3095 Palladium Drive

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

Prepared for:

3095 Palladium LP
3080 Younge Street, Suite 6060
Toronto, ON M4N 3N1

Prepared by:

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

June 2023

PN: 2023-042

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1 Screening

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

2 Existing and Planned Conditions

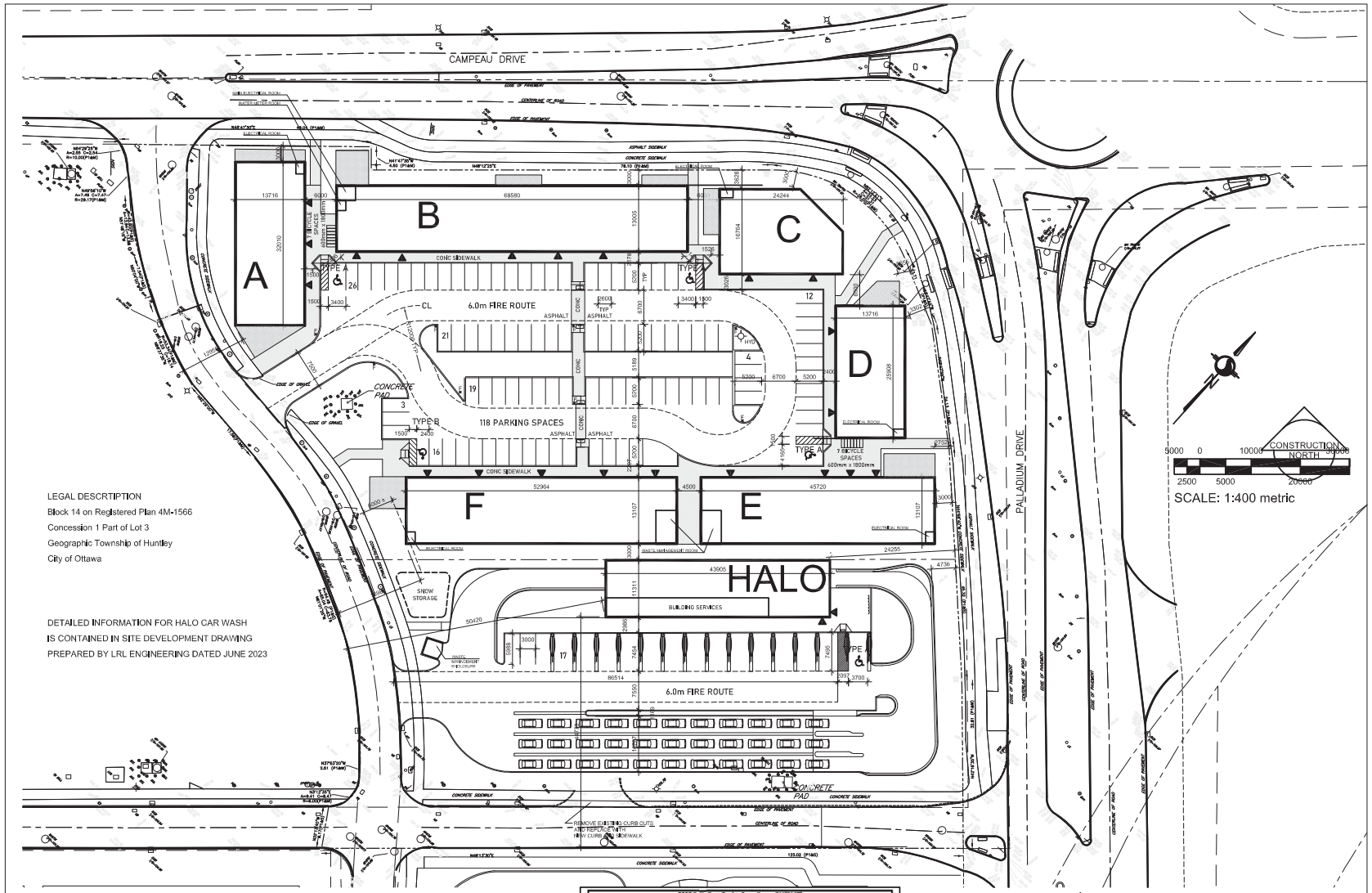
2.1 Proposed Development

The development site is located at 3095 Palladium Drive, and it is zoned as General Mixed-Use Zone (GM[2167]). The proposed development consists of approximately 3,351 sq. m. of retail space including large and small multi-unit retail pads on the northern portion of the site and a 497 sq. m. car wash on the southern portion of the site. A total of 118 vehicle parking spaces and 14 bicycle parking spaces are proposed. The anticipated full build-out and occupancy horizon is 2027 with construction occurring in a single phase. The site will connect to Campeau Drive via Kanata West Centre Drive and to Palladium Drive via Cabela's Way. The site is located within the Kanata West Community Design Plan area and forms part of the previously approved Kanata West Business Park subdivision. 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: March 24, 2023

Figure 2: Concept Plan



LEGAL DESCRTIPTION
Block 14 on Registered Plan 4M-1566
Concession 1 Part of Lot 3
Geographic Township of Huntley
City of Ottawa

DETAILED INFORMATION FOR HALO CAR WASH
IS CONTAINED IN SITE DEVELOPMENT DRAWING
PREPARED BY LRL ENGINEERING DATED JUNE 2023

INFORMATION FOR THIS DRAWING TAKEN FROM PLAN OF SURVEYOF
PART OF BLOCKS 1 AND 14 REGISTERED PLAN 4M-1566
AND PART OF BLOCKS 3 AND 4 REGISTERED PLAN 4M-1642
CITY OF OTTAWA COMPLETED JANUARY 24, 2023
PREPARED BY STANTEC GEOMATICS LTD., OLS
AND FROM
TOPOGRAPHIC SKETCH OF BLOCK 14 REGISTERED PLAN 4M-1566
(GEOGRAPHIC TOWNSHIP OF HUNTLEY) CITY OF OTTAWA
COMPLETED APRIL 10, 2023
PREPARED BY STANTEC GEOMATICS LTD., OLS

GROSS FLOOR AREAS

BUILDING A	418	m2
BUILDING B	846	m2
BUILDING C	352	m2
MEZZ	175	m2
BUILDING D	336	m2
BUILDING E	548	m2
MEZZ	147	m2
BUILDING F	639	m2
HALO	358	m2
TOTAL	**3,819**	**m2**

3095 Palladium Zoning Compliance GM[2167]

Mechanism	Required	Proposed
Minimum Lot Area	No Minimum	17,573 m²
Minimum Lot Width	No Minimum	132.3 m
Minimum Interior Side Yard Setback	No Minimum	12.76 m
Minimum Front Yard Setback	1.5 m	2.65 m
Minimum Rear Yard Setback	No Minimum	183.8 m
Minimum Corner Side Yard Setback	No Minimum	0.7 m
Maximum Building Height	18 m	8.4
Maximum Floor Space Index	2	0.22
Minimum Width of Landscaped Area	Abutting a Street: 3m Other Cases: No Minimum	3 m N/A
Minimum Area of Landscaping in Parking Lot	15%	35%
Minimum Width of Landscaping Around Parking Lot	3 m	8.4 m
Parking Spaces	110	118
Bicycle Parking Spaces	7	14

OWNER/DEVELOPER
3095 Palladium GP Inc.
3080 Yonge Street Suite 6060
Toronto ON M4N 3N1

ENGINEER
RobInson Consultants Inc.
210-350 Palladium Drive
Ottawa ON K2V 1A8

ARCHITECT
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610-160 Baldwin Street
Toronto ON M5T 3K7

SURVEYOR
Stantec Geomatics Ltd.
300-1331Clyde Avenue
Ottawa ON K2C 3G4

APPLICANT
J.F. Sabourin and Associates Inc.
52 Springbrook Drive
Ottawa ON K2S 1B9
Attn: Mr. Tim Eisner, M.Pl., LEED Green Associate

1
A100
SCALE: 1:400

ISO A1

REVISIONS AND DISTRIBUTION LOG

No.	Date	Note
01	20 JUN 2023	ISSUED FOR SITE PLAN CONTROL

ALL DRAWINGS ARE THE PROPERTY OF THE ARCHITECT AND MUST BE RETURNED ON REQUEST.
THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND REPORT DISCREPANCIES TO THE ARCHITECT.
ALL DIMENSIONS ARE GIVEN IN MILLIMETERS UNLESS OTHERWISE INDICATED.
DO NOT SCALE DRAWINGS.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBø	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
M/MEAS	"	MEASURED
PROP	"	PROPOSED/NONE
OU	"	ORIGIN UNKNOWN
SC	"	STANTEC GEOMATICS LTD.
P1	"	REGISTERED PLAN 4M-1566
● BOL	"	BOLLARD
CB	"	CATCH BASIN
SICB	"	SIDE INLET CB
ELPOST	"	ELECTRICAL OUTLET
HYD	"	FIRE HYDRANT
LS	"	LIGHT STANDARD
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHSAN	"	MAINTENANCE HOLE SANITARY
MHSTM	"	MAINTENANCE HOLE STORM
PLBX	"	PULL BOX
SN	"	SIGN
TB BELL	"	TERMINAL BOX - BELL
TCB	"	TRAFFIC CONTROL BOX
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
	"	TREE DECIDUOUS (DBH SHOWN)
F	"	FIRE ROUTE SIGN

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Toronto ON M5T 3K7
T 416.550.1585
allan@ajsarchitect.com

Project
COMMERCIAL DEVELOPMENT
3095 Palladium Drive
Ottawa Ontario

Drawing Title
SITE PLAN

Drawn By:	Checked By:	Date Checked:	Project No.
			3095P_2023

Date Plotted: Jun 20, 2023 - 12:24pm
Scale: 1:400

Drawing No.: A100
Revision No.: 01

2.2 Existing Conditions

2.2.1 Area Road Network

Campeau Drive: Campeau Drive is a City of Ottawa arterial road east of Palladium Drive, and a City of Ottawa local road west of Palladium Drive. East of Kanata West Centre Drive, it has a divided four-lane urban cross-section with sidewalks and cycletracks on both sides of the road within the study area except for the section between Journeyman Street and Huntmar Drive, which have a sidewalk and cycletrack on the south side of the road. West of Kanata West Centre Drive, it has a divided two-lane urban cross-section with sidewalks on both sides of the road. The posted speed limit is 60 km/h. The Official Plan reserves a right-of-way of 26.0 metres west of Palladium Drive and 37.5 metres west of Palladium Drive within the study area.

Palladium Drive: Palladium Drive is a City of Ottawa arterial road south of Campeau Drive and a local road north of Campeau Drive. Palladium Drive north of Upper Canada Street, it has a two-lane urban cross-section. Between Upper Canada Street and Campeau Drive, it has a two-lane urban cross-section with sidewalks and cycletracks on both sides of the road. Between Campeau Drive and westbound Highway 417 ramp terminal, it has a divided four-lane urban cross-section with sidewalks and cycletracks on both sides of the road. South of westbound Highway 417 ramp terminal within the study area, it has a four-lane rural cross-section with gravel shoulders. The posted speed limit is 60 km/h north of westbound Highway 417 ramp terminal and 70 km/h south of westbound Highway 417 ramp terminal. The Official Plan reserves a right-of-way of 44.5 metres within the study area. Palladium Drive is a truck route south of the westbound Highway 417 ramp terminal.

Journeyman Street: Journeyman Street is a City of Ottawa local road with a two-lane urban cross-section. Sidewalks are present on both sides of the road. The unposed speed limit is assumed to be 50km/h and the existing right-of-way is 26.0 metres.

Highway 417: Highway 417 is a Ministry of Transportation of Ontario urban freeway with a seven-lane cross-section within the study area. The posted speed limit is 100 km/h and the existing right of way is 60.0 metres.

Kanata West Centre Drive: Kanata West Centre Drive is a N-S private road with a two-lane urban cross-section. Sidewalks are present on the east side of the road. The unposed speed limit is assumed to be 30km/h.

Cabela's Way: Cabela's Way is a E-W private road with a two-lane rural cross-section. Sidewalks are present on the north side of the road. The unposed speed limit is assumed to be 30km/h.

2.2.2 Existing Intersections

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

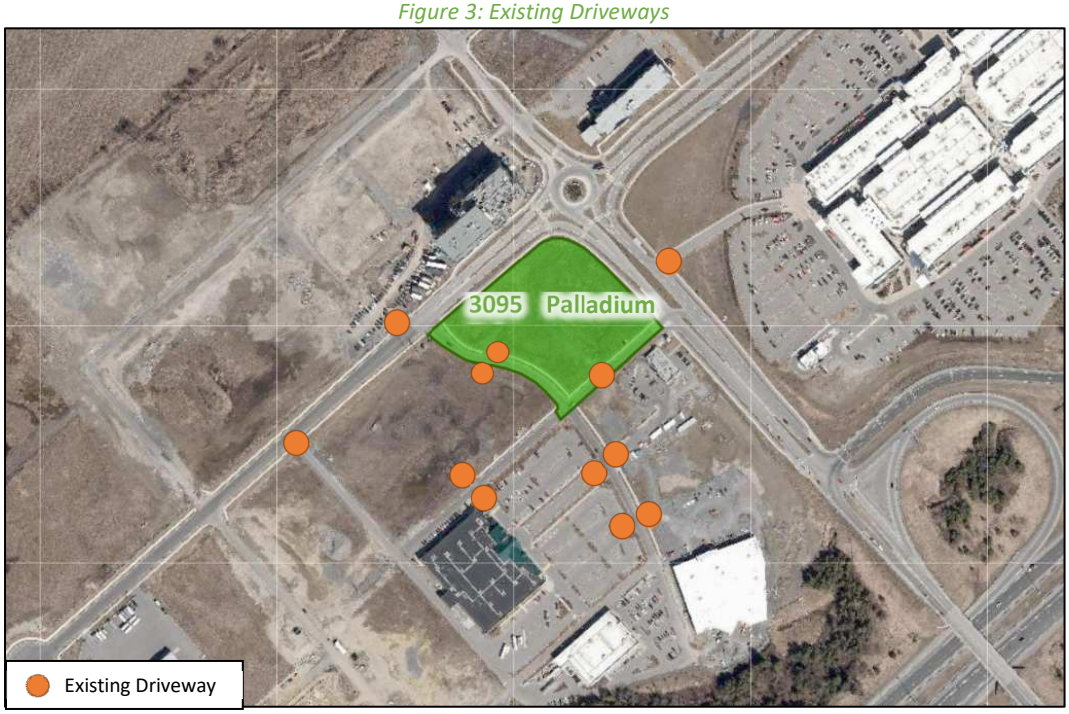
Campeau Drive at Kanata West Centre Drive	The intersection of Campeau Drive at Kanata West Centre Drive is a T-intersection with stop control on the minor approaches of Kanata West Centre Drive. All approaches consist of a shared all-movements lane. No turn restrictions were noted.
Campeau Drive at Palladium Drive	The intersection of Campeau Drive at Palladium Drive is a four-legged roundabout intersection. The northbound consists of a shared left-turn/through lane and a right-turn bypass lane, and the southbound consists of a shared left-turn/through lane and a shared through/right-turn lane. The eastbound consists of a shared all-movement lane and a right-turn bypass lane, and the westbound approach consists of a left-turn lane and a shared all-movement lane.

	Pedestrian crossovers are provided on each leg and a cycletracks circulates the roundabout. No turn restrictions were noted.
Campeau Drive at Journeyman Street	The intersection of Campeau Drive at Journeyman Street is a signalized intersection. The eastbound, westbound, and southbound approaches each consists of an auxiliary left-turn lane, a through lane, and a shared through/right-turn lane. The northbound approach consists of an auxiliary left-turn lane, a through lane, and a right-turn lane. No turn restrictions were noted.
Palladium Drive at Cabela's Way	The intersection of Palladium Drive at Cabela's Way is a T-intersection with stop control on the minor approach of Cabela's Way. The northbound approach consists of an auxiliary left-turn lane and two through lanes, and the southbound approach consists of a through lane and a shared through/right-turn lane. The eastbound approach consists of a right-turn lane. The northbound U-turn and eastbound left-turn movements are prohibited.
Palladium Drive at Westbound Highway 417 Ramp	The intersection of Palladium Drive at Westbound Highway 417 Ramp is a signalized intersection. The northbound approach consists of two through lanes and an auxiliary channelized right-turn lane, and the southbound approach consists of an auxiliary left-turn lane and two through lanes. The westbound approach consists of two left-turn lanes and an auxiliary right-turn lane. No turn restrictions were noted.
Palladium Drive at Eastbound Highway 417 Ramp	The intersection of Palladium Drive at Eastbound Highway 417 Ramp is a T-intersection with stop control on the minor approach of Eastbound Highway 417 Ramp. The northbound and southbound approaches each consists of two through lanes. The westbound approach consists of a left-turn lane and an auxiliary channelized right-turn lane. Approximately 120 metres north and 90 metres south of the intersection are on-ramps to the eastbound Highway 417. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the proposed site access, accesses are present on Kanata West Centre Drive and Cabela's Way to the retail plaza. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: March 24, 2023

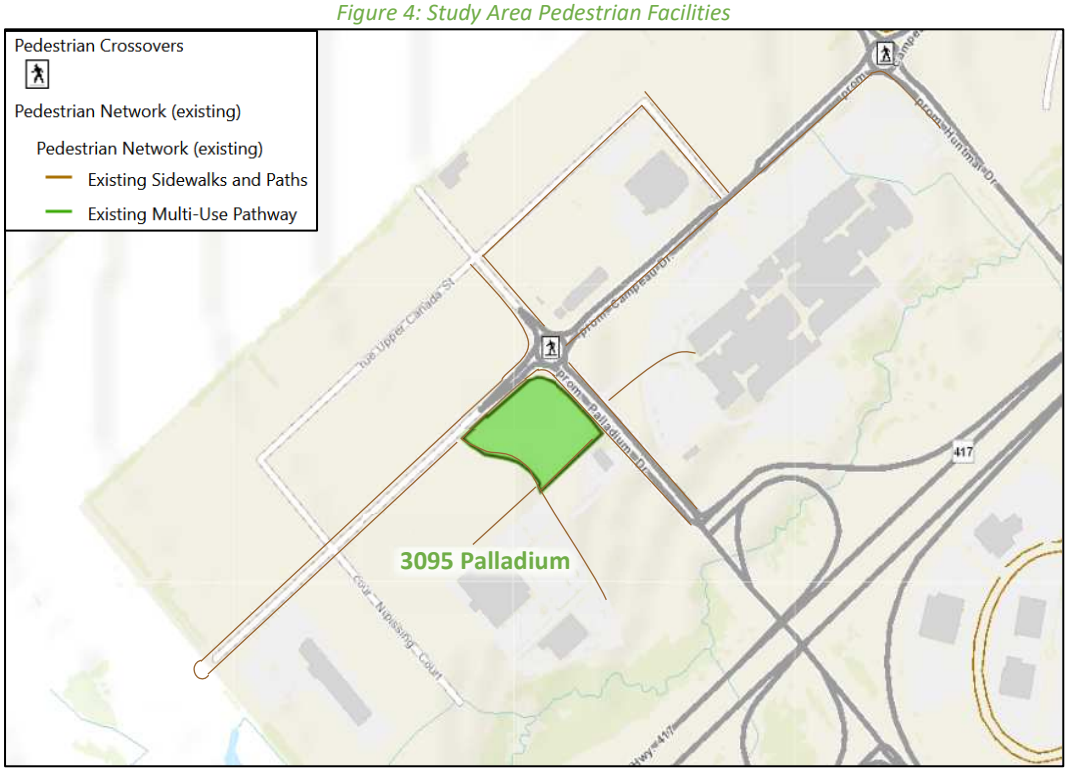
2.2.4 Cycling and Pedestrian Facilities

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

Within the study area, sidewalks are provided on both sides of Campeau Drive west of Journeyman Street, Campeau Drive east of Huntmar Drive, Palladium Drive between Upper Canada Street and westbound Highway 417 ramp terminal, and Journeyman Street. Sidewalks are also provided on the south side of Campeau Drive between Palladium Drive and Huntmar Drive, on the east side of Kanata West Centre Drive, around Tanger outlet, and on the north side of Cabela's Way.

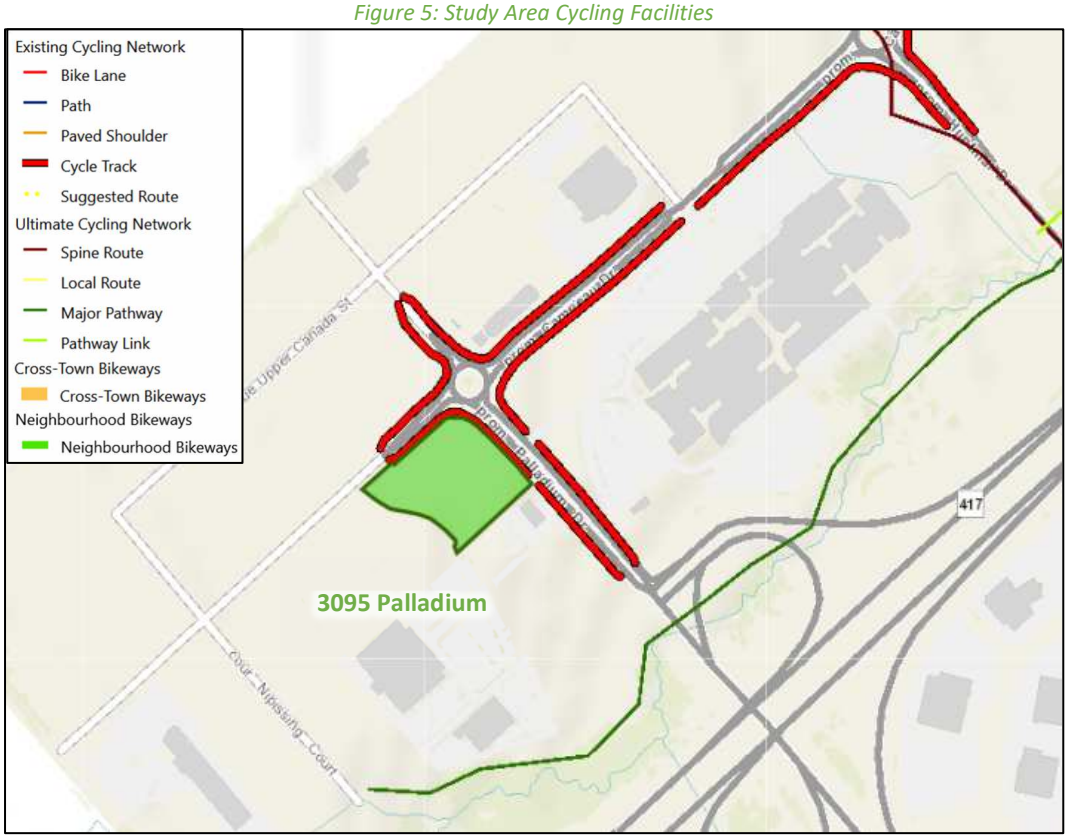
Within the study area, cycletracks are present on both sides along Campeau Drive and Palladium Drive between Upper Canada Street and westbound Highway 417 ramp terminal.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: March 24, 2023

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: March 24, 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.

Figure 6: Existing Pedestrian Volumes

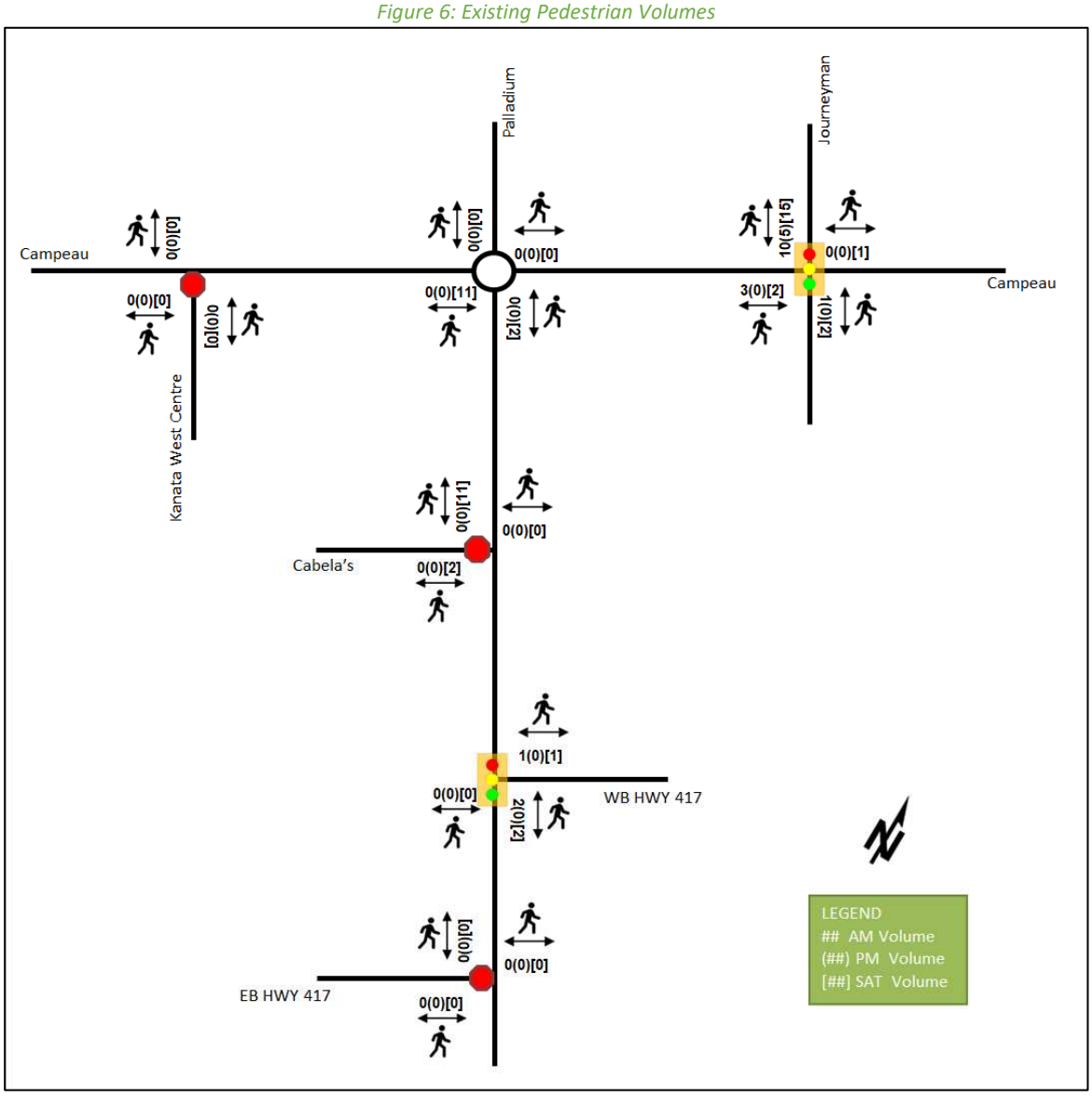
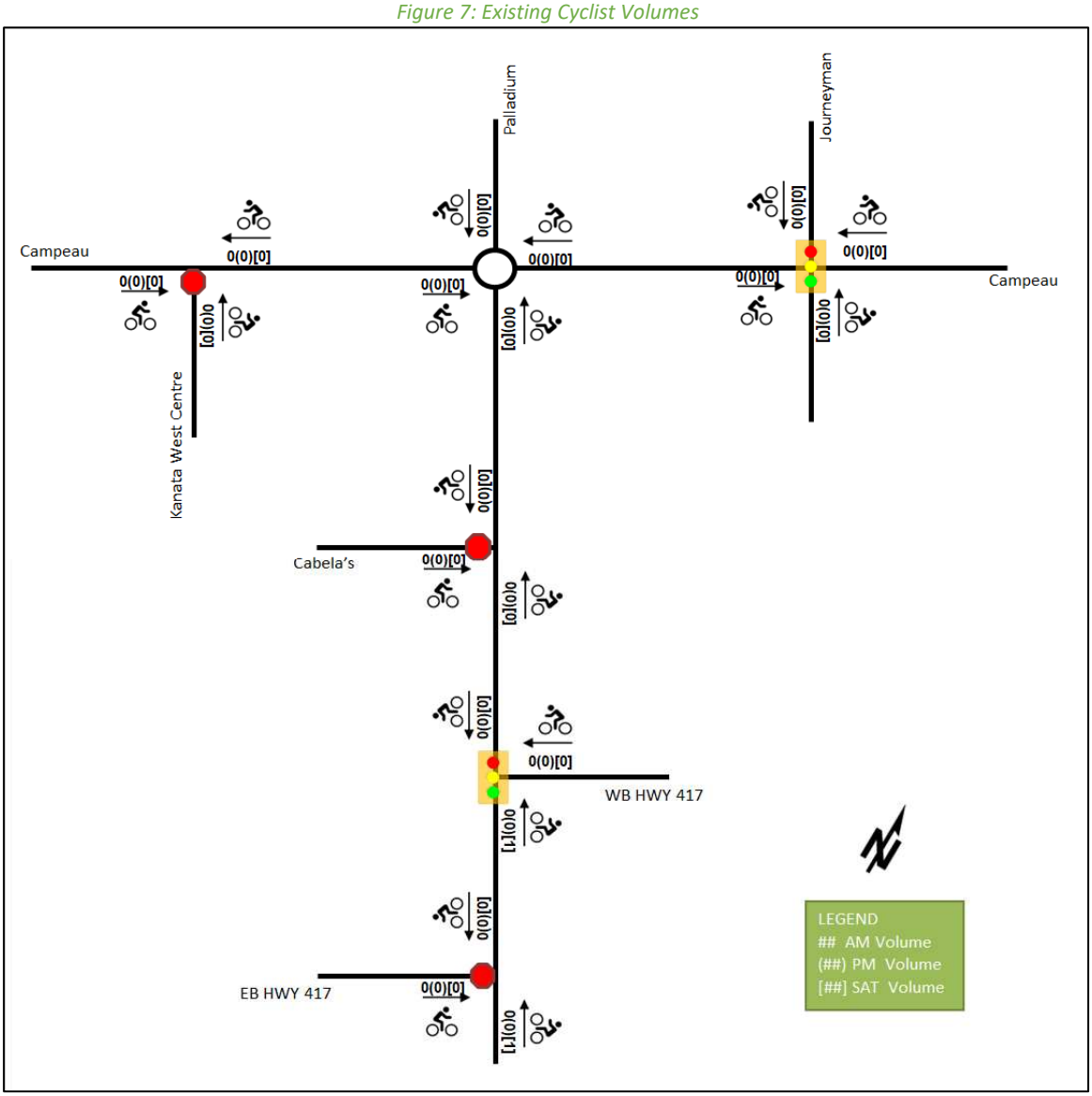


Figure 7: Existing Cyclist Volumes



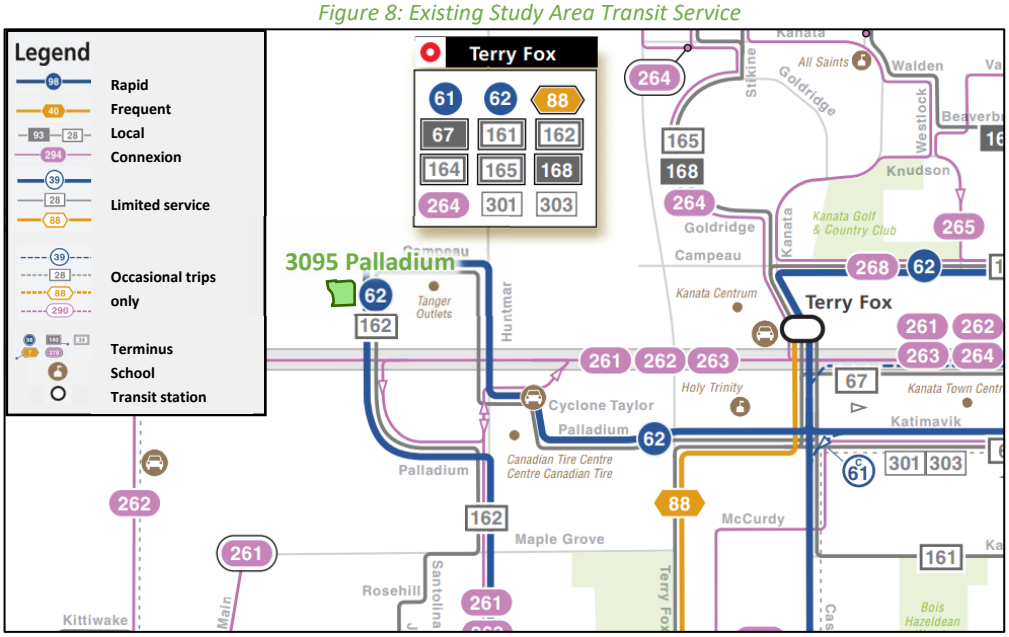
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from March 15, 2023, and is included for general information purposes and context to the surrounding area.

Within the study area, routes #62 and #162 travel along Palladium Drive, Campeau Dive, and Huntmar Drive. Primary stops are located at Palladium Drive at Campeau Dive. The frequency of these routes within proximity of the proposed site based on March 15, 2023, service levels are:

- Route #62 – 30-minute service all-day
- Route # 162 – Three afternoon buses and four late evening buses per day

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: March 15, 2023

Figure 9: Existing Study Area Transit Stops

http://maps.ottawa.ca/geoOttawa/ Accessed: March 15, 2023

2.2.6 Existing Area Traffic Management Measures

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

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa, The Traffic Specialist, and Ministry of Transportation for the existing study area intersection. The existing traffic counts were balanced along the roadways and grown to 2023 existing condition. It is noted that subsequent to this study, the City direction has been to discontinue the prior request for balancing. Table 1 summarizes the intersection count dates and sources.

Table 1: Intersection Count Date

Intersection	Count Date	Source
Campeau Drive at Kanata West Centre Drive	Tuesday, 28 May 2019	The Traffic Specialist
	Saturday, April 1 2023	
Campeau Drive at Palladium Drive	Tuesday, 28 May 2019	The Traffic Specialist
	Saturday, April 15, 2023	
Campeau Drive at Journeyman Street	Thursday, 23 May 2019	The Traffic Specialist
	Saturday, April 1 2023	
Palladium Drive at Cabela's Way	Thursday, 23 May 2019	The Traffic Specialist
	Saturday, April 1 2023	
Palladium Drive at Westbound Highway 417 Ramp	Wednesday November 2, 2022	City of Ottawa
	Saturday, April 1 2023	The Traffic Specialist
Palladium Drive at Eastbound Highway 417 Ramp	Tuesday, 24 April 2018	Ministry of Transportation
	Saturday, April 1 2023	The Traffic Specialist

The developments of 8600 Campeau Drive, 8605 Campeau Drive, 8700 Campeau Drive, 800 Palladium Drive, Kanata West Retail/Business Park (Furniture Stores), and 340 Huntmar Drive are noted to have been completed during the intermediate years from the AM and PM peak hour traffic counts and have been added to the existing conditions.

While not within the study area, the Campeau Drive extension was completed and opened in the fall of 2021, connecting Campeau Drive across the Carp River to Didsbury Road, including the roundabout at Winterset Road and signals at both Kanata Commons and Didsbury Road. Palladium Drive has been realigned to the south of Highway 417 at a new roundabout intersection to form a portion of the planned Kanata North-South Arterial.

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, and average delay for unsignalized intersections. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. Detailed turning movement count data is included in Appendix B and the Synchro and Sidra worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

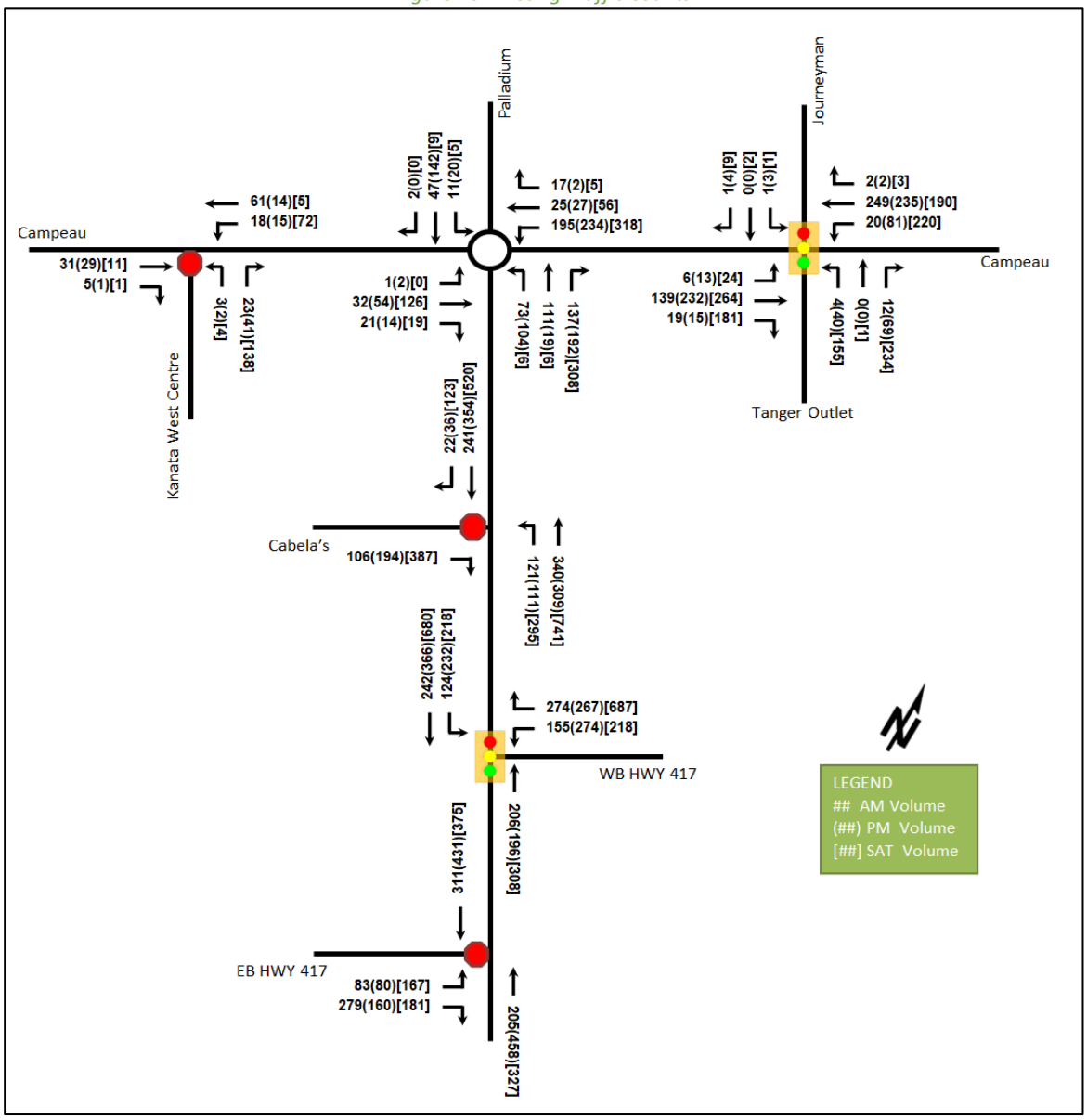


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour				SAT Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Campeau Drive at Kanata West Centre Drive *Unsignalized*	EBT	-	-	-	-	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-	-	-	-	-
	WBL	A	0.01	7.3	0.0	A	0.01	7.3	0.0	A	0.05	7.4	1.5
	WBT	-	-	-	-	-	-	-	-	-	-	-	-
	NBL	A	0.00	9.3	0.0	A	0.00	9.0	0.0	A	0.01	9.7	0.0
	NBR	A	0.03	8.6	0.8	A	0.04	8.6	0.8	A	0.14	8.9	3.8
	Overall	**A**	**-**	**2.6**	**-**	**A**	**-**	**4.7**	**-**	**A**	**-**	**7.8**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour				SAT Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Campeau Drive at Palladium Drive ***Roundabout***	EB	A	0.04	4.0	0.9	A	0.05	4.5	1.4	A	0.12	4.3	3.1
	WB	A	0.10	8.9	3.5	A	0.10	9.0	3.8	A	0.13	8.3	4.9
	NB	A	0.12	4.5	4.6	A	0.11	5.2	3.2	A	0.18	3.2	0.3
	SB	A	0.03	5.6	0.8	A	0.08	5.6	2.3	A	0.01	6.6	0.2
	Overall	**A**	**0.12**	**6.1**	**4.6**	**A**	**0.11**	**6.4**	**3.8**	**A**	**0.18**	**5.7**	**4.9**
Campeau Drive at Journeyman Street ***Signalized***	EBL	A	0.03	21.3	3.6	A	0.08	24.2	5.8	A	0.07	19.3	8.4
	EBT/R	A	0.27	21.6	16.2	A	0.47	27.4	26.6	A	0.40	13.2	30.7
	WBL	A	0.10	22.7	7.3	A	0.50	35.9	23.4	E	0.95	73.7	**#84.0**
	WBT/R	A	0.43	26.4	26.3	A	0.45	27.9	26.0	A	0.18	19.8	20.5
	NBL	A	0.00	8.8	2.0	A	0.05	5.8	6.1	A	0.27	14.9	30.0
	NBT	-	-	-	-	-	-	-	-	A	0.00	12.0	0.9
	NBR	A	0.01	0.0	0.0	A	0.07	0.1	0.0	A	0.30	2.8	11.6
	SBL	A	0.00	9.0	0.9	A	0.00	5.7	1.1	A	0.00	12.0	0.9
	SBT/R	A	0.00	0.0	0.0	A	0.00	0.0	0.0	A	0.01	0.0	0.0
	Overall	**A**	**0.11**	**23.6**	**-**	**A**	**0.15**	**24.3**	**-**	**A**	**0.55**	**22.9**	**-**
Palladium Drive at Cabela's Way ***Unsignalized***	EBR	A	0.14	9.8	3.8	B	0.27	11.3	8.3	C	0.69	22.9	41.3
	NBL	A	0.11	8.2	3.0	A	0.11	8.6	3.0	B	0.38	11.7	13.5
	NBT	-	-	-	-	-	-	-	-				
	SBT/R	-	-	-	-	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**2.4**	**-**	**A**	**-**	**3.1**	**-**	**A**	**-**	**5.9**	**-**
Palladium Drive at Westbound Highway 417 Ramp ***Signalized***	WBL	A	0.23	20.2	19.5	A	0.45	21.1	24.8	A	0.23	19.7	26.9
	WBR	A	0.53	6.9	18.2	A	0.54	7.1	16.3	E	0.91	23.8	**#131.1**
	NRT	A	0.28	18.8	23.1	A	0.35	21.3	20.1	A	0.49	29.0	36.6
	SBL	A	0.31	9.6	19.6	A	0.48	10.4	26.0	A	0.51	16.7	36.2
	SBT	A	0.20	8.0	17.1	A	0.24	7.3	18.0	A	0.48	14.8	54.0
	Overall	**A**	**0.33**	**12.0**	**-**	**A**	**0.53**	**12.7**	**-**	**C**	**0.71**	**20.5**	**-**
Palladium Drive at Eastbound Highway 417 Ramp ***Unsignalized***	EB	B	0.18	13.5	4.5	C	0.25	18.7	7.5	C	0.43	19.4	15.8
	NB	-	-	-	-	-	-	-	-				
	SB	-	-	-	-	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.9**	**-**	**A**	**-**	**1.5**	**-**	**A**	**-**	**3.7**	**-**

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

During all peak hours, the study area intersections operate well. No capacity issues are noted.

During the Saturday peak hour, the westbound left-turn movement at Campeau Drive and Journeyman Street intersection and the westbound right-turn movement at Palladium Drive at Westbound Highway 417 Ramp may exhibit extended queues.

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 intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2016-2020

		Number	%
Total Collisions		**21**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	1	5%
	Property Damage Only	20	95%
Initial Impact Type	**Angle**	3	14%
	Rear end	7	33%
	Sideswipe	3	14%
	Turning Movement	6	29%
	SMV Other	1	5%
	Other	1	5%
Road Surface Condition	**Dry**	15	71%
	Wet	3	14%
	Loose Snow	3	14%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

Figure 11: Study Area Collision Records

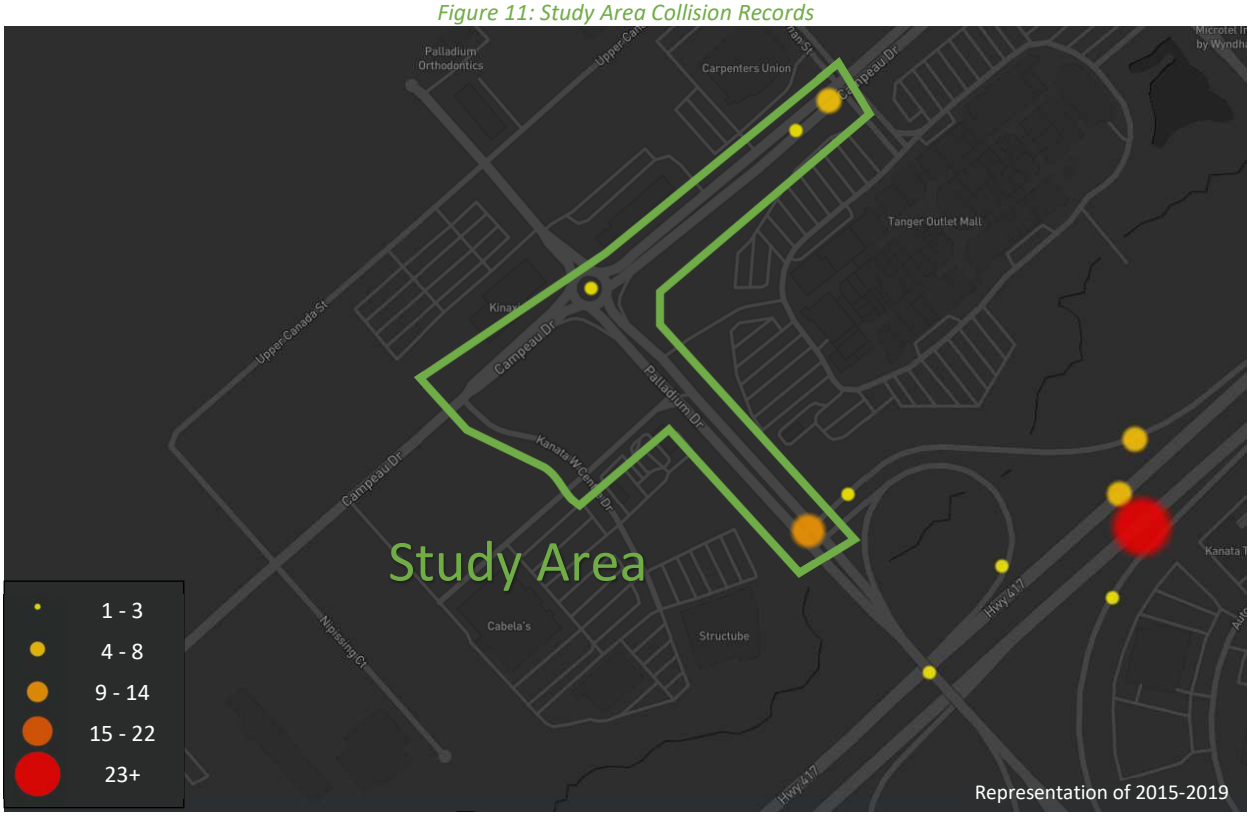


Table 4: Summary of Collision Locations, 2016-2020

	Number	%
Intersections / Segments	**21**	**100%**
Hwy 417 WB off-ramp @ Palladium Dr	12	57%
Campeau Dr @ Journeyman St	3	14%
Palladium Dr btwn Hwy417 Ic142 Ramp62 & Huntmar Dr	3	14%
Campeau Dr @ Palladium Dr	2	10%

Within the study area, the intersection of Highway 417 westbound off-ramp at Palladium Drive is noted to have experienced higher collisions than other locations. Table 5 summarizes the collision types and conditions for the intersection.

Table 5: Highway 417 Westbound off-ramp at Palladium Drive Collision Summary

		Number	%
Total Collisions		12	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	0	0%
	Property Damage Only	12	100%
Initial Impact Type	**Angle**	1	8%
	Rear end	4	33%
	Sideswipe	2	17%
	Turning Movement	4	33%
	Other	1	8%
Road Surface Condition	**Dry**	10	83%
	Wet	2	17%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Highway 417 Westbound off-ramp at Palladium Drive intersection had a total of twelve collisions during the 2016-2020 time period, with all collisions involving property damage. The collision types are most represented by rear end and turning movement each with four collisions, followed by sideswipe with two collisions, and the remaining one collision each for angle and other. The collision rates have been generally consistent through the years with 2016, 2017, and 2020 peaking with three collisions. Weather conditions do not affect collisions at this location. No further examination is required as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

The Ultimate Transit Network diagram identifies Light Rail Transit to extend Light Rail Transit (LRT) from Moodie Drive to Kanata and this project is being studied within the Kanata LRT Planning and EA Study. The future Palladium LRT Station along this extension is planned to be located approximately 1.05 kilometres from the site at Huntmar Drive and Cyclone Taylor Boulevard, and the completion of the station is assumed beyond the study horizon.

The Transportation Master Plan's (TMP) Road Network identifies the widening of Huntmar Drive from Campeau south to Maple Grove Road by phase three (2026 to 2031).

An extension of Robert Grant Avenue from Huntmar Avenue to Abbott Street is identified in the TMP as a Phase 2 (2020-2025) project, and an extension of Stittsville Main Street from it's current terminus west of Maple Grove to Robert Grant Avenue is identified as a Phase 3 (2026-2031) project. The EA including the Stittsville Main Street is expected to be completed in 2023, and the ultimate timeline will be subject to the new TMP and DC bylaw. Both

extensions are assumed to have a buildout timeline beyond 2032 and will not be modeled within the subject analyses.

It is anticipated that the Palladium Drive at Eastbound Highway 417 Ramp intersection will be signalized intersection by 2027, and it will be included in the future conditions. The design of future signalized Palladium Drive at Eastbound Highway 417 Ramp intersection is included in Appendix E.

2.3.2 Other Study Area Developments

130 Huntmar Drive

The proposed development application includes a site plan for the construction of 90 single family homes, 226 townhomes, 426 stacked townhomes, 30,000 ft^2 of retail, and a 23,941 m^2 school. The development is anticipated to be built out in 2024 and is predicted to generate 269 new AM two-way peak-hour auto trips and 217 new PM two-way peak-hour auto trips. (Dillon Consulting, 2020)

195 Huntmar Drive

The proposed development application includes a plan of subdivision for the construction of a total of 155 single-detached, 418 townhouse units, 13,747 $m^2$of commercial spaces across three parcels, and two car dealerships (4,000 m^2 GFA each). The development is anticipated to be built out in 2024 and is predicted to generate 991 new AM two-way peak-hour auto trips and 1,372 new PM two-way peak-hour auto trips. (CGH Transportation, 2019)

340 Huntmar Drive

340 Huntmar Drive has been constructed in 2021 and the traffic for this site was added to the existing turning movement counts auto trips. (Parsons, 2018)

319 Huntmar Drive

The proposed development application includes a site plan for the construction of nine-storey high-rise apartment buildings with 106 units each for a total of 424 units. The anticipated build-out horizon is 2025, and the development is predicted to generate 153 new AM two-way peak-hour auto trips and 195 new PM two-way peak-hour auto trips. (IBI Group, 2021)

405 Huntmar Drive

The proposed development application includes a site plan for the construction of 44,493 m^2 of warehouse buildings. The anticipated build-out horizon is 2024. The development is predicted to generate new 89 AM two-way peak-hour auto trips and 92 new PM two-way peak-hour auto trips. (Novatech, 2022)

1300-1360 Upper Canada Street

The proposed development application includes a site plan for the construction of a one-storey warehouse facility, with approximately 120,500 ft^2 gross floor area. The anticipated build-out horizon is 2023, and the development is predicted to generate 34 new AM two-way peak-hour auto trips and 36 new PM two-way peak-hour auto trips. (Parsons, 2021)

1400 Upper Canada Street

The proposed development application includes a site plan for the construction of 65,400 ft^2 of office space and warehouse area by phase one and expands to 76,400 ft^2 of office space and warehouse area by phase two. It is assumed that the anticipated build-out horizon is 2023 for phase one and 2028 for phase two. The development is predicted to generate new 178 AM two-way peak-hour auto trips and 122 new PM two-way peak-hour auto trips by phase one and 213 new AM two-way peak-hour auto trips and 150 new PM two-way peak-hour auto trips by phase two. (Parson, 2020)

8600 Campeau Drive

8600 Campeau Drive has been constructed in 2021 and the traffic for this site was added to the existing turning movement counts auto trips. (IBI Group, 2018)

8605 Campeau Drive

The proposed development application includes a site plan for the construction of a gas station comprising of five gasoline pumps with ten fueling stations, a convenience store and eating establishment with a drive-through, and an oil change building. The anticipated build-out horizon is 2025, and the development is predicted to generate 110 new AM two-way peak-hour auto trips and 119 new PM two-way peak-hour auto trips. (NexTrans, 2020)

8700 Campeau Drive

8700 Campeau Drive has been constructed in 2021 and the traffic for this site was added to the existing turning movement counts auto trips. (Parsons, 2019)

8800 Campeau Drive

The proposed development application includes a site plan for the construction of 66,000 ft^2 of office/warehouse space by phase one and will expand to 77,800 ft^2 of office/warehouse space by phase two. The assumed phase one horizon year is 2023 with the facility operating at only 25% of the ultimate capacity. The assumed phase two horizon year is 2026 but could take upwards of 20 years for this level of operation to materialize depending on market conditions. The development is predicted to generate 60 new AM and PM two-way peak-hour auto trips by phase one and 70 AM two-way peak-hour auto trips and 71 new PM two-way peak-hour auto trips by phase two. (Parsons, 2021)

800 Palladium Drive

800 Palladium Drive has been constructed in 2021 and the traffic for this site was added to the existing turning movement counts auto trips. (Stantec, 2019)

Arcadia Community Stage 3&4

Arcadia Community Stage 3&4 has been constructed in 2022 and the traffic for this site was added to the existing turning movement counts auto trips. (J.L. Richards & Associates Limited, 2019)

570 Winterset Road (Arcadia community Stage 5)

The proposed development application includes a zoning by-law amendment and plan of subdivision application for the construction of 62 single detached units and 162 townhome units. The anticipated build-out horizon is 2025, and the development is predicted to generate 86 new AM two-way peak-hour auto trips and 104 new PM two-way peak-hour auto trips. (CGH Transportation, 2021)

8415 Campeau Drive (Arcadia community Stage 6)

The proposed development application includes a site plan for the construction of 264 stacked towns and 104 townhomes. The anticipated build-out horizon is 2025, and the development is predicted to generate 100 new AM two-way peak-hour auto trips and 123 new PM two-way peak-hour auto trips. (CGH Transportation, 2022)

Kanata West Retail/Business Park

The proposed development application includes a zoning by-law amendment for a mixed-use development including office, retail, and industrial land uses. The auto parts, UPS distribution, fast food restaurant, and Cabela's have been constructed, and it has been included in the 2019 existing counts. The traffic for the land use of furniture stores were added to the existing turning movement counts auto trips. (Parsons, 2017)

3075 Palladium Drive

The proposed development application includes a site plan for approximately 82,500 sq. ft. of retail space including large and small multi-unit retail pads. The anticipated full build-out horizon is 2027. The file has been initiated and no TIA is available at this time.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Campeau Drive at
  - Kanata West Centre Drive
  - Palladium Drive
  - Journeyman Street
- Palladium Drive at
  - Westbound Highway 417 Ramp
  - Eastbound Highway 417 Ramp

The boundary road will be Campeau Drive and Palladium Drive, and no screenlines are present within proximity to the site.

3.2 Time Periods

As the proposed development is composed entirely of commercial/retail spaces and it will not open during the AM peak hour, the PM peak and Saturday hours will be examined.

3.3 Horizon Years

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

4 Exemption Review

Table 6 summarizes the exemptions for this TIA.

Table 6: Exemption Review

Module	Element	Explanation	Exempt/Required
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Required
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Exempt
Network Impact Component			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	Required
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and	Exempt

Module	Element	Explanation	Exempt/Required
		total volumes exceed ATM capacity thresholds	
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

4.1 TIA Stepped Process

The proposed site is part of the approved Kanata West Retail/Business Park subdivision and is consistent with pervious subdivision except for an additional car wash on the southern portion of the site. No operational constraints are noted at the area intersections for the existing conditions. Due to the above factors, the City has agreed to combine Steps 3 and 4 into a single submission.

5 Development-Generated Travel Demand

5.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Kanata/Stittsville have been summarized in Table 7. It is assumed that all retails are closed during the AM peak hour. The PM peak hour mode shares were used for the Saturday peak hour.

Table 7: TRANS Trip Generation Manual Recommended Mode Shares – Kanata/Stittsville

Travel Mode	Commercial Generator
	PM and SAT
Auto Driver	73%
Auto Passenger	22%
Transit	1%
Cycling	0%
Walking	4%
Total	**100%**

5.2 Trip Generation

This TIA has been prepared using the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 11th Edition (2021) using the City-prescribed conversion factor of 1.28. A conservative estimate of 46 person trips entering and exiting every hour for the car wash during both PM and Saturday peak hours are assumed based on the 3555 Borrisokane Road (Halo Car Wash) TIA study (May 2022), which has the same operator and similar layout. Table 8 summarizes the person trip rates for the site land uses by peak hour.

Table 8: Trip Generation Person Trip Rates

Land Use	Land Use Code	Peak	Peak Hour	
			Vehicle Trip Rate	Person Trip Rates
Strip Retail Plaza (<40k)	822 (ITE)	PM	6.59	8.44
		SAT	6.57	8.41
Car Wash	-	PM	-	92 per hr
		SAT	-	92 per hr

Using the above person trip rates, the total person trip generation has been estimated. Table 9 summarizes the total person trip generation for the non-residential land uses.

Table 9: Total Person Trip Generation

Land Use	GLA	PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total
Strip Retail Plaza (<40k)	35,381 sq. ft	150	150	300	152	146	298
Car Wash	3,661 sq. ft	46	46	92	46	46	92

PM peak hour pass-by reduction of 40% and Saturday peak hour pass-by reduction of 31% for the land use of Shopping Plaza (40 - 150k) are taken from the ITE Trip Generation Manual 11th Edition (2021). A pass-by reduction of 32% and internal capture of 30% are assumed for the land use of Car Wash. A diverted trip rate of 10% is assumed for the land use of Shopping Plaza (40k) and Car Wash.

Using the above mode share targets, pass-by rates, person trip rates, and diverted trip rates, the person trips by mode have been projected. Table 10 summarizes the non-residential trip generation by mode and peak hour.

Table 10: Trip Generation by Mode

Travel Mode		PM Peak Hour				SAT Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Strip Retail Plaza (<40k)	Auto Driver	**73%**	35	35	70	**73%**	49	47	96
	Auto Passenger	**22%**	33	33	66	**22%**	34	32	66
	Transit	**1%**	2	2	4	**1%**	2	1	3
	Cycling	**0%**	0	0	0	**0%**	0	0	0
	Walking	**4%**	6	6	12	**4%**	6	6	12
	Total	**100%**	**76**	**76**	**152**	**100%**	**92**	**87**	**179**
	Diverted	*10%*	*-15*	*-15*	*-30*	*10%*	*-15*	*-15*	*-30*
	Pass-by	*40%*	*-60*	*-60*	*-120*	*31%*	*-47*	*-45*	*-92*
Car Wash	Auto Driver	**73%**	8	8	16	**73%**	8	8	16
	Auto Passenger	**27%**	10	10	20	**27%**	10	10	20
	Total	**100%**	**18**	**18**	**36**	**100%**	**18**	**18**	**36**
	Diverted	*10%*	*-5*	*-5*	*-10*	*10%*	*-5*	*-5*	*-10*
	Pass-by	*32%*	*-15*	*-15*	*-30*	*32%*	*-15*	*-15*	*-30*
	Internal Capture	*30%*	*-8*	*-8*	*-16*	*30%*	*-8*	*-8*	*-16*
Total	Auto Driver	**-**	43	43	86	**-**	57	55	112
	Auto Passenger	**-**	43	43	86	**-**	44	42	86
	Transit	**-**	2	2	4	**-**	2	1	3
	Cycling	**-**	0	0	0	**-**	0	0	0
	Walking	**-**	6	6	12	**-**	6	6	12
	Total	**100%**	**94**	**94**	**188**	**100%**	**109**	**103**	**212**
	Diverted	*10%*	*-20*	*-20*	*-40*	*10%*	*-20*	*-20*	*-40*
	Pass-by	*varies*	*-75*	*-75*	*-150*	*varies*	*-62*	*-60*	*-122*
	Internal Capture	*30%*	*-8*	*-8*	*-16*	*30%*	*-8*	*-8*	*-16*

As shown above, a total of 86 PM and 112 Saturday new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel, and these patterns were applied based on the build-out of Kanata/Stittsville. Table 11 below summarizes the distributions.

Table 11: OD Survey Distribution – Kanata/Stittsville

To/From	% of Trips
North	15%
South	30%
East	50%
West	5%
Total	**100%**

5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 12 summarizes the proportional assignment to the study area roadways, Figure 12 illustrates the new site generated volumes, Figure 13 illustrates the pass-by volumes, and Figure 14 illustrates the diverted trip volumes.

Table 12: Trip Assignment

To/From	Via
North	15% Campeau Drive (E)
South	20% Highway 417 (W) 10% Campeau Drive (E)
East	20% Campeau Drive (E) 30% Highway 417 (E)
West	5% Highway 417 (W)
Total	**100%**

Figure 12: New Site Generation Auto Volumes

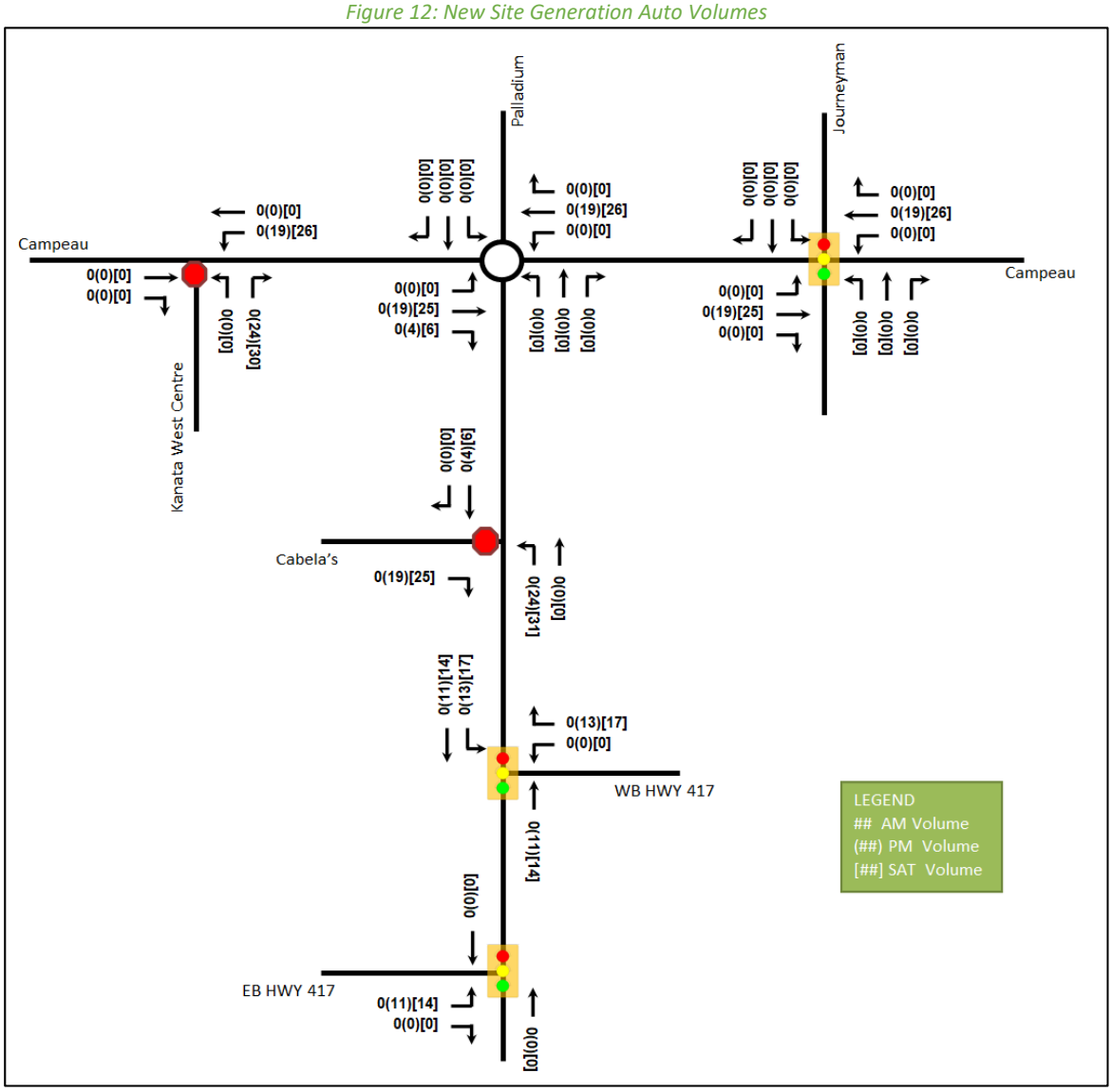


Figure 13: Pass-By Volumes

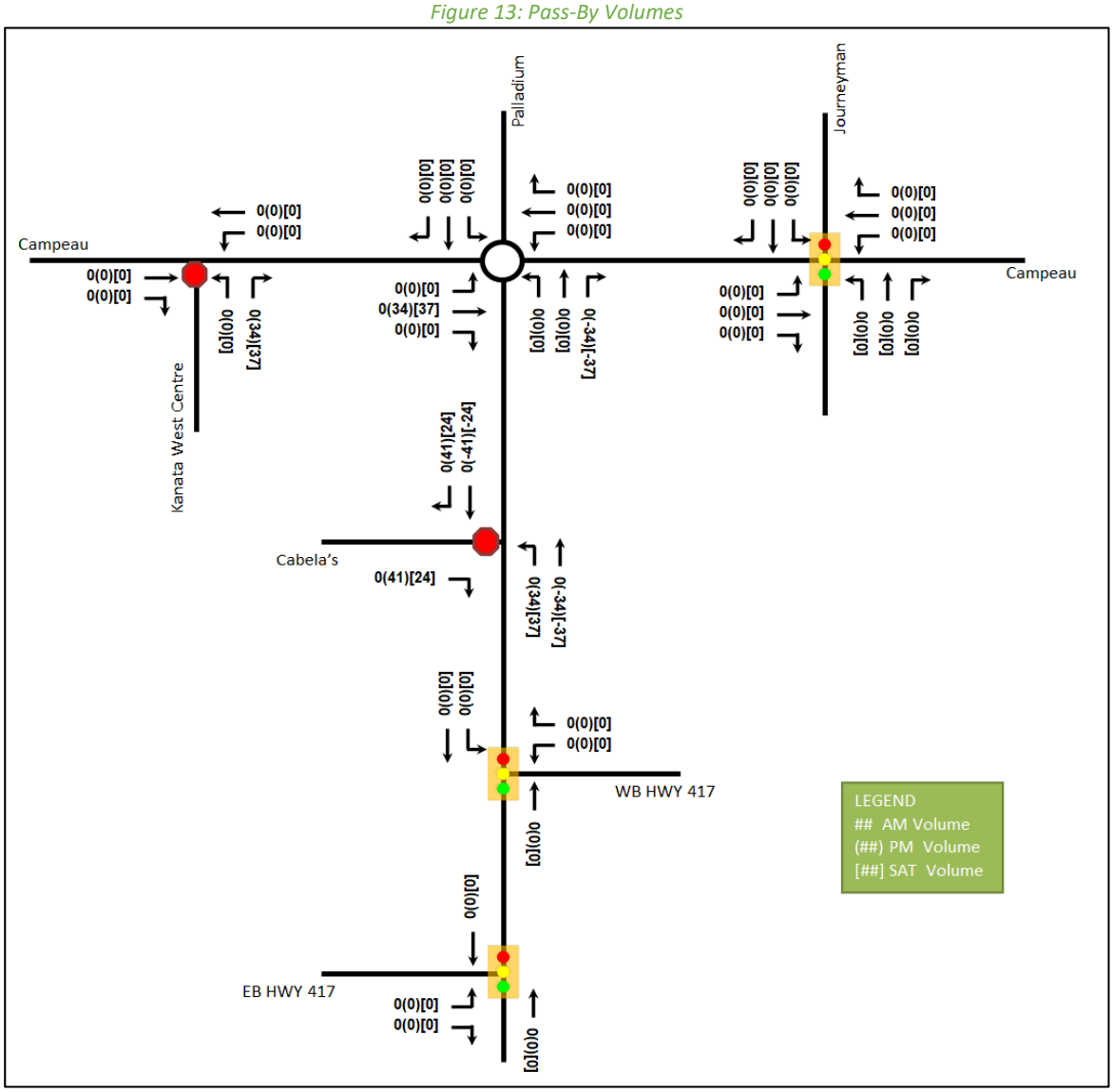
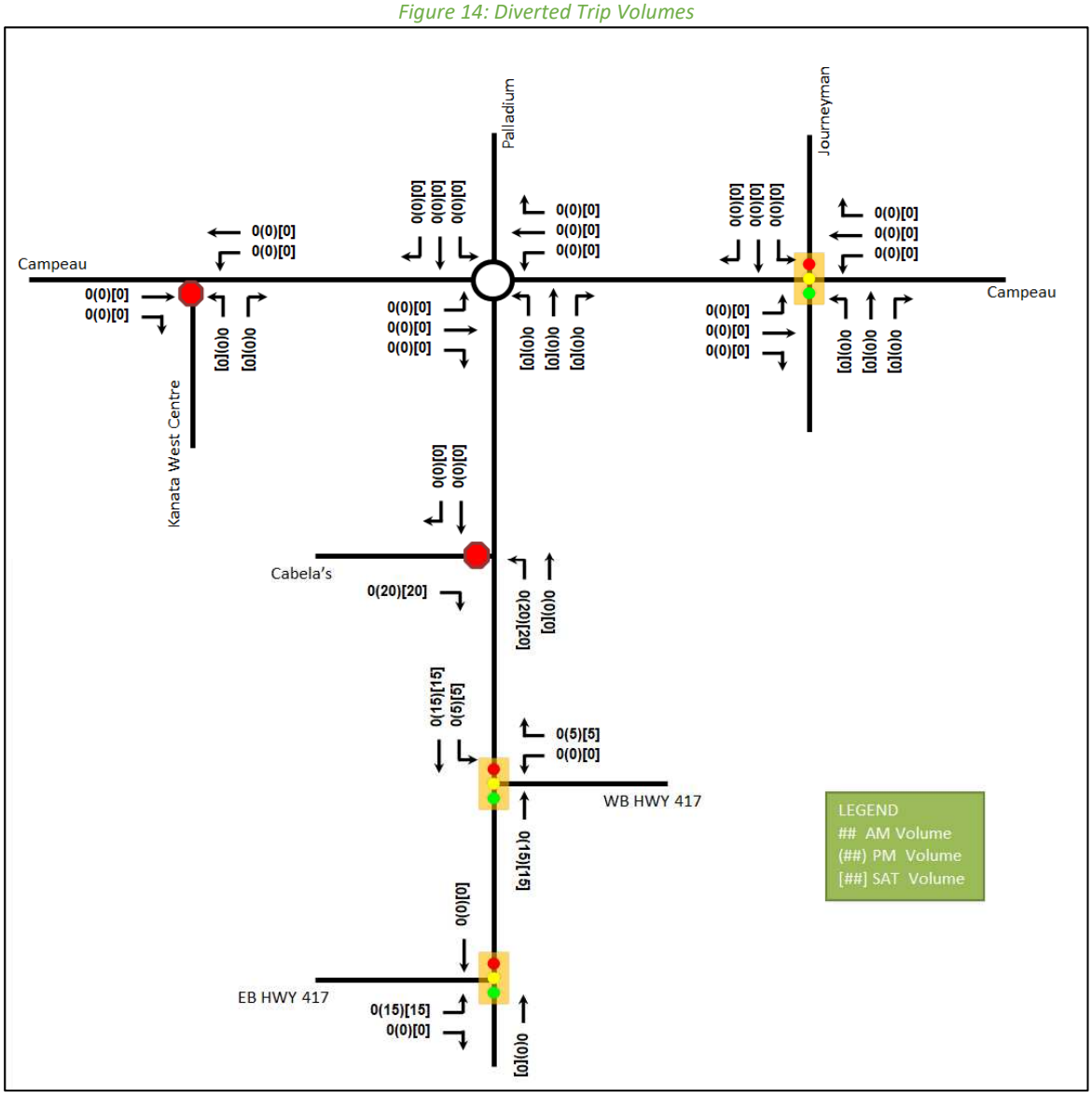


Figure 14: Diverted Trip Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3 and have been incorporated into the road network analysis.

6.2 Background Growth

All background developments within Kanata have been included in this TIA and would account for the majority of growth in the area. An annual background growth of 1% will be applied to mainline volumes of Palladium Drive and Campeau Drive in order to capture any additional growth further development beyond the study area.

6.3 Other Developments

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

- 130 Huntmar Drive
- 195 Huntmar Drive
- 319 Huntmar Drive
- 405 Huntmar Drive
- 1300-1360 Upper Canada Street
- 1400 Upper Canada Street
- 8605 Campeau Drive
- 8800 Campeau Drive
- 570 Winterset Road (Arcadia community Stage 5)
- 3075 Palladium Drive

Figure 15 and Figure 16 illustrate the 2027 and 2032 background development volumes, respectively. The background development volumes within the study area have been provided in Appendix F.

Figure 15: 2027 Background Development Volumes

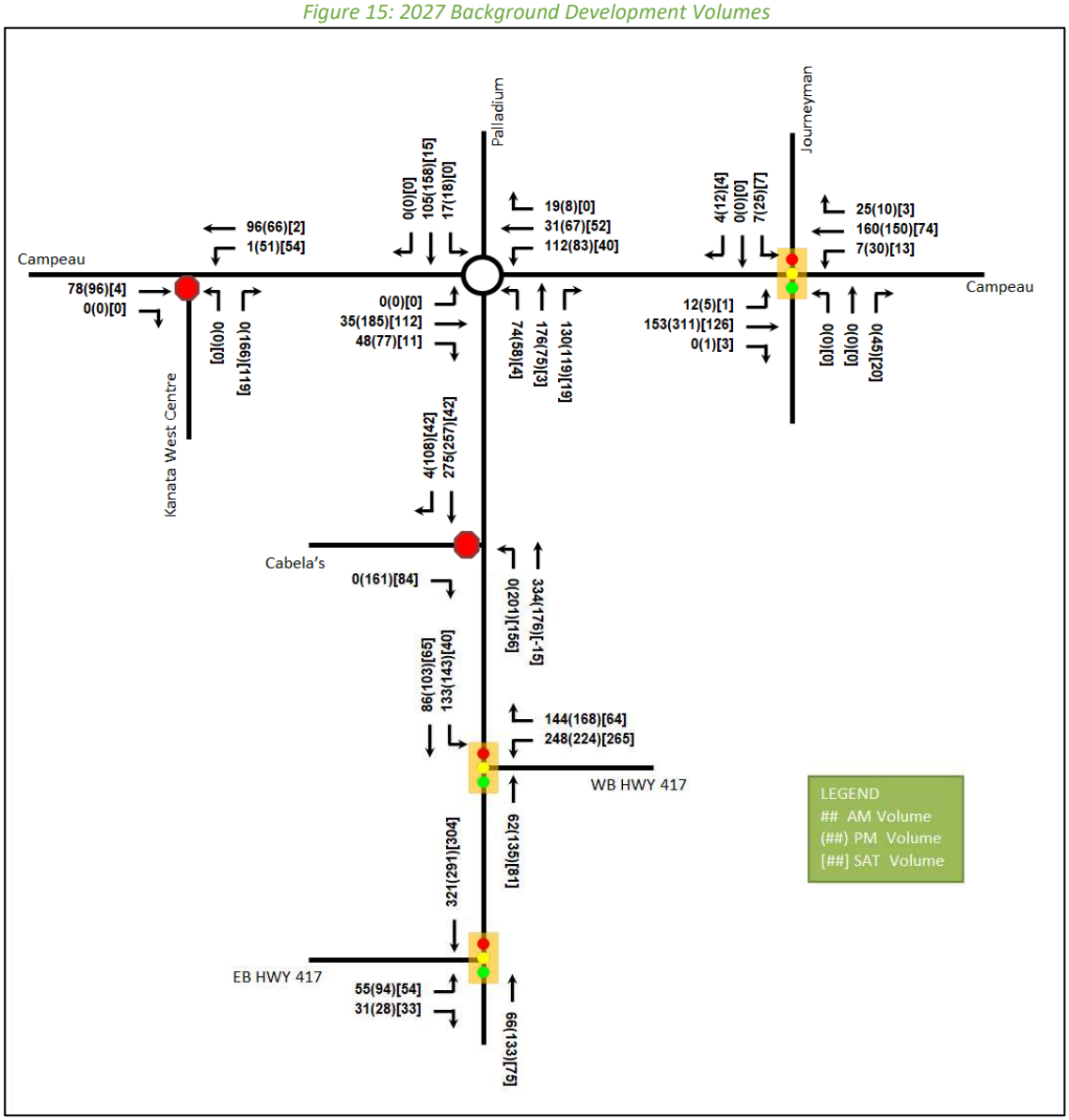
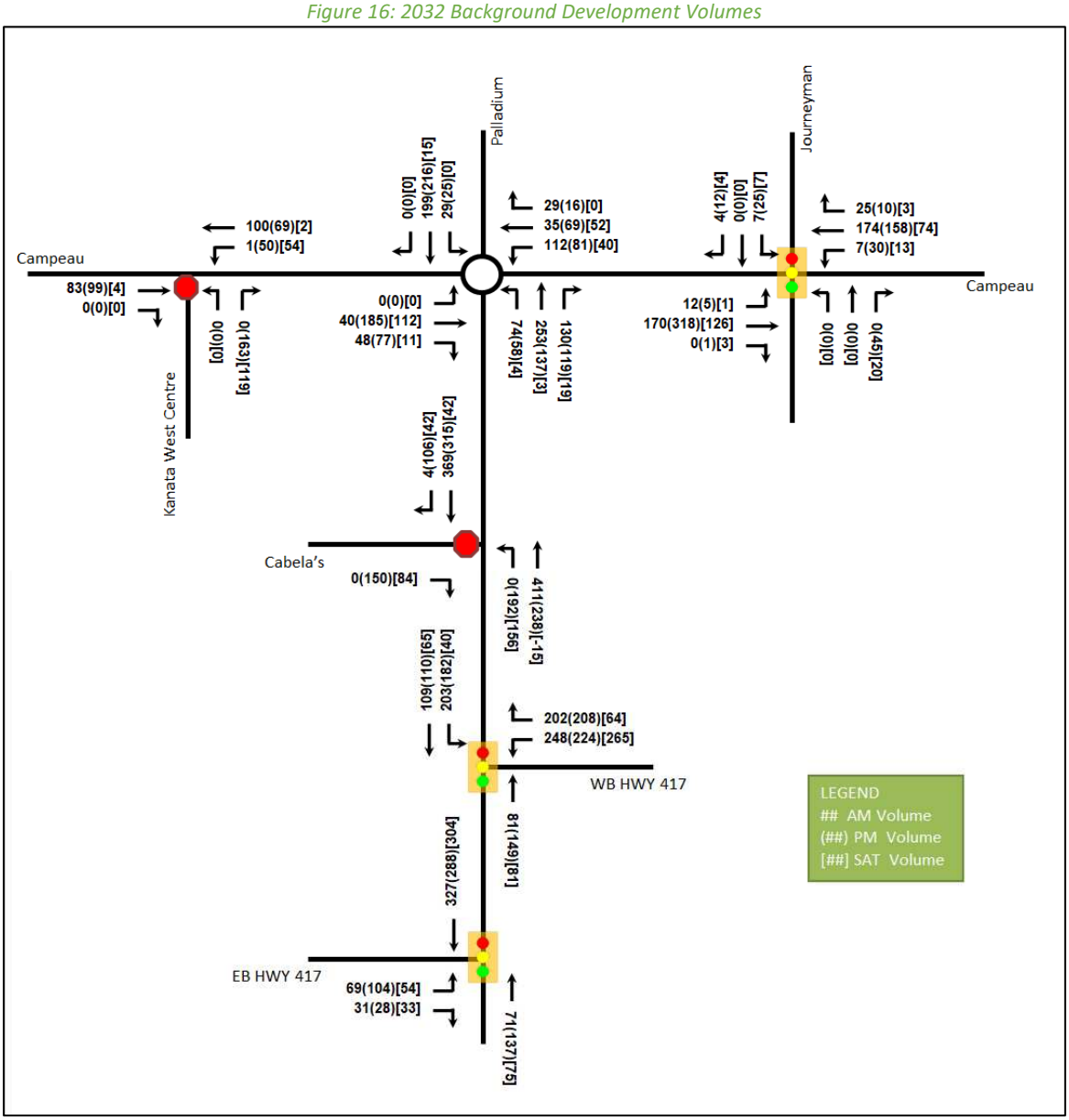


Figure 16: 2032 Background Development Volumes



7 Demand Rationalization

7.1 2027 Future Background Operations

Palladium Drive at Eastbound Highway 417 Ramp intersection is anticipated to be signalized and will be included in the future conditions.

Figure 17 illustrates the 2027 background volumes and Table 13 summarizes the 2027 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. The synchro worksheets for the 2027 future background horizon are provided in Appendix G.

Figure 17: 2027 Future Background Volumes

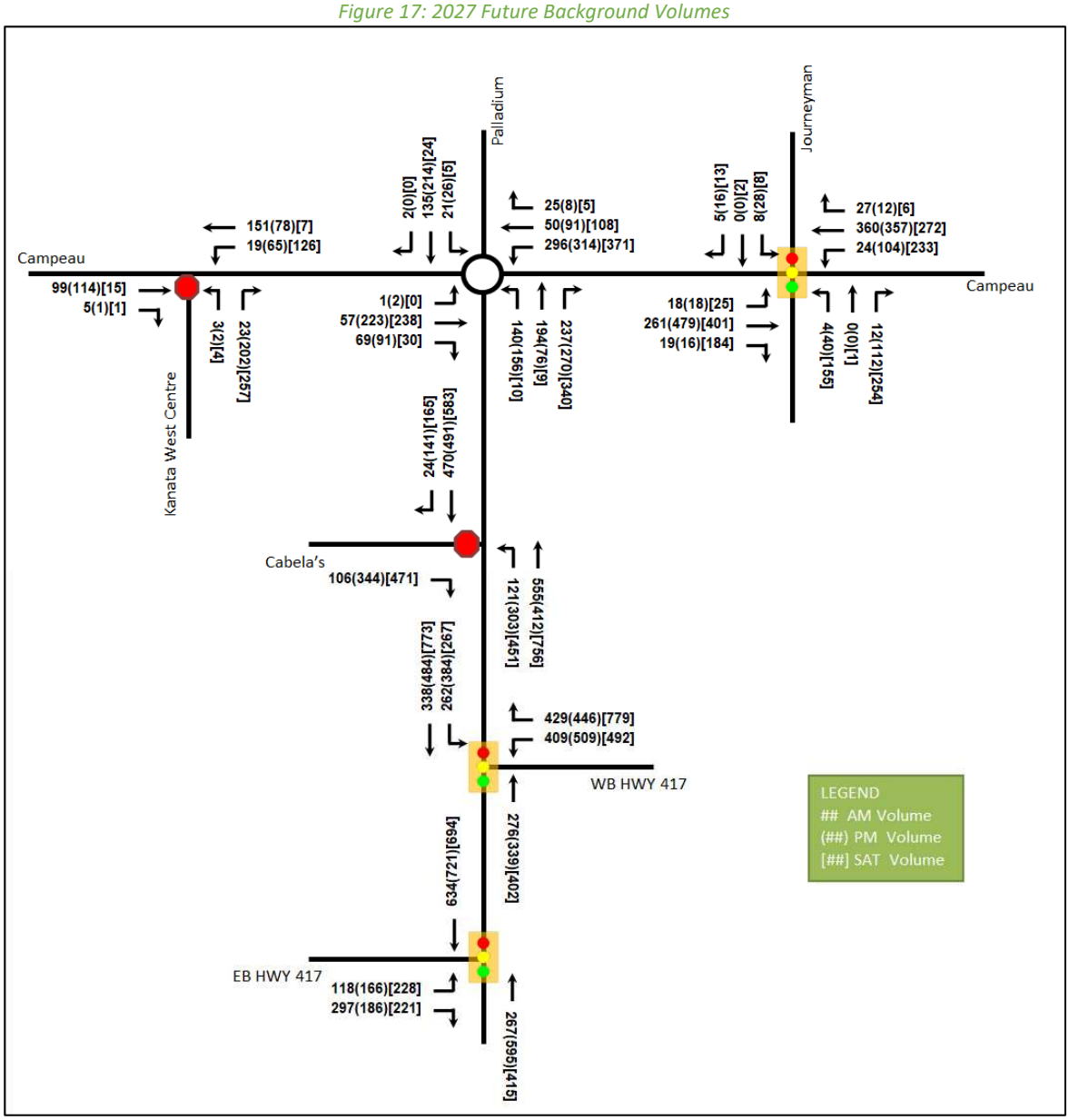


Table 13: 2027 Future Background Intersection Operations

Intersection	Lane	PM Peak Hour				SAT Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Campeau Drive at Kanata West Centre Drive *Unsignalized*	EBT	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-
	WBL	A	0.04	7.6	0.8	A	0.08	7.4	2.3
	WBT	-	-	-	-	-	-	-	-
	NBL	B	0.00	10.6	0.0	B	0.01	10.5	0.0
	NBR	A	0.22	9.9	6.0	A	0.24	9.5	6.8
	Overall	**A**	**-**	**5.4**	**-**	**A**	**-**	**8.3**	**-**

Intersection	Lane	PM Peak Hour				SAT Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Campeau Drive at Palladium Drive *Roundabout*	EB	A	0.20	4.6	6.0	A	0.20	4.5	5.8
	WB	A	0.16	8.7	6.5	A	0.15	7.9	6.1
	NB	A	0.16	5.3	6.9	A	0.18	3.2	0.5
	SB	A	0.12	5.9	3.5	A	0.01	5.8	0.3
	Overall	**A**	**0.20**	**6.2**	**6.9**	**A**	**0.20**	**5.6**	**6.1**
Campeau Drive at Journeyman Street *Signalized*	EBL	A	0.09	22.3	6.7	A	0.07	19.3	8.0
	EBT/R	B	0.65	29.6	46.6	A	0.48	19.7	48.2
	WBL	B	0.68	48.3	29.3	**F**	**1.01**	**93.5**	**#86.3**
	WBT/R	A	0.49	26.4	34.5	A	0.23	20.1	26.0
	NBL	A	0.05	8.2	7.5	A	0.25	14.8	27.3
	NBT	-	-	-	-	A	0.00	12.0	0.9
	NBR	A	0.12	0.3	0.4	A	0.30	2.8	11.5
	SBL	A	0.04	8.2	5.8	A	0.01	12.1	2.9
	SBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	Overall	**A**	**0.24**	**25.7**	**-**	**A**	**0.57**	**27.4**	**-**
Palladium Drive at Cabela's Way *Unsignalized*	EBR	C	0.51	15.6	21.8	D	0.78	28.7	54.8
	NBL	B	0.32	10.6	10.5	B	0.54	14.1	24.8
	NBT	-	-	-	-				
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**5.1**	**-**	**A**	**-**	**8.2**	**-**
Palladium Drive at Westbound Highway 417 Ramp *Signalized*	WBL	B	0.62	25.0	44.7	A	0.42	21.9	53.8
	WBR	B	0.63	6.8	19.4	E	0.92	27.3	**#149.4**
	NRT	A	0.53	27.1	34.0	A	0.58	31.8	42.9
	SBL	B	0.70	18.6	**#56.4**	A	0.60	19.7	40.3
	SBT	A	0.28	9.4	28.1	A	0.51	16.1	55.4
	Overall	**C**	**0.74**	**16.9**	**-**	**C**	**0.77**	**23.0**	**-**
Palladium Drive at Eastbound Highway 417 Ramp *Signalized*	EBL/R	A	0.35	6.4	11.1	A	0.43	7.5	15.3
	NBT	A	0.47	9.2	20.3	A	0.33	8.5	15.7
	SBT	A	0.58	10.4	25.5	A	0.56	10.5	27.2
	Overall	**A**	**0.44**	**9.1**	**-**	**A**	**0.46**	**9.1**	**-**

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

During the PM peak hour, the southbound left-turn movement at Palladium Drive and Westbound Highway 417 Ramp intersection may exhibit extended queues. During the Saturday peak hour, the westbound left-turn movement at Campeau Drive and Journeyman Street intersection will be over theoretical capacity and may be subject to high delays and extended queues and the westbound right-turn movement at Palladium Drive at Westbound Highway 417 Ramp may exhibit extended queues, which is similar to the existing condition.

At Campeau Drive and Journeyman Street intersection during the Saturday peak hour, shifting one second of split from the northbound and southbound phases to the eastbound and westbound phases would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.2 2032 Future Background Operations

Palladium Drive at Eastbound Highway 417 Ramp intersection is anticipated to be signalized and will be included in the future conditions.

Figure 18 illustrates the 2032 background volumes and Table 14 summarizes the 2032 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. The synchro worksheets for the 2032 future background horizon are provided in Appendix H.

Figure 18: 2032 Future Background Volumes

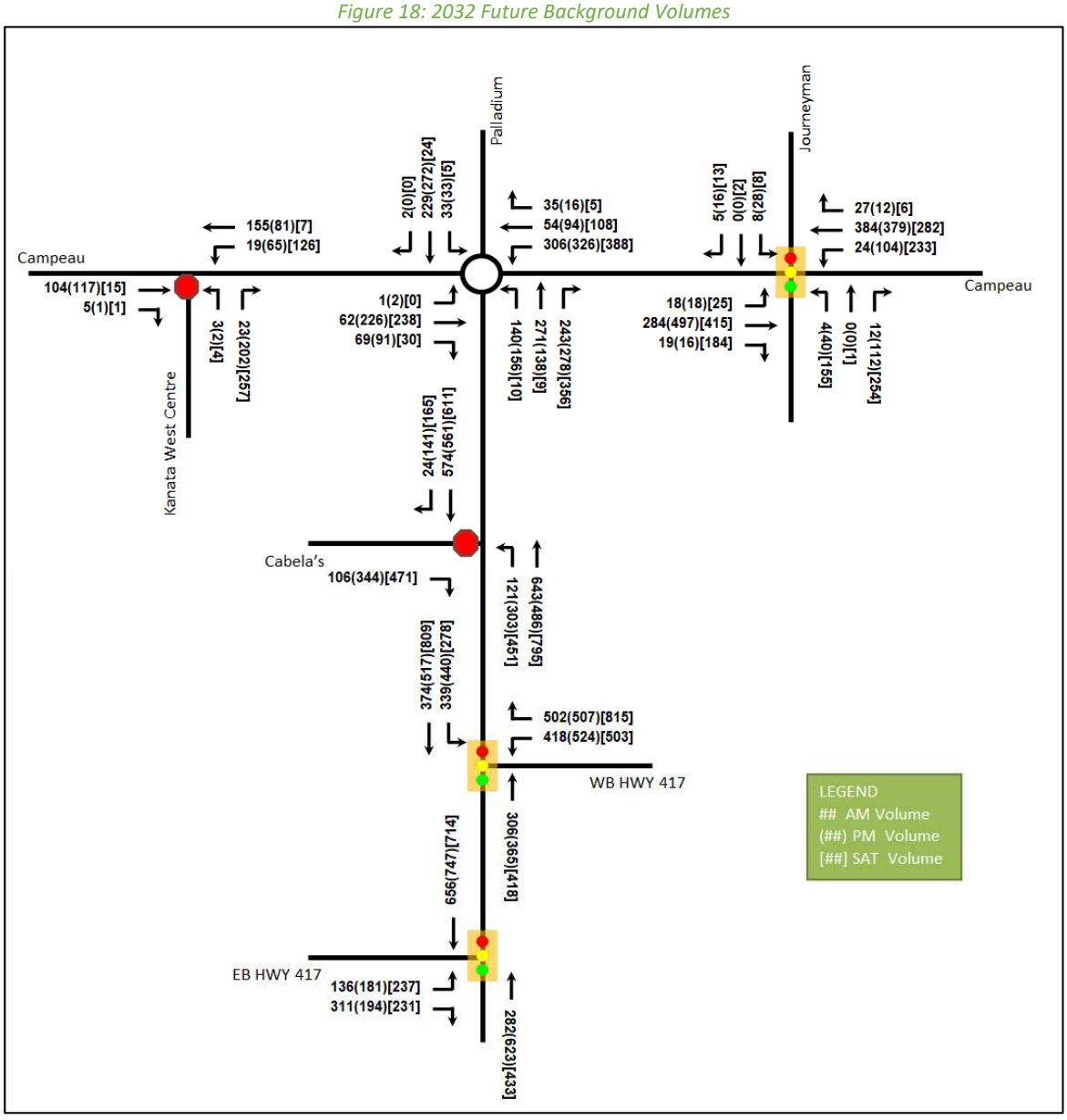


Table 14: 2032 Future Background Intersection Operations

Intersection	Lane	PM Peak Hour				SAT Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Campeau Drive at Kanata West Centre Drive *Unsignalized*	EBT	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-
	WBL	A	0.04	7.6	0.8	A	0.08	7.4	2.3
	WBT	-	-	-	-	-	-	-	-
	NBL	B	0.00	10.7	0.0	B	0.01	10.5	0.0
	NBR	A	0.22	9.9	6.0	A	0.24	9.5	6.8
	Overall	**A**	**-**	**5.4**	**-**	**A**	**-**	**8.3**	**-**
Campeau Drive at Palladium Drive *Roundabout*	EB	A	0.21	4.8	6.3	A	0.20	4.5	5.9
	WB	A	0.17	8.9	7.5	A	0.15	7.9	6.3
	NB	A	0.21	5.2	9.1	A	0.19	3.2	0.5
	SB	A	0.15	6.0	4.7	A	0.01	5.9	0.4
	Overall	**A**	**0.21**	**6.3**	**9.1**	**A**	**0.20**	**5.6**	**6.3**
Campeau Drive at Journeyman Street *Signalized*	EBL	A	0.09	22.3	6.7	A	0.07	19.3	8.0
	EBT/R	B	0.66	29.6	48.3	A	0.49	20.2	50.2
	WBL	B	0.69	49.8	29.8	**F**	**1.04**	**101.3**	**#87.4**
	WBT/R	A	0.51	26.5	36.5	A	0.24	20.2	27.0
	NBL	A	0.05	8.5	7.7	A	0.25	14.8	27.3
	NBT	-	-	-	-	A	0.00	12.0	0.9
	NBR	A	0.12	0.6	1.4	A	0.30	3.0	12.3
	SBL	A	0.04	8.5	6.0	A	0.01	12.1	2.9
	SBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	Overall	**A**	**0.25**	**26.0**	**-**	**A**	**0.59**	**28.6**	**-**
Palladium Drive at Cabela's Way *Unsignalized*	EBR	C	0.53	16.8	24.0	D	0.79	30.5	57.8
	NBL	B	0.34	11.1	11.3	B	0.55	14.6	25.5
	NBT	-	-	-	-				
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**5.0**	**-**	**A**	**-**	**8.4**	**-**
Palladium Drive at Westbound Highway 417 Ramp *Signalized*	WBL	B	0.64	25.7	46.8	A	0.42	22.1	55.1
	WBR	B	0.67	7.1	21.3	E	0.96	34.7	**#167.3**
	NRT	A	0.57	28.2	36.8	A	0.60	32.6	44.7
	SBL	C	0.79	24.2	**#75.1**	B	0.64	21.1	41.9
	SBT	A	0.30	9.7	30.6	A	0.53	16.8	58.6
	Overall	**C**	**0.80**	**18.3**	**-**	**D**	**0.83**	**25.7**	**-**
Palladium Drive at Eastbound Highway 417 Ramp *Signalized*	EBL/R	A	0.37	6.7	12.2	A	0.45	8.2	16.8
	NBT	A	0.48	9.3	22.0	A	0.34	8.6	16.9
	SBT	A	0.59	10.5	27.4	A	0.56	10.6	28.9
	Overall	**A**	**0.45**	**9.3**	**-**	**A**	**0.48**	**9.4**	**-**

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

Intersections within the study area will operate similar to the 2027 future background condition. No additional capacity issues are noted.

At Campeau Drive and Journeyman Street intersection during the Saturday peak hour, shifting two seconds of split from the northbound and southbound phases to the eastbound and westbound phases would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.3 2027 Future Total Operations

Figure 19 illustrates the 2027 total volumes and Table 15 summarizes the 2027 total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. The synchro worksheets for the 2027 total horizon are provided in Appendix I.

Figure 19: 2027 Future Total Volumes

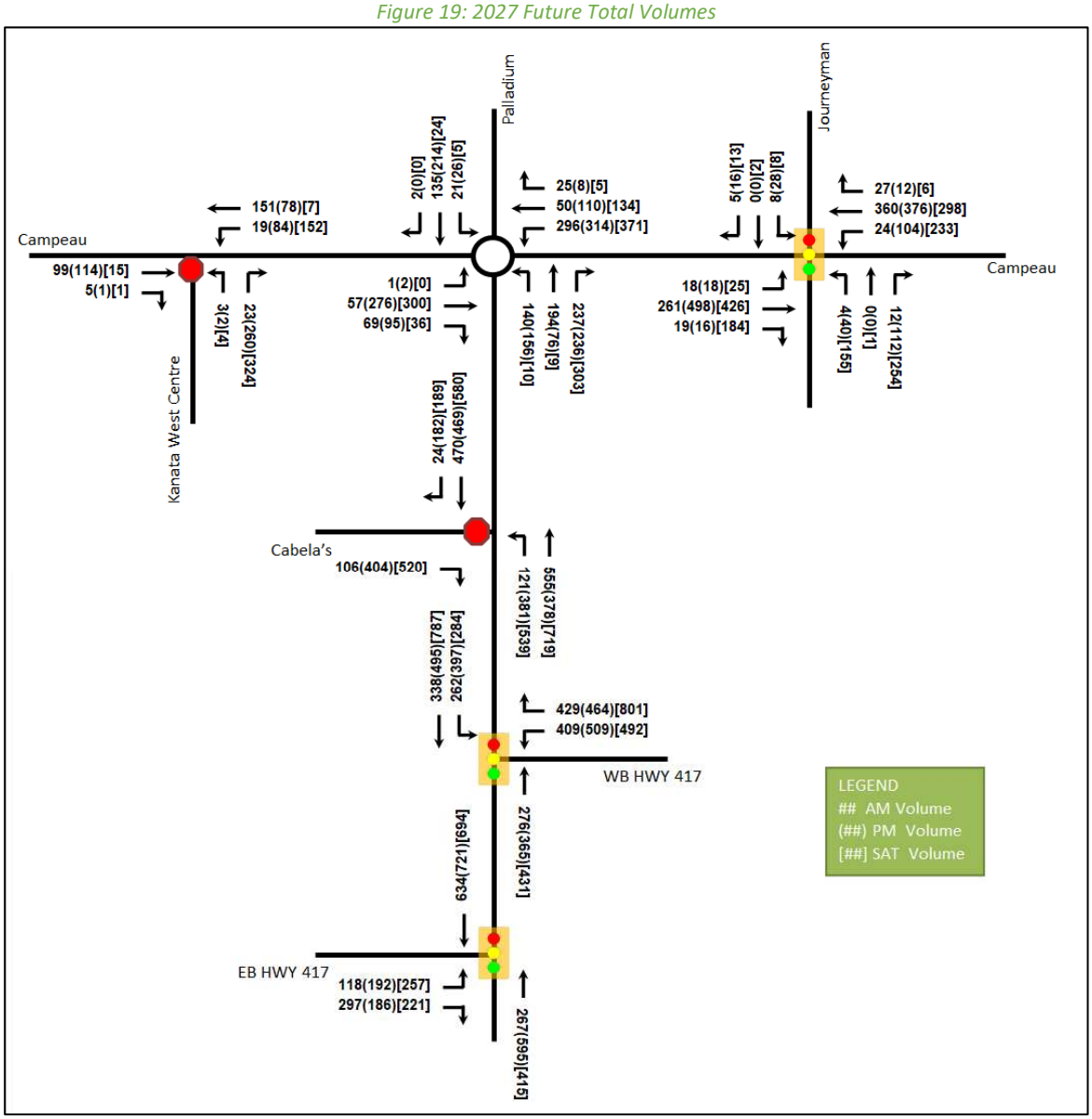


Table 15: 2027 Future Total Intersection Operations

Intersection	Lane	PM Peak Hour				SAT Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Campeau Drive at Kanata West Centre Drive *Unsignalized*	EBT	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-
	WBL	A	0.06	7.6	1.5	A	0.10	7.5	2.3
	WBT	-	-	-	-	-	-	-	-
	NBL	B	0.00	11.0	0.0	B	0.01	11.0	0.0
	NBR	B	0.28	10.3	8.3	A	0.31	9.9	9.8
	Overall	**A**	**-**	**6.2**	**-**	**A**	**-**	**8.7**	**-**
Campeau Drive at Palladium Drive *Roundabout*	EB	A	0.25	4.7	7.7	A	0.25	4.6	7.7
	WB	A	0.16	8.5	7.0	A	0.16	7.6	6.5
	NB	A	0.17	5.6	7.3	A	0.16	3.3	0.5
	SB	A	0.12	6.0	3.6	A	0.01	5.9	0.4
	Overall	**A**	**0.25**	**6.3**	**7.7**	**A**	**0.25**	**5.6**	**7.7**
Campeau Drive at Journeyman Street *Signalized*	EBL	A	0.09	22.2	6.7	A	0.07	19.3	8.0
	EBT/R	B	0.66	29.7	48.4	A	0.50	20.6	51.5
	WBL	B	0.69	50.2	29.8	**F**	**1.06**	**108.5**	**#88.2**
	WBT/R	A	0.50	26.5	36.3	A	0.25	20.4	28.4
	NBL	A	0.05	8.5	7.7	A	0.25	14.8	27.3
	NBT	-	-	-	-	A	0.00	12.0	0.9
	NBR	A	0.12	0.6	1.4	A	0.30	3.4	13.4
	SBL	A	0.04	8.5	6.0	A	0.01	12.1	2.9
	SBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	Overall	**A**	**0.25**	**26.1**	**-**	**A**	**0.60**	**29.8**	**-**
Palladium Drive at Cabela's Way *Unsignalized*	EBR	C	0.60	18.2	30.8	E	0.87	39.1	75.0
	NBL	B	0.41	11.5	15.0	C	0.65	17.1	36.8
	NBT	-	-	-	-				
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**6.5**	**-**	**B**	**-**	**11.6**	**-**
Palladium Drive at Westbound Highway 417 Ramp *Signalized*	WBL	B	0.63	25.4	45.4	A	0.41	22.2	53.8
	WBR	B	0.64	7.0	20.0	E	0.95	33.1	**#163.7**
	NRT	A	0.56	27.5	36.6	B	0.61	32.8	46.1
	SBL	C	0.73	19.8	**#59.3**	B	0.66	21.7	43.0
	SBT	A	0.29	9.4	28.8	A	0.51	16.5	56.6
	Overall	**C**	**0.76**	**17.4**	**-**	**D**	**0.83**	**25.3**	**-**
Palladium Drive at Eastbound Highway 417 Ramp *Signalized*	EBL/R	A	0.37	6.8	12.4	A	0.45	7.9	16.7
	NBT	A	0.47	9.2	21.0	A	0.33	8.6	16.2
	SBT	A	0.58	10.4	26.4	A	0.56	10.6	28.0
	Overall	**A**	**0.45**	**9.2**	**-**	**A**	**0.47**	**9.3**	**-**

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

Intersections within the study area will operate similar to the 2027 future background condition. No additional capacity issues are noted.

At Campeau Drive and Journeyman Street intersection during the Saturday peak hour, shifting two seconds of split from the northbound and southbound phases to the eastbound and westbound phases would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.4 2032 Future Total Operations

Figure 20 illustrates the 2032 total volumes and Table 16 summarizes the 2032 total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. The synchro worksheets for the 2032 total horizon are provided in Appendix J.

Figure 20: 2032 Future Total Volumes

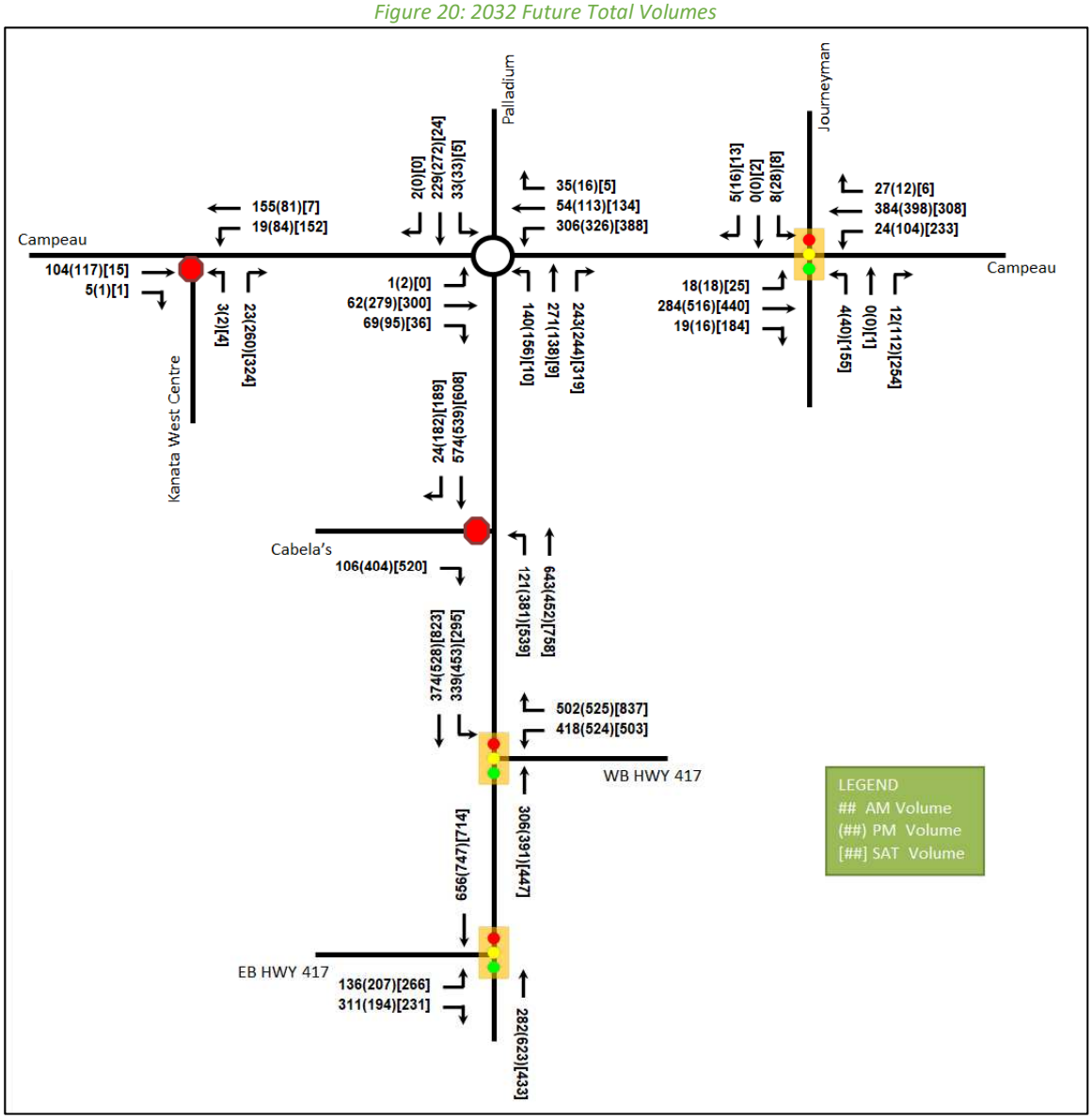


Table 16: 2032 Future Total Intersection Operations

Intersection	Lane	PM Peak Hour				SAT Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Campeau Drive at Kanata West Centre Drive *Unsignalized*	EBT	-	-	-	-	-	-	-	-
	EBR	-	-	-	-	-	-	-	-
	WBL	A	0.06	7.6	1.5	A	0.10	7.5	2.3
	WBT	-	-	-	-	-	-	-	-
	NBL	B	0.00	11.1	0.0	B	0.01	11.0	0.0
	NBR	B	0.28	10.3	8.3	A	0.31	9.9	9.8
	Overall	**A**	**-**	**6.1**	**-**	**A**	**-**	**8.7**	**-**
Campeau Drive at Palladium Drive *Roundabout*	EB	A	0.26	4.9	8.1	A	0.26	4.6	7.8
	WB	A	0.18	8.7	8.0	A	0.16	7.7	6.8
	NB	A	0.21	5.5	9.7	A	0.01	5.9	0.4
	SB	A	0.15	6.1	4.8	A	0.17	3.3	0.5
	Overall	**A**	**0.26**	**6.3**	**9.7**	**A**	**0.26**	**5.6**	**7.8**
Campeau Drive at Journeyman Street *Signalized*	EBL	A	0.09	22.1	6.6	A	0.07	19.4	8.0
	EBT/R	B	0.67	29.7	50.0	A	0.52	21.0	53.4
	WBL	C	0.71	51.6	30.1	**F**	**1.09**	**118.2**	**#89.2**
	WBT/R	A	0.52	26.6	38.2	A	0.26	20.5	29.2
	NBL	A	0.05	8.8	7.9	A	0.25	14.8	27.3
	NBT	-	-	-	-	A	0.00	12.0	0.9
	NBR	A	0.12	0.8	2.4	A	0.31	3.8	14.6
	SBL	A	0.04	8.8	6.2	A	0.01	12.1	2.9
	SBT/R	A	0.01	0.0	0.0	A	0.01	0.0	0.0
	Overall	**A**	**0.26**	**26.3**	**-**	**B**	**0.61**	**31.3**	**-**
Palladium Drive at Cabela's Way *Unsignalized*	EBR	C	0.64	20.0	33.8	E	0.89	42.3	79.5
	NBL	B	0.44	12.2	16.5	C	0.67	18.0	39.0
	NBT	-	-	-	-				
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**6.5**	**-**	**B**	**-**	**12.1**	**-**
Palladium Drive at Westbound Highway 417 Ramp *Signalized*	WBL	B	0.64	26.1	47.5	A	0.43	22.5	55.1
	WBR	B	0.69	8.2	25.8	E	1.00	45.2	**#180.9**
	NRT	A	0.59	28.7	40.1	B	0.63	33.1	47.7
	SBL	D	0.82	26.2	**#92.4**	B	0.69	22.7	44.8
	SBT	A	0.30	9.8	32.4	A	0.53	16.7	59.9
	Overall	**D**	**0.82**	**19.1**	**-**	**D**	**0.88**	**29.0**	**-**
Palladium Drive at Eastbound Highway 417 Ramp *Signalized*	EBL/R	A	0.39	7.1	13.5	A	0.47	8.6	18.2
	NBT	A	0.48	9.3	22.6	A	0.34	8.7	17.4
	SBT	A	0.59	10.5	28.2	A	0.56	10.7	29.6
	Overall	**A**	**0.46**	**9.3**	**-**	**A**	**0.49**	**9.5**	**-**

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

Intersections within the study area will operate similar to the 2027 future background condition. No additional capacity issues are noted.

At Campeau Drive and Journeyman Street intersection during the Saturday peak hour, shifting three seconds of split from the northbound and southbound phases to the eastbound and westbound phases would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.5 Demand Rationalization Conclusions

7.5.1 Network Rationalization

The background conditions identify capacity constraints on the westbound left-turn movement at the intersection of Campeau Drive at Journeyman Street during the Saturday peak hour. It is noted that the proposed site will not generate trips on this movement and the capacity issues is anticipated to be mitigable by signal timing adjustment. No further rationalization for background travel demand is required for this study.

7.5.2 Development Rationalization

The proposed trip generation rates and mode shares are consistent with the surrounding area context and do not unduly impact the surrounding road network. No site-specific demand rationalization is considered necessary as part of this TIA.

8 Development Design

8.1 Design for Sustainable Modes

The proposed development is a retail development with surface parking for both automobiles and bicycles. A total of 118 vehicle parking spaces and 14 bike parking spaces will be provided for the proposed development. Sidewalks are provided along the boundary roads of Campeau Drive and Palladium Drive, and the private roads of Kanata West Centre Drive and Cabela's Way, and cycle tracks are provided along the boundary roads of Campeau Drive and Palladium Drive. Within 400 metres of walking distance, a local transit stop is provided near Palladium Drive at Cabela's Way.

The infrastructure TDM checklist is provided in Appendix N.

8.2 Circulation and Access

The site will connect to Campeau Drive via Kanata West Centre Drive and to Palladium Drive via Cabela's Way. The garbage is expected to be collected in the internal drive aisles for the retail and in the waste management area for the car wash. The garbage collection vehicles and emergency services were reviewed to confirm movements will be permitted on site. The turning templates are provided in Appendix K.

9 Parking

9.1 Parking Supply

The site provides 118 vehicle parking spaces and 14 bike parking spaces for retail. The minimum parking provision is 119 vehicle parking spaces and seven bike parking spaces for retail. No parking requirements for car wash.

The minimum bicycle parking meets the requirements, and the vehicle parking is one space less than the requirement. It is noted that the existing Kanata West Retail Centre has 735 vehicle parking spaces, which has 139 more spaces than the parking requirement. Therefore, the parking is provided within the Kanata West Retail Centre development to accommodate the site.

10 Boundary Street Design

Table 17 summarizes the MMLOS analysis for the boundary streets of Campeau Drive and Palladium Drive. The existing and future conditions for both streets will be the same and are considered in one row. The boundary street analysis is based on the land use area of the "Entreprise Area". The MMLOS worksheets have been provided in Appendix L.

Table 17: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Campeau Drive	B	C	A	D	-	-	-	-
Palladium Drive	**D**	C	A	D	-	-	-	-

Palladium Drive does not meet the pedestrian MMLOS target. To meet the theoretical pedestrian LOS targets, the operating speed would need to be less than 60 km/h. The City may look at reducing the speed limit to help improve the PLOS results.

11 Access Intersections Design

11.1 Location and Design of Access

The site will connect to Campeau Drive via Kanata West Centre Drive and to Palladium Drive via Cabela's Way. Kanata West Centre Drive and Cabela's Way are existing internal private roadways to the site, and sidewalks are provided along the east side of Kanata West Centre Drive and the north side of Cabela's Way. Kanata West Centre Drive and Cabela's Way meet throat length requirements.

11.2 Intersection Control

Based upon the projected volumes and the operations at all study horizons, Campeau Drive at Kanata West Centre Drive intersection will remain stop-control on the minor approach.

The Palladium Drive at Cabela's Way intersection does not meet signalization warrants at all study horizons, and the northbound left-turn movement at this intersection will operate well during peak hours with no capacity or queuing issues noted at all horizons. Therefore, Palladium Drive at Cabela's Way intersection will remain stop-control on the minor approach, and the northbound left-turn can remain at this intersection. The signal warrants sheets at Palladium Drive at Cabela's Way intersection have been provided in Appendix M.

11.3 Access Intersection Design

11.3.1 Future Access Intersection Operations

The operations are noted in Section 7.4 and both 2027 and 2032 future total access intersections operate well with all movements and the overall intersection operating at LOS A or B.

11.3.2 Access Intersection MMLOS

All accesses are unsignalized and do not require MMLOS review.

11.3.3 Recommended Design Elements

No changes to the site accesses are proposed.

12 Transportation Demand Management

12.1 Context for TDM

The mode shares used within the TIA represent the unmodified district mode shares. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided.

12.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel, and it has been carried through the analysis. The study area intersections are anticipated to have residual capacity and the increase in transit ridership is achievable.

12.3 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 N. The key TDM measures recommended include:

- Provide a multimodal travel option package to new/relocating employees

13 Transit

13.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 18 summarizes the transit trip generation.

Table 18: Trip Generation by Transit Mode

Travel Mode	Mode Share	PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total
Transit	1%	2	2	4	2	1	3

The proposed development is anticipated to generate an additional four PM and three Saturday peak hour two-way transit trips, and the existing transit service is expected to accommodate these increased riders.

13.2 Transit Priority

Examining the study area intersection delays, negligible impacts are noted on the transit movements and no decrease in transit LOS at the study area intersections is noted as a result of forecasted site-generated traffic.

14 Network Intersection Design

14.1 Network Intersection Control

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

14.2 Network Intersection Design

14.2.1 2027 & 2032 Future Total Network Intersection Operations

The operations are noted in Section 7.4 and no changes on the intersections within the study area are required.

14.2.2 Network Intersection MMLOS

Table 19 summarizes the MMLOS analysis for the network intersections of Campeau Drive at Journeyman Street, Palladium Drive at Westbound Highway 417 Ramp, and future Palladium Drive at Eastbound Highway 417 Ramp. The existing and future conditions for intersections of Campeau Drive at Journeyman Street, Palladium Drive at Westbound Highway 417 Ramp will be the same and are considered in one row. The intersection analysis is based on the land use area of "Entreprise Area". The MMLOS worksheets have been provided in Appendix L.

Table 19: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Campeau Drive at Journeyman Street	F	C	F	D	-	-	-	-	A	D

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Palladium Drive at Westbound Highway 417 Ramp	F	C	-	-	-	-	A	B	D	D
Palladium Drive at Eastbound Highway 417 Ramp (Future)	D	C	-	-	-	-	A	B	A	D

The pedestrian LOS targets will not be met at the intersections of Campeau Drive at Journeyman Street, Palladium Drive at Westbound Highway 417 Ramp, and future Palladium Drive at Eastbound Highway 417 Ramp. To meet pedestrian LOS targets, the maximum crossing distance on all pedestrian crossings would need to be reduced to three lane widths.

Pedestrian delay LOS is not considered in the PLOS calculation as it is not a suitable metric for the assessment of pedestrian LOS as formulated. This exclusion is consistent with City direction since 2015, and no alternative methodology has been provided for its assessment.

The bicycle LOS targets will not be met at the intersections of Campeau Drive at Journeyman Street. To meet bicycle LOS targets, north and south approaches would need dedicated cycling facilities.

The City will be responsible for exploring options to address the area PLOS and BLOS deficiencies.

14.2.3 Recommended Design Elements

No capacity issues are noted on the westbound right-turn movement during both PM and Saturday peak hours at Palladium Drive and westbound Highway 417 ramp intersection. No design elements are proposed as part of this study.

15 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The proposed site consists of approximately 3,351 sq. m. of retail space and a 497 sq. m car wash
- The anticipated full build-out and occupancy horizon is 2027 with construction occurring in a single phase
- A total of 118 vehicle parking spaces and 14 bicycle parking spaces are proposed
- The site will connect to Campeau Drive via Kanata West Centre Drive and to Palladium Drive via Cabela's Way
- The site is located within the Kanata West Community Design Plan area and forms part of the previously approved Kanata West Business Park subdivision
- The trip generation and safety triggers were met for the TIA Screening

Existing Conditions

- Campeau Drive and Palladium Drive are arterial roads, and Journeyman Street is a local road in the study area
- Kanata West Centre Drive and Cabela's Way are private roads
- Sidewalks are provided on both sides of Campeau Drive west of Journeyman Street, Campeau Drive east of Huntmar Drive, Palladium Drive between Upper Canada Street and westbound Highway 417 ramp terminal, and Journeyman Street

- Sidewalks are also provided on the south side of Campeau Drive between Palladium Drive and Huntmar Drive, on the east side of Kanata West Centre Drive, around Tanger outlet, and on the north side of Cabela's Way
- Cycletracks are present on Campeau Drive and Palladium Drive between Upper Canada Street and westbound Highway 417 ramp terminal
- The intersection of Highway 417 westbound off-ramp at Palladium Drive is noted to have experienced higher collisions (12 out of 21) than other locations
- The collision rates have been generally consistent through the years with 2016, 2017, and 2020 peaking with three collisions and no further examination is required as part of this study
- During all peak hours, the study area intersections operate well in the existing condition
- The westbound left-turn movement at Campeau Drive and Journeyman Street intersection and the westbound right-turn movement at Palladium Drive at Westbound Highway 417 Ramp may exhibit extended queues during the Saturday peak hour in the existing condition

Development Generated Travel Demand

- A total of 86 PM and 112 Saturday new peak hour two-way vehicle trips are projected as a result of the proposed development
- Of the forecasted trips, 15 % are anticipated to travel north, 30% to the south, 50 % to the east, and 5 % to the west

Background Conditions

- The future Palladium LRT Station along this extension is planned to be located approximately 1.05 kilometres from the site at Huntmar Drive and Cyclone Taylor Boulevard, and the completion of the station is assumed beyond the study horizon
- Extension of Robert Grant Avenue from Huntmar Avenue to Abbott Street and extension of Stittsville Main Street from it's current terminus west of Maple Grove to Robert Grant Avenue are assumed to have a buildout timeline beyond 2032 and will not be modeled within the subject analyses
- It is anticipated that the Palladium Drive at Eastbound Highway 417 Ramp intersection will be signalized intersection by 2027, and it will be included in the future conditions
- An annual background growth of 1% will be applied to mainline volumes of Palladium Drive and Campeau Drive in order to capture any additional growth further development beyond the study area
- At both 2027 and 2032 future background horizons, the westbound left-turn movement at Campeau Drive and Journeyman Street intersection during the Saturday peak hour will be over theoretical capacity and may be subject to high delays and extended queues
- The Campeau Drive and Journeyman Street intersection signal timing adjustment may address the constraint and reduce the v/c of all movements to be 1.00 or below during the Saturday peak hour
- No further rationalization for background travel demand is required for this study

Development Design

- The proposed development is a retail development with surface parking for both automobiles and bicycles
- Sidewalks are provided along the boundary roads of Campeau Drive, Palladium Drive, Kanata West Centre Drive, and Cabela's Way, and cycle tracks are provided along the boundary roads of Campeau Drive and Palladium Drive
- Within 400 metres of walking distance, a local transit stop is provided at Palladium Drive at Campeau Dive

- The garbage collection vehicles and emergency services were reviewed to confirm movements will be permitted on site
- The garbage is expected to be collected in the internal drive aisles for the retail and in the waste management area for the car wash
- The garbage collection vehicles and emergency services were reviewed to confirm movements will be permitted on site

Parking

- A total of 118 vehicle parking spaces and 14 bike parking spaces will be provided
- The minimum bicycle parking requirement is satisfied
- The vehicle parking is one space less than the requirement
- Existing Kanata West Retail Centre provides 139 more spaces than the requirements, and the parking is provided within the Kanata West Retail Centre development to accommodate the site
- No parking requirements for car wash

Boundary Street Design

- Palladium Drive does not meet the pedestrian MMLOS target, and the operating speed would need to be less than 60 km/h
- The City may look at reducing the speed limit to help improve the PLOS results

Access Intersections Design

- Campeau Drive at Kanata West Centre Drive intersection will remain stop-control on the minor approach based upon the projected volumes and the operations at all study horizons
- The Palladium Drive at Cabela's Way intersection does not meet signalization warrants at all study horizons, and the northbound left-turn movement at this intersection will operate well during peak hours with no capacity or queuing issues noted at all horizons
- Palladium Drive at Cabela's Way intersection will remain stop-control on the minor approach, and the northbound left-turn can remain at this intersection

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Provide a multimodal travel option package to new/relocating employees

Transit

- The proposed development is anticipated to generate an additional four PM and three Saturday peak hour two-way transit trips
- The existing transit service is expected to accommodate these increased riders
- Examining the study area intersection delays, negligible impacts are noted on the transit movements and no decrease in transit LOS at the study area intersections is noted as a result of forecasted site-generated traffic

Network Intersection Design

- Intersections within the study area will operate similar to future background conditions

- Similar to the future background conditions during the Saturday peak hour, signal timing adjustment may constrains address the constraint on the westbound left-turn movement at Campeau Drive and Journeyman Street intersection
- The proposed trip generation rates and mode shares are consistent with the surrounding area context and do not unduly impact the surrounding road network
- No site-specific demand rationalization is considered necessary as part of this TIA
- No capacity issues are noted on the westbound right-turn movement during both PM and Saturday peak hours at Palladium Drive and westbound highway 417 ramp intersection, and no design elements are proposed as part of this study
- The pedestrian LOS targets will not be met at the intersections of Campeau Drive at Journeyman Street, Palladium Drive at Westbound Highway 417 Ramp, and future Palladium Drive at Eastbound Highway 417 Ramp, and maximum of three lane widths crossing distance on all pedestrian crossings would need to meet the targets
- The bicycle LOS targets will not be met at the intersections of Campeau Drive at Journeyman Street, and north and south approaches would need dedicated cycling facilities to meet the targets
- The City will be responsible for exploring options to address the area PLOS and BLOS deficiencies

16 Conclusion

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

Prepared By:

Yu-Chu Chen, EIT
Transportation Engineering-Intern

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 18-Jan-23
Project Number: 2022-107
Project Reference: 3095 Palladium

1.1 Description of Proposed Development	
Municipal Address	3095 Palladium Drive
Description of Location	Parcel south of Campeau Drive, west of Palladium Drive
Land Use Classification	General Mixed-Use (GM[2167])
Development Size	41,500 sq. ft. of commercial/retail space
Accesses	Two existing on Campeau Drive, one existing on Palladium Drive. Internally, two on private road of Kanata West Centre Drive
Phase of Development	One
Buildout Year	2027
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Destination retail	
Development Size	3,855	G.F.A.
Trip Generation Trigger	Yes	

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

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

TIA Plan Reports

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

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

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

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise [check √ appropriate field(s)] is either transportation engineering √ or transportation planning □.

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

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

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

Dated at ___Ottawa_____ this __20__ day of _____September_____, 2018.
(City)

Name: _____Andrew Harte_____
(Please Print)

Professional Title: _____Professional Engineer_____

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

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

Appendix B

Turning Movement Counts

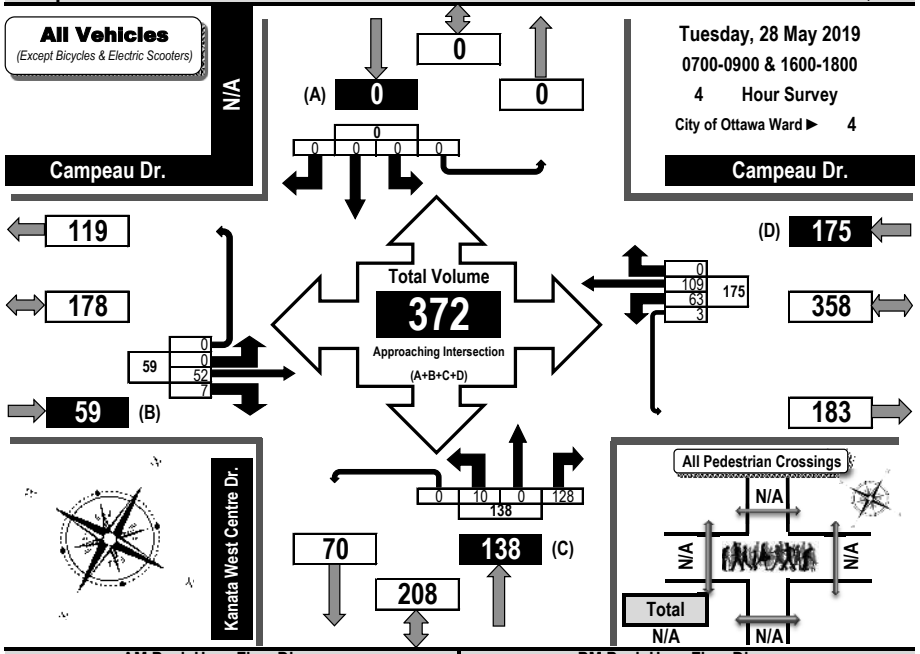
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

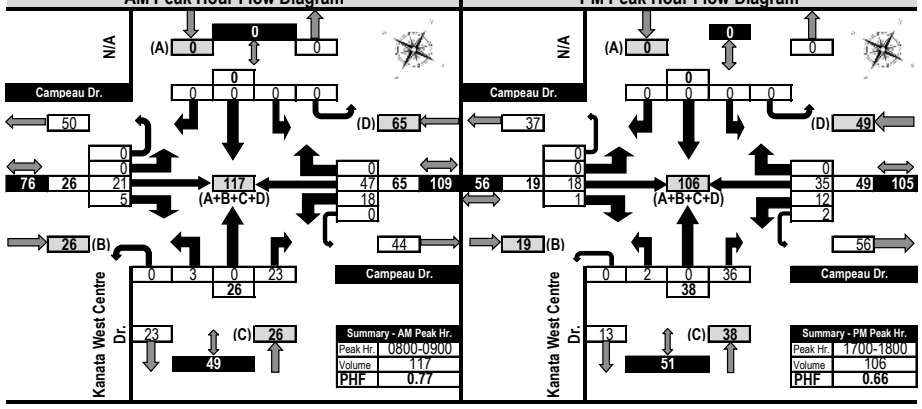
Campeau Drive & Kanata West Centre Drive — **Kanata, ON**

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, 28 May 2019
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 4



AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	117
PHF	0.77

PM Peak Hour Flow Diagram

Summary - PM Peak Hr.	
Peak Hr.	1700-1800
Volume	106
PHF	0.66

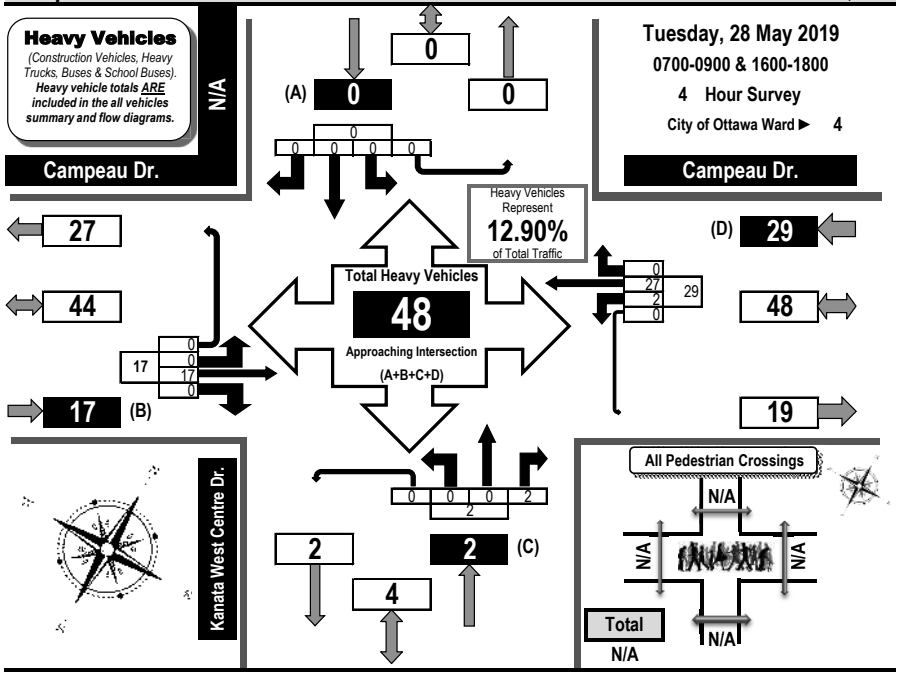
Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Heavy Trucks, Buses, and School Buses

Campeau Drive & Kanata West Centre Drive — **Kanata, ON**

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

Tuesday, 28 May 2019
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 4



	Campeau Dr.					Campeau Dr.					Kanata West Centre Dr.					N/A				
	Eastbound					Westbound					Northbound					Southbound				
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0700-0800	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
0800-0900	0	13	0	0	13	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	15
1600-1700	0	3	0	0	3	1	3	0	0	4	0	0	1	0	1	0	0	0	0	0	8
1700-1800	0	1	0	0	1	1	22	0	0	23	0	0	0	0	0	0	0	0	0	0	24
Totals	0	17	0	0	17	2	27	0	0	29	0	0	2	0	2	0	0	0	0	0	48

Comments:
Campeau Drive not yet open to Terry Fox Drive. Cabela's, Princess Auto and McDonalds represent the businesses now open. The majority of the heavy vehicles are associated with the UPS facility on Campeau Drive.

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Campeau Drive & Kanata West Centre Drive — Kanata, ON

Survey Date: Tuesday, 28 May 2019 **Start Time:** 0700 **AADT Factor:** 0.9
Weather AM: Overcast +9ºC **Survey Duration:** 4 Hrs. **Survey Hours:** 0700-0900 & 1600-1800
Weather PM: Overcast +11ºC **Surveyor(s):** Mousseau

	Campeau Dr.					Campeau Dr.						Kanata West Centre Dr.					N/A					
	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	0	4	1	0	5	8	6	0	0	14	19	1	0	25	0	26	0	0	0	0	0	26	45
0800-0900	0	21	5	0	26	18	47	0	0	65	91	3	0	23	0	26	0	0	0	0	0	26	117
1600-1700	0	9	0	0	9	25	21	0	1	47	56	4	0	44	0	48	0	0	0	0	0	48	104
1700-1800	0	18	1	0	19	12	35	0	2	49	68	2	0	36	0	38	0	0	0	0	0	38	106
Totals	0	52	7	0	59	63	109	0	3	175	234	10	0	128	0	138	0	0	0	0	0	138	372

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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.77 — Highest Hourly Vehicle Volume Between 0700h & 0900h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0800-0900	0	21	5	0	26	18	47	0	0	65	91	3	0	23	0	26	0	0	0	0	0	26	117

PM Peak Hour Factor ➡ 0.66 — Highest Hourly Vehicle Volume Between 1600h & 1800h

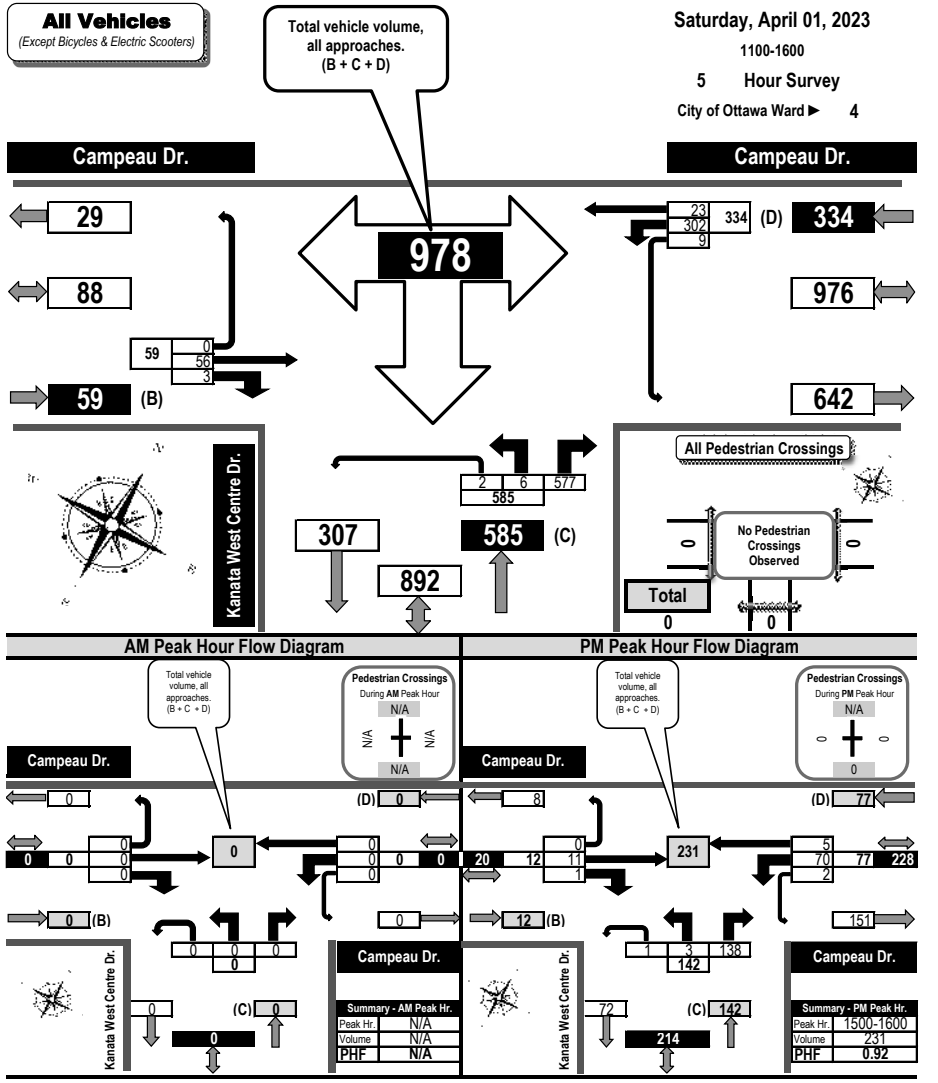
PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1700-1800	0	18	1	0	19	12	35	0	2	49	68	2	0	36	0	38	0	0	0	0	0	38	106

Comments:
Campeau Drive not yet open to Terry Fox Drive. Cabela's, Princess Auto and McDonalds represent the businesses now open. The majority of the heavy vehicles are associated with the UPS facility on Campeau 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.

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

Campeau Drive & Kanata West Centre Drive — Kanata, ON



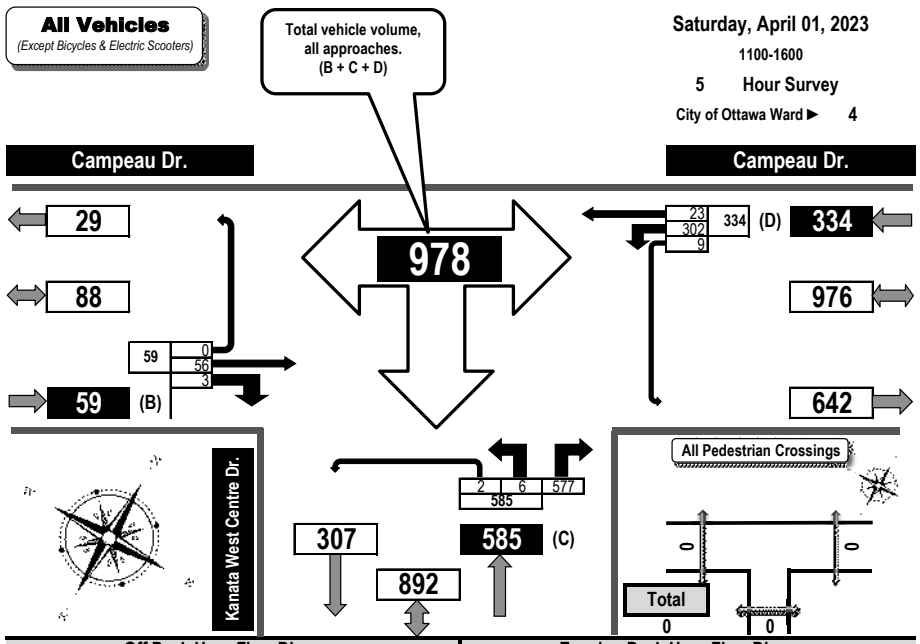
Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Campeau Drive & Kanata West Centre Drive — **Kanata, ON**

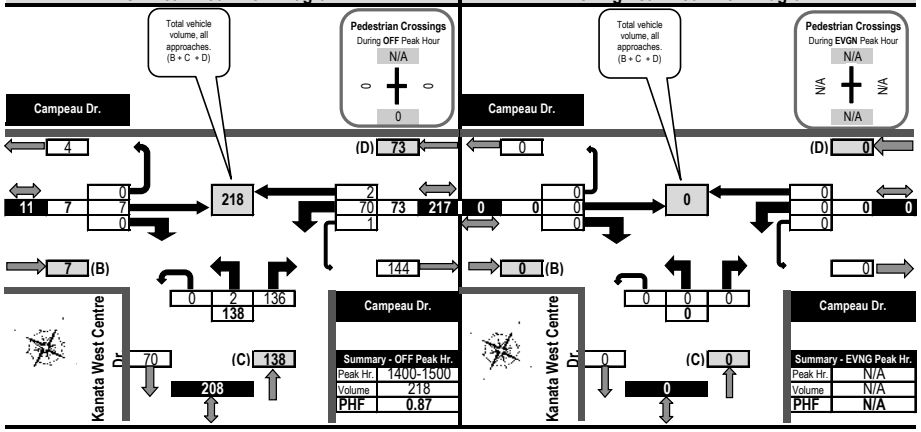
All Vehicles
(Except Bicycles & Electric Scooters)

Total vehicle volume, all approaches. (B + C + D)

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4



Off Peak Hour Flow Diagram



Evening Peak Hour Flow Diagram

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

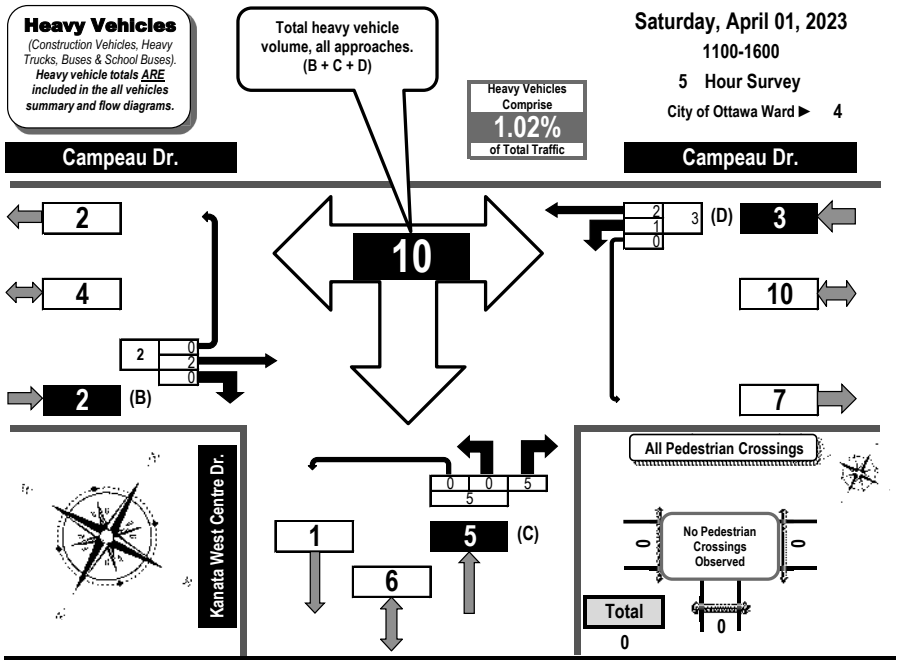
Campeau Drive & Kanata West Centre Drive — **Kanata, ON**

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

Total heavy vehicle volume, all approaches. (B + C + D)

Heavy Vehicles Comprise **1.02%** of Total Traffic

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4



	Campeau Dr. Eastbound					Campeau Dr. Westbound					Kanata West Centre Dr. Northbound					N/A 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
1100-1200		1	0	0	1	0	1		0	1	0		0	0	0						2
1200-1300		1	0	0	1	0	0		0	0	0		0	0	0						1
1300-1400		0	0	0	0	0	1		0	1	0		1	0	1						2
1400-1500		0	0	0	0	1	0		0	1	0		2	0	2						3
1500-1600		0	0	0	0	0	0		0	0	0		2	0	2						2
Totals		2	0	0	2	1	2		0	3	0		5	0	5					0	10

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

Campeau Drive & Kanata West Centre Drive — **Kanata, ON**

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

Total bus volume, all approaches. (B + C + D)

All Buses Comprise **0.00%** of Total Traffic and **0.00%** of the Heavy Vehicle Traffic

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4

Campeau Dr. | Campeau Dr.

Kanata West Centre Dr.

All Pedestrian Crossings: No Pedestrian Crossings Observed — Total 0

	Campeau Dr. Eastbound					Campeau Dr. Westbound					Kanata West Centre Dr. Northbound					N/A 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
1100-1200		0	0	0	0	0	0		0	0	0		0	0	0						0
1200-1300		0	0	0	0	0	0		0	0	0		0	0	0						0
1300-1400		0	0	0	0	0	0		0	0	0		0	0	0						0
1400-1500		0	0	0	0	0	0		0	0	0		0	0	0						0
1500-1600		0	0	0	0	0	0		0	0	0		0	0	0						0
Totals		0	0	0	0	0	0		0	0	0		0	0	0						0

Turning Movement Count
Bicycle Summary
Flow Diagram

Campeau Drive & Kanata West Centre Drive — **Kanata, ON**

Bicycles
(Including electric bicycles and electric scooters)
Note:
Bicycle volumes are **NOT** included in vehicle totals.

Total bicycle volume, all approaches. (B + C + D)

Bicycles comprise **0.00%** of total traffic

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4

Campeau Dr. | Campeau Dr.

No Bicycles Observed

Includes all bicycles travelling on sidewalks.

Kanata West Centre Dr.

All Pedestrian Crossings: No Pedestrian Crossings Observed — Total 0

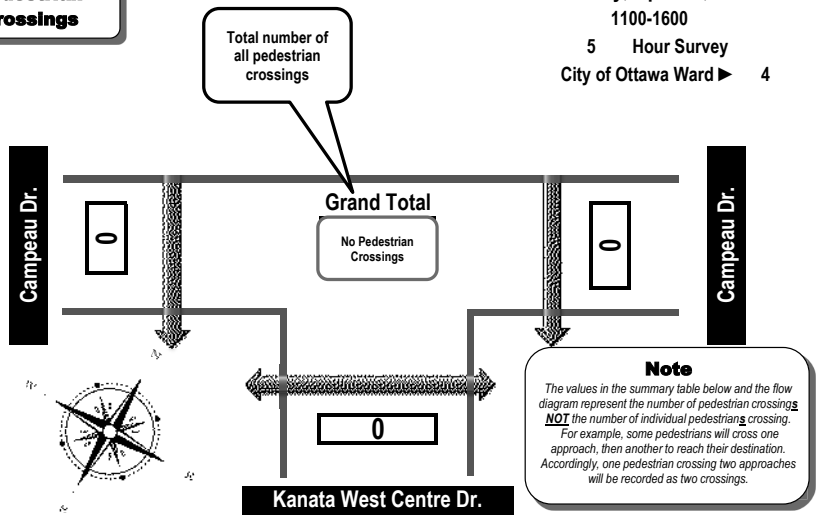
	Campeau Dr. Eastbound					Campeau Dr. Westbound					Kanata West Centre Dr. Northbound					N/A Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200		0	0	0	0	0	0		0	0	0		0	0	0						0
1200-1300		0	0	0	0	0							0	0	0						0
1300-1400		0	0	0	0	0	No Bicycles Observed						0	0	0						0
1400-1500		0	0	0	0	0							0	0	0						0
1500-1600		0	0	0	0	0	0		0	0	0		0	0	0						0
Totals		0	0	0	0	0	0		0	0	0		0	0	0						0

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Campeau Drive & Kanata West Centre Drive — Kanata, ON

Pedestrian Crossings

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► **4**



Note
*The values in the summary table below and the flow diagram represent the number of pedestrian crossing**s** **NOT** the number of individual pedestrian**s** crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Campeau Dr.	East Side Crossing Campeau Dr.	Street Total	South Side Crossing Kanata West Centre Dr.	North Side Crossing N/A	Street Total	Grand Total
1100-1200	0	0	0	0		0	0
1200-1300	0	0		0		0	0
1300-1400	0	0		0		0	0
1400-1500	0	0		0		0	0
1500-1600	0	0	0	0		0	0
Totals	0	0	0	0		0	0

No Pedestrian Crossings

Comments:
No bicycles, buses or pedestrian crossings were observed.

Turning Movement Count
Summary Report
Including OFF Peak, PM Peak and PHF
All Vehicles Except Bicycles

Campeau Drive & Kanata West Centre Drive — Kanata, ON

Survey Date: Saturday, April 01, 2023 **Start Time:** 1100 **AADT Factor:** 1.0
Weather: AM: Drizzle +1° C **Survey Duration:** 5 Hrs. **Survey Hours:** 1100 - 1600
Weather PM: Most Sunny +8° C **Surveyor(s):** M. Brazeau

	Campeau Dr. Eastbound					Campeau Dr. Westbound						Kanata West Centre Dr. Northbound					N/A 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
1100-1200	0	9	0	0	9	51	5	0	1	57	66	0	0	97	1	98	0	0	0	0	0	98	164
1200-1300	0	15	1	0	16	55	3	0	2	60	76	0	0	98	0	98	0	0	0	0	0	98	174
1300-1400	0	14	1	0	15	56	8	0	3	67	82	1	0	108	0	109	0	0	0	0	0	109	191
1400-1500	0	7	0	0	7	70	2	0	1	73	80	2	0	136	0	138	0	0	0	0	0	138	218
1500-1600	0	11	1	0	12	70	5	0	2	77	89	3	0	138	1	142	0	0	0	0	0	142	231
Totals	0	56	3	0	59	302	23	0	9	334	393	6	0	577	2	585	0	0	0	0	0	585	978

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

OFF Peak Hour Factor ➡ 0.87

												Highest Hourly Vehicle Volume Between 1100h & 1500h										
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.
1400-1500	0	7	0	0	7	70	2	0	1	73	80	2	0	136	0	138	0	0	0	0	0	138	218

PM Peak Hour Factor ➡ 0.92

												Highest Hourly Vehicle Volume Between 1500h & 1900h										
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.
1500-1600	0	11	1	0	12	70	5	0	2	77	89	3	0	138	1	142	0	0	0	0	0	142	231

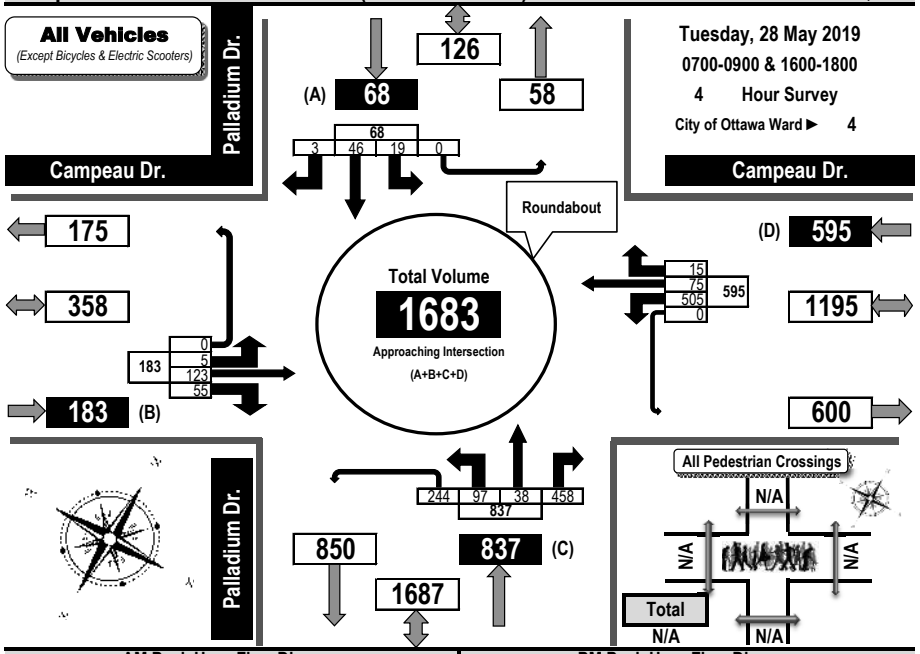
Comments:
No bicycles, buses or pedestrian crossings were observed.

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

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Campeau Drive & Palladium Drive (ROUNDABOUT) — **Kanata, ON**

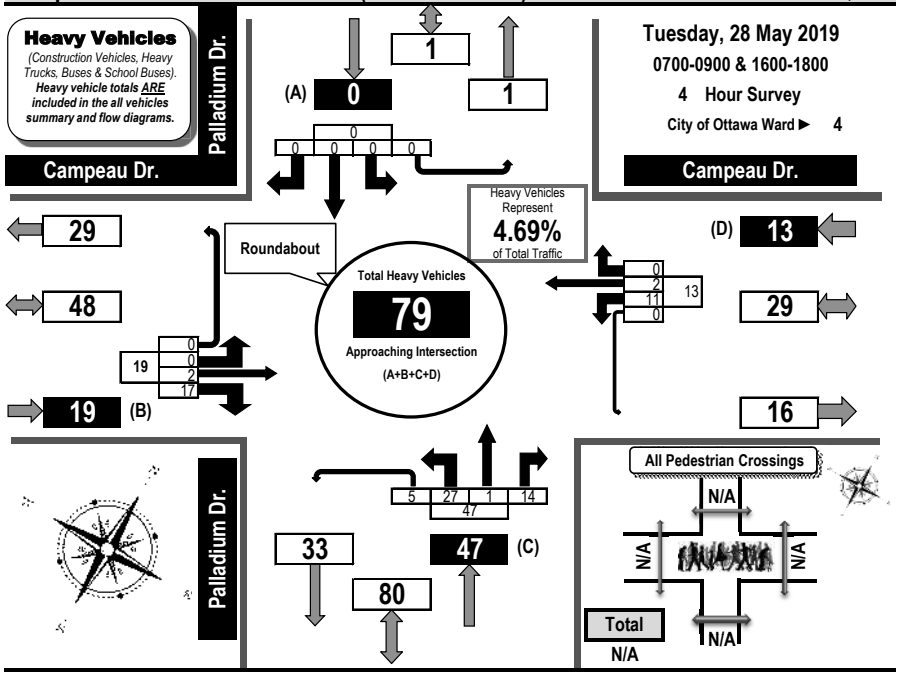


Printed on: 5/30/2019 — Prepared by: thetrafficspecialist@gmail.com — Flow Diagrams: AM PM Peak

Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Heavy Trucks, Buses, and School Buses

Campeau Drive & Palladium Drive (ROUNDABOUT) — **Kanata, ON**



	Campeau Dr. Eastbound					Campeau Dr. Westbound					Palladium Dr. Northbound					Palladium Dr. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0700-0800	0	1	0	0	1	1	0	0	0	1	0	0	3	0	3	0	0	0	0	0	5
0800-0900	0	0	14	0	14	5	0	0	0	5	2	1	5	1	9	0	0	0	0	0	28
1600-1700	0	1	3	0	4	3	1	0	0	4	3	0	3	3	9	0	0	0	0	0	17
1700-1800	0	0	0	0	0	2	1	0	0	3	22	0	3	1	26	0	0	0	0	0	29
Totals	0	2	17	0	19	11	2	0	0	13	27	1	14	5	47	0	0	0	0	0	79

Comments:
Campeau Drive not yet open to Terry Fox Drive. Cabela's, Princess Auto and McDonalds represent the businesses now open in the Kanata West Business Park. The large number of northbound U-turns primarily originate from the Tanger Outlet access located south of Campeau Drive.

Printed on: 5/30/2019 — Prepared by: thetrafficspecialist@gmail.com — Summary: Heavy Vehicles

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Campeau Drive & Palladium Drive (ROUNDABOUT) — Kanata, ON

Survey Date: Tuesday, 28 May 2019 **Start Time:** 0700 **AADT Factor:** 0.9
Weather AM: Overcast +9ºC **Survey Duration:** 4 Hrs. **Survey Hours:** 0700-0900 & 1600-1800
Weather PM: Overcast +11ºC **Surveyor(s):** Carmody

	Campeau Dr. Eastbound					Campeau Dr. Westbound						Palladium Dr. Northbound						Palladium Dr. 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	2	23	6	0	**31**	91	9	7	0	**107**	**138**	6	17	70	5	**98**	1	2	0	0	**3**	**101**	**239**
0800-0900	1	22	21	0	**44**	101	19	6	0	**126**	**170**	46	16	91	12	**165**	4	15	2	0	**21**	**186**	**356**
1600-1700	2	37	14	0	**53**	169	30	1	0	**200**	**253**	17	1	151	111	**280**	10	15	0	0	**25**	**305**	**558**
1700-1800	0	41	14	0	**55**	144	17	1	0	**162**	**217**	28	4	146	116	**294**	4	14	1	0	**19**	**313**	**530**
Totals	**5**	**123**	**55**	**0**	**183**	**505**	**75**	**15**	**0**	**595**	**778**	**97**	**38**	**458**	**244**	**837**	**19**	**46**	**3**	**0**	**68**	**905**	**1683**

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	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	**n/a**

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	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	**n/a**

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	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	**n/a**

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.82 — Highest Hourly Vehicle Volume Between 0700h & 0900h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0800-0900	1	22	21	0	**44**	101	19	6	0	**126**	**170**	46	16	91	12	**165**	4	15	2	0	**21**	**186**	**356**

PM Peak Hour Factor ➡ 0.95 — Highest Hourly Vehicle Volume Between 1600h & 1800h

PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1615-1715	2	38	14	0	**54**	166	24	0	0	**190**	**244**	20	1	179	101	**301**	8	22	0	0	**30**	**331**	**575**

Comments:

Campeau Drive not yet open to Terry Fox Drive. Cabela's, Princess Auto and McDonalds represent the businesses now open in the Kanata West Business Park. The large number of northbound U-turns primarily originate from the Tanger Outlet access located south of Campeau 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.

Diagrams, Maps and Photographs

Campeau Drive & Palladium Drive (ROUNDABOUT)

Saturday, April 01, 2023

Turning Movement Count
Summary Report
Including OFF Peak, PM Peak and PHF
All Vehicles Except Bicycles

Campeau Drive & Palladium Drive (ROUNDABOUT) — Kanata, ON

Survey Date: Saturday, April 01, 2023 | **Start Time:** 1100 | **AADT Factor:** 1.0
Weather: AM: Drizzle +1° C | **Survey Duration:** 5 Hrs. | **Survey Hours:** 1100 - 1600
Weather PM: Mostly Sunny +8° C | **Surveyor(s):** T. Carmody

	Campeau Dr. Eastbound					Campeau Dr. Westbound						Palladium Dr. Northbound						Palladium Dr. 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
1100-1200	3	85	17	0	105	165	47	5	8	225	330	12	6	107	152	277	5	13	1	0	19	296	626
1200-1300	1	87	27	0	115	145	53	4	7	209	324	16	4	154	181	355	6	5	0	0	11	366	690
1300-1400	1	106	16	0	123	199	53	4	5	261	384	14	12	256	221	503	6	21	3	0	30	533	917
1400-1500	1	122	24	0	147	261	56	4	1	322	469	10	10	314	293	627	7	11	1	0	19	646	1115
1500-1600	0	126	19	0	145	316	56	5	2	379	524	6	6	308	348	668	5	9	0	0	14	682	1206
Totals	6	526	103	0	635	1086	265	22	23	1396	2031	58	38	1139	1195	2430	29	59	5	0	93	2523	4554

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

OFF Peak Hour Factor ➡ 0.92 — Highest Hourly Vehicle Volume Between 1100h & 1500h

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.
1400-1500	1	122	24	0	147	261	56	4	1	322	469	10	10	314	293	627	7	11	1	0	19	646	1115

PM Peak Hour Factor ➡ 0.91 — Highest Hourly Vehicle Volume Between 1500h & 1900h

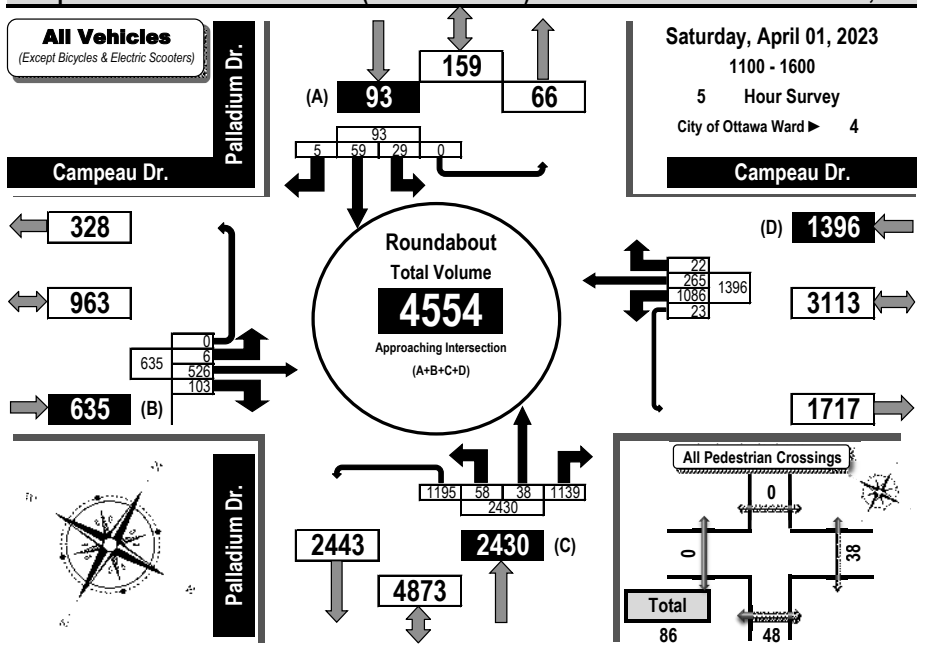
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1500-1600	0	126	19	0	145	316	56	5	2	379	524	6	6	308	348	668	5	9	0	0	14	682	1206

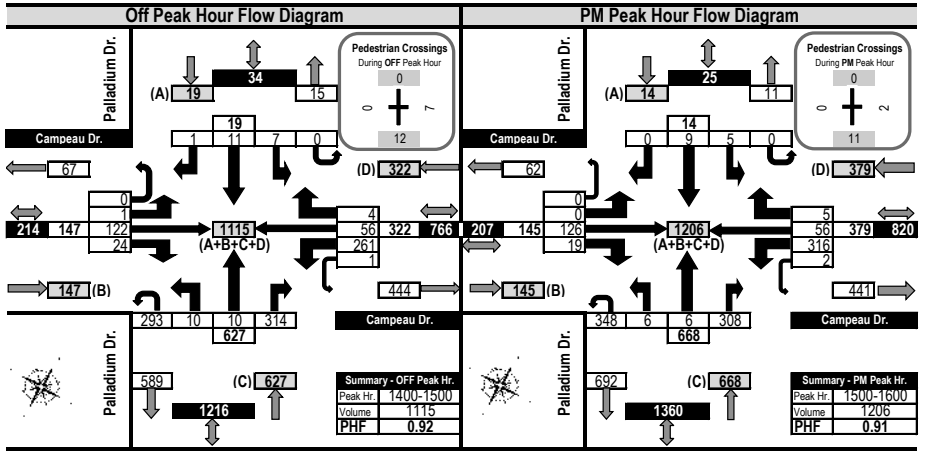
Comments:
OC Transpo buses comprise 65.22% of the heavy vehicle traffic. No bicycles were observed.

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

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

Campeau Drive & Palladium Drive (ROUNDABOUT) — Kanata, ON



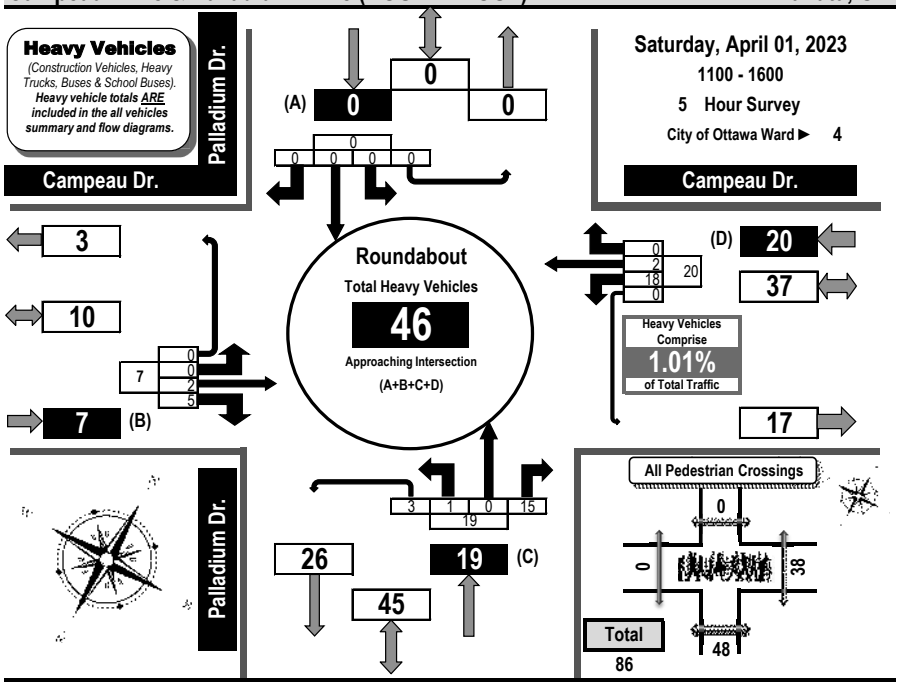


Turning Movement Count
Heavy Vehicle Summary (FHWA Class 4-13)
Flow Diagram

Campeau Drive & Palladium Drive (ROUNDABOUT) — **Kanata, ON**

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

Saturday, April 01, 2023
1100 - 1600
5 Hour Survey
City of Ottawa Ward ► 4



	Campeau Dr.					Campeau Dr.					Palladium Dr.					Palladium Dr.					
	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
1100-1200	0	0	1	0	1	4	1	0	0	5	0	0	4	0	4	0	0	0	0	0	10
1200-1300	0	0	1	0	1	3	0	0	0	3	0	0	3	0	3	0	0	0	0	0	7
1300-1400	0	0	1	0	1	4	0	0	0	4	1	0	3	1	5	0	0	0	0	0	10
1400-1500	0	2	0	0	2	4	1	0	0	5	0	0	3	0	3	0	0	0	0	0	10
1500-1600	0	0	2	0	2	3	0	0	0	3	0	0	2	2	4	0	0	0	0	0	9
Totals	0	2	5	0	7	18	2	0	0	20	1	0	15	3	19	0	0	0	0	0	46

Comments:

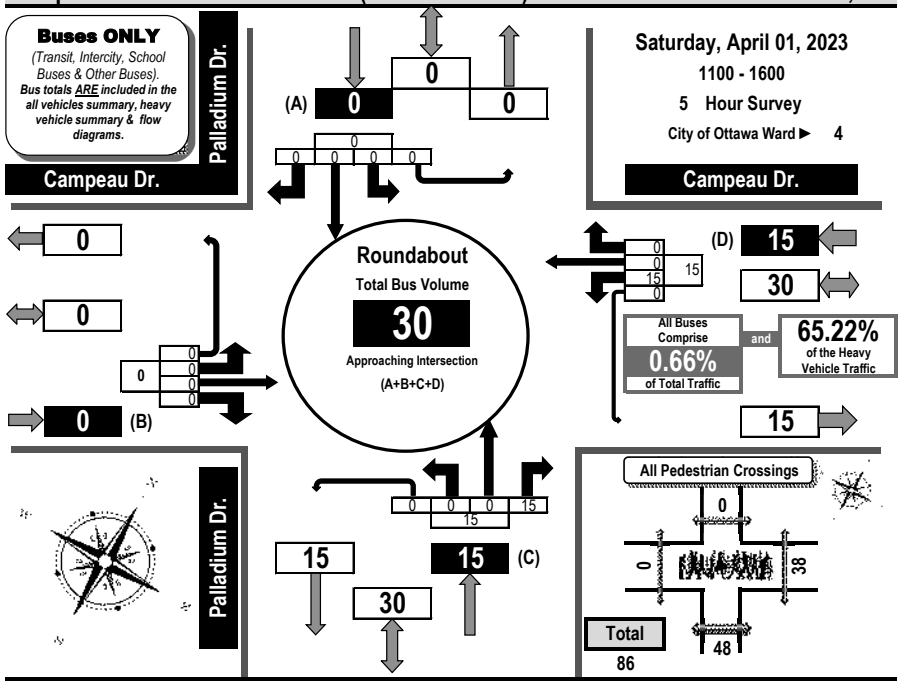
OC Transpo buses comprise 65.22% of the heavy vehicle traffic. No bicycles were observed.

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

Campeau Drive & Palladium Drive (ROUNDABOUT) — **Kanata, ON**

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

Saturday, April 01, 2023
1100 - 1600
5 Hour Survey
City of Ottawa Ward ► 4

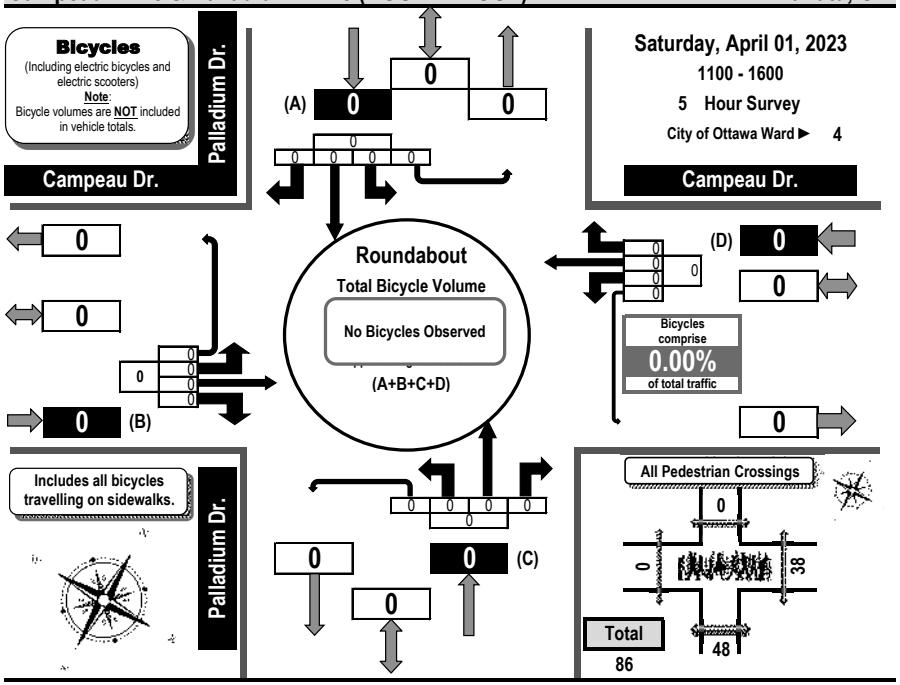


	Campeau Dr.					Campeau Dr.					Palladium Dr.					Palladium Dr.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0	0	0	0	0	3	0	0	0	3	0	0	4	0	4	0	0	0	0	0	7
1200-1300	0	0	0	0	0	3	0	0	0	3	0	0	3	0	3	0	0	0	0	0	6
1300-1400	0	0	0	0	0	3	0	0	0	3	0	0	3	0	3	0	0	0	0	0	6
1400-1500	0	0	0	0	0	3	0	0	0	3	0	0	3	0	3	0	0	0	0	0	6
1500-1600	0	0	0	0	0	3	0	0	0	3	0	0	2	0	2	0	0	0	0	0	5
Totals	0	0	0	0	0	15	0	0	0	15	0	0	15	0	15	0	0	0	0	0	30

Comments:
OC Transpo buses comprise 65.22% of the heavy vehicle traffic. No bicycles were observed.

Turning Movement Count
Bicycle Summary
Flow Diagram

Campeau Drive & Palladium Drive (ROUNDABOUT) — **Kanata, ON**



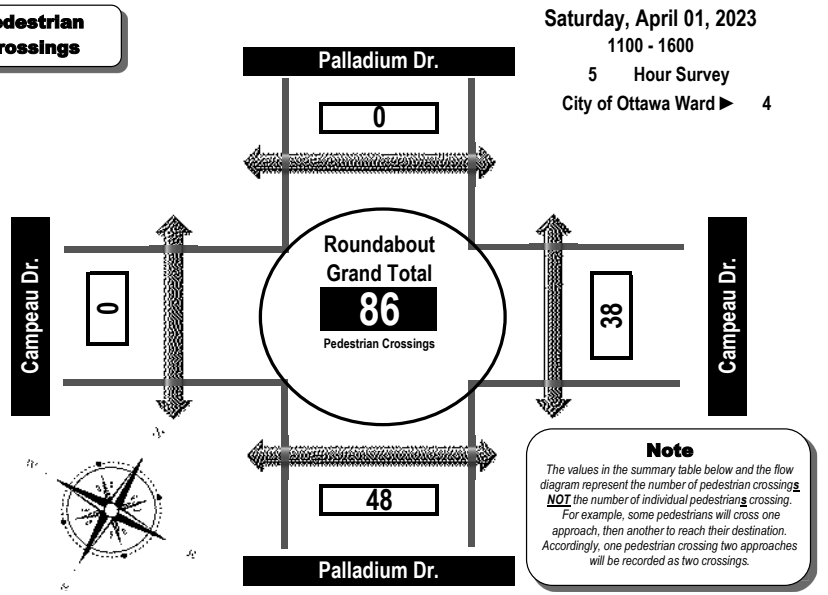
	Campeau Dr. Eastbound					Campeau Dr. Westbound					Palladium Dr. Northbound					Palladium Dr. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1200-1300	0	0	0	0	0	0	0					0	0	0	0	0	0	0	0	0	0
1300-1400	0	0	0	0	0	0	0	No Bicycles Observed				0	0	0	0	0	0	0	0	0	0
1400-1500	0	0	0	0	0	0	0					0	0	0	0	0	0	0	0	0	0
1500-1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

OC Transpo buses comprise 65.22% of the heavy vehicle traffic. No bicycles were observed.

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Campeau Drive & Palladium Drive (ROUNDABOUT) — **Kanata, ON**



Time Period	West Side Crossing Campeau Dr.	East Side Crossing Campeau Dr.	Street Total	South Side Crossing Palladium Dr.	North Side Crossing Palladium Dr.	Street Total	Grand Total
1100-1200	0	4	4	2	0	2	6
1200-1300	0	7	7	7	0	7	14
1300-1400	0	18	18	16	0	16	34
1400-1500	0	7	7	12	0	12	19
1500-1600	0	2	2	11	0	11	13
Totals	0	38	38	48	0	48	86

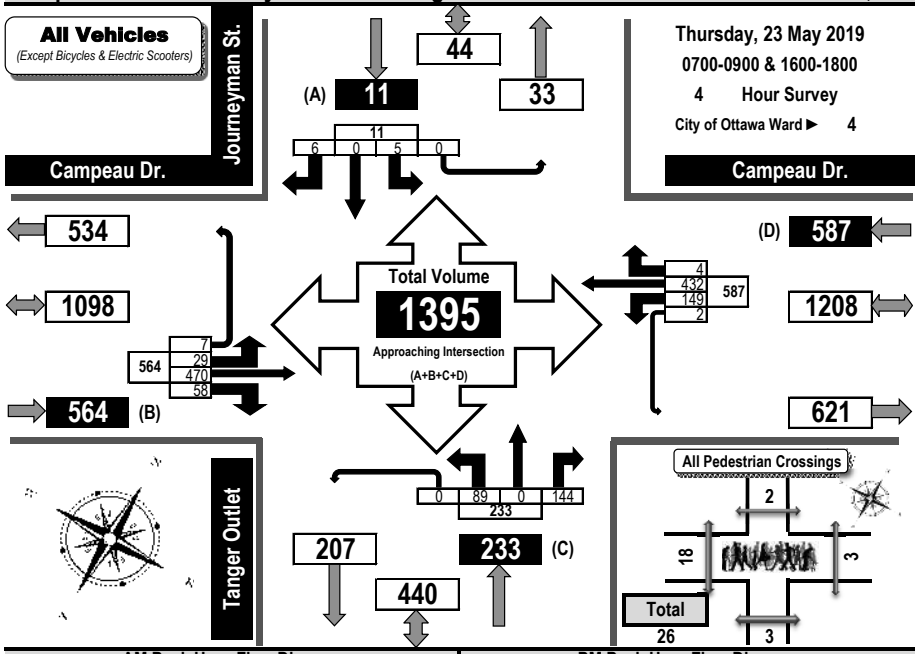
Comments:

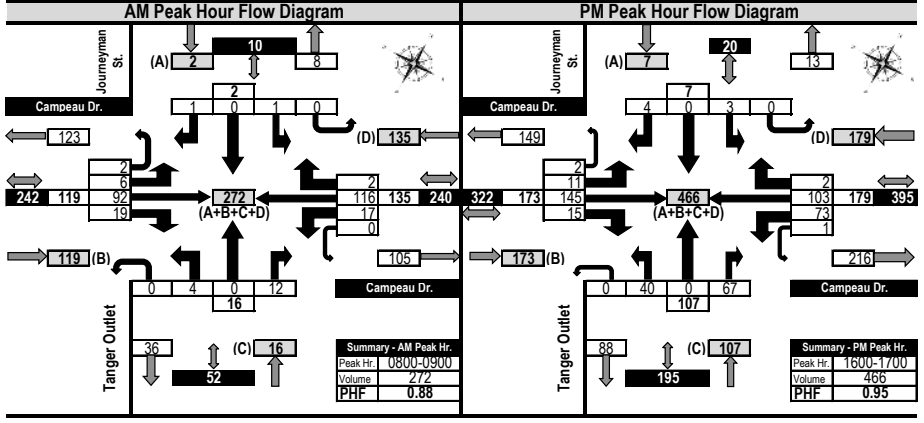
OC Transpo buses comprise 65.22% of the heavy vehicle traffic. No bicycles were observed.

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Campeau Drive & Journeyman Street/Tanger Outlet — Kanata, ON



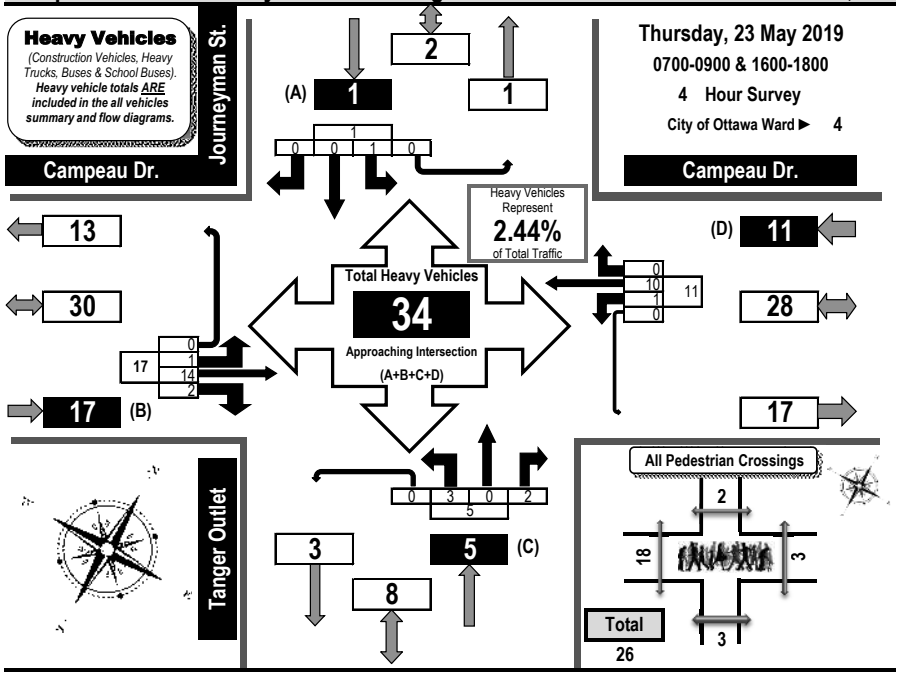


Printed on: 5/28/2019 Prepared by: thetrafficspecialist@gmail.com Flow Diagrams: AM PM Peak

Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Heavy Trucks, Buses, and School Buses

Campeau Drive & Journeyman Street/Tanger Outlet — Kanata, ON



	Campeau Dr. Eastbound					Campeau Dr. Westbound					Tanger Outlet Northbound					Journeyman St. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0700-0800	1	4	0	0	5	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	7
0800-0900	0	5	1	0	6	0	6	0	0	6	0	0	1	0	1	0	0	0	0	0	13
1600-1700	0	3	0	0	3	0	3	0	0	3	1	0	1	0	2	0	0	0	0	0	8
1700-1800	0	2	1	0	3	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	6
Totals	1	14	2	0	17	1	10	0	0	11	3	0	2	0	5	1	0	0	0	1	34

Comments:

No bicycles were observed during this traffic count. Eastbound through traffic, including OC Transpo buses, use both eastbound lanes although pavement markings indicate the south curb lane is right-turn only. 59% of the heavy vehicles were either OC Transpo or school buses. Campeau Drive not yet open to Terry Fox Drive.

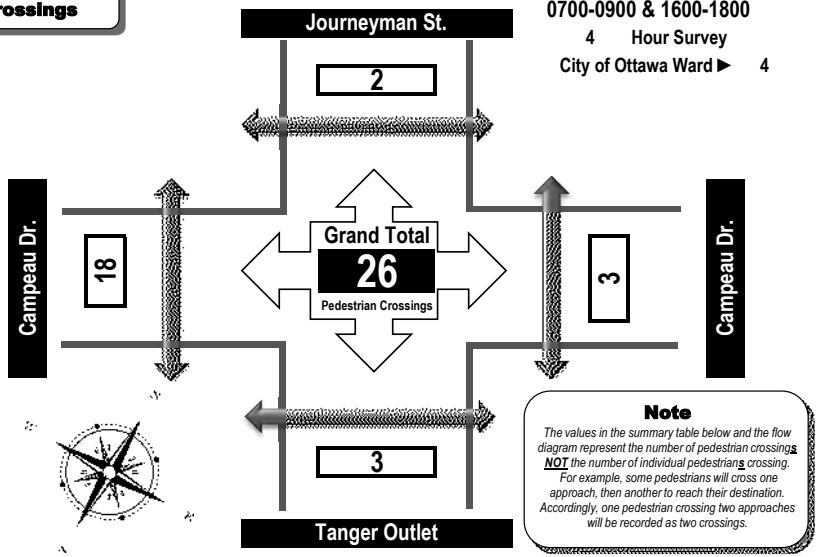
Printed on: 5/28/2019 Prepared by: thetrafficspecialist@gmail.com Summary: Heavy Vehicles

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Campeau Drive & Journeyman Street/Tanger Outlet — Kanata, ON

Pedestrian Crossings

Thursday, 23 May 2019
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 4



Note
*The values in the summary table below and the flow diagram represent the number of pedestrian crossing**s** **NOT** the number of individual pedestrian**s** crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Campeau Dr.	East Side Crossing Campeau Dr.	Street Total	South Side Crossing Tanger Outlet	North Side Crossing Journeyman St.	Street Total	Grand Total
0700-0800	0	0	0	0	0	0	0
0800-0900	10	1	11	3	0	3	14
1600-1700	5	0	5	0	0	0	5
1700-1800	3	2	5	0	2	2	7
Totals	18	3	21	3	2	5	26

Comments:
No bicycles were observed during this traffic count. Eastbound through traffic, including OC Transpo buses, use both eastbound lanes although pavement markings indicate the south curb lane is right-turn only. 59% of the heavy vehicles were either OC Transpo or school buses. Campeau Drive not yet open to Terry Fox Drive.

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Campeau Drive & Journeyman Street/Tanger Outlet — Kanata, ON

Survey Date: Thursday, 23 May 2019 **Start Time:** 0700 **AADT Factor:** 0.9
Weather AM: Clear +12ºC **Survey Duration:** 4 Hrs. **Survey Hours:** 0700-0900 & 1600-1800
Weather PM: Overcast +18ºC **Surveyor(s):** Carmody

	Campeau Dr. Eastbound					Campeau Dr. Westbound						Tanger Outlet Northbound					Journeyman St. 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	10	76	9	1	96	4	105	0	1	110	206	3	0	6	0	9	1	0	1	0	2	11	217
0800-0900	6	92	19	2	119	17	116	2	0	135	254	4	0	12	0	16	1	0	1	0	2	18	272
1600-1700	11	145	15	2	173	73	103	2	1	179	352	40	0	67	0	107	3	0	4	0	7	114	466
1700-1800	2	157	15	2	176	55	108	0	0	163	339	42	0	59	0	101	0	0	0	0	0	101	440
Totals	29	470	58	7	564	149	432	4	2	587	1151	89	0	144	0	233	5	0	6	0	11	244	1395

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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
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	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.88 — Highest Hourly Vehicle Volume Between 0700h & 0900h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0800-0900	6	92	19	2	119	17	116	2	0	135	254	4	0	12	0	16	1	0	1	0	2	18	272

PM Peak Hour Factor ➡ 0.95 — Highest Hourly Vehicle Volume Between 1600h & 1800h

PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1600-1700	11	145	15	2	173	73	103	2	1	179	352	40	0	67	0	107	3	0	4	0	7	114	466

Comments:
No bicycles were observed during this traffic count. Eastbound through traffic, including OC Transpo buses, use both eastbound lanes although pavement markings indicate the south curb lane is right-turn only. 59% of the heavy vehicles were either OC Transpo or school buses. Campeau Drive not yet open to Terry Fox 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.

Turning Movement Count
Summary Report
Including OFF Peak, PM Peak and PHF
All Vehicles Except Bicycles

Campeau Drive & Journeyman Street/Tanger Outlet — Kanata, ON

Survey Date: Saturday, April 01, 2023 | **Start Time:** 1100 | **AADT Factor:** 1.0
Weather: AM: Drizzle +1° C | **Survey Duration:** 5 Hrs. | **Survey Hours:** 1100 - 1600
Weather PM: Mostly Sunny +8° C | **Surveyor(s):** T. Carmody

	Campeau Dr. Eastbound					Campeau Dr. Westbound						Tanger Outlet Northbound					Journeyman St. 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
1100-1200	1	156	49	1	207	179	151	1	0	331	538	58	0	105	0	163	0	1	3	0	4	167	705
1200-1300	4	190	51	6	251	202	141	3	1	347	598	66	2	135	0	203	1	1	5	0	7	210	808
1300-1400	5	231	133	7	376	233	165	1	1	400	776	102	0	169	1	272	1	0	2	0	3	275	1051
1400-1500	9	261	182	15	467	269	160	2	0	431	898	141	0	194	0	335	1	0	7	0	8	343	1241
1500-1600	10	264	181	14	469	219	190	3	1	413	882	155	1	234	0	390	1	2	9	0	12	402	1284
Totals	29	1102	596	43	1770	1102	807	10	3	1922	3692	522	3	837	1	1363	4	4	26	0	34	1397	5089

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

OFF Peak Hour Factor ➡ 0.93 — Highest Hourly Vehicle Volume Between 1100h & 1500h

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.
1400-1500	9	261	182	15	467	269	160	2	0	431	898	141	0	194	0	335	1	0	7	0	8	343	1241

PM Peak Hour Factor ➡ 0.90 — Highest Hourly Vehicle Volume Between 1500h & 1900h

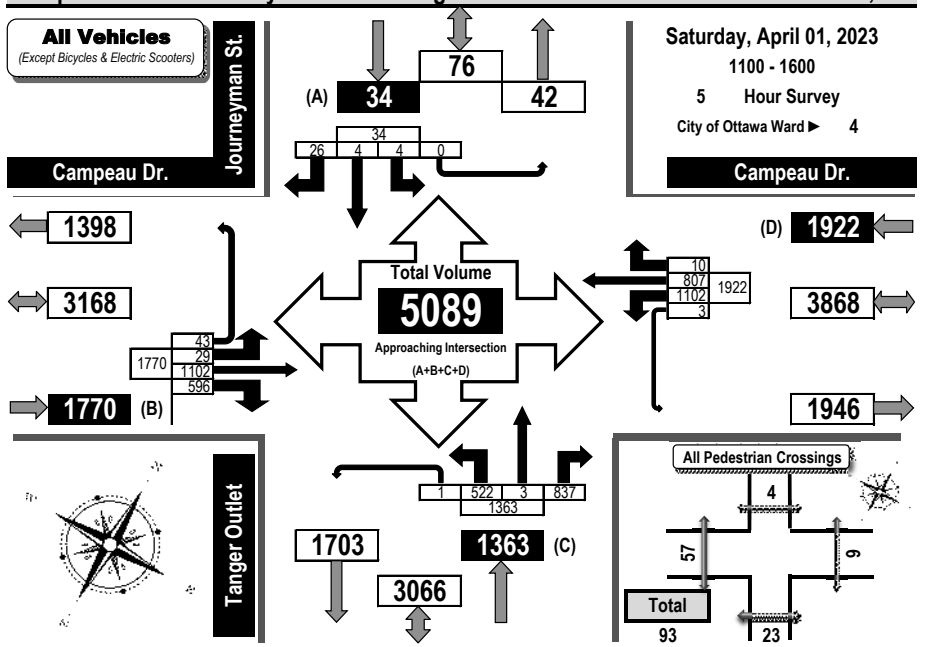
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1500-1600	10	264	181	14	469	219	190	3	1	413	882	155	1	234	0	390	1	2	9	0	12	402	1284

Comments:
OC Transpo buses comprise 64.44% of the heavy vehicle traffic. No bicycles were observed.

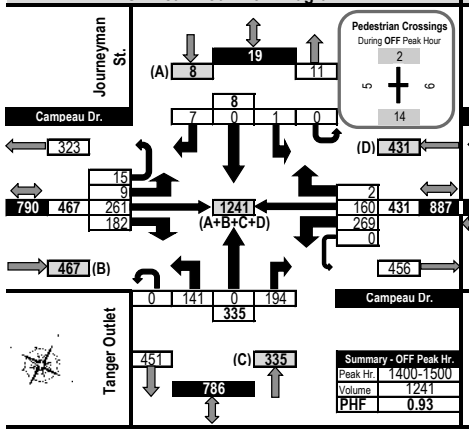
Notes:
1. Includes all vehicle types except bicycles and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

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

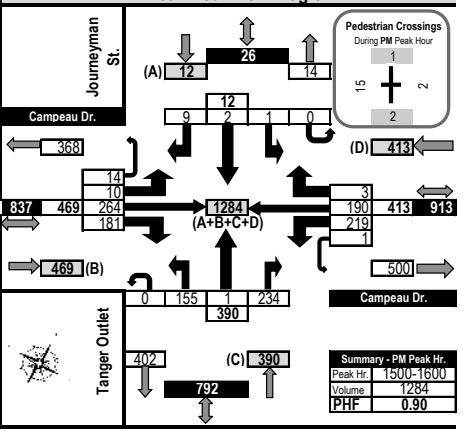
Campeau Drive & Journeyman Street/Tanger Outlet — Kanata, ON



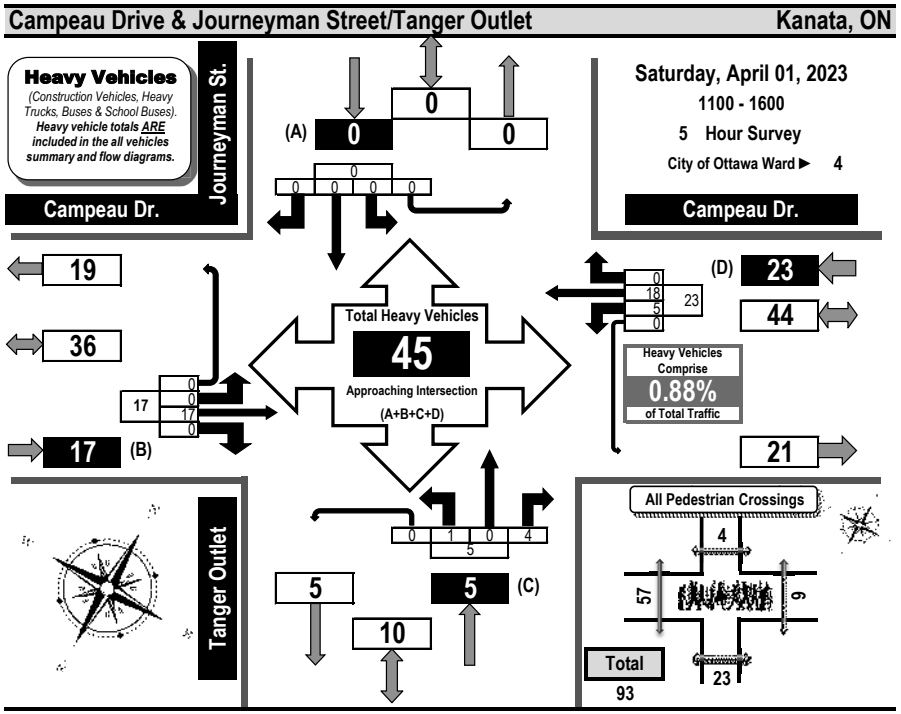
Off Peak Hour Flow Diagram



PM Peak Hour Flow Diagram



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

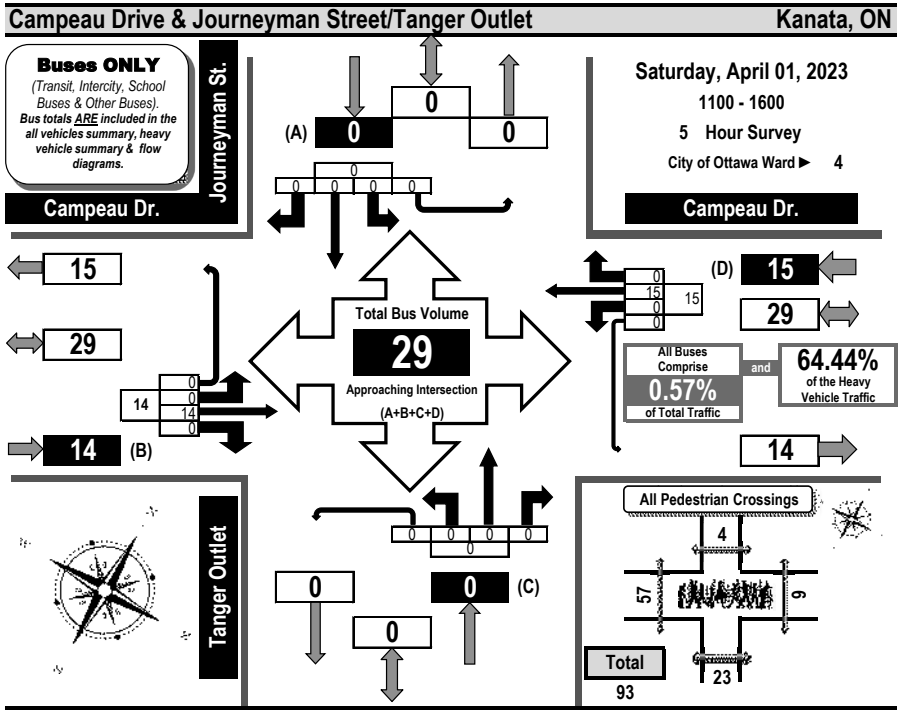


	Campeau Dr.					Campeau Dr.					Tanger Outlet					Journeyman St.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0	4	0	0	4	2	4	0	0	6	1	0	1	0	2	0	0	0	0	0	12
1200-1300	0	3	0	0	3	1	3	0	0	4	0	0	2	0	2	0	0	0	0	0	9
1300-1400	0	4	0	0	4	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	9
1400-1500	0	5	0	0	5	1	3	0	0	4	0	0	1	0	1	0	0	0	0	0	10
1500-1600	0	1	0	0	1	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	5
Totals	0	17	0	0	17	5	18	0	0	23	1	0	4	0	5	0	0	0	0	0	45

Comments:

OC Transpo buses comprise 64.44% of the heavy vehicle traffic. No bicycles were observed.

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

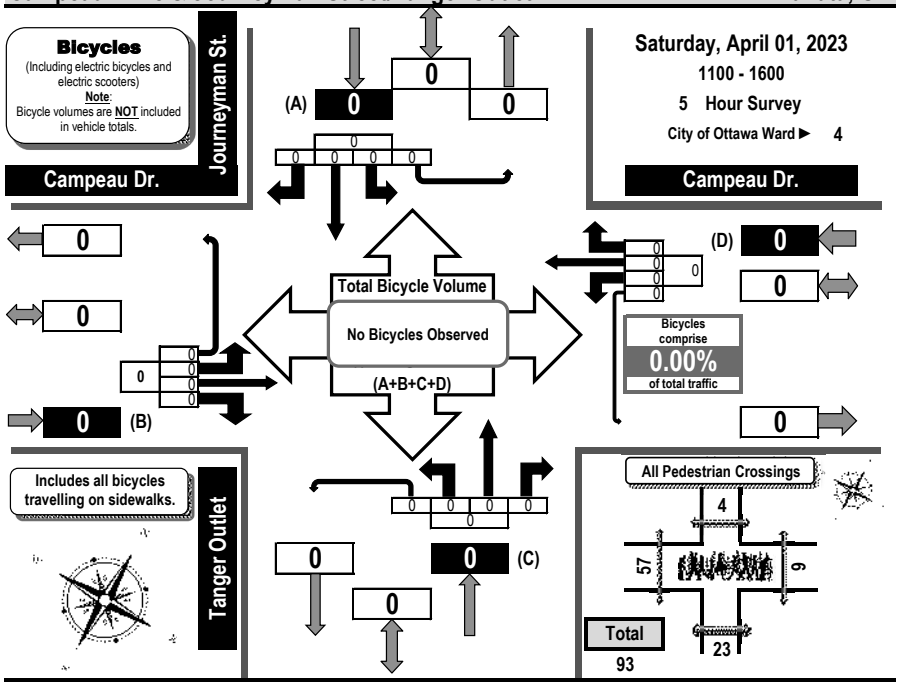


	Campeau Dr.					Campeau Dr.					Tanger Outlet					Journeyman St.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0	4	0	0	4	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	7
1200-1300	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	6
1300-1400	0	3	0	0	3	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	7
1400-1500	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
1500-1600	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	4
Totals	0	14	0	0	14	0	15	0	0	15	0	0	0	0	0	0	0	0	0	0	29

Comments:
OC Transpo buses comprise 64.44% of the heavy vehicle traffic. No bicycles were observed.

Turning Movement Count
Bicycle Summary
Flow Diagram

Campeau Drive & Journeyman Street/Tanger Outlet — **Kanata, ON**



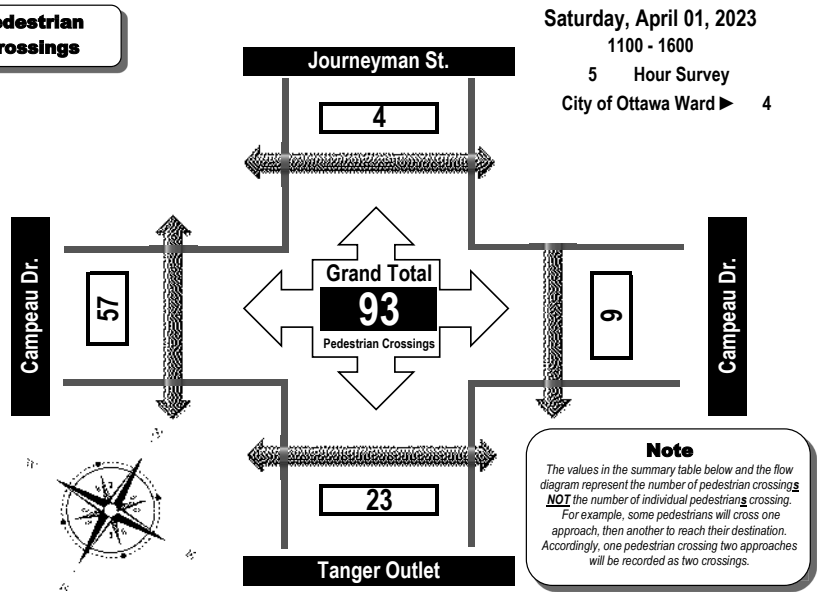
	Campeau Dr. Eastbound					Campeau Dr. Westbound					Tanger Outlet Northbound					Journeyman St. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1200-1300	0	0	0	0	0	0					0	0	0	0	0	0	0	0	0	0	0
1300-1400	0	0	0	0	0	0	No Bicycles Observed				0	0	0	0	0	0	0	0	0	0	0
1400-1500	0	0	0	0	0	0					0	0	0	0	0	0	0	0	0	0	0
1500-1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

OC Transpo buses comprise 64.44% of the heavy vehicle traffic. No bicycles were observed.

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Campeau Drive & Journeyman Street/Tanger Outlet — **Kanata, ON**



Time Period	West Side Crossing Campeau Dr.	East Side Crossing Campeau Dr.	Street Total	South Side Crossing Tanger Outlet	North Side Crossing Journeyman St.	Street Total	Grand Total
1100-1200	9	0	9	1	0	1	10
1200-1300	12	0	12	2	0	2	14
1300-1400	16	1	17	4	1	5	22
1400-1500	5	6	11	14	2	16	27
1500-1600	15	2	17	2	1	3	20
Totals	57	9	66	23	4	27	93

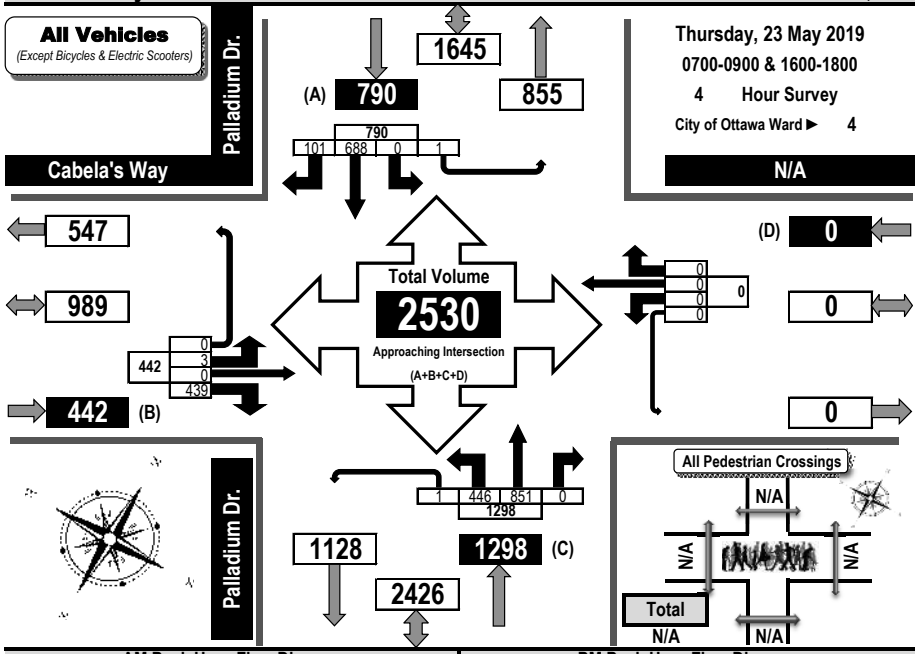
Comments:

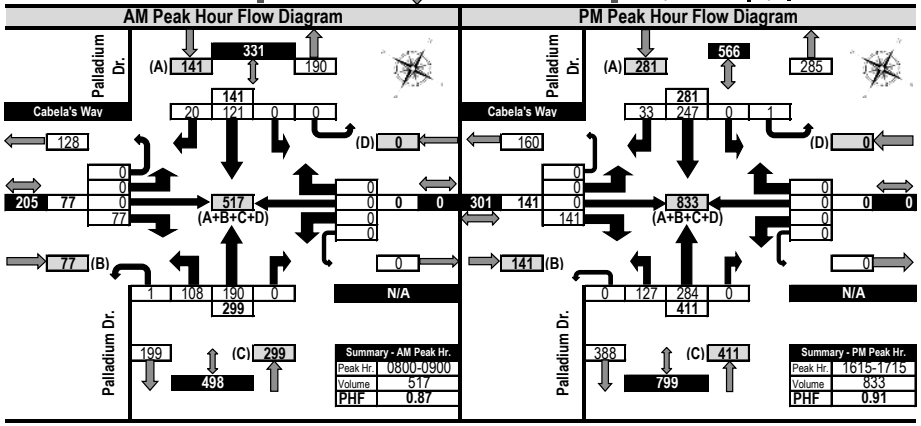
OC Transpo buses comprise 64.44% of the heavy vehicle traffic. No bicycles were observed.

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Cabela's Way & Palladium Drive — **Kanata, ON**

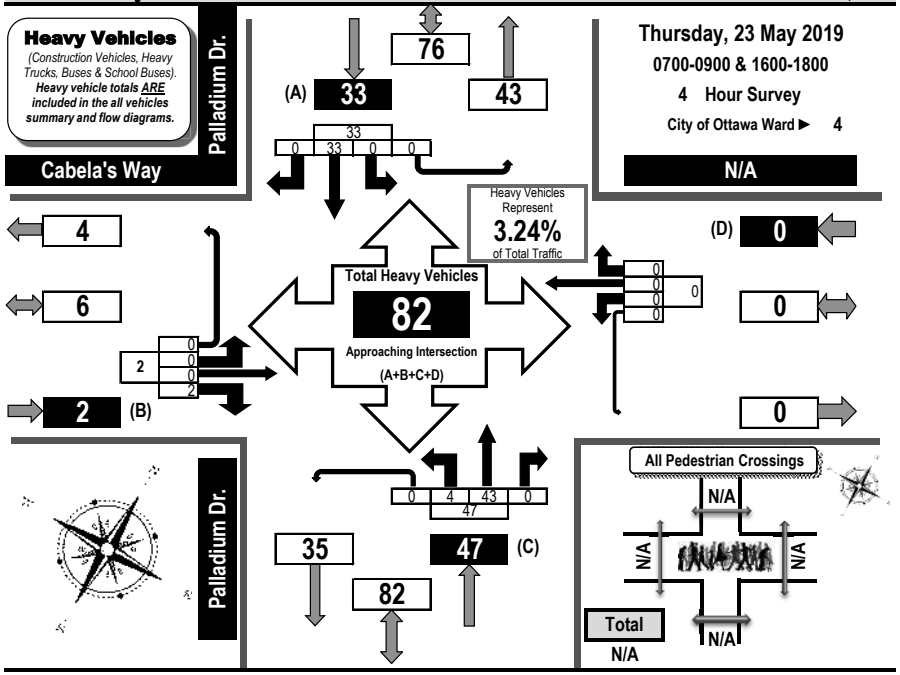




Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Heavy Trucks, Buses, and School Buses

Cabela's Way & Palladium Drive — **Kanata, ON**



	Cabela's Way					N/A					Palladium Dr.					Palladium Dr.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0700-0800	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	2	0	0	2	8
0800-0900	0	0	1	0	1	0	0	0	0	0	2	7	0	0	9	0	18	0	0	18	28
1600-1700	0	0	1	0	1	0	0	0	0	0	0	5	0	0	5	0	7	0	0	7	13
1700-1800	0	0	0	0	0	0	0	0	0	0	2	25	0	0	27	0	6	0	0	6	33
Totals	0	0	2	0	2	0	0	0	0	0	4	43	0	0	47	0	33	0	0	33	82

Comments:
No bicycles observed during this traffic count. Campeau Drive is not yet open to Terry Fox Drive. Cabela's, Princess Auto and McDonalds represent the businesses now open. The majority of the heavy vehicle traffic are from the UPS facility on Campeau Drive.

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Cabela's Way & Palladium Drive — Kanata, ON

Survey Date: Thursday, 23 May 2019 **Start Time:** 0700 **AADT Factor:** 0.9
Weather AM: Clear +12ºC **Survey Duration:** 4 Hrs. **Survey Hours:** 0700-0900 & 1600-1800
Weather PM: Overcast +18ºC **Surveyor(s):** Carmody

	Cabela's Way					N/A					Palladium Dr.					Palladium Dr.						
	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	1	0	79	0	**80**	0	0	0	0	**0**	**80**	100	128	0	0	**228**	0	90	21	0	**111**	**339**	**419**
0800-0900	0	0	77	0	**77**	0	0	0	0	**0**	**77**	108	190	0	1	**299**	0	121	20	0	**141**	**440**	**517**
1600-1700	0	0	145	0	**145**	0	0	0	0	**0**	**145**	130	272	0	0	**402**	0	244	27	1	**272**	**674**	**819**
1700-1800	2	0	138	0	**140**	0	0	0	0	**0**	**140**	108	261	0	0	**369**	0	233	33	0	**266**	**635**	**775**
Totals	**3**	**0**	**439**	**0**	**442**	**0**	**0**	**0**	**0**	**0**	**442**	**446**	**851**	**0**	**1**	**1298**	**0**	**688**	**101**	**1**	**790**	**2088**	**2530**

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	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	**n/a**

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	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	**n/a**

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	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	**n/a**

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.87 — Highest Hourly Vehicle Volume Between 0700h & 0900h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0800-0900	0	0	77	0	**77**	0	0	0	0	**0**	**77**	108	190	0	1	**299**	0	121	20	0	**141**	**440**	**517**

PM Peak Hour Factor ➡ 0.91 — Highest Hourly Vehicle Volume Between 1600h & 1800h

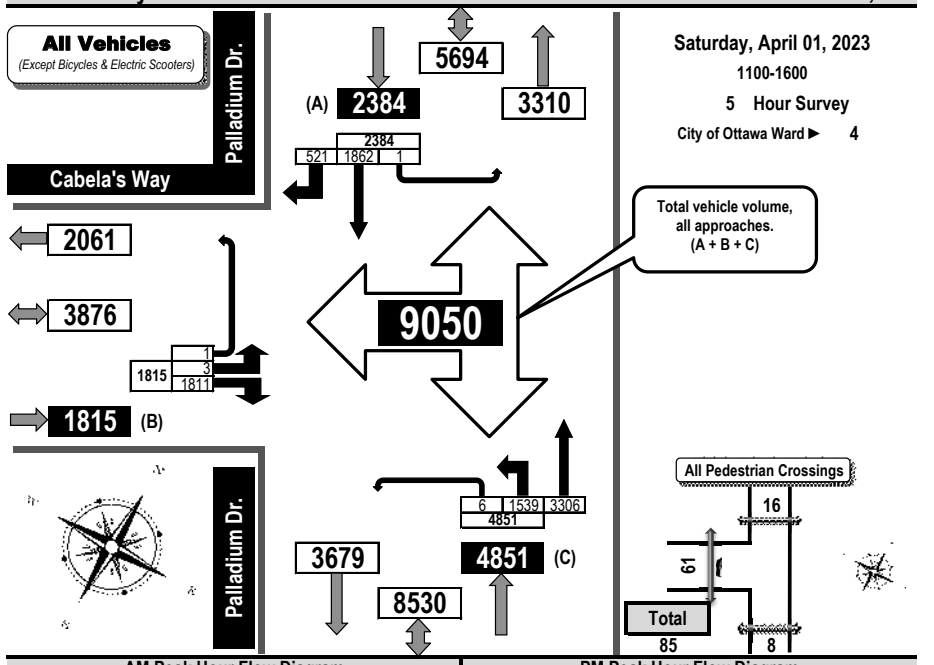
PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1615-1715	0	0	141	0	**141**	0	0	0	0	**0**	**141**	127	284	0	0	**411**	0	247	33	1	**281**	**692**	**833**

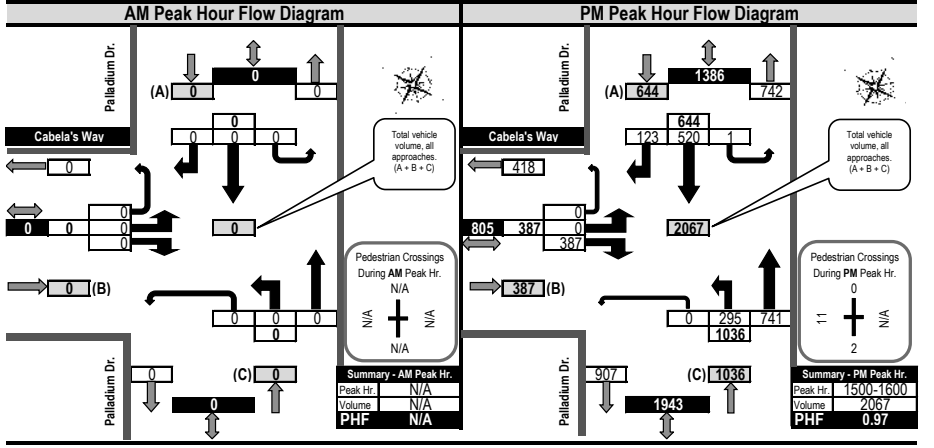
Comments:
No bicycles observed during this traffic count. Campeau Drive is not yet open to Terry Fox Drive. Cabela's, Princess Auto and McDonalds represent the businesses now open. The majority of the heavy vehicle traffic are from the UPS facility on Campeau Drive.

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.

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

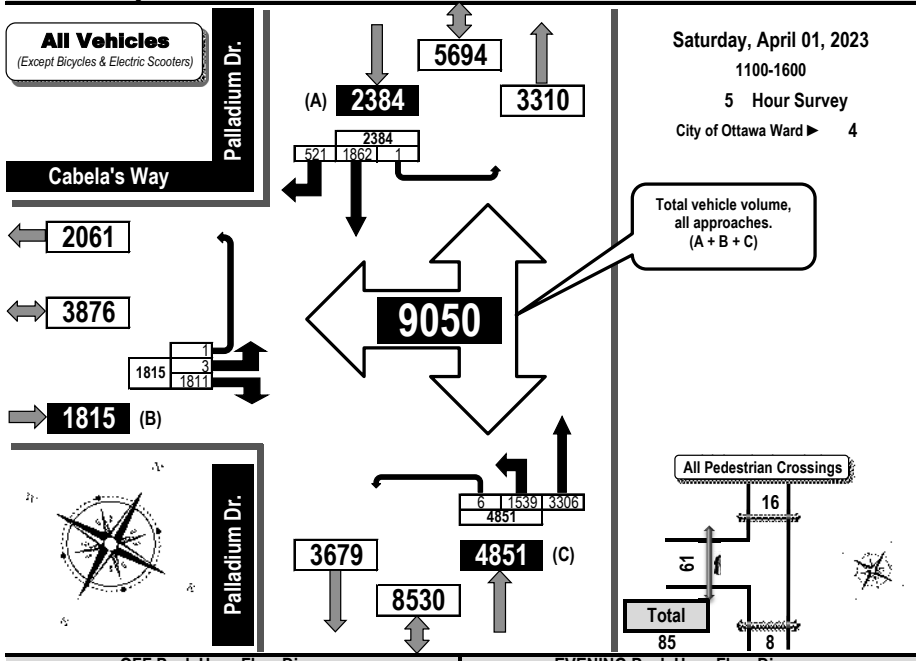
Cabela's Way & Palladium Drive — Kanata, ON

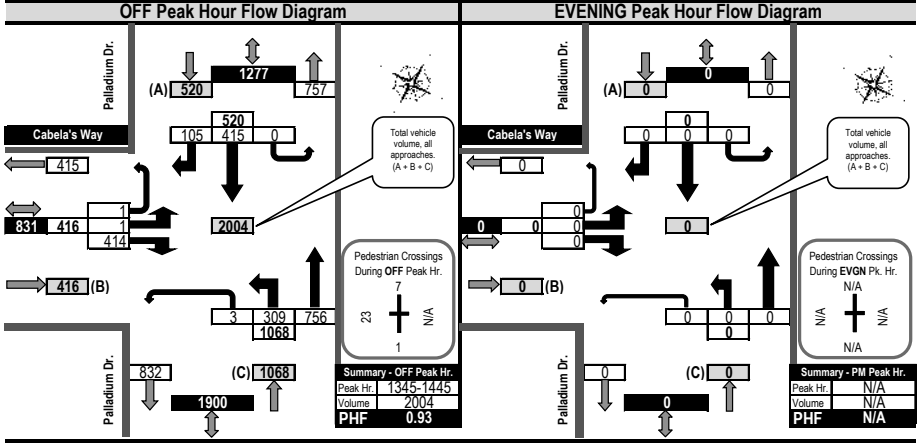




Turning Movement Count
Summary, OFF and EVGN Peak Hour Flow Diagrams
All Vehicles Except Bicycles

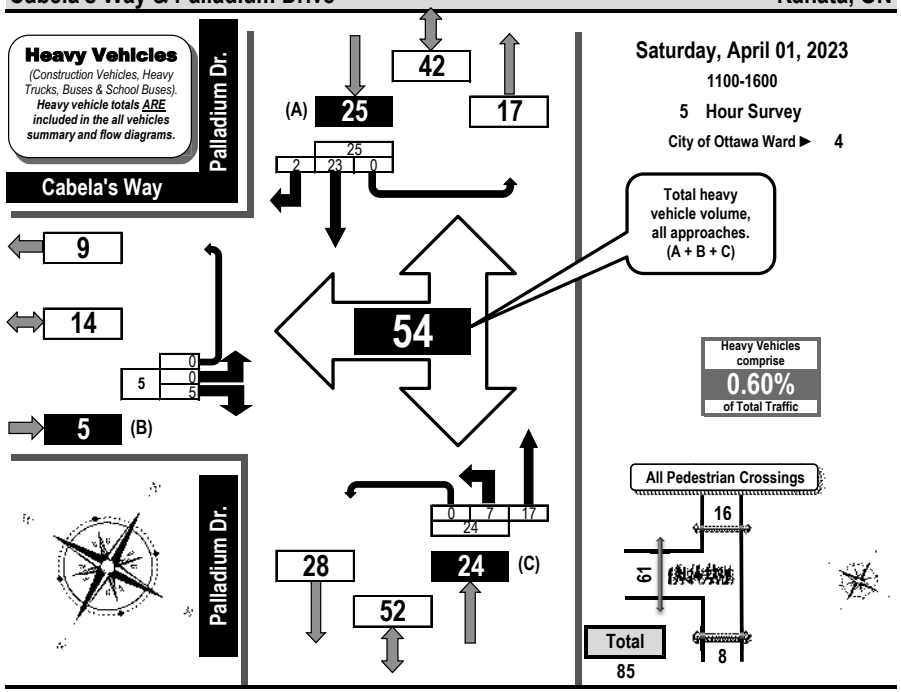
Cabela's Way & Palladium Drive — **Kanata, ON**





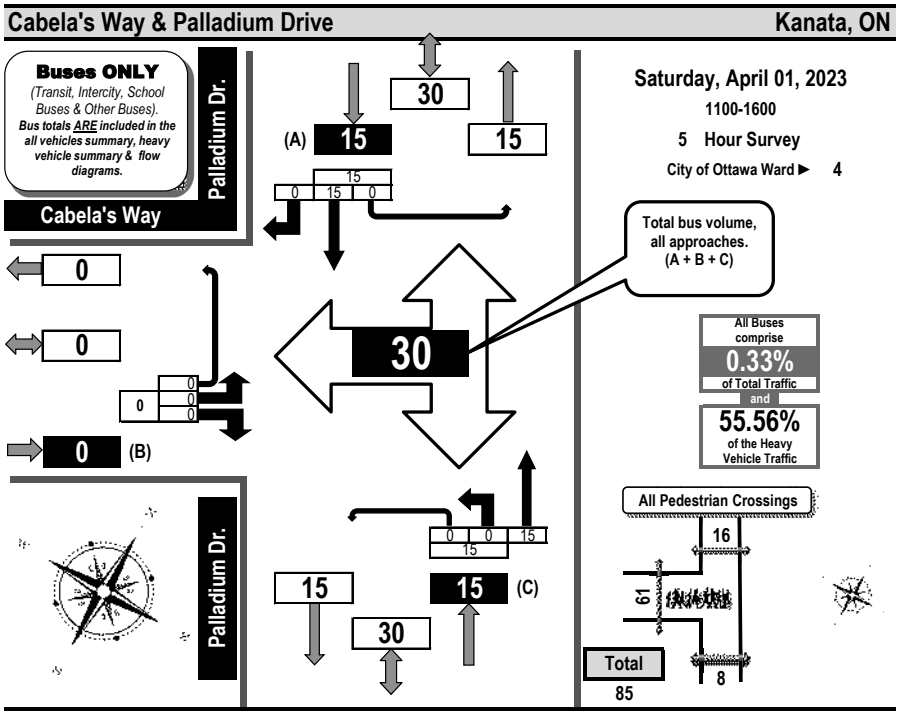
Turning Movement Count
Heavy Vehicle Summary (FHWA Class 4 to 13)
Flow Diagram

Cabela's Way & Palladium Drive — **Kanata, ON**



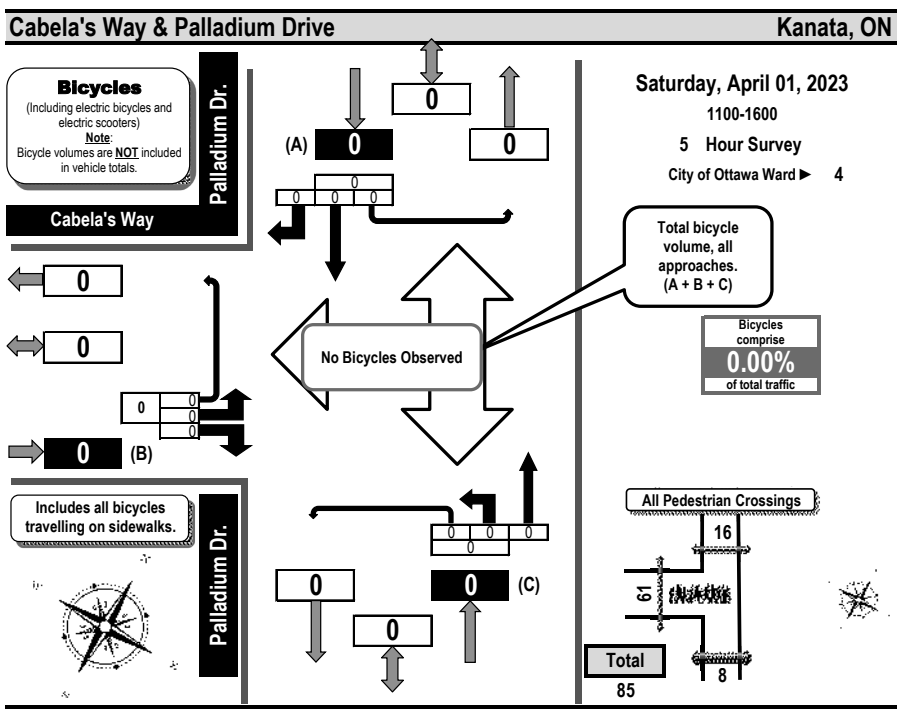
	Cabela's Way					N/A					Palladium Dr.					Palladium Dr.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0		0	0	0						1	4		0	5		4	0	0	4	9
1200-1300	0		0	0	0						1	3		0	4		5	0	0	5	9
1300-1400	0		0	0	0						1	4		0	5		5	1	0	6	11
1400-1500	0		3	0	3						2	3		0	5		3	0	0	3	11
1500-1600	0		2	0	2						2	3		0	5		6	1	0	7	14
Totals	0		5	0	5						7	17		0	24		23	2	0	25	54

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



	Cabela's Way					N/A					Palladium Dr.					Palladium Dr.				
	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
1100-1200	0		0	0	0						0	4		0	4		2	0	0	2	6
1200-1300	0		0	0	0						0	3		0	3		4	0	0	4	7
1300-1400	0		0	0	0						0	3		0	3		3	0	0	3	6
1400-1500	0		0	0	0						0	3		0	3		3	0	0	3	6
1500-1600	0		0	0	0						0	2		0	2		3	0	0	3	5
Totals	0		0	0	0						0	15		0	15		15	0	0	15	30

Turning Movement Count
Bicycle Summary
Flow Diagram



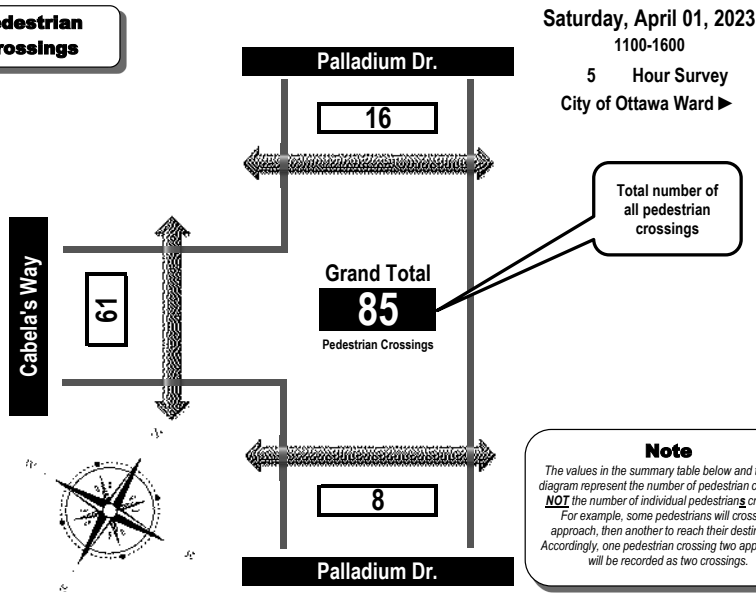
	Cabela's Way					N/A					Palladium Dr.					Palladium Dr.				
	Eastbound					Westbound					Northbound					Southbound				
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0		0	0	0						0	0		0	0		0	0	0	0	0
1200-1300	0		0	0	0										0		0	0	0	0	0
1300-1400	0		0	0	0						No Bicycles Observed				0		0	0	0	0	0
1400-1500	0		0	0	0										0		0	0	0	0	0
1500-1600	0		0	0	0						0	0		0	0		0	0	0	0	0
Totals	0		0	0	0						0	0		0	0		0	0	0	0	0

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Cabela's Way & Palladium Drive — Kanata, ON

Pedestrian Crossings

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4



Note
*The values in the summary table below and the flow diagram represent the number of pedestrian crossings **NOT** the number of individual pedestrians crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Cabela's Way	East Side Crossing N/A	Street Total	South Side Crossing Palladium Dr.	North Side Crossing Palladium Dr.	Street Total	Grand Total
1100-1200	4		4	3	3	6	10
1200-1300	6		6	0	2	2	8
1300-1400	20		20	0	7	7	27
1400-1500	20		20	3	4	7	27
1500-1600	11		11	2	0	2	13
Totals	61		61	8	16	24	85

Comments:
OC Transpo buses comprise 55.56% of the heavy vehicle traffic. No bicycles were observed.

Turning Movement Count
Summary Report
Including OFF Peak, PM Peak and PHF
All Vehicles Except Bicycles

Cabela's Way & Palladium Drive — Kanata, ON

Survey Date: Saturday, April 01, 2023 **Start Time:** 1100 **AADT Factor:** 1.0
Weather: AM: Drizzle +1° C **Survey Duration:** 5 Hrs. **Survey Hours:** 1100 - 1600
Weather PM: Mostly Sunny +8° C **Surveyor(s):** J. Mousseau

	Cabela's Way Eastbound					N/A Westbound						Palladium Dr. Northbound					Palladium Dr. 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
1100-1200	1	0	318	0	319	0	0	0	0	0	319	334	471	0	1	806	0	265	82	0	347	1153	1472
1200-1300	1	0	327	0	328	0	0	0	0	0	328	278	610	0	1	889	0	285	82	0	367	1256	1584
1300-1400	0	0	393	0	393	0	0	0	0	0	393	348	733	0	0	1081	0	345	131	0	476	1557	1950
1400-1500	1	0	386	1	388	0	0	0	0	0	388	284	751	0	4	1039	0	447	103	0	550	1589	1977
1500-1600	0	0	387	0	387	0	0	0	0	0	387	295	741	0	0	1036	0	520	123	1	644	1680	2067
Totals	3	0	1811	1	1815	0	0	0	0	0	1815	1539	3306	0	6	4851	0	1862	521	1	2384	7235	9050

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

OFF Peak Hour Factor ➡ 0.93

	Cabela's Way Eastbound						N/A Westbound							Palladium Dr. Northbound						Palladium Dr. Southbound							Highest Hourly Vehicle Volume Between 1100h & 1500h						
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.	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1345-1445	1	0	414	1	416		0	0	0	0	0	416		309	756	0	3	1068		0	415	105	0	520	1588	2004							

PM Peak Hour Factor ➡ 0.97

	Cabela's Way Eastbound						N/A Westbound							Palladium Dr. Northbound						Palladium Dr. Southbound							Highest Hourly Vehicle Volume Between 1500h & 1900h						
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.	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1500-1600	0	0	387	0	387		0	0	0	0	0	387		295	741	0	0	1036		0	520	123	1	644	1680	2067							

Comments:
OC Transpo buses comprise 55.56% of the heavy vehicle traffic. No bicycles were observed.

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

Transportation Services - Traffic Services

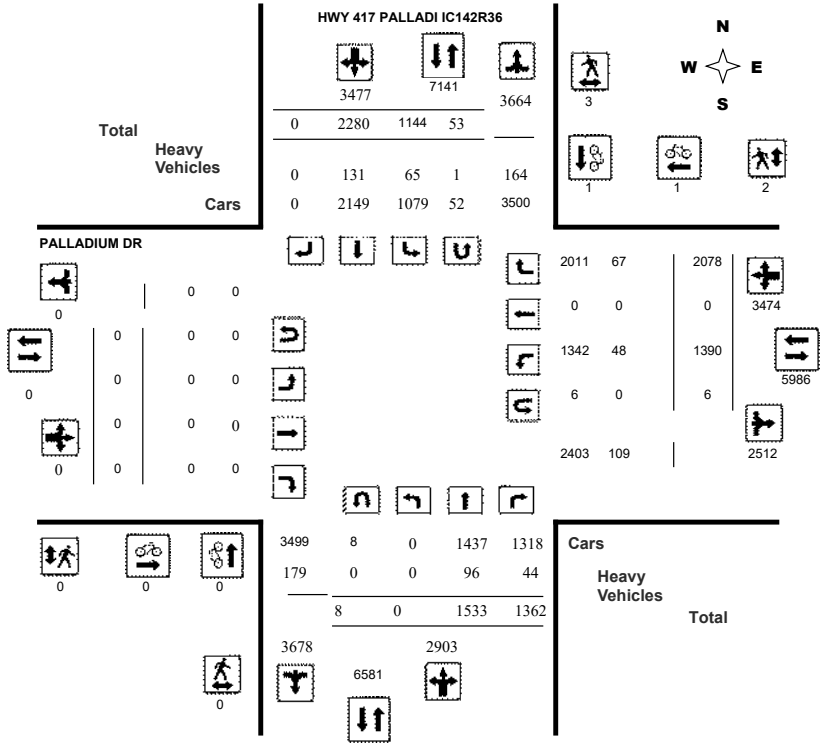
Turning Movement Count - Study Results

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study Diagram



Transportation Services - Traffic Services

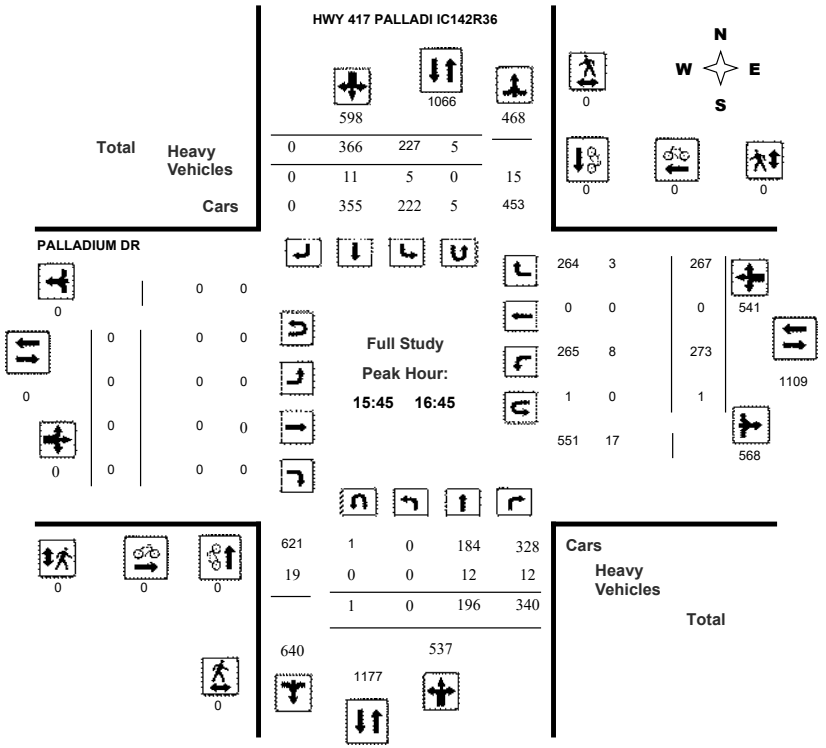
Turning Movement Count - Study Results

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study Peak Hour Diagram



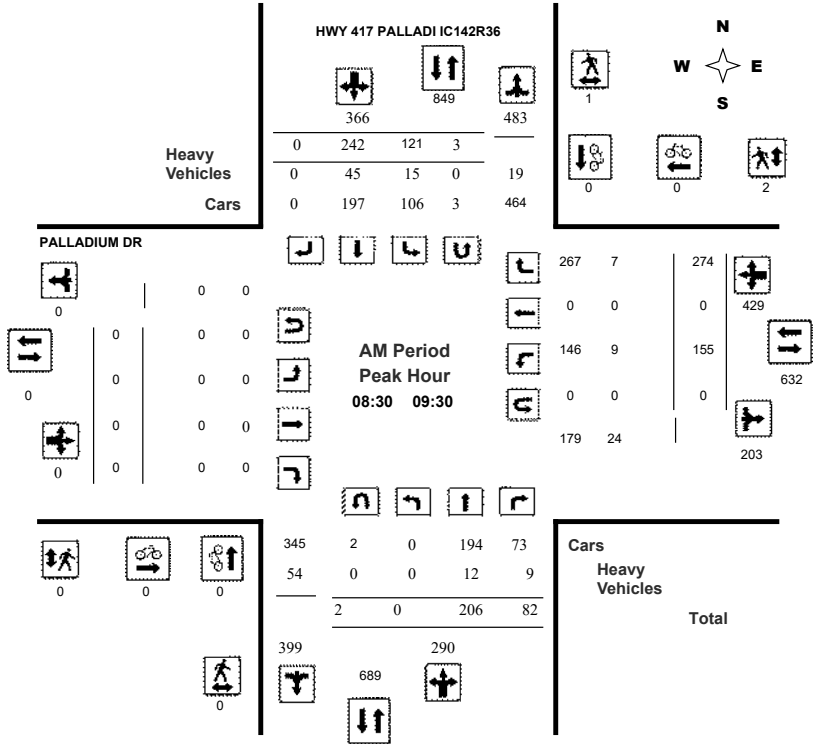
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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



Comments

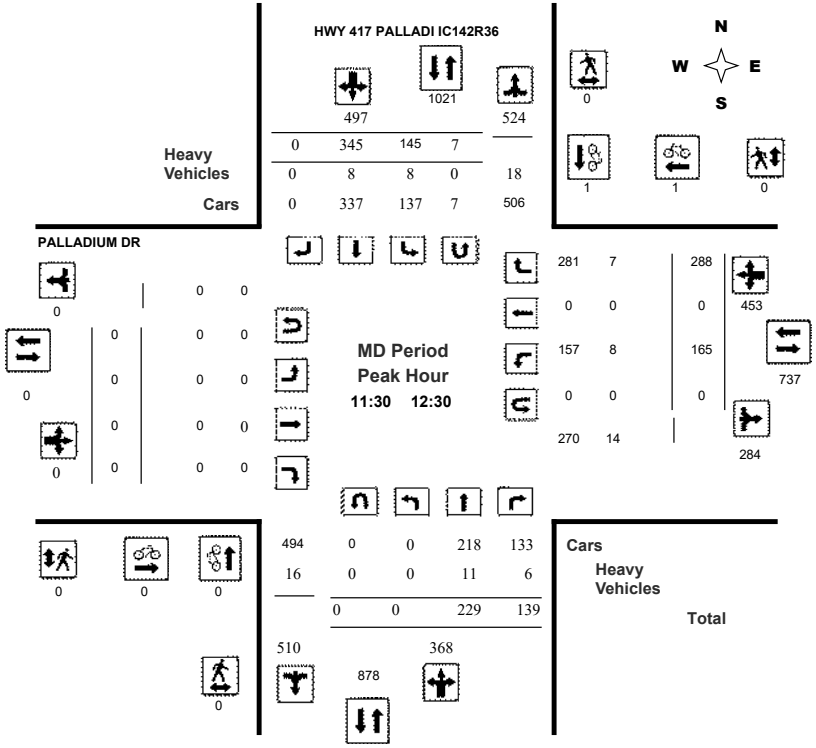
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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



Comments

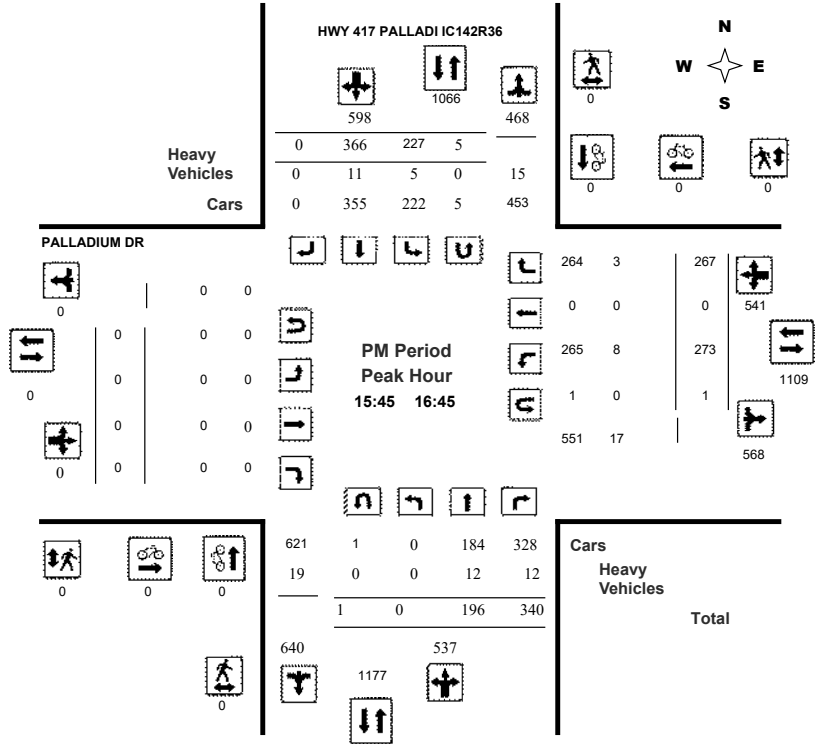
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, November 02, 2022

Total Observed U-Turns

Northbound: 8 Southbound: 53

Eastbound: 0 Westbound: 6

AADT Factor .90

	HWY 417 PALLADI IC142R36								PALLADIUM DR								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	194	79	**273**	77	189	0	**266**	**539**	0	0	0	**0**	139	0	185	**324**	**324**	**863**
08:00 09:00	0	190	83	**273**	94	197	0	**291**	**564**	0	0	0	**0**	159	0	245	**404**	**404**	**968**
09:00 10:00	0	205	76	**281**	132	245	0	**377**	**658**	0	0	0	**0**	126	0	254	**380**	**380**	**1038**
11:30 12:30	0	229	139	**368**	145	345	0	**490**	**858**	0	0	0	**0**	165	0	288	**453**	**453**	**1311**
12:30 13:30	0	194	155	**349**	147	314	0	**461**	**810**	0	0	0	**0**	151	0	287	**438**	**438**	**1248**
15:00 16:00	0	168	258	**426**	178	327	0	**505**	**931**	0	0	0	**0**	224	0	279	**503**	**503**	**1434**
16:00 17:00	0	186	342	**528**	214	357	0	**571**	**1099**	0	0	0	**0**	257	0	292	**549**	**549**	**1648**
17:00 18:00	0	167	230	**397**	157	306	0	**463**	**860**	0	0	0	**0**	169	0	248	**417**	**417**	**1277**
Sub Total	0	1533	1362	**2895**	1144	2280	0	**3424**	**6319**	0	0	0	**0**	1390	0	2078	**3468**	**3468**	**9787**
U Turns				**8**				**53**	**61**				**0**				**6**	**6**	**67**
Total	0	1533	1362	**2903**	1144	2280	0	**3477**	**6380**	0	0	0	**0**	1390	0	2078	**3474**	**3474**	**9854**
EQ 12Hr	0	2131	1893	**4035**	1590	3169	0	**4833**	**8868**	0	0	0	**0**	1932	0	2888	**4829**	**4829**	**13697**

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12Hr	0	1918	1704	**3632**	1431	3736	0	**4350**	**7981**	0	0	0	**0**	1739	0	2599	**4346**	**4346**	**12327**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**

AVG 24Hr	0	2513	2232	**4758**	1875	4894	0	**5698**	**10455**	0	0	0	**0**	2278	0	3405	**5693**	**5693**	**16148**

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

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study 15 Minute Increments

		HWY 417 PALLADI IC142R36									PALLADIUM DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	37	13	50	14	29	0	43	93	0	0	0	0	24	0	33	57	57	150
07:15	07:30	0	48	22	70	18	56	0	74	144	0	0	0	0	28	0	39	67	67	211
07:30	07:45	0	58	28	86	23	46	0	71	157	0	0	0	0	39	0	45	84	84	241
07:45	08:00	0	51	16	67	22	58	0	85	152	0	0	0	0	48	0	68	116	116	268
08:00	08:15	0	32	25	57	27	41	0	68	125	0	0	0	0	47	0	41	88	88	213
08:15	08:30	0	51	14	65	19	47	0	67	132	0	0	0	0	32	0	48	81	81	213
08:30	08:45	0	70	29	99	26	54	0	80	179	0	0	0	0	38	0	69	107	107	286
08:45	09:00	0	37	15	53	22	55	0	78	131	0	0	0	0	42	0	87	129	129	260
09:00	09:15	0	45	17	62	34	79	0	114	176	0	0	0	0	45	0	58	103	103	279
09:15	09:30	0	54	21	76	39	54	0	94	170	0	0	0	0	30	0	60	90	90	260
09:30	09:45	0	48	22	70	22	68	0	90	160	0	0	0	0	31	0	61	92	92	252
09:45	10:00	0	58	16	75	37	44	0	83	158	0	0	0	0	20	0	75	95	95	253
11:30	11:45	0	58	29	87	32	95	0	128	215	0	0	0	0	40	0	76	116	116	331
11:45	12:00	0	54	44	98	34	79	0	115	213	0	0	0	0	43	0	67	110	110	323
12:00	12:15	0	54	41	95	38	72	0	110	205	0	0	0	0	32	0	73	105	105	310
12:15	12:30	0	63	25	88	41	99	0	144	232	0	0	0	0	50	0	72	122	122	354
12:30	12:45	0	50	43	95	36	64	0	102	197	0	0	0	0	36	0	79	117	117	314
12:45	13:00	0	46	31	77	35	77	0	115	192	0	0	0	0	43	0	67	111	111	303
13:00	13:15	0	52	39	91	38	91	0	131	222	0	0	0	0	31	0	61	92	92	314
13:15	13:30	0	46	42	88	38	82	0	124	212	0	0	0	0	41	0	80	121	121	333
15:00	15:15	0	49	59	108	44	76	0	120	228	0	0	0	0	50	0	64	114	114	342
15:15	15:30	0	39	59	99	41	86	0	130	229	0	0	0	0	50	0	75	125	125	354
15:30	15:45	0	33	73	106	42	73	0	119	225	0	0	0	0	47	0	73	120	120	345
15:45	16:00	0	47	67	114	51	92	0	144	258	0	0	0	0	77	0	67	145	145	403
16:00	16:15	0	56	98	154	57	99	0	158	312	0	0	0	0	65	0	75	140	140	452
16:15	16:30	0	46	97	143	66	85	0	153	296	0	0	0	0	70	0	58	128	128	424
16:30	16:45	0	47	78	126	53	90	0	143	269	0	0	0	0	61	0	67	128	128	397
16:45	17:00	0	37	69	106	38	83	0	124	230	0	0	0	0	61	0	92	154	154	384
17:00	17:15	0	36	81	117	39	77	0	117	234	0	0	0	0	41	0	59	100	100	334
17:15	17:30	0	47	54	101	38	78	0	119	220	0	0	0	0	34	0	45	79	79	299
17:30	17:45	0	39	63	103	40	76	0	118	221	0	0	0	0	39	0	57	96	96	317
17:45	18:00	0	45	32	77	40	75	0	116	193	0	0	0	0	55	0	87	142	142	335
Total:		0	1533	1362	2903	1144	2280	0	3477	6380	0	0	0	0	1390	0	2078	3474	3474	9,854

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study Cyclist Volume

		HWY 417 PALLADI IC142R36			PALLADIUM DR			
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	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	1	1	1
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	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	1	1	0	1	1	2

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study Pedestrian Volume

HWY 417 PALLADI IC142R36 **PALLADIUM DR**

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	0	0	**0**	**0**
07:15 07:30	0	0	**0**	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	1	**1**	**1**
09:15 09:30	0	1	**1**	0	1	**1**	**2**
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	2	**2**	0	0	**0**	**2**
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	3	**3**	0	2	**2**	**5**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study Heavy Vehicles

HWY 417 PALLADI IC142R36 **PALLADIUM DR**

		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	4	0	**9**	1	4	0	**9**	**18**	0	0	0	**0**	1	0	0	**2**	**2**	**10**
07:15	07:30	0	2	1	**12**	2	8	0	**13**	**25**	0	0	0	**0**	1	0	1	**5**	**5**	**15**
07:30	07:45	0	6	1	**10**	1	1	0	**8**	**18**	0	0	0	**0**	2	0	0	**4**	**4**	**11**
07:45	08:00	0	0	2	**7**	1	5	0	**8**	**15**	0	0	0	**0**	0	0	2	**5**	**5**	**10**
08:00	08:15	0	2	2	**7**	1	2	0	**7**	**14**	0	0	0	**0**	1	0	2	**6**	**6**	**10**
08:15	08:30	0	5	0	**14**	2	5	0	**13**	**27**	0	0	0	**0**	4	0	1	**7**	**7**	**17**
08:30	08:45	0	2	3	**18**	1	9	0	**14**	**32**	0	0	0	**0**	4	0	2	**10**	**10**	**21**
08:45	09:00	0	3	0	**8**	0	2	0	**8**	**16**	0	0	0	**0**	3	0	3	**6**	**6**	**11**
09:00	09:15	0	1	5	**29**	6	23	0	**31**	**60**	0	0	0	**0**	0	0	1	**12**	**12**	**36**
09:15	09:30	0	6	1	**20**	8	11	0	**26**	**46**	0	0	0	**0**	2	0	1	**12**	**12**	**29**
09:30	09:45	0	4	3	**17**	6	8	0	**22**	**39**	0	0	0	**0**	2	0	4	**15**	**15**	**27**
09:45	10:00	0	1	0	**5**	4	1	0	**7**	**12**	0	0	0	**0**	3	0	1	**8**	**8**	**10**
11:30	11:45	0	1	2	**8**	2	4	0	**9**	**17**	0	0	0	**0**	1	0	2	**7**	**7**	**12**
11:45	12:00	0	2	1	**6**	1	1	0	**6**	**12**	0	0	0	**0**	2	0	2	**6**	**6**	**9**
12:00	12:15	0	6	2	**12**	3	2	0	**12**	**24**	0	0	0	**0**	2	0	1	**8**	**8**	**16**
12:15	12:30	0	2	1	**7**	2	1	0	**7**	**14**	0	0	0	**0**	3	0	2	**8**	**8**	**11**
12:30	12:45	0	4	1	**8**	1	2	0	**11**	**19**	0	0	0	**0**	1	0	4	**7**	**7**	**13**
12:45	13:00	0	5	0	**13**	3	7	0	**19**	**32**	0	0	0	**0**	1	0	4	**8**	**8**	**20**
13:00	13:15	0	2	0	**9**	1	5	0	**8**	**17**	0	0	0	**0**	2	0	0	**3**	**3**	**10**
13:15	13:30	0	3	2	**9**	3	4	0	**11**	**20**	0	0	0	**0**	0	0	1	**6**	**6**	**13**
15:00	15:15	0	3	1	**7**	3	3	0	**14**	**21**	0	0	0	**0**	0	0	5	**9**	**9**	**15**
15:15	15:30	0	3	1	**4**	1	0	0	**7**	**11**	0	0	0	**0**	0	0	1	**3**	**3**	**7**
15:30	15:45	0	4	1	**8**	2	2	0	**9**	**17**	0	0	0	**0**	1	0	1	**5**	**5**	**11**
15:45	16:00	0	2	6	**17**	0	6	0	**9**	**26**	0	0	0	**0**	3	0	1	**10**	**10**	**18**
16:00	16:15	0	4	2	**10**	0	1	0	**6**	**16**	0	0	0	**0**	3	0	1	**6**	**6**	**11**
16:15	16:30	0	6	1	**10**	3	3	0	**13**	**23**	0	0	0	**0**	0	0	1	**5**	**5**	**14**
16:30	16:45	0	0	3	**6**	2	1	0	**3**	**9**	0	0	0	**0**	2	0	0	**7**	**7**	**8**
16:45	17:00	0	2	0	**7**	0	4	0	**9**	**16**	0	0	0	**0**	1	0	3	**4**	**4**	**10**
17:00	17:15	0	1	1	**4**	2	2	0	**9**	**13**	0	0	0	**0**	0	0	4	**7**	**7**	**10**
17:15	17:30	0	5	1	**8**	0	2	0	**13**	**21**	0	0	0	**0**	0	0	6	**7**	**7**	**14**
17:30	17:45	0	2	0	**5**	1	2	0	**11**	**16**	0	0	0	**0**	1	0	6	**8**	**8**	**12**
17:45	18:00	0	3	0	**5**	2	0	0	**9**	**14**	0	0	0	**0**	2	0	4	**8**	**8**	**11**
Total:	None	0	96	44	**319**	65	131	0	**361**	**680**	0	0	0	**0**	48	0	67	**224**	**224**	**452**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HWY 417 PALLADI IC142R36 @ PALLADIUM DR

Survey Date: Wednesday, November 02, 2022 **WO No:** 40671

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

Full Study 15 Minute U-Turn Total

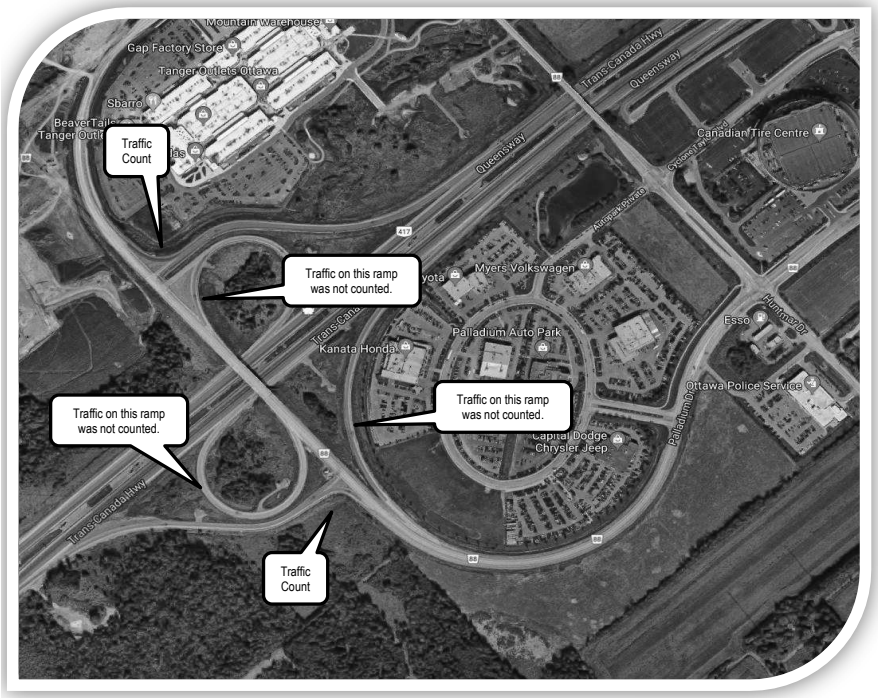
HWY 417 PALLADI IC142R36 **PALLADIUM DR**

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	2	0	0	2
07:45	08:00	0	5	0	0	5
08:00	08:15	0	0	0	0	0
08:15	08:30	0	1	0	1	2
08:30	08:45	0	0	0	0	0
08:45	09:00	1	1	0	0	2
09:00	09:15	0	1	0	0	1
09:15	09:30	1	1	0	0	2
09:30	09:45	0	0	0	0	0
09:45	10:00	1	2	0	0	3
11:30	11:45	0	1	0	0	1
11:45	12:00	0	2	0	0	2
12:00	12:15	0	0	0	0	0
12:15	12:30	0	4	0	0	4
12:30	12:45	2	2	0	2	6
12:45	13:00	0	3	0	1	4
13:00	13:15	0	2	0	0	2
13:15	13:30	0	4	0	0	4
15:00	15:15	0	0	0	0	0
15:15	15:30	1	3	0	0	4
15:30	15:45	0	4	0	0	4
15:45	16:00	0	1	0	1	2
16:00	16:15	0	2	0	0	2
16:15	16:30	0	2	0	0	2
16:30	16:45	1	0	0	0	1
16:45	17:00	0	3	0	1	4
17:00	17:15	0	1	0	0	1
17:15	17:30	0	3	0	0	3
17:30	17:45	1	2	0	0	3
17:45	18:00	0	1	0	0	1
Total		8	53	0	6	67

Diagrams, Maps and Photographs

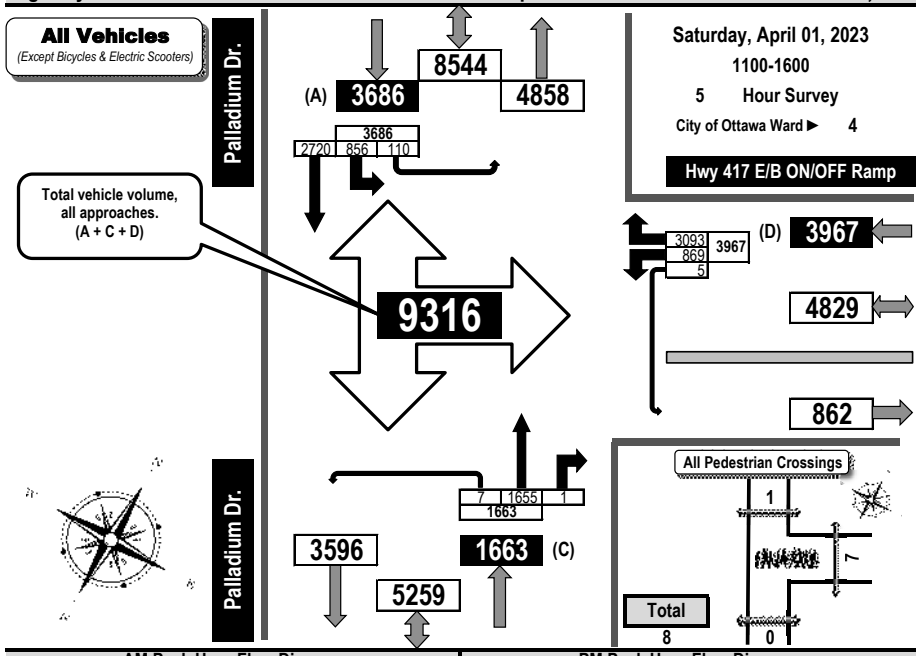
Highway 417 & Palladium Drive Westbound ON/OFF Ramp

Saturday, April 01, 2023

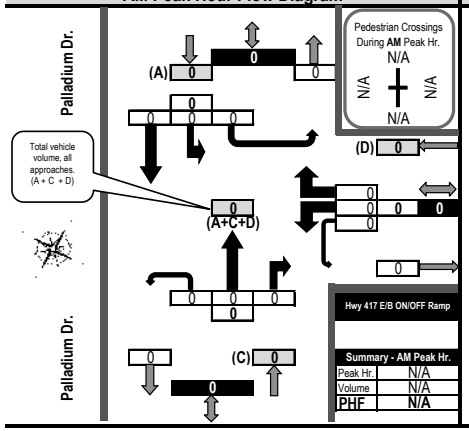


Turning Movement Count
Summary, AM and PM Peak Hour
Flow Diagrams
All Vehicles Except Bicycles

Highway 417 & Palladium Drive Westbound ON/OFF Ramp — **Kanata, ON**

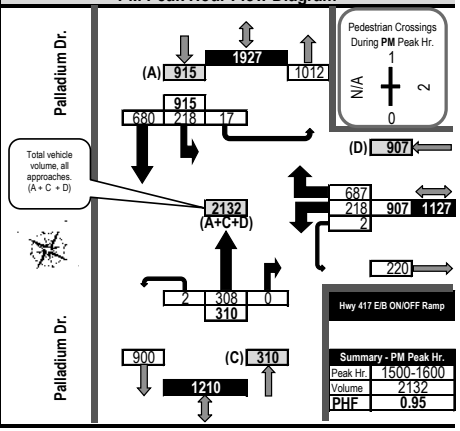


AM Peak Hour Flow Diagram



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

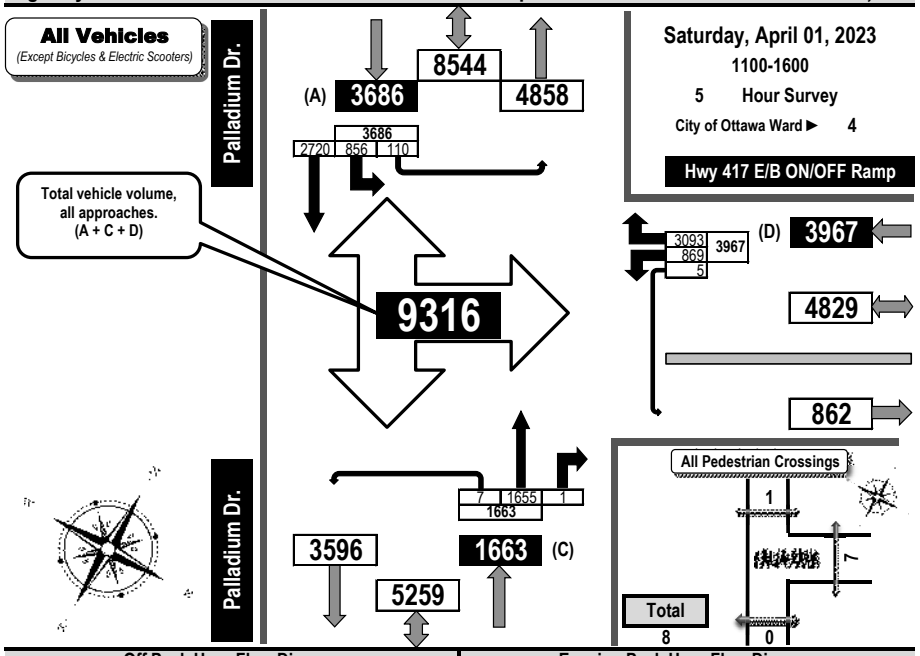
PM Peak Hour Flow Diagram



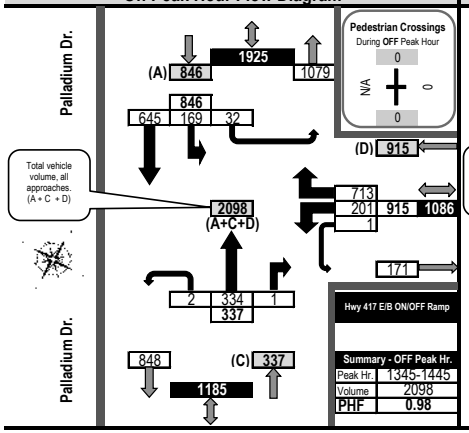
Summary - PM Peak Hr.	
Peak Hr.	1500-1600
Volume	2132
PHF	0.95

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

Highway 417 & Palladium Drive Westbound ON/OFF Ramp — **Kanata, ON**

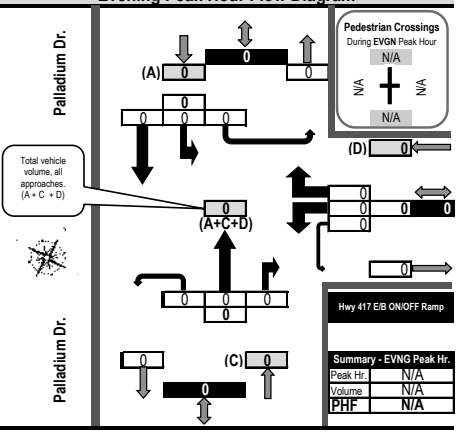


Off Peak Hour Flow Diagram



Summary - OFF Peak Hr.	
Peak Hr.	1345-1445
Volume	2098
PHF	0.98

Evening Peak Hour Flow Diagram



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

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

Highway 417 & Palladium Drive Westbound ON/OFF Ramp — **Kanata, ON**

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

Palladium Dr.

(A) 25 | 48 | 23

25 (23 | 2 | 0)

Total heavy vehicle volume, all approaches. (A + C + D)

58

Heavy Vehicles Comprise 0.62% of Total Traffic

Palladium Dr.

33 | 51 | 18 (C)

0 | 18 | 0 (18)

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4

Hwy 417 E/B ON/OFF Ramp

(D) 15 | 17 | 2

5 | 10 | 0 (15)

All Pedestrian Crossings

1 | 7 | 0

Total 8

	N/A					Hwy 417 E/B ON/OFF Ramp					Palladium Dr.					Palladium Dr.				
	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
1100-1200						1		1	0	2		3	0	0	3	0	3		0	3	8
1200-1300						2		0	0	2		4	0	0	4	0	6		0	6	12
1300-1400						3		2	0	5		4	0	0	4	0	3		0	3	12
1400-1500						3		1	0	4		4	0	0	4	1	6		0	7	15
1500-1600						1		1	0	2		3	0	0	3	1	5		0	6	11
Totals						10		5	0	15		18	0	0	18	2	23		0	25	58

Printed on: 4/10/2023 — Prepared by: thetrafficspecialist@gmail.com — Summary: Heavy Vehicles

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

Highway 417 & Palladium Drive Westbound ON/OFF Ramp — **Kanata, ON**

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

Palladium Dr.

(A) 15 | 30 | 15

15 (15 | 0 | 0)

Total bus volume, all approaches. (A + C + D)

32

All Buses Comprise 0.34% of Total Traffic and 55.17% of the Heavy Vehicle Traffic

Palladium Dr.

17 | 31 | 14 (C)

0 | 14 | 0 (14)

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4

Hwy 417 E/B ON/OFF Ramp

(D) 3 | 3 | 0

1 | 2 | 0 (3)

All Pedestrian Crossings

1 | 7 | 0

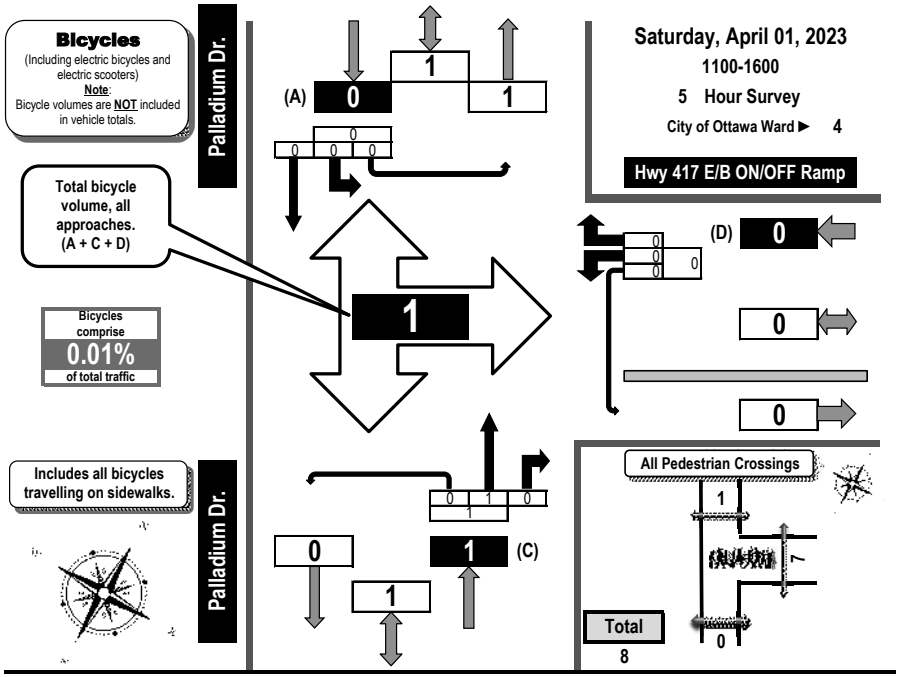
Total 8

	N/A					Hwy 417 E/B ON/OFF Ramp					Palladium Dr.					Palladium Dr.				
	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
1100-1200						0		1	0	1		3	0	0	3	0	2		0	2	6
1200-1300						1		0	0	1		3	0	0	3	0	4		0	4	8
1300-1400						0		0	0	0		3	0	0	3	0	3		0	3	6
1400-1500						0		0	0	0		3	0	0	3	0	3		0	3	6
1500-1600						1		0	0	1		2	0	0	2	0	3		0	3	6
Totals						2		1	0	3		14	0	0	14	0	15		0	15	32

Printed on: 4/10/2023 — Prepared by: thetrafficspecialist@gmail.com — Summary: Buses Only

Turning Movement Count
Bicycle Summary
Flow Diagram

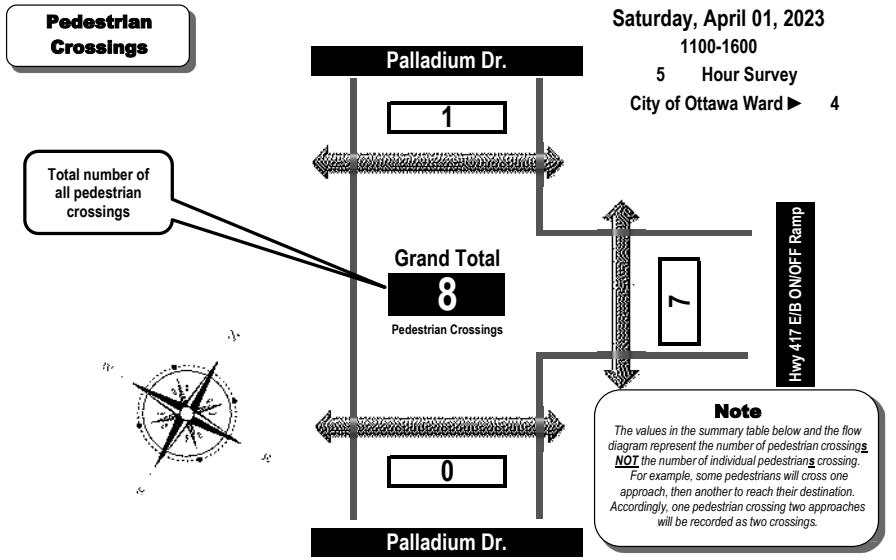
Highway 417 & Palladium Drive Westbound ON/OFF Ramp — **Kanata, ON**



	N/A					Hwy 417 E/B ON/OFF Ramp					Palladium Dr.					Palladium Dr.					
	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
1100-1200						0		0	0	0		0	0	0	0	0	0		0	0	0
1200-1300						0		0	0	0		0	0	0	0	0	0		0	0	0
1300-1400						0		0	0	0		0	0	0	0	0	0		0	0	0
1400-1500						0		0	0	0		0	0	0	0	0	0		0	0	0
1500-1600						0		0	0	0		1	0	0	1	0	0		0	0	1
Totals						0		0	0	0		1	0	0	1	0	0		0	0	1

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Highway 417 & Palladium Drive Westbound ON/OFF Ramp — **Kanata, ON**



Time Period	West Side Crossing N/A	East Side Crossing Hwy 417 E/B ON/OFF Ramp	Street Total	South Side Crossing Palladium Dr.	North Side Crossing Palladium Dr.	Street Total	Grand Total
1100-1200		0	0	0	0	0	0
1200-1300		3	3	0	0	0	3
1300-1400		2	2	0	0	0	2
1400-1500		0	0	0	0	0	0
1500-1600		2	2	0	1	1	3
Totals	0	7	7	0	1	1	8

Comments:
OC Transpo and Para Transpo buses comprise 55.17% of the heavy vehicle traffic. Traffic on the northbound to westbound ramp was not counted. 2 pedestrians walked along the west shoulder and are not included in the pedestrian crossings totals. Conflicts occurred throughout the count between S/B U-turns and W/B right turns.

Turning Movement Count
Summary Report
Including OFF Peak, PM Peak and PHF
All Vehicles Except Bicycles

Ontario

Hwy 417 @ PALLADIUM DR IC-142

Eastern

Intersection ID:495620000(--S--) **Count Day: Tuesday** **Count Date: 24-Apr-2018**

Highway 417 & Palladium Drive Westbound ON/OFF Ramp — Kanata, ON

Survey Date: Saturday, April 01, 2023 **Start Time:** 1100 **AADT Factor:** 1.0

Weather: AM: Drizzle +1° C **Survey Duration:** 5 Hrs. **Survey Hours:** 1100 - 1600

Weather PM: Mostly Sunny +8° C **Surveyor(s):** T. Carmody

	N/A					Hwy 417 E/B ON/OFF Ramp						Palladium Dr.					Palladium Dr.						
	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
1100-1200	0	0	0	0	**0**	134	0	450	1	**585**	**585**	0	337	0	0	**337**	143	421	0	18	**582**	**919**	**1504**
1200-1300	0	0	0	0	**0**	167	0	548	1	**716**	**716**	0	322	0	3	**325**	132	457	0	28	**617**	**942**	**1658**
1300-1400	0	0	0	0	**0**	155	0	683	0	**838**	**838**	0	379	0	2	**381**	185	516	0	24	**725**	**1106**	**1944**
1400-1500	0	0	0	0	**0**	195	0	725	1	**921**	**921**	0	309	1	0	**310**	178	646	0	23	**847**	**1157**	**2078**
1500-1600	0	0	0	0	**0**	218	0	687	2	**907**	**907**	0	308	0	2	**310**	218	680	0	17	**915**	**1225**	**2132**
Totals	**0**	**0**	**0**	**0**	**0**	**869**	**0**	**3093**	**5**	**3967**	**3967**	**0**	**1655**	**1**	**7**	**1663**	**856**	**2720**	**0**	**110**	**3686**	**5349**	**9316**

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

OFF Peak Hour Factor ➡ 0.98												Highest Hourly Vehicle Volume Between 1100h & 1500h										
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.
1345-1445	0	0	0	0	**0**	201	0	713	1	**915**	**915**	0	334	1	2	**337**	169	645	0	32	**846**	**1183**	**2098**

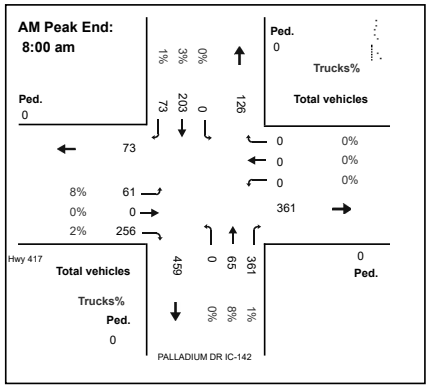
PM Peak Hour Factor ➡ 0.95												Highest Hourly Vehicle Volume Between 1500h & 1900h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1500-1600	0	0	0	0	**0**	218	0	687	2	**907**	**907**	0	308	0	2	**310**	218	680	0	17	**915**	**1225**	**2132**

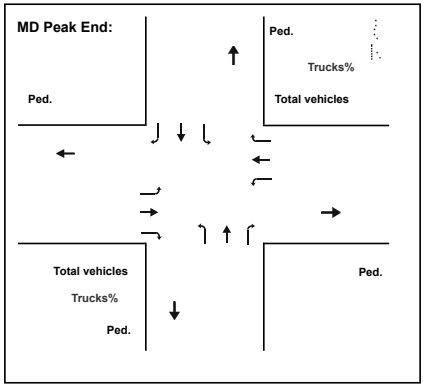
Comments:

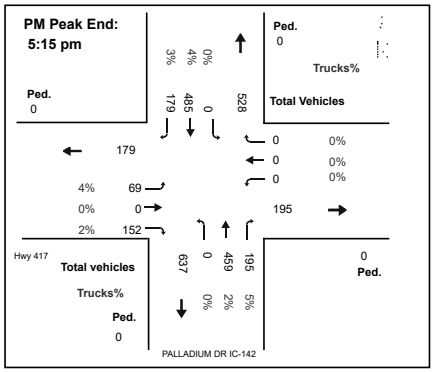
OC Transpo and Para Transpo buses comprise 55.17% of the heavy vehicle traffic. Traffic on the northbound to westbound ramp was not counted. 2 pedestrians walked along the west shoulder and are not included in the pedestrian crossings totals. Conflicts occurred throughout the count between S/B U-turns and W/B right turns.

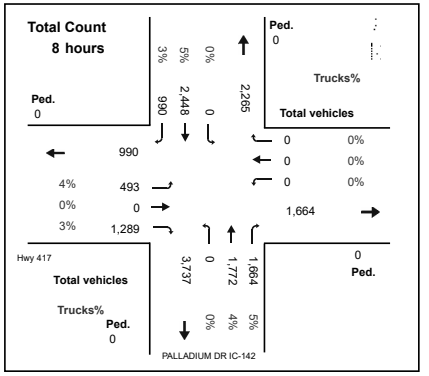
Notes:

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





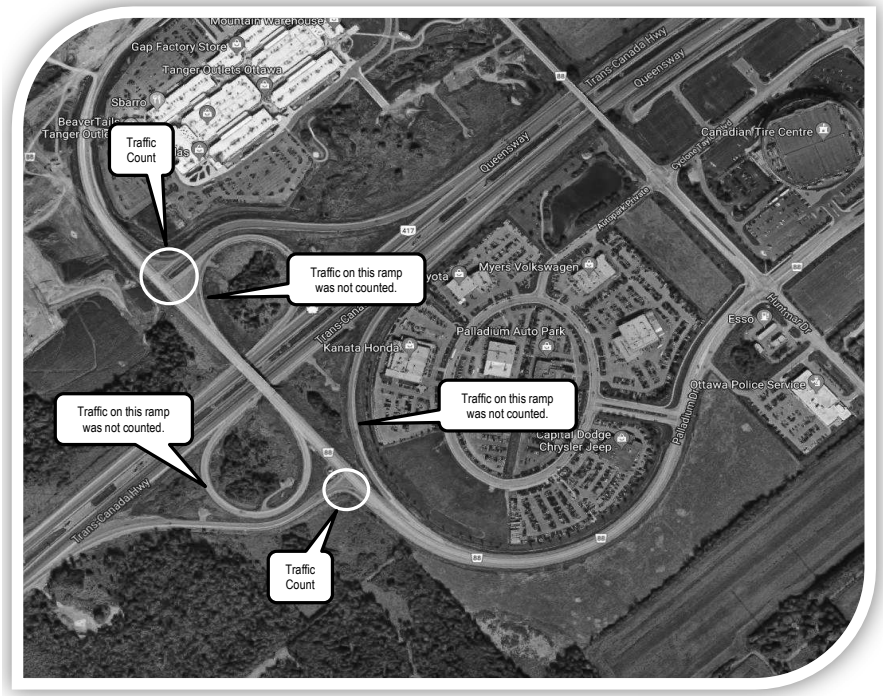




Diagrams, Maps and Photographs

Highway 417 Eastbound Off Ramp & Palladium Drive

Saturday, April 01, 2023

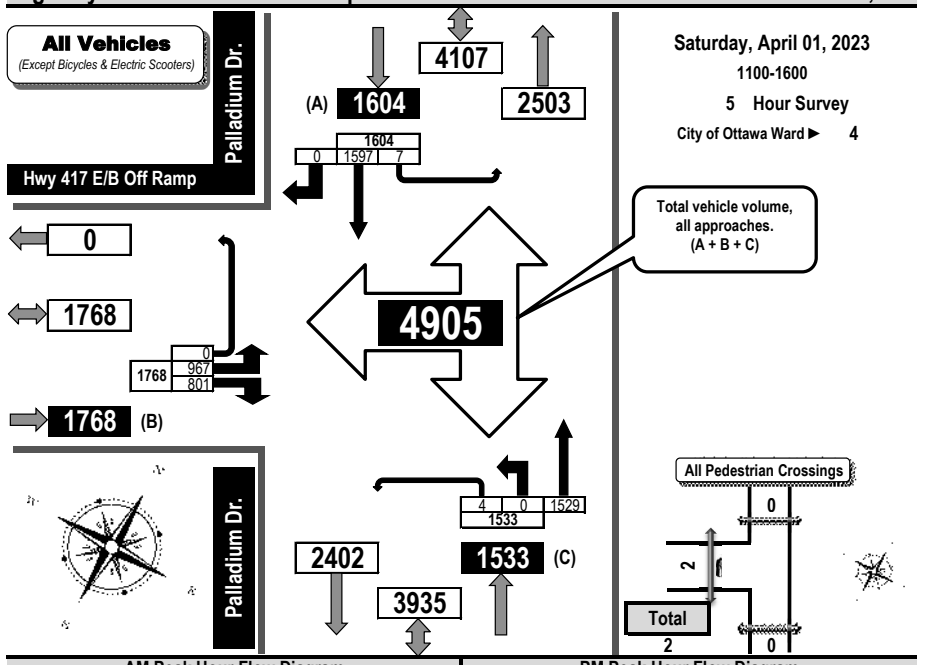


Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

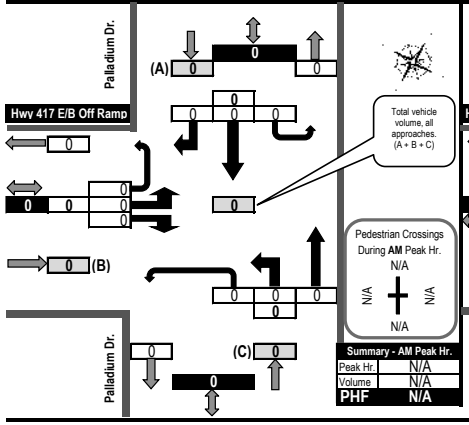
Highway 417 Eastbound Off Ramp & Palladium Drive — Kanata, ON

All Vehicles (Except Bicycles & Electric Scooters)

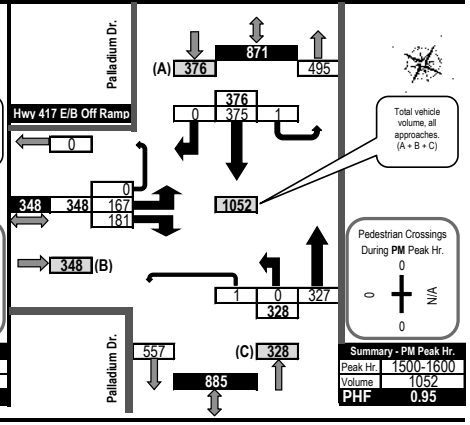
Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4



AM Peak Hour Flow Diagram

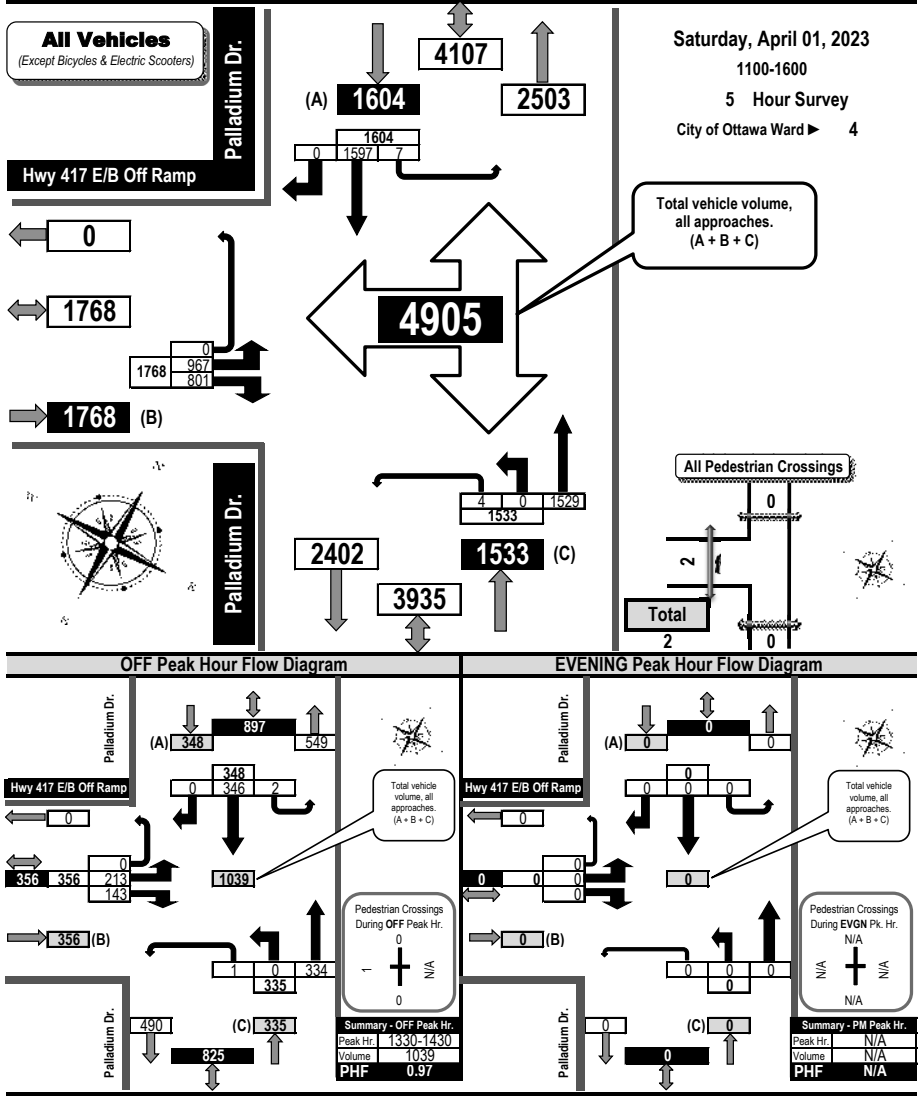


PM Peak Hour Flow Diagram



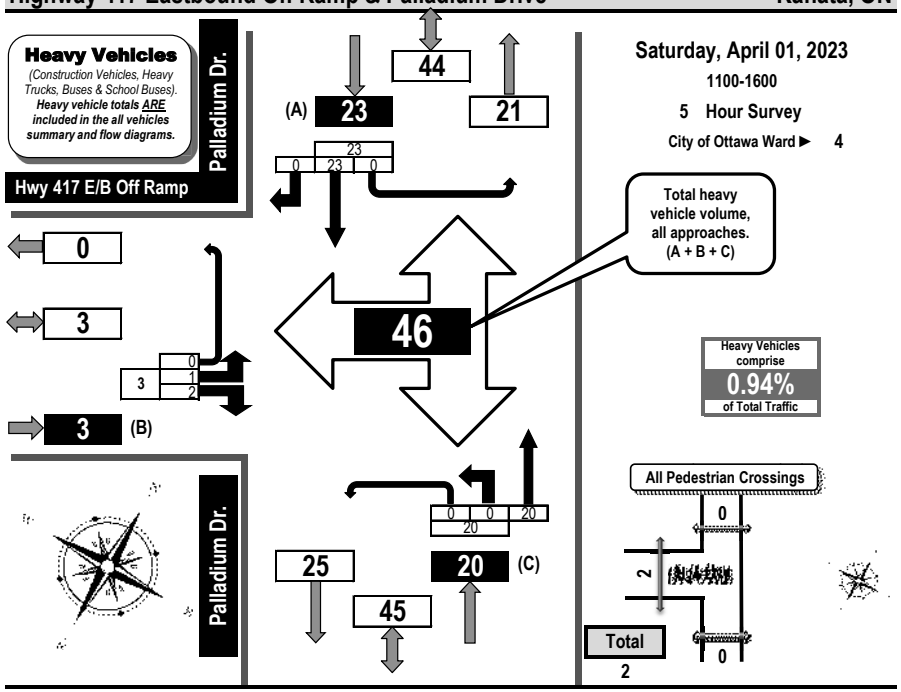
Turning Movement Count
Summary, OFF and EVGN Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Highway 417 Eastbound Off Ramp & Palladium Drive — **Kanata, ON**



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

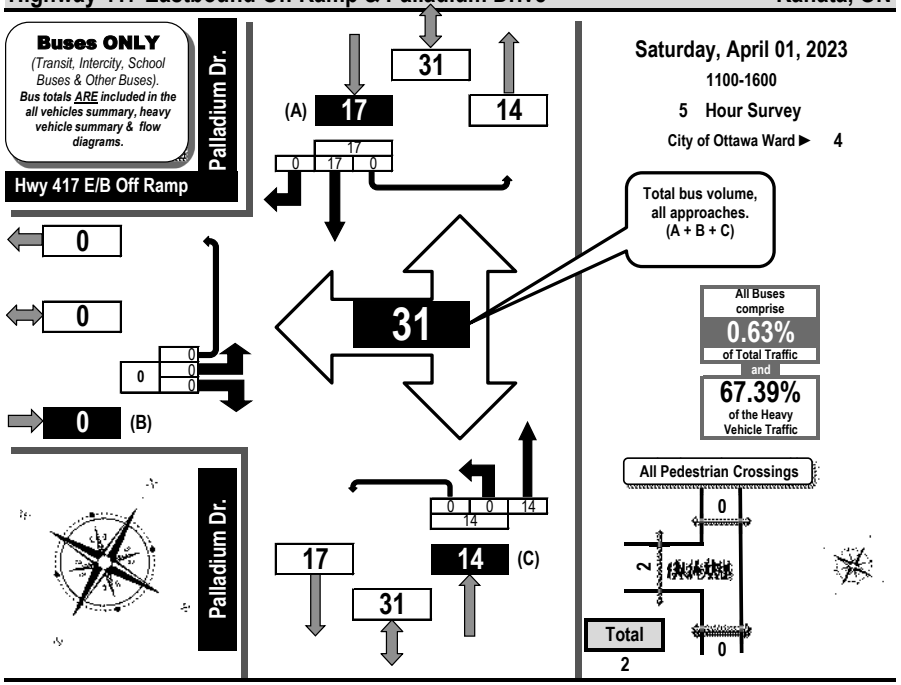
Highway 417 Eastbound Off Ramp & Palladium Drive — **Kanata, ON**



	Hwy 417 E/B Off Ramp					N/A					Palladium Dr.					Palladium Dr.					
	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
1100-1200	0		1	0	1						0	3		0	3		3	0	0	3	7
1200-1300	0		1	0	1						0	5		0	5		6	0	0	6	12
1300-1400	1		0	0	1						0	4		0	4		5	0	0	5	10
1400-1500	0		0	0	0						0	4		0	4		4	0	0	4	8
1500-1600	0		0	0	0						0	4		0	4		5	0	0	5	9
Totals	1		2	0	3						0	20		0	20		23	0	0	23	46

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

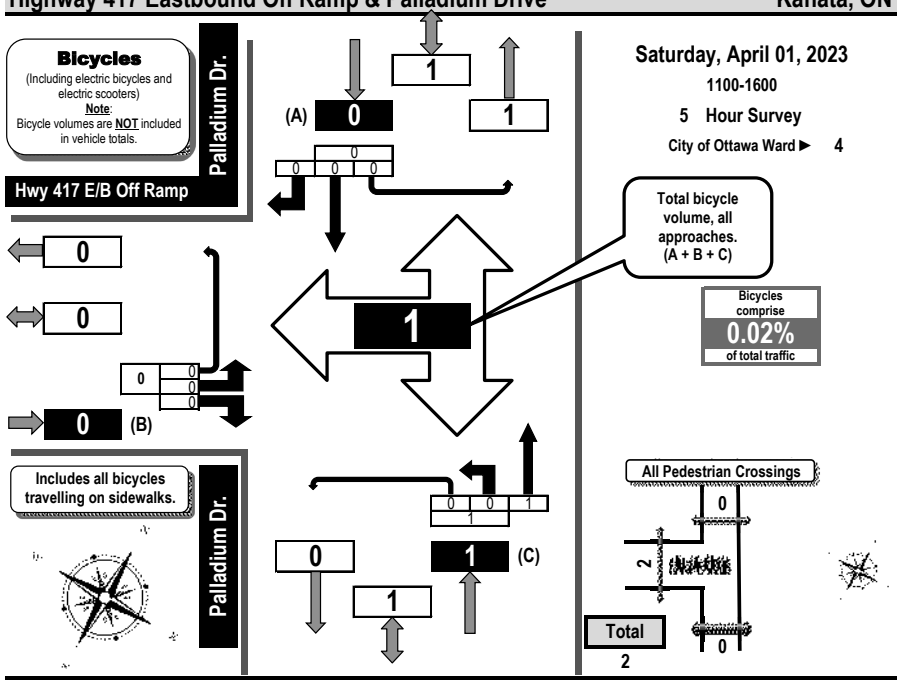
Highway 417 Eastbound Off Ramp & Palladium Drive — Kanata, ON



	Hwy 417 E/B Off Ramp					N/A					Palladium Dr.					Palladium Dr.				
	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
1100-1200	0		0	0	0						0	3		0	3		2	0	0	2	5
1200-1300	0		0	0	0						0	3		0	3		5	0	0	5	8
1300-1400	0		0	0	0						0	3		0	3		3	0	0	3	6
1400-1500	0		0	0	0						0	3		0	3		3	0	0	3	6
1500-1600	0		0	0	0						0	2		0	2		4	0	0	4	6
Totals	0		0	0	0						0	14		0	14		17	0	0	17	31

Turning Movement Count
Bicycle Summary
Flow Diagram

Highway 417 Eastbound Off Ramp & Palladium Drive — Kanata, ON



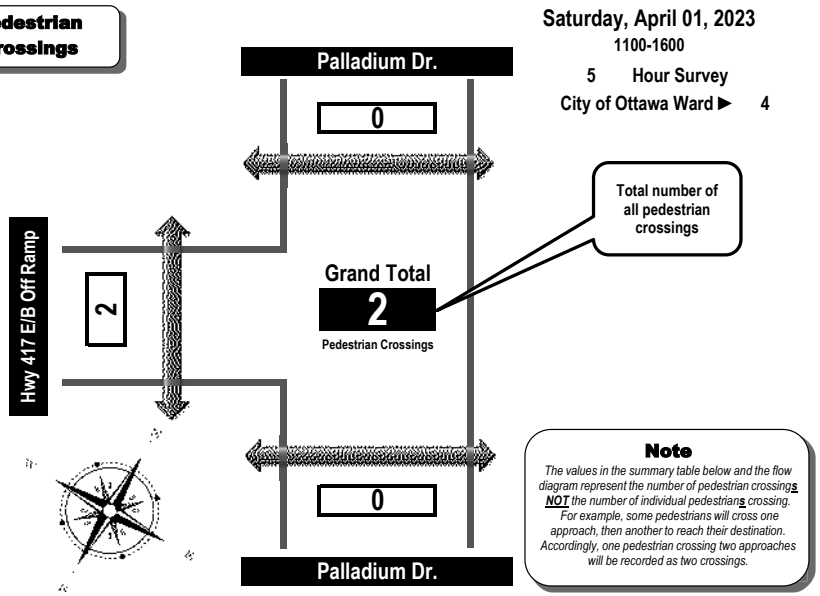
	Hwy 417 E/B Off Ramp					N/A					Palladium Dr.					Palladium Dr.				
	Eastbound					Westbound					Northbound					Southbound				
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0		0	0	0						0	0		0	0		0	0	0	0	0
1200-1300	0		0	0	0						0	0		0	0		0	0	0	0	0
1300-1400	0		0	0	0						0	0		0	0		0	0	0	0	0
1400-1500	0		0	0	0						0	0		0	0		0	0	0	0	0
1500-1600	0		0	0	0						0	1		0	1		0	0	0	0	1
Totals	0		0	0	0						0	1		0	1		0	0	0	0	1

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Highway 417 Eastbound Off Ramp & Palladium Drive — Kanata, ON

Pedestrian Crossings

Saturday, April 01, 2023
1100-1600
5 Hour Survey
City of Ottawa Ward ► 4



Note
*The values in the summary table below and the flow diagram represent the number of pedestrian crossings **NOT** the number of individual pedestrians crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Hwy 417 E/B Off Ramp	East Side Crossing N/A	Street Total	South Side Crossing Palladium Dr.	North Side Crossing Palladium Dr.	Street Total	Grand Total
1100-1200	0		0	0	0	0	0
1200-1300	1		1	0	0	0	1
1300-1400	1		1	0	0	0	1
1400-1500	0		0	0	0	0	0
1500-1600	0		0	0	0	0	0
Totals	2		2	0	0	0	2

Comments:
OC Transpo and Para Transpo buses comprise 67.39% of the heavy vehicle traffic. The bicycle total includes 1 E-scooter (stand-up type). 6 pedestrians walked along the east shoulder, 5 southbound and 1 northbound but are not included in the pedestrian crossings totals as they did not cross the off ramp. Traffic was not counted on the southbound and northbound on ramps to Hwy 417 eastbound.

Turning Movement Count
Summary Report
Including OFF Peak, PM Peak and PHF
All Vehicles Except Bicycles

Highway 417 Eastbound Off Ramp & Palladium Drive — Kanata, ON

Survey Date: Saturday, April 01, 2023 **Start Time:** 1100 **AADT Factor:** 1.0
Weather: AM: Drizzle +1° C **Survey Duration:** 5 Hrs. **Survey Hours:** 1100 - 1600
Weather PM: Mostly Sunny +8° C **Surveyor(s):** T. Carmody

	Hwy 417 E/B Off Ramp					N/A						Palladium Dr.					Palladium Dr.					
	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
1100-1200	203	0	178	0	381	0	0	0	0	0	381	0	273	0	0	273	0	263	0	2	265	538	919
1200-1300	199	0	168	0	367	0	0	0	0	0	367	0	290	0	2	292	0	318	0	0	318	610	977
1300-1400	218	0	137	0	355	0	0	0	0	0	355	0	326	0	1	327	0	291	0	2	293	620	975
1400-1500	180	0	137	0	317	0	0	0	0	0	317	0	313	0	0	313	0	350	0	2	352	665	982
1500-1600	167	0	181	0	348	0	0	0	0	0	348	0	327	0	1	328	0	375	0	1	376	704	1052
Totals	967	0	801	0	1768	0	0	0	0	0	1768	0	1529	0	4	1533	0	1597	0	7	1604	3137	4905

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

OFF Peak Hour Factor ➡ 0.97												Highest Hourly Vehicle Volume Between 1100h & 1500h										
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.
1330-1430	213	0	143	0	356	0	0	0	0	0	356	0	334	0	1	335	0	346	0	2	348	683	1039

PM Peak Hour Factor ➡ 0.95												Highest Hourly Vehicle Volume Between 1500h & 1900h										
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.
1500-1600	167	0	181	0	348	0	0	0	0	0	348	0	327	0	1	328	0	375	0	1	376	704	1052

Comments:
OC Transpo and Para Transpo buses comprise 67.39% of the heavy vehicle traffic. The bicycle total includes 1 E-scooter (stand-up type). 6 pedestrians walked along the east shoulder, 5 southbound and 1 northbound but are not included in the pedestrian crossings totals as they did not cross the off ramp. Traffic was not counted on the southbound and northbound on ramps to Hwy 417 eastbound.

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

Appendix C

Synchro and Sidra Intersection Worksheets – Existing Conditions

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	31	5	18	61	3	23
Future Vol, veh/h	31	5	18	61	3	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	62	2	2	4	2	2
Mvmt Flow	34	6	20	68	3	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	40	0	145	37
Stage 1	-	-	-	-	37	-
Stage 2	-	-	-	-	108	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1570	-	847	1035
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1570	-	836	1035
Mov Cap-2 Maneuver	-	-	-	-	836	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	8.7
HCM LOS			A

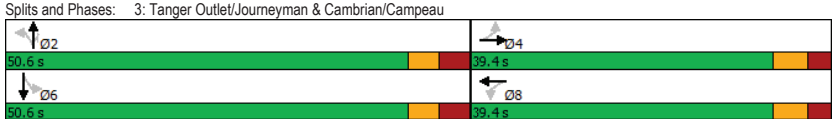
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	1035	-	-	1570	-
HCM Lane V/C Ratio	0.004	0.025	-	-	0.013	-
HCM Control Delay (s)	9.3	8.6	-	-	7.3	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	139	19	20	249	2	4	0	12	1	0	1
Future Volume (vph)	6	139	19	20	249	2	4	0	12	1	0	1
Satd. Flow (prot)	1658	3158	0	1658	3218	0	1658	1745	1401	1658	2762	0
Flt Permitted	0.580			0.641			0.757			0.757		
Satd. Flow (perm)	1012	3158	0	1116	3218	0	1310	1745	1383	1320	2762	0
Satd. Flow (RTOR)		19			1				625		411	
Lane Group Flow (vph)	7	175	0	22	279	0	4	0	13	1	1	0
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	14.5	14.5		14.5	14.5		44.4		44.4	44.4	44.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.61		0.61	0.61	0.61	
v/c Ratio	0.03	0.27		0.10	0.43		0.00		0.01	0.00	0.00	
Control Delay	21.3	21.6		22.7	26.4		8.8		0.0	9.0	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	21.3	21.6		22.7	26.4		8.8		0.0	9.0	0.0	
LOS	C	C		C	C		A		A	A	A	
Approach Delay		21.6			26.1			2.1			4.5	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	0.8	9.3		2.4	17.2		0.2		0.0	0.1	0.0	
Queue Length 95th (m)	3.6	16.2		7.3	26.3		2.0		0.0	0.9	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	468	1470		516	1488		804		1090	810	1854	
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	0.01	0.12		0.04	0.19		0.00		0.01	0.00	0.00	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 72.3
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.43

Intersection Signal Delay: 23.6 Intersection LOS: C
Intersection Capacity Utilization 62.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: Tanger Outlet/Journeyman & Cambrian/Campeau



Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	106	121	340	241	22
Future Vol, veh/h	0	106	121	340	241	22
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	115	-	-	-
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	4	15	2
Mvmt Flow	0	118	134	378	268	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	146	292	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	875	1267	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	875	1267	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	2.1	0
HCM LOS	A		

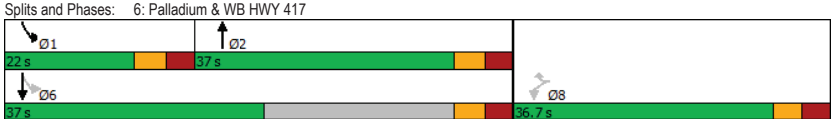
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1267	-	875	-	-
HCM Lane V/C Ratio	0.106	-	0.135	-	-
HCM Control Delay (s)	8.2	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	155	274	206	0	124	242
Future Volume (vph)	155	274	206	0	124	242
Satd. Flow (prot)	3095	1469	3191	0	1510	2842
Flt Permitted	0.950				0.403	
Satd. Flow (perm)	3095	1450	3191	0	639	2842
Satd. Flow (RTOR)		304				
Lane Group Flow (vph)	172	304	229	0	138	269
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	13.0	13.0	13.7		25.9	25.9
Actuated g/C Ratio	0.24	0.24	0.25		0.48	0.48
v/c Ratio	0.23	0.53	0.28		0.31	0.20
Control Delay	20.2	6.9	18.8		9.6	8.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	20.2	6.9	18.8		9.6	8.0
LOS	C	A	B		A	A
Approach Delay	11.7		18.8			8.5
Approach LOS	B		B			A
Queue Length 50th (m)	6.4	0.0	8.9		5.7	5.8
Queue Length 95th (m)	19.5	18.2	23.1		19.6	17.1
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1902	1008	1975		593	2597
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	0.09	0.30	0.12		0.23	0.10

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 54.1
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.53

Intersection Signal Delay: 12.0 — Intersection LOS: B
Intersection Capacity Utilization 42.8% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Palladium & WB HWY 417



Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	83	256	0	205	311	0
Future Vol, veh/h	83	256	0	205	311	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	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, %	8	2	2	8	3	2
Mvmt Flow	92	284	0	228	346	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	460	-	-	0	-	0
Stage 1	346	-	-	-	-	-
Stage 2	114	-	-	-	-	-
Critical Hdwy	6.96	-	-	-	-	-
Critical Hdwy Stg 1	5.96	-	-	-	-	-
Critical Hdwy Stg 2	5.96	-	-	-	-	-
Follow-up Hdwy	3.58	-	-	-	-	-
Pot Cap-1 Maneuver	515	0	0	-	-	0
Stage 1	670	0	0	-	-	0
Stage 2	881	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	515	-	-	-	-	-
Mov Cap-2 Maneuver	515	-	-	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	881	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	515	-
HCM Lane V/C Ratio	-	0.179	-
HCM Control Delay (s)	-	13.5	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.6	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	1	15	14	2	41
Future Vol, veh/h	29	1	15	14	2	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	2	2	63	2	2
Mvmt Flow	32	1	17	16	2	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	33	0	83	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1579	-	919	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	972	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1579	-	909	1041
Mov Cap-2 Maneuver	-	-	-	-	909	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	961	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	8.6
HCM LOS			A

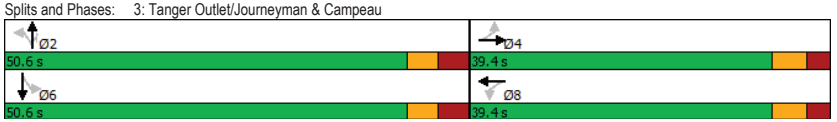
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	909	1041	-	-	1579	-
HCM Lane V/C Ratio	0.002	0.044	-	-	0.011	-
HCM Control Delay (s)	9	8.6	-	-	7.3	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	232	15	81	235	2	40	0	69	3	0	4
Future Volume (vph)	13	232	15	81	235	2	40	0	69	3	0	4
Satd. Flow (prot)	1658	3286	0	1658	3280	0	1642	1745	1483	1658	2773	0
Flt Permitted	0.589			0.583			0.755			0.757		
Satd. Flow (perm)	1028	3286	0	1017	3280	0	1299	1745	1483	1321	2773	0
Satd. Flow (RTOR)		8			1				440		436	
Lane Group Flow (vph)	14	275	0	90	263	0	44	0	77	3	4	0
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	12.3	12.3		12.3	12.3		43.9		43.9	43.9	43.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.63		0.63	0.63	0.63	
v/c Ratio	0.08	0.47		0.50	0.45		0.05		0.07	0.00	0.00	
Control Delay	24.2	27.4		35.9	27.9		5.8		0.1	5.7	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	24.2	27.4		35.9	27.9		5.8		0.1	5.7	0.0	
LOS	C	C		D	C		A		A	A	A	
Approach Delay		27.2			29.9			2.2			2.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	1.5	16.4		10.7	16.1		1.8		0.0	0.2	0.0	
Queue Length 95th (m)	5.8	26.6		23.4	26.0		6.1		0.0	1.1	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	489	1569		484	1563		821		1099	835	1913	
Starvation Cap Reductn	0	0		0	0		0		0	0	0	
Spillback Cap Reductn	0	0		0	0		0		0	0	0	
Storage Cap Reductn	0	0		0	0		0		0	0	0	
Reduced v/c Ratio	0.03	0.18		0.19	0.17		0.05		0.07	0.00	0.00	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 69.4
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.50

Intersection Signal Delay: 24.3 Intersection LOS: C
Intersection Capacity Utilization 60.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	194	111	309	354	36
Future Vol, veh/h	0	194	111	309	354	36
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	115	-	-	-
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	3	2
Mvmt Flow	0	216	123	343	393	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	217	433	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	787	1123	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	787	1123	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	2.3	0
HCM LOS	B		

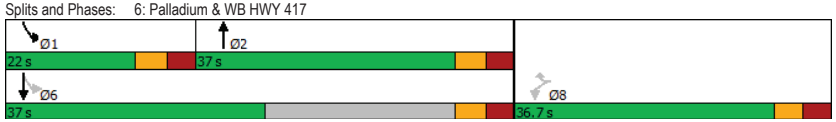
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1123	-	787	-	-
HCM Lane V/C Ratio	0.11	-	0.274	-	-
HCM Control Delay (s)	8.6	-	11.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	274	267	196	0	232	366
Future Volume (vph)	274	267	196	0	232	366
Satd. Flow (prot)	3185	1483	3191	0	1658	3283
Flt Permitted	0.950				0.369	
Satd. Flow (perm)	3185	1483	3191	0	644	3283
Satd. Flow (RTOR)		297				
Lane Group Flow (vph)	304	297	218	0	258	407
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	11.3	11.3	10.4		28.1	28.1
Actuated g/C Ratio	0.21	0.21	0.20		0.53	0.53
v/c Ratio	0.45	0.54	0.35		0.48	0.24
Control Delay	21.1	7.1	21.3		10.4	7.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	21.1	7.1	21.3		10.4	7.3
LOS	C	A	C		B	A
Approach Delay	14.2		21.3			8.5
Approach LOS	B		C			A
Queue Length 50th (m)	12.8	0.0	9.2		11.7	9.3
Queue Length 95th (m)	24.8	16.3	20.1		26.0	18.0
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1811	971	1814		627	3146
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	0.17	0.31	0.12		0.41	0.13

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 53.2
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.54

Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 47.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Palladium & WB HWY 417



Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	152	0	458	431	0
Future Vol, veh/h	80	152	0	458	431	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	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, %	4	2	2	2	4	3
Mvmt Flow	89	169	0	509	479	0

Major/Minor	Minor2			Major1		Major2	
Conflicting Flow All	734	-	-	0	-	0	
Stage 1	479	-	-	-	-	-	
Stage 2	255	-	-	-	-	-	
Critical Hdwy	6.88	-	-	-	-	-	
Critical Hdwy Stg 1	5.88	-	-	-	-	-	
Critical Hdwy Stg 2	5.88	-	-	-	-	-	
Follow-up Hdwy	3.54	-	-	-	-	-	
Pot Cap-1 Maneuver	351	0	0	-	-	0	
Stage 1	583	0	0	-	-	0	
Stage 2	758	0	0	-	-	0	
Platoon blocked, %				-	-		
Mov Cap-1 Maneuver	351	-	-	-	-	-	
Mov Cap-2 Maneuver	351	-	-	-	-	-	
Stage 1	583	-	-	-	-	-	
Stage 2	758	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	18.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	351	-
HCM Lane V/C Ratio	-	0.253	-
HCM Control Delay (s)	-	18.7	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	1	-

Intersection	
Int Delay, s/veh	7.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	11	1	72	5	4	138
Future Vol, veh/h	11	1	72	5	4	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
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	12	1	80	6	4	153

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	13	0	179	13
Stage 1	-	-	-	-	13	-
Stage 2	-	-	-	-	166	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1606	-	811	1067
Stage 1	-	-	-	-	1010	-
Stage 2	-	-	-	-	863	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1606	-	770	1067
Mov Cap-2 Maneuver	-	-	-	-	770	-
Stage 1	-	-	-	-	1010	-
Stage 2	-	-	-	-	820	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.9	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	770	1067	-	-	1606	-
HCM Lane V/C Ratio	0.006	0.144	-	-	0.05	-
HCM Control Delay (s)	9.7	8.9	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.5	-	-	0.2	-

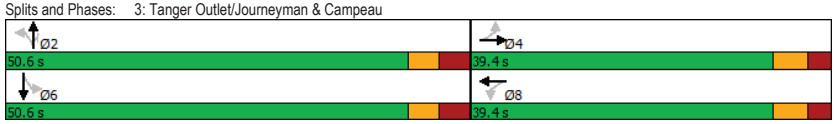
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	264	181	220	190	3	155	1	234	1	2	9
Future Volume (vph)	24	264	181	220	190	3	155	1	234	1	2	9
Satd. Flow (prot)	1658	3096	0	1658	3308	0	1658	1745	1483	1658	2843	0
Flt Permitted	0.618			0.422			0.749			0.757		
Satd. Flow (perm)	1077	3096	0	736	3308	0	1291	1745	1463	1319	2843	0
Satd. Flow (RTOR)		201			2				260		517	
Lane Group Flow (vph)	27	494	0	244	214	0	172	1	260	1	12	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	31.0	31.0		31.0	31.0		43.9	43.9	43.9	43.9	43.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.50	0.50	0.50	0.50	0.50	
v/c Ratio	0.07	0.40		0.95	0.18		0.27	0.00	0.30	0.00	0.01	
Control Delay	19.3	13.2		73.7	19.8		14.9	12.0	2.8	12.0	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	13.2		73.7	19.8		14.9	12.0	2.8	12.0	0.0	
LOS	B	B		E	B		B	B	A	B	A	
Approach Delay		13.5			48.5			7.6			0.9	
Approach LOS		B			D			A			A	
Queue Length 50th (m)	3.0	18.3		39.3	12.8		16.9	0.1	0.0	0.1	0.0	
Queue Length 95th (m)	8.4	30.7		#84.0	20.5		30.0	0.9	11.6	0.9	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	403	1286		275	1242		642	869	858	656	1674	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.38		0.89	0.17		0.27	0.00	0.30	0.00	0.01	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 88.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95

Intersection Signal Delay: 22.9	Intersection LOS: C
Intersection Capacity Utilization 71.5%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	387	295	741	520	123
Future Vol, veh/h	0	387	295	741	520	123
Conflicting Peds, #/hr	0	2	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	115	-	-	-
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	0	430	328	823	578	137

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	371	726	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	626	873	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	620	866	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.9	3.3	0
HCM LOS	C		

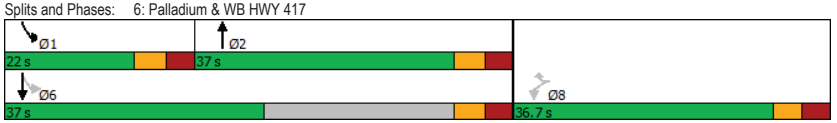
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	866	-	620	-	-
HCM Lane V/C Ratio	0.378	-	0.694	-	-
HCM Control Delay (s)	11.7	-	22.9	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.8	-	5.5	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	218	687	308	0	218	680
Future Volume (vph)	218	687	308	0	218	680
Satd. Flow (prot)	3216	1483	3316	0	1658	3316
Flt Permitted	0.950				0.379	
Satd. Flow (perm)	3216	1464	3316	0	660	3316
Satd. Flow (RTOR)		539				
Lane Group Flow (vph)	242	763	342	0	242	756
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	24.3	24.3	15.5		35.0	35.0
Actuated g/C Ratio	0.33	0.33	0.21		0.47	0.47
v/c Ratio	0.23	0.91	0.49		0.51	0.48
Control Delay	19.7	23.8	29.0		16.7	14.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	19.7	23.8	29.0		16.7	14.8
LOS	B	C	C		B	B
Approach Delay	22.8		29.0			15.2
Approach LOS	C		C			B
Queue Length 50th (m)	11.5	26.0	24.4		22.6	41.1
Queue Length 95th (m)	26.9	#131.1	36.6		36.2	54.0
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1377	935	1433		527	2450
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	0.18	0.82	0.24		0.46	0.31

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 73.7
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91

Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 65.4% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417



Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	167	181	0	327	375	0
Future Vol, veh/h	167	181	0	327	375	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	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	186	201	0	363	417	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	599	-	-	0	-	0
Stage 1	417	-	-	-	-	-
Stage 2	182	-	-	-	-	-
Critical Hdwy	6.84	-	-	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	-	-	-	-
Pot Cap-1 Maneuver	433	0	0	-	-	0
Stage 1	633	0	0	-	-	0
Stage 2	831	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	433	-	-	-	-	-
Mov Cap-2 Maneuver	433	-	-	-	-	-
Stage 1	633	-	-	-	-	-
Stage 2	831	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	433	-
HCM Lane V/C Ratio	-	0.429	-
HCM Control Delay (s)	-	19.4	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	2.1	-

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau AM Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.0.3.9771

Reprocess the Site in this Version to see the selected Movement Class results. All results may be affected by reprocessing compared with Version 9.0 results.

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	81	2.0	81	2.0	0.121	9.3	LOS A	0.6	4.6	0.16	0.47	0.16	56.4
2	T1	All MCs	123	2.0	123	2.0	0.121	3.2	LOS A	0.6	4.6	0.16	0.47	0.16	56.2
3	R2	All MCs	152	2.0	152	2.0	0.080	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	57.1
Approach			357	2.0	357	2.0	0.121	4.5	LOS A	0.6	4.6	0.09	0.44	0.09	56.6
East: Campeau															
4	L2	All MCs	217	2.0	217	2.0	0.095	9.9	LOS A	0.5	3.5	0.35	0.60	0.35	53.4
5	T1	All MCs	28	2.0	28	2.0	0.095	4.1	LOS A	0.5	3.5	0.34	0.58	0.34	54.0
6	R2	All MCs	19	2.0	19	2.0	0.095	4.1	LOS A	0.5	3.5	0.34	0.58	0.34	52.5
Approach			263	2.0	263	2.0	0.095	8.9	LOS A	0.5	3.5	0.35	0.60	0.35	53.4
North: Palladium															
7	L2	All MCs	12	2.0	12	2.0	0.029	10.1	LOS B	0.1	0.8	0.36	0.55	0.36	55.1
8	T1	All MCs	52	2.0	52	2.0	0.029	4.6	LOS A	0.1	0.8	0.35	0.49	0.35	55.6
9	R2	All MCs	2	2.0	2	2.0	0.029	4.6	LOS A	0.1	0.8	0.35	0.45	0.35	54.4
Approach			67	2.0	67	2.0	0.029	5.6	LOS A	0.1	0.8	0.35	0.50	0.35	55.4
West: Campeau															
10	L2	All MCs	1	2.0	1	2.0	0.035	9.9	LOS A	0.1	0.9	0.32	0.43	0.32	57.0
11	T1	All MCs	36	2.0	36	2.0	0.035	4.1	LOS A	0.1	0.9	0.32	0.43	0.32	56.6
12	R2	All MCs	23	2.0	23	2.0	0.035	3.6	LOS A	0.1	0.9	0.09	0.42	0.09	56.2
Approach			60	2.0	60	2.0	0.035	4.0	LOS A	0.1	0.9	0.23	0.43	0.23	56.5
All Vehicles			747	2.0	747	2.0	0.121	6.1	LOS A	0.6	4.6	0.22	0.50	0.22	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\MichelleChen\CGH TRANSPORTATION\CGH Working - Documents\Projects\2023-042 Quaestus 3095 Palladium\DATA\sidra\2023-042 3095 Palladium 2023-06-15.sip9

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau PM Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.0.3.9771

Reprocess the Site in this Version to see the selected Movement Class results. All results may be affected by reprocessing compared with Version 9.0 results.

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	116	2.0	116	2.0	0.084	9.4	LOS A	0.4	3.2	0.21	0.58	0.21	54.1
2	T1	All MCs	21	2.0	21	2.0	0.084	3.3	LOS A	0.4	3.2	0.21	0.58	0.21	53.9
3	R2	All MCs	213	2.0	213	2.0	0.112	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	57.1
Approach			350	2.0	350	2.0	0.112	5.2	LOS A	0.4	3.2	0.08	0.47	0.08	55.9
East: Campeau															
4	L2	All MCs	260	2.0	260	2.0	0.101	9.6	LOS A	0.5	3.8	0.29	0.59	0.29	53.4
5	T1	All MCs	30	2.0	30	2.0	0.101	3.9	LOS A	0.5	3.8	0.28	0.58	0.28	53.7
6	R2	All MCs	2	2.0	2	2.0	0.101	3.9	LOS A	0.5	3.8	0.28	0.58	0.28	52.2
Approach			292	2.0	292	2.0	0.101	9.0	LOS A	0.5	3.8	0.29	0.59	0.29	53.4
North: Palladium															
7	L2	All MCs	22	2.0	22	2.0	0.081	10.4	LOS B	0.3	2.3	0.41	0.56	0.41	55.3
8	T1	All MCs	158	2.0	158	2.0	0.081	4.9	LOS A	0.3	2.3	0.40	0.51	0.40	55.5
9	R2	All MCs	1	2.0	1	2.0	0.081	4.9	LOS A	0.3	2.3	0.39	0.47	0.39	54.1
Approach			181	2.0	181	2.0	0.081	5.6	LOS A	0.3	2.3	0.40	0.51	0.40	55.4
West: Campeau															
10	L2	All MCs	2	2.0	2	2.0	0.053	10.2	LOS B	0.2	1.4	0.39	0.46	0.39	56.5
11	T1	All MCs	60	2.0	60	2.0	0.053	4.5	LOS A	0.2	1.4	0.39	0.46	0.39	56.1
12	R2	All MCs	16	2.0	16	2.0	0.008	3.6	LOS A	0.0	0.0	0.00	0.42	0.00	56.8
Approach			78	2.0	78	2.0	0.053	4.5	LOS A	0.2	1.4	0.31	0.45	0.31	56.3
All Vehicles			901	2.0	901	2.0	0.112	6.4	LOS A	0.5	3.8	0.23	0.52	0.23	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau SAT Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.0.3.9771

Reprocess the Site in this Version to see the selected Movement Class results. All results may be affected by reprocessing compared with Version 9.0 results.

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	7	2.0	7	2.0	0.009	9.6	LOS A	0.0	0.3	0.28	0.49	0.28	55.5
2	T1	All MCs	7	2.0	7	2.0	0.009	3.4	LOS A	0.0	0.3	0.28	0.49	0.28	55.2
3	R2	All MCs	342	2.0	342	2.0	0.180	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	57.1
Approach			356	2.0	356	2.0	0.180	3.2	LOS A	0.0	0.3	0.01	0.40	0.01	57.0
East: Campeau															
4	L2	All MCs	353	2.0	353	2.0	0.127	9.2	LOS A	0.7	4.9	0.08	0.59	0.08	54.3
5	T1	All MCs	62	2.0	62	2.0	0.127	3.5	LOS A	0.7	4.9	0.08	0.57	0.08	54.8
6	R2	All MCs	6	2.0	6	2.0	0.127	3.5	LOS A	0.7	4.9	0.08	0.57	0.08	53.2
Approach			421	2.0	421	2.0	0.127	8.3	LOS A	0.7	4.9	0.08	0.59	0.08	54.4
North: Palladium															
7	L2	All MCs	6	2.0	6	2.0	0.007	10.2	LOS B	0.0	0.2	0.37	0.59	0.37	53.9
8	T1	All MCs	10	2.0	10	2.0	0.007	4.7	LOS A	0.0	0.2	0.36	0.48	0.36	55.4
9	R2	All MCs	1	2.0	1	2.0	0.007	4.8	LOS A	0.0	0.2	0.36	0.45	0.36	54.3
Approach			17	2.0	17	2.0	0.007	6.6	LOS A	0.0	0.2	0.37	0.52	0.37	54.8
West: Campeau															
10	L2	All MCs	1	2.0	1	2.0	0.117	10.2	LOS B	0.4	3.1	0.37	0.45	0.37	56.7
11	T1	All MCs	140	2.0	140	2.0	0.117	4.4	LOS A	0.4	3.1	0.37	0.45	0.37	56.3
12	R2	All MCs	21	2.0	21	2.0	0.011	3.5	LOS A	0.0	0.0	0.00	0.42	0.00	56.8
Approach			162	2.0	162	2.0	0.117	4.3	LOS A	0.4	3.1	0.32	0.44	0.32	56.4
All Vehicles			956	2.0	956	2.0	0.180	5.7	LOS A	0.7	4.9	0.10	0.49	0.10	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix D

Collision Data

CGH TRANSPORTATION

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
12/26/2019	2019	15:17	CAMPEAU DR @ PALLADIUM DR (0017186)	01 - Clear	01 - Daylight	11 - Roundabout	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2/20/2020	2020	19:50	CAMPEAU DR @ PALLADIUM DR (0017186)	01 - Clear	07 - Dark	11 - Roundabout	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
12/27/2018	2018	19:36	CAMPEAU DR @ JOURNEYMAN ST (0016431)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
1/5/2019	2019	14:47	CAMPEAU DR @ JOURNEYMAN ST (0016431)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2/11/2019	2019	18:31	CAMPEAU DR @ JOURNEYMAN ST (0016431)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
11/24/2016	2016	8:09	PALLADIUM DR btwn HWY417 IC142 RAMP62 & HUNTMAR DR (__3ZAZW8)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0	0	0
1/16/2019	2019	11:20	PALLADIUM DR btwn HWY417 IC142 RAMP62 & HUNTMAR DR (__3ZAZW8)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	03 - Loose snow	1	0	0	0
8/13/2020	2020	16:40	PALLADIUM DR btwn HWY417 IC142 RAMP62 & HUNTMAR DR (__3ZAZW8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
12/19/2016	2016	16:35	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	99 - Other	02 - Wet	2	0	0	0
5/7/2016	2016	14:32	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
9/21/2016	2016	17:30	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
11/1/2017	2017	17:18	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	02 - Rain	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
12/8/2017	2017	12:04	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
12/29/2017	2017	14:40	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
11/8/2018	2018	21:31	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
6/10/2018	2018	14:02	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	1	0	0
8/20/2019	2019	5:40	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	03 - Dawn	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2/1/2020	2020	19:43	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2/9/2020	2020	15:00	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
7/24/2020	2020	20:22	HWY 417 PALLADI IC142R36 @ PALLADIUM DR (0010683)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
1/30/2019	2019	17:15	HWY 417 PALLADIU IC142R61 @ HWY 417 PALLADIU I (0010685)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	2	0	0	0

Appendix E

Signalized Palladium Drive at Eastbound Highway 417 Ramp intersection Design

CGH TRANSPORTATION

PALLADIUM DRIVE

0+200

LIMIT OF CONSTRUCTION
STA. 0+100

10cm 3/6/3 WHITE (TYP.)
10cm SOLID YELLOW
10cm SOLID WHITE
0.45m SOLID YELLOW@ 3m SPACING
0.45m SOLID WHITE @ 3m SPACING
OBJECT MARKER (Wa-33LR)
Rb-25 Wa-33L
60cm SOLID WHITE STOP BAR (TYP.)
10cm SOLID WHITE 3m CROSSWALK (TYP.)

3.50m
3.75m
0.8m
4.25m

N-E RAMP
W-N RAMP
W-S RAMP

REFER TO THIS SHEET
MATCH LINE STA. 0+250

0+300

S-E RAMP

Wa-33LR
10cm SOLID WHITE
10cm 3/6/3 WHITE (TYP.)
0.45m SOLID WHITE @ 3m SPACING
Wb-3 Wa-37 Wa-7t
OBJECT MARKER (Wa-33LR)

REFER TO THIS SHEET
MATCH LINE STA. 0+250

REFER TO SHEET RCI-07
MATCH LINE STA. 0+400

195 HUNTMAR DRIVE
HWY 417 RAMP TERMINAL TO
NORTH ROUNDABOUT LIMITS

PAVEMENT MARKINGS & SIGNAGE I
STA. 0+100 TO STA. 0+250
STA. 0+250 TO STA. 0+400

Robinson Consultants

LICENSED PROFESSIONAL ENGINEER
R. E COTNAM
100078713
PROVINCE OF ONTARIO
22/07/21

Ottawa

Contract No.	Dwg. No. RCI-06
Sheet - of -	
Asset No.	
Asset Group	
Des. O.M.	Chk'd. R.G.
Dwn. O.M.	Chk'd. R.G.
Utility Circ. No.	Index No.
Const. Inspector	

Scale: HORIZONTAL
0m 5 10

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
0	ISSUED FOR COMMENTS - INTERNAL CIRCULATION	R.G.	27.01.21
1	PRELIMINARY DESIGN SUBMISSION	R.G.	05.02.21
2	90% SUBMISSION	R.G.	30.04.21
3	90% SUBMISSION RE-ISSUED	R.G.	12.05.21
4	90% SUBMISSION RE-ISSUED	R.G.	12.06.08
5	100% SUBMISSION	R.G.	22.07.21

NOT FOR CONSTRUCTION

Ra-2

Rb-21
Wa-38

Rb-25
Wa-33L

Wa-17
Wa-33LR

Ra-5L

Ra-5R

CYCLISTS DISMOUNT AND WALK
CYCLISTES PIEDS A TERRE
SIGN 2

NEW

30 km/h

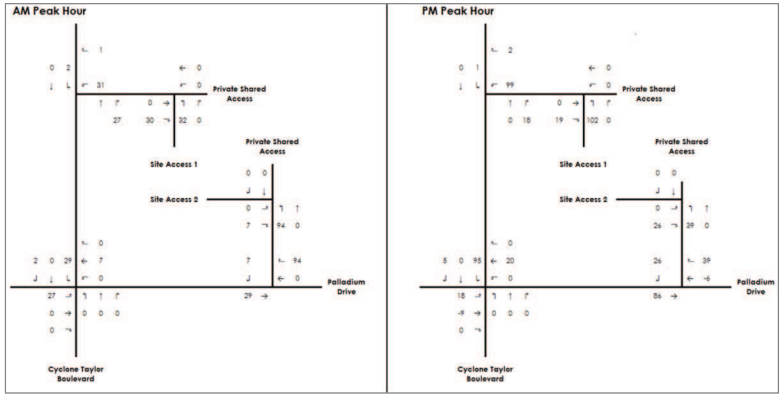
Wb-3
Wa-37
Wa-7t

Appendix F

Background Development Volumes

CGH TRANSPORTATION

Figure 12 - Net Site Generated Traffic Volumes



As shown in **Table 4.1**, the proposed development is anticipated to generate 110 two-way trips (61 inbound and 49 outbound) during the AM peak hours and 119 two-way trips (60 inbound and 59 outbound) during the PM peak hours.

The assumptions for the trip distribution rates are based on the existing traffic patterns at the Campeau Drive and Palladium Drive intersection, and routes that drivers would likely take to access the subject site and engineering judgement based on ease of site access. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and afternoon peak hours in **Table 4.2**.

Table 4.2 – Site Traffic Trip Distribution

Direction	Via	AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
North	Palladium Drive	8%	8%	2%	2%
South	Palladium Drive	42%	42%	55%	55%
East	Campeau Drive	36%	36%	32%	32%
West	Campeau Drive	14%	14%	11%	11%
Total		**100%**	**100%**	**100%**	**100%**

Figure 4-1 - Site Generated Traffic Volumes

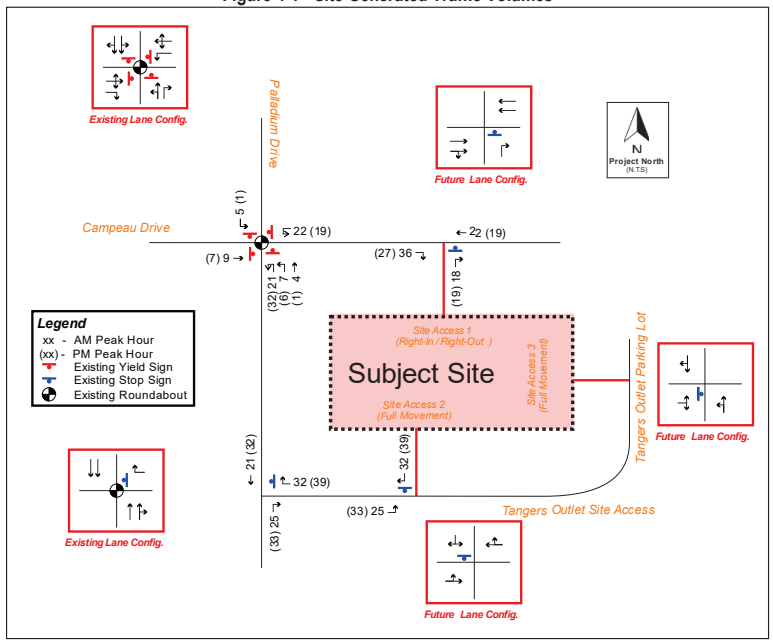


Table 4: Mode Shares for the Office Building Development

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	111	18	129	21	108	129
Auto Passenger	15%	28	5	33	5	27	32
Transit	10%	18	3	21	3	18	21
Non-motorized	15%	27	4	31	5	27	32
Total Person Trips	100%	184	30	214	34	180	214
Total 'New' Auto Trips		**111**	**18**	**129**	**21**	**108**	**129**

As shown in **Table 4**, the number of Total Person Trips and number of 'New' Auto Trips expected to be generated by the proposed development are approximately 214 person trips/h and 129 vehicle trips/h, respectively, during both the morning and afternoon weekday peak hour periods.

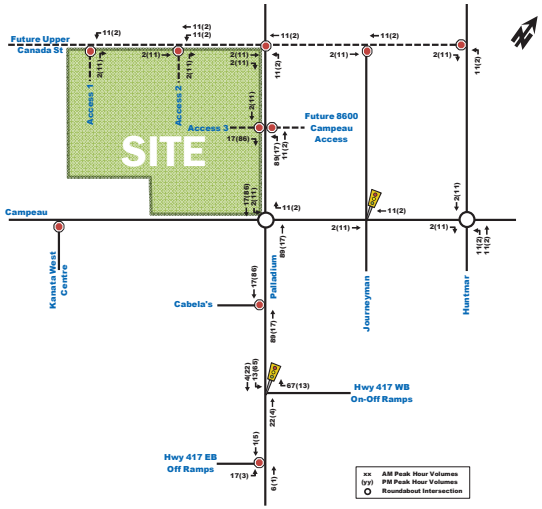
3.1.2. TRIP DISTRIBUTION AND ASSIGNMENT

Based on the 2011 NCR Household Origin-Destination Survey (Kanata – Stittsville district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 25% to/from the north;
- 10% to/from the south;
- 60% to/from the east; and,
- 5% to/from the west.

The expected site-generated auto trips in **Table 4** were then assigned to the road networks as shown in **Figure 9** below, based on existing traffic volumes, estimated travel times and engineering judgement.

Figure 9: Kinaxis Office Development Site-Generated Traffic



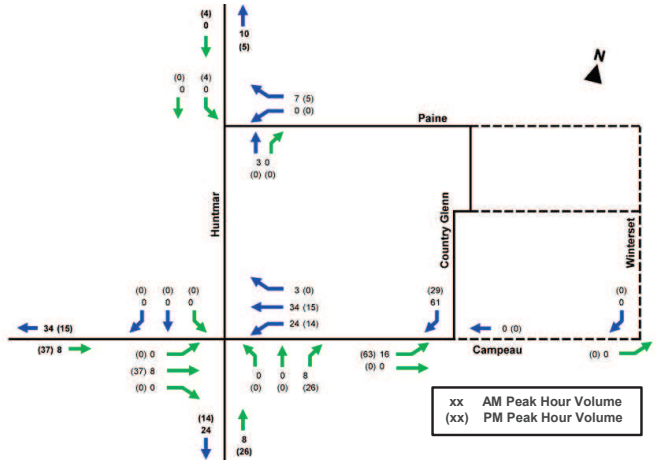


Figure 5: Site-Generated Traffic – Stage 3 Build-Out

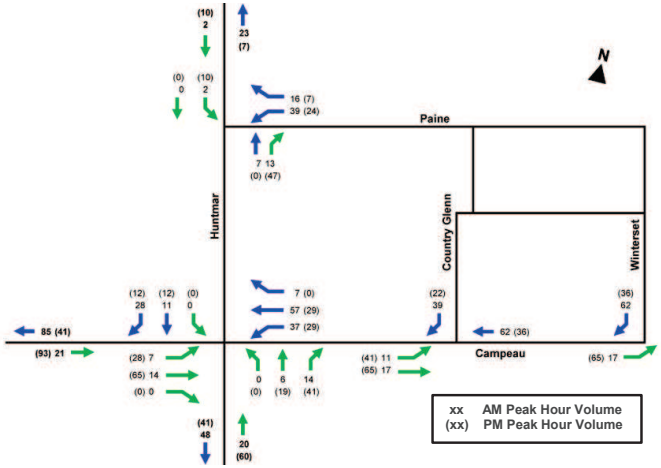


Figure 6: Site-Generated Traffic – Stage 3 and 4 Build-Out

3.1.3. TRIP DISTRIBUTION AND ASSIGNMENT

Given the low projected number of vehicle trips projected to be generated by the proposed development, the future roadway network impact is considered negligible. However, a review of the number of vehicles projected to enter/exit the site at the proposed site driveways is provided as Figure 7.

Figure 7: Site-Generated Vehicle Trips

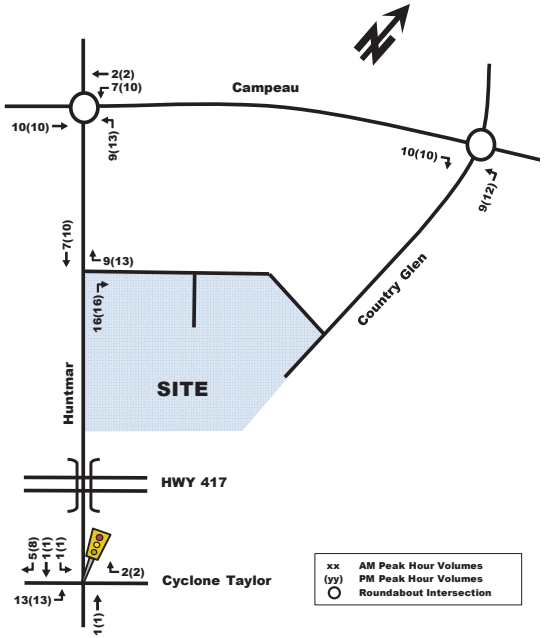
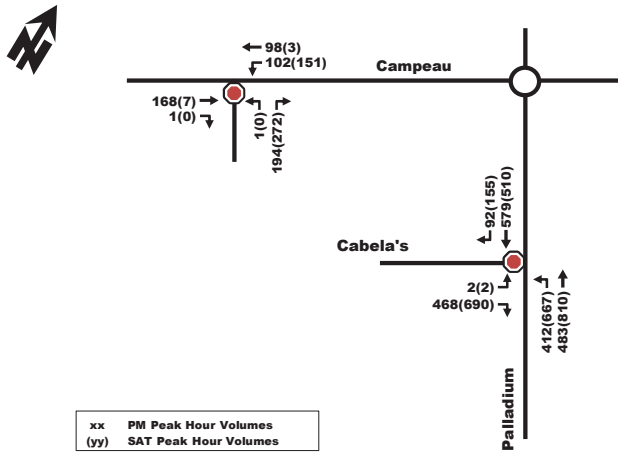


Figure 5: Scenario 1 – Existing and Projected Site-Generated Vehicle Trips



Scenario 1 assumed that the Campeau Drive extension across the Carp River is not yet completed. As such, the majority of site-related traffic is projected to travel to/from HWY 417 along Palladium Drive and as a result the unsignalized left-in/right-in/right-out driveway is heavily used.

Figure 6: Scenario 2 – Existing and Projected Site-Generated Vehicle Trips

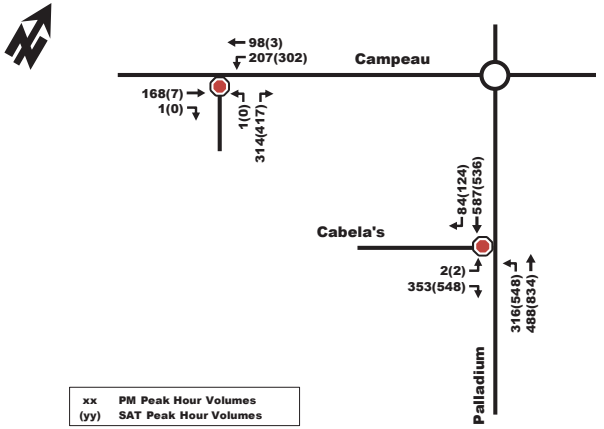


Table 4: Projected Site Traffic Generation as of 2017 Site Plan (AM/PM and SAT peak hour)

Land Use	Area	AM Peak (veh/h)			PM Peak (veh/h)			SAT Peak (veh/h)		
		In	Out	Total	In	Out	Total	In	Out	Total
Sporting Goods (Cabela's)	68,890 ft²	0	0	0	51	78	129	244	261	505
Large Format Retail	120,000 ft²	88	72	159	212	230	442	317	316	633
Shopping Centre	68,262 ft²	65	41	106	188	205	393	300	277	577
Fast Food Restaurant	5,220 ft²	103	99	202	75	70	145	133	128	261
Auto Parts/ Furniture Stores	83,115 ft²	41	39	80	108	115	223	10	12	22
UPS Distribution	53,184 ft²	60	68	128	69	59	128	0	0	0
Industrial Park	165,000 ft²	97	22	119	28	107	135	0	0	0
Large Format Retail Pass-by (30%)		-24	-24	-48	-66	-66	-132	-95	-95	-190
Shopping Centre Pass-by (30%)		-16	-16	-32	-59	-59	-118	-87	-87	-174
Fast Food Restaurant Pass-by (50%)		-51	-51	-102	-36	-36	-72	-65	-65	-130
Auto Parts/Furniture Stores Pass-by (5%)		-2	-2	-4	-6	-6	-12	-1	-1	-2
Multi-Purpose Trips (5%)		-18	-13	-31	-28	-34	-62	-31	-30	-61
Addendum #12 'New' Auto Trips		**343**	**235**	**577**	**536**	**663**	**1,199**	**725**	**716**	**1,441**
Previous Site Plan 'New' Auto Trips (2015 and 2014)		*492*	*174*	*666*	*474*	*760*	*1,234*	*665*	*607*	*1,272*

As shown in Table 2, the total projected site-generated vehicle trips associated with the revised Plan are approximately 575 veh/h, 1,200 veh/h and 1,440 veh/h two-way total, during the weekday morning, afternoon and Saturday peak hours, respectively. When compared to the previously submitted Site Plan, the weekday morning and afternoon peak hour traffic generations are relatively consistent. During the Saturday peak hour, the revised Site Plan is expected to generate an additional 170 veh/h than previously estimated (only a 12% increase).

3.3 Future Traffic Conditions

The figures listed below present the following future traffic conditions:

- Proposed site-generated traffic volumes in 2024 are shown in **Figure 5**;
- Background traffic volumes in 2024 are shown in **Figure 6**;
- Background traffic volumes in 2029 are shown in **Figure 7**;
- Total traffic volumes in 2024 are shown in **Figure 8**;
- Total traffic volumes in 2029 are shown in **Figure 9**.

Figure 5: Site-Generated Volumes

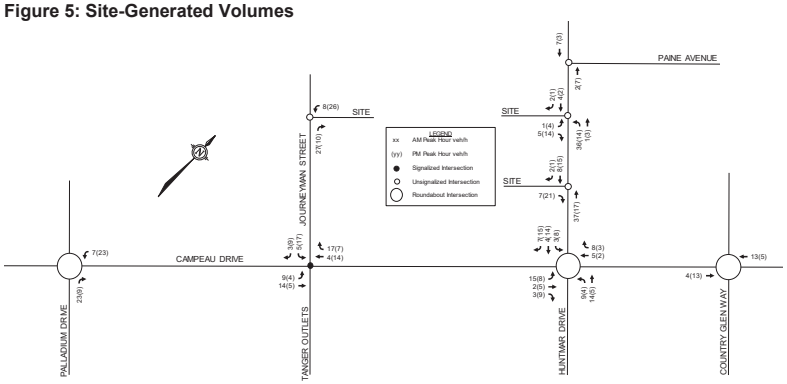


Figure 11: New Site Generation Auto Volumes

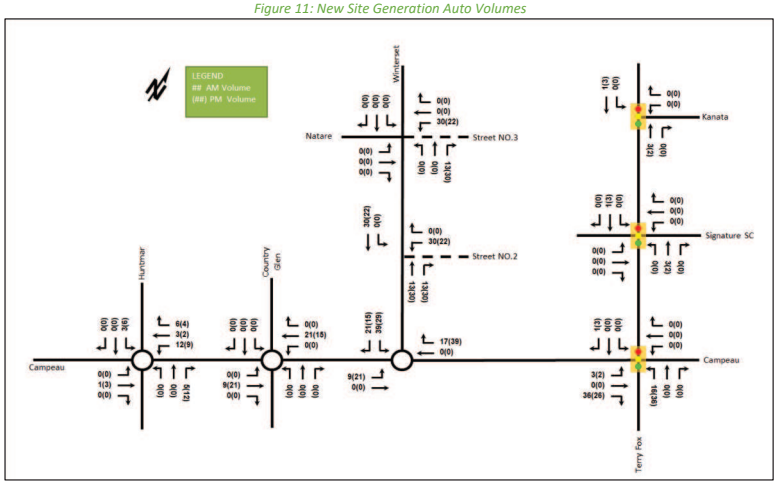


Figure 11: New Site Generation Auto Volumes

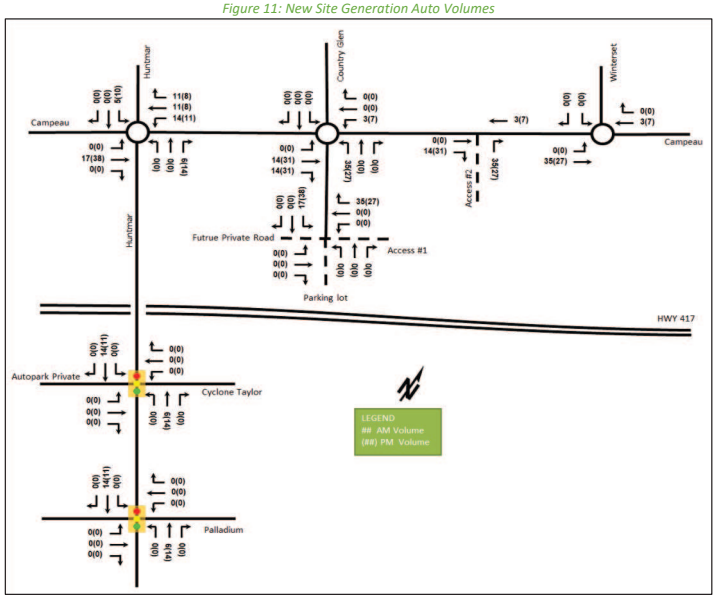


Figure 20: Trip Assignment

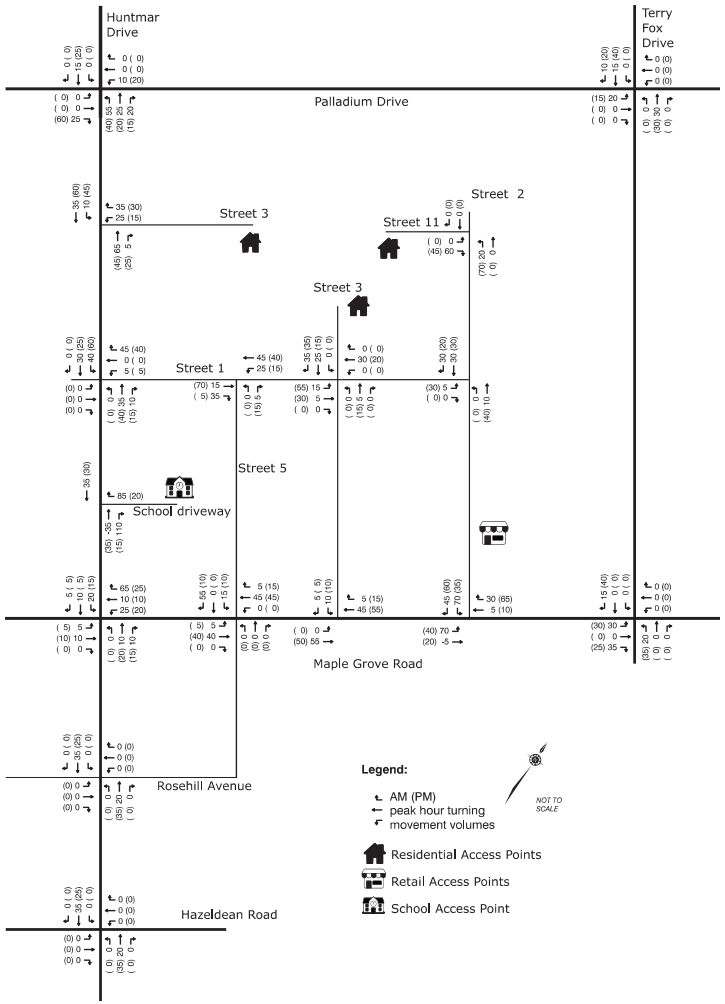
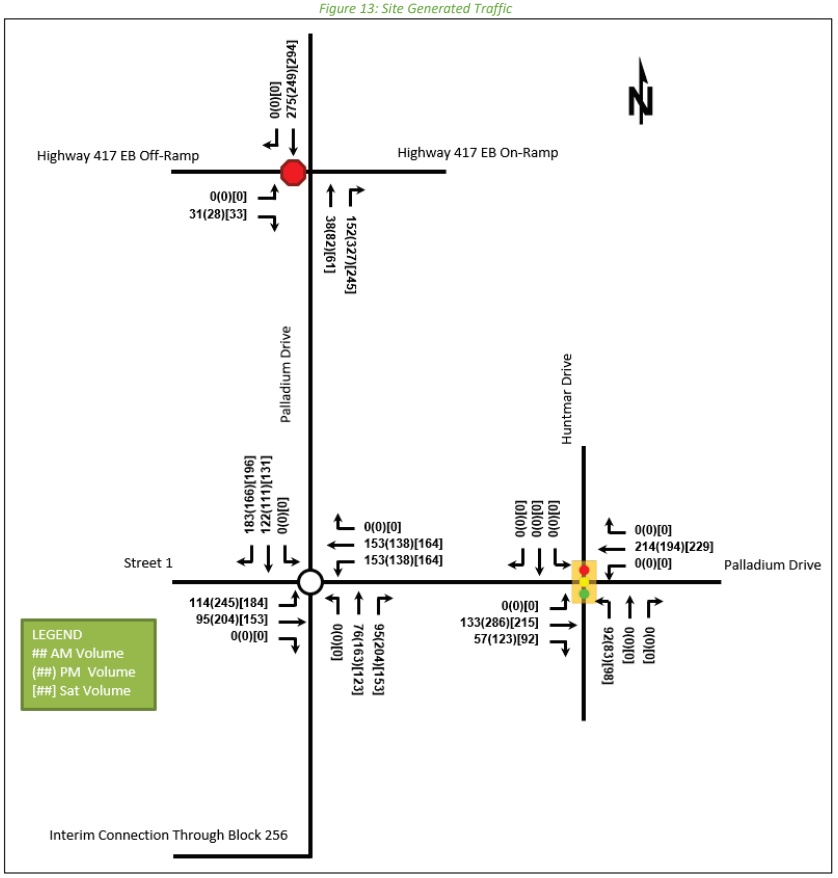


Figure 13: Site Generated Traffic



3.1.2. TRIP DISTRIBUTION AND ASSIGNMENT

Based on the 2011 NCR Household Origin-Destination Survey (Kanata – Stittsville district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 25% to/from the north;
- 10% to/from the south;
- 60% to/from the east; and,
- 5% to/from the west.

The expected site-generated auto trips in Table 15 and Table 16 were then assigned to the road networks as shown in Figure 12 and Figure 13, by assessing the flow of existing traffic volumes and the estimated travel times.

Figure 12: Purolator Facility Site-Generated Traffic (Phase 1)

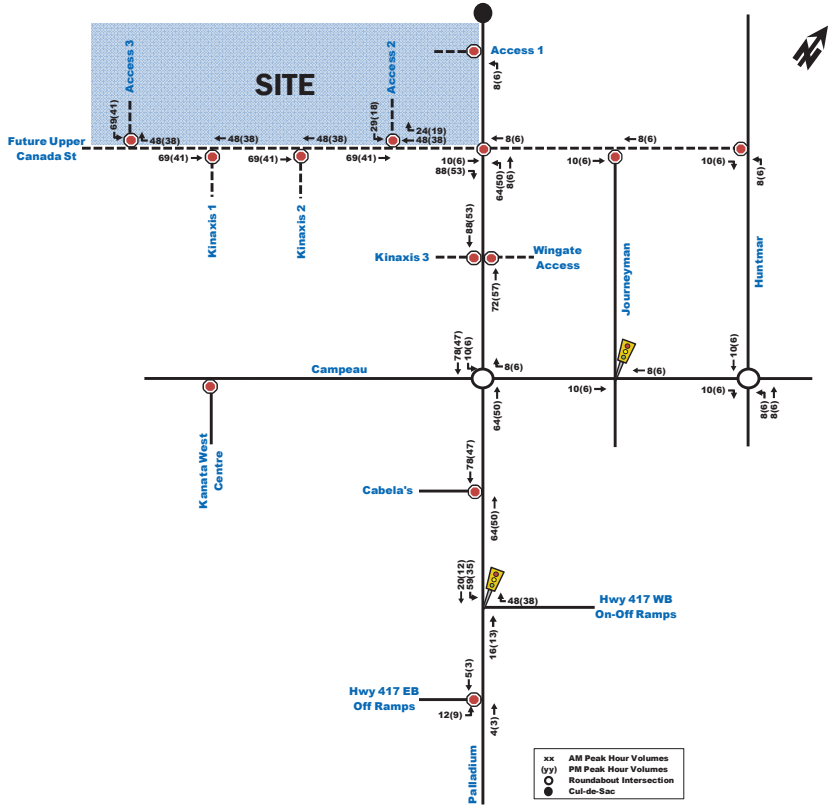
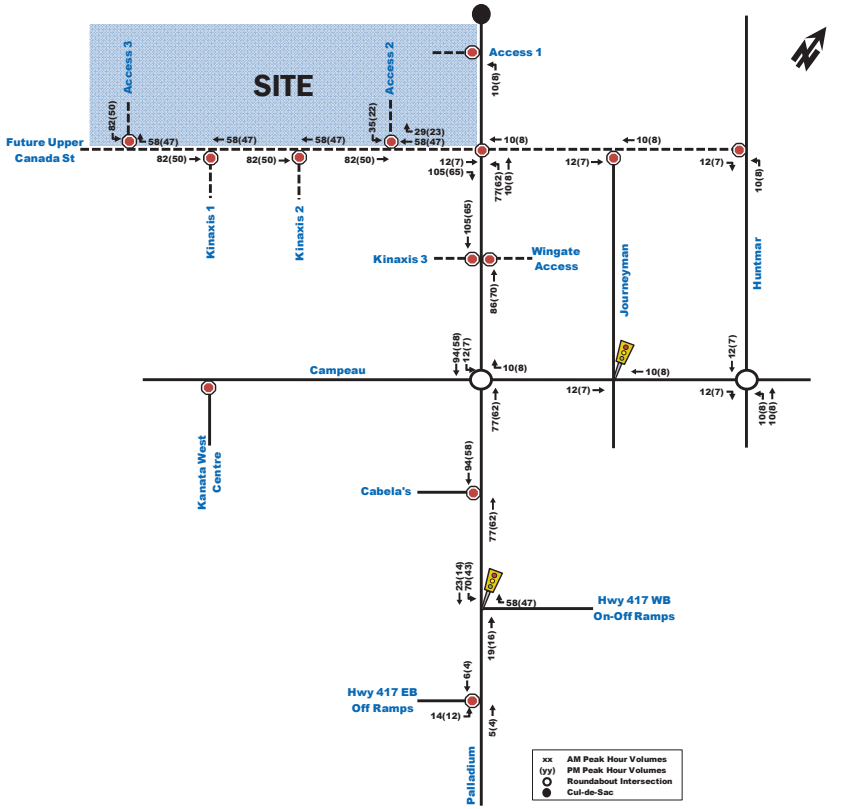


Figure 13: Purolator Facility Site-Generated Traffic (Phase 2)



It was assumed that 25% of site traffic would travel to/from Huntmar Rd, while 75% would use Hwy 417. The majority of employees and customers were anticipated to use Site Access 3, along the future Upper Canada Street, to enter and exit the development site. The remainder would use accesses 1 and 2, with access 1 being used mainly by inbound delivery and transport trucks.

Table 6: Site-Generated Trips by Travel Mode, Horizon Year 2023

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	65%	26	8	34	10	26	36
Auto Passenger	15%	6	2	8	2	6	8
Transit	15%	6	2	8	2	6	8
Walk	2%	0	0	0	0	1	1
Bike	3%	1	0	1	0	1	1
Total Person Trips	100%	39	12	51	14	40	54
Total Auto Trips		**26**	**8**	**34**	**10**	**26**	**36**

As shown in Table 6, the anticipated number of total auto trips generated by proposed development is approximately 34 to 36 veh/h at horizon year 2023, during the morning and afternoon peak hours.

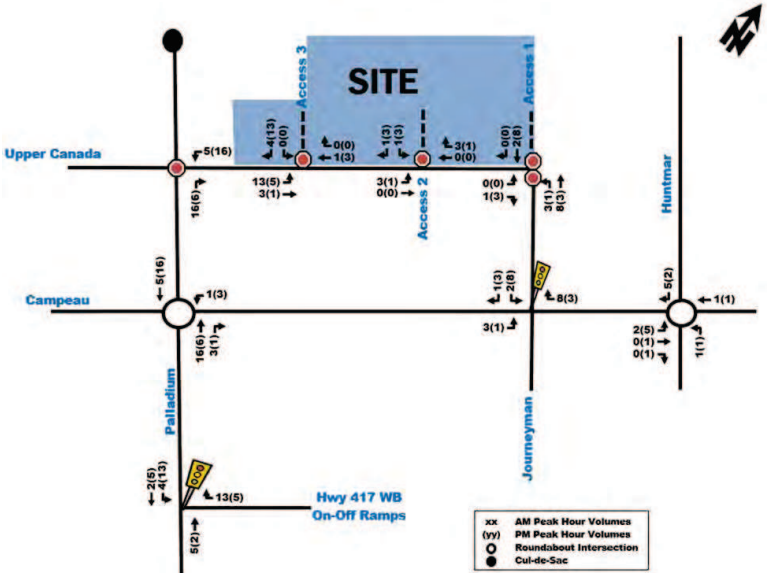
3.1.2. Trip Distribution and Assignment

Based on the 2011 OD Survey (Kanata – Stittsville district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 25% to/from the north;
- 5% to/from the south;
- 60% to/from the east; and,
- 10% to/from the west.

The anticipated site-generated auto trips for the proposed development from Table 6 were then assigned to the road network as shown in Figure 10.

Figure 10: Site-Generated Traffic



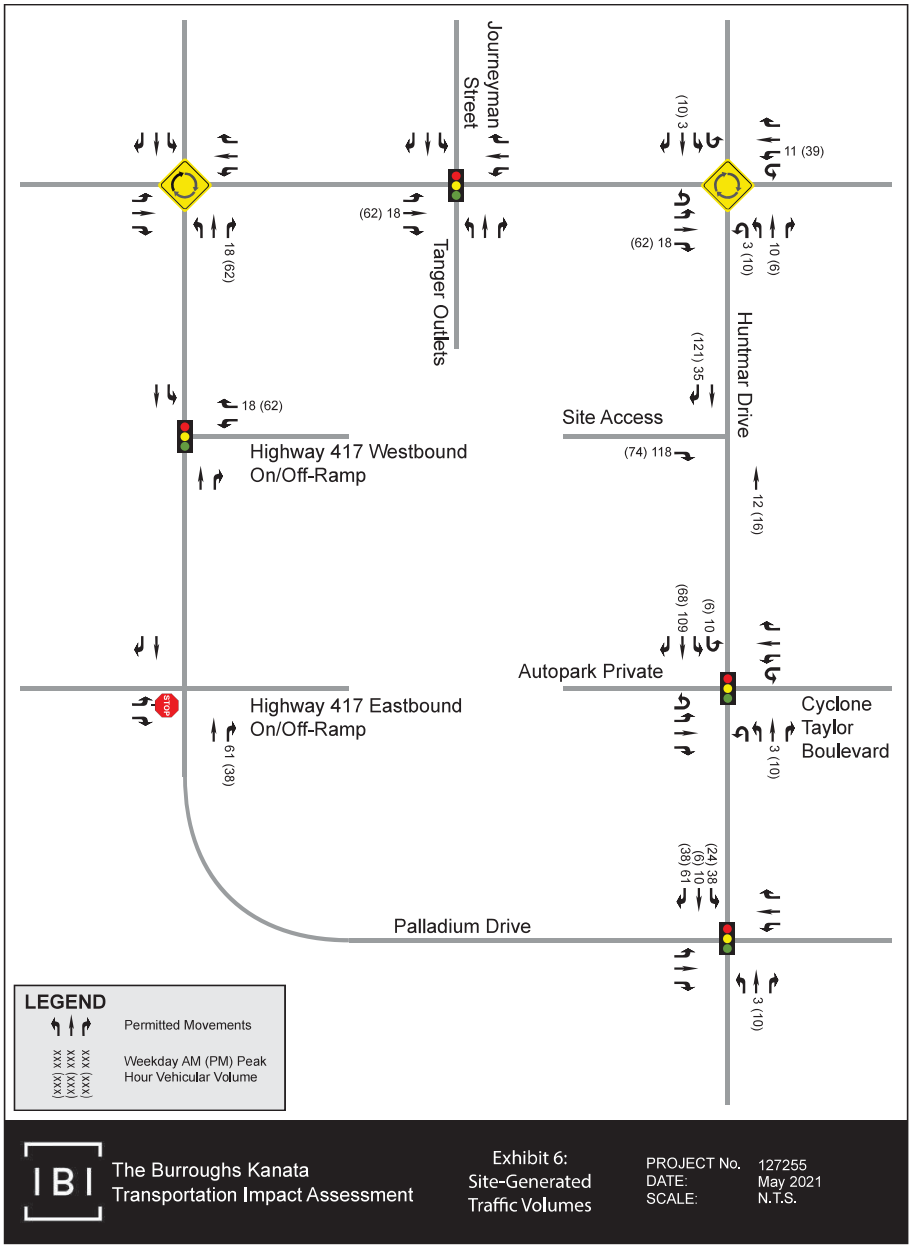


Figure 12: Maritime Ontario Facility Site-Generated Traffic (Phase 1)

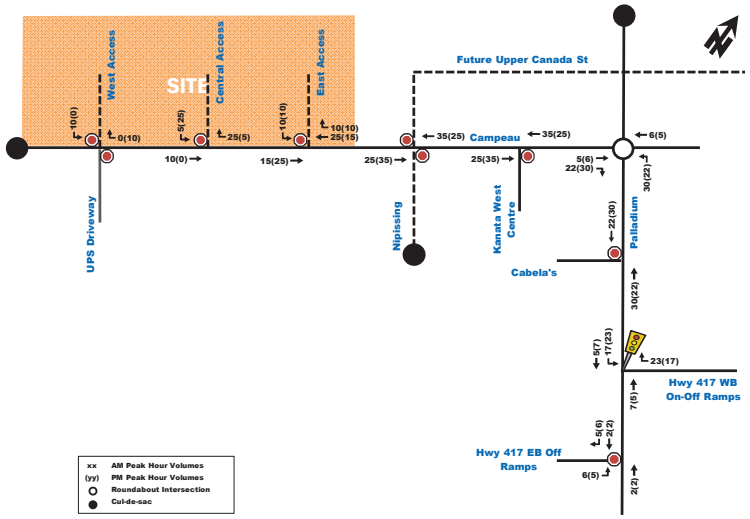


Figure 13: Maritime Ontario Facility Site-Generated Traffic (Phase 2)

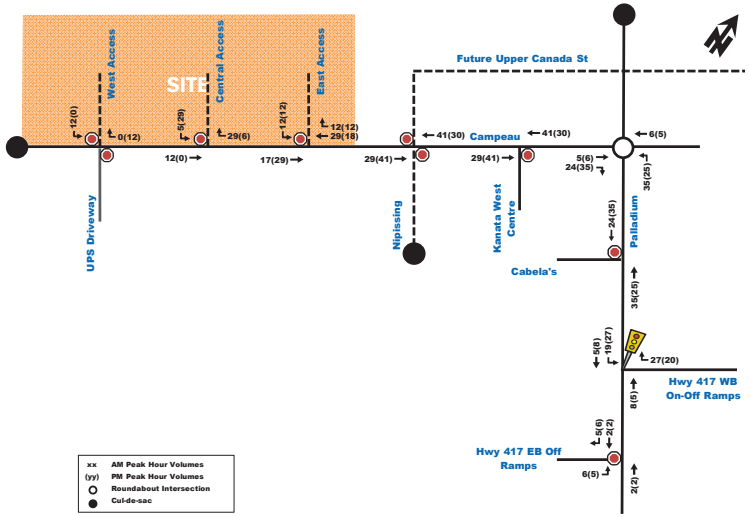


Figure 12: New Site Generation Auto Volumes

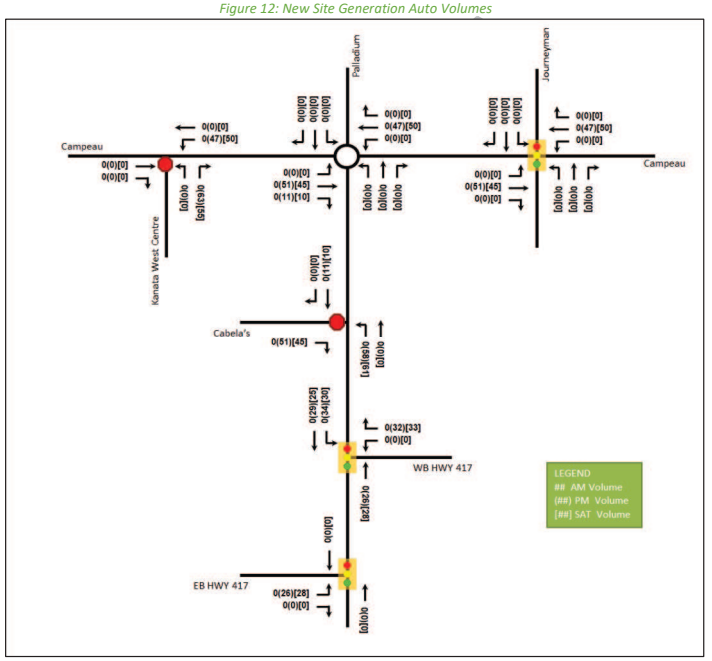


Figure 13: Pass-By Auto Volumes

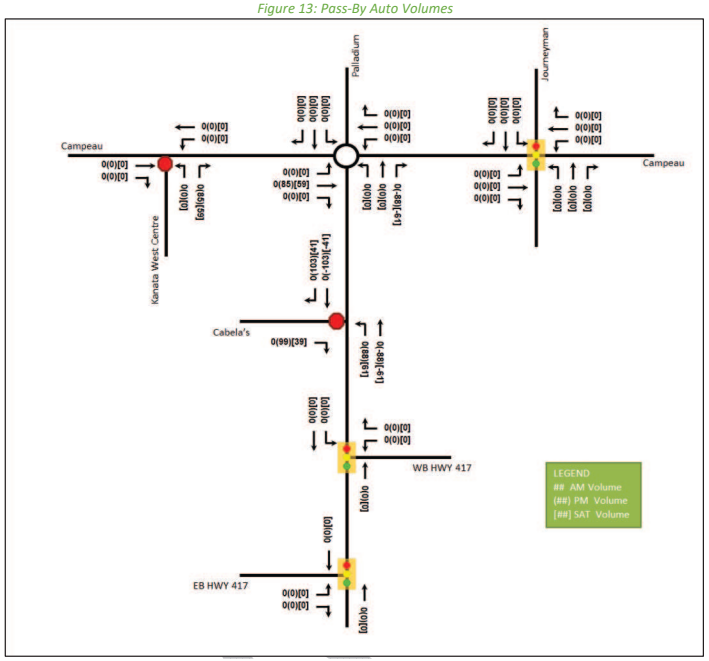
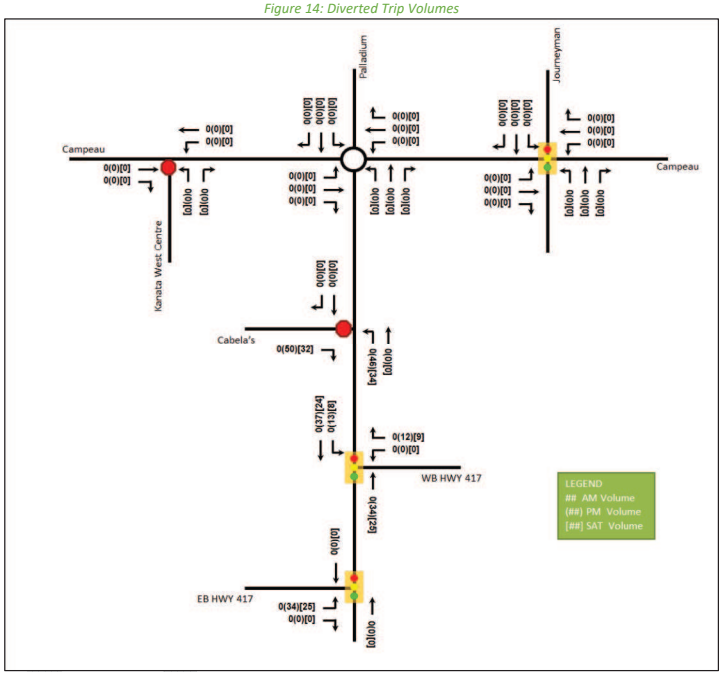


Figure 14: Diverted Trip Volumes



Appendix G

Synchro and Sidra Intersection Worksheets – 2027 Future Background Conditions

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	114	1	65	78	2	202
Future Vol, veh/h	114	1	65	78	2	202
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	2	2	63	2	2
Mvmt Flow	114	1	65	78	2	202

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	115	0	323	115
Stage 1	-	-	-	-	115	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1474	-	671	937
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	827	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1474	-	641	937
Mov Cap-2 Maneuver	-	-	-	-	641	-
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	791	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	9.9
HCM LOS			A

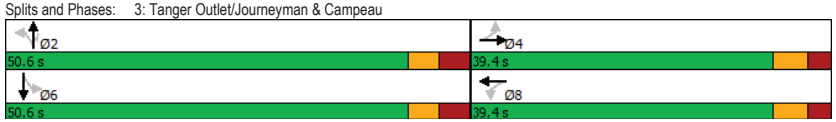
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	641	937	-	-	1474	-
HCM Lane V/C Ratio	0.003	0.216	-	-	0.044	-
HCM Control Delay (s)	10.6	9.9	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.8	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	479	16	104	357	12	40	0	112	28	0	16
Future Volume (vph)	18	479	16	104	357	12	40	0	112	28	0	16
Satd. Flow (prot)	1658	3299	0	1658	3268	0	1642	1745	1483	1658	2773	0
Flt Permitted	0.516			0.381			0.746			0.757		
Satd. Flow (perm)	900	3299	0	665	3268	0	1284	1745	1483	1321	2773	0
Satd. Flow (RTOR)		4			4				197		308	
Lane Group Flow (vph)	18	495	0	104	369	0	40	0	112	28	16	0
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	17.2	17.2		17.2	17.2		44.0		44.0	44.0	44.0	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.59		0.59	0.59	0.59	
v/c Ratio	0.09	0.65		0.68	0.49		0.05		0.12	0.04	0.01	
Control Delay	22.3	29.6		48.3	26.4		8.2		0.3	8.2	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	22.3	29.6		48.3	26.4		8.2		0.3	8.2	0.0	
LOS	C	C		D	C		A		A	A	A	
Approach Delay		29.3			31.2			2.4			5.2	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	2.0	32.7		13.3	23.3		2.0		0.0	1.4	0.0	
Queue Length 95th (m)	6.7	46.6		29.3	34.5		7.5		0.4	5.8	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	400	1471		296	1457		758		957	780	1765	
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	0.04	0.34		0.35	0.25		0.05		0.12	0.04	0.01	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 74.4
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68

Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 66.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	344	303	412	491	141
Future Vol, veh/h	0	344	303	412	491	141
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	115	-	-	-
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	3	2
Mvmt Flow	0	344	303	412	491	141

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	316	632	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	680	947	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	680	947	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	4.5	0
HCM LOS	C		

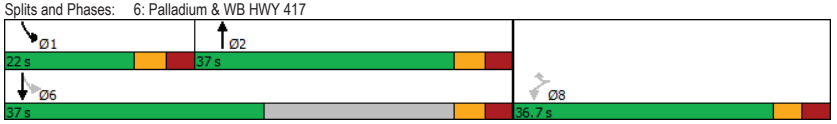
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	947	-	680	-	-
HCM Lane V/C Ratio	0.32	-	0.506	-	-
HCM Control Delay (s)	10.6	-	15.6	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.4	-	2.9	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	509	446	339	0	384	484
Future Volume (vph)	509	446	339	0	384	484
Satd. Flow (prot)	3185	1483	3191	0	1658	3283
Flt Permitted	0.950				0.355	
Satd. Flow (perm)	3185	1483	3191	0	620	3283
Satd. Flow (RTOR)		446				
Lane Group Flow (vph)	509	446	339	0	384	484
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	16.3	16.3	12.7		33.4	33.4
Actuated g/C Ratio	0.26	0.26	0.20		0.53	0.53
v/c Ratio	0.62	0.63	0.53		0.70	0.28
Control Delay	25.0	6.8	27.1		18.6	9.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	25.0	6.8	27.1		18.6	9.4
LOS	C	A	C		B	A
Approach Delay	16.5		27.1			13.4
Approach LOS	B		C			B
Queue Length 50th (m)	27.7	0.0	19.3		25.3	15.1
Queue Length 95th (m)	44.7	19.4	34.0		#56.4	28.1
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1528	943	1531		574	2721
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	0.33	0.47	0.22		0.67	0.18

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 63.6
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.70

Intersection Signal Delay: 16.9 Intersection LOS: B
Intersection Capacity Utilization 64.9% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	166	186	0	595	721	0
Future Volume (vph)	166	186	0	595	721	0
Satd. Flow (prot)	3018	0	0	3316	3252	0
Flt Permitted	0.977					
Satd. Flow (perm)	3018	0	0	3316	3252	0
Satd. Flow (RTOR)	186					
Lane Group Flow (vph)	352	0	0	595	721	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.5			22.5	25.0	
Total Split (s)	36.0			59.7	59.7	
Total Split (%)	37.6%			62.4%	62.4%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.1			13.2	13.2	
Actuated g/C Ratio	0.29			0.38	0.38	
v/c Ratio	0.35			0.47	0.58	
Control Delay	6.4			9.2	10.4	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.4			9.2	10.4	
LOS	A			A	B	
Approach Delay	6.4			9.2	10.4	
Approach LOS	A			A	B	
Queue Length 50th (m)	3.5			12.2	15.5	
Queue Length 95th (m)	11.1			20.3	25.5	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	2707			3316	3252	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.13			0.18	0.22	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 34.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.58

Intersection Signal Delay: 9.1 — Intersection LOS: A
Intersection Capacity Utilization 41.5% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: EB HWY 417 & Palladium

Intersection	
Int Delay, s/veh	8.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	1	126	7	4	257
Future Vol, veh/h	15	1	126	7	4	257
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	1	126	7	4	257

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	16	0	275	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	259	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1602	-	715	1063
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1602	-	659	1063
Mov Cap-2 Maneuver	-	-	-	-	659	-
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	722	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	659	1063	-	-	1602	-
HCM Lane V/C Ratio	0.006	0.242	-	-	0.079	-
HCM Control Delay (s)	10.5	9.5	-	-	7.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.9	-	-	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	401	184	233	272	6	155	1	254	8	2	13
Future Volume (vph)	25	401	184	233	272	6	155	1	254	8	2	13
Satd. Flow (prot)	1658	3146	0	1658	3304	0	1658	1745	1483	1658	2825	0
Flt Permitted	0.581			0.361			0.747			0.757		
Satd. Flow (perm)	1013	3146	0	630	3304	0	1288	1745	1463	1319	2825	0
Satd. Flow (RTOR)		94			3				254		416	
Lane Group Flow (vph)	25	585	0	233	278	0	155	1	254	8	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	33.0	33.0		33.0	33.0		43.8	43.8	43.8	43.8	43.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.49	0.49	0.49	0.49	0.49	
v/c Ratio	0.07	0.48		1.01	0.23		0.25	0.00	0.30	0.01	0.01	
Control Delay	19.3	19.7		93.5	20.1		14.8	12.0	2.8	12.1	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	19.7		93.5	20.1		14.8	12.0	2.8	12.1	0.0	
LOS	B	B		F	C		B	B	A	B	A	
Approach Delay		19.7			53.6			7.4			4.2	
Approach LOS		B			D			A			A	
Queue Length 50th (m)	2.8	33.4		~40.4	17.0		15.0	0.1	0.0	0.7	0.0	
Queue Length 95th (m)	8.0	48.2		#86.3	26.0		27.3	0.9	11.5	2.9	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	371	1213		231	1213		626	849	842	641	1588	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.48		1.01	0.23		0.25	0.00	0.30	0.01	0.01	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.01

Intersection Signal Delay: 27.4	Intersection LOS: C
Intersection Capacity Utilization 76.1%	ICU Level of Service D
Analysis Period (min) 15	

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

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

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	471	451	756	583	165
Future Vol, veh/h	0	471	451	756	583	165
Conflicting Peds, #/hr	0	2	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	115	-	-	-
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	0	471	451	756	583	165

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	387	759	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	611	848	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	605	841	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.7	5.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	841	-	605	-	-
HCM Lane V/C Ratio	0.536	-	0.779	-	-
HCM Control Delay (s)	14.1	-	28.7	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	3.3	-	7.3	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	492	779	402	0	267	773
Future Volume (vph)	492	779	402	0	267	773
Satd. Flow (prot)	3216	1483	3316	0	1658	3316
Flt Permitted	0.950				0.334	
Satd. Flow (perm)	3216	1464	3316	0	582	3316
Satd. Flow (RTOR)		499				
Lane Group Flow (vph)	492	779	402	0	267	773
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	28.9	28.9	16.6		36.6	36.6
Actuated g/C Ratio	0.36	0.36	0.21		0.46	0.46
v/c Ratio	0.42	0.92	0.58		0.60	0.51
Control Delay	21.9	27.3	31.8		19.7	16.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	21.9	27.3	31.8		19.7	16.1
LOS	C	C	C		B	B
Approach Delay	25.2		31.8			17.0
Approach LOS	C		C			B
Queue Length 50th (m)	27.2	41.2	29.7		25.3	42.2
Queue Length 95th (m)	53.8	#149.4	42.9		40.3	55.4
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1237	870	1290		475	2225
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	0.40	0.90	0.31		0.56	0.35

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 79.5
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92

Intersection Signal Delay: 23.0 Intersection LOS: C
Intersection Capacity Utilization 74.2% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	228	221	0	415	694	0
Future Volume (vph)	228	221	0	415	694	0
Satd. Flow (prot)	3057	0	0	3316	3316	0
Flt Permitted	0.975					
Satd. Flow (perm)	3057	0	0	3316	3316	0
Satd. Flow (RTOR)	185					
Lane Group Flow (vph)	449	0	0	415	694	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.7			25.0	25.0	
Total Split (s)	41.0			54.7	54.7	
Total Split (%)	42.8%			57.2%	57.2%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.5			12.9	12.9	
Actuated g/C Ratio	0.30			0.37	0.37	
v/c Ratio	0.43			0.33	0.56	
Control Delay	7.5			8.5	10.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	7.5			8.5	10.5	
LOS	A			A	B	
Approach Delay	7.5			8.5	10.5	
Approach LOS	A			A	B	
Queue Length 50th (m)	5.4			8.0	14.7	
Queue Length 95th (m)	15.3			15.7	27.2	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	3051			3316	3316	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.15			0.13	0.21	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 34.6
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56

Intersection Signal Delay: 9.1 Intersection LOS: A
Intersection Capacity Utilization 43.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: EB HWY 417 & Palladium

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau PM 2027 BG (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	156	2.0	156	2.0	0.162	10.1	LOS B	1.0	6.9	0.42	0.57	0.42	51.1
2	T1	All MCs	76	2.0	76	2.0	0.162	3.9	LOS A	1.0	6.9	0.42	0.57	0.42	52.1
3	R2	All MCs	270	2.0	270	2.0	0.142	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			502	2.0	502	2.0	0.162	5.3	LOS A	1.0	6.9	0.19	0.48	0.19	53.8
East: Campeau															
4	L2	All MCs	314	2.0	314	2.0	0.155	10.1	LOS B	0.9	6.5	0.42	0.59	0.42	50.3
5	T1	All MCs	91	2.0	91	2.0	0.155	4.2	LOS A	0.9	6.5	0.40	0.55	0.40	52.3
6	R2	All MCs	8	2.0	8	2.0	0.155	4.3	LOS A	0.9	6.5	0.40	0.55	0.40	51.9
Approach			413	2.0	413	2.0	0.155	8.7	LOS A	0.9	6.5	0.41	0.58	0.41	50.8
North: Palladium															
7	L2	All MCs	26	2.0	26	2.0	0.118	10.9	LOS B	0.5	3.4	0.49	0.59	0.49	51.8
8	T1	All MCs	214	2.0	214	2.0	0.118	5.3	LOS A	0.5	3.5	0.48	0.55	0.48	53.1
9	R2	All MCs	1	2.0	1	2.0	0.118	5.3	LOS A	0.5	3.5	0.47	0.51	0.47	52.9
Approach			241	2.0	241	2.0	0.118	5.9	LOS A	0.5	3.5	0.48	0.55	0.48	52.9
West: Campeau															
10	L2	All MCs	2	2.0	2	2.0	0.203	10.7	LOS B	0.8	6.0	0.48	0.50	0.48	52.7
11	T1	All MCs	223	2.0	223	2.0	0.203	4.9	LOS A	0.8	6.0	0.48	0.50	0.48	53.7
12	R2	All MCs	91	2.0	91	2.0	0.048	3.7	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			316	2.0	316	2.0	0.203	4.6	LOS A	0.8	6.0	0.34	0.48	0.34	54.3
All Vehicles			1472	2.0	1472	2.0	0.203	6.2	LOS A	1.0	6.9	0.33	0.52	0.33	52.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau SAT 2027 BG (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	10	2.0	10	2.0	0.013	9.9	LOS A	0.1	0.5	0.37	0.51	0.37	51.8
2	T1	All MCs	9	2.0	9	2.0	0.013	3.7	LOS A	0.1	0.5	0.37	0.51	0.37	52.8
3	R2	All MCs	340	2.0	340	2.0	0.179	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			359	2.0	359	2.0	0.179	3.2	LOS A	0.1	0.5	0.02	0.40	0.02	55.9
East: Campeau															
4	L2	All MCs	371	2.0	371	2.0	0.148	9.2	LOS A	0.9	6.1	0.11	0.57	0.11	51.3
5	T1	All MCs	108	2.0	108	2.0	0.148	3.5	LOS A	0.9	6.1	0.10	0.53	0.10	53.3
6	R2	All MCs	5	2.0	5	2.0	0.148	3.5	LOS A	0.9	6.1	0.10	0.53	0.10	52.9
Approach			484	2.0	484	2.0	0.148	7.9	LOS A	0.9	6.1	0.10	0.56	0.10	51.8
North: Palladium															
7	L2	All MCs	5	2.0	5	2.0	0.014	10.4	LOS B	0.0	0.3	0.40	0.56	0.40	51.8
8	T1	All MCs	24	2.0	24	2.0	0.014	4.9	LOS A	0.0	0.3	0.39	0.50	0.39	53.4
9	R2	All MCs	1	2.0	1	2.0	0.014	4.9	LOS A	0.0	0.3	0.39	0.47	0.39	53.4
Approach			30	2.0	30	2.0	0.014	5.8	LOS A	0.0	0.3	0.39	0.51	0.39	53.1
West: Campeau															
10	L2	All MCs	1	2.0	1	2.0	0.201	10.3	LOS B	0.8	5.8	0.41	0.46	0.41	53.0
11	T1	All MCs	238	2.0	238	2.0	0.201	4.6	LOS A	0.8	5.8	0.41	0.46	0.41	54.0
12	R2	All MCs	30	2.0	30	2.0	0.016	3.5	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			269	2.0	269	2.0	0.201	4.5	LOS A	0.8	5.8	0.36	0.46	0.36	54.2
All Vehicles			1142	2.0	1142	2.0	0.201	5.6	LOS A	0.9	6.1	0.15	0.49	0.15	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix H

Synchro and Sidra Intersection Worksheets – 2032 Future Background Conditions

CGH TRANSPORTATION

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	117	1	65	81	2	202
Future Vol, veh/h	117	1	65	81	2	202
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	2	2	63	2	2
Mvmt Flow	117	1	65	81	2	202

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	118	0	329	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	211	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1470	-	665	934
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1470	-	636	934
Mov Cap-2 Maneuver	-	-	-	-	636	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	788	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	9.9
HCM LOS			A

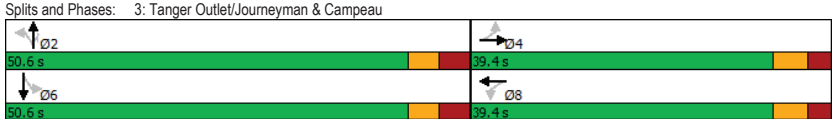
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	934	-	-	1470	-
HCM Lane V/C Ratio	0.003	0.216	-	-	0.044	-
HCM Control Delay (s)	10.7	9.9	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.8	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	497	16	104	379	12	40	0	112	28	0	16
Future Volume (vph)	18	497	16	104	379	12	40	0	112	28	0	16
Satd. Flow (prot)	1658	3299	0	1658	3268	0	1642	1745	1483	1658	2773	0
Flt Permitted	0.492			0.366			0.746			0.757		
Satd. Flow (perm)	859	3299	0	639	3268	0	1284	1745	1483	1321	2773	0
Satd. Flow (RTOR)		4			4				184		285	
Lane Group Flow (vph)	18	513	0	104	391	0	40	0	112	28	16	0
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	17.7	17.7		17.7	17.7		44.0		44.0	44.0	44.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.59		0.59	0.59	0.59	
v/c Ratio	0.09	0.66		0.69	0.51		0.05		0.12	0.04	0.01	
Control Delay	22.3	29.6		49.8	26.5		8.5		0.6	8.5	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	22.3	29.6		49.8	26.5		8.5		0.6	8.5	0.0	
LOS	C	C		D	C		A		A	A	A	
Approach Delay		29.4			31.4			2.7			5.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	2.0	34.1		13.4	24.8		2.1		0.0	1.4	0.0	
Queue Length 95th (m)	6.7	48.3		29.8	36.5		7.7		1.4	6.0	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	379	1461		282	1448		754		946	775	1745	
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	0.05	0.35		0.37	0.27		0.05		0.12	0.04	0.01	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 75
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.69

Intersection Signal Delay: 26.0 Intersection LOS: C
Intersection Capacity Utilization 67.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	344	303	486	561	141
Future Vol, veh/h	0	344	303	486	561	141
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	115	-	-	-
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	3	2
Mvmt Flow	0	344	303	486	561	141

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	351	702	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	645	891	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	645	891	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.8	4.3	0
HCM LOS	C		

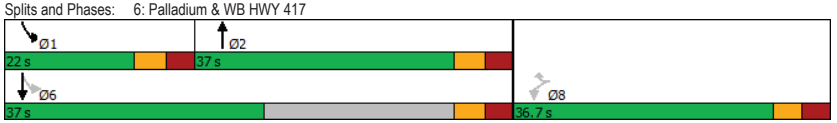
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	891	-	645	-	-
HCM Lane V/C Ratio	0.34	-	0.533	-	-
HCM Control Delay (s)	11.1	-	16.8	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.5	-	3.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	524	507	365	0	440	517
Future Volume (vph)	524	507	365	0	440	517
Satd. Flow (prot)	3185	1483	3191	0	1658	3283
Flt Permitted	0.950				0.351	
Satd. Flow (perm)	3185	1483	3191	0	613	3283
Satd. Flow (RTOR)		507				
Lane Group Flow (vph)	524	507	365	0	440	517
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	17.0	17.0	13.3		34.9	34.9
Actuated g/C Ratio	0.26	0.26	0.20		0.53	0.53
v/c Ratio	0.64	0.67	0.57		0.79	0.30
Control Delay	25.7	7.1	28.2		24.2	9.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	25.7	7.1	28.2		24.2	9.7
LOS	C	A	C		C	A
Approach Delay	16.6		28.2			16.4
Approach LOS	B		C			B
Queue Length 50th (m)	29.1	0.0	21.2		31.1	16.7
Queue Length 95th (m)	46.8	21.3	36.8		#75.1	30.6
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1472	958	1475		566	2631
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	0.36	0.53	0.25		0.78	0.20

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 65.8
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.79

Intersection Signal Delay: 18.3 Intersection LOS: B
Intersection Capacity Utilization 69.4% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	181	194	0	623	747	0
Future Volume (vph)	181	194	0	623	747	0
Satd. Flow (prot)	3018	0	0	3316	3252	0
Flt Permitted	0.976					
Satd. Flow (perm)	3018	0	0	3316	3252	0
Satd. Flow (RTOR)	193					
Lane Group Flow (vph)	375	0	0	623	747	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.5			22.5	25.0	
Total Split (s)	36.0			59.7	59.7	
Total Split (%)	37.6%			62.4%	62.4%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.2			13.6	13.6	
Actuated g/C Ratio	0.29			0.39	0.39	
v/c Ratio	0.37			0.48	0.59	
Control Delay	6.7			9.3	10.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.7			9.3	10.5	
LOS	A			A	B	
Approach Delay	6.7			9.3	10.5	
Approach LOS	A			A	B	
Queue Length 50th (m)	3.9			12.8	16.3	
Queue Length 95th (m)	12.2			22.0	27.4	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	2678			3316	3252	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.14			0.19	0.23	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 34.9
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.3 Intersection LOS: A
Intersection Capacity Utilization 43.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Palladium & EB HWY 417

Intersection	
Int Delay, s/veh	8.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	1	126	7	4	257
Future Vol, veh/h	15	1	126	7	4	257
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	1	126	7	4	257

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	16	0	275	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	259	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1602	-	715	1063
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1602	-	659	1063
Mov Cap-2 Maneuver	-	-	-	-	659	-
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	722	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	659	1063	-	-	1602	-
HCM Lane V/C Ratio	0.006	0.242	-	-	0.079	-
HCM Control Delay (s)	10.5	9.5	-	-	7.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.9	-	-	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	415	184	233	282	6	155	1	254	8	2	13
Future Volume (vph)	25	415	184	233	282	6	155	1	254	8	2	13
Satd. Flow (prot)	1658	3150	0	1658	3304	0	1658	1745	1483	1658	2825	0
Flt Permitted	0.575			0.352			0.747			0.757		
Satd. Flow (perm)	1003	3150	0	614	3304	0	1288	1745	1463	1319	2825	0
Satd. Flow (RTOR)		89			3				246		401	
Lane Group Flow (vph)	25	599	0	233	288	0	155	1	254	8	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	33.0	33.0		33.0	33.0		43.8	43.8	43.8	43.8	43.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.49	0.49	0.49	0.49	0.49	
v/c Ratio	0.07	0.49		1.04	0.24		0.25	0.00	0.30	0.01	0.01	
Control Delay	19.3	20.2		101.3	20.2		14.8	12.0	3.0	12.1	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	20.2		101.3	20.2		14.8	12.0	3.0	12.1	0.0	
LOS	B	C		F	C		B	B	A	B	A	
Approach Delay		20.1			56.5			7.5			4.2	
Approach LOS		C			E			A			A	
Queue Length 50th (m)	2.8	34.9		~43.8	17.6		15.0	0.1	0.7	0.7	0.0	
Queue Length 95th (m)	8.0	50.2		#87.4	27.0		27.3	0.9	12.3	2.9	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	367	1211		225	1213		626	849	838	641	1580	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.49		1.04	0.24		0.25	0.00	0.30	0.01	0.01	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.04

Intersection Signal Delay: 28.6 Intersection LOS: C
Intersection Capacity Utilization 76.4% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	471	451	795	611	165
Future Vol, veh/h	0	471	451	795	611	165
Conflicting Peds, #/hr	0	2	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	115	-	-	-
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	0	471	451	795	611	165

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	401	787	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	599	828	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	593	821	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.5	5.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	821	-	593	-	-
HCM Lane V/C Ratio	0.549	-	0.794	-	-
HCM Control Delay (s)	14.6	-	30.5	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	3.4	-	7.7	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	503	815	418	0	278	809
Future Volume (vph)	503	815	418	0	278	809
Satd. Flow (prot)	3216	1483	3316	0	1658	3316
Flt Permitted	0.950				0.320	
Satd. Flow (perm)	3216	1464	3316	0	558	3316
Satd. Flow (RTOR)		490				
Lane Group Flow (vph)	503	815	418	0	278	809
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	30.3	30.3	17.1		37.4	37.4
Actuated g/C Ratio	0.37	0.37	0.21		0.46	0.46
v/c Ratio	0.42	0.96	0.60		0.64	0.53
Control Delay	22.1	34.7	32.6		21.1	16.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	22.1	34.7	32.6		21.1	16.8
LOS	C	C	C		C	B
Approach Delay	29.9		32.6			17.9
Approach LOS	C		C			B
Queue Length 50th (m)	28.7	54.7	31.3		26.6	44.8
Queue Length 95th (m)	55.1	#167.3	44.7		41.9	58.6
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1195	852	1246		460	2150
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	0.42	0.96	0.34		0.60	0.38

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 81.6
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96

Intersection Signal Delay: 25.7 Intersection LOS: C
Intersection Capacity Utilization 77.0% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	237	231	0	433	714	0
Future Volume (vph)	237	231	0	433	714	0
Satd. Flow (prot)	3057	0	0	3316	3316	0
Flt Permitted	0.975					
Satd. Flow (perm)	3057	0	0	3316	3316	0
Satd. Flow (RTOR)	176					
Lane Group Flow (vph)	468	0	0	433	714	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.5			25.0	25.0	
Total Split (s)	41.0			54.7	54.7	
Total Split (%)	42.8%			57.2%	57.2%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.7			13.5	13.5	
Actuated g/C Ratio	0.30			0.38	0.38	
v/c Ratio	0.45			0.34	0.56	
Control Delay	8.2			8.6	10.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	8.2			8.6	10.6	
LOS	A			A	B	
Approach Delay	8.2			8.6	10.6	
Approach LOS	A			A	B	
Queue Length 50th (m)	6.5			8.3	15.2	
Queue Length 95th (m)	16.8			16.9	28.9	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	2938			3316	3316	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.16			0.13	0.22	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 35.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56

Intersection Signal Delay: 9.4 — Intersection LOS: A
Intersection Capacity Utilization 44.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Palladium & EB HWY 417

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau PM 2032 BG (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	156	2.0	156	2.0	0.206	10.1	LOS B	1.3	9.1	0.45	0.55	0.45	51.5
2	T1	All MCs	138	2.0	138	2.0	0.206	4.0	LOS A	1.3	9.1	0.45	0.55	0.45	52.5
3	R2	All MCs	278	2.0	278	2.0	0.146	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			572	2.0	572	2.0	0.206	5.2	LOS A	1.3	9.1	0.23	0.48	0.23	53.9
East: Campeau															
4	L2	All MCs	326	2.0	326	2.0	0.172	10.4	LOS B	1.0	7.5	0.48	0.61	0.48	50.2
5	T1	All MCs	94	2.0	94	2.0	0.172	4.5	LOS A	1.0	7.5	0.46	0.57	0.46	52.2
6	R2	All MCs	16	2.0	16	2.0	0.172	4.5	LOS A	1.0	7.5	0.46	0.57	0.46	51.8
Approach			436	2.0	436	2.0	0.172	8.9	LOS A	1.0	7.5	0.47	0.60	0.47	50.6
North: Palladium															
7	L2	All MCs	33	2.0	33	2.0	0.152	11.0	LOS B	0.6	4.6	0.51	0.60	0.51	51.7
8	T1	All MCs	272	2.0	272	2.0	0.152	5.4	LOS A	0.7	4.7	0.50	0.55	0.50	53.0
9	R2	All MCs	1	2.0	1	2.0	0.152	5.4	LOS A	0.7	4.7	0.50	0.52	0.50	52.8
Approach			306	2.0	306	2.0	0.152	6.0	LOS A	0.7	4.7	0.50	0.56	0.50	52.8
West: Campeau															
10	L2	All MCs	2	2.0	2	2.0	0.211	10.8	LOS B	0.9	6.3	0.50	0.52	0.50	52.6
11	T1	All MCs	226	2.0	226	2.0	0.211	5.1	LOS A	0.9	6.3	0.50	0.52	0.50	53.5
12	R2	All MCs	91	2.0	91	2.0	0.048	3.8	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			319	2.0	319	2.0	0.211	4.8	LOS A	0.9	6.3	0.36	0.49	0.36	54.2
All Vehicles			1633	2.0	1633	2.0	0.211	6.3	LOS A	1.3	9.1	0.37	0.53	0.37	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau SAT 2032 BG (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	10	2.0	10	2.0	0.013	9.9	LOS A	0.1	0.5	0.37	0.51	0.37	51.8
2	T1	All MCs	9	2.0	9	2.0	0.013	3.7	LOS A	0.1	0.5	0.37	0.51	0.37	52.8
3	R2	All MCs	356	2.0	356	2.0	0.188	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			375	2.0	375	2.0	0.188	3.2	LOS A	0.1	0.5	0.02	0.40	0.02	55.9
East: Campeau															
4	L2	All MCs	388	2.0	388	2.0	0.153	9.2	LOS A	0.9	6.3	0.11	0.58	0.11	51.3
5	T1	All MCs	108	2.0	108	2.0	0.153	3.5	LOS A	0.9	6.3	0.10	0.53	0.10	53.2
6	R2	All MCs	5	2.0	5	2.0	0.153	3.5	LOS A	0.9	6.3	0.10	0.53	0.10	52.9
Approach			501	2.0	501	2.0	0.153	7.9	LOS A	0.9	6.3	0.10	0.57	0.10	51.7
North: Palladium															
7	L2	All MCs	5	2.0	5	2.0	0.014	10.5	LOS B	0.0	0.3	0.41	0.56	0.41	51.8
8	T1	All MCs	24	2.0	24	2.0	0.014	5.0	LOS A	0.0	0.4	0.40	0.51	0.40	53.4
9	R2	All MCs	1	2.0	1	2.0	0.014	4.9	LOS A	0.0	0.4	0.39	0.48	0.39	53.3
Approach			30	2.0	30	2.0	0.014	5.9	LOS A	0.0	0.4	0.40	0.52	0.40	53.1
West: Campeau															
10	L2	All MCs	1	2.0	1	2.0	0.202	10.4	LOS B	0.8	5.9	0.41	0.47	0.41	53.0
11	T1	All MCs	238	2.0	238	2.0	0.202	4.6	LOS A	0.8	5.9	0.41	0.47	0.41	54.0
12	R2	All MCs	30	2.0	30	2.0	0.016	3.6	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			269	2.0	269	2.0	0.202	4.5	LOS A	0.8	5.9	0.37	0.46	0.37	54.2
All Vehicles			1175	2.0	1175	2.0	0.202	5.6	LOS A	0.9	6.3	0.14	0.49	0.14	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix I

Synchro and Sidra Intersection Worksheets – 2027 Future Total Conditions

Intersection	
Int Delay, s/veh	6.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	114	1	84	78	2	260
Future Vol, veh/h	114	1	84	78	2	260
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	2	2	63	2	2
Mvmt Flow	114	1	84	78	2	260

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	115	0	361	115
Stage 1	-	-	-	-	115	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1474	-	638	937
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1474	-	602	937
Mov Cap-2 Maneuver	-	-	-	-	602	-
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	750	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	10.3
HCM LOS			B

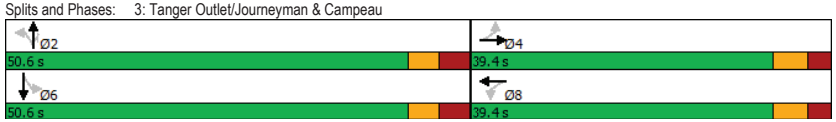
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	602	937	-	-	1474	-
HCM Lane V/C Ratio	0.003	0.277	-	-	0.057	-
HCM Control Delay (s)	11	10.3	-	-	7.6	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0	1.1	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	498	16	104	376	12	40	0	112	28	0	16
Future Volume (vph)	18	498	16	104	376	12	40	0	112	28	0	16
Satd. Flow (prot)	1658	3299	0	1658	3268	0	1642	1745	1483	1658	2773	0
Flt Permitted	0.495			0.365			0.746			0.757		
Satd. Flow (perm)	864	3299	0	637	3268	0	1284	1745	1483	1321	2773	0
Satd. Flow (RTOR)		4			4				184		288	
Lane Group Flow (vph)	18	514	0	104	388	0	40	0	112	28	16	0
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	17.7	17.7		17.7	17.7		44.0		44.0	44.0	44.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.59		0.59	0.59	0.59	
v/c Ratio	0.09	0.66		0.69	0.50		0.05		0.12	0.04	0.01	
Control Delay	22.2	29.7		50.2	26.5		8.5		0.6	8.5	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	22.2	29.7		50.2	26.5		8.5		0.6	8.5	0.0	
LOS	C	C		D	C		A		A	A	A	
Approach Delay		29.4			31.5			2.7			5.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	2.0	34.2		13.4	24.6		2.1		0.0	1.4	0.0	
Queue Length 95th (m)	6.7	48.4		29.8	36.3		7.7		1.4	6.0	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	382	1461		281	1448		754		946	775	1746	
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	0.05	0.35		0.37	0.27		0.05		0.12	0.04	0.01	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 75
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.69

Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 67.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	404	381	378	469	182
Future Vol, veh/h	0	404	381	378	469	182
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	115	-	-	-
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	3	2
Mvmt Flow	0	404	381	378	469	182

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	326	651	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	670	931	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	670	931	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	5.8	0
HCM LOS	C		

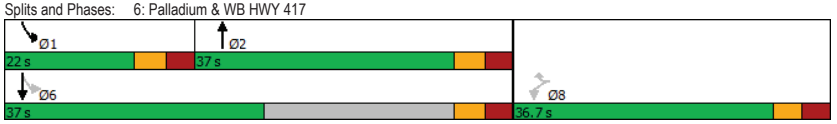
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	931	-	670	-	-
HCM Lane V/C Ratio	0.409	-	0.603	-	-
HCM Control Delay (s)	11.5	-	18.2	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	2	-	4.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	509	464	365	0	397	495
Future Volume (vph)	509	464	365	0	397	495
Satd. Flow (prot)	3185	1483	3191	0	1658	3283
Flt Permitted	0.950				0.351	
Satd. Flow (perm)	3185	1483	3191	0	613	3283
Satd. Flow (RTOR)		464				
Lane Group Flow (vph)	509	464	365	0	397	495
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	16.4	16.4	13.2		34.0	34.0
Actuated g/C Ratio	0.25	0.25	0.20		0.53	0.53
v/c Ratio	0.63	0.64	0.56		0.73	0.29
Control Delay	25.4	7.0	27.5		19.8	9.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	25.4	7.0	27.5		19.8	9.4
LOS	C	A	C		B	A
Approach Delay	16.6		27.5			14.0
Approach LOS	B		C			B
Queue Length 50th (m)	28.0	0.0	21.1		26.5	15.6
Queue Length 95th (m)	45.4	20.0	36.6		#59.3	28.8
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1508	946	1511		571	2693
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	0.34	0.49	0.24		0.70	0.18

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 64.4
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73

Intersection Signal Delay: 17.4 Intersection LOS: B
Intersection Capacity Utilization 66.4% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	192	186	0	595	721	0
Future Volume (vph)	192	186	0	595	721	0
Satd. Flow (prot)	3026	0	0	3316	3252	0
Flt Permitted	0.975					
Satd. Flow (perm)	3026	0	0	3316	3252	0
Satd. Flow (RTOR)	186					
Lane Group Flow (vph)	378	0	0	595	721	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.5			22.5	23.6	
Total Split (s)	36.0			59.7	59.7	
Total Split (%)	37.6%			62.4%	62.4%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.2			13.3	13.3	
Actuated g/C Ratio	0.29			0.38	0.38	
v/c Ratio	0.37			0.47	0.58	
Control Delay	6.8			9.2	10.4	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.8			9.2	10.4	
LOS	A			A	B	
Approach Delay	6.8			9.2	10.4	
Approach LOS	A			A	B	
Queue Length 50th (m)	4.1			12.2	15.5	
Queue Length 95th (m)	12.4			21.0	26.4	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	2787			3316	3252	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.14			0.18	0.22	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 34.7
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.58

Intersection Signal Delay: 9.2 Intersection LOS: A
Intersection Capacity Utilization 42.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Palladium & EB HWY 417

Intersection	
Int Delay, s/veh	8.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	1	152	7	4	324
Future Vol, veh/h	15	1	152	7	4	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	1	152	7	4	324

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	16	0	327	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	311	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1602	-	667	1063
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1602	-	604	1063
Mov Cap-2 Maneuver	-	-	-	-	604	-
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	604	1063	-	-	1602	-
HCM Lane V/C Ratio	0.007	0.305	-	-	0.095	-
HCM Control Delay (s)	11	9.9	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	1.3	-	-	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	426	184	233	298	6	155	1	254	8	2	13
Future Volume (vph)	25	426	184	233	298	6	155	1	254	8	2	13
Satd. Flow (prot)	1658	3153	0	1658	3304	0	1658	1745	1483	1658	2825	0
Flt Permitted	0.567			0.345			0.747			0.757		
Satd. Flow (perm)	989	3153	0	602	3304	0	1288	1745	1463	1319	2825	0
Satd. Flow (RTOR)		85			2				236		379	
Lane Group Flow (vph)	25	610	0	233	304	0	155	1	254	8	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	33.0	33.0		33.0	33.0		43.8	43.8	43.8	43.8	43.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.49	0.49	0.49	0.49	0.49	
v/c Ratio	0.07	0.50		1.06	0.25		0.25	0.00	0.30	0.01	0.01	
Control Delay	19.3	20.6		108.5	20.4		14.8	12.0	3.4	12.1	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.3	20.6		108.5	20.4		14.8	12.0	3.4	12.1	0.0	
LOS	B	C		F	C		B	B	A	B	A	
Approach Delay		20.5			58.7			7.7			4.2	
Approach LOS		C			E			A			A	
Queue Length 50th (m)	2.8	36.2		~44.6	18.8		15.0	0.1	1.5	0.7	0.0	
Queue Length 95th (m)	8.0	51.5		#88.2	28.4		27.3	0.9	13.4	2.9	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	362	1209		220	1212		626	849	833	641	1569	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.50		1.06	0.25		0.25	0.00	0.30	0.01	0.01	

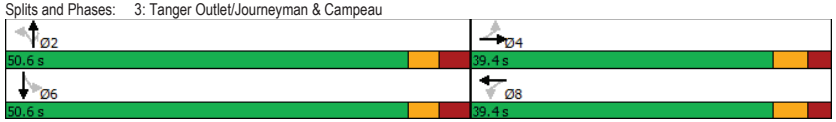
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.06

Intersection Signal Delay: 29.8	Intersection LOS: C
Intersection Capacity Utilization 76.7%	ICU Level of Service D
Analysis Period (min) 15	

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

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

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	520	539	719	580	189
Future Vol, veh/h	0	520	539	719	580	189
Conflicting Peds, #/hr	0	2	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	115	-	-	-
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	0	520	539	719	580	189

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	398	780	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	601	833	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	595	826	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	39.1	7.4	0
HCM LOS	E		

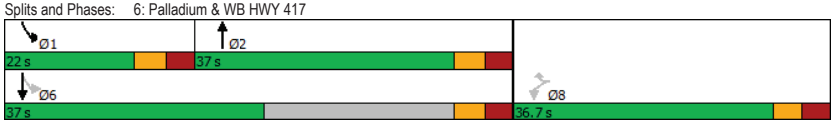
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	826	-	595	-	-
HCM Lane V/C Ratio	0.653	-	0.874	-	-
HCM Control Delay (s)	17.2	-	39.1	-	-
HCM Lane LOS	C	-	E	-	-
HCM 95th %tile Q(veh)	5	-	10	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	492	801	431	0	284	787
Future Volume (vph)	492	801	431	0	284	787
Satd. Flow (prot)	3216	1483	3316	0	1658	3316
Flt Permitted	0.950				0.311	
Satd. Flow (perm)	3216	1464	3316	0	542	3316
Satd. Flow (RTOR)		483				
Lane Group Flow (vph)	492	801	431	0	284	787
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	30.3	30.3	17.4		37.8	37.8
Actuated g/C Ratio	0.37	0.37	0.21		0.46	0.46
v/c Ratio	0.41	0.95	0.61		0.66	0.51
Control Delay	22.2	33.1	32.8		21.7	16.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	22.2	33.1	32.8		21.7	16.5
LOS	C	C	C		C	B
Approach Delay	28.9		32.8			17.8
Approach LOS	C		C			B
Queue Length 50th (m)	28.2	53.0	32.5		27.3	43.2
Queue Length 95th (m)	53.8	#163.7	46.1		43.0	56.6
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1189	845	1240		456	2139
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	0.41	0.95	0.35		0.62	0.37

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 82
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95

Intersection Signal Delay: 25.3 Intersection LOS: C
Intersection Capacity Utilization 76.5% 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: 6: Palladium & WB HWY 417



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	257	221	0	415	694	0
Future Volume (vph)	257	221	0	415	694	0
Satd. Flow (prot)	3070	0	0	3316	3316	0
Flt Permitted	0.974					
Satd. Flow (perm)	3070	0	0	3316	3316	0
Satd. Flow (RTOR)	185					
Lane Group Flow (vph)	478	0	0	415	694	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.5			25.0	25.0	
Total Split (s)	41.0			54.7	54.7	
Total Split (%)	42.8%			57.2%	57.2%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.7			13.2	13.2	
Actuated g/C Ratio	0.30			0.38	0.38	
v/c Ratio	0.45			0.33	0.56	
Control Delay	7.9			8.6	10.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	7.9			8.6	10.6	
LOS	A			A	B	
Approach Delay	7.9			8.6	10.6	
Approach LOS	A			A	B	
Queue Length 50th (m)	6.1			8.0	14.7	
Queue Length 95th (m)	16.7			16.2	28.0	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	2962			3316	3316	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.16			0.13	0.21	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 35.1
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56

Intersection Signal Delay: 9.3 — Intersection LOS: A
Intersection Capacity Utilization 44.6% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Palladium & EB HWY 417

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau PM 2027 FT (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	156	2.0	156	2.0	0.168	10.3	LOS B	1.0	7.3	0.47	0.58	0.47	50.9
2	T1	All MCs	76	2.0	76	2.0	0.168	4.1	LOS A	1.0	7.3	0.47	0.58	0.47	51.9
3	R2	All MCs	236	2.0	236	2.0	0.124	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			468	2.0	468	2.0	0.168	5.6	LOS A	1.0	7.3	0.23	0.49	0.23	53.6
East: Campeau															
4	L2	All MCs	314	2.0	314	2.0	0.163	10.1	LOS B	1.0	7.0	0.42	0.59	0.42	50.3
5	T1	All MCs	110	2.0	110	2.0	0.163	4.2	LOS A	1.0	7.0	0.41	0.54	0.41	52.5
6	R2	All MCs	8	2.0	8	2.0	0.163	4.3	LOS A	1.0	7.0	0.41	0.54	0.41	52.1
Approach			432	2.0	432	2.0	0.163	8.5	LOS A	1.0	7.0	0.42	0.58	0.42	50.9
North: Palladium															
7	L2	All MCs	26	2.0	26	2.0	0.119	11.0	LOS B	0.5	3.5	0.50	0.60	0.50	51.8
8	T1	All MCs	214	2.0	214	2.0	0.119	5.4	LOS A	0.5	3.6	0.49	0.55	0.49	53.0
9	R2	All MCs	1	2.0	1	2.0	0.119	5.3	LOS A	0.5	3.6	0.48	0.52	0.48	52.9
Approach			241	2.0	241	2.0	0.119	6.0	LOS A	0.5	3.6	0.49	0.56	0.49	52.9
West: Campeau															
10	L2	All MCs	2	2.0	2	2.0	0.251	10.8	LOS B	1.1	7.7	0.49	0.51	0.49	52.6
11	T1	All MCs	276	2.0	276	2.0	0.251	5.0	LOS A	1.1	7.7	0.49	0.51	0.49	53.6
12	R2	All MCs	95	2.0	95	2.0	0.050	3.7	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			373	2.0	373	2.0	0.251	4.7	LOS A	1.1	7.7	0.37	0.48	0.37	54.1
All Vehicles			1514	2.0	1514	2.0	0.251	6.3	LOS A	1.1	7.7	0.36	0.52	0.36	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau SAT 2027 FT (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	10	2.0	10	2.0	0.014	10.1	LOS B	0.1	0.5	0.42	0.52	0.42	51.6
2	T1	All MCs	9	2.0	9	2.0	0.014	3.9	LOS A	0.1	0.5	0.42	0.52	0.42	52.6
3	R2	All MCs	303	2.0	303	2.0	0.160	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			322	2.0	322	2.0	0.160	3.3	LOS A	0.1	0.5	0.02	0.41	0.02	55.9
East: Campeau															
4	L2	All MCs	371	2.0	371	2.0	0.156	9.2	LOS A	0.9	6.5	0.11	0.57	0.11	51.4
5	T1	All MCs	134	2.0	134	2.0	0.156	3.5	LOS A	0.9	6.5	0.10	0.51	0.10	53.6
6	R2	All MCs	5	2.0	5	2.0	0.156	3.5	LOS A	0.9	6.5	0.10	0.51	0.10	53.2
Approach			510	2.0	510	2.0	0.156	7.6	LOS A	0.9	6.5	0.11	0.55	0.11	51.9
North: Palladium															
7	L2	All MCs	5	2.0	5	2.0	0.014	10.5	LOS B	0.0	0.3	0.41	0.57	0.41	51.8
8	T1	All MCs	24	2.0	24	2.0	0.014	5.0	LOS A	0.0	0.4	0.40	0.51	0.40	53.3
9	R2	All MCs	1	2.0	1	2.0	0.014	5.0	LOS A	0.0	0.4	0.40	0.48	0.40	53.3
Approach			30	2.0	30	2.0	0.014	5.9	LOS A	0.0	0.4	0.40	0.52	0.40	53.1
West: Campeau															
10	L2	All MCs	1	2.0	1	2.0	0.253	10.4	LOS B	1.1	7.7	0.43	0.47	0.43	53.0
11	T1	All MCs	300	2.0	300	2.0	0.253	4.7	LOS A	1.1	7.7	0.43	0.47	0.43	53.9
12	R2	All MCs	36	2.0	36	2.0	0.019	3.5	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			337	2.0	337	2.0	0.253	4.6	LOS A	1.1	7.7	0.38	0.47	0.38	54.1
All Vehicles			1199	2.0	1199	2.0	0.253	5.6	LOS A	1.1	7.7	0.17	0.49	0.17	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix J

Synchro and Sidra Intersection Worksheets – 2032 Future Total Conditions

Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	117	1	84	81	2	260
Future Vol, veh/h	117	1	84	81	2	260
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	2	2	63	2	2
Mvmt Flow	117	1	84	81	2	260

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	118	0	367	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	249	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1470	-	633	934
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	792	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1470	-	597	934
Mov Cap-2 Maneuver	-	-	-	-	597	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	747	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	10.3
HCM LOS			B

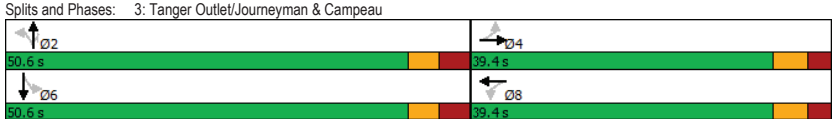
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	597	934	-	-	1470	-
HCM Lane V/C Ratio	0.003	0.278	-	-	0.057	-
HCM Control Delay (s)	11.1	10.3	-	-	7.6	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0	1.1	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	516	16	104	398	12	40	0	112	28	0	16
Future Volume (vph)	18	516	16	104	398	12	40	0	112	28	0	16
Satd. Flow (prot)	1658	3299	0	1658	3271	0	1642	1745	1483	1658	2773	0
Flt Permitted	0.472			0.351			0.746			0.757		
Satd. Flow (perm)	824	3299	0	613	3271	0	1284	1745	1483	1321	2773	0
Satd. Flow (RTOR)		4			4				172		265	
Lane Group Flow (vph)	18	532	0	104	410	0	40	0	112	28	16	0
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	18.2	18.2		18.2	18.2		44.0		44.0	44.0	44.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.58		0.58	0.58	0.58	
v/c Ratio	0.09	0.67		0.71	0.52		0.05		0.12	0.04	0.01	
Control Delay	22.1	29.7		51.6	26.6		8.8		0.8	8.8	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	22.1	29.7		51.6	26.6		8.8		0.8	8.8	0.0	
LOS	C	C		D	C		A		A	A	A	
Approach Delay		29.5			31.6			2.9			5.6	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	2.0	35.6		13.5	26.3		2.1		0.0	1.5	0.0	
Queue Length 95th (m)	6.6	50.0		30.1	38.2		7.9		2.4	6.2	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	362	1451		269	1438		748		936	770	1727	
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	0.05	0.37		0.39	0.29		0.05		0.12	0.04	0.01	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 75.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71

Intersection Signal Delay: 26.3 Intersection LOS: C
Intersection Capacity Utilization 67.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	404	381	452	539	182
Future Vol, veh/h	0	404	381	452	539	182
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	115	-	-	-
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	3	2
Mvmt Flow	0	404	381	452	539	182

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	361	721	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	636	877	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	636	877	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20	5.6	0
HCM LOS	C		

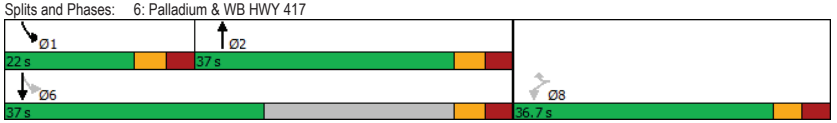
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	877	-	636	-	-
HCM Lane V/C Ratio	0.434	-	0.635	-	-
HCM Control Delay (s)	12.2	-	20	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	2.2	-	4.5	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	524	525	391	0	453	528
Future Volume (vph)	524	525	391	0	453	528
Satd. Flow (prot)	3185	1483	3191	0	1658	3283
Flt Permitted	0.950				0.347	
Satd. Flow (perm)	3185	1483	3191	0	606	3283
Satd. Flow (RTOR)		506				
Lane Group Flow (vph)	524	525	391	0	453	528
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	17.3	17.3	13.9		35.7	35.7
Actuated g/C Ratio	0.26	0.26	0.21		0.53	0.53
v/c Ratio	0.64	0.69	0.59		0.82	0.30
Control Delay	26.1	8.2	28.7		26.2	9.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	26.1	8.2	28.7		26.2	9.8
LOS	C	A	C		C	A
Approach Delay	17.1		28.7			17.3
Approach LOS	B		C			B
Queue Length 50th (m)	29.5	1.8	23.1		32.5	17.2
Queue Length 95th (m)	47.5	25.8	40.1		#92.4	32.4
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1448	950	1451		562	2588
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	0.36	0.55	0.27		0.81	0.20

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 67
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82

Intersection Signal Delay: 19.1 Intersection LOS: B
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417

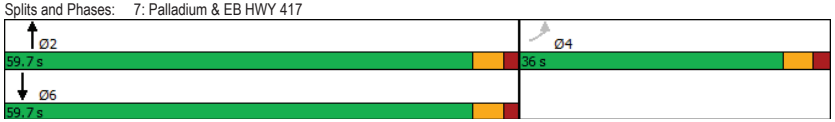


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	207	194	0	623	747	0
Future Volume (vph)	207	194	0	623	747	0
Satd. Flow (prot)	3029	0	0	3316	3252	0
Flt Permitted	0.975					
Satd. Flow (perm)	3029	0	0	3316	3252	0
Satd. Flow (RTOR)	193					
Lane Group Flow (vph)	401	0	0	623	747	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.5			25.0	25.0	
Total Split (s)	36.0			59.7	59.7	
Total Split (%)	37.6%			62.4%	62.4%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.3			13.7	13.7	
Actuated g/C Ratio	0.29			0.39	0.39	
v/c Ratio	0.39			0.48	0.59	
Control Delay	7.1			9.3	10.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	7.1			9.3	10.5	
LOS	A			A	B	
Approach Delay	7.1			9.3	10.5	
Approach LOS	A			A	B	
Queue Length 50th (m)	4.5			12.8	16.3	
Queue Length 95th (m)	13.5			22.6	28.2	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	2671			3316	3252	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.15			0.19	0.23	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 35.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.3 — Intersection LOS: A
Intersection Capacity Utilization 43.7% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Palladium & EB HWY 417



Intersection	
Int Delay, s/veh	8.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	1	152	7	4	324
Future Vol, veh/h	15	1	152	7	4	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	12.5
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	1	152	7	4	324

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	16	0	327	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	311	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1602	-	667	1063
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1602	-	604	1063
Mov Cap-2 Maneuver	-	-	-	-	604	-
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	604	1063	-	-	1602	-
HCM Lane V/C Ratio	0.007	0.305	-	-	0.095	-
HCM Control Delay (s)	11	9.9	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	1.3	-	-	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	440	184	233	308	6	155	1	254	8	2	13
Future Volume (vph)	25	440	184	233	308	6	155	1	254	8	2	13
Satd. Flow (prot)	1658	3157	0	1658	3304	0	1658	1745	1483	1658	2825	0
Flt Permitted	0.561			0.336			0.747			0.757		
Satd. Flow (perm)	978	3157	0	586	3304	0	1288	1745	1463	1319	2825	0
Satd. Flow (RTOR)		81			2				224		365	
Lane Group Flow (vph)	25	624	0	233	314	0	155	1	254	8	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.4	39.4		39.4	39.4		39.8	39.8	39.8	39.8	39.8	
Total Split (s)	39.4	39.4		39.4	39.4		50.6	50.6	50.6	50.6	50.6	
Total Split (%)	43.8%	43.8%		43.8%	43.8%		56.2%	56.2%	56.2%	56.2%	56.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7		2.7	2.7		3.5	3.5	3.5	3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.8	6.8	6.8	6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Act Effct Green (s)	33.0	33.0		33.0	33.0		43.8	43.8	43.8	43.8	43.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.49	0.49	0.49	0.49	0.49	
v/c Ratio	0.07	0.52		1.09	0.26		0.25	0.00	0.31	0.01	0.01	
Control Delay	19.4	21.0		118.2	20.5		14.8	12.0	3.8	12.1	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.4	21.0		118.2	20.5		14.8	12.0	3.8	12.1	0.0	
LOS	B	C		F	C		B	B	A	B	A	
Approach Delay		20.9			62.1			8.0			4.2	
Approach LOS		C			E			A			A	
Queue Length 50th (m)	2.8	37.6		~45.6	19.5		15.0	0.1	2.6	0.7	0.0	
Queue Length 95th (m)	8.0	53.4		#89.2	29.2		27.3	0.9	14.6	2.9	0.0	
Internal Link Dist (m)		316.8			140.3			49.2			97.1	
Turn Bay Length (m)	45.0			50.0			24.5			50.0		
Base Capacity (vph)	358	1208		214	1212		626	849	826	641	1562	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.52		1.09	0.26		0.25	0.00	0.31	0.01	0.01	

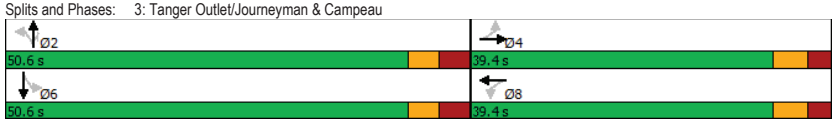
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.09

Intersection Signal Delay: 31.3	Intersection LOS: C
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

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

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

Splits and Phases: 3: Tanger Outlet/Journeyman & Campeau



Intersection	
Int Delay, s/veh	12.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	520	539	758	608	189
Future Vol, veh/h	0	520	539	758	608	189
Conflicting Peds, #/hr	0	2	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	115	-	-	-
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	0	520	539	758	608	189

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	412	808	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	589	813	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	583	806	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	42.3	7.5	0
HCM LOS	E		

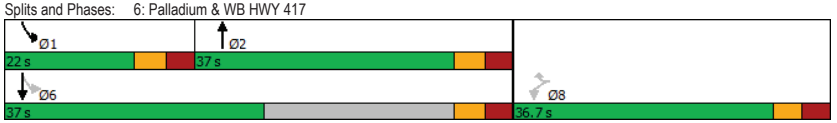
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	806	-	583	-	-
HCM Lane V/C Ratio	0.669	-	0.892	-	-
HCM Control Delay (s)	18	-	42.3	-	-
HCM Lane LOS	C	-	E	-	-
HCM 95th %tile Q(veh)	5.2	-	10.6	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	503	837	447	0	295	823
Future Volume (vph)	503	837	447	0	295	823
Satd. Flow (prot)	3216	1483	3316	0	1658	3316
Flt Permitted	0.950				0.301	
Satd. Flow (perm)	3216	1464	3316	0	525	3316
Satd. Flow (RTOR)		475				
Lane Group Flow (vph)	503	837	447	0	295	823
Turn Type	Perm	Perm	NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8			6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	33.0	33.0	39.0		12.1	17.0
Total Split (s)	36.7	36.7	37.0		22.0	37.0
Total Split (%)	38.3%	38.3%	38.7%		23.0%	38.7%
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	3.4	3.4	3.3		3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.7	6.7	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	30.3	30.3	17.8		38.4	38.4
Actuated g/C Ratio	0.37	0.37	0.22		0.47	0.47
v/c Ratio	0.43	1.00	0.63		0.69	0.53
Control Delay	22.5	45.2	33.1		22.7	16.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	22.5	45.2	33.1		22.7	16.7
LOS	C	D	C		C	B
Approach Delay	36.7		33.1			18.3
Approach LOS	D		C			B
Queue Length 50th (m)	29.6	67.7	34.2		28.6	45.8
Queue Length 95th (m)	55.1	#180.9	47.7		44.8	59.9
Internal Link Dist (m)	143.3		396.7			189.7
Turn Bay Length (m)		125.0			115.0	
Base Capacity (vph)	1180	838	1231		452	2123
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	0.43	1.00	0.36		0.65	0.39

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 82.5
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.00

Intersection Signal Delay: 29.0 Intersection LOS: C
Intersection Capacity Utilization 79.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Palladium & WB HWY 417



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	266	231	0	433	714	0
Future Volume (vph)	266	231	0	433	714	0
Satd. Flow (prot)	3067	0	0	3316	3316	0
Flt Permitted	0.974					
Satd. Flow (perm)	3067	0	0	3316	3316	0
Satd. Flow (RTOR)	176					
Lane Group Flow (vph)	497	0	0	433	714	0
Turn Type	Perm			NA	NA	
Protected Phases				2	6	
Permitted Phases	4					
Detector Phase	4			2	6	
Switch Phase						
Minimum Initial (s)	10.0			10.0	10.0	
Minimum Split (s)	29.5			22.5	23.6	
Total Split (s)	41.0			54.7	54.7	
Total Split (%)	42.8%			57.2%	57.2%	
Yellow Time (s)	3.3			3.7	3.7	
All-Red Time (s)	2.2			1.9	1.9	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.5			5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	10.9			13.7	13.7	
Actuated g/C Ratio	0.30			0.38	0.38	
v/c Ratio	0.47			0.34	0.56	
Control Delay	8.6			8.7	10.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	8.6			8.7	10.7	
LOS	A			A	B	
Approach Delay	8.6			8.7	10.7	
Approach LOS	A			A	B	
Queue Length 50th (m)	7.3			8.3	15.2	
Queue Length 95th (m)	18.2			17.4	29.6	
Internal Link Dist (m)	231.1			165.0	396.7	
Turn Bay Length (m)						
Base Capacity (vph)	2926			3316	3316	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.17			0.13	0.22	

Intersection Summary
Cycle Length: 95.7
Actuated Cycle Length: 35.9
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56

Intersection Signal Delay: 9.5 Intersection LOS: A
Intersection Capacity Utilization 45.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 7: Palladium & EB HWY 417

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau PM 2032 FT (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	156	2.0	156	2.0	0.214	10.4	LOS B	1.4	9.7	0.49	0.56	0.49	51.3
2	T1	All MCs	138	2.0	138	2.0	0.214	4.2	LOS A	1.4	9.7	0.49	0.56	0.49	52.4
3	R2	All MCs	244	2.0	244	2.0	0.129	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			538	2.0	538	2.0	0.214	5.5	LOS A	1.4	9.7	0.27	0.49	0.27	53.7
East: Campeau															
4	L2	All MCs	326	2.0	326	2.0	0.180	10.4	LOS B	1.1	8.0	0.48	0.60	0.48	50.2
5	T1	All MCs	113	2.0	113	2.0	0.180	4.5	LOS A	1.1	8.0	0.47	0.56	0.47	52.3
6	R2	All MCs	16	2.0	16	2.0	0.180	4.5	LOS A	1.1	8.0	0.47	0.56	0.47	52.0
Approach			455	2.0	455	2.0	0.180	8.7	LOS A	1.1	8.0	0.48	0.59	0.48	50.7
North: Palladium															
7	L2	All MCs	33	2.0	33	2.0	0.154	11.1	LOS B	0.7	4.6	0.52	0.61	0.52	51.7
8	T1	All MCs	272	2.0	272	2.0	0.154	5.5	LOS A	0.7	4.8	0.51	0.56	0.51	52.9
9	R2	All MCs	1	2.0	1	2.0	0.154	5.4	LOS A	0.7	4.8	0.50	0.53	0.50	52.8
Approach			306	2.0	306	2.0	0.154	6.1	LOS A	0.7	4.8	0.51	0.56	0.51	52.8
West: Campeau															
10	L2	All MCs	2	2.0	2	2.0	0.261	10.9	LOS B	1.1	8.1	0.52	0.52	0.52	52.5
11	T1	All MCs	279	2.0	279	2.0	0.261	5.2	LOS A	1.1	8.1	0.52	0.52	0.52	53.4
12	R2	All MCs	95	2.0	95	2.0	0.050	3.8	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			376	2.0	376	2.0	0.261	4.9	LOS A	1.1	8.1	0.39	0.50	0.39	54.0
All Vehicles			1675	2.0	1675	2.0	0.261	6.3	LOS A	1.4	9.7	0.40	0.53	0.40	52.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Palladium at Campeau SAT 2032 FT (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

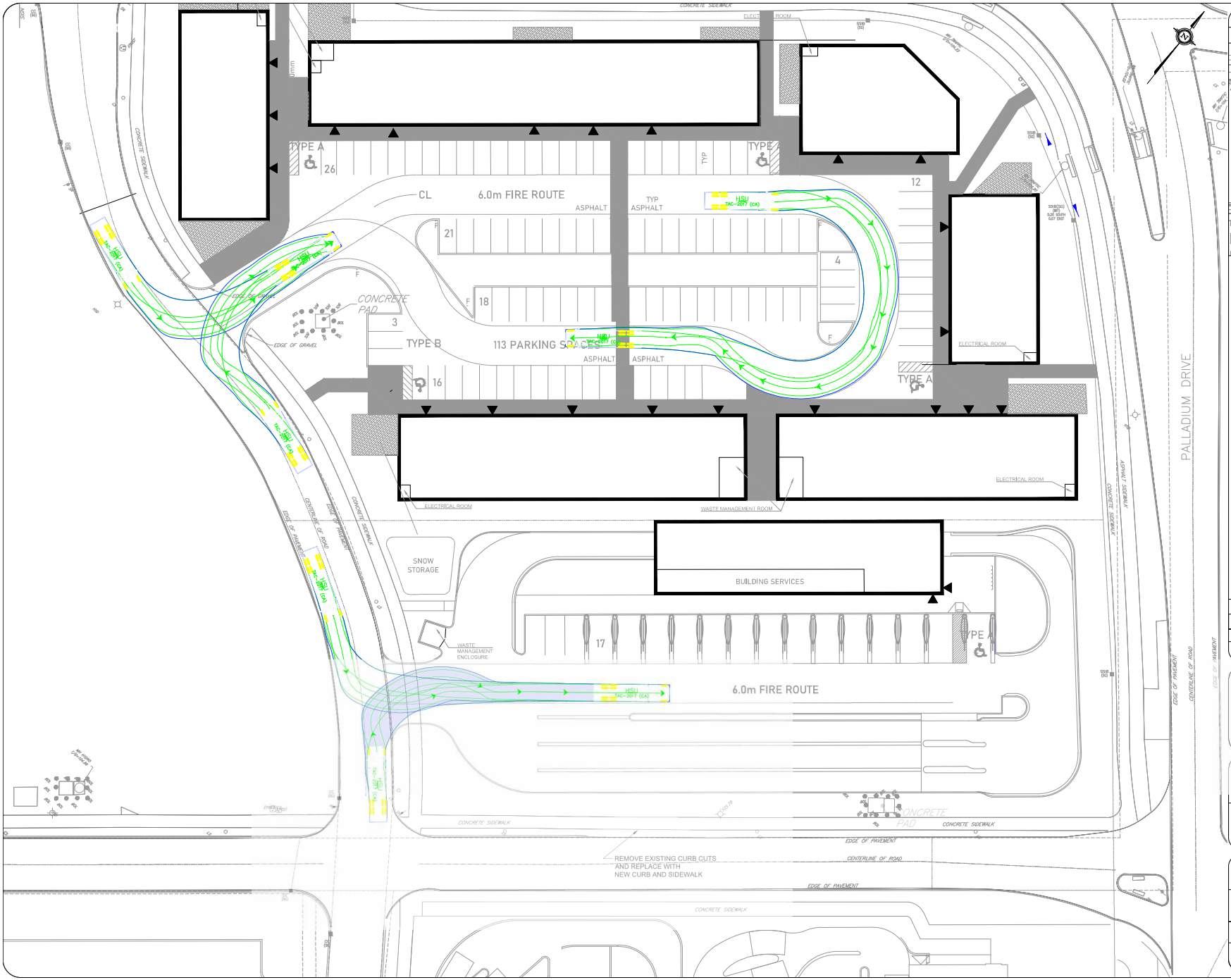
Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Palladium															
1	L2	All MCs	10	2.0	10	2.0	0.014	10.1	LOS B	0.1	0.5	0.42	0.52	0.42	51.6
2	T1	All MCs	9	2.0	9	2.0	0.014	3.9	LOS A	0.1	0.5	0.42	0.52	0.42	52.6
3	R2	All MCs	319	2.0	319	2.0	0.168	3.0	LOS A	0.0	0.0	0.00	0.40	0.00	56.2
Approach			338	2.0	338	2.0	0.168	3.3	LOS A	0.1	0.5	0.02	0.41	0.02	55.9
East: Campeau															
4	L2	All MCs	388	2.0	388	2.0	0.161	9.2	LOS A	1.0	6.8	0.11	0.57	0.11	51.3
5	T1	All MCs	134	2.0	134	2.0	0.161	3.5	LOS A	1.0	6.8	0.10	0.51	0.10	53.5
6	R2	All MCs	5	2.0	5	2.0	0.161	3.5	LOS A	1.0	6.8	0.10	0.51	0.10	53.1
Approach			527	2.0	527	2.0	0.161	7.7	LOS A	1.0	6.8	0.11	0.55	0.11	51.9
North: Palladium															
7	L2	All MCs	5	2.0	5	2.0	0.014	10.6	LOS B	0.0	0.4	0.42	0.57	0.42	51.8
8	T1	All MCs	24	2.0	24	2.0	0.014	5.0	LOS A	0.0	0.4	0.41	0.51	0.41	53.3
9	R2	All MCs	1	2.0	1	2.0	0.014	5.0	LOS A	0.0	0.4	0.40	0.48	0.40	53.3
Approach			30	2.0	30	2.0	0.014	5.9	LOS A	0.0	0.4	0.41	0.52	0.41	53.0
West: Campeau															
10	L2	All MCs	1	2.0	1	2.0	0.255	10.5	LOS B	1.1	7.8	0.43	0.48	0.43	52.9
11	T1	All MCs	300	2.0	300	2.0	0.255	4.7	LOS A	1.1	7.8	0.43	0.48	0.43	53.9
12	R2	All MCs	36	2.0	36	2.0	0.019	3.5	LOS A	0.0	0.0	0.00	0.42	0.00	55.9
Approach			337	2.0	337	2.0	0.255	4.6	LOS A	1.1	7.8	0.39	0.47	0.39	54.1
All Vehicles			1232	2.0	1232	2.0	0.255	5.6	LOS A	1.1	7.8	0.17	0.49	0.17	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

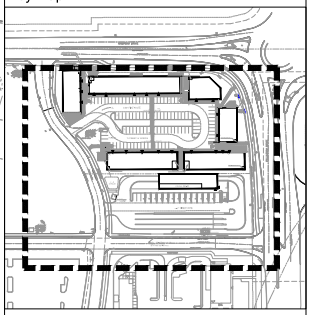
Appendix K

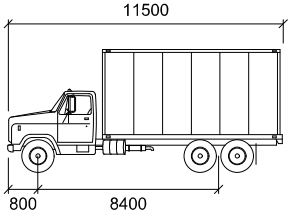
Turning Template



Notes:

Key Map:





HSU

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

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	AN	2023-06-16
01	Issued for Review	AN	2023-04-20

STATUS:

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

CLIENT: Quaestus Management

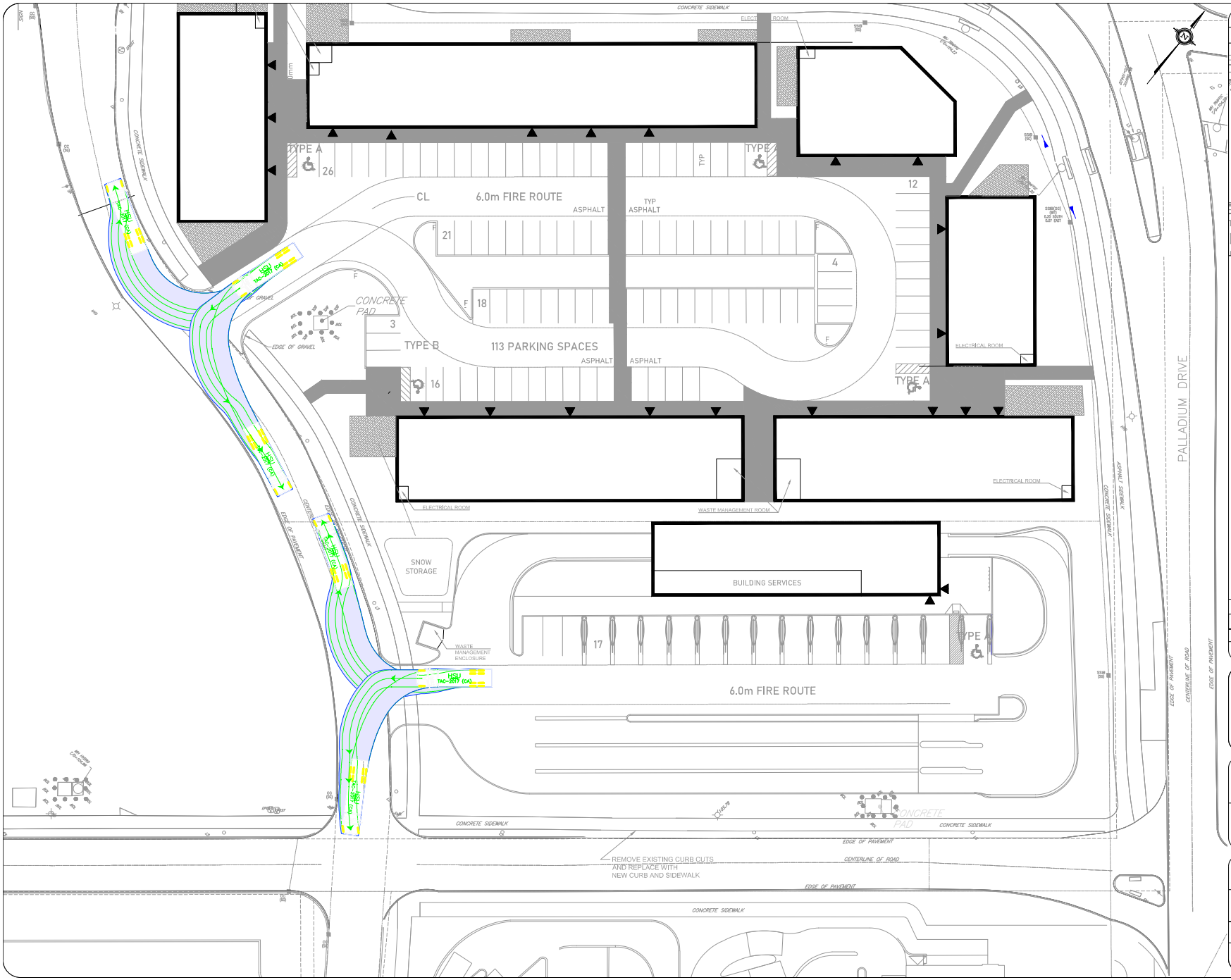
ARCHITECT:

SITE: 3095 Palladium

TITLE: Turning Movement Analysis
HSU Inbound Movements

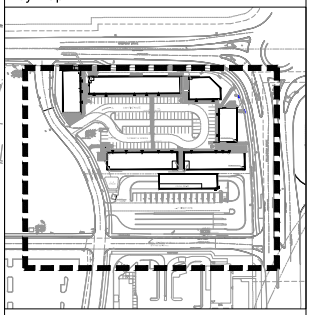
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-06-16	AN	AH

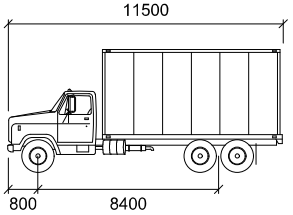
PROJECT NO:	DRAWING NO:	REVISION:
2023-042	001	02



Notes:

Key Map:





HSU

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

REV.	DESCRIPTION:	BY:	DATE:
02	Issued for Review	AN	2023-06-16
01	Issued for Review	AN	2023-04-20

STATUS:

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

CLIENT: Quaestus Management

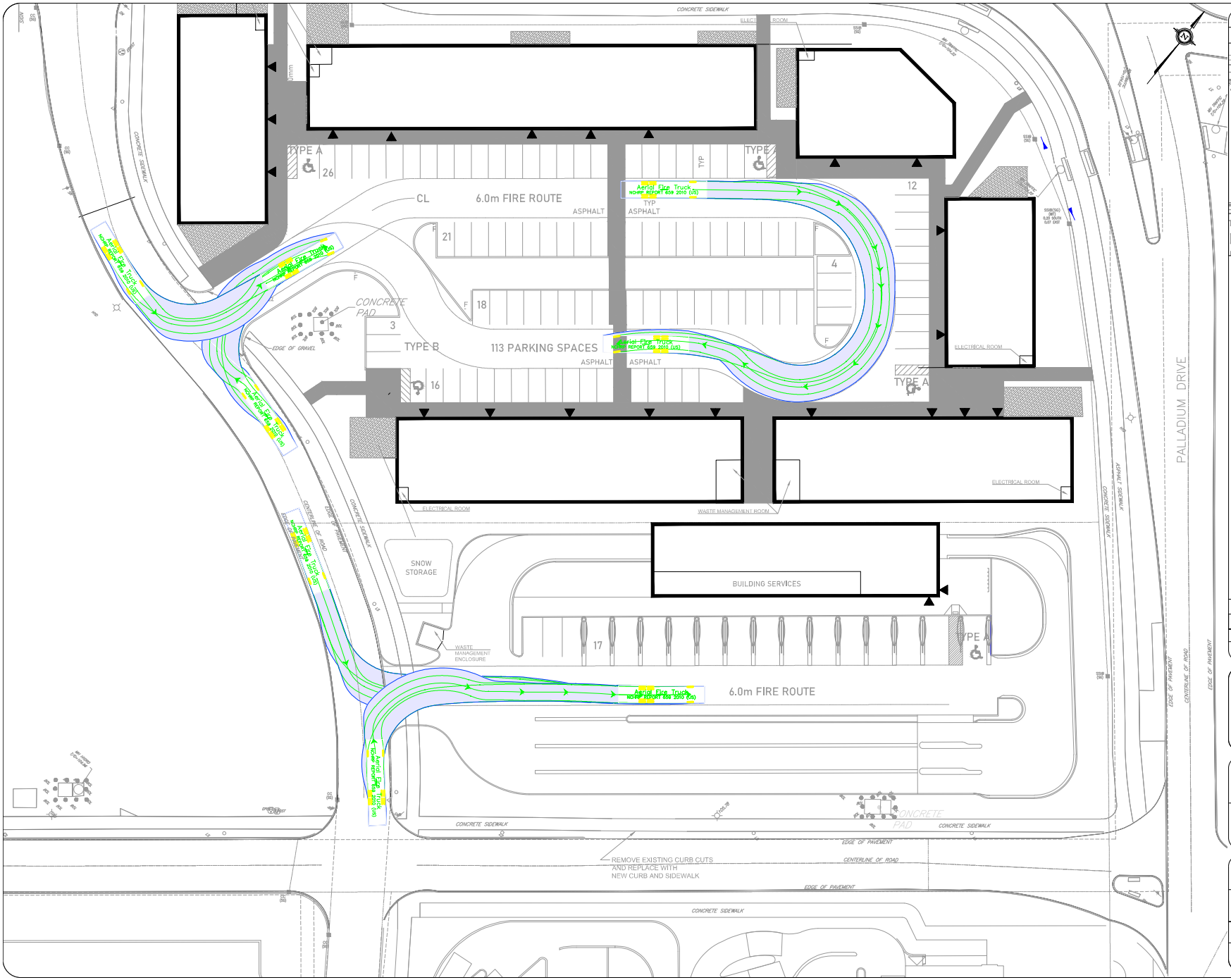
ARCHITECT:

SITE: 3095 Palladium

TITLE: Turning Movement Analysis
HSU Outbound Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-06-16	AN	AH

PROJECT NO:	DRAWING NO:	REVISION:
2023-042	002	02



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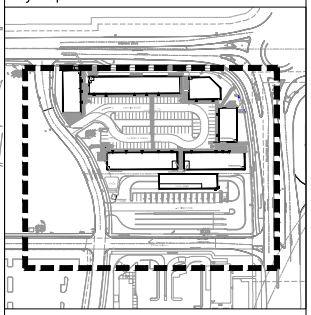
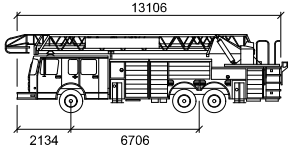




Aerial Fire Truck

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

REV.	DESCRIPTION:	BY:	DATE:
02	Issued for Review	AN	2023-06-16
01	Issued for Review	AN	2023-04-20

STATUS:

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

CLIENT: Quaestus Management

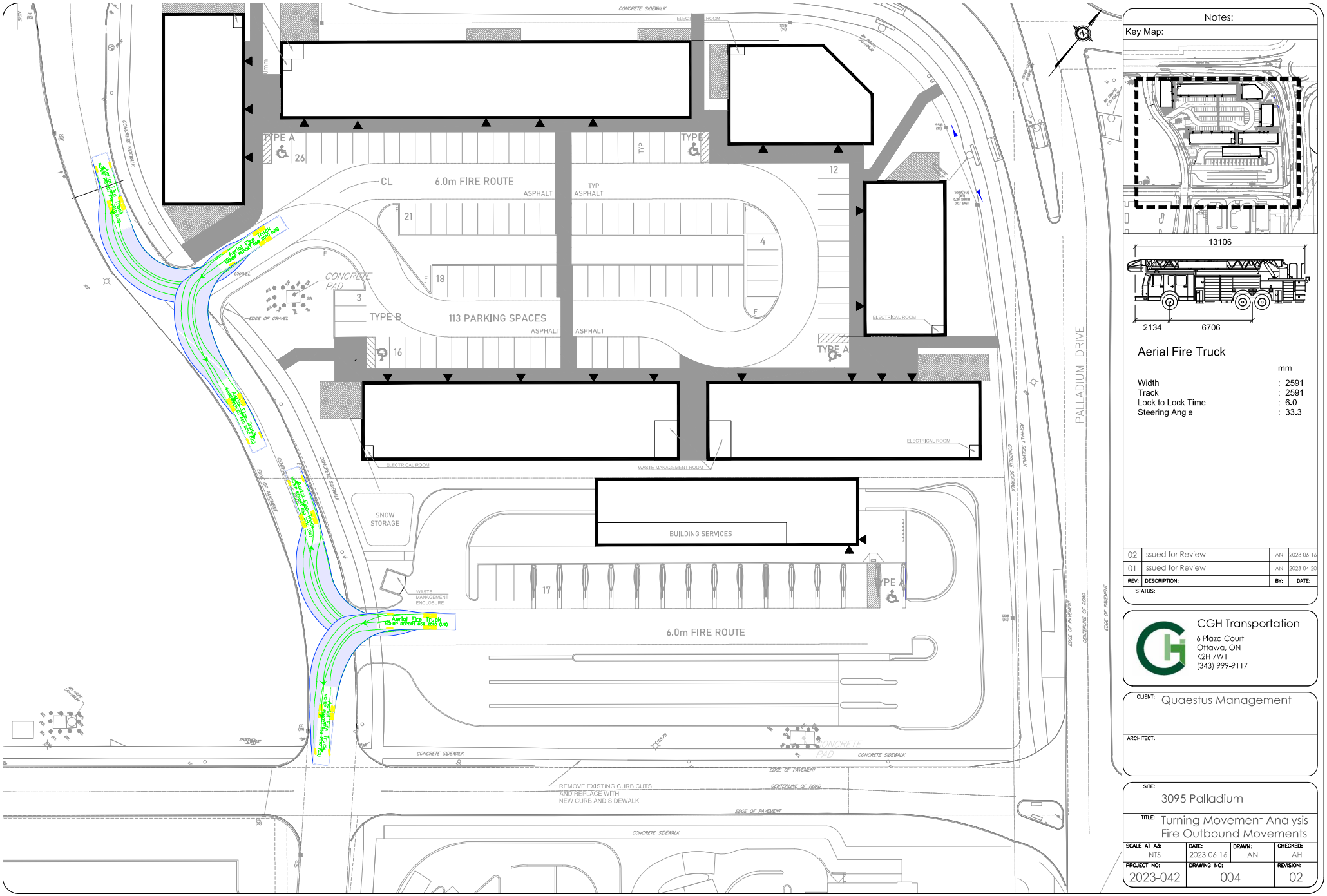
ARCHITECT:

SITE: 3095 Palladium

TITLE: Turning Movement Analysis
Fire Inbound Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-06-16	AN	AH

PROJECT NO:	DRAWING NO:	REVISION:
2023-042	003	02



Notes:

Key Map:

Aerial Fire Truck

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

REV.	DESCRIPTION:	BY:	DATE:
02	Issued for Review	AN	2023-06-16
01	Issued for Review	AN	2023-04-20

STATUS:

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

CLIENT: Quaestus Management

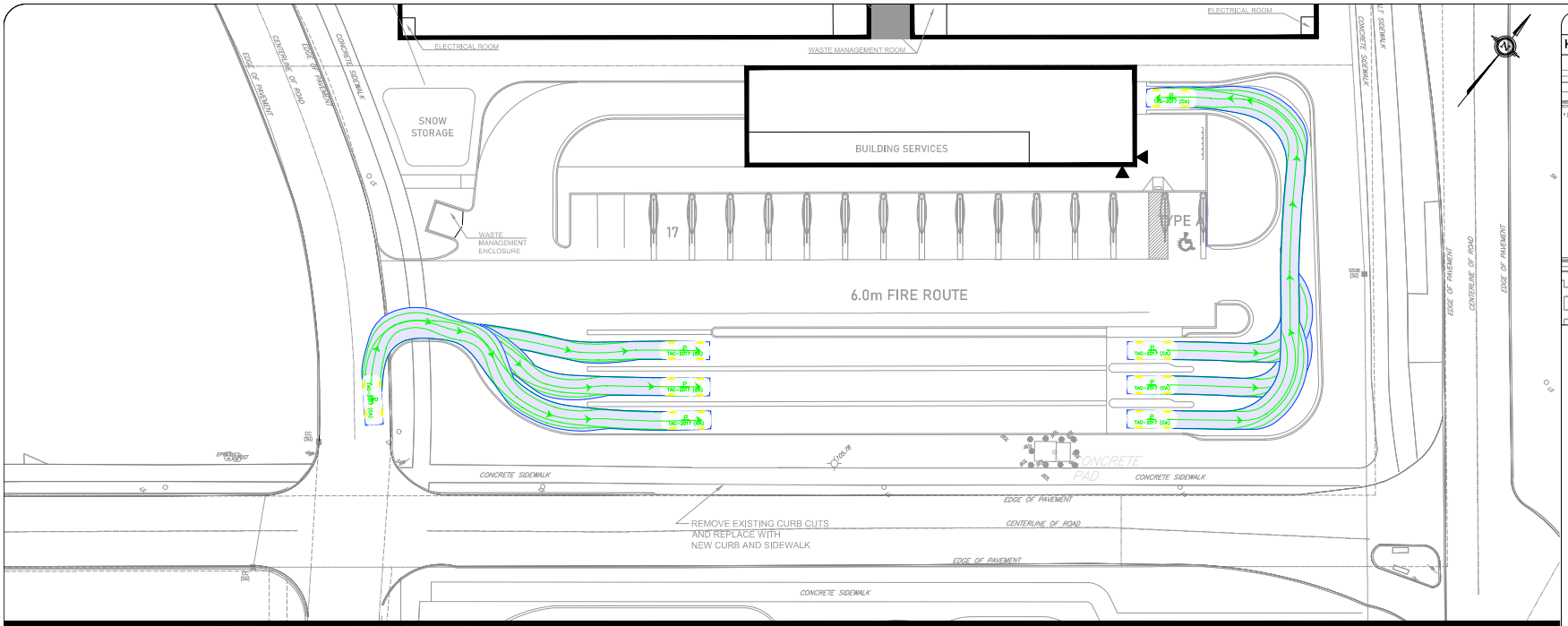
ARCHITECT:

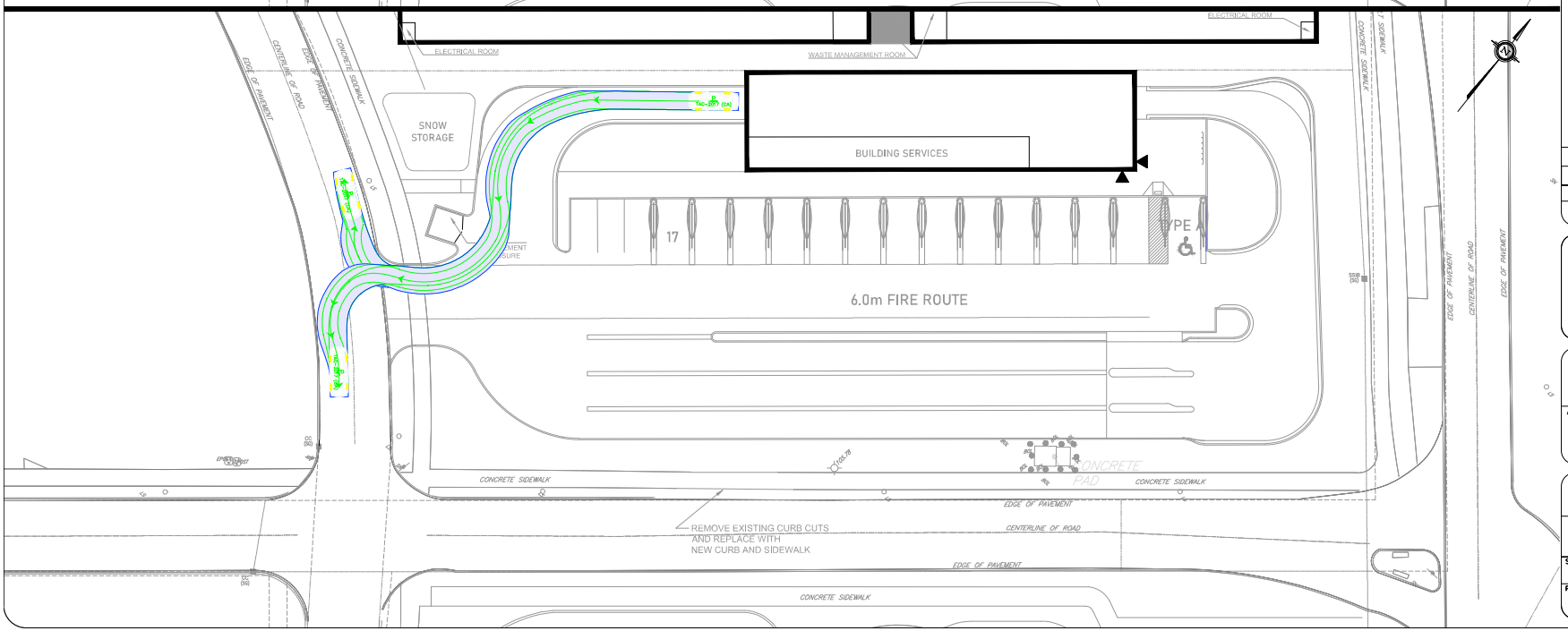
SITE: 3095 Palladium

TITLE: Turning Movement Analysis
Fire Outbound Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-06-16	AN	AH

PROJECT NO:	DRAWING NO:	REVISION:
2023-042	004	02





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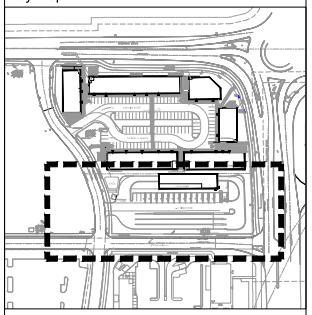

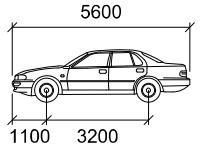

P

	mm
Width	: 2000
Track	: 2000
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

REV.	DESCRIPTION:	BY:	DATE:
02	Issued for Review	AN	2023-06-16
01	Issued for Review	AN	2023-04-20

STATUS:

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

CLIENT: Quaestus Management

ARCHITECT:

SITE: 3095 Palladium

TITLE: Turning Movement Analysis
Passenger Turning Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-06-16	AN	AH

PROJECT NO:	DRAWING NO:	REVISION:
2023-042	005	02

Appendix L

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation Inc**	**Project**	**2023-042**
Scenario	**Existing/Future**	**Date**	**6/16/2023**
Comments			

	INTERSECTIONS	**Campeau Drive at Journeyman Street**				**Palladium Drive at Westbound Highway 417 Ramp**				**Palladium Drive at Eastbound Highway 417 Ramp (Future)**			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	7	6	7	7	7		9			5		0 - 2
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m			No Median - 2.4 m		No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive	Permissive		Permissive			Permissive		Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control		Permissive or yield control			Permissive or yield control		Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR allowed		RTOR allowed			RTOR allowed		RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No	No		No			No		No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Right Turn		No Channel			No Right Turn		No Channel
	Corner Radius	10-15m	5-10m	10-15m	5-10m	No Right Turn		10-15m			No Right Turn		5-10m
	Crosswalk Type	Std transverse markings	Zebra stripe hi-vis markings	Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings			Std transverse markings		Std transverse markings
	PETSI Score	**7**	**27**	**7**	**8**	**14**		**-29**			**47**		**86**
	Ped. Exposure to Traffic LoS	**F**	**F**	**F**	**F**	**F**	**-**	**F**	**-**	**-**	**D**	**-**	**B**
	Cycle Length	90	90	90	90	96	96	96		96	96		96
	Effective Walk Time	12	12	18	18	30	5	11		48	42		12
	Average Pedestrian Delay	**34**	**34**	**29**	**29**	**23**	**43**	**38**		**12**	**15**		**37**
	Pedestrian Delay LoS	**D**	**D**	**C**	**C**	**C**	**E**	**D**	**-**	**B**	**B**	**-**	**D**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**E**	**F**	**-**	**B**	**D**	**-**	**D**
		F				**F**				**D**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic			Mixed Traffic	Mixed Traffic		
	Right Turn Lane Configuration	> 50 m	> 50 m	Not Applicable	Not Applicable								
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	Not Applicable	Not Applicable								
	Cyclist relative to RT motorists	**F**	**F**	**Not Applicable**	**Not Applicable**	**Not Applicable**	**#N/A**	**-**	**-**	**#N/A**	**#N/A**	**-**	**-**
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Separated**	**Mixed Traffic**	**-**	**-**	**Mixed Traffic**	**Mixed Traffic**	**-**	**-**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	2-stage, LT box	≥ 2 lanes crossed								
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h								
	Left Turning Cyclist	**F**	**F**	**A**	**F**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Level of Service	**F**	**F**	**A**	**F**	**-**	**#N/A**	**-**	**-**	**#N/A**	**#N/A**	**-**	**-**
		F				**#N/A**				**#N/A**			
Transit	Average Signal Delay												
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		-				**-**				**-**			
Truck	Effective Corner Radius						> 15 m			> 15 m	> 15 m		
	Number of Receiving Lanes on Departure from Intersection						≥ 2			≥ 2	≥ 2		
	Level of Service	**-**	**-**	**-**	**-**	**-**	**A**	**-**	**-**	**A**	**A**	**-**	**-**
		-				**A**				**A**			
Auto	Volume to Capacity Ratio	0.0 - 0.60				0.81 - 0.90				0.0 - 0.60			
	Level of Service	**A**				**D**				**A**			

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc**	**Project**	**2023-042**
Scenario	**Existing/Future**	**Date**	**6/16/2023**
Comments			

SEGMENTS			Campeau Drive	Palladium Drive	Section
			1	2	3
Pedestrian	Sidewalk Width Boulevard Width		≥ 2 m > 2 m	≥ 2 m > 2 m	
	Avg Daily Curb Lane Traffic Volume		≤ 3000	> 3000	
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	
	Exposure to Traffic PLoS	**-**	**B**	**D**	**-**
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		**-**	**-**	**-**
	Level of Service		**-**	**-**	**-**
Bicycle	Type of Cycling Facility		Physically Separated	Physically Separated	
	Number of Travel Lanes				
	Operating Speed				
	# of Lanes & Operating Speed LoS		**-**	**-**	**-**
	Bike Lane (+ Parking Lane) Width				
	Bike Lane Width LoS	**A**	**-**	**-**	**-**
	Bike Lane Blockages				
	Blockage LoS		**-**	**-**	**-**
	Median Refuge Width (no median = < 1.8 m)				
	No. of Lanes at Unsignalized Crossing				
	Sidestreet Operating Speed				
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**-**
	Level of Service		**A**	**A**	**-**
Transit	Facility Type				
	Friction or Ratio Transit:Posted Speed	**-**			
	Level of Service		**-**	**-**	**-**
Truck	Truck Lane Width				
	Travel Lanes per Direction	**-**			
	Level of Service		**-**	**-**	**-**

Appendix M

Signal Warrants Sheets – Palladium Drive at Cabela's Way intersection

CGH TRANSPORTATION

Palladium Drive @ Cabela's Way
Exising

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	459	51%	51%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	113	66%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	384	43%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Palladium Drive @ Cabela's Way
2027 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	745	83%	83%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	169	99%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	633	70%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Palladium Drive @ Cabela's Way
2032 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	829	92%	92%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	169	99%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	717	80%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Palladium Drive @ Cabela's Way
2027 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	777	86%	86%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	191	113%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	650	72%	72%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	63	84%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Palladium Drive @ Cabela's Way
2032 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	861	96%	96%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	191	113%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	734	82%	82%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	63	84%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Appendix N

TDM Checklist

CGH TRANSPORTATION

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

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: *Non-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 Development Design and Infrastructure Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

		TDM-supportive design & infrastructure measures: *Non-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: *Non-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 commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☐
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office 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 the expected number of commuter cyclists (assuming the cycling mode share target is met)	☐
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	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)	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	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	☐
	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	☐
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(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	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	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	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☐
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

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

Legend

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

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

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

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		1.	**TDM PROGRAM MANAGEMENT**	
		1.1	**Program coordinator**	
BASIC	★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2	**Travel surveys**	
BETTER		1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2.	**WALKING AND CYCLING**	
		2.1	**Information on walking/cycling routes & destinations**	
BASIC		2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances	☐
		2.2	**Bicycle skills training**	
			Commuter travel	
BETTER	★	2.2.1	Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
		2.3	**Valet bike parking**	
			Visitor travel	
BETTER		2.3.1	Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		3. TRANSIT	
		3.1 Transit information	
BASIC	3.1.1	Display relevant transit schedules and route maps at entrances	☐
BASIC	3.1.2	Provide online links to OC Transpo and STO information	☐
BETTER	3.1.3	Provide real-time arrival information display at entrances	☐
		3.2 Transit fare incentives	
		Commuter travel	
BETTER	3.2.1	Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER ★	3.2.2	Subsidize or reimburse monthly transit pass purchases by employees	☐
		Visitor travel	
BETTER	3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3 Enhanced public transit service	
		Commuter travel	
BETTER	3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER	3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4 Private transit service	
		Commuter travel	
BETTER	3.4.1	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER	3.4.2	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

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

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