1174 Carp Road

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report (Rev #1)

Prepared for:

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November 2024

PN: 2023-034

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1 Screening

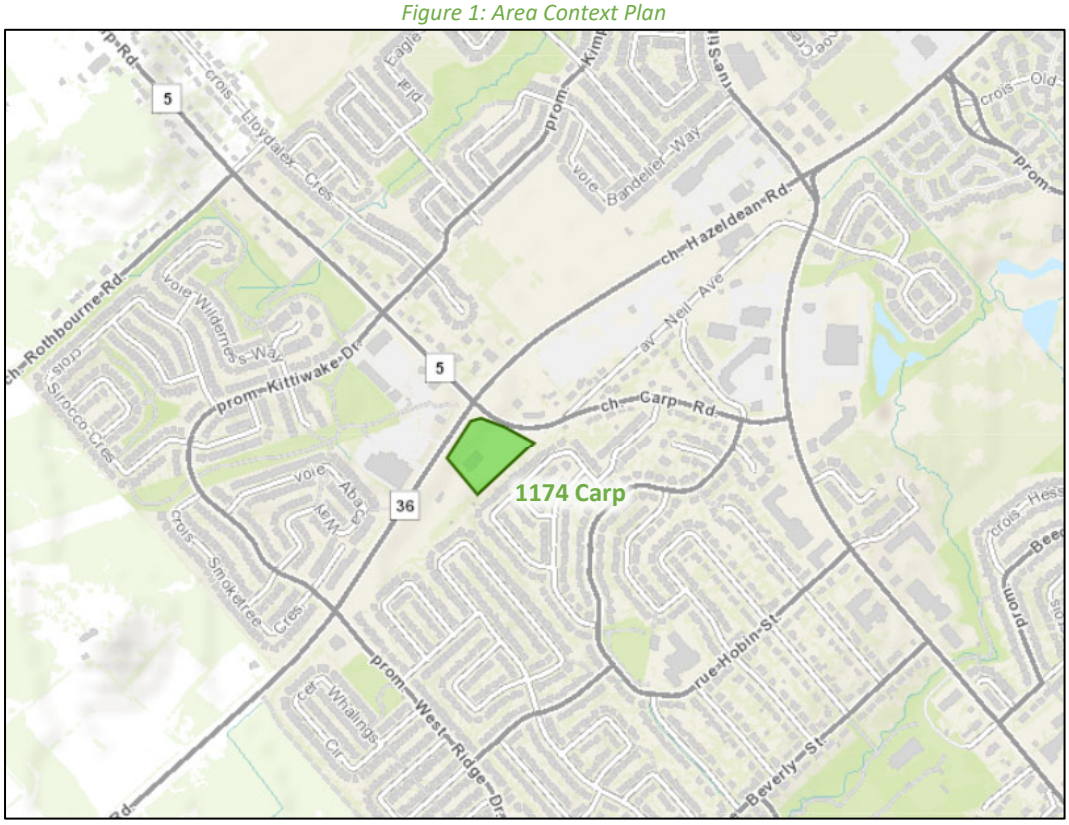
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required, and this study has been prepared to support a site plan application.

2 Existing and Planned Conditions

2.1 Proposed Development

The proposed development site is located at 1174 Carp Road and is zoned as Arterial Mainstreet Zone (AM9) and is presently occupied by an RV dealership. The proposed development will consist of 413 senior's housing units within a 14-storey tower on nine- and five-storey podia, to be built by 2026. The development is proposed to include 305 vehicle parking spaces with vehicular access via the southward relocation of the full-movement access on Carp Road as the site main entrance and a new right-in-/right-out access on Hazeldean Road. 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: September 9, 2023

PROJECT STATISTICS

SITE AREA	= 196,682 ft² (18,272 m²)	TOTAL UNITS	= 413
10% PARKLAND PROVIDED	= 19,686 ft²	FOOTPRINT AREA	= 51,376 ft²
COURTYARD AREA	= 25,987 ft²	LOT COVERAGE	= 26.1 %
		OPEN SPACE	= 73.9 %

GFA SUMMARY *(NOT INCLUDING PARKING)*

	GFA PER FLOOR	# OF FLOORS	TOTAL GFA
LEVEL 1	51,376 ft²	1	51,376 ft²
LEVEL 2-5	49,056 ft²	4	196,225 ft²
LEVEL 6-9	30,121 ft²	4	120,483 ft²
LEVEL 10-13	9,632 ft²	4	38,528 ft²
LEVEL 14	9,632 ft²	1	9,632 ft²
			416,244 ft²

GFA SUMMARY - PARKING

	GFA PER FLOOR	# OF FLOORS	TOTAL GFA
P1 PARKING	109637 ft²	1	109,636.99 ft²
			109,636.99 ft²

PARKING SUMMARY

TOTAL PARKING COUNT = 305

TOTAL ABOVE GRADE PARKING	
5200x2600 -VISITOR	32
Barrier Free Parking-VISITOR	2
Barrier Free Parking-VISITOR	2
	36
TOTAL BELOW GRADE PARKING P1	
PARKING SPACE 5500X2400 SMALL	12
PARKING SPACE 5500X2750	257
	269

HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

SITE PLAN

SITE PLAN

SCALE 1 : 750

November 7, 2024

2.2 Existing Conditions

2.2.1 Area Road Network

Hazeldean Road: Hazeldean Road is a City of Ottawa arterial road with a two-lane cross-section west of the signalized Farm Boy access, and a divided four-lane cross-section to the east. The cross-section is rural with gravel shoulders west of Kittiwake Drive, rural with paved shoulders between Kittiwake Drive and the unsignalized western inbound Farm Boy driveway, semi-urban with a paved shoulder on the south side between the inbound Farm Boy access and Carp Road, and urban east of Carp Road. Sidewalks are present on the north side of the road between the pathway block to Abaca Way and Carp Road, and on both sides east of Carp Road. Bike lanes are present on both sides of the road east of Carp Road, and a westbound bike lane continues west of Carp Road and transitions to a paved shoulder on the west side of the inbound unsignalized Farm Boy access. West of the edge of urban development, approximately 195 metres west of Kittiwake Drive, the posted speed limit is 80 km/h to the west and the posted speed limit is 60 km/h to the east. 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 cross-section that is rural north of Kittiwake Drive, semi-urban with a curb on the west side between Kittiwake Drive and Hazeldean Road, semi-urban with a curb on the east side between Hazeldean Road and Hobin Street, and urban south of Hobin Street. Bike lanes are present on both sides of the road between Hazeldean Road and Kittiwake Drive/Echowoods Avenue. South of Hazeldean Road, a bike lane is present on the east side of the road approaching Hazeldean Road, and a paved shoulder is present on the west side of the road. Sidewalks are provided on the west side of the road between Kittiwake Drive/Echowoods Avenue and Hazeldean Road, on the east side between Hazeldean Road and McCooeye Lane/Hobin Street, and on both sides between McCooeye Lane/Hobin Street and Stittsville Main Street. The posted speed limit is 60km/h north of Hazeldean Road and is 50 km/h south of Hazeldean Road. The City-protected right-of-way is 33.2 metres north of Echowoods Avenue, 33.4 metres between Hazeldean Road and Echowoods Avenue, and 23.0 metres between Hazeldean Road and Stittsville Main Street. 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, each with a two-lane urban cross-section. North of Hazeldean Road, a MUP is provided on the west side of the road and a sidewalk on the east side, and sidewalks are provided on both sides of the road to the south within the study area. The posted speed limit is 50 km/h, the City-protected right-of-way is 37.5 metres between Hazeldean Road and Carp Road, 30.0 metres south of Carp Road within the study area, and the existing right-of-way is 26.0 metres north of Hazeldean Road. Stittsville Main Street south of Hazeldean Road is designated as a truck route.

Kittiwake Drive: Kittiwake Drive is a City of Ottawa collector road with a two-lane urban cross-section with a sidewalk provided on the south/east side of the road. The posted 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 with a sidewalk on the south side of the road. The posed speed limit is 40 km/h, and the existing right-of-way is 18.0 metres.

Neil Avenue: Neil Avenue is a City of Ottawa local road with a two-lane rural cross-section. The posted speed limit is 50 km/h, and the existing right-of-way is 20.0 metres.

2.2.2 Existing Intersections

The key existing intersections within one kilometre of the site, per the discussion in Section 3.1, have been summarized below:

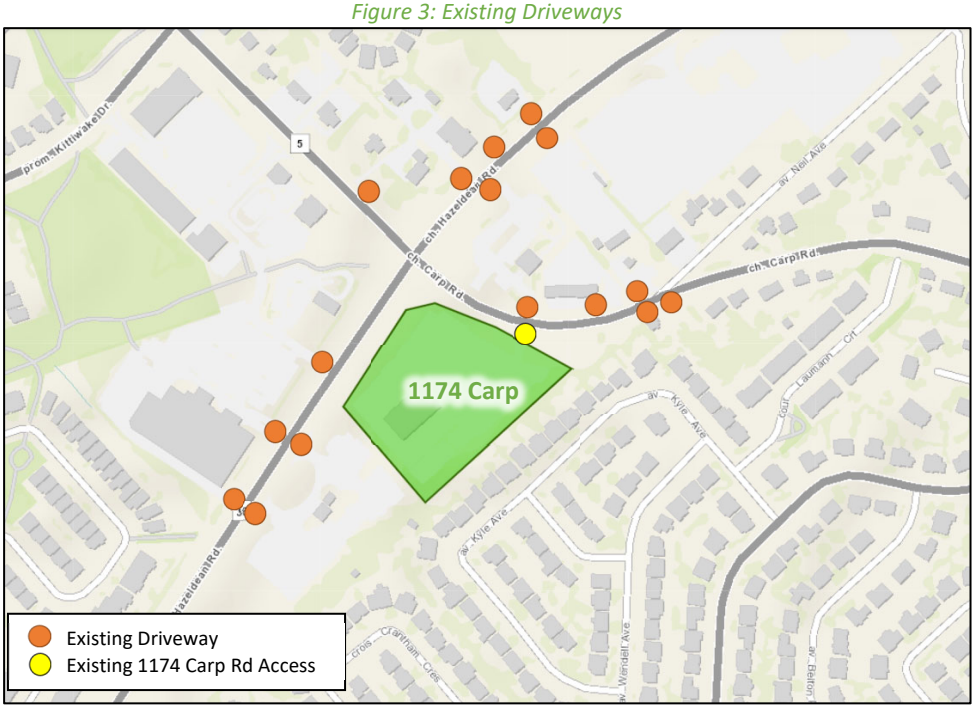
Hazeldean Road at Stittsville Corners Mall (Farm Boy)	The intersection of Hazeldean Road at the Stittsville Corners Mall (Farm Boy) is a signalized intersection. The private northbound approach consists of a shared all-movement lane, and the private southbound approach consists of a shared left-turn/through lane and a right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, a through/right-turn lane, and a bike lane, and the westbound approach consists 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, an auxiliary shared through/right lane, and a bike lane. The southbound and westbound approaches each consist 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 private southbound approach consists of a shared all-movement lane that functions as a left-turn lane and auxiliary right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, two through lanes, and a bike lane, and the westbound approach consists 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 Neil Avenue	The intersection of Carp Road at Neil Avenue is a T-intersection, stop-controlled on the minor approach of Neil Avenue. The northbound approach consists of a shared through/right-turn lane, and the southbound approach consists of a shared left-turn/through lane. The westbound approach consists of a shared left-turn/right-turn. No turn restrictions were noted

2.2.3 Existing Driveways

An existing access to the subject site is present on Carp Road. Within 200 metres of the proposed site accesses, three existing driveways to a retail plaza and two existing driveways to a vacant land are present on Hazeldean

Road west of Carp Road, a shared driveway to a dental clinic and a detached dwelling, a driveway to a service access for a water tower, two driveways to used car dealers, and one driveway to a gas station with a car wash are present on Hazeldean Road east of Carp Road. Another shared driveway to the dental clinic and detached dwelling is present on Carp Road north of Hazeldean Road, and two driveways to the gas station and car wash, one driveway to an oil change provider, one to a real estate agency, and one to dwelling indeterminate commercial land use are present on Carp Road south of Hazeldean Road. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/Accessed: September 9, 2023

2.2.4 Cycling and Pedestrian Facilities

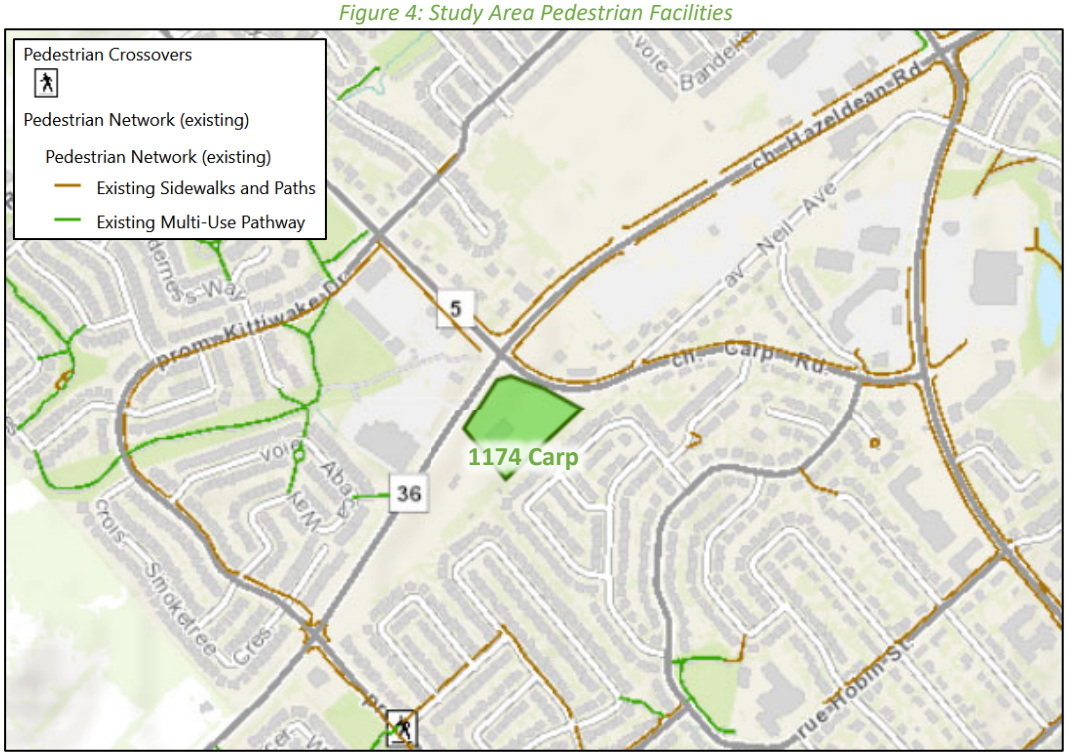
Figure 4 illustrates the pedestrian facilities in the study area and Figure 5 illustrates the cycling facilities.

A sidewalk is provided on the north side of Hazeldean Road between the pathway block to Abaca Way and Carp Road, and on both sides east of Carp Road. A sidewalk is provided on the west side of Carp Road between Kittiwake Drive and Hazeldean Road, on the east/north side of Carp Road west of McCooeye Lane, and on both sides of Carp Road between McCooeye Lane and Stittsville Main Street. A sidewalk is on the south side of Echowoods Avenue, on the south/east side of Kittiwake Drive, on the east side of Stittsville Main Street north of Hazeldean road, and on both sides of Stittsville Mains Street south of Hazeldean Road. A MUP is provided on the west side of the Stittsville Main Street north of Hazeldean Road.

Bike lanes are provided on the north side of Hazeldean Road east of the inbound Farm Boy access, on the south side of Hazeldean Road east of Carp Road, on the east side of Carp Road approaching the Hazeldean Road intersection to Kittiwake Drive/Echowoods Avenue, and on the west side of Carp Road between Hazeldean Road and Kittiwake Drive/Echowoods Avenue. Paved shoulders are present on the west side of Carp Road between Hazeldean Road and McCooeye Lane/Hobin Street, on both sides of Hazeldean Road between Kittiwake Drive/West Ridge Drive and the inbound Farm Boy access, and on the south side between Stittsville Corners Mall access and Carp Road.

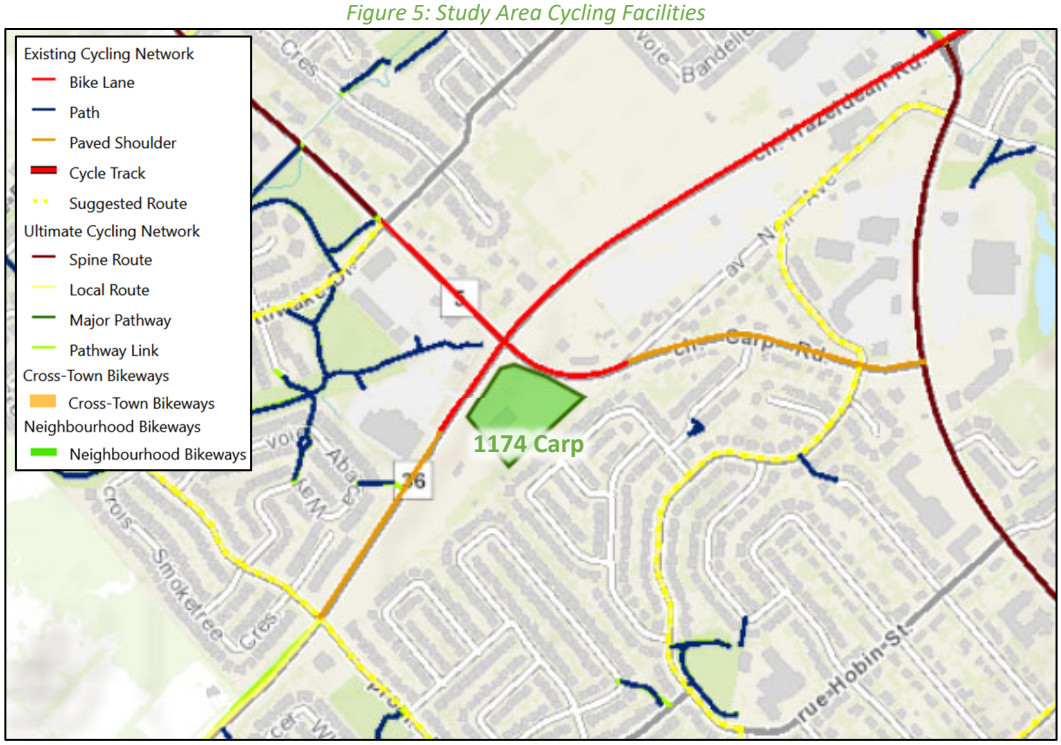
Carp Road, Hazeldean Road east of Kittiwake Drive, and Stittsville Main Street south of Hazeldean Road are spine cycling routes, and Hazeldean Road west of Kittiwake Drive, Hobin street, McCooeye Lane, and Kittiwake Drive are local routes.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: September 9, 2023

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: September 9, 2023

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. Based upon data having been collected during the winter, it is noted that the existing cycling volumes at the intersections of Hazeldean Road at Stittsville Corners/195 W Of Carp Road and Hazeldean Road at Jackson Trails Centre Mall may be lower than during warmer months.

Figure 6: Existing Pedestrian Volumes

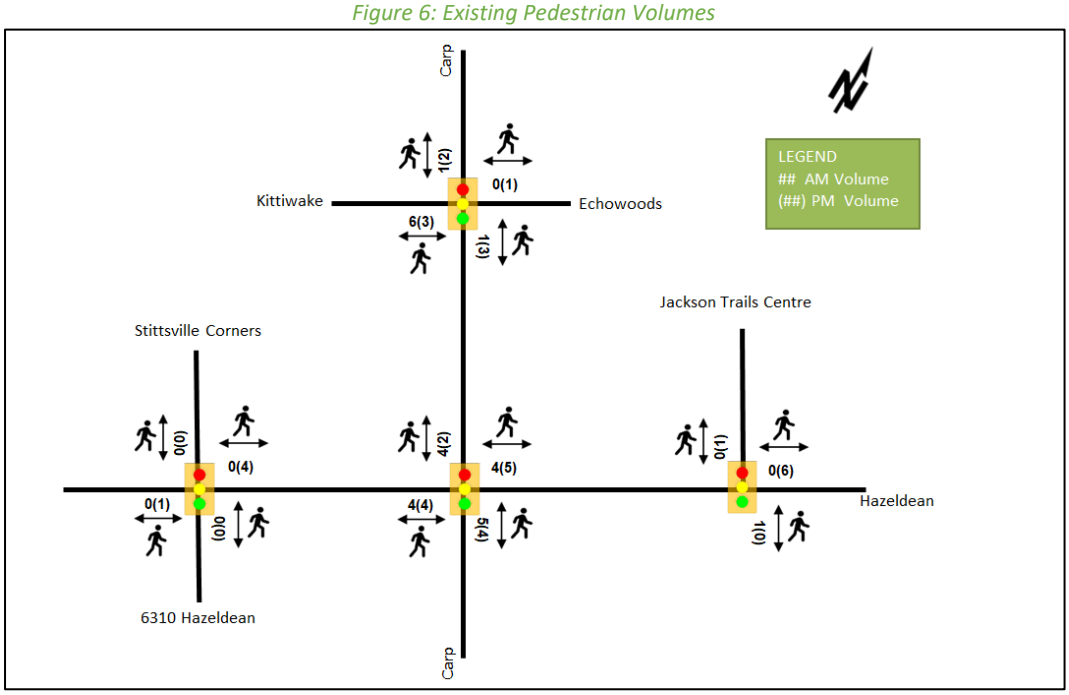
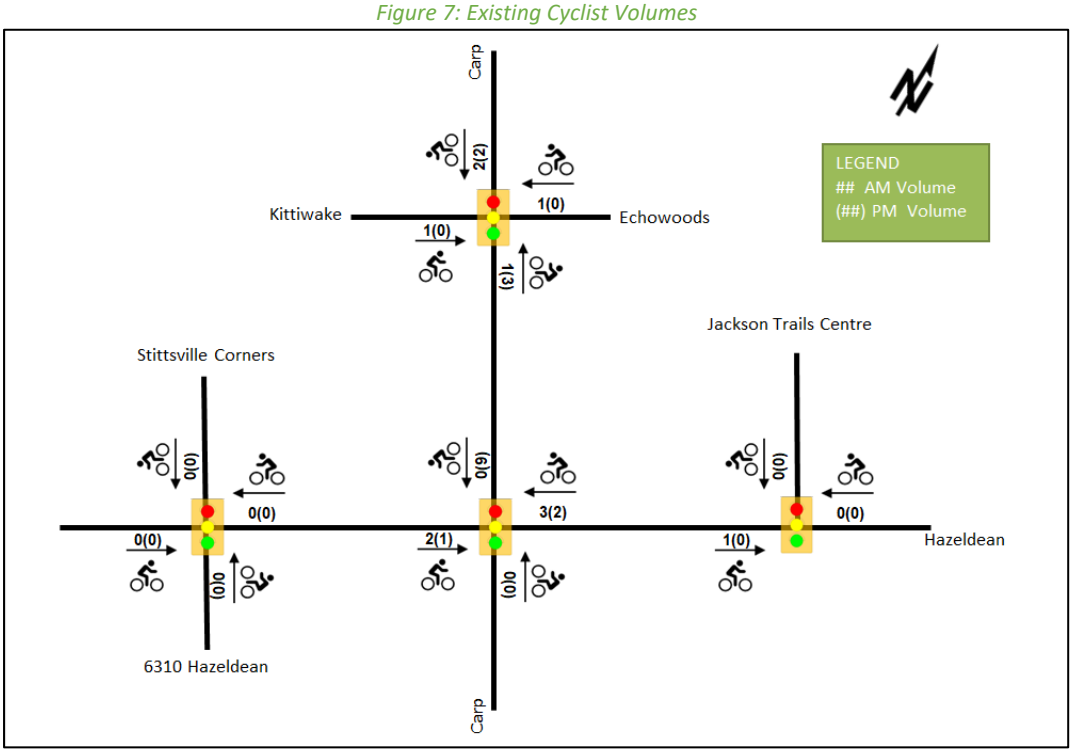


Figure 7: Existing Cyclist Volumes



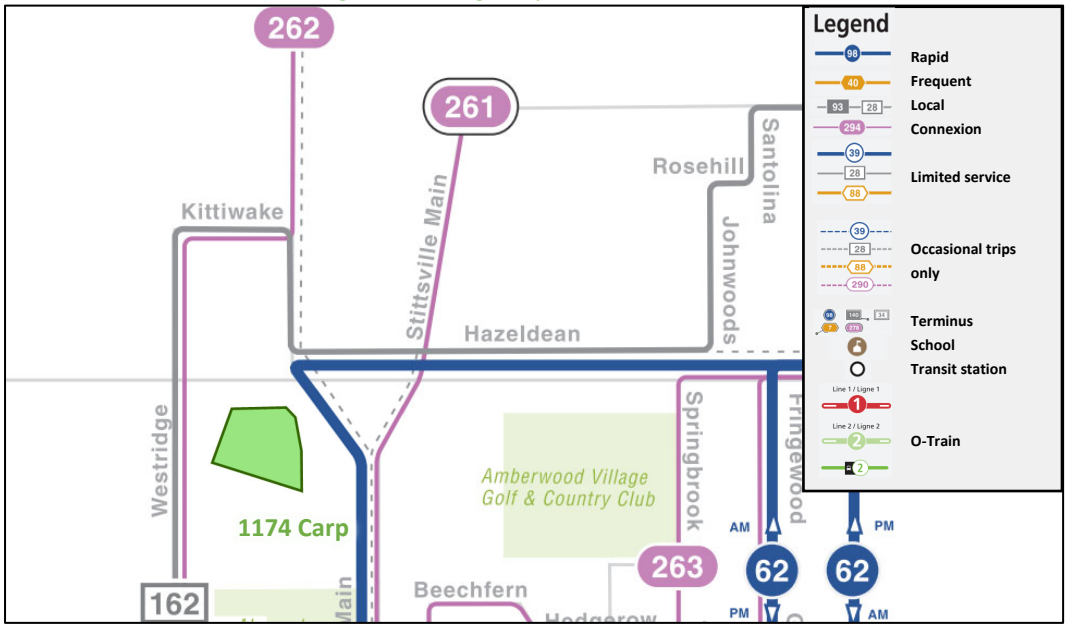
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from September 11, 2023 and is included for general information purposes and context to the surrounding area.

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. The frequency of these routes within proximity of the proposed site based on September 11, 2023 service levels are:

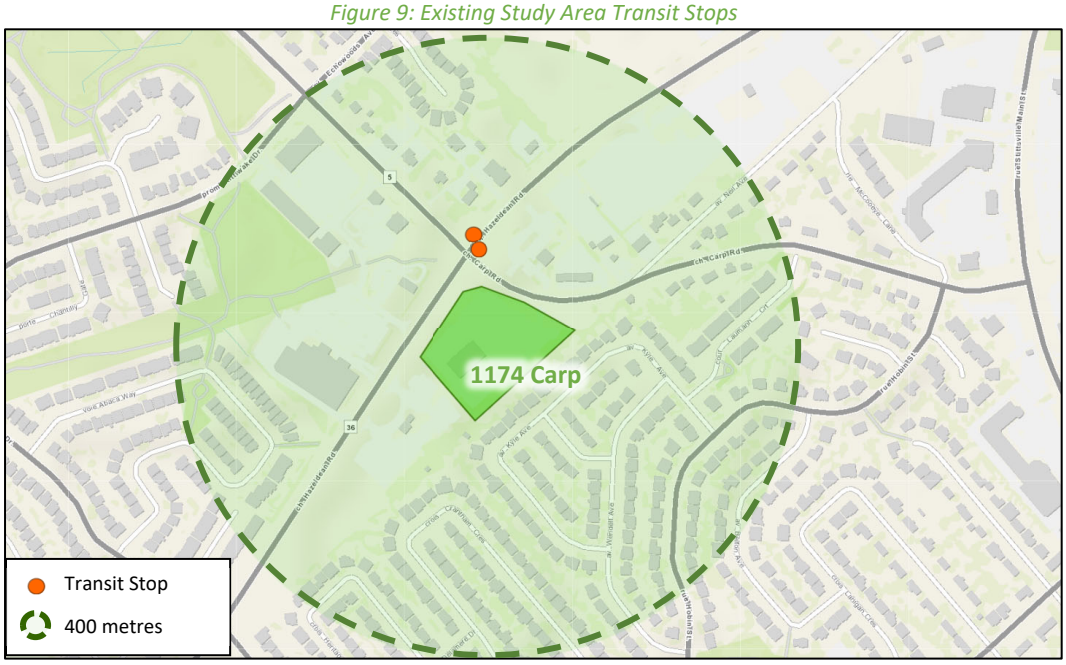
- Route # 61 – 20-30-minute service all-day
- Route # 162 – Three afternoon buses and four late evening buses per day
- Route # 262 – 30-minute service in the peak period/direction

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: September 9, 2023

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: September 11, 2023

2.2.6 Existing Area Traffic Management Measures

On-road messaging of the 50 km/h speed limit is present on Carp Road south of Hazeldean Road.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa and The Traffic Specialist for the existing study area intersections, per the discussion in Section 3.1. Table 1 summarizes the intersection count dates and sources.

Table 1: Intersection Count Date

Intersection	Count Date	Source
Hazeldean Rd at Stittsville Corners/195 W Of Carp Rd	Wednesday, January 19, 2022	City of Ottawa
Hazeldean Rd at Carp Rd	Wednesday, August 23, 2023	The Traffic Specialist
Hazeldean Rd at Jackson Trails Centre Mall	Tuesday, January 11, 2022	City of Ottawa
Carp Rd at Echowoods Ave/Kittiwake Dr	Wednesday, August 23, 2023	The Traffic Specialist

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

Figure 10: Existing Traffic Counts

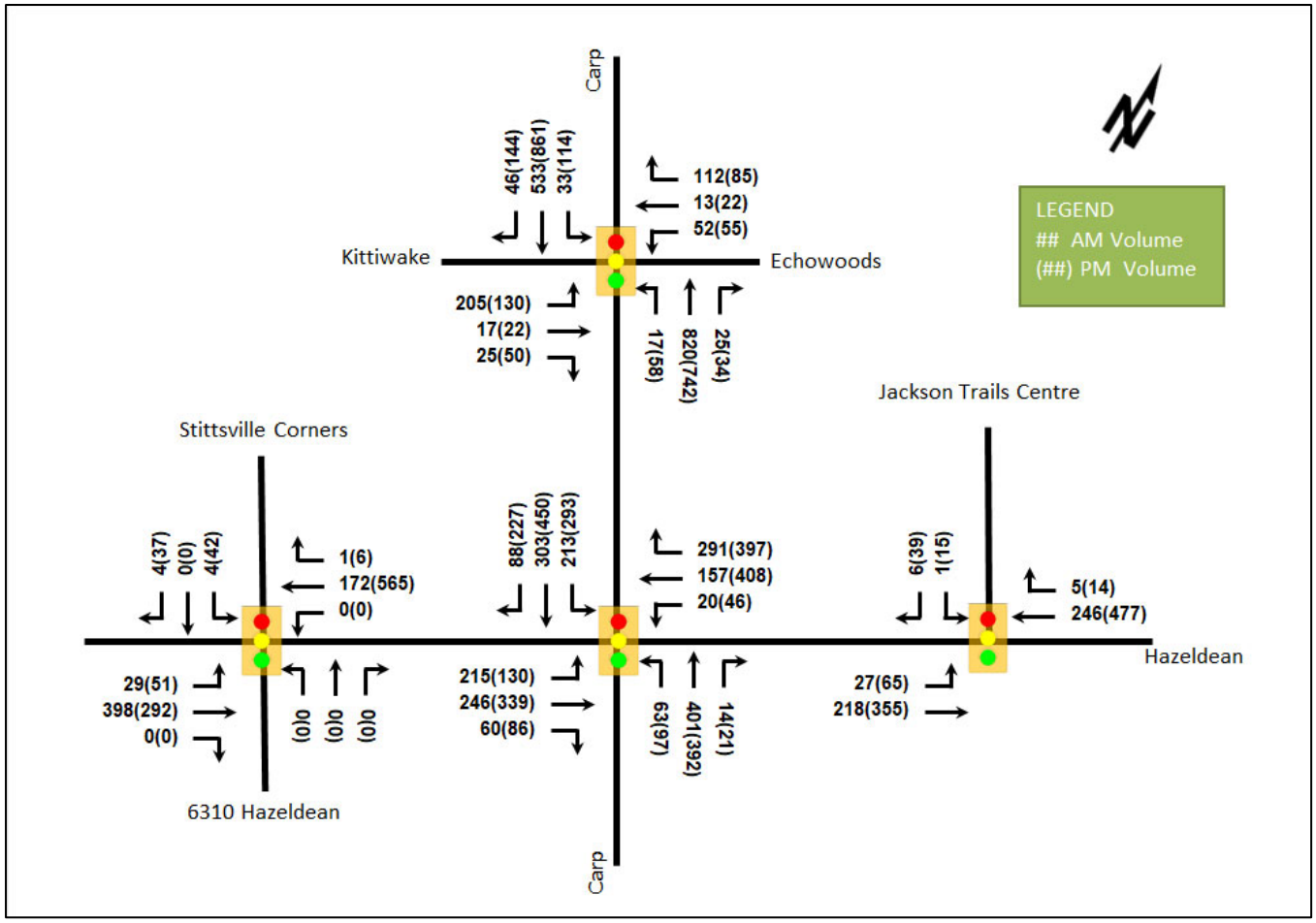


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Hazeldean Rd at Stittsville Corners/195 W Of Carp Rd ***Signalized***	EBL	A	0.03	1.0	2.8	A	0.09	2.9	5.8
	EBT/R	A	0.14	0.7	12.4	A	0.12	2.3	11.5
	WBL	-	-	-	-	-	-	-	-
	WBT	A	0.12	0.7	6.3	A	0.42	1.7	m16.9
	WBR	A	0.00	0.0	m0.0	A	0.01	0.0	m0.0
	NB	-	-	-	-	-	-	-	-
	SBL/T	A	0.04	54.0	4.7	A	0.41	66.8	23.7
	SBR	A	0.03	0.2	0.0	A	0.25	19.3	10.7
	Overall	**A**	**0.15**	**1.0**	**-**	**A**	**0.44**	**5.4**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Hazeldean Rd at Carp Rd *Signalized*	EBL	E	0.94	**82.7**	**#69.0**	D	0.86	75.8	**#50.3**
	EBT/R	A	0.40	33.0	39.2	A	0.39	26.3	47.9
	WBL	A	0.16	43.8	11.1	A	0.25	38.8	21.4
	WBT	B	0.66	60.0	56.3	E	0.93	71.3	**#167.8**
	WBR	B	0.64	10.6	23.0	B	0.63	8.9	32.9
	NBL	A	0.57	73.1	**#34.1**	C	0.72	**82.6**	**#50.6**
	NBT/R	A	0.37	28.6	56.2	A	0.57	46.8	75.1
	SBL	C	0.80	62.5	**#141.0**	D	0.88	52.9	m97.8
	SBT	A	0.39	37.4	114.1	C	0.75	42.4	m163.2
	SBR	A	0.13	13.4	19.7	A	0.36	11.6	m28.6
	Overall	**B**	**0.70**	**40.3**	-	**D**	**0.88**	**41.6**	-
Hazeldean Road at Jackson Trails Centre Mall *Signalized*	EBL	A	0.03	1.1	2.8	A	0.11	2.7	5.7
	EBT	A	0.08	0.8	7.2	A	0.14	2.3	11.3
	WBT/R	A	0.09	0.8	8.2	A	0.20	2.4	15.7
	SBL	A	0.01	48.0	1.9	A	0.13	53.5	11.1
	SBR	A	0.06	28.3	4.5	A	0.27	19.5	11.1
	Overall	**A**	**0.10**	**1.2**	-	**A**	**0.20**	**3.9**	-
Carp Rd at Echowoods Ave/Kittiwake Dr *Signalized*	EBL	E	0.93	**86.0**	**#93.9**	E	0.92	**106.4**	**#74.5**
	EBT/R	A	0.11	17.6	12.6	A	0.26	19.8	19.1
	WB	A	0.48	27.8	46.6	B	0.68	52.9	59.7
	NBL	A	0.05	9.1	m3.1	A	0.27	6.1	m2.0
	NBT/R	E	0.92	36.2	**m#321.2**	C	0.80	26.5	m259.2
	SBL	A	0.23	12.8	7.8	A	0.43	10.1	14.5
	SBT	A	0.58	19.9	146.0	D	0.82	25.2	259.8
	SBR	A	0.06	1.4	2.9	A	0.16	5.3	16.3
	Overall	**E**	**0.92**	**34.3**	-	**D**	**0.84**	**29.5**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both peak hours, the study area intersections operate satisfactorily in the existing conditions.

At the Hazeldean Road and Carp Road intersection, the eastbound, northbound, and southbound left-turn movements may be subject to extended queues during the AM peak hour with the eastbound left-turn movement also experiencing high delays. During the PM peak hour, the eastbound and northbound left-turn, and westbound through movements may be subject to extended queues with the northbound left-turn movement also experiencing high delays.

At the intersection of Carp Road at Echowoods Avenue/Kittiwake Drive Boulevard, the eastbound left-turn movement may be subject to extended queues and high delays during both peak hours, and the northbound through/right-turn movement may be subject to extended queues during the AM peak hour.

2.2.8 Collision Analysis

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

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**56**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	9	16%
	Property Damage Only	47	84%
Initial Impact Type	**Angle**	3	5%
	Rear end	33	59%
	Sideswipe	5	9%
	Turning Movement	6	11%
	SMV Other	7	13%
	Other	2	4%
Road Surface Condition	**Dry**	36	64%
	Wet	10	18%
	Loose Snow	2	4%
	Slush	2	4%
	Packed Snow	1	2%
	Ice	4	7%
	Loose sand or gravel	1	2%
Pedestrian Involved		0	0%
Cyclists Involved		1	2%

Figure 11: Study Area Collision Records

Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**56**	**100%**
Carp Rd @ Hazeldean Rd	46	82%
Neil Ave @ Carp Rd	4	7%
Carp Rd btwn Hazeldean Rd & Neil Ave	3	5%
Hazeldean Rd btwn Carp Rd & Kittiwake Dr	3	5%

Within the study area, the intersection of Carp Road at Hazeldean Road is noted to have experienced a higher incidence of collisions than other locations. Table 5 summarizes the collision types and conditions for this location.

Table 5: Carp Road at Hazeldean Road Collision Summary

		Number	%
Total Collisions		**46**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	6	13%
	Property Damage Only	40	87%
Initial Impact Type	**Angle**	3	7%
	Rear end	29	63%
	Sideswipe	5	11%
	Turning Movement	4	9%
	SMV Other	3	7%
	Other	2	4%
Road Surface Condition	**Dry**	30	65%
	Wet	9	20%
	Loose Snow	1	2%
	Slush	2	4%
	Packed Snow	1	2%
	Ice	3	7%
Pedestrian Involved		0	0%
Cyclists Involved		1	2%

The Carp Road at Hazeldean Road intersection had a total of 46 collisions during the 2018-2022 time period, with 40 involving property damage only and the remaining six having non-fatal injuries. The collision types are most represented by rear end with 29 collisions, followed by sideswipe with five collisions, turning movement with four, angle and SMV other each with three, and with the remaining collision type represented by “Other”. Weather conditions do not affect collisions at this location. The collisions are overwhelmingly of the types associated with congestion at the intersection, and no further examination is required as part of this study.

One cyclist collision was noted during the 2018-2022 time period during daylight hours in clear and dry conditions, occurring as an angle collision. While no patterns can be discerned from this single cyclist collision, ultimately this intersection is proposed to be reconstructed as part of the Carp Road Widening works, and cycling safety will be a key consideration of the City design. No further examination of collisions at this intersection is required as part of this study.

2.3 Planned Conditions

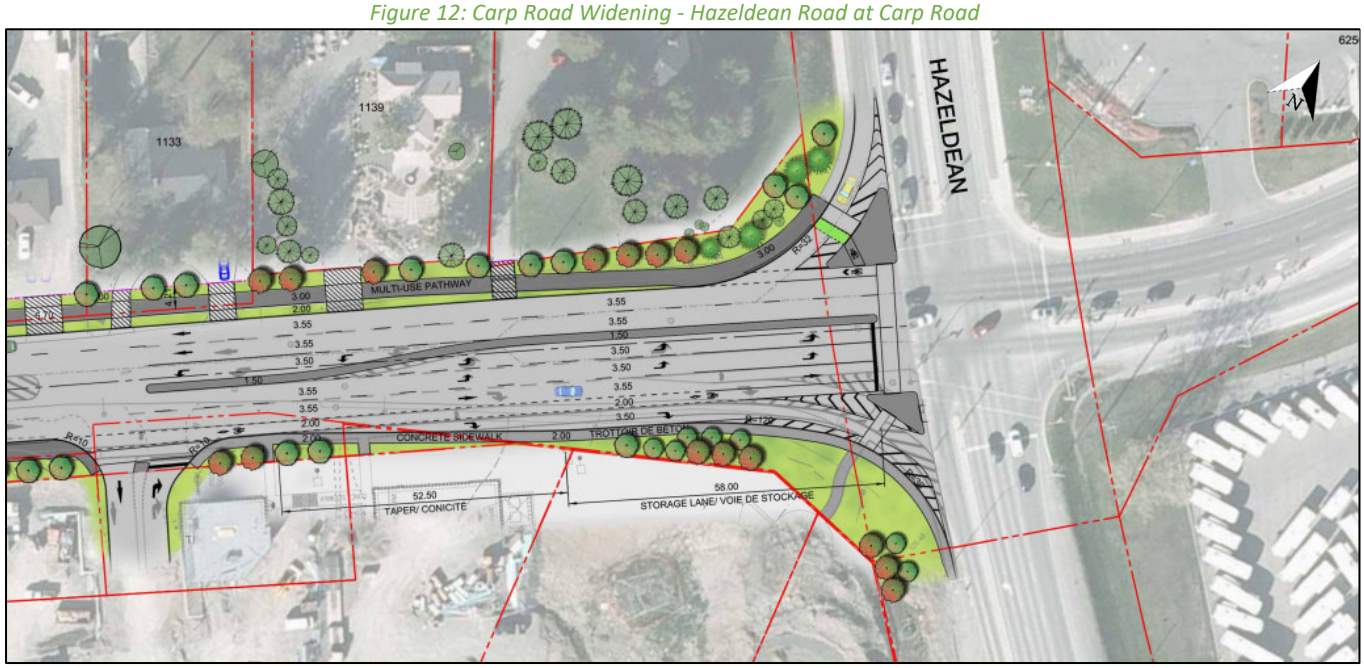
2.3.1 Changes to the Area Transportation Network

The Transportation Master Plan’s (TMP) Rapid Transit and Transit Priority Network identifies isolated transit priority measures along Hazeldean Road east of Stittsville Main Steet and along Stittsville Main Steet south of

Hazeldean Road within the Ultimate Network Concepts diagram, however, the Stittsville Main Steet corridor does not appear within the Affordable Network diagram.

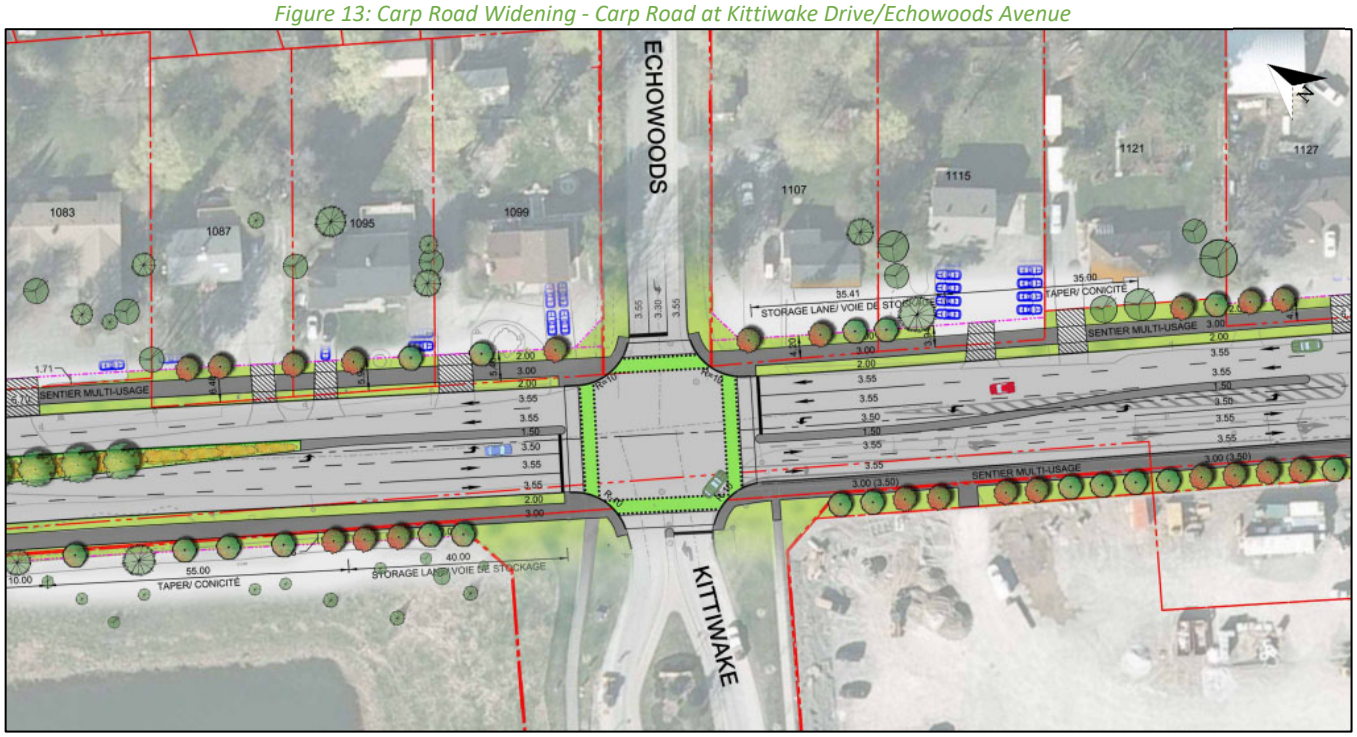
The Road Network's Affordable Network diagram identifies the widening of Carp Road between Hazeldean Road and Highway 417 as a Phase 2 project (2020 to 2025), for which an EA has arrived at a preliminary design. The preliminary design included changes to the cross-section of Carp Road from a two-lane to a five-lane cross-section including a two-way left-turn lane south of Westbrook Road, with a dividing median along the Carp Road approaches to the intersections and south of Kittiwake Drive, and multi-use pathways on both sides of the road north of Stittsville Corners access with a transition on the west side to an on-road bike lane with a sidewalk. Since the environmental study report, the scope of works has recently been expanded to include all four legs of the intersection of Carp Road at Hazeldean Road, which is assumed will be a protected intersection as part of the forthcoming functional and detailed designs. It is understood that sidewalks will be provided on the site frontages as part of these works. Figure 12 and Figure 13 illustrate excerpts from the preliminary design within the study area, however it should be noted that further design is to commence shortly where the existing plans and additional areas will be updated to current standards.

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



Source: https://documents.ottawa.ca/sites/documents/files/documents/carp_landscape_en.pdf Accessed: September 11, 2023

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



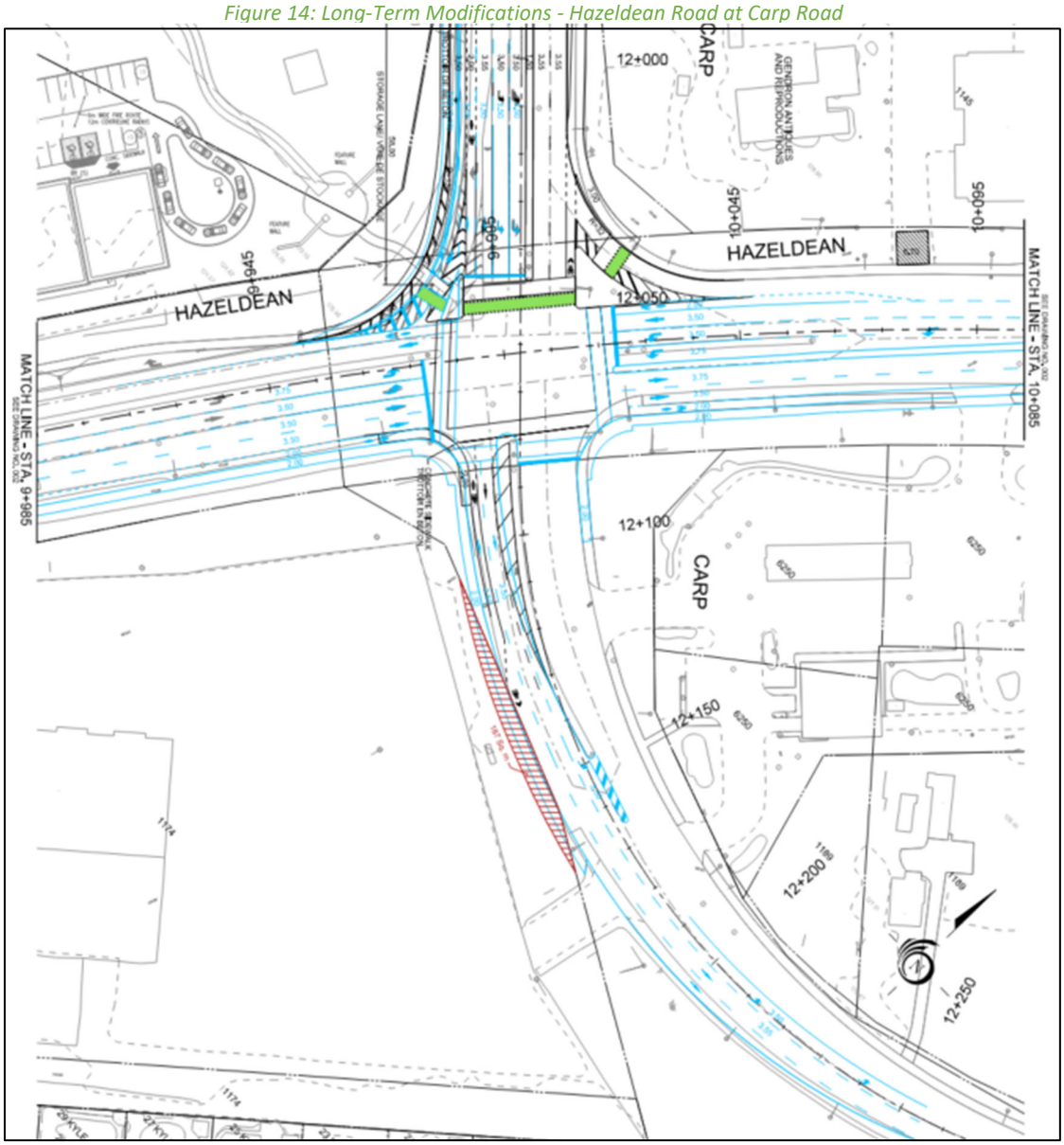
Source: https://documents.ottawa.ca/sites/documents/files/documents/carp_landscape_en.pdf Accessed: September 11, 2023

Included within the Carp Road Widening EA was a conceptual plan for long-term modifications to the Hazeldean Road at Carp Road intersection. Beyond the features provided within the EA recommended plan north of the Stittsville Corners access, the following elements were proposed as part of the long-term modifications:

- multi-use pathways on both sides of Carp Road north of Hazeldean Road
- a sidewalk on the west side of Carp Road south of Hazeldean Road
- a sidewalk and bike lane on the south side of Hazeldean Road on the west leg of the intersection
- dual auxiliary left-turn lanes on each the eastbound, westbound, and southbound approaches
- a new auxiliary receiving lane on the south leg of the intersection

The scope and budget of the EA were recently expanded to include these modifications. The intersection and widening works are subject to future preliminary, functional, and detailed design, and are anticipated to be completed by the 2027. Figure 14 illustrates the conceptual long-term modifications for the intersection of Hazeldean Road at Carp Road from the EA, including the property requirements for the works in red hatch, which have been reserved as part of the subject development plan.

Figure 14: Long-Term Modifications - Hazeldean Road at Carp Road



Source: Carp Road Widening EA Accessed: November 11, 2024

2.3.2 Other Study Area Developments

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 forecast to generate 273 new AM and 345 new PM two-way peak-hour auto trips. (EXP Services Inc., 2021)

6310 Hazeldean Road

The proposed development application includes a zoning amendment to allow the construction of approximately 1,630 sq. m of ground floor commercial space and 317 apartment units in three buildings. The anticipated full build-out and occupancy horizon is 2027. The development is forecast to generate 62 new AM and 103 new PM two-way peak-hour auto trips. (CGH, 2022)

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 required for this development.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Hazeldean Road at:
  - Stittsville Corners Mall (Farm Boy)
  - Jackson Trails Centre Mall
- Carp Road at:
  - Hazeldean Road
  - Kittiwake Drive/Echowoods Avenue

The intersections of Hazeldean Road and Kittiwake Drive/West Ridge Drive, Carp Road and McCooeye Lane/Hobin Street, and Carp Road and Stittsville Main Street are within one kilometre of the site. It is noted that the development would generate negligible volumes on any turning movements at these intersections. Based upon correspondence with the City's Transportation Project Manager outlining this rationale, the scope of the TIA was agreed on August 16, 2023 to be limited to four intersections comprising the bulleted list above. Similarly, a subsequent request was made for the TIA to include a description of the Carp Road at Neil Road intersection for contextual purposes only.

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

3.2 Time Periods

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

3.3 Horizon Years

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

4 Development-Generated Travel Demand

4.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Kanata/Stittsville have been summarized in Table 6.

Table 6: TRANS Trip Generation Manual Recommended Mode Shares – Kanata/Stittsville

Travel Mode	Residential (All Dwelling Types)	
	AM	PM
Auto Driver	52%	56%
Auto Passenger	15%	19%
Transit	20%	15%
Cycling	1%	1%
Walking	12%	9%

Travel Mode	Residential (All Dwelling Types)	
	AM	PM
Total	**100%**	**100%**

4.2 Trip Generation

This TIA has been prepared using the vehicle trip rates and derived person trip rates for the residential component from the ITE Trip Generation Manual 11th Edition (2021) using the fitted curve equations and the City-prescribed conversion factor of 1.28. Table 10 summarizes the person trip rates by peak hour. Table 7 summarizes the person trip rates by peak hour.

Table 7: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Hour	Vehicle Trip Rate	Person Trip Rates
Senior Adult Housing (Multifamily)	252 (ITE)	AM	0.19	0.24
		PM	0.25	0.32

Using the above person trip rates, the total person trip generation has been estimated. Table 8 summarizes the total person trip generation by Peak Hour.

Table 8: Person Trip Generation by Peak Hour

Land Use	Units	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Senior Adult Housing (Multifamily)	413	34	65	99	74	58	132

Using the above mode share targets, the person trip rates, the person trips by mode have been projected. Table 9 summarizes the trip generation and by mode and peak hour.

Table 9: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Senior Adult Housing (Multifamily)	Auto Driver	**52%**	18	34	52	**56%**	41	32	73
	Auto Passenger	**15%**	5	10	15	**19%**	14	11	25
	Transit	**20%**	7	13	20	**15%**	11	9	20
	Cycling	**1%**	0	1	1	**1%**	1	1	2
	Walking	**12%**	4	8	12	**9%**	7	5	12
	Total	**100%**	**34**	**66**	**100**	**100%**	**74**	**58**	**132**

As shown above, a total of 52 AM and 73 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Kanata/Stittsville. Table 10 below summarizes the distributions.

Table 10: OD Survey Distribution – Kanata/Stittsville

To/From	Residential % of Trips
North	30%
South	5%
East	60%

To/From	Residential % of Trips
West	5%
Total	**100%**

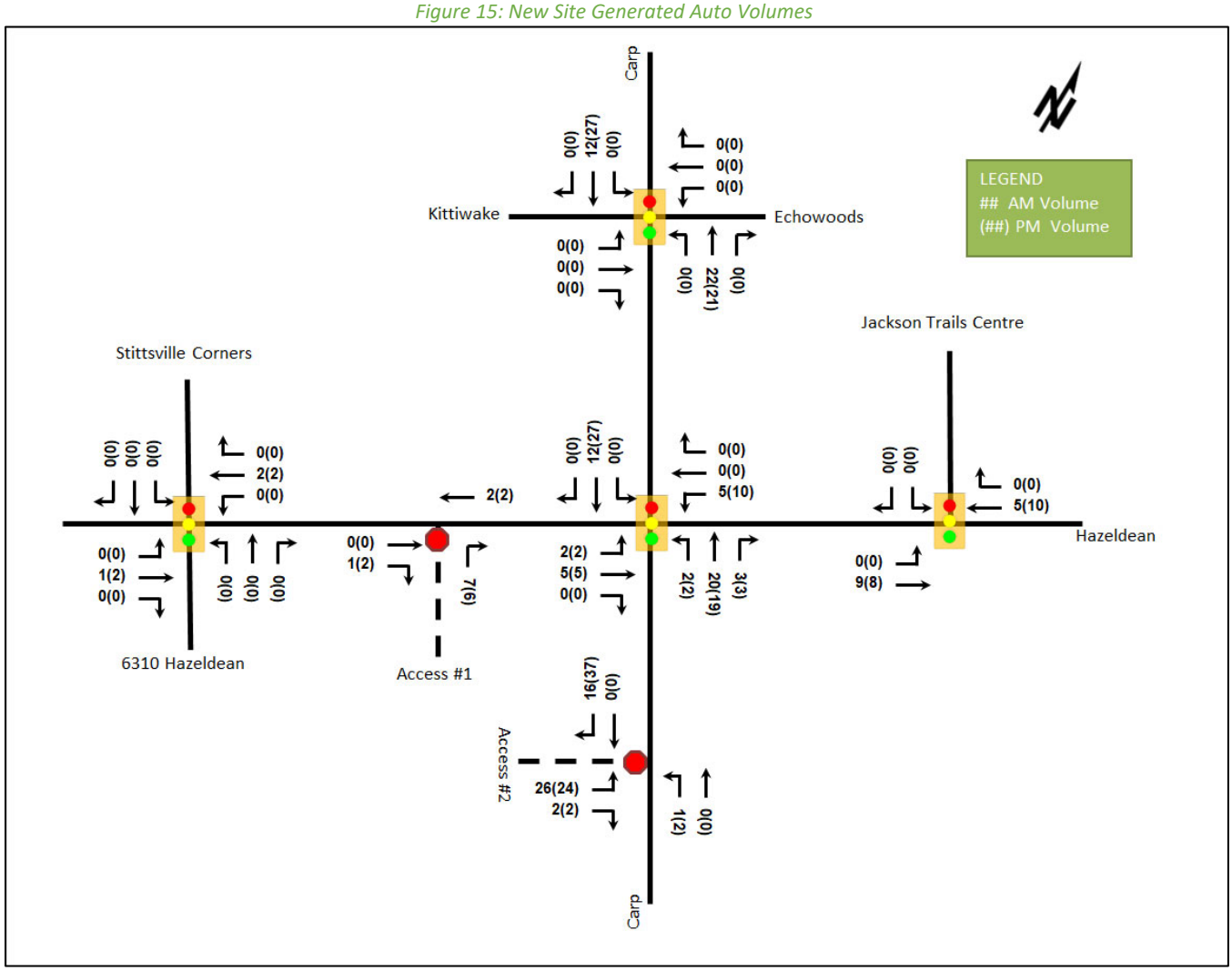
4.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 11 summarizes the proportional assignment to the study area roadways, and Figure 15 illustrates the new site generated volumes.

Table 11: Trip Assignment

To/From	Via
North	30% Carp Road (N)
South	5% Carp Road (S)
East	35% Carp Road (N) 25% Hazeldean Road (E)
West	5% Hazeldean Road (W)
Total	**100%**

Figure 15: New Site Generated Auto Volumes



4.5 Trip Reductions

Based on the existing RV sales building of approximately 10,000 sq. ft. using the ITE trip generation rates for the land use of Recreational Vehicle Sales (LUC 842), and the commercial generator mode shares for Kanata/Stittsville, the estimated trip generation of the existing site is six AM and ten PM peak hour two-way vehicle trips. The trip assignment of the estimated volume reductions, based on the distribution presented in Table 10, is illustrated in Figure 16. Table 12 compares the estimated existing primary auto trips and forecasted site-generated primary auto trips.

Figure 16: Estimated Trip Reductions

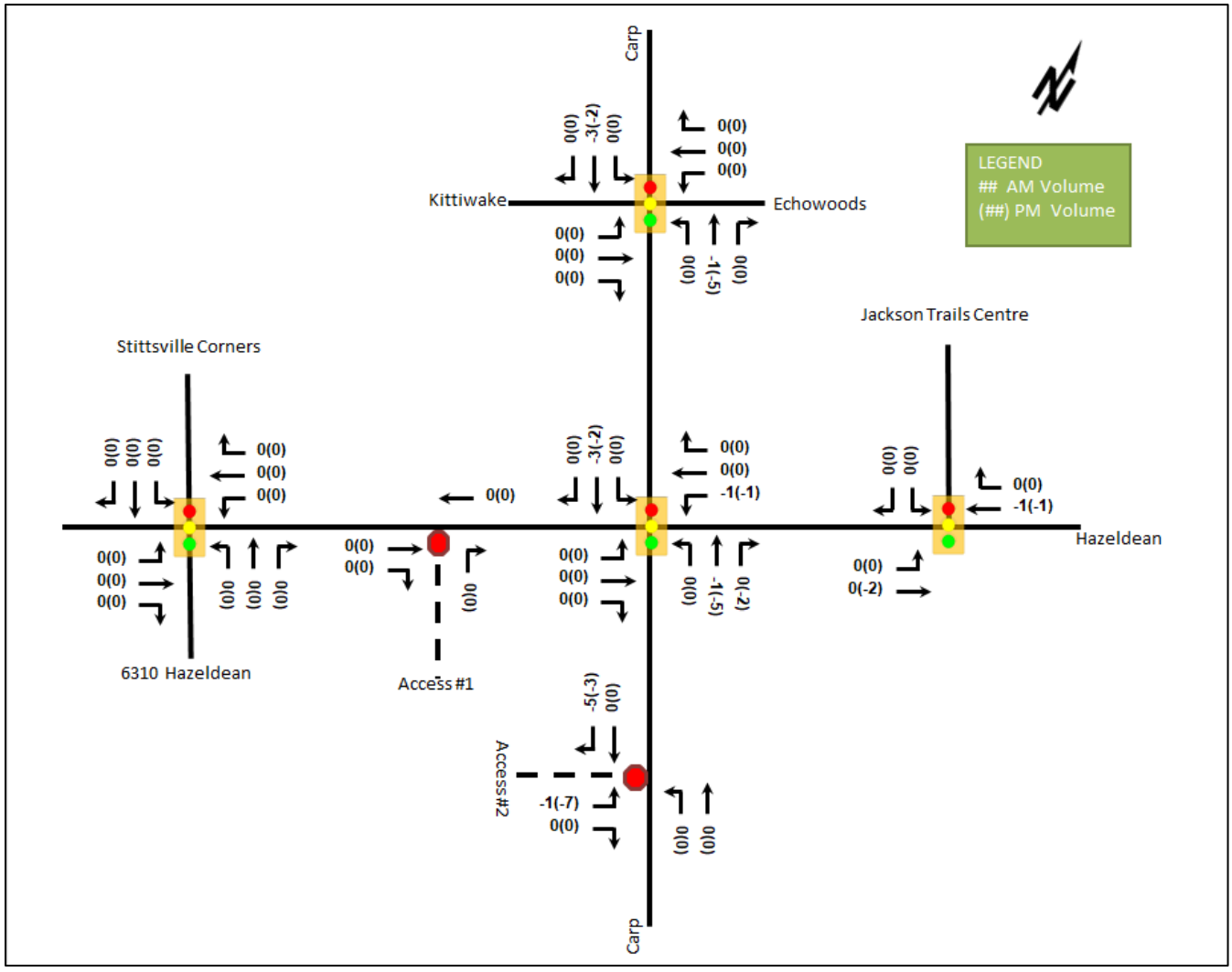
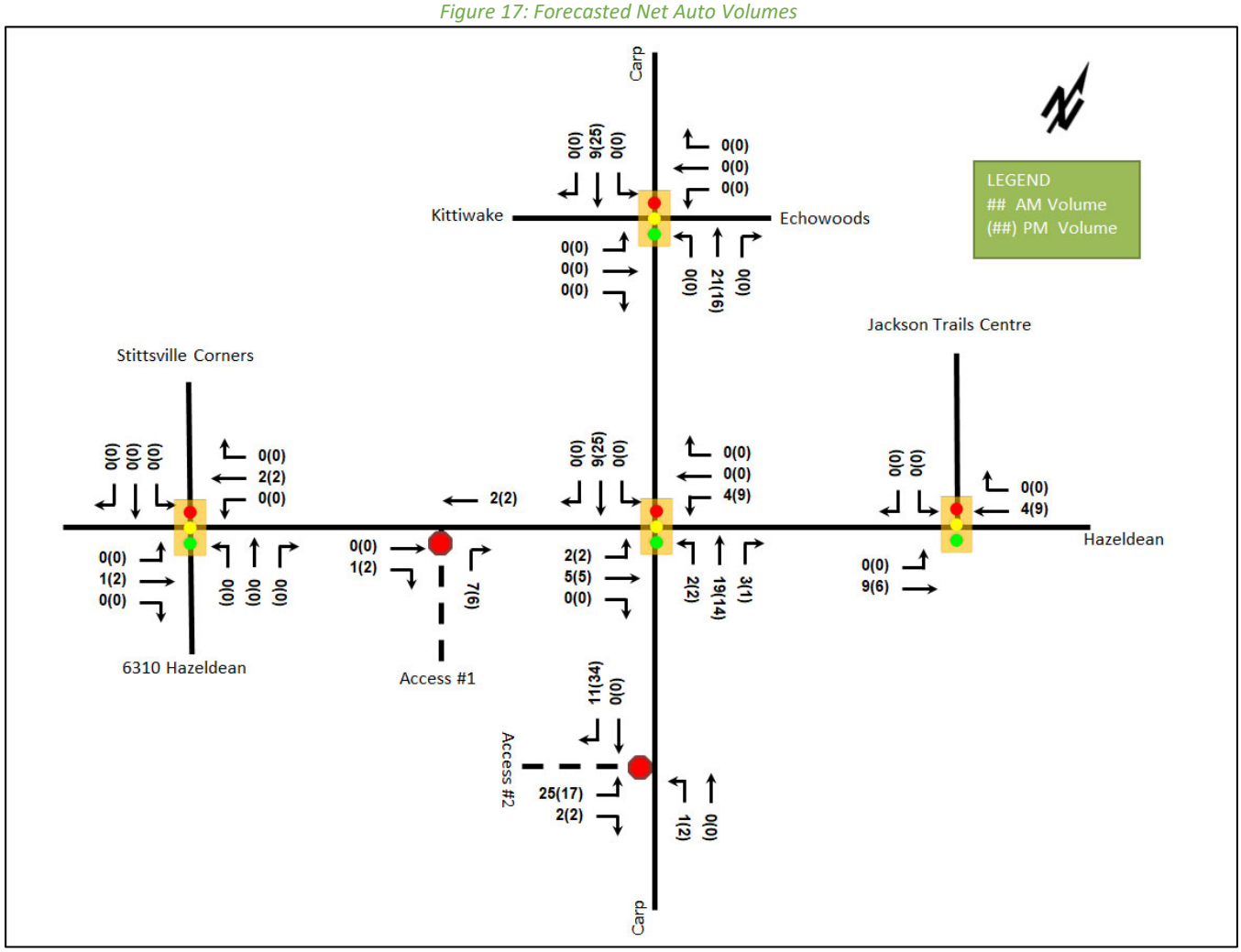


Table 12: Estimated Existing Auto Trip Volumes vs Forecasted Auto Trip Volumes

Scenario	AM Peak Hour				PM Peak Hour			
	Mode Share	In	Out	Total	Mode Share	In	Out	Total
Existing	**81%**	-5	-1	-6	**73%**	-3	-7	-10
Proposed	**52%**	18	34	52	**56%**	41	32	73
Difference	**-**	**+13**	**+33**	**+46**	**-**	**+38**	**+25**	**+63**

Figure 17: Forecasted Net Auto Volumes



5 Exemption Review

Table 13 summarizes the exemptions for this TIA.

Table 13: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	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 plan and zoning by-law applications	Required
4.3 Boundary Street Design		All applications	Required
4.5 Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required

Module	Element	Explanation	Exempt/Required
Network Impact			
3.2 Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered when the development generates more than 75 auto or transit trips	Exempt
3.3 Demand Rationalization		Only required when one or more other Network Impact Modules when the development generates more than 75 auto trips	Exempt
4.6 Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access: 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: • School (within 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced Child Care Centre; • Community Centre; or • 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	
4.7 Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Exempt
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Exempt
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess	Exempt

Module	Element	Explanation	Exempt/Required
		of equivalent volume permitted by established zoning	
4.9 Intersection Design	4.9.1 Intersection Control (incl. Site Accesses)	Only required when the development generates more than 75 auto trips	Exempt
	4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Exempt. Including an analysis of the access intersection at City request.

6 Development Design

6.1 Design for Sustainable Modes

The proposed land use is a seniors' housing development. Hard surface connections surrounding the building connect each of the entrances.

As part of the EA works, a sidewalk and bike lane will be provided along the Hazeldean Road frontage and a sidewalk will be provided along the Carp Road frontage. Pedestrian connections will be provided to connect these proposed sidewalks with the on-site pedestrian facilities.

Bicycle parking is anticipated to be provided within the underground parking level and in surface racks. Visitor vehicle parking is provided in surface lots, and resident and staff vehicle parking in the underground parking level.

The infrastructure TDM checklist is provided in Appendix E.

6.2 Circulation and Access

The plan is proposed as including a new right-in/right-out access on Hazeldean Road (Access #1) and the relocation of the full-movement access on Carp Road (Access #2) closer to the southern boundary of the parcel. An internal drive aisle connects the two accesses. The north-south portion of this aisle provides access to the underground parking and an access easement for the public parkland conveyance. The east-west drive aisle provides access to surface parking, a parallel loading space for deliveries and Para Transpo passenger boarding and alighting, an ambulance parking bay, and a drop-off loop.

The drop-off loop is proposed to operate one-way counterclockwise with angle parking accessing the inbound aisle and a layby along the site entrance on the outbound aisle. The outbound aisle is proposed to have a surface treatment that permits the full width required for fire access for the on-site fire lane.

Garbage collection will occur on the drive aisle. Delivery vehicles for the commercial kitchen, moving vehicles, and garbage collection vehicles can circulate the site using the drive aisles with standard fire route geometry. Resident move-in and move-out is accommodated within the loading area with a building entrance for this purpose on the southeast corner of the building. Turning templates are provided in Appendix F.

7 Parking

The development proposes a total of 305 vehicle parking spaces, including 36 spaces on the surface connecting to the drive aisles and 269 spaces below grade in a single parking level.

From the Zoning By-Law, the minimum vehicle parking provision for residents is 0.25 vehicle parking spaces per dwelling unit plus 1 per 100m^2 of space for medical or personal services, equating to 107 spaces, and the minimum vehicle parking provision for visitors is 0.2 vehicle parking spaces per dwelling unit, equating to 83 spaces. Therefore, the total minimum vehicle parking provision is 188, which is satisfied by the proposed development.

The site is proposed as providing 115 bicycle parking spaces, with 110 mostly within secure rooms in the underground parking level and five within a surface rack. From the Zoning By-Law, the minimum bicycle parking provision is 0.25 vehicle parking spaces per dwelling unit, equating to 103 bicycle parking spaces which is satisfied by the proposed development.

Based on the Accessibility for Ontarians with Disabilities Act (AODA) and the City of Ottawa Accessibility Design Standards, the total number of accessible spaces required is nine spaces. The site is proposed to provide a total of nine accessible parking spaces, and therefore meets the requirements.

8 Boundary Street Design

8.1 Boundary Street MMLOS

Table 14 summarizes the MMLOS analysis for the boundary streets of Hazeldean Road and Carp Road. The boundary street analysis of Hazeldean Road is based on the land use of "Arterial Mainstreet", and the boundary street analysis of Carp Road is based on the land use of "General Urban Area." The MMLOS analysis for future conditions along the boundary streets of Hazeldean Road and Carp Road are based on the long-term modifications identified by the Carp Road Widening EA. The MMLOS worksheets has been provided in Appendix G.

Table 14: Boundary Street MMLOS Analysis

Segment	Condition	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Hazeldean Road	Existing	**F**	C	C	C	-	-	A	D
	Future	B	C	C	C	-	-	A	D
Carp Road	Existing	**F**	C	**E**	C	-	-	B	D
	Future	C	C	**E**	C	-	-	A	D

Both boundary streets of Hazeldean Road and Carp Road do not meet the pedestrian LOS targets in the existing conditions, and both are anticipated to be meet targets in the future conditions with the EA geometry.

The bicycle LOS will not be met along the segment of Carp Road, where a curbside bike lane would be required to meet the theoretical targets. It will be incumbent on the City to evaluate the MMLOS for the intersection when it proceeds to functional and detailed design for these works. No modifications or mitigations are required to support this development application.

8.2 Boundary Street Design Elements

As noted in Section 2.3.1, the City's EA considered a long-term plan for the study area. As part of this long-term plan, additional right-of-way has been identified as being required for future roadway needs along the boundary road of Carp Road on the site frontage. This right-of-way has been protected for this purpose and is illustrated on the site plan.

9 Transportation Demand Management

9.1 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 breakdown. The proposed development is for seniors.

9.2 Need and Opportunity

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

9.3 TDM Program

The "suite of post occupancy TDM measures" has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix E. 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
- Unbundle parking cost from the rental cost

10 Access Intersections Design

10.1 Location and Design of Access

The development is proposed as being accessed by a new right-in-/right-out access on Hazeldean Road (Access #1) and by the full-movement access on Carp Road (Access #2).

Access #1 is 6.2-metres-wide at the property line and 9.6-meters-wide at the curb line. Access #2 is 7.1-metres-wide at the property line and 16.3-meters-wide at the curb line. The widths of proposed accesses comply with the Private Approach By-Law maximum width of 9.0 metres at the property line; however, as in the case of the majority of site plan applications in the City, it does not comply at the curb line due to the larger radii required to accommodate larger truck movements.

Access #1 is proposed to be located approximately 120 metres from the Hazeldean Road at Carp Road intersection, approximately 1.5 metres from the western property line. This location is within the left-turn taper for the intersection and thus the minimum suggested corner clearance is being provided, per TAC. While less than three metres of offset is being provided to the adjacent property line, as the adjacent parcel is accessed by a signalized intersection approximately 44 metres west of the shared property line, and a treed ditch is present on the adjacent property next to the property line precluding a future 6310 Hazeldean Road access in proximity to the proposed Access #1. Thus, it is recommended that the access location be approved in line with provision 25.1.r of the Private Approach By-Law given adequate offset and does not impact the adjacent parcel's ability to provide access.

Access #2 is proposed to be relocated approximately 115 metres from the Hazeldean Road at Carp Road intersection, which meets the minimum corner clearance of 70 metres from TAC, and is further from the intersection than the existing access. The access is over 20 metres from the adjacent property line. The new location is further on the curve of the intersection, but it is noted that given the orientation of the curvature, full sightlines are available along both legs of Carp Road. Sightlines for the relocated access are provided in Appendix H.

The existing site access on Carp Road is roughly aligned with a gas station access northeast side of Carp Road, which is proposed to be offset approximately 25 metres with the relocation of Access #2. The gas station access was designed to be oriented to inbound left-turns from the auxiliary turn lane provided and to discourage inbound right turns although inbound right turns, and limited outbound right turns are expected to occur. The TAC Geometric Design Guide notes that the relative locations of accesses on opposing sides of the road should be examined when both the roadway and the accesses are moderate- to high-volume, giving the example of a busy commercial land use, and notes the key movements for consideration are the accommodation of left-turns into

the opposite developments and the inter-development traffic flow. As the subject development driveway is considered low-volume, as the offset for the accesses separates the left-turn movements such that they do not overlap, and as negligible inter-development interaction is expected, no issues are noted with the relocation of the site access.

The Geometric Design Guide for Canadian Roads (TAC, 2017) suggests a minimum throat length for the closest approximation of the subject land use of "apartments" on an arterial road is 40.0 metres based on the proposed number of units. Access #1 has a throat length of approximately 68 metres, meeting the suggested minimum value from TAC. Access #2 is proposed to have a throat length of approximately 30 metres. The forecasted trips (see Figure 15) anticipated on the inbound movement for Access #2 are 12 AM and 36 PM peak hour vehicles, equating to approximately an averaged inbound vehicle every five minutes during the AM peak hour and every minute-and-forty-seconds during the PM peak hour. The impacts from the outbound movements are confined to the site, they will not impact the public road network. As the senior housing units are anticipated to have lower vehicle traffic than standard apartments and given the site has two accesses, the reduced throat length provided on Access #2 is considered acceptable for the proposed site.

10.2 Intersection Control

Based upon the projected volumes and roadway classifications, the site accesses will have stop-control on the minor access approaches.

10.3 2031 Future Total Access Intersection Operations

As requested by the City, the forecasted operations at Site Access #2 will be examined. The 2031 future total intersection volumes, with background growth and area development traffic consistent with the 6310 Hazeldean Road TIA, are illustrated in Figure 18 and the access intersection operations are summarized below in Table 15. Synchro 11 has been used to model the unsignalized intersections and HCM 2010 delay was used to determine v/c for the unsignalized intersection operations. The synchro worksheets have been provided in Appendix I and excerpts from the 6310 Hazeldean Road TIA are provided in Appendix J.

Figure 18: 2031 Future Total Volumes

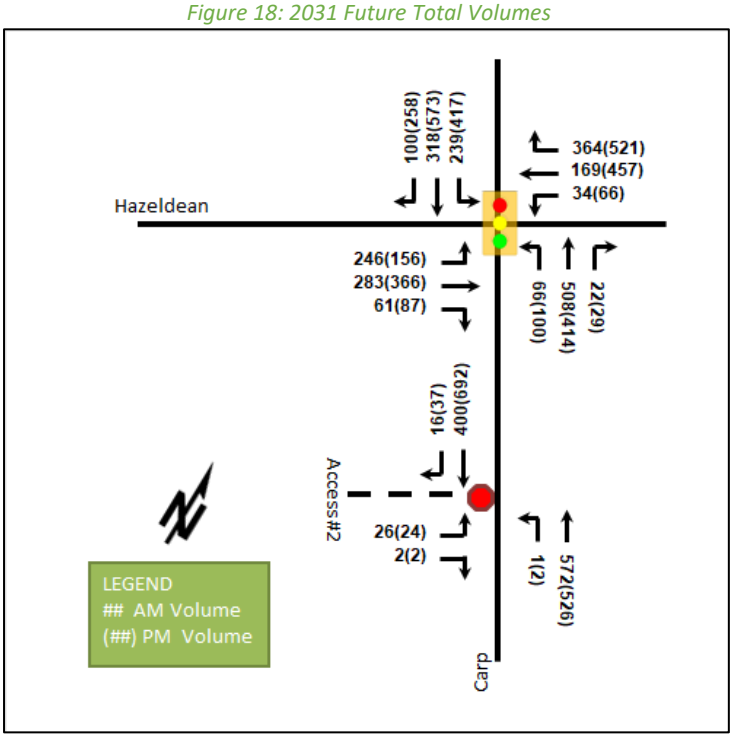


Table 15: 2031 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Carp Rd at Access #2 *Unsignalized*	EBL/R	C	0.10	18.8	2.3	D	0.17	31.0	4.5
	NBL/T	A	0.00	8.2	0.0	A	0.00	9.4	0.0
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.5**	**-**	**A**	**-**	**0.6**	**-**

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

Access #2 will operate well during both peak hours at the 2031 future total horizon. Delay on the eastbound approach is expected to be 31 seconds or less during both peak hours, which are considered acceptable. Queuing will be contained within the provided access throat length. No operational issues are noted.

10.3.1 Recommended Design Elements

The required design elements have been included within the site design.

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 development is a senior's residence with 413 residential dwelling units
- Accesses will be provided via the southward relocation of an existing full-movement access on Carp Road and a new right-in/right-out access on Hazeldean Road
- The development is proposed to be completed as a single phase by 2026

- The Trip Generation trigger was met for the TIA Screening

Existing Conditions

- Carp Road, Hazeldean Road, and Stittsville Main Street are arterial roads, and Kittiwake Drive and Echowoods Avenue are collector roads in the study area
- A sidewalk is provided on:
    - the north side of Hazeldean Road between the pathway block to Abaca Way and Carp Road, and on both sides east of Carp Road
    - the west side of Carp Road between Kittiwake Drive and Hazeldean Road, on the east/north side of Carp Road west of McCooeye Lane, and on both sides of Carp Road between McCooeye Lane and Stittsville Main Streeton the south side of Echowoods Avenue
    - the south/east side of Kittiwake Drive
    - the east side of Stittsville Main Street north of Hazeldean road, and on both sides of Stittsville Mains Street south of Hazeldean Road
- A MUP is provided on the west side of the Stittsville Main Street north of Hazeldean Road
- Bike lanes are provided on:
    - the north side of Hazeldean Road east of the inbound Farm Boy access, on the south side of Hazeldean Road east of Carp Road
    - the east side of Carp Road approaching the Hazeldean Road intersection to Kittiwake Drive/Echowoods Avenue, and on the west side of Carp Road between Hazeldean Road and Kittiwake Drive/Echowoods Avenue
- Paved shoulders are present on:
    - the west side of Carp Road between Hazeldean Road and McCooeye Lane/Hobin Street
    - on both sides of Hazeldean Road between Kittiwake Drive/West Ridge Drive and the inbound Farm Boy access, and on the south side between Stittsville Corners Mall access and Carp Road
- Carp Road, Hazeldean Road east of Kittiwake Drive, and Stittsville Main Street south of Hazeldean Road are spine cycling routes, and Hazeldean Road west of Kittiwake Drive, Hobin street, McCooeye Lane, and Kittiwake Drive are local routes
- One 20-30 minute service bus route is in proximity to the site, and a 30-minute service express route is present in proximity to the stie
- Study area intersections operate satisfactorily in the existing conditions, and no capacity issues are noted
- The high volumes roadways have produced a high number of collisions at the intersection of Carp Road at Hazeldean Road
- The collisions are predominantly rear end collisions indicating that they are lower speed and a result of congestion

Planned Conditions

- The Carp Road Widening EA has arrived at a preliminary design to widen Carp Road north of Hazeldean Road
- The EA has recently had its scope expanded to include all legs of the intersection of Carp Road at Hazeldean Road, and is understood to be providing sidewalks along both site frontages
- Based on the conceptual long-term modifications to Hazeldean Road at Carp Road from the Carp Road Widening EA, anticipated to be complete in 2027, beyond the features provided within the EA

recommended plan north of the Stittsville Corners access, the following elements were proposed as part of the long-term modifications:

- multi-use pathways on both sides of Carp Road north of Hazeldean Road
- a sidewalk on the west side of Carp Road south of Hazeldean Road
- a sidewalk and bike lane on the south side of Hazeldean Road on the west leg of the intersection
- dual auxiliary left-turn lanes on each the eastbound, westbound, and southbound approaches
- a new auxiliary receiving lane on the south leg of the intersection

Development Generated Travel Demand

- The proposed development is forecasted produce 100 two-way people trips during the AM peak hour and 132 two-way people trips during the PM peak hour
- Of the forecasted people trips, 52 two-way trips will be vehicle trips during the AM peak hour and 73 two-way trips will be vehicle trips during the PM peak hour based on a 52-56% auto modal share target
- Of the forecasted trips, 30% are anticipated to travel north, 60% to the east, and 5% to both the west and south
- The existing land use is estimated to be generating six two-way AM and ten two-way PM peak hour auto trips

Development Design

- Hard surface connections surrounding the building are proposed to connect each entrance
- As part of the EA works, a sidewalk and bike lane will be provided along the Hazeldean Road frontage and a sidewalk will be provided along the Carp Road frontage, and pedestrian connections will be provided to connect these proposed sidewalks with the on-site pedestrian facilities
- Bicycle parking is anticipated to be provided in the underground parking level
- Visitor vehicle parking is provided in surface lots and resident vehicle parking in the underground parking levels
- A drop-off loop is proposed accessing the east-west drive aisle including a lay-by on the west side of the southbound one-way portion of the loop and bay parking for visitors and an ambulance on the two-way portion of the loop
- Emergency services can access the western side of the loop with a 6.0-metre fire lane extending into the lane via a surface treatment that permits the full width required for fire access
- Angle visitor parking is proposed on both sides along the inbound portion of the loop and along the north side of the east-west drive aisle
- A layby for Para Transpo boarding and alighting, delivery, and moving vehicles and an ambulance bay are proposed on the north side of the east-west drive aisle

Parking

- The development is proposed as including a total of 305 vehicle parking spaces, with 36 surface spaces connecting to the drive aisles and 269 spaces below grade in a single parking level
- A total of 115 bicycle spaces are proposed with 110 mostly within secure rooms on the parking level, and with five external spaces within a surface rack
- The Zoning By-Law minimum vehicle parking is 188 spaces, and the minimum bicycle parking is 103 spaces, and these minimum vehicle and bicycle parking provisions are proposed to be satisfied

- The AODA/City of Ottawa Accessibility Design Standards, nine accessible parking spaces are required, which are proposed as being provided by the site

Boundary Street Design

- Both boundary streets of Hazeldean Road and Carp Road do not meet the pedestrian LOS targets in the existing conditions, and both are anticipated to be meet targets in the future conditions
- The bicycle LOS targets will not be met along the segment of Carp Road, where a curbside bike lane would be required to meet the theoretical targets
- It will be incumbent on the City to evaluate the MMLOS for the intersection when it proceeds to functional and detailed design for these works and no modifications or mitigations are required to support this development application
- As part of the long-term planning identified by the Carp Road Widening EA, additional right-of-way has been identified as being required for future roadway needs along the boundary road of Carp Road on the site frontage, and this right-of-way is being protected and is shown on the site plan

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
    - Unbundle parking costs from the rental costs

Intersection Design

- Access #1 is 6.2 metres in width at the property line and 9.6 meters at the curb line, and Access #2 is 7.1 metres in width at the property line and 16.3 meters at the curb line
- The widths of proposed accesses comply with the Private Approach By-Law maximum width of 9.0 metres at the property line; however, as with many sites, it does not comply at the curb line due to the larger radii required to accommodate larger truck movements
- The throat length of the Hazeldean Road access meets suggested minimum values from TAC, and the throat length of the Carp Road access is approximately 10 metres less than the suggested minimum value
- The design throat length is supported by the site trip generation, and the site provides two accesses, and is therefore considered adequate
- Corner clearance suggested minimums from TAC are proposed to be met, the offset from the adjacent property line from the Private-Approach By-Law is proposed to be met for the Carp Road Access, but not for the Hazeldean Road access which is recommended to be approved in line with provision 25.1.r of the by-law given the adjacent site does not and cannot provide access in proximity to the property line
- The offset from the opposing gas station access on Carp Road is proposed to be increased with the relocation of the Carp Road access southward
- As the left-turns do not overlap, the inter-development traffic is anticipated to be negligible, and as the site access is forecast to be low-volume, no concern is noted from the configuration relative to the opposing access
- Sightlines at the Carp Road access are adequate
- The site accesses will have stop control on the minor access approaches
- The Carp Road access is anticipated to operate well during both peak hours, with an outbound delay of 31 seconds or less during the peak hours

12 Conclusion

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

Prepared By:

John Kingsley
Transportation Engineering Intern

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: 28-Sep-23
Project Number: 2023-034
Project Reference: 1174 Carp

1.1 Description of Proposed Development	
Municipal Address	1174 Carp Road
Description of Location	Southwest corner of Hazeldean Road at Carp Road intersection
Land Use Classification	Arterial Mainstreet Zone (AM9)
Development Size	Seniors community with approximately 400 units
Accesses	An existing access on Carp Road and a new access on Hazeldean Road
Phase of Development	Single
Buildout Year	2026
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Multi-Family (High-Rise)	
Development Size	400	Units
Trip Generation Trigger	Yes	

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	No
Location Trigger	No

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

Certification Form for TIA Study PM

TIA Plan Reports

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

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

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

CERTIFICATION

- ☑ I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines; (Update effective July 2023)
- ☑ I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
- ☑ I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
- ☑ I am either a licensed or registered[1] professional in good standing, whose field of expertise
  - ☑ is either transportation engineering
  - ☐ or transportation planning.

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

City Of Ottawa
Planning, Real Estate and Economic Development
110 Laurier Avenue West, 4th fl.
Ottawa, ON
K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Revision Date: June 2023

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

Name : Andrew Harte

Professional title: Senior Transportation Engineer / Vice-President Ottawa

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

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

Stamp

Revision Date: June 2023

Appendix B

Turning Movement Counts

Transportation Services - Traffic Services

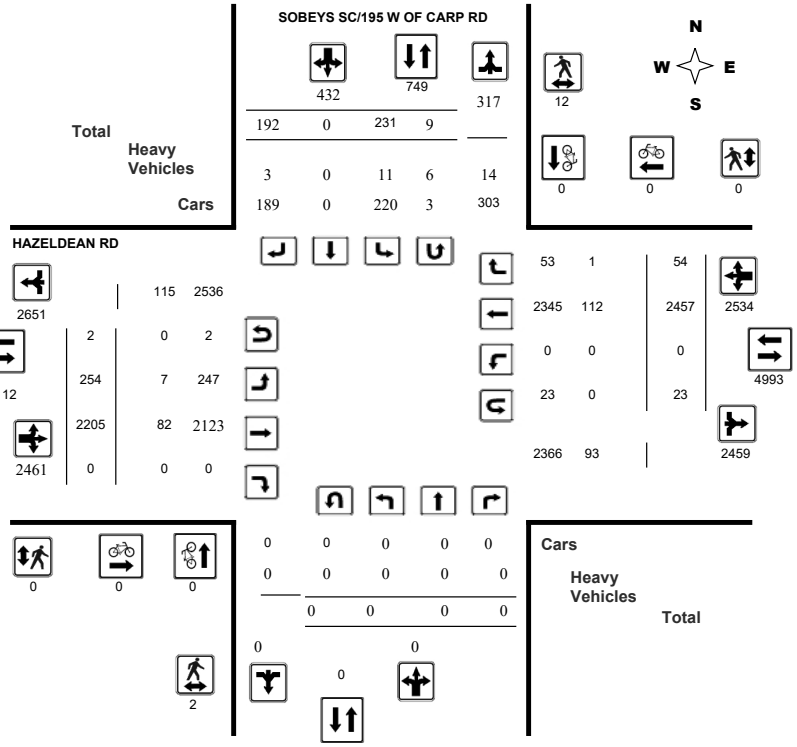
Turning Movement Count - Study Results

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

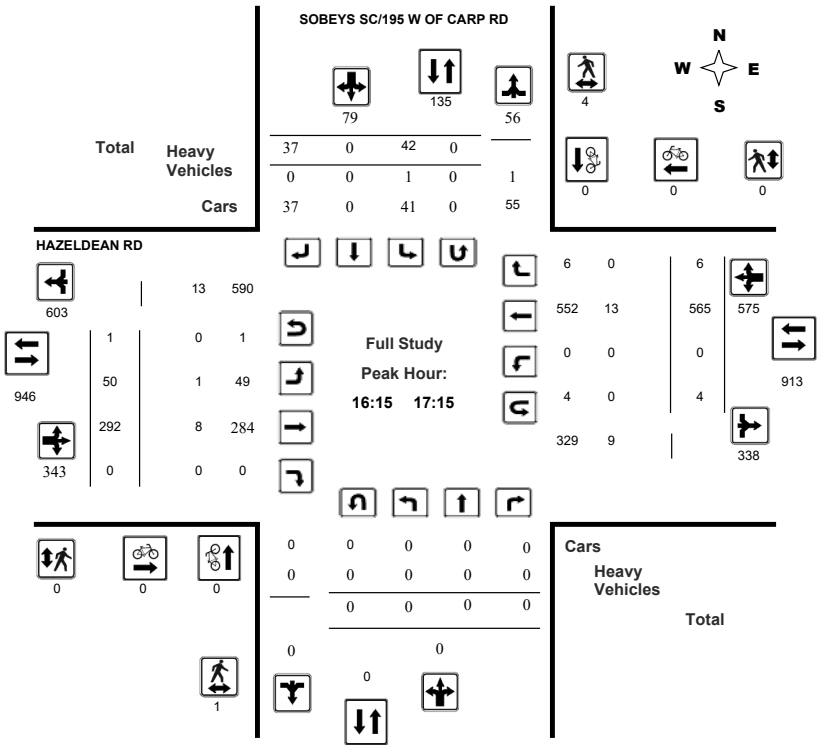
Turning Movement Count - Study Results

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



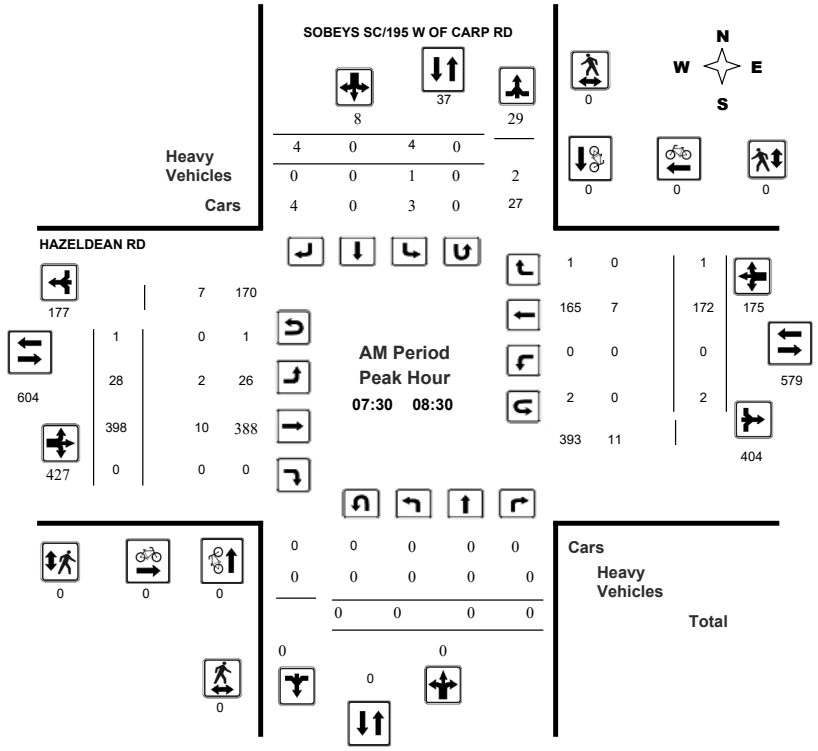
Transportation Services - Traffic Services

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

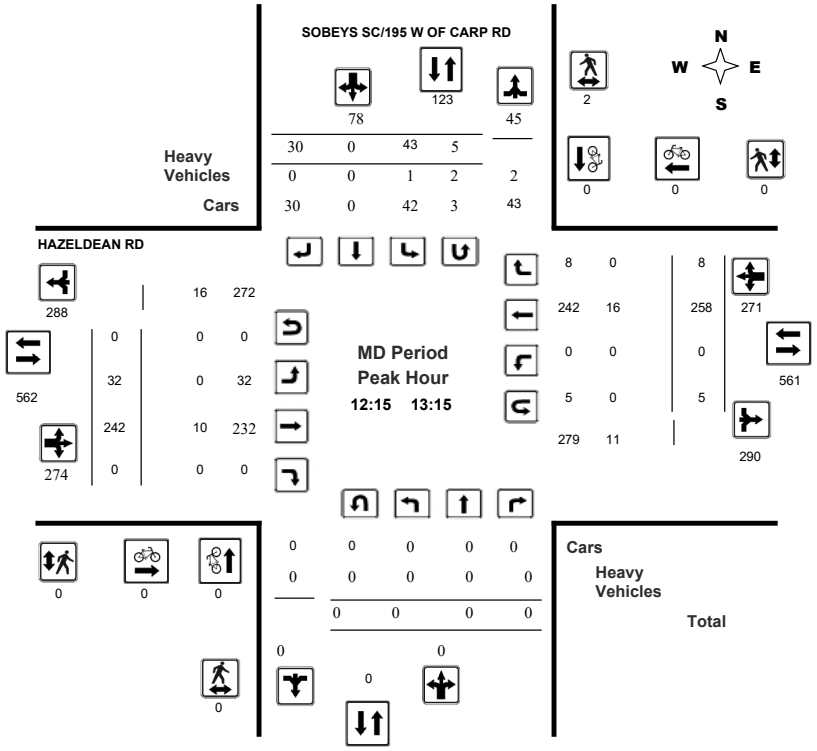
Transportation Services - Traffic Services

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

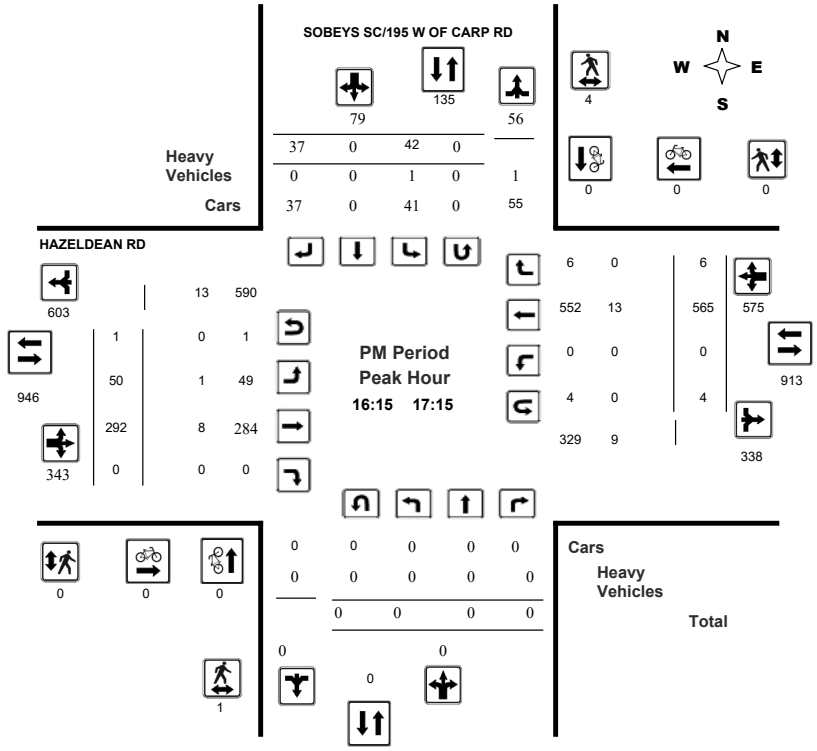
Transportation Services - Traffic Services

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



Comments

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**

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary Report Including Peak Hours, AADT and Expansion Factors
All Vehicles Except Bicycles

Carp Road & Hazeldean Road — Stittsville, ON

Survey Date: Wednesday, August 23, 2023 **Start Time:** 0700 **AADT Factor:** 0.9

Weather AM: Clear/Sunny 14° C **Survey Duration:** 8 Hrs. **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800

Weather PM: Overcast 27° C **Surveyor(s):** T. Carmody

	Hazeldean Rd. Eastbound					Hazeldean Rd. Westbound						Carp Rd. Northbound					Carp Rd. Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	190	180	46	0	**416**	10	100	241	0	**351**	**767**	40	354	18	0	**412**	192	197	61	1	**451**	**863**	**1630**
0800-0900	215	246	60	0	**521**	20	157	291	0	**468**	**989**	63	401	14	0	**478**	213	303	88	0	**604**	**1082**	**2071**
0900-1000	147	211	74	0	**432**	22	161	250	0	**433**	**865**	57	323	16	0	**396**	174	286	85	0	**545**	**941**	**1806**
1130-1230	131	257	72	0	**460**	31	285	312	1	**629**	**1089**	96	323	25	1	**445**	272	342	105	1	**720**	**1165**	**2254**
1230-1330	136	222	62	0	**420**	26	249	276	0	**551**	**971**	75	348	27	0	**450**	271	391	118	1	**781**	**1231**	**2202**
1500-1600	125	300	104	0	**529**	22	348	326	0	**696**	**1225**	88	369	16	0	**473**	266	405	182	1	**854**	**1327**	**2552**
1600-1700	131	338	91	0	**560**	45	410	400	0	**855**	**1415**	85	369	19	0	**473**	320	456	188	0	**964**	**1437**	**2852**
1700-1800	148	295	100	0	**543**	25	370	346	2	**743**	**1286**	96	360	19	0	**475**	299	458	227	1	**985**	**1460**	**2746**
Totals	1223	2049	609	0	**3881**	201	2080	2442	3	**4726**	**8607**	600	2847	154	1	**3602**	2007	2838	1054	5	**5904**	**9506**	**18113**

Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor
Applicable to the Day and Month of the Turning Movement Count
Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 ➡12 expansion factor of 1.39

Equ. 12 Hr	1700	2848	847	0	**5395**	279	2891	3394	4	**6569**	**11964**	834	3957	214	1	**5007**	2790	3945	1465	7	**8207**	**13213**	**25177**

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 0.9

AADT 12-hr	1530	2563	762	0	**4855**	251	2602	3055	4	**5912**	**10767**	751	3562	193	1	**4506**	2511	3550	1319	6	**7386**	**11892**	**22659**

24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 ➡24 expansion factor of 1.31

AADT 24 Hr	2004	3358	998	0	**6360**	329	3409	4002	5	**7745**	**14105**	983	4666	252	2	**5903**	3289	4651	1727	8	**9676**	**15579**	**29684**

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.98												Highest Hourly Vehicle Volume Between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0800-0900	215	246	60	0	**521**	20	157	291	0	**468**	**989**	63	401	14	0	**478**	213	303	88	0	**604**	**1082**	**2071**
OFF Peak Hour Factor ➡ 0.96												Highest Hourly Vehicle Volume Between 1130h & 1330h										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1145-1245	123	235	74	0	**432**	35	282	304	1	**622**	**1054**	96	345	29	0	**470**	279	380	124	1	**784**	**1254**	**2308**
PM Peak Hour Factor ➡ 0.99												Highest Hourly Vehicle Volume Between 1500h & 1800h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1615-1715	130	339	86	0	**555**	45	408	397	1	**851**	**1406**	97	392	21	0	**510**	293	450	227	0	**970**	**1480**	**2886**

Comments:

OC Transpo and Para Transpo buses and school buses comprise 6.76% of the heavy vehicle traffic. The bicycle totals include 8 varieties of E-bicycles and E-scooters (both Vespa style and stand-up types).

Notes:

1. Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Carp Road & Hazeldean Road — **Stittsville, ON**

All Vehicles (Except Bicycles & Electric Scooters)

Wednesday, August 23, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 6

Carp Rd. / Hazeldean Rd.

(A) 5904 | 12421 | 6517
5904: 1054 | 2838 | 2007 | 5

(B) 3881 | 3734 | 7615
3881: 0 | 1223 | 2049 | 609

(C) 3602 | 3649 | 7251
3602: 1 | 600 | 2847 | 154

(D) 4726 | 8939 | 4213
4726: 2442 | 2080 | 201 | 3

Total Volume: **18113**
Approaching Intersection (A+B+C+D)

All Pedestrian Crossings: 63 | 23 | 33 | Total 141 | 22

AM Peak Hour Flow Diagram

(A) 604 | 1511 | 907
604: 88 | 303 | 213 | 0
Pedestrian Crossings During AM Peak Hour: 4 | 4 | 5 | 4

(D) 468 | 308 | 732
0 | 215 | 246 | 60
829 | 521
291 | 157 | 468 | 941
20 | 0 | 473
2071 (A+B+C+D)

(B) 521 | 555
0 | 63 | 401 | 14
478
Hazeldean Rd.

(C) 478 | 383 | 861

Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	2071
PHF	0.98

PM Peak Hour Flow Diagram

(A) 970 | 1889 | 919
970: 227 | 450 | 293 | 0
Pedestrian Crossings During PM Peak Hour: 5 | 2 | 4 | 4

(D) 851 | 732 | 1287
0 | 130 | 339 | 86
555
397 | 408 | 851 | 1505
45 | 1 | 654
2886 (A+B+C+D)

(B) 555
0 | 97 | 392 | 21
510
Hazeldean Rd.

(C) 510 | 581 | 1091

Summary - PM Peak Hr.	
Peak Hr.	1615-1715
Volume	2886
PHF	0.99

Printed on: 8/30/2023 — Prepared by: thetrafficspecialist@gmail.com — Flow Diagrams: AM PM Peak

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Carp Road & Hazeldean Road — **Stittsville, ON**

All Vehicles (Except Bicycles & Electric Scooters)

Wednesday, August 23, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 6

Carp Rd. / Hazeldean Rd.

(A) 5904 | 12421 | 6517
5904: 1054 | 2838 | 2007 | 5

(B) 3881 | 3734 | 7615
3881: 0 | 1223 | 2049 | 609

(C) 3602 | 3649 | 7251
3602: 1 | 600 | 2847 | 154

(D) 4726 | 8939 | 4213
4726: 2442 | 2080 | 201 | 3

Total Volume: **18113**
Approaching Intersection (A+B+C+D)

All Pedestrian Crossings: 63 | 23 | 33 | Total 141 | 22

Off Peak Hour Flow Diagram

(A) 784 | 1557 | 773
784: 124 | 380 | 279 | 1
Pedestrian Crossings During OFF Peak Hour: 11 | 1 | 5 | 2

(D) 622 | 502 | 934
0 | 123 | 235 | 74
432
304 | 282 | 622 | 1166
35 | 1 | 544
2308 (A+B+C+D)

(B) 432
0 | 96 | 345 | 29
470
Hazeldean Rd.

(C) 470 | 489 | 959

Summary - OFF Peak Hr.	
Peak Hr.	1145-1245
Volume	2308
PHF	0.96

Evening Peak Hour Flow Diagram

(A) 0 | 0 | 0
0: 0
Pedestrian Crossings During EVGN Peak Hour: N/A | N/A | N/A | N/A

(D) 0 | 0 | 0
0 | 0 | 0 | 0
0
0 | 0 | 0 | 0
0 | 0
0 (A+B+C+D)

(B) 0
0
0
Hazeldean Rd.

(C) 0 | 0 | 0

Summary - EVNG Peak Hr.	
Peak Hr.	N/A
Volume	N/A
PHF	N/A

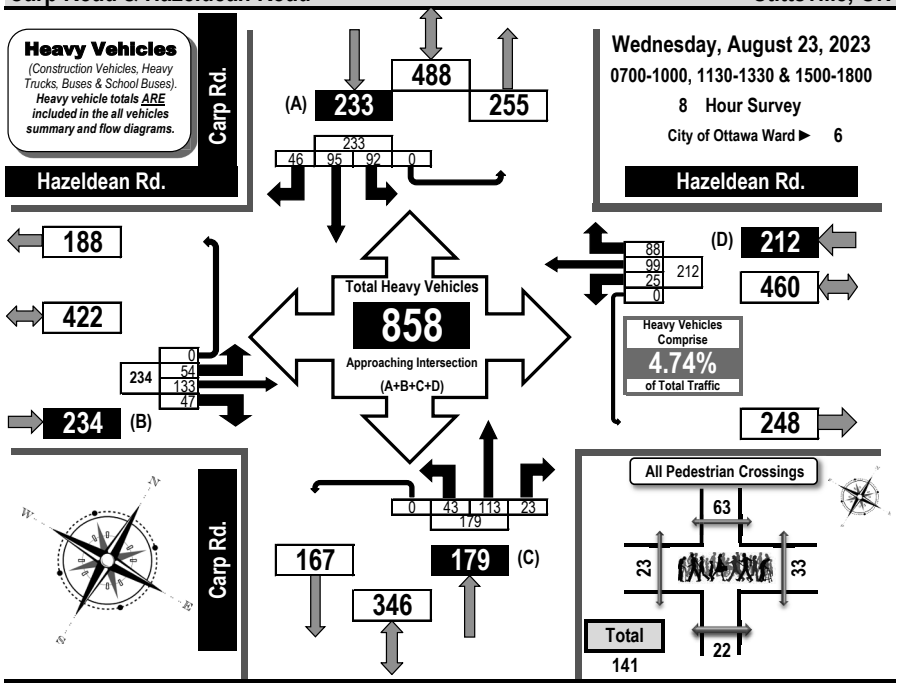
Printed on: 8/30/2023 — Prepared by: thetrafficspecialist@gmail.com — Flow Diagrams: OFF Peak

Turning Movement Count
Heavy Vehicle Summary (FHWA Class 4-13)
Flow Diagram

Carp Road & Hazeldean Road — **Stittsville, ON**

Heavy Vehicles
(Construction Vehicles, Heavy Trucks, Buses & School Buses).
Heavy vehicle totals ARE included in the all vehicles summary and flow diagrams.

Wednesday, August 23, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 6



	Hazeldean Rd. Eastbound					Hazeldean Rd. Westbound					Carp Rd. Northbound					Carp Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	8	25	8	0	41	3	17	3	0	23	7	11	5	0	23	19	22	6	0	47	134
0800-0900	9	21	5	0	35	2	13	8	0	23	7	12	2	0	21	14	11	9	0	34	113
0900-1000	7	15	7	0	29	3	13	9	0	25	6	18	2	0	26	11	15	6	0	32	112
1130-1230	9	19	11	0	39	2	20	15	0	37	8	14	4	0	26	19	12	6	0	37	139
1230-1330	6	19	4	0	29	2	15	20	0	37	5	15	4	0	24	16	15	6	0	37	127
1500-1600	11	19	7	0	37	2	6	11	0	19	6	14	2	0	22	8	7	8	0	23	101
1600-1700	3	11	4	0	18	7	5	14	0	26	1	21	2	0	24	4	8	3	0	15	83
1700-1800	1	4	1	0	6	4	10	8	0	22	3	8	2	0	13	1	5	2	0	8	49
Totals	54	133	47	0	234	25	99	88	0	212	43	113	23	0	179	92	95	46	0	233	858

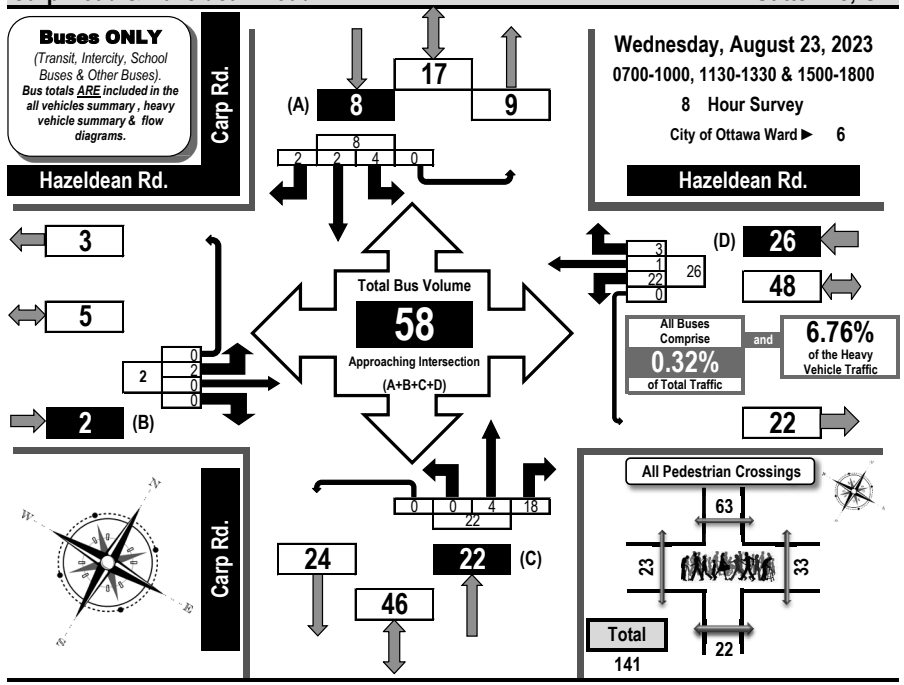
Comments:
OC Transpo and Para Transpo buses and school buses comprise 6.76% of the heavy vehicle traffic. The bicycle totals include 8 varieties of E-bicycles and E-scooters (both Vespa style and stand-up types).

Turning Movement Count
All Buses Summary (FHWA Class 4 ONLY)
Flow Diagram

Carp Road & Hazeldean Road — **Stittsville, ON**

Buses ONLY
(Transit, Intercity, School Buses & Other Buses).
Bus totals ARE included in the all vehicles summary , heavy vehicle summary & flow diagrams.

Wednesday, August 23, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 6

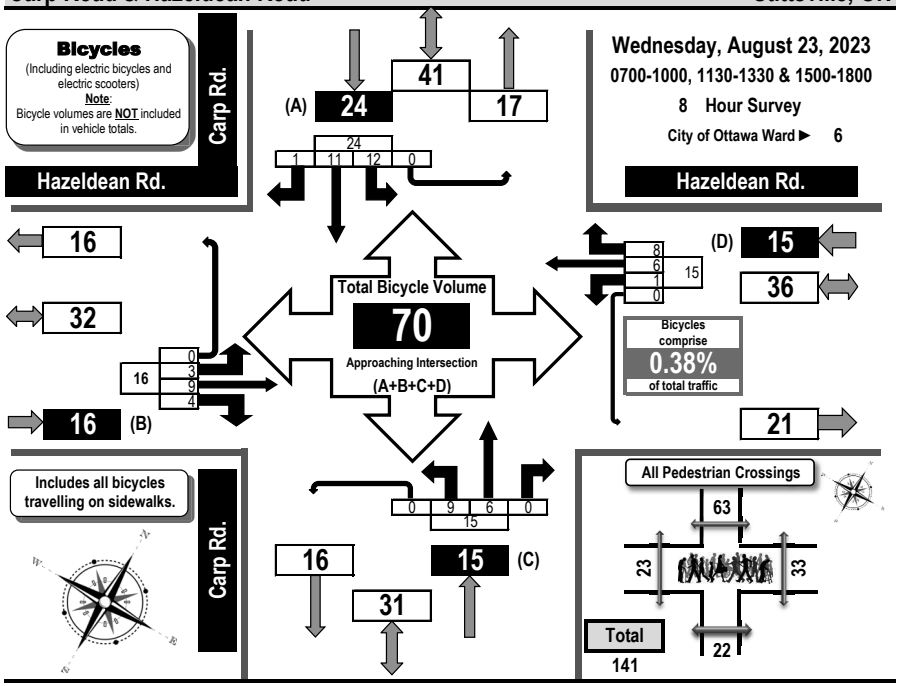


	Hazeldean Rd. Eastbound					Hazeldean Rd. Westbound					Carp Rd. Northbound					Carp Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	0	0	0	0	2	0	1	0	3	0	0	4	0	4	1	0	0	0	1	8
0800-0900	1	0	0	0	1	2	0	0	0	2	0	0	2	0	2	1	0	1	0	2	7
0900-1000	0	0	0	0	0	2	0	0	0	2	0	0	2	0	2	0	1	0	0	1	5
1130-1230	0	0	0	0	0	2	1	0	0	3	0	0	2	0	2	1	0	0	0	1	6
1230-1330	0	0	0	0	0	2	0	1	0	3	0	0	2	0	2	0	0	0	0	0	5
1500-1600	0	0	0	0	0	2	0	1	0	3	0	1	2	0	3	1	0	1	0	2	8
1600-1700	1	0	0	0	1	6	0	0	0	6	0	0	2	0	2	0	1	0	0	1	10
1700-1800	0	0	0	0	0	4	0	0	0	4	0	3	2	0	5	0	0	0	0	0	9
Totals	2	0	0	0	2	22	1	3	0	26	0	4	18	0	22	4	2	2	0	8	58

Comments:
OC Transpo and Para Transpo buses and school buses comprise 6.76% of the heavy vehicle traffic. The bicycle totals include 8 varieties of E-bicycles and E-scooters (both Vespa style and stand-up types).

Turning Movement Count
Bicycle Summary
Flow Diagram

Carp Road & Hazeldean Road — **Stittsville, ON**

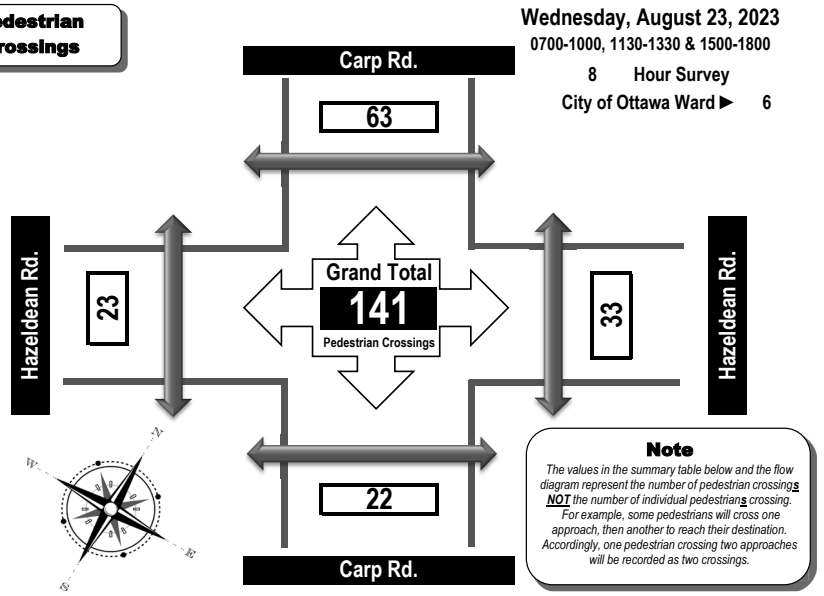


	Hazeldean Rd. Eastbound					Hazeldean Rd. Westbound					Carp Rd. Northbound					Carp Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	0	0	0	0	0	0	4	0	4	0	2	0	0	2	0	0	0	0	0	6
0800-0900	0	1	1	0	2	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	5
0900-1000	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	2	0	0	0	2	5
1130-1230	2	1	1	0	4	0	2	0	0	2	1	3	0	0	4	0	0	0	0	0	10
1230-1330	1	0	0	0	1	0	1	0	0	1	5	1	0	0	6	0	3	0	0	3	11
1500-1600	0	3	1	0	4	0	1	0	0	1	2	0	0	0	2	3	2	0	0	5	12
1600-1700	0	1	0	0	1	1	0	1	0	2	0	0	0	0	0	3	5	1	0	9	12
1700-1800	0	1	1	0	2	0	1	0	0	1	1	0	0	0	1	4	1	0	0	5	9
Totals	3	9	4	0	16	1	6	8	0	15	9	6	0	0	15	12	11	1	0	24	70

Comments:
OC Transpo and Para Transpo buses and school buses comprise 6.76% of the heavy vehicle traffic. The bicycle totals include 8 varieties of E-bicycles and E-scooters (both Vespa style and stand-up types).

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Carp Road & Hazeldean Road — **Stittsville, ON**



Time Period	West Side Crossing Hazeldean Rd.	East Side Crossing Hazeldean Rd.	Street Total	South Side Crossing Carp Rd.	North Side Crossing Carp Rd.	Street Total	Grand Total
0700-0800	0	2	2	1	8	9	11
0800-0900	4	5	9	4	4	8	17
0900-1000	0	3	3	2	10	12	15
1130-1230	0	3	3	0	10	10	13
1230-1330	5	6	11	3	10	13	24
1500-1600	4	3	7	2	6	8	15
1600-1700	4	5	9	6	7	13	22
1700-1800	6	6	12	4	8	12	24
Totals	23	33	56	22	63	85	141

Comments:
OC Transpo and Para Transpo buses and school buses comprise 6.76% of the heavy vehicle traffic. The bicycle totals include 8 varieties of E-bicycles and E-scooters (both Vespa style and stand-up types).

Transportation Services - Traffic Services

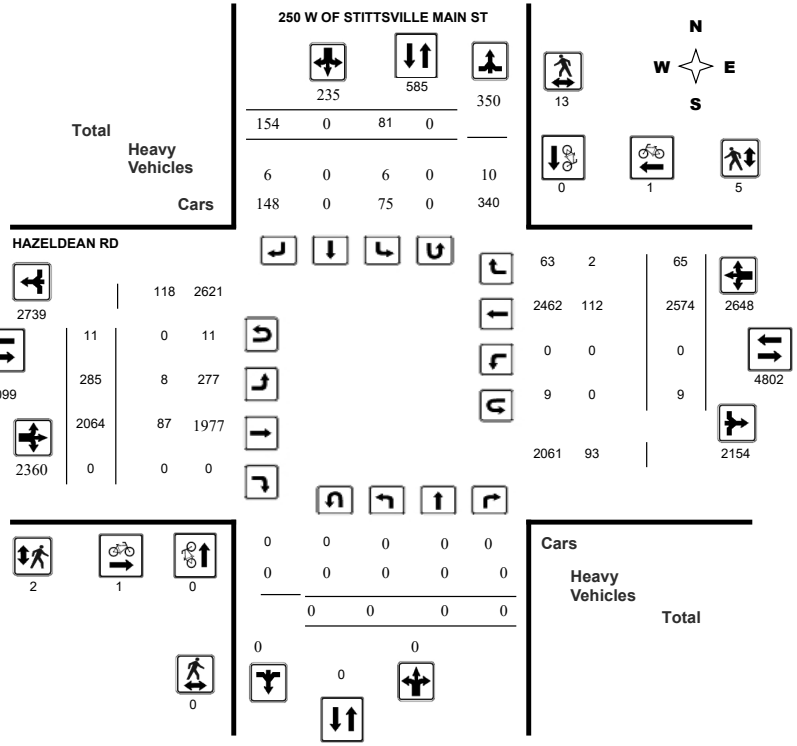
Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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

Full Study Diagram



Transportation Services - Traffic Services

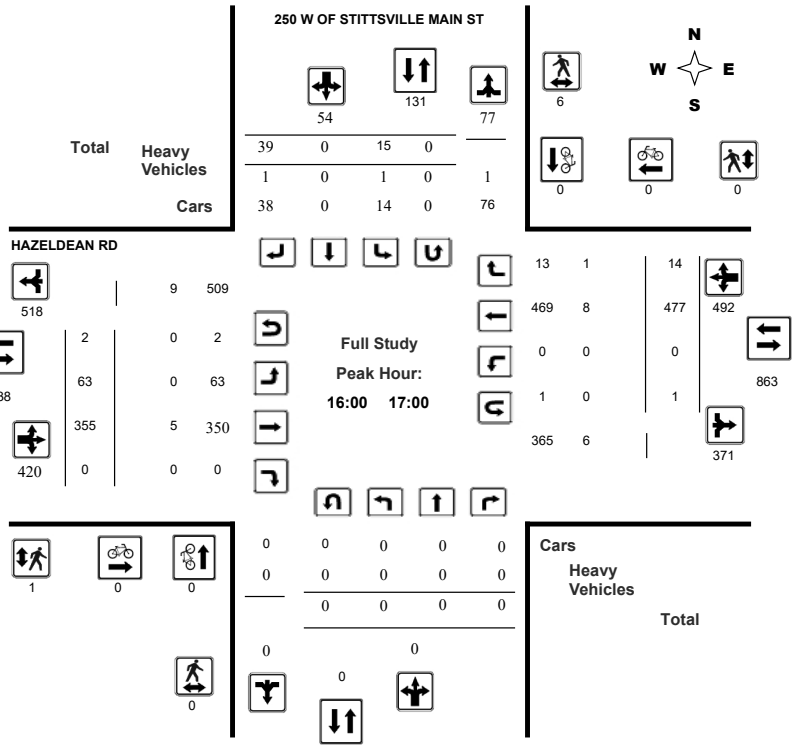
Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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

Full Study Peak Hour Diagram



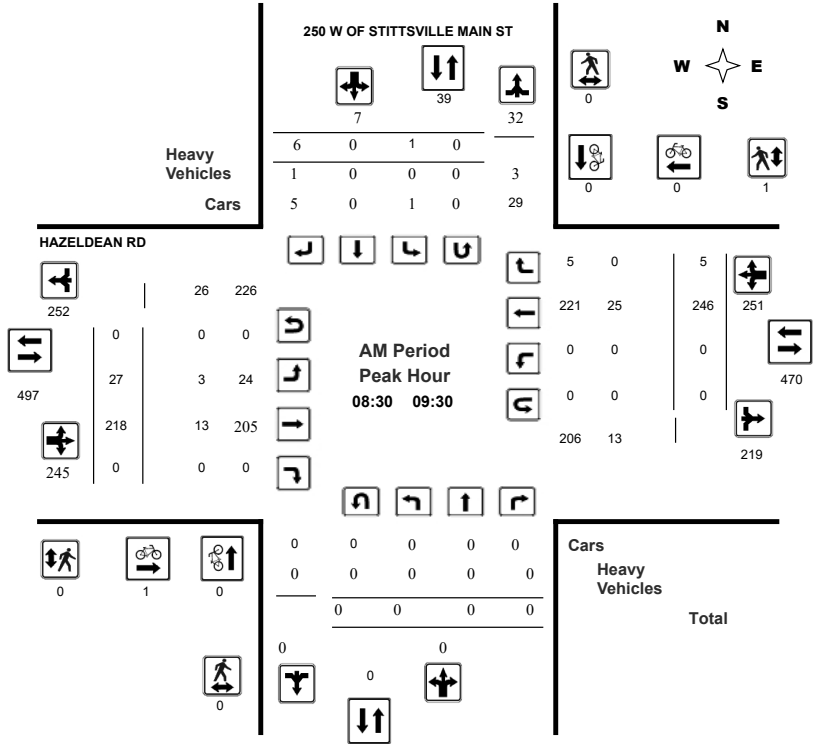
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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



Comments

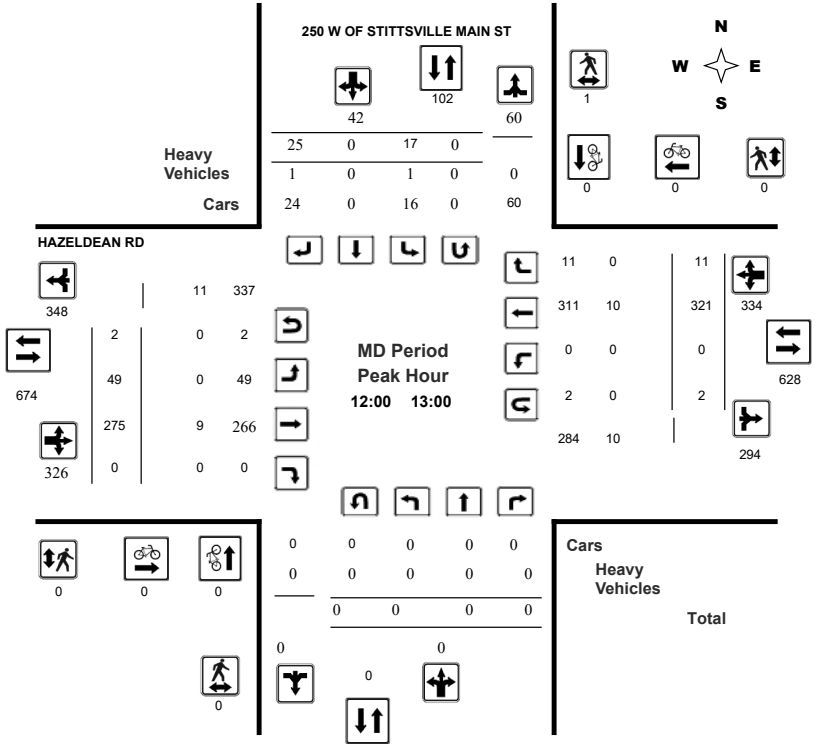
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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



Comments

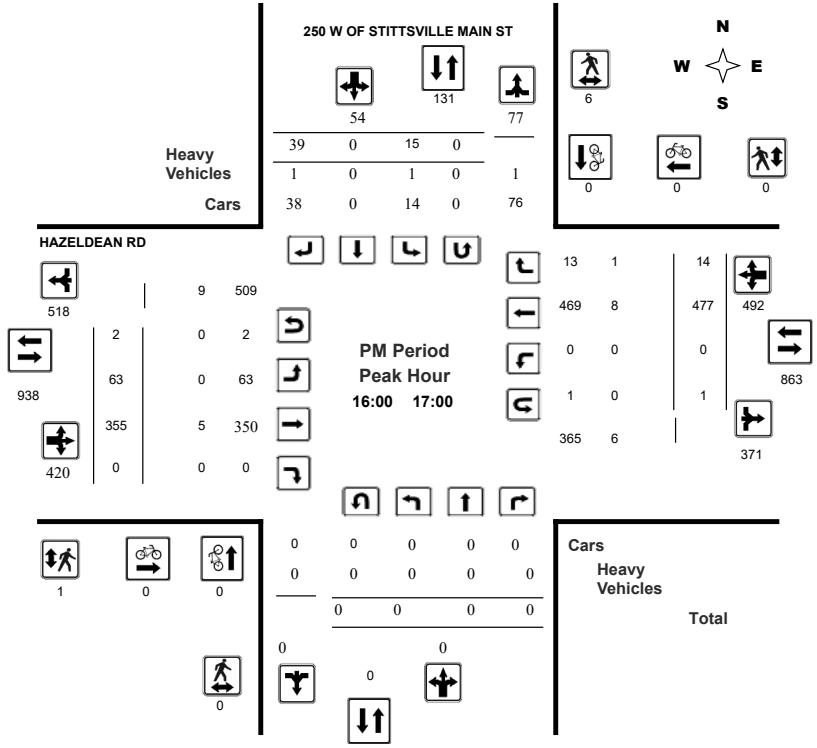
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, January 11, 2022

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 11 Westbound: 9

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**	1	0	3	**4**	**4**	9	191	0	**200**	0	176	1	**177**	**377**	**381**
08:00 09:00	0	0	0	**0**	3	0	4	**7**	**7**	19	218	0	**237**	0	239	5	**244**	**481**	**488**
09:00 10:00	0	0	0	**0**	2	0	10	**12**	**12**	25	216	0	**241**	0	249	0	**249**	**490**	**502**
11:30 12:30	0	0	0	**0**	13	0	20	**33**	**33**	41	279	0	**320**	0	314	10	**324**	**644**	**677**
12:30 13:30	0	0	0	**0**	15	0	20	**35**	**35**	47	250	0	**297**	0	314	13	**327**	**624**	**659**
15:00 16:00	0	0	0	**0**	20	0	29	**49**	**49**	39	280	0	**319**	0	427	12	**439**	**758**	**807**
16:00 17:00	0	0	0	**0**	15	0	39	**54**	**54**	63	355	0	**418**	0	477	14	**491**	**909**	**963**
17:00 18:00	0	0	0	**0**	12	0	29	**41**	**41**	42	275	0	**317**	0	378	10	**388**	**705**	**746**
Sub Total	0	0	0	**0**	81	0	154	**235**	**235**	285	2064	0	**2349**	0	2574	65	**2639**	**4988**	**5223**
U Turns				**0**				**0**	**0**				**11**				**9**	**20**	**20**
Total	0	0	0	**0**	81	0	154	**235**	**235**	285	2064	0	**2360**	0	2574	65	**2648**	**5008**	**5243**
EQ 12Hr	0	0	0	**0**	113	0	214	**327**	**327**	396	2869	0	**3280**	0	3578	90	**3681**	**6961**	**7288**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	0	0	**0**	124	0	308	**360**	**360**	436	3156	0	**3608**	0	3936	99	**4049**	**7657**	**8017**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.10**					
AVG 24Hr	0	0	0	**0**	162	0	403	**472**	**472**	571	4134	0	**4726**	0	5156	130	**5304**	**10031**	**10502**
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 11, 2022 **WO No:** 40033

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	0	0	0	0	0	1	39	0	41	0	35	0	35	76	76
07:15	07:30	0	0	0	0	1	0	1	2	2	4	39	0	43	0	42	0	42	85	87
07:30	07:45	0	0	0	0	0	0	2	2	2	2	53	0	55	0	38	0	38	93	95
07:45	08:00	0	0	0	0	0	0	0	0	0	2	60	0	63	0	61	1	62	125	125
08:00	08:15	0	0	0	0	2	0	0	2	2	2	54	0	56	0	56	0	56	112	114
08:15	08:30	0	0	0	0	0	0	1	1	1	4	58	0	62	0	56	0	57	119	120
08:30	08:45	0	0	0	0	0	0	2	2	2	10	58	0	68	0	64	2	66	134	136
08:45	09:00	0	0	0	0	1	0	1	2	2	3	48	0	51	0	63	3	66	117	119
09:00	09:15	0	0	0	0	0	0	0	0	0	3	65	0	68	0	58	0	58	126	126
09:15	09:30	0	0	0	0	0	0	3	3	3	11	47	0	58	0	61	0	61	119	122
09:30	09:45	0	0	0	0	0	0	4	4	4	4	48	0	52	0	63	0	63	115	119
09:45	10:00	0	0	0	0	2	0	3	5	5	7	56	0	63	0	67	0	67	130	135
11:30	11:45	0	0	0	0	2	0	4	6	6	9	75	0	84	0	70	3	73	157	163
11:45	12:00	0	0	0	0	2	0	3	5	5	9	57	0	67	0	82	2	84	151	156
12:00	12:15	0	0	0	0	5	0	9	14	14	15	72	0	87	0	85	3	88	175	189
12:15	12:30	0	0	0	0	4	0	4	8	8	8	75	0	83	0	77	2	80	163	171
12:30	12:45	0	0	0	0	6	0	6	12	12	11	62	0	75	0	81	5	87	162	174
12:45	13:00	0	0	0	0	2	0	6	8	8	15	66	0	81	0	78	1	79	160	168
13:00	13:15	0	0	0	0	2	0	4	6	6	14	70	0	84	0	78	6	84	168	174
13:15	13:30	0	0	0	0	5	0	4	9	9	7	52	0	61	0	77	1	79	140	149
15:00	15:15	0	0	0	0	4	0	6	10	10	12	58	0	70	0	101	3	104	174	184
15:15	15:30	0	0	0	0	5	0	7	12	12	8	56	0	64	0	113	5	119	183	195
15:30	15:45	0	0	0	0	7	0	9	16	16	12	95	0	108	0	109	1	110	218	234
15:45	16:00	0	0	0	0	4	0	7	11	11	7	71	0	79	0	104	3	109	188	199
16:00	16:15	0	0	0	0	4	0	7	11	11	18	95	0	113	0	143	3	146	259	270
16:15	16:30	0	0	0	0	5	0	9	14	14	18	76	0	95	0	105	1	106	201	215
16:30	16:45	0	0	0	0	2	0	15	17	17	14	98	0	113	0	128	7	135	248	265
16:45	17:00	0	0	0	0	4	0	8	12	12	13	86	0	99	0	101	3	105	204	216
17:00	17:15	0	0	0	0	4	0	11	15	15	10	72	0	82	0	112	2	114	196	211
17:15	17:30	0	0	0	0	3	0	9	12	12	16	80	0	96	0	106	2	108	204	216
17:30	17:45	0	0	0	0	1	0	4	5	5	12	75	0	87	0	94	3	98	185	190
17:45	18:00	0	0	0	0	4	0	5	9	9	4	48	0	52	0	66	3	69	121	130
Total:		0	0	0	0	81	0	154	235	235	285	2064	0	2360	0	2574	65	2648	5008	5,243

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 11, 2022 **WO No:** 40033

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

Full Study Cyclist Volume

		250 W OF STITTSVILLE MAIN ST			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	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	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	1	1	1
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	1	2	2

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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

Full Study Pedestrian Volume

250 W OF STITTSVILLE MAIN ST **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**	1	0	**1**	**1**
07:15 07:30	0	0	**0**	0	0	**0**	**0**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
07:45 08:00	0	0	**0**	0	1	**1**	**1**
08:00 08:15	0	0	**0**	0	0	**0**	**0**
08:15 08:30	0	1	**1**	0	0	**0**	**1**
08:30 08:45	0	0	**0**	0	0	**0**	**0**
08:45 09:00	0	0	**0**	0	1	**1**	**1**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
09:15 09:30	0	0	**0**	0	0	**0**	**0**
09:30 09:45	0	0	**0**	0	0	**0**	**0**
09:45 10:00	0	1	**1**	0	0	**0**	**1**
11:30 11:45	0	1	**1**	0	0	**0**	**1**
11:45 12:00	0	1	**1**	0	0	**0**	**1**
12:00 12:15	0	0	**0**	0	0	**0**	**0**
12:15 12:30	0	0	**0**	0	0	**0**	**0**
12:30 12:45	0	1	**1**	0	0	**0**	**1**
12:45 13:00	0	0	**0**	0	0	**0**	**0**
13:00 13:15	0	0	**0**	0	0	**0**	**0**
13:15 13:30	0	2	**2**	0	0	**0**	**2**
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	2	**2**	**2**
15:45 16:00	0	0	**0**	0	0	**0**	**0**
16:00 16:15	0	2	**2**	1	0	**1**	**3**
16:15 16:30	0	3	**3**	0	0	**0**	**3**
16:30 16:45	0	1	**1**	0	0	**0**	**1**
16:45 17:00	0	0	**0**	0	0	**0**	**0**
17:00 17:15	0	0	**0**	0	1	**1**	**1**
17:15 17:30	0	0	**0**	0	0	**0**	**0**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	13	**13**	2	5	**7**	**20**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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

Full Study Heavy Vehicles

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**	0	0	0	**1**	**1**	1	2	0	**5**	0	2	0	**4**	**9**	**5**
07:15	07:30	0	0	0	**0**	1	0	1	**3**	**3**	1	5	0	**9**	0	2	0	**8**	**17**	**10**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**8**	0	5	0	**8**	**16**	**8**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**9**	0	7	0	**9**	**18**	**9**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**6**	0	3	0	**6**	**12**	**6**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**6**	0	2	0	**6**	**12**	**6**
08:30	08:45	0	0	0	**0**	0	0	0	**1**	**1**	1	2	0	**10**	0	7	0	**9**	**19**	**10**
08:45	09:00	0	0	0	**0**	0	0	0	**1**	**1**	1	3	0	**9**	0	5	0	**8**	**17**	**9**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**11**	0	5	0	**11**	**22**	**11**
09:15	09:30	0	0	0	**0**	0	0	1	**2**	**2**	1	2	0	**12**	0	8	0	**10**	**22**	**12**
09:30	09:45	0	0	0	**0**	0	0	0	**1**	**1**	1	2	0	**7**	0	4	0	**6**	**13**	**7**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**12**	0	9	0	**12**	**24**	**12**
11:30	11:45	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**6**	0	1	0	**6**	**12**	**6**
11:45	12:00	0	0	0	**0**	1	0	0	**3**	**3**	2	2	0	**11**	0	7	0	**10**	**21**	**12**
12:00	12:15	0	0	0	**0**	1	0	1	**2**	**2**	0	3	0	**6**	0	2	0	**6**	**12**	**7**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**5**	0	3	0	**5**	**10**	**5**
12:30	12:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**4**	0	3	0	**4**	**8**	**4**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**5**	0	2	0	**5**	**10**	**5**
13:00	13:15	0	0	0	**0**	0	0	1	**1**	**1**	0	7	0	**13**	0	5	0	**12**	**25**	**13**
13:15	13:30	0	0	0	**0**	1	0	1	**2**	**2**	0	1	0	**7**	0	5	0	**7**	**14**	**8**
15:00	15:15	0	0	0	**0**	1	0	0	**1**	**1**	0	5	0	**7**	0	2	0	**8**	**15**	**8**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**3**	0	1	0	**3**	**6**	**3**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**12**	0	5	0	**12**	**24**	**12**
15:45	16:00	0	0	0	**0**	0	0	0	**1**	**1**	0	2	0	**5**	0	3	1	**6**	**11**	**6**
16:00	16:15	0	0	0	**0**	0	0	1	**1**	**1**	0	1	0	**5**	0	3	0	**4**	**9**	**5**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**3**	0	2	0	**3**	**6**	**3**
16:30	16:45	0	0	0	**0**	0	0	0	**1**	**1**	0	0	0	**2**	0	2	1	**3**	**5**	**3**
16:45	17:00	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**4**	0	1	0	**5**	**9**	**5**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**2**	0	1	0	**2**	**4**	**2**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**6**	0	4	0	**6**	**12**	**6**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**3**	0	1	0	**3**	**6**	**3**
Total:	None	0	0	0	**0**	6	0	6	**22**	**22**	8	87	0	**213**	0	112	2	**207**	**420**	**221**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

250 W OF STITTSVILLE MAIN ST @ HAZELDEAN RD

Survey Date: Tuesday, January 11, 2022 **WO No:** 40033

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	1	0	1
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	1	0	1
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	1	1
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	1	0	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	1	1
12:30	12:45	0	0	2	1	3
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	2	1	3
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	1	1
15:30	15:45	0	0	1	0	1
15:45	16:00	0	0	1	2	3
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	1	0	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	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	1	1
17:45	18:00	0	0	0	0	0
Total		0	0	11	9	20

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count

Summary Report Including Peak Hours, AADT and Expansion Factors

All Vehicles Except Bicycles

Carp Road & Echowoods Avenue/Kittiwake Drive — Stittsville, ON

Survey Date: Wednesday, August 23, 2023 **Start Time:** 0700 **AADT Factor:** 0.9

Weather AM: Clear/Sunny 14° C **Survey Duration:** 8 Hrs. **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800

Weather PM: Overcast 27° C **Surveyor(s):** T. Carmody

	Kittiwake Dr.					Echowoods Ave.						Carp Rd.					Carp Rd.					
	Eastbound					Westbound						Northbound					Southbound					
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	185	4	18	0	207	19	7	92	0	118	325	6	723	15	0	744	24	445	31	0	500	1244	1569
0800-0900	183	16	25	0	224	47	14	123	0	184	408	20	819	30	0	869	36	535	47	0	618	1487	1895
0900-1000	129	9	16	0	154	29	12	70	0	111	265	13	637	18	0	668	24	524	61	0	609	1277	1542
1130-1230	156	23	35	0	214	29	10	60	0	99	313	32	645	21	0	698	46	670	101	0	817	1515	1828
1230-1330	141	20	34	0	195	28	10	47	0	85	280	31	654	21	0	706	42	700	78	0	820	1526	1806
1500-1600	99	27	16	0	142	38	8	53	0	99	241	32	672	35	1	740	92	760	83	0	935	1675	1916
1600-1700	103	20	40	0	163	49	19	90	0	158	321	39	752	48	0	839	94	827	124	0	1045	1884	2205
1700-1800	136	28	54	0	218	44	16	80	0	140	358	62	678	29	0	769	120	854	138	0	1112	1881	2239
Totals	1132	147	238	0	1517	283	96	615	0	994	2511	235	5580	217	1	6033	478	5315	663	0	6456	12489	15000

Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor

Applicable to the Day and Month of the Turning Movement Count

Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 ➡12 expansion factor of 1.39

Equ. 12 Hr	1573	204	331	0	2109	393	133	855	0	1382	3490	327	7756	302	1	8386	664	7388	922	0	8974	17360	20850

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 0.9

AADT 12-hr	1416	184	298	0	1898	354	120	769	0	1243	3141	294	6981	271	1	7547	598	6649	829	0	8076	15624	18765

24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 ➡24 expansion factor of 1.31

AADT 24 Hr	1855	241	390	0	2486	464	157	1008	0	1629	4115	385	9145	356	2	9887	783	8710	1087	0	10580	20467	24582

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.97												Highest Hourly Vehicle Volume Between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0745-0845	205	17	25	0	247	52	13	112	0	177	424	17	820	25	0	862	33	533	46	0	612	1474	1898
OFF Peak Hour Factor ➡ 0.98												Highest Hourly Vehicle Volume Between 1130h & 1330h										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1145-1245	173	25	37	0	235	26	8	50	0	84	319	32	653	20	0	705	51	737	102	0	890	1595	1914
PM Peak Hour Factor ➡ 0.94												Highest Hourly Vehicle Volume Between 1500h & 1800h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1630-1730	130	22	50	0	202	55	22	85	0	162	364	58	742	34	0	834	114	861	144	0	1119	1953	2317

Comments:

OC Transpo and Para Transpo buses and school buses comprise 4.76% of the heavy vehicle traffic. The bicycle totals include 11 varieties of E-bicycles and E-scooters (stand-up types). A total of 6 bicycles and E-bicycles/E-scooters used the bicycle lane along the west side of Carp Road south of Kittiwake Drive.

Notes:

1. Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

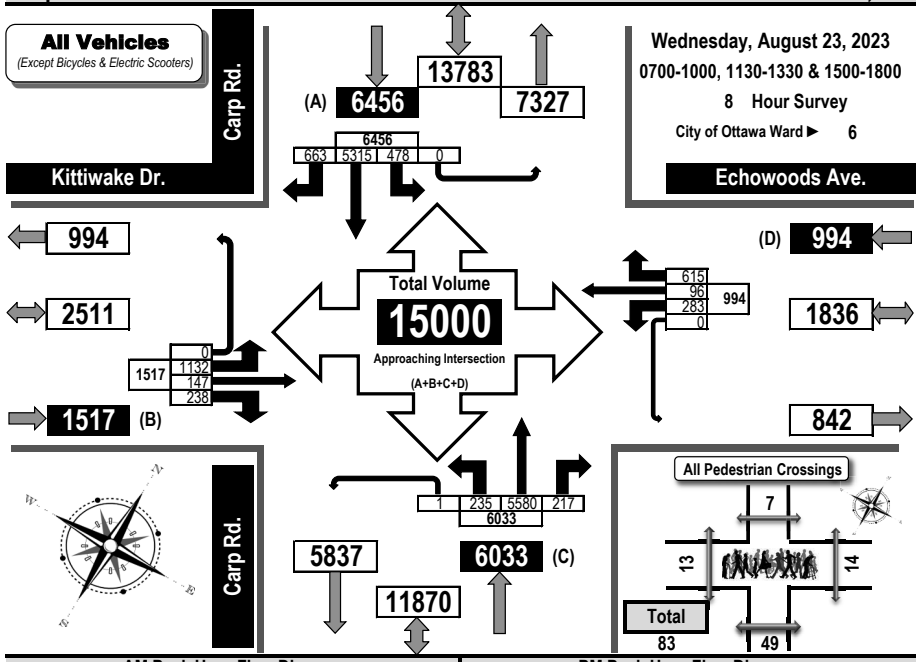
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

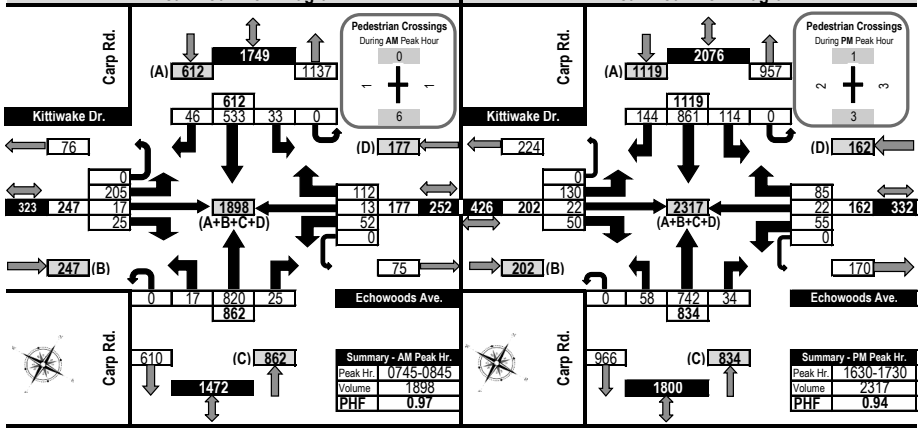
Carp Road & Echowoods Avenue/Kittiwake Drive — Stittsville, ON

All Vehicles (Except Bicycles & Electric Scooters)

Wednesday, August 23, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 6



AM Peak Hour Flow Diagram



PM Peak Hour Flow Diagram

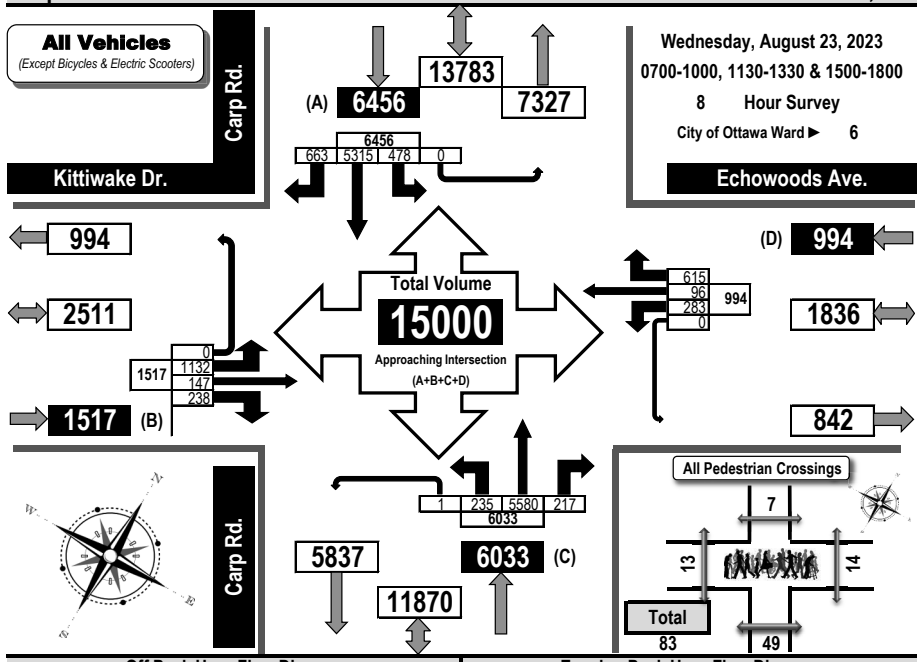
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles

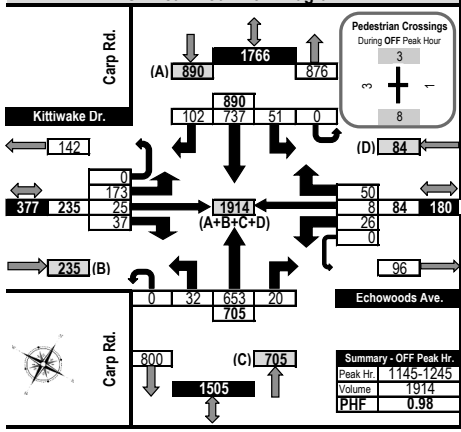
Carp Road & Echowoods Avenue/Kittiwake Drive — Stittsville, ON

All Vehicles (Except Bicycles & Electric Scooters)

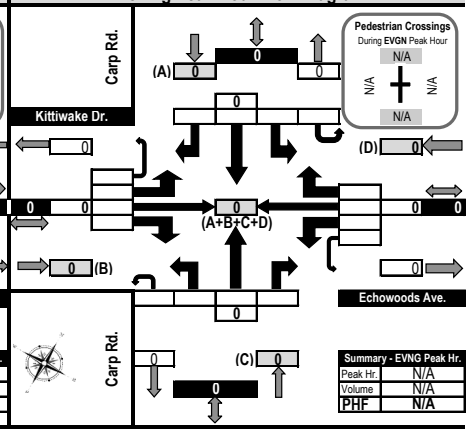
Wednesday, August 23, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 6



Off Peak Hour Flow Diagram

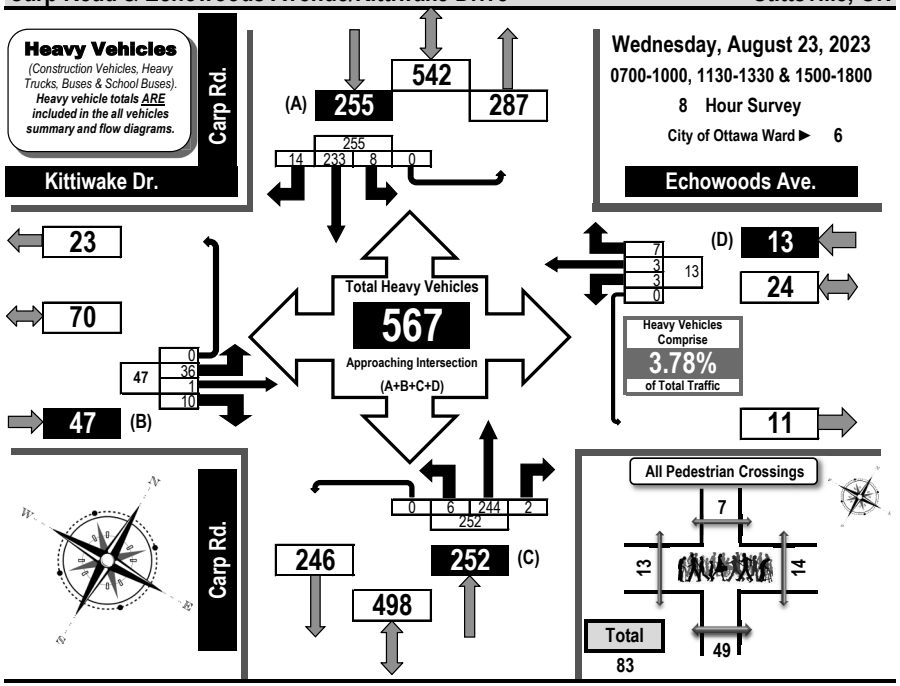


Evening Peak Hour Flow Diagram



Turning Movement Count
Heavy Vehicle Summary (FHWA Class 4-13)
Flow Diagram

Carp Road & Echowoods Avenue/Kittiwake Drive — Stittsville, ON



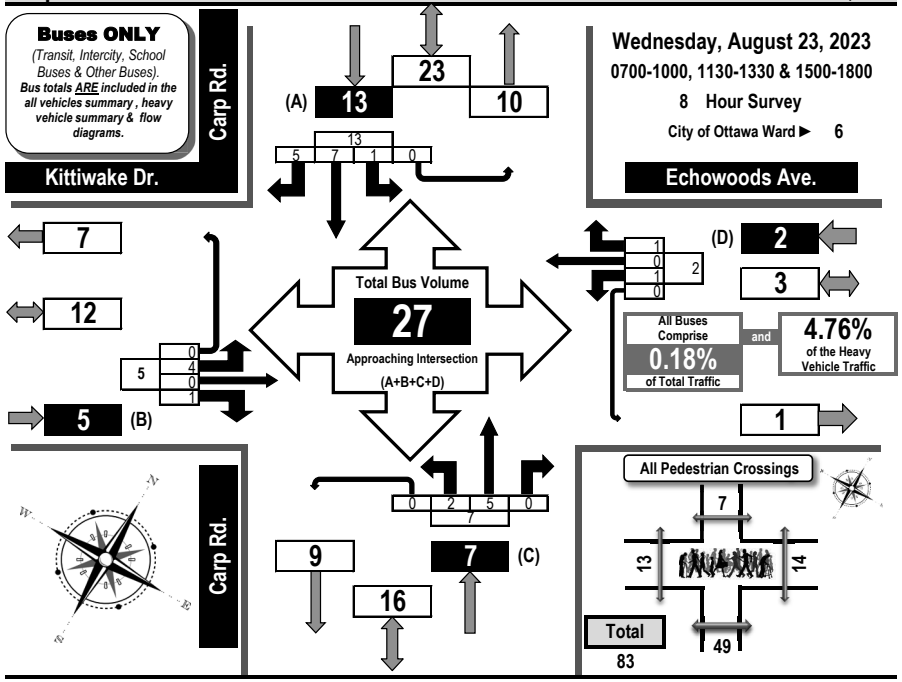
	Kittiwake Dr.					Echowoods Ave.					Carp Rd.					Carp Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	10	0	2	0	12	0	0	0	0	0	0	14	0	0	14	3	52	1	0	56	82
0800-0900	7	0	2	0	9	0	0	1	0	1	2	26	0	0	28	0	33	0	0	33	71
0900-1000	3	1	0	0	4	0	1	1	0	2	0	33	0	0	33	0	38	1	0	39	78
1130-1230	8	0	4	0	12	1	2	1	0	4	1	36	1	0	38	2	34	2	0	38	92
1230-1330	4	0	0	0	4	0	0	0	0	0	2	42	0	0	44	1	34	2	0	37	85
1500-1600	3	0	1	0	4	1	0	2	0	3	1	33	1	0	35	1	19	2	0	22	64
1600-1700	0	0	0	0	0	0	0	0	0	0	0	42	0	0	42	1	15	2	0	18	60
1700-1800	1	0	1	0	2	1	0	2	0	3	0	18	0	0	18	0	8	4	0	12	35
Totals	36	1	10	0	47	3	3	7	0	13	6	244	2	0	252	8	233	14	0	255	567

Comments:

OC Transpo and Para Transpo buses and school buses comprise 4.76% of the heavy vehicle traffic. The bicycle totals include 11 varieties of E-bicycles and E-scooters (stand-up types). A total of 6 bicycles and E-bicycles/E-scooters used the bicycle lane along the west side of Carp Road south of Kittiwake Drive.

Turning Movement Count
All Buses Summary (FHWA Class 4 ONLY)
Flow Diagram

Carp Road & Echowoods Avenue/Kittiwake Drive — Stittsville, ON



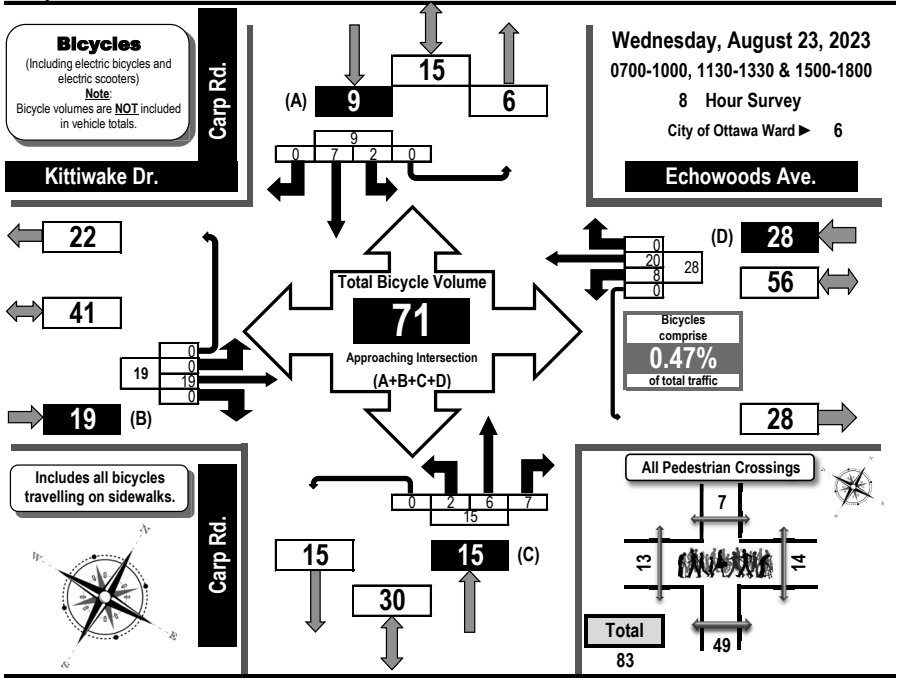
	Kittiwake Dr.					Echowoods Ave.					Carp Rd.					Carp Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
0800-0900	1	0	0	0	1	0	0	1	0	1	0	1	0	0	1	0	2	0	0	2	5
0900-1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
1130-1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
1230-1330	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
1500-1600	1	0	1	0	2	1	0	0	0	1	1	1	0	0	2	1	1	1	0	3	8
1600-1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	3
1700-1800	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	2	0	2	5
Totals	4	0	1	0	5	1	0	1	0	2	2	5	0	0	7	1	7	5	0	13	27

Comments:

OC Transpo and Para Transpo buses and school buses comprise 4.76% of the heavy vehicle traffic. The bicycle totals include 11 varieties of E-bicycles and E-scooters (stand-up types). A total of 6 bicycles and E-bicycles/E-scooters used the bicycle lane along the west side of Carp Road south of Kittiwake Drive.

Turning Movement Count
Bicycle Summary
Flow Diagram

Carp Road & Echowoods Avenue/Kittiwake Drive — **Stittsville, ON**



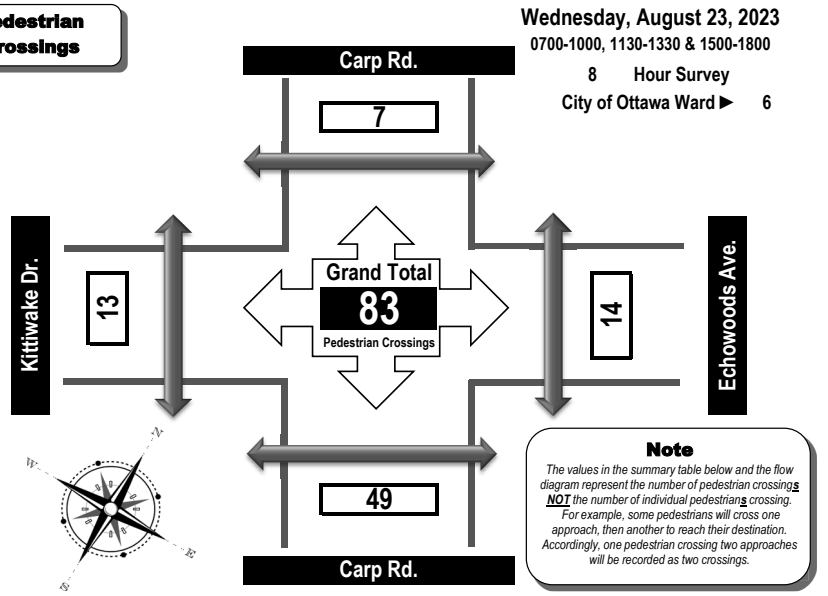
	Kittiwake Dr. Eastbound					Echowoods Ave. Westbound					Carp Rd. Northbound					Carp Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	2	0	0	2	0	0	0	0	0	1	4	0	0	5	1	0	0	0	1	8
0800-0900	0	1	0	0	1	1	2	0	0	3	0	2	0	0	2	0	0	0	0	0	6
0900-1000	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2
1130-1230	0	3	0	0	3	2	6	0	0	8	1	0	3	0	4	0	1	0	0	1	16
1230-1330	0	6	0	0	6	1	3	0	0	4	0	0	2	0	2	0	0	0	0	0	12
1500-1600	0	1	0	0	1	1	3	0	0	4	0	0	2	0	2	0	1	0	0	1	8
1600-1700	0	2	0	0	2	2	2	0	0	4	0	0	0	0	0	0	1	0	0	1	7
1700-1800	0	4	0	0	4	0	4	0	0	4	0	0	0	0	0	1	3	0	0	4	12
Totals	0	19	0	0	19	8	20	0	0	28	2	6	7	0	15	2	7	0	0	9	71

Comments:

OC Transpo and Para Transpo buses and school buses comprise 4.76% of the heavy vehicle traffic. The bicycle totals include 11 varieties of E-bicycles and E-scooters (stand-up types). A total of 6 bicycles and E-bicycles/E-scooters used the bicycle lane along the west side of Carp Road south of Kittiwake Drive.

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Carp Road & Echowoods Avenue/Kittiwake Drive — **Stittsville, ON**



Time Period	West Side Crossing Kittiwake Dr.	East Side Crossing Echowoods Ave.	Street Total	South Side Crossing Carp Rd.	North Side Crossing Carp Rd.	Street Total	Grand Total
0700-0800	3	3	6	3	0	3	9
0800-0900	1	1	2	8	0	8	10
0900-1000	0	0	0	4	0	4	4
1130-1230	3	1	4	7	0	7	11
1230-1330	1	0	1	8	4	12	13
1500-1600	0	0	0	5	2	7	7
1600-1700	2	8	10	9	1	10	20
1700-1800	3	1	4	5	0	5	9
Totals	13	14	27	49	7	56	83

Comments:

OC Transpo and Para Transpo buses and school buses comprise 4.76% of the heavy vehicle traffic. The bicycle totals include 11 varieties of E-bicycles and E-scooters (stand-up types). A total of 6 bicycles and E-bicycles/E-scooters used the bicycle lane along the west side of Carp Road south of Kittiwake Drive.

Appendix C

Synchro Intersection Worksheets – Existing Conditions

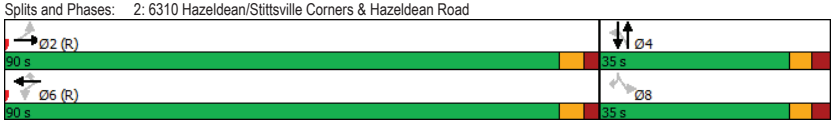
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	517	0	0	302	1	0	0	0	4	0	4
Future Volume (vph)	29	517	0	0	302	1	0	0	0	4	0	4
Satd. Flow (prot)	1580	3283	0	1745	1712	1483	0	1745	0	0	1353	1483
Flt Permitted	0.558											
Satd. Flow (perm)	928	3283	0	1745	1712	1483	0	1745	0	0	1424	1483
Satd. Flow (RTOR)						29						27
Lane Group Flow (vph)	32	574	0	0	336	1	0	0	0	0	4	4
Turn Type	Perm	NA		Perm	NA	Perm				custom	NA	custom
Protected Phases		2			6			4			4	
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8	4	8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	30.1	30.1		30.1	30.1	30.1	34.3	34.3		34.3	34.3	34.3
Total Split (s)	90.0	90.0		90.0	90.0	90.0	35.0	35.0		35.0	35.0	35.0
Total Split (%)	72.0%	72.0%		72.0%	72.0%	72.0%	28.0%	28.0%		28.0%	28.0%	28.0%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	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	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	None
Act Effct Green (s)	120.5	120.5			120.5	120.5					10.0	10.0
Actuated g/C Ratio	0.96	0.96			0.96	0.96					0.08	0.08
v/c Ratio	0.04	0.18			0.20	0.00					0.04	0.03
Control Delay	1.0	0.8			0.9	0.0					54.0	0.2
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0
Total Delay	1.0	0.8			0.9	0.0					54.0	0.2
LOS	A	A			A	A					D	A
Approach Delay		0.8			0.9						27.1	
Approach LOS		A			A						C	
Queue Length 50th (m)	0.0	0.0			0.8	0.0					0.9	0.0
Queue Length 95th (m)	2.8	16.4			10.0	m0.0					4.7	0.0
Internal Link Dist (m)		342.4			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	895	3165			1651	1431					326	361
Starvation Cap Reductn	0	0			0	0					0	0
Spillback Cap Reductn	0	0			0	0					0	0
Storage Cap Reductn	0	0			0	0					0	0
Reduced v/c Ratio	0.04	0.18			0.20	0.00					0.01	0.01

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 37 (30%), 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: 1.1 — 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



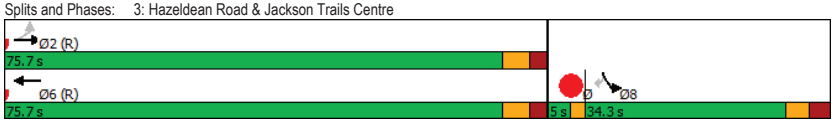
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	27	441	462	5	1	6	
Future Volume (vph)	27	441	462	5	1	6	
Satd. Flow (prot)	1523	3191	3071	0	1658	1293	
Flt Permitted	0.460				0.950		
Satd. Flow (perm)	738	3191	3071	0	1658	1293	
Satd. Flow (RTOR)			2			7	
Lane Group Flow (vph)	30	490	519	0	1	7	
Turn Type	Perm	NA	NA		Prot	Perm	
Protected Phases		2	6		8		7
Permitted Phases	2					8	
Detector Phase	2	2	6		8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	24.4	24.4	33.4		34.3	34.3	5.0
Total Split (s)	75.7	75.7	75.7		34.3	34.3	5.0
Total Split (%)	65.8%	65.8%	65.8%		29.8%	29.8%	4%
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3	2.0
All-Red Time (s)	2.7	2.7	2.7		3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4		6.3	6.3	
Lead/Lag					Lag	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max		None	None	None
Act Effct Green (s)	110.5	110.5	110.5		10.0	10.0	
Actuated g/C Ratio	0.96	0.96	0.96		0.09	0.09	
v/c Ratio	0.04	0.16	0.18		0.01	0.06	
Control Delay	1.2	0.9	0.9		48.0	28.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	1.2	0.9	0.9		48.0	28.3	
LOS	A	A	A		D	C	
Approach Delay		0.9	0.9		30.8		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.0	0.0	0.0		0.2	0.0	
Queue Length 95th (m)	2.8	14.4	15.4		1.9	4.5	
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0					13.5	
Base Capacity (vph)	709	3065	2950		403	320	
Starvation Cap Reductn	0	0	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.04	0.16	0.18		0.00	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: 1.1	Intersection LOS: A
Intersection Capacity Utilization 42.6%	ICU Level of Service A
Analysis Period (min) 15	

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)	215	246	60	20	157	291	63	401	14	213	303	88
Future Volume (vph)	215	246	60	20	157	291	63	401	14	213	303	88
Satd. Flow (prot)	1626	2998	0	1537	1648	1469	1523	3253	0	1580	1712	1375
Flt Permitted	0.381			0.547			0.950			0.950		
Satd. Flow (perm)	650	2998	0	881	1648	1441	1514	3253	0	1574	1712	1335
Satd. Flow (RTOR)		28				323		3				137
Lane Group Flow (vph)	239	340	0	22	174	323	70	462	0	237	337	98
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	39.6		39.6	39.6	39.6	11.0	32.1		11.0	32.1	32.1
Total Split (s)	15.0	55.0		40.0	40.0	40.0	16.0	54.0		16.0	54.0	54.0
Total Split (%)	12.0%	44.0%		32.0%	32.0%	32.0%	12.8%	43.2%		12.8%	43.2%	43.2%
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)	35.5	35.0		20.0	20.0	20.0	10.1	47.9		23.4	63.7	63.7
Actuated g/C Ratio	0.28	0.28		0.16	0.16	0.16	0.08	0.38		0.19	0.51	0.51
v/c Ratio	0.94	0.40		0.16	0.66	0.64	0.57	0.37		0.80	0.39	0.13
Control Delay	82.3	32.8		43.8	60.0	10.6	73.1	28.6		62.5	37.4	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	82.3	32.8		43.8	60.0	10.6	73.1	28.6		62.5	37.4	13.4
LOS	F	C		D	E	B	E	C		E	D	B
Approach Delay		53.3			28.6			34.5			42.7	
Approach LOS		D			C			C			D	
Queue Length 50th (m)	50.3	33.2		4.8	41.3	0.0	16.7	42.2		58.5	57.2	1.2
Queue Length 95th (m)	#69.4	39.3		11.1	56.3	23.0	#34.1	56.2		#141.0	114.1	19.7
Internal Link Dist (m)		168.3			634.2			626.0			97.8	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	254	1177		235	440	621	133	1248		295	872	747
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	0.94	0.29		0.09	0.40	0.52	0.53	0.37		0.80	0.39	0.13

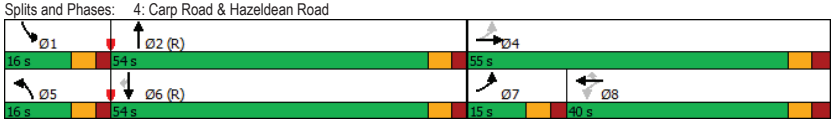
Intersection Summary
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 107 (86%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 40.3	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)	205	17	25	52	13	112	17	820	25	33	533	46
Future Volume (vph)	205	17	25	52	13	112	17	820	25	33	533	46
Satd. Flow (prot)	1642	1516	0	0	1552	0	1510	1721	0	1658	1679	1483
Flt Permitted	0.557				0.891		0.329			0.085		
Satd. Flow (perm)	963	1516	0	0	1400	0	523	1721	0	148	1679	1448
Satd. Flow (RTOR)		28			70			2				78
Lane Group Flow (vph)	228	47	0	0	196	0	19	939	0	37	592	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	32.0		10.6	32.0	32.0
Total Split (s)	43.0	43.0		43.0	43.0		11.0	71.0		11.0	71.0	71.0
Total Split (%)	34.4%	34.4%		34.4%	34.4%		8.8%	56.8%		8.8%	56.8%	56.8%
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)	32.0	32.0			32.0		77.6	73.9		78.8	76.3	76.3
Actuated g/C Ratio	0.26	0.26			0.26		0.62	0.59		0.63	0.61	0.61
v/c Ratio	0.93	0.11			0.48		0.05	0.92		0.23	0.58	0.06
Control Delay	86.0	17.6			27.8		9.1	36.2		12.8	19.9	1.4
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	86.0	17.6			27.8		9.1	36.2		12.8	19.9	1.4
LOS	F	B			C		A	D		B	B	A
Approach Delay		74.3			27.8			35.7			18.1	
Approach LOS		E			C			D			B	
Queue Length 50th (m)	53.1	3.4			25.0		1.0	~249.0		3.3	79.4	0.0
Queue Length 95th (m)	#93.9	12.6			46.6		m3.1	m#321.4		7.8	146.0	2.9
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)	282	464			460		368	1017		163	1024	913
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	0.81	0.10			0.43		0.05	0.92		0.23	0.58	0.06

Intersection Summary
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 7 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93
Intersection Signal Delay: 34.3 — Intersection LOS: C
Intersection Capacity Utilization 87.0% — 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.

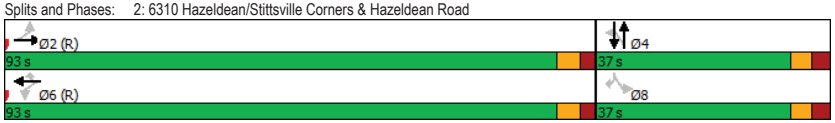
Splits and Phases: 5: Carp Road & Kittiwake Drive/Echowoods Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	292	0	0	565	6	0	0	0	42	0	37
Future Volume (vph)	51	292	0	0	565	6	0	0	0	42	0	37
Satd. Flow (prot)	1658	3283	0	1745	1745	1483	0	1745	0	0	1658	1483
Flt Permitted	0.405										0.757	
Satd. Flow (perm)	705	3283	0	1745	1745	1438	0	1745	0	0	1321	1483
Satd. Flow (RTOR)						28						41
Lane Group Flow (vph)	57	324	0	0	628	7	0	0	0	0	47	41
Turn Type	Perm	NA		Perm	NA	Perm				custom	NA	custom
Protected Phases		2			6			4			4	
Permitted Phases	2			6		6	4			8		8
Detector Phase	2	2		6	6	6	4	4		8	4	8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	30.1	30.1		34.1	34.1	34.1	34.3	34.3		34.3	34.3	34.3
Total Split (s)	93.0	93.0		93.0	93.0	93.0	37.0	37.0		37.0	37.0	37.0
Total Split (%)	71.5%	71.5%		71.5%	71.5%	71.5%	28.5%	28.5%		28.5%	28.5%	28.5%
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	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	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	None
Act Effct Green (s)	110.8	110.8			110.8	110.8					11.3	11.3
Actuated g/C Ratio	0.85	0.85			0.85	0.85					0.09	0.09
v/c Ratio	0.09	0.12			0.42	0.01					0.41	0.25
Control Delay	2.9	2.3			1.4	0.0					66.8	19.3
Queue Delay	0.0	0.0			0.3	0.0					0.0	0.0
Total Delay	2.9	2.3			1.7	0.0					66.8	19.3
LOS	A	A			A	A					E	B
Approach Delay		2.4			1.7						44.6	
Approach LOS		A			A						D	
Queue Length 50th (m)	2.2	6.5			5.0	0.0					11.8	0.0
Queue Length 95th (m)	5.8	11.5			m16.9	m0.0					23.7	10.7
Internal Link Dist (m)		336.6			168.3			30.9			31.1	
Turn Bay Length (m)	140.0					100.0						
Base Capacity (vph)	601	2798			1487	1230					311	381
Starvation Cap Reductn	0	0			336	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	0.09	0.12			0.55	0.01					0.15	0.11

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 47 (36%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.42
Intersection Signal Delay: 5.4 Intersection LOS: A
Intersection Capacity Utilization 63.4% 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



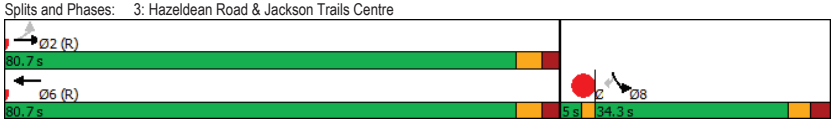
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	65	355	477	14	15	39	
Future Volume (vph)	65	355	477	14	15	39	
Satd. Flow (prot)	1658	3316	3298	0	1580	1469	
Flt Permitted	0.448				0.950		
Satd. Flow (perm)	777	3316	3298	0	1580	1469	
Satd. Flow (RTOR)			5			43	
Lane Group Flow (vph)	72	394	546	0	17	43	
Turn Type	Perm	NA	NA		Prot	Perm	
Protected Phases		2	6		8		7
Permitted Phases	2					8	
Detector Phase	2	2	6		8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	24.4	24.4	33.4		34.3	34.3	5.0
Total Split (s)	80.7	80.7	80.7		34.3	34.3	5.0
Total Split (%)	67.3%	67.3%	67.3%		28.6%	28.6%	4%
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3	2.0
All-Red Time (s)	2.7	2.7	2.7		3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4		6.3	6.3	
Lead/Lag					Lag	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max		None	None	None
Act Effct Green (s)	101.8	101.8	101.8		10.0	10.0	
Actuated g/C Ratio	0.85	0.85	0.85		0.08	0.08	
v/c Ratio	0.11	0.14	0.20		0.13	0.27	
Control Delay	2.7	2.3	2.4		53.5	19.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	2.7	2.3	2.4		53.5	19.5	
LOS	A	A	A		D	B	
Approach Delay		2.3	2.4		29.1		
Approach LOS		A	A		C		
Queue Length 50th (m)	2.8	8.3	12.0		3.8	0.0	
Queue Length 95th (m)	5.7	11.3	15.7		11.1	11.1	
Internal Link Dist (m)		634.2	235.6		86.5		
Turn Bay Length (m)	49.0					13.5	
Base Capacity (vph)	659	2814	2800		368	375	
Starvation Cap Reductn	0	0	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.11	0.14	0.20		0.05	0.11	

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: 0.27

Intersection Signal Delay: 3.9	Intersection LOS: A
Intersection Capacity Utilization 47.0%	ICU Level of Service A
Analysis Period (min) 15	

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

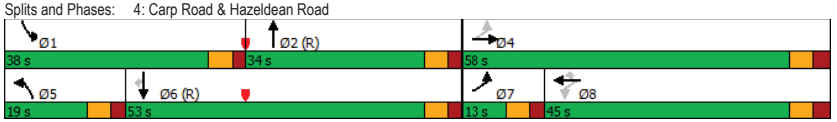


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	339	86	46	408	397	97	392	21	293	450	227
Future Volume (vph)	130	339	86	46	408	397	97	392	21	293	450	227
Satd. Flow (prot)	1658	3154	0	1470	1745	1455	1658	3185	0	1658	1745	1483
Flt Permitted	0.137			0.481			0.950			0.950		
Satd. Flow (perm)	239	3154	0	741	1745	1427	1654	3185	0	1653	1745	1433
Satd. Flow (RTOR)		29				421		4				240
Lane Group Flow (vph)	144	473	0	51	453	441	108	459	0	326	500	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	39.6		39.6	39.6	39.6	11.0	32.1		11.0	32.1	32.1
Total Split (s)	13.0	58.0		45.0	45.0	45.0	19.0	34.0		38.0	53.0	53.0
Total Split (%)	10.0%	44.6%		34.6%	34.6%	34.6%	14.6%	26.2%		29.2%	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)	50.0	49.5		36.5	36.5	36.5	11.9	32.8		29.0	49.9	49.9
Actuated g/C Ratio	0.38	0.38		0.28	0.28	0.28	0.09	0.25		0.22	0.38	0.38
v/c Ratio	0.86	0.39		0.25	0.93	0.63	0.72	0.57		0.88	0.75	0.36
Control Delay	70.3	26.3		38.8	71.3	8.6	82.6	46.8		52.9	42.4	11.6
Queue Delay	5.5	0.0		0.0	0.0	0.3	0.0	0.0		0.0	0.0	0.0
Total Delay	75.8	26.3		38.8	71.3	8.9	82.6	46.8		52.9	42.4	11.6
LOS	E	C		D	E	A	F	D		D	D	B
Approach Delay		37.8			40.4			53.6			38.4	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	22.2	37.2		9.9	110.6	3.7	27.1	56.3		80.2	128.3	22.5
Queue Length 95th (m)	#50.3	47.9		21.4	#167.8	32.9	#50.6	75.1		m97.8	m163.2	m28.6
Internal Link Dist (m)		168.3			634.2			607.2			97.4	
Turn Bay Length (m)	95.0			53.5			41.0			80.0		
Base Capacity (vph)	167	1264		218	515	718	165	806		408	670	698
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	8	0		0	0	48	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.91	0.37		0.23	0.88	0.66	0.65	0.57		0.80	0.75	0.36

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 129 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93
Intersection Signal Delay: 41.6 — Intersection LOS: D
Intersection Capacity Utilization 90.5% — 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: 4: Carp Road & Hazeldean Road

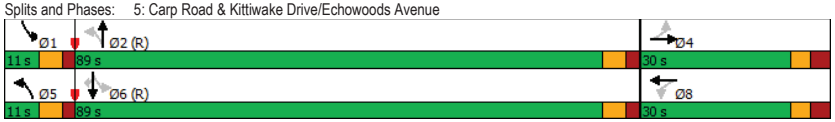


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	22	50	55	22	85	58	742	34	114	861	144
Future Volume (vph)	130	22	50	55	22	85	58	742	34	114	861	144
Satd. Flow (prot)	1658	1543	0	0	1575	0	1658	1668	0	1658	1745	1483
Flt Permitted	0.523				0.855		0.152			0.192		
Satd. Flow (perm)	911	1543	0	0	1367	0	265	1668	0	335	1745	1445
Satd. Flow (RTOR)		56			37			4				75
Lane Group Flow (vph)	144	80	0	0	179	0	64	862	0	127	957	160
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	32.0		10.6	32.0	32.0
Total Split (s)	30.0	30.0		30.0	30.0		11.0	89.0		11.0	89.0	89.0
Total Split (%)	23.1%	23.1%		23.1%	23.1%		8.5%	68.5%		8.5%	68.5%	68.5%
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)	22.4	22.4			22.4		90.0	84.1		91.3	86.5	86.5
Actuated g/C Ratio	0.17	0.17			0.17		0.69	0.65		0.70	0.67	0.67
v/c Ratio	0.92	0.26			0.68		0.27	0.80		0.43	0.82	0.16
Control Delay	106.4	19.8			52.9		6.1	25.5		10.1	25.2	5.3
Queue Delay	0.0	0.0			0.0		0.0	1.0		0.0	0.0	0.0
Total Delay	106.4	19.8			52.9		6.1	26.5		10.1	25.2	5.3
LOS	F	B			D		A	C		B	C	A
Approach Delay		75.5			52.9			25.1			21.1	
Approach LOS		E			D			C			C	
Queue Length 50th (m)	36.2	5.2			34.1		1.7	207.0		8.6	183.6	7.8
Queue Length 95th (m)	#74.5	19.1			59.7		m2.0	m259.2		14.5	259.8	16.3
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)	166	327			279		241	1080		292	1161	986
Starvation Cap Reductn	0	0			0		0	68		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	0.87	0.24			0.64		0.27	0.85		0.43	0.82	0.16

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 29 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92
Intersection Signal Delay: 29.5 — Intersection LOS: C
Intersection Capacity Utilization 83.7% — 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.
m Volume for 95th percentile queue is metered by upstream signal.

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



Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2018-02-02	2018	9:15	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-02-18	2018	10:22	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-03-14	2018	22:45	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	07 - Dark	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	06 - Ice	0	0	0	0
2018-05-16	2018	10:44	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2018-05-18	2018	9:20	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-06-25	2018	16:09	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-07-13	2018	10:09	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-08-09	2018	17:30	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2018-09-27	2018	13:55	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-11-21	2018	17:08	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	06 - Ice	0	0	0	0
2018-12-02	2018	14:42	CARP RD @ HAZELDEAN RD (0000086)	04 - Freezing Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	04 - Slush	0	0	0	0
2018-02-12	2018	8:45	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	04 - Slush	0	0	0	0
2018-08-07	2018	8:54	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2018-11-01	2018	17:04	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	05 - Dusk	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2019-05-17	2019	11:23	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	1	0
2020-02-24	2020	20:30	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2020-06-17	2020	15:39	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	1	0	0
2021-10-21	2021	13:57	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
2019-01-23	2019	7:10	CARP RD @ HAZELDEAN RD (0000086)	03 - Snow	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
2019-04-20	2019	13:53	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2019-04-28	2019	3:30	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
2019-08-23	2019	10:40	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-12-31	2019	12:05	CARP RD @ HAZELDEAN RD (0000086)	04 - Freezing Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	06 - Ice	0	0	0	0
2020-01-03	2020	9:44	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2020-01-28	2020	7:50	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2020-03-09	2020	16:51	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2020-10-13	2020	16:03	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2020-11-07	2020	15:00	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2021-01-13	2021	15:00	CARP RD @ HAZELDEAN RD (0000086)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
2021-02-13	2021	10:46	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	01 - Dry	0	0	0	0
2021-02-16	2021	13:12	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	05 - Packed snow	0	0	0	0
2021-04-25	2021	14:17	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2021-08-05	2021	14:25	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2021-08-09	2021	11:15	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2021-08-23	2021	12:35	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2021-08-26	2021	12:35	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2021-09-01	2021	16:20	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2021-09-23	2021	16:12	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2021-09-25	2021	10:15	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2021-10-01	2021	16:04	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2021-10-24	2021	8:00	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2022-01-06	2022	13:00	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2022-03-30	2022	7:43	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	01 - Dry	0	0	0	0
2022-04-11	2022	15:50	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2022-04-19	2022	17:55	CARP RD @ HAZELDEAN RD (0000086)	02 - Rain	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	02 - Wet	0	0	0	0
2022-09-27	2022	16:15	CARP RD @ HAZELDEAN RD (0000086)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	0	0	0	0
2019-06-05	2019	15:36	CARP RD btwn HAZELDEAN RD & NEIL AVE (__3ZA3EJ)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2021-07-18	2021	6:39	CARP RD btwn HAZELDEAN RD & NEIL AVE (__3ZA3EJ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
2021-08-30	2021	18:06	CARP RD btwn HAZELDEAN RD & NEIL AVE (__3ZA3EJ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
2018-08-09	2018	17:46	NEIL AVE @ CARP RD (0000088)	02 - Rain	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2019-07-12	2019	6:47	NEIL AVE @ CARP RD (0000088)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	07 - SMV other	08 - Loose sand or gravel	0	1	0	0
2019-11-25	2019	8:44	NEIL AVE @ CARP RD (0000088)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2022-05-15	2022	17:31	NEIL AVE @ CARP RD (0000088)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
2018-02-03	2018	8:18	HAZELDEAN RD btwn CARP RD & KITTIWAKE DR (__3ZA3EI)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
2020-05-25	2020	12:45	HAZELDEAN RD btwn CARP RD & KITTIWAKE DR (__3ZA3EI)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2021-02-24	2021	16:33	HAZELDEAN RD btwn CARP RD & KITTIWAKE DR (__3ZA3EI)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	06 - Ice	0	0	0	0

Appendix E

TDM Checklist

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

Legend

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

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

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

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

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

Legend

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

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

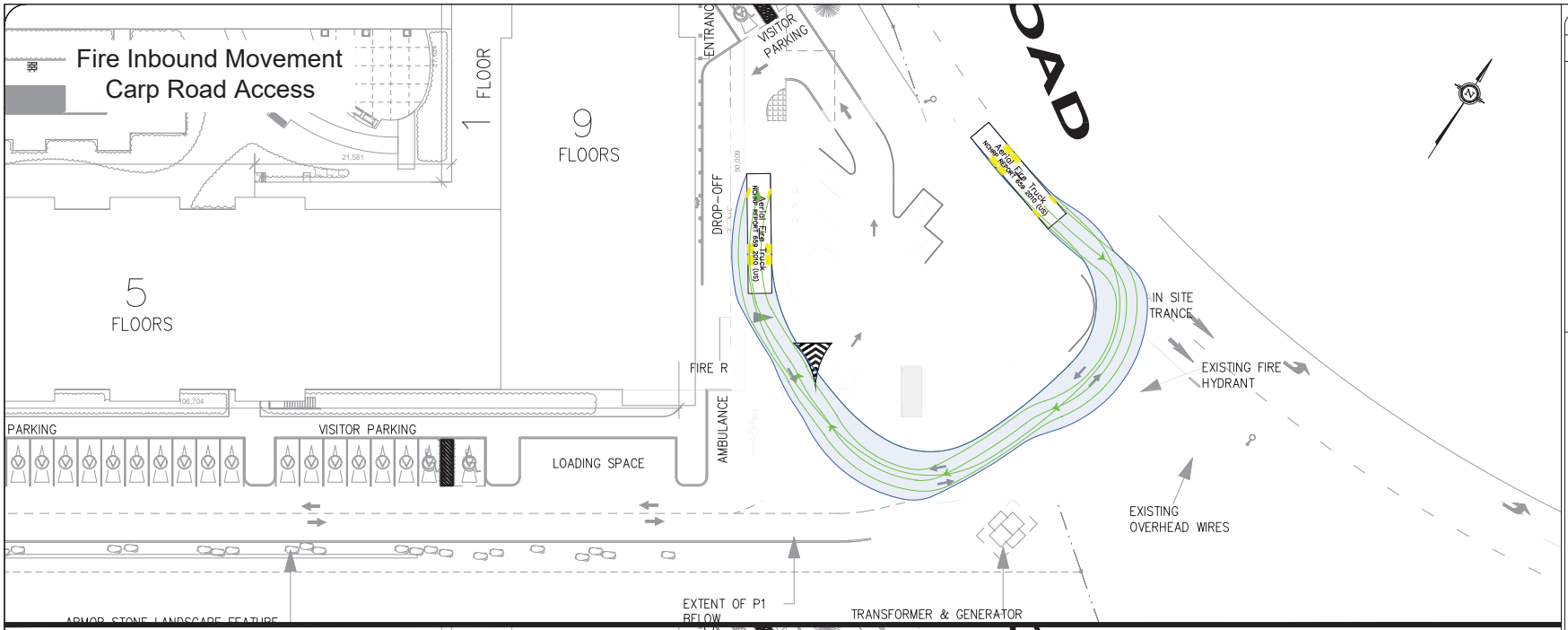
		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas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

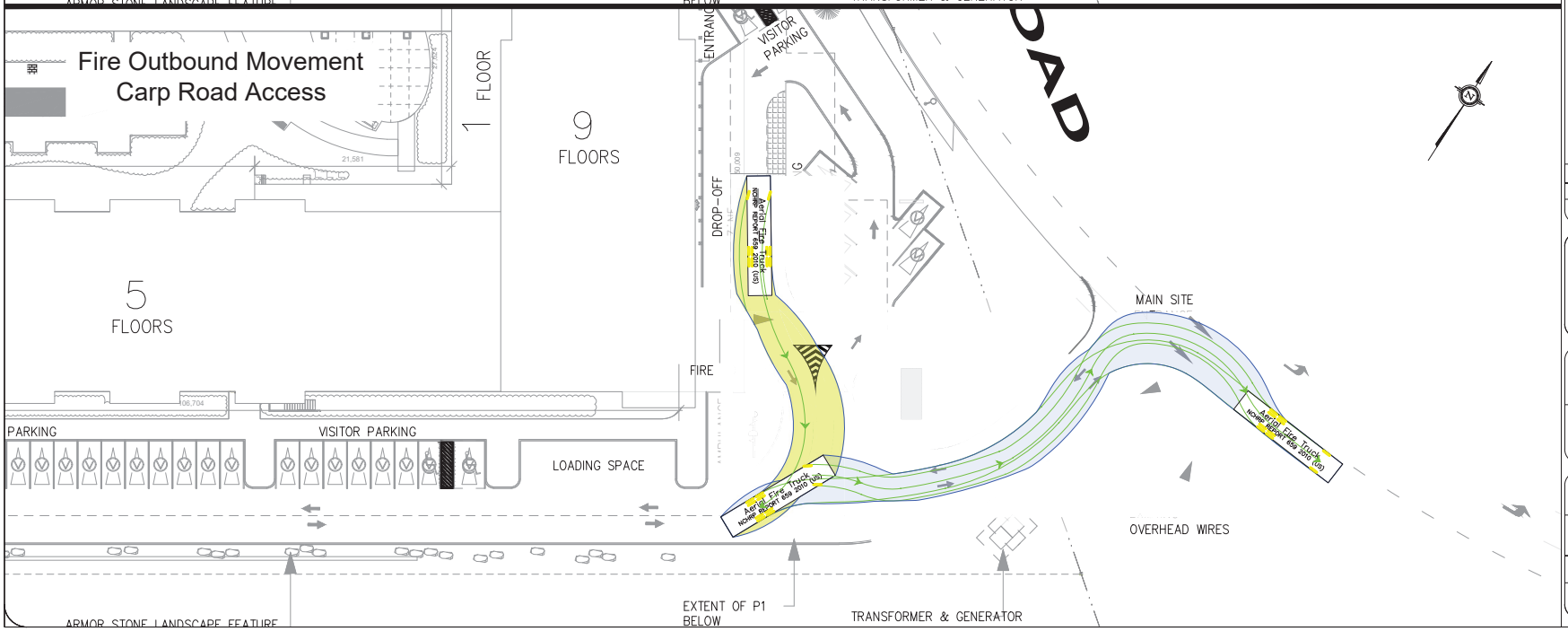
		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted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

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

Appendix F

Turning Templates





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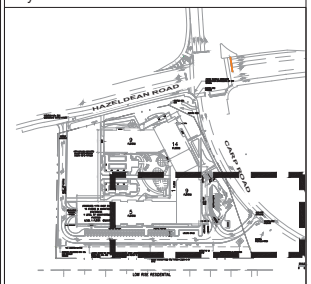

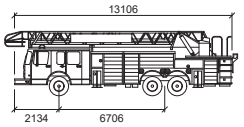

Aerial Fire Truck

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Track	: 2591
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

REV:	DESCRIPTION:	BY:	DATE:
04	Issued for Review:	AN	2024-11-29

STATUS:

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

CLIENT: Le Groupe Maurice
400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

ARCHITECT:

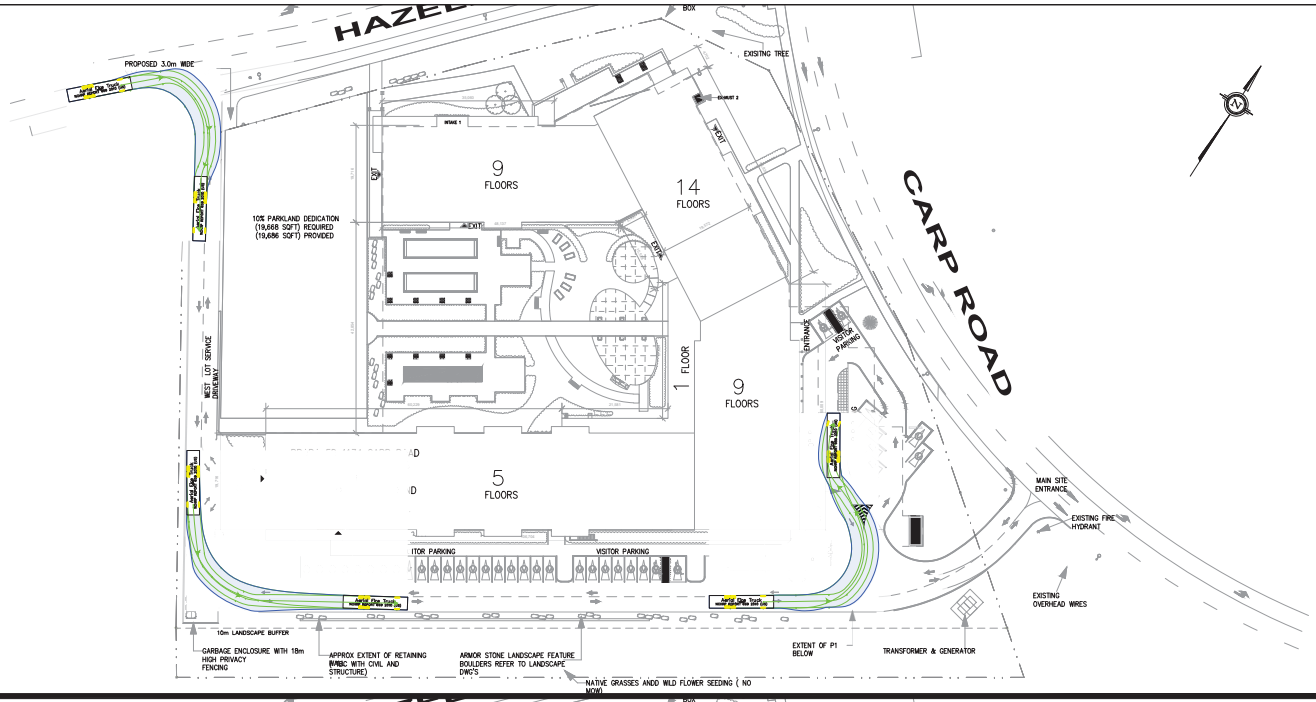
SITE: 1174 Carp Road

TITLE: Turning Movement Analysis
Fire Turning Movements (1)

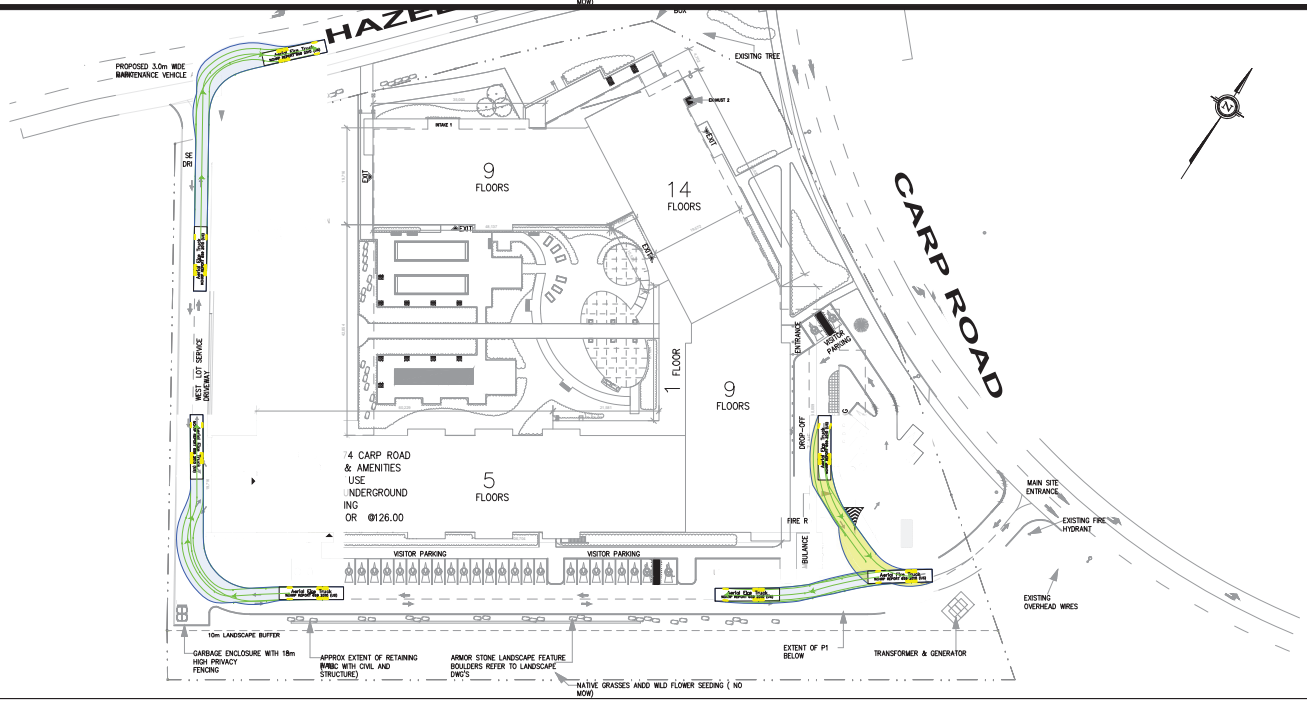
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-29	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-034	001	04

Fire Inbound Movement
Hazeldean Road Access



Fire Outbound Movement
Hazeldean Road Access



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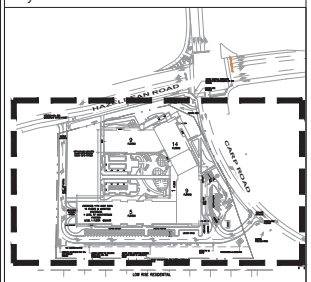

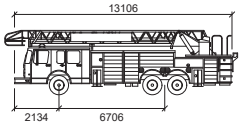

Aerial Fire Truck

	mm
Width	: 2591
Track	: 2591
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

REV:	DESCRIPTION:	BY:	DATE:
04	Issued for Review:	AN	2024-11-29

STATUS:

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6 Plaza Court
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(343) 999-9117

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400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

ARCHITECT:

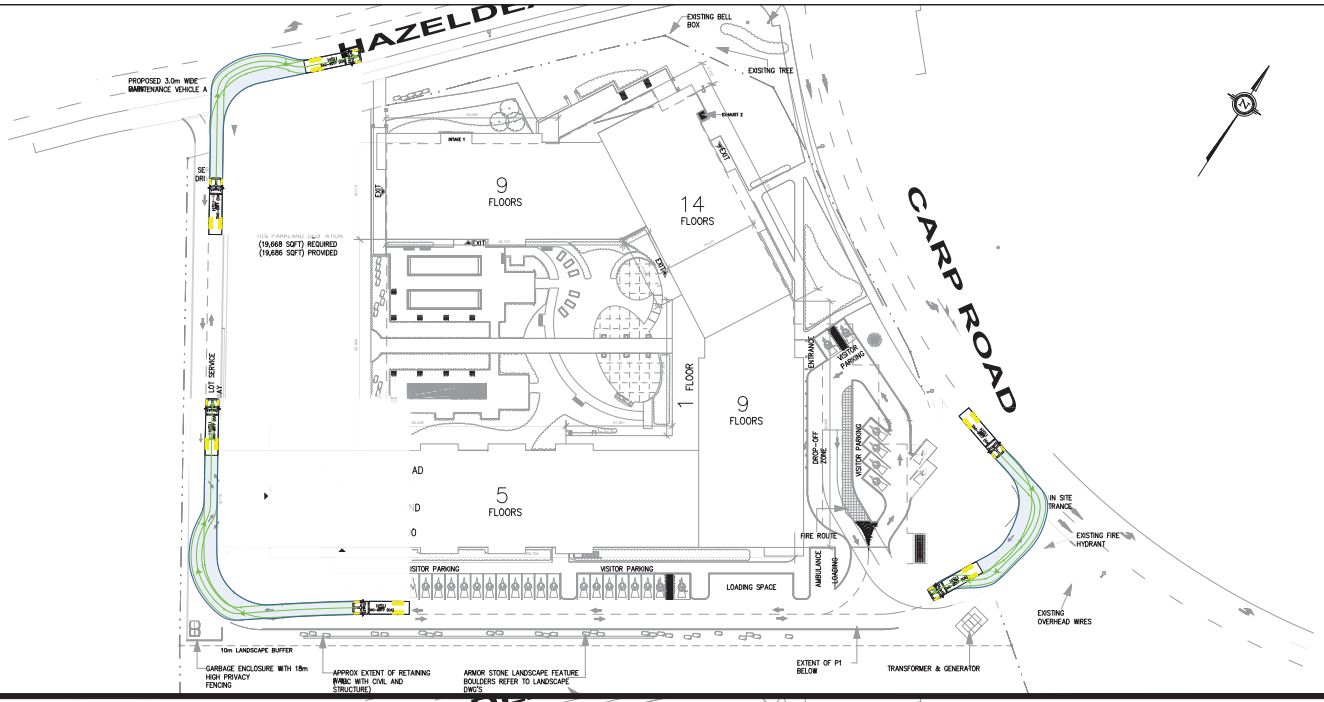
SITE: 1174 Carp Road

TITLE: Turning Movement Analysis
Fire Turning Movements (2)

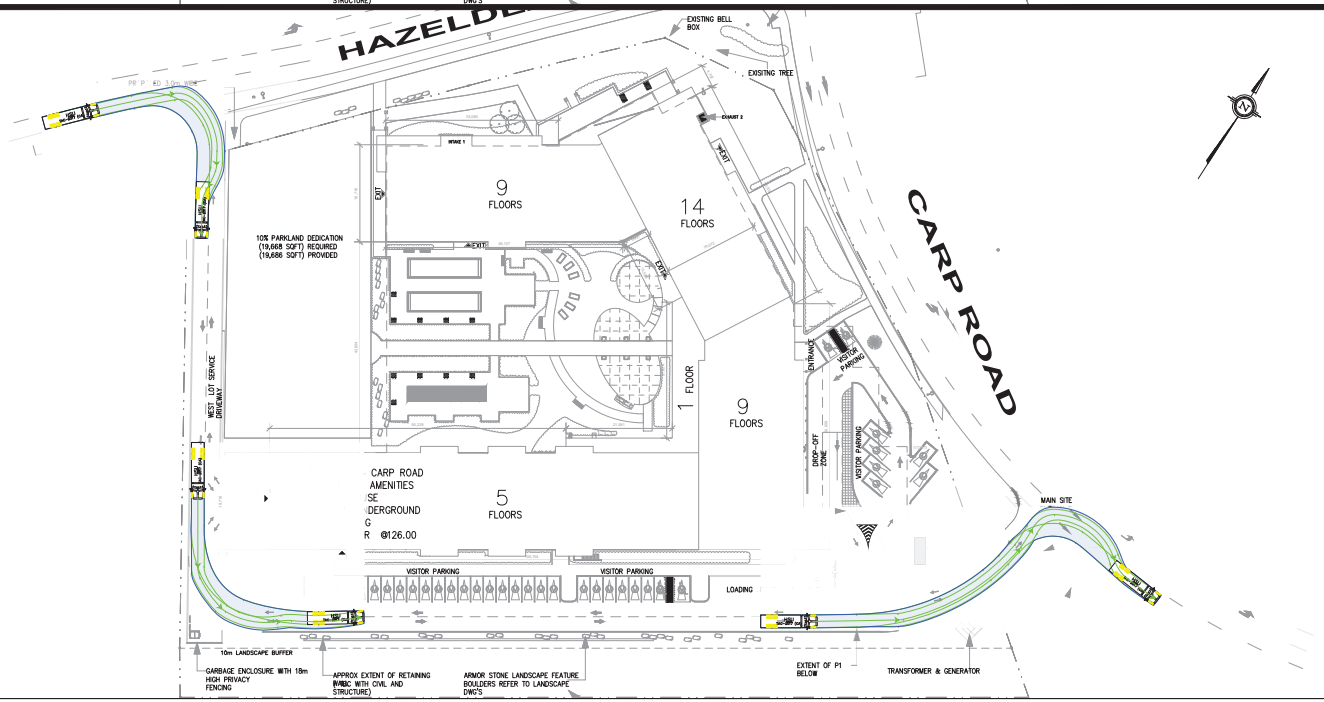
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-29	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-034	002	04

HSU Movements
Carp Road Access



HSU Movements
Hazeldean Road Access



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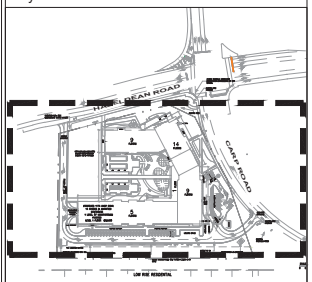

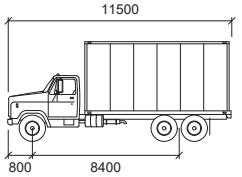

HSU

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Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
04	Issued for Review:	AN	2024-11-29

STATUS:

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

CLIENT: Le Groupe Maurice
400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

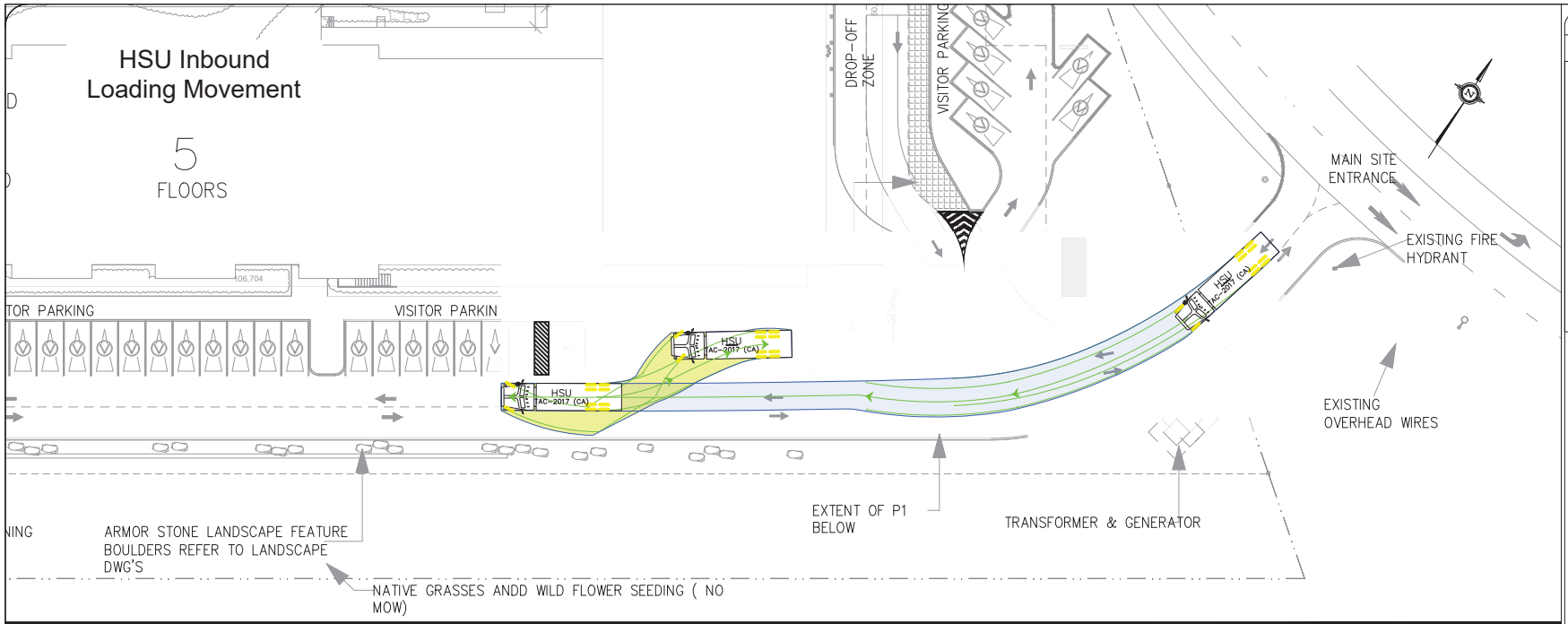
ARCHITECT:

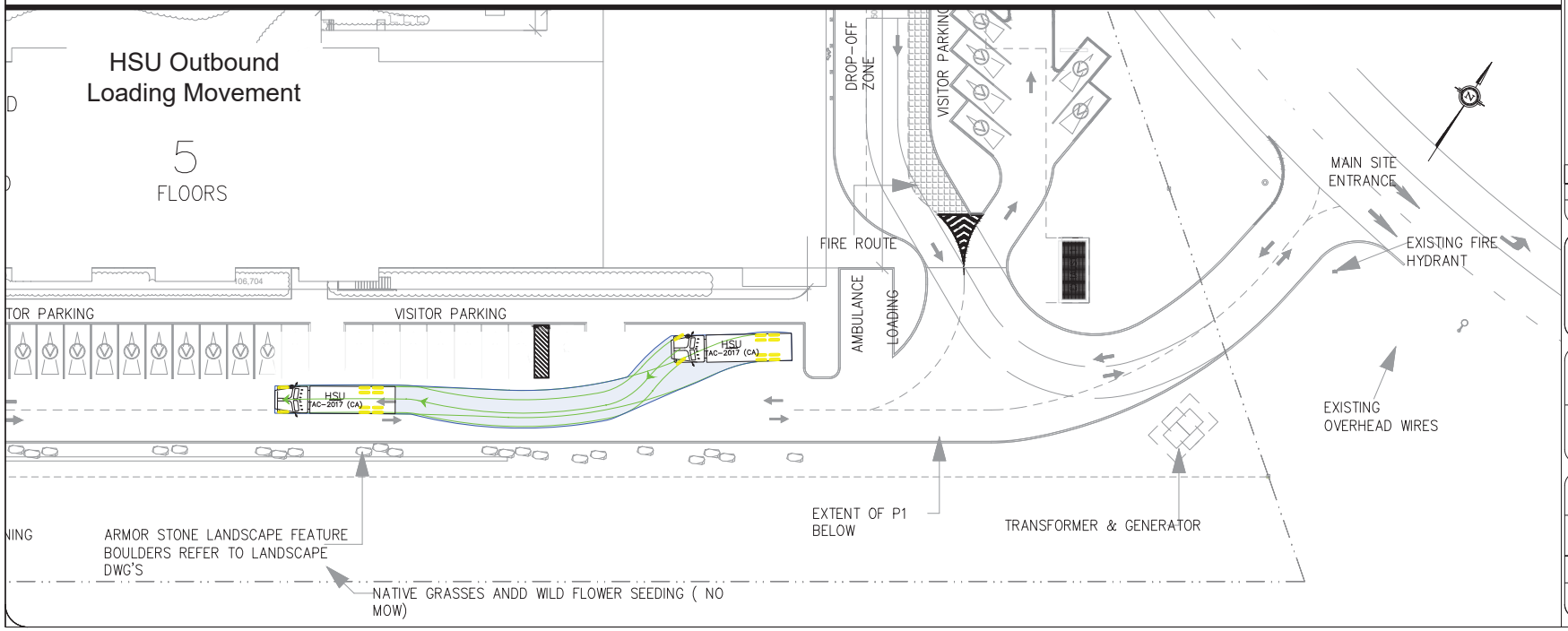
SITE: 1174 Carp Road

TITLE: Turning Movement Analysis
HSU Turning Movements (1)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-29	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-034	003	04





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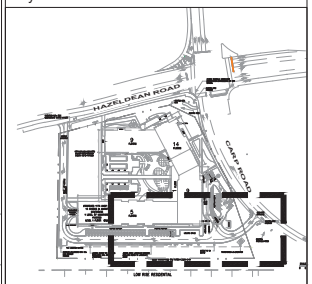
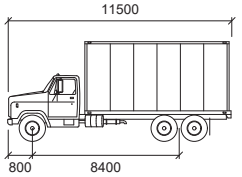




HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
04	Issued for Review:	AN	2024-11-29

STATUS:

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

CLIENT: Le Groupe Maurice
400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

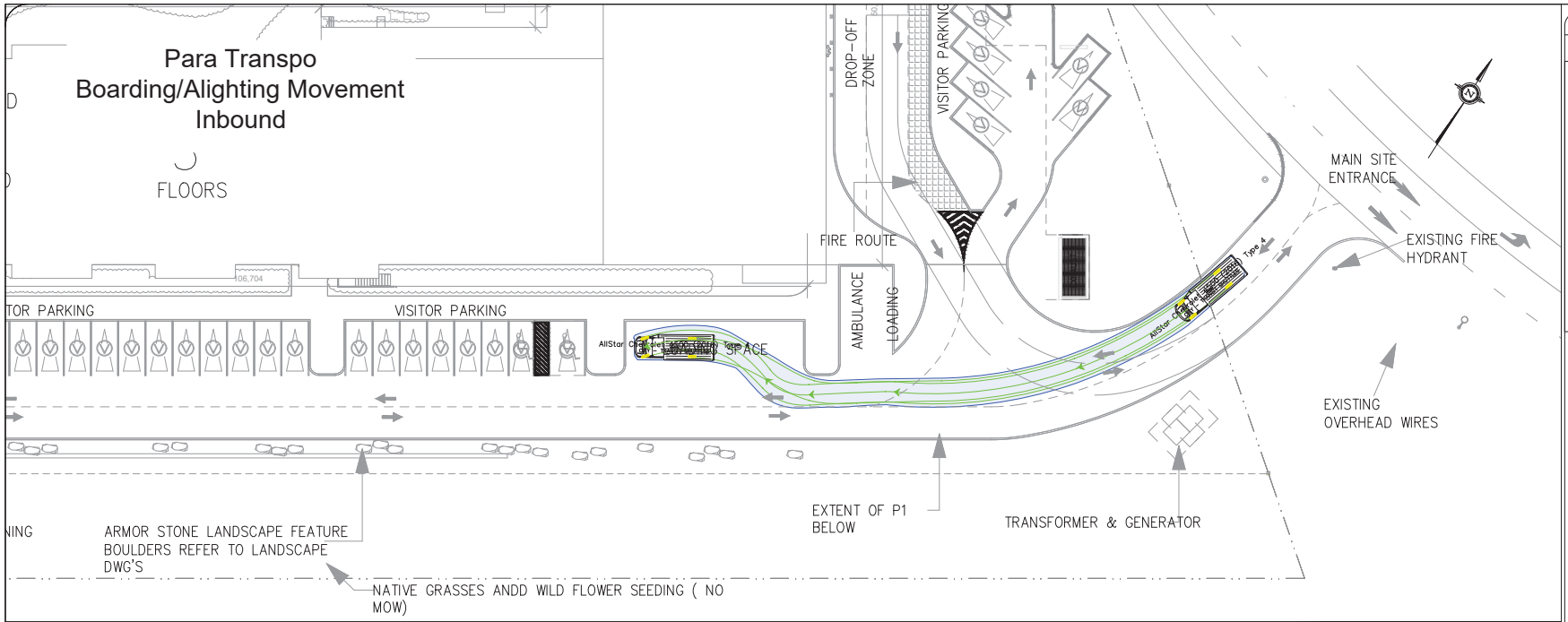
ARCHITECT:

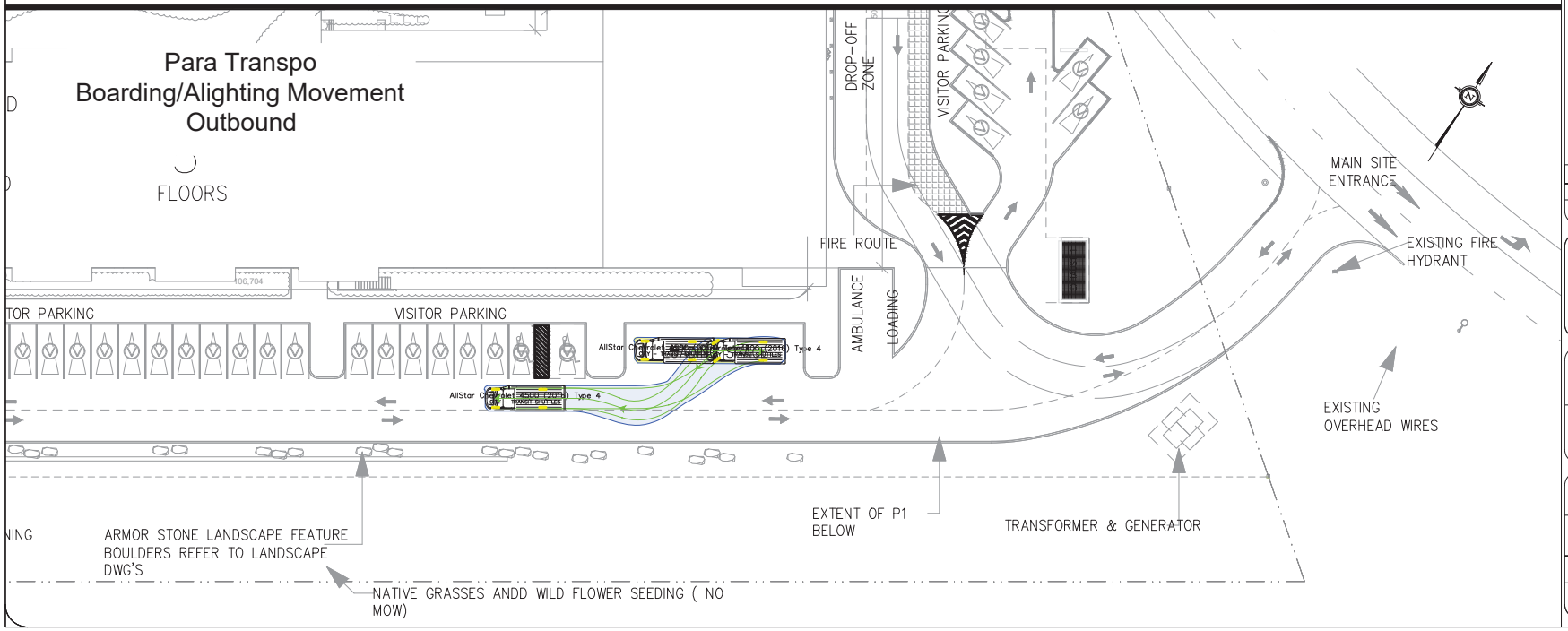
SITE: 1174 Carp Road

TITLE: Turning Movement Analysis
HSU Turning Movements (2)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-29	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-034	004	04





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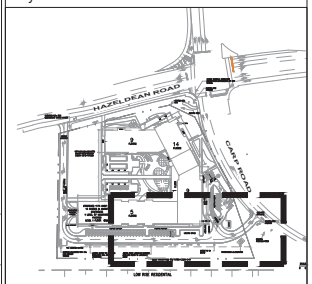
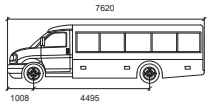
Key Plan:





AllStar Chevrolet 4500 (2016) Type 4

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Track	: 1957
Lock to Lock Time	: 6.0
Steering Angle	: 34.2

REV:	DESCRIPTION:	BY:	DATE:
04	Issued for Review:	AN	2024-11-29

STATUS:

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

CLIENT: Le Groupe Maurice
400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

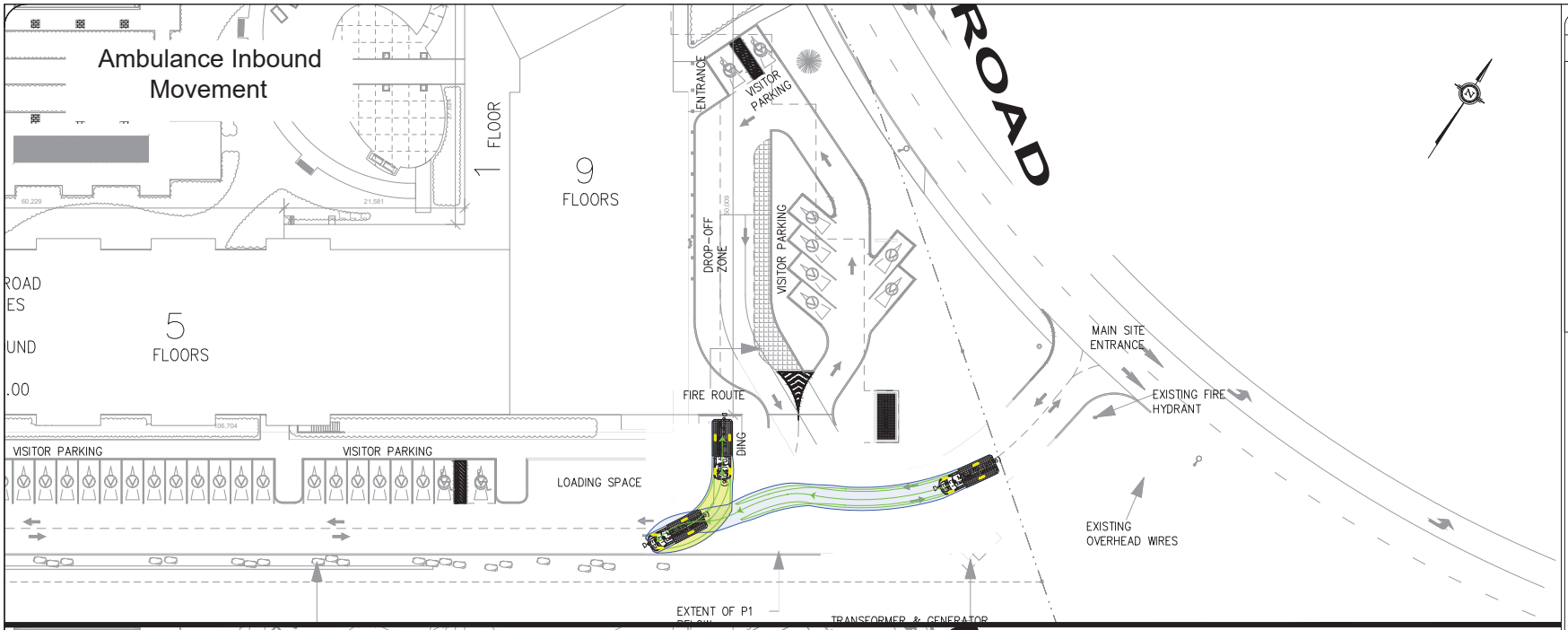
ARCHITECT:

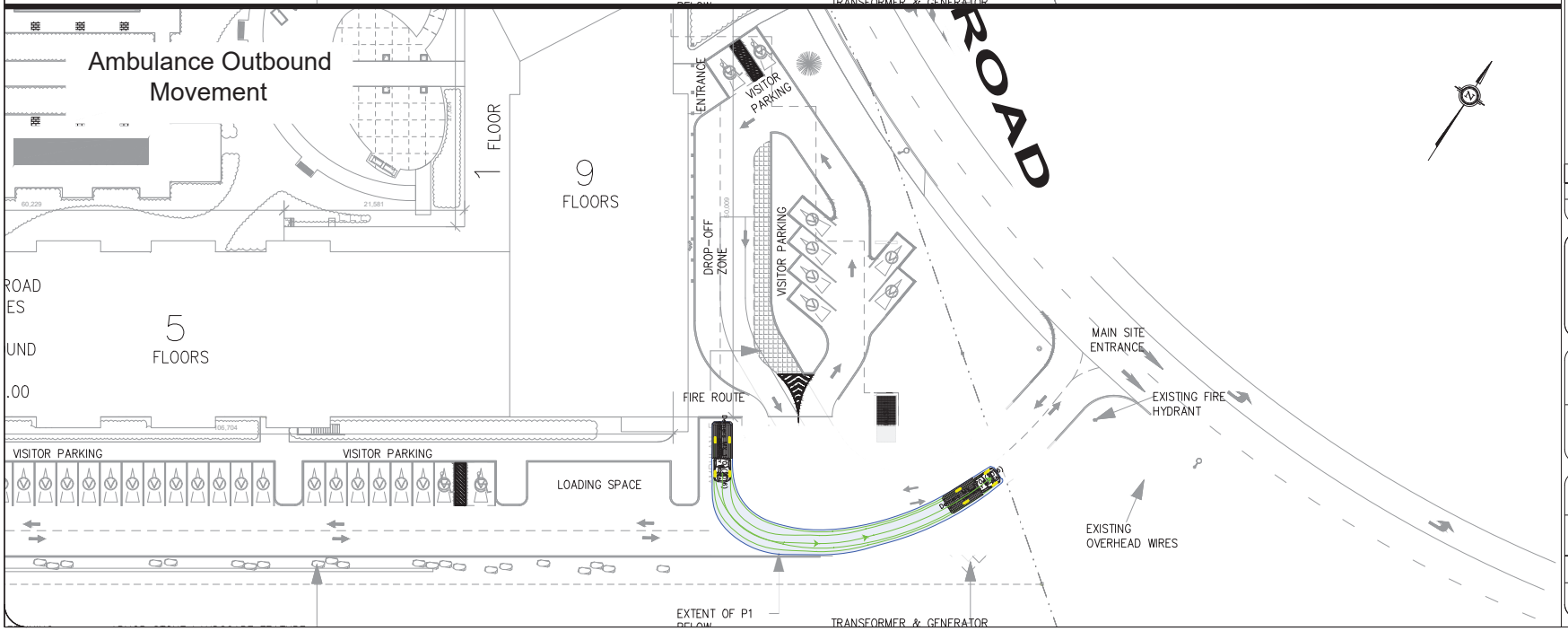
SITE: 1174 Carp Road

TITLE: Turning Movement Analysis
Para Transpo Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-29	AN	JK

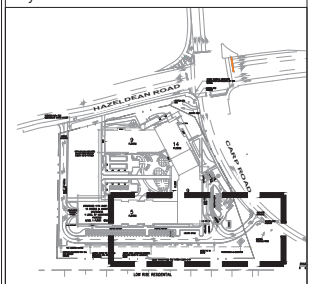
PROJECT NO:	DRAWING NO:	REVISION:
2023-034	005	04

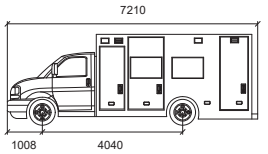




Notes:

Key Plan:





Demers MX 170 (2016)

	mm
Width	: 2410
Track	: 1957
Lock to Lock Time	: 6.0
Steering Angle	: 28.3

REV:	DESCRIPTION:	BY:	DATE:
04	Issued for Review:	AN	2024-11-29

STATUS:

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

CLIENT: Le Groupe Maurice
400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

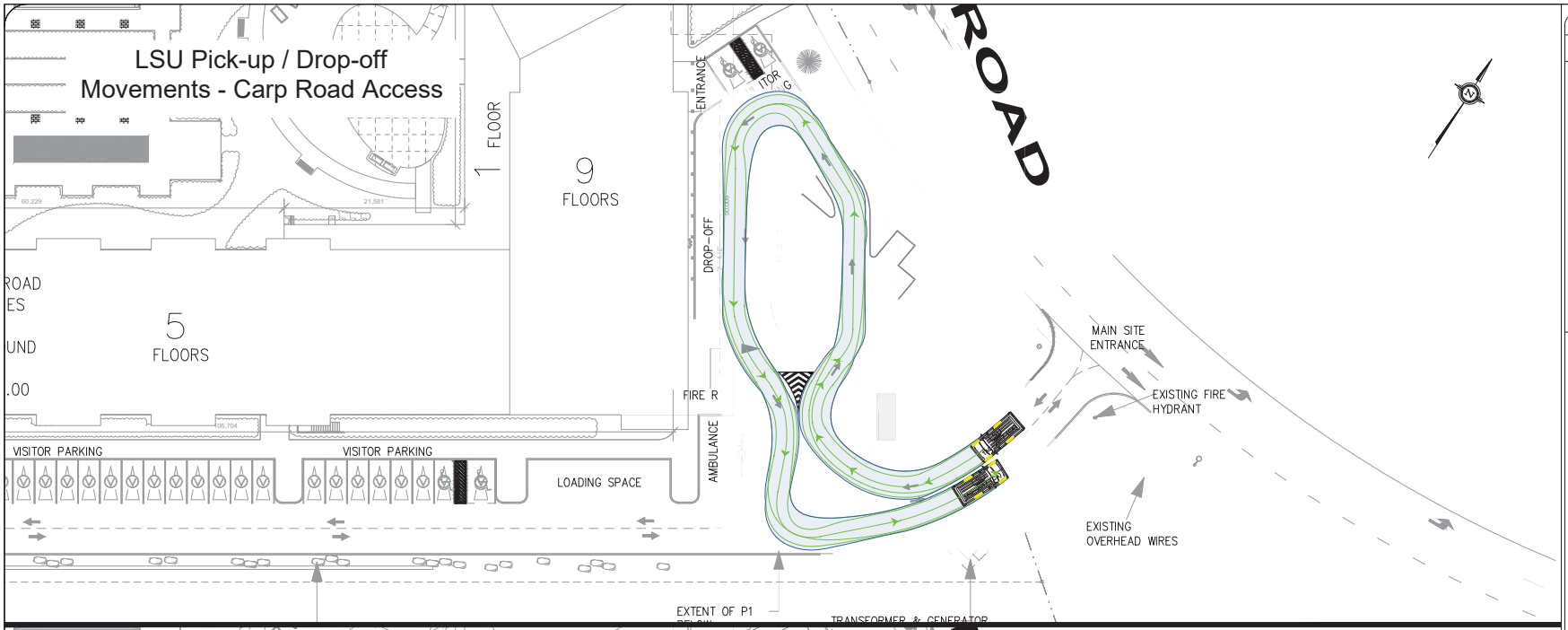
ARCHITECT:

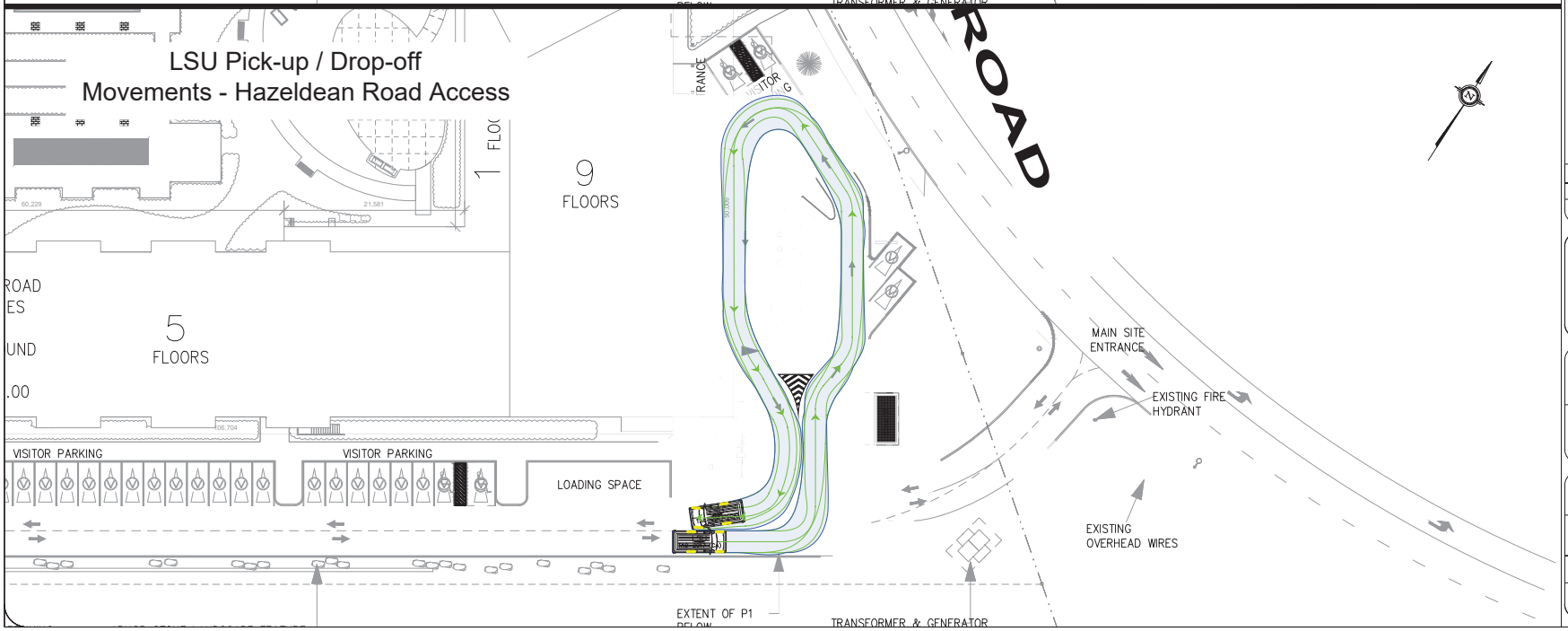
SITE: 1174 Carp Road

TITLE: Turning Movement Analysis
Ambulance Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-29	AN	JK

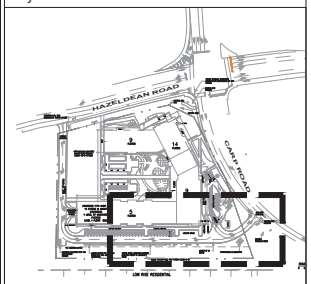
PROJECT NO:	DRAWING NO:	REVISION:
2023-034	006	04

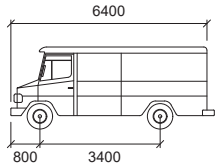




Notes:

Key Plan:





LSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

REV:	DESCRIPTION:	BY:	DATE:
04	Issued for Review:	AN	2024-11-29

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6 Plaza Court
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(343) 999-9117

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400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

ARCHITECT:

SITE: 1174 Carp Road

TITLE: Turning Movement Analysis
LSU Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-11-29	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-034	007	04

Appendix G

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc.**	**Project**	**2023-034**
Scenario	**Existing/Future**	**Date**	**2023-10-26**
Comments			

SEGMENTS			Hazeldean Rd	Carp Rd
			1	2
Pedestrian	Sidewalk Width Boulevard Width	-	no sidewalk n/a	no sidewalk n/a
	Avg Daily Curb Lane Traffic Volume		≤ 3000	≤ 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 50 to 60 km/h no
	Exposure to Traffic PLoS		**F**	**F**
	Effective Sidewalk Width			
	Pedestrian Volume			
	Crowding PLoS		**-**	**-**
	Level of Service		**-**	**-**
Bicycle	Type of Cycling Facility	**C**	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes		2 ea. dir. (w median)	2 ea. dir. (w median)
	Operating Speed		>50 to 70 km/h	>50 to 70 km/h
	# of Lanes & Operating Speed LoS		**C**	**C**
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m	≥ 1.8 m
	Bike Lane Width LoS		**A**	**A**
	Bike Lane Blockages		Rare	Rare
	Blockage LoS		**A**	**A**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		>40 to 50 km/h	>40 to 50 km/h
	Unsignalized Crossing - Lowest LoS		**B**	**A**
	Level of Service		**C**	**C**
Transit	Facility Type	-		
	Friction or Ratio Transit:Posted Speed			
	Level of Service		**-**	**-**
Truck	Truck Lane Width	**B**	> 3.7 m	> 3.7 m
	Travel Lanes per Direction		1	1
	Level of Service		**B**	**B**
Auto	**Level of Service**	**Not Applicable**		

Appendix H

Carp Road Access Sightlines

CGH TRANSPORTATION

Notes:

Design Speed: 60km/h

LEGEND

STOPPING SIGHT DISTANCE: 85m

DECISION POINT

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	AN	2024-06-25

STATUS:

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

CLIENT: Le Groupe Maurice
400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

ARCHITECT:

SITE: 1174 Carp Road

TITLE: Sightline Analysis
Stopping Sight Distance

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-06-25	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-034	001	01

Notes:

Design Speed: 60km/h

LEGEND

DEPARTURE SIGHT DISTANCE
RIGHT TURN: 110m
LEFT TURN: 130m

DECISION POINT

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	AN	2024-06-25

STATUS:

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

CLIENT: Le Groupe Maurice
400 rue des Nations, bureau 137
Saint-Laurent (Quebec)
H4R 3G4

ARCHITECT:

SITE: 1174 Carp Road

TITLE: Sightline Analysis
Departure Sight Distance

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-06-25	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-034	002	01

Appendix I

Synchro Access Intersection Operations Worksheets – 2031 Future Total Conditions

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	2	1	572	400	16
Future Vol, veh/h	26	2	1	572	400	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	2	1	572	400	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	982	408	416	0	-	0
Stage 1	408	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	276	643	1143	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	276	643	1143	-	-	-
Mov Cap-2 Maneuver	276	-	-	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	563	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1143	-	288	-	-
HCM Lane V/C Ratio	0.001	-	0.097	-	-
HCM Control Delay (s)	8.2	0	18.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	2	2	526	692	37
Future Vol, veh/h	24	2	2	526	692	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	2	2	584	769	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1378	790	810	0	-	0
Stage 1	790	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	160	390	816	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	159	390	816	-	-	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	445	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31	0	0
HCM LOS	D		

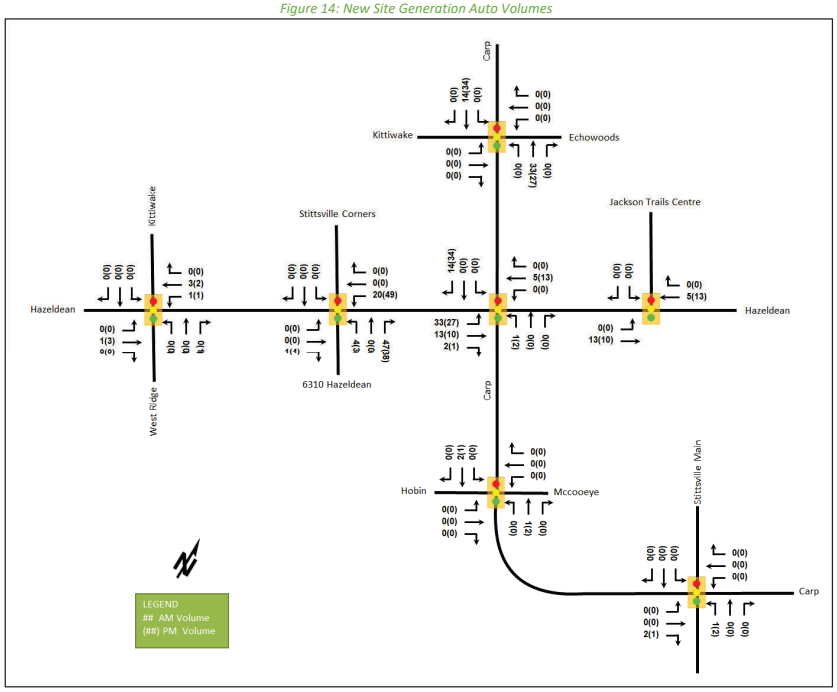
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	816	-	167	-	-
HCM Lane V/C Ratio	0.003	-	0.173	-	-
HCM Control Delay (s)	9.4	0	31	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Appendix J

6310 Hazeldean Road TIA Excerpts

CGH TRANSPORTATION

Figure 14: New Site Generation Auto Volumes



5 Exemption Review

Table 12 summarizes the exemptions for this TIA.

Table 12: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	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 plan and zoning by-law applications	Required
4.3 Boundary Street Design		All applications	Required

10.2 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 H.

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 applied to the appropriate roadway mainline volume and to the appropriate major turning movements at the intersections to account for external area growth. Table 14 summarizes the growth rates from the TRANS model, and Table 15 summarizes the growth rates applied within the study area.

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

Street	TRANS Rate	
	Eastbound	**Westbound**
Hazeldean Rd	0.55%	0.09%
	Northbound	**Southbound**
Carp Rd	2.62%	0.24%

Table 15: 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%

10.3 Other Developments

The background developments explicitly considered in the background conditions (Section 10.2) include:

- 6171 Hazeldean Road
- 1174 Carp Road

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

11 Demand Rationalization

11.1 2027 Future Background Operations

As noted in Section 2.2.7, due to the difference between the 2022 and the 2023 volumes on the network, approximately 130-230 vehicles during the AM peak and approximately 130-335 vehicles during the PM peak were added to the 2022 counts along Hazeldean Road on the eastbound and westbound movements for balancing the volumes for the future analysis. Figure 15 illustrates the 2027 background volumes and Table 16 summarizes the 2027 background intersection operations. The level of service for signalized intersections is based on HCM 2010 calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and HCM average delay for unsignalized intersections. The synchro worksheets for the 2027 future background horizon are provided in Appendix J.