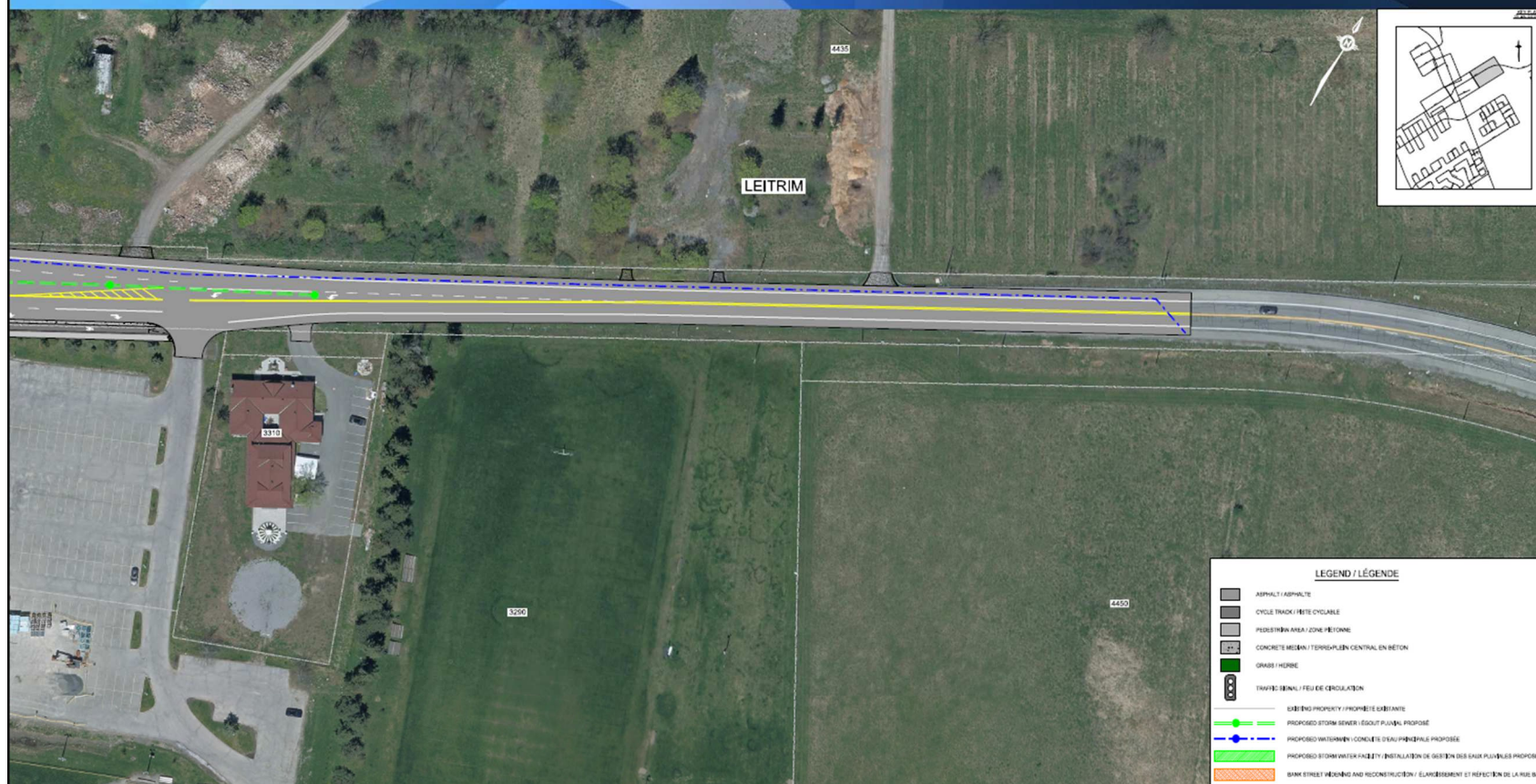
Bank Street and Leitrim Road Intersection Modifications

Modification de l'intersection entre la rue Bank et le chemin Leitrim



Bank Street and Leitrim Road Intersection Modifications

Modification de l'intersection entre la rue Bank et le chemin Leitrim



Bank Street and Leitrim Road Intersection Modifications

Modification de l'intersection entre la rue Bank et le chemin Leitrim

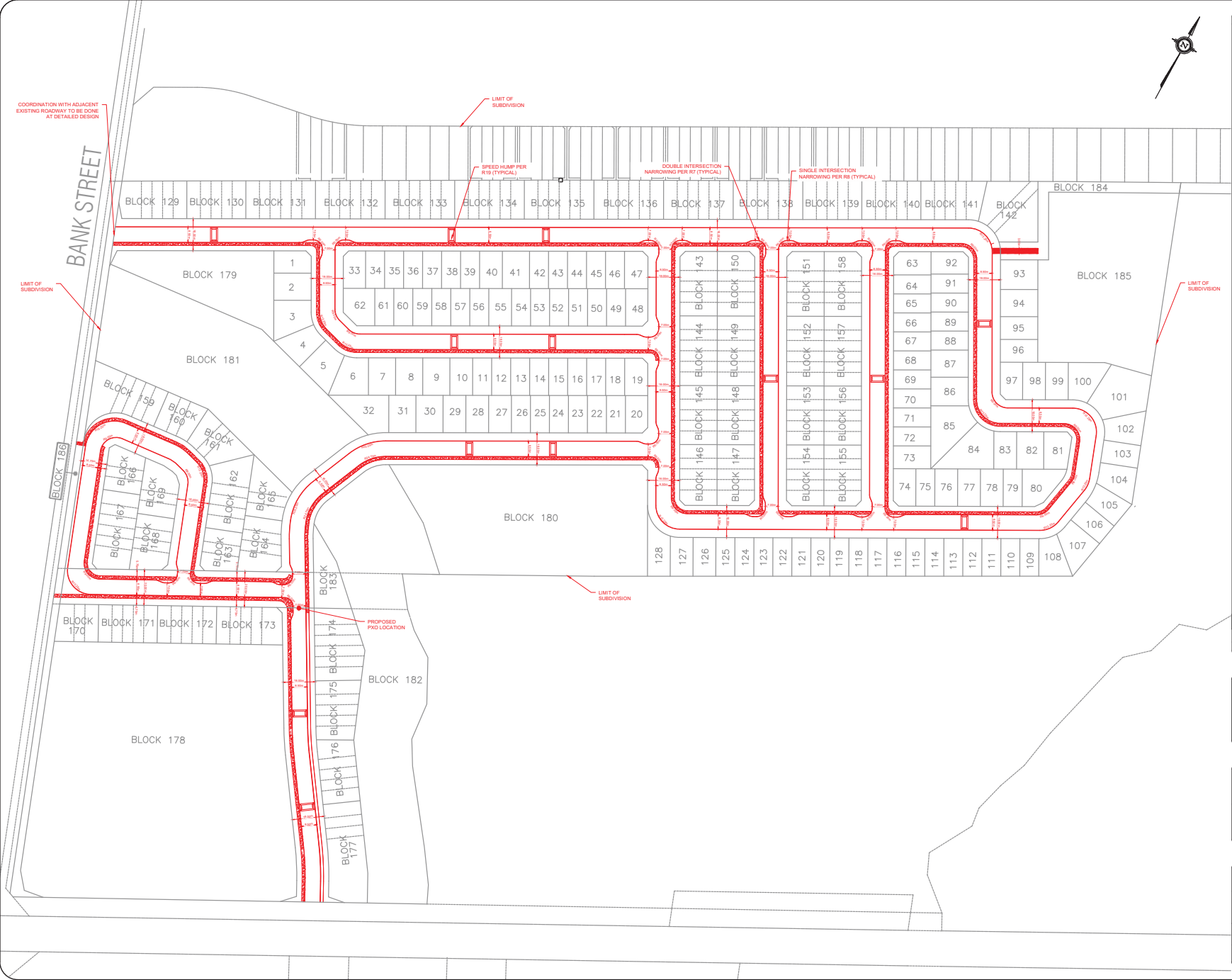
LEGEND / LÉGENDE

	ASPHALT / ASPHALTE
	CYCLE TRACK / PISTE CYCLABLE
	PEDESTRIAN AREA / ZONE PIÉTONNE
	CONCRETE MEDIAN / TERRAIN-PIED CENTRAL EN BÉTON
	GRASS / HERBE
	TRAFFIC SIGNAL / FEU DE CIRCULATION
	EXISTING PROPERTY / PROPRIÉTÉ EXISTANTE
	PROPOSED STORM SEWER / ÉGOUT PLUVIAL PROPOSÉ
	PROPOSED WATERMAIN / CONDUITE D'EAU PRINCIPALE PROPOSÉE
	PROPOSED STORM WATER FACILITY / INSTALLATION DE GESTION DES EAUX PLUVIALES PROPOSÉE
	BANK STREET WIDENING AND RECONSTRUCTION / ÉLARGISSEMENT ET RÉFECTON DE LA RUE BANK



Appendix G

Conceptual Traffic Calming Plan



Notes:

LEGEND:

- CONCRETE SIDEWALK
2.00m ON 20m LOCAL ROADS
1.80m ON 18m AND 14.7m LOCAL ROADS
- 3.00m ASPHALT MULTI-USE PATH

NOTES:

- THIS TRAFFIC CALMING CONCEPT IS SUBJECT TO SERVICING AND ILLUSTRATES THE PHILOSOPHY OF THE 30KM/H TRAFFIC CALMING GUIDELINES.

01	Issued for Review:	CH	2024-06-30
REV:	DESCRIPTION:	BY:	DATE:
STATUS:			



CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT:

Caivan Communities
3713 Barrisokane Road
Ottawa, ON
K2J 4J4

ARCHITECT:

SITE: 4795 BANK STREET

TITLE: GRDD Redline

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:2000	2024-06-30	CH	JK
PROJECT NO:	DRAWING NO:	REVISION:	
2024-172	001	01	

Appendix H

MMLOS Analysis Worksheets

Multi-Modal Level of Service - Segments Form

Project: 4795 Bank St
Consultant: CGH Transportation Inc.
Date: 2026-05-29
Scenario: Existing/Future

Segment Name		Bank St		Blais Rd	
OP Transect / Policy Area		Mainstreet Corridor (outside a Hub)		Outer Urban or Suburban	
Segment Component Side of Street		Majority (>50%)		Majority (>50%)	
		E		N	
Pedestrian	PLOS Inputs				
	Posted Speed (km/h)	60 km/h		60 km/h	
	Two-Way ADT	26,150		5,550	
	Pedestrian Facility	Sidewalk		Sidewalk	
	Does the facility meet the TMP Sidewalk or MUP Policy? If not, for MUPs, does the location have a low volume of peak daily users AND are pedestrian volumes likely less than 20% of total users?	Yes		Yes	
	Facility Width (m)	2.00m		2.00m	
	Offset from Motor Vehicle Travel Lanes (m)	≥ 3.0m		1.5-2.99m	
	Presence of Adjacent Parking?	No		-	
	General Purpose Curb Lane ADT	-		> 3000	
	Max. Distance between Controlled Crossings (m)	> 400m		> 400m	
	Score	-		3.00	
	PLOS	-		C	
	Target PLOS	B		C	
Bicycle	BLOS Inputs				
	Cycling Route Classification	Elsewhere		Elsewhere	
	Cycling Facility	Input PLOS First	Cycle Track	Shared Operating Space	Input PLOS First
	Is the minimum level of separation provided according to OTM Book 18 Pre-Selection Nomograph - Rural Context (Figure 5.6)? (for paved shoulders)		-	-	
	Facility Operation		Unidirectional	-	
	Pedestrian/Cyclist Volume		-	-	
	Facility Width		1.8m-2.09m	-	
	Boulevard/Buffer Width (excluding curb)		≥ 1.0m	-	
	Unsignalized Roadway Crossing Type (where cyclists are required to yield)		None	None	
	Number of Travel Lanes at Crossing		-	-	
	Crossing includes Median Refuge (≥ 2.7m)		-	-	
	Cross-street Posted Speed (km/h)		-	-	
	Cycling Path Blockages (e.g. bus stops and/or loading zones)		-	Rare	
	Score	-		0.75	
	BLOS	-		E	
	Target BLOS	C		C	
Transit	TLOS Inputs				
	Transit Facility	TP - Isolated Measures		Select Transit Designation	
	Facility Type	Mixed Traffic			
	Expected Transit Running Time	Slightly Impeded			
	Transit Travel Speed (if available)	Enter Speed (if available)			
	TLOS	-		-	
	Target TLOS	C		-	
Public Realm	PRLOS Inputs				
	Context	Input PLOS and BLOS First	Mainstreet or active frontage street within a Hub, Special District, or Village	Other Streets	Input PLOS and BLOS First
	Inner Boulevard Width		1.5-1.99m	≤ 0.6m	
	Middle Boulevard Width		≤ 0.5m	≤ 0.5m	
	Outer Boulevard (Frontage) Width		-	≥ 3.0m	
	Transit Route on Segment?		Yes	No	
	Bus Stop Elements		Curbside landing zone with no shelter	-	
	Number of Midblock Traffic Lanes (both travel directions)		5	≤ 2	
	Score	-		18.30	
	PRLOS	-		C	
		D		C	

Multi-Modal Level of Service - Segments Form

Project: 4795 Bank St
Consultant: CGH Transportation Inc.
Date: 2026-05-29
Scenario: Existing/Future

Segment Name		New 18.0m Internal Local Roads		New 20.0m Local Road	
OP Transect / Policy Area		Outer Urban or Suburban		Outer Urban or Suburban	
Segment Component Side of Street		Majority (>50%)		Majority (>50%)	
		W or N	E or S	W or N	E or S
Pedestrian	PLOS Inputs				
	Posted Speed (km/h)	30 km/h		30 km/h	
	Two-Way ADT	2,040		1,000	
	Pedestrian Facility	Sidewalk	None	Sidewalk	Sidewalk
	Does the facility meet the TMP Sidewalk or MUP Policy? If not, for MUPs, does the location have a low volume of peak daily users AND are pedestrian volumes likely less than 20% of total users?	Yes	Yes	Yes	Yes
	Facility Width (m)	1.80m	-	2.00m	2.00m
	Offset from Motor Vehicle Travel Lanes (m)	< 0.5m	-	< 0.5m	< 0.5m
	Presence of Adjacent Parking?	-	-	-	-
	General Purpose Curb Lane ADT	≤ 3000	-	≤ 3000	≤ 3000
	Max. Distance between Controlled Crossings (m)	291-400m	-	-	-
	Score	2.50	-	4.25	4.25
	PLOS	C	-	B	B
	Target PLOS	C		C	
Bicycle	BLOS Inputs				
	Cycling Route Classification	Elsewhere		Elsewhere	
	Cycling Facility	Shared Operating Space	Shared Operating Space	Shared Operating Space	Shared Operating Space
	Is the minimum level of separation provided according to OTM Book 18 Pre-Selection Nomograph - Rural Context (Figure 5.6)? (for paved shoulders)	-	-	-	-
	Facility Operation	-	-	-	-
	Pedestrian/Cyclist Volume	-	-	-	-
	Facility Width	-	-	-	-
	Boulevard/Buffer Width (excluding curb)	-	-	-	-
	Unsignalized Roadway Crossing Type (where cyclists are required to yield)	Cross-Street	Cross-Street	Cross-Street	Cross-Street
	Number of Travel Lanes at Crossing	≤ 2	≤ 2	≤ 2	≤ 2
	Crossing includes Median Refuge (≥ 2.7m)	No	No	No	No
	Cross-street Posted Speed (km/h)	≤ 30 km/h	≤ 30 km/h	≤ 30 km/h	≤ 30 km/h
	Cycling Path Blockages (e.g. bus stops and/or loading zones)	Rare	Rare	Rare	Rare
	Score	4.30	4.30	5.00	5.00
	BLOS	B	B	A	A
	Target BLOS	C		C	
Transit	TLOS Inputs				
	Transit Facility	Select Transit Designation		Select Transit Designation	
	Facility Type				
	Expected Transit Running Time				
	Transit Travel Speed (if available)				
	TLOS	-	-	-	-
	Target TLOS	-		-	
Public Realm	PRLOS Inputs				
	Context	Other Streets	Other Streets	Other Streets	Other Streets
	Inner Boulevard Width	≤ 0.6m	≥ 4.0m	≤ 0.6m	≤ 0.6m
	Middle Boulevard Width	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m
	Outer Boulevard (Frontage) Width	2.0-2.99m	1.5-1.99m	≥ 3.0m	≥ 3.0m
	Transit Route on Segment?	No	No	No	No
	Bus Stop Elements	-	-	-	-
	Number of Midblock Traffic Lanes (both travel directions)	≤ 2		≤ 2	
	Score	19.50	15.00	25.50	25.50
	PRLOS	C	D	A	A
		C		A	

Multi-Modal Level of Service - Intersections Form

Project: 4795 Bank St
Consultant: CGH Transportation Inc.
Date: 2026-05-29
Scenario: Existing/Future

Intersection Name		Bank Street at Conroy Road/Kemp Drive				Bank Street at Leitrim Road				Bank Street at Rotary Way			
OP Transect / Policy Area		Greenbelt or Rural				Mainstreet Corridor (outside a Hub)				Mainstreet Corridor (outside a Hub)			
Pedestrian	PLOS Inputs												
	Pedestrians Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Number of Travel Lanes Crossed	6	6	4	1-3	6	5	4	1-3	6	5	1-3	1-3
	Median Refuge (≥2.7m)	No	No	No	No	No	No	No	No	No	No	No	No
	Crosswalk Treatment	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	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
	Signal Cycle Length (sec)			130.0				130.0				130.0	
	Effective Walk Time (sec)	7.0	7.0	7.0	7.0	31.0	31.0	9.0	9.0	68.0	68.0	8.0	8.0
	Conflict with Right-Turn Vehicles (For PLOS & BLOS)	WBR	EBR	NBR	SBR	WBR	EBR	NBR	SBR	WBR	EBR	NBR	SBR
	Right-Turn Geometry	Right-Turn With No Channel	Right-Turn With No Channel	Smart Channel w/ Raised Crossing	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel
	Right-Turn Signal Phasing	Permissive	Permissive	-	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
	Right-Turn Volume	≤ 150 veh/h	≤ 150 veh/h	> 300 veh/h	≤ 150 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	> 150 to 300 veh/h	> 300 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h
	Right-Turn Effective Corner Radius	> 8m	> 8m	-	> 8m	≤ 8m	≤ 8m	> 8m	> 8m	> 8m	> 8m	> 8m	> 8m
	Cross-street Posted Speed (km/h)	70 km/h		70 km/h		60 km/h		60 km/h		50 km/h		60 km/h	
Bicycle	Conflict with Left-Turn Vehicles (For PLOS & BLOS)	EBL	WBL	SBL	NBL	EBL	WBL	SBL	NBL	EBL	WBL	SBL	NBL
	Left-Turn Signal Phasing	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm
	Left-Turn Volume	≤ 50 veh/h	> 100 veh/h	≤ 50 veh/h	≤ 50 veh/h	> 100 veh/h	> 100 veh/h	> 100 veh/h	> 50 to 100 veh/h	> 50 to 100 veh/h	≤ 50 veh/h	> 100 veh/h	≤ 50 veh/h
	Left-Turn Opposing Lanes	-	-	-	-	-	-	-	≥ 2	≤ 1	-	-	-
	Score	2.20	2.00	3.25	4.00	2.15	2.90	2.90	3.35	2.40	3.45	3.85	4.05
	PLOS	D	D	C	B	D	C	C	C	D	C	B	B
		C				C				C			
	Target PLOS	D				B				B			
	BLOS Inputs												
	Cycling Route Classification	Elsewhere				Elsewhere				Elsewhere			
	Cyclists Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Type of Cycling Facility Across Leg	Bike Lane Through Intersection	Bike Lane Through Intersection	Mixed Traffic	Mixed Traffic	Mixed Traffic	Bike Lane Through Intersection	Mixed Traffic	Mixed Traffic	Crossride	Crossride	Mixed Traffic	Mixed Traffic
	Two-Way ADT (in Cyclist Travel Direction)	37,350		11,200		44,150		15,600		44,400		2,250	
Transit	Floating Bike Lane or Right-Turn Lane Crossover Approaching the Crossing?	Yes	Yes	No	No	No	No	No	No	No	No	No	No
	Crossride Operation	-	-	-	-	-	-	-	-	Unidirectional	Unidirectional	-	-
	Target Crossride Setback Met?	-	-	-	-	-	-	-	-	Yes	Yes	-	-
	Right-Turn Vehicle Volume from Adjacent Roadway > 100 veh/h?	-	-	-	-	-	-	-	-	-	-	-	-
	Cyclist Left-Turn Operation	WBL	EBL	NBL	SBL	WBL	EBL	NBL	SBL	WBL	EBL	NBL	SBL
	Cyclist Left-Turn Treatment Type	General Purpose Dual Left-Turn Lanes	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	Protected Corner	Protected Corner	Protected Corner	Protected Corner
	Vehicle Lanes Crossed by Cyclists	-	No Lane Crossed	Two or More Lanes Crossed	Two or More Lanes Crossed	No Lane Crossed	No Lane Crossed	No Lane Crossed	Two or More Lanes Crossed	-	-	-	-
	Score	25	5	20	30	10	45	-10	-40	130	140	40	80
	BLOS	E	F	E	E	F	D	F	F	A	A	D	C
		E				F				B			
	Target BLOS	D				C				C			
	TLOS Inputs												
	Transit Facility	TP - Isolated Measures				TP - Isolated Measures				TP - Isolated Measures			
	Vehicles Travelling	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound
Auto	Average Transit Delay (if available)	21-35 sec	≤ 10 sec			> 80 sec	> 80 sec			11-20 sec	11-20 sec	36-55 sec	
	Example Transit Priority Treatment	-	-	-	-	-	-	-	-	-	-	-	-
	TLOS	C	A	-	-	F	F	-	-	B	B	D	-
		B				F				C			
	Target TLOS	N/A				C				C			
Auto	AutoLOS Inputs												
	Overall Intersection Volume to Capacity Ratio	0.81 to 0.90				> 1.00				0.81 to 0.90			
	Individual Movements V/C Ratios and Queue Lengths	See Separate Traffic Operations Table				See Separate Traffic Operations Table				See Separate Traffic Operations Table			
	AutoLOS	D				F				D			
	Target AutoLOS	D				E				E			

Multi-Modal Level of Service - Intersections Form

Project: 4795 Bank St
Consultant: CGH Transportation Inc.
Date: 2026-05-29
Scenario: Existing/Future

Intersection Name		Bank Street at White Alder Avenue/Analdea Drive				Bank Street at Findlay Creek Drive				Bank Street at Shuttleworth Drive/Cowan's Grove Plaza			
OP Transect / Policy Area		Mainstreet Corridor (outside a Hub)				Mainstreet Corridor (outside a Hub)				Mainstreet Corridor (outside a Hub)			
Pedestrian	PLOS Inputs												
	Pedestrians Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Number of Travel Lanes Crossed	6	5	1-3	1-3	6	5	1-3	5	6	5	1-3	4
	Median Refuge (≥2.7m)	No	No	No	No	No	No	No	No	No	No	No	No
	Crosswalk Treatment	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings
	Signal Cycle Length (sec)	130.0				130.0				130.0			
	Effective Walk Time (sec)	79.0	79.0	11.0	11.0	52.0	40.0	23.0	23.0	49.0	33.0	18.0	18.0
	Conflict with Right-Turn Vehicles (For PLOS & BLOS)	WBR	EBR	NBR	SBR	WBR	EBR	NBR	SBR	WBR	EBR	NBR	SBR
	Right-Turn Geometry	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Smart Channel w/ Raised Crossing	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel
	Right-Turn Signal Phasing	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	-	Permissive	Permissive	Permissive	Permissive
	Right-Turn Volume	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	> 150 to 300 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	≤ 150 veh/h	> 300 veh/h	≤ 150 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	≤ 150 veh/h
	Right-Turn Effective Corner Radius	≤ 8m	≤ 8m	> 8m	> 8m	≤ 8m	≤ 8m	≤ 8m	-	≤ 8m	≤ 8m	≤ 8m	≤ 8m
	Cross-street Posted Speed (km/h)	40 km/h		60 km/h		50 km/h		60 km/h		40 km/h		60 km/h	
Bicycle	Conflict with Left-Turn Vehicles (For PLOS & BLOS)	EBL	WBL	SBL	NBL	EBL	WBL	SBL	NBL	EBL	WBL	SBL	NBL
	Left-Turn Signal Phasing	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Fully Protected	Fully Protected
	Left-Turn Volume	> 100 veh/h	≤ 50 veh/h	≤ 50 veh/h	≤ 50 veh/h	> 100 veh/h	> 100 veh/h	> 100 veh/h	≤ 50 veh/h	≤ 50 veh/h	> 100 veh/h	-	-
	Left-Turn Opposing Lanes	-	-	-	-	-	-	-	-	-	-	-	-
	Score	2.65	3.45	4.05	3.75	2.35	2.95	4.00	2.70	2.70	2.80	4.20	3.60
	PLOS	C	C	B	B	D	C	B	C	C	C	B	B
		C				C				C			
	Target PLOS	B				B				B			
Bicycle	BLOS Inputs												
	Cycling Route Classification	Elsewhere				Elsewhere				Elsewhere			
	Cyclists Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Type of Cycling Facility Across Leg	Crossride	Crossride	Mixed Traffic	Mixed Traffic	Crossride	Crossride	Mixed Traffic	Mixed Traffic	Crossride	Crossride	Mixed Traffic	Mixed Traffic
	Two-Way ADT (in Cyclist Travel Direction)	38,250		1,000		31,650		6,550		25,400		4,600	
	Floating Bike Lane or Right-Turn Lane Crossover Approaching the Crossing?	No	No	No	No	No	No	No	No	No	No	No	No
	Crossride Operation	Unidirectional	Unidirectional	-	-	Unidirectional	Unidirectional	-	-	Unidirectional	Unidirectional	-	-
	Target Crossride Setback Met?	Yes	Yes	-	-	Yes	Yes	-	-	Yes	Yes	-	-
	Right-Turn Vehicle Volume from Adjacent Roadway > 100 veh/h?	-	-	-	-	-	-	-	-	-	-	-	-
	Cyclist Left-Turn Operation	WBL	EBL	NBL	SBL	WBL	EBL	NBL	SBL	WBL	EBL	NBL	SBL
	Cyclist Left-Turn Treatment Type	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner	Protected Corner
	Vehicle Lanes Crossed by Cyclists	-	-	-	-	-	-	-	-	-	-	-	-
	Score	100	140	80	60	90	100	50	70	140	90	90	90
Transit	BLOS	B	A	C	D	C	B	D	C	A	C	C	C
		B				C				B			
	Target BLOS	C				C				C			
Transit	TLOS Inputs												
	Transit Facility	TP - Isolated Measures				TP - Isolated Measures				TP - Isolated Measures			
	Vehicles Travelling	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound
	Average Transit Delay (if available)	≤ 10 sec	11-20 sec			11-20 sec	11-20 sec		36-55 sec	11-20 sec	21-35 sec		
	Example Transit Priority Treatment	-	-	-	-	-	-	-	-	-	-	-	-
	TLOS	A	B	-	-	B	B	-	D	B	C	-	-
		A				C				B			
	Target TLOS	C				C				C			
Auto	AutoLOS Inputs												
	Overall Intersection Volume to Capacity Ratio	0.61 to 0.70				0.61 to 0.70				0.61 to 0.70			
	Individual Movements V/C Ratios and Queue Lengths	See Separate Traffic Operations Table				See Separate Traffic Operations Table				See Separate Traffic Operations Table			
	AutoLOS	B				B				B			
	Target AutoLOS	E				E				E			

Multi-Modal Level of Service - Intersections Form

Project: 4795 Bank St
Consultant: CGH Transportation Inc.
Date: 2026-05-29
Scenario: Existing/Future

Intersection Name		Bank Street at Blais Road/Miikana Road				Bank Street at Dun Skipper Drive			
OP Transect / Policy Area		Mainstreet Corridor (outside a Hub)				Mainstreet Corridor (outside a Hub)			
Pedestrian	PLOS Inputs								
	Pedestrians Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Number of Travel Lanes Crossed	6	5	1-3	1-3	1-3	1-3	No Crosswalk	1-3
	Median Refuge (≥2.7m)	No	No	No	No	No	No	-	No
	Crosswalk Treatment	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	Zebra Stripe Hi-Vis Markings	-	Zebra Stripe Hi-Vis Markings
	Signal Cycle Length (sec)	130.0				130.0			
	Effective Walk Time (sec)	53.0	53.0	48.0	48.0	78.0	78.0	-	21.0
	Conflict with Right-Turn Vehicles (For PLOS & BLOS)	WBR	EBR	NBR	SBR	WBR	EBR	NBR	SBR
	Right-Turn Geometry	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Smart Channel w/ Raised Crossing	No Right-Turn / Prohib.	Right-Turn With No Channel	No Right-Turn / Prohib.	Right-Turn With No Channel
	Right-Turn Signal Phasing	Permissive	Permissive	Permissive	-	-	Permissive	-	Permissive
	Right-Turn Volume	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	> 150 to 300 veh/h	-	≤ 150 veh/h	-	> 150 to 300 veh/h
	Right-Turn Effective Corner Radius	> 8m	> 8m	> 8m	-	-	> 8m	-	> 8m
	Cross-street Posted Speed (km/h)	60 km/h				50 km/h			
	Cross-street Posted Speed (km/h)	60 km/h				70 km/h			
	Conflict with Left-Turn Vehicles (For PLOS & BLOS)	EBL	WBL	SBL	NBL	EBL	WBL	SBL	NBL
Left-Turn Signal Phasing	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	No Left-Turn / Prohib.	No Left-Turn / Prohib.	Perm or Prot+Perm	
Left-Turn Volume	> 100 veh/h	> 50 to 100 veh/h	≤ 50 veh/h	> 50 to 100 veh/h	> 100 veh/h	-	-	> 100 veh/h	
Left-Turn Opposing Lanes	-	≤ 1	-	≥ 2	-	-	-	-	
Score	2.35	3.15	4.35	4.15	4.60	4.65	-	3.55	
PLOS	D	C	B	B	A	A	-	B	
	B				B				
Target PLOS	B				B				
Bicycle	BLOS Inputs								
	Cycling Route Classification	Elsewhere				Elsewhere			
	Cyclists Crossing the	North Leg	South Leg	East Leg	West Leg	North Leg	South Leg	East Leg	West Leg
	Type of Cycling Facility Across Leg	Crossride	Crossride	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Two-Way ADT (in Cyclist Travel Direction)	24,100		3,850		19,950		2,450	
	Floating Bike Lane or Right-Turn Lane Crossover Approaching the Crossing?	No	No	No	No	No	No	No	No
	Crossride Operation	Unidirectional	Unidirectional	-	-	-	-	-	-
	Target Crossride Setback Met?	Yes	Yes	-	-	-	-	-	-
	Right-Turn Vehicle Volume from Adjacent Roadway > 100 veh/h?	-	-	-	-	-	-	-	-
	Cyclist Left-Turn Operation	WBL	EBL	NBL	SBL	WBL	EBL	NBL	SBL
	Cyclist Left-Turn Treatment Type	Protected Corner	Protected Corner	Protected Corner	Protected Corner	No Left-Turn	Protected Corner	Protected Corner	No Left-Turn
	Vehicle Lanes Crossed by Cyclists	-	-	-	-	-	-	-	-
	Score	100	140	80	40	60	90	100	20
	BLOS	B	A	C	D	D	C	B	E
		C				C			
Target BLOS	C				C				
Transit	TLOS Inputs								
	Transit Facility	TP - Isolated Measures				TP - Isolated Measures			
	Vehicles Travelling	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound
	Average Transit Delay (if available)	≤ 10 sec	≤ 10 sec			11-20 sec	≤ 10 sec		
	Example Transit Priority Treatment	-	-	-	-	-	-	-	-
	TLOS	A	A	-	-	B	A	-	-
	Target TLOS	C				C			
Auto	AutoLOS Inputs								
	Overall Intersection Volume to Capacity Ratio	0 to 0.60				0.71 to 0.80			
	Individual Movements V/C Ratios and Queue Lengths	See Separate Traffic Operations Table				See Separate Traffic Operations Table			
	AutoLOS	A				C			
	Target AutoLOS	E				E			

Appendix I

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

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

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

Appendix J

Background Development Volumes

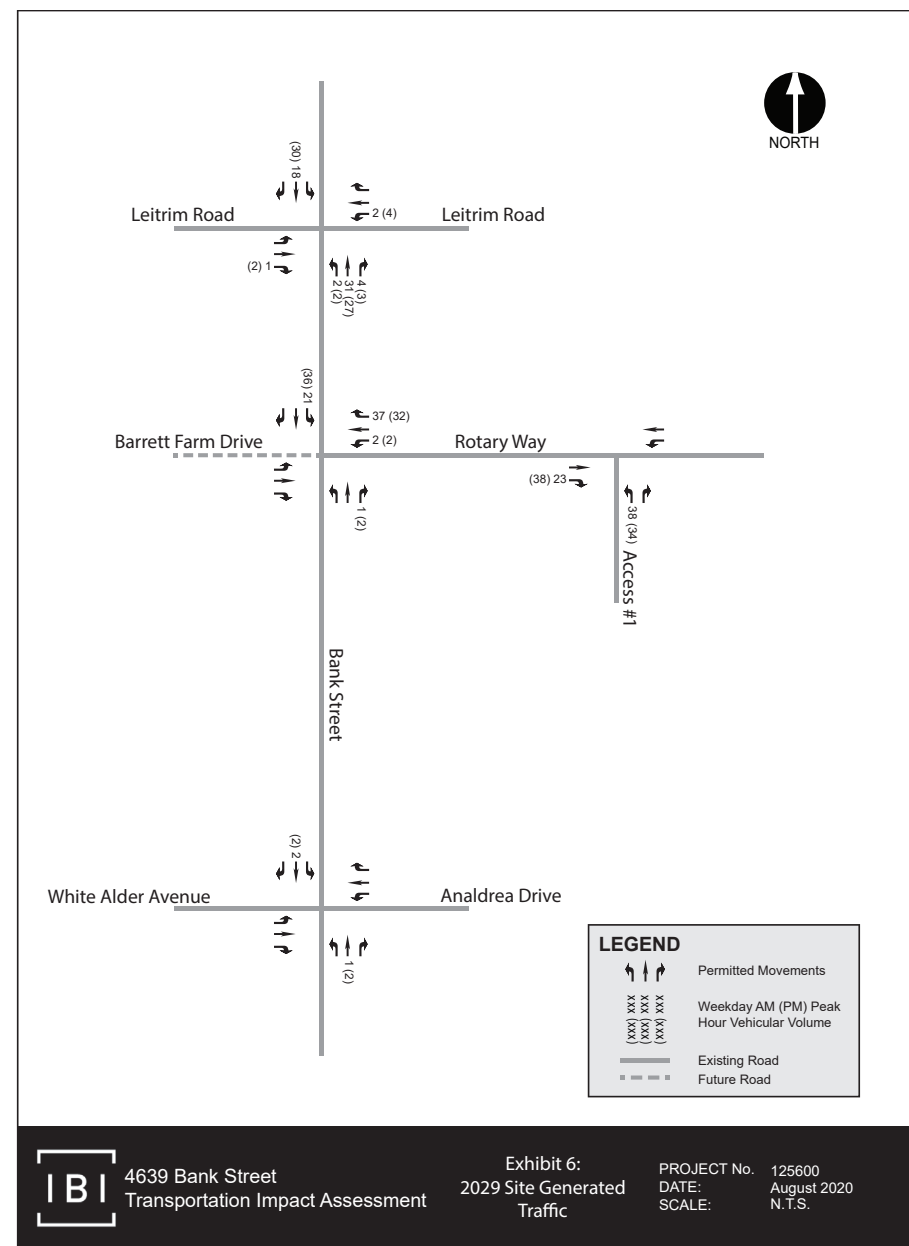
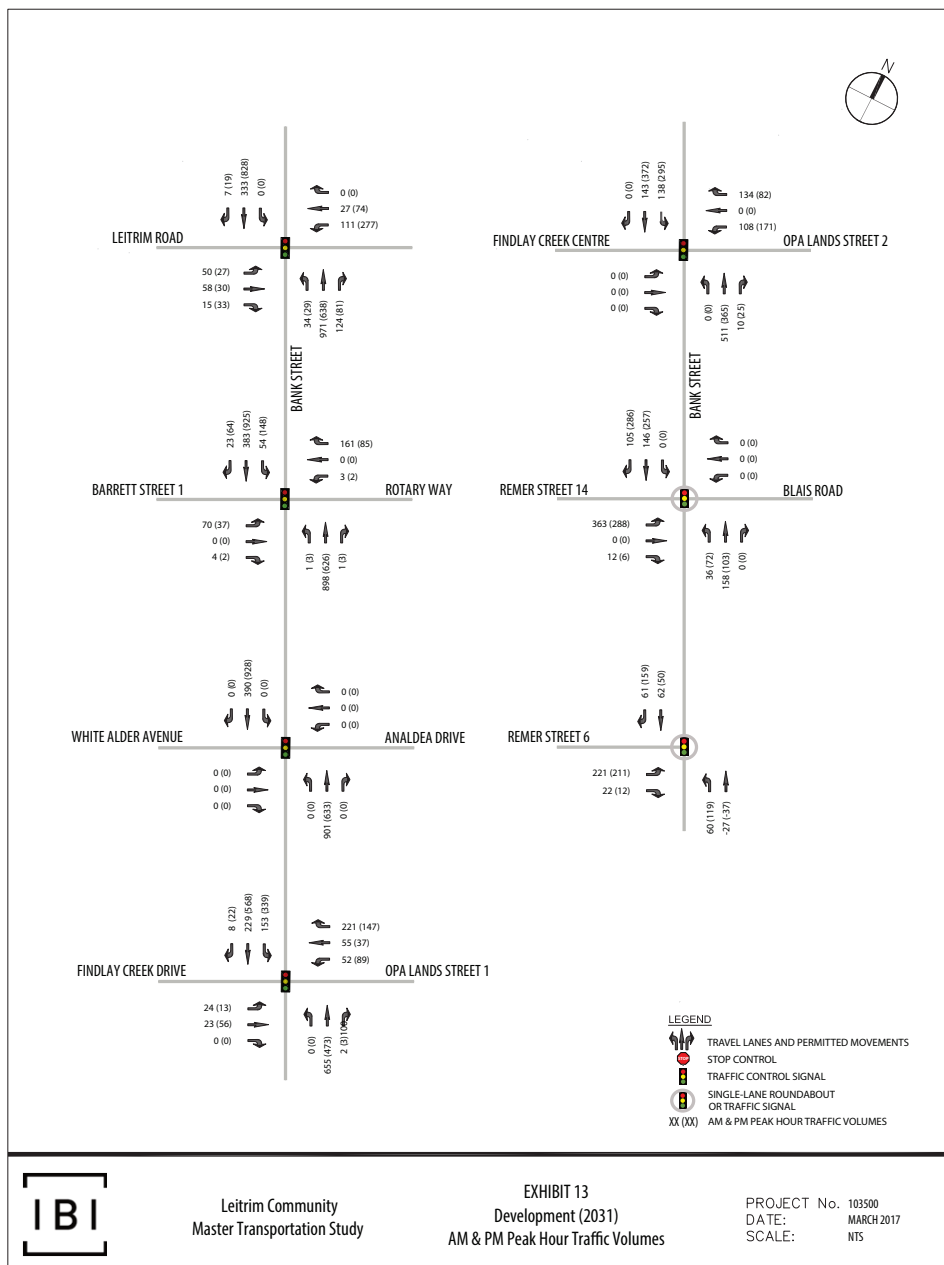
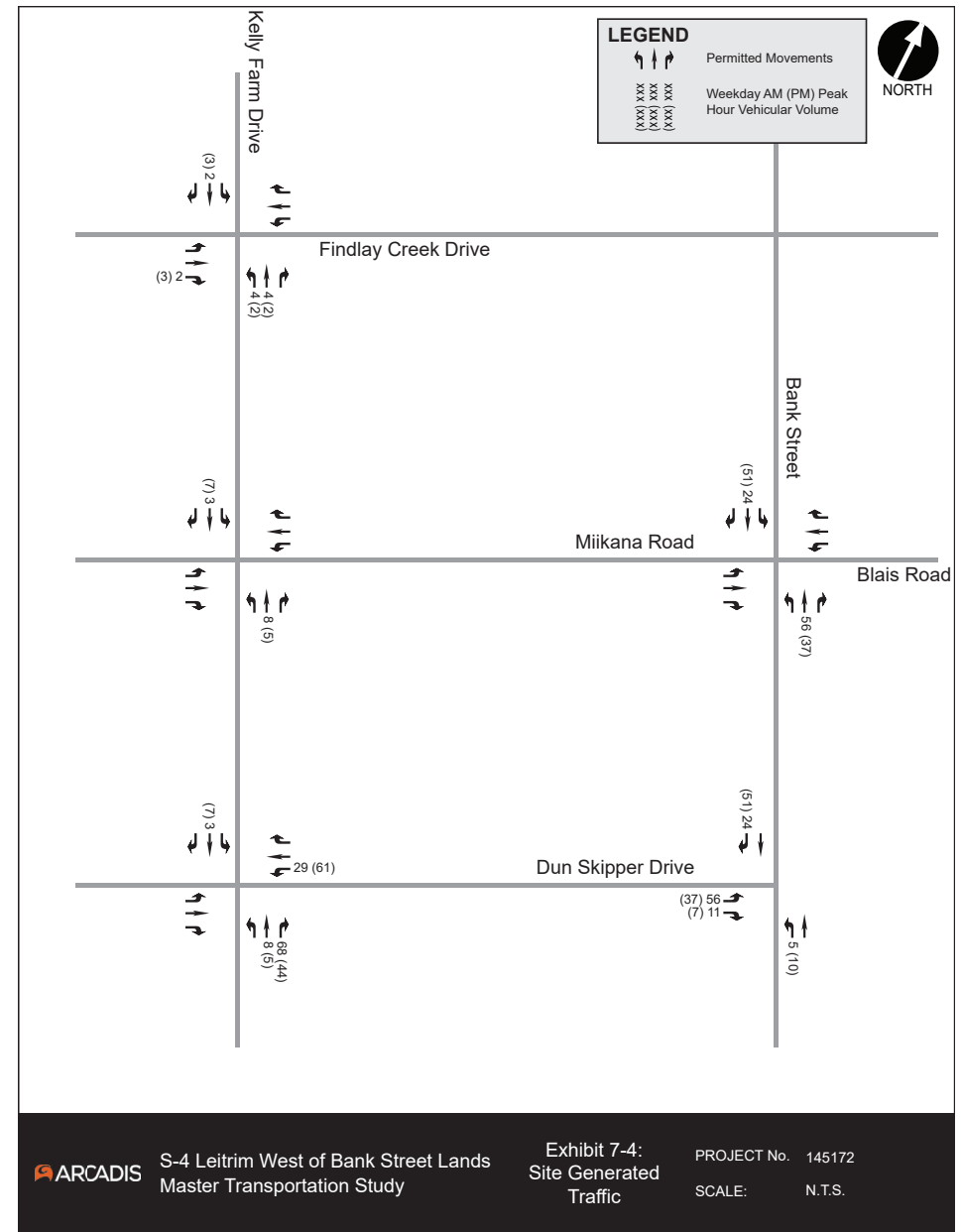
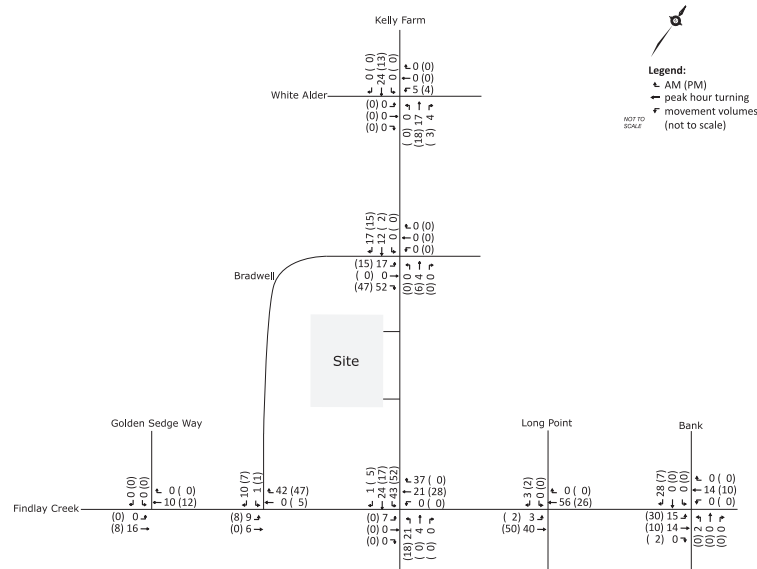


Figure 15 illustrates the forecast site-generated trips.

Figure 15: Site Generated Trips



3.2 Background Network Travel Demand

3.2.1 Transportation Network Plans

The City's 2013 Transportation Master Plan identified the widening of Bank Street from Leitrim Road to Dun Skipper Road. Dillon is currently engaged in providing traffic analysis for the Bank Street widening project, which is in the detailed design stage. There are no other network modifications which will directly impact the study area road network.

3.2.2 Background Traffic Volume Growth

Traffic volumes at the intersection of Bank Street and Findlay Creek Drive are expected to grow as a result of general background growth and specific development growth in the general area. Future 2025 traffic volumes were obtained from the Leitrim MTS. Future 2030 traffic volumes were obtained from Dillon's traffic analysis undertaken for the Bank Street widening project.

Appendix K

Synchro Intersection Worksheets – 2031 Future Background Conditions

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2031 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	5	256	3	2	1359	892	3	488	3
Future Volume (vph)	15	5	256	3	2	1359	892	3	488	3
Lane Group Flow (vph)	15	9	256	4	2	1359	892	3	488	3
Turn Type	Perm	NA	custom	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4				2			6	
Permitted Phases	4		8	8	2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	30.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Split (%)	12.7%	12.7%	23.1%	23.1%	76.9%	76.9%	76.9%	76.9%	76.9%	76.9%
Maximum Green (s)	10.0	10.0	23.7	23.7	93.4	93.4	93.4	93.4	93.4	93.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	18.8	18.8	19.0	19.0	98.1	98.1	98.1	98.1	98.1	98.1
Actuated g/C Ratio	0.14	0.14	0.15	0.15	0.75	0.75	0.75	0.75	0.75	0.75
v/c Ratio	0.09	0.04	0.73	0.02	0.00	0.55	0.69	0.01	0.20	0.00
Control Delay	47.0	34.7	65.1	40.2	2.0	3.3	10.3	5.3	5.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	34.7	65.1	40.2	2.0	3.3	10.3	5.3	5.2	0.0
LOS	D	C	E	D	A	A	B	A	A	A
Approach Delay		42.4		64.8		6.1			5.2	
Approach LOS		D		E		A			A	
Queue Length 50th (m)	3.4	1.1	32.7	0.7	0.0	13.9	58.8	0.2	16.5	0.0
Queue Length 95th (m)	9.6	6.0	45.2	3.8	m0.1	m16.5	m0.0	1.1	26.4	0.0
Internal Link Dist (m)		337.1		495.4		153.6			706.5	
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	213	299	441	263	625	2482	1289	225	2412	1103
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.03	0.58	0.02	0.00	0.55	0.69	0.01	0.20	0.00

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 54 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 11.3

Intersection LOS: B

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
Page 1

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2031 Future Background
AM Peak Hour

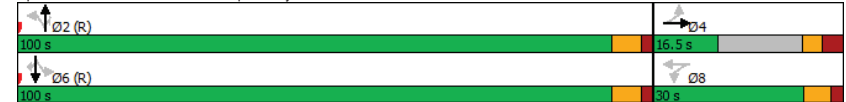
Intersection Capacity Utilization 91.4%

ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leitrin

2031 Future Background
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	275	333	28	193	271	147	72	1788	49	635	77
Future Volume (vph)	275	333	28	193	271	147	72	1788	49	635	77
Lane Group Flow (vph)	0	608	28	193	271	147	72	2037	49	635	77
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2	1	6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	12.0	31.3	12.0	31.3	31.3
Total Split (s)	51.0	51.0	51.0	12.0	63.0	63.0	12.0	55.0	12.0	55.0	55.0
Total Split (%)	39.2%	39.2%	39.2%	9.2%	48.5%	48.5%	9.2%	42.3%	9.2%	42.3%	42.3%
Maximum Green (s)	44.5	44.5	44.5	5.5	56.5	56.5	5.9	48.7	5.9	48.7	48.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	C-Max	None	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)	27.0	27.0	27.0		27.0	27.0		18.0		18.0	18.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5		6	6
Act Effct Green (s)	44.5	44.5	56.5	56.5	56.5	56.5	51.1	56.0	51.1	51.1	
Actuated g/C Ratio	0.34	0.34	0.43	0.43	0.43	0.43	0.39	0.43	0.39	0.39	
v/c Ratio	1.42	0.06	1.68	0.38	0.21	0.29	1.61	0.39	0.51	0.13	
Control Delay	237.6	0.2	363.0	26.9	6.7	12.4	300.9	31.0	26.4	2.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	237.6	0.2	363.0	26.9	6.7	12.4	300.9	31.0	26.4	2.8	
LOS	F	A	F	C	A	B	F	C	C	A	
Approach Delay	227.2				128.2		291.1		24.3		
Approach LOS	F				F		F		C		
Queue Length 50th (m)	~209.8	0.0	~59.0	46.3	4.1	6.7	~406.4	4.5	40.3	0.0	
Queue Length 95th (m)	#279.6	0.0	#107.1	68.9	16.6	m7.9	#445.6	m15.6	74.4	m2.9	
Internal Link Dist (m)	312.8			585.8			421.1		467.3		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	427	507	115	709	700	247	1268	128	1242	575	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.42	0.06	1.68	0.38	0.21	0.29	1.61	0.38	0.51	0.13	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

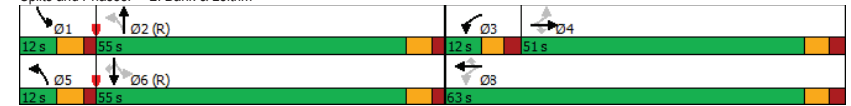
CGH Transportation
Page 3

Lanes, Volumes, Timings
2: Bank & Leitrin

2031 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.68	
Intersection Signal Delay: 207.7	Intersection LOS: F
Intersection Capacity Utilization 130.9%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2031 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	63	0	21	0	1	1732	107	721	21
Future Volume (vph)	63	0	21	0	1	1732	107	721	21
Lane Group Flow (vph)	63	4	21	242	1	1742	107	721	21
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	27.3	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	28.0	28.0	28.0	28.0	88.0	88.0	14.0	102.0	102.0
Total Split (%)	21.5%	21.5%	21.5%	21.5%	67.7%	67.7%	10.8%	78.5%	78.5%
Maximum Green (s)	21.7	21.7	21.7	21.7	81.4	81.4	7.7	95.4	95.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	14.0	14.0	14.0	14.0	13.0	13.0		13.0	13.0
Pedestrian Calls (#/hr)	10	10	10	10	11	11		10	10
Act Effct Green (s)	18.4	18.4	18.4	18.4	85.0	85.0	99.0	98.7	98.7
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.65	0.65	0.76	0.76	0.76
v/c Ratio	1.07	0.01	0.12	0.80	0.00	0.82	0.64	0.31	0.02
Control Delay	187.8	0.0	48.1	47.2	3.0	8.2	28.2	15.8	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	187.8	0.0	48.1	47.2	3.0	8.2	28.2	15.8	7.2
LOS	F	A	D	D	A	A	C	B	A
Approach Delay		176.6		47.3		8.2		17.2	
Approach LOS		F		D		A		B	
Queue Length 50th (m)	16.0	0.0	4.6	31.0	0.0	179.7	17.1	77.5	1.7
Queue Length 95th (m)	#44.6	0.0	12.4	#62.7	m0.0	43.2	m22.8	m79.7	m3.0
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	70	482	211	335	426	2124	170	2356	1069
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.01	0.10	0.72	0.00	0.82	0.63	0.31	0.02
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 72 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 90									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

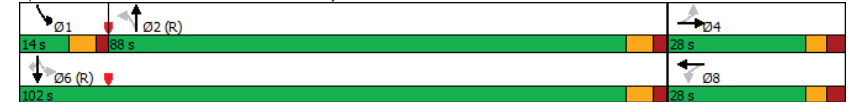
CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2031 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 18.2
Intersection LOS: B
Intersection Capacity Utilization 103.8%
ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2031 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	195	0	2	0	1	1481	719	18
Future Volume (vph)	195	0	2	0	1	1481	719	18
Lane Group Flow (vph)	195	6	2	4	1	1482	719	18
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
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)	29.0	29.0	29.0	29.0	25.2	25.2	25.2	25.2
Total Split (s)	40.0	40.0	40.0	40.0	90.0	90.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	69.2%	69.2%	69.2%	69.2%
Maximum Green (s)	34.0	34.0	34.0	34.0	83.8	83.8	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	2.7	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2	6.2	6.2
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)	16.0	16.0	16.0	16.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	17	17	16	16	12	12
Act Effct Green (s)	25.0	25.0	25.0	25.0	92.8	92.8	92.8	92.8
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.71	0.71	0.71	0.71
v/c Ratio	0.80	0.01	0.01	0.01	0.00	0.64	0.33	0.02
Control Delay	71.9	0.0	37.5	0.0	7.0	17.0	1.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.9	0.0	37.5	0.0	7.0	17.0	1.9	0.1
LOS	E	A	D	A	A	B	A	A
Approach Delay		69.7		12.5		17.0	1.8	
Approach LOS		E		B		B	A	
Queue Length 50th (m)	48.0	0.0	0.4	0.0	0.1	137.6	5.8	0.0
Queue Length 95th (m)	69.3	0.0	2.5	0.0	m0.1	m169.3	7.2	0.0
Internal Link Dist (m)		264.9		519.4		373.7	429.7	
Turn Bay Length (m)	100.0		15.0		50.0			95.0
Base Capacity (vph)	334	552	334	407	446	2300	2176	959
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	0.58	0.01	0.01	0.01	0.00	0.64	0.33	0.02
Intersection Summary								
Cycle Length: 130								
Actuated Cycle Length: 130								
Offset: 58 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 70								

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

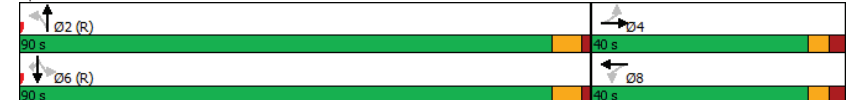
CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2031 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 16.8
Intersection LOS: B
Intersection Capacity Utilization 71.9%
ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Bank & White Alder/Analdea



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	350	37	67	69	18	919	138	488	100
Future Volume (vph)	350	37	67	69	18	919	138	488	100
Lane Group Flow (vph)	350	58	67	268	18	921	138	488	100
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	32.3	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	44.0	44.0	44.0	44.0	69.0	69.0	17.0	86.0	86.0
Total Split (%)	33.8%	33.8%	33.8%	33.8%	53.1%	53.1%	13.1%	66.2%	66.2%
Maximum Green (s)	37.7	37.7	37.7	37.7	62.3	62.3	10.6	79.3	79.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	19.0	19.0	19.0	19.0	23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)	21	21	21	21	21	21		28	28
Act Effct Green (s)	35.8	35.8	35.8	35.8	65.4	65.4	81.5	81.2	81.2
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.50	0.50	0.63	0.62	0.62
v/c Ratio	0.97	0.13	0.20	0.54	0.05	0.61	0.43	0.27	0.11
Control Delay	85.8	24.0	37.0	26.8	8.4	10.3	11.1	7.2	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.8	24.0	37.0	26.8	8.4	10.3	11.1	7.2	1.0
LOS	F	C	D	C	A	B	B	A	A
Approach Delay		77.0		28.8		10.2		7.1	
Approach LOS		E		C		B		A	
Queue Length 50th (m)	44.7	6.9	12.9	32.9	0.8	23.0	3.4	6.2	0.0
Queue Length 95th (m)	#74.0	17.6	25.2	60.3	m2.1	29.4	12.5	11.0	0.0
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	382	486	353	513	397	1520	331	1822	899
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.12	0.19	0.52	0.05	0.61	0.42	0.27	0.11
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green									
Natural Cycle: 85									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

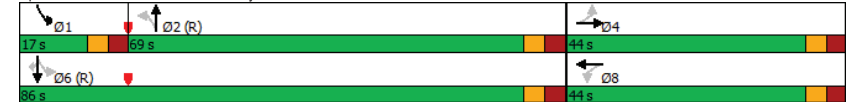
CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 86.9%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 5: Bank & Findlay Creek



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2031 Future Background

AM Peak Hour

	↖	→	↗	↖	↖	↑	↘	↓	↗
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	32	25	108	30	182	804	124	408	24
Future Volume (vph)	32	25	108	30	182	804	124	408	24
Lane Group Flow (vph)	32	127	108	151	182	814	124	408	24
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	37.0	37.0	37.0	37.0	36.0	64.0	29.0	57.0	57.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	27.7%	49.2%	22.3%	43.8%	43.8%
Maximum Green (s)	30.0	30.0	30.0	30.0	29.6	57.1	22.6	50.1	50.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.7	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	20	20	20	20	20	20	20	20	20
Act Effct Green (s)	18.1	18.1	18.1	18.1	19.5	76.3	15.3	72.0	72.0
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.15	0.59	0.12	0.55	0.55
v/c Ratio	0.26	0.44	0.74	0.49	0.73	0.45	0.66	0.24	0.03
Control Delay	52.5	18.0	81.6	18.4	76.3	10.7	91.8	4.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	18.0	81.6	18.4	76.3	10.7	91.8	4.6	0.1
LOS	D	B	F	B	E	B	F	A	A
Approach Delay		24.9		44.7		22.6		23.8	
Approach LOS		C		D		C		C	
Queue Length 50th (m)	7.4	5.7	27.0	6.9	43.5	43.5	33.7	7.8	0.0
Queue Length 95th (m)	16.5	22.8	44.4	25.3	67.2	52.7	53.6	11.5	0.1
Internal Link Dist (m)		60.3		127.0		175.1		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	204	414	240	427	377	1800	279	1673	763
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.31	0.45	0.35	0.48	0.45	0.44	0.24	0.03

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 10 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 70

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation

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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2031 Future Background

AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 26.1

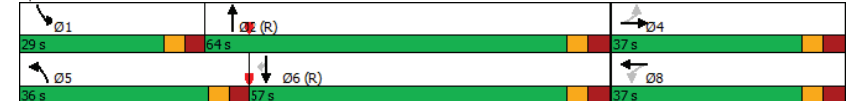
Intersection LOS: C

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation

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Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	277	89	6	39	36	693	24	416	74
Future Volume (vph)	277	89	6	39	36	693	24	416	74
Lane Group Flow (vph)	277	102	6	46	36	701	24	416	74
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	68.0	68.0	68.0	68.0	62.0	62.0	62.0	62.0	62.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	47.7%	47.7%	47.7%	47.7%	47.7%
Maximum Green (s)	61.4	61.4	61.4	61.4	55.4	55.4	55.4	55.4	55.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	0	0	1	1	0	0	21	21	21
Act Effct Green (s)	35.4	35.4	35.4	35.4	81.4	81.4	81.4	81.4	81.4
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.63	0.63	0.63	0.63	0.63
v/c Ratio	0.81	0.22	0.02	0.10	0.07	0.35	0.06	0.21	0.09
Control Delay	60.7	32.2	29.3	27.9	11.5	13.4	12.4	10.6	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	32.2	29.3	27.9	11.5	13.4	12.4	10.6	3.3
LOS	E	C	C	C	B	B	B	B	A
Approach Delay		53.0		28.1		13.3		9.7	
Approach LOS		D		C		B		A	
Queue Length 50th (m)	66.3	18.6	1.1	7.5	3.3	50.7	1.4	13.4	0.2
Queue Length 95th (m)	87.1	28.8	4.0	14.9	9.0	74.5	m7.4	39.8	6.5
Internal Link Dist (m)		213.3		2015.8		102.9		270.3	
Turn Bay Length (m)	150.0		25.0		75.0		70.0		120.0
Base Capacity (vph)	597	811	496	807	527	1989	382	1942	819
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.13	0.01	0.06	0.07	0.35	0.06	0.21	0.09
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green									
Natural Cycle: 50									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

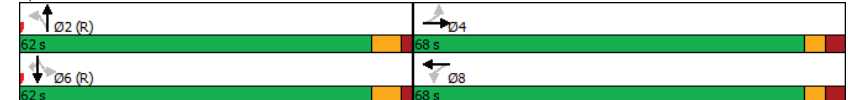
CGH Transportation
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Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 21.6	Intersection LOS: C
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 8: Bank & Miikana/Blais



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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Lanes, Volumes, Timings
9: Bank & Dun Skipper

2031 Future Background
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	192	22	60	540	352	49
Future Volume (vph)	192	22	60	540	352	49
Lane Group Flow (vph)	192	22	60	540	352	49
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	33.0	33.0	33.0	33.0
Total Split (s)	42.0	42.0	88.0	88.0	88.0	88.0
Total Split (%)	32.3%	32.3%	67.7%	67.7%	67.7%	67.7%
Maximum Green (s)	35.4	35.4	81.3	81.3	81.3	81.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	9	9
Act Effct Green (s)	21.1	21.1	95.6	95.6	95.6	95.6
Actuated g/C Ratio	0.16	0.16	0.74	0.74	0.74	0.74
v/c Ratio	0.75	0.09	0.10	0.45	0.30	0.06
Control Delay	69.0	16.2	6.4	9.1	6.5	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	16.2	6.4	9.1	6.5	1.5
LOS	E	B	A	A	A	A
Approach Delay	63.6			8.8	5.9	
Approach LOS	E			A	A	
Queue Length 50th (m)	47.5	0.0	3.9	48.7	25.2	0.0
Queue Length 95th (m)	68.8	7.2	10.0	86.3	51.9	4.4
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	430	394	624	1189	1179	801
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.06	0.10	0.45	0.30	0.06
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 79 (61%), Referenced to phase 2:NBTL and 6:SBT, Start of Green						
Natural Cycle: 70						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

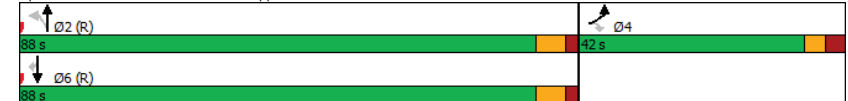
CGH Transportation
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Lanes, Volumes, Timings
9: Bank & Dun Skipper

2031 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 55.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 9: Bank & Dun Skipper



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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HCM 2010 TWSC
10: Hawthorne /Hawthorne & Blais

2031 Future Background
AM Peak Hour

Intersection						
Int Delay, s/veh	4.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	186	12	8	351	194	122
Future Vol, veh/h	186	12	8	351	194	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	25	2	35	47	13
Mvmt Flow	186	12	8	351	194	122
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	622	255	316	0	-	0
Stage 1	255	-	-	-	-	-
Stage 2	367	-	-	-	-	-
Critical Hdwy	6.54	6.45	4.12	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.525	2.218	-	-	-
Pot Cap-1 Maneuver	432	731	1244	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	429	731	1244	-	-	-
Mov Cap-2 Maneuver	429	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	19.7	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1244	-	440	-	-	
HCM Lane VIC Ratio	0.006	-	0.45	-	-	
HCM Control Delay (s)	7.9	0	19.7	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	2.3	-	-	

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2031 Future Background
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	13	9	849	11	6	1011	430	5	1374	16
Future Volume (vph)	13	9	849	11	6	1011	430	5	1374	16
Lane Group Flow (vph)	13	11	849	15	6	1011	430	5	1374	16
Turn Type	Perm	NA	custom	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4				2					
Permitted Phases	4		8	8	2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	67.0	67.0	63.0	63.0	63.0	63.0	63.0	63.0
Total Split (%)	12.7%	12.7%	51.5%	51.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%
Maximum Green (s)	10.0	10.0	60.7	60.7	56.4	56.4	56.4	56.4	56.4	56.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	51.5	51.5	51.7	51.7	65.4	65.4	65.4	65.4	65.4	65.4
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50	0.50
v/c Ratio	0.03	0.02	0.86	0.02	0.08	0.61	0.48	0.04	0.82	0.02
Control Delay	21.1	18.1	44.8	16.7	7.8	9.8	1.2	21.2	33.9	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	18.1	44.8	16.7	7.8	9.8	1.2	21.2	33.9	3.2
LOS	C	B	D	B	A	A	A	C	C	A
Approach Delay	19.7		44.3		7.2		33.5			
Approach LOS	B		D		A		C			
Queue Length 50th (m)	2.0	1.4	100.4	1.7	0.3	29.1	0.0	0.6	154.7	0.0
Queue Length 95th (m)	5.6	4.7	114.1	5.5	m0.3	m30.2	m0.0	3.4	#224.5	2.5
Internal Link Dist (m)	337.1		495.4		153.6		706.5			
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	607	650	1162	719	75	1650	898	124	1667	714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.73	0.02	0.08	0.61	0.48	0.04	0.82	0.02
Intersection Summary										
Cycle Length: 130										
Actuated Cycle Length: 130										
Offset: 29 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green										
Natural Cycle: 80										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.86										
Intersection Signal Delay: 25.7					Intersection LOS: C					

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background

CGH Transportation
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Lanes, Volumes, Timings

1: Bank & Kemp/Conroy

2031 Future Background
PM Peak Hour

Intersection Capacity Utilization 83.1% ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Bank & Kemp/Conroy

63 s	16.5 s
63 s	67 s

Lanes, Volumes, Timings

2: Bank & Leitrim

2031 Future Background
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↗	↗	↖	↗	↖	↗	↗
Traffic Volume (vph)	109	367	78	396	399	55	71	1042	87	1822	363
Future Volume (vph)	109	367	78	396	399	55	71	1042	87	1822	363
Lane Group Flow (vph)	0	476	78	396	399	55	71	1211	87	1822	363
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2	1	6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	12.0	31.3	12.0	31.3	31.3
Total Split (s)	45.0	45.0	45.0	18.0	63.0	63.0	12.0	55.0	12.0	55.0	55.0
Total Split (%)	34.6%	34.6%	34.6%	13.8%	48.5%	48.5%	9.2%	42.3%	9.2%	42.3%	42.3%
Maximum Green (s)	38.5	38.5	38.5	11.5	56.5	56.5	5.9	48.7	5.9	48.7	48.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0	27.0	27.0	27.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5	5	5	5	5	5	5
Act Effct Green (s)	38.5	38.5	56.5	56.5	56.5	54.8	48.7	56.0	51.1	51.1	
Actuated g/C Ratio	0.30	0.30	0.43	0.43	0.43	0.42	0.37	0.43	0.39	0.39	
v/c Ratio	1.23	0.15	1.81	0.53	0.08	0.57	1.00	0.69	1.40	0.48	
Control Delay	162.3	1.1	403.4	30.2	2.3	33.8	65.4	38.5	214.6	9.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	162.3	1.1	403.4	30.2	2.3	33.8	65.4	38.5	214.6	9.2	
LOS	F	A	F	C	A	C	E	D	F	A	
Approach Delay	139.6			202.3			63.6		175.0		
Approach LOS	F			F			E		F		
Queue Length 50th (m)	~149.9	0.0	~132.6	73.9	0.0	12.3	~173.5	14.0	~338.2	21.6	
Queue Length 95th (m)	#215.3	1.1	#194.8	104.6	4.1	#18.8	#216.6	m16.5	#382.9	m41.8	
Internal Link Dist (m)	312.8			585.8			421.1		467.3		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	388	504	219	751	653	125	1206	127	1303	753	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.23	0.15	1.81	0.53	0.08	0.57	1.00	0.69	1.40	0.48	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 122 (94%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Lanes, Volumes, Timings

2: Bank & Leirim

2031 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.81

Intersection Signal Delay: 146.9

Intersection LOS: F

Intersection Capacity Utilization 129.4%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

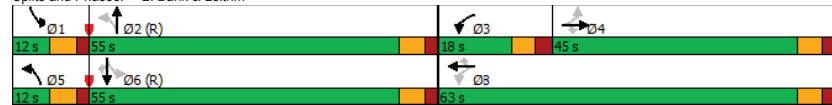
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Bank & Leirim



Lanes, Volumes, Timings

3: Bank & Barrett Farms/Rotary

2031 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	33	0	24	0	3	1090	232	1993	58
Future Volume (vph)	33	0	24	0	3	1090	232	1993	58
Lane Group Flow (vph)	33	2	24	147	3	1111	232	1993	58
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	27.3	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	28.0	28.0	28.0	28.0	77.0	77.0	25.0	102.0	102.0
Total Split (%)	21.5%	21.5%	21.5%	21.5%	59.2%	59.2%	19.2%	78.5%	78.5%
Maximum Green (s)	21.7	21.7	21.7	21.7	70.4	70.4	18.7	95.4	95.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	14.0	14.0	14.0	14.0	13.0	13.0		13.0	13.0
Pedestrian Calls (#/hr)	14	14	10	10	11	11		10	10
Act Effct Green (s)	14.4	14.4	14.4	14.4	85.6	85.6	103.0	102.7	102.7
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.66	0.66	0.79	0.79	0.79
v/c Ratio	0.36	0.01	0.17	0.36	0.03	0.52	0.61	0.76	0.05
Control Delay	62.6	0.0	52.5	2.4	5.3	4.2	7.4	12.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	0.0	52.5	2.4	5.3	4.2	7.4	12.5	0.3
LOS	E	A	D	A	A	A	A	B	A
Approach Delay		59.0		9.4		4.2		11.7	
Approach LOS		E		A		A		B	
Queue Length 50th (m)	8.3	0.0	5.9	0.0	0.0	6.8	12.9	82.4	0.0
Queue Length 95th (m)	17.9	0.0	13.5	0.0	m0.3	28.2	m3.4	m129.3	m0.3
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	137	305	212	475	100	2152	462	2619	1115
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.01	0.11	0.31	0.03	0.52	0.50	0.76	0.05

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 53 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2031 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 9.7

Intersection LOS: A

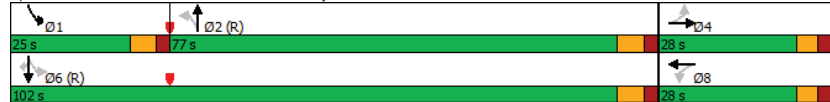
Intersection Capacity Utilization 108.9%

ICU Level of Service G

Analysis Period (min) 15

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

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2031 Future Background
PM Peak Hour

	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	71	1	0	8	1053	4	1825	157
Future Volume (vph)	71	1	0	8	1053	4	1825	157
Lane Group Flow (vph)	71	17	3	8	1055	4	1825	157
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	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)	29.0	29.0	29.0	25.2	25.2	25.2	25.2	25.2
Total Split (s)	29.0	29.0	29.0	101.0	101.0	101.0	101.0	101.0
Total Split (%)	22.3%	22.3%	22.3%	77.7%	77.7%	77.7%	77.7%	77.7%
Maximum Green (s)	23.0	23.0	23.0	94.8	94.8	94.8	94.8	94.8
Yellow Time (s)	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	1.6	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.2	6.2	6.2	6.2	6.2
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	C-Max	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)	16.0	16.0	16.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	10	16	16	16	16	16
Act Effct Green (s)	15.7	15.7	15.7	106.5	106.5	106.5	106.5	106.5
Actuated g/C Ratio	0.12	0.12	0.12	0.82	0.82	0.82	0.82	0.82
v/c Ratio	0.46	0.09	0.01	0.06	0.40	0.01	0.68	0.14
Control Delay	60.6	20.7	0.0	4.2	5.8	2.0	2.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	20.7	0.0	4.2	5.8	2.0	2.0	0.3
LOS	E	C	A	A	A	A	A	A
Approach Delay		52.9			5.8		1.8	
Approach LOS		D			A		A	
Queue Length 50th (m)	17.7	0.2	0.0	0.0	3.6	0.0	5.8	0.0
Queue Length 95th (m)	30.8	7.0	0.0	m0.9	111.7	m0.1	27.6	m0.3
Internal Link Dist (m)		264.9	519.4		373.7		429.7	
Turn Bay Length (m)	100.0			50.0		45.0		95.0
Base Capacity (vph)	229	261	381	131	2664	363	2690	1148
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	0.31	0.07	0.01	0.06	0.40	0.01	0.68	0.14

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 42 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2031 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 4.6

Intersection LOS: A

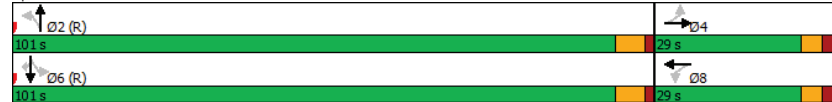
Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 4: Bank & White Alder/Analdea



Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	213	66	119	47	30	689	305	1141	394
Future Volume (vph)	213	66	119	47	30	689	305	1141	394
Lane Group Flow (vph)	213	102	119	179	30	692	305	1141	394
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	32.3	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	40.0	40.0	40.0	40.0	52.0	52.0	38.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	40.0%	40.0%	29.2%	69.2%	69.2%
Maximum Green (s)	33.7	33.7	33.7	33.7	45.3	45.3	31.6	83.3	83.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	19.0	19.0	19.0	19.0	23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)	20	20	20	20	20	20		26	26
Act Effct Green (s)	22.1	22.1	22.1	22.1	74.4	74.4	95.2	94.9	94.9
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.57	0.57	0.73	0.73	0.73
v/c Ratio	0.80	0.35	0.61	0.52	0.13	0.38	0.58	0.49	0.35
Control Delay	72.9	39.9	62.4	25.4	7.1	5.6	6.7	5.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.9	39.9	62.4	25.4	7.1	5.6	6.7	5.0	1.4
LOS	E	D	E	C	A	A	A	A	A
Approach Delay		62.2		40.2		5.7		4.5	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	26.2	17.9	27.4	16.1	1.1	13.3	24.9	81.6	8.2
Queue Length 95th (m)	39.8	33.9	47.1	38.4	m2.8	17.8	26.8	66.6	7.6
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	406	436	298	466	235	1841	675	2352	1117
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.23	0.40	0.38	0.13	0.38	0.45	0.49	0.35

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 85

Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 13.8

Intersection LOS: B

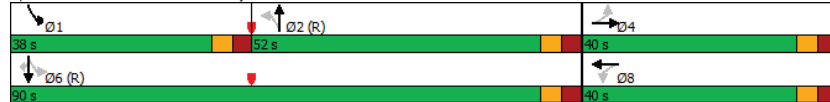
Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 5: Bank & Findlay Creek



Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2031 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	30	20	171	40	123	601	265	962	39
Future Volume (vph)	30	20	171	40	123	601	265	962	39
Lane Group Flow (vph)	30	208	171	114	123	626	265	962	39
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	43.0	43.0	43.0	43.0	21.0	50.0	37.0	66.0	66.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	16.2%	38.5%	28.5%	50.8%	50.8%
Maximum Green (s)	36.0	36.0	36.0	36.0	14.6	43.1	30.6	59.1	59.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.7	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	22	22	32	32		21		24	24
Act Effct Green (s)	28.6	28.6	28.6	28.6	13.5	55.9	25.2	67.6	67.6
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.10	0.43	0.19	0.52	0.52
v/c Ratio	0.12	0.45	0.93	0.30	0.72	0.46	0.83	0.57	0.05
Control Delay	38.5	10.2	100.3	18.1	83.8	30.6	89.9	10.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	10.2	100.3	18.1	83.8	30.6	89.9	10.1	0.2
LOS	D	B	F	B	F	C	F	B	A
Approach Delay		13.8		67.4		39.3		26.5	
Approach LOS		B		E		D		C	
Queue Length 50th (m)	6.1	4.0	42.8	8.8	33.0	66.8	0.0	19.1	0.0
Queue Length 95th (m)	13.7	23.3	#74.9	23.2	#55.1	81.5	86.2	73.8	m0.2
Internal Link Dist (m)		60.3		127.0		175.1		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	311	534	230	466	190	1375	390	1690	757
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.39	0.74	0.24	0.65	0.46	0.68	0.57	0.05

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2031 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 33.7

Intersection LOS: C

Intersection Capacity Utilization 84.9%

ICU Level of Service E

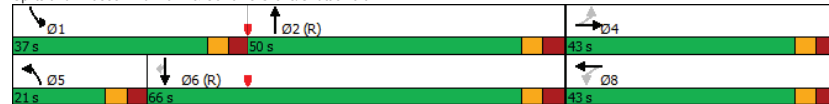
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	220	73	20	93	72	490	4	1073	208
Future Volume (vph)	220	73	20	93	72	490	4	1073	208
Lane Group Flow (vph)	220	79	20	121	72	498	4	1073	208
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	63.0	63.0	63.0	63.0	67.0	67.0	67.0	67.0	67.0
Total Split (%)	48.5%	48.5%	48.5%	48.5%	51.5%	51.5%	51.5%	51.5%	51.5%
Maximum Green (s)	56.4	56.4	56.4	56.4	60.4	60.4	60.4	60.4	60.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	22	22	22
Act Effct Green (s)	30.4	30.4	30.4	30.4	86.4	86.4	86.4	86.4	86.4
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.66	0.66	0.66	0.66	0.66
v/c Ratio	0.81	0.21	0.08	0.30	0.28	0.23	0.01	0.50	0.23
Control Delay	68.1	36.6	35.2	35.5	10.2	6.6	8.0	7.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	36.6	35.2	35.5	10.2	6.6	8.0	7.9	0.9
LOS	E	D	D	D	B	A	A	A	A
Approach Delay		59.8		35.5		7.1		6.7	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	53.6	15.6	4.0	22.4	4.6	16.0	0.3	37.7	0.0
Queue Length 95th (m)	74.2	25.7	9.6	34.9	12.4	27.4	m0.5	53.4	m1.1
Internal Link Dist (m)		213.3		2015.8		102.9		270.3	
Turn Bay Length (m)	150.0		25.0		75.0		70.0		120.0
Base Capacity (vph)	504	696	482	733	261	2152	508	2160	922
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.11	0.04	0.17	0.28	0.23	0.01	0.50	0.23

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 128 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 15.5

Intersection LOS: B

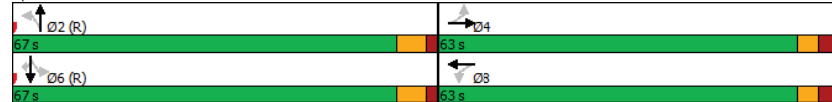
Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 8: Bank & Miikana/Blais



Lanes, Volumes, Timings
9: Bank & Dun Skipper

2031 Future Background
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	178	12	119	383	920	128
Future Volume (vph)	178	12	119	383	920	128
Lane Group Flow (vph)	178	12	119	383	920	128
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	33.0	33.0	33.0	33.0
Total Split (s)	34.0	34.0	96.0	96.0	96.0	96.0
Total Split (%)	26.2%	26.2%	73.8%	73.8%	73.8%	73.8%
Maximum Green (s)	27.4	27.4	89.3	89.3	89.3	89.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	5	5
Act Effct Green (s)	20.0	20.0	96.7	96.7	96.7	96.7
Actuated g/C Ratio	0.15	0.15	0.74	0.74	0.74	0.74
v/c Ratio	0.74	0.06	0.40	0.31	0.73	0.12
Control Delay	70.3	20.2	12.2	6.9	8.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	20.2	12.2	6.9	8.7	0.3
LOS	E	C	B	A	A	A
Approach Delay	67.1			8.2	7.6	
Approach LOS	E			A	A	
Queue Length 50th (m)	44.1	0.0	9.8	28.7	101.4	0.0
Queue Length 95th (m)	64.9	5.4	27.2	51.7	74.6	0.0
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	330	283	295	1238	1261	1084
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.04	0.40	0.31	0.73	0.12
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 9 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 90						

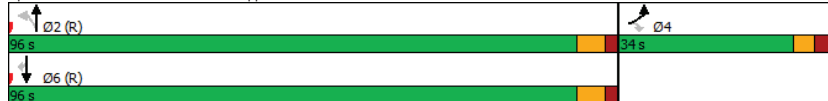
Lanes, Volumes, Timings
9: Bank & Dun Skipper

2031 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 14.3
Intersection Capacity Utilization 86.5%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service E

Splits and Phases: 9: Bank & Dun Skipper



HCM 2010 TWSC
10: Hawthorne /Hawthorne & Blais

2031 Future Background
PM Peak Hour

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	179	23	14	301	352	225
Future Vol, veh/h	179	23	14	301	352	225
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	17	14	27	25	10
Mvmt Flow	179	23	14	301	352	225

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	794	465	577
Stage 1	465	-	-
Stage 2	329	-	-
Critical Hdwy	6.47	6.37	4.24
Critical Hdwy Stg 1	5.47	-	-
Critical Hdwy Stg 2	5.47	-	-
Follow-up Hdwy	3.563	3.453	2.326
Pot Cap-1 Maneuver	350	568	940
Stage 1	622	-	-
Stage 2	718	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	344	568	940
Mov Cap-2 Maneuver	344	-	-
Stage 1	611	-	-
Stage 2	718	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.1	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	940	-	360	-
HCM Lane V/C Ratio	0.015	-	0.561	-
HCM Control Delay (s)	8.9	0	27.1	-
HCM Lane LOS	A	A	D	-
HCM 95th %tile Q(veh)	0	-	3.3	-

Lanes, Volumes, Timings
2: Bank & Leitrin

2031Future Background - Mitigation
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	275	333	28	193	271	147	72	1788	249	49	635	77
Future Volume (vph)	275	333	28	193	271	147	72	1788	249	49	635	77
Lane Group Flow (vph)	275	333	28	193	271	147	72	1788	249	49	635	77
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	20.4	40.6	40.6	20.3	40.5	40.5	21.3	78.0	78.0	11.1	67.8	67.8
Total Split (%)	13.6%	27.1%	27.1%	13.5%	27.0%	27.0%	14.2%	52.0%	52.0%	7.4%	45.2%	45.2%
Maximum Green (s)	13.9	34.1	34.1	13.8	34.0	34.0	15.2	71.7	71.7	5.0	61.5	61.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0		27.0	27.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5		5	5		6	6	6
Act Effct Green (s)	13.9	22.6	22.6	13.1	21.7	21.7	12.2	79.7	79.7	9.3	76.8	76.8
Actuated g/C Ratio	0.09	0.15	0.15	0.09	0.14	0.14	0.08	0.53	0.53	0.06	0.51	0.51
v/c Ratio	0.93	0.68	0.09	0.74	0.60	0.42	0.62	1.03	0.31	0.48	0.39	0.11
Control Delay	104.3	67.0	0.5	83.9	64.8	9.1	88.0	63.1	12.0	81.7	24.9	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	67.0	0.5	83.9	64.8	9.1	88.0	63.1	12.0	81.7	24.9	0.3
LOS	F	E	A	F	E	A	F	E	B	F	C	A
Approach Delay		80.2			57.5			57.9			26.1	
Approach LOS		F			E			E			C	
Queue Length 50th (m)	42.5	50.8	0.0	29.2	40.6	0.0	21.0	~300.4	20.2	14.1	58.8	0.0
Queue Length 95th (m)	#70.0	60.8	0.0	42.8	50.4	14.8	37.5	#367.2	42.3	#41.5	90.8	0.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0		150.0	150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	295	739	402	276	703	453	146	1743	815	102	1618	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.45	0.07	0.70	0.39	0.32	0.49	1.03	0.31	0.48	0.39	0.11

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031Future Background - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leitrin

2031Future Background - Mitigation
AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 55.4

Intersection LOS: E

Intersection Capacity Utilization 97.2%

ICU Level of Service F

Analysis Period (min) 15

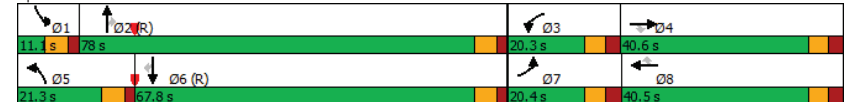
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031Future Background - Mitigation

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Background - Mitigation
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	109	367	78	396	399	55	71	1042	169	87	1822	363
Future Volume (vph)	109	367	78	396	399	55	71	1042	169	87	1822	363
Lane Group Flow (vph)	109	367	78	396	399	55	71	1042	169	87	1822	363
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	16.7	40.5	40.5	23.0	46.8	46.8	12.0	67.4	67.4	19.1	74.5	74.5
Total Split (%)	11.1%	27.0%	27.0%	15.3%	31.2%	31.2%	8.0%	44.9%	44.9%	12.7%	49.7%	49.7%
Maximum Green (s)	10.2	34.0	34.0	16.5	40.3	40.3	5.9	61.1	61.1	13.0	68.2	68.2
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0		27.0	27.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	5
Act Effct Green (s)	9.5	24.2	24.2	16.5	31.2	31.2	12.9	71.7	71.7	12.2	71.0	71.0
Actuated g/C Ratio	0.06	0.16	0.16	0.11	0.21	0.21	0.09	0.48	0.48	0.08	0.47	0.47
v/c Ratio	0.55	0.74	0.22	1.15	0.58	0.13	0.51	0.66	0.22	0.65	1.16	0.42
Control Delay	78.7	68.7	1.4	154.1	56.6	0.7	77.8	33.9	5.0	89.0	116.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.7	68.7	1.4	154.1	56.6	0.7	77.8	33.9	5.0	89.0	116.2	5.1
LOS	E	E	A	F	E	A	E	C	A	F	F	A
Approach Delay		61.2			98.4			32.5			97.4	
Approach LOS		E			F			C			F	
Queue Length 50th (m)	16.4	55.9	0.0	~71.2	57.7	0.0	20.3	122.7	1.2	25.4	~339.5	4.8
Queue Length 95th (m)	26.8	67.6	0.0	#104.3	68.5	0.0	#57.6	167.9	16.0	#46.2	#387.8	25.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0			150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	214	697	438	343	882	493	138	1569	767	148	1569	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.53	0.18	1.15	0.45	0.11	0.51	0.66	0.22	0.59	1.16	0.42

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Background - Mitigation
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 76.8

Intersection LOS: E

Intersection Capacity Utilization 103.8%

ICU Level of Service G

Analysis Period (min) 15

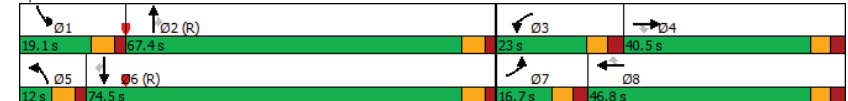
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leirim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background - Mitigation

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leitrim

2031Future Background - Mitigation
AM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖↗	↖↗	↖	↖↗	↖↗	↖	↖	↖↗	↖	↖↗
Traffic Volume (vph)	275	333	28	193	271	147	72	1788	49	635
Future Volume (vph)	275	333	28	193	271	147	72	1788	49	635
Lane Group Flow (vph)	275	333	28	193	271	147	72	2037	49	712
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	11.1	31.3
Total Split (s)	22.4	40.5	40.5	22.4	40.5	40.5	21.3	76.0	11.1	65.8
Total Split (%)	14.9%	27.0%	27.0%	14.9%	27.0%	27.0%	14.2%	50.7%	7.4%	43.9%
Maximum Green (s)	15.9	34.0	34.0	15.9	34.0	34.0	15.2	69.7	5.0	59.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0			7.0	7.0		7.0		7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		18.0		18.0
Pedestrian Calls (#/hr)		5	5		5	5		5		6
Act Effct Green (s)	15.5	22.7	22.7	14.1	21.3	21.3	12.2	78.5	9.3	75.7
Actuated g/C Ratio	0.10	0.15	0.15	0.09	0.14	0.14	0.08	0.52	0.06	0.50
v/c Ratio	0.84	0.68	0.09	0.68	0.62	0.43	0.62	0.84	0.48	0.32
Control Delay	87.6	66.7	0.5	78.4	65.6	9.3	88.0	35.0	81.7	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.6	66.7	0.5	78.4	65.6	9.3	88.0	35.0	81.7	23.4
LOS	F	E	A	E	E	A	F	C	F	C
Approach Delay		72.8			56.1			36.8		27.2
Approach LOS		E			E			D		C
Queue Length 50th (m)	41.9	50.8	0.0	28.9	41.0	0.0	21.0	184.7	14.1	43.3
Queue Length 95th (m)	#63.2	60.8	0.0	42.1	50.4	14.8	37.5	#231.7	#41.5	65.7
Internal Link Dist (m)		312.8			585.8			260.1		467.3
Turn Bay Length (m)	120.0		150.0	150.0		150.0	105.0		75.0	
Base Capacity (vph)	337	737	401	319	703	453	146	2427	102	2237
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.45	0.07	0.61	0.39	0.32	0.49	0.84	0.48	0.32
Intersection Summary										
Cycle Length: 150										
Actuated Cycle Length: 150										
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green										
Natural Cycle: 135										

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031Future Background - Mitigation

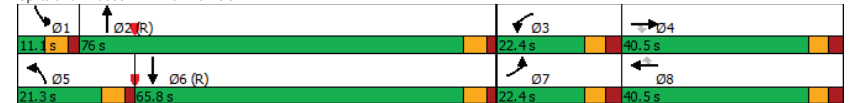
CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leitrim

2031Future Background - Mitigation
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 43.4	Intersection LOS: D
Intersection Capacity Utilization 87.4%	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: 2: Bank & Leitrim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031Future Background - Mitigation

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Background - Mitigation
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Traffic Volume (vph)	109	367	78	396	399	55	71	1042	87	1822
Future Volume (vph)	109	367	78	396	399	55	71	1042	87	1822
Lane Group Flow (vph)	109	367	78	396	399	55	71	1211	87	2185
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	11.1	31.3
Total Split (s)	19.0	40.5	40.5	25.5	47.0	47.0	16.9	65.0	19.0	67.1
Total Split (%)	12.7%	27.0%	27.0%	17.0%	31.3%	31.3%	11.3%	43.3%	12.7%	44.7%
Maximum Green (s)	12.5	34.0	34.0	19.0	40.5	40.5	10.8	58.7	12.9	60.8
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0			7.0	7.0		7.0		7.0
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		18.0		18.0	
Pedestrian Calls (#/hr)	5	5		5	5		5		5	
Act Effct Green (s)	10.3	24.2	24.2	19.0	32.9	32.9	10.9	69.2	12.2	70.5
Actuated g/C Ratio	0.07	0.16	0.16	0.13	0.22	0.22	0.07	0.46	0.08	0.47
v/c Ratio	0.50	0.74	0.24	1.00	0.55	0.14	0.61	0.57	0.65	1.00
Control Delay	75.2	68.7	3.8	110.1	54.7	0.7	88.8	31.2	88.9	57.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	68.7	3.8	110.1	54.7	0.7	88.8	31.2	88.9	57.1
LOS	E	E	A	F	D	A	F	C	F	E
Approach Delay		60.9			77.0			34.4		58.4
Approach LOS		E			E			C		E
Queue Length 50th (m)	16.3	55.9	0.0	~61.8	56.6	0.0	20.7	93.3	25.3	232.1
Queue Length 95th (m)	26.3	67.6	4.2	#96.0	68.4	0.0	#41.4	122.6	#46.5	#305.7
Internal Link Dist (m)		312.8			585.8			260.1		467.3
Turn Bay Length (m)	120.0			150.0		150.0	105.0		75.0	
Base Capacity (vph)	262	697	404	395	886	462	125	2135	148	2192
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.53	0.19	1.00	0.45	0.12	0.57	0.57	0.59	1.00

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Background - Mitigation
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 55.7

Intersection LOS: E

Intersection Capacity Utilization 96.5%

ICU Level of Service F

Analysis Period (min) 15

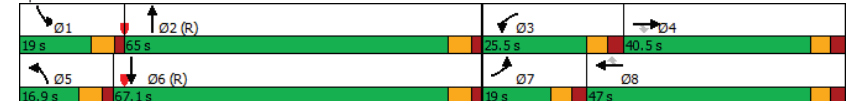
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leirim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Background - Mitigation

CGH Transportation
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Appendix L

Synchro Intersection Worksheets – 2036 Future Background Conditions

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2036 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	5	236	3	2	1269	839	3	450	3
Future Volume (vph)	15	5	236	3	2	1269	839	3	450	3
Lane Group Flow (vph)	15	9	236	4	2	1269	839	3	450	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2		6		6
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	30.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Split (%)	12.7%	12.7%	23.1%	23.1%	76.9%	76.9%	76.9%	76.9%	76.9%	76.9%
Maximum Green (s)	10.0	10.0	23.7	23.7	93.4	93.4	93.4	93.4	93.4	93.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	17.8	17.8	18.0	18.0	99.1	99.1	99.1	99.1	99.1	99.1
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.76	0.76	0.76	0.76	0.76	0.76
v/c Ratio	0.09	0.04	0.71	0.02	0.00	0.51	0.66	0.01	0.19	0.00
Control Delay	48.1	35.4	65.1	41.2	2.0	3.1	3.6	5.0	4.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	35.4	65.1	41.2	2.0	3.1	3.6	5.0	4.8	0.0
LOS	D	D	E	D	A	A	A	A	A	A
Approach Delay		43.4		64.7		3.3			4.8	
Approach LOS		D		E		A			A	
Queue Length 50th (m)	3.4	1.1	30.2	0.7	0.1	19.2	11.7	0.2	14.4	0.0
Queue Length 95th (m)	9.7	6.1	42.1	3.9	m0.1	m17.0	m0.0	1.1	23.4	0.0
Internal Link Dist (m)		337.1		495.4		153.6			706.5	
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	211	297	438	261	655	2503	1280	256	2432	1112
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.03	0.54	0.02	0.00	0.51	0.66	0.01	0.19	0.00

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 62 (48%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 9.1

Intersection LOS: A

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
Page 1

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2036 Future Background
AM Peak Hour

Intersection Capacity Utilization 87.9%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Background
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	275	333	28	193	271	147	72	1645	49	577	77
Future Volume (vph)	275	333	28	193	271	147	72	1645	49	577	77
Lane Group Flow (vph)	0	608	28	193	271	147	72	1894	49	577	77
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		4		3	8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	31.3	31.3	31.3	31.3	31.3
Total Split (s)	55.0	55.0	55.0	12.0	67.0	67.0	63.0	63.0	63.0	63.0	63.0
Total Split (%)	42.3%	42.3%	42.3%	9.2%	51.5%	51.5%	48.5%	48.5%	48.5%	48.5%	48.5%
Maximum Green (s)	48.5	48.5	48.5	5.5	60.5	60.5	56.7	56.7	56.7	56.7	56.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.3	6.3	6.3	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead							
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	C-Max	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	7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0		27.0	27.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5	5		5	5	5	5	6	6	6
Act Effct Green (s)	48.5	48.5	60.5	60.5	60.5	56.7	56.7	56.7	56.7	56.7	56.7
Actuated g/C Ratio	0.37	0.37	0.47	0.47	0.47	0.44	0.44	0.44	0.44	0.44	0.44
v/c Ratio	1.31	0.06	1.40	0.36	0.21	0.30	1.35	0.91	0.42	0.13	
Control Delay	187.8	0.2	242.0	24.0	17.4	12.6	184.0	130.5	19.5	4.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	187.8	0.2	242.0	24.0	17.4	12.6	184.0	130.5	19.5	4.6	
LOS	F	A	F	C	B	B	F	F	B	A	
Approach Delay	179.6			91.3			177.8		25.6		
Approach LOS	F			F			F		C		
Queue Length 50th (m)	~199.6	0.0	~45.1	43.6	17.4	7.8	~336.0	10.4	32.7	0.0	
Queue Length 95th (m)	#269.3	0.0	#90.1	64.9	31.2	m7.8	#372.1	m#37.1	58.1	7.6	
Internal Link Dist (m)	312.8			585.8			421.1		467.3		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	465	509	138	759	693	243	1404	54	1378	596	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.31	0.06	1.40	0.36	0.21	0.30	1.35	0.91	0.42	0.13	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 128 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

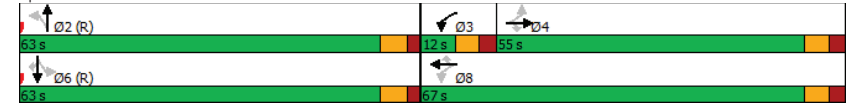
CGH Transportation
Page 3

Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.40	
Intersection Signal Delay: 137.2	Intersection LOS: F
Intersection Capacity Utilization 130.9%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2036 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	63	0	21	0	1	1589	107	663	21
Future Volume (vph)	63	0	21	0	1	1589	107	663	21
Lane Group Flow (vph)	63	4	21	242	1	1599	107	663	21
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	7	4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	7	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	11.0	39.0	28.0	28.0	76.0	76.0	15.0	91.0	91.0
Total Split (%)	8.5%	30.0%	21.5%	21.5%	58.5%	58.5%	11.5%	70.0%	70.0%
Maximum Green (s)	5.0	32.7	21.7	21.7	69.4	69.4	8.7	84.4	84.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	13.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	10	10	10	11	11	11	10	10	10
Act Effct Green (s)	23.9	23.6	14.8	14.8	78.2	78.2	93.8	93.5	93.5
Actuated g/C Ratio	0.18	0.18	0.11	0.11	0.60	0.60	0.72	0.72	0.72
v/c Ratio	0.56	0.01	0.15	0.81	0.00	0.82	0.58	0.30	0.02
Control Delay	61.6	0.0	51.4	41.6	7.0	12.9	31.2	17.5	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	0.0	51.4	41.6	7.0	12.9	31.2	17.5	2.0
LOS	E	A	D	D	A	B	C	B	A
Approach Delay		57.9		42.4		12.9		18.9	
Approach LOS		E		D		B		B	
Queue Length 50th (m)	13.7	0.0	5.0	22.5	0.0	41.5	15.8	58.2	0.1
Queue Length 95th (m)	24.6	0.0	12.4	50.2	m0.1	#96.5	m28.7	m67.8	m1.0
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	112	568	211	365	414	1954	190	2231	1027
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.01	0.10	0.66	0.00	0.82	0.56	0.30	0.02
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 89 (68%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 110									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

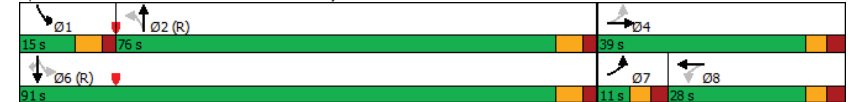
CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2036 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 18.6
Intersection LOS: B
Intersection Capacity Utilization 95.2%
ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Background
AM Peak Hour

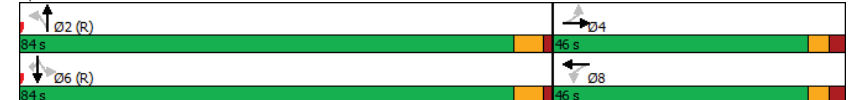
								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	195	0	2	0	1	1338	661	18
Future Volume (vph)	195	0	2	0	1	1338	661	18
Lane Group Flow (vph)	195	6	2	4	1	1339	661	18
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
Protected Phases		4		8		2	6	
Permitted Phases	4		8		2			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)	29.0	29.0	29.0	29.0	25.2	25.2	25.2	25.2
Total Split (s)	46.0	46.0	46.0	46.0	84.0	84.0	84.0	84.0
Total Split (%)	35.4%	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%
Maximum Green (s)	40.0	40.0	40.0	40.0	77.8	77.8	77.8	77.8
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	2.7	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2	6.2	6.2
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)	16.0	16.0	16.0	16.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	17	17	16	16	12	12
Act Effct Green (s)	25.2	25.2	25.2	25.2	92.6	92.6	92.6	92.6
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.71	0.71	0.71	0.71
v/c Ratio	0.79	0.01	0.01	0.01	0.00	0.58	0.30	0.02
Control Delay	70.5	0.0	37.0	0.0	7.0	15.8	3.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.5	0.0	37.0	0.0	7.0	15.8	3.1	0.6
LOS	E	A	D	A	A	B	A	A
Approach Delay		68.4		12.3		15.8	3.1	
Approach LOS		E		B		B	A	
Queue Length 50th (m)	47.9	0.0	0.4	0.0	0.1	120.6	16.0	0.0
Queue Length 95th (m)	68.9	0.0	2.5	0.0	m0.1	173.1	16.5	0.0
Internal Link Dist (m)		264.9		519.4		373.7	429.7	
Turn Bay Length (m)	100.0		15.0		50.0			95.0
Base Capacity (vph)	393	608	393	473	477	2293	2169	956
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	0.50	0.01	0.01	0.01	0.00	0.58	0.30	0.02
Intersection Summary								
Cycle Length: 130								
Actuated Cycle Length: 130								
Offset: 76 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 65								

Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 16.6
Intersection LOS: B
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: 4: Bank & White Alder/Analdea



Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	350	37	87	69	18	816	124	444	100
Future Volume (vph)	350	37	87	69	18	816	124	444	100
Lane Group Flow (vph)	350	58	87	228	18	832	124	444	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	7	4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	7	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	19.0	53.0	34.0	34.0	58.0	58.0	19.0	77.0	77.0
Total Split (%)	14.6%	40.8%	26.2%	26.2%	44.6%	44.6%	14.6%	59.2%	59.2%
Maximum Green (s)	13.0	46.7	27.7	27.7	51.3	51.3	12.6	70.3	70.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	23.0	23.0	23.0	23.0	23.0	23.0
Pedestrian Calls (#/hr)	21	21	21	21	21	21	28	28	28
Act Effct Green (s)	40.1	39.8	20.8	20.8	61.0	61.0	77.5	77.2	77.2
Actuated g/C Ratio	0.31	0.31	0.16	0.16	0.47	0.47	0.60	0.59	0.59
v/c Ratio	0.74	0.11	0.45	0.74	0.05	0.59	0.37	0.26	0.12
Control Delay	44.6	20.4	54.7	46.5	11.4	12.7	12.1	11.6	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	20.4	54.7	46.5	11.4	12.7	12.1	11.6	3.0
LOS	D	C	D	D	B	B	B	B	A
Approach Delay		41.2		48.8		12.7		10.4	
Approach LOS		D		D		B		B	
Queue Length 50th (m)	33.8	6.3	19.4	34.6	1.0	63.8	17.2	51.2	3.9
Queue Length 95th (m)	45.6	15.8	35.1	61.4	m2.6	30.9	11.2	31.0	2.1
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	471	597	259	385	386	1413	358	1731	860
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.10	0.34	0.59	0.05	0.59	0.35	0.26	0.12
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 18 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 95									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

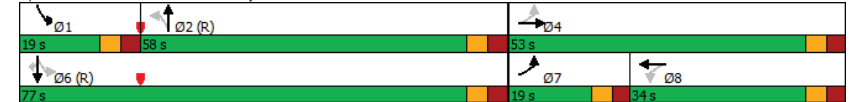
CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 83.9%	ICU Level of Service E
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 5: Bank & Findlay Creek



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2036 Future Background

AM Peak Hour

	↖	→	↗	↖	↖	↑	↗	↓	↘
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	32	25	140	30	182	727	98	410	24
Future Volume (vph)	32	25	140	30	182	727	98	410	24
Lane Group Flow (vph)	32	127	140	139	182	763	98	410	24
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	41.0	41.0	41.0	41.0	36.0	63.0	26.0	53.0	53.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	27.7%	48.5%	20.0%	40.8%	40.8%
Maximum Green (s)	34.0	34.0	34.0	34.0	29.6	56.1	19.6	46.1	46.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.7	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	20	20	20	20	20	20	20	20	20
Act Effct Green (s)	21.5	21.5	21.5	21.5	19.5	75.0	13.2	68.7	68.7
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.15	0.58	0.10	0.53	0.53
v/c Ratio	0.20	0.39	0.80	0.42	0.73	0.43	0.60	0.26	0.03
Control Delay	46.6	15.7	81.1	16.4	78.7	11.2	92.7	3.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	15.7	81.1	16.4	78.7	11.2	92.7	3.9	0.1
LOS	D	B	F	B	E	B	F	A	A
Approach Delay		21.9		48.9		24.2		20.1	
Approach LOS		C		D		C		C	
Queue Length 50th (m)	7.2	5.5	34.9	6.6	43.0	41.1	25.3	10.2	0.0
Queue Length 95th (m)	15.6	21.7	54.1	23.5	68.1	50.1	41.2	14.7	0.0
Internal Link Dist (m)		60.3		127.0		175.1		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	257	455	279	461	377	1759	242	1596	734
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.28	0.50	0.30	0.48	0.43	0.40	0.26	0.03

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 23 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 70

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation

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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2036 Future Background

AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 26.5

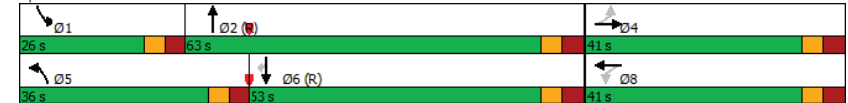
Intersection LOS: C

Intersection Capacity Utilization 73.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation

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Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Background
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	209	89	6	39	36	710	24	476	48
Future Volume (vph)	209	89	6	39	36	710	24	476	48
Lane Group Flow (vph)	209	102	6	46	36	718	24	476	48
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	60.0	60.0	60.0	60.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%	53.8%
Maximum Green (s)	53.4	53.4	53.4	53.4	63.4	63.4	63.4	63.4	63.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	0	0	1	1	0	0	21	21	21
Act Effct Green (s)	27.5	27.5	27.5	27.5	89.3	89.3	89.3	89.3	89.3
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.69	0.69	0.69	0.69	0.69
v/c Ratio	0.78	0.28	0.03	0.13	0.07	0.33	0.06	0.22	0.05
Control Delay	67.3	39.6	35.8	33.9	7.7	9.5	6.9	6.1	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.3	39.6	35.8	33.9	7.7	9.5	6.9	6.1	1.6
LOS	E	D	D	C	A	A	A	A	A
Approach Delay		58.3		34.1		9.4		5.8	
Approach LOS		E		C		A		A	
Queue Length 50th (m)	51.0	20.5	1.2	8.1	2.6	46.6	1.0	10.9	0.0
Queue Length 95th (m)	71.7	32.8	4.5	16.9	m6.5	62.0	m5.2	34.0	m2.8
Internal Link Dist (m)		213.3		2015.8		102.9		270.3	
Turn Bay Length (m)	150.0		25.0		75.0		70.0		120.0
Base Capacity (vph)	520	706	431	702	549	2182	424	2131	884
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.14	0.01	0.07	0.07	0.33	0.06	0.22	0.05
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green									
Natural Cycle: 50									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

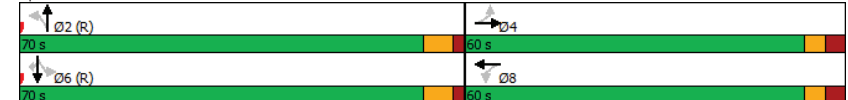
CGH Transportation
Page 13

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 61.5%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 8: Bank & Miikana/Blais



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
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Lanes, Volumes, Timings
9: Bank & Dun Skipper

2036 Future Background
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (vph)	142	22	60	633	418	43
Future Volume (vph)	142	22	60	633	418	43
Lane Group Flow (vph)	142	22	60	633	418	43
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	33.0	33.0	33.0	33.0
Total Split (s)	38.0	38.0	92.0	92.0	92.0	92.0
Total Split (%)	29.2%	29.2%	70.8%	70.8%	70.8%	70.8%
Maximum Green (s)	31.4	31.4	85.3	85.3	85.3	85.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	9	9
Act Effct Green (s)	17.0	17.0	99.7	99.7	99.7	99.7
Actuated g/C Ratio	0.13	0.13	0.77	0.77	0.77	0.77
v/c Ratio	0.69	0.11	0.10	0.51	0.34	0.05
Control Delay	70.4	18.1	5.1	8.2	3.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	18.1	5.1	8.2	3.6	0.3
LOS	E	B	A	A	A	A
Approach Delay	63.3			7.9	3.3	
Approach LOS	E			A	A	
Queue Length 50th (m)	35.2	0.0	3.3	53.4	16.2	0.0
Queue Length 95th (m)	54.5	7.6	8.7	94.7	27.6	0.0
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	381	351	610	1240	1230	832
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.06	0.10	0.51	0.34	0.05
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 82 (63%), Referenced to phase 2:NBTL and 6:SBT, Start of Green						
Natural Cycle: 70						

Lanes, Volumes, Timings
9: Bank & Dun Skipper

2036 Future Background
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 13.2	Intersection LOS: B
Intersection Capacity Utilization 56.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 9: Bank & Dun Skipper

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HCM 2010 TWSC
10: Hawthorne /Hawthorne & Blais

2036 Future Background
AM Peak Hour

Intersection						
Int Delay, s/veh	4.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	186	12	8	366	203	122
Future Vol, veh/h	186	12	8	366	203	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	25	2	35	47	13
Mvmt Flow	186	12	8	366	203	122
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	646	264	325	0	-	0
Stage 1	264	-	-	-	-	-
Stage 2	382	-	-	-	-	-
Critical Hdwy	6.54	6.45	4.12	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.525	2.218	-	-	-
Pot Cap-1 Maneuver	418	722	1235	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	415	722	1235	-	-	-
Mov Cap-2 Maneuver	415	-	-	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.6	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1235	-	426	-	-	
HCM Lane VIC Ratio	0.006	-	0.465	-	-	
HCM Control Delay (s)	7.9	0	20.6	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	2.4	-	-	

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
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Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2036 Future Background
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	13	9	795	11	6	942	395	5	1301	16
Future Volume (vph)	13	9	795	11	6	942	395	5	1301	16
Lane Group Flow (vph)	13	11	795	15	6	942	395	5	1301	16
Turn Type	Perm	NA	custom	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4				2		6			
Permitted Phases	4		8	8	2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	72.0	72.0	58.0	58.0	58.0	58.0	58.0	58.0
Total Split (%)	12.7%	12.7%	55.4%	55.4%	44.6%	44.6%	44.6%	44.6%	44.6%	44.6%
Maximum Green (s)	10.0	10.0	65.7	65.7	51.4	51.4	51.4	51.4	51.4	51.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	50.3	50.3	50.5	50.5	66.6	66.6	66.6	66.6	66.6	66.6
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.51	0.51	0.51	0.51	0.51	0.51
v/c Ratio	0.03	0.02	0.82	0.03	0.06	0.56	0.44	0.03	0.77	0.02
Control Delay	21.3	18.3	43.0	16.9	7.8	7.2	1.0	20.8	30.7	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	18.3	43.0	16.9	7.8	7.2	1.0	20.8	30.7	3.3
LOS	C	B	D	B	A	A	A	C	C	A
Approach Delay	19.9		42.5		5.4		30.3			
Approach LOS	B		D		A		C			
Queue Length 50th (m)	2.0	1.4	92.8	1.7	0.3	26.7	0.0	0.6	137.4	0.0
Queue Length 95th (m)	5.5	4.7	103.1	5.5	m0.5	m31.7	m0.0	3.4	#197.4	2.5
Internal Link Dist (m)	337.1		495.4		153.6		706.5			
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	657	704	1258	778	97	1682	889	146	1699	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.63	0.02	0.06	0.56	0.44	0.03	0.77	0.02

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 30 (23%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 23.5	Intersection LOS: C

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background

CGH Transportation
Page 1

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2036 Future Background
PM Peak Hour

Intersection Capacity Utilization 79.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Bank & Kemp/Conroy

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Lanes, Volumes, Timings
2: Bank & Leitrim

2036 Future Background
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	109	367	78	396	399	55	71	938	87	1695	363	
Future Volume (vph)	109	367	78	396	399	55	71	938	87	1695	363	
Lane Group Flow (vph)	0	476	78	396	399	55	71	1107	87	1695	363	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2	1	6		
Permitted Phases	4		4	8		8	2		6		6	
Detector Phase	4	4	4	3	8	8	5	2	1	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	12.0	31.3	12.0	31.3	31.3	
Total Split (s)	46.0	46.0	46.0	19.0	65.0	65.0	12.0	53.0	12.0	53.0	53.0	
Total Split (%)	35.4%	35.4%	35.4%	14.6%	50.0%	50.0%	9.2%	40.8%	9.2%	40.8%	40.8%	
Maximum Green (s)	39.5	39.5	39.5	12.5	58.5	58.5	5.9	46.7	5.9	46.7	46.7	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1	2.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3	
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	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	
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	27.0	27.0	27.0	27.0	27.0	27.0	18.0	18.0	18.0	18.0	18.0	
Pedestrian Calls (#/hr)	5	5	5	5	5	5	5	5	5	5	5	
Act Effct Green (s)	39.5	39.5	58.5	58.5	58.5	52.8	46.7	54.0	49.1	49.1	49.1	
Actuated g/C Ratio	0.30	0.30	0.45	0.45	0.45	0.41	0.36	0.42	0.38	0.38	0.38	
v/c Ratio	1.20	0.15	1.64	0.51	0.08	0.57	0.96	0.69	1.35	0.49	0.49	
Control Delay	150.1	1.0	330.3	28.5	2.1	32.9	56.6	41.6	196.9	9.7	9.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	150.1	1.0	330.3	28.5	2.1	32.9	56.6	41.6	196.9	9.7	9.7	
LOS	F	A	F	C	A	C	E	D	F	A	A	
Approach Delay	129.1			167.4			55.2		158.9			
Approach LOS	F			F			E		F			
Queue Length 50th (m)	~147.2	0.0	~124.2	71.7	0.0	12.1	156.7	13.9	~310.4	20.8	20.8	
Queue Length 95th (m)	#212.6	1.1	#186.4	101.5	4.0	#18.0	#193.5	m18.6	#353.5	m43.1	43.1	
Internal Link Dist (m)	312.8			585.8			421.1		467.3			
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0		
Base Capacity (vph)	398	514	241	777	674	125	1156	127	1252	745	745	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.20	0.15	1.64	0.51	0.08	0.57	0.96	0.69	1.35	0.49	0.49	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 120 (92%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 150

Lanes, Volumes, Timings 2: Bank & Leirim

2036 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.64

Intersection Signal Delay: 131.1

Intersection LOS: F

Intersection Capacity Utilization 125.7%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

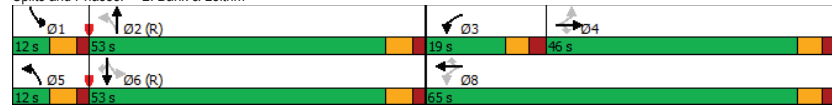
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Bank & Leirim



Lanes, Volumes, Timings 3: Bank & Barrett Farms/Rotary

2036 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱	↱
Traffic Volume (vph)	33	0	24	0	3	986	232	1866	58
Future Volume (vph)	33	0	24	0	3	986	232	1866	58
Lane Group Flow (vph)	33	2	24	147	3	1007	232	1866	58
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	27.3	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	28.0	28.0	28.0	28.0	85.0	85.0	17.0	102.0	102.0
Total Split (%)	21.5%	21.5%	21.5%	21.5%	65.4%	65.4%	13.1%	78.5%	78.5%
Maximum Green (s)	21.7	21.7	21.7	21.7	78.4	78.4	10.7	95.4	95.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	14.0	14.0	14.0	14.0	13.0	13.0		13.0	13.0
Pedestrian Calls (#/hr)	14	14	10	10	11	11		10	10
Act Effct Green (s)	14.4	14.4	14.4	14.4	86.8	86.8	103.0	102.7	102.7
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.67	0.67	0.79	0.79	0.79
v/c Ratio	0.36	0.01	0.17	0.40	0.02	0.46	0.56	0.71	0.05
Control Delay	62.5	0.0	52.4	3.2	4.7	3.8	5.9	10.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	0.0	52.4	3.2	4.7	3.8	5.9	10.1	0.2
LOS	E	A	D	A	A	A	A	B	A
Approach Delay		58.9		10.1		3.8		9.4	
Approach LOS		E		B		A		A	
Queue Length 50th (m)	8.3	0.0	5.9	0.0	0.0	17.5	9.0	42.8	0.0
Queue Length 95th (m)	17.9	0.0	13.5	0.0	m0.3	21.8	m1.8	m63.3	m0.1
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	138	305	212	435	122	2185	425	2619	1116
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.01	0.11	0.34	0.02	0.46	0.55	0.71	0.05

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 41 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2036 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 8.2

Intersection LOS: A

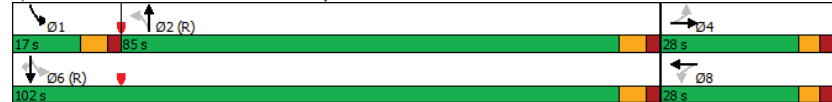
Intersection Capacity Utilization 105.2%

ICU Level of Service G

Analysis Period (min) 15

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

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Background
PM Peak Hour

	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↰	↱	↱
Traffic Volume (vph)	71	1	0	8	949	4	1698	157
Future Volume (vph)	71	1	0	8	949	4	1698	157
Lane Group Flow (vph)	71	17	3	8	951	4	1698	157
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	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)	29.0	29.0	29.0	25.2	25.2	25.2	25.2	25.2
Total Split (s)	33.0	33.0	33.0	97.0	97.0	97.0	97.0	97.0
Total Split (%)	25.4%	25.4%	25.4%	74.6%	74.6%	74.6%	74.6%	74.6%
Maximum Green (s)	27.0	27.0	27.0	90.8	90.8	90.8	90.8	90.8
Yellow Time (s)	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	1.6	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.2	6.2	6.2	6.2	6.2
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	C-Max	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)	16.0	16.0	16.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	10	16	16	16	16	16
Act Effct Green (s)	15.7	15.7	15.7	106.5	106.5	106.5	106.5	106.5
Actuated g/C Ratio	0.12	0.12	0.12	0.82	0.82	0.82	0.82	0.82
v/c Ratio	0.46	0.09	0.01	0.05	0.36	0.01	0.63	0.14
Control Delay	60.6	20.6	0.0	4.5	5.1	1.0	1.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	20.6	0.0	4.5	5.1	1.0	1.4	0.2
LOS	E	C	A	A	A	A	A	A
Approach Delay		52.9			5.1		1.3	
Approach LOS		D			A		A	
Queue Length 50th (m)	17.7	0.2	0.0	0.1	3.4	0.0	5.7	0.0
Queue Length 95th (m)	30.8	7.0	0.0	m1.4	81.3	m0.1	10.5	m0.1
Internal Link Dist (m)		264.9	519.4		373.7		429.7	
Turn Bay Length (m)	100.0			50.0		45.0		95.0
Base Capacity (vph)	269	304	436	156	2664	409	2689	1148
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	0.26	0.06	0.01	0.05	0.36	0.01	0.63	0.14
Intersection Summary								
Cycle Length: 130								
Actuated Cycle Length: 130								
Offset: 42 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 80								

Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 4.1

Intersection LOS: A

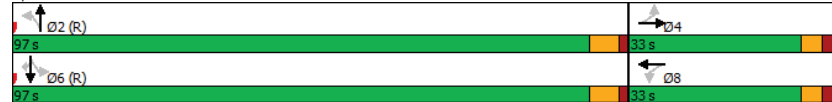
Intersection Capacity Utilization 74.0%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 4: Bank & White Alder/Analdea



Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	213	66	132	47	30	611	274	1045	394
Future Volume (vph)	213	66	132	47	30	611	274	1045	394
Lane Group Flow (vph)	213	102	132	153	30	645	274	1045	394
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	32.3	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	39.0	39.0	39.0	39.0	56.0	56.0	35.0	91.0	91.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	43.1%	43.1%	26.9%	70.0%	70.0%
Maximum Green (s)	32.7	32.7	32.7	32.7	49.3	49.3	28.6	84.3	84.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	19.0	19.0	19.0	19.0	23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)	20	20	20	20	20	20		26	26
Act Effct Green (s)	21.6	21.6	21.6	21.6	76.2	76.2	95.7	95.4	95.4
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.59	0.59	0.74	0.73	0.73
v/c Ratio	0.72	0.36	0.69	0.48	0.11	0.35	0.50	0.44	0.35
Control Delay	64.5	40.2	68.6	26.6	6.0	4.6	5.4	4.7	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.5	40.2	68.6	26.6	6.0	4.6	5.4	4.7	1.4
LOS	E	D	E	C	A	A	A	A	A
Approach Delay		56.6		46.1		4.7		4.0	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	27.0	18.7	32.3	15.9	1.1	11.6	17.2	56.5	6.2
Queue Length 95th (m)	38.1	33.5	51.2	34.7	m2.5	16.6	21.9	55.1	9.3
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	448	424	289	442	266	1867	673	2362	1120
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.24	0.46	0.35	0.11	0.35	0.41	0.44	0.35

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 128 (98%), Referenced to phase 2:NBL and 6:SBTL, Start of Green

Natural Cycle: 85

Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 13.7

Intersection LOS: B

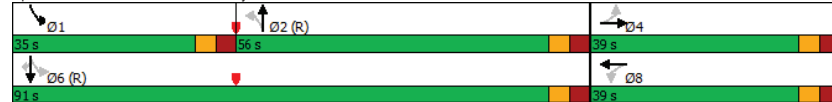
Intersection Capacity Utilization 86.9%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 5: Bank & Findlay Creek



Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2036 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	30	20	192	40	123	554	208	936	39
Future Volume (vph)	30	20	192	40	123	554	208	936	39
Lane Group Flow (vph)	30	208	192	107	123	636	208	936	39
Turn Type	Perm	NA	pm+pt	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4	3	8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	11.8	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	29.0	29.0	21.0	50.0	22.0	49.0	31.0	58.0	58.0
Total Split (%)	22.3%	22.3%	16.2%	38.5%	16.9%	37.7%	23.8%	44.6%	44.6%
Maximum Green (s)	22.0	22.0	14.2	43.0	15.6	42.1	24.6	51.1	51.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.5	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	6.8	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0		7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0		13.0		13.0	13.0
Pedestrian Calls (#/hr)	22	22		32		21		24	24
Act Effct Green (s)	17.2	17.2	37.9	37.7	13.5	51.4	20.6	58.4	58.4
Actuated g/C Ratio	0.13	0.13	0.29	0.29	0.10	0.40	0.16	0.45	0.45
v/c Ratio	0.20	0.59	0.76	0.22	0.72	0.51	0.79	0.64	0.06
Control Delay	50.9	16.2	55.5	14.5	80.8	26.3	93.9	15.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	16.2	55.5	14.5	80.8	26.3	93.9	15.2	0.1
LOS	D	B	E	B	F	C	F	B	A
Approach Delay		20.6		40.8		35.2		28.5	
Approach LOS		C		D		D		C	
Queue Length 50th (m)	6.6	4.4	37.0	7.0	32.3	64.7	50.6	87.6	0.0
Queue Length 95th (m)	15.8	27.5	#59.5	20.4	52.5	78.1	80.6	114.5	0.0
Internal Link Dist (m)		60.3		127.0		175.1		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	191	399	258	542	198	1245	313	1461	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.52	0.74	0.20	0.62	0.51	0.66	0.64	0.06

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 116 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2036 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 31.3

Intersection LOS: C

Intersection Capacity Utilization 85.2%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Background
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱	↱
Traffic Volume (vph)	167	73	20	93	72	553	4	1134	142
Future Volume (vph)	167	73	20	93	72	553	4	1134	142
Lane Group Flow (vph)	167	79	20	121	72	561	4	1134	142
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	47.0	47.0	47.0	47.0	83.0	83.0	83.0	83.0	83.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	63.8%	63.8%	63.8%	63.8%	63.8%
Maximum Green (s)	40.4	40.4	40.4	40.4	76.4	76.4	76.4	76.4	76.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	22	22	22
Act Effct Green (s)	23.8	23.8	23.8	23.8	93.0	93.0	93.0	93.0	93.0
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.72	0.72	0.72	0.72	0.72
v/c Ratio	0.81	0.27	0.10	0.38	0.26	0.24	0.01	0.49	0.15
Control Delay	77.4	43.8	41.5	43.6	8.8	5.7	5.8	6.2	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.4	43.8	41.5	43.6	8.8	5.7	5.8	6.2	0.8
LOS	E	D	D	D	A	A	A	A	A
Approach Delay		66.6		43.3		6.1		5.6	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	41.4	16.9	4.3	24.7	4.5	18.1	0.2	31.4	0.7
Queue Length 95th (m)	61.8	28.7	10.7	39.3	m12.2	30.2	m0.4	43.8	m1.3
Internal Link Dist (m)		213.3		2015.8		102.9		270.3	
Turn Bay Length (m)	150.0		25.0		75.0		70.0		120.0
Base Capacity (vph)	352	499	345	527	273	2318	516	2326	959
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.16	0.06	0.23	0.26	0.24	0.01	0.49	0.15

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 118 (91%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 14.6

Intersection LOS: B

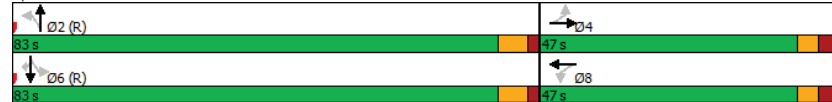
Intersection Capacity Utilization 81.5%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 8: Bank & Miikana/Blais



Lanes, Volumes, Timings
9: Bank & Dun Skipper

2036 Future Background
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰
Traffic Volume (vph)	133	12	119	557	996	113
Future Volume (vph)	133	12	119	557	996	113
Lane Group Flow (vph)	133	12	119	557	996	113
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	33.0	33.0	33.0	33.0
Total Split (s)	25.0	25.0	105.0	105.0	105.0	105.0
Total Split (%)	19.2%	19.2%	80.8%	80.8%	80.8%	80.8%
Maximum Green (s)	18.4	18.4	98.3	98.3	98.3	98.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	5	5
Act Effct Green (s)	15.4	15.4	101.3	101.3	101.3	101.3
Actuated g/C Ratio	0.12	0.12	0.78	0.78	0.78	0.78
v/c Ratio	0.72	0.07	0.41	0.43	0.75	0.10
Control Delay	76.4	23.4	10.2	6.3	11.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.4	23.4	10.2	6.3	11.5	0.4
LOS	E	C	B	A	B	A
Approach Delay	72.0			7.0	10.3	
Approach LOS	E			A	B	
Queue Length 50th (m)	33.1	0.0	8.7	41.7	86.3	0.5
Queue Length 95th (m)	54.1	5.9	21.5	63.3	75.9	0.0
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	221	193	291	1297	1321	1127
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.06	0.41	0.43	0.75	0.10

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 7 (5%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 80

Lanes, Volumes, Timings
9: Bank & Dun Skipper

2036 Future Background
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 13.8

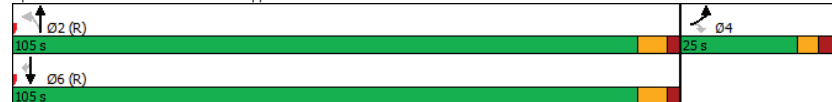
Intersection LOS: B

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 9: Bank & Dun Skipper



HCM 2010 TWSC

10: Hawthorne /Hawthorne & Blais

2036 Future Background

PM Peak Hour

Intersection

Int Delay, s/veh 5.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	W
Traffic Vol, veh/h	179	23	14	314	367	225
Future Vol, veh/h	179	23	14	314	367	225
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	17	14	27	25	10
Mvmt Flow	179	23	14	314	367	225

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	822	480	592
Stage 1	480	-	-
Stage 2	342	-	-
Critical Hdwy	6.47	6.37	4.24
Critical Hdwy Stg 1	5.47	-	-
Critical Hdwy Stg 2	5.47	-	-
Follow-up Hdwy	3.563	3.453	2.326
Pot Cap-1 Maneuver	337	556	927
Stage 1	612	-	-
Stage 2	708	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	331	556	927
Mov Cap-2 Maneuver	331	-	-
Stage 1	601	-	-
Stage 2	708	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.9	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	927	-	347	-
HCM Lane V/C Ratio	0.015	-	0.582	-
HCM Control Delay (s)	8.9	0	28.9	-
HCM Lane LOS	A	A	D	-
HCM 95th %tile Q(veh)	0	-	3.5	-

Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Background - Mitigation
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	275	333	28	193	271	147	72	1645	249	49	577	77
Future Volume (vph)	275	333	28	193	271	147	72	1645	249	49	577	77
Lane Group Flow (vph)	275	333	28	193	271	147	72	1645	249	49	577	77
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	20.4	40.6	40.6	20.3	40.5	40.5	21.3	78.0	78.0	11.1	67.8	67.8
Total Split (%)	13.6%	27.1%	27.1%	13.5%	27.0%	27.0%	14.2%	52.0%	52.0%	7.4%	45.2%	45.2%
Maximum Green (s)	13.9	34.1	34.1	13.8	34.0	34.0	15.2	71.7	71.7	5.0	61.5	61.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0			27.0	27.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)	5	5			5	5		5	5		6	6
Act Effct Green (s)	13.9	22.6	22.6	13.1	21.7	21.7	12.2	79.7	79.7	9.3	76.8	76.8
Actuated g/C Ratio	0.09	0.15	0.15	0.09	0.14	0.14	0.08	0.53	0.53	0.06	0.51	0.51
v/c Ratio	0.93	0.68	0.09	0.74	0.60	0.42	0.62	0.94	0.31	0.48	0.36	0.11
Control Delay	104.3	67.0	0.5	83.9	64.8	9.1	88.0	45.5	12.0	81.7	24.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	67.0	0.5	83.9	64.8	9.1	88.0	45.5	12.0	81.7	24.3	0.3
LOS	F	E	A	F	E	A	F	D	B	F	C	A
Approach Delay		80.2			57.5			42.8			25.6	
Approach LOS		F			E			D			C	
Queue Length 50th (m)	42.5	50.8	0.0	29.2	40.6	0.0	21.0	239.0	20.2	14.1	52.3	0.0
Queue Length 95th (m)	#70.0	60.8	0.0	42.8	50.4	14.8	37.5	#321.4	42.3	#41.5	81.4	0.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0		150.0	150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	295	739	402	276	703	453	146	1743	815	102	1618	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.45	0.07	0.70	0.39	0.32	0.49	0.94	0.31	0.48	0.36	0.11

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Background - Mitigation
AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 48.1

Intersection LOS: D

Intersection Capacity Utilization 93.0%

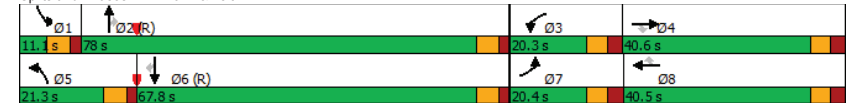
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background - Mitigation

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leirim

2036 Future Background - Mitigation
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	109	367	78	396	399	55	71	938	169	87	1695	363
Future Volume (vph)	109	367	78	396	399	55	71	938	169	87	1695	363
Lane Group Flow (vph)	109	367	78	396	399	55	71	938	169	87	1695	363
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	16.7	40.5	40.5	23.0	46.8	46.8	12.0	67.4	67.4	19.1	74.5	74.5
Total Split (%)	11.1%	27.0%	27.0%	15.3%	31.2%	31.2%	8.0%	44.9%	44.9%	12.7%	49.7%	49.7%
Maximum Green (s)	10.2	34.0	34.0	16.5	40.3	40.3	5.9	61.1	61.1	13.0	68.2	68.2
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0		27.0	27.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	5
Act Effct Green (s)	9.5	24.2	24.2	16.5	31.2	31.2	12.9	71.7	71.7	12.2	71.0	71.0
Actuated g/C Ratio	0.06	0.16	0.16	0.11	0.21	0.21	0.09	0.48	0.48	0.08	0.47	0.47
v/c Ratio	0.55	0.74	0.22	1.15	0.58	0.13	0.51	0.60	0.22	0.65	1.08	0.42
Control Delay	78.7	68.7	1.4	154.1	56.6	0.7	77.8	31.9	5.0	89.0	85.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.7	68.7	1.4	154.1	56.6	0.7	77.8	31.9	5.0	89.0	85.4	5.1
LOS	E	E	A	F	E	A	E	C	A	F	F	A
Approach Delay		61.2			98.4			30.8			72.0	
Approach LOS		E			F			C			E	
Queue Length 50th (m)	16.4	55.9	0.0	~71.2	57.7	0.0	20.3	105.6	1.2	25.4	~298.2	4.8
Queue Length 95th (m)	26.8	67.6	0.0	#104.3	68.5	0.0	#57.6	145.6	16.0	#46.2	#347.3	25.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0			150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	214	697	438	343	882	493	138	1569	767	148	1569	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.53	0.18	1.15	0.45	0.11	0.51	0.60	0.22	0.59	1.08	0.42

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leirim

2036 Future Background - Mitigation
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 65.2

Intersection LOS: E

Intersection Capacity Utilization 100.1%

ICU Level of Service G

Analysis Period (min) 15

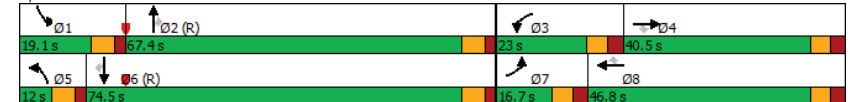
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leirim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background - Mitigation

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Background - Mitigation
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Traffic Volume (vph)	109	367	78	396	399	55	71	938	87	1695
Future Volume (vph)	109	367	78	396	399	55	71	938	87	1695
Lane Group Flow (vph)	109	367	78	396	399	55	71	1107	87	2058
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	11.1	31.3
Total Split (s)	16.8	40.5	40.5	26.3	50.0	50.0	11.1	72.1	11.1	72.1
Total Split (%)	11.2%	27.0%	27.0%	17.5%	33.3%	33.3%	7.4%	48.1%	7.4%	48.1%
Maximum Green (s)	10.3	34.0	34.0	19.8	43.5	43.5	5.0	65.8	5.0	65.8
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0			7.0	7.0		7.0		7.0
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		18.0		18.0	
Pedestrian Calls (#/hr)	5	5		5	5		5		5	
Act Effct Green (s)	9.5	24.2	24.2	19.8	34.5	34.5	13.7	65.8	14.8	66.9
Actuated g/C Ratio	0.06	0.16	0.16	0.13	0.23	0.23	0.09	0.44	0.10	0.45
v/c Ratio	0.55	0.74	0.22	0.96	0.53	0.13	0.49	0.55	0.54	0.99
Control Delay	78.4	68.7	1.4	99.5	52.8	0.7	75.3	31.3	76.0	57.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	68.7	1.4	99.5	52.8	0.7	75.3	31.3	76.0	57.3
LOS	E	E	A	F	D	A	E	C	E	E
Approach Delay	61.2				71.2		34.0		58.0	
Approach LOS	E				E		C		E	
Queue Length 50th (m)	16.4	55.9	0.0	61.2	56.2	0.0	20.2	85.6	24.9	218.7
Queue Length 95th (m)	26.8	67.6	0.0	#93.4	66.5	0.0	#60.5	99.8	#73.2	#259.3
Internal Link Dist (m)		312.8			585.8			260.1		467.3
Turn Bay Length (m)	120.0			150.0		150.0	105.0		75.0	
Base Capacity (vph)	216	697	440	412	952	488	146	2031	161	2082
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.53	0.18	0.96	0.42	0.11	0.49	0.55	0.54	0.99
Intersection Summary										
Cycle Length: 150										
Actuated Cycle Length: 150										
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green										
Natural Cycle: 145										

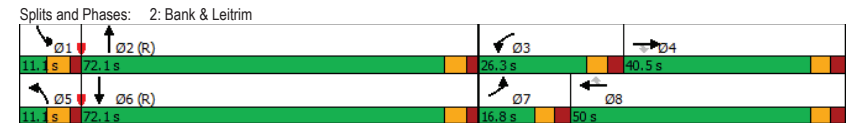
Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Background - Mitigation
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 54.8	Intersection LOS: D
Intersection Capacity Utilization 93.9%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Background - Mitigation

CGH Transportation
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Appendix M

TRANS Model Volume Plots

TRANS Regional Model

Version 1.01 - Assigned December, 2024

AM Peak Hour Total Traffic Volume

S5

2022 Model - Basecase

N/A

User Initials: TIMW

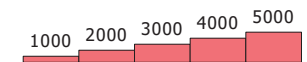
Plot Prepared: April 2026

EMME Scenario: 22002



Legend

AM Peak Hour Total Traffic Volume



Distance (m)



Johnston Corners

Green

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.

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TRANS Regional Model

Version 1.01 - Assigned December, 2025

**AM Peak Hour Seletf cink TraWt mlu5 e
SL**

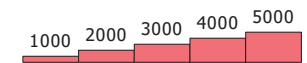
2046 Model - Priority Network

User Initials: TIMW
Plot Prepared: April 2026
EMME Scenario: 46011

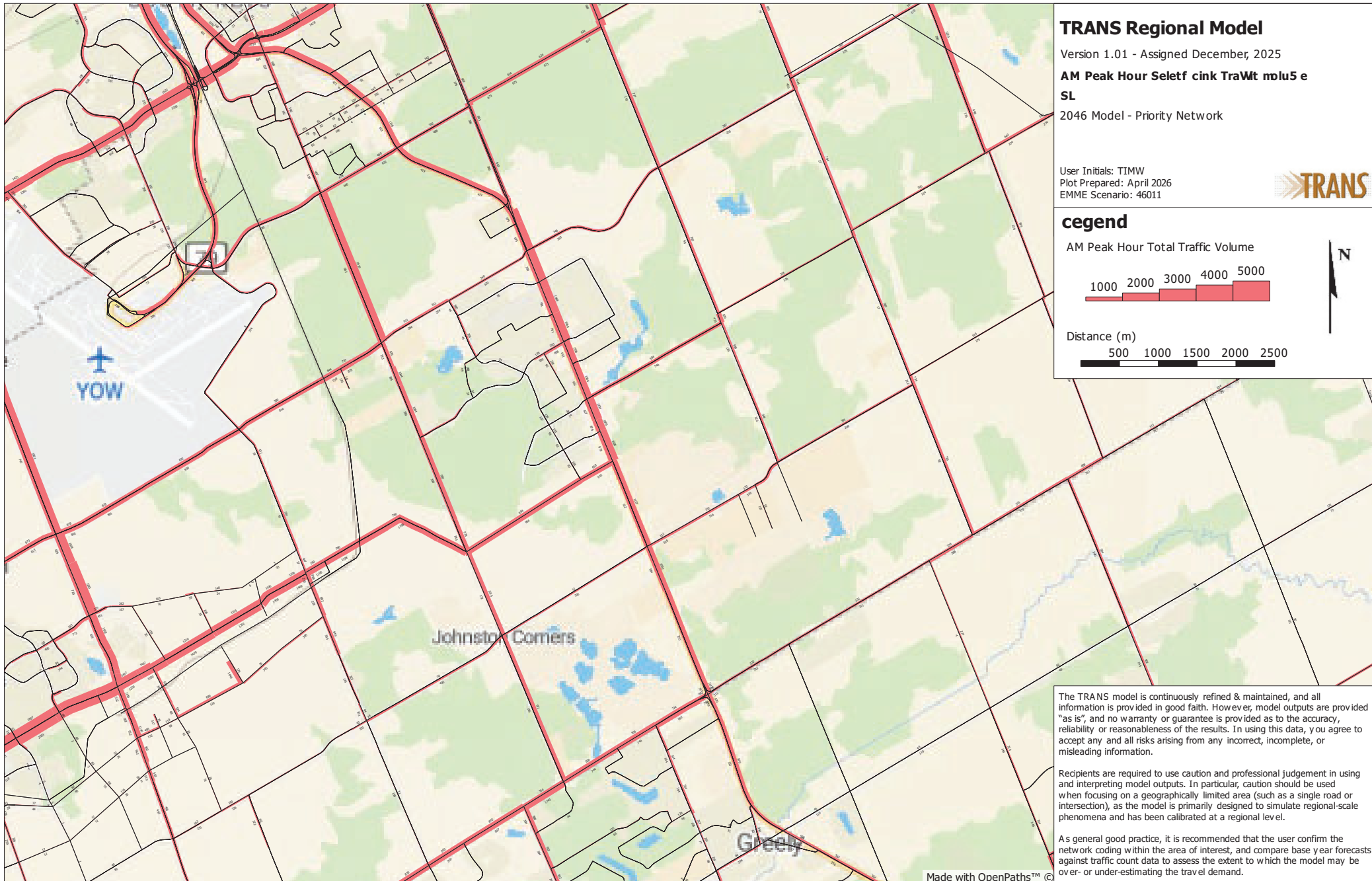


legend

AM Peak Hour Total Traffic Volume



Distance (m)



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

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

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

Appendix N

Signalization Warrants

Blais @ Hawthorne
Existing

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	379	79%	74%	No (Case 3)
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	89	74%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	320	67%	67%	No (Case 3)
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	51	102%		

Notes
1. Refer to OTM Book 12, pg 125, July 2024
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Blais @ Hawthorne
Future Background 2031

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	492	102%	102%	Maybe (Case 2)
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	150	125%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	392	82%	82%	No (Case 3)
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	91	183%		

Notes
1. Refer to OTM Book 12, pg 125, July 2024
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Blais @ Hawthorne
Future Total 2036

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	571	119%	119%	Maybe (Case 2)
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	205	171%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	434	90%	90%	No (Case 3)
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	128	256%		

- Notes
- 1. Refer to OTM Book 12, pg 125, July 2024
 - 2. Lowest section percentage governs justification
 - 3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
 - 4. T-intersection factor corrected, applies only to 1B

Bank @ Site Access
Future Total 2036

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	902	125%	6%	No (Case 3)
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	10	6%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	895	124%	0%	No (Case 3)
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

- Notes
- 1. Refer to OTM Book 12, pg 125, July 2024
 - 2. Lowest section percentage governs justification
 - 3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
 - 4. T-intersection factor corrected, applies only to 1B

Blais @ Site Access
Future Total 2036

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	294	61%	61%	No (Case 3)
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	90	75%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	234	49%	49%	No (Case 3)
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	37	74%		

Notes
1. Refer to OTM Book 12, pg 125, July 2024
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Appendix O

Synchro Intersection Worksheets – 2031 Future Total Conditions

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2031 Future Total
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	5	263	3	2	1375	908	3	495	3
Future Volume (vph)	15	5	263	3	2	1375	908	3	495	3
Lane Group Flow (vph)	15	9	263	4	2	1375	908	3	495	3
Turn Type	Perm	NA	custom	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4				2			6	
Permitted Phases	4		8	8	2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	30.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Split (%)	12.7%	12.7%	23.1%	23.1%	76.9%	76.9%	76.9%	76.9%	76.9%	76.9%
Maximum Green (s)	10.0	10.0	23.7	23.7	93.4	93.4	93.4	93.4	93.4	93.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	19.2	19.2	19.4	19.4	97.7	97.7	97.7	97.7	97.7	97.7
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.75	0.75	0.75	0.75	0.75	0.75
v/c Ratio	0.09	0.04	0.73	0.02	0.00	0.56	0.70	0.01	0.21	0.00
Control Delay	46.6	34.3	64.9	40.0	2.0	3.3	10.6	5.3	5.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	34.3	64.9	40.0	2.0	3.3	10.6	5.3	5.3	0.0
LOS	D	C	E	D	A	A	B	A	A	A
Approach Delay		42.0		64.5		6.2			5.3	
Approach LOS		D		E		A			A	
Queue Length 50th (m)	3.4	1.1	33.6	0.7	0.0	12.8	61.9	0.2	17.1	0.0
Queue Length 95th (m)	9.6	6.0	46.0	3.8	m0.1	m17.0	m0.0	1.2	27.3	0.0
Internal Link Dist (m)		337.1		495.4		153.6			706.5	
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	213	301	443	264	619	2474	1292	218	2405	1100
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.03	0.59	0.02	0.00	0.56	0.70	0.01	0.21	0.00

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 54 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 11.4

Intersection LOS: B

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
Page 1

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2031 Future Total
AM Peak Hour

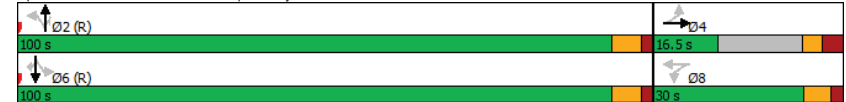
Intersection Capacity Utilization 92.4%

ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leitrin

2031 Future Total
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	275	333	28	193	271	163	72	1804	56	642	77
Future Volume (vph)	275	333	28	193	271	163	72	1804	56	642	77
Lane Group Flow (vph)	0	608	28	193	271	163	72	2053	56	642	77
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2	1	6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	12.0	31.3	12.0	31.3	31.3
Total Split (s)	51.0	51.0	51.0	12.0	63.0	63.0	12.0	55.0	12.0	55.0	55.0
Total Split (%)	39.2%	39.2%	39.2%	9.2%	48.5%	48.5%	9.2%	42.3%	9.2%	42.3%	42.3%
Maximum Green (s)	44.5	44.5	44.5	5.5	56.5	56.5	5.9	48.7	5.9	48.7	48.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	C-Max	None	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)	27.0	27.0	27.0		27.0	27.0		18.0		18.0	18.0
Pedestrian Calls (#/hr)	5	5	5		5	5		5		6	6
Act Effct Green (s)	44.5	44.5	56.5	56.5	56.5	56.5	51.1	56.0	51.1	51.1	
Actuated g/C Ratio	0.34	0.34	0.43	0.43	0.43	0.43	0.39	0.43	0.39	0.39	
v/c Ratio	1.42	0.06	1.68	0.38	0.23	0.30	1.62	0.44	0.52	0.13	
Control Delay	237.6	0.2	363.0	26.9	8.0	12.4	306.3	33.8	28.3	3.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	237.6	0.2	363.0	26.9	8.0	12.4	306.3	33.8	28.3	3.2	
LOS	F	A	F	C	A	B	F	C	C	A	
Approach Delay	227.2			125.4			296.4		26.2		
Approach LOS	F			F			F		C		
Queue Length 50th (m)	~209.8	0.0	~59.0	46.3	6.5	6.6	~411.1	5.0	40.9	0.0	
Queue Length 95th (m)	#279.6	0.0	#107.1	68.9	20.2	m7.9	#449.1	m18.5	79.4	m3.0	
Internal Link Dist (m)	312.8			585.8			421.1		467.3		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	427	507	115	709	700	244	1268	128	1242	575	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.42	0.06	1.68	0.38	0.23	0.30	1.62	0.44	0.52	0.13	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

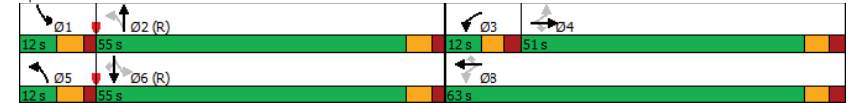
CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leitrin

2031 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.68	
Intersection Signal Delay: 209.8	Intersection LOS: F
Intersection Capacity Utilization 130.9%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2031 Future Total
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱	↱
Traffic Volume (vph)	63	0	21	0	1	1748	107	728	21
Future Volume (vph)	63	0	21	0	1	1748	107	728	21
Lane Group Flow (vph)	63	4	21	242	1	1758	107	728	21
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	27.3	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	28.0	28.0	28.0	28.0	88.0	88.0	14.0	102.0	102.0
Total Split (%)	21.5%	21.5%	21.5%	21.5%	67.7%	67.7%	10.8%	78.5%	78.5%
Maximum Green (s)	21.7	21.7	21.7	21.7	81.4	81.4	7.7	95.4	95.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	14.0	14.0	14.0	14.0	13.0	13.0		13.0	13.0
Pedestrian Calls (#/hr)	10	10	10	10	12	12		11	11
Act Effct Green (s)	18.4	18.4	18.4	18.4	85.0	85.0	99.0	98.7	98.7
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.65	0.65	0.76	0.76	0.76
v/c Ratio	1.07	0.01	0.12	0.80	0.00	0.83	0.66	0.31	0.02
Control Delay	187.8	0.0	48.1	47.2	3.0	8.5	29.4	16.2	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	187.8	0.0	48.1	47.2	3.0	8.5	29.4	16.2	7.4
LOS	F	A	D	D	A	A	C	B	A
Approach Delay		176.6		47.3		8.5		17.6	
Approach LOS		F		D		A		B	
Queue Length 50th (m)	16.0	0.0	4.6	31.0	0.0	182.2	17.2	78.6	1.1
Queue Length 95th (m)	#44.6	0.0	12.4	#62.7	m0.0	44.1	m24.3	m81.7	m3.2
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	70	479	211	335	422	2123	166	2356	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.01	0.10	0.72	0.00	0.83	0.64	0.31	0.02
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 72 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 100									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

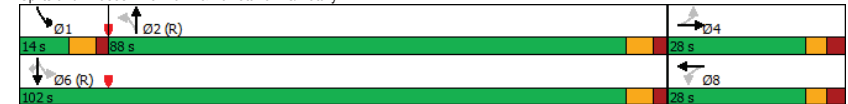
CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2031 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 18.4
Intersection LOS: B
Intersection Capacity Utilization 104.2%
ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2031 Future Total
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	195	0	2	0	1	1497	726	18
Future Volume (vph)	195	0	2	0	1	1497	726	18
Lane Group Flow (vph)	195	6	2	4	1	1498	726	18
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
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)	29.0	29.0	29.0	29.0	25.2	25.2	25.2	25.2
Total Split (s)	40.0	40.0	40.0	40.0	90.0	90.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	69.2%	69.2%	69.2%	69.2%
Maximum Green (s)	34.0	34.0	34.0	34.0	83.8	83.8	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	2.7	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2	6.2	6.2
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)	16.0	16.0	16.0	16.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	17	17	17	17	13	13
Act Effct Green (s)	25.0	25.0	25.0	25.0	92.8	92.8	92.8	92.8
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.71	0.71	0.71	0.71
v/c Ratio	0.80	0.01	0.01	0.01	0.00	0.65	0.33	0.02
Control Delay	71.9	0.0	37.5	0.0	7.0	17.0	1.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.9	0.0	37.5	0.0	7.0	17.0	1.9	0.1
LOS	E	A	D	A	A	B	A	A
Approach Delay		69.7		12.5		17.0	1.8	
Approach LOS		E		B		B	A	
Queue Length 50th (m)	48.0	0.0	0.4	0.0	0.1	140.3	5.8	0.0
Queue Length 95th (m)	69.3	0.0	2.5	0.0	m0.1	m176.4	7.2	0.0
Internal Link Dist (m)		264.9		519.4		373.7	429.7	
Turn Bay Length (m)	100.0		15.0		50.0			95.0
Base Capacity (vph)	334	548	334	405	442	2300	2176	955
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	0.58	0.01	0.01	0.01	0.00	0.65	0.33	0.02

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 58 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

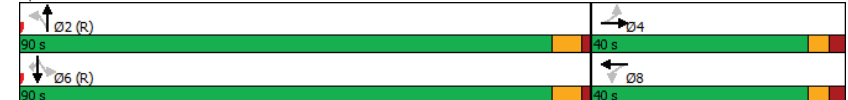
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2031 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 16.7
Intersection LOS: B
Intersection Capacity Utilization 72.4%
ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Bank & White Alder/Analdea



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

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Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Total
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	350	37	67	69	18	935	138	495	100
Future Volume (vph)	350	37	67	69	18	935	138	495	100
Lane Group Flow (vph)	350	58	67	268	18	937	138	495	100
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	32.3	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	44.0	44.0	44.0	44.0	69.0	69.0	17.0	86.0	86.0
Total Split (%)	33.8%	33.8%	33.8%	33.8%	53.1%	53.1%	13.1%	66.2%	66.2%
Maximum Green (s)	37.7	37.7	37.7	37.7	62.3	62.3	10.6	79.3	79.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	19.0	19.0	19.0	19.0	23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)	21	21	21	21	23	23		30	30
Act Effct Green (s)	35.8	35.8	35.8	35.8	65.4	65.4	81.5	81.2	81.2
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.50	0.50	0.63	0.62	0.62
v/c Ratio	0.97	0.13	0.20	0.54	0.05	0.62	0.44	0.27	0.11
Control Delay	85.8	24.0	37.0	26.8	8.7	10.0	11.5	7.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.8	24.0	37.0	26.8	8.7	10.0	11.5	7.1	1.0
LOS	F	C	D	C	A	B	B	A	A
Approach Delay		77.0		28.8		10.0		7.1	
Approach LOS		E		C		A		A	
Queue Length 50th (m)	44.7	6.9	12.9	32.9	0.8	23.4	3.4	6.3	0.0
Queue Length 95th (m)	#74.0	17.6	25.2	60.3	m2.2	31.4	13.0	11.0	0.0
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	382	486	353	513	394	1520	326	1822	897
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.12	0.19	0.52	0.05	0.62	0.42	0.27	0.11

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 85

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

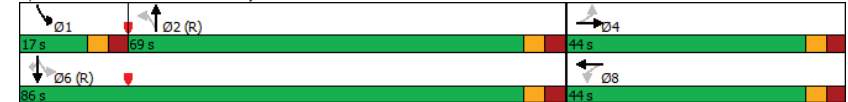
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 23.0
Intersection LOS: C
Intersection Capacity Utilization 87.3%
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: 5: Bank & Findlay Creek



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2031 Future Total

AM Peak Hour

	↖	→	↗	↖	↖	↑	↗	↓	↘
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	32	25	108	30	182	820	124	415	24
Future Volume (vph)	32	25	108	30	182	820	124	415	24
Lane Group Flow (vph)	32	127	108	151	182	830	124	415	24
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	37.0	37.0	37.0	37.0	36.0	64.0	29.0	57.0	57.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	27.7%	49.2%	22.3%	43.8%	43.8%
Maximum Green (s)	30.0	30.0	30.0	30.0	29.6	57.1	22.6	50.1	50.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.7	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0		13.0		13.0	13.0
Pedestrian Calls (#/hr)	45	45	34	34		42		45	45
Act Effct Green (s)	20.5	20.5	20.5	20.5	19.5	73.9	15.3	69.6	69.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.15	0.57	0.12	0.54	0.54
v/c Ratio	0.23	0.42	0.67	0.46	0.73	0.48	0.66	0.26	0.03
Control Delay	49.5	17.1	70.9	17.2	75.6	11.7	93.7	4.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	17.1	70.9	17.2	75.6	11.7	93.7	4.9	0.1
LOS	D	B	E	B	E	B	F	A	A
Approach Delay		23.6		39.6		23.2		24.3	
Approach LOS		C		D		C		C	
Queue Length 50th (m)	7.2	5.5	26.0	6.6	43.7	45.4	33.7	8.2	0.0
Queue Length 95th (m)	16.3	22.8	44.3	25.1	67.4	53.8	53.6	11.5	0.0
Internal Link Dist (m)		60.3		127.0		84.5		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	207	401	235	421	377	1741	279	1617	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.32	0.46	0.36	0.48	0.48	0.44	0.26	0.03

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 10 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation

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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2031 Future Total

AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 25.6

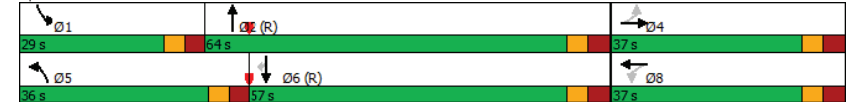
Intersection LOS: C

Intersection Capacity Utilization 79.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation

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HCM 2010 TWSC
7: Bank & Site Access

2031 Future Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↘ ↘	↗ ↘ ↘			↗ ↘
Traffic Vol, veh/h	0	16	977	19	0	519
Future Vol, veh/h	0	16	977	19	0	519
Conflicting Peds, #/hr	0	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	6	2	2	9
Mvmt Flow	0	16	977	19	0	519
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	506	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	438	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	435	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.6	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	-	435	-		
HCM Lane V/C Ratio	-	-	0.037	-		
HCM Control Delay (s)	-	-	13.6	-		
HCM Lane LOS	-	-	B	-		
HCM 95th %tile Q(veh)	-	-	0.1	-		

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Total
AM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	277	89	61	39	36	709	31	416	74
Future Volume (vph)	277	89	61	39	36	709	31	416	74
Lane Group Flow (vph)	277	102	61	49	36	725	31	416	74
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	4		8		2		6		6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	68.0	68.0	68.0	68.0	62.0	62.0	62.0	62.0	62.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	47.7%	47.7%	47.7%	47.7%	47.7%
Maximum Green (s)	61.4	61.4	61.4	61.4	55.4	55.4	55.4	55.4	55.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	6	6	13	13	6	6	33	33	33
Act Effct Green (s)	36.4	36.4	36.4	36.4	80.4	80.4	80.4	80.4	80.4
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.81	0.21	0.21	0.10	0.07	0.37	0.09	0.22	0.10
Control Delay	60.6	31.4	34.4	25.7	11.8	13.9	12.3	10.5	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	31.4	34.4	25.7	11.8	13.9	12.3	10.5	3.0
LOS	E	C	C	C	B	B	B	B	A
Approach Delay	52.7		30.5		13.8		9.5		
Approach LOS	D		C		B		A		
Queue Length 50th (m)	66.2	18.4	12.0	7.4	3.2	54.8	1.7	12.4	0.0
Queue Length 95th (m)	86.8	28.3	20.7	14.9	m8.8	78.9	m9.3	39.7	6.9
Internal Link Dist (m)	213.3		195.7		102.9		270.3		
Turn Bay Length (m)	150.0	25.0		75.0		70.0		120.0	
Base Capacity (vph)	579	809	490	796	504	1957	364	1919	758
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.13	0.12	0.06	0.07	0.37	0.09	0.22	0.10
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBTL, Start of Green									
Natural Cycle: 50									

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 21.9

Intersection LOS: C

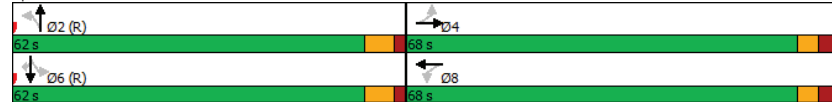
Intersection Capacity Utilization 65.4%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 8: Bank & Miikana/Blais



Lanes, Volumes, Timings
9: Bank & Dun Skipper

2031 Future Total
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (vph)	192	22	60	564	407	49
Future Volume (vph)	192	22	60	564	407	49
Lane Group Flow (vph)	192	22	60	564	407	49
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	33.0	33.0	33.0	33.0
Total Split (s)	42.0	42.0	88.0	88.0	88.0	88.0
Total Split (%)	32.3%	32.3%	67.7%	67.7%	67.7%	67.7%
Maximum Green (s)	35.4	35.4	81.3	81.3	81.3	81.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	17	17
Act Effct Green (s)	21.1	21.1	95.6	95.6	95.6	95.6
Actuated g/C Ratio	0.16	0.16	0.74	0.74	0.74	0.74
v/c Ratio	0.75	0.09	0.10	0.47	0.35	0.06
Control Delay	69.0	16.2	6.5	9.4	6.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	16.2	6.5	9.4	6.4	1.4
LOS	E	B	A	A	A	A
Approach Delay	63.6			9.1	5.9	
Approach LOS	E			A	A	
Queue Length 50th (m)	47.5	0.0	3.9	52.1	39.4	0.0
Queue Length 95th (m)	68.8	7.2	10.1	92.2	55.3	4.1
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	430	394	576	1189	1179	772
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.06	0.10	0.47	0.35	0.06

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 79 (61%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 70

Lanes, Volumes, Timings
9: Bank & Dun Skipper

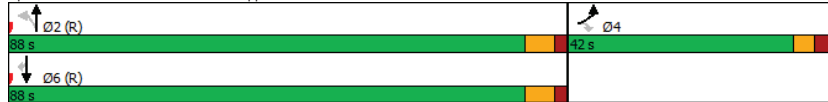
2031 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 17.0
Intersection Capacity Utilization 58.8%

Intersection LOS: B
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 9: Bank & Dun Skipper



HCM 2010 TWSC
10: Hawthorne /Hawthorne & Blais

2031 Future Total
AM Peak Hour

Intersection

Int Delay, s/veh 8.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	W	W
Traffic Vol, veh/h	273	12	8	351	194	159
Future Vol, veh/h	273	12	8	351	194	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	25	2	35	47	13
Mvmt Flow	273	12	8	351	194	159

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	641	274	353
Stage 1	274	-	-
Stage 2	367	-	-
Critical Hdwy	6.54	6.45	4.12
Critical Hdwy Stg 1	5.54	-	-
Critical Hdwy Stg 2	5.54	-	-
Follow-up Hdwy	3.626	3.525	2.218
Pot Cap-1 Maneuver	421	713	1206
Stage 1	745	-	-
Stage 2	675	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	418	713	1206
Mov Cap-2 Maneuver	418	-	-
Stage 1	739	-	-
Stage 2	675	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.1	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1206	-	425	-
HCM Lane V/C Ratio	0.007	-	0.671	-
HCM Control Delay (s)	8	0	29.1	-
HCM Lane LOS	A	A	D	-
HCM 95th %tile Q(veh)	0	-	4.8	-

HCM 2010 TWSC
11: Blais & Site Access

2031 Future Total
AM Peak Hour

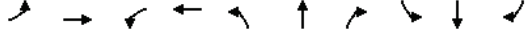
Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	198	133	34	87	55
Future Vol, veh/h	15	198	133	34	87	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	198	133	34	87	55
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	167	0	-	0	378	150
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1411	-	-	-	624	896
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1411	-	-	-	617	896
Mov Cap-2 Maneuver	-	-	-	-	617	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	810	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		11.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1411	-	-	-	702	
HCM Lane V/C Ratio	0.011	-	-	-	0.202	
HCM Control Delay (s)	7.6	0	-	-	11.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.8	

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
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Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2031 Future Total
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	13	9	864	11	6	1022	441	5	1389	16
Future Volume (vph)	13	9	864	11	6	1022	441	5	1389	16
Lane Group Flow (vph)	13	11	864	15	6	1022	441	5	1389	16
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	4		8		2		2		6	
Permitted Phases	4		8		2		2		6	
Detector Phase	4		8		2		2		6	
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	67.0	67.0	63.0	63.0	63.0	63.0	63.0	63.0
Total Split (%)	12.7%	12.7%	51.5%	51.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%
Maximum Green (s)	10.0	10.0	60.7	60.7	56.4	56.4	56.4	56.4	56.4	56.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	52.2	52.2	52.4	52.4	64.7	64.7	64.7	64.7	64.7	64.7
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50	0.50
v/c Ratio	0.02	0.02	0.86	0.02	0.09	0.63	0.49	0.04	0.84	0.02
Control Delay	20.7	17.8	44.6	16.5	8.5	9.3	1.1	21.6	35.2	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	17.8	44.6	16.5	8.5	9.3	1.1	21.6	35.2	3.3
LOS	C	B	D	B	A	A	A	C	D	A
Approach Delay	19.4		44.1		6.8		34.8			
Approach LOS	B		D		A		C			
Queue Length 50th (m)	2.0	1.4	101.9	1.7	0.3	27.8	0.0	0.6	159.6	0.0
Queue Length 95th (m)	5.5	4.7	116.3	5.5	m0.3	m31.1	m0.0	3.5	#230.1	2.5
Internal Link Dist (m)	337.1		495.4		153.6		706.5			
Turn Bay Length (m)	15.0	110.0		130.0		170.0		130.0		95.0
Base Capacity (vph)	607	650	1162	719	69	1633	898	118	1649	707
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.74	0.02	0.09	0.63	0.49	0.04	0.84	0.02

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 29 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 26.0	Intersection LOS: C

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
Page 1

Lanes, Volumes, Timings

1: Bank & Kemp/Conroy

2031 Future Total
PM Peak Hour

Intersection Capacity Utilization 84.0% ICU Level of Service E

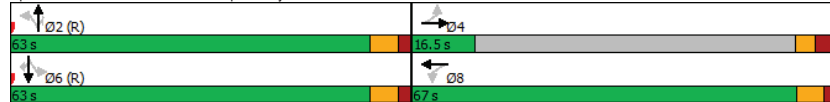
Analysis Period (min) 15

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: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
Page 2

Lanes, Volumes, Timings

2: Bank & Leitrim

2031 Future Total
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	109	367	78	396	399	66	71	1053	102	1837	363
Future Volume (vph)	109	367	78	396	399	66	71	1053	102	1837	363
Lane Group Flow (vph)	0	476	78	396	399	66	71	1222	102	1837	363
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	12.0	31.3	12.0	31.3	31.3
Total Split (s)	45.0	45.0	45.0	18.0	63.0	63.0	12.0	55.0	12.0	55.0	55.0
Total Split (%)	34.6%	34.6%	34.6%	13.8%	48.5%	48.5%	9.2%	42.3%	9.2%	42.3%	42.3%
Maximum Green (s)	38.5	38.5	38.5	11.5	56.5	56.5	5.9	48.7	5.9	48.7	48.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0	27.0	27.0	27.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5	5	5	5	5	5	5
Act Effct Green (s)	38.5	38.5	56.5	56.5	56.5	54.8	48.7	56.0	51.1	51.1	51.1
Actuated g/C Ratio	0.30	0.30	0.43	0.43	0.43	0.42	0.37	0.43	0.39	0.39	0.39
v/c Ratio	1.23	0.15	1.81	0.53	0.10	0.57	1.01	0.80	1.41	0.48	0.48
Control Delay	162.3	1.1	403.4	30.2	3.6	33.9	67.2	49.9	219.6	9.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.3	1.1	403.4	30.2	3.6	33.9	67.2	49.9	219.6	9.0	9.0
LOS	F	A	F	C	A	C	E	D	F	A	A
Approach Delay	139.6			199.8			65.4		178.9		
Approach LOS	F			F			E		F		
Queue Length 50th (m)	~149.9	0.0	~132.6	73.9	0.0	12.4	~176.7	16.2	~342.5	21.5	21.5
Queue Length 95th (m)	#215.3	1.1	#194.8	104.6	6.3	#20.3	#220.1	m#19.6	#386.8	m40.8	40.8
Internal Link Dist (m)	312.8			585.8			421.1		467.3		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	388	504	219	751	653	125	1207	127	1303	753	753
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.23	0.15	1.81	0.53	0.10	0.57	1.01	0.80	1.41	0.48	0.48

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 122 (94%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 150

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
Page 3

Lanes, Volumes, Timings

2: Bank & Leitrim

2031 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.81

Intersection Signal Delay: 148.8

Intersection LOS: F

Intersection Capacity Utilization 129.9%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

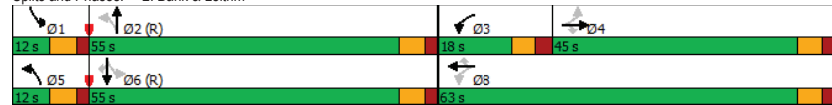
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Bank & Leitrim



Lanes, Volumes, Timings

3: Bank & Barrett Farms/Rotary

2031 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	33	0	24	0	3	1101	232	2008	58
Future Volume (vph)	33	0	24	0	3	1101	232	2008	58
Lane Group Flow (vph)	33	2	24	147	3	1122	232	2008	58
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	27.3	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	28.0	28.0	28.0	28.0	77.0	77.0	25.0	102.0	102.0
Total Split (%)	21.5%	21.5%	21.5%	21.5%	59.2%	59.2%	19.2%	78.5%	78.5%
Maximum Green (s)	21.7	21.7	21.7	21.7	70.4	70.4	18.7	95.4	95.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	14.0	14.0	14.0	14.0	13.0	13.0		13.0	13.0
Pedestrian Calls (#/hr)	14	14	10	10	12	12		11	11
Act Effct Green (s)	14.4	14.4	14.4	14.4	85.5	85.5	103.0	102.7	102.7
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.66	0.66	0.79	0.79	0.79
v/c Ratio	0.36	0.01	0.17	0.36	0.03	0.52	0.61	0.77	0.05
Control Delay	62.6	0.0	52.5	2.4	5.3	4.1	7.7	12.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	0.0	52.5	2.4	5.3	4.1	7.7	12.8	0.3
LOS	E	A	D	A	A	A	A	B	A
Approach Delay		59.0		9.5		4.1		12.0	
Approach LOS		E		A		A		B	
Queue Length 50th (m)	8.3	0.0	5.9	0.0	0.0	6.8	13.5	89.0	0.0
Queue Length 95th (m)	17.9	0.0	13.5	0.0	m0.3	28.2	m3.3	m131.9	m0.3
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	137	305	212	474	97	2150	458	2619	1111
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.01	0.11	0.31	0.03	0.52	0.51	0.77	0.05

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 53 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Lanes, Volumes, Timings

3: Bank & Barrett Farms/Rotary

2031 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 9.9

Intersection LOS: A

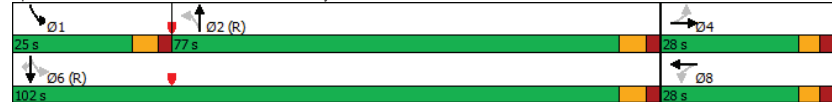
Intersection Capacity Utilization 109.3%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Lanes, Volumes, Timings

4: Bank & White Alder/Analdea

2031 Future Total
PM Peak Hour

	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	71	1	0	8	1064	4	1840	157
Future Volume (vph)	71	1	0	8	1064	4	1840	157
Lane Group Flow (vph)	71	17	3	8	1066	4	1840	157
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	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)	29.0	29.0	29.0	25.2	25.2	25.2	25.2	25.2
Total Split (s)	29.0	29.0	29.0	101.0	101.0	101.0	101.0	101.0
Total Split (%)	22.3%	22.3%	22.3%	77.7%	77.7%	77.7%	77.7%	77.7%
Maximum Green (s)	23.0	23.0	23.0	94.8	94.8	94.8	94.8	94.8
Yellow Time (s)	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	1.6	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.2	6.2	6.2	6.2	6.2
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	C-Max	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)	16.0	16.0	16.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	10	17	17	17	17	17
Act Effct Green (s)	15.7	15.7	15.7	106.5	106.5	106.5	106.5	106.5
Actuated g/C Ratio	0.12	0.12	0.12	0.82	0.82	0.82	0.82	0.82
v/c Ratio	0.46	0.09	0.01	0.06	0.40	0.01	0.68	0.14
Control Delay	60.6	20.7	0.0	4.2	5.4	2.0	2.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	20.7	0.0	4.2	5.4	2.0	2.0	0.3
LOS	E	C	A	A	A	A	A	A
Approach Delay		52.9			5.4		1.9	
Approach LOS		D			A		A	
Queue Length 50th (m)	17.7	0.2	0.0	0.1	3.6	0.0	5.8	0.0
Queue Length 95th (m)	30.8	7.0	0.0	m0.9	98.0	m0.1	29.5	m0.4
Internal Link Dist (m)		264.9	519.4		373.7		429.7	
Turn Bay Length (m)	100.0			50.0		45.0		95.0
Base Capacity (vph)	229	261	379	127	2664	359	2690	1143
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	0.31	0.07	0.01	0.06	0.40	0.01	0.68	0.14
Intersection Summary								
Cycle Length: 130								
Actuated Cycle Length: 130								
Offset: 42 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 90								

Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2031 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 4.5

Intersection LOS: A

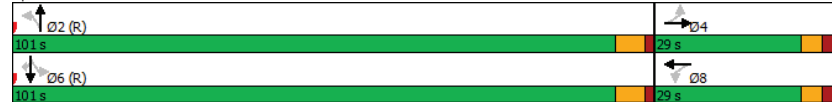
Intersection Capacity Utilization 78.1%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 4: Bank & White Alder/Analdea



Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	213	66	119	47	30	700	305	1156	394
Future Volume (vph)	213	66	119	47	30	700	305	1156	394
Lane Group Flow (vph)	213	102	119	179	30	703	305	1156	394
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	32.3	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	40.0	40.0	40.0	40.0	52.0	52.0	38.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	40.0%	40.0%	29.2%	69.2%	69.2%
Maximum Green (s)	33.7	33.7	33.7	33.7	45.3	45.3	31.6	83.3	83.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	19.0	19.0	19.0	19.0	23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)	20	20	20	20	22	22		28	28
Act Effct Green (s)	22.1	22.1	22.1	22.1	74.3	74.3	95.2	94.9	94.9
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.57	0.57	0.73	0.73	0.73
v/c Ratio	0.80	0.35	0.61	0.52	0.13	0.38	0.58	0.49	0.35
Control Delay	72.9	39.9	62.4	25.4	7.2	5.6	6.8	5.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.9	39.9	62.4	25.4	7.2	5.6	6.8	5.1	1.4
LOS	E	D	E	C	A	A	A	A	A
Approach Delay		62.2		40.2		5.7		4.6	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	26.2	17.9	27.4	16.1	1.1	13.3	24.8	83.0	8.0
Queue Length 95th (m)	39.8	33.9	47.1	38.4	m2.8	18.1	27.6	70.4	8.4
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	406	436	298	466	231	1838	670	2352	1114
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.23	0.40	0.38	0.13	0.38	0.46	0.49	0.35

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 85

Lanes, Volumes, Timings
5: Bank & Findlay Creek

2031 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 13.8

Intersection LOS: B

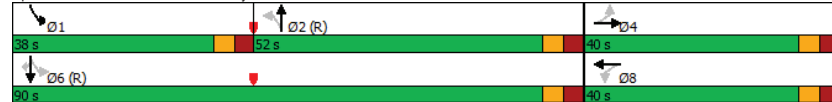
Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 5: Bank & Findlay Creek



Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2031 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	30	20	171	40	123	612	265	977	39
Future Volume (vph)	30	20	171	40	123	612	265	977	39
Lane Group Flow (vph)	30	208	171	114	123	637	265	977	39
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	43.0	43.0	43.0	43.0	21.0	50.0	37.0	66.0	66.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	16.2%	38.5%	28.5%	50.8%	50.8%
Maximum Green (s)	36.0	36.0	36.0	36.0	14.6	43.1	30.6	59.1	59.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.7	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	48	48	47	47		44		50	50
Act Effct Green (s)	29.3	29.3	29.3	29.3	13.3	55.2	25.2	67.1	67.1
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.10	0.42	0.19	0.52	0.52
v/c Ratio	0.12	0.46	0.93	0.30	0.73	0.47	0.83	0.58	0.05
Control Delay	38.1	10.3	98.7	17.9	85.0	29.9	89.9	10.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.1	10.3	98.7	17.9	85.0	29.9	89.9	10.4	0.2
LOS	D	B	F	B	F	C	F	B	A
Approach Delay		13.8		66.4		38.9		26.5	
Approach LOS		B		E		D		C	
Queue Length 50th (m)	6.1	4.0	42.5	8.7	32.9	66.8	72.2	19.1	0.0
Queue Length 95th (m)	13.7	23.6	#76.1	23.2	#56.1	78.9	86.5	75.2	m0.2
Internal Link Dist (m)		60.3		127.0		84.5		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	304	517	226	458	188	1354	390	1677	714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.40	0.76	0.25	0.65	0.47	0.68	0.58	0.05

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 124 (95%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2031 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 33.4

Intersection LOS: C

Intersection Capacity Utilization 86.5%

ICU Level of Service E

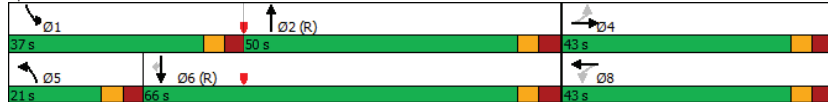
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



HCM 2010 TWSC
7: Bank & Site Access

2031 Future Total
PM Peak Hour

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑↑			↑↑
Traffic Vol, veh/h	0	11	734	42	0	1300
Future Vol, veh/h	0	11	734	42	0	1300
Conflicting Peds, #/hr	0	0	0	9	9	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	4	2	2	4
Mvmt Flow	0	11	734	42	0	1300

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	397	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.92	-
Pot Cap-1 Maneuver	0	515	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	511	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	511
HCM Lane V/C Ratio	-	-	0.022
HCM Control Delay (s)	-	-	12.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	220	73	58	93	72	525	19	1073	208
Future Volume (vph)	220	73	58	93	72	525	19	1073	208
Lane Group Flow (vph)	220	79	58	128	72	550	19	1073	208
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	63.0	63.0	63.0	63.0	67.0	67.0	67.0	67.0	67.0
Total Split (%)	48.5%	48.5%	48.5%	48.5%	51.5%	51.5%	51.5%	51.5%	51.5%
Maximum Green (s)	56.4	56.4	56.4	56.4	60.4	60.4	60.4	60.4	60.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	6	6	12	12	6	6	34	34	34
Act Effct Green (s)	31.2	31.2	31.2	31.2	85.6	85.6	85.6	85.6	85.6
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.66	0.66	0.66	0.66	0.66
v/c Ratio	0.82	0.20	0.22	0.31	0.28	0.26	0.04	0.50	0.24
Control Delay	69.7	35.8	38.4	34.5	11.8	7.8	7.7	7.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	35.8	38.4	34.5	11.8	7.8	7.7	7.9	0.9
LOS	E	D	D	C	B	A	A	A	A
Approach Delay		60.7		35.7		8.2		6.7	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	53.7	15.4	12.0	23.1	4.8	18.9	1.1	36.5	0.0
Queue Length 95th (m)	74.3	25.4	21.3	35.8	15.0	35.9	m2.7	51.4	m1.2
Internal Link Dist (m)		213.3		195.7		102.9		270.3	
Turn Bay Length (m)	150.0		25.0		75.0		70.0		120.0
Base Capacity (vph)	482	695	476	723	257	2112	467	2140	858
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.11	0.12	0.18	0.28	0.26	0.04	0.50	0.24
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 128 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Green									
Natural Cycle: 60									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

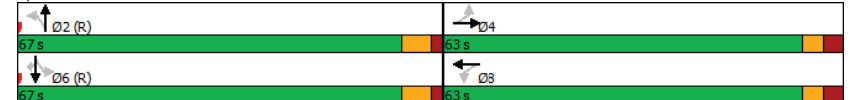
CGH Transportation
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Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2031 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 84.5%	ICU Level of Service E
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 8: Bank & Miikana/Blais



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
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Lanes, Volumes, Timings
9: Bank & Dun Skipper

2031 Future Total
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	178	12	119	435	958	128
Future Volume (vph)	178	12	119	435	958	128
Lane Group Flow (vph)	178	12	119	435	958	128
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	33.0	33.0	33.0	33.0
Total Split (s)	34.0	34.0	96.0	96.0	96.0	96.0
Total Split (%)	26.2%	26.2%	73.8%	73.8%	73.8%	73.8%
Maximum Green (s)	27.4	27.4	89.3	89.3	89.3	89.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	14	14
Act Effct Green (s)	20.0	20.0	96.7	96.7	96.7	96.7
Actuated g/C Ratio	0.15	0.15	0.74	0.74	0.74	0.74
v/c Ratio	0.74	0.06	0.44	0.35	0.76	0.12
Control Delay	70.3	20.2	13.7	7.3	9.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	20.2	13.7	7.3	9.4	0.3
LOS	E	C	B	A	A	A
Approach Delay	67.1			8.7	8.3	
Approach LOS	E			A	A	
Queue Length 50th (m)	44.1	0.0	10.2	33.9	94.2	0.0
Queue Length 95th (m)	64.9	5.4	29.4	60.5	74.7	0.0
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	330	283	272	1238	1261	1043
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.04	0.44	0.35	0.76	0.12
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 9 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 100						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

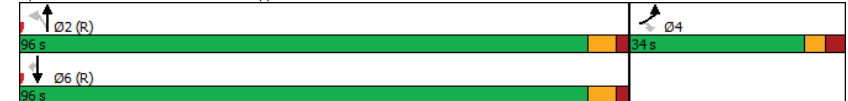
CGH Transportation
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Lanes, Volumes, Timings
9: Bank & Dun Skipper

2031 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 14.5	Intersection LOS: B
Intersection Capacity Utilization 88.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 9: Bank & Dun Skipper



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total

CGH Transportation
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HCM 2010 TWSC
10: Hawthorne /Hawthorne & Blais

2031 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	9.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	239	23	14	301	352	306
Future Vol, veh/h	239	23	14	301	352	306
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	17	14	27	25	10
Mvmt Flow	239	23	14	301	352	306

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	834	505	658	0	- 0
Stage 1	505	-	-	-	-
Stage 2	329	-	-	-	-
Critical Hdwy	6.47	6.37	4.24	-	- -
Critical Hdwy Stg 1	5.47	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-
Follow-up Hdwy	3.563	3.453	2.326	-	- -
Pot Cap-1 Maneuver	332	538	875	-	- -
Stage 1	596	-	-	-	-
Stage 2	718	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	326	538	875	-	- -
Mov Cap-2 Maneuver	326	-	-	-	-
Stage 1	585	-	-	-	-
Stage 2	718	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	44.3	0.4	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	875	- 338	-	-
HCM Lane V/C Ratio	0.016	- 0.775	-	-
HCM Control Delay (s)	9.2	0 44.3	-	-
HCM Lane LOS	A	A E	-	-
HCM 95th %tile Q(veh)	0	- 6.2	-	-

HCM 2010 TWSC
11: Blais & Site Access

2031 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		W	W		W	
Traffic Vol, veh/h	32	202	246	74	60	38
Future Vol, veh/h	32	202	246	74	60	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	9	3	2	2	2
Mvmt Flow	32	202	246	74	60	38

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	320	0	0	549	283
Stage 1	-	-	-	283	-
Stage 2	-	-	-	266	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1240	-	-	497	756
Stage 1	-	-	-	765	-
Stage 2	-	-	-	779	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	1240	-	-	483	756
Mov Cap-2 Maneuver	-	-	-	483	-
Stage 1	-	-	-	743	-
Stage 2	-	-	-	779	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1240	-	-	-	562
HCM Lane V/C Ratio	0.026	-	-	-	0.174
HCM Control Delay (s)	8	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Lanes, Volumes, Timings
2: Bank & Leitrin

2031 Future Total - Mitigation
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	275	333	28	193	271	163	72	1804	249	56	642	77
Future Volume (vph)	275	333	28	193	271	163	72	1804	249	56	642	77
Lane Group Flow (vph)	275	333	28	193	271	163	72	1804	249	56	642	77
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.6	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.1	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	20.4	40.6	40.6	20.3	40.5	40.5	21.3	78.0	78.0	11.1	67.8	67.8
Total Split (%)	13.6%	27.1%	27.1%	13.5%	27.0%	27.0%	14.2%	52.0%	52.0%	7.4%	45.2%	45.2%
Maximum Green (s)	13.9	34.1	34.1	13.8	34.0	34.0	15.2	71.7	71.7	5.0	61.5	61.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0		27.0	27.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5		5	5		6	6	6
Act Effct Green (s)	13.9	22.6	22.6	13.1	21.7	21.7	12.2	78.3	78.3	10.7	76.8	76.8
Actuated g/C Ratio	0.09	0.15	0.15	0.09	0.14	0.14	0.08	0.52	0.52	0.07	0.51	0.51
v/c Ratio	0.93	0.68	0.09	0.74	0.60	0.47	0.62	1.05	0.31	0.47	0.40	0.11
Control Delay	104.3	67.0	0.5	83.9	64.8	12.0	88.0	72.1	12.3	78.9	25.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	67.0	0.5	83.9	64.8	12.0	88.0	72.1	12.3	78.9	25.0	0.3
LOS	F	E	A	F	E	B	F	E	B	E	C	A
Approach Delay	80.2				57.0			65.7			26.4	
Approach LOS	F				E			E			C	
Queue Length 50th (m)	42.5	50.8	0.0	29.2	40.6	0.8	21.0	~309.8	20.6	16.1	59.7	0.0
Queue Length 95th (m)	#70.0	60.8	0.0	42.8	50.4	19.5	37.5	#372.0	42.3	#47.1	91.8	0.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0		150.0	150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	295	739	402	276	703	453	146	1713	803	118	1618	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.45	0.07	0.70	0.39	0.36	0.49	1.05	0.31	0.47	0.40	0.11

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leitrin

2031 Future Total - Mitigation
AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 59.3

Intersection LOS: E

Intersection Capacity Utilization 97.7%

ICU Level of Service F

Analysis Period (min) 15

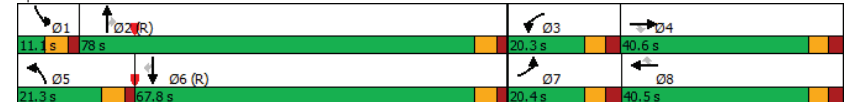
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

CGH Transportation
Page 2

Lanes, Volumes, Timings
2: Bank & Leitrim

2031 Future Total - Mitigation
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	109	367	78	396	399	66	71	1053	169	102	1837	363
Future Volume (vph)	109	367	78	396	399	66	71	1053	169	102	1837	363
Lane Group Flow (vph)	109	367	78	396	399	66	71	1053	169	102	1837	363
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	16.7	40.5	40.5	23.0	46.8	46.8	12.0	67.4	67.4	19.1	74.5	74.5
Total Split (%)	11.1%	27.0%	27.0%	15.3%	31.2%	31.2%	8.0%	44.9%	44.9%	12.7%	49.7%	49.7%
Maximum Green (s)	10.2	34.0	34.0	16.5	40.3	40.3	5.9	61.1	61.1	13.0	68.2	68.2
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0		27.0	27.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	5
Act Effct Green (s)	9.5	24.2	24.2	16.5	31.2	31.2	12.9	70.3	70.3	13.6	71.0	71.0
Actuated g/C Ratio	0.06	0.16	0.16	0.11	0.21	0.21	0.09	0.47	0.47	0.09	0.47	0.47
v/c Ratio	0.55	0.74	0.22	1.15	0.58	0.16	0.51	0.68	0.22	0.69	1.17	0.42
Control Delay	78.7	68.7	1.4	154.1	56.6	0.8	77.8	35.3	5.1	88.7	120.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.7	68.7	1.4	154.1	56.6	0.8	77.8	35.3	5.1	88.7	120.1	5.1
LOS	E	E	A	F	E	A	E	D	A	F	F	A
Approach Delay		61.2			97.2			33.7			100.5	
Approach LOS		E			F			C			F	
Queue Length 50th (m)	16.4	55.9	0.0	~71.2	57.7	0.0	20.3	127.8	1.3	29.6	~344.3	4.8
Queue Length 95th (m)	26.8	67.6	0.0	#104.3	68.5	0.0	#57.6	170.6	16.0	#57.9	#392.7	25.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0			150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	214	697	438	343	882	493	138	1539	755	156	1569	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.53	0.18	1.15	0.45	0.13	0.51	0.68	0.22	0.65	1.17	0.42

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leitrim

2031 Future Total - Mitigation
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 78.4

Intersection LOS: E

Intersection Capacity Utilization 104.3%

ICU Level of Service G

Analysis Period (min) 15

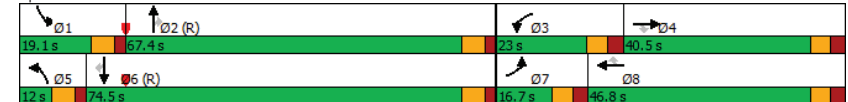
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leitrim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Total - Mitigation
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	275	333	28	193	271	163	72	1804	56	642
Future Volume (vph)	275	333	28	193	271	163	72	1804	56	642
Lane Group Flow (vph)	275	333	28	193	271	163	72	2053	56	719
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.6	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	11.1	40.5	40.5	11.5	40.5	40.5	11.1	31.3	11.1	31.3
Total Split (s)	22.4	40.5	40.5	22.4	40.5	40.5	21.3	76.0	11.1	65.8
Total Split (%)	14.9%	27.0%	27.0%	14.9%	27.0%	27.0%	14.2%	50.7%	7.4%	43.9%
Maximum Green (s)	15.9	34.0	34.0	15.9	34.0	34.0	15.2	69.7	5.0	59.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0			7.0	7.0		7.0		7.0
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		18.0		18.0	
Pedestrian Calls (#/hr)	5	5		5	5		5		6	
Act Effct Green (s)	15.5	22.7	22.7	14.1	21.3	21.3	12.2	77.2	10.7	75.7
Actuated g/C Ratio	0.10	0.15	0.15	0.09	0.14	0.14	0.08	0.51	0.07	0.50
v/c Ratio	0.84	0.68	0.09	0.68	0.62	0.48	0.62	0.86	0.47	0.32
Control Delay	87.6	66.7	0.5	78.4	65.6	12.2	88.0	36.8	78.9	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.6	66.7	0.5	78.4	65.6	12.2	88.0	36.8	78.9	23.5
LOS	F	E	A	E	E	B	F	D	E	C
Approach Delay	72.8				55.7		38.5		27.5	
Approach LOS	E				E		D		C	
Queue Length 50th (m)	41.9	50.8	0.0	28.9	41.0	0.8	21.0	190.6	16.1	43.9
Queue Length 95th (m)	#63.2	60.8	0.0	42.1	50.4	19.5	37.5	#237.8	#47.1	66.5
Internal Link Dist (m)		312.8			585.8			260.1		467.3
Turn Bay Length (m)	120.0		150.0	150.0		150.0	105.0		75.0	
Base Capacity (vph)	337	737	401	319	703	453	146	2386	118	2237
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.45	0.07	0.61	0.39	0.36	0.49	0.86	0.47	0.32
Intersection Summary										
Cycle Length: 150										
Actuated Cycle Length: 150										
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green										
Natural Cycle: 135										

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

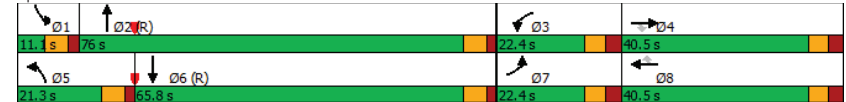
CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Total - Mitigation
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 44.3	Intersection LOS: D
Intersection Capacity Utilization 87.7%	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: 2: Bank & Leirim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Total - Mitigation
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Traffic Volume (vph)	109	367	78	396	399	66	71	1053	102	1837
Future Volume (vph)	109	367	78	396	399	66	71	1053	102	1837
Lane Group Flow (vph)	109	367	78	396	399	66	71	1222	102	2200
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	11.1	31.3
Total Split (s)	19.0	40.5	40.5	25.5	47.0	47.0	16.9	65.0	19.0	67.1
Total Split (%)	12.7%	27.0%	27.0%	17.0%	31.3%	31.3%	11.3%	43.3%	12.7%	44.7%
Maximum Green (s)	12.5	34.0	34.0	19.0	40.5	40.5	10.8	58.7	12.9	60.8
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0			7.0	7.0		7.0		7.0
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		18.0		18.0	
Pedestrian Calls (#/hr)	5	5		5	5		5		5	
Act Effct Green (s)	10.3	24.2	24.2	19.0	32.9	32.9	10.9	67.9	13.5	70.5
Actuated g/C Ratio	0.07	0.16	0.16	0.13	0.22	0.22	0.07	0.45	0.09	0.47
v/c Ratio	0.50	0.74	0.24	1.00	0.55	0.17	0.61	0.58	0.69	1.00
Control Delay	75.2	68.7	3.8	110.1	54.7	1.0	88.8	32.4	88.9	58.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	68.7	3.8	110.1	54.7	1.0	88.8	32.4	88.9	58.8
LOS	E	E	A	F	D	A	F	C	F	E
Approach Delay		60.9			76.1			35.5		60.1
Approach LOS		E			E			D		E
Queue Length 50th (m)	16.3	55.9	0.0	~61.8	56.6	0.0	20.7	96.7	29.6	~238.7
Queue Length 95th (m)	26.3	67.6	4.2	#96.0	68.4	0.4	#41.4	124.1	#58.2	#309.1
Internal Link Dist (m)		312.8			585.8			260.1		467.3
Turn Bay Length (m)	120.0			150.0		150.0	105.0		75.0	
Base Capacity (vph)	262	697	404	395	886	462	125	2094	156	2191
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.53	0.19	1.00	0.45	0.14	0.57	0.58	0.65	1.00
Intersection Summary										
Cycle Length: 150										
Actuated Cycle Length: 150										
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green										
Natural Cycle: 145										

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

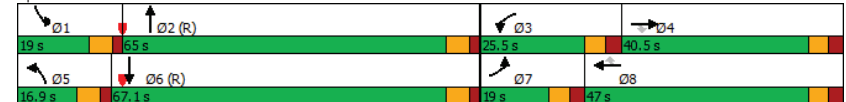
CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leirim

2031 Future Total - Mitigation
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 56.6	Intersection LOS: E
Intersection Capacity Utilization 96.8%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 2: Bank & Leirim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2031 Future Total - Mitigation

CGH Transportation
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Appendix P

Synchro Intersection Worksheets – 2036 Future Total Conditions

Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2036 Future Total
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	5	245	3	2	1296	862	3	460	3
Future Volume (vph)	15	5	245	3	2	1296	862	3	460	3
Lane Group Flow (vph)	15	9	245	4	2	1296	862	3	460	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2		6		6
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	30.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Split (%)	12.7%	12.7%	23.1%	23.1%	76.9%	76.9%	76.9%	76.9%	76.9%	76.9%
Maximum Green (s)	10.0	10.0	23.7	23.7	93.4	93.4	93.4	93.4	93.4	93.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	18.2	18.2	18.4	18.4	98.7	98.7	98.7	98.7	98.7	98.7
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.76	0.76	0.76	0.76	0.76	0.76
v/c Ratio	0.09	0.04	0.72	0.02	0.00	0.52	0.67	0.01	0.19	0.00
Control Delay	47.6	35.1	65.1	40.8	2.0	3.0	4.0	5.0	5.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	35.1	65.1	40.8	2.0	3.0	4.0	5.0	5.0	0.0
LOS	D	D	E	D	A	A	A	A	A	A
Approach Delay		42.9		64.7		3.4			4.9	
Approach LOS		D		E		A			A	
Queue Length 50th (m)	3.4	1.1	31.3	0.7	0.0	16.0	16.2	0.2	15.1	0.0
Queue Length 95th (m)	9.7	6.0	43.4	3.9	m0.1	m17.7	m0.0	1.1	24.4	0.0
Internal Link Dist (m)		337.1		495.4		153.6			706.5	
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	212	298	439	262	645	2493	1284	246	2423	1107
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.03	0.56	0.02	0.00	0.52	0.67	0.01	0.19	0.00

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 62 (48%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.2

Intersection LOS: A

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2036 Future Total
AM Peak Hour

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Total
AM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	275	333	28	193	271	163	72	1679	56	589	77
Future Volume (vph)	275	333	28	193	271	163	72	1679	56	589	77
Lane Group Flow (vph)	0	608	28	193	271	163	72	1928	56	589	77
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		4		3	8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	31.3	31.3	31.3	31.3	31.3
Total Split (s)	55.0	55.0	55.0	12.0	67.0	67.0	63.0	63.0	63.0	63.0	63.0
Total Split (%)	42.3%	42.3%	42.3%	9.2%	51.5%	51.5%	48.5%	48.5%	48.5%	48.5%	48.5%
Maximum Green (s)	48.5	48.5	48.5	5.5	60.5	60.5	56.7	56.7	56.7	56.7	56.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.3	6.3	6.3	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead							
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	C-Max	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	7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0		27.0	27.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5	5		5	5	5	5	6	6	6
Act Effct Green (s)	48.5	48.5	60.5	60.5	60.5	56.7	56.7	56.7	56.7	56.7	56.7
Actuated g/C Ratio	0.37	0.37	0.47	0.47	0.47	0.44	0.44	0.44	0.44	0.44	0.44
v/c Ratio	1.31	0.06	1.40	0.36	0.24	0.30	1.37	1.04	0.43	0.13	
Control Delay	187.8	0.2	242.0	24.0	18.2	12.5	193.6	166.5	20.9	5.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	187.8	0.2	242.0	24.0	18.2	12.5	193.6	166.5	20.9	5.1	
LOS	F	A	F	C	B		B	F	F	C	A
Approach Delay	179.6			89.6			187.1		30.5		
Approach LOS	F			F			F		C		
Queue Length 50th (m)	~199.6	0.0	~45.1	43.6	20.0	7.5	~345.5	~15.5	33.4	0.0	
Queue Length 95th (m)	#269.3	0.0	#90.1	64.9	34.9	m7.7	#380.8	m#41.2	59.4	7.7	
Internal Link Dist (m)	312.8			585.8			421.1		467.3		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	465	509	138	759	693	239	1406	54	1378	596	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.31	0.06	1.40	0.36	0.24	0.30	1.37	1.04	0.43	0.13	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 128 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

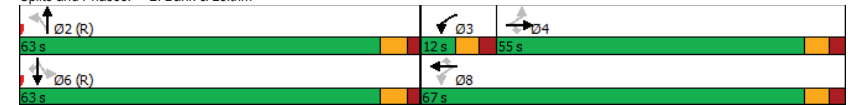
CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 142.2
Intersection LOS: F
Intersection Capacity Utilization 130.9%
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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2036 Future Total
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	63	0	21	0	1	1623	107	675	21
Future Volume (vph)	63	0	21	0	1	1623	107	675	21
Lane Group Flow (vph)	63	4	21	242	1	1633	107	675	21
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	7	4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	7	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	11.0	39.0	28.0	28.0	76.0	76.0	15.0	91.0	91.0
Total Split (%)	8.5%	30.0%	21.5%	21.5%	58.5%	58.5%	11.5%	70.0%	70.0%
Maximum Green (s)	5.0	32.7	21.7	21.7	69.4	69.4	8.7	84.4	84.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	13.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	10	10	10	10	12	12	11	11	11
Act Effct Green (s)	24.0	23.7	14.9	14.9	78.2	78.2	93.7	93.4	93.4
Actuated g/C Ratio	0.18	0.18	0.11	0.11	0.60	0.60	0.72	0.72	0.72
v/c Ratio	0.56	0.01	0.14	0.81	0.00	0.84	0.61	0.30	0.02
Control Delay	61.5	0.0	51.3	41.8	7.0	13.4	33.1	17.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	0.0	51.3	41.8	7.0	13.4	33.1	17.9	2.1
LOS	E	A	D	D	A	B	C	B	A
Approach Delay		57.9		42.6		13.4		19.5	
Approach LOS		E		D		B		B	
Queue Length 50th (m)	13.6	0.0	5.0	22.8	0.0	172.4	60.1	0.1	0.1
Queue Length 95th (m)	24.6	0.0	12.4	50.5	m0.1	#252.3	m27.5	m72.2	m1.1
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	112	562	211	365	409	1953	183	2229	1023
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.01	0.10	0.66	0.00	0.84	0.58	0.30	0.02

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 89 (68%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

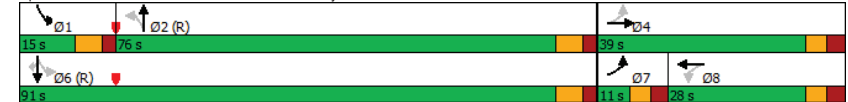
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Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2036 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 19.0
Intersection LOS: B
Intersection Capacity Utilization 96.2%
ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Total
AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	195	0	2	0	1	1372	673	18
Future Volume (vph)	195	0	2	0	1	1372	673	18
Lane Group Flow (vph)	195	6	2	4	1	1373	673	18
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA	Perm
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)	29.0	29.0	29.0	29.0	25.2	25.2	25.2	25.2
Total Split (s)	46.0	46.0	46.0	46.0	84.0	84.0	84.0	84.0
Total Split (%)	35.4%	35.4%	35.4%	35.4%	64.6%	64.6%	64.6%	64.6%
Maximum Green (s)	40.0	40.0	40.0	40.0	77.8	77.8	77.8	77.8
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	2.7	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	6.2	6.2	6.2
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)	16.0	16.0	16.0	16.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	17	17	17	17	13	13
Act Effct Green (s)	25.2	25.2	25.2	25.2	92.6	92.6	92.6	92.6
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.71	0.71	0.71	0.71
v/c Ratio	0.79	0.01	0.01	0.01	0.00	0.60	0.31	0.02
Control Delay	70.5	0.0	37.0	0.0	7.0	15.9	3.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.5	0.0	37.0	0.0	7.0	15.9	3.1	0.6
LOS	E	A	D	A	A	B	A	A
Approach Delay		68.4		12.3		15.9	3.0	
Approach LOS		E		B		B	A	
Queue Length 50th (m)	47.9	0.0	0.4	0.0	0.1	126.4	16.0	0.0
Queue Length 95th (m)	68.9	0.0	2.5	0.0	m0.1	179.4	16.5	0.0
Internal Link Dist (m)		264.9		519.4		373.7	429.7	
Turn Bay Length (m)	100.0		15.0		50.0			95.0
Base Capacity (vph)	393	602	393	470	469	2293	2169	952
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	0.50	0.01	0.01	0.01	0.00	0.60	0.31	0.02
Intersection Summary								
Cycle Length: 130								
Actuated Cycle Length: 130								
Offset: 76 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 65								

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

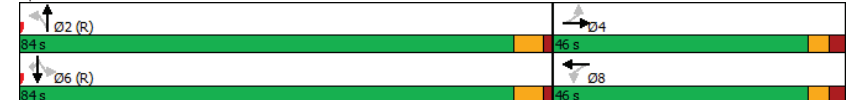
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Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 16.6
Intersection LOS: B
Intersection Capacity Utilization 68.8%
ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Bank & White Alder/Analdea



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Total
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	350	37	87	69	18	850	124	456	100
Future Volume (vph)	350	37	87	69	18	850	124	456	100
Lane Group Flow (vph)	350	58	87	228	18	866	124	456	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	7	4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	7	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	19.0	53.0	34.0	34.0	58.0	58.0	19.0	77.0	77.0
Total Split (%)	14.6%	40.8%	26.2%	26.2%	44.6%	44.6%	14.6%	59.2%	59.2%
Maximum Green (s)	13.0	46.7	27.7	27.7	51.3	51.3	12.6	70.3	70.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0	19.0	23.0	23.0	23.0	23.0	23.0	23.0
Pedestrian Calls (#/hr)	21	21	21	21	23	23	30	30	30
Act Effct Green (s)	40.1	39.8	20.8	20.8	61.0	61.0	77.5	77.2	77.2
Actuated g/C Ratio	0.31	0.31	0.16	0.16	0.47	0.47	0.60	0.59	0.59
v/c Ratio	0.74	0.11	0.45	0.74	0.05	0.61	0.39	0.26	0.12
Control Delay	44.6	20.4	54.7	46.5	11.3	12.6	12.4	11.5	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	20.4	54.7	46.5	11.3	12.6	12.4	11.5	2.9
LOS	D	C	D	D	B	B	B	B	A
Approach Delay		41.2		48.8		12.6		10.4	
Approach LOS		D		D		B		B	
Queue Length 50th (m)	33.8	6.3	19.4	34.6	1.0	66.9	16.4	52.7	3.6
Queue Length 95th (m)	45.6	15.8	35.1	61.4	m2.3	31.7	10.9	32.0	2.0
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	471	597	259	385	380	1413	346	1731	857
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.10	0.34	0.59	0.05	0.61	0.36	0.26	0.12

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 18 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

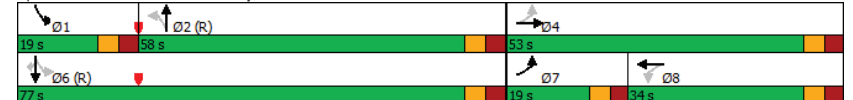
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Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 22.0	Intersection LOS: C
Intersection Capacity Utilization 83.9%	ICU Level of Service E
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 5: Bank & Findlay Creek



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2036 Future Total

AM Peak Hour

	↖	→	↗	↖	↖	↑	↗	↓	↘
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	32	25	140	30	182	761	98	422	24
Future Volume (vph)	32	25	140	30	182	761	98	422	24
Lane Group Flow (vph)	32	127	140	139	182	797	98	422	24
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	41.0	41.0	41.0	41.0	36.0	63.0	26.0	53.0	53.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	27.7%	48.5%	20.0%	40.8%	40.8%
Maximum Green (s)	34.0	34.0	34.0	34.0	29.6	56.1	19.6	46.1	46.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.7	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	13.0	13.0	13.0	13.0	13.0
Pedestrian Calls (#/hr)	45	45	34	34		42		45	45
Act Effct Green (s)	22.8	22.8	22.8	22.8	19.5	73.7	13.2	67.3	67.3
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.15	0.57	0.10	0.52	0.52
v/c Ratio	0.19	0.39	0.77	0.41	0.73	0.46	0.60	0.27	0.03
Control Delay	45.3	15.4	76.6	16.0	78.0	11.8	92.3	4.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	15.4	76.6	16.0	78.0	11.8	92.3	4.2	0.1
LOS	D	B	E	B	E	B	F	A	A
Approach Delay		21.5		46.4		24.2		19.9	
Approach LOS		C		D		C		B	
Queue Length 50th (m)	7.1	5.5	34.9	6.6	43.3	43.3	25.1	10.3	0.0
Queue Length 95th (m)	15.4	21.6	53.9	23.3	68.0	52.7	41.7	14.8	0.0
Internal Link Dist (m)		60.3		127.0		84.5		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	255	441	270	453	377	1721	242	1564	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.29	0.52	0.31	0.48	0.46	0.40	0.27	0.03

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 23 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 70

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation

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Lanes, Volumes, Timings

6: Bank & Cowan's Grove/Shuttleworth

2036 Future Total

AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 25.9

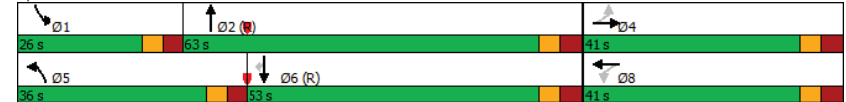
Intersection LOS: C

Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation

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HCM 2010 TWSC
7: Bank & Site Access

2036 Future Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↘ ↘	↗ ↘ ↘			↗ ↘
Traffic Vol, veh/h	0	16	944	19	0	558
Future Vol, veh/h	0	16	944	19	0	558
Conflicting Peds, #/hr	0	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	6	2	2	9
Mvmt Flow	0	16	944	19	0	558

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	490	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.92	-
Pot Cap-1 Maneuver	0	448	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	445	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	445	-
HCM Lane V/C Ratio	-	0.036	-
HCM Control Delay (s)	-	13.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Total
AM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	219	71	61	34	36	734	31	477	52
Future Volume (vph)	219	71	61	34	36	734	31	477	52
Lane Group Flow (vph)	219	84	61	44	36	750	31	477	52
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	4		8		2		6		6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	60.0	60.0	60.0	60.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%	53.8%
Maximum Green (s)	53.4	53.4	53.4	53.4	63.4	63.4	63.4	63.4	63.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	6	6	13	13	6	6	33	33	33
Act Effct Green (s)	29.1	29.1	29.1	29.1	87.7	87.7	87.7	87.7	87.7
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.67	0.67	0.67	0.67	0.67
v/c Ratio	0.79	0.22	0.26	0.12	0.07	0.35	0.08	0.23	0.06
Control Delay	66.9	35.4	41.4	30.2	8.3	10.4	7.5	6.6	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.9	35.4	41.4	30.2	8.3	10.4	7.5	6.6	1.6
LOS	E	D	D	C	A	B	A	A	A
Approach Delay	58.2		36.7		10.3		6.2		
Approach LOS	E		D		B		A		
Queue Length 50th (m)	53.3	15.7	13.0	7.0	2.8	52.3	1.4	12.0	0.0
Queue Length 95th (m)	74.0	26.6	23.1	15.1	m6.6	67.6	m6.8	34.7	m3.7
Internal Link Dist (m)	213.3		195.7		102.9		270.3		
Turn Bay Length (m)	150.0		25.0		75.0		70.0		120.0
Base Capacity (vph)	506	702	432	691	522	2133	395	2092	813
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.12	0.14	0.06	0.07	0.35	0.08	0.23	0.06
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBTL, Start of Green									
Natural Cycle: 50									

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 18.8

Intersection LOS: B

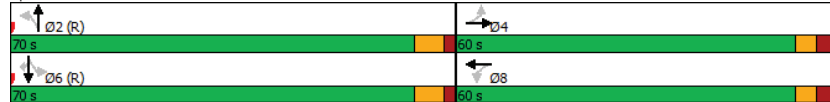
Intersection Capacity Utilization 62.1%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 8: Bank & Miikana/Blais



Lanes, Volumes, Timings
9: Bank & Dun Skipper

2036 Future Total
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (vph)	150	22	60	657	473	44
Future Volume (vph)	150	22	60	657	473	44
Lane Group Flow (vph)	150	22	60	657	473	44
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0	33.0	33.0	33.0	33.0
Total Split (s)	38.0	38.0	92.0	92.0	92.0	92.0
Total Split (%)	29.2%	29.2%	70.8%	70.8%	70.8%	70.8%
Maximum Green (s)	31.4	31.4	85.3	85.3	85.3	85.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	17	17
Act Effct Green (s)	17.7	17.7	99.0	99.0	99.0	99.0
Actuated g/C Ratio	0.14	0.14	0.76	0.76	0.76	0.76
v/c Ratio	0.70	0.11	0.11	0.53	0.39	0.06
Control Delay	70.1	17.8	5.4	8.8	4.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	17.8	5.4	8.8	4.5	0.4
LOS	E	B	A	A	A	A
Approach Delay	63.4			8.5	4.2	
Approach LOS	E			A	A	
Queue Length 50th (m)	37.2	0.0	3.5	58.3	16.5	0.0
Queue Length 95th (m)	56.6	7.6	9.0	103.6	26.0	0.0
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	381	351	559	1232	1222	799
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.06	0.11	0.53	0.39	0.06

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 82 (63%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 75

Lanes, Volumes, Timings
9: Bank & Dun Skipper

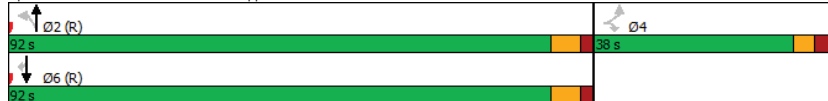
2036 Future Total
AM Peak Hour

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 13.6
Intersection Capacity Utilization 60.0%

Intersection LOS: B
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 9: Bank & Dun Skipper



HCM 2010 TWSC
10: Hawthorne /Hawthorne & Blais

2036 Future Total
AM Peak Hour

Intersection

Int Delay, s/veh 7.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	W
Traffic Vol, veh/h	255	12	8	366	203	154
Future Vol, veh/h	255	12	8	366	203	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	14	25	2	35	47	13
Mvmt Flow	255	12	8	366	203	154

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	662	280	357
Stage 1	280	-	-
Stage 2	382	-	-
Critical Hdwy	6.54	6.45	4.12
Critical Hdwy Stg 1	5.54	-	-
Critical Hdwy Stg 2	5.54	-	-
Follow-up Hdwy	3.626	3.525	2.218
Pot Cap-1 Maneuver	409	707	1202
Stage 1	741	-	-
Stage 2	664	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	406	707	1202
Mov Cap-2 Maneuver	406	-	-
Stage 1	735	-	-
Stage 2	664	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.2	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1202	-	414	-
HCM Lane V/C Ratio	0.007	-	0.645	-
HCM Control Delay (s)	8	0	28.2	-
HCM Lane LOS	A	A	D	-
HCM 95th %tile Q(veh)	0	-	4.4	-

HCM 2010 TWSC
11: Blais & Site Access

2036 Future Total
AM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	15	180	128	34	87	55
Future Vol, veh/h	15	180	128	34	87	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	180	128	34	87	55

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	162	0	0 355 145
Stage 1	-	-	- 145 -
Stage 2	-	-	- 210 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1417	-	- 643 902
Stage 1	-	-	- 882 -
Stage 2	-	-	- 825 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1417	-	- 635 902
Mov Cap-2 Maneuver	-	-	- 635 -
Stage 1	-	-	- 871 -
Stage 2	-	-	- 825 -

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1417	-	-	-	717
HCM Lane V/C Ratio	0.011	-	-	-	0.198
HCM Control Delay (s)	7.6	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings
1: Bank & Kemp/Conroy

2036 Future Total
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	13	9	815	11	6	963	410	5	1324	16
Future Volume (vph)	13	9	815	11	6	963	410	5	1324	16
Lane Group Flow (vph)	13	11	815	15	6	963	410	5	1324	16
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.5	16.5	16.3	16.3	16.6	16.6	16.6	16.6	16.6	16.6
Total Split (s)	16.5	16.5	72.0	72.0	58.0	58.0	58.0	58.0	58.0	58.0
Total Split (%)	12.7%	12.7%	55.4%	55.4%	44.6%	44.6%	44.6%	44.6%	44.6%	44.6%
Maximum Green (s)	10.0	10.0	65.7	65.7	51.4	51.4	51.4	51.4	51.4	51.4
Yellow Time (s)	3.0	3.0	4.2	4.2	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.5	3.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.3	6.3	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	51.3	51.3	51.5	51.5	65.6	65.6	65.6	65.6	65.6	65.6
Actuated g/C Ratio	0.39	0.39	0.40	0.40	0.50	0.50	0.50	0.50	0.50	0.50
v/c Ratio	0.03	0.02	0.83	0.02	0.07	0.58	0.46	0.04	0.79	0.02
Control Delay	20.8	17.8	42.5	16.5	8.5	7.5	1.0	21.4	32.3	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	17.8	42.5	16.5	8.5	7.5	1.0	21.4	32.3	3.4
LOS	C	B	D	B	A	A	A	C	C	A
Approach Delay		19.4		42.1		5.6			31.9	
Approach LOS		B		D		A			C	
Queue Length 50th (m)	2.0	1.4	95.1	1.7	0.3	27.5	0.0	0.6	144.1	0.0
Queue Length 95th (m)	5.5	4.6	105.4	5.4	m0.5	m32.3	m0.0	3.5	#214.8	2.5
Internal Link Dist (m)		337.1		495.4		153.6			706.5	
Turn Bay Length (m)	15.0		110.0		130.0		170.0	130.0		95.0
Base Capacity (vph)	657	704	1258	778	88	1656	889	136	1673	716
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.65	0.02	0.07	0.58	0.46	0.04	0.79	0.02

Intersection Summary										
Cycle Length: 130										
Actuated Cycle Length: 130										
Offset: 30 (23%), Referenced to phase 2:NBT and 6:SBTL, Start of Green										
Natural Cycle: 75										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.83										
Intersection Signal Delay: 24.0										
Intersection LOS: C										

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
Page 1

Lanes, Volumes, Timings

1: Bank & Kemp/Conroy

2036 Future Total
PM Peak Hour

Intersection Capacity Utilization 80.6% ICU Level of Service D

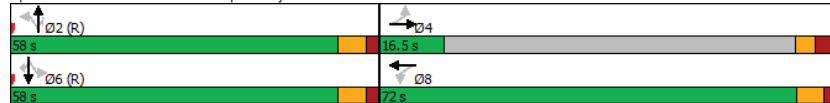
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Bank & Kemp/Conroy



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
Page 2

Lanes, Volumes, Timings

2: Bank & Leitrim

2036 Future Total
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	109	367	78	396	399	66	71	963	102	1723	363
Future Volume (vph)	109	367	78	396	399	66	71	963	102	1723	363
Lane Group Flow (vph)	0	476	78	396	399	66	71	1132	102	1723	363
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2	1	6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	4	4	4	3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.5	40.5	40.5	11.5	40.5	40.5	12.0	31.3	12.0	31.3	31.3
Total Split (s)	46.0	46.0	46.0	19.0	65.0	65.0	12.0	53.0	12.0	53.0	53.0
Total Split (%)	35.4%	35.4%	35.4%	14.6%	50.0%	50.0%	9.2%	40.8%	9.2%	40.8%	40.8%
Maximum Green (s)	39.5	39.5	39.5	12.5	58.5	58.5	5.9	46.7	5.9	46.7	46.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3	6.3
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0	27.0	27.0	27.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5	5	5	5	5	5	5
Act Effct Green (s)	39.5	39.5	58.5	58.5	58.5	52.8	46.7	54.0	49.1	49.1	49.1
Actuated g/C Ratio	0.30	0.30	0.45	0.45	0.45	0.41	0.36	0.42	0.38	0.38	0.38
v/c Ratio	1.20	0.15	1.64	0.51	0.10	0.57	0.98	0.80	1.38	0.49	0.49
Control Delay	150.1	1.0	330.3	28.5	3.4	32.6	60.6	53.3	205.8	9.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	150.1	1.0	330.3	28.5	3.4	32.6	60.6	53.3	205.8	9.5	9.5
LOS	F	A	F	C	A	C	E	D	F	A	A
Approach Delay	129.1			165.4			58.9		166.1		
Approach LOS	F			F			E		F		
Queue Length 50th (m)	~147.2	0.0	~124.2	71.7	0.0	12.3	160.6	16.5	~317.4	20.7	20.7
Queue Length 95th (m)	#212.6	1.1	#186.4	101.5	6.2	#18.3	#201.0	m#26.6	#361.8	m41.7	41.7
Internal Link Dist (m)	312.8			585.8			421.1		467.3		
Turn Bay Length (m)		8.0	45.0		35.0	105.0		75.0		150.0	
Base Capacity (vph)	398	514	241	777	674	125	1157	127	1252	745	745
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.15	1.64	0.51	0.10	0.57	0.98	0.80	1.38	0.49	0.49

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 120 (92%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
Page 3

Lanes, Volumes, Timings

2: Bank & Leirim

2036 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.64

Intersection Signal Delay: 134.9

Intersection LOS: F

Intersection Capacity Utilization 126.6%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

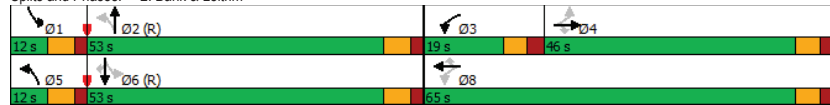
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Bank & Leirim



Lanes, Volumes, Timings

3: Bank & Barrett Farms/Rotary

2036 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	33	0	24	0	3	1011	232	1894	58
Future Volume (vph)	33	0	24	0	3	1011	232	1894	58
Lane Group Flow (vph)	33	2	24	147	3	1032	232	1894	58
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	27.3	27.3	27.3	27.3	26.6	26.6	11.3	26.6	26.6
Total Split (s)	28.0	28.0	28.0	28.0	85.0	85.0	17.0	102.0	102.0
Total Split (%)	21.5%	21.5%	21.5%	21.5%	65.4%	65.4%	13.1%	78.5%	78.5%
Maximum Green (s)	21.7	21.7	21.7	21.7	78.4	78.4	10.7	95.4	95.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.0	3.0	3.0	3.0	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	14.0	14.0	14.0	14.0	13.0	13.0		13.0	13.0
Pedestrian Calls (#/hr)	14	14	10	10	12	12		11	11
Act Effct Green (s)	14.4	14.4	14.4	14.4	86.9	86.9	103.0	102.7	102.7
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.67	0.67	0.79	0.79	0.79
v/c Ratio	0.36	0.01	0.17	0.41	0.03	0.47	0.58	0.72	0.05
Control Delay	62.6	0.0	52.5	3.3	4.7	3.7	6.7	10.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	0.0	52.5	3.3	4.7	3.7	6.7	10.6	0.2
LOS	E	A	D	A	A	A	A	B	A
Approach Delay		59.0		10.2		3.7		9.9	
Approach LOS		E		B		A		A	
Queue Length 50th (m)	8.3	0.0	5.9	0.0	0.0	6.7	10.4	49.5	0.0
Queue Length 95th (m)	17.9	0.0	13.5	0.0	m0.3	21.6	m1.8	m68.1	m0.1
Internal Link Dist (m)		188.8		560.7		429.7		421.1	
Turn Bay Length (m)	30.0		20.0		50.0		125.0		60.0
Base Capacity (vph)	137	305	212	430	117	2186	415	2619	1112
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.01	0.11	0.34	0.03	0.47	0.56	0.72	0.05

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 41 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Lanes, Volumes, Timings
3: Bank & Barrett Farms/Rotary

2036 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 8.5

Intersection LOS: A

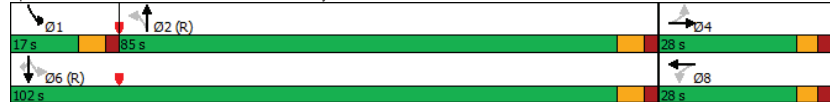
Intersection Capacity Utilization 106.0%

ICU Level of Service G

Analysis Period (min) 15

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

Splits and Phases: 3: Bank & Barrett Farms/Rotary



Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Total
PM Peak Hour

	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	71	1	0	8	974	4	1726	157
Future Volume (vph)	71	1	0	8	974	4	1726	157
Lane Group Flow (vph)	71	17	3	8	976	4	1726	157
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4	8		2		6	
Permitted Phases	4			2		6		6
Detector Phase	4	4	8	2	2	6	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)	29.0	29.0	29.0	25.2	25.2	25.2	25.2	25.2
Total Split (s)	33.0	33.0	33.0	97.0	97.0	97.0	97.0	97.0
Total Split (%)	25.4%	25.4%	25.4%	74.6%	74.6%	74.6%	74.6%	74.6%
Maximum Green (s)	27.0	27.0	27.0	90.8	90.8	90.8	90.8	90.8
Yellow Time (s)	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.7	2.7	2.7	1.6	1.6	1.6	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.2	6.2	6.2	6.2	6.2
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	C-Max	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)	16.0	16.0	16.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	16	16	10	17	17	17	17	17
Act Effct Green (s)	15.7	15.7	15.7	106.5	106.5	106.5	106.5	106.5
Actuated g/C Ratio	0.12	0.12	0.12	0.82	0.82	0.82	0.82	0.82
v/c Ratio	0.46	0.09	0.01	0.05	0.37	0.01	0.64	0.14
Control Delay	60.6	20.6	0.0	4.4	4.3	1.2	1.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	20.6	0.0	4.4	4.3	1.2	1.5	0.2
LOS	E	C	A	A	A	A	A	A
Approach Delay		52.9			4.3		1.4	
Approach LOS		D			A		A	
Queue Length 50th (m)	17.7	0.2	0.0	0.1	4.7	0.0	5.7	0.0
Queue Length 95th (m)	30.8	7.0	0.0	m1.3	83.4	m0.1	14.3	m0.0
Internal Link Dist (m)		264.9	519.4		373.7		429.7	
Turn Bay Length (m)	100.0			50.0		45.0		95.0
Base Capacity (vph)	269	304	429	151	2664	399	2689	1143
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	0.26	0.06	0.01	0.05	0.37	0.01	0.64	0.14

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 42 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Lanes, Volumes, Timings
4: Bank & White Alder/Analdea

2036 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 3.9

Intersection LOS: A

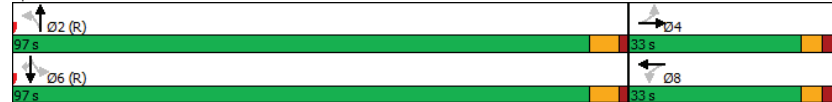
Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 4: Bank & White Alder/Analdea



Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	213	66	132	47	30	636	274	1073	394
Future Volume (vph)	213	66	132	47	30	636	274	1073	394
Lane Group Flow (vph)	213	102	132	153	30	670	274	1073	394
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	32.3	32.3	32.3	32.3	36.7	36.7	11.4	36.7	36.7
Total Split (s)	39.0	39.0	39.0	39.0	56.0	56.0	35.0	91.0	91.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	43.1%	43.1%	26.9%	70.0%	70.0%
Maximum Green (s)	32.7	32.7	32.7	32.7	49.3	49.3	28.6	84.3	84.3
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.0	3.0	3.0	3.0	3.4	3.4	3.1	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.7	6.7	6.4	6.7	6.7
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	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	None	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)	19.0	19.0	19.0	19.0	23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)	20	20	20	20	22	22		28	28
Act Effct Green (s)	22.1	22.1	22.1	22.1	75.7	75.7	95.2	94.9	94.9
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.58	0.58	0.73	0.73	0.73
v/c Ratio	0.70	0.35	0.68	0.47	0.12	0.36	0.52	0.46	0.35
Control Delay	62.7	39.6	66.7	26.2	5.8	4.6	5.9	5.3	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	39.6	66.7	26.2	5.8	4.6	5.9	5.3	1.5
LOS	E	D	E	C	A	A	A	A	A
Approach Delay		55.2		44.9		4.6		4.5	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	25.7	17.9	30.8	15.2	1.0	12.1	23.4	80.8	9.6
Queue Length 95th (m)	38.1	33.5	51.2	34.7	m2.2	16.5	23.6	61.7	9.0
Internal Link Dist (m)		107.8		414.5		298.5		373.7	
Turn Bay Length (m)	80.0		30.0		55.0		160.0		160.0
Base Capacity (vph)	449	424	290	442	256	1854	659	2352	1114
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.24	0.46	0.35	0.12	0.36	0.42	0.46	0.35

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 128 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 85

Lanes, Volumes, Timings
5: Bank & Findlay Creek

2036 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 13.6

Intersection LOS: B

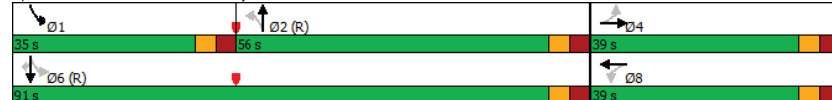
Intersection Capacity Utilization 86.9%

ICU Level of Service E

Analysis Period (min) 15

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

Splits and Phases: 5: Bank & Findlay Creek



Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2036 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱	↰	↱	↱
Traffic Volume (vph)	30	20	192	40	123	579	208	964	39
Future Volume (vph)	30	20	192	40	123	579	208	964	39
Lane Group Flow (vph)	30	208	192	107	123	661	208	964	39
Turn Type	Perm	NA	pm+pt	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4	3	8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	11.8	29.0	11.4	26.9	11.6	26.9	26.9
Total Split (s)	29.0	29.0	21.0	50.0	22.0	49.0	31.0	58.0	58.0
Total Split (%)	22.3%	22.3%	16.2%	38.5%	16.9%	37.7%	23.8%	44.6%	44.6%
Maximum Green (s)	22.0	22.0	14.2	43.0	15.6	42.1	24.6	51.1	51.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.5	3.7	3.1	3.6	3.1	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	6.8	7.0	6.4	6.9	6.4	6.9	6.9
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0		7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0		13.0		13.0	13.0
Pedestrian Calls (#/hr)	48	48		47		44		50	50
Act Effct Green (s)	19.6	19.6	40.3	40.1	13.5	49.0	20.6	56.0	56.0
Actuated g/C Ratio	0.15	0.15	0.31	0.31	0.10	0.38	0.16	0.43	0.43
v/c Ratio	0.18	0.57	0.70	0.21	0.72	0.56	0.79	0.69	0.06
Control Delay	49.3	15.4	49.0	14.2	80.8	28.1	94.6	16.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.3	15.4	49.0	14.2	80.8	28.1	94.6	16.7	0.2
LOS	D	B	D	B	F	C	F	B	A
Approach Delay		19.7		36.6		36.4		29.5	
Approach LOS		B		D		D		C	
Queue Length 50th (m)	6.6	4.4	37.0	7.0	32.3	67.2	55.9	33.5	0.0
Queue Length 95th (m)	15.9	27.9	57.8	20.4	52.4	79.5	80.6	117.8	0.0
Internal Link Dist (m)		60.3		127.0		84.5		298.5	
Turn Bay Length (m)	50.0		50.0		120.0		135.0		195.0
Base Capacity (vph)	186	389	277	534	198	1176	313	1401	643
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.53	0.69	0.20	0.62	0.56	0.66	0.69	0.06

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 116 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Lanes, Volumes, Timings
6: Bank & Cowan's Grove/Shuttleworth

2036 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 31.6

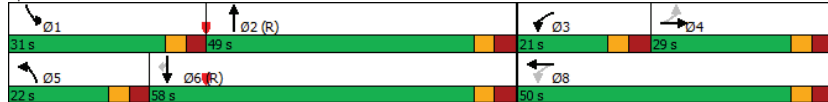
Intersection LOS: C

Intersection Capacity Utilization 87.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Bank & Cowan's Grove/Shuttleworth



HCM 2010 TWSC
7: Bank & Site Access

2036 Future Total
PM Peak Hour

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↘	↗ ↘			↗ ↘
Traffic Vol, veh/h	0	11	758	42	0	1308
Future Vol, veh/h	0	11	758	42	0	1308
Conflicting Peds, #/hr	0	0	0	9	9	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	4	2	2	4
Mvmt Flow	0	11	758	42	0	1308

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	409	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.92	-
Pot Cap-1 Maneuver	0	506	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	502	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	502
HCM Lane V/C Ratio	-	-	0.022
HCM Control Delay (s)	-	-	12.3
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Total
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	175	59	58	80	72	594	19	1137	152
Future Volume (vph)	175	59	58	80	72	594	19	1137	152
Lane Group Flow (vph)	175	65	58	115	72	619	19	1137	152
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Total Split (s)	47.0	47.0	47.0	47.0	83.0	83.0	83.0	83.0	83.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	63.8%	63.8%	63.8%	63.8%	63.8%
Maximum Green (s)	40.4	40.4	40.4	40.4	76.4	76.4	76.4	76.4	76.4
Yellow Time (s)	3.3	3.3	3.3	3.3	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	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	7.0
Flash Dont Walk (s)	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)	6	6	12	12	6	6	34	34	34
Act Effct Green (s)	25.0	25.0	25.0	25.0	91.8	91.8	91.8	91.8	91.8
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.71	0.71	0.71	0.71	0.71
v/c Ratio	0.80	0.21	0.27	0.35	0.27	0.27	0.04	0.50	0.17
Control Delay	74.8	40.4	45.3	39.1	9.8	6.5	5.9	6.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.8	40.4	45.3	39.1	9.8	6.5	5.9	6.5	0.8
LOS	E	D	D	D	A	A	A	A	A
Approach Delay		65.5		41.2		6.8		5.8	
Approach LOS		E		D		A		A	
Queue Length 50th (m)	43.2	13.2	12.8	21.6	4.8	21.2	0.9	31.5	0.7
Queue Length 95th (m)	63.8	24.0	23.5	35.7	m13.5	36.9	m1.8	43.2	m1.0
Internal Link Dist (m)		213.3		195.7		102.9		270.3	
Turn Bay Length (m)	150.0		25.0		75.0		70.0		120.0
Base Capacity (vph)	353	496	345	519	266	2270	471	2296	891
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.13	0.17	0.22	0.27	0.27	0.04	0.50	0.17
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 118 (91%), Referenced to phase 2:NBT and 6:SBTL, Start of Green									
Natural Cycle: 60									

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

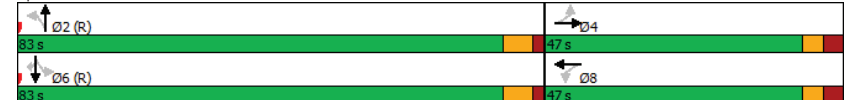
CGH Transportation
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Lanes, Volumes, Timings
8: Bank & Miikana/Blais

2036 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 74.9%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 8: Bank & Miikana/Blais



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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Lanes, Volumes, Timings
9: Bank & Dun Skipper

2036 Future Total
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (vph)	139	12	119	609	1034	116
Future Volume (vph)	139	12	119	609	1034	116
Lane Group Flow (vph)	139	12	119	609	1034	116
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	33.0	33.0	33.0	33.0
Total Split (s)	25.0	25.0	105.0	105.0	105.0	105.0
Total Split (%)	19.2%	19.2%	80.8%	80.8%	80.8%	80.8%
Maximum Green (s)	18.4	18.4	98.3	98.3	98.3	98.3
Yellow Time (s)	3.3	3.3	4.6	4.6	4.6	4.6
All-Red Time (s)	3.3	3.3	2.1	2.1	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.7	6.7	6.7	6.7
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)	9.0	9.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	14	14
Act Effct Green (s)	15.6	15.6	101.1	101.1	101.1	101.1
Actuated g/C Ratio	0.12	0.12	0.78	0.78	0.78	0.78
v/c Ratio	0.74	0.07	0.45	0.47	0.78	0.11
Control Delay	78.3	23.4	11.8	6.8	12.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.3	23.4	11.8	6.8	12.2	0.3
LOS	E	C	B	A	B	A
Approach Delay	73.9			7.6	11.0	
Approach LOS	E			A	B	
Queue Length 50th (m)	34.6	0.0	9.3	48.8	85.7	0.1
Queue Length 95th (m)	56.2	5.9	23.8	72.7	71.5	0.0
Internal Link Dist (m)	237.3			438.2	313.8	
Turn Bay Length (m)		30.0	85.0			75.0
Base Capacity (vph)	221	193	266	1294	1318	1083
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.06	0.45	0.47	0.78	0.11
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset: 7 (5%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 90						

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

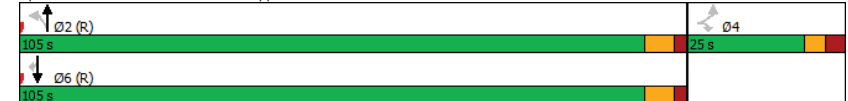
CGH Transportation
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Lanes, Volumes, Timings
9: Bank & Dun Skipper

2036 Future Total
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 14.5	Intersection LOS: B
Intersection Capacity Utilization 90.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 9: Bank & Dun Skipper



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total

CGH Transportation
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HCM 2010 TWSC
10: Hawthorne /Hawthorne & Blais

2036 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	8.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	225	23	14	314	367	293
Future Vol, veh/h	225	23	14	314	367	293
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	17	14	27	25	10
Mvmt Flow	225	23	14	314	367	293

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	856	514	660
Stage 1	514	-	-
Stage 2	342	-	-
Critical Hdwy	6.47	6.37	4.24
Critical Hdwy Stg 1	5.47	-	-
Critical Hdwy Stg 2	5.47	-	-
Follow-up Hdwy	3.563	3.453	2.326
Pot Cap-1 Maneuver	322	532	874
Stage 1	590	-	-
Stage 2	708	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	316	532	874
Mov Cap-2 Maneuver	316	-	-
Stage 1	579	-	-
Stage 2	708	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.2	0.4	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	874	-	328	-
HCM Lane V/C Ratio	0.016	-	0.756	-
HCM Control Delay (s)	9.2	0	43.2	-
HCM Lane LOS	A	A	E	-
HCM 95th %tile Q(veh)	0	-	5.9	-

HCM 2010 TWSC
11: Blais & Site Access

2036 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		W	W		W	
Traffic Vol, veh/h	32	188	233	74	60	38
Future Vol, veh/h	32	188	233	74	60	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	9	3	2	2	2
Mvmt Flow	32	188	233	74	60	38

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	307	0	522
Stage 1	-	-	270
Stage 2	-	-	252
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1254	-	515
Stage 1	-	-	775
Stage 2	-	-	790
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1254	-	501
Mov Cap-2 Maneuver	-	-	501
Stage 1	-	-	753
Stage 2	-	-	790

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1254	-	-	-	579
HCM Lane V/C Ratio	0.026	-	-	-	0.169
HCM Control Delay (s)	7.9	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Total - Mitigation
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	275	333	28	193	271	163	72	1679	249	56	589	77
Future Volume (vph)	275	333	28	193	271	163	72	1679	249	56	589	77
Lane Group Flow (vph)	275	333	28	193	271	163	72	1679	249	56	589	77
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.6	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.1	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	20.4	40.6	40.6	20.3	40.5	40.5	21.3	78.0	78.0	11.1	67.8	67.8
Total Split (%)	13.6%	27.1%	27.1%	13.5%	27.0%	27.0%	14.2%	52.0%	52.0%	7.4%	45.2%	45.2%
Maximum Green (s)	13.9	34.1	34.1	13.8	34.0	34.0	15.2	71.7	71.7	5.0	61.5	61.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0			27.0	27.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)	5	5			5	5		5	5		6	6
Act Effct Green (s)	13.9	22.6	22.6	13.1	21.7	21.7	12.2	78.3	78.3	10.7	76.8	76.8
Actuated g/C Ratio	0.09	0.15	0.15	0.09	0.14	0.14	0.08	0.52	0.52	0.07	0.51	0.51
v/c Ratio	0.93	0.68	0.09	0.74	0.60	0.47	0.62	0.98	0.31	0.47	0.36	0.11
Control Delay	104.3	67.0	0.5	83.9	64.8	12.0	88.0	52.7	12.3	78.9	24.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	67.0	0.5	83.9	64.8	12.0	88.0	52.7	12.3	78.9	24.4	0.3
LOS	F	E	A	F	E	B	F	D	B	E	C	A
Approach Delay		80.2			57.0			48.9			26.0	
Approach LOS		F			E			D			C	
Queue Length 50th (m)	42.5	50.8	0.0	29.2	40.6	0.8	21.0	253.6	20.6	16.1	53.6	0.0
Queue Length 95th (m)	#70.0	60.8	0.0	42.8	50.4	19.5	37.5	#332.1	42.3	#47.1	83.4	0.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0		150.0	150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	295	739	402	276	703	453	146	1713	803	118	1618	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.45	0.07	0.70	0.39	0.36	0.49	0.98	0.31	0.47	0.36	0.11

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leitrin

2036 Future Total - Mitigation
AM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 51.0

Intersection LOS: D

Intersection Capacity Utilization 94.0%

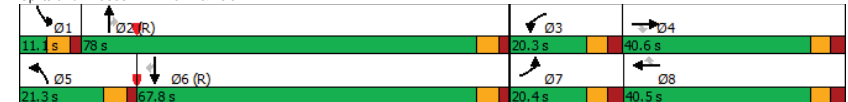
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leitrin



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total - Mitigation

CGH Transportation
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Lanes, Volumes, Timings
2: Bank & Leitrim

2036 Future Total - Mitigation
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	109	367	78	396	399	66	71	963	169	102	1723	363
Future Volume (vph)	109	367	78	396	399	66	71	963	169	102	1723	363
Lane Group Flow (vph)	109	367	78	396	399	66	71	963	169	102	1723	363
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	31.3	11.1	31.3	31.3
Total Split (s)	16.7	40.5	40.5	23.0	46.8	46.8	12.0	67.4	67.4	19.1	74.5	74.5
Total Split (%)	11.1%	27.0%	27.0%	15.3%	31.2%	31.2%	8.0%	44.9%	44.9%	12.7%	49.7%	49.7%
Maximum Green (s)	10.2	34.0	34.0	16.5	40.3	40.3	5.9	61.1	61.1	13.0	68.2	68.2
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	2.1	1.9	2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.3	6.1	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
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	None	None	None	None	None	None	None	C-Max	C-Max	None	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)	27.0	27.0		27.0	27.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	5
Act Effct Green (s)	9.5	24.2	24.2	16.5	31.2	31.2	12.9	70.3	70.3	13.6	71.0	71.0
Actuated g/C Ratio	0.06	0.16	0.16	0.11	0.21	0.21	0.09	0.47	0.47	0.09	0.47	0.47
v/c Ratio	0.55	0.74	0.22	1.15	0.58	0.16	0.51	0.63	0.22	0.69	1.10	0.42
Control Delay	78.7	68.7	1.4	154.1	56.6	0.8	77.8	33.5	5.1	88.7	91.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.7	68.7	1.4	154.1	56.6	0.8	77.8	33.5	5.1	88.7	91.9	5.1
LOS	E	E	A	F	E	A	E	C	A	F	F	A
Approach Delay		61.2			97.2			32.1			77.3	
Approach LOS		E			F			C			E	
Queue Length 50th (m)	16.4	55.9	0.0	~71.2	57.7	0.0	20.3	112.4	1.3	29.6	~307.3	4.8
Queue Length 95th (m)	26.8	67.6	0.0	#104.3	68.5	0.0	#57.6	150.7	16.0	#57.9	#356.4	25.0
Internal Link Dist (m)		312.8			585.8			260.1			467.3	
Turn Bay Length (m)	120.0			150.0		150.0	105.0		30.0	75.0		150.0
Base Capacity (vph)	214	697	438	343	882	493	138	1539	755	156	1569	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.53	0.18	1.15	0.45	0.13	0.51	0.63	0.22	0.65	1.10	0.42

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 145

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total - Mitigation

CGH Transportation
Page 1

Lanes, Volumes, Timings
2: Bank & Leitrim

2036 Future Total - Mitigation
PM Peak Hour

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 67.7

Intersection LOS: E

Intersection Capacity Utilization 100.9%

ICU Level of Service G

Analysis Period (min) 15

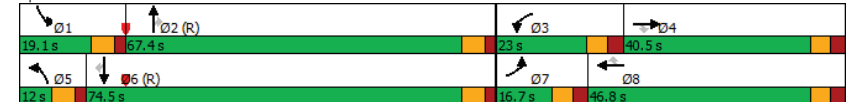
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bank & Leitrim



Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total - Mitigation

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Lanes, Volumes, Timings
2: Bank & Leitrim

2036 Future Total - Mitigation 2
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Traffic Volume (vph)	109	367	78	396	399	66	71	963	102	1723
Future Volume (vph)	109	367	78	396	399	66	71	963	102	1723
Lane Group Flow (vph)	109	367	78	396	399	66	71	1132	102	2086
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	11.5	40.5	40.5	11.5	40.5	40.5	11.1	31.3	11.1	31.3
Total Split (s)	16.8	40.5	40.5	26.3	50.0	50.0	11.1	72.1	11.1	72.1
Total Split (%)	11.2%	27.0%	27.0%	17.5%	33.3%	33.3%	7.4%	48.1%	7.4%	48.1%
Maximum Green (s)	10.3	34.0	34.0	19.8	43.5	43.5	5.0	65.8	5.0	65.8
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	1.9	2.1	1.9	2.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.1	6.3	6.1	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	7.0	7.0			7.0	7.0		7.0		7.0
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		18.0		18.0	
Pedestrian Calls (#/hr)	5	5		5	5		5		5	
Act Effct Green (s)	9.5	24.2	24.2	19.8	34.5	34.5	13.7	65.8	14.8	66.9
Actuated g/C Ratio	0.06	0.16	0.16	0.13	0.23	0.23	0.09	0.44	0.10	0.45
v/c Ratio	0.55	0.74	0.22	0.96	0.53	0.16	0.49	0.56	0.63	1.00
Control Delay	78.4	68.7	1.4	99.5	52.8	1.0	75.3	31.7	81.1	60.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	68.7	1.4	99.5	52.8	1.0	75.3	31.7	81.1	60.5
LOS	E	E	A	F	D	A	E	C	F	E
Approach Delay	61.2				70.3			34.2		61.5
Approach LOS	E				E			C		E
Queue Length 50th (m)	16.4	55.9	0.0	61.2	56.2	0.0	20.2	88.4	29.4	~229.9
Queue Length 95th (m)	26.8	67.6	0.0	#93.4	66.5	0.4	#60.5	102.6	#84.9	#265.6
Internal Link Dist (m)		312.8			585.8			260.1		467.3
Turn Bay Length (m)	120.0			150.0		150.0	105.0		75.0	
Base Capacity (vph)	216	697	440	412	952	488	146	2032	161	2082
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.53	0.18	0.96	0.42	0.14	0.49	0.56	0.63	1.00
Intersection Summary										
Cycle Length: 150										
Actuated Cycle Length: 150										
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green										
Natural Cycle: 145										

Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total - Mitigation 2

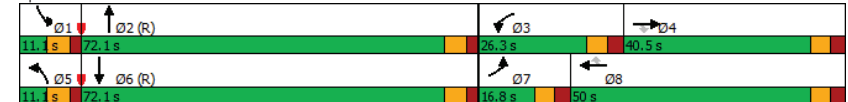
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Page 1

Lanes, Volumes, Timings
2: Bank & Leitrim

2036 Future Total - Mitigation 2
PM Peak Hour

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 56.2	Intersection LOS: E
Intersection Capacity Utilization 94.4%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 2: Bank & Leitrim



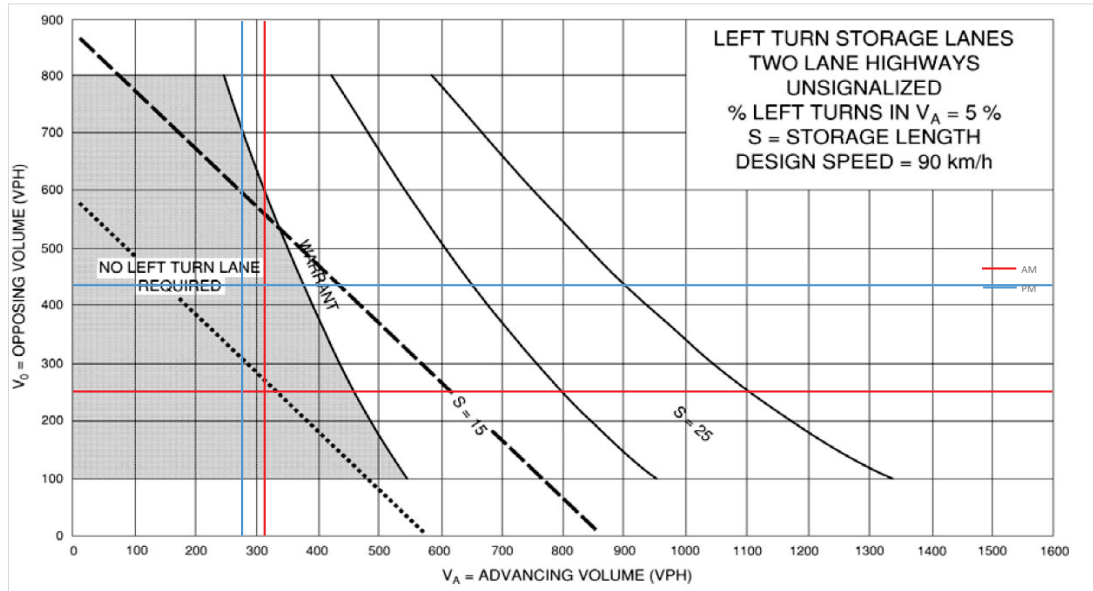
Scenario 1 4795 Bank Street 11:59 pm 10-02-2018 2036 Future Total - Mitigation 2

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Appendix Q

Left-Turn Lane Warrants

Blais at Hawthorne Existing - Northbound Left



Blais at Hawthorne Future Background 2031 - Northbound Left

