6310 Hazeldean Road

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

Prepared for:

4329163 Canada Inc.
6310 Hazeldean Road
P.O. Box 1791
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Prepared by:

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

March 2022

PN: 2022-005

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1 Screening

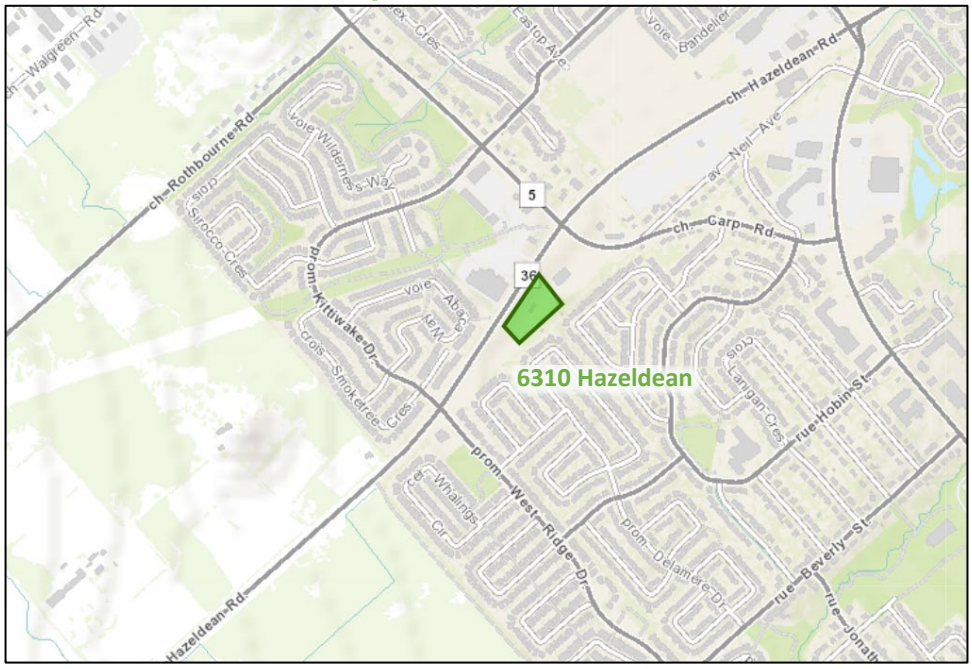
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is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

2 Existing and Planned Conditions

2.1 Proposed Development

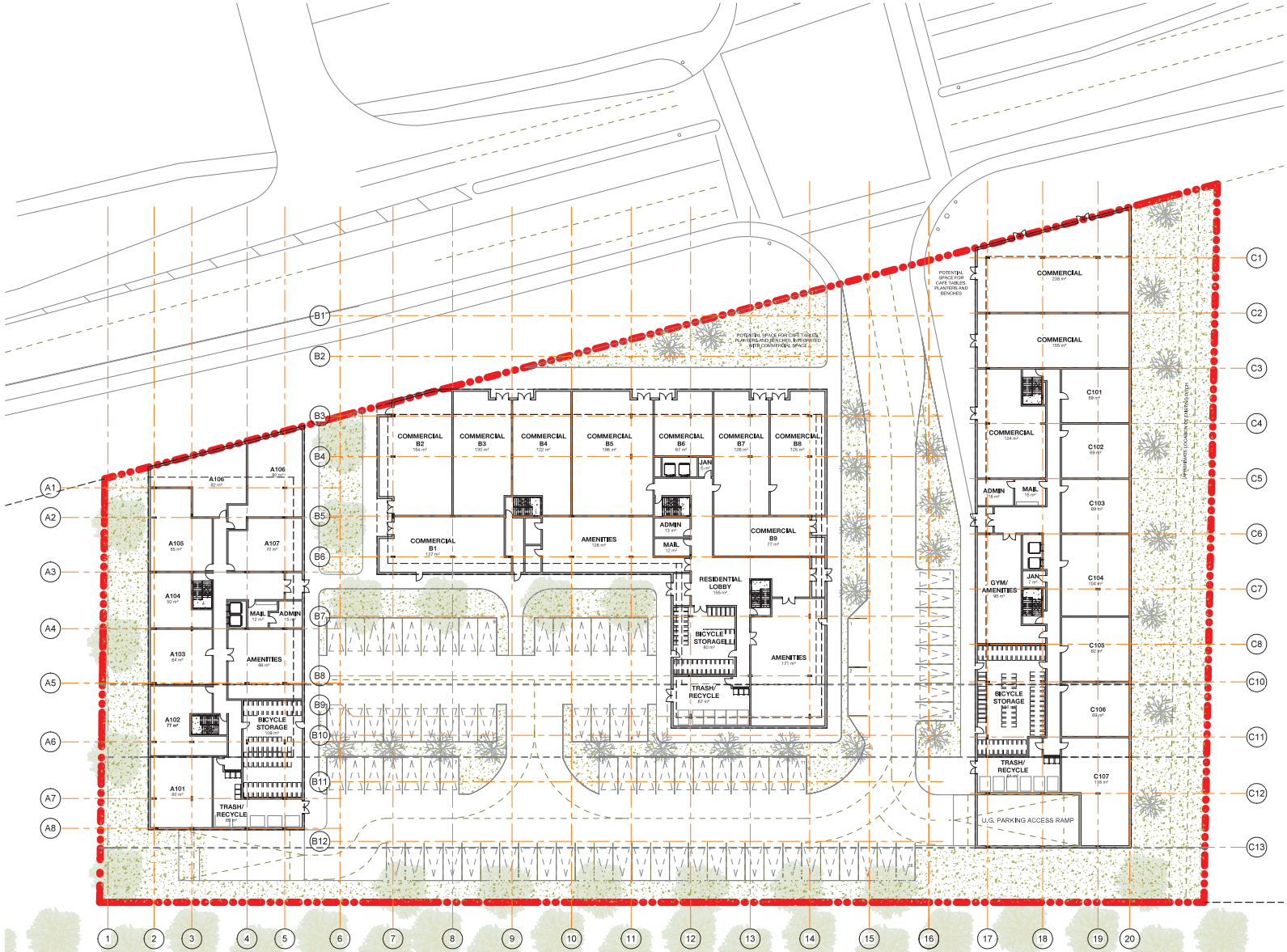
The existing site, located at 6310 Hazeldean Road, is zoned as Arterial Mainstreet Zone (AM9[2102]). The proposed redevelopment consists of approximately 1,630 sq. m of ground floor commercial space and 317 apartment units in three buildings. A full-movements access will be remained at the existing signalized intersection on Hazeldean Road. The redevelopment proposed 360 underground parking and 84 surface parking. The anticipated full build-out and occupancy horizon is 2027 with construction occurring in a single phase. The site is located within Hazeldean Arterial Mainstreet design priority areas. 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: February 3, 2022

6310 Hazeldean Rd
OTTAWA
GROUND FLOOR PLAN



SURFACE PARKING COUNT:

TOTAL: 84
VISITORS: 40
COMMERCIAL: 325

GROUND FLOOR
1 : 250

NOT FOR CONSTRUCTION

No	REVISION	DATE	BY
1	ARCH. STUDIES (DRAFT)	2022-02-10	TK

CLIENT/ OWNER
UBERTI, MICHAEL

Urban Designer, Landscape Architects: Fotenn
396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
Surveyor:

Disclaimer:
These plans were prepared for the purposes of a Zoning Bylaw Amendment Application only. For Site Plan application, Building Permit and Construction purposes, a registered architect shall be retained to develop the final architectural design and detail drawings.

FOTENN
Planning + Design
396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
613.730.5709 www.fotenn.com

DESIGNED	Designer
REVIEWED	Checker
DATE	2021-09-17

P3

D00-00-00-0000

2.2 Existing Conditions

2.2.1 Area Road Network

Hazeldean Road: Hazeldean Road is a City of Ottawa arterial road with a four-lane urban/semi-urban cross-section to the east of the 6310 Hazeldean Access and a two-lane rural cross-section to the west. Within the study area, gravel shoulders are provided on both sides of the road west of Kittiwake Drive/West Ridge Drive, and transitions to paved shoulders east of Kittiwake Drive/West Ridge Drive. Bike lanes are presented on both sides of the road east of Carp Road, and a westbound bike lane transitions to paved shoulder on the west side of Stittsville Corners Mall. Sidewalk and asphalt pathway are provided on the north side of the road between Kittiwake Drive/West Ridge Drive and Carp Road and sidewalks are provided on both sides of the road east of Carp Road. Approximately 195 metres west of Kittiwake Drive/West Ridge Drive, the posted speed limit is 60 km/h to the east and the posted speed limit is 80 km/h to the west. The City-protected right-of-way is 37.5 metres. Hazeldean Road is designated as a truck route.

Carp Road: Carp Road is a City of Ottawa arterial road with a two-lane semi-urban cross-section. Bike lanes are presented on both sides of the road north of Hazeldean Road within the study area. South of Hazeldean Road, a bike lane is presented on the east side of the road approaching Hazeldean Road, and a paved shoulder is presented on the west side of the road. Sidewalks are provided on the west side between Kittiwake Drive/Echowoods Avenue and Hazeldean Road, on the east side between Hazeldean Road and McCooeye Lane/Hobin Street, and both sides between McCooeye Lane/Hobin Street and Stittsville Main Street. The speed limit is 50km/h, and the City-protected right-of-way is 37.5 metres north of Hazeldean Road and 23.0 metres to the south within the study area. Carp Road is designated as a truck route.

Stittsville Main Street: Stittsville Main Street is a City of Ottawa arterial road south of Hazeldean Road, and a major collector road to the north. It has a two-lane urban cross-section and a 50 km/h posted speed limit. Sidewalks are provided on both sides of the road within the study area. The existing right of way is 30.5 metres within the study area. Stittsville Main Street south of Hazeldean Road is designated as a truck route.

West Ridge Drive: West Ridge Drive is a City of Ottawa collector road with a two-lane urban cross-section. The sidewalk is provided on the west side of the road. The speed limit is 40 km/h, and the City-protected right-of-way is 24.0 metres.

Kittiwake Drive: Kittiwake Drive is a City of Ottawa collector road with a two-lane urban cross-section. Sidewalks are provided on the south/east side of the road. The speed limit is 40 km/h, and the existing right of way is 26.0 metres.

Echowoods Avenue: Echowoods Avenue is a City of Ottawa collector road with a two-lane urban cross-section Sidewalk is presented on the south side of the road. The unposed speed limit is assumed to be 50 km/h, and the existing right of way is 18.0 metre

Hobin Street: Hobin Street is a City of Ottawa collector road with a two-lane rural cross-section including gravel shoulders and the speed limit is 40 km/h. The City-protected right-of-way is 24.0 metres within the study area.

McCooeye Lane: McCooeye Lane is a City of Ottawa local road with a two-lane rural cross-section including gravel shoulders. The unposed speed limit is assumed to be 50 km/h. The existing right of way is 26.0 metres.

2.2.2 Existing Intersections

The existing signalized area intersections within one kilometre of the site have been summarized below:

Hazeldean Road at West Ridge Drive/Kittiwake Drive	The intersection of West Ridge Drive/Kittiwake Drive at Hazeldean Road is a signalized intersection. The northbound approach consists of a shared left-turn/through lane and a right-turn movement lane. The southbound, eastbound, and westbound approaches each consists of an auxiliary left-turn lane and a shared through/right-turn lane. Trucks are restricted on north and south legs.
Hazeldean Road at Stittsville Corners Mall	The intersection of Hazeldean Road at the Stittsville Corners Mall is a signalized intersection. The northbound approach, which is a private access, consists of a shared all-movement lane, and the southbound approach consists of a left-turn lane and a right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and a through/right-turn lane, and the westbound approach consist of an auxiliary left-turn lane, a through lane, a bike lane, and an auxiliary right-turn lane. No turn restrictions were noted.
Hazeldean Road at Carp Road	The intersection of Carp Road at Hazeldean Road is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, a through lane, a shared through/right lane, and a bike lane. The southbound and westbound approaches each approach consists of an auxiliary left-turn, a through lane, a bike lane, and a channelized right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and a shared through/right-turn lane. No turn restrictions were noted.
Hazeldean Road at Jackson Trails Centre Mall	The intersection of Hazeldean Road at the Jackson Trails Centre Mall is a signalized T-intersection. The southbound approach consists of a shared all-movement lane. The eastbound approach consists of an auxiliary left-turn lane, two through lanes, and a bike lane, and the westbound approach consist of a through lane, a shared through/right-turn lane, and a bike lane. No turn restrictions were noted.
Carp Road at Kittiwake Drive/Echowoods Avenue	The intersection of Carp Road at Kittiwake Drive/Echowoods Avenue 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, a through lane, a bike lane, and an auxiliary right-turn. The eastbound approach consists of a left-turn lane and a shared through/right-turn lane, and the westbound approach consists of a shared all-movement lane. No turn restrictions were noted.
Carp Road at McCooeye Lane /Hobin Street	The intersection of Carp Road at McCooeye Lane/Hobin Street is a signalized intersection. Carp Road is considered as N-S movements, and McCooeye Lane/Hobin Street is E-W movements. The northbound and southbound approaches each consist of an auxiliary left-turn lane and a shared through/right-turn lane, and the eastbound and westbound

approaches each consists of a shared all-movement lane. No turn restrictions were noted.

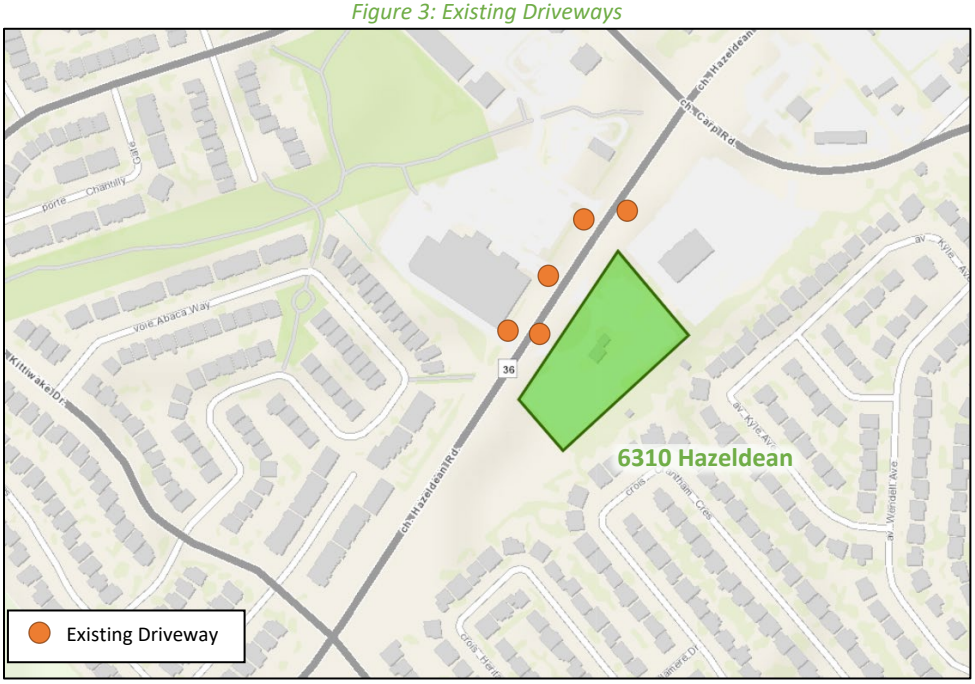
Carp Road at Stittsville Main Street

The intersection of Carp Road at Stittsville Main Street is a signalized intersection. The northbound approach consists of a left-turn lane and a shared through/right-turn lane, and the southbound approach consists of an auxiliary left-turn, a through lane, and an auxiliary channelized right-turn. The eastbound approach consists of an auxiliary left-turn, a through lane, and an auxiliary channelized right-turn lane, and the westbound approach consists of a left-turn lane and a shared through/right-turn movement lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the site accesses, two existing driveways to the site on the south side of Hazeldean Road, and three existing driveways to a retail plaza are present on the north side of Hazeldean Road. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/Accessed: February 3, 2022

2.2.4 Cycling and Pedestrian Facilities

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

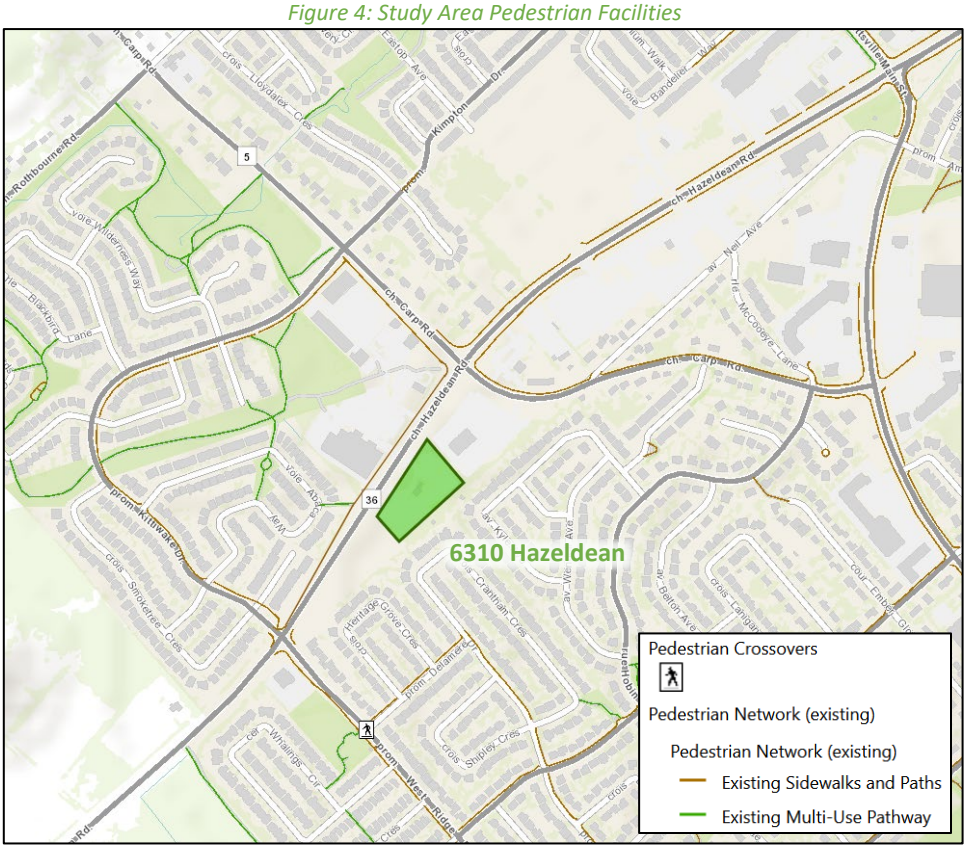
Sidewalk and asphalt pathway are provided on the north side of Hazeldean road between Kittiwake Drive/West Ridge Drive and Carp Road and of Carp Road east of Stittsville Main Street, on the south side of Echowoods Avenue and Kittiwake Drive, on the east side of Carp Road between Hazeldean Road and McCooeye Lane/Hobin Street, on the west side of Carp Road between Kittiwake Drive/Echowoods Avenue and Hazeldean Road and of West Ridge Drive, and on both sides of Hazeldean road east of Carp Road, of Carp Road between McCooeye Lane/Hobin Street and Stittsville Main Street, of Stittsville Main Street.

Bike lanes are provided on the south side of Hazeldean Road east of Carp Road, on the north side of Hazeldean Road east of Stittsville Corners Mall access, on the east side of Carp Road approaching Hazeldean Road to Kittiwake Drive/Echowoods Avenue, and on the west side of Carp Road north of Hazeldean Road.

Paved shoulders are presented on the west side of Carp Road between Hazeldean Road and McCooeye Lane/Hobin Street, on both sides between Kittiwake Drive/West Ridge Drive and Stittsville Corners Mall access, and the south side between Stittsville Corners Mall access and Carp Road.

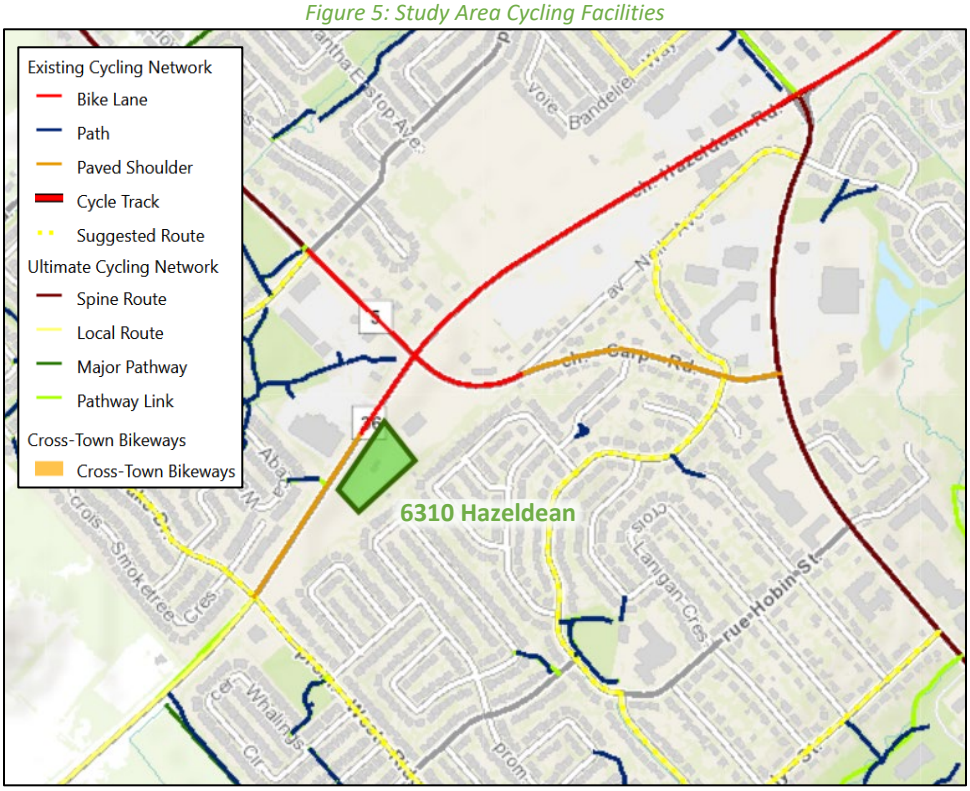
Carp Road, Hazeldean Road east of Kittiwake Drive, Stittsville Main Street south of Hazeldean Road are spine routes, and Hazeldean Road west of Kittiwake Drive, West Ridge Drive, Hobin Street, and McCooeye Lane are local routes.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/Accessed: February 3, 2022

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/Accessed: February 3, 2022

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

Figure 6: Existing Pedestrian Volumes

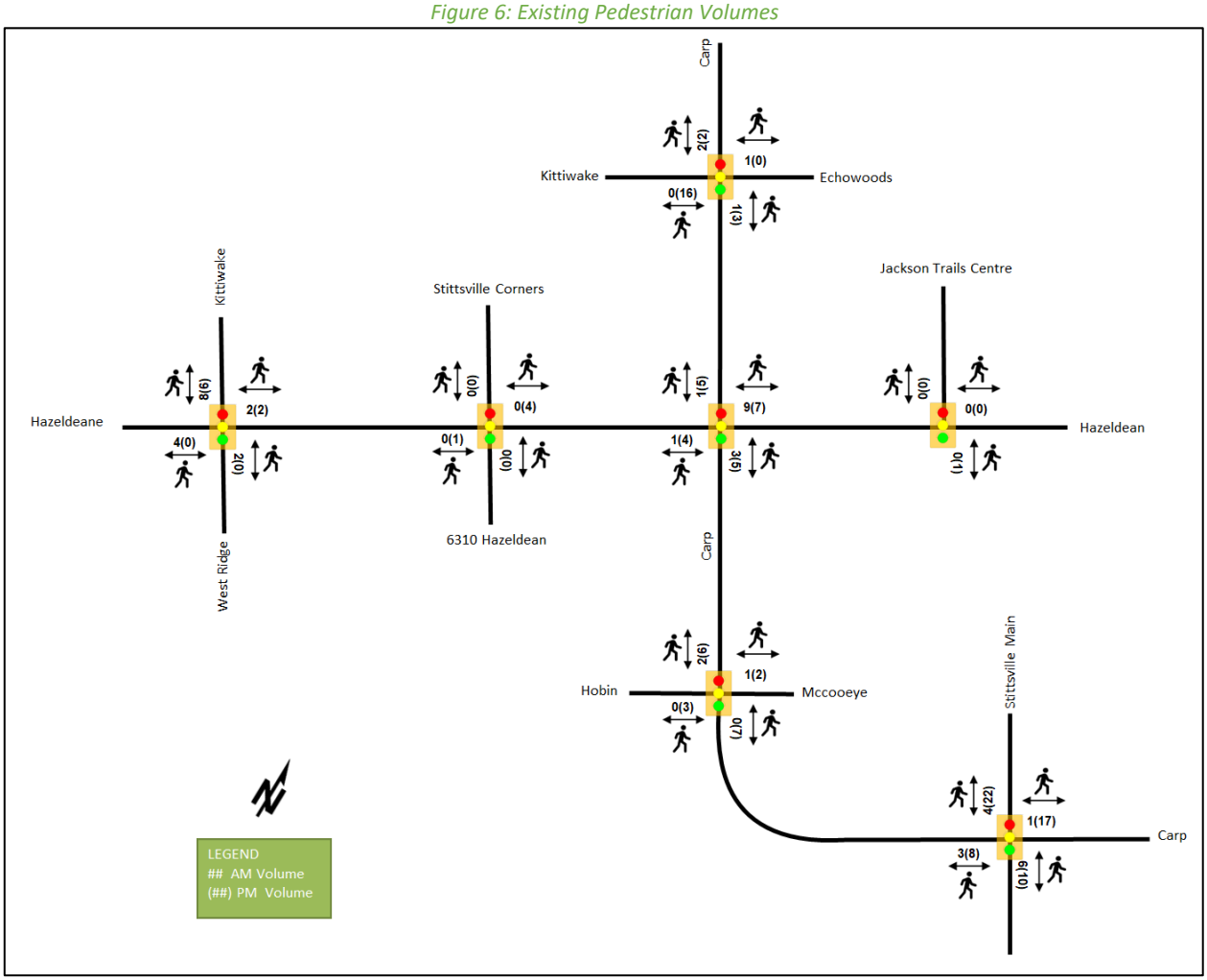
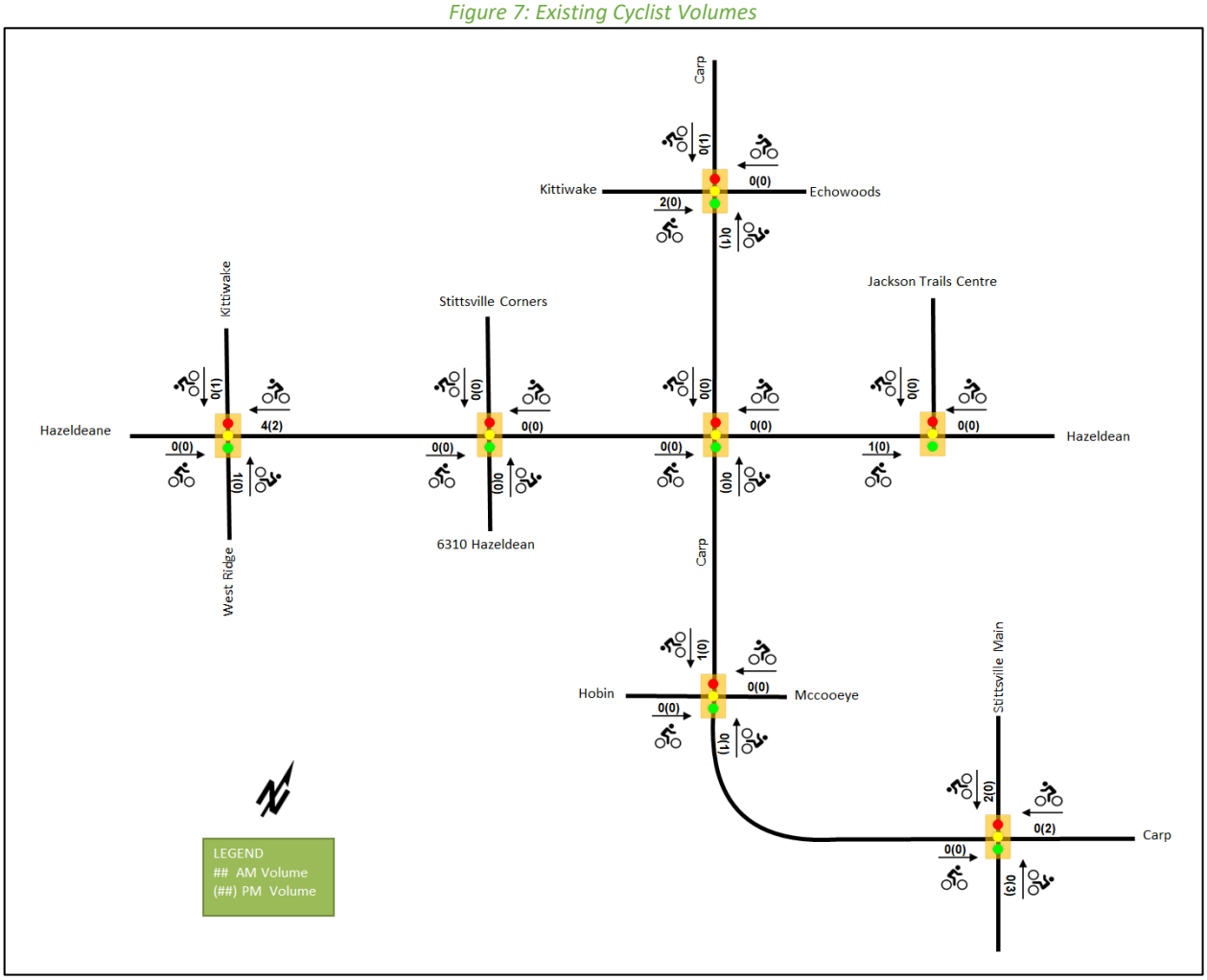


Figure 7: Existing Cyclist Volumes



2.2.5 Existing Transit

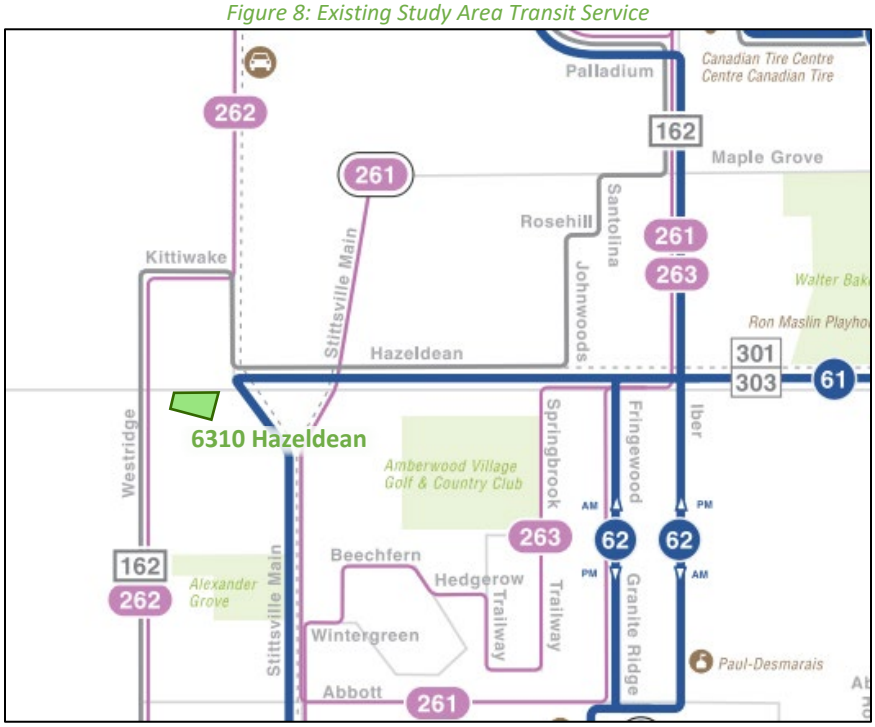
Within the study area, route # 61 travels along Hazeldean Road and Carp Road, route # 162 travels along Hazeldean Road, Carp Road, and Kittiwake Drive, and route # 262 travels along Kittiwake Drive and West Ridge Drive.

Primary stops are located at Carp Road and Hazeldean Road intersection. The frequency of these routes within proximity of the proposed site currently are:

- Route # 61 – 10-15-minute service in the peak period/direction, 30-minute service all-day
- Route # 162 – Three afternoon buses and four late evening buses per day
- Route # 262 – 30-minute service in the peak period/direction

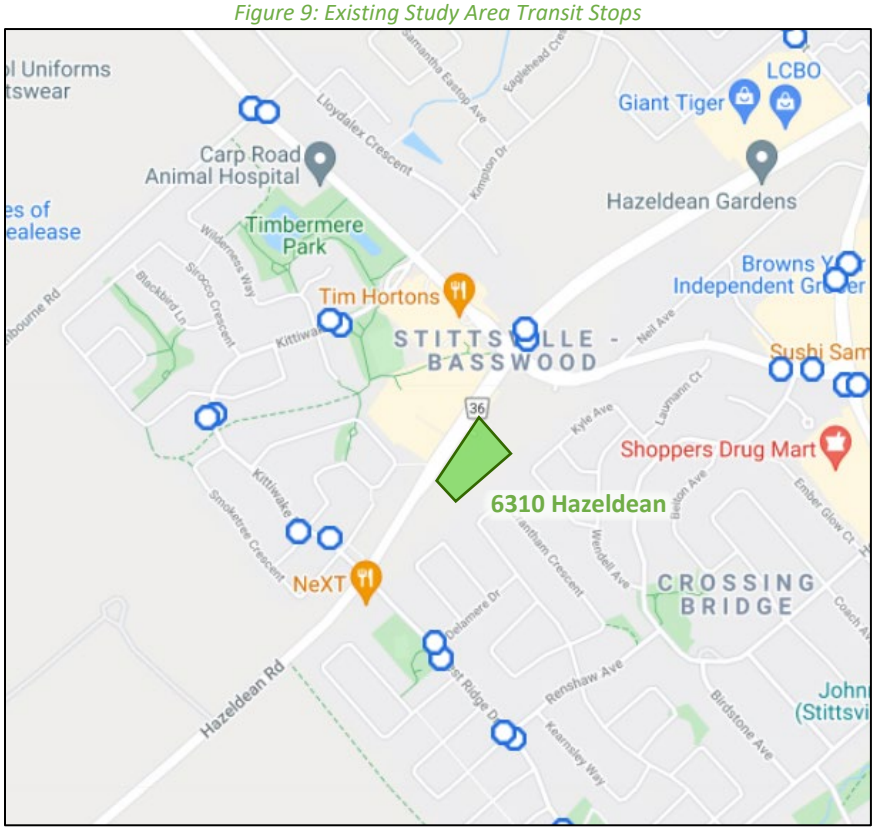
Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops.

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: January 28, 2022

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: January 28, 2022

2.2.6 Existing Area Traffic Management Measures

There are no existing area traffic management measures within the study area.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa for the existing study area intersection. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date
Hazeldean Rd @ West Ridge Dr/Kittiwake Dr	Thursday, July 21, 2016
Hazeldean Rd @ Stittsville Corners Mall	Wednesday, January 19, 2022
Hazeldean Rd @ Jackson Trails Centre Mall	Tuesday, January 19, 2016
Hazeldean Rd @ Carp Rd	Thursday, November 23, 2017
Carp Rd @ Echowoods Ave/Kittiwake Dr	Thursday, May 04, 2017
Carp Rd @ McCooeye Ln/Hobin St	Thursday, May 04, 2017
Carp Rd @ Stittsville Main St	Thursday, May 04, 2017

Figure 10 illustrates the existing traffic counts, balanced along the roadway corridors. Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, 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.

Figure 10: Existing Traffic Counts

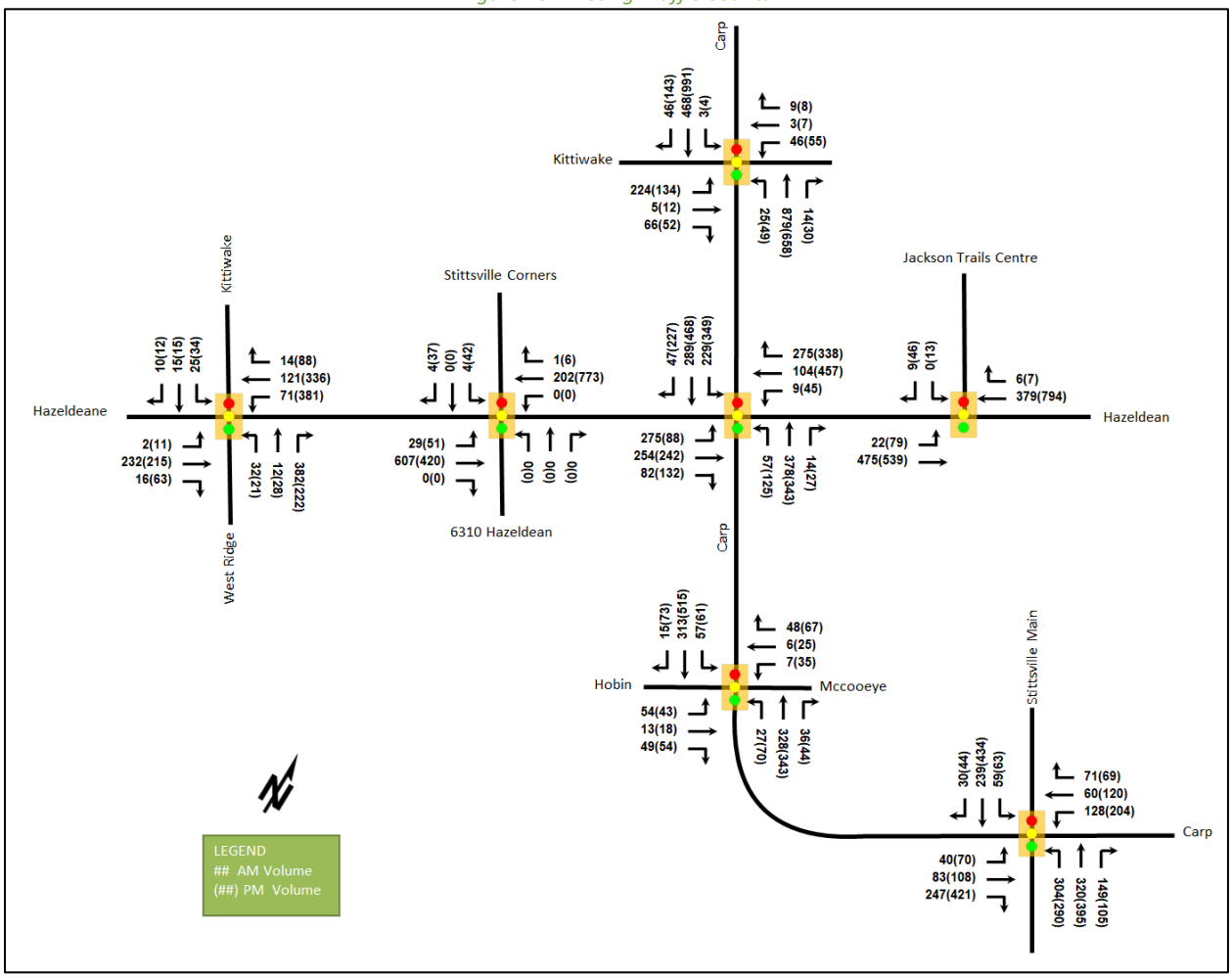


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at West Ridge Dr /Kittiwake Dr *Signalized*	EBL	A	0.00	7.5	1.0	A	0.02	3.5	2.3
	EBT/R	A	0.30	8.6	32.7	A	0.23	3.7	29.2
	WBL	A	0.15	8.3	11.9	A	0.54	5.1	35.0
	WBT/R	A	0.17	7.4	17.9	A	0.35	2.7	13.0
	NBL/T	A	0.17	17.4	10.1	A	0.36	56.0	23.2
	NBR	B	0.65	7.4	16.3	B	0.66	14.9	22.7
	SBL	A	0.10	16.4	6.8	A	0.30	54.6	18.1
	SBT/R	A	0.08	12.2	5.8	A	0.19	34.1	12.0
	Overall	**A**	**0.30**	**8.6**	-	**A**	**0.52**	**9.1**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Stittsville Corners Mall ***Signalized***	EBL	A	0.03	1.1	2.8	A	0.13	3.0	4.6
	EBT/R	A	0.21	0.9	19.9	A	0.17	2.2	12.3
	WBL	-	-	-	-	-	-	-	-
	WBT	A	0.14	2.0	27.1	A	0.59	9.0	m60.6
	WBR	A	0.00	0.0	m0.0	A	0.01	0.0	m0.0
	NB	-	-	-	-	-	-	-	-
	SBL	A	0.03	49.0	4.2	A	0.39	60.3	22.3
	SBR	A	0.03	0.2	0.0	A	0.24	17.9	10.5
	Overall	**A**	**0.23**	**1.4**	**-**	**A**	**0.59**	**8.4**	**-**
Hazeldean at Jackson Trails Centre Mall ***Signalized***	EBL	A	0.03	0.3	m0.3	A	0.19	1.1	m1.1
	EBT	A	0.18	0.2	2.3	A	0.21	0.7	m3.2
	WBT/R	A	0.14	0.8	12.4	A	0.32	2.9	30.2
	SB	A	0.02	0.1	0.0	A	0.37	25.1	16.7
	Overall	**A**	**0.19**	**0.5**	**-**	**A**	**0.32**	**2.9**	**-**
Hazeldean Rd at Carp Rd ***Signalized***	EBL	**F**	**1.03**	**96.3**	**#78.8**	A	0.48	27.5	24.4
	EBT/R	A	0.43	29.7	37.3	A	0.30	13.8	29.1
	WBL	A	0.09	39.8	6.4	A	0.22	36.5	20.7
	WBT	A	0.51	51.7	37.8	**F**	**1.06**	**97.2**	**#204.6**
	WBR	B	0.66	14.5	42.9	A	0.60	18.5	58.0
	NBL	A	0.48	61.2	26.5	B	0.66	64.2	50.0
	NBT/R	A	0.40	31.8	60.6	A	0.52	41.8	59.8
	SBL	C	0.78	51.0	**#108.6**	**F**	**1.28**	**181.6**	**m#131.4**
	SBT	A	0.41	37.2	105.9	**F**	**1.01**	**75.3**	**m#161.4**
	SBR	A	0.07	3.8	m3.5	A	0.44	18.3	m25.5
	Overall	**C**	**0.76**	**42.1**	**-**	**F**	**1.05**	**65.5**	**-**
Carp Rd at Echowoods Ave/Kittiwake Dr ***Signalized***	EBL	D	0.81	60.8	78.4	C	0.72	66.3	52.3
	EBT/R	A	0.20	9.4	12.1	A	0.25	15.5	14.3
	WB	A	0.22	30.3	20.5	A	0.40	46.6	28.5
	NBL	A	0.07	9.0	m4.1	A	0.35	24.3	m14.6
	NBT/R	E	0.92	29.4	**m#317.4**	B	0.63	12.9	93.0
	SBL	A	0.02	9.3	1.4	A	0.01	6.0	1.4
	SBT	A	0.55	19.9	121.4	E	0.97	42.5	**#379.0**
	SBR	A	0.06	1.2	2.3	A	0.17	5.9	18.6
	Overall	**E**	**0.92**	**29.0**	**-**	**E**	**0.91**	**30.9**	**-**
Carp Rd at McCooeye Ln/Hobin St ***Signalized***	EB	A	0.15	5.2	11.7	A	0.14	4.9	11.8
	WB	A	0.08	3.3	5.6	A	0.15	3.9	11.0
	NBL	A	0.21	32.7	m9.1	**F**	**1.01**	**139.8**	**m#27.8**
	NBT/R	E	0.91	62.1	**#110.8**	**F**	**1.03**	**90.9**	**m#116.5**
	SBL	A	0.55	45.7	**#24.6**	D	0.88	112.4	**#36.4**
	SBT/R	D	0.81	43.0	**#91.7**	**F**	**1.53**	**279.1**	**#225.1**
	Overall	**A**	**0.38**	**43.0**	**-**	**A**	**0.53**	**160.9**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at Stittsville Main St *Signalized*	EBL	A	0.19	33.5	m5.0	A	0.41	32.2	m4.4
	EBT	A	0.27	35.3	m10.1	A	0.39	33.6	m6.6
	EBR	A	0.57	15.2	m14.6	D	0.87	27.9	m0.0
	WBL	B	0.61	39.8	33.3	A	0.58	27.7	41.7
	WBT/R	A	0.40	16.9	21.3	A	0.36	18.4	33.2
	NBL	A	0.54	11.2	42.8	D	0.89	52.3	**#116.8**
	NBT/R	A	0.57	17.3	**#111.5**	C	0.78	35.4	**#170.3**
	SBL	A	0.14	7.6	9.2	A	0.24	15.1	14.2
	SBT	A	0.34	17.6	49.1	E	0.95	62.0	**#139.7**
	SBR	A	0.05	0.1	0.0	A	0.09	0.4	0.0
	Overall	**B**	**0.62**	**18.2**	**-**	**D**	**0.84**	**37.7**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 0.90
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During peak hours, capacity issues are noted at the intersection of Carp Road at Hazeldean Road and Carp Road at Hobin Street/McCooeye Lane.

At Hazeldean Road and Carp Road intersection, the eastbound left-turn movements during AM peak hour, and the westbound through, the southbound left-turn and through movements during PM peak hour are over theoretical capacity and may be subject to high delays and extended queues. Extended queues may be exhibited on the southbound left-turn movements during AM peak hour.

The intersection of Carp Road at Echowoods Avenue/Kittiwake Drive Boulevard may be subject to extended queues on the northbound shared through/right-turn movements during AM peak hour and on the southbound through movements during PM peak hour.

The intersection of Carp Road at McCooeye Lane/Hobin Street may be subject to extended queues on the northbound and southbound shared through/right-turn movements during AM peak hour and on. During PM peak hour, the northbound movements and southbound shared through/right-turn movements are over theoretical capacity and may be subject to high delays and extended queues. The southbound left-turn movements may be subject to extended queues during both peak hours

At the intersection of Carp Road at Stittsville Main Street, the northbound shared through/right-turn movements during AM peak hour and the northbound and southbound through movements during PM peak hour may be subject to extended queues.

The intersection timings in the study area could be further optimized to improve the operations for the above noted capacity issues. Table 3 summarizes the individual intersections with optimized timing to illustrate the extent of the potential improvements to the conditions that may be achieved. The City will need to coordinate these operations along Hazeldean Road and Carp Road. The Synchro worksheets for intersections with optimized timing at existing condition are provided in Appendix D.

Table 3: Existing Intersection Operations – Optimized Signal Timing

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Carp Rd *Signalized*	EBL	E	0.96	77.7	72.6	C	0.75	56.1	**#33.6**
	EBT/R	A	0.41	28.5	36.3	A	0.33	15.9	33.1
	WBL	A	0.09	39.1	6.2	A	0.20	32.3	19.5
	WBT	A	0.51	51.2	37.1	E	0.97	73.1	**#187.2**
	WBR	B	0.66	14.3	42.4	A	0.57	14.2	49.3
	NBL	A	0.53	66.8	27.8	E	0.92	**109.2**	**#71.1**
	NBT/R	A	0.40	32.5	62.8	A	0.60	46.3	62.4
	SBL	D	0.82	54.9	**#103.8**	E	0.97	75.4	**m#106.9**
	SBT	A	0.42	35.7	105.1	D	0.83	49.9	m117.7
	SBR	A	0.07	3.7	m3.5	A	0.39	17.1	m27.3
	Overall	**C**	**0.75**	**39.8**	-	**E**	**0.95**	**47.5**	-
Carp Rd at McCooeye Ln/Hobin St *Signalized*	EB	A	0.17	8.0	16.8	A	0.22	14.9	24.1
	WB	A	0.08	5.4	8.0	A	0.23	13.8	25.0
	NBL	A	0.15	18.3	m6.3	A	0.44	25.0	m15.0
	NBT/R	C	0.77	33.5	83.0	A	0.54	21.8	m68.8
	SBL	A	0.37	24.9	15.3	A	0.20	12.8	11.6
	SBT/R	B	0.68	29.4	62.7	C	0.80	26.9	105.8
	Overall	**A**	**0.37**	**26.3**	-	**A**	**0.52**	**22.4**	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 0.90
Delay = average driver delay in seconds
v/c = volume to capacity ratio

Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study are road network. Table 4 summarizes the collisions types and conditions in the study area, Figure 11 illustrates the intersections and segments analyzed, and Table 5 summarizes the total collisions for each of these locations. Collision data are included in Appendix E.

Table 4: Study Area Collision Summary, 2015-2019

		Number	%
Total Collisions		**74**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	15	20%
	Property Damage Only	59	80%
Initial Impact Type	**Angle**	13	18%
	Rear end	36	49%
	Sideswipe	2	3%
	Turning Movement	14	19%
	SMV Other	8	11%
	Other	1	1%
Road Surface Condition	**Dry**	44	59%
	Wet	14	19%
	Loose Snow	6	8%
	Slush	3	4%
	Packed Snow	1	1%
	Ice	6	8%
Pedestrian Involved		0	0%
Cyclists Involved		2	3%

Figure 11: Study Area Collision Records – Representation of 2015-2019

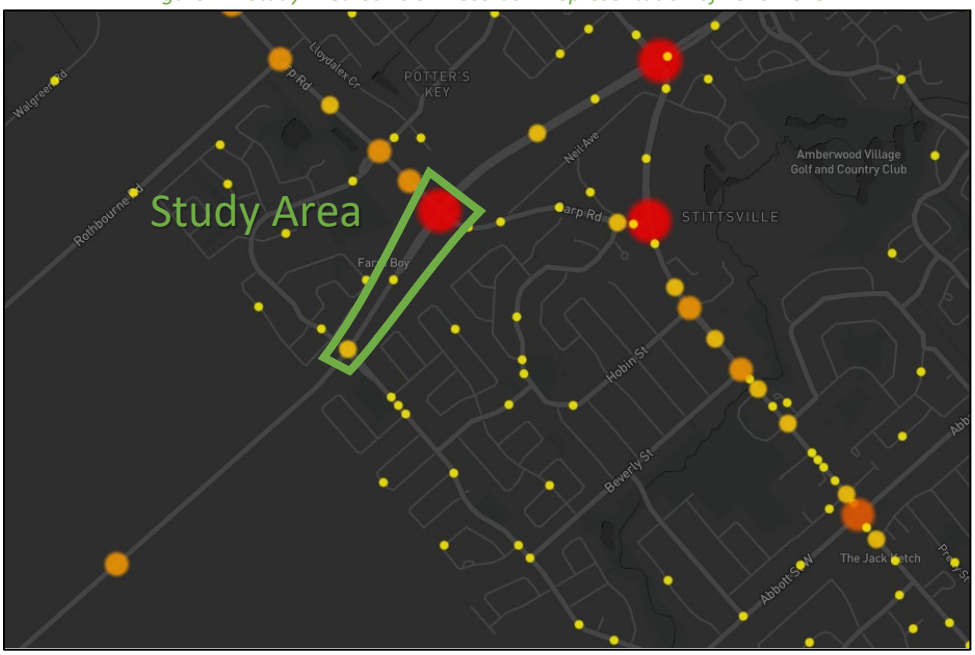


Table 5: Summary of Collision Locations, 2015-2019

	Number	%
Intersections /Segments	**74**	**100%**
Hazeldean Rd @ Carp Rd	65	88%
Hazeldean Rd @ West Ridge Dr	7	9%
Hazeldean Rd btwn Kittiwake Dr & Carp Rd	2	3%

Within the study area, the intersection of Carp Road at Hazeldean Road is noted to have experienced higher collisions than other locations. Table 6 summarizes the collision types and conditions for the location.

Table 6: Hazeldean Road at Carp Road Collision Summary

		Number	%
Total Collisions		**65**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	13	20%
	Property Damage Only	52	80%
Initial Impact Type	**Angle**	12	18%
	Rear end	33	51%
	Turning Movement	13	20%
	SMV Other	7	11%
Road Surface Condition	**Dry**	39	60%
	Wet	12	18%
	Loose Snow	5	8%
	Ice	6	9%
Pedestrian Involved		0	0%
Cyclists Involved		2	3%

The Hazeldean Road at Carp Road intersection had a total of 65 collisions during the 2015-2019 time period, with 52 involving property damage only and the remaining 13 having non-fatal injuries. The collision types are most represented by the rear end with 33 collisions, followed by turning movement with 13 collisions, angle with 12,

and with the remaining collision types represented by SMV other. Rear end collisions are typical of congested areas. Weather conditions do not affect collisions at this location. It is noted that collisions increased significantly during 2017 (23 total collisions), and subsequently decreased to 6 total collisions by 2019.

2.3 Planned Conditions

2.3.1.1 Changes to the Area Transportation Network

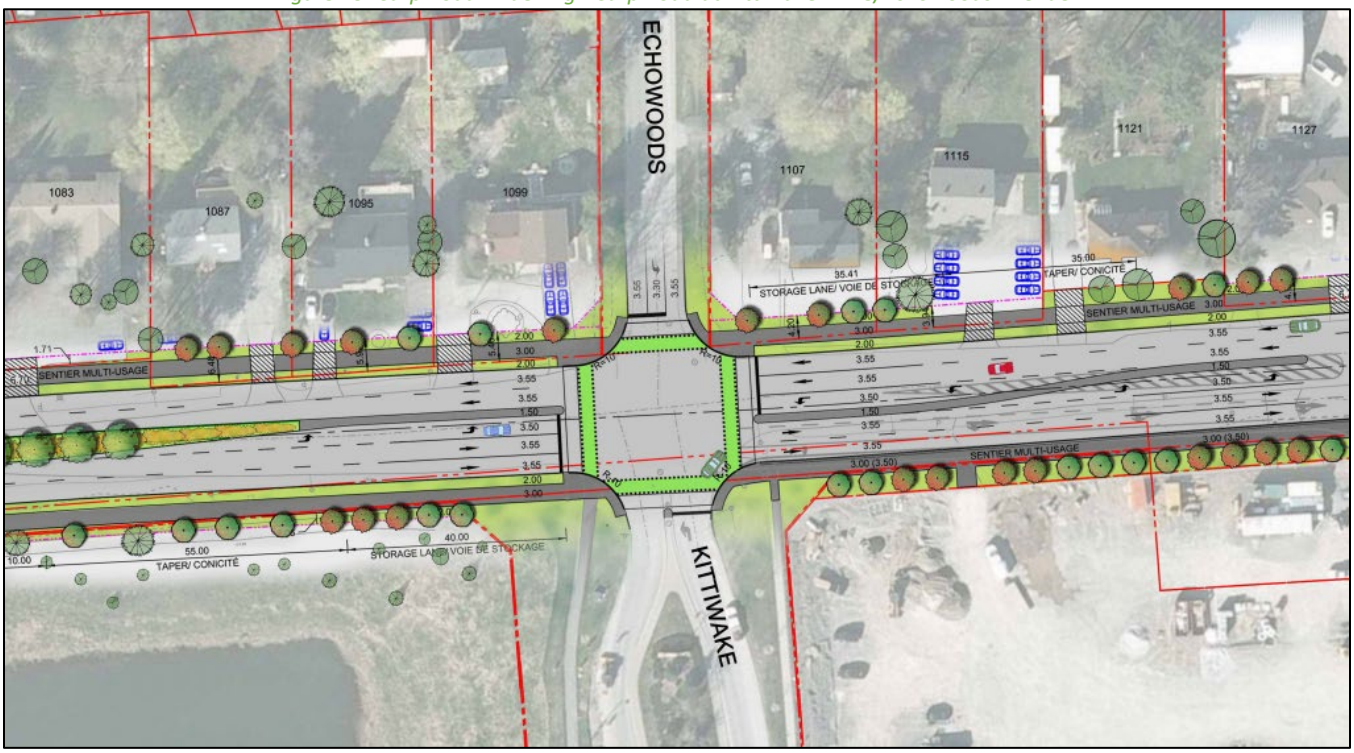
The Transportation Master Plan's (TMP) Rapid Transit and Transit Priority Network identify isolated transit priority measures along Hazeldean Road east of Stittsville Main Steet and Stittsville Main Steet south of Hazeldean Road within the Ultimate Network Concepts diagram, however, the Stittsville Main Steet south of Hazeldean Road does not appear within the Affordable Network diagram.

The Affordable Network identifies the widening of Carp Road between Hazeldean Road and Highway 41 by Phase 2 (2020 to 2025). The widening will include changes to the cross-section of Carp Road from two-lane to five-lane cross-section including a two-way left-turn lane south of Westbrook Road, dividing median along the Carp Road approaches to the intersections, and multi-use pathways on both sides of the road. Figure 12 and Figure 13 illustrate examples of the changes anticipated to the area intersections.

Figure 12: Carp Road Widening - Hazeldean Road at Carp Road

Source: https://documents.ottawa.ca/sites/documents/files/documents/carp_landscape_en.pdf Accessed: February 4, 2022

Figure 13: Carp Road Widening - Carp Road at Kittiwake Drive/Echowoods Avenue



Source: https://documents.ottawa.ca/sites/documents/files/documents/carp_landscape_en.pdf Accessed: February 4, 2022

2.3.2 Other Study Area Developments

1037 Carp Road

The proposed development application includes a site plan for the construction of a new 1,028 m^2 two-storey office building. No TIA is available for this development.

6171 Hazeldean Road

The proposed development application includes a plan of subdivision for the construction of a total of 529 units with 20 single detached, 150 townhomes, 240 condominium units, 160 apartment units, and a 19,400 ft^2 commercial space. The anticipated full build-out and occupancy horizon is 2024. The development is predicted to generate 273 new AM and 345 new PM two-way peak-hour auto trips. (EXP Services Inc., 2021)

37 Wildpine Court

The proposed development application includes a zoning amendment to allow the construction of 29 new townhomes on both public and private streets. No TIA is available for this development.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Hazeldean Road at:
  - West Ridge Drive/Kittiwake Drive
  - Stittsville Corners Mall (future Site Access)
  - Jackson Trails Centre Mall
- Carp Road at:

- Hazeldean Road
- Kittiwake Drive/Echowoods Avenue
- McCooeye Lane/Hobin Street
- Stittsville Main Street

The boundary road will be Hazeldean Road and no screenlines are present within proximity to the site.

3.2 Time Periods

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

3.3 Horizon Years

The anticipated build-out year is 2027. As a result, the full build-out plus five years horizon year is 2032.

4 Exemption Review

Table 7 summarizes the exemptions for this TIA.

Table 7: Exemption Review

Module	Element	Explanation	Exempt/Required
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Required at Site Plan Application
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Required at Site Plan Application
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Exempt. May be required at Site Plan Application
Network Impact Component			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	Required
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	Exempt
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

5 Development-Generated Travel Demand

5.1 Mode Shares

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

Table 8: TRANS Trip Generation Manual Recommended Mode Shares – Kanata/Stittsville

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	43%	55%	81%	73%
Auto Passenger	26%	19%	12%	22%
Transit	28%	21%	5%	1%
Cycling	0%	0%	0%	0%
Walking	4%	5%	2%	4%
Total	**100%**	**100%**	**100%**	**100%**

5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 10th Edition (2017) using the City-prescribed conversion factor of 1.28. Table 9 summarizes the person trip rates for the proposed residential land uses for each peak period and the person trip rates for the non-residential land uses by peak hour.

Table 9: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Vehicle Trip Rate	Person Trip Rates
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	-	0.80
		PM	-	0.90
Land Use	**Land Use Code**	**Peak Hour**	**Vehicle Trip Rate**	**Person Trip Rates**
Shopping Centre	820 (ITE)	AM	0.94	1.20
		PM	3.81	4.88

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 and for the non-residential land uses.

Table 10: Total Residential Person Trip Generation by Peak Period

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	317	79	175	254	165	120	285
Land Use	**GFA**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Shopping Centre	1,630 sq. m	13	8	21	41	45	86

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail component for mixed-use developments. The rates summarized in Table 11 represent the percentage of trips to/from the retail use based on the residential component.

Table 11: Internal Capture Rates

Land Use	AM		PM	
	In	Out	In	Out
Residential to/from Shopping Centre	17%	14%	10%	26%

Pass-by reductions applied to the retail trip generation at a rate of 35% have been included, a value taken as a moderately conservative interpretation from the rates presented in the ITE Trip Generation Handbook 3rd Edition.

Using the above mode share targets for the internal capture and pass-by rates, 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 12 summarizes the residential trip generation and the non-residential trip generation by mode and peak hour.

Table 12: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**43%**	16	36	52	**55%**	40	29	69
	Auto Passenger	**26%**	10	22	32	**19%**	14	10	24
	Transit	**28%**	12	27	39	**21%**	16	12	28
	Cycling	**0%**	0	0	0	**0%**	0	0	0
	Walking	**4%**	2	4	6	**5%**	4	3	7
	Total	**100%**	**40**	**89**	**129**	**100%**	**74**	**54**	**128**
Shopping Centre	Auto Driver	**81%**	6	4	10	**73%**	18	16	34
	Auto Passenger	**12%**	1	1	2	**22%**	8	7	15
	Transit	**5%**	1	0	1	**1%**	0	0	0
	Cycling	**0%**	0	0	0	**0%**	0	0	0
	Walking	**2%**	0	0	0	**4%**	1	1	2
	Internal Capture	*varies*	*-2*	*-1*	*-3*	*varies*	*-4*	*-12*	*-16*
	Pass-by	*35%*	*-3*	*-2*	*-5*	*35%*	*-9*	*-8*	*-18*
	Total	**100%**	**8**	**5**	**13**	**100%**	**27**	**24**	**51**
Total	Auto Driver	-	22	40	62	-	58	45	103
	Auto Passenger	-	11	23	34	-	22	17	39
	Transit	-	13	27	40	-	16	12	28
	Cycling	-	0	0	0	-	0	0	0
	Walking	-	2	4	6	-	5	4	9
	Total	-	**48**	**94**	**142**	-	**101**	**78**	**179**

As shown above, a total of 62 AM and 103 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel, and these patterns were applied based on the build-out of Kanata/Stittsville. Table 13 below summarizes the distributions.

Table 13: OD Survey Distribution – Kanata/Stittsville

To/From	% of Trips
North	30%
South	5%
East	60%
West	5%
Total	**100%**

5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 14 summarizes the proportional assignment to the study area roadways, and Figure 14 and Figure 15 illustrates the Pass-By volumes and new site generated volumes, respectively.

Table 14: Trip Assignment

To/From	Via
North	25% Carp Road (N) 5% Kittiwake Drive (N)
South	3% Carp/Stittsville Main (S) 2% West Ridge Drive (S)
East	35% Carp Road (N) 25% Hazeldean Road (E)
West	5% Hazeldean Road (W)
Total	**100%**

Figure 14: Pass-By Auto Volumes

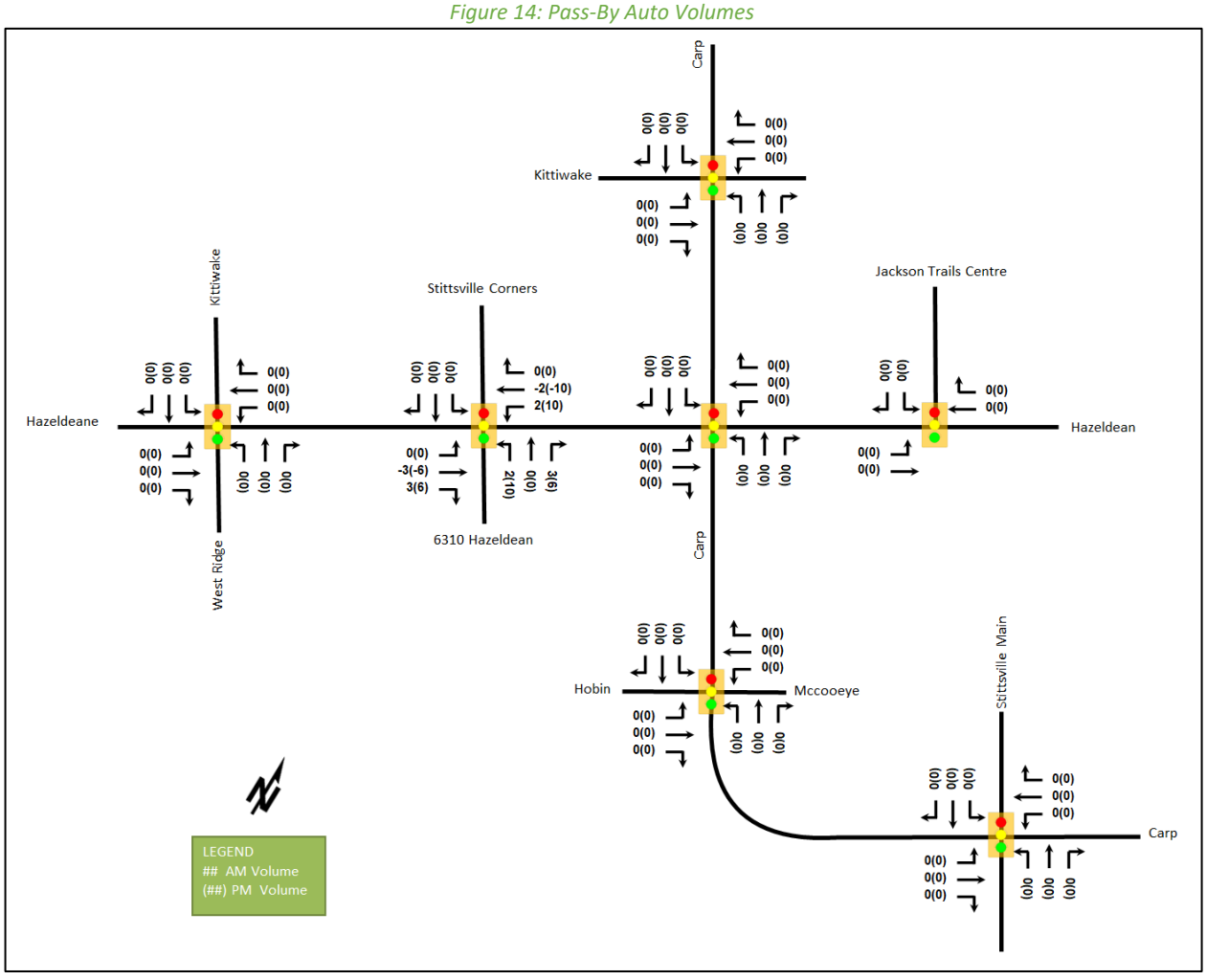
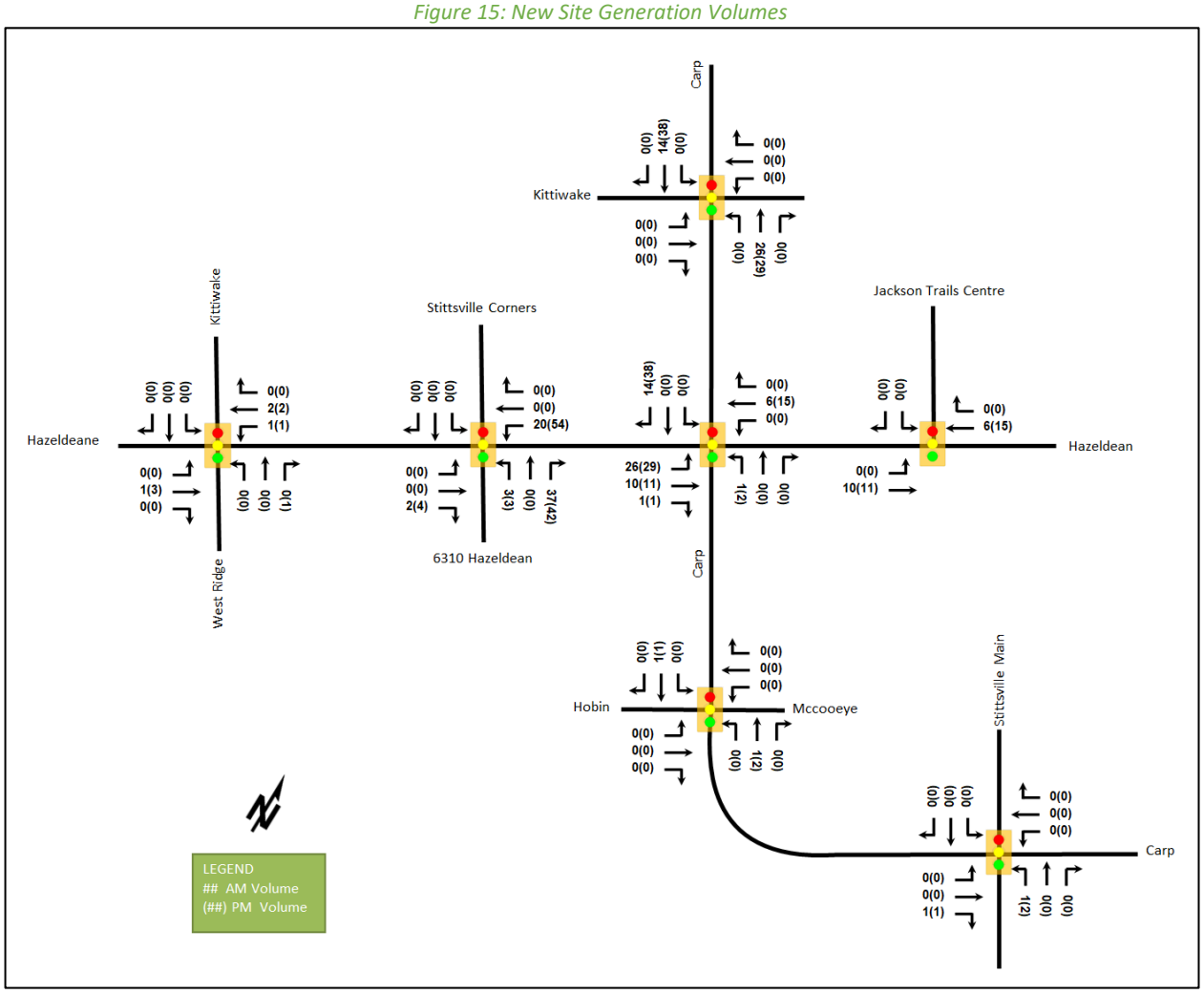


Figure 15: New Site Generation Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The widening of Carp Road is the only confirmed project within the study horizons and is considered at future horizons.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The TRANS model plots are provided in Appendix F.

In general, the growth rates in the study area derived from the two TRANS model horizons are projected to be positive in all directions. When comparing the existing volumes to 2031 horizons, the existing volumes for all directions in the study area have exceeded the forecasted volumes. Given the TRANS model rates are low, the growth rates derived were rounded to the nearest 0.25% and will be peak-directionally applied to the appropriate roadway's mainline volumes and to the appropriate major turning movements at the intersections to account for external area growth. Table 15 summarizes the growth rates from the TRANS model and Table 16 summarizes the growth rates applied within the study area.

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

Street	TRANS Rate		Existing to 2031	
	Eastbound	Westbound	Eastbound	Westbound
Hazeldean Rd	0.55%	0.09%	-4.63%	-3.81%
	Northbound	**Southbound**	**Northbound**	**Southbound**
Carp Rd	2.62%	0.24%	-5.63%	-2.41%

Table 16: Study Area Growth Rates Applied

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Hazeldean Rd	0.50%	0%	0%	0.50%
	Northbound	**Southbound**	**Northbound**	**Southbound**
Carp Rd	2.50%	0.25%	0.25%	2.50%

6.3 Other Developments

The background developments explicitly considered in the background conditions (Section 6.2) include:

- 6171 Hazeldean Road

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

7 Demand Rationalization

7.1 2027 Future Background Operations

Figure 16 illustrates the 2027 background volumes and Table 17 summarizes the 2027 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2027 future background horizon are provided in Appendix H.

Figure 16: 2027 Future Background Volumes

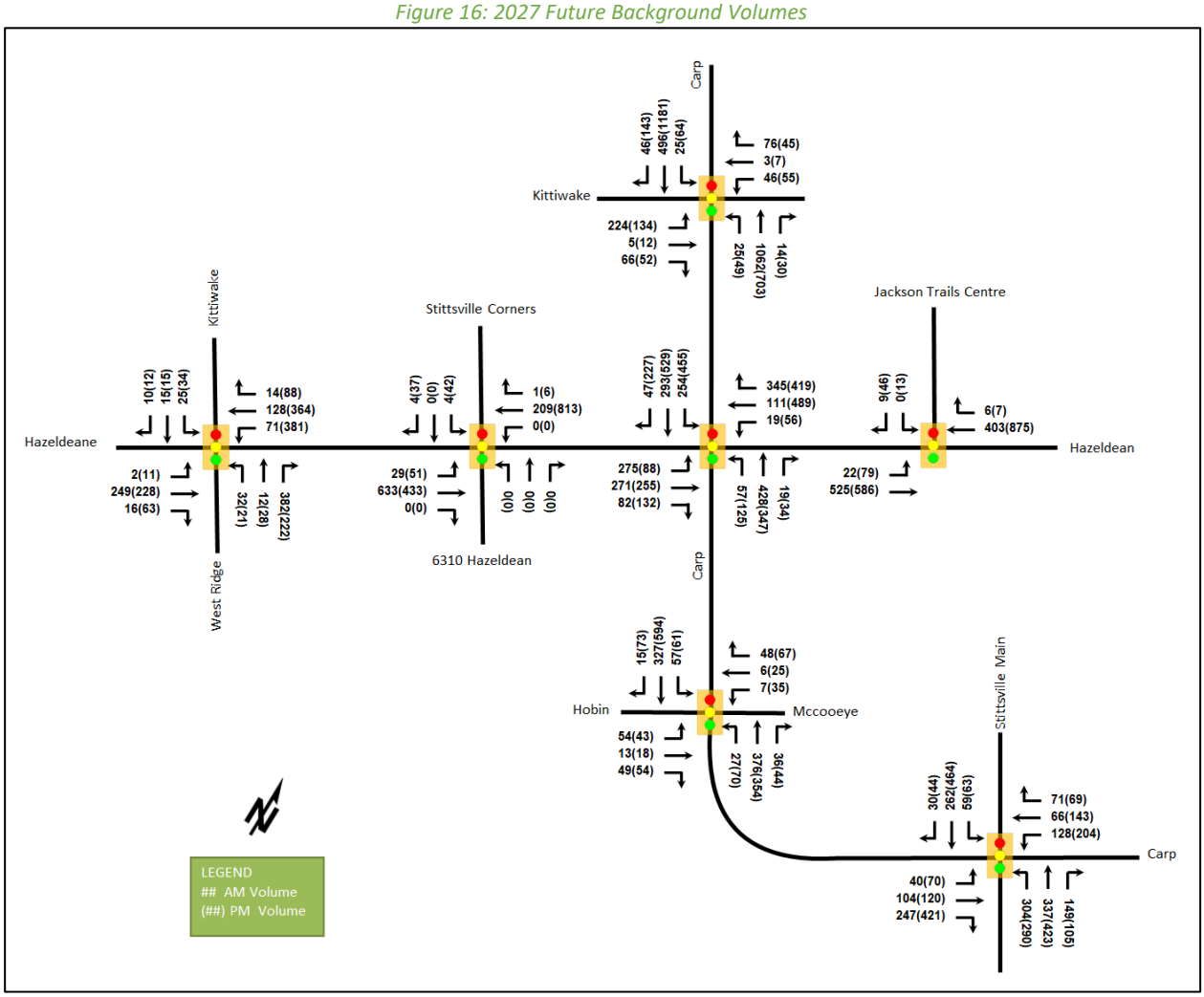


Table 17: 2027 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at West Ridge Dr /Kittiwake Dr *Signalized*	EBL	A	0.00	7.5	1.0	A	0.02	3.5	2.2
	EBT/R	A	0.29	8.5	31.4	A	0.22	3.6	27.5
	WBL	A	0.13	8.1	10.8	A	0.47	4.5	29.9
	WBT/R	A	0.16	7.4	17.1	A	0.34	2.6	13.0
	NBL/T	A	0.15	17.1	9.2	A	0.33	55.1	21.5
	NBR	B	0.62	7.1	15.6	B	0.63	14.8	21.3
	SBL	A	0.09	16.3	6.2	A	0.27	53.7	16.5
	SBT/R	A	0.07	12.2	5.3	A	0.18	33.6	11.4
	Overall	**A**	**0.28**	**8.4**	-	**A**	**0.46**	**8.7**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Stittsville Corners Mall ***Signalized***	EBL	A	0.03	1.1	2.6	A	0.11	2.8	3.9
	EBT/R	A	0.20	0.9	18.6	A	0.16	2.1	11.0
	WBL	-	-	-	-	-	-	-	-
	WBT	A	0.13	1.9	24.6	A	0.55	7.4	m54.0
	WBR	A	0.00	0.0	m0.0	A	0.00	0.0	m0.0
	NB	-	-	-	-	-	-	-	-
	SBL	A	0.03	49.0	4.2	A	0.35	59.5	20.6
	SBR	A	0.03	0.2	0.0	A	0.22	18.5	10.1
	Overall	**A**	**0.22**	**1.4**	**-**	**A**	**0.56**	**7.4**	**-**
Hazeldean at Jackson Trails Centre Mall ***Signalized***	EBL	A	0.03	0.3	m0.4	A	0.17	1.2	m1.2
	EBT	A	0.17	0.3	2.8	A	0.21	0.7	3.7
	WBT/R	A	0.14	0.8	11.9	A	0.32	2.9	29.2
	SB	A	0.02	0.1	0.0	A	0.34	25.6	15.8
	Overall	**A**	**0.19**	**0.5**	**-**	**A**	**0.32**	**2.8**	**-**
Hazeldean Rd at Carp Rd ***Signalized***	EBL	E	0.92	72.0	66.2	A	0.44	26.3	22.4
	EBT/R	A	0.41	29.7	35.3	A	0.28	13.9	27.5
	WBL	A	0.17	43.3	9.8	A	0.24	36.6	22.6
	WBT	A	0.49	51.4	36.8	**F**	**1.01**	**84.4**	**#194.3**
	WBR	B	0.70	14.6	44.3	B	0.63	17.7	60.6
	NBL	A	0.46	60.8	24.6	B	0.63	64.0	46.0
	NBT/R	A	0.32	24.7	61.3	A	0.46	39.7	55.1
	SBL	B	0.67	49.1	40.3	D	0.83	71.4	75.7
	SBT	A	0.37	38.9	97.6	E	1.00	76.2	**#210.9**
	SBR	A	0.06	5.7	5.7	A	0.40	15.3	34.3
	Overall	**B**	**0.64**	**36.6**	**-**	**E**	**0.94**	**50.0**	**-**
Carp Rd at Echowoods Ave/Kittiwake Dr ***Signalized***	EBL	D	0.82	64.9	71.3	B	0.69	65.4	48.0
	EBT/R	A	0.19	9.7	11.4	A	0.24	16.3	13.7
	WBL	A	0.17	34.5	16.9	A	0.29	46.8	22.5
	WBT	A	0.20	8.8	11.5	A	0.21	16.1	11.7
	NBL	A	0.05	8.6	m3.7	A	0.18	6.2	m6.5
	NBT/R	A	0.55	15.3	m122.6	A	0.35	9.4	48.4
	SBL	A	0.09	9.0	5.6	A	0.13	5.8	8.8
	SBT/R	A	0.29	13.3	49.5	B	0.61	14.8	136.8
	Overall	**B**	**0.62**	**19.9**	**-**	**B**	**0.61**	**16.3**	**-**
Carp Rd at McCooeye Ln/Hobin St ***Signalized***	EB	A	0.14	5.2	10.8	A	0.13	4.9	10.8
	WB	A	0.07	3.4	5.2	A	0.14	3.9	10.0
	NBL	A	0.17	31.1	m9.0	E	0.91	**116.6**	**m#26.9**
	NBT/R	E	0.93	64.4	**#114.1**	E	0.96	73.4	**m#121.0**
	SBL	A	0.51	43.3	**#22.0**	B	0.69	70.7	**#30.3**
	SBT/R	C	0.76	38.6	**#82.9**	**F**	**1.56**	**291.6**	**#230.7**
	Overall	**A**	**0.37**	**43.2**	**-**	**A**	**0.53**	**165.0**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at Stittsville Main St ***Signalized***	EBL	A	0.18	34.5	m4.9	A	0.38	32.5	m3.7
	EBT	A	0.32	37.6	m12.1	A	0.40	34.9	m6.1
	EBR	A	0.55	16.0	m13.2	C	0.77	22.1	m0.0
	WBL	A	0.58	39.0	30.3	A	0.54	26.6	37.5
	WBT/R	A	0.39	17.6	20.5	A	0.37	19.6	34.4
	NBL	A	0.48	9.6	37.7	C	0.76	36.4	**#99.0**
	NBT/R	A	0.50	14.5	90.9	C	0.73	32.5	**#158.8**
	SBL	A	0.11	7.1	8.5	A	0.20	14.6	13.1
	SBT	A	0.32	16.6	48.4	E	0.91	55.1	**#132.5**
	SBR	A	0.04	0.1	0.0	A	0.08	0.3	0.0
	Overall	**A**	**0.56**	**17.5**	**-**	**C**	**0.77**	**32.9**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

Intersections within the study area will operate similar to existing condition with the incremental improvement to the intersection operations. It is predominantly a result of the peak hour factor adjustment to 1.00 for forecasted conditions. The anticipated widening of Carp Road will improve operations at the intersections of Hazeldean Road at Carp Road and Carp Road at Echowoods Avenue/Kittiwake Drive. The overall LOS at Hazeldean Road at Carp Road intersection will be decreased from 0.76 to 0.64 during AM peak hour, and from 1.05 to 0.94 during PM peak hour. During PM peak hour, the westbound through will be over theoretical capacity and the southbound through movements may be subject to extended queues. The overall LOS at Carp Road at Echowoods Avenue/Kittiwake Drive will be decreased from 0.92 to 0.63 during AM peak hour, and from 0.91 to 0.62 during PM peak hour.

The intersection of Carp Road at McCooeye Lane/Hobin Street may be subject to extended queues on the northbound and southbound shared through/right-turn and southbound left-turn movements during AM peak hour and on. During PM peak hour, the southbound shared through/right-turn movements will be over theoretical capacity and may be subject to high delays and extended queues. Also, the southbound left-turn movements and northbound shared through/right-turn may be subject to extended queues, and the northbound left-turn movements may be subject to high delays and extended queues.

At the intersection of Carp Road at Stittsville Main Street, the northbound movements during AM peak hour and southbound through movements during PM peak hour may be subject to extended queues.

Similar to the existing conditions, the signal timing plans can be updated throughout the study area to improve the operations for the above noted capacity issues. Table 18 summarizes the individual intersections with optimized timing to illustrate the extent of the potential improvements to the conditions that may be achieved. The City will need to coordinate these operations along Hazeldean Road and Carp Road. The Synchro worksheets for intersections with optimized timing in the 2027 future background horizon are provided in Appendix I.

Table 18: 2027 Future Background Operations – Optimized Signal Timing

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Carp Rd *Signalized*	EBL	B	0.69	38.0	58.8	A	0.60	37.7	**#22.2**
	EBT/R	A	0.33	24.0	30.9	A	0.30	15.6	27.6
	WBL	A	0.17	45.2	10.3	A	0.22	33.5	21.5
	WBT	A	0.49	52.8	38.8	E	0.93	66.8	**#174.6**
	WBR	B	0.70	15.2	46.4	A	0.59	14.8	52.7
	NBL	A	0.50	65.5	25.6	D	0.88	**104.1**	**#65.6**
	NBT/R	A	0.37	28.9	63.5	A	0.41	35.8	52.5
	SBL	C	0.71	53.4	41.7	D	0.87	78.1	**#82.1**
	SBT	A	0.42	43.0	98.0	D	0.83	43.8	**#167.7**
	SBR	A	0.07	5.7	5.7	A	0.34	9.4	27.1
	Overall	**B**	**0.61**	**33.6**	-	**D**	**0.90**	**43.6**	-
Carp Rd at McCooeye Ln/Hobin St *Signalized*	EB	A	0.15	8.3	15.9	A	0.20	14.2	21.3
	WB	A	0.07	5.8	7.7	A	0.21	13.0	21.6
	NBL	A	0.12	17.0	m6.5	A	0.41	22.8	m13.9
	NBT/R	C	0.76	32.8	82.6	A	0.50	19.4	m66.8
	SBL	A	0.32	22.9	13.4	A	0.17	11.9	10.3
	SBT/R	B	0.63	26.6	56.4	D	0.81	26.9	109.9
	Overall	**A**	**0.37**	**25.3**	-	**A**	**0.52**	**21.7**	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

7.2 2032 Future Background Operations

Figure 17 illustrates the 2032 background volumes and Table 19 summarizes the 2032 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2032 future background horizon are provided in Appendix J.

Figure 17: 2032 Future Background Volumes

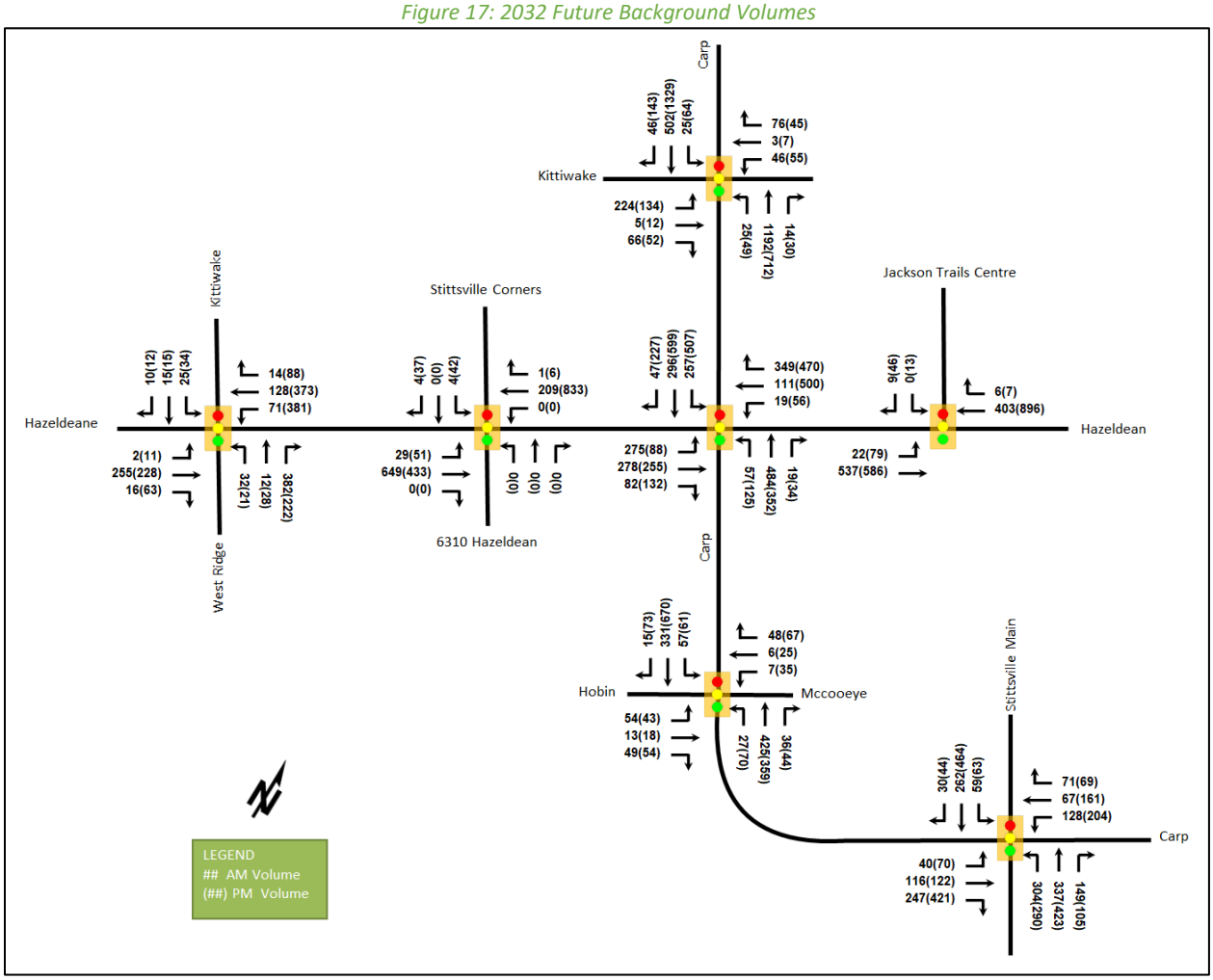


Table 19: 2032 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at West Ridge Dr /Kittiwake Dr *Signalized*	EBL	A	0.00	7.5	1.0	A	0.02	3.5	2.2
	EBT/R	A	0.30	8.6	32.3	A	0.22	3.6	27.5
	WBL	A	0.14	8.1	10.8	A	0.47	4.4	26.9
	WBT/R	A	0.16	7.4	17.1	A	0.34	2.6	12.9
	NBL/T	A	0.15	17.1	9.2	A	0.33	55.1	21.5
	NBR	B	0.62	7.1	15.6	B	0.63	14.8	21.3
	SBL	A	0.09	16.3	6.2	A	0.27	53.7	16.5
	SBT/R	A	0.07	12.2	5.3	A	0.18	33.6	11.4
	Overall	**A**	**0.29**	**8.5**	-	**A**	**0.46**	**8.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Stittsville Corners Mall ***Signalized***	EBL	A	0.03	1.1	2.6	A	0.11	2.8	4.0
	EBT/R	A	0.21	0.9	19.1	A	0.16	2.1	11.0
	WBL	-	-	-	-	-	-	-	-
	WBT	A	0.13	2.0	24.6	A	0.57	8.1	m57.1
	WBR	A	0.00	0.0	m0.0	A	0.00	0.0	m0.0
	NB	-	-	-	-	-	-	-	-
	SBL	A	0.03	49.0	4.2	A	0.35	59.5	20.6
	SBR	A	0.03	0.2	0.0	A	0.22	18.5	10.1
	Overall	**A**	**0.22**	**1.4**	**-**	**A**	**0.57**	**7.8**	**-**
Hazeldean at Jackson Trails Centre Mall ***Signalized***	EBL	A	0.03	0.3	m0.4	A	0.17	1.2	m1.0
	EBT	A	0.18	0.3	2.6	A	0.21	0.6	m3.4
	WBT/R	A	0.14	0.8	11.9	A	0.32	2.9	30.2
	SB	A	0.02	0.1	0.0	A	0.34	25.6	15.8
	Overall	**A**	**0.20**	**0.5**	**-**	**A**	**0.33**	**2.8**	**-**
Hazeldean Rd at Carp Rd ***Signalized***	EBL	E	0.92	72.0	66.2	A	0.44	26.3	22.4
	EBT/R	A	0.41	30.0	36.3	A	0.28	13.9	27.5
	WBL	A	0.17	43.5	9.7	A	0.24	36.7	22.6
	WBT	A	0.49	51.4	36.5	**F**	**1.03**	**89.7**	**#200.3**
	WBR	B	0.70	14.6	44.6	B	0.68	18.7	70.7
	NBL	A	0.46	60.8	24.6	B	0.63	64.0	46.0
	NBT/R	A	0.36	25.4	69.5	A	0.48	40.5	55.8
	SBL	B	0.67	49.0	40.6	D	0.89	74.1	**#89.5**
	SBT	A	0.38	39.0	98.5	**F**	**1.13**	**114.3**	**#249.3**
	SBR	A	0.06	5.7	5.8	A	0.41	18.8	40.1
	Overall	**B**	**0.64**	**36.5**	**-**	**F**	**1.01**	**59.0**	**-**
Carp Rd at Echowoods Ave/Kittiwake Dr ***Signalized***	EBL	D	0.82	64.9	71.3	B	0.69	65.4	48.0
	EBT/R	A	0.19	9.7	11.4	A	0.24	16.3	13.7
	WBL	A	0.17	34.5	16.9	A	0.29	46.8	22.5
	WBT/R	A	0.20	8.8	11.5	A	0.21	16.1	11.7
	NBL	A	0.05	8.2	m3.7	A	0.21	7.0	m6.0
	NBT/R	B	0.62	16.3	m143.4	A	0.35	9.6	50.5
	SBL	A	0.10	9.2	5.6	A	0.13	5.8	8.8
	SBT/R	A	0.30	13.3	50.2	B	0.68	16.5	164.5
	Overall	**B**	**0.67**	**20.2**	**-**	**B**	**0.67**	**17.2**	**-**
Carp Rd at McCooeye Ln/Hobin St ***Signalized***	EB	A	0.14	5.2	10.8	A	0.13	5.7	12.0
	WB	A	0.07	3.4	5.2	A	0.14	3.9	10.0
	NBL	A	0.16	30.3	m9.0	E	0.91	**115.8**	**m#27.8**
	NBT/R	**F**	**1.01**	**81.3**	**#132.9**	E	0.97	74.8	**m#123.4**
	SBL	B	0.66	64.9	**#26.6**	C	0.72	76.8	**#30.9**
	SBT/R	C	0.74	37.6	**#84.5**	**F**	**1.74**	**368.3**	**#261.4**
	Overall	**A**	**0.41**	**52.2**	**-**	**A**	**0.58**	**209.2**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at Stittsville Main St *Signalized*	EBL	A	0.18	34.0	m4.9	A	0.38	32.3	m3.3
	EBT	A	0.35	38.1	m13.6	A	0.40	34.9	m5.4
	EBR	A	0.55	15.7	m12.8	C	0.77	23.3	m0.0
	WBL	A	0.58	39.1	30.4	A	0.54	26.7	37.5
	WBT/R	A	0.39	17.8	21.0	A	0.40	20.8	38.1
	NBL	A	0.48	9.8	37.7	C	0.76	36.4	**#99.0**
	NBT/R	A	0.50	14.6	90.9	C	0.73	32.5	**#158.8**
	SBL	A	0.11	7.1	8.5	A	0.20	14.6	13.1
	SBT	A	0.33	16.7	48.4	E	0.91	55.3	**#132.5**
	SBR	A	0.04	0.1	0.0	A	0.08	0.3	0.0
	Overall	**A**	**0.56**	**17.7**	**-**	**C**	**0.77**	**33.2**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections operate similar to 2027 future background conditions. However, the westbound through movement during PM peak hour at Hazeldean Road and Carp Road intersection and the northbound shared through/right-turn movement during AM peak hour at Carp Road and McCooeye Lane/Hobin Street intersection will be over theoretical capacity and may be subject to high delays and extended queues.

Similar to the existing conditions, the signal timing plans can be updated throughout the study area to improve the operations for the above noted capacity issues. Table 20 summarizes the individual intersections with optimized timing to illustrate the extent of the potential improvements to the conditions that may be achieved. The City will need to coordinate these operations along Hazeldean Road and Carp Road. The Synchro worksheets for intersections with optimized timing in the 2032 future background horizon are provided in Appendix K.

Table 20: 2032 Future Background Operations – Optimized Signal Timing

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Carp Rd *Signalized*	EBL	C	0.73	41.7	60.4	B	0.67	47.8	**#27.4**
	EBT/R	A	0.35	25.5	32.9	A	0.31	15.8	29.4
	WBL	A	0.17	45.3	10.3	A	0.22	33.3	21.4
	WBT	A	0.49	52.7	38.6	E	0.97	73.8	**#184.9**
	WBR	C	0.72	16.8	49.5	B	0.65	15.2	61.3
	NBL	A	0.50	65.5	25.6	E	0.91	**109.8**	**#65.6**
	NBT/R	A	0.40	28.6	70.5	A	0.45	39.2	56.6
	SBL	C	0.71	53.6	42.4	D	0.81	65.3	82.8
	SBT	A	0.41	42.6	98.8	E	0.92	55.7	**#198.6**
	SBR	A	0.07	5.7	5.8	A	0.34	13.8	36.1
	Overall	**B**	**0.62**	**34.3**	**-**	**E**	**0.95**	**46.2**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at McCooeye Ln/Hobin St *Signalized*	EB	A	0.16	9.4	17.0	A	0.23	16.1	22.1
	WB	A	0.08	6.5	8.2	A	0.24	14.9	22.7
	NBL	A	0.10	15.9	m6.3	A	0.40	20.8	m13.7
	NBT/R	C	0.78	33.0	89.7	A	0.46	16.8	m63.1
	SBL	A	0.32	21.1	12.8	A	0.15	9.8	9.7
	SBT/R	A	0.58	23.3	53.1	D	0.82	25.2	126.3
	Overall	**A**	**0.40**	**24.7**	**-**	**A**	**0.57**	**20.6**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

7.3 Modal Share Sensitivity and Demand Rationalization Conclusions

Capacity constraints have been noted at the intersection of Hazeldean Road at Carp Road and Carp Road at McCooeye Lane/Hobin Street.

At the intersection of Hazeldean Road at Carp Road, the site volumes are projected to be 26 on eastbound left-turn movement (9.45% of existing volumes) during AM peak hour, 15 on westbound through movement (3.28% of existing volumes), and none on southbound through movement during PM peak hour. It is expected that the City can make signal timing adjustments to offset the existing and future capacity constraints, which would also be required once Carp Road is widened. The intersection of McCooeye Lane/Hobin Street may not achieve optimal operations due to the proximity to the Stittsville Main Street intersection and likely is used as a metering intersection to reduce the constraints along Stittsville Main Street.

8 Transportation Demand Management

8.1 Context for TDM

The mode shares used within the TIA represent the recommended shares for the Kanata/Stittsville. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided.

The subject site is within the Hazeldean Arterial Mainstreet design priority area. Total bedrooms within the development are subject to the final unit count and layout selections by purchasers, and no age restrictions are noted.

8.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel, and those assumptions have been carried through the analysis. The unmodified district mode shares have been applied, risks to other network users from failing to meet mode share targets are low.

8.3 TDM Program

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

- Display area walking, cycling, and transit maps with route schedules
- Provide a multimodal travel option information package to new residents
- Contract with the provider to install on-site carshare vehicles and promote their use by residents
- Inclusion of a 1-year Presto card for first time new apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site

- Unbundle parking cost from the purchase or rental cost

9 Transit

9.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 21 summarizes the transit trip generation.

Table 21: Trip Generation by Transit Mode

Travel Mode	Mode Share	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Transit	Varies	12	27	39	16	12	28

The proposed development is anticipated to generate an additional 39 AM peak hour transit trips and 28 PM peak hour transit trips. Of these trips, 27 outbound AM trips and 16 inbound PM trips are anticipated. From the trip distribution found in Section 5.3, these values can be further broken down.

Site-generated outbound AM trips break down to eight trips to the north, one trips to the south, 17 trips to the east, and one trip to the west. Site-generated inbound PM trips break down to four trips from the north, one trip from the south, ten trips from the east, and one trip from the west.

Trips are mainly from/ to north and east and may be assumed to be serviced by routes #61 and #262. The existing transit routes provide up to 6 buses in the peak direction, and the increases in ridership from site-generated trips would result in an averaged increase of under three additional riders per bus. Therefore, no service changes are anticipated as being required to accommodate site-generated transit trips.

9.2 Transit Priority

Examining the study area intersection delays, negligible impacts are noted on the transit movements at the study area intersections as a result of the development site traffic.

10 Network Intersection Design

10.1 Network Intersection Control

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

10.2 Network Intersection Design

10.2.1 2027 Future Total Network Intersection Operations

Figure 18 illustrates the 2027 future total volumes and 2027 future total network intersection operations are summarized below in Table 22. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix M.

Figure 18: 2027 Future Total Volumes

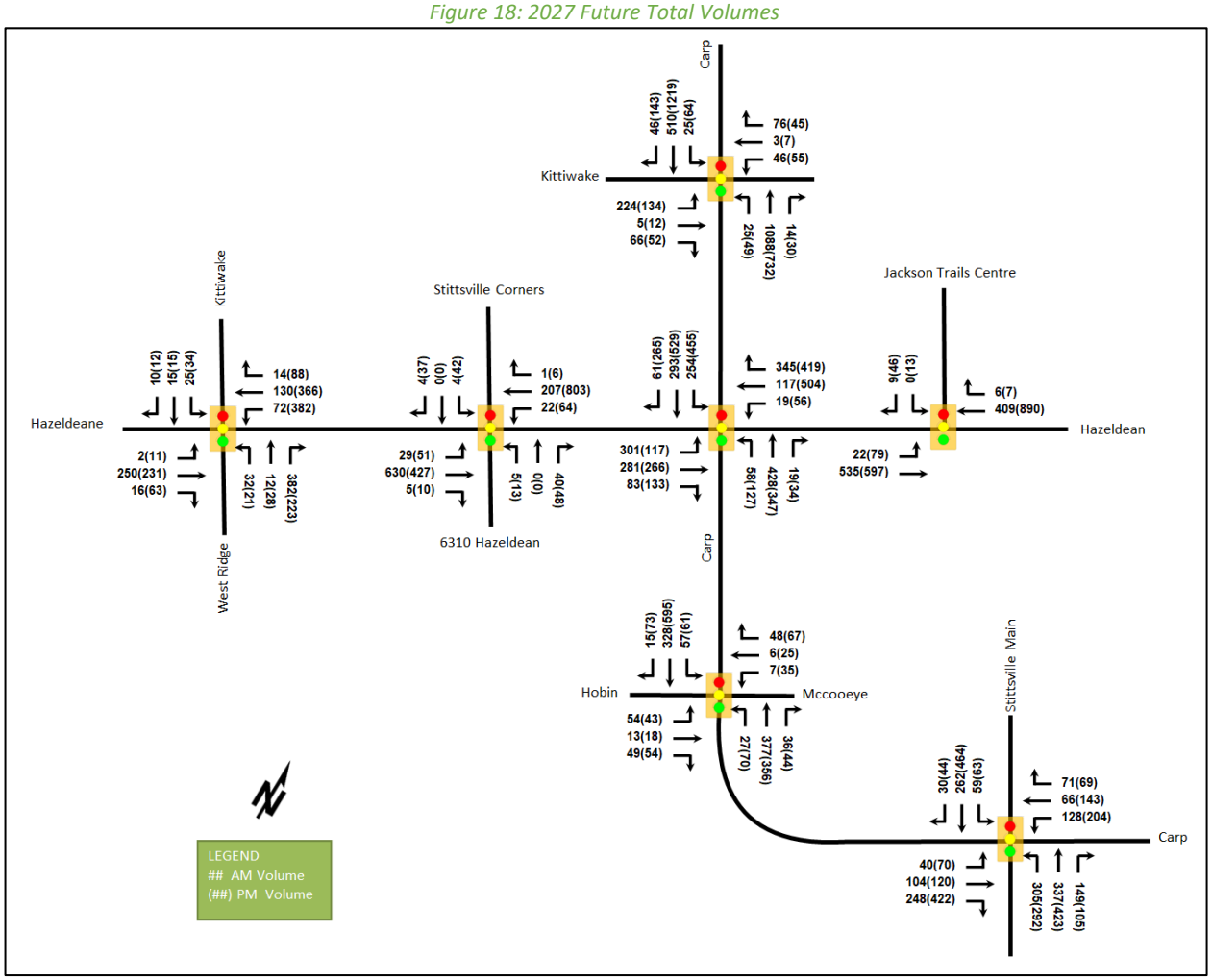


Table 22: 2027 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at West Ridge Dr /Kittiwake Dr *Signalized*	EBL	A	0.00	7.5	1.0	A	0.02	3.5	2.2
	EBT/R	A	0.29	8.5	31.6	A	0.22	3.6	27.7
	WBL	A	0.14	8.2	10.8	A	0.48	4.7	39.9
	WBT/R	A	0.16	7.4	17.3	A	0.34	2.8	14.5
	NBL/T	A	0.15	17.1	9.2	A	0.33	55.1	21.5
	NBR	B	0.62	7.1	15.6	B	0.64	14.8	21.5
	SBL	A	0.09	16.3	6.2	A	0.27	53.7	16.5
	SBT/R	A	0.07	12.2	5.3	A	0.18	33.6	11.4
	Overall	**A**	**0.28**	**8.4**	-	**A**	**0.46**	**8.7**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Stittsville Corners Mall ***Signalized***	EBL	A	0.03	2.3	2.6	A	0.11	2.7	3.9
	EBT/R	A	0.23	2.6	18.6	A	0.16	2.1	11.0
	WBL	A	0.04	2.6	4.4	A	0.09	2.8	m3.3
	WBT	A	0.14	2.2	23.1	A	0.55	6.5	m53.0
	WBR	A	0.00	0.0	m0.0	A	0.00	0.0	m0.0
	NB	A	0.27	21.8	12.2	A	0.34	24.1	15.6
	SBL	A	0.04	49.5	4.3	A	0.33	58.2	20.5
	SBR	A	0.03	0.2	0.0	A	0.22	18.6	10.1
	Overall	**A**	**0.22**	**3.6**	-	**A**	**0.55**	**7.3**	-
Hazeldean at Jackson Trails Centre Mall ***Signalized***	EBL	A	0.03	0.3	m0.4	A	0.17	1.2	m1.1
	EBT	A	0.18	0.3	2.8	A	0.21	0.7	3.7
	WBT/R	A	0.14	0.8	12.1	A	0.32	2.9	29.8
	SB	A	0.02	0.1	0.0	A	0.34	25.6	15.8
	Overall	**A**	**0.20**	**0.5**	-	**A**	**0.32**	**2.8**	-
Hazeldean Rd at Carp Rd ***Signalized***	EBL	**F**	**1.01**	**92.0**	**#77.4**	A	0.55	31.0	30.4
	EBT/R	A	0.42	28.7	37.7	A	0.29	15.3	31.3
	WBL	A	0.17	43.0	9.8	A	0.25	37.2	22.7
	WBT	A	0.51	51.9	38.6	**F**	**1.07**	**100.5**	**#202.0**
	WBR	B	0.69	14.4	44.4	B	0.64	18.8	63.9
	NBL	A	0.46	60.8	25.0	B	0.64	64.0	46.7
	NBT/R	A	0.32	24.9	61.3	A	0.46	39.7	55.1
	SBL	B	0.67	49.0	40.3	D	0.83	71.1	75.7
	SBT	A	0.37	39.2	97.8	E	1.00	77.4	**#211.4**
	SBR	A	0.08	9.1	8.5	A	0.45	15.7	39.9
	Overall	**B**	**0.67**	**39.5**	-	**E**	**0.97**	**52.6**	-
Carp Rd at Echowoods Ave/Kittiwake Dr ***Signalized***	EBL	D	0.82	64.9	71.3	B	0.69	65.4	48.0
	EBT/R	A	0.19	9.7	11.4	A	0.24	16.3	13.7
	WB	A	0.17	34.5	16.9	A	0.29	46.8	22.5
	WBT/R	A	0.20	8.8	11.5	A	0.21	16.1	11.7
	NBL	A	0.05	8.8	m3.8	A	0.19	6.9	m7.0
	NBT/R	A	0.56	15.8	m122.0	A	0.36	10.3	52.8
	SBL	A	0.09	9.0	5.6	A	0.14	5.8	8.8
	SBT/R	A	0.30	13.4	51.1	B	0.63	15.2	143.7
	Overall	**B**	**0.63**	**20.1**	-	**B**	**0.63**	**16.7**	-
Carp Rd at McCooeye Ln/Hobin St ***Signalized***	EB	A	0.14	5.2	10.8	A	0.13	4.9	10.8
	WB	A	0.07	3.4	5.2	A	0.14	3.9	10.0
	NBL	A	0.17	31.1	m8.9	E	0.91	**116.5**	**m#27.0**
	NBT/R	E	0.93	64.5	**#114.4**	E	0.96	74.4	**m#121.1**
	SBL	A	0.52	43.6	**#22.2**	B	0.69	72.1	**#30.5**
	SBT/R	C	0.76	38.6	**#83.2**	**F**	**1.56**	**292.6**	**#231.1**
	Overall	**A**	**0.37**	**43.3**	-	**A**	**0.53**	**165.7**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at Stittsville Main St *Signalized*	EBL	A	0.18	34.4	m4.8	A	0.38	32.5	m3.7
	EBT	A	0.32	37.7	m12.1	A	0.40	34.9	m6.1
	EBR	A	0.55	16.1	m13.3	C	0.77	22.3	m0.0
	WBL	A	0.58	39.0	30.3	A	0.54	26.6	37.5
	WBT/R	A	0.39	17.6	20.5	A	0.37	19.6	34.4
	NBL	A	0.48	9.7	38.0	C	0.76	36.7	**#100.1**
	NBT/R	A	0.50	14.5	90.9	C	0.73	32.5	**#158.8**
	SBL	A	0.11	7.1	8.5	A	0.20	14.6	13.1
	SBT	A	0.32	16.6	48.4	E	0.91	55.3	**#132.5**
	SBR	A	0.04	0.1	0.0	A	0.08	0.3	0.0
	Overall	**A**	**0.56**	**17.5**	**-**	**C**	**0.77**	**33.0**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

The network intersections at the 2027 future total horizon are anticipated to operate similarly to the 2027 background conditions. On eastbound left-turn movement at Hazeldean Road and Carp Road intersection will be over theoretical capacity and may be subject to high delays and extended queues.

Similar to the existing conditions, the signal timing plans can be updated throughout the study area to improve the operations for the above noted capacity issues. Table 23 summarizes the individual intersections with optimized timing to illustrate the extent of the potential improvements to the conditions that may be achieved. The City will need to coordinate these operations along Hazeldean Road and Carp Road. The Synchro worksheets for intersections with optimized timing in the 2027 future total horizon are provided in Appendix N.

Table 23: 2027 Future Total Operations – Optimized Signal Timing

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Carp Rd *Signalized*	EBL	C	0.76	40.7	66.5	C	0.78	55.7	**#38.0**
	EBT/R	A	0.34	23.1	33.4	A	0.30	16.0	31.7
	WBL	A	0.17	45.2	10.4	A	0.22	31.6	20.9
	WBT	A	0.51	53.5	41.2	E	0.95	68.1	**#179.2**
	WBR	C	0.71	16.9	50.1	A	0.60	14.6	54.3
	NBL	A	0.52	67.0	**#26.6**	D	0.89	**105.7**	**#67.1**
	NBT/R	A	0.37	28.9	62.7	A	0.45	39.1	55.7
	SBL	C	0.72	54.5	43.0	C	0.80	68.5	75.6
	SBT	A	0.42	43.7	98.0	D	0.86	50.4	**#170.9**
	SBR	A	0.09	9.3	8.5	A	0.40	13.4	38.5
	Overall	**B**	**0.64**	**34.4**	**-**	**E**	**0.91**	**44.5**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at McCooeye Ln/Hobin St *Signalized*	EB	A	0.15	8.3	15.9	A	0.20	14.3	21.3
	WB	A	0.08	5.8	7.7	A	0.21	13.0	21.6
	NBL	A	0.12	17.0	m6.4	A	0.40	22.6	m14.0
	NBT/R	C	0.76	32.8	82.8	A	0.50	19.4	m67.0
	SBL	A	0.32	22.8	13.5	A	0.17	11.8	10.3
	SBT/R	B	0.63	26.6	56.6	D	0.81	26.8	110.0
	Overall	**A**	**0.37**	**25.3**	-	**A**	**0.52**	**21.7**	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

10.2.2 2032 Future Total Network Intersection Operations

Figure 19 illustrates the 2032 future total volumes and 2032 future total network intersection operations are summarized below in Table 24. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix O.

Figure 19: 2032 Future Total Volumes

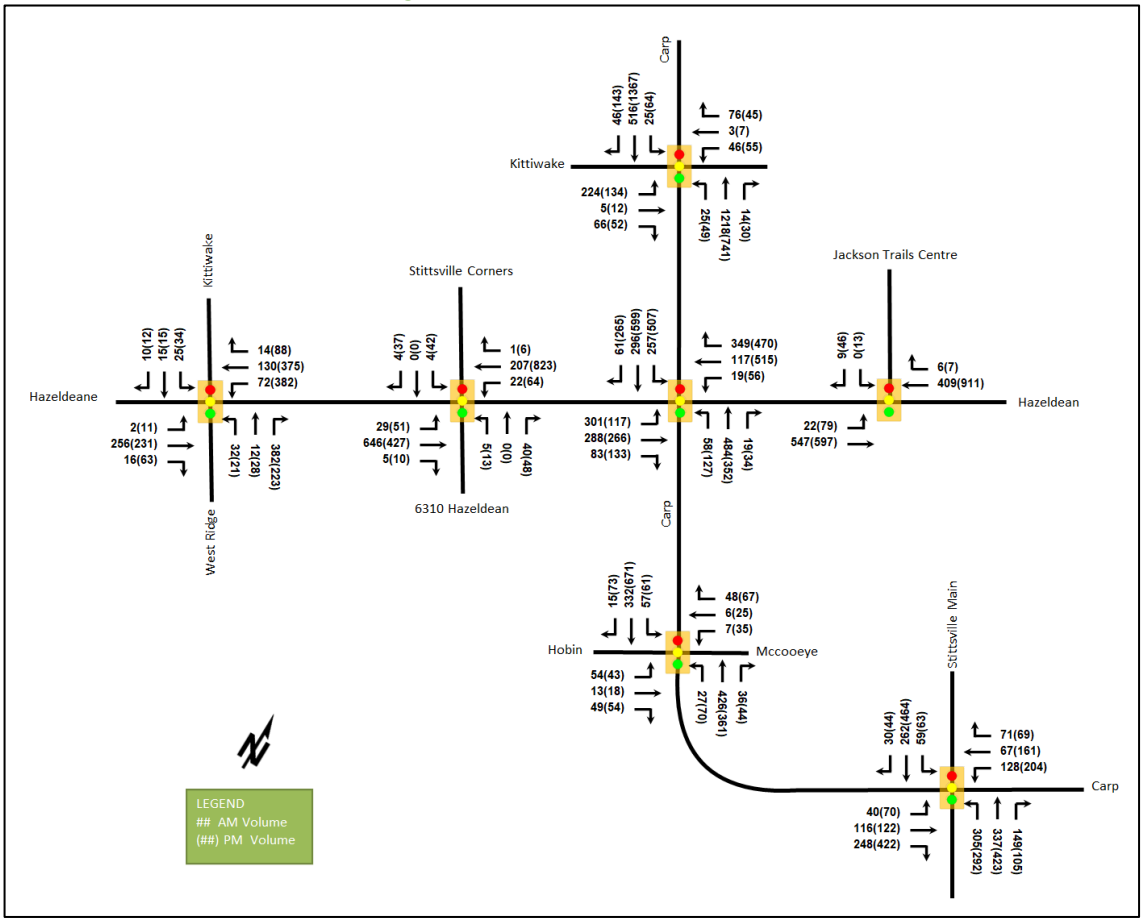


Table 24: 2032 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at West Ridge Dr /Kittiwake Dr ***Signalized***	EBL	A	0.00	7.5	1.0	A	0.02	3.5	2.2
	EBT/R	A	0.30	8.6	32.3	A	0.22	3.6	27.7
	WBL	A	0.14	8.2	10.9	A	0.48	4.6	35.7
	WBT/R	A	0.16	7.4	17.3	A	0.35	2.7	14.4
	NBL/T	A	0.15	17.1	9.2	A	0.33	55.1	21.5
	NBR	B	0.62	7.1	15.6	B	0.64	14.8	21.5
	SBL	A	0.09	16.3	6.2	A	0.27	53.7	16.5
	SBT/R	A	0.07	12.2	5.3	A	0.18	33.6	11.4
	Overall	**A**	**0.29**	**8.5**	-	**A**	**0.46**	**8.7**	-
Hazeldean Rd at Stittsville Corners Mall ***Signalized***	EBL	A	0.03	2.3	2.6	A	0.11	2.7	3.9
	EBT/R	A	0.24	2.6	19.1	A	0.16	2.1	11.0
	WBL	A	0.04	2.6	4.4	A	0.09	2.7	m3.2
	WBT	A	0.14	2.2	23.1	A	0.56	7.0	m51.2
	WBR	A	0.00	0.0	m0.0	A	0.00	0.0	m0.0
	NB	A	0.27	21.8	12.2	A	0.34	24.1	15.6
	SBL	A	0.04	49.5	4.3	A	0.33	58.2	20.5
	SBR	A	0.03	0.2	0.0	A	0.22	18.6	10.1
	Overall	**A**	**0.23**	**3.6**	-	**A**	**0.56**	**7.6**	-
Hazeldean at Jackson Trails Centre Mall ***Signalized***	EBL	A	0.03	0.3	m0.4	A	0.17	1.2	m1.0
	EBT	A	0.18	0.3	2.6	A	0.21	0.6	m3.4
	WBT/R	A	0.14	0.8	12.1	A	0.33	3.0	30.7
	SB	A	0.02	0.1	0.0	A	0.34	25.6	15.8
	Overall	**A**	**0.20**	**0.5**	-	**A**	**0.33**	**2.8**	-
Hazeldean Rd at Carp Rd ***Signalized***	EBL	**F**	**1.01**	**91.9**	**#77.5**	A	0.55	31.0	30.4
	EBT/R	A	0.42	29.0	38.5	A	0.29	15.3	31.3
	WBL	A	0.17	43.3	9.8	A	0.25	37.4	22.6
	WBT	A	0.51	51.9	38.4	**F**	**1.09**	**107.5**	**#208.1**
	WBR	B	0.70	14.5	44.8	B	0.69	19.9	73.4
	NBL	A	0.46	60.8	25.0	B	0.64	64.0	46.7
	NBT/R	A	0.37	25.6	69.5	A	0.48	40.5	55.8
	SBL	B	0.67	48.9	40.8	D	0.89	73.7	**#90.0**
	SBT	A	0.38	39.3	98.6	**F**	**1.13**	**115.8**	**#249.4**
	SBR	A	0.08	9.2	8.7	A	0.47	19.2	47.0
	Overall	**B**	**0.67**	**39.2**	-	**F**	**1.04**	**61.6**	-
Carp Rd at Echowoods Ave/Kittiwake Dr ***Signalized***	EBL	D	0.82	64.9	71.3	B	0.69	65.4	48.0
	EBT/R	A	0.19	9.7	11.4	A	0.24	16.3	13.7
	WBL	A	0.17	34.5	16.9	A	0.29	46.8	22.5
	WBT/R	A	0.20	8.8	11.5	A	0.21	16.1	11.7
	NBL	A	0.06	8.4	m3.9	A	0.22	7.7	m6.3
	NBT/R	B	0.63	16.8	m142.5	A	0.37	10.4	54.8
	SBL	A	0.10	9.2	5.6	A	0.14	5.8	8.8
	SBT/R	A	0.31	13.5	51.7	B	0.70	16.9	172.1
	Overall	**B**	**0.68**	**20.4**	-	**B**	**0.68**	**17.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at McCooeye Ln/Hobin St *Signalized*	EB	A	0.14	5.2	10.8	A	0.13	5.7	12.0
	WB	A	0.07	3.4	5.2	A	0.14	3.9	10.0
	NBL	A	0.16	30.3	m9.0	E	0.91	**115.7**	**m#27.5**
	NBT/R	**F**	**1.01**	**81.8**	**#133.1**	E	0.98	76.5	**m#124.2**
	SBL	B	0.67	66.3	**#26.8**	C	0.73	78.5	**#31.1**
	SBT/R	C	0.75	37.7	**#85.1**	**F**	**1.74**	**369.3**	**#261.7**
	Overall	**A**	**0.41**	**39.9**	-	**A**	**0.58**	**210.1**	-
Carp Rd at Stittsville Main St *Signalized*	EBL	A	0.18	34.1	m4.9	A	0.38	32.3	m3.3
	EBT	A	0.35	38.0	m13.6	A	0.40	34.8	m5.4
	EBR	A	0.55	15.7	m13.0	C	0.77	23.5	m0.0
	WBL	A	0.58	39.1	30.4	A	0.54	26.7	37.5
	WBT/R	A	0.39	17.8	21.0	A	0.40	20.8	38.1
	NBL	A	0.48	9.8	38.0	C	0.76	36.7	**#100.1**
	NBT/R	A	0.50	14.6	90.9	C	0.73	32.5	**#158.8**
	SBL	A	0.11	7.1	8.5	A	0.20	14.6	13.1
	SBT	A	0.33	16.7	48.4	E	0.91	55.5	**#132.5**
	SBR	A	0.04	0.1	0.0	A	0.08	0.3	0.0
	Overall	**A**	**0.56**	**17.7**	-	**C**	**0.77**	**33.3**	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

The network intersection operations for the 2032 future total horizon are anticipated to operate similarly to the 2032 future background conditions.

Similar to the existing conditions, the signal timing plans can be updated throughout the study area to improve the operations for the above noted capacity issues. Table 25 summarizes the individual intersections with optimized timing to illustrate the extent of the potential improvements to the conditions that may be achieved. The City will need to coordinate these operations along Hazeldean Road and Carp Road. The Synchro worksheets for intersections with optimized timing in the 2032 future total horizon are provided in Appendix P.

Table 25: 2032 Future Total Operations – Optimized Signal Timing

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Hazeldean Rd at Carp Rd *Signalized*	EBL	C	0.78	44.0	67.6	D	0.85	70.2	**#45.6**
	EBT/R	A	0.36	24.2	34.8	A	0.31	16.3	32.7
	WBL	A	0.17	48.4	11.2	A	0.22	32.4	21.2
	WBT	A	0.51	55.7	44.0	E	0.97	72.9	**#188.9**
	WBR	C	0.74	21.2	58.1	B	0.65	15.2	62.2
	NBL	A	0.52	67.0	**#26.6**	E	0.92	**112.9**	**#67.1**
	NBT/R	A	0.41	28.9	70.1	A	0.48	40.7	57.6
	SBL	C	0.72	57.0	45.2	D	0.81	64.9	83.1
	SBT	A	0.41	38.8	94.5	E	0.95	63.0	**#203.9**
	SBR	A	0.09	7.3	7.7	A	0.40	15.8	45.6
	Overall	**B**	**0.65**	**35.2**	-	**E**	**0.97**	**48.3**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Carp Rd at McCooeye Ln/Hobin St *Signalized*	EB	A	0.16	9.4	17.0	A	0.23	16.4	22.4
	WB	A	0.08	6.5	8.2	A	0.24	15.0	22.8
	NBL	A	0.10	15.9	m6.3	A	0.40	20.5	m13.5
	NBT/R	C	0.78	33.0	89.8	A	0.46	16.7	m63.0
	SBL	A	0.32	21.1	12.8	A	0.15	9.7	9.6
	SBT/R	A	0.58	23.2	53.3	D	0.82	24.9	125.2
	Overall	**A**	**0.40**	**24.7**	**-**	**A**	**0.57**	**20.4**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
Delay = average driver delay in seconds
v/c = volume to capacity ratio
Q = 95th percentile queue measured in metres
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

10.2.3 Network Intersection MMLOS

Table 26 summarizes the MMLOS analysis for the network intersections within the study area. The existing and future conditions for both intersections will be the same and are considered in one row. The analysis of intersection along Hazeldean Road is based on Arterial Main Street, Carp Road at Kittiwake Drive/ Echowoods Avenue and Carp Road at McCooeye Lane /Hobin Street intersections are based on General Urban Area, and Carp Road at Stittsville Main Street intersection is based on Traditional Mainstreet. The MMLOS worksheets have been provided in Appendix Q.

Table 26: Study Area Intersection MMLOS Analysis

Intersection	Horizon	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Hazeldean Rd at West Ridge Dr/Kittiwake Dr		F	C	F	C	N/A	N/A	N/A	N/A	A	D
Hazeldean Rd at Stittsville Corners Mall		F	C	F	C	N/A	N/A	N/A	N/A	A	D
Hazeldean Rd at Jackson Trails Centre Mall		F	C	F	C	N/A	N/A	N/A	N/A	A	D
Hazeldean Rd at Carp Rd	Existing	F	C	F	C	N/A	N/A	C	D	F	D
	Future	F	C	F	C	N/A	N/A	C	D	F	D
Carp Rd at Echowoods Ave/ Kittiwake Dr	Existing	F	C	F	B	N/A	N/A	N/A	N/A	E	D
	Future	F	C	A	B	N/A	N/A	N/A	N/A	B	D
Carp Rd at McCooeye Ln /Hobin St		F	C	E	B	N/A	N/A	N/A	N/A	A	D
Carp Rd at Stittsville Main St		F	B	F	C	F	D	C	D	C	D

The pedestrian LOS targets will not be met at the existing or future intersections within the study area. As typical for arterial roads, the crossing distance does not permit the targets to be met. To meet pedestrian LOS targets, the maximum crossing distance on all pedestrian crossings would need to be reduced to three lane-widths except for Carp Road at Stittsville Main Street intersection which needs to be reduced to two lane widths.

The bicycle LOS targets will not be met at the existing or future intersections within the study area except for the future intersection of Carp Road at Echowoods Avenue/Kittiwake Drive. To meet bicycle LOS targets, the left-turn

configurations would need to be two-stage or include turn boxes or protected facilities would be required at the intersections.

The transit LOS targets will need to be improved at the Carp Road at Stittsville Main Street intersection beyond 2031.

The auto LOS targets will not be met at the existing intersections of Carp Road at Echowoods/ Kittiwake Drive Avenue; however, it will be met at the future condition after the completion of the Carp Road widening project. The intersection of Hazeldean Road at Carp Road may be improved by optimizing signal timing.

10.2.4 Recommended Design Elements

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

11 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The proposed site includes 1,630 sq m of ground-floor commercial space and 317 apartment units
- The redevelopment proposed 360 underground parking and 84 surface parking
- A full-movements access will be remained at the existing signalized intersection on Hazeldean Road
- The development is proposed to be completed as a single phase by 2027
- The trip generation trigger, location trigger, and safety triggers were met for the TIA Screening

Existing Conditions

- Hazeldean Road, Carp Road, Stittsville Main Street are arterial roads, and West Ridge Drive, Kittiwake Drive, Echowoods Avenue, and Hobin Street are collector roads in the study area
- Sidewalk and asphalt pathway are provided on Hazeldean road east of Kittiwake Drive /West Ridge Drive, Carp Road south of Kittiwake Drive/ Echowoods Avenue, Echowoods Avenue, Kittiwake Drive, and West Ridge Drive
- Bike lanes are provided on the south side of Hazeldean Road east of Carp Road, on the north side of Hazeldean Road east of Stittsville Corners Mall access, on the east side of Carp Road approaching Hazeldean Road to Kittiwake Drive/Echowoods Avenue, and on the west side of Carp Road north of Hazeldean
- The high volumes roadways have produced a high number of collisions at the study area intersections, primarily at the Carp Road at Hazeldean Road intersection, which has 88% of the collisions within the study area
- The Hazeldean Road at Carp Road intersection experienced a significant collision increase during 2017 (23 total collisions), although it subsequently decreased to 6 total collisions by 2019, it is not considered a pattern and only a localized issue due to construction or other transient circumstances
- During peak hours, capacity issues are noted at the intersection of Carp Road at Hazeldean Road and Carp Road at Hobin Street/McCooeye Lane, and both intersections timing could be further optimized to improve the operations

Development Generated Travel Demand

- The proposed development is forecasted to produce 134 two-way people trips during the AM peak hour and 145 two-way people trips during the PM peak hour
- Of the forecasted people trips, 62 two-way trips will be vehicle trips during the AM peak hour and 103 two-way trips will be vehicle trips during the PM peak hour

- Of the forecasted trips, 30% are anticipated to travel north, 5% to both the south and the west, and 60% to the east

Background Conditions

- The background growth rates included 0.50% in the peak directions along Hazeldean Road, and 2.50% in the peak direction and 0.25% in the off-peak direction along Carp Road
- The only explicitly development considered in the background conditions was the plan of subdivision at 6171 Hazeldean Road
- The future background conditions the study area intersections will operate similar to the existing conditions except for the intersections of Hazeldean Road at Carp Road, Carp Road at Echowoods Avenue/Kittiwake Drive, and Carp Rd at McCooeye Lane/Hobin Street
- The City can implement signal timing adjustments to offset the existing and future capacity constraints, which would also be required once Carp Road is widened
- The intersection of McCooeye Lane/Hobin Street may not achieve optimal operations due to the proximity to the Stittsville Main Street intersection and likely is used as a metering intersection to reduce the constraints along Stittsville Main Street

TDM

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

Transit

- The proposed development is anticipated to generate an additional 39 AM peak hour transit trips and 28 PM peak hour transit trips
- Negligible impacts are noted on the transit movements at the study area intersections

Network Intersection Design

- Generally, the network intersections are anticipated to operate similarly to the future background conditions except for the eastbound left-turn movement at Hazeldean Road and Carp Road intersection
- The signal timing plans can be updated throughout the study area to improve the operations at the intersection of Hazeldean Road and Carp Road, and the City will need to coordinate these operations
- The pedestrian LOS targets will not be met at the existing or future intersections within the study area, and cannot be met along the arterial roadways
- The bicycle LOS targets will not be met at the existing or future intersections within the study area, and it is limited by the lack of dedicated facilities and improved left-turn configurations
- The transit LOS targets will need to be improved at the Carp Road at Stittsville Main Street intersection beyond 2031

12 Conclusion

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

Prepared By:

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Transportation Planner

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 11-Feb-22
Project Number: 2022-005
Project Reference: 6310 Hazeldean Road

1.1 Description of Proposed Development	
Municipal Address	6310 Hazeldean Road
Description of Location	Ward 6. On the south side of Hazeldean Road between Carp Road and Kittiwake Drive/West Ridge Drive
Land Use Classification	Arterial Mainstreet Zone (AM9[2102])
Development Size	1,940 sq m of ground floor commercial space and 317 apartment units
Accesses	One existing access on Hazeldean Road
Phase of Development	Single
Buildout Year	2027
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	317	Units
Trip Generation Trigger	Yes	

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

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?	No
Does the proposed driveway make use of an existing median break that serves an existing site?	No
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	No
Does the development include a drive-thru facility?	No
Safety Trigger	Yes

Appendix B

Turning Movement Counts

Transportation Services - Traffic Services

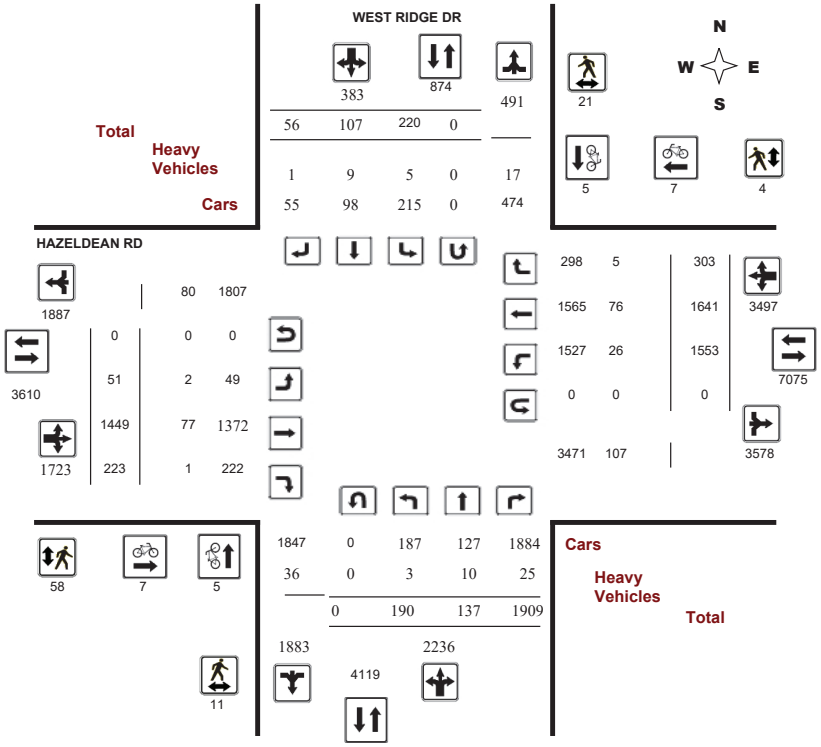
Turning Movement Count - Study Results

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study Diagram



Transportation Services - Traffic Services

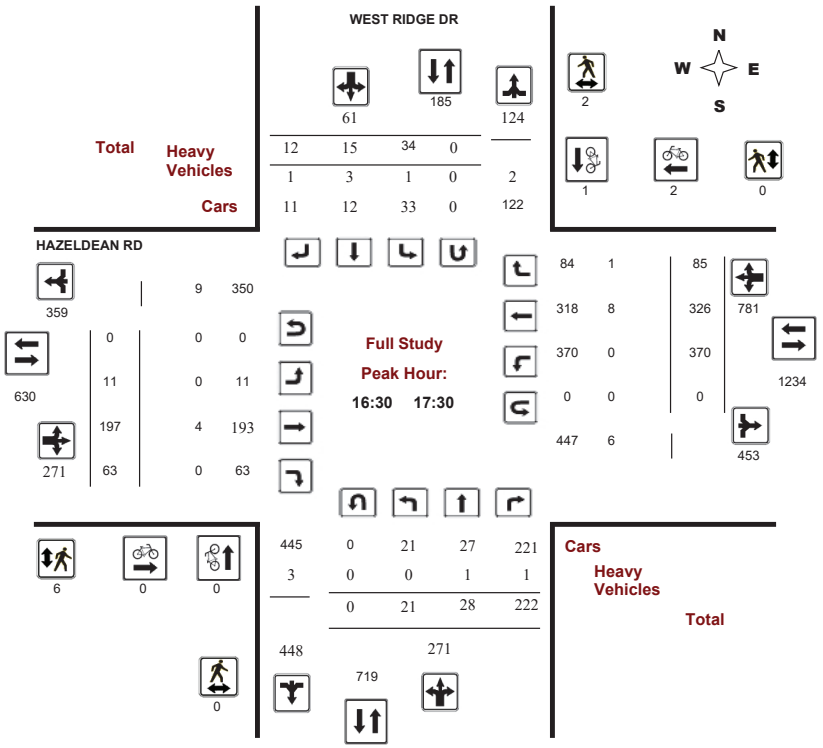
Turning Movement Count - Study Results

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study Peak Hour Diagram



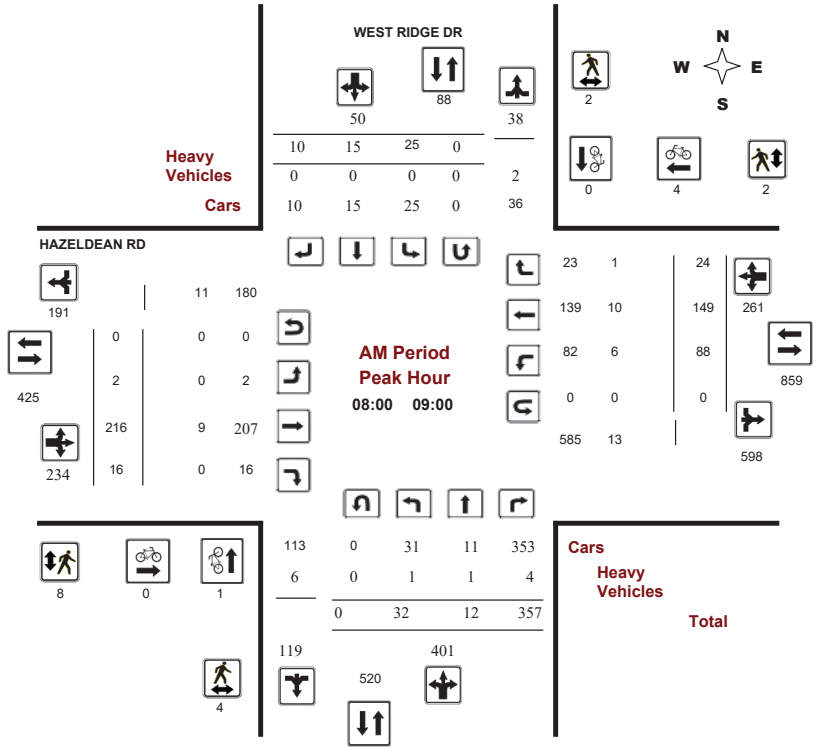
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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



Comments

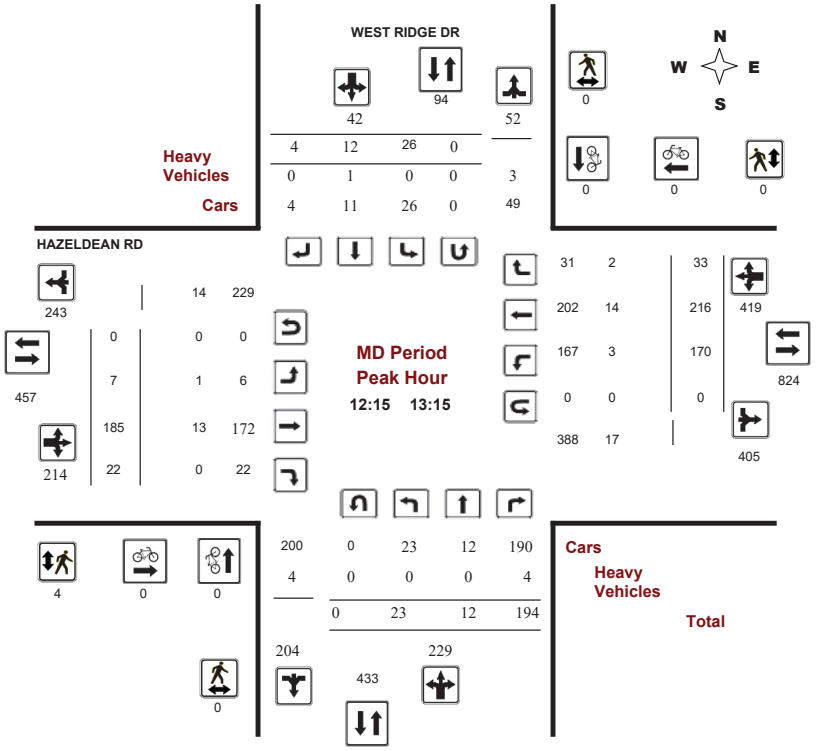
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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



Comments

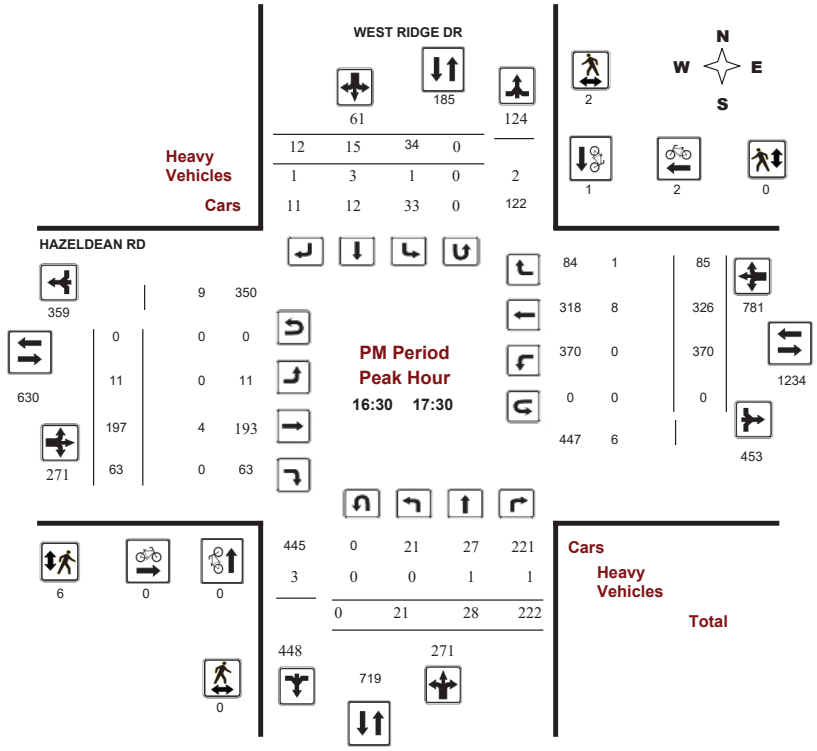
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, July 21, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

	WEST RIDGE DR								HAZELDEAN 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	27	17	351	**395**	26	5	5	**36**	**431**	3	192	17	**212**	60	97	10	**167**	**379**	**810**
08:00 09:00	32	12	357	**401**	25	15	10	**50**	**451**	2	216	16	**234**	88	149	24	**261**	**495**	**946**
09:00 10:00	17	12	244	**273**	32	11	8	**51**	**324**	7	163	19	**189**	101	104	18	**223**	**412**	**736**
11:30 12:30	26	14	182	**222**	17	7	5	**29**	**251**	5	167	21	**193**	172	181	40	**393**	**586**	**837**
12:30 13:30	19	14	187	**220**	28	12	4	**44**	**264**	5	182	16	**203**	170	213	31	**414**	**617**	**881**
15:00 16:00	22	23	166	**211**	20	17	4	**41**	**252**	7	172	29	**208**	256	288	43	**587**	**795**	**1047**
16:00 17:00	24	26	201	**251**	36	20	13	**69**	**320**	15	184	46	**245**	350	320	62	**732**	**977**	**1297**
17:00 18:00	23	19	221	**263**	36	20	7	**63**	**326**	7	173	59	**239**	356	289	75	**720**	**959**	**1285**
Sub Total	190	137	1909	**2236**	220	107	56	**383**	**2619**	51	1449	223	**1723**	1553	1641	303	**3497**	**5220**	**7839**
U Turns	0			**0**	0			**0**	**0**	**0**			**0**	0			**0**	**0**	**0**
Total	190	137	1909	**2236**	220	107	56	**383**	**2619**	51	1449	223	**1723**	1553	1641	303	**3497**	**5220**	**7839**
EQ 12Hr	264	190	2654	**3108**	306	149	78	**533**	**3641**	71	2014	310	**2395**	2159	2281	421	**4861**	**7256**	**10897**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	238	171	2389	**2798**	275	134	70	**479**	**3277**	64	1813	279	**2156**	1943	2053	379	**4375**	**6531**	**9808**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	312	224	3130	**3666**	360	176	92	**628**	**4294**	84	2375	365	**2824**	2545	2689	496	**5730**	**8554**	**12848**
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

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study 15 Minute Increments

		WEST RIDGE DR									HAZELDEAN 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	8	5	80	93	4	1	0	5	**98**	0	49	0	49	17	24	2	43	**92**	**190**
07:15	07:30	7	3	82	92	6	0	1	7	**99**	1	47	5	53	14	20	5	39	**92**	**191**
07:30	07:45	8	6	87	101	4	2	2	8	**109**	0	57	5	62	13	32	2	47	**109**	**218**
07:45	08:00	4	3	102	109	12	2	2	16	**125**	2	39	7	48	16	21	1	38	**86**	**211**
08:00	08:15	14	4	95	113	8	4	4	16	**129**	0	46	3	49	21	45	5	71	**120**	**249**
08:15	08:30	1	3	92	96	8	3	3	14	**110**	1	42	6	49	19	28	5	52	**101**	**211**
08:30	08:45	8	3	91	102	2	5	2	9	**111**	0	65	4	69	23	39	10	72	**141**	**252**
08:45	09:00	9	2	79	90	7	3	1	11	**101**	1	63	3	67	25	37	4	66	**133**	**234**
09:00	09:15	8	2	75	85	5	4	4	13	**98**	1	49	2	52	20	24	7	51	**103**	**201**
09:15	09:30	4	3	63	70	8	1	1	10	**80**	3	35	2	40	23	23	3	49	**89**	**169**
09:30	09:45	2	3	60	65	10	4	2	16	**81**	0	44	8	52	30	27	3	60	**112**	**193**
09:45	10:00	3	4	46	53	9	2	1	12	**65**	3	35	7	45	28	30	5	63	**108**	**173**
11:30	11:45	6	4	49	59	10	2	1	13	**72**	0	50	1	51	36	42	10	88	**139**	**211**
11:45	12:00	6	3	36	45	0	1	2	3	**48**	2	39	8	49	44	44	12	100	**149**	**197**
12:00	12:15	6	3	49	58	3	0	2	5	**63**	1	40	5	46	47	37	12	96	**142**	**205**
12:15	12:30	8	4	48	60	4	4	0	8	**68**	2	38	7	47	45	58	6	109	**156**	**224**
12:30	12:45	2	3	57	62	6	2	3	11	**73**	4	49	3	56	43	60	7	110	**166**	**239**
12:45	13:00	5	4	43	52	11	2	1	14	**66**	1	50	6	57	54	44	9	107	**164**	**230**
13:00	13:15	8	1	46	55	5	4	0	9	**64**	0	48	6	54	28	54	11	93	**147**	**211**
13:15	13:30	4	6	41	51	6	4	0	10	**61**	0	35	1	36	45	55	4	104	**140**	**201**
15:00	15:15	1	6	44	51	9	3	1	13	**64**	1	40	4	45	54	65	11	130	**175**	**239**
15:15	15:30	12	8	40	60	3	4	2	9	**69**	3	39	6	48	66	63	13	142	**190**	**259**
15:30	15:45	5	5	45	55	4	4	0	8	**63**	2	41	10	53	69	88	11	168	**221**	**284**
15:45	16:00	4	4	37	45	4	6	1	11	**56**	1	52	9	62	67	72	8	147	**209**	**265**
16:00	16:15	7	4	47	58	7	7	1	15	**73**	5	41	12	58	78	78	8	164	**222**	**295**
16:15	16:30	7	6	42	55	8	7	3	18	**73**	3	47	3	53	91	68	9	168	**221**	**294**
16:30	16:45	3	10	56	69	11	4	3	18	**87**	4	50	21	75	91	96	20	207	**282**	**369**
16:45	17:00	7	6	56	69	10	2	6	18	**87**	3	46	10	59	90	78	25	193	**252**	**339**
17:00	17:15	6	6	54	66	5	5	2	12	**78**	1	54	17	72	89	81	22	192	**264**	**342**
17:15	17:30	5	6	56	67	8	4	1	13	**80**	3	47	15	65	100	71	18	189	**254**	**334**
17:30	17:45	7	4	61	72	10	7	3	20	**92**	2	37	17	56	79	75	18	172	**228**	**320**
17:45	18:00	5	3	50	58	13	4	1	18	**76**	1	35	10	46	88	62	17	167	**213**	**289**
Total:		190	137	1909	2236	220	107	56	383	**2619**	51	1449	223	1723	1553	1641	303	3497	**2619**	**7,839**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study Cyclist Volume

		WEST RIDGE DR			HAZELDEAN RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	1	0	**1**	0	0	**0**	**1**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	1	0	**1**	**1**
07:45	08:00	2	0	**2**	0	0	**0**	**2**
08:00	08:15	0	0	**0**	0	1	**1**	**1**
08:15	08:30	0	0	**0**	0	3	**3**	**3**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	1	0	**1**	0	0	**0**	**1**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	1	0	**1**	**1**
09:30	09:45	0	1	**1**	1	0	**1**	**2**
09:45	10:00	0	1	**1**	1	0	**1**	**2**
11:30	11:45	1	0	**1**	0	0	**0**	**1**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	0	0	**0**	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**	1	0	**1**	**1**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	1	**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	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	2	**2**	**2**
17:15	17:30	0	1	**1**	0	0	**0**	**1**
17:30	17:45	0	0	**0**	1	0	**1**	**1**
17:45	18:00	0	1	**1**	1	0	**1**	**2**
Total		5	5	**10**	7	7	**14**	**24**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study Pedestrian Volume

	WEST RIDGE DR			HAZELDEAN 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	1	0	**1**	2	0	**2**	**3**
07:15 07:30	2	2	**4**	4	0	**4**	**8**
07:30 07:45	1	4	**5**	6	0	**6**	**11**
07:45 08:00	0	0	**0**	0	0	**0**	**0**
08:00 08:15	0	2	**2**	3	0	**3**	**5**
08:15 08:30	3	0	**3**	3	1	**4**	**7**
08:30 08:45	1	0	**1**	0	1	**1**	**2**
08:45 09:00	0	0	**0**	2	0	**2**	**2**
09:00 09:15	0	2	**2**	2	0	**2**	**4**
09:15 09:30	0	0	**0**	1	0	**1**	**1**
09:30 09:45	1	3	**4**	6	0	**6**	**10**
09:45 10:00	0	0	**0**	0	0	**0**	**0**
11:30 11:45	2	2	**4**	4	2	**6**	**10**
11:45 12:00	0	0	**0**	2	0	**2**	**2**
12:00 12:15	0	1	**1**	1	0	**1**	**2**
12:15 12:30	0	0	**0**	2	0	**2**	**2**
12:30 12:45	0	0	**0**	2	0	**2**	**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	0	**0**	0	0	**0**	**0**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	1	0	**1**	**1**
16:00 16:15	0	1	**1**	1	0	**1**	**2**
16:15 16:30	0	2	**2**	8	0	**8**	**10**
16:30 16:45	0	2	**2**	1	0	**1**	**3**
16:45 17:00	0	0	**0**	1	0	**1**	**1**
17:00 17:15	0	0	**0**	3	0	**3**	**3**
17:15 17:30	0	0	**0**	1	0	**1**	**1**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	0	**0**	2	0	**2**	**2**
Total	11	21	**32**	58	4	**62**	**94**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study Heavy Vehicles

		WEST RIDGE DR									HAZELDEAN RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	2	3	0	**5**	**5**	**6**
07:15	07:30	0	1	2	**3**	0	0	0	**0**	**3**	0	1	1	**2**	0	2	1	**3**	**5**	**8**
07:30	07:45	0	1	0	**1**	0	0	0	**0**	**1**	0	1	0	**1**	0	2	0	**2**	**3**	**4**
07:45	08:00	0	1	0	**1**	0	0	0	**0**	**1**	1	2	0	**3**	0	2	0	**2**	**5**	**6**
08:00	08:15	0	1	2	**3**	0	0	0	**0**	**3**	0	1	0	**1**	2	3	0	**5**	**6**	**9**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	1	0	0	**1**	**3**	**3**
08:30	08:45	0	0	1	**1**	0	0	0	**0**	**1**	0	3	0	**3**	2	3	1	**6**	**9**	**10**
08:45	09:00	1	0	1	**2**	0	0	0	**0**	**2**	0	3	0	**3**	1	4	0	**5**	**8**	**10**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	2	1	0	**3**	**6**	**6**
09:15	09:30	0	0	1	**1**	0	0	0	**0**	**1**	0	3	0	**3**	0	2	0	**2**	**5**	**6**
09:30	09:45	0	0	1	**1**	0	0	0	**0**	**1**	0	6	0	**6**	2	3	0	**5**	**11**	**12**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	1	4	0	**5**	**7**	**7**
11:30	11:45	0	1	0	**1**	1	0	0	**1**	**2**	0	3	0	**3**	2	1	0	**3**	**6**	**8**
11:45	12:00	2	0	1	**3**	0	0	0	**0**	**3**	0	3	0	**3**	0	4	0	**4**	**7**	**10**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	2	0	**2**	**7**	**7**
12:15	12:30	0	0	2	**2**	0	0	0	**0**	**2**	1	2	0	**3**	0	4	0	**4**	**7**	**9**
12:30	12:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	2	3	0	**5**	**6**	**6**
12:45	13:00	0	0	1	**1**	0	0	0	**0**	**1**	0	6	0	**6**	1	3	2	**6**	**12**	**13**
13:00	13:15	0	0	1	**1**	0	1	0	**1**	**2**	0	4	0	**4**	0	4	0	**4**	**8**	**10**
13:15	13:30	0	0	1	**1**	0	0	0	**0**	**1**	0	4	0	**4**	0	3	0	**3**	**7**	**8**
15:00	15:15	0	0	3	**3**	2	1	0	**3**	**6**	0	3	0	**3**	5	3	0	**8**	**11**	**17**
15:15	15:30	0	2	4	**6**	0	0	0	**0**	**6**	0	5	0	**5**	1	3	0	**4**	**9**	**15**
15:30	15:45	0	0	1	**1**	1	0	0	**1**	**2**	0	5	0	**5**	2	3	0	**5**	**10**	**12**
15:45	16:00	0	1	0	**1**	0	1	0	**1**	**2**	0	3	0	**3**	0	2	0	**2**	**5**	**7**
16:00	16:15	0	0	1	**1**	0	1	0	**1**	**2**	0	1	0	**1**	0	2	0	**2**	**3**	**5**
16:15	16:30	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	1	0	**1**	**1**	**2**
16:30	16:45	0	1	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	0	2	1	**3**	**3**	**5**
16:45	17:00	0	0	0	**0**	1	0	1	**2**	**2**	0	1	0	**1**	0	2	0	**2**	**3**	**5**
17:00	17:15	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	2	0	**2**	**2**	**3**
17:15	17:30	0	0	1	**1**	0	1	0	**1**	**2**	0	3	0	**3**	0	2	0	**2**	**5**	**7**
17:30	17:45	0	0	0	**0**	0	1	0	**1**	**1**	0	1	0	**1**	0	1	0	**1**	**2**	**3**
17:45	18:00	0	0	1	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
Total:	None	3	10	25	**38**	5	9	1	**15**	**53**	2	77	1	**80**	26	76	5	**107**	**187**	**240**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ WEST RIDGE DR

Survey Date: Thursday, July 21, 2016 **WO No:** 36061

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

Full Study 15 Minute U-Turn Total

Time Period		WEST RIDGE DR Northbound U-Turn Total	WEST RIDGE DR Southbound U-Turn Total	HAZELDEAN RD Eastbound U-Turn Total	HAZELDEAN RD Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	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

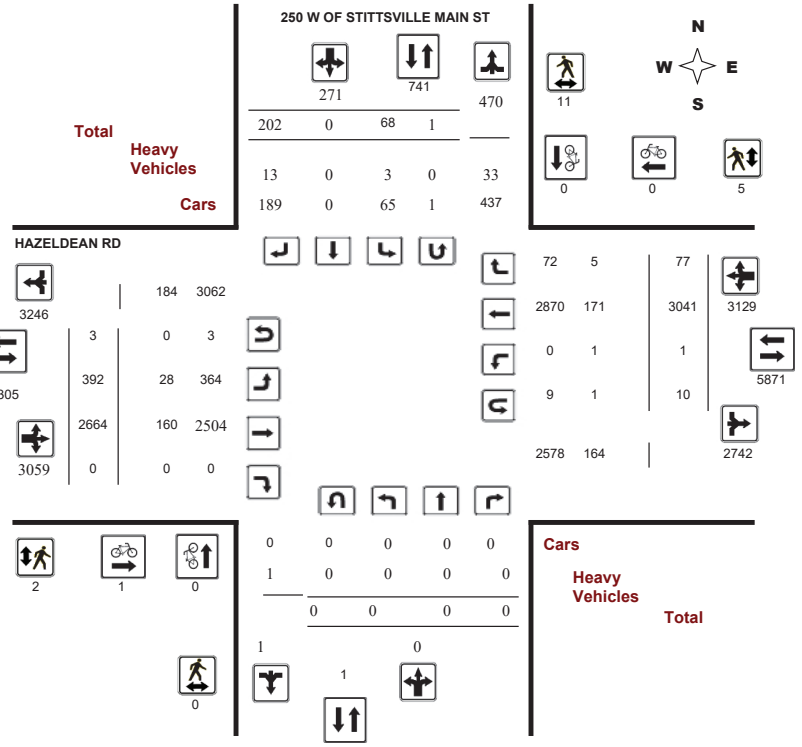
Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study Diagram



Transportation Services - Traffic Services

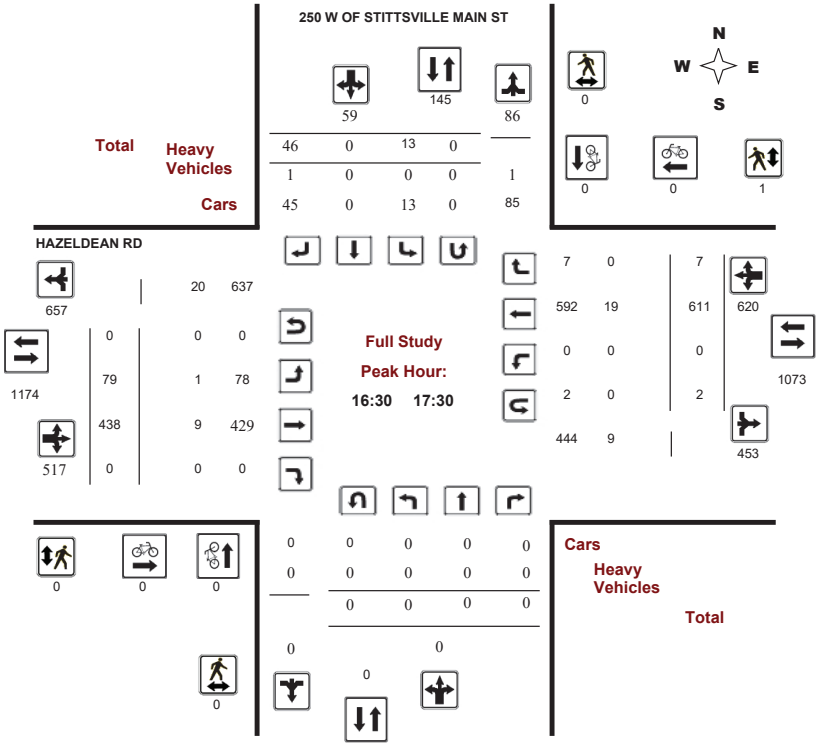
Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study Peak Hour Diagram



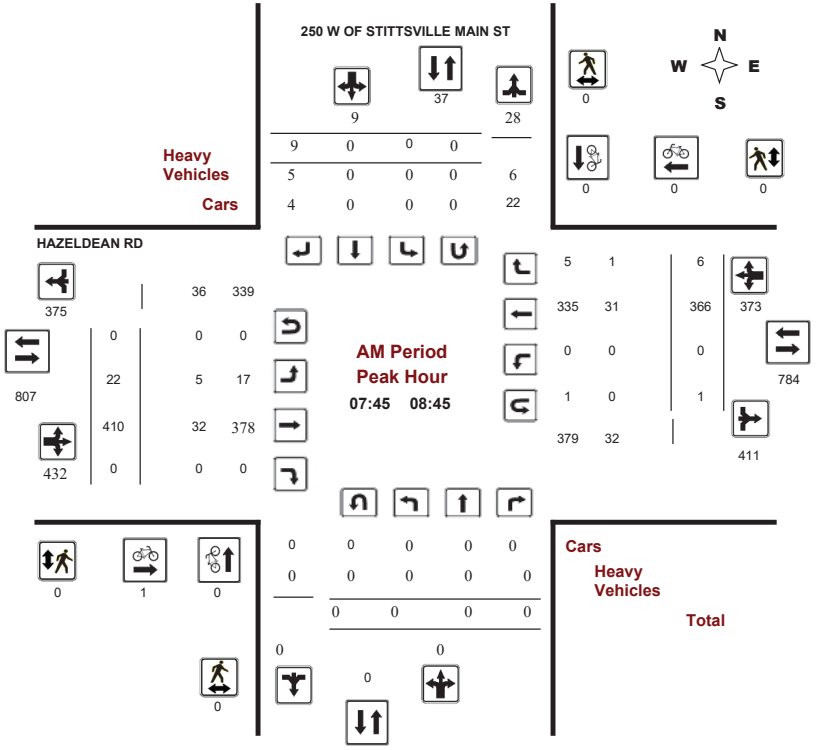
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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



Comments

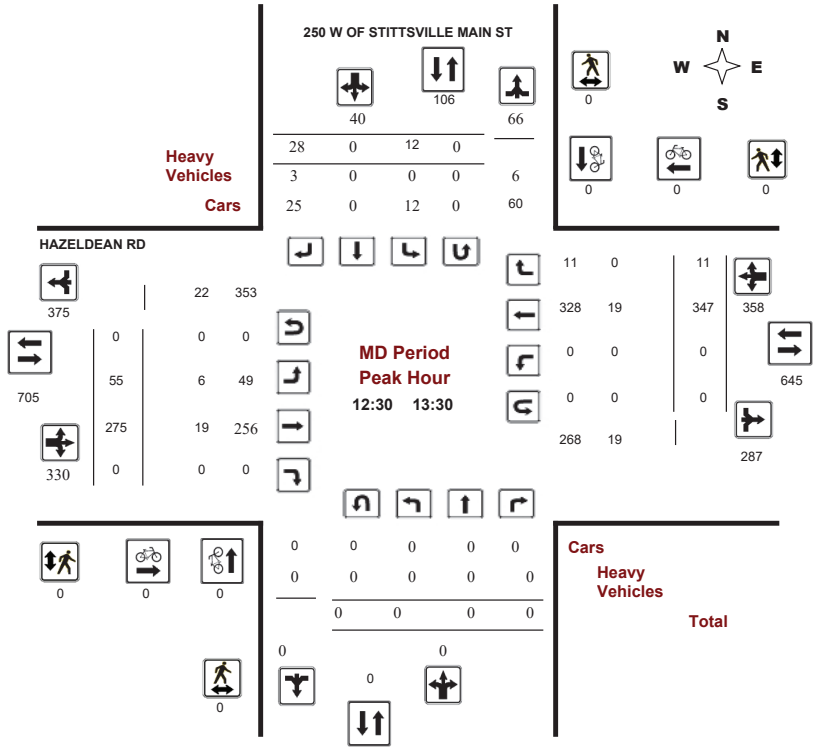
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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



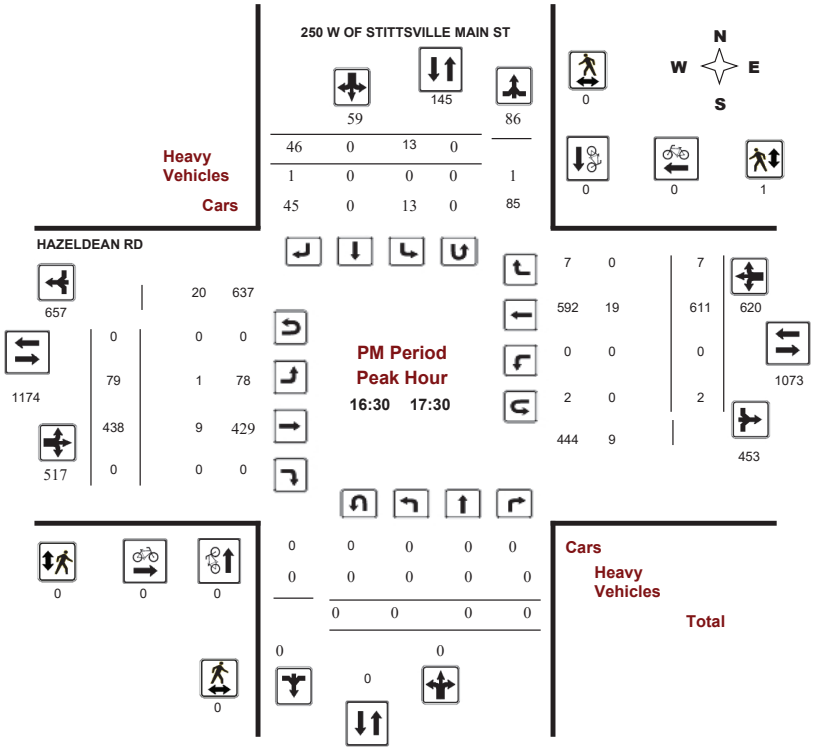
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, January 19, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 1

Eastbound: 3 Westbound: 10

AADT Factor 1.10

	250 W OF STITTSVILLE MAIN ST									HAZELDEAN 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	0	0	**0**	2	0	6	**8**	**8**	14	389	0	**403**	1	286	1	**288**	**691**	**699**
08:00 09:00	0	0	0	**0**	1	0	8	**9**	**9**	31	383	0	**414**	0	351	6	**357**	**771**	**780**
09:00 10:00	0	0	0	**0**	3	0	11	**14**	**14**	40	266	0	**306**	0	225	9	**234**	**540**	**554**
11:30 12:30	0	0	0	**0**	6	0	37	**43**	**43**	57	252	0	**309**	0	297	19	**316**	**625**	**668**
12:30 13:30	0	0	0	**0**	12	0	28	**40**	**40**	55	275	0	**330**	0	347	11	**358**	**688**	**728**
15:00 16:00	0	0	0	**0**	21	0	33	**54**	**54**	55	257	0	**312**	0	433	16	**449**	**761**	**815**
16:00 17:00	0	0	0	**0**	17	0	49	**66**	**66**	69	446	0	**515**	0	546	9	**555**	**1070**	**1136**
17:00 18:00	0	0	0	**0**	6	0	30	**36**	**36**	71	396	0	**467**	0	556	6	**562**	**1029**	**1065**
Sub Total	0	0	0	**0**	68	0	202	**270**	**270**	392	2664	0	**3056**	1	3041	77	**3119**	**6175**	**6445**
U Turns	0			**0**	1			**1**	**1**	**3**			**3**	10			**10**	**13**	**14**
Total	0	0	0	**0**	69	0	202	**271**	**271**	395	2664	0	**3059**	11	3041	77	**3129**	**6188**	**6459**
EQ 12Hr	0	0	0	**0**	96	0	281	**377**	**377**	549	3703	0	**4252**	15	4227	107	**4349**	**8601**	**8978**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	0	0	**0**	106	0	309	**415**	**415**	604	4073	0	**4677**	16	4650	118	**4784**	**9461**	**9876**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.10**					
AVG 24Hr	0	0	0	**0**	139	0	405	**544**	**544**	791	5336	0	**6127**	21	6092	155	**6268**	**12395**	**12939**
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

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study 15 Minute Increments

		250 W OF STITTSVILLE MAIN ST									HAZELDEAN 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	0	0	0	1	0	0	1	**1**	3	95	0	98	0	53	1	54	**152**	**153**
07:15	07:30	0	0	0	0	1	0	4	5	**5**	3	90	0	93	2	66	0	68	**161**	**166**
07:30	07:45	0	0	0	0	0	0	0	0	**0**	3	96	0	99	0	77	0	77	**176**	**176**
07:45	08:00	0	0	0	0	0	0	2	2	**2**	5	108	0	113	1	90	0	91	**204**	**206**
08:00	08:15	0	0	0	0	0	0	2	2	**2**	4	92	0	96	0	89	0	89	**185**	**187**
08:15	08:30	0	0	0	0	0	0	1	1	**1**	8	114	0	122	0	96	0	96	**218**	**219**
08:30	08:45	0	0	0	0	0	0	4	4	**4**	5	96	0	101	0	91	6	97	**198**	**202**
08:45	09:00	0	0	0	0	1	0	1	2	**2**	14	81	0	95	0	75	0	75	**170**	**172**
09:00	09:15	0	0	0	0	1	0	1	2	**2**	9	84	0	93	0	51	0	51	**144**	**146**
09:15	09:30	0	0	0	0	1	0	0	1	**1**	9	61	0	70	1	63	5	69	**139**	**140**
09:30	09:45	0	0	0	0	0	0	5	5	**5**	6	57	0	63	0	51	1	52	**115**	**120**
09:45	10:00	0	0	0	0	1	0	5	6	**6**	16	64	0	80	0	60	3	63	**143**	**149**
11:30	11:45	0	0	0	0	2	0	11	13	**13**	8	65	0	73	0	76	4	80	**153**	**166**
11:45	12:00	0	0	0	0	2	0	9	11	**11**	17	53	0	70	0	82	6	88	**158**	**169**
12:00	12:15	0	0	0	0	2	0	9	11	**11**	13	75	0	88	0	68	8	76	**164**	**175**
12:15	12:30	0	0	0	0	0	0	8	8	**8**	20	59	0	79	1	71	1	73	**152**	**160**
12:30	12:45	0	0	0	0	4	0	7	11	**11**	17	90	0	107	0	80	3	83	**190**	**201**
12:45	13:00	0	0	0	0	2	0	7	9	**9**	9	62	0	71	0	86	3	89	**160**	**169**
13:00	13:15	0	0	0	0	2	0	7	9	**9**	16	65	0	81	0	87	4	91	**172**	**181**
13:15	13:30	0	0	0	0	4	0	7	11	**11**	13	58	0	71	0	94	1	95	**166**	**177**
15:00	15:15	0	0	0	0	5	0	3	8	**8**	10	71	0	81	0	103	6	109	**190**	**198**
15:15	15:30	0	0	0	0	7	0	7	14	**14**	14	68	0	82	1	83	3	87	**169**	**183**
15:30	15:45	0	0	0	0	5	0	12	17	**17**	17	56	0	73	1	118	2	121	**194**	**211**
15:45	16:00	0	0	0	0	5	0	11	16	**16**	14	62	0	76	1	129	5	135	**211**	**227**
16:00	16:15	0	0	0	0	5	0	13	18	**18**	16	107	0	123	0	131	1	132	**255**	**273**
16:15	16:30	0	0	0	0	2	0	7	9	**9**	20	126	0	146	1	126	3	130	**276**	**285**
16:30	16:45	0	0	0	0	7	0	17	24	**24**	16	108	0	124	0	143	2	145	**269**	**293**
16:45	17:00	0	0	0	0	3	0	12	15	**15**	19	105	0	124	1	146	3	150	**274**	**289**
17:00	17:15	0	0	0	0	2	0	7	9	**9**	24	110	0	134	0	156	0	156	**290**	**299**
17:15	17:30	0	0	0	0	1	0	10	11	**11**	20	115	0	135	1	166	2	169	**304**	**315**
17:30	17:45	0	0	0	0	0	0	3	3	**3**	10	79	0	89	0	121	2	123	**212**	**215**
17:45	18:00	0	0	0	0	3	0	10	13	**13**	17	92	0	109	0	113	2	115	**224**	**237**
Total:		0	0	0	0	69	0	202	271	**271**	395	2664	0	3059	11	3041	77	3129	**271**	**6,459**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study Cyclist Volume

Time Period		250 W OF STITTSVILLE MAIN ST			HAZELDEAN RD			
		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**
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	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**
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		0	0	**0**	1	0	**1**	**1**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study Pedestrian Volume

Time Period		250 W OF STITTSVILLE MAIN ST			HAZELDEAN RD			
		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**
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	1	**1**	0	0	**0**	**1**
09:45	10:00	0	5	**5**	0	0	**0**	**5**
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	2	**2**	0	2	**2**	**4**
15:45	16:00	0	0	**0**	1	0	**1**	**1**
16:00	16:15	0	0	**0**	0	2	**2**	**2**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	1	**1**	**1**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	2	**2**	1	0	**1**	**3**
17:45	18:00	0	1	**1**	0	0	**0**	**1**
Total	.....	0	11	**11**	2	5	**7**	**18**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study Heavy Vehicles

250 W OF STITTSVILLE MAIN ST **HAZELDEAN RD**

Time Period		Northbound				Southbound					Eastbound				Westbound					
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	1	0	0	**1**	**1**	1	17	0	**18**	0	3	1	**4**	**22**	**23**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	1	9	0	**10**	1	3	0	**4**	**14**	**15**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	1	4	0	**5**	0	4	0	**4**	**9**	**9**
07:45	08:00	0	0	0	**0**	0	0	2	**2**	**2**	1	9	0	**10**	0	6	0	**6**	**16**	**18**
08:00	08:15	0	0	0	**0**	0	0	1	**1**	**1**	1	5	0	**6**	0	7	0	**7**	**13**	**14**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	1	11	0	**12**	0	9	0	**9**	**21**	**21**
08:30	08:45	0	0	0	**0**	0	0	2	**2**	**2**	2	7	0	**9**	0	9	1	**10**	**19**	**21**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	1	4	0	**5**	0	8	0	**8**	**13**	**13**
09:00	09:15	0	0	0	**0**	0	0	1	**1**	**1**	2	4	0	**6**	0	4	0	**4**	**10**	**11**
09:15	09:30	0	0	0	**0**	1	0	0	**1**	**1**	1	9	0	**10**	0	7	1	**8**	**18**	**19**
09:30	09:45	0	0	0	**0**	0	0	1	**1**	**1**	2	7	0	**9**	0	8	0	**8**	**17**	**18**
09:45	10:00	0	0	0	**0**	0	0	1	**1**	**1**	2	3	0	**5**	0	8	1	**9**	**14**	**15**
11:30	11:45	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	5	0	**5**	**9**	**9**
11:45	12:00	0	0	0	**0**	0	0	0	**0**	**0**	2	3	0	**5**	0	4	0	**4**	**9**	**9**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	8	0	**8**	0	8	1	**9**	**17**	**17**
12:15	12:30	0	0	0	**0**	0	0	1	**1**	**1**	1	4	0	**5**	0	7	0	**7**	**12**	**13**
12:30	12:45	0	0	0	**0**	0	0	1	**1**	**1**	1	5	0	**6**	0	3	0	**3**	**9**	**10**
12:45	13:00	0	0	0	**0**	0	0	1	**1**	**1**	1	7	0	**8**	0	8	0	**8**	**16**	**17**
13:00	13:15	0	0	0	**0**	0	0	1	**1**	**1**	1	2	0	**3**	0	5	0	**5**	**8**	**9**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	3	5	0	**8**	0	3	0	**3**	**11**	**11**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	1	6	0	**7**	0	6	0	**6**	**13**	**13**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	5	0	**5**	**6**	**6**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	1	3	0	**4**	0	6	0	**6**	**10**	**10**
15:45	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	5	0	**5**	**7**	**7**
16:00	16:15	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**3**	0	3	0	**3**	**6**	**7**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	2	0	**2**	**5**	**5**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	1	3	0	**4**	0	5	0	**5**	**9**	**9**
16:45	17:00	0	0	0	**0**	0	0	1	**1**	**1**	0	4	0	**4**	0	4	0	**4**	**8**	**9**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	7	0	**7**	**8**	**8**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	3	0	**3**	**4**	**4**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	5	0	**5**	**7**	**7**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	1	0	**1**	**5**	**5**
Total:	None	0	0	0	**0**	3	0	13	**16**	**16**	28	160	0	**188**	1	171	5	**177**	**365**	**382**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35665

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

Full Study 15 Minute U-Turn Total

250 W OF STITTSVILLE MAIN ST **HAZELDEAN RD**

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	1	**1**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	1	**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	0	0	0	**0**
09:15	09:30	0	0	0	1	**1**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	1	0	**1**
12:15	12:30	0	0	0	1	**1**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	1	**1**
15:30	15:45	0	1	0	1	**2**
15:45	16:00	0	0	0	1	**1**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	2	1	**3**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	1	**1**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	1	**1**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		0	1	3	10	**14**

Transportation Services - Traffic Services

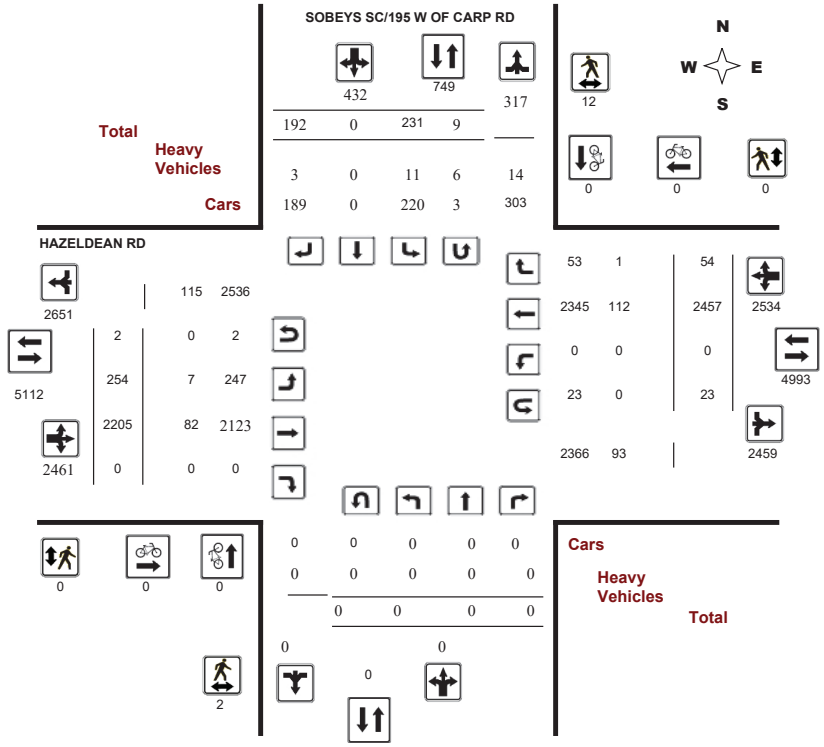
Turning Movement Count - Study Results

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study Diagram



Transportation Services - Traffic Services

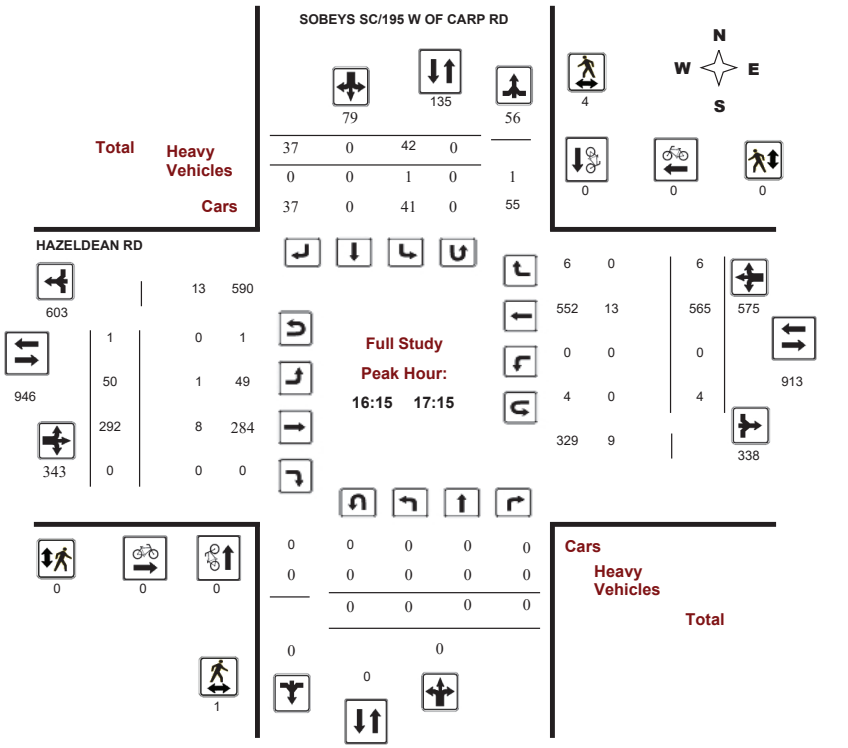
Turning Movement Count - Study Results

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study Peak Hour Diagram



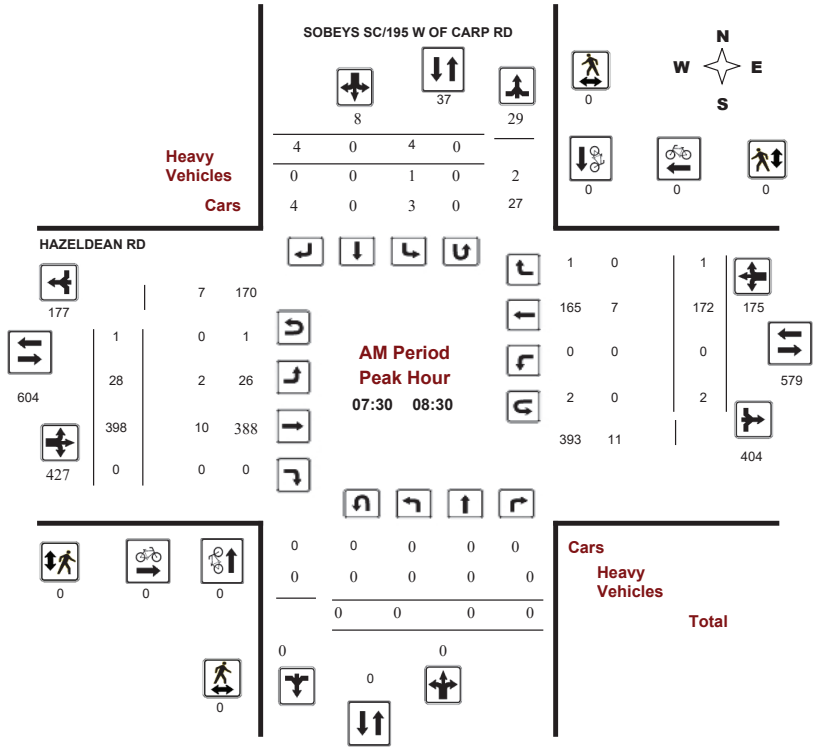
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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



Comments

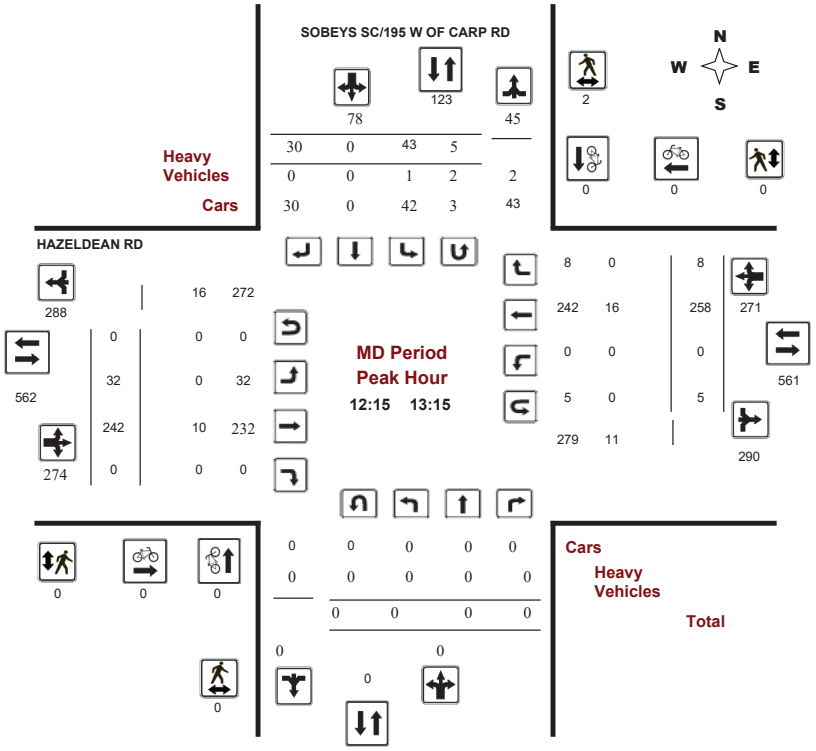
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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



Comments

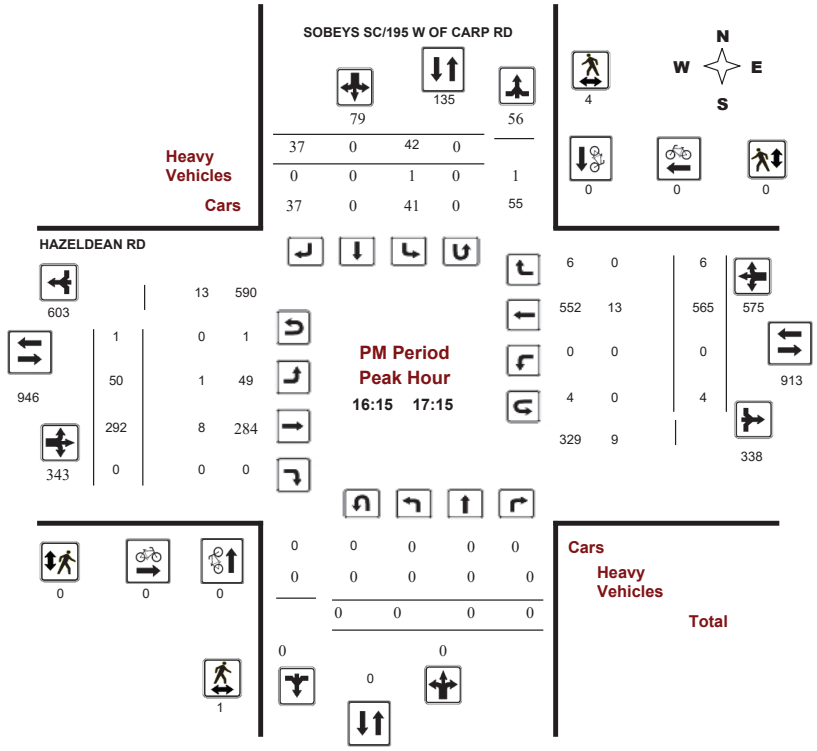
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, January 19, 202

Total Observed U-Turns

Northbound: 0 Southbound: 9

Eastbound: 2 Westbound: 23

AADT Factor 1.00

	SOBEYS SC/195 W OF CARP RD								HAZELDEAN 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	0	0	**0**	2	0	5	**7**	**7**	29	401	0	**430**	0	144	3	**147**	**577**	**584**
08:00 09:00	0	0	0	**0**	8	0	6	**14**	**14**	23	314	0	**337**	0	201	0	**201**	**538**	**552**
09:00 10:00	0	0	0	**0**	20	0	7	**27**	**27**	17	236	0	**253**	0	192	2	**194**	**447**	**474**
11:30 12:30	0	0	0	**0**	38	0	26	**64**	**64**	44	200	0	**244**	0	222	8	**230**	**474**	**538**
12:30 13:30	0	0	0	**0**	41	0	27	**68**	**68**	30	236	0	**266**	0	250	9	**259**	**525**	**593**
15:00 16:00	0	0	0	**0**	43	0	37	**80**	**80**	31	283	0	**314**	0	435	15	**450**	**764**	**844**
16:00 17:00	0	0	0	**0**	43	0	42	**85**	**85**	44	292	0	**336**	0	565	3	**568**	**904**	**989**
17:00 18:00	0	0	0	**0**	36	0	42	**78**	**78**	36	243	0	**279**	0	448	14	**462**	**741**	**819**
Sub Total	0	0	0	**0**	231	0	192	**423**	**423**	254	2205	0	**2459**	0	2457	54	**2511**	**4970**	**5393**
U Turns	0			**0**	9			**9**	**9**	**2**			**2**	23			**23**	**25**	**34**
Total	0	0	0	**0**	240	0	192	**432**	**432**	256	2205	0	**2461**	23	2457	54	**2534**	**4995**	**5427**
EQ 12Hr	0	0	0	**0**	334	0	267	**601**	**601**	356	3065	0	**3421**	32	3415	75	**3522**	**6943**	**7544**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	0	0	**0**	334	0	267	**601**	**601**	356	3065	0	**3421**	32	3415	75	**3522**	**6943**	**7544**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	0	0	0	**0**	438	0	350	**788**	**788**	466	4015	0	**4481**	42	4474	98	**4614**	**9095**	**9883**
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

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study 15 Minute Increments

		SOBEYS SC/195 W OF CARP RD									HAZELDEAN 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	0	0	0	0	0	2	2	**2**	6	81	0	87	1	34	1	36	**123**	**125**
07:15	07:30	0	0	0	0	1	0	2	3	**3**	9	89	0	98	2	35	1	38	**136**	**139**
07:30	07:45	0	0	0	0	1	0	0	1	**1**	8	100	0	108	1	35	1	37	**145**	**146**
07:45	08:00	0	0	0	0	0	0	1	1	**1**	6	131	0	137	0	40	0	40	**177**	**178**
08:00	08:15	0	0	0	0	1	0	1	2	**2**	9	74	0	83	1	53	0	54	**137**	**139**
08:15	08:30	0	0	0	0	2	0	2	4	**4**	6	93	0	99	0	44	0	44	**143**	**147**
08:30	08:45	0	0	0	0	3	0	2	5	**5**	5	74	0	79	0	50	0	50	**129**	**134**
08:45	09:00	0	0	0	0	2	0	1	3	**3**	4	73	0	77	0	54	0	54	**131**	**134**
09:00	09:15	0	0	0	0	5	0	1	6	**6**	2	62	0	64	0	45	0	45	**109**	**115**
09:15	09:30	0	0	0	0	6	0	0	6	**6**	8	57	0	65	0	54	2	56	**121**	**127**
09:30	09:45	0	0	0	0	5	0	4	9	**9**	5	56	0	61	0	52	0	52	**113**	**122**
09:45	10:00	0	0	0	0	8	0	2	10	**10**	2	61	0	63	0	41	0	41	**104**	**114**
11:30	11:45	0	0	0	0	8	0	5	13	**13**	8	58	0	66	0	52	3	55	**121**	**134**
11:45	12:00	0	0	0	0	14	0	9	23	**23**	12	44	0	56	1	56	1	58	**114**	**137**
12:00	12:15	0	0	0	0	9	0	4	13	**13**	13	46	0	59	2	52	1	55	**114**	**127**
12:15	12:30	0	0	0	0	7	0	8	15	**15**	11	52	0	63	1	62	3	66	**129**	**144**
12:30	12:45	0	0	0	0	17	0	9	26	**26**	5	58	0	63	2	61	1	64	**127**	**153**
12:45	13:00	0	0	0	0	19	0	6	25	**25**	8	53	0	61	0	74	2	76	**137**	**162**
13:00	13:15	0	0	0	0	5	0	7	12	**12**	8	79	0	87	2	61	2	65	**152**	**164**
13:15	13:30	0	0	0	0	5	0	5	10	**10**	9	46	0	55	1	54	4	59	**114**	**124**
15:00	15:15	0	0	0	0	11	0	7	18	**18**	6	65	0	71	1	91	5	97	**168**	**186**
15:15	15:30	0	0	0	0	13	0	16	29	**29**	7	70	0	77	0	109	1	110	**187**	**216**
15:30	15:45	0	0	0	0	7	0	4	11	**11**	7	75	0	82	0	125	4	129	**211**	**222**
15:45	16:00	0	0	0	0	12	0	10	22	**22**	11	73	0	84	1	110	5	116	**200**	**222**
16:00	16:15	0	0	0	0	8	0	13	21	**21**	1	67	0	68	0	135	2	137	**205**	**226**
16:15	16:30	0	0	0	0	13	0	9	22	**22**	16	72	0	88	1	141	1	143	**231**	**253**
16:30	16:45	0	0	0	0	9	0	12	21	**21**	16	75	0	91	0	152	0	152	**243**	**264**
16:45	17:00	0	0	0	0	13	0	8	21	**21**	12	78	0	90	1	137	0	138	**228**	**249**
17:00	17:15	0	0	0	0	7	0	8	15	**15**	7	67	0	74	2	135	5	142	**216**	**231**
17:15	17:30	0	0	0	0	13	0	9	22	**22**	9	70	0	79	1	107	5	113	**192**	**214**
17:30	17:45	0	0	0	0	11	0	16	27	**27**	13	62	0	75	2	115	2	119	**194**	**221**
17:45	18:00	0	0	0	0	5	0	9	14	**14**	7	44	0	51	0	91	2	93	**144**	**158**
Total:		0	0	0	0	240	0	192	432	**432**	256	2205	0	2461	23	2457	54	2534	**432**	**5,427**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study Cyclist Volume

		SOBEYS SC/195 W OF CARP RD			HAZELDEAN 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**
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	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**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		0	0	**0**	0	0	**0**	**0**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study Pedestrian Volume

	SOBEYS SC/195 W OF CARP RD			HAZELDEAN 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**
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	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	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	2	**2**	0	0	**0**	**2**
13:00 13:15	0	0	**0**	0	0	**0**	**0**
13:15 13:30	0	0	**0**	0	0	**0**	**0**
15:00 15:15	1	2	**3**	0	0	**0**	**3**
15:15 15:30	0	0	**0**	0	0	**0**	**0**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	0	0	**0**	**0**
16:00 16:15	0	1	**1**	0	0	**0**	**1**
16:15 16:30	0	1	**1**	0	0	**0**	**1**
16:30 16:45	0	1	**1**	0	0	**0**	**1**
16:45 17:00	1	1	**2**	0	0	**0**	**2**
17:00 17:15	0	1	**1**	0	0	**0**	**1**
17:15 17:30	0	0	**0**	0	0	**0**	**0**
17:30 17:45	0	2	**2**	0	0	**0**	**2**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
Total	2	12	**14**	0	0	**0**	**14**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study Heavy Vehicles

		SOBEYS SC/195 W OF CARP RD									HAZELDEAN 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	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**7**	0	7	0	**7**	**14**	**14**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**6**	0	1	0	**1**	**7**	**7**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	3	0	**3**	**6**	**6**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	1	0	**1**	**5**	**5**
08:00	08:15	0	0	0	**0**	1	0	0	**1**	**1**	2	0	0	**2**	0	1	0	**1**	**3**	**4**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	2	0	**2**	**5**	**5**
08:30	08:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	3	0	**3**	**3**	**3**
08:45	09:00	0	0	0	**0**	2	0	0	**2**	**2**	0	4	0	**4**	0	7	0	**7**	**11**	**13**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	4	0	**4**	**7**	**7**
09:15	09:30	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**3**	0	5	1	**6**	**9**	**12**
09:30	09:45	0	0	0	**0**	1	0	0	**1**	**1**	0	2	0	**2**	0	4	0	**4**	**6**	**9**
09:45	10:00	0	0	0	**0**	2	0	0	**2**	**2**	0	4	0	**4**	0	3	0	**3**	**7**	**9**
11:30	11:45	0	0	0	**0**	1	0	0	**1**	**1**	0	1	0	**1**	0	4	0	**4**	**5**	**6**
11:45	12:00	0	0	0	**0**	1	0	1	**2**	**2**	0	4	0	**4**	0	3	0	**3**	**7**	**9**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	0	**4**	**5**	**5**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	1	0	**1**	**4**	**4**
12:30	12:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	7	0	**7**	**7**	**9**
12:45	13:00	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**3**	0	6	0	**6**	**9**	**10**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	2	0	**2**	**6**	**6**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	3	0	**3**	**6**	**6**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	5	0	**5**	**10**	**10**
15:15	15:30	0	0	0	**0**	0	0	2	**2**	**2**	2	4	0	**6**	0	4	0	**4**	**10**	**12**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	1	2	0	**3**	0	5	0	**5**	**8**	**8**
15:45	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	0	**4**	**5**	**5**
16:00	16:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	0	**4**	**5**	**5**
16:15	16:30	0	0	0	**0**	1	0	0	**1**	**1**	0	4	0	**4**	0	3	0	**3**	**7**	**8**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	3	0	**3**	**5**	**5**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	6	0	**6**	**6**	**6**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	1	2	0	**3**	0	1	0	**1**	**4**	**4**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	3	0	**3**	**4**	**4**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	1	2	0	**3**	0	2	0	**2**	**5**	**5**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	0	**1**	**1**	**1**
Total:	None	0	0	0	**0**	11	0	3	**14**	**14**	7	82	0	**89**	0	112	1	**113**	**202**	**222**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZELDEAN RD @ SOBEYS SC/195 W OF CARP RD

Survey Date: Wednesday, January 19, 2022 **WO No:** 40051

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

Full Study 15 Minute U-Turn Total

Time Period		SOBEYS SC/195 W OF CARP RD Northbound U-Turn Total	SOBEYS SC/195 W OF CARP RD Southbound U-Turn Total	HAZELDEAN RD Eastbound U-Turn Total	HAZELDEAN RD Westbound U-Turn Total	Total
07:00	07:15	0	0	0	1	**1**
07:15	07:30	0	0	0	2	**2**
07:30	07:45	0	0	0	1	**1**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	1	1	**2**
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	2	0	0	**2**
09:30	09:45	0	2	0	0	**2**
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	1	**1**
12:00	12:15	0	0	0	2	**2**
12:15	12:30	0	0	0	1	**1**
12:30	12:45	0	5	0	2	**7**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	2	**2**
13:15	13:30	0	0	0	1	**1**
15:00	15:15	0	0	0	1	**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	1	**1**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	1	**1**
16:30	16:45	0	0	1	0	**1**
16:45	17:00	0	0	0	1	**1**
17:00	17:15	0	0	0	2	**2**
17:15	17:30	0	0	0	1	**1**
17:30	17:45	0	0	0	2	**2**
17:45	18:00	0	0	0	0	**0**
Total		0	9	2	23	**34**

Transportation Services - Traffic Services

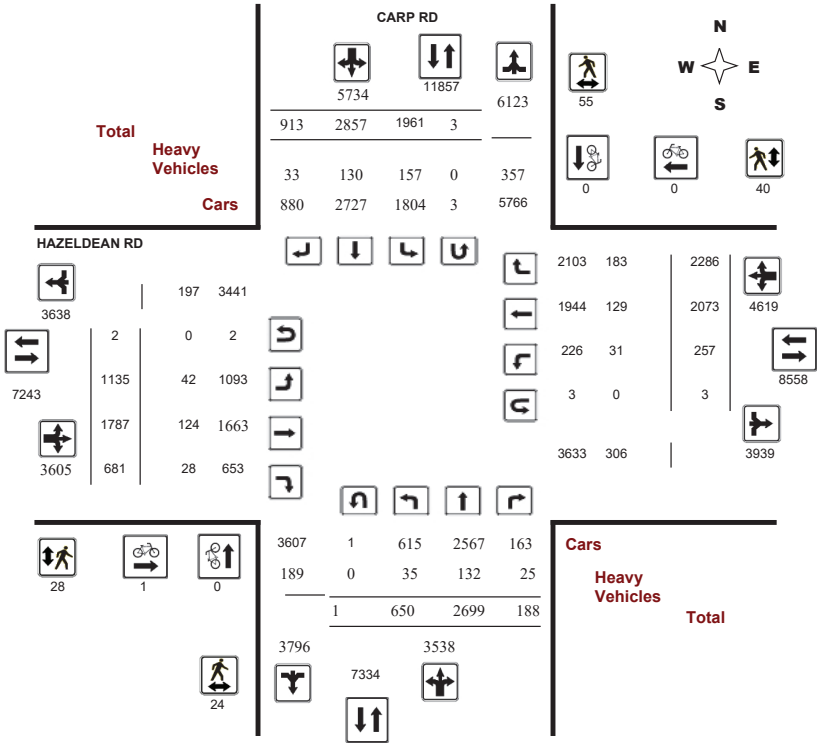
Turning Movement Count - Study Results

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study Diagram



Transportation Services - Traffic Services

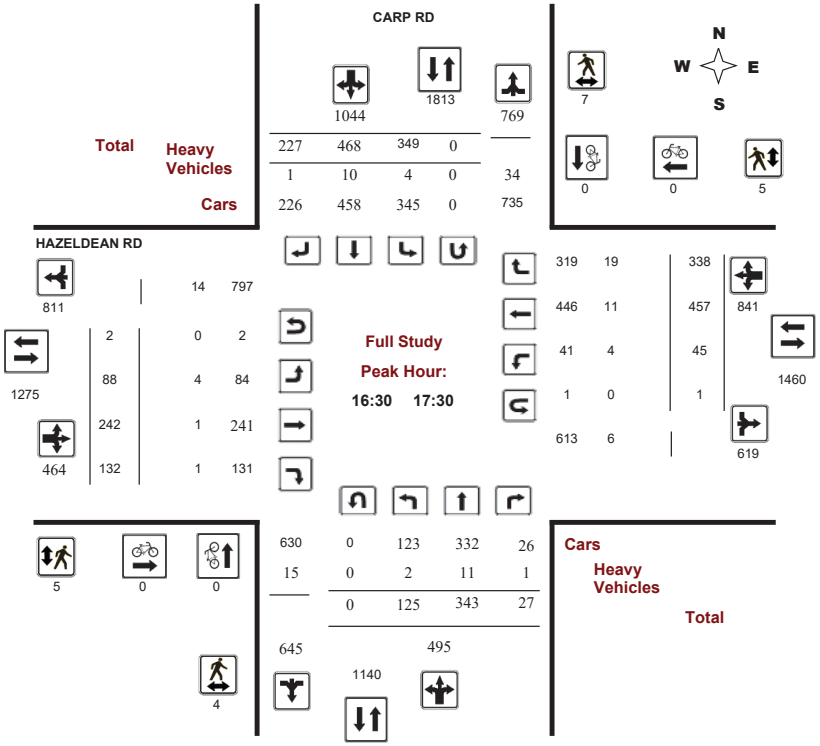
Turning Movement Count - Study Results

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study Peak Hour Diagram



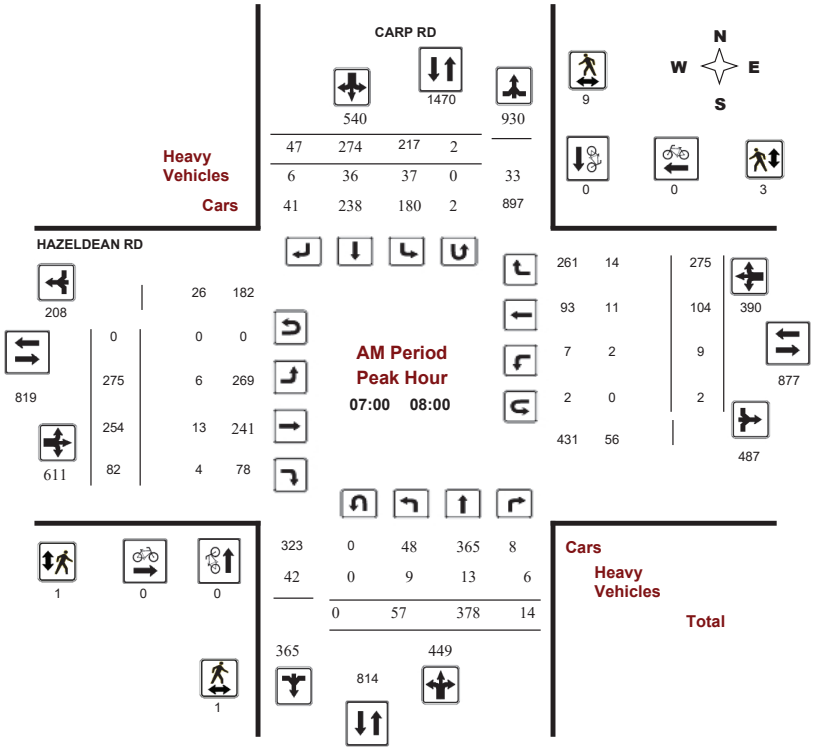
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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



Comments

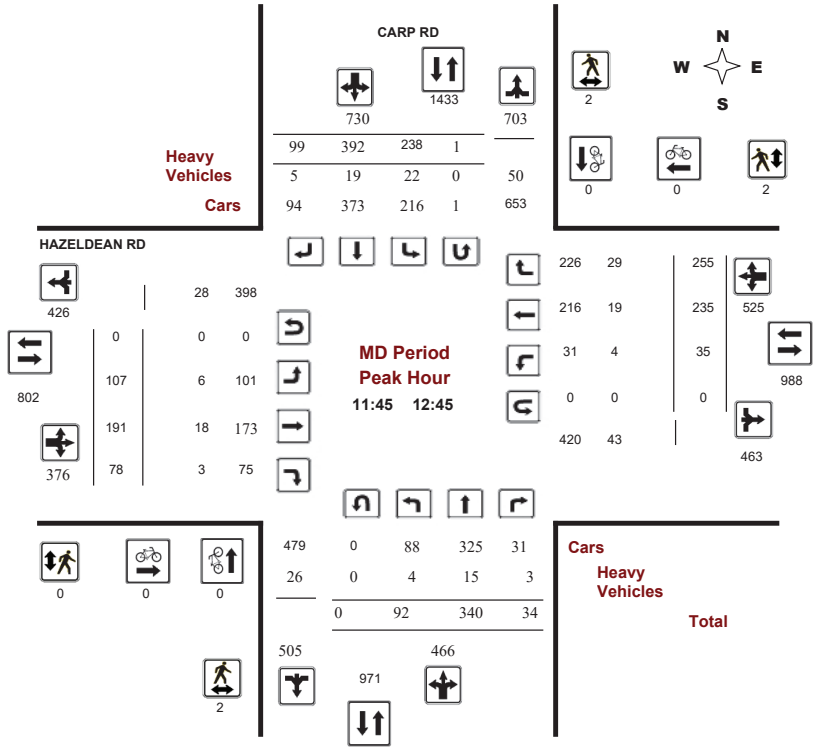
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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



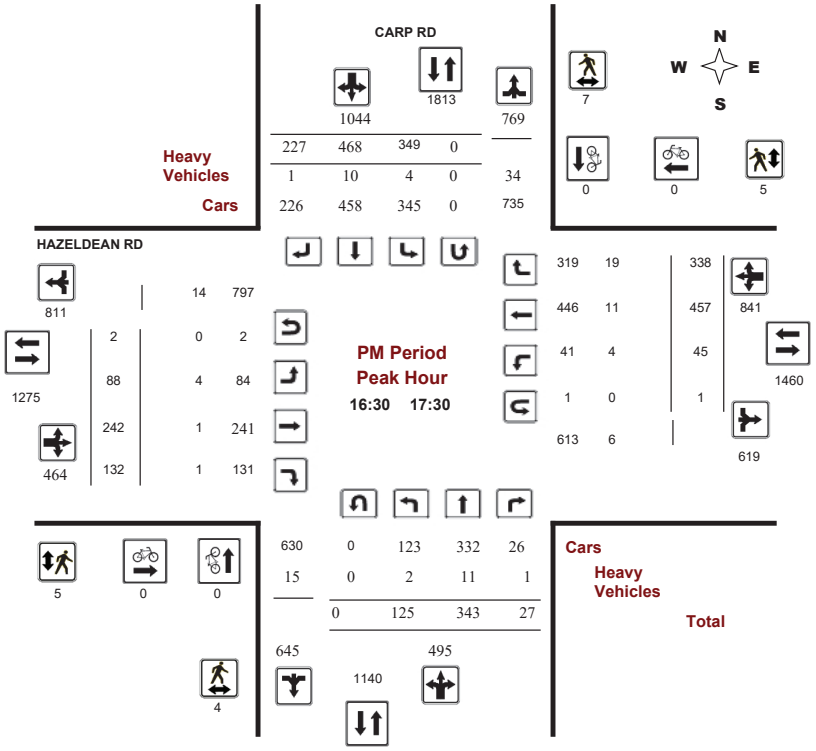
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, November 23, 2017

Total Observed U-Turns

Northbound: 1 Southbound: 3

Eastbound: 2 Westbound: 3

AADT Factor .90

	CARP RD								HAZELDEAN 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	57	378	14	**449**	217	274	47	**538**	**987**	275	254	82	**611**	9	104	275	**388**	**999**	**1986**
08:00 09:00	46	362	22	**430**	192	259	46	**497**	**927**	224	243	83	**550**	28	118	286	**432**	**982**	**1909**
09:00 10:00	51	334	20	**405**	194	252	49	**495**	**900**	137	214	78	**429**	23	115	221	**359**	**788**	**1688**
11:30 12:30	90	305	29	**424**	241	396	99	**736**	**1160**	101	183	83	**367**	32	233	249	**514**	**881**	**2041**
12:30 13:30	72	333	30	**435**	196	296	83	**575**	**1010**	120	201	72	**393**	37	239	274	**550**	**943**	**1953**
15:00 16:00	104	309	21	**434**	291	442	158	**891**	**1325**	78	211	78	**367**	43	386	364	**793**	**1160**	**2485**
16:00 17:00	111	336	27	**474**	301	481	205	**987**	**1461**	103	247	93	**443**	35	457	330	**822**	**1265**	**2726**
17:00 18:00	119	342	25	**486**	329	457	226	**1012**	**1498**	97	234	112	**443**	50	421	287	**758**	**1201**	**2699**
Sub Total	650	2699	188	**3537**	1961	2857	913	**5731**	**9268**	1135	1787	681	**3603**	257	2073	2286	**4616**	**8219**	**17487**
U Turns				**1**				**3**	**4**				**2**				**3**	**5**	**9**
Total	650	2699	188	**3538**	1961	2857	913	**5734**	**9272**	1135	1787	681	**3605**	257	2073	2286	**4619**	**8224**	**17496**
EQ 12Hr	903	3752	261	**4918**	2726	3971	1269	**7970**	**12888**	1578	2484	947	**5011**	357	2881	3178	**6420**	**11431**	**24319**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	766	3182	222	**4171**	2312	3368	1076	**6760**	**11599**	1338	2107	803	**4250**	303	2444	2695	**5446**	**10288**	**21887**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**0.9**					
AVG 24Hr	1004	4169	290	**5464**	3029	4413	1410	**8856**	**14320**	1753	2760	1052	**5568**	397	3202	3531	**7134**	**12702**	**27022**
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

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study 15 Minute Increments

		CARP RD									HAZELDEAN 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	9	90	5	104	59	66	18	143	38	77	58	20	155	1	17	61	79	38	481
07:15	07:30	17	98	1	116	50	83	8	141	27	73	54	22	149	2	20	74	97	27	503
07:30	07:45	11	110	2	123	51	61	12	124	25	67	68	20	155	2	31	62	96	25	498
07:45	08:00	20	80	6	106	57	64	9	132	17	58	74	20	152	4	36	78	118	17	508
08:00	08:15	13	94	6	113	53	54	14	121	25	49	44	24	117	2	24	66	92	25	443
08:15	08:30	12	90	7	109	42	69	9	120	15	76	79	17	172	9	33	87	129	15	530
08:30	08:45	8	82	7	97	43	65	11	119	11	48	53	20	121	10	33	65	108	11	445
08:45	09:00	13	96	2	111	54	71	12	137	14	51	67	22	140	7	28	68	103	14	491
09:00	09:15	16	82	5	103	39	63	16	118	26	52	57	20	129	7	25	52	84	26	434
09:15	09:30	16	109	5	130	55	64	6	125	29	37	57	26	120	7	30	58	95	29	470
09:30	09:45	7	82	5	94	57	65	13	135	21	26	47	22	95	5	32	54	91	21	415
09:45	10:00	12	61	5	78	43	60	14	117	12	22	53	10	85	4	28	57	89	12	369
11:30	11:45	20	54	4	78	57	88	21	166	11	28	49	23	100	5	58	68	131	11	475
11:45	12:00	30	75	9	114	70	101	27	199	17	23	42	24	89	6	63	71	140	17	542
12:00	12:15	24	89	7	120	57	97	23	177	15	27	44	19	90	9	61	56	126	15	513
12:15	12:30	16	87	9	112	57	110	28	195	16	23	48	17	88	12	51	54	117	16	512
12:30	12:45	22	89	9	120	54	84	21	159	20	34	57	18	109	8	60	74	142	20	530
12:45	13:00	20	92	8	120	51	68	14	133	12	28	54	22	104	15	65	82	162	12	519
13:00	13:15	13	81	5	99	48	84	20	152	23	27	39	20	86	5	69	47	121	23	458
13:15	13:30	17	71	8	96	43	60	28	131	20	31	51	12	94	9	45	71	125	20	446
15:00	15:15	27	76	4	107	75	106	37	218	22	23	47	13	83	11	97	91	199	22	607
15:15	15:30	26	94	4	124	56	103	43	202	10	21	68	19	108	12	75	77	164	10	598
15:30	15:45	32	62	5	99	68	112	44	224	16	24	42	18	84	12	105	92	209	16	616
15:45	16:00	19	77	8	105	92	121	34	247	16	10	54	28	92	8	109	104	221	16	665
16:00	16:15	26	74	5	105	73	127	41	241	11	33	51	17	101	8	126	80	214	11	661
16:15	16:30	23	105	5	133	63	103	58	224	12	26	72	18	116	7	105	74	186	12	659
16:30	16:45	35	59	5	99	86	131	52	269	13	21	54	34	110	8	114	95	217	13	695
16:45	17:00	27	98	12	137	79	120	54	253	4	23	70	24	117	12	112	81	205	4	712
17:00	17:15	37	87	7	131	99	121	55	275	6	21	56	37	115	8	134	81	224	6	745
17:15	17:30	26	99	3	128	85	96	66	247	6	23	62	37	122	17	97	81	195	6	692
17:30	17:45	31	74	10	115	75	131	55	261	2	25	58	19	102	17	104	64	185	2	663
17:45	18:00	25	82	5	112	70	109	50	229	0	28	58	19	105	8	86	61	155	0	601
Total:		650	2699	188	3538	1961	2857	913	5734	512	1135	1787	681	3605	257	2073	2286	4619	512	17,496

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study Cyclist Volume

Time Period		CARP RD Northbound	CARP RD Southbound	CARP RD Street Total	HAZELDEAN RD Eastbound	HAZELDEAN RD Westbound	HAZELDEAN RD 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
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	1	0	1	1
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	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
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		0	0	**0**	1	0	1	1

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study Pedestrian Volume

Time Period		CARP RD NB Approach (E or W Crossing)	CARP RD SB Approach (E or W Crossing)	CARP RD Total	HAZELDEAN RD EB Approach (N or S Crossing)	HAZELDEAN RD WB Approach (N or S Crossing)	HAZELDEAN RD Total	Grand Total
07:00	07:15	0	1	**1**	0	1	**1**	**2**
07:15	07:30	1	6	**7**	1	1	**2**	**9**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	2	**2**	0	1	**1**	**3**
08:00	08:15	3	1	**4**	3	1	**4**	**8**
08:15	08:30	0	4	**4**	1	3	**4**	**8**
08:30	08:45	2	3	**5**	1	0	**1**	**6**
08:45	09:00	0	3	**3**	0	0	**0**	**3**
09:00	09:15	1	0	**1**	1	0	**1**	**2**
09:15	09:30	0	3	**3**	0	2	**2**	**5**
09:30	09:45	1	1	**2**	1	1	**2**	**4**
09:45	10:00	3	1	**4**	2	2	**4**	**8**
11:30	11:45	0	1	**1**	2	0	**2**	**3**
11:45	12:00	2	0	**2**	0	0	**0**	**2**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	1	**1**	0	1	**1**	**2**
12:30	12:45	0	1	**1**	0	1	**1**	**2**
12:45	13:00	1	0	**1**	1	2	**3**	**4**
13:00	13:15	0	4	**4**	0	0	**0**	**4**
13:15	13:30	0	2	**2**	0	1	**1**	**3**
15:00	15:15	1	4	**5**	2	7	**9**	**14**
15:15	15:30	1	2	**3**	1	0	**1**	**4**
15:30	15:45	1	1	**2**	4	4	**8**	**10**
15:45	16:00	2	3	**5**	2	2	**4**	**9**
16:00	16:15	0	0	**0**	0	3	**3**	**3**
16:15	16:30	1	0	**1**	1	0	**1**	**2**
16:30	16:45	1	3	**4**	1	2	**3**	**7**
16:45	17:00	1	3	**4**	1	1	**2**	**6**
17:00	17:15	1	1	**2**	1	2	**3**	**5**
17:15	17:30	1	0	**1**	2	0	**2**	**3**
17:30	17:45	0	3	**3**	0	0	**0**	**3**
17:45	18:00	0	1	**1**	0	2	**2**	**3**
Total	.....	24	55	**79**	28	40	**68**	**147**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study Heavy Vehicles

		CARP RD									HAZELDEAN RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	1	1	**2**	18	15	3	**36**	**38**	1	2	3	**6**	0	1	2	**3**	**9**	**47**
07:15	07:30	4	7	1	**12**	9	5	1	**15**	**27**	1	3	1	**5**	1	1	5	**7**	**12**	**39**
07:30	07:45	3	2	1	**6**	7	10	2	**19**	**25**	1	4	0	**5**	0	5	4	**9**	**14**	**39**
07:45	08:00	2	3	3	**8**	3	6	0	**9**	**17**	3	4	0	**7**	1	4	3	**8**	**15**	**32**
08:00	08:15	2	9	2	**13**	8	3	1	**12**	**25**	0	4	1	**5**	0	3	2	**5**	**10**	**35**
08:15	08:30	0	4	1	**5**	3	6	1	**10**	**15**	2	7	1	**10**	3	5	5	**13**	**23**	**38**
08:30	08:45	0	0	0	**0**	6	4	1	**11**	**11**	1	5	4	**10**	1	6	6	**13**	**23**	**34**
08:45	09:00	0	5	1	**6**	2	2	4	**8**	**14**	0	4	0	**4**	2	3	8	**13**	**17**	**31**
09:00	09:15	2	13	1	**16**	7	1	2	**10**	**26**	0	6	3	**9**	0	8	3	**11**	**20**	**46**
09:15	09:30	1	16	1	**18**	8	3	0	**11**	**29**	1	7	1	**9**	2	6	4	**12**	**21**	**50**
09:30	09:45	1	3	1	**5**	6	8	2	**16**	**21**	1	5	1	**7**	0	3	6	**9**	**16**	**37**
09:45	10:00	2	3	0	**5**	3	4	0	**7**	**12**	0	5	0	**5**	0	3	8	**11**	**16**	**28**
11:30	11:45	1	2	1	**4**	3	3	1	**7**	**11**	3	1	2	**6**	0	5	8	**13**	**19**	**30**
11:45	12:00	2	4	0	**6**	7	3	1	**11**	**17**	2	5	1	**8**	2	7	10	**19**	**27**	**44**
12:00	12:15	1	6	0	**7**	3	4	1	**8**	**15**	2	5	1	**8**	1	5	7	**13**	**21**	**36**
12:15	12:30	0	5	1	**6**	7	2	1	**10**	**16**	1	3	0	**4**	1	4	4	**9**	**13**	**29**
12:30	12:45	1	0	2	**3**	5	10	2	**17**	**20**	1	5	1	**7**	0	3	8	**11**	**18**	**38**
12:45	13:00	0	3	1	**4**	3	4	1	**8**	**12**	3	7	2	**12**	1	4	13	**18**	**30**	**42**
13:00	13:15	0	6	0	**6**	12	3	2	**17**	**23**	2	4	1	**7**	1	8	7	**16**	**23**	**46**
13:15	13:30	2	1	2	**5**	9	4	2	**15**	**20**	0	6	0	**6**	1	2	6	**9**	**15**	**35**
15:00	15:15	0	5	1	**6**	7	6	3	**16**	**22**	3	5	0	**8**	1	5	15	**21**	**29**	**51**
15:15	15:30	1	3	0	**4**	2	3	1	**6**	**10**	1	3	2	**6**	1	8	7	**16**	**22**	**32**
15:30	15:45	2	3	1	**6**	9	1	0	**10**	**16**	3	3	2	**8**	0	6	2	**8**	**16**	**32**
15:45	16:00	4	5	0	**9**	2	5	0	**7**	**16**	0	5	0	**5**	3	2	8	**13**	**18**	**34**
16:00	16:15	1	3	1	**5**	3	3	0	**6**	**11**	2	7	0	**9**	1	3	3	**7**	**16**	**27**
16:15	16:30	0	9	0	**9**	1	2	0	**3**	**12**	4	4	0	**8**	0	2	6	**8**	**16**	**28**
16:30	16:45	2	5	0	**7**	0	5	1	**6**	**13**	1	0	1	**2**	1	8	9	**18**	**20**	**33**
16:45	17:00	0	3	0	**3**	0	1	0	**1**	**4**	2	1	0	**3**	1	1	4	**6**	**9**	**13**
17:00	17:15	0	2	1	**3**	1	2	0	**3**	**6**	1	0	0	**1**	2	1	4	**7**	**8**	**14**
17:15	17:30	0	1	0	**1**	3	2	0	**5**	**6**	0	0	0	**0**	0	1	2	**3**	**3**	**9**
17:30	17:45	1	0	1	**2**	0	0	0	**0**	**2**	0	3	0	**3**	4	3	0	**7**	**10**	**12**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	3	4	**7**	**8**	**8**
Total:	None	35	132	25	**192**	157	130	33	**320**	**512**	42	124	28	**194**	31	129	183	**343**	**537**	**1,049**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HAZELDEAN RD

Survey Date: Thursday, November 23, 2017 **WO No:** 37338

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

Full Study 15 Minute U-Turn Total

		CARP RD	HAZELDEAN RD			
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	1	1
07:30	07:45	0	0	0	1	1
07:45	08:00	0	2	0	0	2
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	1	0	0	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	1	0	0	0	1
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	1	0	1
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	1	1	2
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		1	3	2	3	9

Transportation Services - Traffic Services

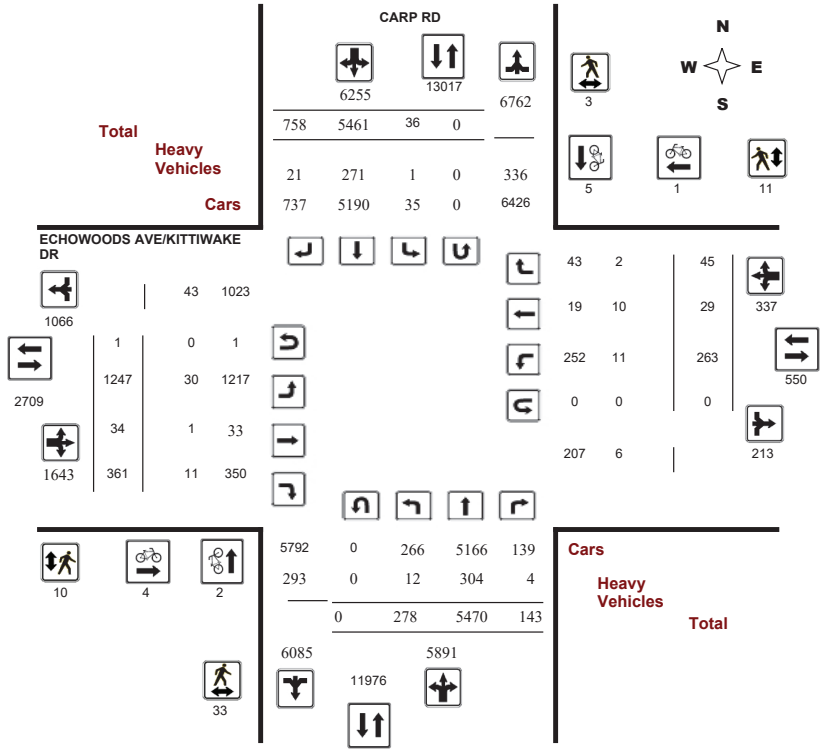
Turning Movement Count - Study Results

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017
Start Time: 07:00

WO No: 36996
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

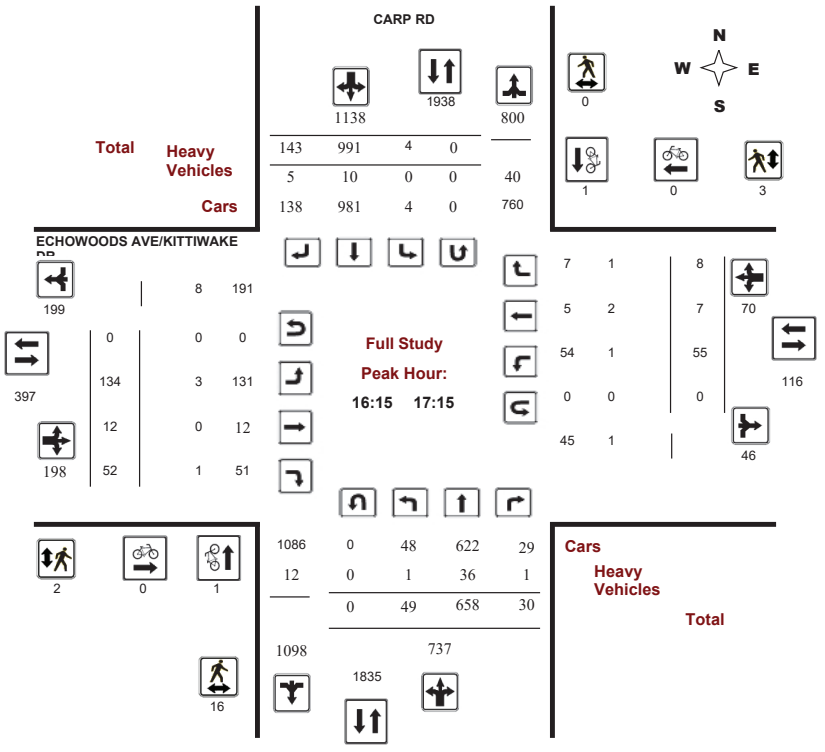
Turning Movement Count - Study Results

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017
Start Time: 07:00

WO No: 36996
Device: Miovision

Full Study Peak Hour Diagram



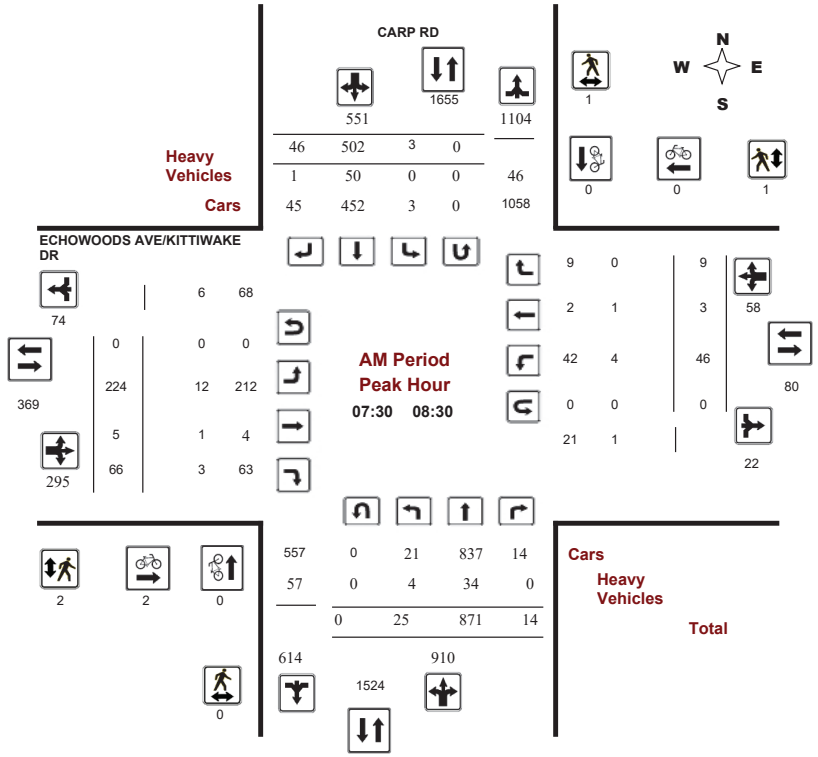
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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



Comments

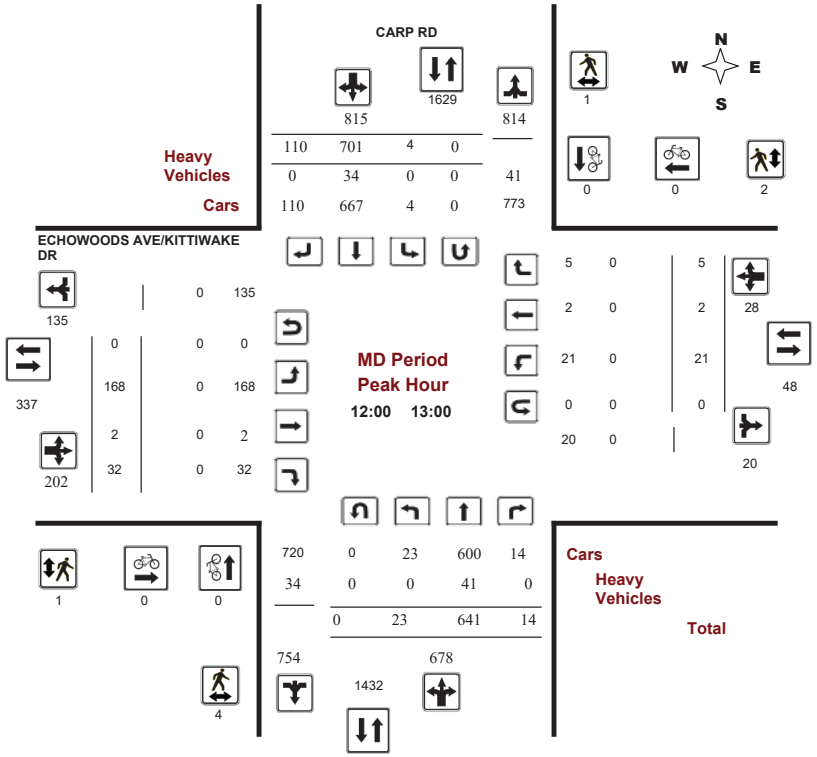
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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



Comments

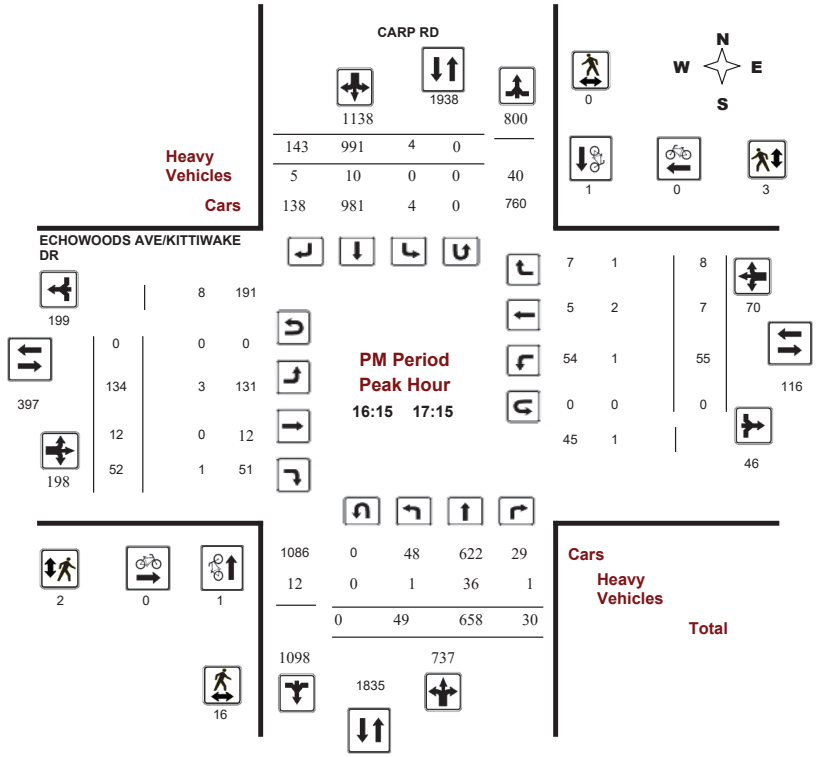
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, May 04, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 1 Westbound: 0

AADT Factor .90

	CARP RD								ECHOWOODS AVE/KITTIWAKE 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	12	903	10	**925**	7	461	38	**506**	**1431**	216	5	51	**272**	38	4	16	**58**	**330**	**1761**
08:00 09:00	28	802	14	**844**	4	470	54	**528**	**1372**	201	6	68	**275**	41	3	7	**51**	**326**	**1698**
09:00 10:00	22	743	16	**781**	4	466	42	**512**	**1293**	142	1	34	**177**	19	0	4	**23**	**200**	**1493**
11:30 12:30	19	578	9	**606**	4	657	102	**763**	**1369**	146	2	32	**180**	17	1	4	**22**	**202**	**1571**
12:30 13:30	31	628	18	**677**	0	639	88	**727**	**1404**	162	1	33	**196**	16	3	4	**23**	**219**	**1623**
15:00 16:00	58	594	23	**675**	9	823	129	**961**	**1636**	117	3	39	**159**	31	6	0	**37**	**196**	**1832**
16:00 17:00	46	666	27	**739**	6	973	128	**1107**	**1846**	108	11	45	**164**	63	7	7	**77**	**241**	**2087**
17:00 18:00	62	556	26	**644**	2	972	177	**1151**	**1795**	155	5	59	**219**	38	5	3	**46**	**265**	**2060**
Sub Total	278	5470	143	**5891**	36	5461	758	**6255**	**12146**	1247	34	361	**1642**	263	29	45	**337**	**1979**	**14125**
U Turns				**0**				**0**	**0**				**1**				**0**	**1**	**1**
Total	278	5470	143	**5891**	36	5461	758	**6255**	**12146**	1247	34	361	**1643**	263	29	45	**337**	**1980**	**14126**
EQ 12Hr	386	7603	199	**8188**	50	7591	1054	**8694**	**16883**	1733	47	502	**2284**	366	40	63	**468**	**2752**	**19635**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	328	6449	169	**6945**	42	6439	894	**7375**	**15195**	1470	40	426	**1937**	310	34	53	**397**	**2477**	**17672**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**0.9**					
AVG 24Hr	429	8448	221	**9099**	56	8434	1171	**9661**	**18760**	1926	53	558	**2538**	406	45	70	**520**	**3058**	**21818**
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

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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

Full Study 15 Minute Increments

		CARP RD									ECHOWOODS AVE/KITTIWAKE DR									
		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	3	219	2	224	3	108	14	125	34	50	2	11	63	7	1	6	14	34	426
07:15	07:30	1	218	0	219	1	98	5	104	25	52	1	9	62	8	1	4	13	25	398
07:30	07:45	2	212	3	217	1	128	8	137	19	68	1	13	82	12	1	3	16	19	452
07:45	08:00	6	254	5	265	2	127	11	140	24	46	1	18	65	11	1	3	15	24	485
08:00	08:15	9	188	4	201	0	114	15	129	23	51	2	13	66	12	1	2	15	23	411
08:15	08:30	8	217	2	227	0	133	12	145	23	59	1	22	82	11	0	1	12	23	466
08:30	08:45	4	206	5	215	2	103	10	115	23	38	2	15	55	9	1	4	14	23	399
08:45	09:00	7	191	3	201	2	120	17	139	19	53	1	18	72	9	1	0	10	19	422
09:00	09:15	5	187	4	196	0	113	13	126	23	38	0	8	46	3	0	1	4	23	372
09:15	09:30	4	219	4	227	1	124	11	136	22	34	0	9	43	2	0	0	2	22	408
09:30	09:45	8	186	4	198	1	113	8	122	22	38	0	10	48	7	0	0	7	22	375
09:45	10:00	5	151	4	160	2	116	10	128	17	32	1	7	40	7	0	3	10	17	338
11:30	11:45	3	149	1	153	0	138	16	154	28	32	0	5	37	3	0	0	3	28	347
11:45	12:00	3	129	1	133	0	166	27	193	20	35	1	12	48	3	1	1	5	20	379
12:00	12:15	4	149	1	154	3	177	36	216	16	31	0	7	38	4	0	1	5	16	413
12:15	12:30	9	151	6	166	1	176	23	200	17	48	1	8	57	7	0	2	9	17	432
12:30	12:45	4	159	3	166	0	153	27	180	20	47	1	11	59	6	2	1	9	20	414
12:45	13:00	6	182	4	192	0	195	24	219	22	42	0	6	48	4	0	1	5	22	464
13:00	13:15	13	141	6	160	0	132	18	150	10	39	0	11	50	3	1	2	6	10	366
13:15	13:30	8	146	5	159	0	159	19	178	25	34	0	5	39	3	0	0	3	25	379
15:00	15:15	14	141	4	159	2	174	32	208	20	33	1	11	45	5	2	0	7	20	419
15:15	15:30	15	142	3	160	0	207	35	242	18	20	1	10	31	11	0	0	11	18	444
15:30	15:45	16	168	10	194	4	212	30	246	18	28	1	9	38	11	0	0	11	18	489
15:45	16:00	13	143	6	162	3	230	32	265	19	36	0	9	45	4	4	0	8	19	480
16:00	16:15	13	163	8	184	2	240	27	269	20	17	2	10	29	16	2	0	18	20	500
16:15	16:30	7	165	9	181	1	255	37	293	19	27	4	14	45	21	0	2	23	19	542
16:30	16:45	17	174	7	198	0	229	29	258	11	34	2	11	47	13	3	4	20	11	523
16:45	17:00	9	164	3	176	3	249	35	287	14	30	3	10	43	13	2	1	16	14	522
17:00	17:15	16	155	11	182	0	258	42	300	9	43	3	17	63	8	2	1	11	9	556
17:15	17:30	21	142	4	167	0	248	37	285	8	43	0	20	63	12	1	1	14	8	529
17:30	17:45	8	136	4	148	0	246	48	294	17	30	2	10	43	13	0	0	13	17	498
17:45	18:00	17	123	7	147	2	220	50	272	8	39	0	12	51	5	2	1	8	8	478
Total:		278	5470	143	5891	36	5461	758	6255	613	1247	34	361	1643	263	29	45	337	613	14,126

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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

Full Study Cyclist Volume

		CARP RD			ECHOWOODS AVE/KITTIWAKE DR			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	1	1	2	0	0	0	2
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	1	0	1	1
08:15	08:30	0	0	0	1	0	1	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	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	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	2	2	0	0	0	2
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	1	1	0	0	0	1
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	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	1	1	2	0	0	0	2
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	1	0	1	1
17:45	18:00	0	0	0	0	1	1	1
Total		2	5	7	4	1	5	12

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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

Full Study Pedestrian Volume

		CARP RD			ECHOWOODS AVE/KITTIWAKE DR			
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**	1	1	**2**	**2**
07:30	07:45	0	1	**1**	1	0	**1**	**2**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	1	**1**	**1**
08:15	08:30	0	0	**0**	1	0	**1**	**1**
08:30	08:45	2	0	**2**	0	1	**1**	**3**
08:45	09:00	0	0	**0**	1	1	**2**	**2**
09:00	09:15	2	0	**2**	2	0	**2**	**4**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	2	0	**2**	0	0	**0**	**2**
11:30	11:45	1	0	**1**	0	0	**0**	**1**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	1	1	**2**	1	2	**3**	**5**
12:45	13:00	3	0	**3**	0	0	**0**	**3**
13:00	13:15	0	0	**0**	0	2	**2**	**2**
13:15	13:30	0	1	**1**	1	0	**1**	**2**
15:00	15:15	1	0	**1**	0	0	**0**	**1**
15:15	15:30	3	0	**3**	0	0	**0**	**3**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	2	0	**2**	0	0	**0**	**2**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	3	0	**3**	0	0	**0**	**3**
16:30	16:45	13	0	**13**	0	1	**1**	**14**
16:45	17:00	0	0	**0**	2	1	**3**	**3**
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**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total	.....	33	3	**36**	10	11	**21**	**57**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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

Full Study Heavy Vehicles

		CARP RD									ECHOWOODS AVE/KITTIWAKE DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	4	0	**4**	1	23	6	**30**	**34**	2	0	0	**2**	1	1	0	**2**	**4**	**38**
07:15	07:30	0	11	0	**11**	0	13	1	**14**	**25**	2	0	0	**2**	0	1	1	**2**	**4**	**29**
07:30	07:45	0	5	0	**5**	0	14	0	**14**	**19**	2	0	1	**3**	1	0	0	**1**	**4**	**23**
07:45	08:00	1	8	0	**9**	0	15	0	**15**	**24**	3	0	1	**4**	1	0	0	**1**	**5**	**29**
08:00	08:15	2	11	0	**13**	0	10	0	**10**	**23**	5	1	0	**6**	1	1	0	**2**	**8**	**31**
08:15	08:30	1	10	0	**11**	0	11	1	**12**	**23**	2	0	1	**3**	1	0	0	**1**	**4**	**27**
08:30	08:45	0	11	0	**11**	0	12	0	**12**	**23**	2	0	0	**2**	1	0	0	**1**	**3**	**26**
08:45	09:00	0	6	1	**7**	0	11	1	**12**	**19**	0	0	1	**1**	1	1	0	**2**	**3**	**22**
09:00	09:15	1	15	0	**16**	0	7	0	**7**	**23**	0	0	1	**1**	0	0	0	**0**	**1**	**24**
09:15	09:30	0	13	0	**13**	0	9	0	**9**	**22**	1	0	0	**1**	0	0	0	**0**	**1**	**23**
09:30	09:45	0	11	0	**11**	0	10	1	**11**	**22**	1	0	0	**1**	0	0	0	**0**	**1**	**23**
09:45	10:00	0	11	0	**11**	0	6	0	**6**	**17**	1	0	1	**2**	0	0	0	**0**	**2**	**19**
11:30	11:45	0	13	0	**13**	0	14	1	**15**	**28**	0	0	0	**0**	0	0	0	**0**	**0**	**28**
11:45	12:00	0	11	0	**11**	0	9	0	**9**	**20**	0	0	0	**0**	0	0	0	**0**	**0**	**20**
12:00	12:15	0	11	0	**11**	0	5	0	**5**	**16**	0	0	0	**0**	0	0	0	**0**	**0**	**16**
12:15	12:30	0	8	0	**8**	0	9	0	**9**	**17**	0	0	0	**0**	0	0	0	**0**	**0**	**17**
12:30	12:45	0	10	0	**10**	0	10	0	**10**	**20**	0	0	0	**0**	0	0	0	**0**	**0**	**20**
12:45	13:00	0	12	0	**12**	0	10	0	**10**	**22**	0	0	0	**0**	0	0	0	**0**	**0**	**22**
13:00	13:15	1	5	0	**6**	0	4	0	**4**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
13:15	13:30	0	11	0	**11**	0	14	0	**14**	**25**	0	0	1	**1**	0	0	0	**0**	**1**	**26**
15:00	15:15	2	10	0	**12**	0	8	0	**8**	**20**	1	0	0	**1**	0	2	0	**2**	**3**	**23**
15:15	15:30	0	11	0	**11**	0	7	0	**7**	**18**	0	0	0	**0**	2	0	0	**2**	**2**	**20**
15:30	15:45	1	12	0	**13**	0	5	0	**5**	**18**	0	0	1	**1**	0	0	0	**0**	**1**	**19**
15:45	16:00	1	10	1	**12**	0	6	1	**7**	**19**	2	0	0	**2**	0	0	0	**0**	**2**	**21**
16:00	16:15	1	11	0	**12**	0	7	1	**8**	**20**	1	0	2	**3**	1	1	0	**2**	**5**	**25**
16:15	16:30	0	14	1	**15**	0	3	1	**4**	**19**	1	0	0	**1**	1	0	1	**2**	**3**	**22**
16:30	16:45	0	7	0	**7**	0	3	1	**4**	**11**	2	0	1	**3**	0	1	0	**1**	**4**	**15**
16:45	17:00	0	10	0	**10**	0	3	1	**4**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
17:00	17:15	1	5	0	**6**	0	1	2	**3**	**9**	0	0	0	**0**	0	1	0	**1**	**1**	**10**
17:15	17:30	0	4	0	**4**	0	3	1	**4**	**8**	2	0	0	**2**	0	1	0	**1**	**3**	**11**
17:30	17:45	0	9	0	**9**	0	7	1	**8**	**17**	0	0	0	**0**	0	0	0	**0**	**0**	**17**
17:45	18:00	0	4	1	**5**	0	2	1	**3**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
Total:	None	12	304	4	**320**	1	271	21	**293**	**613**	30	1	11	**42**	11	10	2	**23**	**65**	**678**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ ECHOWOODS AVE/KITTIWAKE DR

Survey Date: Thursday, May 04, 2017 **WO No:** 36996

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

Full Study 15 Minute U-Turn Total

Time Period		CARP RD Northbound U-Turn Total	CARP RD Southbound U-Turn Total	ECHOWOODS AVE/KITTIWAKE DR Eastbound U-Turn Total	ECHOWOODS AVE/KITTIWAKE DR Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	1	0	1
17:45	18:00	0	0	0	0	0
Total		0	0	1	0	1

Transportation Services - Traffic Services

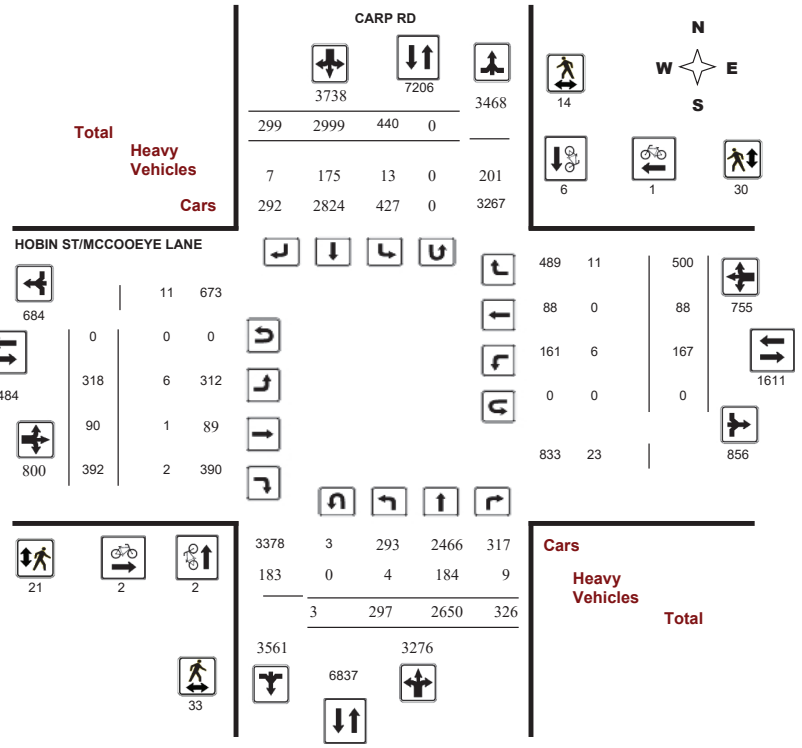
Turning Movement Count - Study Results

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study Diagram



Transportation Services - Traffic Services

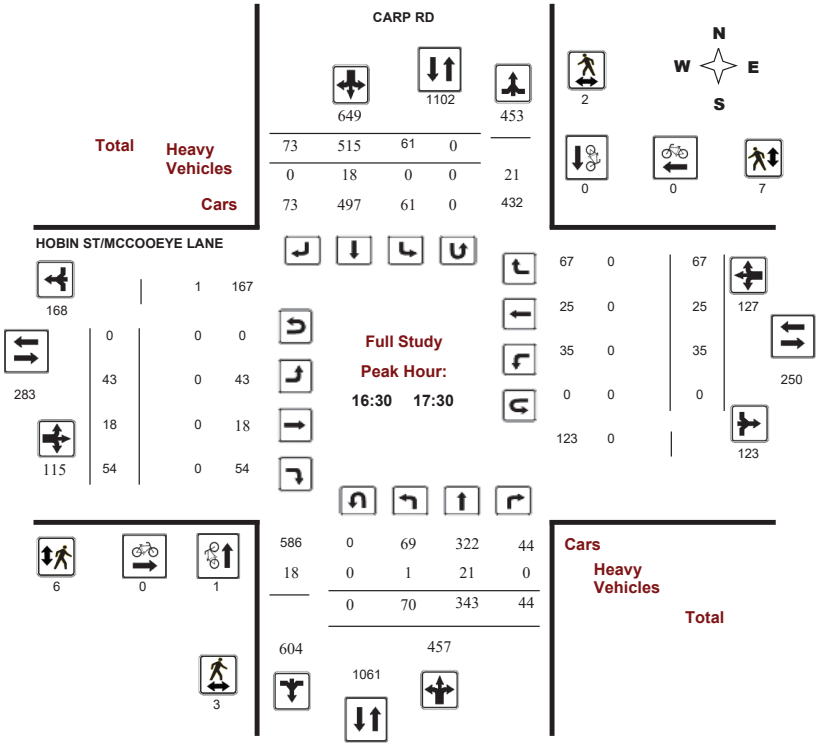
Turning Movement Count - Study Results

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study Peak Hour Diagram



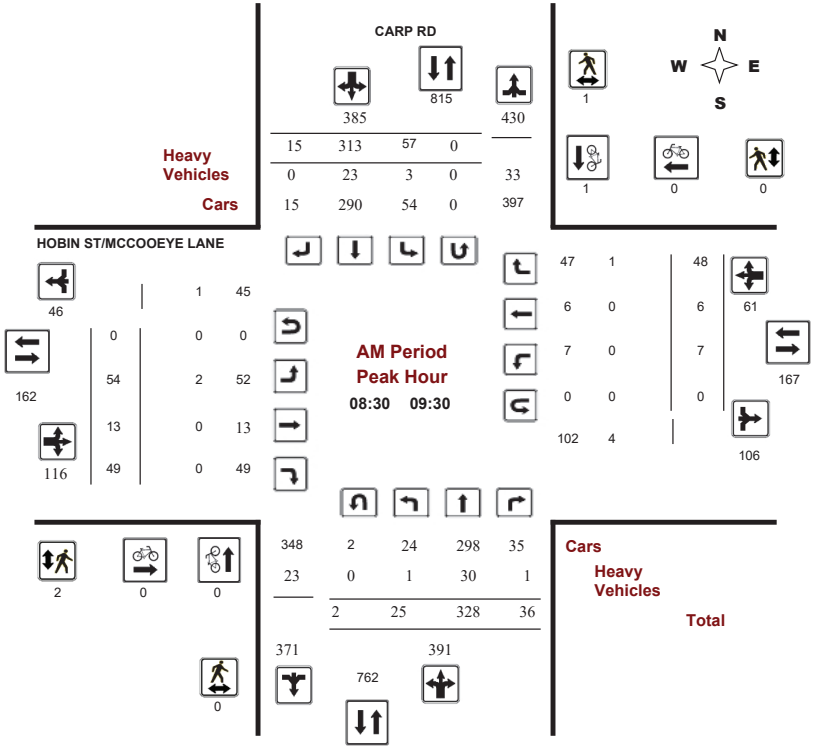
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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



Comments

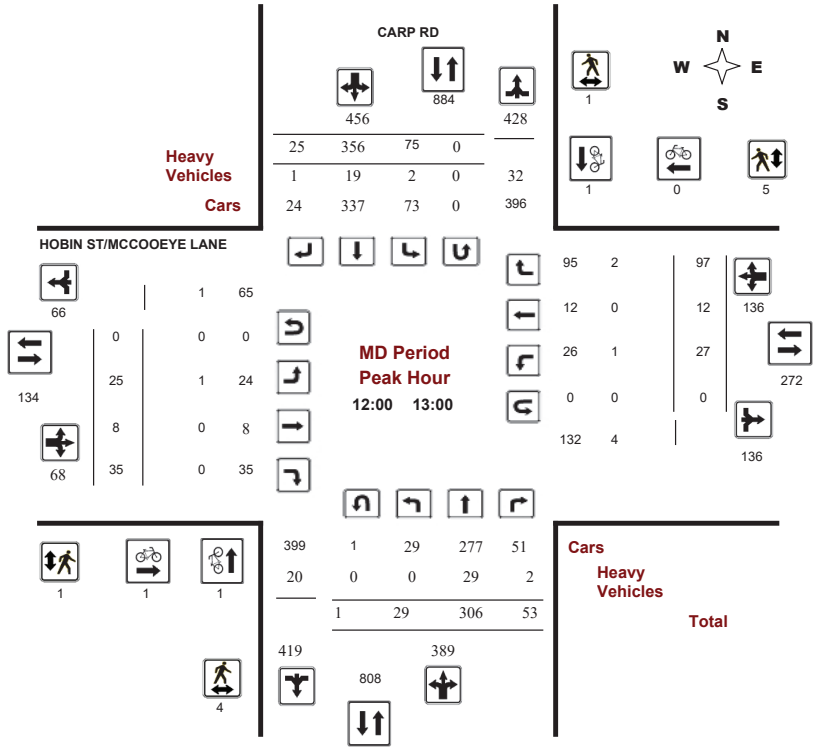
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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



Comments

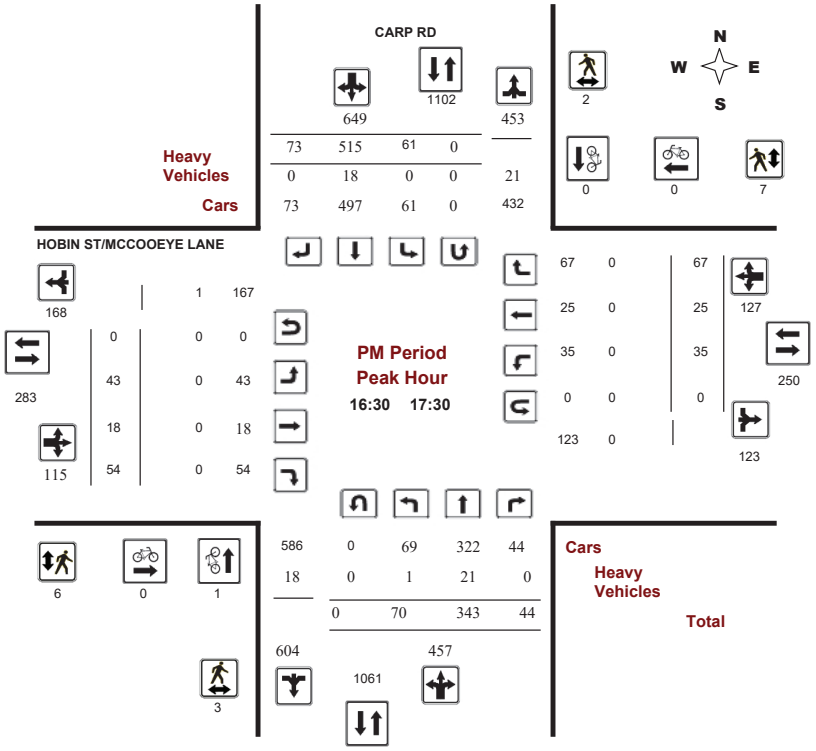
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, May 04, 2017

Total Observed U-Turns

Northbound: 3 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

	CARP RD								HOBIN ST/MCCOOEYE LANE									
	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	11	352	27	**390**	40	255	17	**312**	**702**	72	8	63	**143**	10	3	43	**56**	**199**	**901**
08:00 09:00	22	343	23	**388**	48	293	17	**358**	**746**	43	16	52	**111**	8	2	49	**59**	**170**	**916**
09:00 10:00	27	317	43	**387**	50	293	11	**354**	**741**	51	7	49	**107**	10	6	54	**70**	**177**	**918**
11:30 12:30	24	311	60	**395**	65	368	19	**452**	**847**	26	11	33	**70**	20	8	86	**114**	**184**	**1031**
12:30 13:30	30	294	39	**363**	73	345	28	**446**	**809**	23	7	43	**73**	32	14	80	**126**	**199**	**1008**
15:00 16:00	39	353	48	**440**	51	440	59	**550**	**990**	24	13	47	**84**	24	13	72	**109**	**193**	**1183**
16:00 17:00	60	362	38	**460**	65	507	69	**641**	**1101**	47	14	45	**106**	33	23	58	**114**	**220**	**1321**
17:00 18:00	84	318	48	**450**	48	498	79	**625**	**1075**	32	14	60	**106**	30	19	58	**107**	**213**	**1288**
Sub Total	297	2650	326	**3273**	440	2999	299	**3738**	**7011**	318	90	392	**800**	167	88	500	**755**	**1555**	**8566**
U Turns	3			**3**	0			**0**	**3**	**0**			**0**	0			**0**	**0**	**3**
Total	300	2650	326	**3276**	440	2999	299	**3738**	**7014**	318	90	392	**800**	167	88	500	**755**	**1555**	**8569**
EQ 12Hr	417	3683	453	**4553**	612	4169	416	**5197**	**9750**	442	125	545	**1112**	232	122	695	**1049**	**2161**	**11911**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	375	3315	408	**4098**	551	3752	374	**4677**	**8775**	398	112	490	**1000**	209	110	626	**945**	**1945**	**10720**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	491	4343	534	**5368**	722	4915	490	**6127**	**11495**	521	147	642	**1310**	274	144	820	**1238**	**2548**	**14043**
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

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study 15 Minute Increments

		CARP RD									HOBIN ST/MCCOOEYE LANE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	2	77	9	88	12	61	4	77	**165**	17	0	8	25	0	1	11	12	**37**	**202**
07:15	07:30	0	99	3	102	10	55	5	70	**172**	17	4	13	34	2	0	16	18	**52**	**224**
07:30	07:45	5	94	5	104	4	68	4	76	**180**	21	2	18	41	3	1	8	12	**53**	**233**
07:45	08:00	4	82	10	96	14	71	4	89	**185**	17	2	24	43	5	1	8	14	**57**	**242**
08:00	08:15	8	88	8	104	14	68	7	89	**193**	13	4	17	34	3	0	15	18	**52**	**245**
08:15	08:30	2	96	3	101	6	74	3	83	**184**	10	5	13	28	1	0	13	14	**42**	**226**
08:30	08:45	6	86	2	94	16	69	5	90	**184**	11	4	10	25	0	1	11	12	**37**	**221**
08:45	09:00	8	73	10	91	12	82	2	96	**187**	9	3	12	24	4	1	10	15	**39**	**226**
09:00	09:15	9	82	9	100	15	70	6	91	**191**	17	3	17	37	1	2	14	17	**54**	**245**
09:15	09:30	4	87	15	106	14	92	2	108	**214**	17	3	10	30	2	2	13	17	**47**	**261**
09:30	09:45	7	79	9	95	8	70	2	80	**175**	9	1	12	22	7	1	15	23	**45**	**220**
09:45	10:00	7	69	10	86	13	61	1	75	**161**	8	0	10	18	0	1	12	13	**31**	**192**
11:30	11:45	5	82	17	104	12	80	4	96	**200**	10	5	12	27	4	2	16	22	**49**	**249**
11:45	12:00	4	69	12	85	18	117	6	141	**226**	4	0	6	10	4	3	20	27	**37**	**263**
12:00	12:15	7	95	18	120	18	90	3	111	**231**	6	2	8	16	6	1	25	32	**48**	**279**
12:15	12:30	9	65	13	87	17	81	6	104	**191**	6	4	7	17	6	2	25	33	**50**	**241**
12:30	12:45	7	53	8	68	19	82	6	107	**175**	5	1	8	14	10	0	28	38	**52**	**227**
12:45	13:00	7	93	14	114	21	103	10	134	**248**	8	1	12	21	5	9	19	33	**54**	**302**
13:00	13:15	9	84	11	104	20	72	6	98	**202**	4	1	12	17	5	1	11	17	**34**	**236**
13:15	13:30	7	64	6	77	13	88	6	107	**184**	6	4	11	21	12	4	22	38	**59**	**243**
15:00	15:15	7	87	10	104	12	111	9	132	**236**	9	4	10	23	9	2	7	18	**41**	**277**
15:15	15:30	10	71	12	93	12	111	14	137	**230**	1	2	10	13	4	2	18	24	**37**	**267**
15:30	15:45	10	103	11	124	13	107	20	140	**264**	3	5	10	18	7	4	22	33	**51**	**315**
15:45	16:00	12	92	15	119	14	111	16	141	**260**	11	2	17	30	4	5	25	34	**64**	**324**
16:00	16:15	14	101	9	124	16	117	17	150	**274**	10	4	7	21	8	5	11	24	**45**	**319**
16:15	16:30	17	78	14	109	14	134	16	164	**273**	12	3	12	27	7	4	15	26	**53**	**326**
16:30	16:45	18	89	8	115	19	124	16	159	**274**	15	4	14	33	12	7	16	35	**68**	**342**
16:45	17:00	11	94	7	112	16	132	20	168	**280**	10	3	12	25	6	7	16	29	**54**	**334**
17:00	17:15	20	82	10	112	12	134	16	162	**274**	8	3	15	26	10	5	13	28	**54**	**328**
17:15	17:30	21	78	19	118	14	125	21	160	**278**	10	8	13	31	7	6	22	35	**66**	**344**
17:30	17:45	21	82	10	113	8	129	26	163	**276**	6	2	18	26	6	4	15	25	**51**	**327**
17:45	18:00	22	76	9	107	14	110	16	140	**247**	8	1	14	23	7	4	8	19	**42**	**289**
Total:		300	2650	326	3276	440	2999	299	3738	**7014**	318	90	392	800	167	88	500	755	**7014**	**8,569**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study Cyclist Volume

Time Period		CARP RD			HOBIN ST/MCCOOEYE LANE			
		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	1	**1**	0	0	**0**	**1**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	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	1	**1**	0	0	**0**	**1**
09:45	10:00	0	2	**2**	0	1	**1**	**3**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	1	**1**	0	0	**0**	**1**
12:15	12:30	1	0	**1**	0	0	**0**	**1**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	1	0	**1**	**1**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	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**	1	0	**1**	**1**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	1	0	**1**	0	0	**0**	**1**
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		2	6	**8**	2	1	**3**	**11**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study Pedestrian Volume

Time Period		CARP RD			HOBIN ST/MCCOOEYE LANE			
		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	1	**1**	**1**
07:15	07:30	0	1	**1**	1	0	**1**	**2**
07:30	07:45	2	1	**3**	1	0	**1**	**4**
07:45	08:00	0	0	**0**	1	0	**1**	**1**
08:00	08:15	5	0	**5**	1	0	**1**	**6**
08:15	08:30	0	0	**0**	0	2	**2**	**2**
08:30	08:45	0	1	**1**	0	0	**0**	**1**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	2	0	**2**	**2**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	1	**1**	0	3	**3**	**4**
09:45	10:00	0	2	**2**	1	0	**1**	**3**
11:30	11:45	0	0	**0**	1	0	**1**	**1**
11:45	12:00	0	1	**1**	0	0	**0**	**1**
12:00	12:15	1	0	**1**	0	2	**2**	**3**
12:15	12:30	1	0	**1**	0	0	**0**	**1**
12:30	12:45	0	1	**1**	1	1	**2**	**3**
12:45	13:00	2	0	**2**	0	2	**2**	**4**
13:00	13:15	1	1	**2**	1	1	**2**	**4**
13:15	13:30	4	1	**5**	3	1	**4**	**9**
15:00	15:15	1	0	**1**	0	3	**3**	**4**
15:15	15:30	1	0	**1**	0	1	**1**	**2**
15:30	15:45	3	1	**4**	0	3	**3**	**7**
15:45	16:00	2	0	**2**	0	0	**0**	**2**
16:00	16:15	1	0	**1**	1	2	**3**	**4**
16:15	16:30	2	0	**2**	0	1	**1**	**3**
16:30	16:45	2	2	**4**	1	4	**5**	**9**
16:45	17:00	0	0	**0**	0	3	**3**	**3**
17:00	17:15	0	0	**0**	2	0	**2**	**2**
17:15	17:30	1	0	**1**	3	0	**3**	**4**
17:30	17:45	1	1	**2**	0	0	**0**	**2**
17:45	18:00	3	0	**3**	1	0	**1**	**4**
Total	.....	33	14	**47**	21	30	**51**	**98**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study Heavy Vehicles

CARP RD **HOBIN ST/MCCOOEYE LANE**

Time Period		Northbound				Southbound					Eastbound				Westbound						
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	4	0	**4**	1	11	1	**13**	**17**	0	0	0	**0**	0	0	0	**0**	**0**	**17**
07:15	07:30	0	6	0	**6**	1	6	1	**8**	**14**	0	0	0	**0**	0	0	2	**2**	**2**	**16**
07:30	07:45	0	3	0	**3**	0	8	0	**8**	**11**	0	0	1	**1**	0	0	0	**0**	**1**	**12**
07:45	08:00	0	10	1	**11**	2	3	0	**5**	**16**	0	0	0	**0**	1	0	0	**1**	**1**	**17**
08:00	08:15	1	8	1	**10**	1	7	1	**9**	**19**	0	0	0	**0**	0	0	2	**2**	**2**	**21**
08:15	08:30	0	3	0	**3**	0	3	0	**3**	**6**	0	0	0	**0**	1	0	1	**2**	**2**	**8**
08:30	08:45	0	7	0	**7**	2	3	0	**5**	**12**	0	0	0	**0**	0	0	1	**1**	**1**	**13**
08:45	09:00	1	4	0	**5**	0	8	0	**8**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
09:00	09:15	0	11	0	**11**	0	7	0	**7**	**18**	2	0	0	**2**	0	0	0	**0**	**2**	**20**
09:15	09:30	0	8	1	**9**	1	5	0	**6**	**15**	0	0	0	**0**	0	0	0	**0**	**0**	**15**
09:30	09:45	0	5	0	**5**	0	10	0	**10**	**15**	0	0	0	**0**	1	0	2	**3**	**3**	**18**
09:45	10:00	0	9	0	**9**	0	3	0	**3**	**12**	0	0	0	**0**	0	0	0	**0**	**0**	**12**
11:30	11:45	0	7	0	**7**	2	6	1	**9**	**16**	2	0	0	**2**	0	0	1	**1**	**3**	**19**
11:45	12:00	0	4	2	**6**	0	9	0	**9**	**15**	0	0	0	**0**	0	0	0	**0**	**0**	**15**
12:00	12:15	0	12	1	**13**	0	5	0	**5**	**18**	0	0	0	**0**	0	0	0	**0**	**0**	**18**
12:15	12:30	0	5	0	**5**	0	2	0	**2**	**7**	1	0	0	**1**	0	0	0	**0**	**1**	**8**
12:30	12:45	0	3	0	**3**	2	5	0	**7**	**10**	0	0	0	**0**	1	0	1	**2**	**2**	**12**
12:45	13:00	0	9	1	**10**	0	7	1	**8**	**18**	0	0	0	**0**	0	0	1	**1**	**1**	**19**
13:00	13:15	0	4	1	**5**	0	2	2	**4**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
13:15	13:30	0	7	0	**7**	0	11	0	**11**	**18**	0	1	0	**1**	1	0	0	**1**	**2**	**20**
15:00	15:15	0	4	0	**4**	0	5	0	**5**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
15:15	15:30	0	7	0	**7**	0	6	0	**6**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
15:30	15:45	0	4	0	**4**	0	3	0	**3**	**7**	0	0	0	**0**	1	0	0	**1**	**1**	**8**
15:45	16:00	0	5	0	**5**	0	3	0	**3**	**8**	1	0	1	**2**	0	0	0	**0**	**2**	**10**
16:00	16:15	0	4	0	**4**	1	5	0	**6**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
16:15	16:30	0	6	1	**7**	0	6	0	**6**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
16:30	16:45	1	8	0	**9**	0	6	0	**6**	**15**	0	0	0	**0**	0	0	0	**0**	**0**	**15**
16:45	17:00	0	5	0	**5**	0	6	0	**6**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
17:00	17:15	0	4	0	**4**	0	2	0	**2**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
17:15	17:30	0	4	0	**4**	0	4	0	**4**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
17:30	17:45	0	2	0	**2**	0	3	0	**3**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
17:45	18:00	1	2	0	**3**	0	5	0	**5**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
Total:	None	4	184	9	**197**	13	175	7	**195**	**392**	6	1	2	**9**	6	0	11	**17**	**26**	**418**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ HOBIN ST/MCCOOEYE LANE

Survey Date: Thursday, May 04, 2017 **WO No:** 36998

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

Full Study 15 Minute U-Turn Total

CARP RD **HOBIN ST/MCCOOEYE LANE**

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	1	0	0	0	**1**
08:45	09:00	1	0	0	0	**1**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	0	0	**0**
12:15	12:30	1	0	0	0	**1**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	0	0	0	0	**0**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	0	**0**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		3	0	0	0	**3**

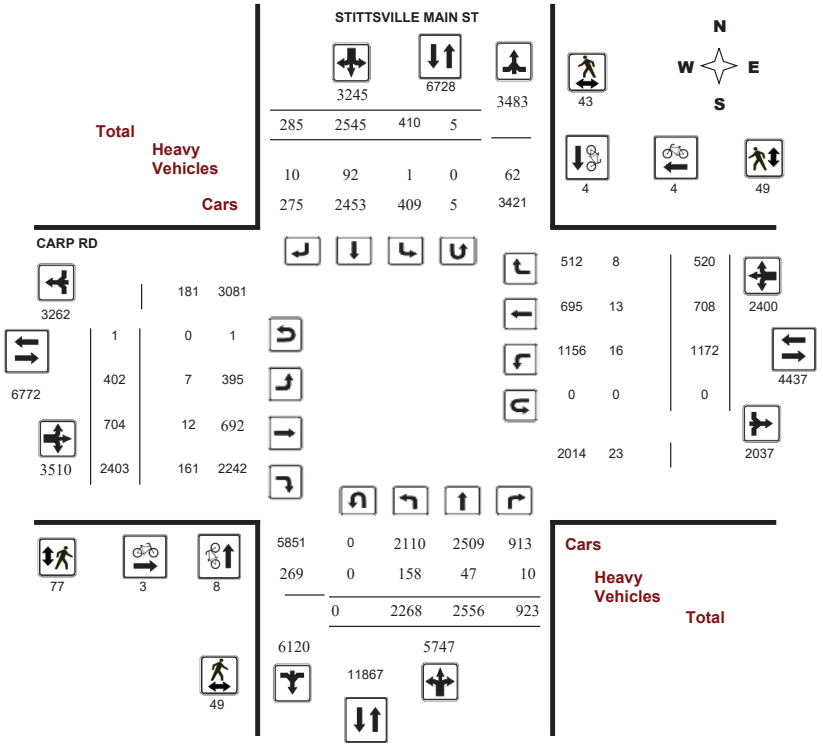
Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017
Start Time: 07:00
WO No: 36999
Device: Miovision

Full Study Diagram



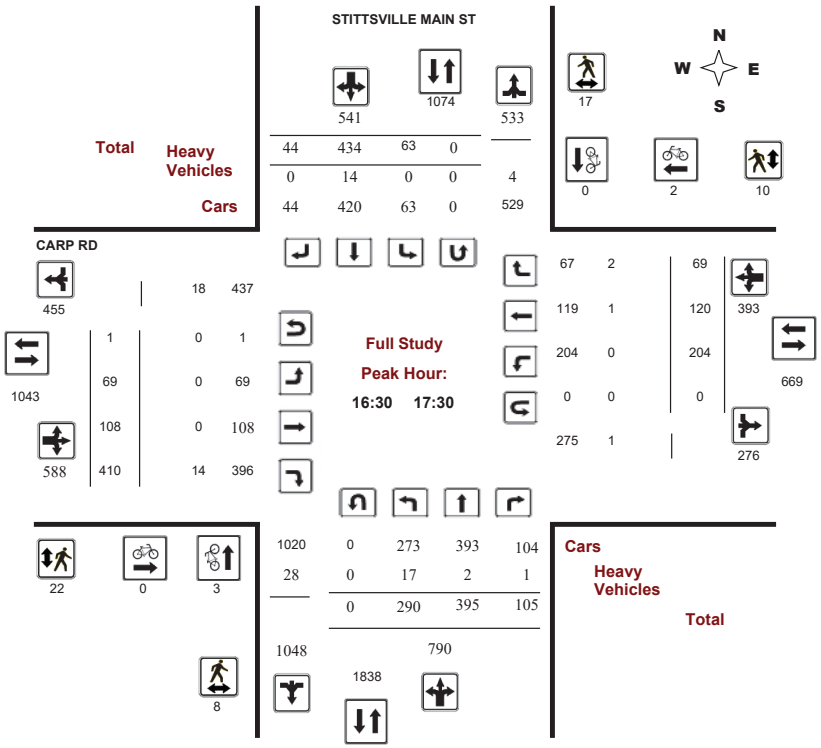
Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017
Start Time: 07:00
WO No: 36999
Device: Miovision

Full Study Peak Hour Diagram



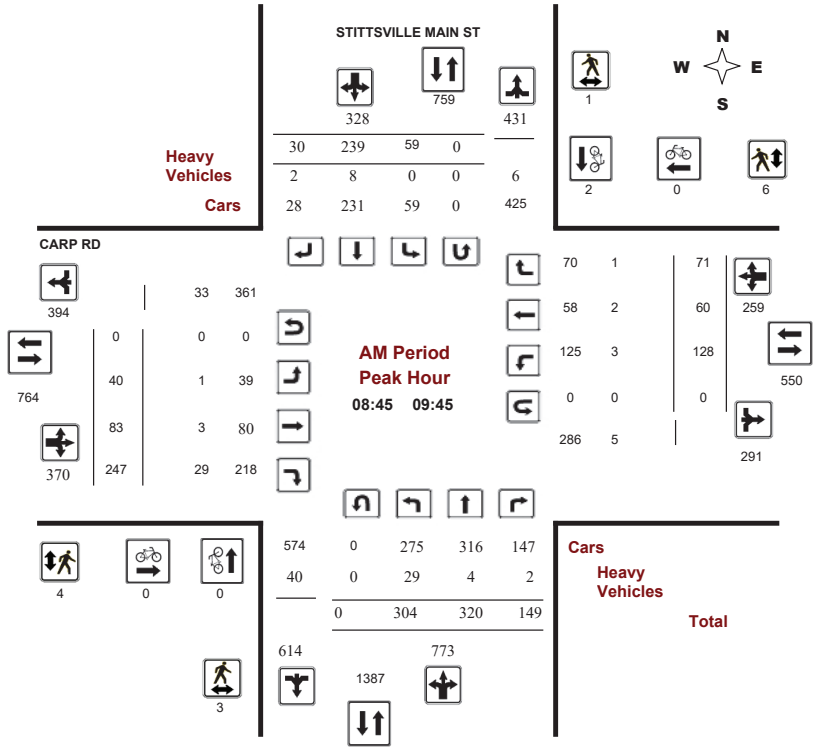
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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



Comments

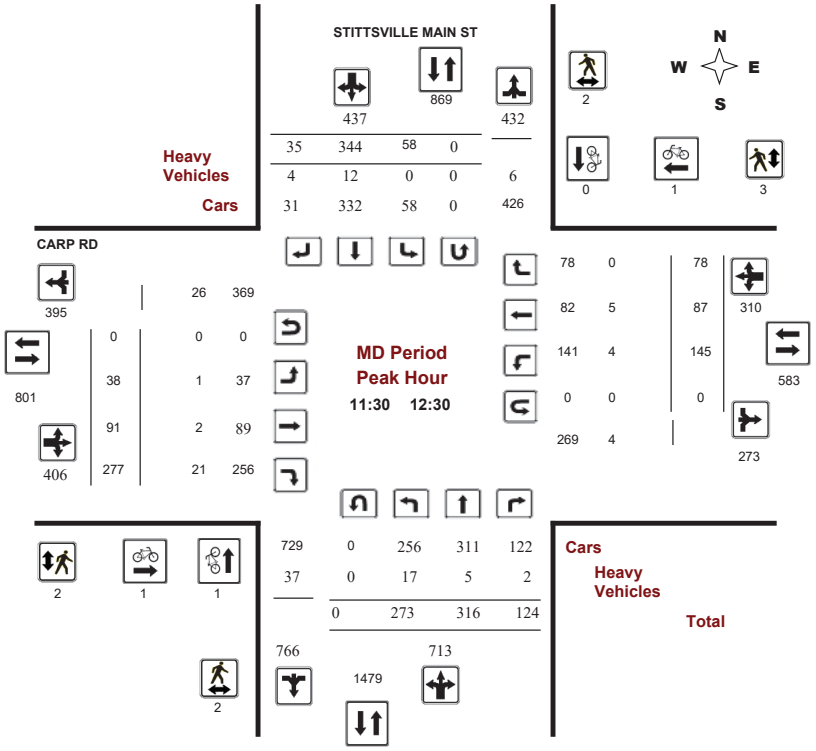
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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



Comments

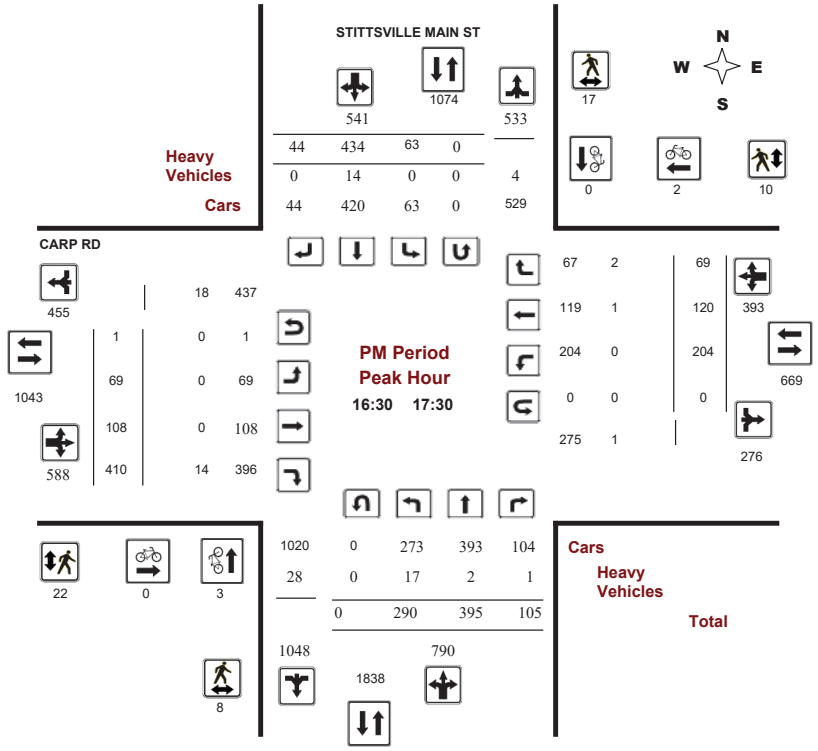
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, May 04, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 5

Eastbound: 1 Westbound: 0

AADT Factor .90

	STITTSVILLE MAIN ST								CARP 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	314	238	118	**670**	32	160	25	**217**	**887**	47	59	218	**324**	75	56	52	**183**	**507**	**1394**
08:00 09:00	304	288	124	**716**	48	222	21	**291**	**1007**	40	72	239	**351**	94	65	56	**215**	**566**	**1573**
09:00 10:00	291	326	148	**765**	54	241	27	**322**	**1087**	43	76	229	**348**	128	66	74	**268**	**616**	**1703**
11:30 12:30	273	316	124	**713**	58	344	35	**437**	**1150**	38	91	277	**406**	145	87	78	**310**	**716**	**1866**
12:30 13:30	249	305	97	**651**	52	285	33	**370**	**1021**	56	85	277	**418**	163	78	79	**320**	**738**	**1759**
15:00 16:00	263	325	107	**695**	62	415	60	**537**	**1232**	54	98	356	**508**	179	118	60	**357**	**865**	**2097**
16:00 17:00	290	385	116	**791**	50	424	31	**505**	**1296**	65	112	390	**567**	197	126	57	**380**	**947**	**2243**
17:00 18:00	284	373	89	**746**	54	454	53	**561**	**1307**	59	111	417	**587**	191	112	64	**367**	**954**	**2261**
Sub Total	2268	2556	923	**5747**	410	2545	285	**3240**	**8987**	402	704	2403	**3509**	1172	708	520	**2400**	**5909**	**14896**
U Turns				**0**				**5**	**5**				**1**				**0**	**1**	**6**
Total	2268	2556	923	**5747**	410	2545	285	**3245**	**8992**	402	704	2403	**3510**	1172	708	520	**2400**	**5910**	**14902**
EQ 12Hr	3153	3553	1283	**7988**	570	3538	396	**4511**	**12499**	559	979	3340	**4879**	1629	984	723	**3336**	**8215**	**20714**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	2674	3014	1088	**6776**	483	3001	336	**3826**	**11249**	474	830	2833	**4138**	1382	835	613	**2830**	**7394**	**18643**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**0.9**					
AVG 24Hr	3503	3948	1426	**8876**	633	3931	440	**5012**	**13888**	621	1087	3711	**5421**	1810	1093	803	**3707**	**9128**	**23016**
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

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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

Full Study 15 Minute Increments

		STITTSVILLE MAIN ST									CARP 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	75	45	27	147	5	38	6	49	7	9	11	48	68	13	12	11	36	7	300
07:15	07:30	77	59	22	158	6	40	7	53	9	11	14	51	76	9	17	18	44	9	331
07:30	07:45	83	65	33	181	7	32	7	46	10	12	13	58	83	25	14	9	48	10	358
07:45	08:00	79	69	36	184	14	50	5	69	22	15	21	61	97	28	13	14	55	22	405
08:00	08:15	85	79	34	198	8	43	6	57	13	12	20	53	85	23	13	13	49	13	389
08:15	08:30	72	73	37	182	12	57	2	71	10	15	16	63	94	22	28	17	67	10	414
08:30	08:45	80	69	27	176	7	57	3	67	10	7	17	54	78	19	8	16	43	10	364
08:45	09:00	67	67	26	160	21	65	10	96	6	6	19	69	94	30	16	10	56	6	406
09:00	09:15	83	76	46	205	16	52	6	74	17	9	21	54	84	33	16	14	63	17	426
09:15	09:30	80	105	48	233	9	57	7	73	12	15	24	68	107	31	15	29	75	12	488
09:30	09:45	74	72	29	175	13	65	7	85	10	10	19	56	85	34	13	18	65	10	410
09:45	10:00	54	73	25	152	16	67	7	90	12	9	12	51	72	30	22	13	65	12	379
11:30	11:45	77	68	35	180	9	83	7	99	6	10	27	54	91	30	18	24	72	6	442
11:45	12:00	60	82	32	174	21	85	9	115	17	7	19	90	116	40	21	17	78	17	483
12:00	12:15	80	80	32	192	14	94	12	120	11	8	25	72	105	41	29	19	89	11	506
12:15	12:30	56	86	25	167	14	82	7	103	6	13	20	61	94	34	19	18	71	6	435
12:30	12:45	52	90	33	175	9	59	5	73	9	17	18	66	101	43	11	18	72	9	421
12:45	13:00	76	78	23	177	16	82	11	109	9	15	25	86	126	34	22	26	82	9	494
13:00	13:15	72	76	26	174	16	71	11	98	10	10	21	56	87	51	22	17	90	10	449
13:15	13:30	49	61	15	125	11	73	6	92	11	14	21	69	104	35	23	18	76	11	397
15:00	15:15	64	79	32	175	16	105	16	139	12	13	23	89	125	43	23	10	76	12	515
15:15	15:30	59	71	24	154	17	96	9	122	11	14	26	85	125	48	28	24	100	11	501
15:30	15:45	66	83	21	170	18	115	21	154	9	12	22	93	127	50	35	15	100	9	551
15:45	16:00	74	92	30	196	11	99	14	125	8	15	27	89	131	38	32	11	81	8	533
16:00	16:15	83	87	30	200	12	90	14	116	8	14	19	95	128	43	29	16	88	8	532
16:15	16:30	66	82	27	175	13	119	2	134	12	14	44	91	149	48	29	11	88	12	546
16:30	16:45	75	108	23	206	15	106	6	127	10	21	25	105	152	53	34	13	100	10	585
16:45	17:00	66	108	36	210	10	109	9	128	9	16	24	99	139	53	34	17	104	9	581
17:00	17:15	73	107	17	197	21	108	14	143	8	16	28	115	159	54	28	15	97	8	596
17:15	17:30	76	72	29	177	17	111	15	143	7	16	31	91	138	44	24	24	92	7	550
17:30	17:45	68	86	26	180	8	112	14	134	3	19	29	114	162	53	33	15	101	3	577
17:45	18:00	67	108	17	192	8	123	10	141	4	8	23	97	128	40	27	10	77	4	538
Total:		2268	2556	923	5747	410	2545	285	3245	318	402	704	2403	3510	1172	708	520	2400	318	14,902

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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

Full Study Cyclist Volume

		STITTSVILLE MAIN ST			CARP RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	1	1	1
07:15	07:30	0	0	0	1	0	1	1
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	1	0	1	0	0	0	1
08:45	09:00	0	1	1	0	0	0	1
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	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	0	0	0	0	0	0	0
12:00	12:15	0	0	0	1	0	1	1
12:15	12:30	1	0	1	0	1	1	2
12:30	12:45	0	1	1	0	0	0	1
12:45	13:00	0	0	0	1	0	1	1
13:00	13:15	0	1	1	0	0	0	1
13:15	13:30	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
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	2	0	2	0	0	0	2
16:30	16:45	1	0	1	0	0	0	1
16:45	17:00	2	0	2	0	2	2	4
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		8	4	12	3	4	7	19

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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

Full Study Pedestrian Volume

	STITTSVILLE MAIN ST			CARP 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**	2	0	**2**	**2**
07:15 07:30	0	0	**0**	0	1	**1**	**1**
07:30 07:45	0	0	**0**	0	1	**1**	**1**
07:45 08:00	3	0	**3**	0	0	**0**	**3**
08:00 08:15	3	2	**5**	1	0	**1**	**6**
08:15 08:30	0	0	**0**	2	0	**2**	**2**
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	1	**1**	1	3	**4**	**5**
09:15 09:30	3	0	**3**	2	2	**4**	**7**
09:30 09:45	0	0	**0**	1	0	**1**	**1**
09:45 10:00	3	2	**5**	2	0	**2**	**7**
11:30 11:45	1	0	**1**	2	0	**2**	**3**
11:45 12:00	1	0	**1**	0	2	**2**	**3**
12:00 12:15	0	1	**1**	0	1	**1**	**2**
12:15 12:30	0	1	**1**	0	0	**0**	**1**
12:30 12:45	4	1	**5**	3	2	**5**	**10**
12:45 13:00	1	0	**1**	3	2	**5**	**6**
13:00 13:15	4	0	**4**	5	0	**5**	**9**
13:15 13:30	1	1	**2**	2	2	**4**	**6**
15:00 15:15	2	4	**6**	2	4	**6**	**12**
15:15 15:30	1	1	**2**	7	2	**9**	**11**
15:30 15:45	2	3	**5**	3	2	**5**	**10**
15:45 16:00	5	4	**9**	7	0	**7**	**16**
16:00 16:15	6	3	**9**	3	6	**9**	**18**
16:15 16:30	1	1	**2**	5	1	**6**	**8**
16:30 16:45	4	4	**8**	8	2	**10**	**18**
16:45 17:00	2	7	**9**	9	3	**12**	**21**
17:00 17:15	1	3	**4**	1	2	**3**	**7**
17:15 17:30	1	3	**4**	4	3	**7**	**11**
17:30 17:45	0	1	**1**	1	6	**7**	**8**
17:45 18:00	0	0	**0**	1	1	**2**	**2**
Total	49	43	**92**	77	49	**126**	**218**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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

Full Study Heavy Vehicles

		STITTSVILLE MAIN ST									CARP 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	5	1	0	**6**	0	1	0	**1**	**7**	0	0	12	**12**	0	0	0	**0**	**12**	**19**
07:15	07:30	3	1	0	**4**	0	5	0	**5**	**9**	0	0	4	**4**	0	1	1	**2**	**6**	**15**
07:30	07:45	4	3	1	**8**	0	2	0	**2**	**10**	0	2	7	**9**	1	1	0	**2**	**11**	**21**
07:45	08:00	8	6	1	**15**	0	7	0	**7**	**22**	1	1	2	**4**	2	1	2	**5**	**9**	**31**
08:00	08:15	9	4	0	**13**	0	0	0	**0**	**13**	1	1	4	**6**	1	0	0	**1**	**7**	**20**
08:15	08:30	2	2	2	**6**	1	3	0	**4**	**10**	1	0	3	**4**	0	0	1	**1**	**5**	**15**
08:30	08:45	5	1	0	**6**	0	4	0	**4**	**10**	0	0	4	**4**	0	0	0	**0**	**4**	**14**
08:45	09:00	4	1	0	**5**	0	1	0	**1**	**6**	0	1	7	**8**	1	1	0	**2**	**10**	**16**
09:00	09:15	12	1	1	**14**	0	3	0	**3**	**17**	0	0	7	**7**	0	0	0	**0**	**7**	**24**
09:15	09:30	7	1	1	**9**	0	2	1	**3**	**12**	0	0	6	**6**	0	1	1	**2**	**8**	**20**
09:30	09:45	6	1	0	**7**	0	2	1	**3**	**10**	1	2	9	**12**	2	0	0	**2**	**14**	**24**
09:45	10:00	6	2	0	**8**	0	4	0	**4**	**12**	0	1	5	**6**	0	1	0	**1**	**7**	**19**
11:30	11:45	2	0	1	**3**	0	1	2	**3**	**6**	0	2	6	**8**	1	1	0	**2**	**10**	**16**
11:45	12:00	7	2	1	**10**	0	6	1	**7**	**17**	0	0	10	**10**	1	1	0	**2**	**12**	**29**
12:00	12:15	6	1	0	**7**	0	3	1	**4**	**11**	0	0	4	**4**	1	3	0	**4**	**8**	**19**
12:15	12:30	2	2	0	**4**	0	2	0	**2**	**6**	1	0	1	**2**	1	0	0	**1**	**3**	**9**
12:30	12:45	4	3	0	**7**	0	2	0	**2**	**9**	1	1	5	**7**	0	0	1	**1**	**8**	**17**
12:45	13:00	4	1	0	**5**	0	1	3	**4**	**9**	0	0	7	**7**	2	0	0	**2**	**9**	**18**
13:00	13:15	5	2	0	**7**	0	3	0	**3**	**10**	0	0	1	**1**	0	1	0	**1**	**2**	**12**
13:15	13:30	6	2	0	**8**	0	3	0	**3**	**11**	0	1	11	**12**	2	0	0	**2**	**14**	**25**
15:00	15:15	3	2	1	**6**	0	6	0	**6**	**12**	0	0	4	**4**	0	0	0	**0**	**4**	**16**
15:15	15:30	7	0	0	**7**	0	3	1	**4**	**11**	0	0	6	**6**	1	0	0	**1**	**7**	**18**
15:30	15:45	3	1	0	**4**	0	5	0	**5**	**9**	0	0	4	**4**	0	0	0	**0**	**4**	**13**
15:45	16:00	4	0	0	**4**	0	4	0	**4**	**8**	0	0	5	**5**	0	0	0	**0**	**5**	**13**
16:00	16:15	4	2	0	**6**	0	2	0	**2**	**8**	1	0	0	**1**	0	0	0	**0**	**1**	**9**
16:15	16:30	8	1	0	**9**	0	3	0	**3**	**12**	0	0	5	**5**	0	0	0	**0**	**5**	**17**
16:30	16:45	7	0	0	**7**	0	3	0	**3**	**10**	0	0	4	**4**	0	0	0	**0**	**4**	**14**
16:45	17:00	4	1	0	**5**	0	4	0	**4**	**9**	0	0	5	**5**	0	0	1	**1**	**6**	**15**
17:00	17:15	2	1	0	**3**	0	5	0	**5**	**8**	0	0	2	**2**	0	1	0	**1**	**3**	**11**
17:15	17:30	4	0	1	**5**	0	2	0	**2**	**7**	0	0	3	**3**	0	0	1	**1**	**4**	**11**
17:30	17:45	2	1	0	**3**	0	0	0	**0**	**3**	0	0	3	**3**	0	0	0	**0**	**3**	**6**
17:45	18:00	3	1	0	**4**	0	0	0	**0**	**4**	0	0	5	**5**	0	0	0	**0**	**5**	**9**
Total:	None	158	47	10	**215**	1	92	10	**103**	**318**	7	12	161	**180**	16	13	8	**37**	**217**	**535**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ STITTSVILLE MAIN ST

Survey Date: Thursday, May 04, 2017 **WO No:** 36999

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

Full Study 15 Minute U-Turn Total

		STITTSVILLE MAIN ST		CARP RD		
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	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	2	0	0	2
15:00	15:15	0	2	0	0	2
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	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	1	0	1
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	5	1	0	6

Appendix C

Synchro Intersection Worksheets – Existing Conditions

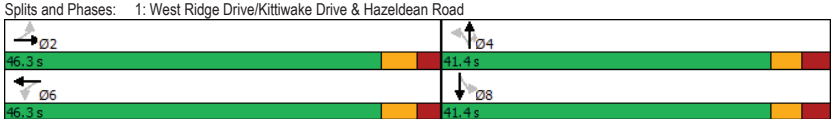
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	232	16	71	121	14	32	12	382	25	15	10
Future Volume (vph)	2	232	16	71	121	14	32	12	382	25	15	10
Satd. Flow (prot)	1658	1694	0	1580	1637	0	0	1646	1483	1658	1618	0
Flt Permitted	0.662			0.590				0.770		0.725		
Satd. Flow (perm)	1152	1694	0	977	1637	0	0	1297	1446	1260	1618	0
Satd. Flow (RTOR)		5			9				424		11	
Lane Group Flow (vph)	2	276	0	79	150	0	0	49	424	28	28	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	28.0	28.0		28.0	28.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	46.3	46.3		46.3	46.3		41.4	41.4	41.4	41.4	41.4	
Total Split (%)	52.8%	52.8%		52.8%	52.8%		47.2%	47.2%	47.2%	47.2%	47.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None	None	None	None	
Act Effct Green (s)	28.1	28.1		28.1	28.1			11.8	11.8	11.8	11.8	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.22	0.22	0.22	0.22	
v/c Ratio	0.00	0.30		0.15	0.17			0.17	0.65	0.10	0.08	
Control Delay	7.5	8.6		8.3	7.4			17.4	7.4	16.4	12.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	7.5	8.6		8.3	7.4			17.4	7.4	16.4	12.2	
LOS	A	A		A	A			B	A	B	B	
Approach Delay		8.6			7.7			8.4			14.3	
Approach LOS		A			A			A			B	
Queue Length 50th (m)	0.1	11.4		3.0	5.4			3.7	0.0	2.1	1.3	
Queue Length 95th (m)	1.0	32.7		11.9	17.9			10.1	16.3	6.8	5.8	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	878	1293		745	1251			865	1106	840	1083	
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	0.00	0.21		0.11	0.12			0.06	0.38	0.03	0.03	

Intersection Summary
Cycle Length: 87.7
Actuated Cycle Length: 52.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65

Lanes, Volumes, Timings
1: West Ridge Drive/Kittiwake Drive & Hazeldean Road
Existing
AM Peak Hour

Intersection Signal Delay: 8.6 — Intersection LOS: A
Intersection Capacity Utilization 74.7% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	607	0	0	202	1	0	0	0	4	0	4
Future Volume (vph)	29	607	0	0	202	1	0	0	0	4	0	4
Satd. Flow (prot)	1580	3283	0	1745	1712	1483	0	1745	0	1353	0	1483
Flt Permitted	0.619											
Satd. Flow (perm)	1030	3283	0	1745	1712	1483	0	1745	0	1424	0	1483
Satd. Flow (RTOR)						31						29
Lane Group Flow (vph)	32	674	0	0	224	1	0	0	0	4	0	4
Turn Type	Perm	NA		Perm	NA	Perm				Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		29.1	29.1	29.1	34.3	34.3		34.3		34.3
Total Split (s)	80.0	80.0		80.0	80.0	80.0	35.0	35.0		35.0		35.0
Total Split (%)	69.6%	69.6%		69.6%	69.6%	69.6%	30.4%	30.4%		30.4%		30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	110.5	110.5			110.5	110.5				10.0		10.0
Actuated g/C Ratio	0.96	0.96			0.96	0.96				0.09		0.09
v/c Ratio	0.03	0.21			0.14	0.00				0.03		0.03
Control Delay	1.1	0.9			2.0	0.0				49.0		0.2
Queue Delay	0.0	0.0			0.0	0.0				0.0		0.0
Total Delay	1.1	0.9			2.0	0.0				49.0		0.2
LOS	A	A			A	A				D		A
Approach Delay		0.9			2.0						24.6	
Approach LOS		A			A						C	
Queue Length 50th (m)	0.0	0.0			0.0	0.0				0.8		0.0
Queue Length 95th (m)	2.8	19.9			27.1	m0.0				4.2		0.0
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	990	3155			1645	1426				355		391
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	0.03	0.21			0.14	0.00				0.01		0.01

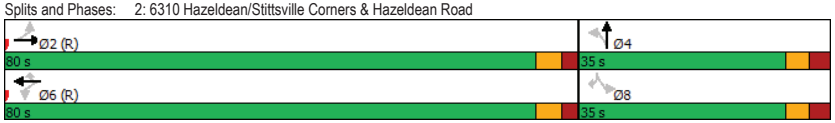
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.21

Intersection Signal Delay: 1.4	Intersection LOS: A
Intersection Capacity Utilization 37.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	22	475	379	6	0	9	
Future Volume (vph)	22	475	379	6	0	9	
Satd. Flow (prot)	1375	3131	3121	0	987	0	
Flt Permitted	0.503						
Satd. Flow (perm)	728	3131	3121	0	987	0	
Satd. Flow (RTOR)			3		466		
Lane Group Flow (vph)	24	528	428	0	10	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	75.7	75.7	75.7		34.3		5.0
Total Split (%)	65.8%	65.8%	65.8%		29.8%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	110.5	110.5	110.5		10.0		
Actuated g/C Ratio	0.96	0.96	0.96		0.09		
v/c Ratio	0.03	0.18	0.14		0.02		
Control Delay	0.3	0.2	0.8		0.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	0.3	0.2	0.8		0.1		
LOS	A	A	A		A		
Approach Delay		0.2	0.8		0.1		
Approach LOS		A	A		A		
Queue Length 50th (m)	0.0	0.0	0.0		0.0		
Queue Length 95th (m)	m0.3	2.3	12.4		0.0		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	699	3007	2998		592		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.03	0.18	0.14		0.02		

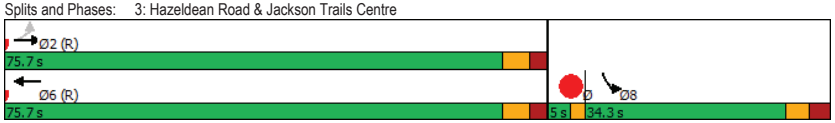
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 75 (65%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 0.5	Intersection LOS: A
Intersection Capacity Utilization 38.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre

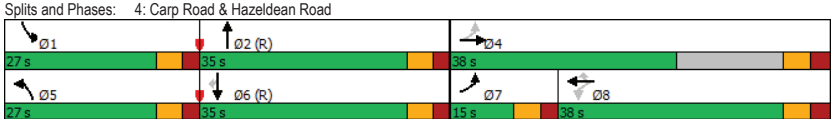


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	254	82	9	104	275	57	378	14	229	289	47
Future Volume (vph)	275	254	82	9	104	275	57	378	14	229	289	47
Satd. Flow (prot)	1658	3085	0	1386	1604	1441	1458	3216	0	1445	1575	1339
Flt Permitted	0.492			0.530			0.950			0.950		
Satd. Flow (perm)	852	3085	0	772	1604	1410	1456	3216	0	1442	1575	1309
Satd. Flow (RTOR)		45				306		3				149
Lane Group Flow (vph)	306	373	0	10	116	306	63	436	0	254	321	52
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	15.0	38.0		38.0	38.0	38.0	27.0	35.0		27.0	35.0	35.0
Total Split (%)	13.0%	33.0%		33.0%	33.0%	33.0%	23.5%	30.4%		23.5%	30.4%	30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	31.9	31.4		16.4	16.4	16.4	10.3	39.0		25.9	57.0	57.0
Actuated g/C Ratio	0.28	0.27		0.14	0.14	0.14	0.09	0.34		0.23	0.50	0.50
v/c Ratio	1.03	0.43		0.09	0.51	0.66	0.48	0.40		0.78	0.41	0.07
Control Delay	96.3	29.7		39.8	51.7	14.5	61.2	31.8		51.0	37.2	3.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	96.3	29.7		39.8	51.7	14.5	61.2	31.8		51.0	37.2	3.8
LOS	F	C		D	D	B	E	C		D	D	A
Approach Delay		59.7			25.1			35.6			40.0	
Approach LOS		E			C			D			D	
Queue Length 50th (m)	~70.8	32.9		2.0	25.2	0.0	13.7	38.9		56.4	72.6	0.0
Queue Length 95th (m)	#78.8	37.3		6.4	37.8	42.9	26.5	60.6		#108.6	105.9	m3.5
Internal Link Dist (m)		168.3			634.2			616.4			97.8	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	298	1271		210	437	607	266	1092		325	779	723
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	1.03	0.29		0.05	0.27	0.50	0.24	0.40		0.78	0.41	0.07

Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03
Intersection Signal Delay: 42.1 Intersection LOS: D
Intersection Capacity Utilization 73.3% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	5	66	46	3	9	25	879	14	3	468	46
Future Volume (vph)	224	5	66	46	3	9	25	879	14	3	468	46
Satd. Flow (prot)	1610	1426	0	0	1532	0	1458	1708	0	1658	1618	1483
Flt Permitted	0.751				0.740		0.355			0.076		
Satd. Flow (perm)	1270	1426	0	0	1179	0	544	1708	0	133	1618	1447
Satd. Flow (RTOR)		73			8			1				84
Lane Group Flow (vph)	249	79	0	0	64	0	28	993	0	3	520	51
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		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)	30.3	30.3		29.3	29.3		10.6	30.0		10.6	30.0	30.0
Total Split (s)	40.0	40.0		40.0	40.0		12.0	63.0		12.0	63.0	63.0
Total Split (%)	34.8%	34.8%		34.8%	34.8%		10.4%	54.8%		10.4%	54.8%	54.8%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	2.3
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3			6.3		5.6	6.0		5.6	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	27.8	27.8			27.8		74.2	72.6		71.4	67.6	67.6
Actuated g/C Ratio	0.24	0.24			0.24		0.65	0.63		0.62	0.59	0.59
v/c Ratio	0.81	0.20			0.22		0.07	0.92		0.02	0.55	0.06
Control Delay	60.8	9.4			30.3		9.0	29.4		9.3	19.9	1.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	60.8	9.4			30.3		9.0	29.4		9.3	19.9	1.2
LOS	E	A			C		A	C		A	B	A
Approach Delay		48.4			30.3			28.8			18.2	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	52.2	1.0			9.9		1.3	162.4		0.3	76.6	0.0
Queue Length 95th (m)	78.4	12.1			20.5		m4.1	m#317.4		1.4	121.4	2.3
Internal Link Dist (m)		65.8			95.1			144.9			438.0	
Turn Bay Length (m)	65.5						24.5			36.0		36.8
Base Capacity (vph)	372	469			351		402	1078		167	950	884
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	0.67	0.17			0.18		0.07	0.92		0.02	0.55	0.06

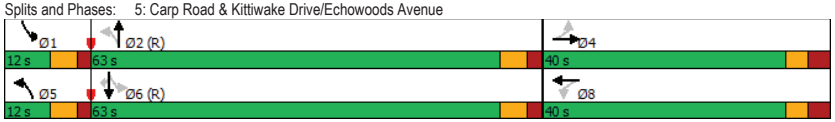
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 29.0	Intersection LOS: C
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	328	36	57	313	15
Future Volume (vph)	54	13	49	7	6	48	27	328	36	57	313	15
Satd. Flow (prot)	0	1593	0	0	1526	0	1626	1617	0	1610	1654	0
Flt Permitted		0.859			0.976		0.311			0.250		
Satd. Flow (perm)	0	1400	0	0	1499	0	531	1617	0	424	1654	0
Satd. Flow (RTOR)		54			53			7			3	
Lane Group Flow (vph)	0	128	0	0	68	0	30	404	0	63	365	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	52.0	52.0		52.0	52.0		28.0	28.0		28.0	28.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		47.0			47.0		21.6	21.6		21.6	21.6	
Actuated g/C Ratio		0.59			0.59		0.27	0.27		0.27	0.27	
v/c Ratio		0.15			0.08		0.21	0.91		0.55	0.81	
Control Delay		5.2			3.3		32.7	62.1		45.7	43.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		5.2			3.3		32.7	62.1		45.7	43.0	
LOS		A			A		C	E		D	D	
Approach Delay		5.2			3.3			60.0			43.4	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		4.6			0.9		4.2	65.7		8.1	50.5	
Queue Length 95th (m)		11.7			5.6		m9.1	#110.8		#24.6	#91.7	
Internal Link Dist (m)		50.8			70.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		844			902		148	457		118	465	
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		0.15			0.08		0.20	0.88		0.53	0.78	

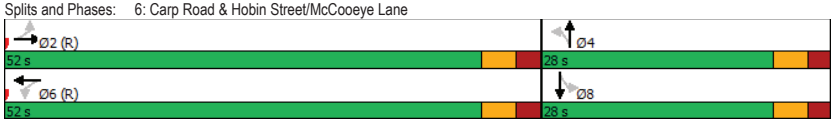
Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 43.0	Intersection LOS: D
Intersection Capacity Utilization 63.0%	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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



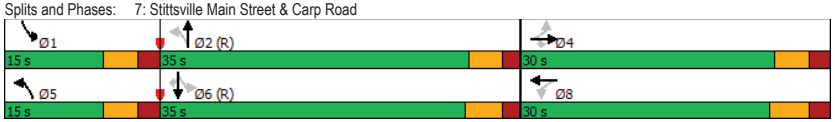
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	83	247	128	60	71	304	320	149	59	239	30
Future Volume (vph)	40	83	247	128	60	71	304	320	149	59	239	30
Satd. Flow (prot)	1642	1712	1351	1658	1578	0	1537	1646	0	1658	1728	1414
Flt Permitted	0.664			0.697			0.487			0.416		
Satd. Flow (perm)	1146	1712	1317	1211	1578	0	785	1646	0	724	1728	1374
Satd. Flow (RTOR)			274		76			34				115
Lane Group Flow (vph)	44	92	274	142	146	0	338	522	0	66	266	33
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.9	29.9		10.5	29.1		10.5	29.5	29.5
Total Split (s)	30.0	30.0	30.0	30.0	30.0		15.0	35.0		15.0	35.0	35.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		18.8%	43.8%		18.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.7	3.7		3.3	3.3		3.3	3.7	3.7
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2		2.2	1.8		2.2	1.8	1.8
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)	5.5	5.5	5.5	5.9	5.9		5.5	5.1		5.5	5.5	5.5
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.8	15.8	15.8	15.4	15.4		52.3	43.6		42.9	36.1	36.1
Actuated g/C Ratio	0.20	0.20	0.20	0.19	0.19		0.65	0.54		0.54	0.45	0.45
v/c Ratio	0.19	0.27	0.57	0.61	0.40		0.54	0.57		0.14	0.34	0.05
Control Delay	33.5	35.3	15.2	39.8	16.6		11.2	17.3		7.6	17.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.4		0.0	0.0		0.0	0.0	0.0
Total Delay	33.5	35.3	15.2	39.8	16.9		11.2	17.3		7.6	17.6	0.1
LOS	C	D	B	D	B		B	B		A	B	A
Approach Delay		21.7			28.2			14.9			14.2	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	5.4	11.4	19.4	20.1	9.2		18.4	47.2		2.9	25.5	0.0
Queue Length 95th (m)	m5.0	m10.1	m14.6	33.3	21.3		42.8	#111.5		9.2	49.1	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	350	524	593	364	528		624	911		523	780	683
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	122		0	0		0	0	13
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.13	0.18	0.46	0.39	0.36		0.54	0.57		0.13	0.34	0.05

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61
Intersection Signal Delay: 18.2 — Intersection LOS: B
Intersection Capacity Utilization 74.1% — 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: 7: Stittsville Main Street & Carp Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	215	63	381	336	88	21	28	222	34	15	12
Future Volume (vph)	11	215	63	381	336	88	21	28	222	34	15	12
Satd. Flow (prot)	1658	1686	0	1658	1682	0	0	1689	1483	1642	1425	0
Flt Permitted	0.480			0.572				0.848		0.722		
Satd. Flow (perm)	836	1686	0	998	1682	0	0	1453	1483	1248	1425	0
Satd. Flow (RTOR)		26			23				247		13	
Lane Group Flow (vph)	12	309	0	423	471	0	0	54	247	38	30	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	85.0	85.0		85.0	85.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	70.8%	70.8%		70.8%	70.8%		29.2%	29.2%	29.2%	29.2%	29.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	95.0	95.0		95.0	95.0			12.3	12.3	12.3	12.3	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.10	0.10	0.10	0.10	
v/c Ratio	0.02	0.23		0.54	0.35			0.36	0.66	0.30	0.19	
Control Delay	3.5	3.7		5.1	2.7			56.0	14.9	54.6	34.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	3.5	3.7		5.1	2.7			56.0	14.9	54.6	34.1	
LOS	A	A		A	A			E	B	D	C	
Approach Delay		3.7			3.8			22.2			45.6	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.4	12.0		8.3	0.0			12.3	0.0	8.6	3.8	
Queue Length 95th (m)	2.3	29.2		35.0	13.0			23.2	22.7	18.1	12.0	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	661	1340		790	1337			346	541	297	349	
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	0.02	0.23		0.54	0.35			0.16	0.46	0.13	0.09	

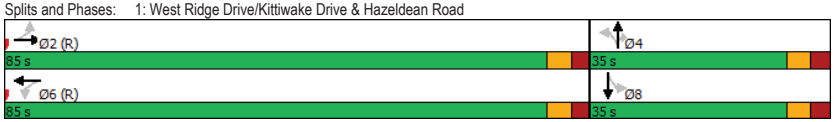
Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 9.1	Intersection LOS: A
Intersection Capacity Utilization 64.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	420	0	0	773	6	0	0	0	42	0	37
Future Volume (vph)	51	420	0	0	773	6	0	0	0	42	0	37
Satd. Flow (prot)	1658	3283	0	1745	1745	1483	0	1745	0	1658	0	1483
Flt Permitted	0.297									0.757		
Satd. Flow (perm)	518	3283	0	1745	1745	1438	0	1745	0	1321	0	1483
Satd. Flow (RTOR)						30						41
Lane Group Flow (vph)	57	467	0	0	859	7	0	0	0	47	0	41
Turn Type	Perm	NA		Perm	NA	Perm				Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		34.1	34.1	34.1	34.3	34.3		34.3		34.3
Total Split (s)	85.0	85.0		85.0	85.0	85.0	35.0	35.0		35.0		35.0
Total Split (%)	70.8%	70.8%		70.8%	70.8%	70.8%	29.2%	29.2%		29.2%		29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	101.0	101.0			101.0	101.0				11.1		11.1
Actuated g/C Ratio	0.84	0.84			0.84	0.84				0.09		0.09
v/c Ratio	0.13	0.17			0.59	0.01				0.39		0.24
Control Delay	3.0	2.2			8.5	0.0				60.3		17.9
Queue Delay	0.0	0.0			0.4	0.0				0.0		0.0
Total Delay	3.0	2.2			9.0	0.0				60.3		17.9
LOS	A	A			A	A				E		B
Approach Delay		2.3			8.9						40.5	
Approach LOS		A			A						D	
Queue Length 50th (m)	2.0	9.1			40.9	0.0				10.7		0.0
Queue Length 95th (m)	4.6	12.3			m60.6	m0.0				22.3		10.5
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	436	2763			1468	1215				315		385
Starvation Cap Reductn	0	0			221	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	0.13	0.17			0.69	0.01				0.15		0.11

Intersection Summary

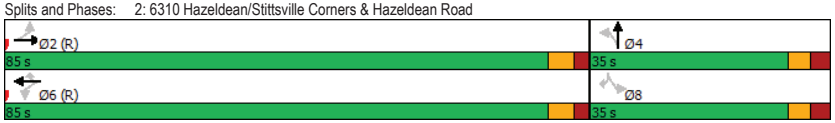
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 61.6%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	79	539	794	7	13	46	
Future Volume (vph)	79	539	794	7	13	46	
Satd. Flow (prot)	1658	3316	3280	0	1543	0	
Flt Permitted	0.317				0.989		
Satd. Flow (perm)	553	3316	3280	0	1543	0	
Satd. Flow (RTOR)			1		51		
Lane Group Flow (vph)	88	599	890	0	65	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	80.7	80.7	80.7		34.3		5.0
Total Split (%)	67.3%	67.3%	67.3%		28.6%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	101.6	101.6	101.6		10.2		
Actuated g/C Ratio	0.85	0.85	0.85		0.08		
v/c Ratio	0.19	0.21	0.32		0.37		
Control Delay	1.1	0.7	2.9		25.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	1.1	0.7	2.9		25.1		
LOS	A	A	A		C		
Approach Delay		0.7	2.9		25.1		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.9	3.1	22.6		3.1		
Queue Length 95th (m)	m1.1	m3.2	30.2		16.7		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	468	2808	2777		399		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.19	0.21	0.32		0.16		

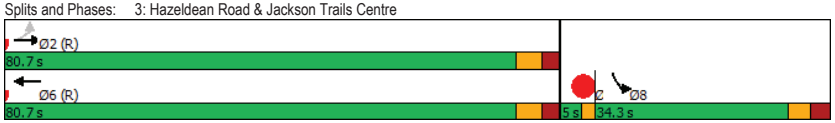
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 2.9	Intersection LOS: A
Intersection Capacity Utilization 56.0%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



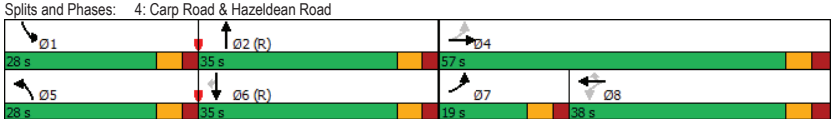
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	242	132	45	457	338	125	343	27	349	468	227
Future Volume (vph)	88	242	132	45	457	338	125	343	27	349	468	227
Satd. Flow (prot)	1610	3109	0	1551	1745	1427	1658	3241	0	1658	1745	1483
Flt Permitted	0.102			0.508			0.950			0.950		
Satd. Flow (perm)	173	3109	0	826	1745	1399	1648	3241	0	1651	1745	1436
Satd. Flow (RTOR)		106				331		6				211
Lane Group Flow (vph)	98	416	0	50	508	376	139	411	0	388	520	252
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	19.0	57.0		38.0	38.0	38.0	28.0	35.0		28.0	35.0	35.0
Total Split (%)	15.8%	47.5%		31.7%	31.7%	31.7%	23.3%	29.2%		23.3%	29.2%	29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	50.9	50.4		33.1	33.1	33.1	15.3	28.9		22.0	35.6	35.6
Actuated g/C Ratio	0.42	0.42		0.28	0.28	0.28	0.13	0.24		0.18	0.30	0.30
v/c Ratio	0.48	0.30		0.22	1.06	0.60	0.66	0.52		1.28	1.01	0.44
Control Delay	27.5	13.8		36.5	97.2	18.5	64.2	41.8		181.6	75.3	18.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	27.5	13.8		36.5	97.2	18.5	64.2	41.8		181.6	75.3	18.3
LOS	C	B		D	F	B	E	D		F	E	B
Approach Delay		16.4			62.3			47.4			98.5	
Approach LOS		B			E			D			F	
Queue Length 50th (m)	14.0	24.4		9.2	~136.2	24.3	31.6	43.7		~119.4	~116.4	17.2
Queue Length 95th (m)	24.4	29.1		20.7	#204.6	58.0	50.0	59.8		m#131.4	m#161.4	m25.5
Internal Link Dist (m)		168.3			634.2			616.4			97.4	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	227	1367		228	481	625	303	785		303	517	574
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	0.43	0.30		0.22	1.06	0.60	0.46	0.52		1.28	1.01	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.28
Intersection Signal Delay: 65.5 Intersection LOS: E
Intersection Capacity Utilization 92.5% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carp Road & Hazeldean Road



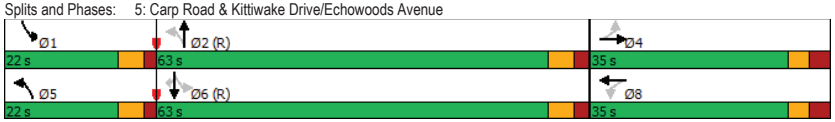
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	12	52	55	7	8	49	658	30	4	991	143
Future Volume (vph)	134	12	52	55	7	8	49	658	30	4	991	143
Satd. Flow (prot)	1658	1485	0	0	1589	0	1658	1684	0	1658	1745	1469
Flt Permitted	0.735				0.726		0.054			0.288		
Satd. Flow (perm)	1283	1485	0	0	1178	0	94	1684	0	503	1745	1431
Satd. Flow (RTOR)		58			5			3				81
Lane Group Flow (vph)	149	71	0	0	78	0	54	764	0	4	1101	159
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		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)	29.3	29.3		29.3	29.3		10.6	30.0		10.6	30.0	30.0
Total Split (s)	35.0	35.0		35.0	35.0		22.0	63.0		22.0	63.0	63.0
Total Split (%)	29.2%	29.2%		29.2%	29.2%		18.3%	52.5%		18.3%	52.5%	52.5%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	2.3
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3			6.3		5.6	6.0		5.6	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	19.3	19.3			19.3		88.1	86.1		83.3	78.3	78.3
Actuated g/C Ratio	0.16	0.16			0.16		0.73	0.72		0.69	0.65	0.65
v/c Ratio	0.72	0.25			0.40		0.35	0.63		0.01	0.97	0.17
Control Delay	66.3	15.5			46.6		24.3	12.9		6.0	42.5	5.9
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	66.3	15.5			46.6		24.3	12.9		6.0	42.5	5.9
LOS	E	B			D		C	B		A	D	A
Approach Delay		49.9			46.6			13.6			37.8	
Approach LOS		D			D			B			D	
Queue Length 50th (m)	33.7	2.6			15.6		3.9	58.5		0.3	237.9	6.6
Queue Length 95th (m)	52.3	14.3			28.5		m14.6	93.0		1.4	#379.0	18.6
Internal Link Dist (m)		73.3			85.0			145.3			438.0	
Turn Bay Length (m)	65.5						24.0			36.0		36.8
Base Capacity (vph)	306	399			285		283	1208		529	1139	962
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	0.49	0.18			0.27		0.19	0.63		0.01	0.97	0.17

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97
Intersection Signal Delay: 30.9 Intersection LOS: C
Intersection Capacity Utilization 78.6% 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: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	343	44	61	515	73
Future Volume (vph)	43	18	54	35	25	67	70	343	44	61	515	73
Satd. Flow (prot)	0	1587	0	0	1579	0	1658	1651	0	1658	1691	0
Flt Permitted		0.868			0.907		0.179			0.179		
Satd. Flow (perm)	0	1401	0	0	1450	0	312	1651	0	311	1691	0
Satd. Flow (RTOR)		46			74			7			8	
Lane Group Flow (vph)	0	128	0	0	141	0	78	430	0	68	653	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	62.0	62.0		62.0	62.0		28.0	28.0		28.0	28.0	
Total Split (%)	68.9%	68.9%		68.9%	68.9%		31.1%	31.1%		31.1%	31.1%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.2			56.2		22.4	22.4		22.4	22.4	
Actuated g/C Ratio		0.62			0.62		0.25	0.25		0.25	0.25	
v/c Ratio		0.14			0.15		1.01	1.03		0.88	1.53	
Control Delay		4.9			3.9		139.8	90.9		112.4	279.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		4.9			3.9		139.8	90.9		112.4	279.1	
LOS		A			A		F	F		F	F	
Approach Delay		4.9			3.9			98.4			263.4	
Approach LOS		A			A			F			F	
Queue Length 50th (m)		5.1			4.1		~15.0	~81.7		11.3	~160.5	
Queue Length 95th (m)		11.8			11.0		m#27.8	m#116.5		#36.4	#225.1	
Internal Link Dist (m)		112.2			110.1			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		892			933		77	416		77	426	
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		0.14			0.15		1.01	1.03		0.88	1.53	

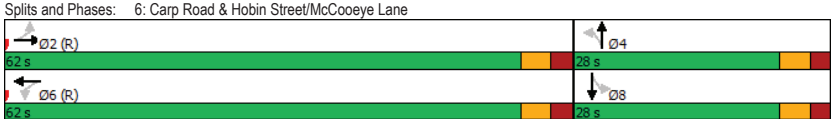
Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.53
Intersection Signal Delay: 160.9 Intersection LOS: F
Intersection Capacity Utilization 75.9% ICU Level of Service D
Analysis Period (min) 15

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	108	421	204	120	69	290	395	105	63	434	44
Future Volume (vph)	70	108	421	204	120	69	290	395	105	63	434	44
Satd. Flow (prot)	1658	1745	1469	1658	1611	0	1595	1674	0	1658	1728	1483
Flt Permitted	0.626			0.511			0.134			0.316		
Satd. Flow (perm)	1065	1745	1417	881	1611	0	222	1674	0	549	1728	1394
Satd. Flow (RTOR)			351		41			15				154
Lane Group Flow (vph)	78	120	468	227	210	0	322	556	0	70	482	49
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	28.1	28.1	28.1	10.1	28.1		10.5	29.5		10.5	29.5	29.5
Total Split (s)	29.0	29.0	29.0	15.0	44.0		14.0	32.0		14.0	32.0	32.0
Total Split (%)	32.2%	32.2%	32.2%	16.7%	48.9%		15.6%	35.6%		15.6%	35.6%	35.6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		2.2	2.2		2.2	2.2	2.2
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)	5.1	5.1	5.1	5.1	5.1		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	16.1	16.1	16.1	31.1	31.1		46.6	37.8		33.7	26.5	26.5
Actuated g/C Ratio	0.18	0.18	0.18	0.35	0.35		0.52	0.42		0.37	0.29	0.29
v/c Ratio	0.41	0.39	0.87	0.58	0.36		0.89	0.78		0.24	0.95	0.09
Control Delay	32.2	33.6	22.9	27.7	18.1		52.3	35.4		15.1	62.0	0.4
Queue Delay	0.0	0.0	5.0	0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	32.2	33.6	27.9	27.7	18.4		52.3	35.4		15.1	62.0	0.4
LOS	C	C	C	C	B		D	D		B	E	A
Approach Delay		29.5			23.3			41.6			51.5	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	10.3	15.8	46.0	30.1	21.6		37.9	80.4		5.3	81.2	0.0
Queue Length 95th (m)	m4.4	m6.6	m0.0	41.7	33.2		#116.8	#170.3		14.2	#139.7	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	282	463	634	389	719		363	712		318	508	519
Starvation Cap Reductn	0	0	109	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	181		0	0		0	0	23
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.28	0.26	0.89	0.58	0.39		0.89	0.78		0.22	0.95	0.10

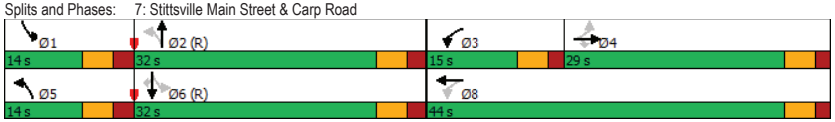
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 37.7	Intersection LOS: D
Intersection Capacity Utilization 82.0%	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: 7: Stittsville Main Street & Carp Road



Appendix D

Synchro Intersection Worksheets – Existing Conditions with Optimized Timing

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	254	82	9	104	275	57	378	14	229	289	47
Future Volume (vph)	275	254	82	9	104	275	57	378	14	229	289	47
Satd. Flow (prot)	1658	3085	0	1386	1604	1441	1458	3216	0	1445	1575	1339
Flt Permitted	0.492			0.530			0.950			0.950		
Satd. Flow (perm)	852	3085	0	772	1604	1410	1456	3216	0	1442	1575	1309
Satd. Flow (RTOR)		46				306		3				149
Lane Group Flow (vph)	306	373	0	10	116	306	63	436	0	254	321	52
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	16.4	54.0		37.6	37.6	37.6	16.0	32.0		29.0	45.0	45.0
Total Split (%)	14.3%	47.0%		32.7%	32.7%	32.7%	13.9%	27.8%		25.2%	39.1%	39.1%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	33.3	32.8		16.4	16.4	16.4	9.4	38.9		24.6	56.5	56.5
Actuated g/C Ratio	0.29	0.29		0.14	0.14	0.14	0.08	0.34		0.21	0.49	0.49
v/c Ratio	0.96	0.41		0.09	0.51	0.66	0.53	0.40		0.82	0.42	0.07
Control Delay	77.7	28.5		39.1	51.2	14.3	66.8	32.5		54.9	35.7	3.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	77.7	28.5		39.1	51.2	14.3	66.8	32.5		54.9	35.7	3.7
LOS	E	C		D	D	B	E	C		D	D	A
Approach Delay		50.6			24.8			36.8			40.8	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	~64.1	32.2		2.0	25.2	0.0	13.7	39.0		55.7	70.4	0.0
Queue Length 95th (m)	72.6	36.3		6.2	37.1	42.4	27.8	62.8		#103.8	105.1	m3.5
Internal Link Dist (m)		168.3			634.2			616.4			97.8	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	318	1298		208	432	603	132	1089		319	773	718
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	0.96	0.29		0.05	0.27	0.51	0.48	0.40		0.80	0.42	0.07

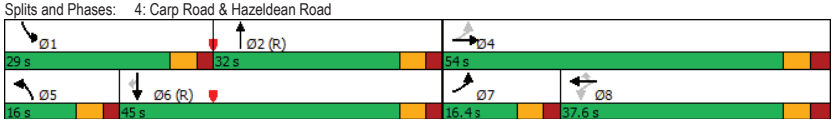
Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96
Intersection Signal Delay: 39.8 — Intersection LOS: D
Intersection Capacity Utilization 73.3% — ICU Level of Service D
Analysis Period (min) 15

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

Splits and Phases: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	328	36	57	313	15
Future Volume (vph)	54	13	49	7	6	48	27	328	36	57	313	15
Satd. Flow (prot)	0	1593	0	0	1526	0	1626	1617	0	1610	1654	0
Flt Permitted		0.857			0.975		0.370			0.318		
Satd. Flow (perm)	0	1396	0	0	1497	0	632	1617	0	539	1654	0
Satd. Flow (RTOR)		53			53			10			4	
Lane Group Flow (vph)	0	128	0	0	68	0	30	404	0	63	365	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	36.0	36.0		36.0	36.0		44.0	44.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		42.9			42.9		25.7	25.7		25.7	25.7	
Actuated g/C Ratio		0.54			0.54		0.32	0.32		0.32	0.32	
v/c Ratio		0.17			0.08		0.15	0.77		0.37	0.68	
Control Delay		8.0			5.4		18.3	33.3		24.9	29.4	
Queue Delay		0.0			0.0		0.0	0.2		0.0	0.0	
Total Delay		8.0			5.4		18.3	33.5		24.9	29.4	
LOS		A			A		B	C		C	C	
Approach Delay		8.0			5.4			32.5			28.7	
Approach LOS		A			A			C			C	
Queue Length 50th (m)		5.2			1.0		3.4	57.0		7.3	47.1	
Queue Length 95th (m)		16.8			8.0		m6.3	83.0		15.3	62.7	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		773			828		303	781		258	796	
Starvation Cap Reductn		0			0		0	64		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.17			0.08		0.10	0.56		0.24	0.46	

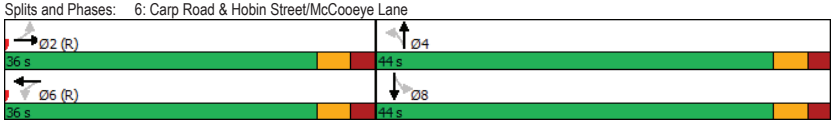
Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 26.3	Intersection LOS: C
Intersection Capacity Utilization 63.0%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



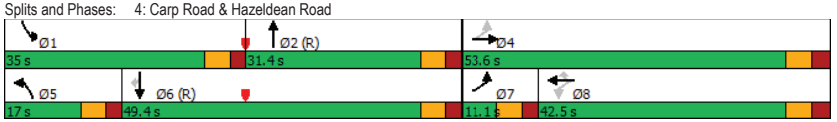
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	242	132	45	457	338	125	343	27	349	468	227
Future Volume (vph)	88	242	132	45	457	338	125	343	27	349	468	227
Satd. Flow (prot)	1610	3109	0	1551	1745	1427	1658	3241	0	1658	1745	1483
Flt Permitted	0.107			0.508			0.950			0.950		
Satd. Flow (perm)	181	3109	0	826	1745	1399	1648	3241	0	1651	1745	1436
Satd. Flow (RTOR)		101				349		6				211
Lane Group Flow (vph)	98	416	0	50	508	376	139	411	0	388	520	252
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	11.1	53.6		42.5	42.5	42.5	17.0	31.4		35.0	49.4	49.4
Total Split (%)	9.3%	44.7%		35.4%	35.4%	35.4%	14.2%	26.2%		29.2%	41.2%	41.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	47.5	47.0		35.9	35.9	35.9	11.0	25.3		29.0	43.3	43.3
Actuated g/C Ratio	0.40	0.39		0.30	0.30	0.30	0.09	0.21		0.24	0.36	0.36
v/c Ratio	0.75	0.33		0.20	0.97	0.57	0.92	0.60		0.97	0.83	0.39
Control Delay	56.1	15.9		32.3	73.1	14.2	109.2	46.3		75.4	49.9	17.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	56.1	15.9		32.3	73.1	14.2	109.2	46.3		75.4	49.9	17.1
LOS	E	B		C	E	B	F	D		E	D	B
Approach Delay		23.5			47.2			62.2			51.3	
Approach LOS		C			D			E			D	
Queue Length 50th (m)	14.7	25.9		8.7	118.5	20.2	33.0	45.6		98.0	98.2	18.5
Queue Length 95th (m)	#33.6	33.1		19.5	#187.2	49.3	#71.1	62.4		m#106.9	m117.7	m27.3
Internal Link Dist (m)		168.3			634.2			616.4			97.4	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	131	1279		247	522	663	151	688		400	629	653
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.75	0.33		0.20	0.97	0.57	0.92	0.60		0.97	0.83	0.39

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97
Intersection Signal Delay: 47.5 — Intersection LOS: D
Intersection Capacity Utilization 92.5% — 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: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	343	44	61	515	73
Future Volume (vph)	43	18	54	35	25	67	70	343	44	61	515	73
Satd. Flow (prot)	0	1587	0	0	1579	0	1658	1651	0	1658	1691	0
Flt Permitted		0.857			0.899		0.212			0.403		
Satd. Flow (perm)	0	1383	0	0	1438	0	369	1651	0	699	1691	0
Satd. Flow (RTOR)		50			62			12			14	
Lane Group Flow (vph)	0	128	0	0	141	0	78	430	0	68	653	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	32.0	32.0		32.0	32.0		58.0	58.0		58.0	58.0	
Total Split (%)	35.6%	35.6%		35.6%	35.6%		64.4%	64.4%		64.4%	64.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		35.6			35.6		43.0	43.0		43.0	43.0	
Actuated g/C Ratio		0.40			0.40		0.48	0.48		0.48	0.48	
v/c Ratio		0.22			0.23		0.44	0.54		0.20	0.80	
Control Delay		14.9			13.8		25.0	21.0		12.8	26.9	
Queue Delay		0.0			0.0		0.0	0.8		0.0	0.1	
Total Delay		14.9			13.8		25.0	21.8		12.8	26.9	
LOS		B			B		C	C		B	C	
Approach Delay		14.9			13.8			22.3			25.6	
Approach LOS		B			B			C			C	
Queue Length 50th (m)		8.7			8.8		10.4	57.0		6.3	87.2	
Queue Length 95th (m)		24.1			25.0		m15.0	m68.8		11.6	105.8	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		577			606		214	966		406	990	
Starvation Cap Reductn		0			0		0	270		0	0	
Spillback Cap Reductn		0			0		0	0		0	18	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.22			0.23		0.36	0.62		0.17	0.67	

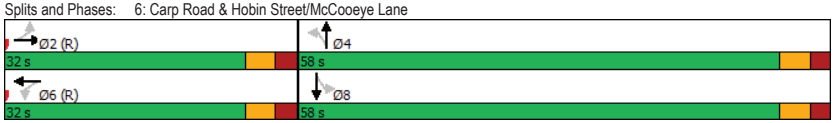
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 22.4	Intersection LOS: C
Intersection Capacity Utilization 75.9%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Appendix E

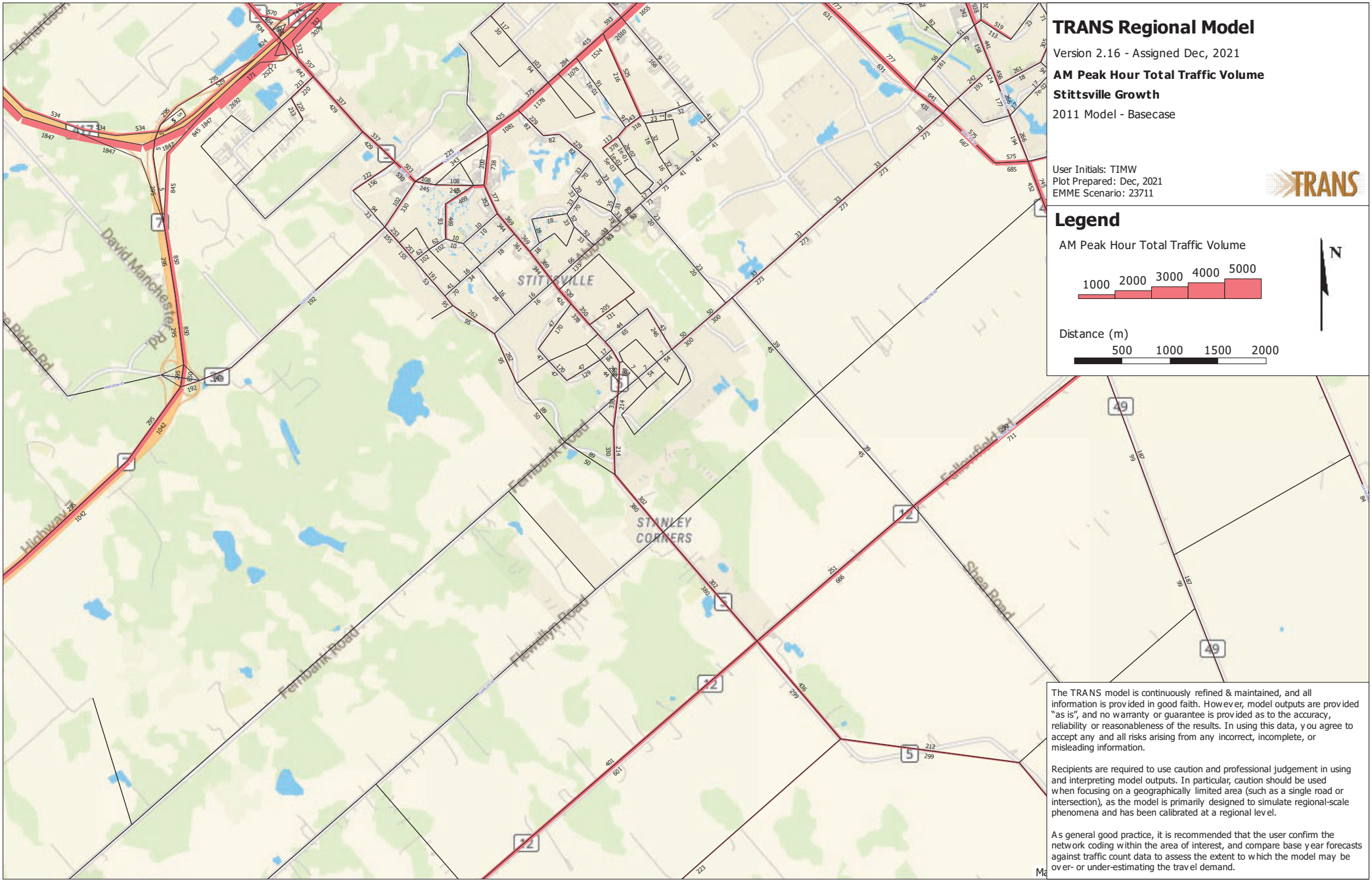
Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition
2/11/2015	2015	8:18	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	03 - Rear end	01 - Dry
6/28/2015	2015	15:48	CARP RD @ HAZELDEAN RD	02 - Rain	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	05 - Turning movement	02 - Wet
4/1/2015	2015	11:08	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
2/25/2015	2015	7:30	CARP RD @ HAZELDEAN RD	03 - Snow	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	03 - Loose snow
2/17/2015	2015	10:35	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
8/29/2015	2015	18:42	CARP RD @ HAZELDEAN RD	02 - Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	02 - Wet
8/7/2015	2015	9:57	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	02 - Angle	01 - Dry
11/11/2015	2015	20:30	CARP RD @ HAZELDEAN RD	01 - Clear	07 - Dark	01 - Traffic signal		03 - P.D. only	07 - SMV other	01 - Dry
9/24/2015	2015	15:33	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
12/12/2015	2015	13:53	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
6/7/2016	2016	11:51	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	05 - Turning movement	01 - Dry
2/29/2016	2016	9:46	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	07 - SMV other	04 - Slush
10/8/2016	2016	12:43	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	03 - Rear end	01 - Dry
2/24/2016	2016	14:29	CARP RD @ HAZELDEAN RD	03 - Snow	01 - Daylight	01 - Traffic signal		03 - P.D. only	02 - Angle	03 - Loose snow
2/28/2016	2016	9:37	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	02 - Angle	02 - Wet
1/26/2016	2016	10:55	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
6/29/2016	2016	12:07	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	01 - Dry
8/23/2016	2016	12:57	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
7/15/2016	2016	9:30	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
11/10/2016	2016	7:15	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	02 - Angle	01 - Dry
9/29/2016	2016	13:36	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
12/5/2016	2016	8:07	CARP RD @ HAZELDEAN RD	03 - Snow	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	03 - Loose snow
5/19/2017	2017	16:46	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	01 - Dry
5/27/2017	2017	12:52	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
5/5/2017	2017	15:49	CARP RD @ HAZELDEAN RD	02 - Rain	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	03 - Rear end	02 - Wet
8/4/2017	2017	13:00	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	02 - Angle	01 - Dry
8/12/2017	2017	10:23	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
7/30/2017	2017	14:17	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	02 - Angle	01 - Dry
6/30/2017	2017	12:44	CARP RD @ HAZELDEAN RD	02 - Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	02 - Wet
8/30/2017	2017	20:01	CARP RD @ HAZELDEAN RD	01 - Clear	05 - Dusk	01 - Traffic signal		02 - Non-fatal injury	02 - Angle	01 - Dry
9/25/2017	2017	19:40	CARP RD @ HAZELDEAN RD	01 - Clear	07 - Dark	01 - Traffic signal		02 - Non-fatal injury	05 - Turning movement	01 - Dry
9/6/2017	2017	17:10	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
9/10/2017	2017	14:00	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
10/6/2017	2017	12:27	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	05 - Turning movement	01 - Dry
9/14/2017	2017	15:41	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	01 - Dry
11/26/2017	2017	19:34	CARP RD @ HAZELDEAN RD	03 - Snow	07 - Dark	01 - Traffic signal		03 - P.D. only	07 - SMV other	06 - Ice
1/2/2017	2017	10:53	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
1/25/2017	2017	19:16	CARP RD @ HAZELDEAN RD	01 - Clear	07 - Dark	01 - Traffic signal		03 - P.D. only	05 - Turning movement	02 - Wet
1/28/2017	2017	9:44	CARP RD @ HAZELDEAN RD	03 - Snow	01 - Daylight	01 - Traffic signal		03 - P.D. only	07 - SMV other	02 - Wet
1/4/2017	2017	20:00	CARP RD @ HAZELDEAN RD	04 - Freezing Rain	07 - Dark	01 - Traffic signal		03 - P.D. only	02 - Angle	06 - Ice
4/15/2017	2017	14:21	CARP RD @ HAZELDEAN RD	02 - Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	02 - Wet
3/24/2017	2017	8:18	CARP RD @ HAZELDEAN RD	03 - Snow	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	03 - Loose snow
3/6/2017	2017	12:08	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
12/17/2017	2017	13:39	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	02 - Wet
12/16/2017	2017	9:13	CARP RD @ HAZELDEAN RD	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	02 - Angle	06 - Ice
2/2/2018	2018	9:15	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
2/12/2018	2018	8:45	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	05 - Turning movement	04 - Slush
2/18/2018	2018	10:22	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
3/14/2018	2018	22:45	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	07 - Dark	01 - Traffic signal		03 - P.D. only	07 - SMV other	06 - Ice
5/16/2018	2018	10:44	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	03 - Rear end	01 - Dry
5/18/2018	2018	9:20	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
6/25/2018	2018	16:09	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
7/13/2018	2018	10:09	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
8/7/2018	2018	8:54	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	02 - Angle	01 - Dry
8/9/2018	2018	17:30	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	02 - Wet
9/27/2018	2018	13:55	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
11/1/2018	2018	17:04	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	05 - Dusk	01 - Traffic signal		03 - P.D. only	02 - Angle	01 - Dry
11/21/2018	2018	17:08	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	07 - Dark	01 - Traffic signal		02 - Non-fatal injury	03 - Rear end	06 - Ice
12/2/2018	2018	14:42	CARP RD @ HAZELDEAN RD (0000086)	04 - Freezing Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	04 - Slush
1/23/2019	2019	7:10	CARP RD @ HAZELDEAN RD (0000086)	03 - Snow	03 - Dawn	01 - Traffic signal		03 - P.D. only	03 - Rear end	03 - Loose snow
4/20/2019	2019	13:53	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	02 - Wet
4/28/2019	2019	3:30	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	07 - Dark	01 - Traffic signal		03 - P.D. only	07 - SMV other	02 - Wet
5/17/2019	2019	11:23	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	02 - Angle	01 - Dry
8/23/2019	2019	10:40	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	01 - Dry
12/31/2019	2019	12:05	CARP RD @ HAZELDEAN RD (0000086)	04 - Freezing Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	07 - SMV other	06 - Ice
11/1/2015	2015	18:41	HAZELDEAN RD @ WEST RIDGE DR	01 - Clear	07 - Dark	01 - Traffic signal		02 - Non-fatal injury	02 - Angle	01 - Dry
5/12/2018	2018	10:18	HAZELDEAN RD @ WEST RIDGE DR (0010365)	01 - Clear	01 - Daylight	01 - Traffic signal		03 - P.D. only	04 - Sideswipe	01 - Dry
12/15/2018	2018	18:05	HAZELDEAN RD @ WEST RIDGE DR (0010365)	01 - Clear	07 - Dark	01 - Traffic signal		03 - P.D. only	99 - Other	02 - Wet
1/10/2019	2019	18:00	HAZELDEAN RD @ WEST RIDGE DR (0010365)	01 - Clear	07 - Dark	01 - Traffic signal		03 - P.D. only	04 - Sideswipe	01 - Dry
4/7/2019	2019	14:30	HAZELDEAN RD @ WEST RIDGE DR (0010365)	01 - Clear	01 - Daylight	01 - Traffic signal		02 - Non-fatal injury	05 - Turning movement	01 - Dry
5/3/2019	2019	13:17	HAZELDEAN RD @ WEST RIDGE DR (0010365)	02 - Rain	01 - Daylight	01 - Traffic signal		03 - P.D. only	03 - Rear end	02 - Wet
12/16/2019	2019	7:48	HAZELDEAN RD @ WEST RIDGE DR (0010365)	03 - Snow	03 - Dawn	01 - Traffic signal		03 - P.D. only	03 - Rear end	05 - Packed snow
11/10/2016	2016	16:49	HAZELDEAN RD btwn KITTIWAKE DR & CARP RD	01 - Clear	05 - Dusk	10 - No control		03 - P.D. only	07 - SMV other	01 - Dry
2/3/2018	2018	8:18	HAZELDEAN RD btwn KITTIWAKE DR & CARP RD (__3ZA3EI)	01 - Clear	01 - Daylight	10 - No control		03 - P.D. only	03 - Rear end	03 - Loose snow

Appendix F

City TRANS Forecasts – Background Growth

CGH TRANSPORTATION



TRANS Regional Model

Version 2.16 - Assigned Dec, 2021

AM Peak Hour Total Traffic Volume

Stittsville Growth

2011 Model - Basecase

User Initials: TIMW
Plot Prepared: Dec, 2021
EMME Scenario: 23711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

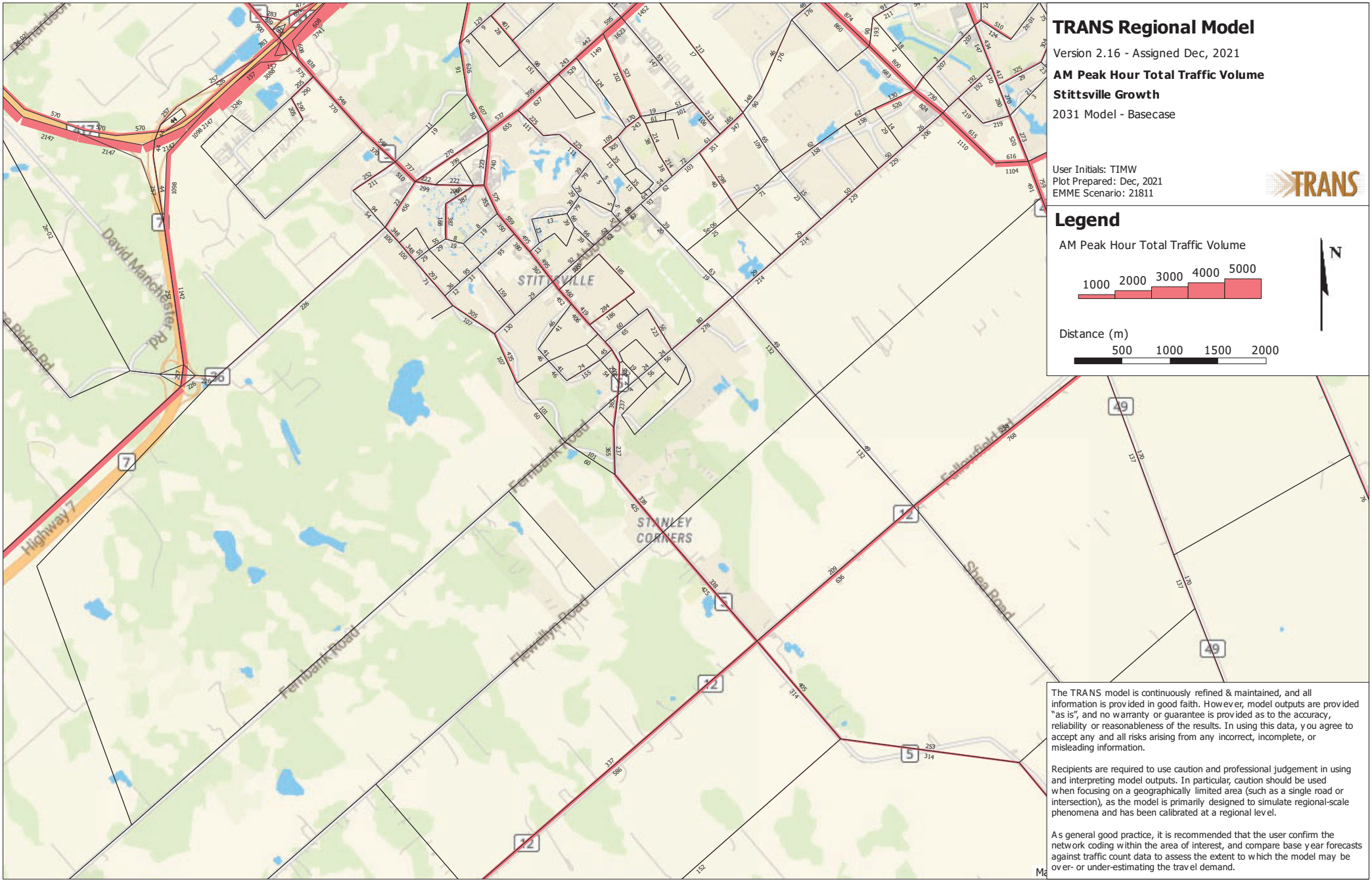
Distance (m)

500 1000 1500 2000

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

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

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



TRANS Regional Model

Version 2.16 - Assigned Dec, 2021

AM Peak Hour Total Traffic Volume

Stittsville Growth

2031 Model - Basecase

User Initials: TIMW
Plot Prepared: Dec, 2021
EMME Scenario: 21811

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

500 1000 1500 2000

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

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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 G

Background Development Volumes

CGH TRANSPORTATION

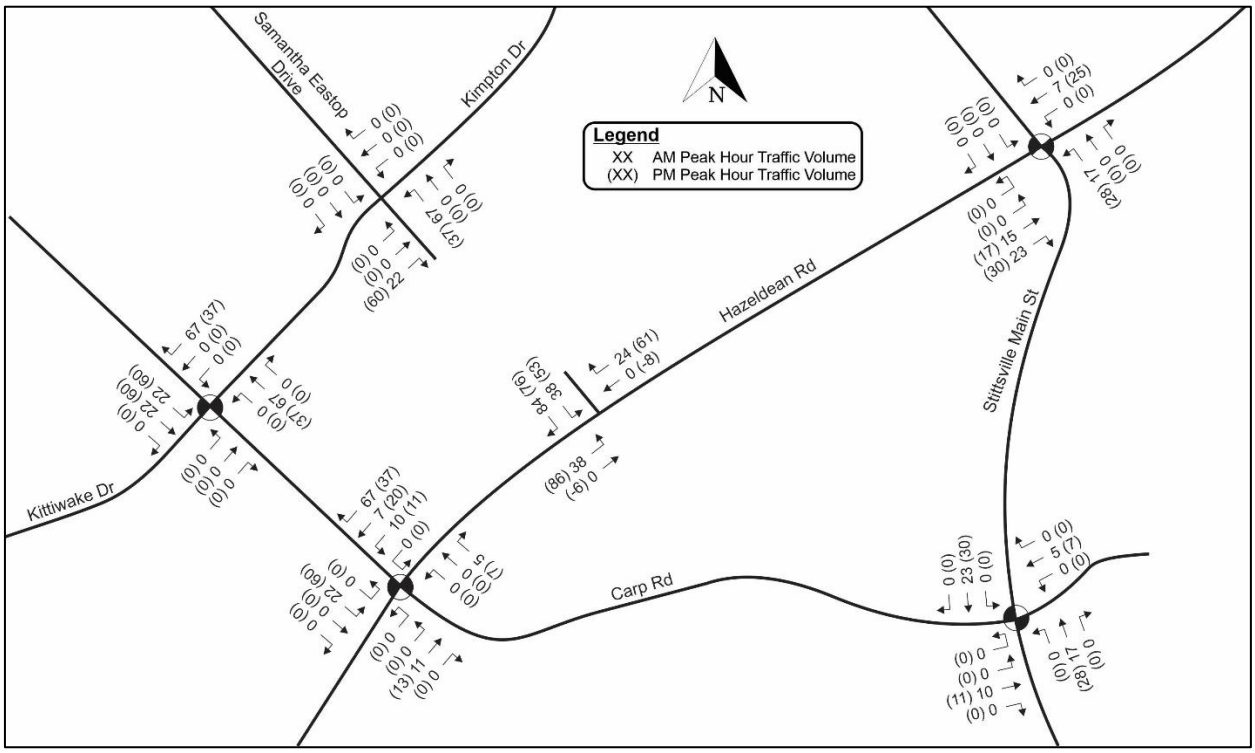


Figure 7 – Site Trip Volumes

Appendix H

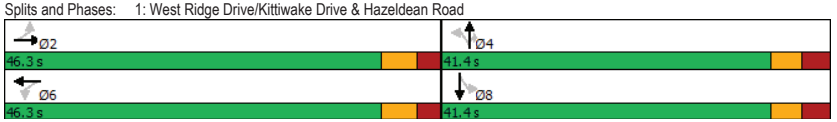
Synchro Intersection Worksheets – 2027 Future Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	249	16	71	128	14	32	12	382	25	15	10
Future Volume (vph)	2	249	16	71	128	14	32	12	382	25	15	10
Satd. Flow (prot)	1658	1695	0	1580	1639	0	0	1646	1483	1658	1616	0
Flt Permitted	0.666			0.596				0.779		0.728		
Satd. Flow (perm)	1159	1695	0	987	1639	0	0	1312	1446	1265	1616	0
Satd. Flow (RTOR)		5			8				382		10	
Lane Group Flow (vph)	2	265	0	71	142	0	0	44	382	25	25	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	28.0	28.0		28.0	28.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	46.3	46.3		46.3	46.3		41.4	41.4	41.4	41.4	41.4	
Total Split (%)	52.8%	52.8%		52.8%	52.8%		47.2%	47.2%	47.2%	47.2%	47.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None	None	None	None	
Act Effct Green (s)	28.1	28.1		28.1	28.1			11.8	11.8	11.8	11.8	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.22	0.22	0.22	0.22	
v/c Ratio	0.00	0.29		0.13	0.16			0.15	0.62	0.09	0.07	
Control Delay	7.5	8.5		8.1	7.4			17.1	7.1	16.3	12.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	7.5	8.5		8.1	7.4			17.1	7.1	16.3	12.2	
LOS	A	A		A	A			B	A	B	B	
Approach Delay		8.5			7.6			8.1			14.3	
Approach LOS		A			A			A			B	
Queue Length 50th (m)	0.1	10.8		2.7	5.2			3.3	0.0	1.9	1.1	
Queue Length 95th (m)	1.0	31.4		10.8	17.1			9.2	15.6	6.2	5.3	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	884	1294		752	1252			875	1092	844	1082	
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	0.00	0.20		0.09	0.11			0.05	0.35	0.03	0.02	

Intersection Summary
Cycle Length: 87.7
Actuated Cycle Length: 52.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62

Intersection Signal Delay: 8.4 — Intersection LOS: A
Intersection Capacity Utilization 74.7% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	633	0	0	209	1	0	0	0	4	0	4
Future Volume (vph)	29	633	0	0	209	1	0	0	0	4	0	4
Satd. Flow (prot)	1580	3283	0	1745	1712	1483	0	1745	0	1353	0	1483
Flt Permitted	0.627											
Satd. Flow (perm)	1043	3283	0	1745	1712	1483	0	1745	0	1424	0	1483
Satd. Flow (RTOR)						31						29
Lane Group Flow (vph)	29	633	0	0	209	1	0	0	0	4	0	4
Turn Type	Perm	NA		Perm	NA	Perm				Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		29.1	29.1	29.1	34.3	34.3		34.3		34.3
Total Split (s)	80.0	80.0		80.0	80.0	80.0	35.0	35.0		35.0		35.0
Total Split (%)	69.6%	69.6%		69.6%	69.6%	69.6%	30.4%	30.4%		30.4%		30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	110.5	110.5			110.5	110.5				10.0		10.0
Actuated g/C Ratio	0.96	0.96			0.96	0.96				0.09		0.09
v/c Ratio	0.03	0.20			0.13	0.00				0.03		0.03
Control Delay	1.1	0.9			2.0	0.0				49.0		0.2
Queue Delay	0.0	0.0			0.0	0.0				0.0		0.0
Total Delay	1.1	0.9			2.0	0.0				49.0		0.2
LOS	A	A			A	A				D		A
Approach Delay		0.9			1.9						24.6	
Approach LOS		A			A						C	
Queue Length 50th (m)	0.0	0.0			0.0	0.0				0.8		0.0
Queue Length 95th (m)	2.6	18.6			24.8	m0.0				4.2		0.0
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	1002	3155			1645	1426				355		391
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	0.03	0.20			0.13	0.00				0.01		0.01

Intersection Summary

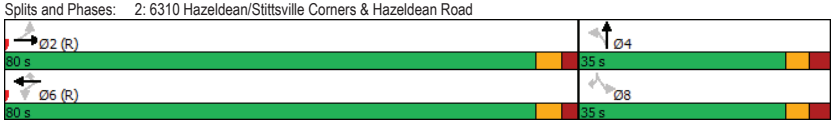
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.20

Intersection Signal Delay: 1.4	Intersection LOS: A
Intersection Capacity Utilization 37.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	22	525	403	6	0	9	
Future Volume (vph)	22	525	403	6	0	9	
Satd. Flow (prot)	1375	3131	3121	0	987	0	
Flt Permitted	0.512						
Satd. Flow (perm)	741	3131	3121	0	987	0	
Satd. Flow (RTOR)			2		483		
Lane Group Flow (vph)	22	525	409	0	9	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	75.7	75.7	75.7		34.3		5.0
Total Split (%)	65.8%	65.8%	65.8%		29.8%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	110.5	110.5	110.5		10.0		
Actuated g/C Ratio	0.96	0.96	0.96		0.09		
v/c Ratio	0.03	0.17	0.14		0.02		
Control Delay	0.3	0.3	0.8		0.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	0.3	0.3	0.8		0.1		
LOS	A	A	A		A		
Approach Delay		0.3	0.8		0.1		
Approach LOS		A	A		A		
Queue Length 50th (m)	0.0	0.0	0.0		0.0		
Queue Length 95th (m)	m0.4	2.8	11.9		0.0		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	712	3007	2998		605		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.03	0.17	0.14		0.01		

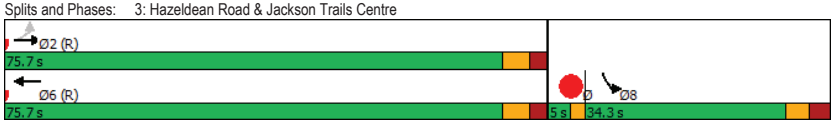
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 75 (65%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.17

Intersection Signal Delay: 0.5	Intersection LOS: A
Intersection Capacity Utilization 38.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



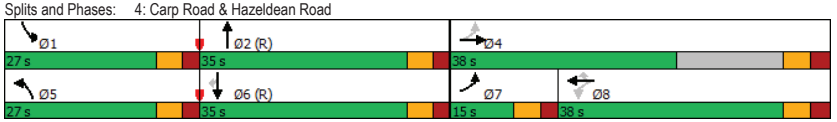
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	271	82	19	111	345	57	428	19	254	293	47
Future Volume (vph)	275	271	82	19	111	345	57	428	19	254	293	47
Satd. Flow (prot)	1658	3092	0	1386	1604	1441	1458	3209	0	2804	1575	1339
Flt Permitted	0.498			0.540			0.950			0.950		
Satd. Flow (perm)	862	3092	0	787	1604	1410	1456	3209	0	2793	1575	1309
Satd. Flow (RTOR)		41				345		4				149
Lane Group Flow (vph)	275	353	0	19	111	345	57	447	0	254	293	47
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	15.0	38.0		38.0	38.0	38.0	27.0	35.0		27.0	35.0	35.0
Total Split (%)	13.0%	33.0%		33.0%	33.0%	33.0%	23.5%	30.4%		23.5%	30.4%	30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	31.7	31.2		16.2	16.2	16.2	9.8	49.5		15.6	57.6	57.6
Actuated g/C Ratio	0.28	0.27		0.14	0.14	0.14	0.09	0.43		0.14	0.50	0.50
v/c Ratio	0.92	0.41		0.17	0.49	0.70	0.46	0.32		0.67	0.37	0.06
Control Delay	72.0	29.7		43.3	51.4	14.6	60.8	24.7		49.1	38.9	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	72.0	29.7		43.3	51.4	14.6	60.8	24.7		49.1	38.9	5.7
LOS	E	C		D	D	B	E	C		D	D	A
Approach Delay		48.2			24.3			28.8			40.6	
Approach LOS		D			C			C			D	
Queue Length 50th (m)	55.8	31.2		3.9	24.1	0.2	12.4	32.3		28.8	62.0	0.8
Queue Length 95th (m)	66.2	35.3		9.8	36.8	44.3	24.6	61.3		40.3	97.6	5.7
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	298	1272		214	437	635	266	1382		512	789	730
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	0.92	0.28		0.09	0.25	0.54	0.21	0.32		0.50	0.37	0.06

Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 36.6	Intersection LOS: D
Intersection Capacity Utilization 76.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Carp Road & Hazeldean Road



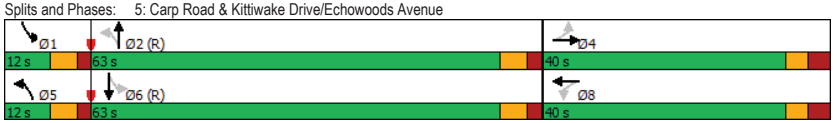
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	5	66	46	3	76	25	1062	14	25	496	46
Future Volume (vph)	224	5	66	46	3	76	25	1062	14	25	496	46
Satd. Flow (prot)	1610	1427	0	1551	1458	0	1458	3245	0	1658	3047	0
Flt Permitted	0.706			0.711			0.429			0.202		
Satd. Flow (perm)	1195	1427	0	1161	1458	0	657	3245	0	352	3047	0
Satd. Flow (RTOR)		66			76			2			12	
Lane Group Flow (vph)	224	71	0	46	79	0	25	1076	0	25	542	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	30.3	30.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	40.0	40.0		40.0	40.0		12.0	63.0		12.0	63.0	
Total Split (%)	34.8%	34.8%		34.8%	34.8%		10.4%	54.8%		10.4%	54.8%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	26.3	26.3		26.3	26.3		73.5	69.3		73.4	69.2	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.60		0.64	0.60	
v/c Ratio	0.82	0.19		0.17	0.20		0.05	0.55		0.09	0.29	
Control Delay	64.9	9.7		34.5	8.8		8.6	15.3		9.0	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	64.9	9.7		34.5	8.8		8.6	15.3		9.0	13.3	
LOS	E	A		C	A		A	B		A	B	
Approach Delay		51.6			18.3			15.2			13.1	
Approach LOS		D			B			B			B	
Queue Length 50th (m)	47.8	0.9		8.3	0.5		1.1	82.5		1.8	32.1	
Queue Length 95th (m)	71.3	11.4		16.9	11.5		m3.7	m122.6		5.6	49.5	
Internal Link Dist (m)		65.8			95.1			266.7			438.0	
Turn Bay Length (m)	65.5						24.5			36.0		
Base Capacity (vph)	350	464		340	480		465	1956		297	1839	
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	0.64	0.15		0.14	0.16		0.05	0.55		0.08	0.29	

Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82
Intersection Signal Delay: 19.9 — 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: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	376	36	57	327	15
Future Volume (vph)	54	13	49	7	6	48	27	376	36	57	327	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1653	0
Flt Permitted		0.867			0.979		0.350			0.242		
Satd. Flow (perm)	0	1413	0	0	1501	0	598	1620	0	410	1653	0
Satd. Flow (RTOR)		49			48			6			3	
Lane Group Flow (vph)	0	116	0	0	61	0	27	412	0	57	342	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	52.0	52.0		52.0	52.0		28.0	28.0		28.0	28.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		46.8			46.8		21.8	21.8		21.8	21.8	
Actuated g/C Ratio		0.58			0.58		0.27	0.27		0.27	0.27	
v/c Ratio		0.14			0.07		0.17	0.93		0.51	0.76	
Control Delay		5.2			3.4		31.1	64.4		43.3	38.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		5.2			3.4		31.1	64.4		43.3	38.6	
LOS		A			A		C	E		D	D	
Approach Delay		5.2			3.4			62.3			39.3	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		4.1			0.8		3.7	66.8		7.2	46.5	
Queue Length 95th (m)		10.8			5.2		m9.0	#114.1		#22.0	#82.9	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		847			898		167	457		114	465	
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		0.14			0.07		0.16	0.90		0.50	0.74	

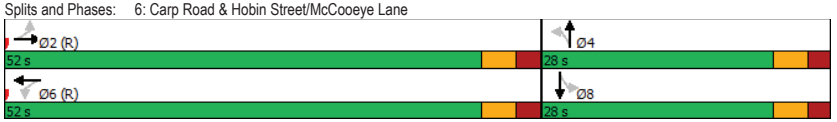
Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 43.2	Intersection LOS: D
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	104	247	128	66	71	304	337	149	59	262	30
Future Volume (vph)	40	104	247	128	66	71	304	337	149	59	262	30
Satd. Flow (prot)	1642	1712	1351	1658	1583	0	1537	1650	0	1658	1728	1414
Flt Permitted	0.669			0.690			0.497			0.466		
Satd. Flow (perm)	1154	1712	1317	1199	1583	0	801	1650	0	810	1728	1374
Satd. Flow (RTOR)			247		69			32				115
Lane Group Flow (vph)	40	104	247	128	137	0	304	486	0	59	262	30
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.9	29.9		10.5	29.1		10.5	29.5	29.5
Total Split (s)	30.0	30.0	30.0	30.0	30.0		15.0	35.0		15.0	35.0	35.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		18.8%	43.8%		18.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.7	3.7		3.3	3.3		3.3	3.7	3.7
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2		2.2	1.8		2.2	1.8	1.8
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)	5.5	5.5	5.5	5.9	5.9		5.5	5.1		5.5	5.5	5.5
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.3	15.3	15.3	14.9	14.9		53.0	46.5		44.1	37.4	37.4
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19		0.66	0.58		0.55	0.47	0.47
v/c Ratio	0.18	0.32	0.55	0.58	0.39		0.48	0.50		0.11	0.32	0.04
Control Delay	34.5	37.6	16.0	39.0	17.3		9.6	14.5		7.1	16.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	34.5	37.6	16.0	39.0	17.6		9.6	14.5		7.1	16.6	0.1
LOS	C	D	B	D	B		A	B		A	B	A
Approach Delay		23.7			27.9			12.6			13.6	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	5.2	13.5	17.8	18.2	9.0		15.4	41.2		2.5	23.8	0.0
Queue Length 95th (m)	m4.9	m12.1	m13.2	30.3	20.5		37.7	90.9		8.5	48.4	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	353	524	574	361	525		633	972		575	808	704
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	122		0	0		0	0	11
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.11	0.20	0.43	0.35	0.34		0.48	0.50		0.10	0.32	0.04

Intersection Summary

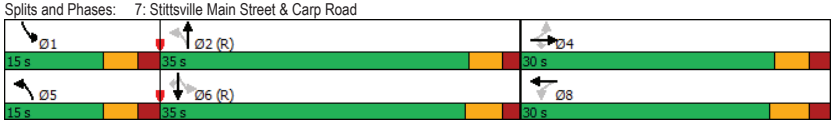
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 74.1%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 7: Stittsville Main Street & Carp Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	228	63	381	364	88	21	28	222	34	15	12
Future Volume (vph)	11	228	63	381	364	88	21	28	222	34	15	12
Satd. Flow (prot)	1658	1689	0	1658	1686	0	0	1690	1483	1642	1423	0
Flt Permitted	0.491			0.582				0.849		0.725		
Satd. Flow (perm)	855	1689	0	1016	1686	0	0	1454	1483	1253	1423	0
Satd. Flow (RTOR)		24			21				222		12	
Lane Group Flow (vph)	11	291	0	381	452	0	0	49	222	34	27	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	85.0	85.0		85.0	85.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	70.8%	70.8%		70.8%	70.8%		29.2%	29.2%	29.2%	29.2%	29.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	95.1	95.1		95.1	95.1			12.2	12.2	12.2	12.2	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.10	0.10	0.10	0.10	
v/c Ratio	0.02	0.22		0.47	0.34			0.33	0.63	0.27	0.18	
Control Delay	3.5	3.6		4.5	2.7			55.1	14.8	53.7	33.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	3.5	3.6		4.5	2.7			55.1	14.8	53.7	33.6	
LOS	A	A		A	A			E	B	D	C	
Approach Delay		3.6			3.5			22.1			44.8	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.4	11.2		5.1	0.0			11.1	0.0	7.7	3.3	
Queue Length 95th (m)	2.2	27.5		29.9	13.0			21.5	21.3	16.5	11.4	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	678	1344		805	1341			346	522	298	348	
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	0.02	0.22		0.47	0.34			0.14	0.43	0.11	0.08	

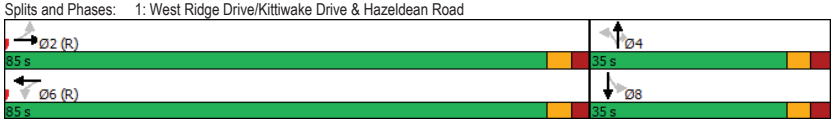
Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 64.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	433	0	0	813	6	0	0	0	42	0	37
Future Volume (vph)	51	433	0	0	813	6	0	0	0	42	0	37
Satd. Flow (prot)	1658	3283	0	1745	1745	1483	0	1745	0	1658	0	1483
Flt Permitted	0.318									0.757		
Satd. Flow (perm)	555	3283	0	1745	1745	1438	0	1745	0	1321	0	1483
Satd. Flow (RTOR)						30						37
Lane Group Flow (vph)	51	433	0	0	813	6	0	0	0	42	0	37
Turn Type	Perm	NA		Perm	NA	Perm				Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		34.1	34.1	34.1	34.3	34.3		34.3		34.3
Total Split (s)	85.0	85.0		85.0	85.0	85.0	35.0	35.0		35.0		35.0
Total Split (%)	70.8%	70.8%		70.8%	70.8%	70.8%	29.2%	29.2%		29.2%		29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	101.2	101.2			101.2	101.2				10.8		10.8
Actuated g/C Ratio	0.84	0.84			0.84	0.84				0.09		0.09
v/c Ratio	0.11	0.16			0.55	0.00				0.35		0.22
Control Delay	2.8	2.1			7.1	0.0				59.5		18.5
Queue Delay	0.0	0.0			0.4	0.0				0.0		0.0
Total Delay	2.8	2.1			7.4	0.0				59.5		18.5
LOS	A	A			A	A				E		B
Approach Delay		2.2			7.4						40.3	
Approach LOS		A			A						D	
Queue Length 50th (m)	1.8	8.4			26.3	0.0				9.5		0.0
Queue Length 95th (m)	3.9	11.0			m53.2	m0.0				20.6		10.1
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	468	2769			1472	1218				315		382
Starvation Cap Reductn	0	0			224	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	0.11	0.16			0.65	0.00				0.13		0.10

Intersection Summary

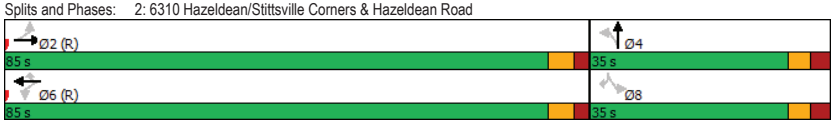
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 7.4	Intersection LOS: A
Intersection Capacity Utilization 63.8%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	79	586	875	7	13	46	
Future Volume (vph)	79	586	875	7	13	46	
Satd. Flow (prot)	1658	3316	3280	0	1545	0	
Flt Permitted	0.319				0.989		
Satd. Flow (perm)	557	3316	3280	0	1545	0	
Satd. Flow (RTOR)			1		46		
Lane Group Flow (vph)	79	586	882	0	59	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	80.7	80.7	80.7		34.3		5.0
Total Split (%)	67.3%	67.3%	67.3%		28.6%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	101.7	101.7	101.7		10.1		
Actuated g/C Ratio	0.85	0.85	0.85		0.08		
v/c Ratio	0.17	0.21	0.32		0.34		
Control Delay	1.2	0.7	2.9		25.6		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	1.2	0.7	2.9		25.6		
LOS	A	A	A		C		
Approach Delay		0.7	2.9		25.6		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.8	2.8	22.3		2.9		
Queue Length 95th (m)	m1.2	3.7	29.2		15.8		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	472	2810	2779		395		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.17	0.21	0.32		0.15		

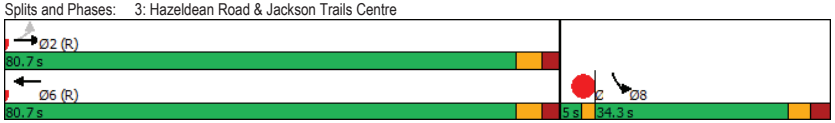
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 2.8	Intersection LOS: A
Intersection Capacity Utilization 58.3%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	255	132	56	489	419	125	347	34	455	529	227
Future Volume (vph)	88	255	132	56	489	419	125	347	34	455	529	227
Satd. Flow (prot)	1610	3117	0	1551	1745	1427	1658	3232	0	3216	1745	1483
Flt Permitted	0.101			0.523			0.950			0.950		
Satd. Flow (perm)	171	3117	0	850	1745	1399	1648	3232	0	3193	1745	1436
Satd. Flow (RTOR)		95				383		8				187
Lane Group Flow (vph)	88	387	0	56	489	419	125	381	0	455	529	227
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	19.0	57.0		38.0	38.0	38.0	28.0	35.0		28.0	35.0	35.0
Total Split (%)	15.8%	47.5%		31.7%	31.7%	31.7%	23.3%	29.2%		23.3%	29.2%	29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	50.9	50.4		33.5	33.5	33.5	14.3	30.3		20.6	36.6	36.6
Actuated g/C Ratio	0.42	0.42		0.28	0.28	0.28	0.12	0.25		0.17	0.30	0.30
v/c Ratio	0.44	0.28		0.24	1.01	0.63	0.63	0.46		0.83	1.00	0.40
Control Delay	26.3	13.9		36.6	84.4	17.7	64.0	39.7		71.4	76.2	15.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	26.3	13.9		36.6	84.4	17.7	64.0	39.7		71.4	76.2	15.3
LOS	C	B		D	F	B	E	D		E	E	B
Approach Delay		16.2			52.6			45.7			63.0	
Approach LOS		B			D			D			E	
Queue Length 50th (m)	12.5	22.8		10.3	~123.7	24.8	28.5	39.9		59.2	83.3	5.0
Queue Length 95th (m)	22.4	27.5		22.6	#194.3	60.6	46.0	55.1		75.7	#210.9	34.3
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	227	1364		237	486	666	303	823		589	531	567
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	0.39	0.28		0.24	1.01	0.63	0.41	0.46		0.77	1.00	0.40

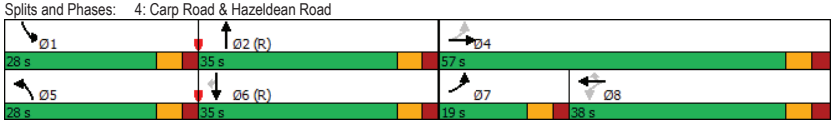
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 50.0	Intersection LOS: D
Intersection Capacity Utilization 89.7%	ICU Level of Service E
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: 4: Carp Road & Hazeldean Road



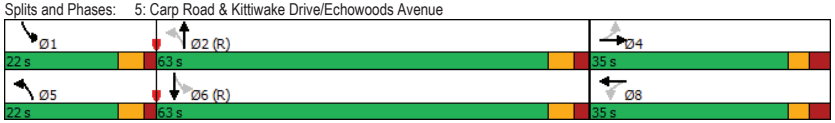
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	12	52	55	7	45	49	703	30	64	1181	143
Future Volume (vph)	134	12	52	55	7	45	49	703	30	64	1181	143
Satd. Flow (prot)	1658	1487	0	1658	1345	0	1658	3200	0	1658	3250	0
Flt Permitted	0.723			0.715			0.154			0.346		
Satd. Flow (perm)	1262	1487	0	1219	1345	0	269	3200	0	603	3250	0
Satd. Flow (RTOR)		52			45			5			15	
Lane Group Flow (vph)	134	64	0	55	52	0	49	733	0	64	1324	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	29.3	29.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	35.0	35.0		35.0	35.0		22.0	63.0		22.0	63.0	
Total Split (%)	29.2%	29.2%		29.2%	29.2%		18.3%	52.5%		18.3%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	18.4	18.4		18.4	18.4		84.9	79.1		85.5	79.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.71	0.66		0.71	0.66	
v/c Ratio	0.69	0.24		0.29	0.21		0.18	0.35		0.13	0.61	
Control Delay	65.4	16.3		46.8	16.1		6.2	9.4		5.8	14.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.4	16.3		46.8	16.1		6.2	9.4		5.8	14.8	
LOS	E	B		D	B		A	A		A	B	
Approach Delay		49.6			31.9			9.2			14.4	
Approach LOS		D			C			A			B	
Queue Length 50th (m)	30.4	2.5		11.7	1.4		2.8	31.9		3.4	89.2	
Queue Length 95th (m)	48.0	13.7		22.5	11.7		m6.5	48.4		8.8	136.8	
Internal Link Dist (m)		73.3			85.0			266.7			438.0	
Turn Bay Length (m)	65.5						24.0			36.0		
Base Capacity (vph)	301	395		291	355		390	2110		594	2154	
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	0.45	0.16		0.19	0.15		0.13	0.35		0.11	0.61	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69
Intersection Signal Delay: 16.3 — Intersection LOS: B
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: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	354	44	61	594	73
Future Volume (vph)	43	18	54	35	25	67	70	354	44	61	594	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1651	0	1658	1696	0
Flt Permitted		0.877			0.914		0.179			0.207		
Satd. Flow (perm)	0	1415	0	0	1461	0	312	1651	0	359	1696	0
Satd. Flow (RTOR)		41			67			7			7	
Lane Group Flow (vph)	0	115	0	0	127	0	70	398	0	61	667	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	62.0	62.0		62.0	62.0		28.0	28.0		28.0	28.0	
Total Split (%)	68.9%	68.9%		68.9%	68.9%		31.1%	31.1%		31.1%	31.1%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.2			56.2		22.4	22.4		22.4	22.4	
Actuated g/C Ratio		0.62			0.62		0.25	0.25		0.25	0.25	
v/c Ratio		0.13			0.14		0.91	0.96		0.69	1.56	
Control Delay		4.9			3.9		116.6	73.4		70.7	291.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		4.9			3.9		116.6	73.4		70.7	291.6	
LOS		A			A		F	E		E	F	
Approach Delay		4.9			3.9			79.8			273.1	
Approach LOS		A			A			E			F	
Queue Length 50th (m)		4.6			3.7		12.8	72.7		9.6	~165.7	
Queue Length 95th (m)		10.8			10.0		m#26.9	m#121.0		#30.3	#230.7	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		898			937		77	416		89	427	
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		0.13			0.14		0.91	0.96		0.69	1.56	

Intersection Summary

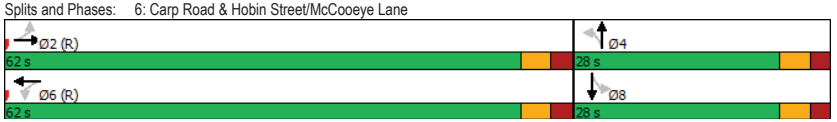
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.56

Intersection Signal Delay: 165.0	Intersection LOS: F
Intersection Capacity Utilization 80.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



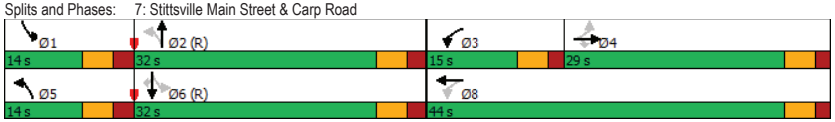
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	120	421	204	143	69	290	423	105	63	464	44
Future Volume (vph)	70	120	421	204	143	69	290	423	105	63	464	44
Satd. Flow (prot)	1658	1745	1469	1658	1625	0	1595	1679	0	1658	1728	1483
Flt Permitted	0.625			0.506			0.154			0.369		
Satd. Flow (perm)	1064	1745	1417	873	1625	0	255	1679	0	641	1728	1394
Satd. Flow (RTOR)			366		34			14				154
Lane Group Flow (vph)	70	120	421	204	212	0	290	528	0	63	464	44
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	28.1	28.1	28.1	10.1	28.1		10.5	29.5		10.5	29.5	29.5
Total Split (s)	29.0	29.0	29.0	15.0	44.0		14.0	32.0		14.0	32.0	32.0
Total Split (%)	32.2%	32.2%	32.2%	16.7%	48.9%		15.6%	35.6%		15.6%	35.6%	35.6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		2.2	2.2		2.2	2.2	2.2
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)	5.1	5.1	5.1	5.1	5.1		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.7	15.7	15.7	30.5	30.5		46.9	38.5		33.7	26.6	26.6
Actuated g/C Ratio	0.17	0.17	0.17	0.34	0.34		0.52	0.43		0.37	0.30	0.30
v/c Ratio	0.38	0.40	0.77	0.54	0.37		0.76	0.73		0.20	0.91	0.08
Control Delay	32.5	34.9	18.3	26.6	19.3		36.4	32.5		14.6	55.1	0.3
Queue Delay	0.0	0.0	3.8	0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	32.5	34.9	22.1	26.6	19.6		36.4	32.5		14.6	55.1	0.3
LOS	C	C	C	C	B		D	C		B	E	A
Approach Delay		25.8			23.0			33.9			46.4	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	11.0	18.8	46.0	28.3	24.3		26.3	68.7		4.3	76.4	0.0
Queue Length 95th (m)	m3.7	m6.1	m0.0	37.5	34.4		#99.0	#158.8		13.1	#132.5	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	282	463	645	382	721		382	726		346	510	520
Starvation Cap Reductn	0	0	145	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	158		0	0		0	0	15
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.25	0.26	0.84	0.53	0.38		0.76	0.73		0.18	0.91	0.09

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91
Intersection Signal Delay: 32.9 — Intersection LOS: C
Intersection Capacity Utilization 84.4% — 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Stittsville Main Street & Carp Road



Appendix I

Synchro Intersection Worksheets – 2027 Future Background Conditions with Optimized Timing

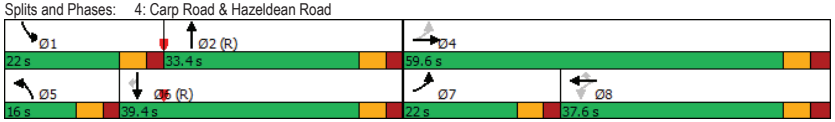
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	271	82	19	111	345	57	428	19	254	293	47
Future Volume (vph)	275	271	82	19	111	345	57	428	19	254	293	47
Satd. Flow (prot)	1658	3092	0	1386	1604	1441	1458	3209	0	2804	1575	1339
Flt Permitted	0.498			0.540			0.950			0.950		
Satd. Flow (perm)	862	3092	0	787	1604	1410	1456	3209	0	2793	1575	1309
Satd. Flow (RTOR)		46				345		4				149
Lane Group Flow (vph)	275	353	0	19	111	345	57	447	0	254	293	47
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	22.0	59.6		37.6	37.6	37.6	16.0	33.4		22.0	39.4	39.4
Total Split (%)	19.1%	51.8%		32.7%	32.7%	32.7%	13.9%	29.0%		19.1%	34.3%	34.3%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	38.7	38.2		16.2	16.2	16.2	9.0	43.3		14.8	51.4	51.4
Actuated g/C Ratio	0.34	0.33		0.14	0.14	0.14	0.08	0.38		0.13	0.45	0.45
v/c Ratio	0.69	0.33		0.17	0.49	0.70	0.50	0.37		0.71	0.42	0.07
Control Delay	38.0	24.0		45.2	52.8	15.2	65.5	28.9		53.4	43.0	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	38.0	24.0		45.2	52.8	15.2	65.5	28.9		53.4	43.0	5.7
LOS	D	C		D	D	B	E	C		D	D	A
Approach Delay		30.1			25.1			33.1			44.5	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	51.0	28.0		3.9	24.1	0.2	12.4	36.3		28.8	67.6	0.8
Queue Length 95th (m)	58.8	30.9		10.3	38.8	46.4	25.6	63.5		41.7	98.0	5.7
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	399	1449		212	432	632	130	1211		397	704	667
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	0.69	0.24		0.09	0.26	0.55	0.44	0.37		0.64	0.42	0.07

Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 33.6	Intersection LOS: C
Intersection Capacity Utilization 76.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Carp Road & Hazeldean Road



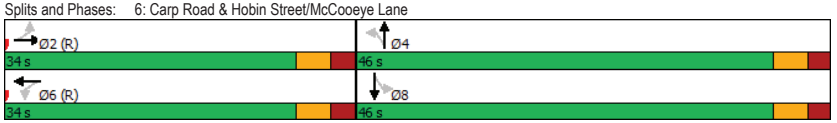
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	376	36	57	327	15
Future Volume (vph)	54	13	49	7	6	48	27	376	36	57	327	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1654	0
Flt Permitted		0.865			0.978		0.409			0.317		
Satd. Flow (perm)	0	1410	0	0	1500	0	699	1620	0	537	1654	0
Satd. Flow (RTOR)		49			48			9			4	
Lane Group Flow (vph)	0	116	0	0	61	0	27	412	0	57	342	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	34.0	34.0		34.0	34.0		46.0	46.0		46.0	46.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		57.5%	57.5%		57.5%	57.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		42.2			42.2		26.4	26.4		26.4	26.4	
Actuated g/C Ratio		0.53			0.53		0.33	0.33		0.33	0.33	
v/c Ratio		0.15			0.07		0.12	0.76		0.32	0.63	
Control Delay		8.3			5.8		17.0	32.6		22.9	26.6	
Queue Delay		0.0			0.0		0.0	0.2		0.0	0.0	
Total Delay		8.3			5.8		17.0	32.8		22.9	26.6	
LOS		A			A		B	C		C	C	
Approach Delay		8.3			5.8			31.8			26.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)		4.7			0.9		3.0	57.2		6.4	42.7	
Queue Length 95th (m)		15.9			7.7		m6.5	82.6		13.4	56.4	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		767			814		352	822		271	837	
Starvation Cap Reductn		0			0		0	74		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.15			0.07		0.08	0.55		0.21	0.41	

Intersection Summary

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

Maximum v/c Ratio: 0.76
Intersection Signal Delay: 25.3 — Intersection LOS: C
Intersection Capacity Utilization 65.7% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	255	132	56	489	419	125	347	34	455	529	227
Future Volume (vph)	88	255	132	56	489	419	125	347	34	455	529	227
Satd. Flow (prot)	1610	3117	0	1551	1745	1427	1658	3232	0	3216	1745	1483
Flt Permitted	0.131			0.523			0.950			0.950		
Satd. Flow (perm)	222	3117	0	850	1745	1399	1648	3232	0	3193	1745	1436
Satd. Flow (RTOR)		92				411		8				220
Lane Group Flow (vph)	88	387	0	56	489	419	125	381	0	455	529	227
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	11.1	55.1		44.0	44.0	44.0	16.0	38.9		26.0	48.9	48.9
Total Split (%)	9.3%	45.9%		36.7%	36.7%	36.7%	13.3%	32.4%		21.7%	40.8%	40.8%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	47.7	47.2		36.1	36.1	36.1	10.3	34.7		19.5	43.9	43.9
Actuated g/C Ratio	0.40	0.39		0.30	0.30	0.30	0.09	0.29		0.16	0.37	0.37
v/c Ratio	0.60	0.30		0.22	0.93	0.59	0.88	0.41		0.87	0.83	0.34
Control Delay	37.7	15.6		33.5	66.8	14.8	104.1	35.8		78.1	43.8	9.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	37.7	15.6		33.5	66.8	14.8	104.1	35.8		78.1	43.8	9.4
LOS	D	B		C	E	B	F	D		E	D	A
Approach Delay		19.7			42.3			52.7			50.2	
Approach LOS		B			D			D			D	
Queue Length 50th (m)	12.8	23.3		10.0	113.3	19.3	29.7	38.1		59.3	59.8	0.0
Queue Length 95th (m)	#22.2	27.6		21.5	#174.6	52.7	#65.6	52.5		#82.1	#167.7	27.1
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	146	1314		264	543	718	142	939		536	637	664
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	0.60	0.29		0.21	0.90	0.58	0.88	0.41		0.85	0.83	0.34

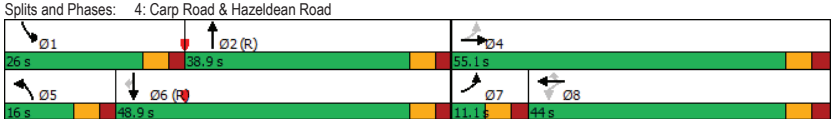
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 43.6	Intersection LOS: D
Intersection Capacity Utilization 89.7%	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: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	354	44	61	594	73
Future Volume (vph)	43	18	54	35	25	67	70	354	44	61	594	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1651	0	1658	1696	0
Flt Permitted		0.866			0.906		0.205			0.435		
Satd. Flow (perm)	0	1398	0	0	1449	0	357	1651	0	754	1696	0
Satd. Flow (RTOR)		50			63			12			12	
Lane Group Flow (vph)	0	115	0	0	127	0	70	398	0	61	667	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	32.0	32.0		32.0	32.0		58.0	58.0		58.0	58.0	
Total Split (%)	35.6%	35.6%		35.6%	35.6%		64.4%	64.4%		64.4%	64.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		35.1			35.1		43.5	43.5		43.5	43.5	
Actuated g/C Ratio		0.39			0.39		0.48	0.48		0.48	0.48	
v/c Ratio		0.20			0.21		0.41	0.50		0.17	0.81	
Control Delay		14.2			13.0		22.8	18.8		11.9	26.9	
Queue Delay		0.0			0.0		0.0	0.6		0.0	0.0	
Total Delay		14.2			13.0		22.8	19.4		11.9	26.9	
LOS		B			B		C	B		B	C	
Approach Delay		14.2			13.0			19.9			25.6	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		7.3			7.1		8.2	47.4		5.5	88.6	
Queue Length 95th (m)		21.3			21.6		m13.9	m66.8		10.3	109.9	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		575			602		207	966		438	992	
Starvation Cap Reductn		0			0		0	255		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.20			0.21		0.34	0.56		0.14	0.67	

Intersection Summary

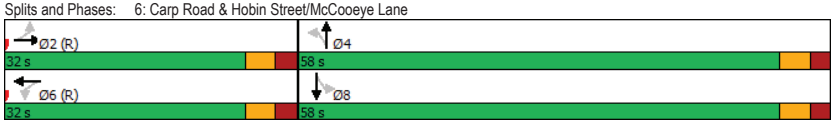
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 21.7	Intersection LOS: C
Intersection Capacity Utilization 80.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Appendix J

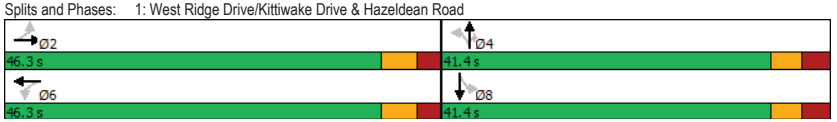
Synchro Intersection Worksheets – 2032 Future Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	255	16	71	128	14	32	12	382	25	15	10
Future Volume (vph)	2	255	16	71	128	14	32	12	382	25	15	10
Satd. Flow (prot)	1658	1695	0	1580	1639	0	0	1646	1483	1658	1616	0
Flt Permitted	0.666			0.593				0.779		0.728		
Satd. Flow (perm)	1159	1695	0	982	1639	0	0	1312	1446	1265	1616	0
Satd. Flow (RTOR)		5			8				382		10	
Lane Group Flow (vph)	2	271	0	71	142	0	0	44	382	25	25	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	28.0	28.0		28.0	28.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	46.3	46.3		46.3	46.3		41.4	41.4	41.4	41.4	41.4	
Total Split (%)	52.8%	52.8%		52.8%	52.8%		47.2%	47.2%	47.2%	47.2%	47.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None	None	None	None	
Act Effct Green (s)	28.1	28.1		28.1	28.1			11.8	11.8	11.8	11.8	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.22	0.22	0.22	0.22	
v/c Ratio	0.00	0.30		0.14	0.16			0.15	0.62	0.09	0.07	
Control Delay	7.5	8.6		8.1	7.4			17.1	7.1	16.3	12.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	7.5	8.6		8.1	7.4			17.1	7.1	16.3	12.2	
LOS	A	A		A	A			B	A	B	B	
Approach Delay		8.6			7.6			8.1			14.3	
Approach LOS		A			A			A			B	
Queue Length 50th (m)	0.1	11.2		2.7	5.2			3.3	0.0	1.9	1.1	
Queue Length 95th (m)	1.0	32.3		10.8	17.1			9.2	15.6	6.2	5.3	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	884	1294		749	1252			875	1092	844	1082	
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	0.00	0.21		0.09	0.11			0.05	0.35	0.03	0.02	

Intersection Summary
Cycle Length: 87.7
Actuated Cycle Length: 52.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62

Intersection Signal Delay: 8.5 — Intersection LOS: A
Intersection Capacity Utilization 74.7% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	649	0	0	209	1	0	0	0	4	0	4
Future Volume (vph)	29	649	0	0	209	1	0	0	0	4	0	4
Satd. Flow (prot)	1580	3283	0	1745	1712	1483	0	1745	0	1353	0	1483
Flt Permitted	0.627											
Satd. Flow (perm)	1043	3283	0	1745	1712	1483	0	1745	0	1424	0	1483
Satd. Flow (RTOR)						31						29
Lane Group Flow (vph)	29	649	0	0	209	1	0	0	0	4	0	4
Turn Type	Perm	NA		Perm	NA	Perm				Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		29.1	29.1	29.1	34.3	34.3		34.3		34.3
Total Split (s)	80.0	80.0		80.0	80.0	80.0	35.0	35.0		35.0		35.0
Total Split (%)	69.6%	69.6%		69.6%	69.6%	69.6%	30.4%	30.4%		30.4%		30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	110.5	110.5			110.5	110.5				10.0		10.0
Actuated g/C Ratio	0.96	0.96			0.96	0.96				0.09		0.09
v/c Ratio	0.03	0.21			0.13	0.00				0.03		0.03
Control Delay	1.1	0.9			2.0	0.0				49.0		0.2
Queue Delay	0.0	0.0			0.0	0.0				0.0		0.0
Total Delay	1.1	0.9			2.0	0.0				49.0		0.2
LOS	A	A			A	A				D		A
Approach Delay		0.9			1.9						24.6	
Approach LOS		A			A						C	
Queue Length 50th (m)	0.0	0.0			0.0	0.0				0.8		0.0
Queue Length 95th (m)	2.6	19.1			24.8	m0.0				4.2		0.0
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	1002	3155			1645	1426				355		391
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	0.03	0.21			0.13	0.00				0.01		0.01

Intersection Summary

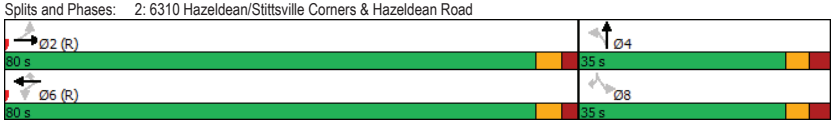
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.21

Intersection Signal Delay: 1.4	Intersection LOS: A
Intersection Capacity Utilization 37.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	22	537	403	6	0	9	
Future Volume (vph)	22	537	403	6	0	9	
Satd. Flow (prot)	1375	3131	3121	0	987	0	
Flt Permitted	0.512						
Satd. Flow (perm)	741	3131	3121	0	987	0	
Satd. Flow (RTOR)			2		483		
Lane Group Flow (vph)	22	537	409	0	9	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	75.7	75.7	75.7		34.3		5.0
Total Split (%)	65.8%	65.8%	65.8%		29.8%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	110.5	110.5	110.5		10.0		
Actuated g/C Ratio	0.96	0.96	0.96		0.09		
v/c Ratio	0.03	0.18	0.14		0.02		
Control Delay	0.3	0.3	0.8		0.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	0.3	0.3	0.8		0.1		
LOS	A	A	A		A		
Approach Delay		0.3	0.8		0.1		
Approach LOS		A	A		A		
Queue Length 50th (m)	0.0	0.0	0.0		0.0		
Queue Length 95th (m)	m0.4	2.6	11.9		0.0		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	712	3007	2998		605		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.03	0.18	0.14		0.01		

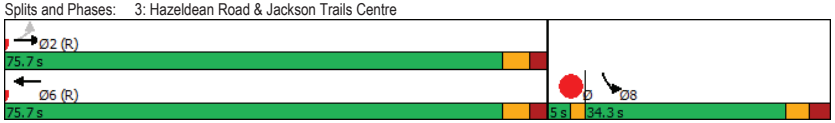
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 75 (65%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 0.5	Intersection LOS: A
Intersection Capacity Utilization 38.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



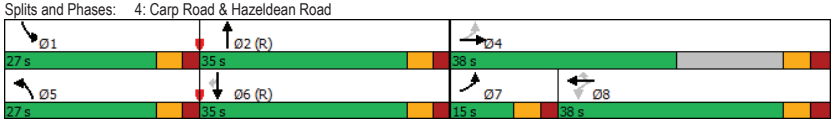
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	278	82	19	111	349	57	484	19	257	296	47
Future Volume (vph)	275	278	82	19	111	349	57	484	19	257	296	47
Satd. Flow (prot)	1658	3096	0	1386	1604	1441	1458	3215	0	2804	1575	1339
Flt Permitted	0.498			0.537			0.950			0.950		
Satd. Flow (perm)	862	3096	0	783	1604	1410	1456	3215	0	2794	1575	1309
Satd. Flow (RTOR)		40				349		3				149
Lane Group Flow (vph)	275	360	0	19	111	349	57	503	0	257	296	47
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	15.0	38.0		38.0	38.0	38.0	27.0	35.0		27.0	35.0	35.0
Total Split (%)	13.0%	33.0%		33.0%	33.0%	33.0%	23.5%	30.4%		23.5%	30.4%	30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	31.7	31.2		16.2	16.2	16.2	9.8	49.4		15.8	57.6	57.6
Actuated g/C Ratio	0.28	0.27		0.14	0.14	0.14	0.09	0.43		0.14	0.50	0.50
v/c Ratio	0.92	0.41		0.17	0.49	0.70	0.46	0.36		0.67	0.38	0.06
Control Delay	72.0	30.0		43.5	51.4	14.6	60.8	25.4		49.0	39.0	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	72.0	30.0		43.5	51.4	14.6	60.8	25.4		49.0	39.0	5.7
LOS	E	C		D	D	B	E	C		D	D	A
Approach Delay		48.2			24.3			29.0			40.7	
Approach LOS		D			C			C			D	
Queue Length 50th (m)	55.8	32.1		3.9	24.1	0.2	12.4	37.3		29.1	62.6	0.8
Queue Length 95th (m)	66.2	36.3		9.7	36.5	44.6	24.6	69.5		40.6	98.5	5.8
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	298	1273		213	437	638	266	1381		512	789	730
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	0.92	0.28		0.09	0.25	0.55	0.21	0.36		0.50	0.38	0.06

Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 36.5	Intersection LOS: D
Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Carp Road & Hazeldean Road



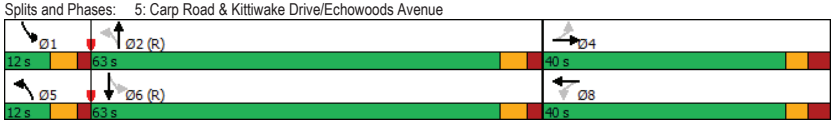
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	5	66	46	3	76	25	1192	14	25	502	46
Future Volume (vph)	224	5	66	46	3	76	25	1192	14	25	502	46
Satd. Flow (prot)	1610	1427	0	1551	1458	0	1458	3245	0	1658	3047	0
Flt Permitted	0.706			0.711			0.426			0.163		
Satd. Flow (perm)	1195	1427	0	1161	1458	0	652	3245	0	284	3047	0
Satd. Flow (RTOR)		66			76			1			12	
Lane Group Flow (vph)	224	71	0	46	79	0	25	1206	0	25	548	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	30.3	30.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	40.0	40.0		40.0	40.0		12.0	63.0		12.0	63.0	
Total Split (%)	34.8%	34.8%		34.8%	34.8%		10.4%	54.8%		10.4%	54.8%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	26.3	26.3		26.3	26.3		73.5	69.3		73.4	69.2	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.60		0.64	0.60	
v/c Ratio	0.82	0.19		0.17	0.20		0.05	0.62		0.10	0.30	
Control Delay	64.9	9.7		34.5	8.8		8.2	16.3		9.2	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	64.9	9.7		34.5	8.8		8.2	16.3		9.2	13.3	
LOS	E	A		C	A		A	B		A	B	
Approach Delay		51.6			18.3			16.2			13.2	
Approach LOS		D			B			B			B	
Queue Length 50th (m)	47.8	0.9		8.3	0.5		1.1	98.2		1.8	32.5	
Queue Length 95th (m)	71.3	11.4		16.9	11.5		m3.7	m143.4		5.6	50.2	
Internal Link Dist (m)		65.8			95.1			266.7			438.0	
Turn Bay Length (m)	65.5						24.5			36.0		
Base Capacity (vph)	350	464		340	480		462	1955		258	1839	
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	0.64	0.15		0.14	0.16		0.05	0.62		0.10	0.30	

Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82
Intersection Signal Delay: 20.2 — Intersection LOS: C
Intersection Capacity Utilization 65.3% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	425	36	57	331	15
Future Volume (vph)	54	13	49	7	6	48	27	425	36	57	331	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1653	0
Flt Permitted		0.867			0.978		0.353			0.182		
Satd. Flow (perm)	0	1413	0	0	1500	0	603	1620	0	309	1653	0
Satd. Flow (RTOR)		49			48			5			3	
Lane Group Flow (vph)	0	116	0	0	61	0	27	461	0	57	346	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	52.0	52.0		52.0	52.0		28.0	28.0		28.0	28.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		46.2			46.2		22.4	22.4		22.4	22.4	
Actuated g/C Ratio		0.58			0.58		0.28	0.28		0.28	0.28	
v/c Ratio		0.14			0.07		0.16	1.01		0.66	0.74	
Control Delay		5.2			3.4		30.3	81.3		64.9	37.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		5.2			3.4		30.3	81.3		64.9	37.6	
LOS		A			A		C	F		E	D	
Approach Delay		5.2			3.4			78.4			41.5	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		4.1			0.8		3.8	~75.8		7.6	47.2	
Queue Length 95th (m)		10.8			5.2		m9.0	#132.9		#26.6	#84.5	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		836			886		168	457		86	465	
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		0.14			0.07		0.16	1.01		0.66	0.74	

Intersection Summary

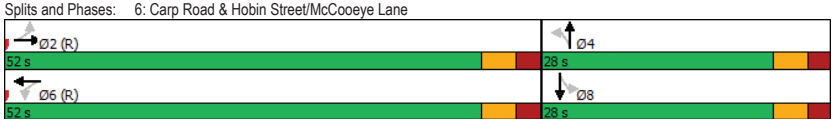
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 52.2	Intersection LOS: D
Intersection Capacity Utilization 68.4%	ICU Level of Service C
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: 6: Carp Road & Hobin Street/McCooeye Lane



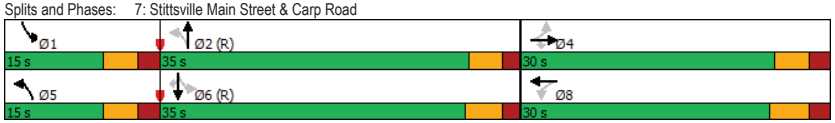
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	116	247	128	67	71	304	337	149	59	262	30
Future Volume (vph)	40	116	247	128	67	71	304	337	149	59	262	30
Satd. Flow (prot)	1642	1712	1351	1658	1585	0	1537	1650	0	1658	1728	1414
Flt Permitted	0.669			0.682			0.497			0.465		
Satd. Flow (perm)	1154	1712	1317	1185	1585	0	801	1650	0	808	1728	1374
Satd. Flow (RTOR)			247		68			32				115
Lane Group Flow (vph)	40	116	247	128	138	0	304	486	0	59	262	30
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.9	29.9		10.5	29.1		10.5	29.5	29.5
Total Split (s)	30.0	30.0	30.0	30.0	30.0		15.0	35.0		15.0	35.0	35.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		18.8%	43.8%		18.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.7	3.7		3.3	3.3		3.3	3.7	3.7
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2		2.2	1.8		2.2	1.8	1.8
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)	5.5	5.5	5.5	5.9	5.9		5.5	5.1		5.5	5.5	5.5
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.4	15.4	15.4	15.0	15.0		53.0	46.4		44.0	37.3	37.3
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19		0.66	0.58		0.55	0.47	0.47
v/c Ratio	0.18	0.35	0.55	0.58	0.39		0.48	0.50		0.11	0.33	0.04
Control Delay	34.0	38.1	15.7	39.1	17.5		9.7	14.6		7.1	16.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.3		0.1	0.0		0.0	0.0	0.0
Total Delay	34.0	38.1	15.7	39.1	17.8		9.8	14.6		7.1	16.7	0.1
LOS	C	D	B	D	B		A	B		A	B	A
Approach Delay		24.0			28.1			12.7			13.6	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	5.2	15.1	17.4	18.2	9.3		15.4	41.3		2.5	23.8	0.0
Queue Length 95th (m)	m4.9	m13.6	m12.8	30.4	21.0		37.7	90.9		8.5	48.4	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	353	524	574	356	524		632	970		574	806	702
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	124		18	0		0	0	43
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.11	0.22	0.43	0.36	0.34		0.50	0.50		0.10	0.33	0.05

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58
Intersection Signal Delay: 17.7 — Intersection LOS: B
Intersection Capacity Utilization 74.1% — ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Stittsville Main Street & Carp Road



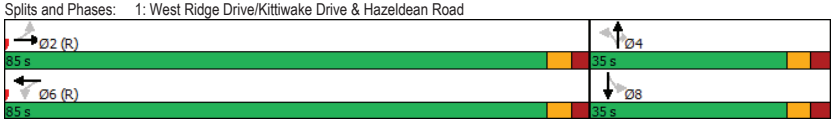
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	228	63	381	373	88	21	28	222	34	15	12
Future Volume (vph)	11	228	63	381	373	88	21	28	222	34	15	12
Satd. Flow (prot)	1658	1689	0	1658	1686	0	0	1690	1483	1642	1423	0
Flt Permitted	0.486			0.582				0.849		0.725		
Satd. Flow (perm)	846	1689	0	1016	1686	0	0	1454	1483	1253	1423	0
Satd. Flow (RTOR)		24			21				222		12	
Lane Group Flow (vph)	11	291	0	381	461	0	0	49	222	34	27	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	85.0	85.0		85.0	85.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	70.8%	70.8%		70.8%	70.8%		29.2%	29.2%	29.2%	29.2%	29.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	95.1	95.1		95.1	95.1			12.2	12.2	12.2	12.2	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.10	0.10	0.10	0.10	
v/c Ratio	0.02	0.22		0.47	0.34			0.33	0.63	0.27	0.18	
Control Delay	3.5	3.6		4.4	2.6			55.1	14.8	53.7	33.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	3.5	3.6		4.4	2.6			55.1	14.8	53.7	33.6	
LOS	A	A		A	A			E	B	D	C	
Approach Delay		3.6			3.4			22.1			44.8	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.4	11.2		5.4	0.0			11.1	0.0	7.7	3.3	
Queue Length 95th (m)	2.2	27.5		26.9	12.9			21.5	21.3	16.5	11.4	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	670	1344		805	1341			346	522	298	348	
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	0.02	0.22		0.47	0.34			0.14	0.43	0.11	0.08	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 64.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	433	0	0	833	6	0	0	0	42	0	37
Future Volume (vph)	51	433	0	0	833	6	0	0	0	42	0	37
Satd. Flow (prot)	1658	3283	0	1745	1745	1483	0	1745	0	1658	0	1483
Flt Permitted	0.309									0.757		
Satd. Flow (perm)	539	3283	0	1745	1745	1438	0	1745	0	1321	0	1483
Satd. Flow (RTOR)						30						37
Lane Group Flow (vph)	51	433	0	0	833	6	0	0	0	42	0	37
Turn Type	Perm	NA		Perm	NA	Perm				Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		34.1	34.1	34.1	34.3	34.3		34.3		34.3
Total Split (s)	85.0	85.0		85.0	85.0	85.0	35.0	35.0		35.0		35.0
Total Split (%)	70.8%	70.8%		70.8%	70.8%	70.8%	29.2%	29.2%		29.2%		29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	101.2	101.2			101.2	101.2				10.8		10.8
Actuated g/C Ratio	0.84	0.84			0.84	0.84				0.09		0.09
v/c Ratio	0.11	0.16			0.57	0.00				0.35		0.22
Control Delay	2.8	2.1			7.7	0.0				59.5		18.5
Queue Delay	0.0	0.0			0.4	0.0				0.0		0.0
Total Delay	2.8	2.1			8.1	0.0				59.5		18.5
LOS	A	A			A	A				E		B
Approach Delay		2.2			8.0						40.3	
Approach LOS		A			A						D	
Queue Length 50th (m)	1.8	8.4			32.0	0.0				9.5		0.0
Queue Length 95th (m)	4.0	11.0			m56.5	m0.0				20.6		10.1
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	454	2769			1472	1218				315		382
Starvation Cap Reductn	0	0			225	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	0.11	0.16			0.67	0.00				0.13		0.10

Intersection Summary

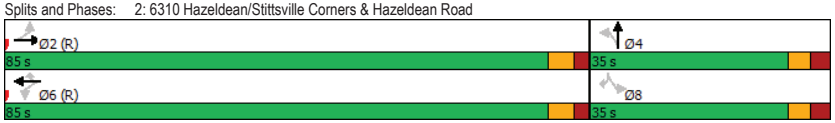
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 7.8	Intersection LOS: A
Intersection Capacity Utilization 64.9%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	79	586	896	7	13	46	
Future Volume (vph)	79	586	896	7	13	46	
Satd. Flow (prot)	1658	3316	3280	0	1545	0	
Flt Permitted	0.312				0.989		
Satd. Flow (perm)	544	3316	3280	0	1545	0	
Satd. Flow (RTOR)			1		46		
Lane Group Flow (vph)	79	586	903	0	59	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	80.7	80.7	80.7		34.3		5.0
Total Split (%)	67.3%	67.3%	67.3%		28.6%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	101.7	101.7	101.7		10.1		
Actuated g/C Ratio	0.85	0.85	0.85		0.08		
v/c Ratio	0.17	0.21	0.32		0.34		
Control Delay	1.2	0.6	2.9		25.6		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	1.2	0.6	2.9		25.6		
LOS	A	A	A		C		
Approach Delay		0.7	2.9		25.6		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.7	2.6	23.1		2.9		
Queue Length 95th (m)	m1.0	m3.4	30.2		15.8		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	461	2810	2779		395		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.17	0.21	0.32		0.15		

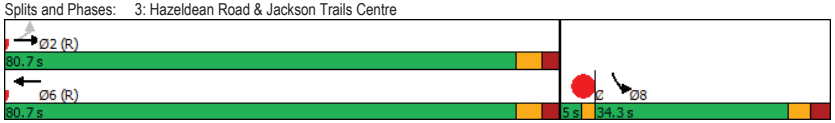
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 2.8	Intersection LOS: A
Intersection Capacity Utilization 59.0%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



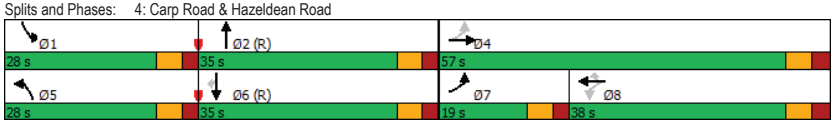
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	255	132	56	500	470	125	352	34	507	599	227
Future Volume (vph)	88	255	132	56	500	470	125	352	34	507	599	227
Satd. Flow (prot)	1610	3117	0	1551	1745	1427	1658	3233	0	3216	1745	1483
Flt Permitted	0.101			0.523			0.950			0.950		
Satd. Flow (perm)	171	3117	0	850	1745	1399	1649	3233	0	3194	1745	1436
Satd. Flow (RTOR)		95				420		8				165
Lane Group Flow (vph)	88	387	0	56	500	470	125	386	0	507	599	227
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	19.0	57.0		38.0	38.0	38.0	28.0	35.0		28.0	35.0	35.0
Total Split (%)	15.8%	47.5%		31.7%	31.7%	31.7%	23.3%	29.2%		23.3%	29.2%	29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	50.9	50.4		33.5	33.5	33.5	14.3	29.5		21.4	36.6	36.6
Actuated g/C Ratio	0.42	0.42		0.28	0.28	0.28	0.12	0.25		0.18	0.30	0.30
v/c Ratio	0.44	0.28		0.24	1.03	0.68	0.63	0.48		0.89	1.13	0.41
Control Delay	26.3	13.9		36.7	89.7	18.7	64.0	40.5		74.1	114.3	18.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	26.3	13.9		36.7	89.7	18.7	64.0	40.5		74.1	114.3	18.8
LOS	C	B		D	F	B	E	D		E	F	B
Approach Delay		16.2			54.3			46.2			82.8	
Approach LOS		B			D			D			F	
Queue Length 50th (m)	12.5	22.8		10.5	~129.6	30.1	28.5	40.5		66.0	~158.7	10.3
Queue Length 95th (m)	22.4	27.5		22.6	#200.3	70.7	46.0	55.8		#89.5	#249.3	40.1
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	227	1364		237	486	693	303	801		589	531	552
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	0.39	0.28		0.24	1.03	0.68	0.41	0.48		0.86	1.13	0.41

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13
Intersection Signal Delay: 59.0 — Intersection LOS: E
Intersection Capacity Utilization 94.2% — 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: 4: Carp Road & Hazeldean Road



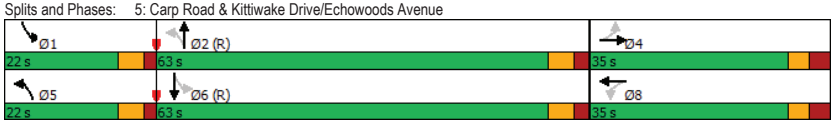
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	12	52	55	7	45	49	712	30	64	1329	143
Future Volume (vph)	134	12	52	55	7	45	49	712	30	64	1329	143
Satd. Flow (prot)	1658	1487	0	1658	1345	0	1658	3200	0	1658	3255	0
Flt Permitted	0.723			0.715			0.121			0.342		
Satd. Flow (perm)	1262	1487	0	1219	1345	0	211	3200	0	596	3255	0
Satd. Flow (RTOR)		52			45			5			13	
Lane Group Flow (vph)	134	64	0	55	52	0	49	742	0	64	1472	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	29.3	29.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	35.0	35.0		35.0	35.0		22.0	63.0		22.0	63.0	
Total Split (%)	29.2%	29.2%		29.2%	29.2%		18.3%	52.5%		18.3%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	18.4	18.4		18.4	18.4		84.9	79.1		85.5	79.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.71	0.66		0.71	0.66	
v/c Ratio	0.69	0.24		0.29	0.21		0.21	0.35		0.13	0.68	
Control Delay	65.4	16.3		46.8	16.1		7.0	9.6		5.8	16.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.4	16.3		46.8	16.1		7.0	9.6		5.8	16.5	
LOS	E	B		D	B		A	A		A	B	
Approach Delay		49.6			31.9			9.4			16.0	
Approach LOS		D			C			A			B	
Queue Length 50th (m)	30.4	2.5		11.7	1.4		2.7	33.7		3.4	107.5	
Queue Length 95th (m)	48.0	13.7		22.5	11.7		m6.0	50.5		8.8	164.5	
Internal Link Dist (m)		73.3			85.0			266.7			438.0	
Turn Bay Length (m)	65.5						24.0			36.0		
Base Capacity (vph)	301	395		291	355		355	2110		590	2156	
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	0.45	0.16		0.19	0.15		0.14	0.35		0.11	0.68	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69
Intersection Signal Delay: 17.2 — Intersection LOS: B
Intersection Capacity Utilization 79.1% — ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	359	44	61	670	73
Future Volume (vph)	43	18	54	35	25	67	70	359	44	61	670	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1653	0	1658	1698	0
Flt Permitted		0.877			0.914		0.179			0.199		
Satd. Flow (perm)	0	1415	0	0	1461	0	312	1653	0	345	1698	0
Satd. Flow (RTOR)		26			67			7			6	
Lane Group Flow (vph)	0	115	0	0	127	0	70	403	0	61	743	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	62.0	62.0		62.0	62.0		28.0	28.0		28.0	28.0	
Total Split (%)	68.9%	68.9%		68.9%	68.9%		31.1%	31.1%		31.1%	31.1%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.2			56.2		22.4	22.4		22.4	22.4	
Actuated g/C Ratio		0.62			0.62		0.25	0.25		0.25	0.25	
v/c Ratio		0.13			0.14		0.91	0.97		0.72	1.74	
Control Delay		5.7			3.9		115.8	74.8		76.8	368.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		5.7			3.9		115.8	74.8		76.8	368.3	
LOS		A			A		F	E		E	F	
Approach Delay		5.7			3.9			80.9			346.2	
Approach LOS		A			A			F			F	
Queue Length 50th (m)		5.6			3.7		12.8	73.5		9.6	~194.1	
Queue Length 95th (m)		12.0			10.0		m#27.8	m#123.4		#30.9	#261.4	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		893			937		77	416		85	427	
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		0.13			0.14		0.91	0.97		0.72	1.74	

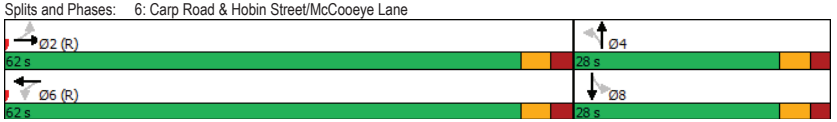
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.74

Intersection Signal Delay: 209.2	Intersection LOS: F
Intersection Capacity Utilization 84.5%	ICU Level of Service E
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: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	122	421	204	161	69	290	423	105	63	464	44
Future Volume (vph)	70	122	421	204	161	69	290	423	105	63	464	44
Satd. Flow (prot)	1658	1745	1469	1658	1635	0	1595	1679	0	1658	1728	1483
Flt Permitted	0.615			0.502			0.154			0.369		
Satd. Flow (perm)	1047	1745	1417	866	1635	0	255	1679	0	641	1728	1394
Satd. Flow (RTOR)			365		30			14				154
Lane Group Flow (vph)	70	122	421	204	230	0	290	528	0	63	464	44
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	28.1	28.1	28.1	10.1	28.1		10.5	29.5		10.5	29.5	29.5
Total Split (s)	29.0	29.0	29.0	15.0	44.0		14.0	32.0		14.0	32.0	32.0
Total Split (%)	32.2%	32.2%	32.2%	16.7%	48.9%		15.6%	35.6%		15.6%	35.6%	35.6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		2.2	2.2		2.2	2.2	2.2
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)	5.1	5.1	5.1	5.1	5.1		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.7	15.7	15.7	30.6	30.6		46.9	38.5		33.6	26.6	26.6
Actuated g/C Ratio	0.17	0.17	0.17	0.34	0.34		0.52	0.43		0.37	0.30	0.30
v/c Ratio	0.38	0.40	0.77	0.54	0.40		0.76	0.73		0.20	0.91	0.08
Control Delay	32.3	34.9	18.8	26.7	20.5		36.4	32.5		14.6	55.3	0.3
Queue Delay	0.0	0.0	4.6	0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	32.3	34.9	23.3	26.7	20.8		36.4	32.5		14.6	55.3	0.3
LOS	C	C	C	C	C		D	C		B	E	A
Approach Delay		26.6			23.6			33.9			46.6	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	10.9	19.1	46.6	28.2	27.8		26.3	68.8		4.3	76.6	0.0
Queue Length 95th (m)	m3.3	m5.4	m0.0	37.5	38.1		#99.0	#158.8		13.1	#132.5	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	278	463	644	381	723		382	725		345	509	520
Starvation Cap Reductn	0	0	154	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	154		0	0		0	0	14
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.25	0.26	0.86	0.54	0.40		0.76	0.73		0.18	0.91	0.09

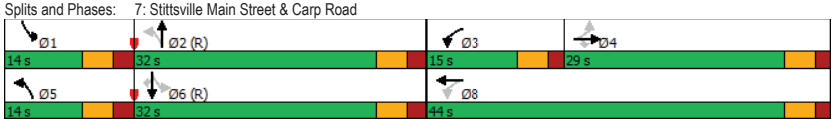
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 33.2	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: 7: Stittsville Main Street & Carp Road



Appendix K

Synchro Intersection Worksheets – 2032 Future Background Conditions with Optimized Timing

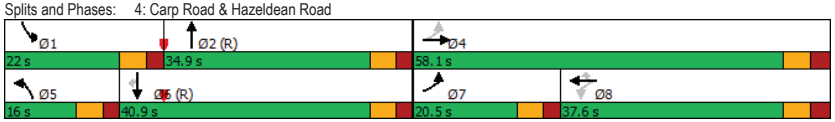
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	278	82	19	111	349	57	484	19	257	296	47
Future Volume (vph)	275	278	82	19	111	349	57	484	19	257	296	47
Satd. Flow (prot)	1658	3096	0	1386	1604	1441	1458	3215	0	2804	1575	1339
Flt Permitted	0.498			0.537			0.950			0.950		
Satd. Flow (perm)	862	3096	0	783	1604	1410	1456	3215	0	2794	1575	1309
Satd. Flow (RTOR)		43				337		3				149
Lane Group Flow (vph)	275	360	0	19	111	349	57	503	0	257	296	47
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	20.5	58.1		37.6	37.6	37.6	16.0	34.9		22.0	40.9	40.9
Total Split (%)	17.8%	50.5%		32.7%	32.7%	32.7%	13.9%	30.3%		19.1%	35.6%	35.6%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	37.2	36.7		16.2	16.2	16.2	9.0	44.8		14.9	52.9	52.9
Actuated g/C Ratio	0.32	0.32		0.14	0.14	0.14	0.08	0.39		0.13	0.46	0.46
v/c Ratio	0.73	0.35		0.17	0.49	0.72	0.50	0.40		0.71	0.41	0.07
Control Delay	41.7	25.5		45.3	52.7	16.8	65.5	28.6		53.6	42.6	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	41.7	25.5		45.3	52.7	16.8	65.5	28.6		53.6	42.6	5.7
LOS	D	C		D	D	B	E	C		D	D	A
Approach Delay		32.5			26.2			32.3			44.4	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	52.1	29.6		3.9	24.1	2.7	12.4	40.9		29.1	67.9	0.8
Queue Length 95th (m)	60.4	32.9		10.3	38.6	49.5	25.6	70.5		42.4	98.8	5.8
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	378	1410		211	432	626	130	1253		398	725	683
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.73	0.26		0.09	0.26	0.56	0.44	0.40		0.65	0.41	0.07

Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 34.3	Intersection LOS: C
Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	425	36	57	331	15
Future Volume (vph)	54	13	49	7	6	48	27	425	36	57	331	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1654	0
Flt Permitted		0.863			0.977		0.428			0.291		
Satd. Flow (perm)	0	1406	0	0	1498	0	731	1620	0	493	1654	0
Satd. Flow (RTOR)		49			48			8			4	
Lane Group Flow (vph)	0	116	0	0	61	0	27	461	0	57	346	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	34.0	34.0		34.0	34.0		46.0	46.0		46.0	46.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		57.5%	57.5%		57.5%	57.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		39.7			39.7		28.9	28.9		28.9	28.9	
Actuated g/C Ratio		0.50			0.50		0.36	0.36		0.36	0.36	
v/c Ratio		0.16			0.08		0.10	0.78		0.32	0.58	
Control Delay		9.4			6.5		15.9	32.5		21.1	23.3	
Queue Delay		0.0			0.0		0.0	0.5		0.0	0.0	
Total Delay		9.4			6.5		15.9	33.0		21.1	23.3	
LOS		A			A		B	C		C	C	
Approach Delay		9.4			6.5			32.1			23.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)		5.1			1.0		3.0	63.7		6.1	41.0	
Queue Length 95th (m)		17.0			8.2		m6.3	89.7		12.8	53.1	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		722			768		369	822		248	837	
Starvation Cap Reductn		0			0		0	103		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.16			0.08		0.07	0.64		0.23	0.41	

Intersection Summary

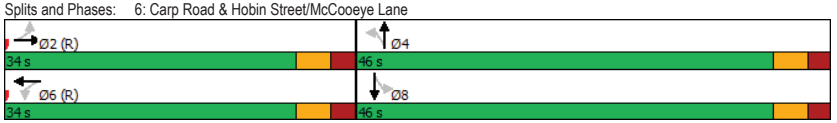
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 24.7	Intersection LOS: C
Intersection Capacity Utilization 68.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	255	132	56	500	470	125	352	34	507	599	227
Future Volume (vph)	88	255	132	56	500	470	125	352	34	507	599	227
Satd. Flow (prot)	1610	3117	0	1551	1745	1427	1658	3233	0	3216	1745	1483
Flt Permitted	0.109			0.523			0.950			0.950		
Satd. Flow (perm)	185	3117	0	850	1745	1399	1649	3233	0	3194	1745	1436
Satd. Flow (RTOR)		90				440		8				200
Lane Group Flow (vph)	88	387	0	56	500	470	125	386	0	507	599	227
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	11.1	53.1		42.0	42.0	42.0	16.0	33.9		33.0	50.9	50.9
Total Split (%)	9.3%	44.3%		35.0%	35.0%	35.0%	13.3%	28.3%		27.5%	42.4%	42.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	47.0	46.5		35.4	35.4	35.4	10.0	31.3		23.5	44.8	44.8
Actuated g/C Ratio	0.39	0.39		0.30	0.30	0.30	0.08	0.26		0.20	0.37	0.37
v/c Ratio	0.67	0.31		0.22	0.97	0.65	0.91	0.45		0.81	0.92	0.34
Control Delay	47.8	15.8		33.3	73.8	15.2	109.8	39.2		65.3	55.7	13.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.8	15.8		33.3	73.8	15.2	109.8	39.2		65.3	55.7	13.8
LOS	D	B		C	E	B	F	D		E	E	B
Approach Delay		21.7			44.7			56.4			52.2	
Approach LOS		C			D			E			D	
Queue Length 50th (m)	13.2	24.4		10.1	116.7	25.3	29.7	39.6		65.9	87.2	7.2
Queue Length 95th (m)	#27.4	29.4		21.4	#184.9	61.3	#65.6	56.6		82.8	#198.6	36.1
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	131	1262		250	514	722	138	850		723	651	661
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	0.67	0.31		0.22	0.97	0.65	0.91	0.45		0.70	0.92	0.34

Intersection Summary

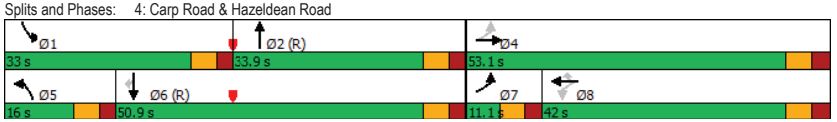
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 46.2	Intersection LOS: D
Intersection Capacity Utilization 94.2%	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.

Splits and Phases: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	359	44	61	670	73
Future Volume (vph)	43	18	54	35	25	67	70	359	44	61	670	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1653	0	1658	1698	0
Flt Permitted		0.862			0.903		0.189			0.452		
Satd. Flow (perm)	0	1391	0	0	1444	0	329	1653	0	783	1698	0
Satd. Flow (RTOR)		49			61			12			11	
Lane Group Flow (vph)	0	115	0	0	127	0	70	403	0	61	743	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	30.3	30.3		30.3	30.3		59.7	59.7		59.7	59.7	
Total Split (%)	33.7%	33.7%		33.7%	33.7%		66.3%	66.3%		66.3%	66.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		30.9			30.9		47.7	47.7		47.7	47.7	
Actuated g/C Ratio		0.34			0.34		0.53	0.53		0.53	0.53	
v/c Ratio		0.23			0.24		0.40	0.46		0.15	0.82	
Control Delay		16.1			14.9		20.8	16.2		9.8	25.2	
Queue Delay		0.0			0.0		0.0	0.6		0.0	0.0	
Total Delay		16.1			14.9		20.8	16.8		9.8	25.2	
LOS		B			B		C	B		A	C	
Approach Delay		16.1			14.9			17.4			24.0	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		8.1			8.1		7.6	43.7		4.8	93.9	
Queue Length 95th (m)		22.1			22.7		m13.7	m63.1		9.7	126.3	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		510			536		197	998		470	1025	
Starvation Cap Reductn		0			0		0	286		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.23			0.24		0.36	0.57		0.13	0.72	

Intersection Summary

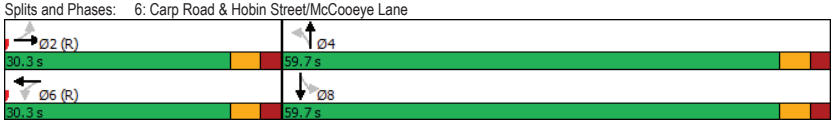
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.6	Intersection LOS: C
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: 6: Carp Road & Hobin Street/McCooeye Lane



Appendix L

TDM Checklist

CGH TRANSPORTATION

TDM Measures Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

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: *Non-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	☑
		2.2 Bicycle skills training	
		Commuter travel	
BETTER	★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
		2.3 Valet bike parking	
		Visitor travel	
BETTER		2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-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	☑
BASIC		3.1.2 Provide online links to OC Transpo and STO information	☐
BETTER		3.1.3 Provide real-time arrival information display at entrances	☐
		3.2 Transit fare incentives	
		Commuter travel	
BETTER		3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER	★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	☐
		Visitor travel	
BETTER		3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3 Enhanced public transit service	
		Commuter travel	
BETTER		3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER		3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4 Private transit service	
		Commuter travel	
BETTER		3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER		3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		4. RIDESHARING	
		4.1 Ridematching service	
		Commuter travel	
BASIC	★ 4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
		4.2 Carpool parking price incentives	
		Commuter travel	
BETTER	4.2.1	Provide discounts on parking costs for registered carpools	☐
		4.3 Vanpool service	
		Commuter travel	
BETTER	4.3.1	Provide a vanpooling service for long-distance commuters	☐
		5. CARSHARING & BIKESHARING	
		5.1 Bikeshare stations & memberships	
BETTER	5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
		Commuter travel	
BETTER	5.1.2	Provide employees with bikeshare memberships for local business travel	☐
		5.2 Carshare vehicles & memberships	
		Commuter travel	
BETTER	5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☐
BETTER	5.2.2	Provide employees with carshare memberships for local business travel	☐
		6. PARKING	
		6.1 Priced parking	
		Commuter travel	
BASIC	★ 6.1.1	Charge for long-term parking (daily, weekly, monthly)	☑
BASIC	6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☑
		Visitor travel	
BETTER	6.1.3	Charge for short-term parking (hourly)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		7. TDM MARKETING & COMMUNICATIONS	
		7.1 Multimodal travel information	
		Commuter travel	
BASIC	★ 7.1.1	Provide a multimodal travel option information package to new/relocating employees and students	☑
		Visitor travel	
BETTER	★ 7.1.2	Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☐
		7.2 Personalized trip planning	
		Commuter travel	
BETTER	★ 7.2.1	Offer personalized trip planning to new/relocating employees	☐
		7.3 Promotions	
		Commuter travel	
BETTER	7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
		8. OTHER INCENTIVES & AMENITIES	
		8.1 Emergency ride home	
		Commuter travel	
BETTER	★ 8.1.1	Provide emergency ride home service to non-driving commuters	☐
		8.2 Alternative work arrangements	
		Commuter travel	
BASIC	★ 8.2.1	Encourage flexible work hours	☐
BETTER	8.2.2	Encourage compressed workweeks	☐
BETTER	★ 8.2.3	Encourage telework	☐
		8.3 Local business travel options	
		Commuter travel	
BASIC	★ 8.3.1	Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
		8.4 Commuter incentives	
		Commuter travel	
BETTER	8.4.1	Offer employees a taxable, mode-neutral commuting allowance	☐
		8.5 On-site amenities	
		Commuter travel	
BETTER	8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

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

Legend

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

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

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

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

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

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

Appendix M

Synchro Intersection Worksheets – 2027 Future Total Conditions

CGH TRANSPORTATION

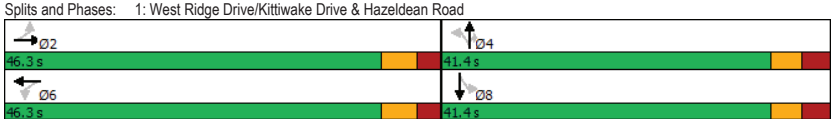
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	250	16	72	130	14	32	12	382	25	15	10
Future Volume (vph)	2	250	16	72	130	14	32	12	382	25	15	10
Satd. Flow (prot)	1658	1695	0	1580	1639	0	0	1646	1483	1658	1616	0
Flt Permitted	0.665			0.595				0.779		0.728		
Satd. Flow (perm)	1158	1695	0	986	1639	0	0	1312	1446	1265	1616	0
Satd. Flow (RTOR)		5			8				382		10	
Lane Group Flow (vph)	2	266	0	72	144	0	0	44	382	25	25	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	28.0	28.0		28.0	28.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	46.3	46.3		46.3	46.3		41.4	41.4	41.4	41.4	41.4	
Total Split (%)	52.8%	52.8%		52.8%	52.8%		47.2%	47.2%	47.2%	47.2%	47.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None	None	None	None	
Act Effct Green (s)	28.1	28.1		28.1	28.1			11.8	11.8	11.8	11.8	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.22	0.22	0.22	0.22	
v/c Ratio	0.00	0.29		0.14	0.16			0.15	0.62	0.09	0.07	
Control Delay	7.5	8.5		8.2	7.4			17.1	7.1	16.3	12.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	7.5	8.5		8.2	7.4			17.1	7.1	16.3	12.2	
LOS	A	A		A	A			B	A	B	B	
Approach Delay		8.5			7.7			8.1			14.3	
Approach LOS		A			A			A			B	
Queue Length 50th (m)	0.1	10.9		2.8	5.2			3.3	0.0	1.9	1.1	
Queue Length 95th (m)	1.0	31.6		10.8	17.3			9.2	15.6	6.2	5.3	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	883	1294		751	1252			875	1092	844	1082	
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	0.00	0.21		0.10	0.12			0.05	0.35	0.03	0.02	

Intersection Summary
Cycle Length: 87.7
Actuated Cycle Length: 52.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62

Lanes, Volumes, Timings
1: West Ridge Drive/Kittiwake Drive & Hazeldean Road
2027 Future Total
AM Peak Hour

Intersection Signal Delay: 8.4 Intersection LOS: A
Intersection Capacity Utilization 74.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	630	5	22	207	1	5	0	40	4	0	4
Future Volume (vph)	29	630	5	22	207	1	5	0	40	4	0	4
Satd. Flow (prot)	1580	3280	0	1658	1712	1483	0	1526	0	1353	0	1483
Flt Permitted	0.628			0.411				0.994		0.728		
Satd. Flow (perm)	1045	3280	0	717	1712	1483	0	1526	0	1037	0	1483
Satd. Flow (RTOR)		1				31		40				29
Lane Group Flow (vph)	29	635	0	22	207	1	0	45	0	4	0	4
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		29.1	29.1	29.1	34.3	34.3		34.3		34.3
Total Split (s)	80.0	80.0		80.0	80.0	80.0	35.0	35.0		35.0		35.0
Total Split (%)	69.6%	69.6%		69.6%	69.6%	69.6%	30.4%	30.4%		30.4%		30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	97.1	97.1		97.1	97.1	97.1		10.0		10.0		10.0
Actuated g/C Ratio	0.84	0.84		0.84	0.84	0.84		0.09		0.09		0.09
v/c Ratio	0.03	0.23		0.04	0.14	0.00		0.27		0.04		0.03
Control Delay	2.3	2.6		2.6	2.2	0.0		21.8		49.5		0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Delay	2.3	2.6		2.6	2.2	0.0		21.8		49.5		0.2
LOS	A	A		A	A	A		C		D		A
Approach Delay		2.5			2.2			21.8			24.9	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	1.0	14.3		0.2	1.6	0.0		1.1		0.8		0.0
Queue Length 95th (m)	2.6	18.6		4.4	23.1	m0.0		12.2		4.3		0.0
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0			30.0		100.0						
Base Capacity (vph)	882	2769		605	1445	1257		410		258		391
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	0.03	0.23		0.04	0.14	0.00		0.11		0.02		0.01

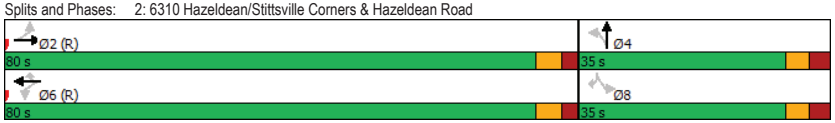
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.27

Intersection Signal Delay: 3.6	Intersection LOS: A
Intersection Capacity Utilization 44.1%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	22	535	409	6	0	9	
Future Volume (vph)	22	535	409	6	0	9	
Satd. Flow (prot)	1375	3131	3121	0	987	0	
Flt Permitted	0.509						
Satd. Flow (perm)	737	3131	3121	0	987	0	
Satd. Flow (RTOR)			2		477		
Lane Group Flow (vph)	22	535	415	0	9	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	75.7	75.7	75.7		34.3		5.0
Total Split (%)	65.8%	65.8%	65.8%		29.8%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	110.5	110.5	110.5		10.0		
Actuated g/C Ratio	0.96	0.96	0.96		0.09		
v/c Ratio	0.03	0.18	0.14		0.02		
Control Delay	0.3	0.3	0.8		0.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	0.3	0.3	0.8		0.1		
LOS	A	A	A		A		
Approach Delay		0.3	0.8		0.1		
Approach LOS		A	A		A		
Queue Length 50th (m)	0.0	0.0	0.0		0.0		
Queue Length 95th (m)	m0.4	2.8	12.1		0.0		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	708	3007	2998		601		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.03	0.18	0.14		0.01		

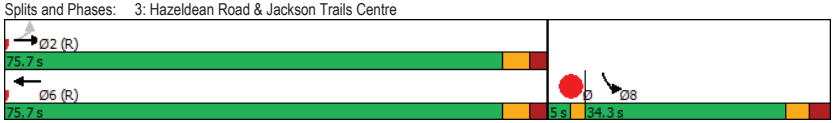
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 75 (65%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 0.5	Intersection LOS: A
Intersection Capacity Utilization 38.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



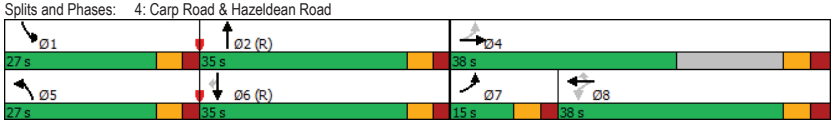
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	281	83	19	117	345	58	428	19	254	293	61
Future Volume (vph)	301	281	83	19	117	345	58	428	19	254	293	61
Satd. Flow (prot)	1658	3096	0	1386	1604	1441	1458	3209	0	2804	1575	1339
Flt Permitted	0.489			0.535			0.950			0.950		
Satd. Flow (perm)	847	3096	0	780	1604	1410	1456	3209	0	2793	1575	1309
Satd. Flow (RTOR)		40				345		4				149
Lane Group Flow (vph)	301	364	0	19	117	345	58	447	0	254	293	61
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	15.0	38.0		38.0	38.0	38.0	27.0	35.0		27.0	35.0	35.0
Total Split (%)	13.0%	33.0%		33.0%	33.0%	33.0%	23.5%	30.4%		23.5%	30.4%	30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	31.9	31.4		16.4	16.4	16.4	9.9	49.2		15.6	57.3	57.3
Actuated g/C Ratio	0.28	0.27		0.14	0.14	0.14	0.09	0.43		0.14	0.50	0.50
v/c Ratio	1.01	0.42		0.17	0.51	0.69	0.46	0.32		0.67	0.37	0.08
Control Delay	92.0	28.7		43.0	51.9	14.4	60.8	24.9		49.0	39.2	9.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	92.0	28.7		43.0	51.9	14.4	60.8	24.9		49.0	39.2	9.1
LOS	F	C		D	D	B	E	C		D	D	A
Approach Delay		57.3			24.7			29.0			40.3	
Approach LOS		E			C			C			D	
Queue Length 50th (m)	~68.9	32.5		3.7	25.2	0.0	12.7	32.5		28.7	62.6	1.6
Queue Length 95th (m)	#77.4	37.7		9.8	38.6	44.4	25.0	61.3		40.3	97.8	8.5
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	297	1273		212	437	635	266	1376		512	784	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	1.01	0.29		0.09	0.27	0.54	0.22	0.32		0.50	0.37	0.08

Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01
Intersection Signal Delay: 39.5 — Intersection LOS: D
Intersection Capacity Utilization 78.2% — ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	5	66	46	3	76	25	1088	14	25	510	46
Future Volume (vph)	224	5	66	46	3	76	25	1088	14	25	510	46
Satd. Flow (prot)	1610	1427	0	1551	1458	0	1458	3245	0	1658	3050	0
Flt Permitted	0.706			0.711			0.422			0.194		
Satd. Flow (perm)	1195	1427	0	1161	1458	0	646	3245	0	338	3050	0
Satd. Flow (RTOR)		66			76			2			12	
Lane Group Flow (vph)	224	71	0	46	79	0	25	1102	0	25	556	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	30.3	30.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	40.0	40.0		40.0	40.0		12.0	63.0		12.0	63.0	
Total Split (%)	34.8%	34.8%		34.8%	34.8%		10.4%	54.8%		10.4%	54.8%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	26.3	26.3		26.3	26.3		73.5	69.3		73.4	69.2	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.60		0.64	0.60	
v/c Ratio	0.82	0.19		0.17	0.20		0.05	0.56		0.09	0.30	
Control Delay	64.9	9.7		34.5	8.8		8.8	15.8		9.0	13.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	64.9	9.7		34.5	8.8		8.8	15.8		9.0	13.4	
LOS	E	A		C	A		A	B		A	B	
Approach Delay		51.6			18.3			15.6			13.2	
Approach LOS		D			B			B			B	
Queue Length 50th (m)	47.8	0.9		8.3	0.5		1.2	84.6		1.8	33.2	
Queue Length 95th (m)	71.3	11.4		16.9	11.5		m3.8	m122.0		5.6	51.1	
Internal Link Dist (m)		65.8			95.1			266.7			438.0	
Turn Bay Length (m)	65.5						24.5			36.0		
Base Capacity (vph)	350	464		340	480		459	1956		289	1840	
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	0.64	0.15		0.14	0.16		0.05	0.56		0.09	0.30	

Intersection Summary

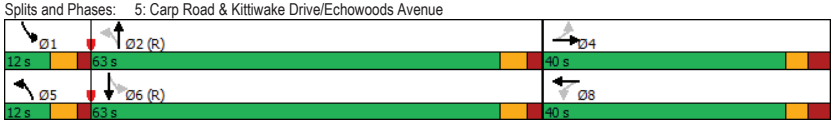
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.1	Intersection LOS: C
Intersection Capacity Utilization 62.2%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	377	36	57	328	15
Future Volume (vph)	54	13	49	7	6	48	27	377	36	57	328	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1653	0
Flt Permitted		0.867			0.979		0.349			0.240		
Satd. Flow (perm)	0	1413	0	0	1501	0	596	1620	0	407	1653	0
Satd. Flow (RTOR)		49			48			6			3	
Lane Group Flow (vph)	0	116	0	0	61	0	27	413	0	57	343	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	52.0	52.0		52.0	52.0		28.0	28.0		28.0	28.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		46.8			46.8		21.8	21.8		21.8	21.8	
Actuated g/C Ratio		0.58			0.58		0.27	0.27		0.27	0.27	
v/c Ratio		0.14			0.07		0.17	0.93		0.52	0.76	
Control Delay		5.2			3.4		31.1	64.5		43.6	38.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		5.2			3.4		31.1	64.5		43.6	38.6	
LOS		A			A		C	E		D	D	
Approach Delay		5.2			3.4			62.4			39.4	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		4.1			0.8		3.7	66.9		7.2	46.7	
Queue Length 95th (m)		10.8			5.2		m8.9	#114.4		#22.2	#83.2	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		846			897		166	457		113	465	
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		0.14			0.07		0.16	0.90		0.50	0.74	

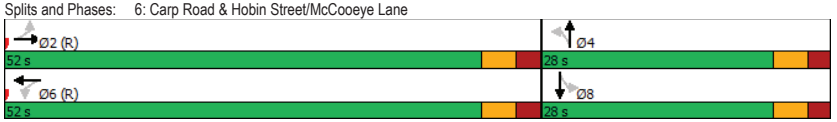
Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 43.3	Intersection LOS: D
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	104	248	128	66	71	305	337	149	59	262	30
Future Volume (vph)	40	104	248	128	66	71	305	337	149	59	262	30
Satd. Flow (prot)	1642	1712	1351	1658	1583	0	1537	1650	0	1658	1728	1414
Flt Permitted	0.669			0.690			0.497			0.466		
Satd. Flow (perm)	1154	1712	1317	1199	1583	0	801	1650	0	810	1728	1374
Satd. Flow (RTOR)			248		69			32				115
Lane Group Flow (vph)	40	104	248	128	137	0	305	486	0	59	262	30
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.9	29.9		10.5	29.1		10.5	29.5	29.5
Total Split (s)	30.0	30.0	30.0	30.0	30.0		15.0	35.0		15.0	35.0	35.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		18.8%	43.8%		18.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.7	3.7		3.3	3.3		3.3	3.7	3.7
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2		2.2	1.8		2.2	1.8	1.8
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)	5.5	5.5	5.5	5.9	5.9		5.5	5.1		5.5	5.5	5.5
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.3	15.3	15.3	14.9	14.9		53.0	46.5		44.0	37.4	37.4
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19		0.66	0.58		0.55	0.47	0.47
v/c Ratio	0.18	0.32	0.55	0.58	0.39		0.48	0.50		0.11	0.32	0.04
Control Delay	34.4	37.7	16.1	39.0	17.3		9.7	14.5		7.1	16.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	34.4	37.7	16.1	39.0	17.6		9.7	14.5		7.1	16.6	0.1
LOS	C	D	B	D	B		A	B		A	B	A
Approach Delay		23.7			27.9			12.7			13.6	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	5.2	13.5	17.9	18.2	9.0		15.4	41.2		2.5	23.8	0.0
Queue Length 95th (m)	m4.8	m12.1	m13.3	30.3	20.5		38.0	90.9		8.5	48.4	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	353	524	575	361	525		633	972		575	808	703
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	122		0	0		0	0	11
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.11	0.20	0.43	0.35	0.34		0.48	0.50		0.10	0.32	0.04

Intersection Summary

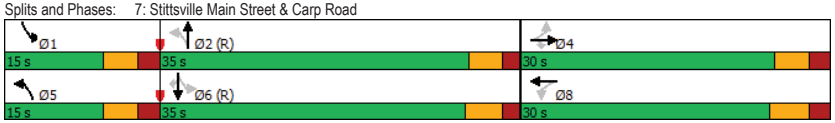
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 7: Stittsville Main Street & Carp Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	231	63	382	366	88	21	28	223	34	15	12
Future Volume (vph)	11	231	63	382	366	88	21	28	223	34	15	12
Satd. Flow (prot)	1658	1689	0	1658	1686	0	0	1690	1483	1642	1423	0
Flt Permitted	0.490			0.580				0.849		0.725		
Satd. Flow (perm)	853	1689	0	1012	1686	0	0	1454	1483	1253	1423	0
Satd. Flow (RTOR)		24			21				223		12	
Lane Group Flow (vph)	11	294	0	382	454	0	0	49	223	34	27	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	85.0	85.0		85.0	85.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	70.8%	70.8%		70.8%	70.8%		29.2%	29.2%	29.2%	29.2%	29.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	95.1	95.1		95.1	95.1			12.2	12.2	12.2	12.2	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.10	0.10	0.10	0.10	
v/c Ratio	0.02	0.22		0.48	0.34			0.33	0.64	0.27	0.18	
Control Delay	3.5	3.6		4.7	2.8			55.1	14.8	53.7	33.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	3.5	3.6		4.7	2.8			55.1	14.8	53.7	33.6	
LOS	A	A		A	A			E	B	D	C	
Approach Delay		3.6			3.7			22.0			44.8	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.4	11.3		5.5	5.7			11.1	0.0	7.7	3.3	
Queue Length 95th (m)	2.2	27.7		39.9	14.5			21.5	21.5	16.5	11.4	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	676	1344		802	1341			346	523	298	348	
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	0.02	0.22		0.48	0.34			0.14	0.43	0.11	0.08	

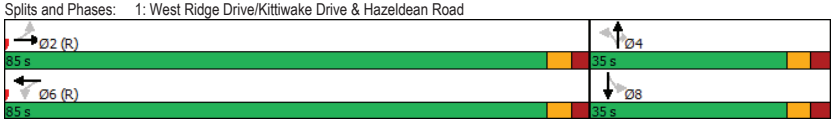
Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 65.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	427	10	64	803	6	13	0	48	42	0	37
Future Volume (vph)	51	427	10	64	803	6	13	0	48	42	0	37
Satd. Flow (prot)	1658	3273	0	1658	1745	1483	0	1543	0	1658	0	1483
Flt Permitted	0.322			0.498				0.989		0.814		
Satd. Flow (perm)	562	3273	0	868	1745	1438	0	1543	0	1421	0	1483
Satd. Flow (RTOR)		4				30		48				37
Lane Group Flow (vph)	51	437	0	64	803	6	0	61	0	42	0	37
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		34.1	34.1	34.1	34.3	34.3		34.3		34.3
Total Split (s)	85.0	85.0		85.0	85.0	85.0	35.0	35.0		35.0		35.0
Total Split (%)	70.8%	70.8%		70.8%	70.8%	70.8%	29.2%	29.2%		29.2%		29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	101.3	101.3		101.3	101.3	101.3		10.8		10.8		10.8
Actuated g/C Ratio	0.84	0.84		0.84	0.84	0.84		0.09		0.09		0.09
v/c Ratio	0.11	0.16		0.09	0.55	0.00		0.34		0.33		0.22
Control Delay	2.7	2.1		2.8	6.1	0.0		24.1		58.2		18.6
Queue Delay	0.0	0.0		0.0	0.4	0.0		0.0		0.0		0.0
Total Delay	2.7	2.1		2.8	6.4	0.0		24.1		58.2		18.6
LOS	A	A		A	A	A		C		E		B
Approach Delay		2.1			6.1			24.1			39.7	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	1.8	8.4		2.1	25.9	0.0		2.9		9.5		0.0
Queue Length 95th (m)	3.9	11.0		m3.3	m52.5	m0.0		15.6		20.5		10.1
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0			30.0		100.0						
Base Capacity (vph)	474	2764		732	1473	1218		405		339		382
Starvation Cap Reductn	0	0		0	240	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	0.11	0.16		0.09	0.65	0.00		0.15		0.12		0.10

Intersection Summary

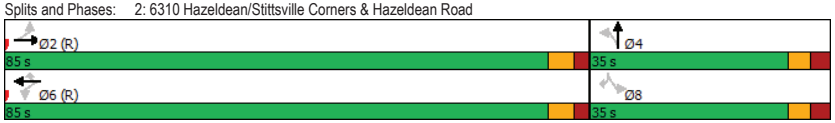
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 7.3	Intersection LOS: A
Intersection Capacity Utilization 77.0%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	79	597	890	7	13	46	
Future Volume (vph)	79	597	890	7	13	46	
Satd. Flow (prot)	1658	3316	3280	0	1545	0	
Flt Permitted	0.314				0.989		
Satd. Flow (perm)	548	3316	3280	0	1545	0	
Satd. Flow (RTOR)			1		46		
Lane Group Flow (vph)	79	597	897	0	59	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	80.7	80.7	80.7		34.3		5.0
Total Split (%)	67.3%	67.3%	67.3%		28.6%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	101.7	101.7	101.7		10.1		
Actuated g/C Ratio	0.85	0.85	0.85		0.08		
v/c Ratio	0.17	0.21	0.32		0.34		
Control Delay	1.2	0.7	2.9		25.6		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	1.2	0.7	2.9		25.6		
LOS	A	A	A		C		
Approach Delay		0.7	2.9		25.6		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.7	2.7	22.9		2.9		
Queue Length 95th (m)	m1.1	3.7	29.8		15.8		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	464	2810	2779		395		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.17	0.21	0.32		0.15		

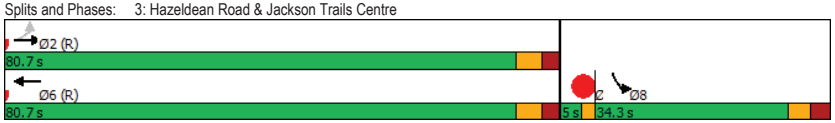
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 2.8	Intersection LOS: A
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



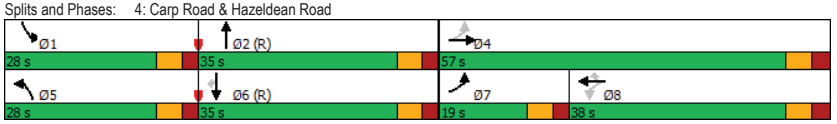
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	266	133	56	504	419	127	347	34	455	529	265
Future Volume (vph)	117	266	133	56	504	419	127	347	34	455	529	265
Satd. Flow (prot)	1610	3121	0	1551	1745	1427	1658	3232	0	3216	1745	1483
Flt Permitted	0.103			0.517			0.950			0.950		
Satd. Flow (perm)	175	3121	0	841	1745	1399	1648	3232	0	3193	1745	1436
Satd. Flow (RTOR)		89				372		8				218
Lane Group Flow (vph)	117	399	0	56	504	419	127	381	0	455	529	265
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	19.0	57.0		38.0	38.0	38.0	28.0	35.0		28.0	35.0	35.0
Total Split (%)	15.8%	47.5%		31.7%	31.7%	31.7%	23.3%	29.2%		23.3%	29.2%	29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	50.9	50.4		32.6	32.6	32.6	14.5	30.3		20.6	36.4	36.4
Actuated g/C Ratio	0.42	0.42		0.27	0.27	0.27	0.12	0.25		0.17	0.30	0.30
v/c Ratio	0.55	0.29		0.25	1.07	0.64	0.64	0.46		0.83	1.00	0.45
Control Delay	31.0	15.3		37.2	100.5	18.8	64.0	39.7		71.1	77.4	15.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	31.0	15.3		37.2	100.5	18.8	64.0	39.7		71.1	77.4	15.7
LOS	C	B		D	F	B	E	D		E	E	B
Approach Delay		18.9			61.9			45.8			62.0	
Approach LOS		B			E			D			E	
Queue Length 50th (m)	17.2	24.9		10.5	~136.4	27.0	28.9	39.9		59.2	~89.1	6.9
Queue Length 95th (m)	30.4	31.3		22.7	#202.0	63.9	46.7	55.1		75.7	#211.4	39.9
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	228	1362		228	473	650	303	823		589	529	587
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.51	0.29		0.25	1.07	0.64	0.42	0.46		0.77	1.00	0.45

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07
Intersection Signal Delay: 52.6 — Intersection LOS: D
Intersection Capacity Utilization 92.3% — 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: 4: Carp Road & Hazeldean Road



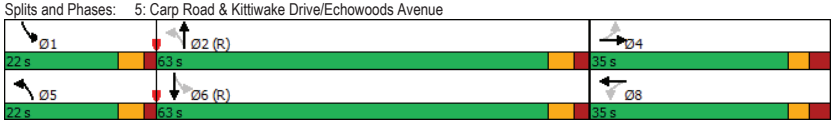
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	12	52	55	7	45	49	732	30	64	1219	143
Future Volume (vph)	134	12	52	55	7	45	49	732	30	64	1219	143
Satd. Flow (prot)	1658	1487	0	1658	1345	0	1658	3200	0	1658	3250	0
Flt Permitted	0.723			0.715			0.145			0.333		
Satd. Flow (perm)	1262	1487	0	1219	1345	0	253	3200	0	580	3250	0
Satd. Flow (RTOR)		52			45			5			14	
Lane Group Flow (vph)	134	64	0	55	52	0	49	762	0	64	1362	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	29.3	29.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	35.0	35.0		35.0	35.0		22.0	63.0		22.0	63.0	
Total Split (%)	29.2%	29.2%		29.2%	29.2%		18.3%	52.5%		18.3%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	18.4	18.4		18.4	18.4		84.9	79.1		85.5	79.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.71	0.66		0.71	0.66	
v/c Ratio	0.69	0.24		0.29	0.21		0.19	0.36		0.14	0.63	
Control Delay	65.4	16.3		46.8	16.1		6.9	10.3		5.8	15.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.4	16.3		46.8	16.1		6.9	10.3		5.8	15.2	
LOS	E	B		D	B		A	B		A	B	
Approach Delay		49.6			31.9			10.0			14.8	
Approach LOS		D			C			B			B	
Queue Length 50th (m)	30.4	2.5		11.7	1.4		2.8	35.8		3.4	93.6	
Queue Length 95th (m)	48.0	13.7		22.5	11.7		m7.0	52.8		8.8	143.7	
Internal Link Dist (m)		73.3			85.0			266.7			438.0	
Turn Bay Length (m)	65.5						24.0			36.0		
Base Capacity (vph)	301	395		291	355		381	2110		580	2153	
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	0.45	0.16		0.19	0.15		0.13	0.36		0.11	0.63	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69
Intersection Signal Delay: 16.7 — Intersection LOS: B
Intersection Capacity Utilization 75.9% — ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue

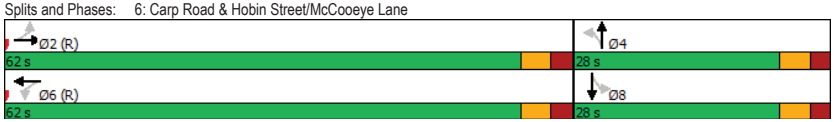


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	356	44	61	595	73
Future Volume (vph)	43	18	54	35	25	67	70	356	44	61	595	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1651	0	1658	1696	0
Flt Permitted		0.877			0.914		0.179			0.204		
Satd. Flow (perm)	0	1415	0	0	1461	0	312	1651	0	354	1696	0
Satd. Flow (RTOR)		41			67			7			7	
Lane Group Flow (vph)	0	115	0	0	127	0	70	400	0	61	668	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	62.0	62.0		62.0	62.0		28.0	28.0		28.0	28.0	
Total Split (%)	68.9%	68.9%		68.9%	68.9%		31.1%	31.1%		31.1%	31.1%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.2			56.2		22.4	22.4		22.4	22.4	
Actuated g/C Ratio		0.62			0.62		0.25	0.25		0.25	0.25	
v/c Ratio		0.13			0.14		0.91	0.96		0.69	1.56	
Control Delay		4.9			3.9		116.5	74.4		72.1	292.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		4.9			3.9		116.5	74.4		72.1	292.6	
LOS		A			A		F	E		E	F	
Approach Delay		4.9			3.9			80.6			274.1	
Approach LOS		A			A			F			F	
Queue Length 50th (m)		4.6			3.7		12.7	73.1		9.6	~166.1	
Queue Length 95th (m)		10.8			10.0		m#27.0	m#121.1		#30.5	#231.1	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		898			937		77	416		88	427	
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		0.13			0.14		0.91	0.96		0.69	1.56	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.56
Intersection Signal Delay: 165.7 Intersection LOS: F
Intersection Capacity Utilization 80.3% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	120	422	204	143	69	292	423	105	63	464	44
Future Volume (vph)	70	120	422	204	143	69	292	423	105	63	464	44
Satd. Flow (prot)	1658	1745	1469	1658	1625	0	1595	1679	0	1658	1728	1483
Flt Permitted	0.625			0.506			0.154			0.369		
Satd. Flow (perm)	1064	1745	1417	873	1625	0	255	1679	0	641	1728	1394
Satd. Flow (RTOR)			366		34			14				154
Lane Group Flow (vph)	70	120	422	204	212	0	292	528	0	63	464	44
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	28.1	28.1	28.1	10.1	28.1		10.5	29.5		10.5	29.5	29.5
Total Split (s)	29.0	29.0	29.0	15.0	44.0		14.0	32.0		14.0	32.0	32.0
Total Split (%)	32.2%	32.2%	32.2%	16.7%	48.9%		15.6%	35.6%		15.6%	35.6%	35.6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		2.2	2.2		2.2	2.2	2.2
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)	5.1	5.1	5.1	5.1	5.1		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.7	15.7	15.7	30.5	30.5		46.9	38.5		33.6	26.6	26.6
Actuated g/C Ratio	0.17	0.17	0.17	0.34	0.34		0.52	0.43		0.37	0.30	0.30
v/c Ratio	0.38	0.40	0.77	0.54	0.37		0.76	0.73		0.20	0.91	0.08
Control Delay	32.5	34.9	18.4	26.6	19.3		36.7	32.5		14.6	55.3	0.3
Queue Delay	0.0	0.0	3.9	0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	32.5	34.9	22.3	26.6	19.6		36.7	32.5		14.6	55.3	0.3
LOS	C	C	C	C	B		D	C		B	E	A
Approach Delay		25.9			23.0			34.0			46.6	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	11.0	18.8	46.2	28.3	24.3		26.6	68.7		4.3	76.6	0.0
Queue Length 95th (m)	m3.7	m6.1	m0.0	37.5	34.4		#100.1	#158.8		13.1	#132.5	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	282	463	645	382	721		383	726		345	509	520
Starvation Cap Reductn	0	0	145	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	159		0	0		0	0	15
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.25	0.26	0.84	0.53	0.38		0.76	0.73		0.18	0.91	0.09

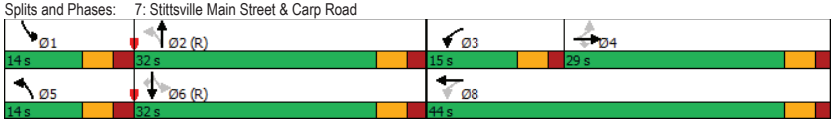
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 33.0	Intersection LOS: C
Intersection Capacity Utilization 84.5%	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: 7: Stittsville Main Street & Carp Road



Appendix N

Synchro Intersection Worksheets – 2027 Future Total Conditions with Optimized Timing

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	281	83	19	117	345	58	428	19	254	293	61
Future Volume (vph)	301	281	83	19	117	345	58	428	19	254	293	61
Satd. Flow (prot)	1658	3096	0	1386	1604	1441	1458	3209	0	2804	1575	1339
Flt Permitted	0.489			0.535			0.950			0.950		
Satd. Flow (perm)	847	3096	0	780	1604	1410	1456	3209	0	2793	1575	1309
Satd. Flow (RTOR)		44				331		4				149
Lane Group Flow (vph)	301	364	0	19	117	345	58	447	0	254	293	61
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	22.0	59.6		37.6	37.6	37.6	15.0	34.4		21.0	40.4	40.4
Total Split (%)	19.1%	51.8%		32.7%	32.7%	32.7%	13.0%	29.9%		18.3%	35.1%	35.1%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	38.9	38.4		16.4	16.4	16.4	8.9	43.3		14.6	51.3	51.3
Actuated g/C Ratio	0.34	0.33		0.14	0.14	0.14	0.08	0.38		0.13	0.45	0.45
v/c Ratio	0.76	0.34		0.17	0.51	0.71	0.52	0.37		0.72	0.42	0.09
Control Delay	40.7	23.1		45.2	53.5	16.9	67.0	28.9		54.5	43.7	9.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	40.7	23.1		45.2	53.5	16.9	67.0	28.9		54.5	43.7	9.3
LOS	D	C		D	D	B	E	C		D	D	A
Approach Delay		31.1			26.9			33.3			44.7	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	56.6	29.3		3.7	25.2	2.7	12.7	36.5		28.7	67.6	1.5
Queue Length 95th (m)	66.5	33.4		10.4	41.2	50.1	#26.6	62.7		43.0	98.0	8.5
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	398	1450		210	432	621	123	1210		380	703	666
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	0.76	0.25		0.09	0.27	0.56	0.47	0.37		0.67	0.42	0.09

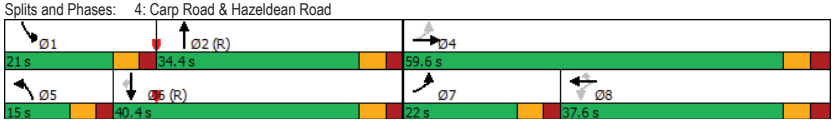
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 34.4	Intersection LOS: C
Intersection Capacity Utilization 78.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 4: Carp Road & Hazeldean Road



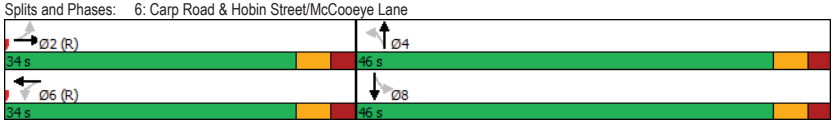
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	377	36	57	328	15
Future Volume (vph)	54	13	49	7	6	48	27	377	36	57	328	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1654	0
Flt Permitted		0.865			0.978		0.407			0.316		
Satd. Flow (perm)	0	1410	0	0	1500	0	695	1620	0	536	1654	0
Satd. Flow (RTOR)		49			48			9			4	
Lane Group Flow (vph)	0	116	0	0	61	0	27	413	0	57	343	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	34.0	34.0		34.0	34.0		46.0	46.0		46.0	46.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		57.5%	57.5%		57.5%	57.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		42.2			42.2		26.4	26.4		26.4	26.4	
Actuated g/C Ratio		0.53			0.53		0.33	0.33		0.33	0.33	
v/c Ratio		0.15			0.08		0.12	0.76		0.32	0.63	
Control Delay		8.3			5.8		17.0	32.6		22.8	26.6	
Queue Delay		0.0			0.0		0.0	0.2		0.0	0.0	
Total Delay		8.3			5.8		17.0	32.8		22.8	26.6	
LOS		A			A		B	C		C	C	
Approach Delay		8.3			5.8			31.9			26.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)		4.7			0.9		3.0	57.3		6.4	42.9	
Queue Length 95th (m)		15.9			7.7		m6.4	82.8		13.5	56.6	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		766			813		350	822		270	837	
Starvation Cap Reductn		0			0		0	74		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.15			0.08		0.08	0.55		0.21	0.41	

Intersection Summary

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

Maximum v/c Ratio: 0.76
Intersection Signal Delay: 25.3 — Intersection LOS: C
Intersection Capacity Utilization 65.7% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



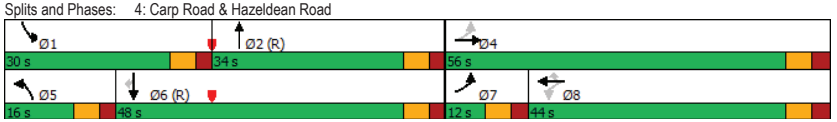
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	266	133	56	504	419	127	347	34	455	529	265
Future Volume (vph)	117	266	133	56	504	419	127	347	34	455	529	265
Satd. Flow (prot)	1610	3121	0	1551	1745	1427	1658	3232	0	3216	1745	1483
Flt Permitted	0.118			0.517			0.950			0.950		
Satd. Flow (perm)	200	3121	0	841	1745	1399	1648	3232	0	3193	1745	1436
Satd. Flow (RTOR)		88				399		8				233
Lane Group Flow (vph)	117	399	0	56	504	419	127	381	0	455	529	265
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	12.0	56.0		44.0	44.0	44.0	16.0	34.0		30.0	48.0	48.0
Total Split (%)	10.0%	46.7%		36.7%	36.7%	36.7%	13.3%	28.3%		25.0%	40.0%	40.0%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	48.9	48.4		36.4	36.4	36.4	10.3	31.5		21.3	42.5	42.5
Actuated g/C Ratio	0.41	0.40		0.30	0.30	0.30	0.09	0.26		0.18	0.35	0.35
v/c Ratio	0.78	0.30		0.22	0.95	0.60	0.89	0.45		0.80	0.86	0.40
Control Delay	55.7	16.0		31.6	68.1	14.6	105.7	39.1		68.5	50.4	13.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.7	16.0		31.6	68.1	14.6	105.7	39.1		68.5	50.4	13.4
LOS	E	B		C	E	B	F	D		E	D	B
Approach Delay		25.0			43.1			55.7			49.1	
Approach LOS		C			D			E			D	
Queue Length 50th (m)	17.4	25.3		9.7	115.0	21.3	30.2	39.5		59.2	72.6	6.0
Queue Length 95th (m)	#38.0	31.7		20.9	#179.2	54.3	#67.1	55.7		75.6	#170.9	38.5
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	150	1336		262	543	710	143	855		643	618	659
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	0.78	0.30		0.21	0.93	0.59	0.89	0.45		0.71	0.86	0.40

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95
Intersection Signal Delay: 44.5 — Intersection LOS: D
Intersection Capacity Utilization 92.3% — ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Carp Road & Hazeldean Road



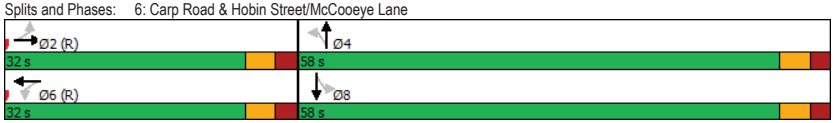
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	356	44	61	595	73
Future Volume (vph)	43	18	54	35	25	67	70	356	44	61	595	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1651	0	1658	1696	0
Flt Permitted		0.866			0.906		0.206			0.434		
Satd. Flow (perm)	0	1398	0	0	1449	0	358	1651	0	752	1696	0
Satd. Flow (RTOR)		50			63			12			12	
Lane Group Flow (vph)	0	115	0	0	127	0	70	400	0	61	668	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	32.0	32.0		32.0	32.0		58.0	58.0		58.0	58.0	
Total Split (%)	35.6%	35.6%		35.6%	35.6%		64.4%	64.4%		64.4%	64.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		35.0			35.0		43.6	43.6		43.6	43.6	
Actuated g/C Ratio		0.39			0.39		0.48	0.48		0.48	0.48	
v/c Ratio		0.20			0.21		0.40	0.50		0.17	0.81	
Control Delay		14.3			13.0		22.6	18.9		11.8	26.8	
Queue Delay		0.0			0.0		0.0	0.6		0.0	0.0	
Total Delay		14.3			13.0		22.6	19.4		11.8	26.8	
LOS		B			B		C	B		B	C	
Approach Delay		14.3			13.0			19.9			25.6	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		7.3			7.2		8.2	47.8		5.5	88.6	
Queue Length 95th (m)		21.3			21.6		m14.0	m67.0		10.3	110.0	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		574			601		208	966		437	992	
Starvation Cap Reductn		0			0		0	255		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.20			0.21		0.34	0.56		0.14	0.67	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81
Intersection Signal Delay: 21.7 — Intersection LOS: C
Intersection Capacity Utilization 80.3% — ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Appendix O

Synchro Intersection Worksheets – 2032 Future Total Conditions

CGH TRANSPORTATION

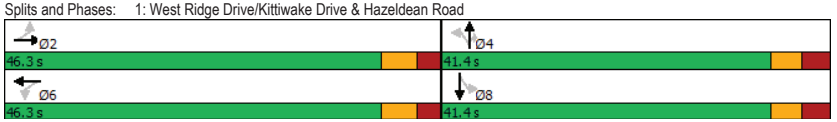
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	256	16	72	130	14	32	12	382	25	15	10
Future Volume (vph)	2	256	16	72	130	14	32	12	382	25	15	10
Satd. Flow (prot)	1658	1695	0	1580	1639	0	0	1646	1483	1658	1616	0
Flt Permitted	0.665			0.592				0.779		0.728		
Satd. Flow (perm)	1158	1695	0	981	1639	0	0	1312	1446	1265	1616	0
Satd. Flow (RTOR)		5			8				382		10	
Lane Group Flow (vph)	2	272	0	72	144	0	0	44	382	25	25	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	28.0	28.0		28.0	28.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	46.3	46.3		46.3	46.3		41.4	41.4	41.4	41.4	41.4	
Total Split (%)	52.8%	52.8%		52.8%	52.8%		47.2%	47.2%	47.2%	47.2%	47.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None	None	None	None	
Act Effct Green (s)	28.1	28.1		28.1	28.1			11.8	11.8	11.8	11.8	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.22	0.22	0.22	0.22	
v/c Ratio	0.00	0.30		0.14	0.16			0.15	0.62	0.09	0.07	
Control Delay	7.5	8.6		8.2	7.4			17.1	7.1	16.3	12.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	7.5	8.6		8.2	7.4			17.1	7.1	16.3	12.2	
LOS	A	A		A	A			B	A	B	B	
Approach Delay		8.6			7.7			8.1			14.3	
Approach LOS		A			A			A			B	
Queue Length 50th (m)	0.1	11.2		2.8	5.2			3.3	0.0	1.9	1.1	
Queue Length 95th (m)	1.0	32.3		10.9	17.3			9.2	15.6	6.2	5.3	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	883	1294		748	1252			875	1092	844	1082	
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	0.00	0.21		0.10	0.12			0.05	0.35	0.03	0.02	

Intersection Summary
Cycle Length: 87.7
Actuated Cycle Length: 52.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62

Lanes, Volumes, Timings
1: West Ridge Drive/Kittiwake Drive & Hazeldean Road
2032 Future Total
AM Peak Hour

Intersection Signal Delay: 8.5 Intersection LOS: A
Intersection Capacity Utilization 74.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	646	5	22	207	1	5	0	40	4	0	4
Future Volume (vph)	29	646	5	22	207	1	5	0	40	4	0	4
Satd. Flow (prot)	1580	3280	0	1658	1712	1483	0	1526	0	1353	0	1483
Flt Permitted	0.628			0.404				0.994		0.728		
Satd. Flow (perm)	1045	3280	0	705	1712	1483	0	1526	0	1037	0	1483
Satd. Flow (RTOR)		1				31		40				29
Lane Group Flow (vph)	29	651	0	22	207	1	0	45	0	4	0	4
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		29.1	29.1	29.1	34.3	34.3		34.3		34.3
Total Split (s)	80.0	80.0		80.0	80.0	80.0	35.0	35.0		35.0		35.0
Total Split (%)	69.6%	69.6%		69.6%	69.6%	69.6%	30.4%	30.4%		30.4%		30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	97.1	97.1		97.1	97.1	97.1		10.0		10.0		10.0
Actuated g/C Ratio	0.84	0.84		0.84	0.84	0.84		0.09		0.09		0.09
v/c Ratio	0.03	0.24		0.04	0.14	0.00		0.27		0.04		0.03
Control Delay	2.3	2.6		2.6	2.2	0.0		21.8		49.5		0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Delay	2.3	2.6		2.6	2.2	0.0		21.8		49.5		0.2
LOS	A	A		A	A	A		C		D		A
Approach Delay		2.6			2.2			21.8			24.9	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	1.0	14.7		0.2	1.6	0.0		1.1		0.8		0.0
Queue Length 95th (m)	2.6	19.1		4.4	23.1	m0.0		12.2		4.3		0.0
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0			30.0		100.0						
Base Capacity (vph)	882	2769		595	1445	1257		410		258		391
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	0.03	0.24		0.04	0.14	0.00		0.11		0.02		0.01

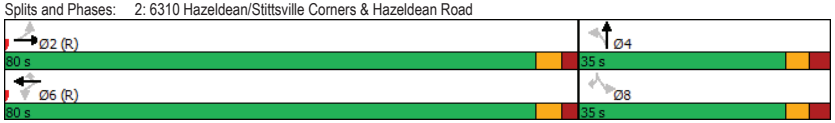
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.27

Intersection Signal Delay: 3.6	Intersection LOS: A
Intersection Capacity Utilization 44.1%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	22	547	409	6	0	9	
Future Volume (vph)	22	547	409	6	0	9	
Satd. Flow (prot)	1375	3131	3121	0	987	0	
Flt Permitted	0.509						
Satd. Flow (perm)	737	3131	3121	0	987	0	
Satd. Flow (RTOR)			2		477		
Lane Group Flow (vph)	22	547	415	0	9	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	75.7	75.7	75.7		34.3		5.0
Total Split (%)	65.8%	65.8%	65.8%		29.8%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	110.5	110.5	110.5		10.0		
Actuated g/C Ratio	0.96	0.96	0.96		0.09		
v/c Ratio	0.03	0.18	0.14		0.02		
Control Delay	0.3	0.3	0.8		0.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	0.3	0.3	0.8		0.1		
LOS	A	A	A		A		
Approach Delay		0.3	0.8		0.1		
Approach LOS		A	A		A		
Queue Length 50th (m)	0.0	0.0	0.0		0.0		
Queue Length 95th (m)	m0.4	2.6	12.1		0.0		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	708	3007	2998		601		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.03	0.18	0.14		0.01		

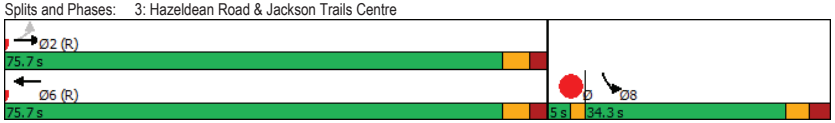
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 75 (65%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 0.5	Intersection LOS: A
Intersection Capacity Utilization 38.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	288	83	19	117	349	58	484	19	257	296	61
Future Volume (vph)	301	288	83	19	117	349	58	484	19	257	296	61
Satd. Flow (prot)	1658	3096	0	1386	1604	1441	1458	3215	0	2804	1575	1339
Flt Permitted	0.489			0.531			0.950			0.950		
Satd. Flow (perm)	847	3096	0	774	1604	1410	1456	3215	0	2794	1575	1309
Satd. Flow (RTOR)		39				349		3				149
Lane Group Flow (vph)	301	371	0	19	117	349	58	503	0	257	296	61
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	15.0	38.0		38.0	38.0	38.0	27.0	35.0		27.0	35.0	35.0
Total Split (%)	13.0%	33.0%		33.0%	33.0%	33.0%	23.5%	30.4%		23.5%	30.4%	30.4%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	31.9	31.4		16.4	16.4	16.4	9.9	49.1		15.8	57.3	57.3
Actuated g/C Ratio	0.28	0.27		0.14	0.14	0.14	0.09	0.43		0.14	0.50	0.50
v/c Ratio	1.01	0.42		0.17	0.51	0.70	0.46	0.37		0.67	0.38	0.08
Control Delay	91.9	29.0		43.3	51.9	14.5	60.8	25.6		48.9	39.3	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	91.9	29.0		43.3	51.9	14.5	60.8	25.6		48.9	39.3	9.2
LOS	F	C		D	D	B	E	C		D	D	A
Approach Delay		57.2			24.6			29.2			40.3	
Approach LOS		E			C			C			D	
Queue Length 50th (m)	~69.1	33.5		3.9	25.4	0.0	12.7	37.6		29.0	64.1	1.6
Queue Length 95th (m)	#77.5	38.5		9.8	38.4	44.8	25.0	69.5		40.8	98.6	8.7
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	297	1272		211	437	638	266	1374		512	784	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	1.01	0.29		0.09	0.27	0.55	0.22	0.37		0.50	0.38	0.08

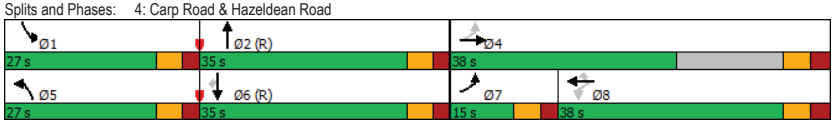
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 39.3	Intersection LOS: D
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 4: Carp Road & Hazeldean Road



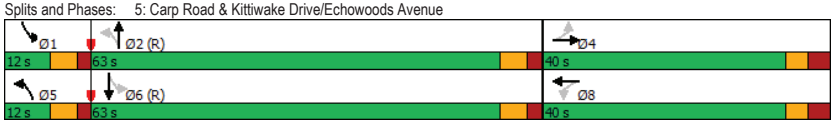
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	5	66	46	3	76	25	1218	14	25	516	46
Future Volume (vph)	224	5	66	46	3	76	25	1218	14	25	516	46
Satd. Flow (prot)	1610	1427	0	1551	1458	0	1458	3245	0	1658	3050	0
Flt Permitted	0.706			0.711			0.419			0.156		
Satd. Flow (perm)	1195	1427	0	1161	1458	0	642	3245	0	272	3050	0
Satd. Flow (RTOR)		66			76			1			11	
Lane Group Flow (vph)	224	71	0	46	79	0	25	1232	0	25	562	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	30.3	30.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	40.0	40.0		40.0	40.0		12.0	63.0		12.0	63.0	
Total Split (%)	34.8%	34.8%		34.8%	34.8%		10.4%	54.8%		10.4%	54.8%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	26.3	26.3		26.3	26.3		73.5	69.3		73.4	69.2	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.60		0.64	0.60	
v/c Ratio	0.82	0.19		0.17	0.20		0.06	0.63		0.10	0.31	
Control Delay	64.9	9.7		34.5	8.8		8.4	16.8		9.2	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	64.9	9.7		34.5	8.8		8.4	16.8		9.2	13.5	
LOS	E	A		C	A		A	B		A	B	
Approach Delay		51.6			18.3			16.7			13.3	
Approach LOS		D			B			B			B	
Queue Length 50th (m)	47.8	0.9		8.3	0.5		1.1	100.6		1.8	33.6	
Queue Length 95th (m)	71.3	11.4		16.9	11.5		m3.9	m142.5		5.6	51.7	
Internal Link Dist (m)		65.8			95.1			266.7			438.0	
Turn Bay Length (m)	65.5						24.5			36.0		
Base Capacity (vph)	350	464		340	480		456	1955		251	1840	
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	0.64	0.15		0.14	0.16		0.05	0.63		0.10	0.31	

Intersection Summary

Cycle Length: 115
Actuated Cycle Length: 115
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82
Intersection Signal Delay: 20.4 — Intersection LOS: C
Intersection Capacity Utilization 66.0% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	426	36	57	332	15
Future Volume (vph)	54	13	49	7	6	48	27	426	36	57	332	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1655	0
Flt Permitted		0.867			0.978		0.351			0.180		
Satd. Flow (perm)	0	1413	0	0	1500	0	600	1620	0	305	1655	0
Satd. Flow (RTOR)		49			48			5			3	
Lane Group Flow (vph)	0	116	0	0	61	0	27	462	0	57	347	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	52.0	52.0		52.0	52.0		28.0	28.0		28.0	28.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		46.2			46.2		22.4	22.4		22.4	22.4	
Actuated g/C Ratio		0.58			0.58		0.28	0.28		0.28	0.28	
v/c Ratio		0.14			0.07		0.16	1.01		0.67	0.75	
Control Delay		5.2			3.4		30.3	81.8		66.3	37.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		5.2			3.4		30.3	81.8		66.3	37.7	
LOS		A			A		C	F		E	D	
Approach Delay		5.2			3.4			79.0			41.8	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		4.1			0.8		3.8	~77.2		7.7	47.4	
Queue Length 95th (m)		10.8			5.2		m9.0	#133.1		#26.8	#85.1	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		836			886		168	457		85	465	
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		0.14			0.07		0.16	1.01		0.67	0.75	

Intersection Summary

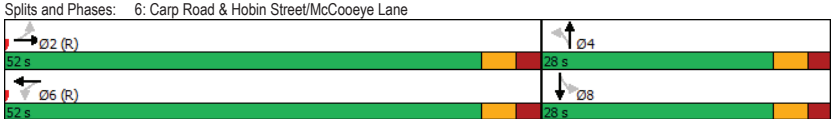
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 52.6	Intersection LOS: D
Intersection Capacity Utilization 68.5%	ICU Level of Service C
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: 6: Carp Road & Hobin Street/McCooeye Lane



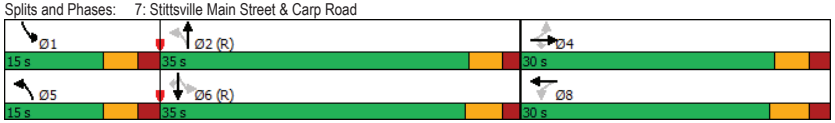
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	116	248	128	67	71	305	337	149	59	262	30
Future Volume (vph)	40	116	248	128	67	71	305	337	149	59	262	30
Satd. Flow (prot)	1642	1712	1351	1658	1585	0	1537	1650	0	1658	1728	1414
Flt Permitted	0.669			0.682			0.497			0.465		
Satd. Flow (perm)	1154	1712	1317	1185	1585	0	801	1650	0	808	1728	1374
Satd. Flow (RTOR)			248		68			32				115
Lane Group Flow (vph)	40	116	248	128	138	0	305	486	0	59	262	30
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.5	29.5	29.5	29.9	29.9		10.5	29.1		10.5	29.5	29.5
Total Split (s)	30.0	30.0	30.0	30.0	30.0		15.0	35.0		15.0	35.0	35.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		18.8%	43.8%		18.8%	43.8%	43.8%
Yellow Time (s)	3.3	3.3	3.3	3.7	3.7		3.3	3.3		3.3	3.7	3.7
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2		2.2	1.8		2.2	1.8	1.8
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)	5.5	5.5	5.5	5.9	5.9		5.5	5.1		5.5	5.5	5.5
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.4	15.4	15.4	15.0	15.0		53.0	46.4		43.9	37.3	37.3
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19		0.66	0.58		0.55	0.47	0.47
v/c Ratio	0.18	0.35	0.55	0.58	0.39		0.48	0.50		0.11	0.33	0.04
Control Delay	34.1	38.0	15.7	39.1	17.5		9.7	14.6		7.1	16.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.3		0.1	0.0		0.0	0.0	0.0
Total Delay	34.1	38.0	15.7	39.1	17.8		9.8	14.6		7.1	16.7	0.1
LOS	C	D	B	D	B		A	B		A	B	A
Approach Delay		23.9			28.1			12.7			13.7	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	5.2	15.1	17.5	18.2	9.3		15.5	41.3		2.5	23.8	0.0
Queue Length 95th (m)	m4.9	m13.6	m13.0	30.4	21.0		38.0	90.9		8.5	48.4	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	353	524	575	356	524		632	970		573	806	702
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	124		18	0		0	0	43
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.11	0.22	0.43	0.36	0.34		0.50	0.50		0.10	0.33	0.05

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58
Intersection Signal Delay: 17.7 — Intersection LOS: B
Intersection Capacity Utilization 74.2% — ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Stittsville Main Street & Carp Road



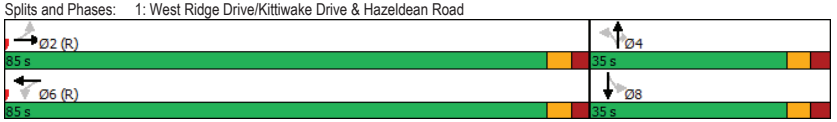
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	231	63	382	375	88	21	28	223	34	15	12
Future Volume (vph)	11	231	63	382	375	88	21	28	223	34	15	12
Satd. Flow (prot)	1658	1689	0	1658	1686	0	0	1690	1483	1642	1423	0
Flt Permitted	0.485			0.580				0.849		0.725		
Satd. Flow (perm)	845	1689	0	1012	1686	0	0	1454	1483	1253	1423	0
Satd. Flow (RTOR)		24			20				223		12	
Lane Group Flow (vph)	11	294	0	382	463	0	0	49	223	34	27	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	34.3	34.3		34.3	34.3		26.4	26.4	26.4	26.4	26.4	
Total Split (s)	85.0	85.0		85.0	85.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	70.8%	70.8%		70.8%	70.8%		29.2%	29.2%	29.2%	29.2%	29.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		3.1	3.1	3.1	3.1	3.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.4	6.4	6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	95.1	95.1		95.1	95.1			12.2	12.2	12.2	12.2	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.10	0.10	0.10	0.10	
v/c Ratio	0.02	0.22		0.48	0.35			0.33	0.64	0.27	0.18	
Control Delay	3.5	3.6		4.6	2.8			55.1	14.8	53.7	33.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	3.5	3.6		4.6	2.8			55.1	14.8	53.7	33.6	
LOS	A	A		A	A			E	B	D	C	
Approach Delay		3.6			3.6			22.0			44.8	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.4	11.3		5.8	6.1			11.1	0.0	7.7	3.3	
Queue Length 95th (m)	2.2	27.7		35.3	14.4			21.5	21.5	16.5	11.4	
Internal Link Dist (m)		182.4			355.8			521.0			146.6	
Turn Bay Length (m)	66.0			98.0					10.0	24.5		
Base Capacity (vph)	670	1344		802	1340			346	523	298	348	
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	0.02	0.22		0.48	0.35			0.14	0.43	0.11	0.08	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 65.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: West Ridge Drive/Kittiwake Drive & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	427	10	64	823	6	13	0	48	42	0	37
Future Volume (vph)	51	427	10	64	823	6	13	0	48	42	0	37
Satd. Flow (prot)	1658	3273	0	1658	1745	1483	0	1543	0	1658	0	1483
Flt Permitted	0.313			0.498				0.989		0.814		
Satd. Flow (perm)	546	3273	0	868	1745	1438	0	1543	0	1421	0	1483
Satd. Flow (RTOR)		4				30		48				37
Lane Group Flow (vph)	51	437	0	64	823	6	0	61	0	42	0	37
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm		Perm
Protected Phases		2			6			4				
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8		8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	29.1	29.1		34.1	34.1	34.1	34.3	34.3		34.3		34.3
Total Split (s)	85.0	85.0		85.0	85.0	85.0	35.0	35.0		35.0		35.0
Total Split (%)	70.8%	70.8%		70.8%	70.8%	70.8%	29.2%	29.2%		29.2%		29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3		3.3		3.3
All-Red Time (s)	2.4	2.4		2.4	2.4	2.4	3.0	3.0		3.0		3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.3		6.3		6.3
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	101.3	101.3		101.3	101.3	101.3		10.8		10.8		10.8
Actuated g/C Ratio	0.84	0.84		0.84	0.84	0.84		0.09		0.09		0.09
v/c Ratio	0.11	0.16		0.09	0.56	0.00		0.34		0.33		0.22
Control Delay	2.7	2.1		2.7	6.6	0.0		24.1		58.2		18.6
Queue Delay	0.0	0.0		0.0	0.4	0.0		0.0		0.0		0.0
Total Delay	2.7	2.1		2.7	7.0	0.0		24.1		58.2		18.6
LOS	A	A		A	A	A		C		E		B
Approach Delay		2.1			6.6			24.1			39.7	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	1.8	8.4		2.2	31.9	0.0		2.9		9.5		0.0
Queue Length 95th (m)	3.9	11.0		m3.2	m51.2	m0.0		15.6		20.5		10.1
Internal Link Dist (m)		355.8			168.3			30.9			31.1	
Turn Bay Length (m)	140.0			30.0		100.0						
Base Capacity (vph)	461	2764		732	1473	1218		405		339		382
Starvation Cap Reductn	0	0		0	242	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	0.11	0.16		0.09	0.67	0.00		0.15		0.12		0.10

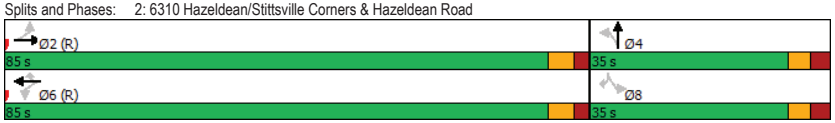
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 7.6	Intersection LOS: A
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: 6310 Hazeldean/Stittsville Corners & Hazeldean Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	79	597	911	7	13	46	
Future Volume (vph)	79	597	911	7	13	46	
Satd. Flow (prot)	1658	3316	3280	0	1545	0	
Flt Permitted	0.307				0.989		
Satd. Flow (perm)	536	3316	3280	0	1545	0	
Satd. Flow (RTOR)			1		46		
Lane Group Flow (vph)	79	597	918	0	59	0	
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		8		7
Permitted Phases	2						
Detector Phase	2	2	6		8		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		1.0
Minimum Split (s)	24.4	24.4	33.4		34.3		5.0
Total Split (s)	80.7	80.7	80.7		34.3		5.0
Total Split (%)	67.3%	67.3%	67.3%		28.6%		4%
Yellow Time (s)	3.7	3.7	3.7		3.3		2.0
All-Red Time (s)	2.7	2.7	2.7		3.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	6.4		6.3		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Recall Mode	C-Max	C-Max	C-Max		None		None
Act Effct Green (s)	101.7	101.7	101.7		10.1		
Actuated g/C Ratio	0.85	0.85	0.85		0.08		
v/c Ratio	0.17	0.21	0.33		0.34		
Control Delay	1.2	0.6	3.0		25.6		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	1.2	0.6	3.0		25.6		
LOS	A	A	A		C		
Approach Delay		0.7	3.0		25.6		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.7	2.6	23.6		2.9		
Queue Length 95th (m)	m1.0	m3.4	30.7		15.8		
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0						
Base Capacity (vph)	454	2810	2779		395		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.17	0.21	0.33		0.15		

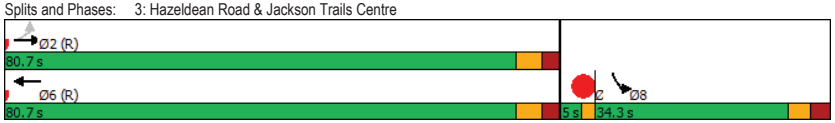
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 2.8	Intersection LOS: A
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: Hazeldean Road & Jackson Trails Centre



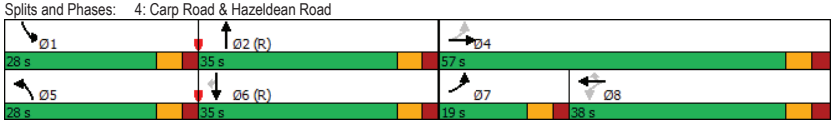
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	266	133	56	515	470	127	352	34	507	599	265
Future Volume (vph)	117	266	133	56	515	470	127	352	34	507	599	265
Satd. Flow (prot)	1610	3121	0	1551	1745	1427	1658	3233	0	3216	1745	1483
Flt Permitted	0.103			0.517			0.950			0.950		
Satd. Flow (perm)	175	3121	0	841	1745	1399	1649	3233	0	3194	1745	1436
Satd. Flow (RTOR)		89				408		8				192
Lane Group Flow (vph)	117	399	0	56	515	470	127	386	0	507	599	265
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	19.0	57.0		38.0	38.0	38.0	28.0	35.0		28.0	35.0	35.0
Total Split (%)	15.8%	47.5%		31.7%	31.7%	31.7%	23.3%	29.2%		23.3%	29.2%	29.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	50.9	50.4		32.6	32.6	32.6	14.5	29.5		21.4	36.4	36.4
Actuated g/C Ratio	0.42	0.42		0.27	0.27	0.27	0.12	0.25		0.18	0.30	0.30
v/c Ratio	0.55	0.29		0.25	1.09	0.69	0.64	0.48		0.89	1.13	0.47
Control Delay	31.0	15.3		37.4	107.5	19.9	64.0	40.5		73.8	115.7	19.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	31.0	15.3		37.4	107.5	19.9	64.0	40.5		73.8	115.7	19.1
LOS	C	B		D	F	B	E	D		E	F	B
Approach Delay		18.9			64.2			46.3			81.5	
Approach LOS		B			E			D			F	
Queue Length 50th (m)	17.2	24.9		10.7	~141.9	32.9	28.9	40.5		66.1	~159.4	12.9
Queue Length 95th (m)	30.4	31.3		22.6	#208.1	73.4	46.7	55.8		#90.1	#249.6	46.7
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	228	1362		228	473	677	303	801		589	529	569
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.51	0.29		0.25	1.09	0.69	0.42	0.48		0.86	1.13	0.47

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13
Intersection Signal Delay: 61.6 — 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: 4: Carp Road & Hazeldean Road



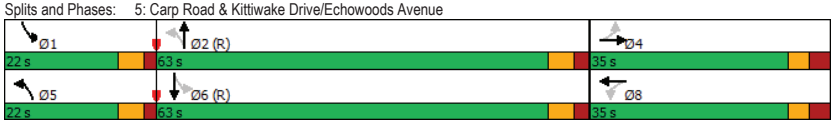
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	12	52	55	7	45	49	741	30	64	1367	143
Future Volume (vph)	134	12	52	55	7	45	49	741	30	64	1367	143
Satd. Flow (prot)	1658	1487	0	1658	1345	0	1658	3200	0	1658	3258	0
Flt Permitted	0.723			0.715			0.113			0.330		
Satd. Flow (perm)	1262	1487	0	1219	1345	0	197	3200	0	575	3258	0
Satd. Flow (RTOR)		52			45			5			13	
Lane Group Flow (vph)	134	64	0	55	52	0	49	771	0	64	1510	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	29.3	29.3		29.3	29.3		10.6	30.0		10.6	30.0	
Total Split (s)	35.0	35.0		35.0	35.0		22.0	63.0		22.0	63.0	
Total Split (%)	29.2%	29.2%		29.2%	29.2%		18.3%	52.5%		18.3%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.3	3.3		3.3	3.3		1.9	2.3		1.9	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.6	6.0		5.6	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	18.4	18.4		18.4	18.4		85.0	79.1		85.6	79.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.71	0.66		0.71	0.66	
v/c Ratio	0.69	0.24		0.30	0.21		0.22	0.37		0.14	0.70	
Control Delay	65.8	16.4		46.9	16.2		7.6	10.4		5.8	16.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.8	16.4		46.9	16.2		7.6	10.4		5.8	16.9	
LOS	E	B		D	B		A	B		A	B	
Approach Delay		49.8			32.0			10.2			16.4	
Approach LOS		D			C			B			B	
Queue Length 50th (m)	30.4	2.5		11.7	1.4		2.7	37.7		3.4	112.3	
Queue Length 95th (m)	48.1	13.7		22.6	11.7		m6.2	54.8		8.7	171.4	
Internal Link Dist (m)		73.3			85.0			266.7			438.0	
Turn Bay Length (m)	65.5						24.0			36.0		
Base Capacity (vph)	301	395		291	355		347	2112		577	2161	
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	0.45	0.16		0.19	0.15		0.14	0.37		0.11	0.70	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70
Intersection Signal Delay: 17.6 — Intersection LOS: B
Intersection Capacity Utilization 80.2% — ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	361	44	61	671	73
Future Volume (vph)	43	18	54	35	25	67	70	361	44	61	671	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1653	0	1658	1699	0
Flt Permitted		0.877			0.914		0.179			0.196		
Satd. Flow (perm)	0	1415	0	0	1461	0	312	1653	0	340	1699	0
Satd. Flow (RTOR)		26			67			6			6	
Lane Group Flow (vph)	0	115	0	0	127	0	70	405	0	61	744	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	62.0	62.0		62.0	62.0		28.0	28.0		28.0	28.0	
Total Split (%)	68.9%	68.9%		68.9%	68.9%		31.1%	31.1%		31.1%	31.1%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.2			56.2		22.4	22.4		22.4	22.4	
Actuated g/C Ratio		0.62			0.62		0.25	0.25		0.25	0.25	
v/c Ratio		0.13			0.14		0.91	0.98		0.73	1.74	
Control Delay		5.7			3.9		115.7	76.5		78.5	369.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		5.7			3.9		115.7	76.5		78.5	369.3	
LOS		A			A		F	E		E	F	
Approach Delay		5.7			3.9			82.3			347.3	
Approach LOS		A			A			F			F	
Queue Length 50th (m)		5.6			3.7		12.8	74.1		9.7	~194.5	
Queue Length 95th (m)		12.0			10.0		m#27.5	m#124.2		#31.1	#261.7	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		893			937		77	415		84	427	
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		0.13			0.14		0.91	0.98		0.73	1.74	

Intersection Summary

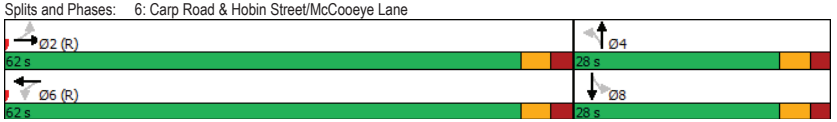
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.74

Intersection Signal Delay: 210.1	Intersection LOS: F
Intersection Capacity Utilization 84.5%	ICU Level of Service E
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: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	122	422	204	161	69	292	423	105	63	464	44
Future Volume (vph)	70	122	422	204	161	69	292	423	105	63	464	44
Satd. Flow (prot)	1658	1745	1469	1658	1635	0	1595	1679	0	1658	1728	1483
Flt Permitted	0.615			0.502			0.154			0.369		
Satd. Flow (perm)	1047	1745	1417	866	1635	0	255	1679	0	641	1728	1394
Satd. Flow (RTOR)			365		30			14				154
Lane Group Flow (vph)	70	122	422	204	230	0	292	528	0	63	464	44
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	28.1	28.1	28.1	10.1	28.1		10.5	29.5		10.5	29.5	29.5
Total Split (s)	29.0	29.0	29.0	15.0	44.0		14.0	32.0		14.0	32.0	32.0
Total Split (%)	32.2%	32.2%	32.2%	16.7%	48.9%		15.6%	35.6%		15.6%	35.6%	35.6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		2.2	2.2		2.2	2.2	2.2
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)	5.1	5.1	5.1	5.1	5.1		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.7	15.7	15.7	30.6	30.6		46.9	38.5		33.6	26.5	26.5
Actuated g/C Ratio	0.17	0.17	0.17	0.34	0.34		0.52	0.43		0.37	0.29	0.29
v/c Ratio	0.38	0.40	0.77	0.54	0.40		0.76	0.73		0.20	0.91	0.08
Control Delay	32.3	34.8	18.9	26.7	20.5		36.7	32.5		14.6	55.5	0.3
Queue Delay	0.0	0.0	4.6	0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	32.3	34.8	23.5	26.7	20.8		36.7	32.5		14.6	55.5	0.3
LOS	C	C	C	C	C		D	C		B	E	A
Approach Delay		26.8			23.6			34.0			46.7	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	10.9	19.1	46.8	28.2	27.8		26.7	68.8		4.3	76.7	0.0
Queue Length 95th (m)	m3.3	m5.4	m0.0	37.5	38.1		#100.1	#158.8		13.1	#132.5	0.0
Internal Link Dist (m)		88.7			74.0			130.8			407.0	
Turn Bay Length (m)	38.0		53.0	21.5			79.5			52.0		37.5
Base Capacity (vph)	278	463	644	381	723		383	725		345	509	519
Starvation Cap Reductn	0	0	154	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	156		0	0		0	0	14
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.25	0.26	0.86	0.54	0.41		0.76	0.73		0.18	0.91	0.09

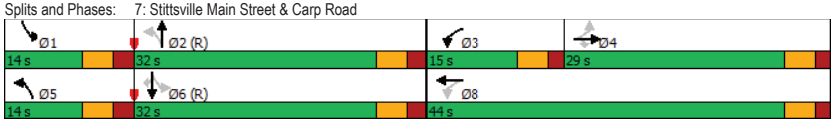
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 33.3	Intersection LOS: C
Intersection Capacity Utilization 85.0%	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: 7: Stittsville Main Street & Carp Road



Appendix P

Synchro Intersection Worksheets – 2032 Future Total Conditions with Optimized Timing

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	288	83	19	117	349	58	484	19	257	296	61
Future Volume (vph)	301	288	83	19	117	349	58	484	19	257	296	61
Satd. Flow (prot)	1658	3096	0	1386	1604	1441	1458	3215	0	2804	1575	1339
Flt Permitted	0.489			0.531			0.950			0.950		
Satd. Flow (perm)	847	3096	0	774	1604	1410	1456	3215	0	2794	1575	1309
Satd. Flow (RTOR)		42				313		3				149
Lane Group Flow (vph)	301	371	0	19	117	349	58	503	0	257	296	61
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	21.0	58.6		37.6	37.6	37.6	15.0	35.4		21.0	41.4	41.4
Total Split (%)	18.3%	51.0%		32.7%	32.7%	32.7%	13.0%	30.8%		18.3%	36.0%	36.0%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	37.9	37.4		16.4	16.4	16.4	8.9	44.2		14.7	52.3	52.3
Actuated g/C Ratio	0.33	0.33		0.14	0.14	0.14	0.08	0.38		0.13	0.45	0.45
v/c Ratio	0.78	0.36		0.17	0.51	0.74	0.52	0.41		0.72	0.41	0.09
Control Delay	44.0	24.2		48.4	55.7	21.2	67.0	28.9		57.0	38.8	7.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	44.0	24.2		48.4	55.7	21.2	67.0	28.9		57.0	38.8	7.3
LOS	D	C		D	E	C	E	C		E	D	A
Approach Delay		33.1			30.6			32.9			43.3	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	57.5	30.6		3.9	25.4	7.2	12.7	41.6		29.7	44.0	0.1
Queue Length 95th (m)	67.6	34.8		11.2	44.0	58.1	#26.6	70.1		45.2	94.5	7.7
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	384	1422		208	432	608	123	1237		382	716	677
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	0.78	0.26		0.09	0.27	0.57	0.47	0.41		0.67	0.41	0.09

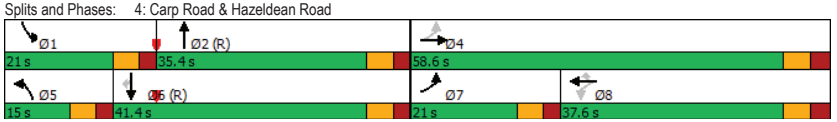
Intersection Summary
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 35.2	Intersection LOS: D
Intersection Capacity Utilization 78.4%	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.

Splits and Phases: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	13	49	7	6	48	27	426	36	57	332	15
Future Volume (vph)	54	13	49	7	6	48	27	426	36	57	332	15
Satd. Flow (prot)	0	1593	0	0	1524	0	1626	1620	0	1610	1655	0
Flt Permitted		0.863			0.977		0.427			0.291		
Satd. Flow (perm)	0	1406	0	0	1498	0	729	1620	0	493	1655	0
Satd. Flow (RTOR)		49			48			8			4	
Lane Group Flow (vph)	0	116	0	0	61	0	27	462	0	57	347	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	34.0	34.0		34.0	34.0		46.0	46.0		46.0	46.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		57.5%	57.5%		57.5%	57.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		39.6			39.6		29.0	29.0		29.0	29.0	
Actuated g/C Ratio		0.50			0.50		0.36	0.36		0.36	0.36	
v/c Ratio		0.16			0.08		0.10	0.78		0.32	0.58	
Control Delay		9.4			6.5		15.9	32.4		21.1	23.2	
Queue Delay		0.0			0.0		0.0	0.5		0.0	0.0	
Total Delay		9.4			6.5		15.9	33.0		21.1	23.2	
LOS		A			A		B	C		C	C	
Approach Delay		9.4			6.5			32.0			22.9	
Approach LOS		A			A			C			C	
Queue Length 50th (m)		5.2			1.0		3.0	64.0		6.1	41.0	
Queue Length 95th (m)		17.0			8.2		m6.3	89.8		12.8	53.3	
Internal Link Dist (m)		50.8			31.9			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		721			766		368	822		248	837	
Starvation Cap Reductn		0			0		0	105		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.16			0.08		0.07	0.64		0.23	0.41	

Intersection Summary

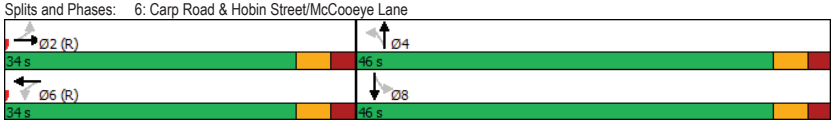
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 65 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 24.7	Intersection LOS: C
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: Carp Road & Hobin Street/McCooeye Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	266	133	56	515	470	127	352	34	507	599	265
Future Volume (vph)	117	266	133	56	515	470	127	352	34	507	599	265
Satd. Flow (prot)	1610	3121	0	1551	1745	1427	1658	3233	0	3216	1745	1483
Flt Permitted	0.106			0.517			0.950			0.950		
Satd. Flow (perm)	180	3121	0	841	1745	1399	1649	3233	0	3194	1745	1436
Satd. Flow (RTOR)		86				432		8				220
Lane Group Flow (vph)	117	399	0	56	515	470	127	386	0	507	599	265
Turn Type	pm+pt	NA		Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8						6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.1	37.6		37.6	37.6	37.6	11.0	31.1		11.0	31.1	31.1
Total Split (s)	11.6	54.6		43.0	43.0	43.0	16.0	32.4		33.0	49.4	49.4
Total Split (%)	9.7%	45.5%		35.8%	35.8%	35.8%	13.3%	27.0%		27.5%	41.2%	41.2%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.4	2.9		2.9	2.9	2.9	2.3	2.4		2.3	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	0.0
Total Lost Time (s)	6.1	6.6		6.6	6.6	6.6	6.0	6.1		6.0	6.1	6.1
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	48.5	48.0		36.4	36.4	36.4	10.0	29.8		23.5	43.3	43.3
Actuated g/C Ratio	0.40	0.40		0.30	0.30	0.30	0.08	0.25		0.20	0.36	0.36
v/c Ratio	0.85	0.31		0.22	0.97	0.65	0.92	0.48		0.81	0.95	0.40
Control Delay	70.2	16.3		32.4	72.9	15.2	112.9	40.7		64.9	63.0	15.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	70.2	16.3		32.4	72.9	15.2	112.9	40.7		64.9	63.0	15.8
LOS	E	B		C	E	B	F	D		E	E	B
Approach Delay		28.5			44.7			58.6			54.6	
Approach LOS		C			D			E			D	
Queue Length 50th (m)	17.7	25.9		10.0	120.0	26.7	30.2	40.3		65.9	92.4	11.6
Queue Length 95th (m)	#45.6	32.7		21.2	#188.9	62.2	#67.1	57.6		83.1	#203.9	45.6
Internal Link Dist (m)		168.3			634.2			616.4			266.7	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	138	1300		255	529	725	138	809		723	629	658
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	0.85	0.31		0.22	0.97	0.65	0.92	0.48		0.70	0.95	0.40

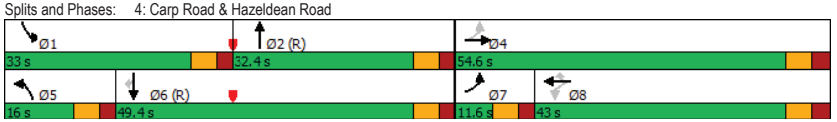
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 48.3	Intersection LOS: D
Intersection Capacity Utilization 96.8%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 4: Carp Road & Hazeldean Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	18	54	35	25	67	70	361	44	61	671	73
Future Volume (vph)	43	18	54	35	25	67	70	361	44	61	671	73
Satd. Flow (prot)	0	1586	0	0	1579	0	1658	1653	0	1658	1699	0
Flt Permitted		0.862			0.903		0.190			0.451		
Satd. Flow (perm)	0	1391	0	0	1444	0	331	1653	0	781	1699	0
Satd. Flow (RTOR)		48			61			12			11	
Lane Group Flow (vph)	0	115	0	0	127	0	70	405	0	61	744	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		27.8	27.8		27.8	27.8	
Total Split (s)	30.0	30.0		30.0	30.0		60.0	60.0		60.0	60.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.8			5.8		5.6	5.6		5.6	5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		30.8			30.8		47.8	47.8		47.8	47.8	
Actuated g/C Ratio		0.34			0.34		0.53	0.53		0.53	0.53	
v/c Ratio		0.23			0.24		0.40	0.46		0.15	0.82	
Control Delay		16.4			15.0		20.5	16.0		9.7	24.9	
Queue Delay		0.0			0.0		0.0	0.6		0.0	0.0	
Total Delay		16.4			15.0		20.5	16.7		9.7	24.9	
LOS		B			B		C	B		A	C	
Approach Delay		16.4			15.0			17.2			23.7	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		8.3			8.1		7.6	44.0		4.8	93.6	
Queue Length 95th (m)		22.4			22.8		m13.5	m63.0		9.6	125.2	
Internal Link Dist (m)		112.2			60.6			88.7			616.4	
Turn Bay Length (m)							28.0			44.0		
Base Capacity (vph)		507			533		200	1003		472	1031	
Starvation Cap Reductn		0			0		0	291		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.23			0.24		0.35	0.57		0.13	0.72	

Intersection Summary

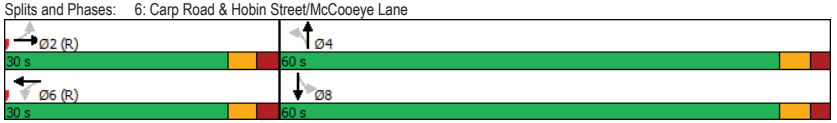
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 76 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.4	Intersection LOS: C
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: 6: Carp Road & Hobin Street/McCooeye Lane



Appendix Q

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Intersections Form

Consultant	CGH Transportation Inc.	Project	6310 Hazeldean Road
Scenario	Existing/Future	Date	3/18/2022
Comments			

INTERSECTIONS: Hazeldean Rd at West Ridge Dr/Kittiwake Dr

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	8	5	5
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	15-25m	10-15m	10-15m	10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	18	-12	37	37
	Ped. Exposure to Traffic LoS	F	F	E	E
	Cycle Length	120	120	120	120
	Effective Walk Time	16	16	58	58
	Average Pedestrian Delay	45	45	16	16
	Pedestrian Delay LoS	E	E	B	B
	Level of Service	F	F	E	E
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration				
	Right Turning Speed				
	Cyclist relative to RT motorists	#N/A	#N/A	#N/A	#N/A
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Left Turn Approach	One lane crossed	One lane crossed	One lane crossed	One lane crossed
	Operating Speed	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	D	D	F	F
	Level of Service	#N/A	#N/A	#N/A	#N/A
	Level of Service (intersection)	#N/A			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius				
	Number of Receiving Lanes on Departure from Intersection				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Auto	Volume to Capacity Ratio	0.0 - 0.60			
	Level of Service	A			

Hazeldean Rd at Stittsville Corners Mall

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	6	8	7
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	5-10m	10-15m	10-15m	10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	21	20	-12	4
	Ped. Exposure to Traffic LoS	F	F	F	F
	Cycle Length	115	115	115	115
	Effective Walk Time	8	8	53	53
	Average Pedestrian Delay	50	50	17	17
	Pedestrian Delay LoS	E	E	B	B
	Level of Service	F	F	F	F
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Pocket Bike Lane	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration			> 50 m Introduced right turn lane	
	Right Turning Speed			≤ 25 km/h	
	Cyclist relative to RT motorists	#N/A	#N/A	D	Not Applicable
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Separated	Separated
	Left Turn Approach	One lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed
	Operating Speed	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	D	B	F	F
	Level of Service	#N/A	#N/A	F	F
	Level of Service (intersection)	#N/A			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius				
	Number of Receiving Lanes on Departure from Intersection				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Auto	Volume to Capacity Ratio	0.0 - 0.60			
	Level of Service	A			

Hazeldean Rd at Jackson Trails Centre Mall

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	7		7	7
	Median	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive		Protected	No left turn / Prohib.
	Conflicting Right Turns	Permissive or yield control		No right turn	Protected
	Right Turns on Red (RToR) ?	RTOR allowed		RTOR prohibited	RTOR allowed
	Ped Signal Leading Interval?	Yes		No	No
	Right Turn Channel	No Channel		No Right Turn	No Channel
	Corner Radius	15-25m		No Right Turn	10-15m
	Crosswalk Type	Std transverse markings		Std transverse markings	Std transverse markings
	PETSI Score	4		30	17
	Ped. Exposure to Traffic LoS	F	-	E	F
	Cycle Length	115		115	115
	Effective Walk Time	7		50	70
	Average Pedestrian Delay	51		18	9
	Pedestrian Delay LoS	E	-	B	A
	Level of Service	F	-	E	F
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration				
	Right Turning Speed				
	Cyclist relative to RT motorists	#N/A	-	Not Applicable	Not Applicable
	Separated or Mixed Traffic	Mixed Traffic	-	Separated	Separated
	Left Turn Approach	No lane crossed		1 lane crossed	≥ 2 lanes crossed
	Operating Speed	> 50 to < 60 km/h		≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	C	-	E	F
	Level of Service	#N/A	-	E	F
	Level of Service (intersection)	#N/A			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius				
	Number of Receiving Lanes on Departure from Intersection				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Auto	Volume to Capacity Ratio	0.0 - 0.60			
	Level of Service	A			

Hazeldean Rd at Carp Rd (Existing)

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	8	6	7
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Protected/ Permissive	Permissive	Protected	Protected
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	Conv'tl without Receiving Lane	No Channel	No Channel	Conv'tl without Receiving Lane
	Corner Radius	>25m	10-15m	10-15m	>25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	21	-12	28	13
	Ped. Exposure to Traffic LoS	F	F	F	F
	Cycle Length	115	115	115	115
	Effective Walk Time	11	11	7	7
	Average Pedestrian Delay	47	47	51	51
	Pedestrian Delay LoS	E	E	E	E
	Level of Service	F	F	F	F
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	Not Applicable	Not Applicable	Not Applicable	
	Right Turning Speed	Not Applicable	Not Applicable	Not Applicable	
	Cyclist relative to RT motorists	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Separated or Mixed Traffic	Separated	Separated	Separated	Separated
	Left Turn Approach	1 lane crossed	≥ 2 lanes crossed	1 lane crossed	≥ 2 lanes crossed
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	D	F	E	F
	Level of Service	D	F	E	F
	Level of Service (intersection)	F			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius	> 15 m	> 15 m	> 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	1
	Level of Service	C	C	A	C
	Level of Service (intersection)	C			
Auto	Volume to Capacity Ratio	> 1.00			
	Level of Service	F			

Hazeldean Rd at Carp Rd (Future)

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	8	6	7
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Protected/ Permissive	Permissive	Protected	Protected
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	Conv'tl without Receiving Lane	No Channel	No Channel	Conv'tl without Receiving Lane
	Corner Radius	>25m	10-15m	10-15m	>25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	21	-12	28	13
	Ped. Exposure to Traffic LoS	F	F	F	F
	Cycle Length	115	115	115	115
	Effective Walk Time	11	11	7	7
	Average Pedestrian Delay	47	47	51	51
	Pedestrian Delay LoS	E	E	E	E
	Level of Service	F	F	F	F
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	Bike lane shifts to the left of right turn	> 50 m Introduced right turn lane	Not Applicable	
	Right Turning Speed	Not Applicable	Not Applicable	Not Applicable	
	Cyclist relative to RT motorists	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Separated or Mixed Traffic	Separated	Separated	Separated	Separated
	Left Turn Approach	1 lane crossed	≥ 2 lanes crossed	1 lane crossed	≥ 2 lanes crossed
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	D	F	E	F
	Level of Service	D	F	E	F
	Level of Service (intersection)	F			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius	> 15 m	> 15 m	> 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	1
	Level of Service	C	C	A	C
	Level of Service (intersection)	C			
Auto	Volume to Capacity Ratio	> 1.00			
	Level of Service	F			

Carp Rd at Echowoods Ave/Kittiwake Dr (Existing)

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	6	4	7
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	5-10m	10-15m	5-10m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	21	20	54	2
	Ped. Exposure to Traffic LoS	F	F	D	F
	Cycle Length	115	115	115	115
	Effective Walk Time	40	40	18	18
	Average Pedestrian Delay	24	24	41	41
	Pedestrian Delay LoS	C	C	E	E
	Level of Service	F	F	E	F
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	Not Applicable			
	Right Turning Speed	Not Applicable			
	Cyclist relative to RT motorists	Not Applicable	Not Applicable	#N/A	#N/A
	Separated or Mixed Traffic	Separated	Separated	Mixed Traffic	Mixed Traffic
	Left Turn Approach	≥ 2 lanes crossed	1 lane crossed	No lane crossed	One lane crossed
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	F	D	C	D
	Level of Service	F	D	#N/A	#N/A
	Level of Service (intersection)	#N/A			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius				
	Number of Receiving Lanes on Departure from Intersection				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Auto	Volume to Capacity Ratio	0.91 - 1.00			
	Level of Service	E			

Carp Rd at Echowoods Ave/Kittiwake Dr (Future)

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	6	4	7
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	5-10m	10-15m	10-15m	10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	21	20	53	4
	Ped. Exposure to Traffic LoS	F	F	D	F
	Cycle Length	115	115	115	115
	Effective Walk Time	40	40	18	18
	Average Pedestrian Delay	24	24	41	41
	Pedestrian Delay LoS	C	C	E	E
	Level of Service	F	F	E	F
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	Not Applicable	Not Applicable		
	Right Turning Speed	Not Applicable	Not Applicable		
	Cyclist relative to RT motorists	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Separated or Mixed Traffic	Separated	Separated	Separated	Separated
	Left Turn Approach	2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	A	A	A	A
	Level of Service	A	A	A	A
	Level of Service (intersection)	A			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius				
	Number of Receiving Lanes on Departure from Intersection				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Auto	Volume to Capacity Ratio	0.61 - 0.70			
	Level of Service	B			

Carp Rd at McCooeye Ln /Hobin St

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	5	5	5
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	5-10m	5-10m	10-15m	10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	21	38	37	37
	Ped. Exposure to Traffic LoS	F	E	E	E
	Cycle Length	80	80	80	80
	Effective Walk Time	7	7	31	31
	Average Pedestrian Delay	33	33	15	15
	Pedestrian Delay LoS	D	D	B	B
	Level of Service	F	E	E	E
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration				
	Right Turning Speed				
	Cyclist relative to RT motorists	#N/A	#N/A	#N/A	#N/A
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Left Turn Approach	One lane crossed	One lane crossed	No lane crossed	No lane crossed
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h	> 50 to < 60 km/h
	Left Turning Cyclist	E	E	B	C
	Level of Service	#N/A	#N/A	#N/A	#N/A
	Level of Service (intersection)	#N/A			
Transit	Average Signal Delay				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Truck	Effective Corner Radius				
	Number of Receiving Lanes on Departure from Intersection				
	Level of Service	-	-	-	-
	Level of Service (intersection)	-			
Auto	Volume to Capacity Ratio	0.0 - 0.60			
	Level of Service	A			

Carp Rd at Stittsville Main St

Mode	Crossing Side	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	5	6	6	5
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Protected/ Permissive	Protected/ Permissive	Protected/ Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	Conv'tl without Receiving Lane	No Channel	Conv'tl without Receiving Lane
	Corner Radius	5-10m	15-25m	15-25m	>25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	38	22	18	38
	Ped. Exposure to Traffic LoS	E	F	F	E
	Cycle Length	115	115	115	115
	Effective Walk Time	17	17	13	13
	Average Pedestrian Delay	42	42	45	45
	Pedestrian Delay LoS	E	E	E	E
	Level of Service	E	F	F	E
	Level of Service (intersection)	F			
	Approach From	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Right Turn Lane Configuration	> 50 m			≤ 50 m
	Right Turning Speed	>25 km/h			>25 km/h
	Cyclist relative to RT motorists	F	#N/A	#N/A	E
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Left Turn Approach	≥ 2 lanes crossed	One lane crossed	One lane crossed	≥ 2 lanes crossed
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h
	Left Turning Cyclist	F	E	E	F
	Level of Service	F	#N/A	#N/A	F
	Level of Service (intersection)	#N/A			
Transit	Average Signal Delay	> 40 sec	≤ 40 sec		≤ 40 sec
	Level of Service	F	E	-	E
	Level of Service (intersection)	F			
Truck	Effective Corner Radius	> 15 m	> 15 m	> 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1	1	1
	Level of Service	C	C	C	C
	Level of Service (intersection)	C			
Auto	Volume to Capacity Ratio	0.71 - 0.80			
	Level of Service	C			