1137-1151 Ogilvie Road & 1111 Cummings Avenue

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report

Prepared for:

TCU Development Corporation
150 Isabella St, Unit 1207
Ottawa, On K1S 5H3

Prepared by:

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

April 2025

PN: 2023-139

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1 Screening

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

2 Existing and Planned Conditions

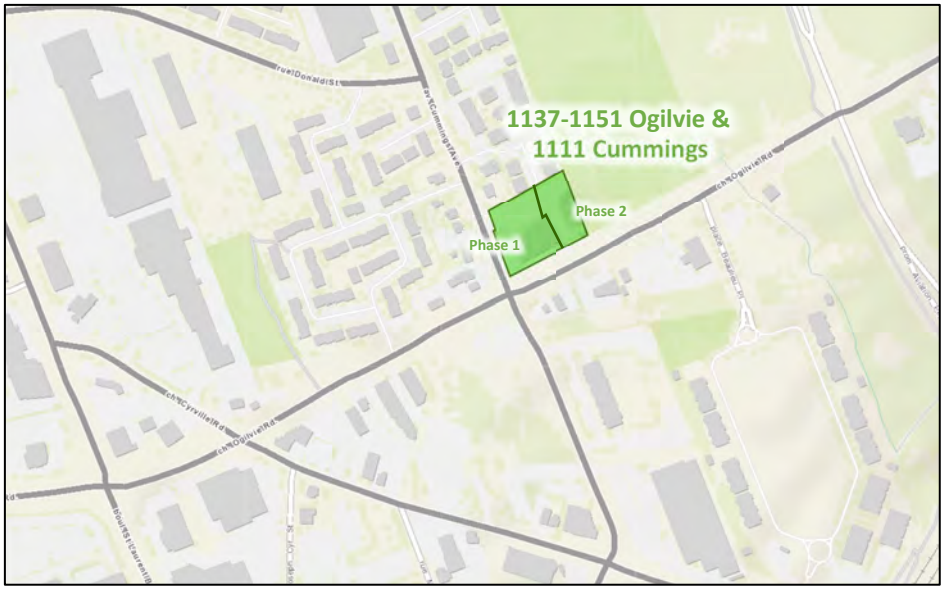
2.1 Proposed Development

The site is currently zoned as local commercial (LC6) and within the Cyrville TOD Plan area and design priority area. The overall proposed development includes two 30-storey residential buildings with potential for mixed-use podia, a total of 846 residential units, 8,327 ft² of ground-floor retail space, 483 vehicle parking spaces, and 846 bicycle parking spaces, anticipated to be built out by 2029. The project will be constructed in two phases with Phase 1, located at 1137 Ogilvie Road and 1111 Cummings Avenue, comprising the 30-storey mixed-use building with 436 residential units, 5,846 ft² of retail space, 231 vehicle parking spaces, and 436 bicycle parking spaces, expected to be completed by 2027. The gross floor area (GFA) for the retail space is currently unknown and the total ground floor amenity/commercial allocation has been assumed to be entirely commercial for the purposes of a conservative trip generation. The proposed access configuration includes a full-movement two-way access at the north end of the Cummings Avenue frontage.

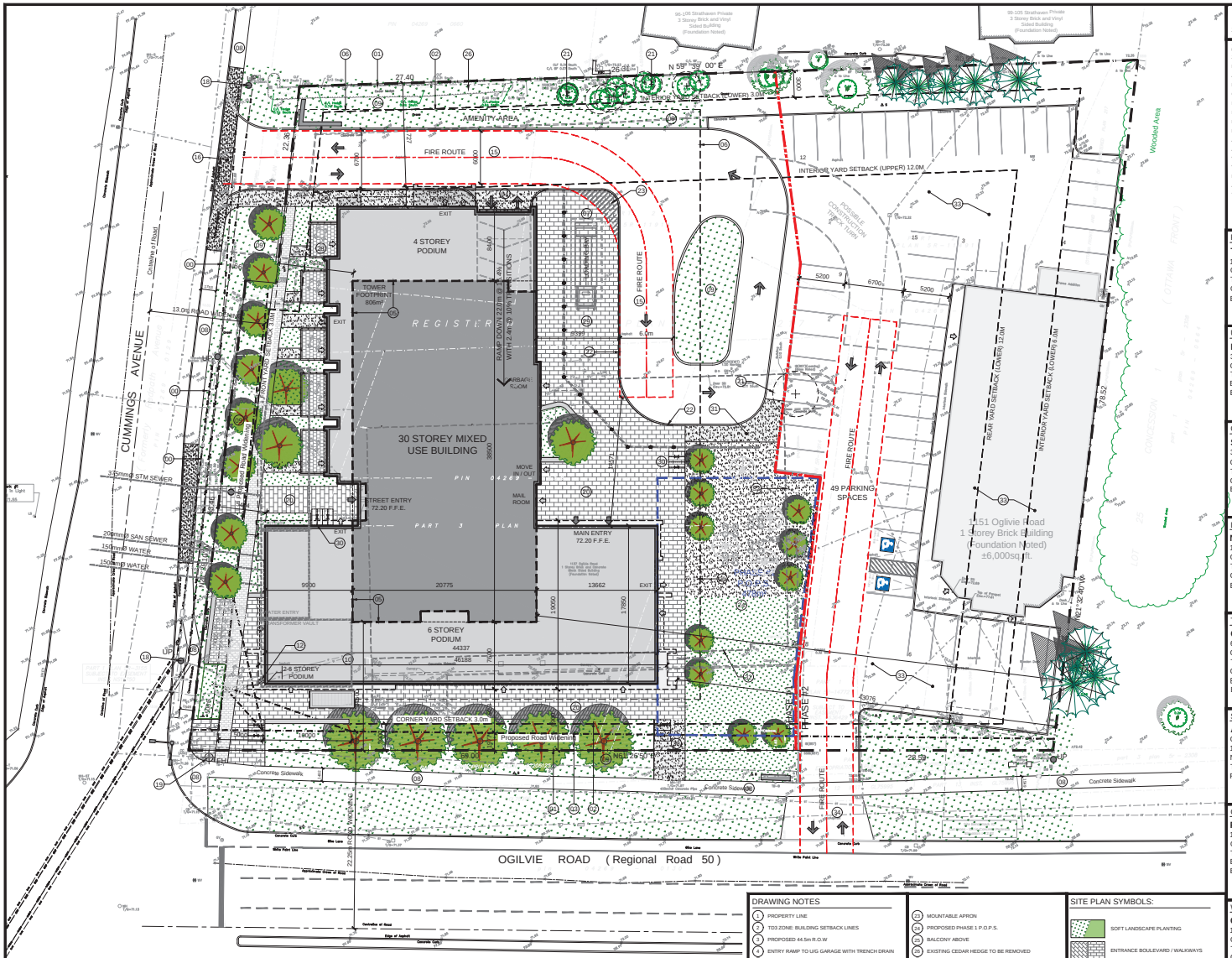
The existing site is occupied presently by a commercial building comprising a restaurant and a supermarket, a second commercial building comprising a restaurant, and surrounding surface parking lots. The boundary street of Ogilvie Road is a "Mainstreet within Design Priority Area" corridor.

Figure 1 illustrates the study area context. Figure 2 and Figure 3 illustrate the proposed Phase 1 and full build out concept plans, respectively.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: January 21, 2025



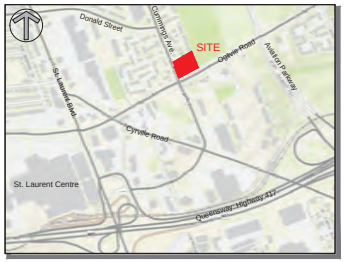
SITE PLAN - PHASE 1

1 / SP-1

SCALE = 1 : 200

0m 5 10 20

SCALE 1: 200



KEY MAP

DRAWING NOTES

1. PROPERTY LINE
2. TD3 ZONE: BUILDING SETBACK LINES
3. PROPOSED 44.5m R.O.W
4. ENTRY RAMP TO U/G GARAGE WITH TRENCH DRAIN
5. OUTLINE OF TOWER ABOVE
6. OUTLINE OF PARKING GARAGE
7. LOADING BAY
8. EX. CONCRETE SIDEWALK TO REMAIN
9. SOFT LANDSCAPING, SEE LANDSCAPE PLAN
10. BELOW GRADE CISTERN IN PARKING GARAGE
11. T.B.D.: 1.2 X 3.0 CONCRETE PAD FOR GAS EQUIPMENT WITH BOLLARDS AS REQUIRED (GAS BLOW OFF)
12. SIAMESE CONNECTION
13. PROPOSED UTILITIES, SEE CIVIL
14. PRIVACY FENCE / GATE
15. 6.0m WIDE FIRE ROUTE
16. CONCRETE SIDEWALK, CONTINUOUS & DEPRESSED THROUGH DRIVEWAY, SEE CITY DETAIL SC 7.1
17. 150mm HT CONCRETE BARRIER CURB
18. EXISTING HYDRO POLE & OVERHEAD WIRES
19. FIRE HYDRANT
20. HARD SURFACE WALK, SEE LANDSCAPE
21. EXISTING TREE TO BE REMOVED
22. FLUSH CURB AROUND ENTRY AREA
23. MOUNTABLE APRON
24. PROPOSED PHASE 1 P.O.P.S.
25. BALCONY ABOVE
26. EXISTING CEDAR HEDGE TO BE REMOVED
27. T.B.D.: METAL GRATE - INTAKE / EXHAUST AIR SHAFT
28. PRIVATE TERRACES AT GROUND LEVEL
29. GARBAGE BIN PICKUP AREA
30. SURFACE MOUNTED BIKE RACK
31. INTERIM CONNECTION PATHWAY
32. EXISTING BUILDING / ASPHALT PARKING LOT TO BE REMOVED.
33. EXISTING BUILDING AND PARKING TO REMAIN AS CONSTRUCTION STAGING AREA.
34. EXISTING ENTRANCE TO REMAIN

SITE PLAN SYMBOLS:

- SOFT LANDSCAPE PLANTING
- ENTRANCE BOULEVARD / WALKWAYS
- PRIVATE PATIOS
- PAVERS @ TERRACE LEVEL
- PROPOSED CITY BOULEVARD: CONCRETE SIDEWALK & ASPHALT CYCLE TRACK
- BIKE RACK
- MAIN ENTRANCE DOOR
- SERVICE / EXIT DOOR
- VEHICULAR DIRECTION
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- PROPOSED TREE
- SIAMESE CONNECTION
- FIRE HYDRANT

PROJECT INFORMATION

Zoning By-law 2008-250 Consolidation LC6 SITE AREA 0.74 ha. 7,384.8 sq. m. 79,489 sq. ft.

ZONING	REQUIRED	PROVIDED
ZONE	LC6	TD3 [XXXX]
BUILDING HEIGHT	30 STOREY'S / 90.0m	30 STOREY'S / 97.0m
ALLOWABLE PROJECTION - AMENITY LEVEL	0.0m @ 0.0m²	4.5m @ 200.0m²
FRONT YARD SETBACK	3.0m	1.5m
CORNER SIDE YARD SETBACK	3.0m	4.6m
INTERIOR YARD SETBACK: 6 STOREYS & BELOW	3.0m	7.9m
INTERIOR YEAR SETBACK: 7 STOREYS & ABOVE	12.0m	21.6m
REAR YARD SETBACK: 6 STOREYS & BELOW	6.0m	43.0m
REAR YARD SETBACK: 7 STOREYS & ABOVE	12.0m	59.6m
AMENITY AREA - TOTAL 6.0m² PER UNIT	2,616.0m²	2,665.0m²
AMENITY AREA - 50% COMMUNAL PER UNIT	1,308.0m²	1,940.0m²
VEHICLE PARKING: RESIDENTIAL - 0.5 PER UNIT AFTER 12 UNITS PER BUILDING	212	201
VEHICLE PARKING: VISITOR - 0.1 PER UNIT, MAX. 30 PER BUILDING	30	30
BICYCLE PARKING - RESIDENTIAL - 0.5 PER UNIT	218	436
AISLE & DRIVEWAY MINIMUM / MAXIMUM WIDTH	6.0m / 6.7m	6.0m
TOWER FLOOR PLATE - GUIDELINE ONLY	750m²	806.0m²

PROJECT DEVELOPER

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URBAN PLANNER

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LEGAL DESCRIPTION

TOPOGRAPHIC PLAN OF SURVEY OF

PART OF LOT 18
REGISTERED PLAN 217
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

BUILDING STATISTICS

GROSS BUILDING - AREA (CITY OF OTTAWA'S DEFINITION)	WEST TOWER 'A'
GROUND FLOOR	1,506.1 sq. m. 16,212 sq. ft.
2nd & 3rd FLOOR	2 x 1,466.0 sq. m. 2 x 15,780 sq. ft. — 2,942.0 sq. m. 31,560 sq. ft.
4th FLOOR	1,438.0 sq. m. 15,479 sq. ft.
5th FLOOR	1,125.1 sq. m. 12,111 sq. ft.
6th FLOOR	1,215.5 sq. m. 13,083 sq. ft.
7th FLOOR	597.2 sq. m. 6,428 sq. ft.
8th - 30th FLOOR - TOWER	23 x 680.422 sq. m. 23 x 7,324 sq. ft. — 15,649.7 sq. m. 168,452 sq. ft.
31st AMENITY / MECHANICAL PENTHOUSE	0.0 sq. m. 000 sq. ft.
TOTAL AREA	24,463.7 sq. m. 263,325 sq. ft.
TOWER FOOTPRINT AREA (INCLUDING BALCONIES / PROJECTIONS)	806.0 sq. m. 8,676 sq. ft.

UNIT STATISTICS

STUDIO	48.4%	211
1 BEDROOM UNIT	17.7%	77
1 BEDROOM + DEN UNIT	6.0%	26
2 BEDROOM UNIT	21.6%	94
2 BEDROOM + DEN UNIT	6.4%	28
3 BEDROOM UNIT	0.0%	0
TOTAL	100%	436

CAR PARKING

AREA 'A' ON SCHEDULE 1A

MINIMUM REQUIRED		
RESIDENCE	- 0.5 PER UNIT AFTER 12	212
VISITOR	- 0.1 PER UNIT AFTER 12	30
COMMERCIAL - RESTAURANT	- 1 PER 250m² GFA	---
COMMERCIAL - RETAIL	- 1 PER 250m² GFA	---
TOTAL		242
PROVIDED		
RESIDENCE	- 0.46 PER UNIT	201
VISITOR	- 0.1 PER UNIT	30
COMMERCIAL - RESTAURANT	- 1 PER 250m² GFA	---
COMMERCIAL - RETAIL	- 1 PER 250m² GFA	---
TOTAL		231

BICYCLE PARKING

REQUIRED		
RESIDENCE	- 0.5 PER UNIT (436 UNITS)	218
PROVIDED		
EXTERIOR		16
PARKING GARAGE		420
TOTAL		436

AMENITY SPACE

EXTERIOR NORTH EDGE: COMMUNAL =	100.0 sq. m.
EXTERIOR COURTYARD: COMMUNAL =	50.0 sq. m.
EXTERIOR AT GRADE TERRACE: PRIVATE =	100.0 sq. m.
1st FL. INTERIOR LOBBY: COMMUNAL =	180.0 sq. m.
1st FL. INTERIOR FLEX AREA: COMMUNAL =	500.0 sq. m.
7th FLOOR INTERIOR: COMMUNAL =	270.0 sq. m.
7th FLOOR TERRACE: COMMUNAL =	710.0 sq. m.
ROOF TOP AMENITY ROOM =	130.0 sq. m.
ROOF TOP AMENITY TERRACE =	0.0 sq. m.
PRIVATE TERRACE =	75.0 sq. m.
PRIVATE BALCONIES =	550.0 sq. m.
TOTAL =	2,665.0 sq. m.
TOTAL COMMUNAL =	1,940.0 sq. m.
REQUIRED - 6.0m² PER UNIT (436) =	2,616.0 sq. m.
REQUIRED COMMUNAL @ 50% =	1,308.0 sq. m.

LOT COVERAGE

PHASE #2 AREA =	2,622.0 sq. m.	35.5%
PAVED SURFACE =	795.0 sq. m.	10.8%
BUILDING FOOTPRINT=	1,441.0 sq. m.	19.5%
LANDSCAPE OPEN SPACE =	2,048.8 sq. m.	27.7%
P.O.P.S. =	478.0 sq. m.	6.5%
TOTAL =	7,384.8 sq. m	100.0%

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

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- <XX> INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE.
- (WW) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (###) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- DETAIL NUMBER
- TITLE
- SCALE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

No.	DESCRIPTION	DATE
3	ISSUED FOR SPC APPLICATION	2025 04 15
2	ISSUED FOR CONSULTANT UPDATE	2025 04 03
1	ISSUED FOR ZBLA APPLICATION	2025 03 05

REVISIONS:

ARCHITECT SEAL:

SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:

TCU Development Corporation

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PROJECT TITLE:

1151 OGILVIE ROAD

OTTAWA ONTARIO

SHEET TITLE:

SITE PLAN
PHASE 1 INTERIM

DRAWN:	CHECKED:
R.V.	K.R.
SCALE: 1:200	SHEET No. SP-1
PROJECT No. 2420	

D07-12-22-0

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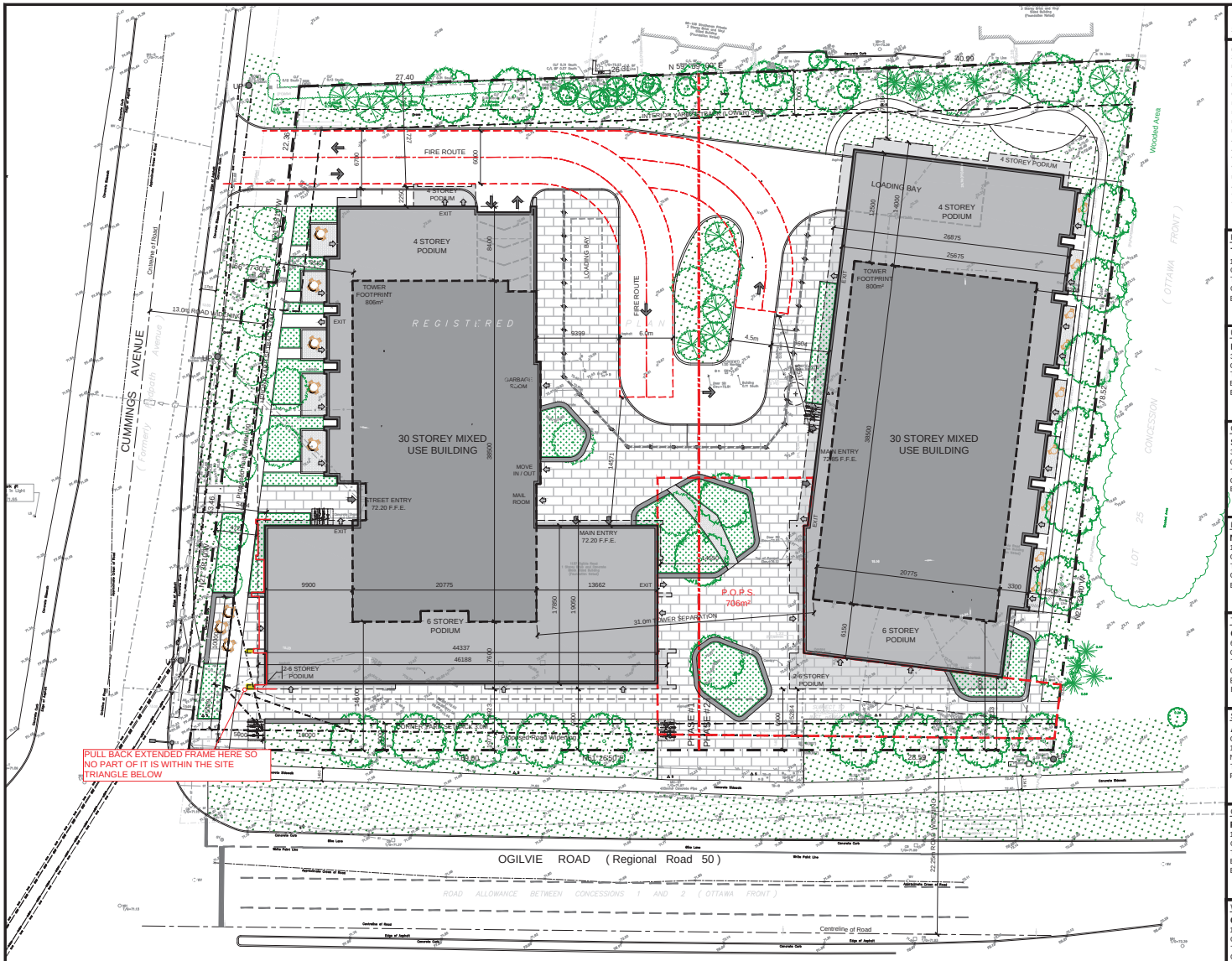

1 SP-1 SITE PLAN
SCALE = 1 : 200

0m 5 10 20
SCALE 1: 200

KEY MAP

PROJECT INFORMATION

Zoning By-law 2008-250 Consolidation LC6 SITE AREA 0.74 ha. 7,384.8 sq. m. 79,489 sq. ft.

ZONING	REQUIRED	PROVIDED
ZONE	LC6	TD3 [XXXX]
BUILDING HEIGHT	12.5m	30 STOREYS / 97.0m
ALLOWABLE PROJECTION - AMENITY LEVEL	0.0m @ 0.0m²	4.5m @ 200.0m²
FRONT YARD SETBACK	3.0m	1.5m
CORNER SIDE YARD SETBACK	3.0m	4.6m
INTERIOR YARD SETBACK: 6 STOREYS & BELOW	5.0m	7.9m
INTERIOR YEAR SETBACK: 7 STOREYS & ABOVE	N/A	21.6m
REAR YARD SETBACK: 6 STOREYS & BELOW	NO MINIMUM	4.6m
REAR YARD SETBACK: 7 STOREYS & ABOVE	N/A	8.2m
AMENITY AREA - TOTAL 6.0m² PER UNIT	4,956.0m²	5,000.0m²
AMENITY AREA - 50% COMMUNAL PER UNIT	2,478.0m²	3,392.0m²
VEHICLE PARKING: RESIDENTIAL - 0.5 PER UNIT AFTER 12 UNITS PER BUILDING	401	417
VEHICLE PARKING: VISITOR - 0.1 PER UNIT, MAX. 30 PER BUILDING	60	60
BICYCLE PARKING - RESIDENTIAL - 0.5 PER UNIT	413	413
AISLE & DRIVEWAY MINIMUM / MAXIMUM WIDTH	6.0m / 6.7m	6.0m
TOWER SEPARATION - GUIDELINE ONLY	23m	31.0m
TOWER FLOOR PLATE - GUIDELINE ONLY	750m²	806.0m²

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LEGAL DESCRIPTION
TOPOGRAPHIC PLAN OF SURVEY OF

PART OF LOT 18
REGISTERED PLAN 217
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

LOT COVERAGE

PAVED SURFACE =	806.0 sq. m.	10.9%
BUILDING FOOTPRINT: TOWER A =	1,621.8 sq. m.	22.0%
BUILDING FOOTPRINT: TOWER B =	1,441.0 sq. m.	19.5%
LANDSCAPE OPEN SPACE =	2,810.0 sq. m.	38.0%
P.O.P.S. =	706.0 sq. m.	9.6%
TOTAL =	7,384.8 sq. m	100.0%

BUILDING STATISTICS

GROSS BUILDING - AREA [CITY OF OTTAWA'S DEFINITION]	WEST TOWER 'A'	
GROUND FLOOR		1,506.1 sq. m. / 16,212 sq. ft.
2nd & 3rd FLOOR	2 x 1,466.0 sq. m. / 2 x 15,780 sq. ft.	2,942.0 sq. m. / 31,560 sq. ft.
4th FLOOR		1,438.0 sq. m. / 15,479 sq. ft.
5th FLOOR		1,125.1 sq. m. / 12,111 sq. ft.
6th FLOOR		1,215.5 sq. m. / 13,083 sq. ft.
7th FLOOR		597.2 sq. m. / 6,428 sq. ft.
8th - 30th FLOOR - TOWER	23 x 680.422 sq. m. / 23 x 7,324 sq. ft.	15,649.7 sq. m. / 168,452 sq. ft.
31st AMENITY / MECHANICAL PENTHOUSE		0.0 sq. m. / 000 sq. ft.
TOTAL AREA		24,463.7 sq. m. / 263,325 sq. ft.
TOWER FOOTPRINT AREA (INCLUDING BALCONIES / PROJECTIONS)		806.0 sq. m. / 8,676 sq. ft.

GROSS BUILDING - AREA [CITY OF OTTAWA'S DEFINITION]	EAST TOWER 'B'	
GROUND FLOOR		1,170.7 sq. m. / 12,601 sq. ft.
2nd & 3rd FLOOR	2 x 1,484.6 sq. m. / 2 x 15,980 sq. ft.	2,969.2 sq. m. / 31,960 sq. ft.
4th FLOOR		1,430.9 sq. m. / 15,402 sq. ft.
5th FLOOR		892.5 sq. m. / 8,608 sq. ft.
6th FLOOR		947.3 sq. m. / 10,197 sq. ft.
7th FLOOR		615.5 sq. m. / 6,625 sq. ft.
8th - 30th FLOOR - TOWER	23 x 693.707 sq. m. / 23 x 7,467 sq. ft.	15,955.3 sq. m. / 171,741 sq. ft.
31st AMENITY / MECHANICAL PENTHOUSE		0.0 sq. m. / 000 sq. ft.
TOTAL AREA		23,891.3 sq. m. / 257,164 sq. ft.
TOWER FOOTPRINT AREA (INCLUDING BALCONIES / PROJECTIONS)		800.0 sq. m. / 8,609 sq. ft.
TOTAL AREA: BOTH TOWERS		48,355.0 sq. m. / 520,489 sq. ft.

UNIT STATISTICS

	WEST TOWER 'A'	EAST TOWER 'B'		TOTAL
STUDIO	143	78	26.8%	221
1 BEDROOM UNIT	102	179	34.0%	281
1 BEDROOM + DEN UNIT	50	29	9.6%	79
2 BEDROOM UNIT	95	86	21.9%	181
2 BEDROOM + DEN UNIT	28	19	5.7%	47
3 BEDROOM UNIT	0	17	2.0%	17
TOTAL	418	408	100%	826

* EAST TOWER DESIGN IS PRELIMINARY ONLY AND SUBJECT TO CHANGE

CAR PARKING
AREA 'A' on SCHEDULE 1A

MINIMUM REQUIRED		
RESIDENCE	- 0.5 PER DWELLING UNIT	401
VISITOR	- 0.1 PER DWELLING UNIT	60
COMMERCIAL - RESTAURANT	- 1 PER 20/m² GFA	---
COMMERCIAL - RETAIL	- 1 PER 20/m² GFA	---
TOTAL		461
PROVIDED		
RESIDENCE	- 0.5 PER UNIT	417
VISITOR	- 0.1 PER UNIT	60
COMMERCIAL - RESTAURANT	- 1 PER 20/m² GFA	---
COMMERCIAL - RETAIL	- 1 PER 20/m² GFA	---
TOTAL		477

BICYCLE PARKING

REQUIRED		
RESIDENCE	- 0.5 PER UNIT (826 UNITS)	413
COMMERCIAL	- 1 PER 500m² GFA	---
PROVIDED		
EXTERIOR		13
PARKING GARAGE		400
TOTAL		413

AMENITY SPACE

EXTERIOR NORTH EDGE - COMMUNAL =	730.0 sq. m.
EXTERIOR COURTYARD - COMMUNAL =	380.0 sq. m.
EXTERIOR AT GRADE TERRACE - PRIVATE =	200.0 sq. m.
1st FL. INTERIOR LOBBY - COMMUNAL =	370.0 sq. m.
1st FL. INTERIOR FLEX AREA - COMMUNAL =	545.0 sq. m.
7th FLOOR TERRACE - PRIVATE =	158.0 sq. m.
7th FLOOR TERRACE - COMMUNAL =	517.0 sq. m.
ROOF TOP AMENITY ROOM =	700.0 sq. m.
ROOF TOP AMENITY TERRACE =	150.0 sq. m.
PRIVATE TERRACE =	150.0 sq. m.
PRIVATE BALCONIES =	1,100.0 sq. m.
TOTAL =	5,000.0 sq. m.
TOTAL COMMUNAL =	3,392.0 sq. m.
REQUIRED - 6.0m² PER UNIT (823) =	4,938.0 sq. m.
REQUIRED COMMUNAL @ 50% =	2,469.0 sq. m.

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

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DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- (A) INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE.
- (W) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (D00) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- 00 / TITLE / SHEET — DETAIL NUMBER, DETAIL REFERENCE PAGE, DETAIL CROSS REFERENCE PAGE

No.	DESCRIPTION	DATE
1	ISSUED FOR ZBLA APPLICATION	2025 03 06

REVISIONS:

ARCHITECT SEAL: SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT: TCU Development Corporation

ARCHITECT:
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roderick lahey architect inc.
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PROJECT TITLE: 1151 OGILVIE ROAD
OTTAWA ONTARIO

SHEET TITLE: SITE PLAN

DRAWN:	CHECKED:
R.V.	K.R.

SCALE: 1:200
SHEET No.: SP-1
PROJECT No.: 2405
D07-12-22-0

PAPER SIZE: ISO Full Bleed B1 (707.00 X 1000.00 MM) | PLOT DATE: Thursday, March 06, 2025 | PLOT SCALE: 1:1 | PEN STYLE: 0-RLA-MASTER-100%.ctb

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DWG # _____

2.2 Existing Conditions

2.2.1 Area Road Network

Aviation Parkway: Aviation Parkway is a federally owned freeway. North of Ogilvie Road, Aviation Parkway is a divided four-lane rural cross-section and has a semi-urban cross-section to the south as it transitions to Highway 417. A mixed-use path (MUP) is present along the west side of the road. The existing right-of-way is 130.0 metres or greater within the study area, and the posted speed limit is 60 km/h.

Cummings Avenue: Cummings Avenue is a collector road north of Donald Street, and a major collector road between Ogilvie Road and Donald Street, with a two-lane urban cross-section and sidewalks on both sides of the road. South of Ogilvie Road, Cummings Avenue is a City of Ottawa arterial road with a two-lane semi-urban cross-section, with a 1.5-metre-wide gravel shoulder on its west side and curbed with a sidewalk on its east side. The posted speed limit is 50 km/h. The City-protected right-of-way is 24.0 metres north of Donald Street, 26.0 metres between Donald Street and Ogilvie Road, and 37.5 metres south of Ogilvie Road. Cummings Avenue south of Donald Street is a truck route.

Ogilvie Road: Ogilvie Road is a City of Ottawa arterial road with a four-lane, divided urban cross-section with curbside bike lanes and sidewalks on both sides of the road. The posted speed limit is 60 km/h and the City-protected right-of-way is 44.5 metres within the study area. Ogilvie Road is a truck route.

Cyrville Road: Cyrville Road is a City of Ottawa collector road north of Cummings Avenue/Labelle Street and an arterial road south of Cummings Avenue/Labelle Street, each with a two-lane cross-section. North of Ogilvie Road, the cross-section includes a curb with a sidewalk on the east side and is uncurbed on the west side. Between Ogilvie Road and Cummings Avenue/Labelle Street, the cross-section is fully urban and includes a sidewalk and curb-side bike lane on each side of the road. South of Cummings Avenue/Labelle Street, the cross-section transitions to an uncurbed condition and includes a paved shoulder and sidewalk on the west side of the road and a MUP on the east side of the road separated by a concrete rumble strip. The posted speed limit is 60 km/h. The City-protected right-of-way is 26.0 metres north of Cummings Avenue and 37.5 metres south of Cummings Avenue/Labelle Street. Cyrville Road is a truck route.

Donald Street: Donald Street is a City of Ottawa major collector road with a two-lane urban cross-section, with sidewalks on both sides of the road and with curbside bike lanes on both sides of the road west of Belgate Way within the study area. On-street parking is permitted on the south side of the road between Findon Gate and Belgate Way. The posted speed limit is 50 km/h, and the existing right-of-way is 26.0 metres. Donald Street is a truck route within the study area.

Labelle Street: Labelle Street is a City of Ottawa major collector road with a two-lane urban cross-section with sidewalks on both sides of the road east of Michael Street N, and on the north side of the road west of Michael Street N. The unposted speed limit is assumed to be 50 km/h, and the right-of-way varies between 20.0 metres and 22.5 metres within the study area.

2.2.2 Existing Intersections

The existing signalized area intersections within 400 metres of the site have been summarized below:

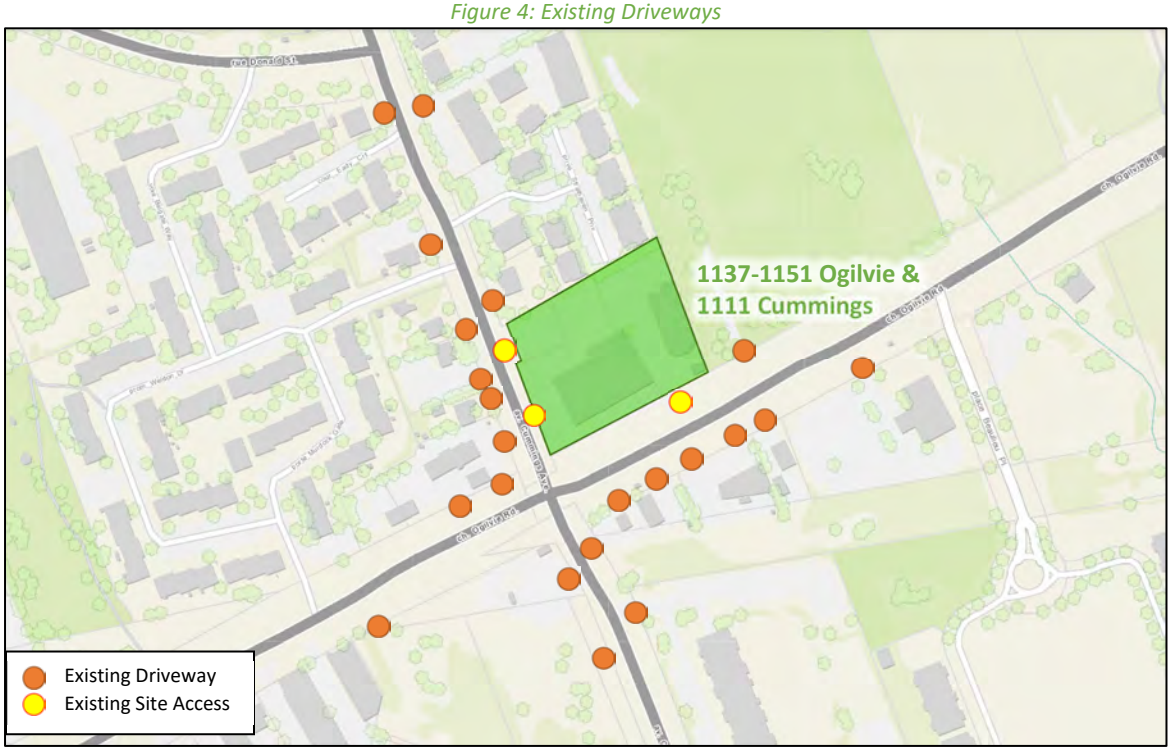
Donald Street at Cummings Avenue	The intersection of Donald Street at Cummings Avenue is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a through lane, and the southbound approach consists of a shared through/right-turn lane. The eastbound approach consists

	of an auxiliary left-turn lane, and a right-turn lane. No turn restrictions were noted.
Ogilvie Road at Cyrville Road	The intersection of Ogilvie Road at Cyrville Road is a signalized intersection. The northbound approach of Cyrville Road consists of an auxiliary left-turn lane, a shared through/right-turn lane, and a bike lane and the southbound consists of an auxiliary left-turn lane and a shared through/channelized right-turn lane. The eastbound approach consists of two through lanes, a bike lane, and an auxiliary right-turn lane and the westbound approach consists of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary right-turn lane. Eastbound left turns are restricted at this intersection.
Ogilvie Road at Cummings Avenue	The intersection of Ogilvie Road at Cummings Avenue is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a shared through/channelized right-turn lane, and the southbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane. The eastbound and westbound approaches each consist of an auxiliary left-turn lane, a through lane, a shared through/right-turn lane, and a bike lane. No turn restrictions were noted.
Ogilvie Road at Aviation Parkway	The intersection of Ogilvie Road at Aviation Parkway is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, a through lane, and a shared through/channelized right-turn lane and the eastbound and westbound approaches each consist of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary channelized right-turn lane. No turn restrictions were noted.
Cyrville Road Labelle at Street / Cummings Avenue	The intersection of Cyrville Road at Labelle Street/Cummings Avenue is a signalized intersection with the northbound and southbound approaches each consisting of an auxiliary left-turn lane and a shared through/right-turn lane, and the eastbound and westbound approaches each consisting of an auxiliary left-turn lane and a shared through/right-turn lane and a bike lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Driveways to residential land uses exist on both sides of Cummings Avenue north of the proposed site access, and to gas stations, and mid-rise residential land uses and a vacant lot south of the site accesses. On Ogilvie Road, driveways to outdoor recreational, funerary and commercial services, and restaurant land uses and driveways to a gas station are present east of the site accesses, and to a vacant lot and a gas station to the west of the site accesses. Figure 3 illustrates the existing driveways.

Figure 4: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: January 21, 2025

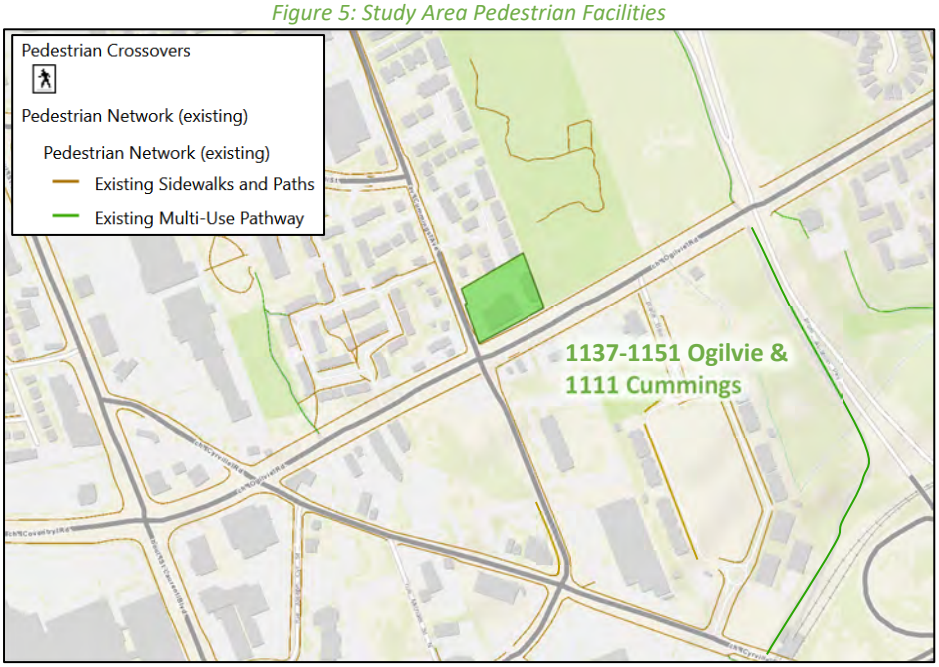
2.2.4 Cycling and Pedestrian Facilities

Figure 5 illustrates the pedestrian facilities in the study area and Figure 6 illustrates the cycling facilities.

Sidewalks are provided along both sides of Cummings Avenue north of Ogilvie Road, Ogilvie Road, Cyrville Road south of Ogilvie Road, Donald Street, and Labelle Street within the study area. Sidewalks are also provided along the east side of Cyrville Road north of Ogilvie Road, of Cummings Avenue south of Ogilvie Road, and along the 1173 Cyrville Road development boundary street of Cummings Avenue.

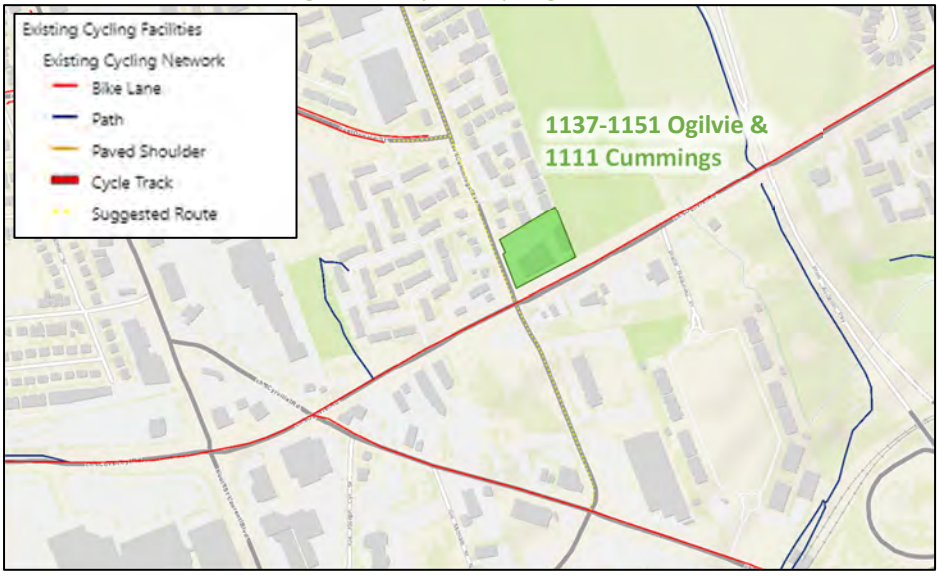
Cycling facilities include bike lanes along Ogilvie Road, Cyrville Road south of Ogilvie Road, and Donald Street. A multi-use path (MUP) is present along the west side of Aviation Parkway and on the east side of Cyrville Road separated by a concrete rumble strip. Donald Street west of St-Laurent Boulevard, St-Laurent Boulevard between Donald Street and Ogilvie Road, Ogilvie Road, Cyrville Road south of Ogilvie Road, the Aviation Pathway, and the pathway between the Aviation Parkway and Blair Station are Cross-Town Bikeways.

Figure 5: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: January 21, 2025

Figure 6: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: January 21, 2025

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 7 and Figure 8, respectively.

Figure 7: Existing Pedestrian Volumes

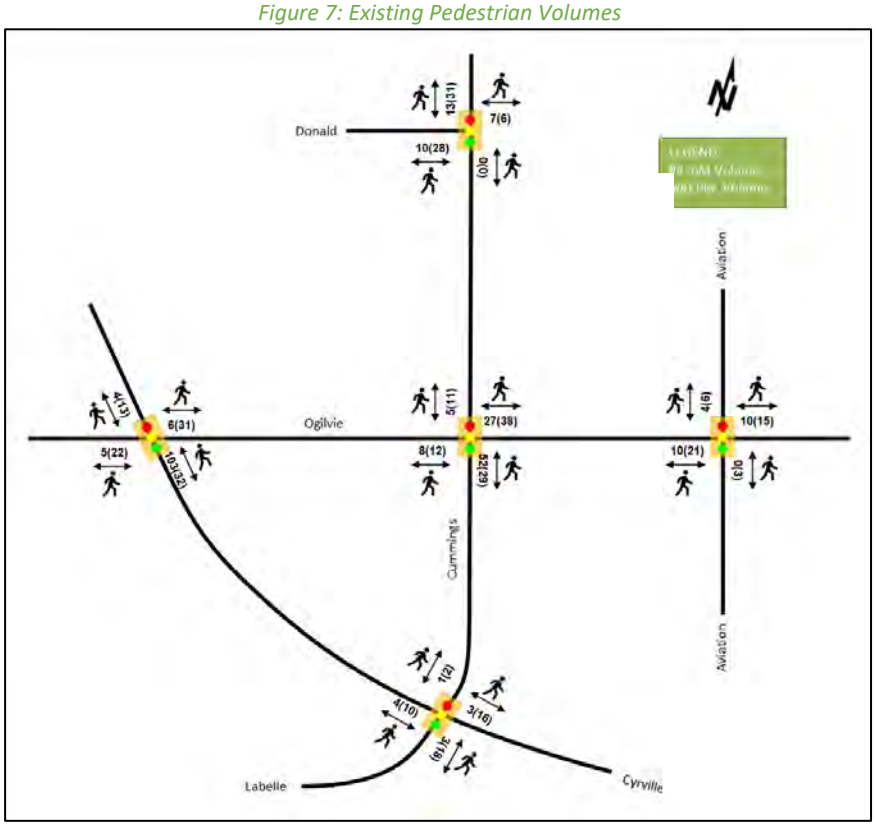
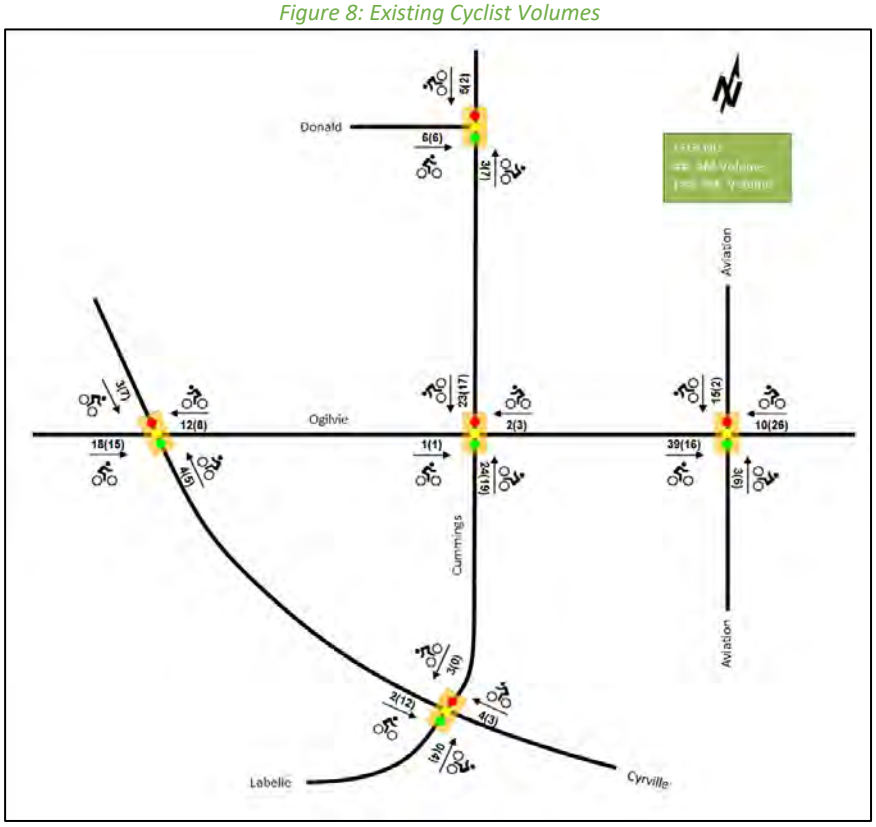


Figure 8: Existing Cyclist Volumes



2.2.5 Existing Transit

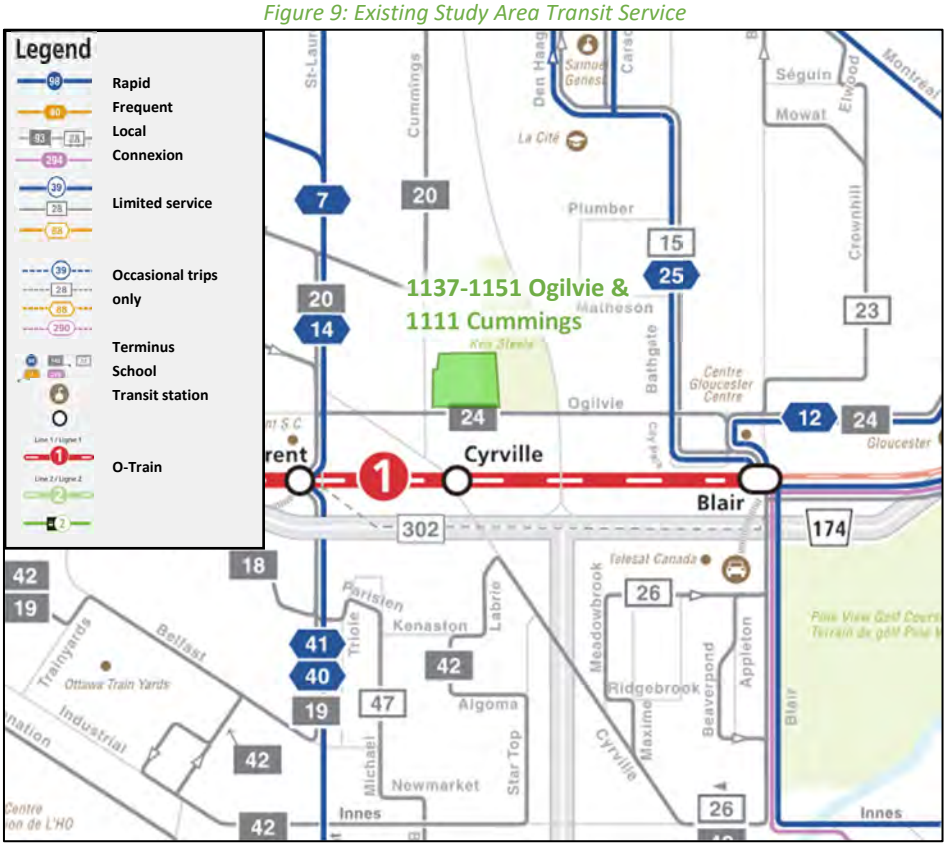
Figure 9 illustrates the transit system map in the study area and Figure 10 illustrates transit stops within 400 metres from the site and transit stations within 800 metres from the site. All transit information is from April 30, 2025 and is included for general information purposes and context to the surrounding area.

Within the study area, route #24 travel along Ogilvie Road, and route #20 travels along Donald Street and Cummings Avenue to the north. The frequency of these routes within proximity of the proposed site based on April 30, 2025 service levels are:

- Route #20 – 30-minute service all day, one hour service after 9:45 PM
- Route #24 – 15-minute service during peak hours, 30-minute service all day

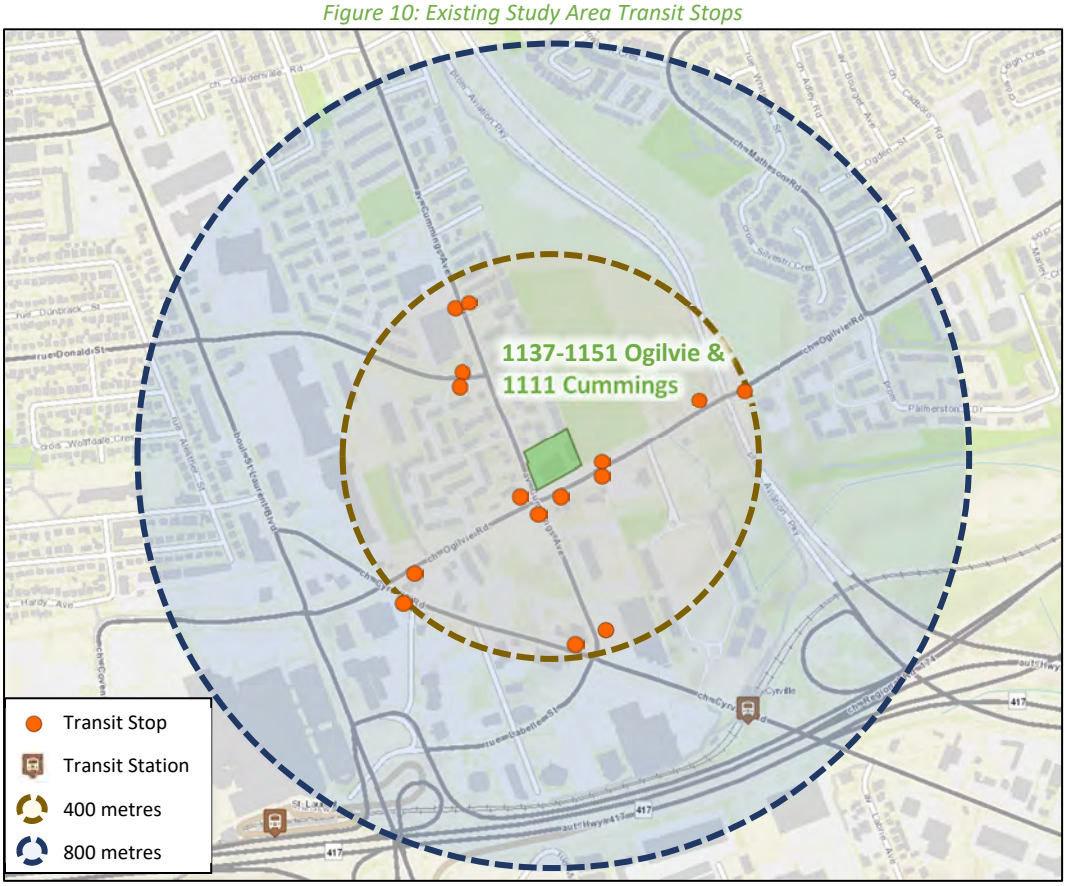
Additionally, the site is approximately 700-metre walking distance of Cyrville Station and approximately 1.1-kilometres walking distance of St. Laurent LRT station, on the Confederation LRT Line. The LRT line provides 5-minute service during the peak periods, and 10–15-minute service outside of peaks.

Figure 9: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: April 30, 2025

Figure 10: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: January 21, 2025

2.2.6 Existing Area Traffic Management Measures

Vertical centreline treatments are present on Cummings Avenue north of Donald Street within the study area, and a centre island is present approximately 60.0 metres north of Cummings Avenue at Donald Street intersection.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa, The Traffic Specialist, and Ontario Traffic Inc. for the existing study area intersections. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date	Source
Donald Street at Cummings Avenue	Thursday, October 26, 2023	The Traffic Specialist
Ogilvie Road at Cyrville Road	Thursday, October 26, 2023	The Traffic Specialist
Ogilvie Road at Cummings Avenue	Tuesday, October 31, 2023	Ontario Traffic Inc.
Ogilvie Road at Aviation Parkway	Thursday, September 28, 2023	City of Ottawa
Cyrville Road at Cummings Avenue/Labelle Street	Thursday, October 26, 2023	The Traffic Specialist

Figure 11 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 11: Existing Traffic Counts

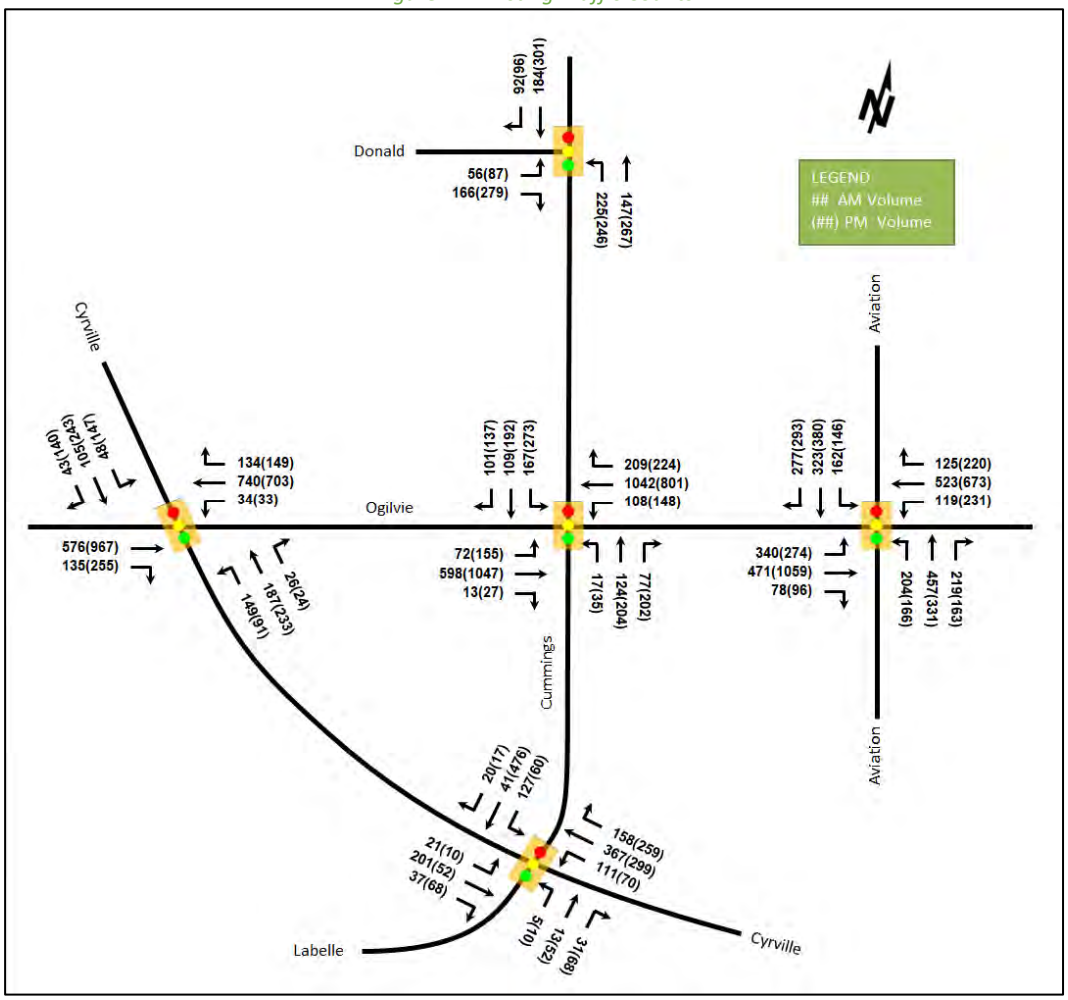


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Donald Street at Cummings Avenue *Signalized*	EBL	A	0.21	21.5	13.8	A	0.32	22.9	19.4
	EBR	A	0.44	7.7	13.2	A	0.59	8.0	16.4
	NBL	A	0.37	8.2	26.5	A	0.54	12.7	38.6
	NBT	A	0.14	5.6	13.7	A	0.29	7.2	27.9
	SBT/R	A	0.27	5.2	21.5	A	0.44	7.9	41.6
	Overall	**A**	**0.40**	**7.6**	-	**A**	**0.57**	**9.7**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Ogilvie Road at Cyrville Road *Signalized*	EBT	A	0.29	9.2	53.3	A	0.54	16.5	109.4
	EBR	A	0.15	2.0	8.5	A	0.30	2.5	12.6
	WBL	A	0.09	2.2	m1.1	A	0.17	24.3	m6.3
	WBT	A	0.36	1.9	20.3	A	0.39	23.3	m61.2
	WBR	A	0.16	0.3	m0.4	A	0.19	10.1	m10.5
	NBL	D	0.85	81.9	60.3	D	0.89	99.5	#50.2
	NBT	C	0.71	57.0	73.2	A	0.57	39.4	75.7
	SBL	A	0.37	48.6	21.7	C	0.75	59.0	56.2
	SBT/R	A	0.49	43.6	48.4	D	0.87	55.5	118.2
	Overall	**A**	**0.44**	**18.5**	-	**A**	**0.57**	**28.3**	-
Ogilvie Road at Cummings Avenue *Signalized*	EBL	A	0.51	35.1	26.2	D	0.85	68.4	#64.2
	EBT	A	0.39	16.7	52.8	F	1.10	90.4	#211.9
	WBL	A	0.31	13.8	m19.8	D	0.84	61.9	m#49.2
	WBT/R	D	0.83	29.9	m209.8	F	1.09	92.5	m#168.7
	NBL	A	0.09	40.5	10.7	A	0.15	34.6	16.1
	NBT/R	B	0.67	52.2	73.9	E	0.99	80.5	#165.4
	SBL	C	0.75	55.4	#58.9	F	1.01	82.8	#108.8
	SBT/R	A	0.47	33.6	63.3	A	0.49	23.6	80.2
	Overall	**C**	**0.79**	**30.0**	-	**F**	**1.04**	**80.1**	-
Ogilvie Road at Aviation Parkway *Signalized*	EBL	E	0.95	71.1	#127.8	D	0.82	33.3	m43.9
	EBT	A	0.44	33.3	72.3	E	0.95	37.6	m85.2
	EBR	A	0.13	3.3	m5.0	A	0.17	4.9	m1.6
	WBL	A	0.34	21.7	31.1	E	0.95	76.0	#96.2
	WBT	A	0.56	39.7	83.8	A	0.60	32.5	94.1
	WBR	A	0.24	3.9	9.7	A	0.34	4.5	16.2
	NBL	C	0.80	72.5	81.6	F	1.03	127.3	#90.7
	NBT	D	0.82	47.8	108.2	D	0.81	50.7	#79.3
	SBL	F	1.17	175.5	#100.5	F	1.24	201.1	#89.9
	SBT	E	0.91	56.6	#111.2	F	1.11	105.7	#129.3
	Overall	**C**	**0.80**	**52.6**	-	**F**	**1.01**	**58.7**	-
Cyrville Road at Cummings Avenue/Labelle Street *Signalized*	EBL	A	0.07	7.9	4.3	A	0.05	10.7	3.2
	EBT	A	0.28	8.7	29.4	A	0.19	6.5	13.6
	WBL	A	0.25	14.9	25.0	A	0.16	15.8	18.1
	WBT	C	0.72	22.8	#137.1	D	0.85	32.6	#164.7
	NBL	A	0.02	25.8	3.8	A	0.07	22.7	5.5
	NBT	A	0.16	14.5	10.4	A	0.29	13.4	22.6
	SBL	D	0.84	70.5	#52.2	A	0.30	23.9	20.5
	SBT	A	0.21	20.8	16.4	D	0.82	35.8	#152.6
	Overall	**C**	**0.72**	**23.7**	-	**D**	**0.83**	**28.5**	-

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

The intersection of Ogilvie Road at Cummings Avenue and Ogilvie Road at Aviation Parkway may experience capacity issues during the PM peak hour, however, the remaining study area intersections generally operate satisfactorily.

At the intersection of Ogilvie Road at Cyrville Road, the northbound left movement may be subject to extended queues during the PM peak hour.

The Ogilvie Road at Cummings Avenue intersection may be subject to extended queues on the southbound left-turn movement during the AM peak hour, and on the eastbound left, eastbound through, westbound left, westbound through/right, northbound through/right, and southbound left movements during the PM peak hour. The overall intersection, the eastbound through, westbound through, and southbound left movements are over theoretical capacity and may be subject to high delays during the PM peak hour, and the northbound through/right movement may be subject to high delays during the PM peak hour.

At the intersection of Ogilvie Road and Aviation Parkway during the AM peak hour, the southbound left movement is over theoretical capacity and may be subject to high delays and extended queues, and the eastbound left and southbound through movements may exhibit extended queues. During the PM peak hour, the northbound left, southbound left, and southbound through movements, are all over theoretical capacity and may exhibit high delays and extended queues, and overall intersection is over theoretical capacity. Additionally, the westbound left and northbound through movements may exhibit extended queues during the PM peak hour. A shift of three seconds from the northbound through movement to the southbound left movement during the AM peak hour would address the capacity issues during the AM peak hour and reduce the v/c of all movements to be 1.00 or below.

The Cyrville Road at Cummings Avenue/Labelle Street intersection's westbound through and southbound left may exhibit extended queues during the AM peak hour, and the westbound through and southbound through movements may exhibit extended queues during the PM peak hour.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network (2018-2022). The latest detailed collision data on record from the City are for a 5-year period one year earlier than the open data the data range (2017-2021). Table 3 summarizes the collision types and conditions in the study area, Figure 12 illustrates the area collisions, and Table 4 summarizes the total collisions for each of the locations analyzed. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**80**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	20	25%
	Property Damage Only	60	75%
Initial Impact Type	**Angle**	19	24%
	Rear end	21	26%
	Sideswipe	11	14%
	Turning Movement	23	29%
	SMV Other	5	6%
	Other	1	1%
Road Surface Condition	**Dry**	51	64%
	Wet	13	16%
	Loose Snow	3	4%
	Slush	3	4%
	Packed Snow	5	6%
	Ice	5	6%
Pedestrian Involved		3	4%

	Number	%
Total Collisions	**80**	**100%**
Cyclists Involved	5	6%

Figure 12: Study Area Collision Records, 2018-2022

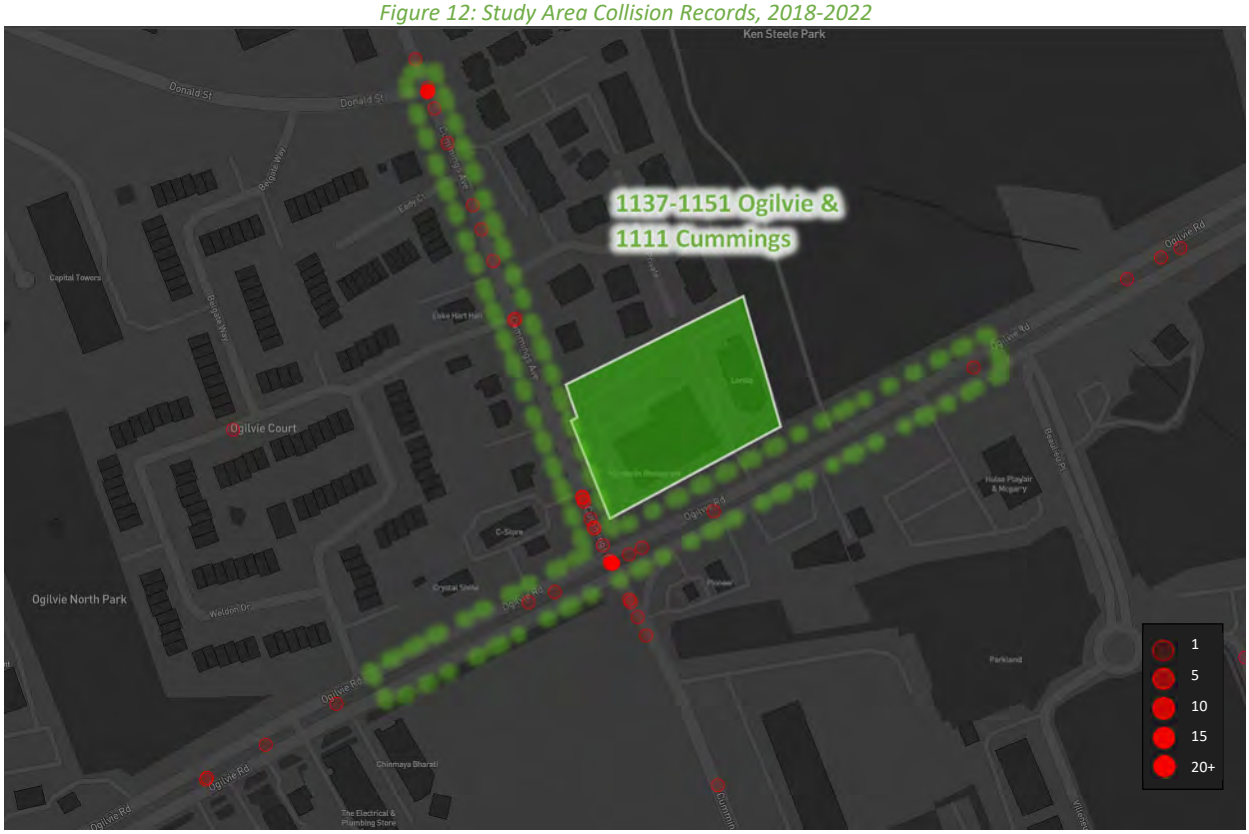


Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**80**	**100%**
Ogilvie Rd at Cummings Ave	47	59%
Donald St at Cummings Ave	13	16%
Cummings Ave between Weldon Dr & Ogilvie Rd	10	13%
Ogilvie Rd between Cummings Ave & Beaulieu Pl	4	5%
Cummings Ave between Donald St & Eady Crt	3	4%
Ogilvie Rd between Murdock Gt & Cummings Ave	2	3%
Cummings Ave between Eady Crt & Strathaven Priv	1	1%

Within the study area, three pedestrian collisions and five cyclist collisions were noted between 2018-2022. Three cyclist collisions occurred at the intersection of Ogilvie Road at Cummings Avenue, and one cyclist collision each at the segment of Cummings Avenue between Ogilvie Road and Weldon Drive and of Ogilvie Road between Beaulieu Place Cummings Avenue. Three pedestrian collisions occurred at the intersection of Donald Street at Cummings Avenue. The pedestrian and cyclist collisions at Ogilvie Road at Cummings Avenue, Donald Street at Cummings Avenue, and Cummings Avenue between Ogilvie Road and Weldon Drive will be further discussed in detailed collision reviews for each location below. The cyclist collision, which took place on Ogilvie Road between Beaulieu Place and Cummings Avenue, was an angled collision that occurred in 2018 during dark and dry conditions. No further collision review is required at this location as part of this study.

Table 5, Table 6, and Table 7 summarize the collision types and conditions for the intersections of Ogilvie Road at Cummings Avenue and Ogilvie Road at Donald Street, and the segment of Cummings Avenue between Weldon Drive and Ogilvie Road, respectively.

Table 5: Ogilvie Road at Cummings Avenue Collision Summary

		Number	%
Total Collisions		**47**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	10	21%
	Property Damage Only	37	79%
Initial Impact Type	**Angle**	6	13%
	Rear end	16	34%
	Sideswipe	8	17%
	Turning Movement	16	34%
	Other	1	2%
Road Surface Condition	**Dry**	31	66%
	Wet	6	13%
	Loose Snow	3	6%
	Packed Snow	4	9%
	Ice	3	6%
Pedestrian Involved		0	0%
Cyclists Involved		3	6%

The Ogilvie Road at Cummings Avenue intersection had a total of 47 collisions during the 2018-2022 time period, with 37 involving property damage only and the remaining ten having non-fatal injuries. The collision types are most represented by rear end and turning movement with 16 collisions each, sideswipe with eight, angle with six, and other with one. Rear end collisions and sideswipe collisions are typically associated with congestion. Weather conditions are not considered to affect collisions at this location.

From the 2017-2021 detailed data, turning movement and angle collisions were observed on all approaches at the intersection. A high proportion of the collisions involving eastbound and southbound vehicles were associated with the left-turn on these approaches or the U-turn on the eastbound approach, where eastbound left-turning vehicles were typically in conflict with westbound through vehicles, and southbound left-turning vehicles were typically in conflict with northbound through or right-turning vehicles. The frequency of left turn collisions may be indicative of drivers pushing gaps in the traffic stream in congested conditions, especially given these collisions cluster around the AM, PM, and mid-day peaks. All sideswipe collisions involved lane changes on the east and west legs. No patterns have been observed for the remaining collision types. Although the 2018-2022 collision data included three cyclist collisions, a more detailed review of the 2017-2021 data included four cyclist collisions at the intersection of Ogilvie Road at Cummings Avenue. Collisions involving cyclist from these data occurred in daylight and in clear conditions and were the exclusive result of westbound right-turning motorists in conflict with cyclists making the westbound through movement.

The City's Cycling Safety Review of High-Volume Intersections (March 2020) completed a review of this intersection for pedestrian and cycling-related observations and movements. This report suggests improvements such as the removal of the northbound right-turn channel, the addition of a westbound right-turn lane, and signal phasing changes. Ultimately a protected intersection configuration was suggested to help address a variety of collisions noted at Ogilvie Road at Cummings Avenue intersection. These improvements are understood to be planned for implementation by 2027 as part of the Cumming Cycling (Donald to Cyrville) active transportation

project. No interim mitigations on Cummings Avenue are required, and no interim changes to the arterial Ogilvie Road are identified or recommended.

Table 6: Donald Street at Cummings Avenue Collision Summary

		Number	%
Total Collisions		**13**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	4	31%
	Property Damage Only	9	69%
Initial Impact Type	**Angle**	2	15%
	Rear end	3	23%
	Sideswipe	1	8%
	Turning Movement	3	23%
	SMV Other	4	31%
Road Surface Condition	**Dry**	6	46%
	Wet	4	31%
	Slush	1	8%
	Ice	2	15%
Pedestrian Involved		3	23%
Cyclists Involved		0	0%

The Donald Street at Cummings Avenue intersection had a total of 13 collisions during the 2018-2022 time period, with nine involving property damage only and the remaining four having non-fatal injuries. The collision types are most represented by SMV other with four collisions, which included the three pedestrian collisions, followed by rear end and turning movement with three collisions each, two angle collisions, and one sideswipe collisions.

From the 2017-2021 detailed data, two pedestrian collisions were noted, both in dark conditions. One collision occurred in snow as a driver was making an eastbound right turn and one occurred in rain as a driver was making a northbound left turn. This intersection is included in the planned active transportation infrastructure project entitled Cummings Cycling (Donald to Cyrville) which will be implementing a forthcoming design for upgrades along the Cummings Avenue corridor, including at its intersection with Donald Street. No interim mitigations are required, and no further review of collisions at this location is required as part of this study.

Table 7: Cummings Avenue between Weldon Drive and Ogilvie Road Collision Summary

		Number	%
Total Collisions		**10**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	1	10%
	Property Damage Only	9	90%
Initial Impact Type	**Angle**	8	80%
	Turning Movement	2	20%
Road Surface Condition	**Dry**	7	70%
	Wet	2	20%
	Packed Snow	1	10%
Pedestrian Involved		0	0%
Cyclists Involved		1	10%

The segment of Cummings Avenue between Weldon Drive and Ogilvie Road had a total of ten collisions during the 2018-2022 time period, with nine involving property damage only and the remaining one having non-fatal injuries. The collision types are most represented by angle with eight collisions, followed by two turning movement collisions.

From the 2017-2021 detailed data, all angle collisions involved eastbound vehicles, 88% of which were turning left, in conflict with northbound and southbound through vehicles in equal proportions. Based on the collisions' coordinates, these appear to be situated in proximity to the Ogilvie Road intersection and related to the gas station on the corner. As part of the concept plan for the intersection of Cummings Avenue at Ogilvie Road from the Cycling Safety Review of High-Volume Intersections, a median is proposed on the southbound approach of Cummings Avenue, and therefore the eastbound left-turn from the gas station will be physical restricted in the future conditions.

The collision involving a cyclist occurred during daylight hours as a cyclist made an eastbound left-turn movement while an automobile was making the northbound through movement. This collision is related to the gas station and would also be physically restricted in the future conditions. No further review of collisions at this location is required as part of this study.

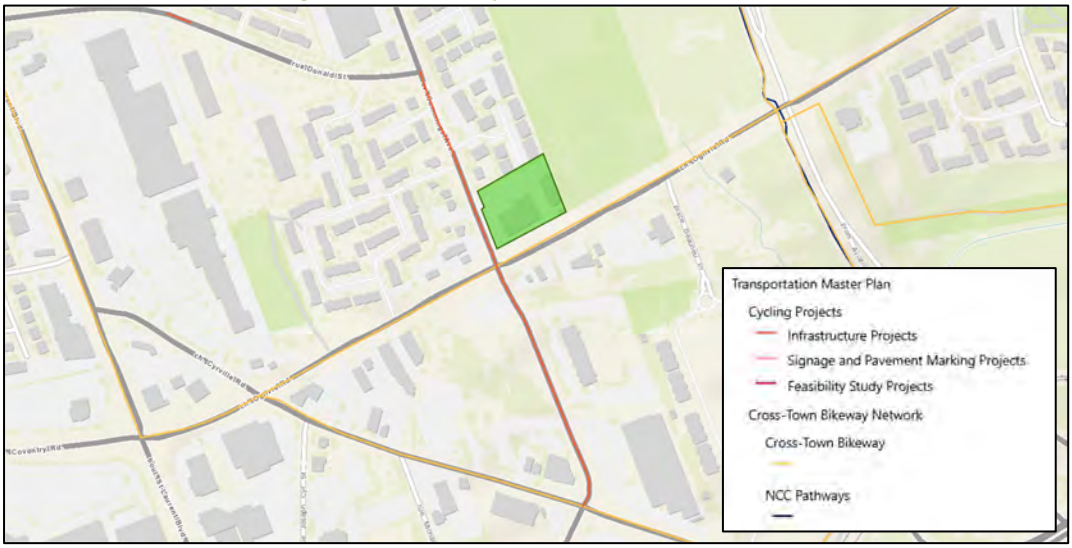
2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

2.3.1.1 2023 Transportation Master Plan (TMP) – Part 1

The 2023 TMP – Part 1 includes cycling facilities on Cummings Avenue from Donald Street to Cyrville Road and missing links on Donald Street at Elaine Drive and signage and pavement marking for bike lanes, where feasible, on Ogilvie Road. Figure 13 illustrates the cycling and pedestrian plans in the 2023 TMP – Part 1.

Figure 13: 2023 Transportation Master Plan – Part 1



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: January 21, 2025

2.3.1.2 Transportation Master Plan (2013)

Within the Transportation Master Plan, the Road Network's Network Concept diagram shows Cyrville Road between St Laurent Boulevard and Lemieux Street as a new or widened collector, and Cyrville Road south of Lemieux Street as widened arterials. Within the Affordable Network diagram, these sections are shown as segments for phase 3 widening (2026-2031). The scope of the work per the Affordable Network is the urbanization of the existing two-lane rural cross-section of Cyrville Road between Star Top Road and St Laurent Boulevard, and the widening of Coventry Road from two lanes to four between Belfast Road and the Shopping Centre – outside of the study area.

Within the Rapid Transit and Transit Priority Network's Network Concept diagram, isolated transit priority measures are shown along Ogilvie Road, however these are not included in the Affordable Network. Both Networks include an isolated measures transit priority corridor along St. Laurent Boulevard west of the study area.

2.3.1.3 Ottawa Cycling Plan (2013)

The Ottawa Cycling Plan P2-11 includes a MUP connection from St. Laurent Station to the Aviation Pathway as part of the TOD projects, and this link is scheduled for implementation between 2020 and 2025.

Additionally, within the Ottawa Cycling Plan, P1-39 includes shared use lanes on Donald Street within the study area and have been completed.

2.3.1.4 Cummings Cycling (Donald to Cyrville)

The City's Cycling Safety Review of High-Volume Intersections (2020) included a review of Ogilvie Road at Cummings Avenue intersection for pedestrian and cycling-related observations and movements. The study recommended a variety of improvements, such as the removal of the northbound right-turn channel, the addition of a westbound right-turn lane, signal phasing changes, and ultimately a protected intersection configuration.

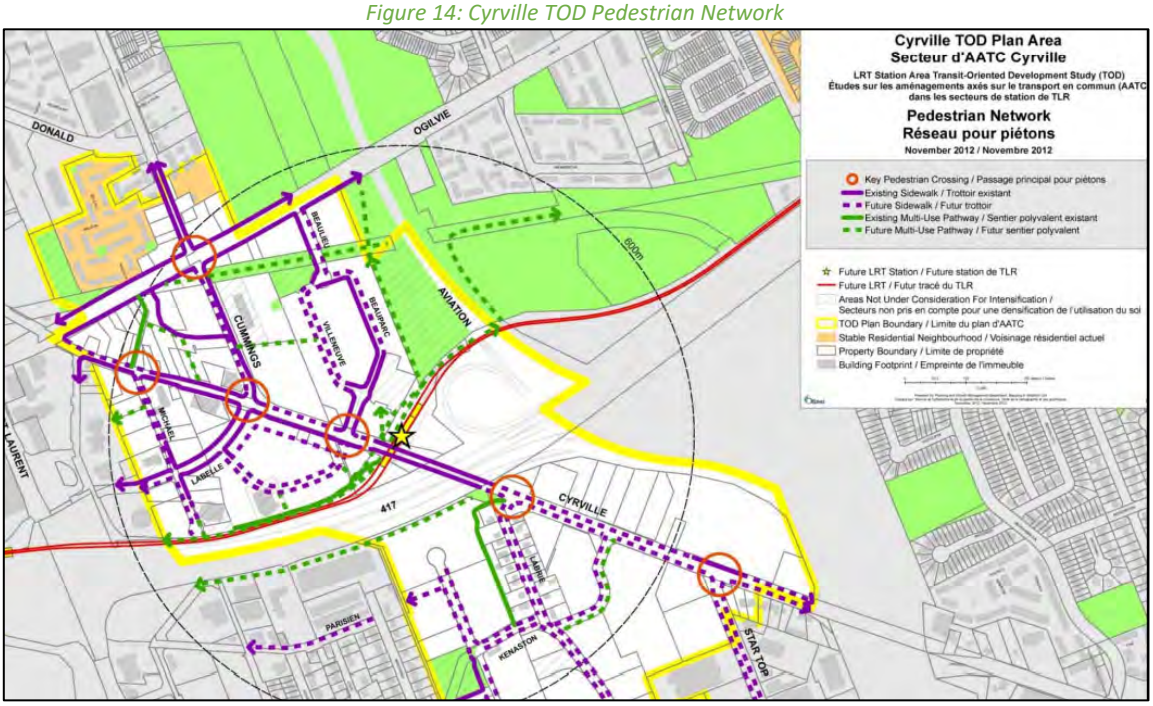
This work has been included in a planned active transportation infrastructure project entitled Cummings Cycling (Donald to Cyrville). The scope of work is the evaluation of dedicated cycling facilities on Cummings Avenue, either as cycletracks or bike lanes. The scope of work at the intersection of Cummings Avenue at Ogilvie Road is a fully protected intersection, tying into existing bike lanes on Ogilvie Road east and west of the intersection. Construction of this project has been assumed to commence in 2027 and to be completed by 2029.

Excerpts from City draft concept plans from the functional design exercise for the intersections of Cummings Avenue at Ogilvie Road, at Donald Street, and at Cyrville Road are provided in Appendix E.

2.3.1.5 Cyrville TOD Plan

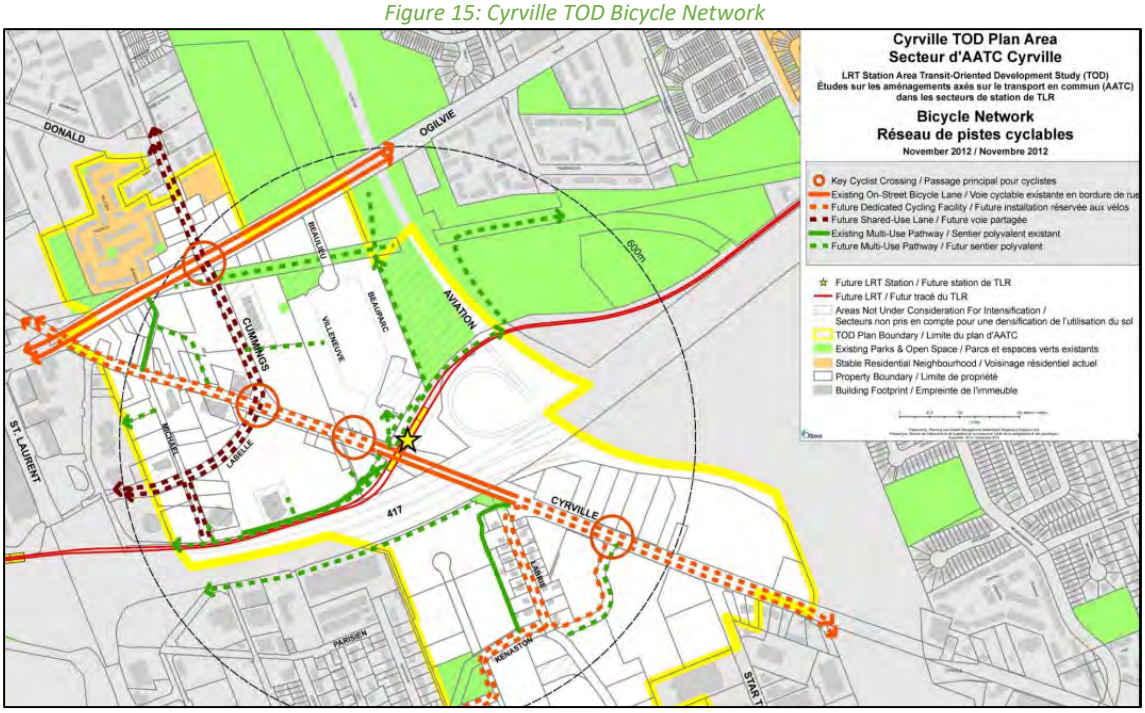
The Cyrville TOD plan outlines a future sidewalk on the west side of Cummings Avenue south of Ogilvie Road and future shared-use lanes along Cummings Avenue. It is noted that the sidewalk on the west side of Cummings Avenue south of Ogilvie Road will be implemented as part of roadway modifications for the 1098 Ogilvie Road / 1178 Cummings Avenue development. Figure 14 and Figure 15 illustrate the Cyrville pedestrian and cycling TOD plans, respectively.

Figure 14: Cyrville TOD Pedestrian Network



Source: https://ottawa.ca/en/transit-oriented-development-tod-plans Accessed: October 24, 2023

Figure 15: Cyrville TOD Bicycle Network



Source: https://ottawa.ca/en/transit-oriented-development-tod-plans Accessed: October 24, 2023

2.3.1.6 Coventry Road Widening EA

The study of Coventry Road widening between St. Laurent Shopping Centre West Access and Belfast Road is planned and is understood to be commencing shortly. The EA study will offer an opportunity to improve the public realm and enhance connectivity for pedestrians and cyclists. The project timeline is unknown, and it is assumed that it will be completed beyond the study horizon years.

2.3.1.7 St-Laurent Boulevard Transit Priority Corridor EA

The study of the St-Laurent Boulevard Transit Priority Corridor, between Hemlock Road and Innes Road/Industrial Avenue, is ongoing. The EA study will explore options to enhance transit service efficiency and the travel environment for all modes. Since the timing of implementation is currently unknown, it is assumed that it will occur beyond the study horizon years.

2.3.2 Other Study Area Developments

1098 Ogilvie Road, 1178 Cummings Avenue

The proposed development application includes a site plan for a two-phase development, comprising three residential towers and one hotel for 850 residential dwelling units and 175 hotel rooms. The development is expected to generate 148 new AM peak hour two-way auto trips and 130 new PM peak hour two-way auto trips. The development is currently under construction. (Parsons, 2020)

1298 Ogilvie Road

The proposed development application includes a site plan for seven townhome buildings comprising 78 residential units. The development is expected to generate 39 new AM peak hour two-way auto trips and 40 new PM peak hour two-way auto trips. The trip generation trigger was not met, and negligible impact is anticipated on road network. The build-out horizon is assumed to be 2025. (Parsons, 2018)

1155 Joseph Cyr Street, 1082 Cyrville Road

The proposed development application includes a zoning amendment and site plan for the construction of a six-storey mixed-use building comprising 116 residential dwelling units and 1,425 ft^2 of ground floor retail. The development is currently under construction. The development is expected to generate eight new AM and nine new PM two-way peak-hour auto trips. (CGH, 2020)

1209 St Laurent Boulevard, 1200 Lemieux Street

The proposed development includes a site plan application to construct two 30-storey residential buildings including 644 units to be built by 2026. The development is expected to generate 35 new AM peak hour two-way auto trips and 38 new PM peak hour two-way auto trips. (CGH, 2022)

1125 - 1149 Cyrville Road

The proposed development application includes a site plan to construct two residential buildings with a total of 354 units. The development is expected to generate 22 new AM and 21 new PM two-way peak-hour auto trips. The development is currently under construction. (Stantec, 2021)

1184-1196 Cummings Avenue

The proposed development application includes a zoning amendment and site plan for redeveloping existing residential units into a mid-rise apartment building totaling 188 units. The development is anticipated to be built out by 2026 and to generate 17 new AM and 17 new PM two-way auto trips. (CGH, 2023)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Cyrville Road at:
  - Ogilvie Road
  - Labelle Street/Cummings Avenue

- Ogilvie Road at:
  - Cummings Avenue
  - Aviation Parkway
- Cummings Avenue at:
  - Donald Street
  - Site Access (future conditions)

The boundary roads will be Cummings Avenue and Ogilvie Road and no screenlines are present within proximity to the site.

3.2 Time Periods

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

3.3 Horizon Years

The Phase 1 build-out year is anticipated to be 2027, and the anticipated Phase 2 build out year is 2029. As a result, the full build out plus five years horizon year is 2034.

4 Development-Generated Travel Demand

4.1 Mode Shares

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

Table 8: TRANS Trip Generation Manual Recommended Mode Shares – Ottawa East

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	40%	40%	57%	55%
Auto Passenger	7%	14%	10%	18%
Transit	38%	28%	15%	11%
Cycling	2%	3%	1%	1%
Walking	13%	15%	17%	15%
Total	**100%**	**100%**	**100%**	**100%**

Being within the Cyrville TOD Plan area, which is approximately 700-metre walking distance from Cyrville Station, a higher transit mode is considered achievable at this location. A 15% shift to the transit mode from the auto mode is proposed for residential land use, and a 5% shift to the transit mode from the auto mode is proposed for commercial land use. The proposed modified mode share targets are summarized in Table 9.

Table 9: Proposed Development Mode Shares

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	25%	25%	52%	50%
Auto Passenger	7%	14%	10%	18%
Transit	53%	43%	20%	16%
Cycling	2%	3%	1%	1%
Walking	13%	15%	17%	15%
Total	**100%**	**100%**	**100%**	**100%**

4.2 Trip Generation

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

Table 10: Trip Generation Person Trip Rates

Land Use	Land Use Code	Peak Period	Vehicle Trip Rate	Person Trip Rates
Multi-Unit High-Rise	221 & 222 (TRANS)	AM	-	0.80
		PM	-	0.90
Land Use	**Land Use Code**	**Peak Hour**	**Vehicle Trip Rate**	**Person Trip Rates**
Strip Retail Plaza (<40k sq. ft.)	822 (ITE)	AM	2.36	3.02
		PM	6.59	8.44

Using the above person trip rates, the total person trip generation has been estimated. Table 11 and Table 12 summarize the total person trip generation for the residential land uses and for the non-residential land uses for Phase 1 and full build out, respectively.

Table 11: Person Trip Generation by Peak Period/Hour – Phase 1

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	436	108	241	349	227	165	392
Land Use	**GFA**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Strip Retail Plaza (<40k sq. ft.)	5,846 sq. ft	11	7	18	25	25	49

Table 12: Person Trip Generation by Peak Period/Hour – Full Build Out

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	846	210	467	677	441	320	761
Land Use	**GFA**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Strip Retail Plaza (<40k sq. ft.)	8,327 sq. ft	15	10	25	35	35	70

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail component for mixed-use developments. The rates summarized in Table 13 represent the percentage of trips to/from the retail use based on the residential component.

Table 13: Internal Capture Rates

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

Typical pass-by reductions applied to the retail land use's trip generation are 40%, which is derived from the recommended value presented in the ITE Trip Generation Manual 11th Edition (2021) for the most similar land use with a recommended rate, "Retail (40k – 150k sq. ft)." The subject development is one quadrant of an intersection with an arterial as the major roadway and with a major collector/arterial as the minor roadway. Given this proximity, and that the site access is onto the lower classification roadway, the application of the pass-by

percentage to Cummings Avenue would not fully capture the expected pass-by component of the site trips. Due to this context, the analysis will forgo the application of diverted trips and will apply the 40% pass-by from both Ogilvie Road at Cummings Avenue.

Using the above mode share targets for a LRT area, the internal capture and pass-by rates, and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 14 and Table 15 summarize the residential trip generation and the non-residential trip generation by mode and peak hour for Phase 1 and full build out, respectively.

Table 14: Trip Generation by Mode – Phase 1

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	**In**	**Out**	**Total**	**Mode Share**	**In**	**Out**	**Total**
Multi-Unit (High-Rise)	Auto Driver	**25%**	13	29	42	**25%**	25	18	43
	Auto Passenger	**7%**	4	8	12	**14%**	14	10	24
	Transit	**53%**	31	70	102	**43%**	46	33	79
	Cycling	**2%**	1	3	4	**3%**	3	2	6
	Walking	**13%**	8	18	26	**15%**	18	13	31
	Total	**100%**	**57**	**128**	**186**	**100%**	**106**	**76**	**183**
Strip Retail Plaza (<40k)	Auto Driver	**52%**	3	2	5	**50%**	7	5	12
	Auto Passenger	**10%**	1	1	2	**18%**	4	3	7
	Transit	**20%**	2	1	3	**16%**	4	3	7
	Cycling	**1%**	0	0	0	**1%**	0	0	0
	Walking	**17%**	2	1	3	**15%**	3	3	6
	Total	**100%**	**8**	**5**	**13**	**100%**	**18**	**14**	**32**
	Internal Capture	*varies*	*-2*	*-1*	*-3*	*varies*	*-3*	*-7*	*-10*
	Pass-by	*40%*	*-2*	*-1*	*-3*	*40%*	*-4*	*-4*	*-8*
Total	Auto Driver	-	16	31	47	-	32	23	55
	Auto Passenger	-	5	9	14	-	18	13	31
	Transit	-	33	71	105	-	50	36	86
	Cycling	-	1	3	4	-	3	2	6
	Walking	-	10	19	29	-	21	16	37
	Total	-	**65**	**133**	**199**	-	**124**	**90**	**215**
	Internal Capture	*varies*	*-2*	*-1*	*-3*	*varies*	*-3*	*-7*	*-10*
	Pass-by	*40%*	*-2*	*-1*	*-3*	*40%*	*-4*	*-4*	*-8*

As shown above, a total of 47 AM and 55 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

Table 15: Trip Generation by Mode – Full Build Out

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**25%**	25	56	81	**25%**	48	35	84
	Auto Passenger	**7%**	7	16	23	**14%**	27	20	47
	Transit	**53%**	61	136	197	**43%**	89	65	154
	Cycling	**2%**	2	5	8	**3%**	6	5	11
	Walking	**13%**	16	35	51	**15%**	34	25	59
	Total	**100%**	**111**	**248**	**360**	**100%**	**204**	**150**	**355**
Strip Retail Plaza (<40k)	Auto Driver	**52%**	4	3	7	**50%**	10	8	18
	Auto Passenger	**10%**	1	1	2	**18%**	6	5	11
	Transit	**20%**	2	2	4	**16%**	5	4	9
	Cycling	**1%**	0	0	0	**1%**	0	0	0
	Walking	**17%**	2	2	4	**15%**	5	4	9
	Total	**100%**	**9**	**8**	**17**	**100%**	**26**	**21**	**47**
	Internal Capture	*varies*	*-3*	*-1*	*-4*	*varies*	*-4*	*-9*	*-13*
	Pass-by	*40%*	*-2*	*-2*	*-4*	*40%*	*-6*	*-5*	*-11*
Total	Auto Driver	-	29	59	88	-	58	43	102
	Auto Passenger	-	8	17	25	-	33	25	58
	Transit	-	63	138	201	-	94	69	163
	Cycling	-	2	5	8	-	6	5	11
	Walking	-	18	37	55	-	39	29	68
	Total	-	**120**	**256**	**377**	-	**230**	**171**	**402**
	Internal Capture	*varies*	*-3*	*-1*	*-4*	*varies*	*-6*	*-5*	*-11*
	Pass-by	*40%*	*-2*	*-2*	*-4*	*40%*	*-4*	*-9*	*-13*

As shown above, a total of 88 AM and 102 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Ottawa East. Table 16 below summarizes the distributions.

Table 16: OD Survey Distribution – Ottawa East

To/From	Residential % of Trips
North	15%
South	20%
East	15%
West	50%
Total	**100%**

4.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 17 summarizes the proportional assignment to the study area roadways. Figure 16 and Figure 17 illustrates the new site generated volumes for Phase 1 and the full build out, respectively. Figure 18 and Figure 19 illustrate the pass-by volumes.

Table 17: Trip Assignment

To/From	Via
North	10% Donald St (N) 5% Cummings Ave (N)
South	5% Aviation Pkwy (S) 5% Cummings Ave (S) 10% Ogilvie Rd (W)
East	10% Ogilvie Rd (E) 5% Cyrville Rd (E)
West	50% Ogilvie Rd (W)
Total	**100%**

Figure 16: New Site Generated Auto Volumes – Phase 1

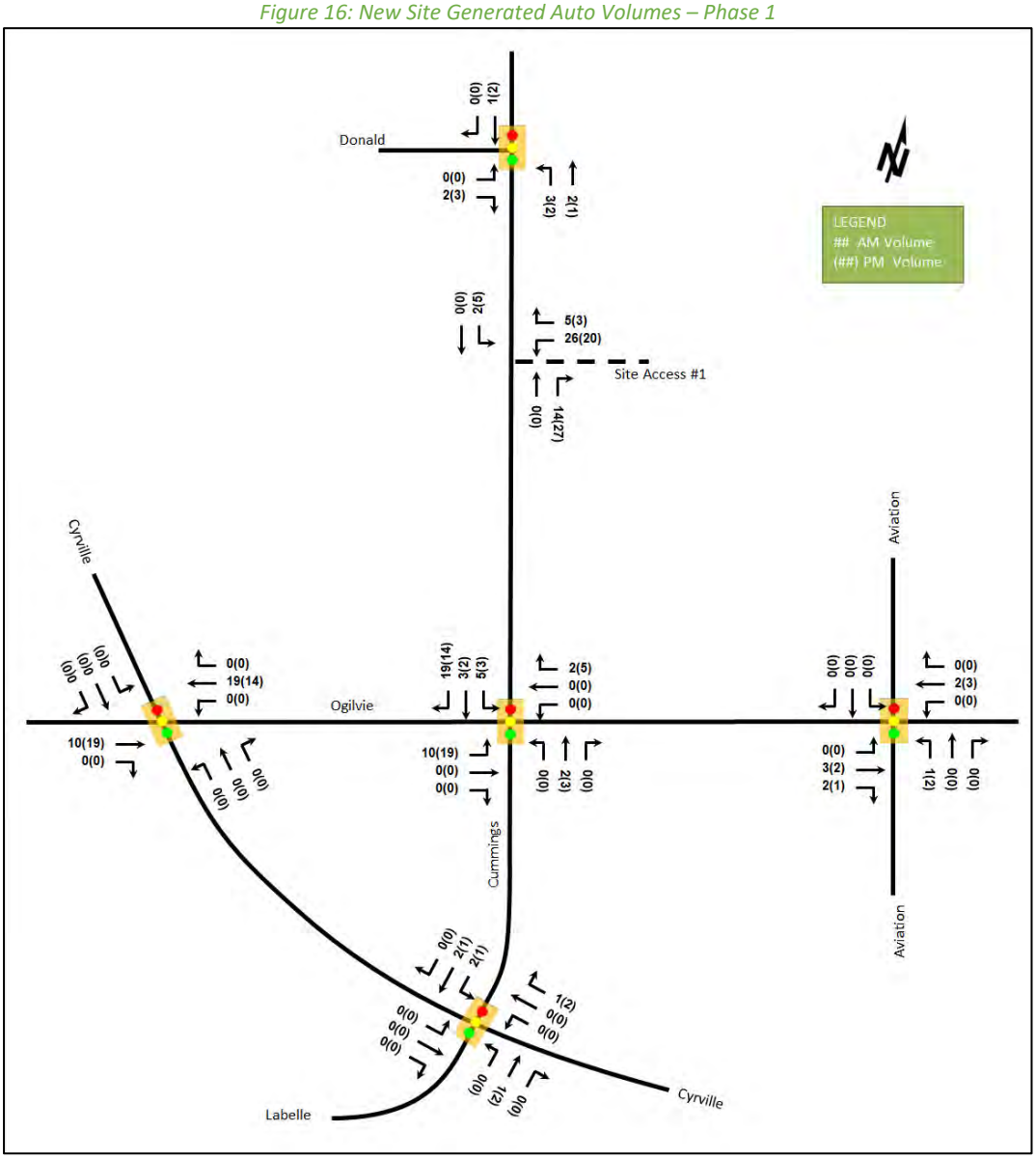


Figure 17: New Site Generated Auto Volumes – Full Build Out

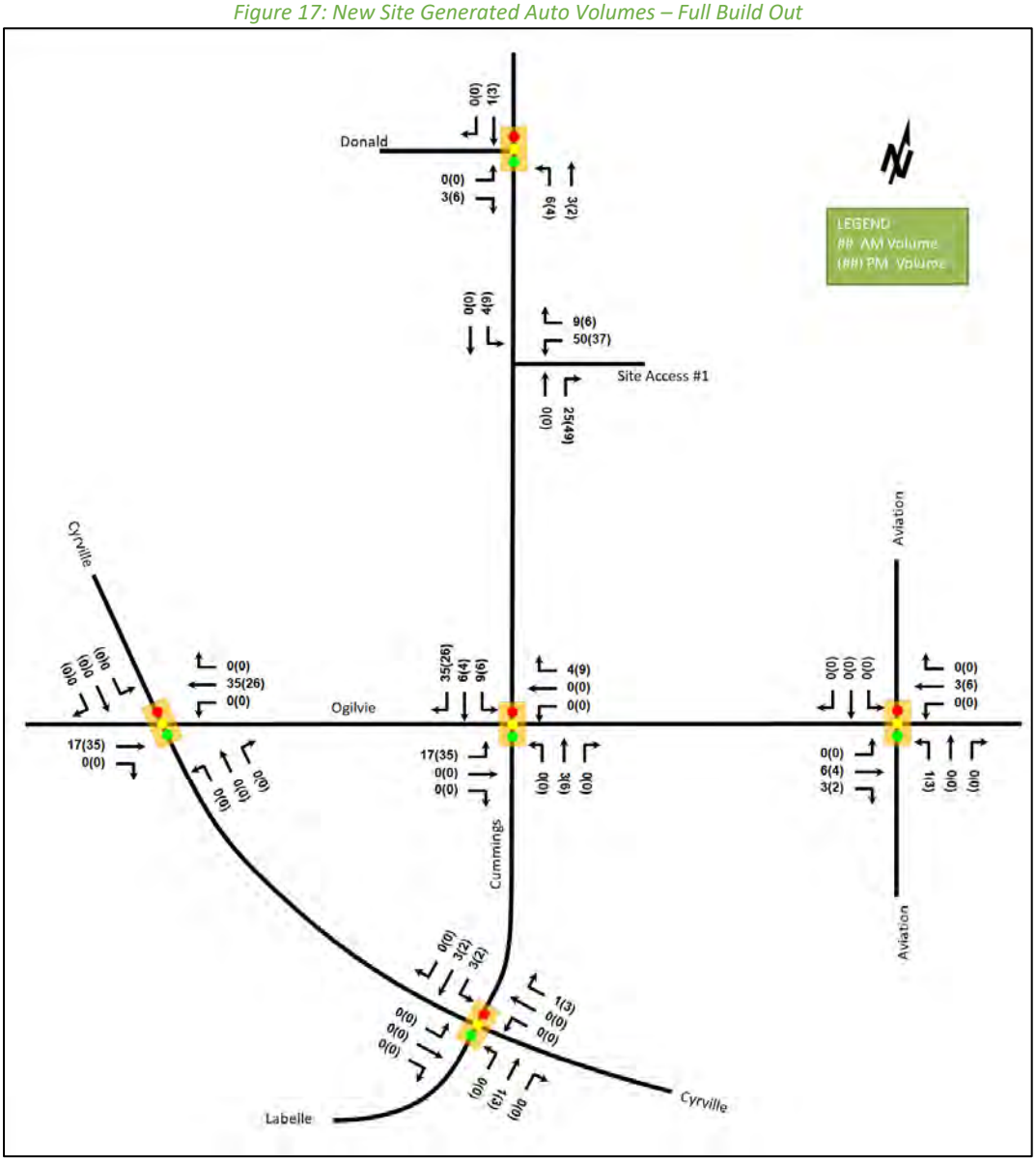


Figure 18: Pass-by Auto Volumes – Phase 1

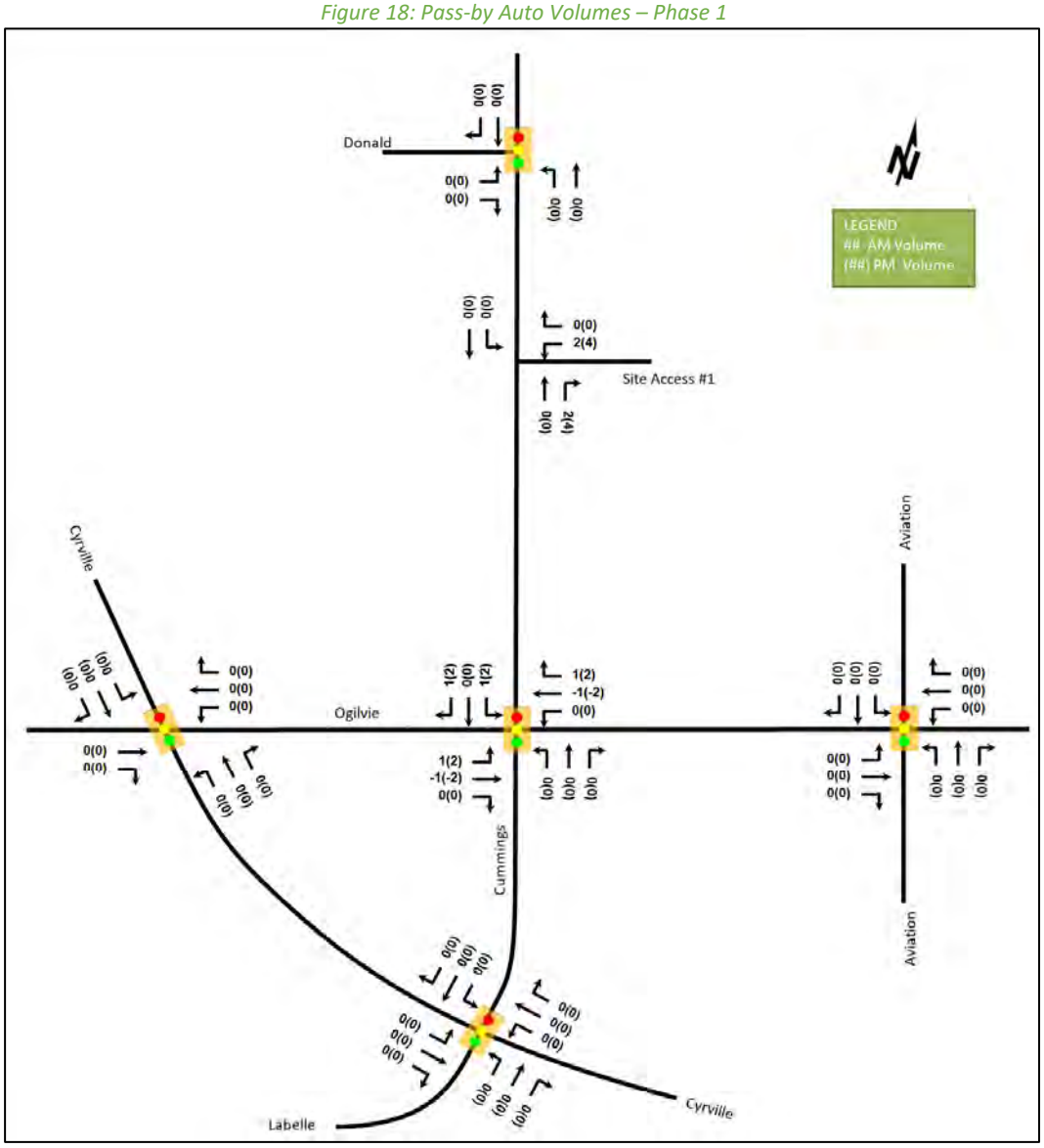
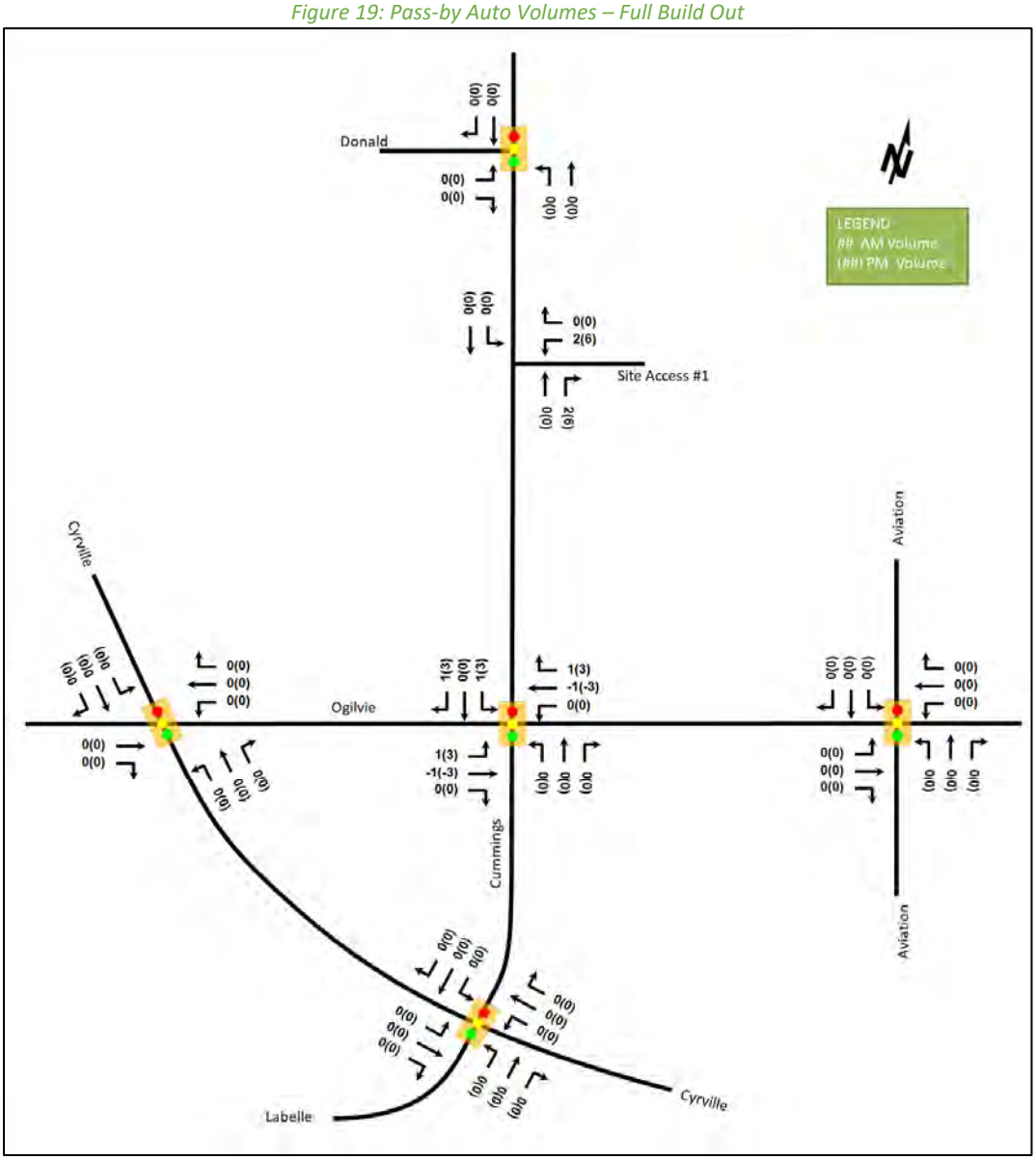


Figure 19: Pass-by Auto Volumes – Full Build Out



4.5 Trip Reductions

The existing supermarket is approximately 6,390 sq. ft, and the existing restaurant is approximately 8,855 sq. ft on the 1137 Ogilvie Road parcel for Phase 1. The existing restaurant is approximately 5,995 sq. ft on the 1151 Ogilvie Road parcel for Phase 2. All are closed during the AM peak hour. Using the ITE trip generation rates for the land use of Supermarket (ITE 850), High-Turnover (Sit-Down) Restaurant (ITE 932), pass-by rate of 24% for supermarket, pass-by rate of 43% for restaurant, and commercial generator mode shares for Ottawa East, the estimated trip generation of the existing site during the PM peak hour is 63 two-way primary vehicle trips at 1137 Ogilvie Road and 1111 Cummings Avenue and 21 two-way primary vehicle trips at 1151 Ogilvie Road. The trip assignment of the estimated reduced volumes, based on the commercial land use and the build-out of Ottawa East, is illustrated in Figure 20 and Figure 21. The existing property has additional accesses beyond the one proposed as part of the redevelopment. Accounting for this existing access configuration, and the estimated pass-by adjustment, consistent with the proportional assignment used for the proposed development, for the existing

land use on the network for Phase 1 and full build out are illustrated in Figure 22 and Figure 23. Table 18 compares the estimated existing primary auto trips and forecasted site-generated primary auto trips for Phase 1 and full build out.

Figure 20: Estimated Existing Trip Reductions – Phase 1

Figure 21: Estimated Existing Trip Reductions – Full Build Out

Figure 22: Estimated Existing Pass-By Network Adjustment – Phase 1

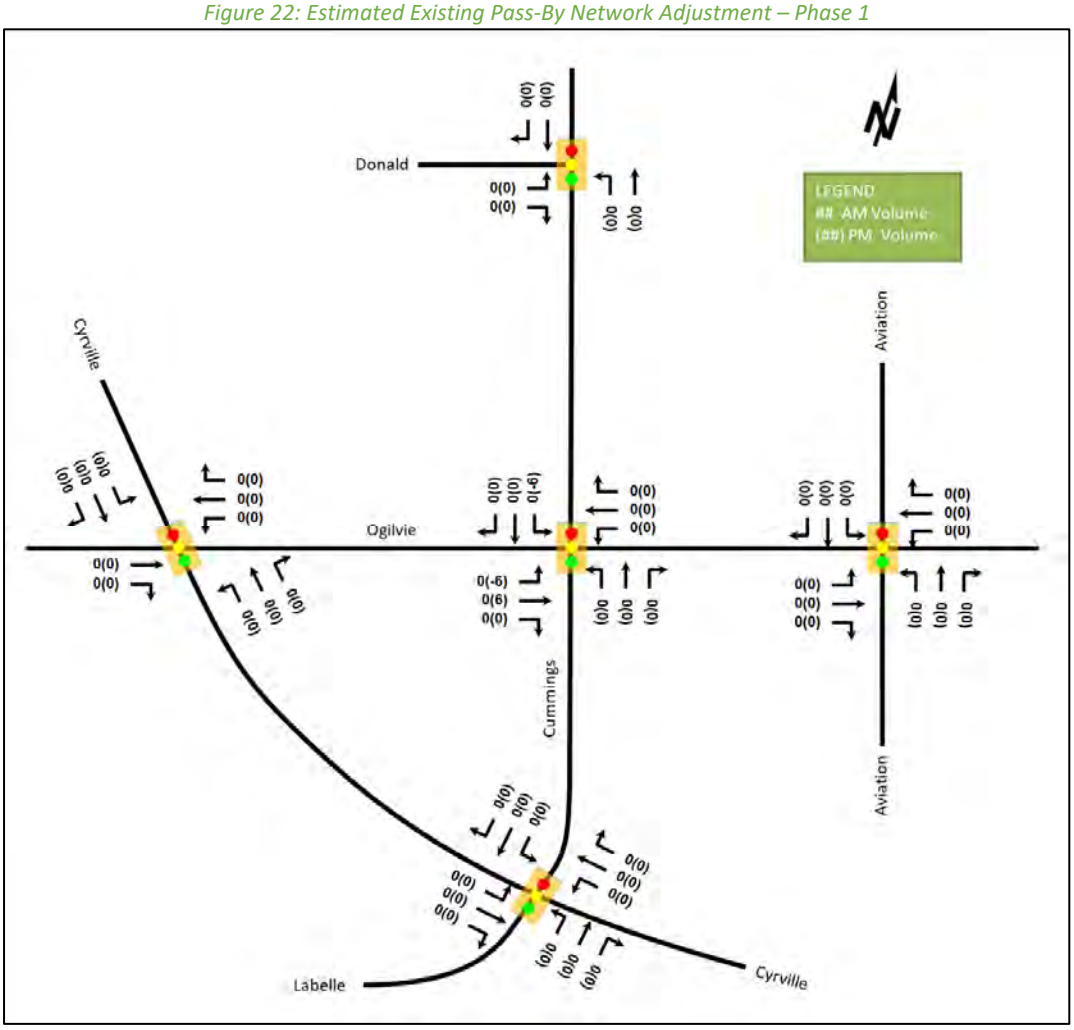


Figure 23: Estimated Existing Pass-By Network Adjustment – Full Build Out

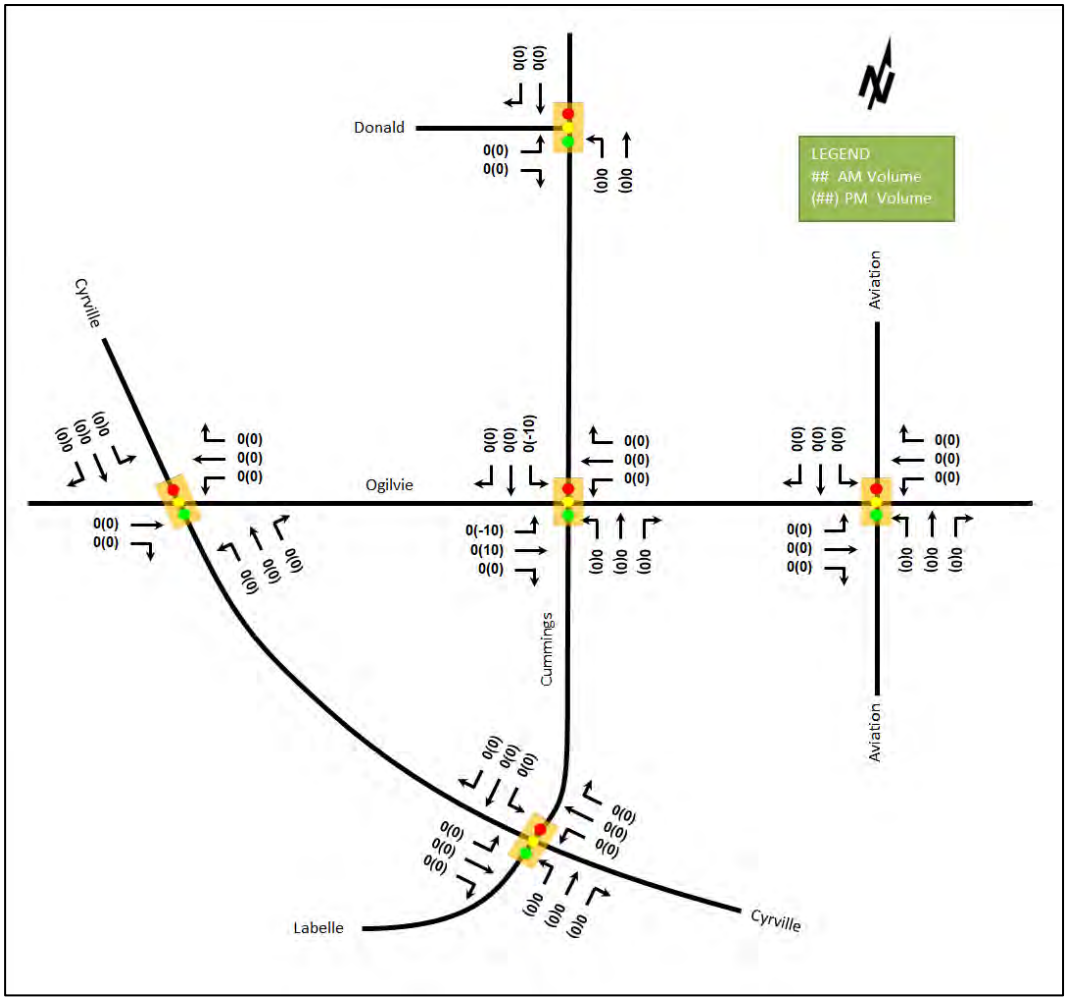


Table 18: Estimated Existing Primary Auto Trips vs Forecasted Primary Auto Trips

Scenario	AM Peak Hour				PM Peak Hour			
	Mode Share	In	Out	Total	Mode Share	In	Out	Total
Existing (Phase 1 area)	**57%**	0	0	0	**55%**	35	28	63
Proposed (Phase 1)	**Varies**	16	31	47	**Varies**	32	23	55
Difference	**-**	**+16**	**+31**	**+47**	**-**	**-3**	**-5**	**-8**
Existing (Full Build Out area)	**57%**	0	0	0	**55%**	48	36	84
Proposed (Full Build Out)	**Varies**	29	59	88	**Varies**	58	43	102
Difference	**-**	**+29**	**+59**	**+88**	**-**	**+10**	**+7**	**+18**

As shown above, the proposed redevelopment is anticipated to generate 47 new additional two-way AM peak hour vehicles and eight fewer two-way PM peak hour vehicles from the existing use for Phase 1, and 88 additional two-way AM peak hour vehicles and 18 additional two-way PM peak hour vehicles from the existing use for full build out. Figure 24 and Figure 25 illustrates the net auto volumes for Phase 1 and full build out, respectively.

Figure 24: Net Auto Volumes – Phase 1

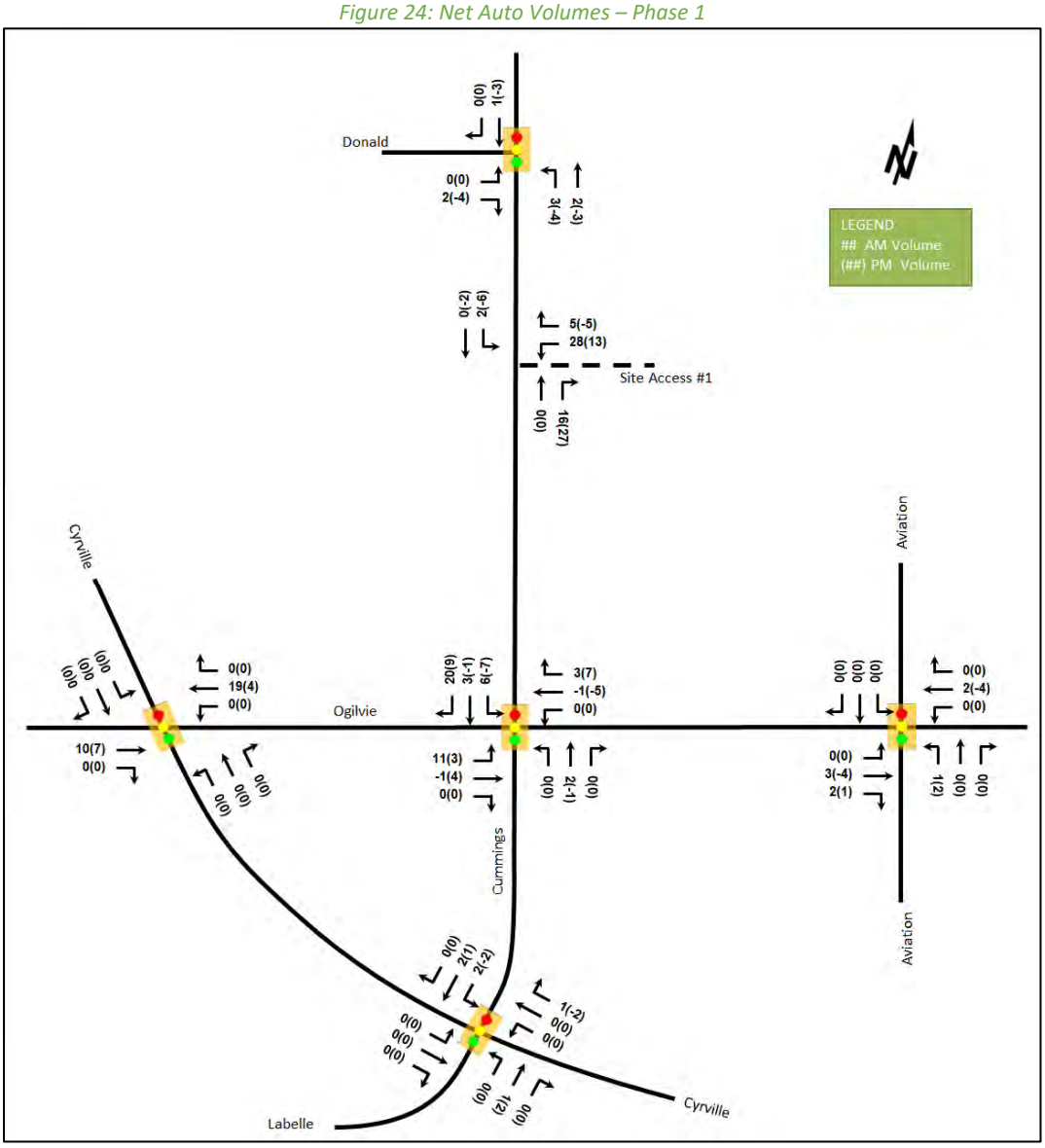
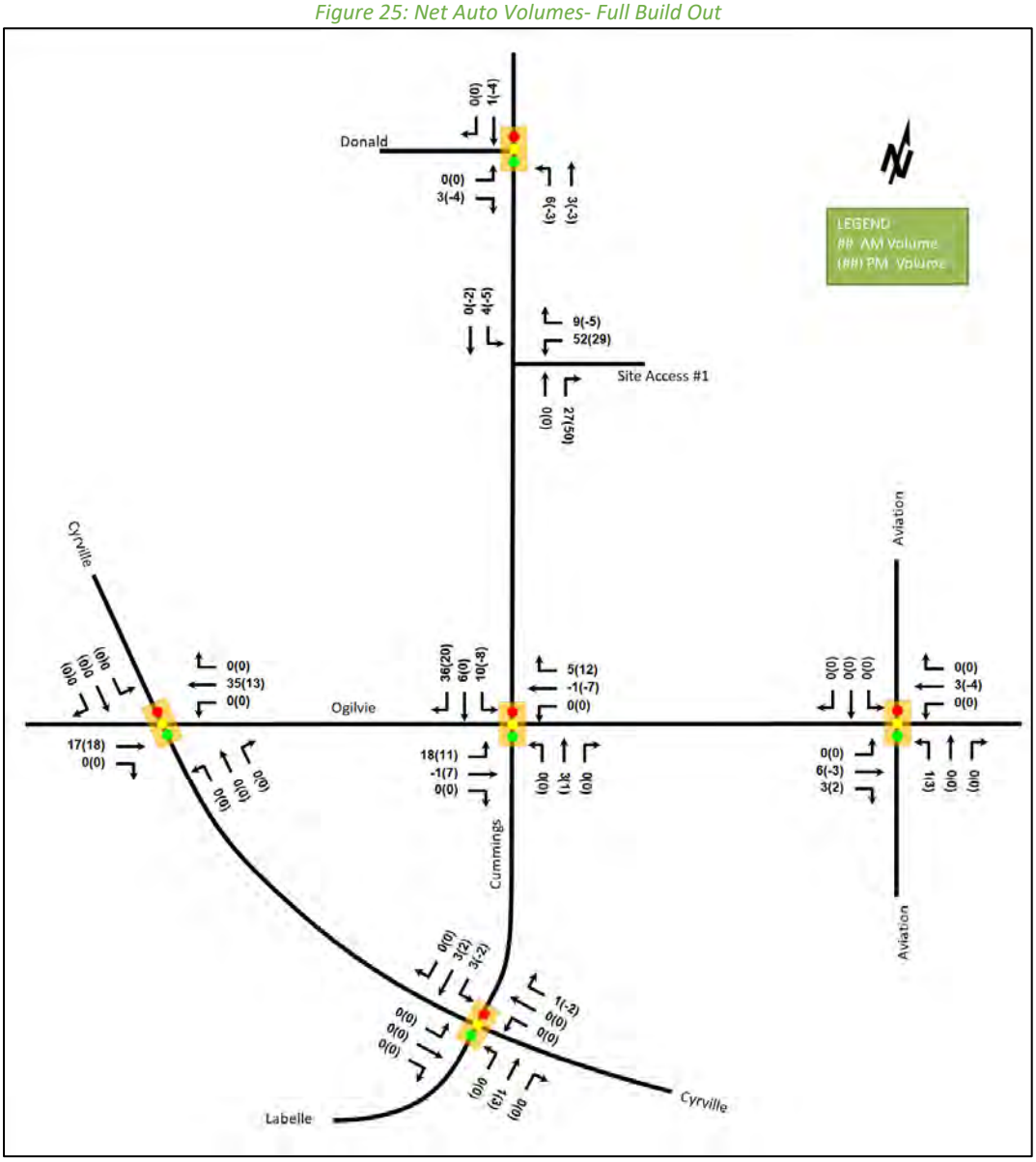


Figure 25: Net Auto Volumes- Full Build Out



5 Exemption Review

Table 19 summarizes the exemptions for this TIA.

Table 19: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
Parking	4.2.1 Parking Supply	Only required for site plan and zoning by-law applications	Required
Boundary Street Design		All applications	Required

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

Module	Element	Explanation	Exempt/Required
Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt
Intersection Design	4.4.1-2/4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Required
	4.4.3/4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Required

6 Development Design

6.1 Design for Sustainable Modes

The proposed development is two residential buildings with the possibility of ground floor retail. Vehicle parking located in three parking levels below grade and with a drop-off loop located on the surface within laybys along the aisle. Bicycle parking is located within the parking levels accessed via ramp with a maximum 16.4% grade, and within surface racks. Elevators are additionally provided from the parking levels for cyclists' ease of use. The parking ramp is located within the Phase 1 building.

Existing sidewalks are present along Cummings Avenue and Ogilvie Road, and hard surface connections to these facilities from the building entrances are proposed for each phase.

The infrastructure TDM checklist is provided in Appendix F.

6.2 Circulation and Access

Vehicle access is provided via a 6.7-metre-wide two-way full-movement access on Cummings Avenue. To facilitate access by loading, garbage, and fire services trucks, the southern curb-return radius between the access and Cummings Avenue is recommended to be 6.0 metres. The access connects to the underground parking ramp, a drop-off loop, and the loading areas. Para Transpo vehicles can circulate the internal drive aisles, and board and alight passengers along the southern curb line onto the depressed unit-paver area for both phases. Garbage collection will occur in the depressed unit-paver loading area adjacent to the Phase 1 building, and emergency services can access the site drive aisles and make a three-point turn to egress. Turning templates are provided in Appendix G.

7 Parking

7.1 Parking Supply

The site is currently proposed to include a total of 483 vehicle parking spaces below grade for the overall site, with 231 spaces within the Phase 1 area and 252 spaces within the Phase 2 area.

The Zoning By-Law requires a minimum parking provision is 411 vehicle parking spaces for residents and 60 vehicle parking spaces for visitors for the overall site and 212 vehicle parking spaces for residents and 30 vehicle parking spaces for visitors for Phase 1. Therefore, the required parking provision for the residential component from the Zoning By-Law is 471 for the overall site and 242 for Phase 1.

The site is located within 600 metres of Cyrville Station and is located in the Cyrville Hub and Design Priority Area and on the Ogilvie Road Mainstreet Corridor. Considering other planning context for the site parking, it is noted

that no minimum parking provision would be required for a lot across the street on Ogilvie Road at its intersection with Cummings Avenue, and the draft Zoning By-Law proposes the elimination of parking minima in the City. Therefore, despite presently considering a higher quantity, the proponent is pursuing a minimum parking ratio of 0.3 spaces per residential unit for the site through the rezoning.

The Zoning By-Law requires a maximum vehicle parking provision for developments located within 600 metres of a rapid transit station. A maximum parking ratio of 1.5 spaces per dwelling unit for the residential component including visitor spaces is required, resulting in a total of 1,269 spaces for the overall site and 654 parking spaces for Phase 1. Therefore, the parking spaces proposed for the residential component of the development fall below the maximum permitted by the Zoning By-Law.

Regarding the potential commercial component, a minimum parking ratio of 1.25 spaces per 100 m^2 of gross floor area would required if a ground floor retail component is above 500 m^2 in area, and a resulting total of seven retail parking would be required for the overall site and in Phase 1. Additionally, a maximum parking ratio of 1.0 space per 100 m^2 of gross floor area for the retail component is required, resulting in a total of eight commercial spaces for the overall site and five commercial parking spaces for Phase 1.

The site proposes a total of 846 bicycle parking spaces as part of the overall site and 436 as part of Phase 1. Twenty-four of the bicycle parking spaces will be provided within surface racks for the overall site and 16 will be within surface racks for Phase 1. The minimum bicycle parking provision from the Zoning By-Law is 423 residential spaces and three commercial retail spaces for the overall site and 218 residential spaces and two commercial retail spaces for Phase 1. The site is proposed to provide bicycle parking at one space per residential unit, and thus the minimum bicycle parking provision is met for both the overall site and Phase 1.

8 Boundary Street Design

Table 20 summarizes the MMLOS analysis for the boundary streets of Cummings Avenue and Ogilvie Road. Given that the Cummings Cycling (Donald to Cyrville) project is anticipated to be completed by 2029, it will be considered in future conditions. The boundary street analysis is based on the policy area of "Within 600m of a rapid transit station," and the MMLOS worksheets has been provided in Appendix H.

Table 20: Boundary Street MMLOS Analysis

Segment		Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Ogilvie Road	Ex.	**E**	A	**D**	C	D	D	A	D
	Fut.	**D**	A	A	C	D	D	A	D
Cummings Avenue	Ex.	**F**	A	**E**	B	N/A	N/A	B	D
	Fut.	**C**	A	A	B	N/A	N/A	B	D

Ogilvie Road and Cummings Avenue will not meet the pedestrian LOS targets in the existing or future conditions. To meet the theoretical PLOS targets, the operating speeds on both roadways would need to be reduced to 30 km/h.

Ogilvie Road and Cummings Avenue do not meet the bicycle LOS target in the existing conditions, although both boundary streets will meet the bicycle LOS target in the future conditions once the Cummings Cycling (Donald to Cyrville) project is completed.

Given the roadway speeds are not changing, no changes are proposed to the boundary streets as part of this study.

9 Transportation Demand Management

9.1 Context for TDM

The mode shares used within the TIA represent a shift from auto modes to transit modes based on its proximity to Cyrville Station. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided.

The subject site is within the Cyrville TOD design priority area.

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

9.2 Need and Opportunity

The subject site has been assumed to rely predominantly on transit ridership with the proximity to the Cyrville Station, and those assumptions have been carried through the analysis. The redevelopment of the existing site is expected to have a modest increase in traffic beyond the existing site during the AM peak hour and a minor increase during the PM peak hour, at full build out. The volumes are not anticipated to directly impact any existing or forecasted capacity concerns, which mitigate the risks of a higher auto mode than forecast. Moreover, impacts on area auto delays and capacity stemming from the fully protected left-turn phases to improve cycling safety are anticipated to further drive transit adoption, enabled by the site's proximity to Cyrville Station.

Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided to encourage shifts towards sustainable mode.

9.3 TDM Program

The "suite of post occupancy TDM measures" has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix F. The key TDM measures recommended include:

- Display local area maps with walking and cycling routes, and transit route information and schedules at major entrances
- Provide a multimodal travel option information package to new residents
- Contract with providers to install carshare spaces
- Inclusion of a 1-year Presto card for first time apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
- Unbundle parking cost from purchase/rental costs

10 Background Network Travel Demands

10.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. Cummings Cycling (Donald to Cyrville) is anticipated to be completed by 2029 and will be included in 2029 and 2034 future horizons. Both Cyrville Road widening and St-Laurent Boulevard Transit Priority Corridor projects are assumed to be beyond 2031, and the proposed changes are not anticipated to impact the study area traffic volumes and travel patterns given the pre-existing regional and local demands on the study area road network.

10.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The background TRANS model growth rates are summarized in Table 21 and the TRANS model plots are provided in Appendix I.

Table 21: TRANS Regional Model Projections – Study Area Growth Rates

Street	TRANS Rate	
	Eastbound	Westbound
Ogilvie Rd	0.47%	0.27%
Labelle St	6.90%	-0.85%
	Northbound	**Southbound**
Cummings Ave	0.50%	1.00%
Cyrville Rd	0.42%	1.57%
Aviation Pkwy	2.74%	3.66%

In general, the growth rates in the study area derived from the two TRANS model horizons are projected to be positive along all roadways with the exception of the westbound Labelle Street during the AM peak hour. Growth rates derived from the TRANS model horizons will be applied to the mainline and major turning movements for the appropriate roads during the AM peak hour, rounded to the nearest 0.25%, and reversed for the PM peak hour. In the case of Aviation Parkway, given that low residual capacity is available, a constrained growth rate will be applied, consistent with the fact that the existing volumes are higher than the volumes forecast within the 2031 model. Additionally, during the PM peak hour, growth on Labelle Street westbound will be taken from the northbound Cyrville Road rate. This rate will be used as the 2011 AM eastbound volumes are low and the low absolute increase in vehicles result in a large relative increase associated with the high growth rate. Table 22 summarizes the recommended growth rates to be considered within the study area.

Table 22: Recommended Area Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Ogilvie Rd	0.50%	0.25%	0.25%	0.50%
Labelle St	7.00%	0.00%	0.00%	1.50%
	Northbound	**Southbound**	**Northbound**	**Southbound**
Cummings Ave	0.50%	1.00%	1.00%	0.50%
Cyrville Rd	0.50%	1.50%	1.50%	0.50%
Aviation Pkwy	1.00%	1.25%	1.25%	1.00%

10.3 Other Developments

The background developments explicitly considered in the background conditions include:

- 1098 Ogilvie Road, 1178 Cummings Avenue
- 1155 Joseph Cyr Street, 1082 Cyrville Road
- 1209 St Laurent Boulevard, 1200 Lemieux Street
- 1125 - 1149 Cyrville Road
- 1184-1196 Cummings Avenue

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

11 Demand Rationalization

11.1 2027 Future Background Intersection Operations

The existing study area volumes have been balanced for the future background conditions. Figure 26 illustrates the 2027 background volumes and Table 23 summarizes the 2027 background intersection operations. The level of service for signalized intersections is based on volume to v/c calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services. The synchro worksheets for the 2027 future background horizon are provided in Appendix K.

Figure 26: 2027 Future Background Volumes

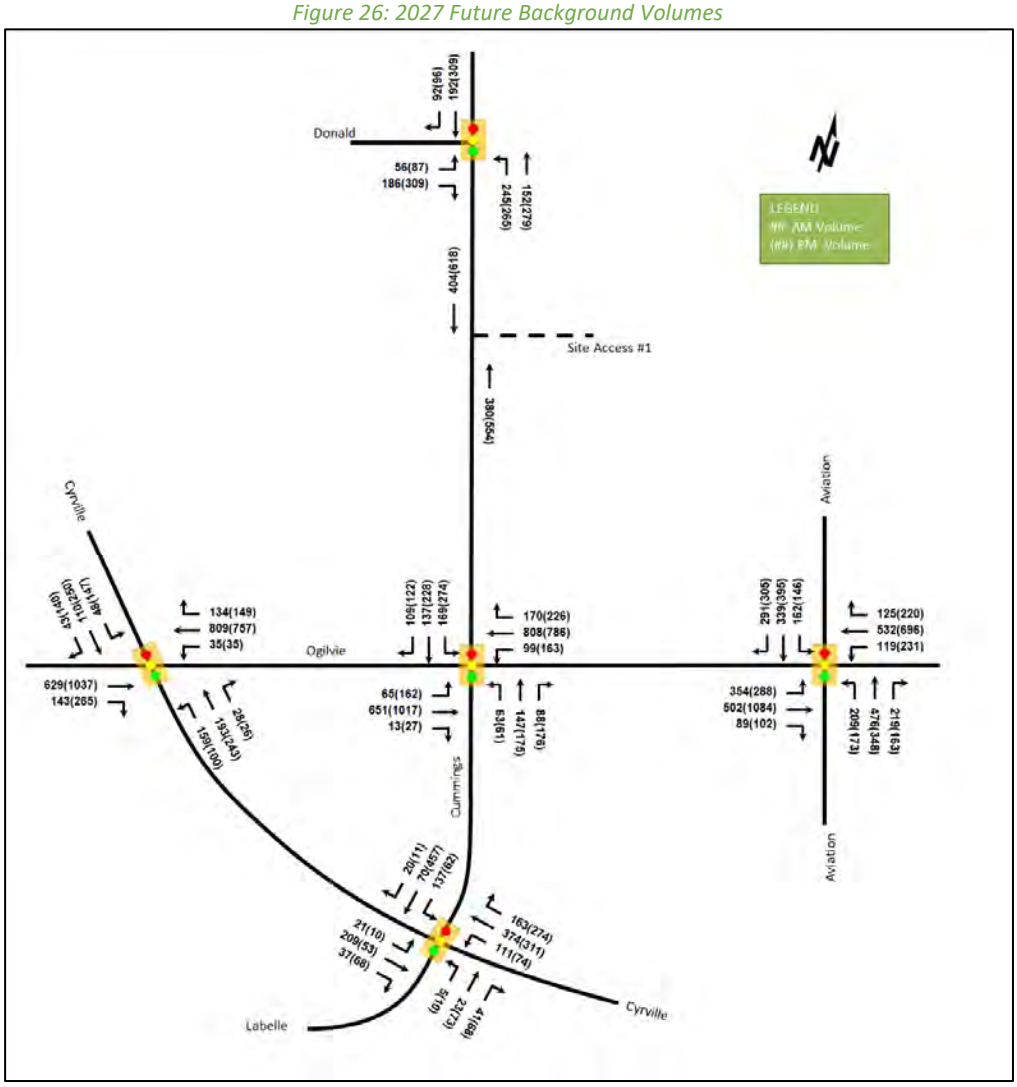


Table 23: 2027 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Donald Street at Cummings Avenue *Signalized*	EBL	A	0.19	21.2	12.8	A	0.29	22.4	17.7
	EBR	A	0.44	7.7	13.3	A	0.59	8.0	16.3
	NBL	A	0.36	8.0	25.5	A	0.50	11.4	35.1
	NBT	A	0.13	5.6	12.8	A	0.28	7.1	26.2
	SBT/R	A	0.25	5.1	19.8	A	0.41	7.5	37.1
	Overall	**A**	**0.39**	**7.4**	-	**A**	**0.55**	**9.3**	-
Ogilvie Road at Cyrville Road *Signalized*	EBT	A	0.28	8.8	52.2	A	0.51	15.0	103.8
	EBR	A	0.15	2.0	8.4	A	0.28	2.4	12.1
	WBL	A	0.08	4.7	m3.1	A	0.15	22.6	m6.9
	WBT	A	0.35	4.9	51.1	A	0.37	20.6	m70.6
	WBR	A	0.14	0.6	1.2	A	0.17	9.2	m12.1
	NBL	D	0.81	77.2	56.6	D	0.83	87.4	**#45.3**
	NBT	B	0.69	56.5	68.3	A	0.57	40.7	71.1
	SBL	A	0.33	47.2	19.9	B	0.70	55.9	49.3
	SBT/R	A	0.47	43.6	45.2	D	0.84	54.1	105.6
	Overall	**A**	**0.43**	**18.8**	-	**A**	**0.60**	**26.4**	-
Ogilvie Road at Cummings Avenue *Signalized*	EBL	A	0.24	13.1	13.1	C	0.75	53.1	**#57.1**
	EBT	A	0.39	16.9	52.1	D	0.90	39.5	**#119.7**
	WBL	A	0.25	13.6	m16.3	C	0.79	57.1	**m#52.2**
	WBT	A	0.57	20.4	74.1	D	0.90	47.6	**m#140.8**
	NBL	A	0.29	45.5	26.6	A	0.26	37.9	22.9
	NBT/R	B	0.70	53.8	77.7	D	0.86	58.8	**#110.3**
	SBL	B	0.70	51.4	50.9	D	0.82	43.6	**#68.3**
	SBT/R	A	0.49	35.5	68.6	A	0.50	26.0	77.9
	Overall	**A**	**0.59**	**26.4**	-	**D**	**0.87**	**44.3**	-
Ogilvie Road at Aviation Parkway *Signalized*	EBL	D	0.83	50.7	**#98.0**	C	0.74	33.6	m54.0
	EBT	A	0.40	31.4	68.7	D	0.86	35.1	m94.1
	EBR	A	0.13	3.6	m5.7	A	0.16	4.5	m2.5
	WBL	A	0.29	20.4	28.4	D	0.86	56.5	**#77.2**
	WBT	A	0.49	37.1	76.1	A	0.55	31.3	86.5
	WBR	A	0.21	2.6	6.5	A	0.31	4.5	15.5
	NBL	C	0.78	71.0	75.3	E	0.97	112.8	**#84.9**
	NBT	C	0.79	47.5	98.5	C	0.75	48.0	73.1
	SBL	**F**	**1.05**	**142.8**	**#89.3**	**F**	**1.11**	**162.9**	**#80.6**
	SBT	D	0.88	53.1	**#99.6**	**F**	**1.04**	**83.9**	**#116.1**
	Overall	**C**	**0.74**	**47.1**	-	**E**	**0.93**	**50.7**	-
Cyrville Road at Cummings Avenue/Labelle Street *Signalized*	EBL	A	0.06	7.8	3.9	A	0.03	10.0	3.0
	EBT	A	0.26	8.5	27.2	A	0.16	6.2	12.7
	WBL	A	0.22	14.6	22.5	A	0.14	14.5	17.4
	WBT	B	0.66	20.3	**#111.7**	C	0.74	23.9	**#150.2**
	NBL	A	0.02	25.8	3.4	A	0.08	23.3	5.3
	NBT	A	0.21	15.1	12.8	A	0.33	17.4	27.3
	SBL	D	0.84	68.9	**#50.7**	A	0.26	22.5	17.9
	SBT	A	0.28	24.8	22.3	D	0.81	35.9	**#118.8**
	Overall	**B**	**0.68**	**22.7**	-	**C**	**0.76**	**25.0**	-

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

During both the AM and PM peak hours, the study area intersections at the 2027 future background horizon operate similarly to the existing conditions. No additional capacity issues were noted. The incremental improvement to the intersection operations is predominantly a result of the peak hour factor adjustment to 1.00 for forecasted conditions.

At the intersection of Ogilvie Road at Aviation Parkway, a shift of one second from the northbound movement to the southbound left movement during the AM peak hour would address capacity issues during the AM peak hour, and a shift of one second from the eastbound/westbound movements to the northbound left/southbound left turn movements and one second from the eastbound/westbound through movements to the northbound/southbound through movements during the PM peak hour would reduce the v/c of all movements to be 1.00 or below.

The westbound approach at the intersection of Ogilvie Road at Cummings Avenue have been balanced based on a comparison with the remainder of the study area. The outlier intersection count was the intersection of Ogilvie Road at Cummings Avenue, resulting in reductions to algin with the adjacent intersection counts.

11.2 2029 Future Background Intersection Operations

The existing study area volumes have been balanced for the future background conditions. As noted in Section 2.3.1.4, the Cummings Cycling (Donald to Cyrville) is assumed to be completed by 2029 and will be considered at this horizon. The future geometries of the study area intersections along Cummings Avenue, as shown in Section 2.3.1.4, will be included in the modeled conditions. At the intersection of Ogilvie Road at Cummings Avenue, fully protected left-turn phases will be assumed for all left-turn movements based on the recommendations in the City's Cycling Safety Review of High-Volume Intersections (2020). Figure 27 illustrates the 2029 background volumes and Table 24 summarizes the 2029 background intersection operations. The level of service for signalized intersections is based on volume to v/c calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services. The synchro worksheets for the 2029 future background horizon are provided in Appendix L.

Figure 27: 2029 Future Background Volumes

Table 24: 2029 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Donald Street at Cummings Avenue *Signalized*	EBL	A	0.19	21.3	12.8	A	0.29	22.4	17.7
	EBR	A	0.46	7.8	13.4	A	0.59	8.0	16.3
	NBL	A	0.41	8.9	26.0	A	0.52	11.9	36.5
	NBT	A	0.15	5.8	13.0	A	0.28	7.1	26.7
	SBT/R	A	0.29	5.5	20.3	A	0.42	7.7	38.5
	Overall	**A**	**0.43**	**7.9**	-	**A**	**0.56**	**9.4**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Ogilvie Road at Cyrville Road *Signalized*	EBT	A	0.28	8.9	53.4	A	0.51	15.2	105.1
	EBR	A	0.15	2.0	8.5	A	0.28	2.4	12.2
	WBL	A	0.08	3.8	m1.6	A	0.15	4.1	m0.9
	WBT	A	0.35	3.4	15.2	A	0.38	3.3	m9.7
	WBR	A	0.14	0.2	m0.0	A	0.17	0.1	m0.0
	NBL	D	0.82	78.6	57.7	D	0.85	90.5	**#46.8**
	NBT/R	B	0.69	56.5	68.8	A	0.58	40.9	72.6
	SBL	A	0.33	47.2	19.9	C	0.71	56.7	49.6
	SBT/R	A	0.47	43.7	45.9	D	0.84	54.0	106.2
	Overall	**A**	**0.43**	**18.3**	-	**A**	**0.54**	**21.7**	-
Ogilvie Road at Cummings Avenue *Signalized*	EBL	A	0.56	78.6	32.7	E	0.97	112.3	**#82.8**
	EBT	A	0.52	28.4	68.3	**F**	**1.03**	**85.6**	**#186.1**
	WBL	B	0.62	83.9	m41.7	E	0.99	102.9	**m#65.6**
	WBT/R	C	0.71	32.6	m157.6	**F**	**1.06**	**77.4**	**m#160.3**
	NBL	A	0.53	74.2	30.6	B	0.65	86.0	**#34.1**
	NBT/R	C	0.78	66.2	84.8	E	0.98	86.4	**#144.7**
	SBL	C	0.79	80.1	**#72.3**	**F**	**1.09**	**129.6**	**#124.7**
	SBT/R	A	0.57	46.3	81.9	B	0.62	38.3	105.6
	Overall	**C**	**0.72**	**43.3**	-	**F**	**1.04**	**83.9**	-
Ogilvie Road at Aviation Parkway *Signalized*	EBL	D	0.86	62.2	**#155.1**	C	0.76	12.0	m9.6
	EBT	A	0.41	51.7	89.8	D	0.86	26.4	m125.6
	EBR	A	0.13	12.0	m11.8	A	0.16	3.2	m3.6
	WBL	A	0.30	20.7	28.4	D	0.86	56.9	**#77.6**
	WBT	A	0.49	37.3	76.6	A	0.56	31.6	87.3
	WBR	A	0.21	2.6	6.5	A	0.31	4.5	15.5
	NBL	C	0.78	71.0	75.3	E	0.97	112.8	**#84.9**
	NBT	C	0.79	47.3	100.5	C	0.77	49.1	74.9
	SBL	**F**	**1.05**	**142.8**	**#89.3**	**F**	**1.11**	**162.9**	**#80.6**
	SBT	D	0.88	53.8	**#104.6**	**F**	**1.06**	**89.3**	**#120.1**
	Overall	**C**	**0.74**	**51.6**	-	**E**	**0.93**	**48.1**	-
Cyrville Road at Cummings Avenue/Labelle Street *Signalized*	EBL	A	0.06	7.2	3.8	A	0.03	10.4	3.0
	EBT	A	0.28	9.1	28.4	A	0.17	6.7	12.8
	WBL	A	0.22	14.5	21.9	A	0.15	15.6	18.1
	WBT	B	0.70	22.7	**#124.2**	D	0.82	31.9	**#166.8**
	NBL	A	0.02	26.0	3.3	A	0.07	23.5	5.3
	NBT	A	0.26	28.9	20.7	A	0.33	18.7	30.4
	SBL	D	0.90	83.3	**#53.2**	A	0.26	22.8	18.6
	SBT	A	0.31	29.2	25.6	D	0.81	36.5	**#127.9**
	Overall	**C**	**0.72**	**26.7**	-	**D**	**0.81**	**28.6**	-

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

During both the AM and PM peak hours, the study area intersections at the 2029 future background horizon operate similarly to the 2027 future background conditions with the exception of the intersection of Ogilvie Road at Cummings Avenue.

At the Ogilvie Road at Cummings Avenue intersection, the overall intersection, the eastbound through, westbound through/right, and southbound left movements are over theoretical capacity and may be subject to high delays

during the PM peak hour. The degradation in operations is due primarily to the introduction of fully protected left-turn phases planned as part of the Cummings Cycling project. The v/c on the eastbound left turn and westbound left turn movements are approaching their theoretical capacity, and southbound left turn movement is over theoretical capacity during the PM peak hours, each where there was a high degree of residual capacity in the 2027 background conditions. It is recommended that the City review the signal timing at this intersection as part of the Cummings Cycling project.

Similarly to 2027 future background conditions at the intersection of Ogilvie Road at Aviation Parkway, a shift of one second from the northbound movement to the southbound left movement during the AM peak hour would address capacity issues at the intersection. A shift of one second from the eastbound/westbound movements to the northbound left/southbound left turn movements, and two seconds from the eastbound/westbound through movements to the northbound/southbound through movements during the PM peak hour would reduce the v/c of all movements to be 1.00 or below at the intersection.

11.3 2034 Future Background Intersection Operations

The existing study area volumes have been balanced for the future background conditions. Figure 28 illustrates the 2034 background volumes and Table 25 summarizes the 2034 background intersection operations. The level of service for signalized intersections is based on volume to v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2034 future background horizon are provided in Appendix M.

Figure 28: 2034 Future Background Volumes

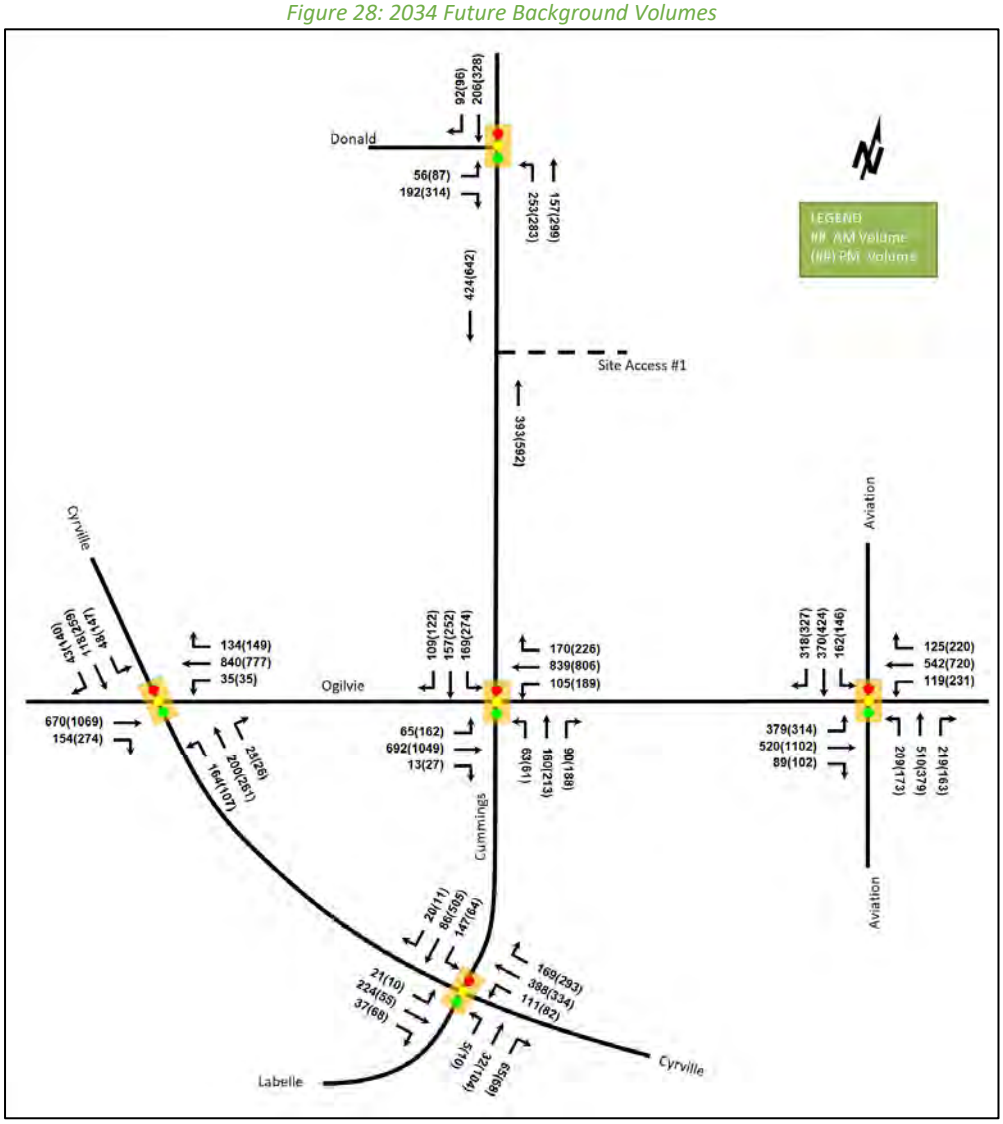


Table 25: 2034 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Donald Street at Cummings Avenue *Signalized*	EBL	A	0.19	21.3	12.8	A	0.29	22.4	17.7
	EBR	A	0.46	7.8	13.5	A	0.59	8.0	16.4
	NBL	A	0.42	9.2	26.9	A	0.55	12.7	40.0
	NBT	A	0.16	5.8	13.3	A	0.30	7.2	28.3
	SBT/R	A	0.30	5.6	21.3	A	0.43	7.8	39.9
	Overall	**A**	**0.44**	**8.0**	-	**A**	**0.57**	**9.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Ogilvie Road at Cyrville Road *Signalized*	EBT	A	0.30	9.2	56.3	A	0.53	15.6	108.8
	EBR	A	0.16	2.0	8.6	A	0.29	2.4	12.3
	WBL	A	0.08	3.8	m1.5	A	0.15	4.2	m0.9
	WBT	A	0.36	3.3	15.3	A	0.38	3.4	m9.8
	WBR	A	0.14	0.2	m0.0	A	0.17	0.1	m0.0
	NBL	D	0.85	82.3	59.4	D	0.90	101.2	**#50.5**
	NBT	B	0.70	56.6	70.4	A	0.60	41.3	76.2
	SBL	A	0.34	47.2	19.9	C	0.73	59.0	50.4
	SBT/R	A	0.48	44.3	47.8	D	0.85	54.3	108.7
	Overall	**A**	**0.44**	**18.6**	-	**A**	**0.56**	**22.6**	-
Ogilvie Road at Cummings Avenue *Signalized*	EBL	A	0.57	79.6	32.4	**F**	**1.01**	**121.5**	**#84.0**
	EBT/R	A	0.55	29.8	74.2	**F**	**1.07**	**96.2**	**#194.8**
	WBL	B	0.64	83.0	m43.1	**F**	**1.06**	**115.1**	**m#74.8**
	WBT/R	C	0.73	32.8	m161.2	**F**	**1.04**	**70.7**	**m#155.4**
	NBL	A	0.53	74.2	30.6	B	0.65	86.0	**#34.1**
	NBT/R	C	0.80	68.3	89.0	**F**	**1.07**	**108.8**	**#164.1**
	SBL	C	0.79	80.1	**#72.3**	**F**	**1.12**	**141.3**	**#126.8**
	SBT/R	A	0.60	46.9	86.0	B	0.64	39.7	110.0
	Overall	**C**	**0.74**	**44.0**	-	**F**	**1.08**	**89.8**	-
Ogilvie Road at Aviation Parkway *Signalized*	EBL	E	0.94	76.8	**#168.3**	D	0.82	14.7	m10.4
	EBT	A	0.44	53.7	91.7	D	0.87	26.7	m121.2
	EBR	A	0.14	12.3	m12.2	A	0.16	3.3	m3.3
	WBL	A	0.32	21.5	28.4	D	0.88	61.0	**#79.7**
	WBT	A	0.53	38.8	77.7	A	0.58	32.1	90.0
	WBR	A	0.22	2.7	6.5	A	0.32	4.6	15.5
	NBL	C	0.78	71.0	75.3	E	0.97	112.8	**#84.9**
	NBT	C	0.78	45.8	105.6	D	0.81	51.8	**#80.0**
	SBL	**F**	**1.05**	**142.8**	**#89.3**	**F**	**1.11**	**162.9**	**#80.6**
	SBT	D	0.88	53.1	**#117.7**	**F**	**1.11**	**107.3**	**#130.1**
	Overall	**C**	**0.78**	**53.3**	-	**E**	**0.96**	**52.2**	-
Cyrville Road at Cummings Avenue/Labelle Street *Signalized*	EBL	A	0.06	7.2	3.8	A	0.04	10.6	3.0
	EBT	A	0.29	9.3	29.8	A	0.18	6.8	13.0
	WBL	A	0.23	14.6	21.9	A	0.17	16.2	19.1
	WBT	C	0.72	23.6	**#129.4**	D	0.90	40.2	**#179.3**
	NBL	A	0.02	26.0	3.3	A	0.07	23.6	5.4
	NBT	A	0.36	30.7	26.7	A	0.35	20.7	36.8
	SBL	E	0.95	94.9	**#56.6**	A	0.24	22.2	18.7
	SBT	A	0.34	29.7	28.1	D	0.81	36.3	**#142.2**
	Overall	**C**	**0.75**	**28.8**	-	**D**	**0.85**	**32.0**	-

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

During both the AM and PM peak hours, the study area intersections at the 2034 future background horizon operate similarly to the 2029 future background conditions.

At the intersection of Ogilvie Road at Cummings Avenue, the overall intersection, the eastbound left, eastbound through/right, westbound left, westbound through/right, northbound through/right, and southbound left movements are over theoretical capacity and may be subject to high delays during the PM peak hour. As noted in

2029 future background conditions, these capacity issues are driven by the fully protected left-turn phases planned as part of the Cummings Cycling project. It is recommended that the City review the signal timing at this intersection as part of the Cummings Cycling project.

Similar to 2029 future background conditions at the intersection of Ogilvie Road at Aviation Parkway, a shift of one second from the northbound movement to the southbound left movement would address capacity issues during the AM peak hour. A shift of one second from the eastbound/westbound movements to the northbound left/southbound left turn movements, and two seconds from the eastbound/westbound through movements to the northbound/southbound through movements during the PM peak hour would reduce the v/c of all movements to be 1.00 or below at the intersection.

11.4 Demand Rationalization Conclusions

11.4.1 Network Rationalization

The existing conditions identify capacity issues at the intersections of Ogilvie Road at Cummings Avenue and Ogilvie Road at Aviation Parkway. As previously noted, the capacity issues at the intersection of Ogilvie Road at Cummings Avenue in both 2029 and 2034 horizons are driven by the fully protected left-turn phases planned as part of the Cycling Safety Review of High-Volume Intersections (2020) and Cummings Cycling project. While these phases will improve cycling safety conditions at the intersection, they will reduce auto capacity as these two objectives trade-off with each other with this treatment. Ultimately, the elective reduction to auto capacity on behalf of the City in achieving its priorities for the corridor must not constrain the ability to develop the surrounding lands.

11.4.2 Development Rationalization

Given that residual capacity is available during the AM peak hour and only 16 new two-way PM trips are forecast by the proposed site overall development, and that a reduction in traffic is forecast for Phase 1, it is expected that the network will accommodate the proposed development. The development is proposed as being transit-oriented, and the mode shares are consistent with this assumption and the expected competitiveness of the transit mode for the subject study area. Any capacity issues introduced at the adjacent intersection to the site of Ogilvie Road at Cummings Avenue is anticipated to further drive the adoption of transit by future site users. No further rationalization for site traffic or modal share selection is required.

12 Transit

12.1 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 26 summarizes the transit trip generation for Phase 1 and full build out.

Table 26: Trip Generation by Transit Mode

Horizon	Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Phase 1	Transit	Varies	33	71	105	50	36	86
Full Build Out	Transit	Varies	63	138	201	94	69	163

The proposed development is anticipated to generate an additional 105 AM and 86 PM peak hour two-way transit trips at Phase 1 and 201 AM and 163 PM peak hour two-way transit trips at full build out. From the trip distribution

found in section 4.3, these values can be further broken down. Table 27 summarizes forecasted site-generated transit ridership trips by direction and the equivalent bus loads for Phase 1 and full build out.

Table 27: Forecasted Site-Generated Transit Ridership

Horizon	Direction	AM Peak Hour		PM Peak Hour		Service Type	Approximate Equivalent Peak Hour/Direction Bus Loads
		In	Out	In	Out		
Phase 1	North	5	11	8	5	Bus	A fifth of a standard bus
	South	7	14	10	7	Bus	A quarter of a standard bus
	East	5	11	8	5	Bus, LRT	A fifth of a standard bus
	West	17	36	25	18	Bus, LRT	Three fifths of a standard bus
Full Build Out	North	9	21	14	10	Bus	A quarter of a standard bus
	South	13	28	19	14	Bus	Half of a standard bus
	East	9	21	14	10	Bus, LRT	A quarter of a standard bus
	West	32	69	47	35	Bus, LRT	One and a quarter of a standard bus

12.2 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 are noted as a result of forecasted site-generated traffic.

13 Access Intersections Design

13.1 Location and Design of Access

The site access is proposed to be two-way and to permit full movements. The access is located approximately 5.0 metres from the northern property line, and approximately 61.0 metres from the protected Ogilvie Road right-of-way. It is also located approximately 73.0 metres from the existing edge of the curb along Ogilvie Road. The access meets the minimum offset of 60 metres from the Ogilvie Road right-of-way and three-metre offset from the adjacent property line from the Private Approach By-Law. The location of the access meets the Private Approach By-Law location requirements, however the northern curb return radius is noted to be approximately one metre beyond the extension of the property line at the roadway edge. This curb radius does not conflict with the existing land use or impact the ability to locate any future access on the adjacent site with the appropriate separation and the location is recommended to be approved.

The access is proposed to be 6.7-metres-wide both in its typical dimension and at the right-of-way line. Accounting for the curb returns, at the roadway edge, the access is proposed to be 16.8 metres and is recommended to be 17.7 metres with a 6.0-metre curb return radius on the south side of the access. The maximum width of a two-way access from the Private Approach By-Law is 9.0 metres. This width is noted within the By-Law to apply to both the street (right-of-way) line as well as the roadway edge, however its application at the roadway edge is not possible to meet given the minimum driveway width of 6.0 metres from the Zoning By-Law, combined with City Standard SC7.1. Therefore, the proposed driveway width is recommended to be approved, and a 6.0-metre curb return radius is recommended to be provided on the south side of the access.

The throat length to the first on-site conflict of the underground ramp is 25.4 metres and meets the suggested minimum throat length per TAC of 25 metres for apartment developments of over 200 units accessing a collector road. It is noted that if the southern curb return radius were increased to 6.0 metres, the throat length would be 24.5 metres, but it is noted that the same quantity of vehicle storage on the access is provided irrespective of curb radii, and it is recommended that the access throat be approved in either condition.

13.2 Intersection Control

The site access will have a stop-control on the minor approach.

13.3 Access Intersection Design

13.3.1 2027 Future Total Access Intersection Operations – Phase 1

Figure 29 illustrates the 2027 future total volumes and Table 28 summarizes the 2027 future total access intersection operations. Synchro 11 has been used to model the unsignalized intersections and HCM 2010 methodology was used for unsignalized intersection operations. The synchro worksheets have been provided in Appendix N.

Figure 29: 2027 Future Total Volumes – Phase 1

Table 28: 2027 Future Total Access Intersection Operations – Phase 1

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cummings Avenue at Access 1 ***Unsignalized***	WBL/R	B	0.07	13.2	1.5	C	0.09	17.7	2.3
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.00	8.1	0.0	A	0.01	8.7	0.0
	Overall	**A**	**-**	**0.5**	**-**	**A**	**-**	**0.4**	**-**

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

The access intersection is anticipated to operate well at the 2027 future total horizon. No capacity, delay, or queuing issues are forecast. It is noted that 95th percentile queues on the southbound approach of the intersection of Ogilvie Road at Cummings Avenue extend past the site access during both peak hours. Gaps in southbound traffic during the heaviest periods may be limited to ends of each southbound phase and to courtesy gaps. This access location is considered the best solution for the parcel which is on the corner of the intersection of arterial road and a major collector road. The proposed access location is an improvement above the existing access configuration of the parcels of two (2) two-way full-movement accesses on Cummings Avenue and one two-way right-in/right-out access on Ogilvie Road.

13.3.2 2029 Future Total Access Intersection Operations (Full Build Out)

Figure 30 illustrates the 2029 future total volumes and Table 29 summarizes the 2029 future total access intersection operations. Synchro 11 has been used to model the unsignalized intersections and HCM 2010 methodology was used for unsignalized intersection operations. The synchro worksheets have been provided in Appendix O.

Figure 30: 2029 Future Total Volumes – Full Build Out

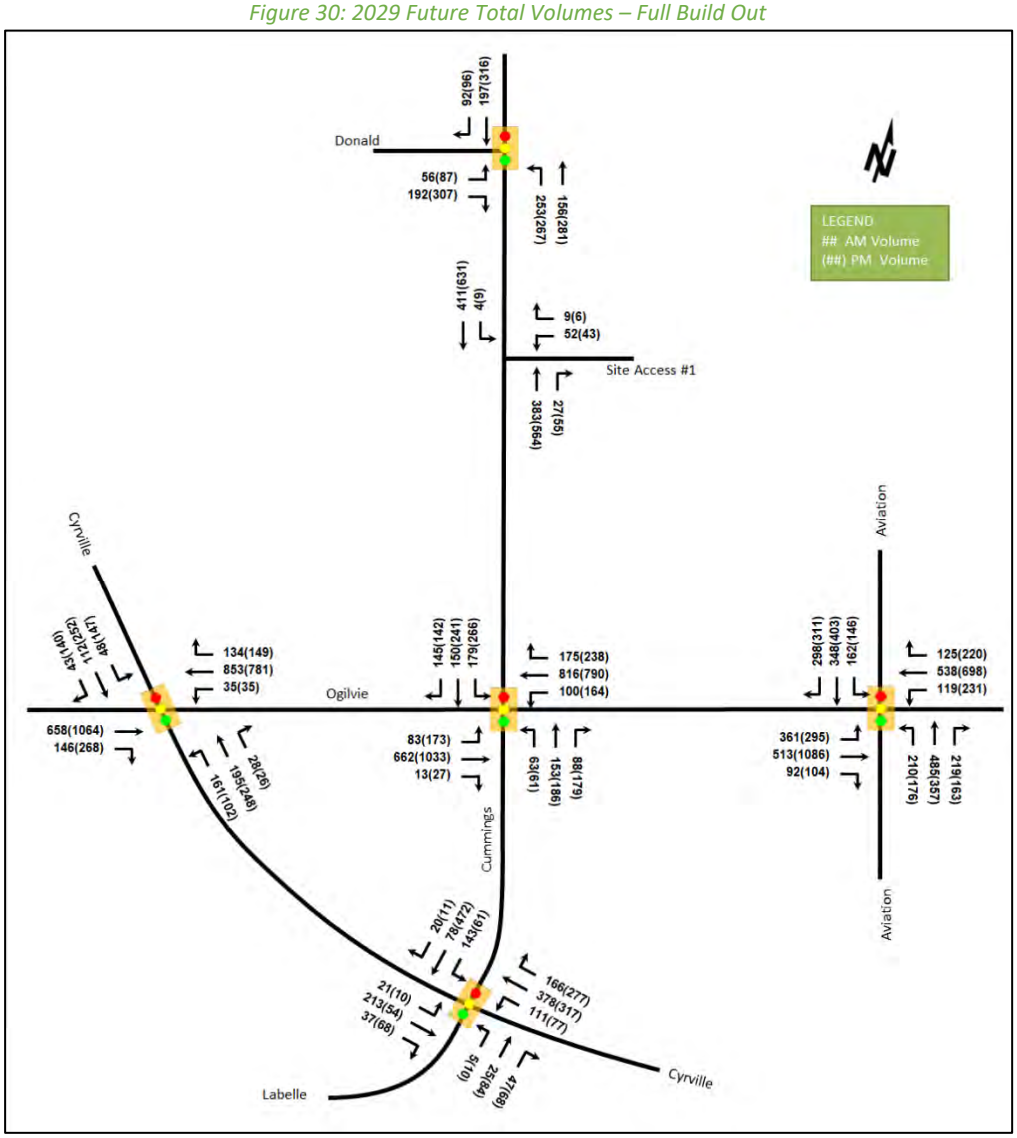


Table 29: 2029 Future Total Access Intersection Operations – Full Build Out

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cummings Avenue at Access 1 ***Unsignalized***	WBL/R	B	0.13	14.0	3.8	C	0.17	19.6	4.5
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.00	8.2	0.0	A	0.01	8.8	0.0
	Overall	**A**	**-**	**1.0**	**-**	**A**	**-**	**0.8**	**-**

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

The access intersection is anticipated to operate well at the 2029 future total horizon, and similarly to the 2027 access intersection conditions with the addition of the Phase 2 traffic.

13.3.3 2034 Future Total Access Intersection Operations

Figure 31 illustrates the 2034 future total volumes and Table 30 summarizes the 2034 future total access intersection operations. Synchro 11 has been used to model the unsignalized intersections and HCM 2010

methodology was used for unsignalized intersection operations. The synchro worksheets have been provided in Appendix P.

Figure 31: 2034 Future Total Volumes

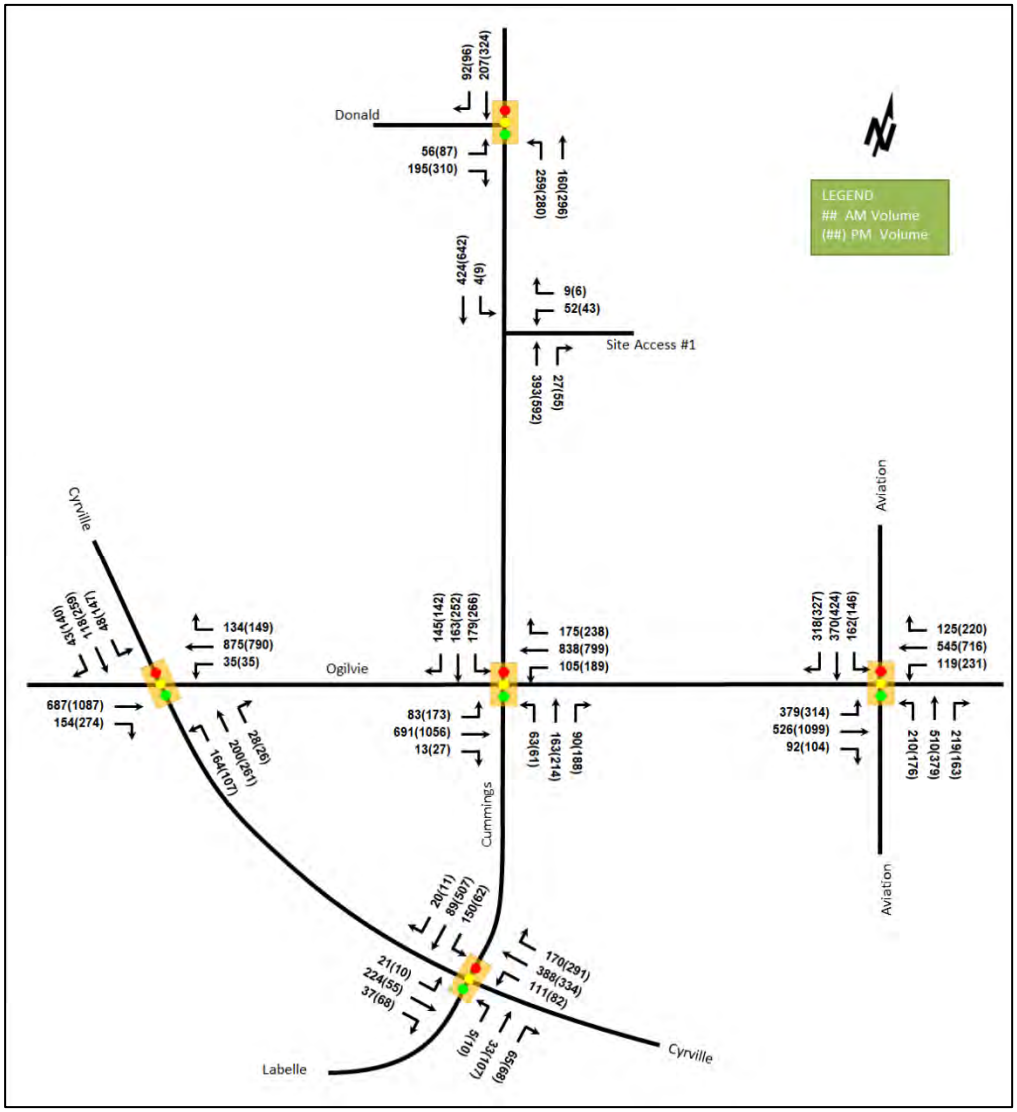


Table 30: 2034 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cummings Avenue at Access 1 *Unsignalized*	WBL/R	B	0.14	14.2	3.8	C	0.17	20.4	4.5
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.00	8.2	0.0	A	0.01	8.9	0.0
	Overall	**A**	**-**	**1.0**	**-**	**A**	**-**	**0.8**	**-**

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

The access intersection is anticipated to operate well at the 2034 future total horizon and similar to the 2029 access intersection conditions.

13.3.4 Access Intersection MMLOS

Based upon the projected volumes, the site access will have stop-control on the minor approach.

13.3.5 Recommended Design Elements

The access is recommended to comply with SC36.1 with a continuous depressed sidewalk and cycletrack if built out after the improvements.

14 Intersection Design

14.1 Intersection Control

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

14.2 Intersection Design

14.2.1 2027 Future Total Intersection Operations – Phase 1

Figure 29 in Section 13.3.1 illustrates the 2027 future total volumes and Table 31 below summarizes the 2027 future total network intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services. The synchro worksheets have been provided in Appendix N.

Table 31: 2027 Future Total Intersection Operations – Phase 1

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Donald Street at Cummings Avenue *Signalized*	EBL	A	0.19	21.3	12.8	A	0.29	22.4	17.7
	EBR	A	0.46	7.9	13.3	A	0.58	8.0	16.2
	NBL	A	0.41	8.9	26.1	A	0.49	11.2	33.9
	NBT	A	0.15	5.8	13.0	A	0.27	7.0	25.7
	SBT/R	A	0.28	5.4	20.0	A	0.40	7.5	36.6
	Overall	**A**	**0.43**	**7.8**	-	**A**	**0.54**	**9.2**	-
Ogilvie Road at Cyrville Road *Signalized*	EBT	A	0.28	8.8	53.2	A	0.51	15.1	104.7
	EBR	A	0.15	2.0	8.4	A	0.28	2.4	12.1
	WBL	A	0.08	5.2	m3.3	A	0.15	22.6	m6.9
	WBT	A	0.36	5.4	56.0	A	0.37	20.8	m70.9
	WBR	A	0.14	0.7	1.3	A	0.17	9.2	m11.9
	NBL	D	0.81	77.5	56.6	D	0.83	87.4	**#45.3**
	NBT	B	0.69	56.7	68.3	A	0.57	40.7	71.1
	SBL	A	0.33	47.3	19.9	B	0.70	55.9	49.3
	SBT/R	A	0.47	43.7	45.2	D	0.84	54.1	105.6
	Overall	**A**	**0.43**	**18.8**	-	**A**	**0.60**	**26.4**	-
Ogilvie Road at Cummings Avenue *Signalized*	EBL	A	0.28	15.0	16.5	C	0.78	56.3	**#64.0**
	EBT	A	0.39	17.0	52.1	D	0.90	39.2	**#116.2**
	WBL	A	0.25	13.6	m16.4	C	0.79	56.7	**m#52.1**
	WBT/R	A	0.57	20.4	m74.0	E	0.91	48.3	**m#141.2**
	NBL	A	0.29	45.8	26.7	A	0.26	38.0	22.9
	NBT/R	B	0.70	54.4	78.6	D	0.86	58.6	**#109.8**
	SBL	C	0.73	54.0	**#54.8**	D	0.81	43.2	**#67.5**
	SBT/R	A	0.54	36.5	74.9	A	0.52	26.2	79.5
	Overall	**A**	**0.60**	**26.9**	-	**D**	**0.87**	**44.5**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Ogilvie Road at Aviation Parkway *Signalized*	EBL	D	0.83	50.5	**#98.7**	C	0.74	33.3	m54.0
	EBT	A	0.40	31.3	69.3	D	0.86	34.9	m94.0
	EBR	A	0.14	3.6	m5.7	A	0.16	4.6	m2.5
	WBL	A	0.30	20.4	28.4	D	0.86	56.0	**#77.0**
	WBT	A	0.49	37.1	76.4	A	0.55	31.3	85.8
	WBR	A	0.21	2.6	6.5	A	0.31	4.5	15.5
	NBL	C	0.78	71.0	75.7	E	0.98	115.5	**#85.9**
	NBT	C	0.79	47.4	98.5	C	0.75	48.0	73.1
	SBL	**F**	**1.05**	**142.8**	**#89.3**	**F**	**1.11**	**162.9**	**#80.6**
	SBT	D	0.88	53.2	**#99.6**	**F**	**1.04**	**83.9**	**#116.1**
	Overall	**C**	**0.74**	**47.0**	-	**E**	**0.93**	**50.8**	-
Cyrville Road at Cummings Avenue/Labelle Street *Signalized*	EBL	A	0.06	7.8	3.9	A	0.03	10.0	3.0
	EBT	A	0.26	8.5	27.2	A	0.16	6.2	12.7
	WBL	A	0.22	14.6	22.5	A	0.14	14.6	17.4
	WBT	B	0.67	20.4	**#112.4**	C	0.74	23.9	**#149.1**
	NBL	A	0.02	25.8	3.4	A	0.08	23.2	5.3
	NBT	A	0.21	15.3	13.1	A	0.33	17.6	27.7
	SBL	D	0.84	69.9	**#51.3**	A	0.25	22.3	17.4
	SBT	A	0.28	24.9	22.8	D	0.81	35.9	**#119.6**
	Overall	**B**	**0.69**	**23.0**	-	**C**	**0.76**	**25.0**	-

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

During both the AM and PM peak hours, the study area intersections operate similarly to the 2027 future background conditions. Negligible impacts are noted at the intersection of Ogilvie Road at Cummings Avenue and no additional capacity issues have been noted at any study area intersection.

Similar to 2027 future background conditions at the intersection of Ogilvie Road at Aviation Parkway, a shift of one second from northbound through movement to the southbound left movement during the AM peak hour would address the capacity issues during the AM peak hour, a shift of one second from eastbound/westbound phase to northbound left/southbound left turn phase, and one second from eastbound/westbound through movements to northbound/southbound movements during the PM peak hour would reduce the v/c of all movements to be 1.00 or below.

14.2.2 2029 Future Total Intersection Operations – Full Build Out

Figure 30 in Section 13.3.2 illustrates the 2029 future total volumes and Table 32 below summarizes the 2029 future total network intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services. The synchro worksheets have been provided in Appendix O.

Table 32: 2029 Future Total Intersection Operations – Full Build Out

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Donald Street at Cummings Avenue *Signalized*	EBL	A	0.19	21.3	12.8	A	0.29	22.4	17.7
	EBR	A	0.46	7.8	13.5	A	0.58	8.0	16.3
	NBL	A	0.42	9.1	26.9	A	0.51	11.6	35.5
	NBT	A	0.16	5.8	13.2	A	0.28	7.1	26.3
	SBT/R	A	0.29	5.5	20.3	A	0.41	7.6	37.8
	Overall	**A**	**0.44**	**7.9**	-	**A**	**0.55**	**9.3**	-
Ogilvie Road at Cyrville Road *Signalized*	EBT	A	0.29	9.0	55.0	A	0.52	15.3	107.7
	EBR	A	0.15	2.0	8.5	A	0.28	2.4	12.2
	WBL	A	0.08	4.6	m2.0	A	0.15	4.7	m1.1
	WBT	A	0.37	4.1	20.3	A	0.38	3.9	m11.5
	WBR	A	0.14	0.2	m0.0	A	0.17	0.1	m0.0
	NBL	D	0.82	78.6	57.7	D	0.85	90.5	**#46.8**
	NBT	B	0.69	56.5	68.8	A	0.58	40.9	72.6
	SBL	A	0.33	47.2	19.9	C	0.71	56.7	49.6
	SBT/R	A	0.47	43.7	45.9	D	0.84	54.0	106.2
	Overall	**A**	**0.44**	**18.3**	-	**A**	**0.55**	**21.8**	-
Ogilvie Road at Cummings Avenue *Signalized*	EBL	B	0.65	83.5	**#45.1**	**F**	**1.04**	**127.4**	**#89.9**
	EBT	A	0.52	28.8	69.2	**F**	**1.04**	**87.4**	**#188.3**
	WBL	B	0.62	84.1	m41.7	E	0.99	103.2	**m#65.0**
	WBT	C	0.76	35.3	m158.3	**F**	**1.07**	**80.5**	**m#161.4**
	NBL	A	0.53	74.2	30.6	B	0.64	83.6	**#33.5**
	NBT/R	C	0.78	66.8	85.8	E	0.98	87.0	**#145.1**
	SBL	D	0.82	83.3	**#78.7**	**F**	**1.06**	**121.0**	**#120.3**
	SBT/R	B	0.67	50.1	97.0	B	0.66	39.7	112.6
	Overall	**C**	**0.76**	**45.7**	-	**F**	**1.05**	**85.3**	-
Ogilvie Road at Aviation Parkway *Signalized*	EBL	D	0.86	62.2	**#154.9**	C	0.76	11.8	m9.8
	EBT	A	0.41	51.9	90.5	D	0.86	26.4	m125.9
	EBR	A	0.14	12.5	m11.8	A	0.16	3.3	m4.0
	WBL	A	0.30	20.7	28.4	D	0.86	56.7	**#77.2**
	WBT	A	0.50	37.4	77.0	A	0.56	31.5	86.6
	WBR	A	0.21	2.6	6.5	A	0.31	4.5	15.5
	NBL	C	0.78	71.0	75.7	E	0.98	116.9	**#86.3**
	NBT	C	0.79	47.3	100.5	C	0.77	49.1	74.9
	SBL	**F**	**1.05**	**142.8**	**#89.3**	**F**	**1.11**	**162.9**	**#80.6**
	SBT	D	0.89	54.0	**#104.6**	**F**	**1.06**	**89.3**	**#120.1**
	Overall	**C**	**0.75**	**51.7**	-	**E**	**0.93**	**48.3**	-
Cyrville Road at Cummings Avenue/Labelle Street *Signalized*	EBL	A	0.06	7.8	3.9	A	0.03	10.5	3.0
	EBT	A	0.27	9.0	28.3	A	0.17	6.7	12.8
	WBL	A	0.23	15.0	22.8	A	0.15	15.7	18.1
	WBT	C	0.71	23.6	**#128.9**	D	0.82	31.9	**#166.0**
	NBL	A	0.02	26.6	3.4	A	0.07	23.5	5.3
	NBT	A	0.24	15.4	14.1	A	0.34	18.9	31.1
	SBL	E	0.93	90.0	**#56.0**	A	0.25	22.6	18.1
	SBT	A	0.32	30.0	27.1	D	0.81	36.4	**#128.6**
	Overall	**C**	**0.73**	**27.3**	-	**D**	**0.81**	**28.6**	-

Notes:

Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00

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

During both the AM and PM peak hours, the study area intersections operate similarly to the 2029 future background conditions. The eastbound let movement at the Ogilvie Road at Cummings Avenue intersection during PM peak hour is anticipated to be over theoretical capacity as it was approaching its theoretical capacity in the background conditions based on the planned intersection changes and due to the net increase of 11 vehicles from the site pushing it over capacity. The increase in these 11 vehicles is on the order of a daily variation in traffic, and it is recommended that the City review the signal timing at this intersection as part of the Cummings Cycling project.

Similar to 2029 future background conditions at the intersection of Ogilvie Road at Aviation Parkway, a shift of one second from the northbound through movement to the southbound left movement during the AM peak hour, a shift of one second from the eastbound/westbound through movements to the northbound left/southbound left turn movements, and two seconds from the eastbound/westbound through movements to the northbound/southbound through movements during the PM peak hour would reduce the v/c of all movements to be 1.00 or below.

14.2.3 2034 Future Total Intersection Operations

Figure 31 in Section 13.3.3 illustrates the 2034 future total volumes and Table 33 below summarizes the 2034 future total access intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services. The synchro worksheets have been provided in Appendix P.

Table 33: 2034 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Donald Street at Cummings Avenue ***Signalized***	EBL	A	0.19	21.2	12.8	A	0.29	22.4	17.7
	EBR	A	0.46	7.8	13.5	A	0.59	8.0	16.4
	NBL	A	0.43	9.4	28.0	A	0.54	12.4	39.0
	NBT	A	0.16	5.9	13.7	A	0.29	7.2	27.9
	SBT/R	A	0.30	5.7	21.6	A	0.42	7.7	39.2
	Overall	**A**	**0.44**	**8.0**	-	**A**	**0.57**	**9.5**	-
Ogilvie Road at Cyrville Road ***Signalized***	EBT	A	0.30	9.3	57.9	A	0.54	15.8	111.3
	EBR	A	0.16	2.0	8.6	A	0.29	2.4	12.3
	WBL	A	0.08	4.6	m1.8	A	0.16	4.9	m1.0
	WBT	A	0.38	4.0	20.4	A	0.39	4.0	m11.6
	WBR	A	0.14	0.2	m0.0	A	0.17	0.1	m0.0
	NBL	D	0.84	80.8	59.3	D	0.90	101.2	**#50.5**
	NBT	B	0.69	56.2	70.4	A	0.60	41.3	76.2
	SBL	A	0.33	46.8	19.9	C	0.73	59.0	50.4
	SBT/R	A	0.48	44.1	47.8	D	0.85	54.3	108.7
	Overall	**A**	**0.45**	**18.4**	-	**A**	**0.57**	**22.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Ogilvie Road at Cummings Avenue *Signalized*	EBL	B	0.66	84.9	**#44.3**	**F**	**1.07**	**137.7**	**#91.5**
	EBT	A	0.55	30.2	75.0	**F**	**1.07**	**98.4**	**#196.7**
	WBL	B	0.64	83.1	m43.1	**F**	**1.06**	**115.5**	**m#75.2**
	WBT	C	0.78	35.6	m162.0	**F**	**1.04**	**72.8**	**m#156.0**
	NBL	A	0.53	74.2	30.6	B	0.64	83.6	**#33.5**
	NBT/R	D	0.81	68.7	90.3	**F**	**1.07**	**109.5**	**#165.0**
	SBL	D	0.82	83.3	**#78.7**	**F**	**1.09**	**131.6**	**#122.4**
	SBT/R	B	0.69	50.8	101.4	B	0.68	41.3	117.7
	Overall	**C**	**0.78**	**46.4**	-	**F**	**1.07**	**91.0**	-
Ogilvie Road at Aviation Parkway *Signalized*	EBL	E	0.95	77.2	**#121.4**	D	0.81	14.4	m10.5
	EBT	A	0.45	53.8	93.0	D	0.87	26.8	m121.4
	EBR	A	0.14	12.8	m12.6	A	0.16	3.4	m3.6
	WBL	A	0.32	21.5	28.4	D	0.88	60.2	**#79.3**
	WBT	A	0.53	38.9	78.0	A	0.57	32.0	89.3
	WBR	A	0.22	2.7	6.5	A	0.32	4.6	15.5
	NBL	C	0.78	71.0	75.7	E	0.98	116.9	**#86.3**
	NBT	C	0.78	45.8	105.6	D	0.81	51.8	**#80.0**
	SBL	**F**	**1.05**	**142.8**	**#89.3**	**F**	**1.11**	**162.9**	**#80.6**
	SBT	D	0.89	53.2	**#117.7**	**F**	**1.11**	**107.3**	**#130.1**
	Overall	**C**	**0.78**	**53.4**	-	**E**	**0.96**	**52.4**	-
Cyrville Road at Cummings Avenue/Labelle Street *Signalized*	EBL	A	0.07	7.9	3.9	A	0.04	10.6	3.0
	EBT	A	0.29	9.3	29.7	A	0.18	6.8	13.0
	WBL	A	0.23	15.2	22.9	A	0.17	16.2	19.1
	WBT	C	0.73	24.5	**#134.3**	D	0.90	40.0	**#178.6**
	NBL	A	0.02	26.6	3.4	A	0.07	23.6	5.4
	NBT	A	0.31	15.1	17.0	A	0.36	20.9	37.9
	SBL	E	0.97	100.9	**#59.3**	A	0.24	22.1	18.2
	SBT	A	0.35	30.4	29.5	D	0.81	36.3	**#142.9**
	Overall	**C**	**0.76**	**28.9**	-	**D**	**0.85**	**32.0**	-

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

During both the AM and PM peak hours, the study area intersection operates similar to 2034 future background conditions. No additional capacity issues have been noted.

Similar to 2032 future background conditions at the intersection of Ogilvie Road at Aviation Parkway, a shift of one second from the northbound through movement to the southbound left movement during the AM peak hour, a shift of one second from the eastbound/westbound through movements to the northbound left/southbound left turn movements, and three seconds from the eastbound/westbound through movements to the northbound/southbound through movements during the PM peak hour would reduce the v/c of all movements to be 1.00 or below at this intersection.

14.2.4 Future 2034 Horizon Without Cummings Cycling – Sensitivity Analysis

Given the expected impacts of the left-turn lanes associated with cycling improvements at the intersection of Ogilvie Road at Cummings Avenue, the operations at this intersection for the 2034 future horizons will be evaluated to determine the impacts specifically associated with site traffic, absent these improvements. The intersection operations for this sensitivity analysis for the 2034 future background horizon and 2034 future total horizon are summarized in Table 34. The level of service for signalized intersections is based on v/c calculations

for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services. The synchro worksheets have been provided in Appendix Q.

Table 34: 2034 Future Background Intersection Operations – Without Cummings Cycling Project

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Future Background 2034 **Ogilvie Road at Cummings Avenue *Signalized***	EBL	A	0.25	13.9	14.1	C	0.80	60.3	**#58.8**
	EBT	A	0.41	17.6	57.6	E	0.98	51.5	**#150.8**
	WBL	A	0.28	13.7	m17.2	D	0.90	70.4	**m#55.9**
	WBT	A	0.58	20.8	m77.4	E	0.95	53.9	**m#141.4**
	NBL	A	0.29	45.7	26.7	A	0.25	37.0	23.0
	NBT/R	C	0.74	56.9	83.5	E	0.93	68.2	**#138.6**
	SBL	C	0.73	54.4	**#54.0**	D	0.86	48.6	**#81.0**
	SBT/R	A	0.53	37.5	75.7	A	0.52	25.8	84.9
	Overall	**B**	**0.61**	**27.4**	-	**E**	**0.94**	**52.3**	-
Future Total **Ogilvie Road at Cummings Avenue 2034 *Signalized***	EBL	A	0.33	17.4	20.9	D	0.84	65.4	**#66.3**
	EBT	A	0.41	17.8	59.0	E	0.98	52.9	**#152.6**
	WBL	A	0.28	13.6	m17.2	D	0.90	70.1	**m#56.0**
	WBT	B	0.61	21.7	m77.5	E	0.96	55.4	**m#141.7**
	NBL	A	0.31	46.5	27.0	A	0.25	37.2	23.0
	NBT/R	C	0.74	57.3	84.8	E	0.93	68.5	**#139.6**
	SBL	C	0.78	59.3	**#61.1**	D	0.84	45.8	**#76.9**
	SBT/R	B	0.61	39.6	88.2	A	0.55	26.4	90.3
	Overall	**B**	**0.64**	**28.7**	-	**E**	**0.94**	**53.2**	-

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

For both scenarios, the peak hours are forecasted to operate similarly to the 2027 future background conditions, indicating minimal impact from the subject site traffic on the intersection operations.

During the AM peak hour with the addition of site traffic, the eastbound left movement and southbound through/right movements have the greatest increase in v/c, 0.08 v/c each. The LOS change will be a shift from LOS A to B for the westbound through and southbound through/right movements.

During the PM peak hour with the addition of site traffic, an increase of 0.04 v/c on the eastbound left movement and an increase of 0.03 v/c on the southbound right movement are noted. The only change in the LOS would be the eastbound left movement, due to the background being at 0.80 v/c (LOS C) and changing to 0.84 v/c (LOS D).

Overall, the site traffic will have negligible impacts to the intersection and is not contributing to operational issues from future City intersection modifications.

14.2.5 Intersection MMLOS

Table 35 summarizes the MMLOS analysis for the study area intersections. Given that Cummings Cycling (Donald to Cyrville) project is anticipated to be completed by 2029, it will be considered in future conditions. The intersection analysis for Donald Street at Cummings Avenue is based on the lane use of “General Urban Area”, and other study area intersections are based on the policy area of “within 600 metres of a rapid transit station”. Where intersection conditions are the same in the existing and future conditions, they will be presented in one row. The MMLOS worksheets has been provided in Appendix H.

Table 35: 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
Donald St at Cummings Ave	Ex.	F	C	E	D	n/a	n/a	E	D	A	D
	Fut.	F		A				E		A	
Ogilvie Rd at Cyrville Rd	Ex./Fut.	F	A	F	A	D	D	D	D	B	E
Ogilvie Rd at Cummings Ave	Ex.	F	A	F	A	F	D	E	D	F	E
	Fut.	E		A		F		E		F	
Ogilvie Rd at Aviation Pkwy	Ex./Fut.	F	A	F	A	E	D	B	D	F/E	E
Cyrville Rd at Cummings Ave/Labelle St	Ex.	F	A	E	A	n/a	n/a	E	D	D	E
	Fut.	E		A				E		E	

The pedestrian MMLOS targets are not met at all study area intersections and will not be in the future. As is typical for arterial roads, the crossing distance does not permit the targets to be met. Similarly, the crossing distance on the west leg of the Donald Street at Cummings Avenue intersection does not permit targets to be met in the future. To meet pedestrian LOS targets, the maximum crossing distance on all pedestrian crossings would need to be reduced to three lane-widths at the intersection of Donald Street at Cummings Avenue and two lane-widths at other study area intersections.

The bicycle MMLOS targets are not met at all study area intersections in the existing conditions. The intersections along Cummings Avenue will meet bicycle MMLOS targets once the Cummings Cycling (Donald to Cyrville) project is completed. To meet the bicycle MMLOS targets at the intersection of Ogilvie Road at Cyrville Road and Ogilvie Road at Aviation Parkway, the left-turn configurations would need to be two-stage or include turn boxes.

The transit LOS targets will not be met at the intersections of Ogilvie Road at Cummings Avenue and at Aviation Parkway, and the delay would need to be reduced to below 30 seconds for the eastbound through and westbound through transit movements at the intersection.

The truck MMLOS targets are not met at the intersections along Cummings Avenue. To meet the truck MMLOS targets at the intersections, the larger than 15 metres effective corner radius would be required.

Given the City is upgrading the Cummings Avenue corridor, it is understood that the forthcoming designs will meet its preferred balance of MMLOS trade-offs for the study area. No mitigations or modifications are required to support the subject development.

14.2.6 Recommended Design Elements

Consistent with the draft functional design from the Cummings Cycling project, the access is recommended to comply with City Standard SC36.1 giving the future cycle tracks and sidewalks across the access.

As noted in both the background and future total horizons, signal timing adjustments are recommended at the intersection of Ogilvie Road at Aviation Parkway, and it is recommended that the City review the signal timing the intersection of Ogilvie Road at Cummings Avenue as part of the Cummings Cycling project.

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 existing site is within the Cyrville TOD Plan area and design priority area
- The proposed development includes two 30-storey mixed-use buildings with potential for mixed-use podia with a total of 846 residential units, 8,327 ft² of ground-floor retail space, 483 vehicle parking spaces, and 846 bicycle parking spaces
- The project will be constructed in two phases, with Phase 1, located at 1137 Ogilvie Road and 1111 Cummings Avenue, featuring a 30-storey mixed-use building with 436 residential units, 5,846 ft² of retail space, 231 vehicle parking spaces, and 436 bicycle parking spaces, expected to be completed by 2027. Phase 2, located at 1151 Ogilvie Road, will complete the development by 2029
- The total ground floor amenity/commercial allocation has been assumed to be entirely commercial for the purpose of a conservative trip generation
- The proposed access configuration comprises a two-way full-movement access at the north end of the Cummings Avenue frontage
- The trip generation, location, and safety triggers were met for the TIA Screening
- This study has been prepared to support a site plan application for the first phase of development and a zoning by-law amendment application for the overall site

Existing Conditions

- Sidewalks are provided along both sides of Cummings Avenue north of Ogilvie Road, Ogilvie Road, Cyrville Road south of Ogilvie Road, Donald Street, and Labelle Street within the study area
- Sidewalks are also provided along the east side of Cyrville Road north of Ogilvie Road, of Cummings Avenue south of Ogilvie Road, and along the 1173 Cyrville Road development boundary street of Cummings Avenue
- Bike lanes are present along Ogilvie Road, Cyrville Road south of Ogilvie Road, and Donald Street
- A multi-use path (MUP) is present along the west side of Aviation Parkway and on the east side of Cyrville Road separated by a concrete rumble strip
- During both the AM and PM peak hours, the study area intersections generally operate satisfactorily, with the exception of the intersections of Ogilvie Road at Cummings Avenue and Ogilvie Road at Aviation Parkway which may experience capacity issues during the PM peak hour
- Three turning movement collisions involving cyclists were noted at the intersection of Ogilvie Road at Cummings Avenue between 2018 and 2022 and conditions are expected to be improved with the fully-protected intersection upgrades planned for implementation starting in 2027
- Three collisions involving pedestrians were noted at the intersection of Donald Street at Cummings between 2018 and 2022, and this intersection is included in the planned Cummings Cycling (Donald to Cyrville) active transportation infrastructure project

Planned Conditions

- Cycling facilities on Cummings Avenue from Donald Street to Cyrville Road, missing links on Donald Street at Elaine Drive, and signage and pavement marking for bike lanes, where feasible, on Ogilvie Road are identified in the 2023 TMP – Part 1
- The construction of the Cummings Cycling project including the protected intersection of Ogilvie Road at Cummings Avenue is anticipated to be completed by 2029
- The Coventry Road widening and St-Laurent Boulevard Transit Priority Corridor are assumed to occur beyond the study horizon years

Development Generated Travel Demand

- The proposed development Phase 1 is forecasted produce 199 two-way people trips during the AM peak hour and 215 two-way people trips during the PM peak hour
- Of the forecasted Phase 1 people trips, 47 two-way trips will be vehicle trips during the AM peak hour and 55 two-way trips will be vehicle trips during the PM peak hour
- Of the forecasted Phase 1 people trips, 105 two-way transit trips during the AM peak hour and 86 two-way transit trips during the PM peak hour were noted
- The proposed development full build out is forecasted produce 377 two-way people trips during the AM peak hour and 402 two-way people trips during the PM peak hour
- Of the forecasted full build out people trips, 88 two-way trips will be vehicle trips during the AM peak hour and 102 two-way trips will be vehicle trips during the PM peak hour
- Of the forecasted full build out people trips, 201 two-way transit trips during the AM peak hour and 163 two-way transit trips during the PM peak hour were noted
- The proposed redevelopment is anticipated to generate 47 new additional AM peak hour vehicles and eight fewer PM peak hour vehicles from the existing use for Phase 1 and 88 new additional AM peak hour vehicles and 18 new additional PM peak hour vehicles from the existing use for full build out beyond the existing use
- Of the forecasted trips, 15% are anticipated to travel north and the east, 20% to the south, and 50% to the west

Development Design

- The proposed development is a two residential buildings with the possibility of ground floor retail
- Vehicle parking located in three parking levels below grade and with a drop-off loop located on the surface
- A total of 24 bicycle parking spaces are located external to the building and the remainder of bicycle parking spaces are located in the parking levels below grade
- Existing sidewalks are present along Cummings Avenue and Ogilvie Road, and hard surface connections to these facilities from the building entrances are proposed
- Vehicle access is provided via a two-way full-movement access on Cummings Avenue
- The access connects to the underground parking ramp, a drop-off loop, and the loading areas
- Garbage collection will occur in the depressed unit-paver loading area, and emergency services can access the site drive aisles

Parking

- The site is currently proposed to include a total of 483 vehicle parking spaces for the overall site with 231 spaces within Phase 1 and 252 spaces within Phase 2
- The site provides a total of 846 bicycle parking spaces for the overall site and 436 as part of Phase 1, including 24 spaces external to the building for the overall site and 16 will be within surface racks for Phase 1
- The proposed parking meets the minimum vehicle and bicycle parking and maximum vehicle parking provisions from the Zoning By-Law for both the overall site and Phase 1
- Given the site is within 600 metres of Cyrville Station and is located in the Cyrville Hub and Design Priority Area and on the Ogilvie Road Mainstreet Corridor, sites across the street have no minimum parking

provision, the draft zoning by-law does not require a minimum parking rate, the proponent is pursuing a minimum parking ratio of 0.3 spaces per unit for the site through the rezoning

Boundary Street Design

- Ogilvie Road and Cummings Avenue do not meet the pedestrian LOS targets
- To meet theoretical PLOS targets, the operating speeds on both roadways would need to be reduced to 30 km/h
- Ogilvie Road and Cummings Avenue do not meet the bicycle LOS target in the existing conditions, but both boundary streets will meet the bicycle LOS target in the future conditions once the Cummings Cycling (Donald to Cyrville) project is completed
- Given the roadway speeds are not changing, no changes are proposed to the boundary streets as part of this study

TDM

- Supportive TDM measures recommended to be included within the proposed development include:
    - Display local area maps with walking and cycling routes, and transit route information and schedules at major entrances
    - Provide a multimodal travel option information package to new residents
    - Contract with providers to install carshare spaces
    - Inclusion of a 1-year Presto card for first time apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
    - Unbundle parking cost from purchase/rental costs

Background Conditions

- Growth rates derived from the 2011 and 2031 TRANS models have been peak-directionally applied to mainline volumes and major turning movements throughout the study area along with explicit background development volumes
- The study area intersections at the 2027 future background horizon are forecast to operate similarly to the existing conditions with incremental improvements resulting from the peak hour factor increasing to 1.00 for modeled conditions, and the intersection of Ogilvie Road at Aviation Parkway is anticipated to have capacity issues during both peak hours, which are anticipated to be mitigable by signal timing changes
- The study area intersections at the 2029 future background horizon are forecast to operate similarly the 2027 background conditions with the exception of the intersection of Ogilvie Road at Cummings Avenue, which is anticipated to be subject to a number of capacity issues during the PM peak hour on account of the recommended changes associated with the Cumming Cycling project, and it is recommended that the City review signal timing as part of this project
- The study area intersections at the 2029 future background horizon are forecast to operate similarly the 2027 background conditions
- The City has elected to improve cycling conditions at the intersection of Ogilvie Road at Cummings Avenue, which necessarily will trade-off with auto capacity and the resultant reduction in capacity should not limit area development
- The subject development is transit-oriented and is associated with a low increase in volumes above the existing uses, and thus no rationalization for the background traffic demands or development mode share selection is required

Transit

- The proposed development is anticipated to generate ridership increases on the order of a fifth of a standard bus to three fifths of a standard bus in a peak hour per peak direction at Phase 1, and on the order of a quarter of a standard bus to one and one quarter standard buses per peak hour per peak direction at full build out, and these demands are largely expected to be accommodated by LRT
- 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 are noted as a result of forecasted site-generated traffic

Intersection Design

- The site access meets the Private Approach By-Law provisions, and its curb return is noted to be approximately one metre the extension of the adjacent property line at the roadway edge, however this does not impact the existing site or constrain future development
- The throat length functionally meets the TAC suggested minimum values under the recommended configuration
- The site access will have a stop-control on the minor approach
- The site accesses are anticipated to operate well, however gaps in southbound traffic during the heaviest periods may be limited to ends of each southbound phase and to courtesy gaps
- The site accesses are recommended to comply with City Standard SC36.1 and it is recommended that the proposed site access configuration be approved
- The study area intersections at all future total horizons operate similarly to their corresponding future background horizons, with the 11 eastbound left turns at the 2029 future total horizon pushing the movement over its theoretical capacity, however it is noted this capacity was mostly consumed by the fully protected left-turn phases
- The site traffic operational impacts are considered negligible overall and not contributing to operational issues from future City intersection modifications
- Network intersection pedestrian LOS targets will not be met at any intersection due to crossing distances of over two lane widths
- Cycling LOS targets will be met in the future conditions along Cummings Avenue due to the Cummings Cycling upgrades
- Transit LOS and auto LOS will not be met at the intersections of Ogilvie Road at Cummings Avenue, and Truck LOS will only be met at the intersections of Ogilvie Road at Cyrville Road and Ogilvie Road at Aviation Parkway
- Given the City is upgrading the Cummings Avenue corridor, it is understood that the forthcoming designs will meet its preferred balance of MMLOS trade-offs for the study area and no mitigations or modifications are required to support the subject development

16 Conclusion

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

Prepared By:

John Kingsley
Transportation Engineering Intern

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

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

Date: 20-Feb-25
Project Number: 2023-139
Project Reference: 1137 Ogilvie

1.1 Description of Proposed Development	
Municipal Address	1137-1151 Ogilvie Road, 1111 Cummings Avenue
Description of Location	Northeast quadrant of Ogilvie Rd @ Cummings Ave intersection
Land Use Classification	Local Commercial (LC6)
Development Size	825 apartment units
Accesses	One full moves onto Cummings Avenue
Phase of Development	Two phases
Buildout Year	2029
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Multi-Family (High-Rise)	
Development Size	825	Units
Trip Generation Trigger	Yes	

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

1.4. Safety Triggers		
Are posted speed limits on a boundary street 80 km/hr or greater?	No	
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No	
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	Yes	
Is the proposed driveway within auxiliary lanes of an intersection?	Yes	
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?	Yes	Collisions at the intersection of Ogilvie Rd at Cummings Ave
Does the development include a drive-thru facility?	No	
Safety Trigger	Yes	

Certification Form for TIA Study PM

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

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

Revision Date: June 2023

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

Name : Andrew Harte

Professional title: Senior Transportation Engineer / Vice-President Ottawa

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

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

Stamp

LICENSED PROFESSIONAL ENGINEER
A. J. HARTE
100149314
PROVINCE OF ONTARIO

Revision Date: June 2023

Appendix B

Turning Movement Counts

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #23-352 - CGH Transportation

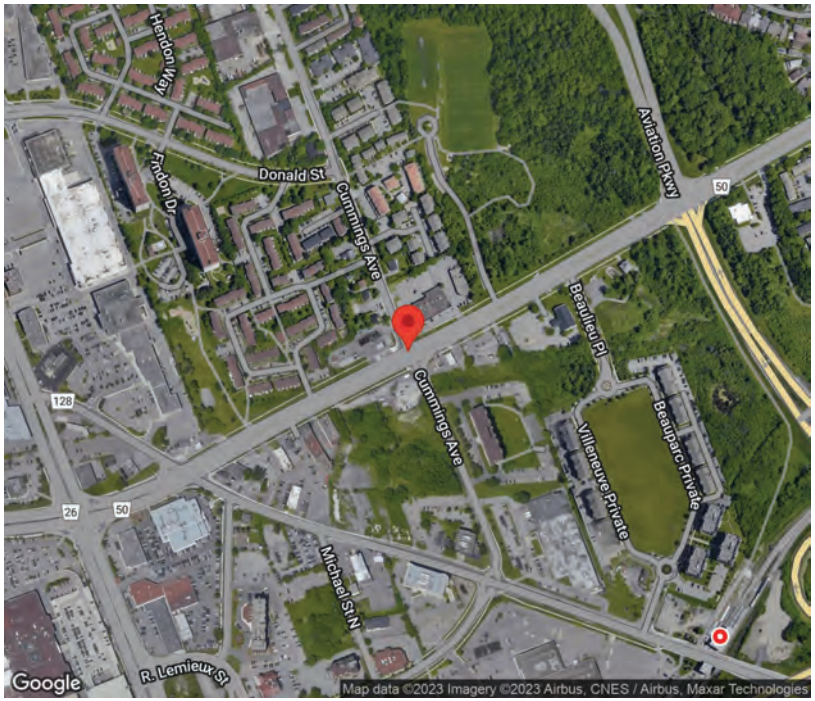
Intersection Count Report

Intersection:	Ogilvie Rd & Cummings Ave
Municipality:	Ottawa
Count Date:	Tuesday, Oct 31, 2023
Site Code:	2335200001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 11:30-13:30, 15:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Ogilvie Rd & Cummings Ave
Site Code:	2335200001
Municipality:	Ottawa
Count Date:	Oct 31, 2023



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

Cummings Ave - Traffic Summary

Hour	North Approach Totals (Includes Cars, Trucks, Bicycles)						South Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	129	96	105	0	330	7	17	78	51	0	146	6	476
08:00 - 09:00	167	109	101	0	377	27	17	124	77	0	218	8	595
09:00 - 10:00	191	111	120	0	422	13	30	112	84	0	226	9	648
BREAK													
11:30 - 12:00	84	76	40	0	200	5	20	79	66	0	165	3	365
12:00 - 13:00	236	145	93	0	474	13	46	149	144	0	339	20	813
13:00 - 13:30	104	56	31	0	191	5	17	53	70	0	140	4	331
BREAK													
15:00 - 16:00	278	168	119	0	565	10	54	195	173	0	422	15	987
16:00 - 17:00	273	192	137	0	602	38	35	204	202	0	441	12	1043
17:00 - 18:00	247	144	77	0	468	12	52	195	139	0	386	19	854
GRAND TOTAL	**1709**	**1097**	**823**	**0**	**3629**	**130**	**288**	**1189**	**1006**	**0**	**2483**	**96**	**6112**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

Ogilvie Rd - Traffic Summary

Hour	East Approach Totals (Includes Cars, Trucks, Bicycles)						West Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	77	575	112	3	767	29	57	512	9	0	578	1	1345
08:00 - 09:00	108	1042	209	0	1359	52	71	598	13	1	683	5	2042
09:00 - 10:00	78	617	172	0	867	25	81	517	16	4	618	8	1485
BREAK													
11:30 - 12:00	64	304	82	2	452	7	39	321	16	1	377	5	829
12:00 - 13:00	114	630	184	7	935	20	85	685	27	9	806	13	1741
13:00 - 13:30	61	277	92	0	430	7	36	321	14	6	377	3	807
BREAK													
15:00 - 16:00	99	736	249	6	1090	68	116	915	29	12	1072	17	2162
16:00 - 17:00	144	801	224	4	1173	29	144	1047	27	11	1229	11	2402
17:00 - 18:00	94	561	222	2	879	26	127	971	24	5	1127	16	2006
GRAND TOTAL	**839**	**5543**	**1546**	**24**	**7952**	**263**	**756**	**5887**	**175**	**49**	**6867**	**79**	**14819**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

North Approach - Cummings Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	28	22	15	0	65	1	0	0	0	1	0	0	0	0	0	0
07:15	20	24	25	0	69	1	0	0	0	1	0	0	0	0	0	1
07:30	37	19	28	0	84	2	1	0	0	3	1	0	0	0	1	3
07:45	36	30	37	0	103	2	0	0	0	2	1	0	0	0	1	3
08:00	32	25	24	0	81	1	0	0	0	1	0	0	0	0	0	8
08:15	47	27	26	0	100	1	1	0	0	2	0	1	0	0	1	10
08:30	42	24	28	0	94	0	0	1	0	1	1	0	0	0	1	7
08:45	40	31	22	0	93	3	0	0	0	3	0	0	0	0	0	2
09:00	59	25	32	0	116	2	1	0	0	3	0	0	0	0	0	3
09:15	51	28	26	0	105	1	1	1	0	3	1	0	1	0	2	2
09:30	36	24	36	0	96	1	1	1	0	3	1	0	0	0	1	3
09:45	39	31	23	0	93	0	0	0	0	0	0	0	0	0	0	5
SUBTOTAL	467	310	322	0	1099	15	5	3	0	23	5	1	1	0	7	47

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

North Approach - Cummings Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
11:30	35	41	17	0	93	4	0	2	0	6	0	0	0	0	0	1
11:45	43	35	20	0	98	0	0	1	0	1	2	0	0	0	2	4
12:00	59	46	18	0	123	2	1	0	0	3	0	0	0	0	0	4
12:15	64	27	24	0	115	0	1	0	0	1	0	0	0	0	0	4
12:30	50	37	27	0	114	0	2	0	0	2	0	0	0	0	0	4
12:45	61	31	22	0	114	0	0	2	0	2	0	0	0	0	0	1
13:00	50	22	11	0	83	0	1	1	0	2	0	0	0	0	0	2
13:15	54	32	19	0	105	0	1	0	0	1	0	0	0	0	0	3
SUBTOTAL	416	271	158	0	845	6	6	6	0	18	2	0	0	0	2	23

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

North Approach - Cummings Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
15:00	60	41	32	0	133	1	0	2	0	3	0	0	0	0	0	3
15:15	75	35	31	0	141	0	2	2	0	4	0	0	0	0	0	2
15:30	70	36	26	0	132	2	0	0	0	2	0	0	0	0	0	0
15:45	68	54	26	0	148	2	0	0	0	2	0	0	0	0	0	5
16:00	60	48	32	0	140	3	0	0	0	3	0	0	0	0	0	4
16:15	76	48	35	0	159	1	1	1	0	3	0	1	0	0	1	20
16:30	54	46	32	0	132	1	0	0	0	1	0	0	0	0	0	7
16:45	77	48	37	0	162	1	0	0	0	1	0	0	0	0	0	7
17:00	78	40	23	0	141	1	0	0	0	1	0	0	0	0	0	4
17:15	64	33	25	0	122	1	0	0	0	1	0	0	0	0	0	6
17:30	49	42	17	0	108	0	0	1	0	1	0	0	0	0	0	0
17:45	54	29	11	0	94	0	0	0	0	0	0	0	0	0	0	2
SUBTOTAL	785	500	327	0	1612	13	3	6	0	22	0	1	0	0	1	60
GRAND TOTAL	1668	1081	807	0	3556	34	14	15	0	63	7	2	1	0	10	130

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

South Approach - Cummings Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	5	11	14	0	30	0	0	3	0	3	0	0	1	0	1	1
07:15	5	21	11	0	37	1	3	2	0	6	0	0	0	0	0	3
07:30	2	19	6	0	27	0	3	0	0	3	0	1	0	0	1	0
07:45	4	20	14	0	38	0	0	0	0	0	0	0	0	0	0	2
08:00	1	35	12	0	48	0	1	0	0	1	0	0	0	0	0	1
08:15	4	24	14	0	42	0	0	0	0	0	0	0	0	0	0	5
08:30	4	33	26	0	63	0	1	1	0	2	0	0	0	0	0	1
08:45	8	28	22	0	58	0	2	2	0	4	0	0	0	0	0	1
09:00	14	21	22	0	57	0	1	2	0	3	0	0	0	0	0	3
09:15	4	29	22	0	55	0	0	1	0	1	0	0	0	0	0	2
09:30	8	32	17	0	57	0	1	4	0	5	0	0	0	0	0	2
09:45	3	27	16	0	46	1	1	0	0	2	0	0	0	0	0	2
SUBTOTAL	62	300	196	0	558	2	13	15	0	30	0	1	1	0	2	23

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

South Approach - Cummings Ave

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
11:30	8	43	34	0	85	0	3	1	0	4	0	0	0	0	0	2
11:45	12	32	31	0	75	0	0	0	0	0	0	1	0	0	1	1
12:00	14	42	37	0	93	0	3	0	0	3	0	0	0	0	0	5
12:15	9	30	40	0	79	0	0	0	0	0	0	0	0	0	0	3
12:30	16	37	37	0	90	0	1	0	0	1	0	0	0	0	0	6
12:45	7	36	30	0	73	0	0	0	0	0	0	0	0	0	0	6
13:00	6	24	26	0	56	0	0	0	0	0	1	0	0	0	1	1
13:15	10	29	40	0	79	0	0	4	0	4	0	0	0	0	0	3
SUBTOTAL	82	273	275	0	630	0	7	5	0	12	1	1	0	0	2	27

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

South Approach - Cummings Ave

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
15:00	8	58	36	0	102	1	0	0	0	1	0	0	0	0	0	6
15:15	22	61	38	0	121	0	0	0	0	0	0	0	0	0	0	4
15:30	9	42	58	0	109	0	1	0	0	1	0	0	0	0	0	2
15:45	12	33	39	0	84	1	0	2	0	3	1	0	0	0	1	3
16:00	9	48	52	0	109	0	0	0	0	0	0	0	0	0	0	1
16:15	10	55	50	0	115	0	1	0	0	1	0	0	0	0	0	7
16:30	7	42	54	0	103	0	1	0	0	1	0	0	0	0	0	3
16:45	9	57	46	0	112	0	0	0	0	0	0	0	0	0	0	1
17:00	11	50	45	0	106	0	0	0	0	0	0	0	0	0	0	5
17:15	12	49	45	0	106	0	0	0	0	0	0	0	0	0	0	5
17:30	12	48	30	0	90	0	1	0	0	1	0	0	0	0	0	5
17:45	17	47	19	0	83	0	0	0	0	0	0	0	0	0	0	4
SUBTOTAL	138	590	512	0	1240	2	4	2	0	8	1	0	0	0	1	46
GRAND TOTAL	282	1163	983	0	2428	4	24	22	0	50	2	2	1	0	5	96

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

East Approach - Ogilvie Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	14	71	20	1	106	0	2	0	0	2	0	1	0	0	1	7
07:15	22	136	32	0	190	0	4	0	0	4	0	1	0	0	1	3
07:30	14	144	23	1	182	1	1	2	0	4	0	3	0	0	3	13
07:45	25	203	34	1	263	1	6	1	0	8	0	3	0	0	3	6
08:00	22	255	42	0	319	0	6	3	0	9	0	0	0	0	0	16
08:15	30	240	50	0	320	0	6	1	0	7	0	2	0	0	2	12
08:30	28	256	55	0	339	1	5	0	0	6	0	2	0	0	2	16
08:45	25	261	57	0	343	2	6	1	0	9	0	3	0	0	3	8
09:00	20	141	35	0	196	0	5	1	0	6	0	0	0	0	0	9
09:15	19	171	49	0	239	0	11	1	0	12	0	0	0	0	0	7
09:30	17	143	42	0	202	0	4	1	0	5	0	1	0	0	1	7
09:45	22	139	41	0	202	0	2	2	0	4	0	0	0	0	0	2
SUBTOTAL	258	2160	480	3	2901	5	58	13	0	76	0	16	0	0	16	106

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

East Approach - Ogilvie Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
11:30	31	152	36	0	219	0	2	1	0	3	0	0	0	0	0	4
11:45	32	147	44	2	225	1	3	1	0	5	0	0	0	0	0	3
12:00	28	169	52	1	250	2	1	1	0	4	0	0	0	0	0	8
12:15	27	166	46	1	240	2	3	1	0	6	0	0	0	0	0	2
12:30	21	144	42	2	209	3	3	0	0	6	0	2	0	0	2	6
12:45	30	139	42	3	214	1	3	0	0	4	0	0	0	0	0	4
13:00	24	133	39	0	196	0	2	0	0	2	0	0	0	0	0	2
13:15	34	141	52	0	227	3	1	1	0	5	0	0	0	0	0	5
SUBTOTAL	227	1191	353	9	1780	12	18	5	0	35	0	2	0	0	2	34

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

East Approach - Ogilvie Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
15:00	20	170	60	3	253	0	3	1	0	4	0	0	1	0	1	33
15:15	29	185	57	1	272	1	5	2	0	8	0	3	0	0	3	13
15:30	19	190	70	1	280	1	0	0	0	1	0	1	0	0	1	12
15:45	28	171	58	1	258	1	7	0	0	8	0	1	0	0	1	10
16:00	38	213	52	2	305	1	5	3	0	9	0	2	2	0	4	6
16:15	37	185	49	1	272	3	4	0	0	7	0	4	0	0	4	9
16:30	30	197	64	0	291	3	3	0	0	6	0	2	0	0	2	10
16:45	32	176	54	1	263	0	6	0	0	6	0	4	0	0	4	4
17:00	25	152	69	1	247	0	2	0	0	2	0	3	1	0	4	5
17:15	27	127	60	0	214	1	2	1	0	4	0	5	1	0	6	6
17:30	23	144	43	1	211	0	2	0	0	2	0	1	1	0	2	7
17:45	18	122	46	0	186	0	0	0	0	0	0	1	0	0	1	8
SUBTOTAL	326	2032	682	12	3052	11	39	7	0	57	0	27	6	0	33	123
GRAND TOTAL	811	5383	1515	24	7733	28	115	25	0	168	0	45	6	0	51	263

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

West Approach - Ogilvie Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	16	79	2	0	97	0	7	0	0	7	0	0	0	0	0	0
07:15	13	118	1	0	132	0	2	2	0	4	0	0	0	0	0	1
07:30	10	135	2	0	147	0	3	0	0	3	0	0	0	0	0	0
07:45	17	163	2	0	182	1	3	0	0	4	0	2	0	0	2	0
08:00	19	124	1	1	145	1	2	0	0	3	0	1	0	0	1	1
08:15	16	128	7	0	151	2	5	1	0	8	0	2	0	0	2	2
08:30	19	148	3	0	170	1	3	0	0	4	0	11	0	0	11	1
08:45	12	163	1	0	176	1	9	0	0	10	0	2	0	0	2	1
09:00	22	150	0	1	173	1	7	1	0	9	0	6	0	0	6	1
09:15	19	130	2	2	153	0	3	0	0	3	0	3	0	0	3	2
09:30	22	98	4	0	124	1	5	1	0	7	0	2	0	0	2	4
09:45	14	113	8	1	136	2	0	0	0	2	0	0	0	0	0	1
SUBTOTAL	199	1549	33	5	1786	10	49	5	0	64	0	29	0	0	29	14

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

West Approach - Ogilvie Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
11:30	17	151	5	1	174	1	4	1	0	6	0	2	0	0	2	0
11:45	20	160	9	0	189	1	4	1	0	6	0	0	0	0	0	5
12:00	30	159	7	1	197	0	1	0	0	1	0	0	0	0	0	6
12:15	19	181	5	0	205	0	1	0	0	1	0	0	0	0	0	1
12:30	14	160	7	2	183	0	4	1	0	5	0	0	0	0	0	5
12:45	21	172	7	6	206	1	6	0	0	7	0	1	0	0	1	1
13:00	17	145	6	2	170	0	3	0	0	3	0	0	0	0	0	2
13:15	19	172	8	4	203	0	1	0	0	1	0	0	0	0	0	1
SUBTOTAL	157	1300	54	16	1527	3	24	3	0	30	0	3	0	0	3	21

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Municipality: Ottawa
Count Date: Oct 31, 2023

West Approach - Ogilvie Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	27	202	6	7	242	1	8	1	0	10	0	2	0	0	2	6
15:15	31	220	5	3	259	0	5	0	0	5	0	0	0	0	0	1
15:30	28	257	9	2	296	1	5	0	0	6	0	0	0	0	0	2
15:45	28	210	8	0	246	0	4	0	0	4	0	2	0	0	2	8
16:00	35	249	7	0	291	0	6	0	0	6	0	0	0	0	0	1
16:15	30	224	5	5	264	0	1	1	0	2	0	2	0	0	2	7
16:30	45	289	5	3	342	0	8	0	0	8	0	2	0	0	2	2
16:45	34	263	9	3	309	0	2	0	0	2	0	1	0	0	1	1
17:00	32	292	10	1	335	2	2	0	0	4	0	0	0	0	0	0
17:15	24	228	7	2	261	0	2	0	0	2	0	3	0	0	3	8
17:30	34	233	3	0	270	0	3	0	0	3	0	3	0	0	3	3
17:45	34	203	4	2	243	1	1	0	0	2	0	1	0	0	1	5
SUBTOTAL	382	2870	78	28	3358	5	47	2	0	54	0	16	0	0	16	44
GRAND TOTAL	738	5719	165	49	6671	18	120	10	0	148	0	48	0	0	48	79

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	08:00:00
To:	10:00:00	To:	09:00:00

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Count Date: Oct 31, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Ogilvie Rd runs E/W

North Approach

	Out	In	Total
Cars	368	390	758
Trucks	7	14	21
Bicycles	2	0	2
	377	404	781

Cummings Ave

Bicycles	0	1	1	0
Trucks	1	1	5	0
Cars	100	107	161	0
Totals	101	109	167	0

Peds: 27

East Approach

	Out	In	Total
Cars	1321	798	2119
Trucks	31	27	58
Bicycles	7	17	24
	1359	842	2201

Ogilvie Rd

Bicycles	Trucks	Cars	Totals
0	0	1	1
0	5	66	71
16	19	563	598
0	1	12	13

Peds: 5

Peds: 52

Peds: 8

Ogilvie Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
209	204	5	0
1042	1012	23	7
108	105	3	0

West Approach

	Out	In	Total
Cars	642	1130	1772
Trucks	25	24	49
Bicycles	16	7	23
	683	1161	1844

Cummings Ave

Totals	17	124	77	0
Cars	17	120	74	0
Trucks	0	4	3	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	211	224	435
Trucks	7	5	12
Bicycles	0	1	1
	218	230	448

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Count Date: Oct 31, 2023
Period: 07:00 - 10:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Cummings Ave						South Approach Cummings Ave						East Approach Ogilvie Rd						West Approach Ogilvie Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00	33	25	24	0	8	82	1	36	12	0	1	49	22	261	45	0	16	328	20	127	1	1	1	149	608
08:15	48	29	26	0	10	103	4	24	14	0	5	42	30	248	51	0	12	329	18	135	8	0	2	161	635
08:30	43	24	29	0	7	96	4	34	27	0	1	65	29	263	55	0	16	347	20	162	3	0	1	185	693
08:45	43	31	22	0	2	96	8	30	24	0	1	62	27	270	58	0	8	355	13	174	1	0	1	188	701
Grand Total	**167**	**109**	**101**	**0**	**27**	**377**	**17**	**124**	**77**	**0**	**8**	**218**	**108**	**1042**	**209**	**0**	**52**	**1359**	**71**	**598**	**13**	**1**	**5**	**683**	**2637**
Approach %	44.3	28.9	26.8	0		-	7.8	56.9	35.3	0		-	7.9	76.7	15.4	0		-	10.4	87.6	1.9	0.1		-	
Totals %	6.3	4.1	3.8	0		14.3	0.6	4.7	2.9	0		8.3	4.1	39.5	7.9	0		51.5	2.7	22.7	0.5	0		25.9	
PHF	**0.87**	**0.88**	**0.87**	**0**		**0.92**	**0.53**	**0.86**	**0.71**	**0**		**0.84**	**0.9**	**0.96**	**0.9**	**0**		**0.96**	**0.89**	**0.86**	**0.41**	**0.25**		**0.91**	**0.94**
Cars	161	107	100	0		368	17	120	74	0		211	105	1012	204	0		1321	66	563	12	1		642	2542
% Cars	96.4	98.2	99	0		97.6	100	96.8	96.1	0		96.8	97.2	97.1	97.6	0		97.2	93	94.1	92.3	100		94	96.4
Trucks	5	1	1	0		7	0	4	3	0		7	3	23	5	0		31	5	19	1	0		25	70
% Trucks	3	0.9	1	0		1.9	0	3.2	3.9	0		3.2	2.8	2.2	2.4	0		2.3	7	3.2	7.7	0		3.7	2.7
Bicycles	1	1	0	0		2	0	0	0	0		0	0	7	0	0		7	0	16	0	0		16	25
% Bicycles	0.6	0.9	0	0		0.5	0	0	0	0		0	0	0.7	0	0		0.5	0	2.7	0	0		2.3	0.9
Peds					27	-					8	-					52	-					5	-	92
% Peds					29.3	-					8.7	-					56.5	-					5.4	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	11:30:00	From:	12:00:00
To:	13:30:00	To:	13:00:00

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Count Date: Oct 31, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Ogilvie Rd runs E/W

North Approach

	Out	In	Total
Cars	466	411	877
Trucks	8	7	15
Bicycles	0	0	0
	474	418	892

Cummings Ave

Bicycles	0	0	0	0
Trucks	2	4	2	0
Cars	91	141	234	0
Totals	93	145	236	0

Peds: 13

East Approach

	Out	In	Total
Cars	913	1057	1970
Trucks	20	14	34
Bicycles	2	1	3
	935	1072	2007

Ogilvie Rd

Bicycles	Trucks	Cars	Totals	
0	0	9	9	
0	1	84	85	
1	12	672	685	
0	1	26	27	

Peds: 13

Peds: 20

Ogilvie Rd

	Totals	Cars	Trucks	Bicycles
	7	7	0	0
	184	182	2	0
	630	618	10	2
	114	106	8	0

West Approach

	Out	In	Total
Cars	791	764	1555
Trucks	14	12	26
Bicycles	1	2	3
	806	778	1584

Cummings Ave

Totals	46	149	144	0
Cars	46	145	144	0
Trucks	0	4	0	0
Bicycles	0	0	0	0

Peds: 20

South Approach

	Out	In	Total
Cars	335	273	608
Trucks	4	13	17
Bicycles	0	0	0
	339	286	625

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Count Date: Oct 31, 2023
Period: 11:30 - 13:30

Peak Hour Data (12:00 - 13:00)

Start Time	North Approach Cummings Ave						South Approach Cummings Ave						East Approach Ogilvie Rd						West Approach Ogilvie Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
12:00	61	47	18	0	4	126	14	45	37	0	5	96	30	170	53	1	8	254	30	160	7	1	6	198	674
12:15	64	28	24	0	4	116	9	30	40	0	3	79	29	169	47	1	2	246	19	182	5	0	1	206	647
12:30	50	39	27	0	4	116	16	38	37	0	6	91	24	149	42	2	6	217	14	164	8	2	5	188	612
12:45	61	31	24	0	1	116	7	36	30	0	6	73	31	142	42	3	4	218	22	179	7	6	1	214	621
Grand Total	**236**	**145**	**93**	**0**	**13**	**474**	**46**	**149**	**144**	**0**	**20**	**339**	**114**	**630**	**184**	**7**	**20**	**935**	**85**	**685**	**27**	**9**	**13**	**806**	**2554**
Approach %	49.8	30.6	19.6	0		-	13.6	44	42.5	0		-	12.2	67.4	19.7	0.7		-	10.5	85	3.3	1.1		-	
Totals %	9.2	5.7	3.6	0		18.6	1.8	5.8	5.6	0		13.3	4.5	24.7	7.2	0.3		36.6	3.3	26.8	1.1	0.4		31.6	
PHF	**0.92**	**0.77**	**0.86**	**0**		**0.94**	**0.72**	**0.83**	**0.9**	**0**		**0.88**	**0.92**	**0.93**	**0.87**	**0.58**		**0.92**	**0.71**	**0.94**	**0.84**	**0.38**		**0.94**	**0.95**
Cars	234	141	91	0		466	46	145	144	0		335	106	618	182	7		913	84	672	26	9		791	2505
% Cars	99.2	97.2	97.8	0		98.3	100	97.3	100	0		98.8	93	98.1	98.9	100		97.6	98.8	98.1	96.3	100		98.1	98.1
Trucks	2	4	2	0		8	0	4	0	0		4	8	10	2	0		20	1	12	1	0		14	46
% Trucks	0.8	2.8	2.2	0		1.7	0	2.7	0	0		1.2	7	1.6	1.1	0		2.1	1.2	1.8	3.7	0		1.7	1.8
Bicycles	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	1	0	0		1	3
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0.3	0	0		0.2	0	0.1	0	0		0.1	0.1
Peds					13	-					20	-					20	-					13	-	66
% Peds					19.7	-					30.3	-					30.3	-					19.7	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	15:00:00	From:	16:00:00
To:	18:00:00	To:	17:00:00

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Count Date: Oct 31, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Ogilvie Rd runs E/W

North Approach

	Out	In	Total
Cars	593	565	1158
Trucks	8	5	13
Bicycles	1	2	3
	602	572	1174

Cummings Ave

Bicycles	0	1	0	0
Trucks	1	1	6	0
Cars	136	190	267	0
Totals	137	192	273	0

Peds: 38

East Approach

	Out	In	Total
Cars	1131	1498	2629
Trucks	28	23	51
Bicycles	14	5	19
	1173	1526	2699

Ogilvie Rd

Bicycles	Trucks	Cars	Totals	
0	0	11	11	↰
0	0	144	144	↑
5	17	1025	1047	→
0	1	26	27	↓

Peds: 11

Peds: 29

Ogilvie Rd

Totals	Cars	Trucks	Bicycles	
4	4	0	0	↱
224	219	3	2	↑
801	771	18	12	←
144	137	7	0	↓

West Approach

	Out	In	Total
Cars	1206	953	2159
Trucks	18	19	37
Bicycles	5	12	17
	1229	984	2213

Peds: 12

Totals	35	204	202	0
Cars	35	202	202	0
Trucks	0	2	0	0
Bicycles	0	0	0	0

Cummings Ave

South Approach

	Out	In	Total
Cars	439	353	792
Trucks	2	9	11
Bicycles	0	1	1
	441	363	804

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Ogilvie Rd & Cummings Ave
Site Code: 2335200001
Count Date: Oct 31, 2023
Period: 15:00 - 18:00

Peak Hour Data (16:00 - 17:00)

Start Time	North Approach Cummings Ave						South Approach Cummings Ave						East Approach Ogilvie Rd						West Approach Ogilvie Rd						Total Vehicles
	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	
16:00	63	48	32	0	4	143	9	48	52	0	1	109	39	220	57	2	6	318	35	255	7	0	1	297	867
16:15	77	50	36	0	20	163	10	56	50	0	7	116	40	193	49	1	9	283	30	227	6	5	7	268	830
16:30	55	46	32	0	7	133	7	43	54	0	3	104	33	202	64	0	10	299	45	299	5	3	2	352	888
16:45	78	48	37	0	7	163	9	57	46	0	1	112	32	186	54	1	4	273	34	266	9	3	1	312	860
Grand Total	**273**	**192**	**137**	**0**	**38**	**602**	**35**	**204**	**202**	**0**	**12**	**441**	**144**	**801**	**224**	**4**	**29**	**1173**	**144**	**1047**	**27**	**11**	**11**	**1229**	**3445**
Approach %	45.3	31.9	22.8	0		-	7.9	46.3	45.8	0		-	12.3	68.3	19.1	0.3		-	11.7	85.2	2.2	0.9		-	
Totals %	7.9	5.6	4	0		17.5	1	5.9	5.9	0		12.8	4.2	23.3	6.5	0.1		34	4.2	30.4	0.8	0.3		35.7	
PHF	**0.88**	**0.96**	**0.93**	**0**		**0.92**	**0.88**	**0.89**	**0.94**	**0**		**0.95**	**0.9**	**0.91**	**0.88**	**0.5**		**0.92**	**0.8**	**0.88**	**0.75**	**0.55**		**0.87**	**0.97**
Cars	267	190	136	0		593	35	202	202	0		439	137	771	219	4		1131	144	1025	26	11		1206	3369
% Cars	97.8	99	99.3	0		98.5	100	99	100	0		99.5	95.1	96.3	97.8	100		96.4	100	97.9	96.3	100		98.1	97.8
Trucks	6	1	1	0		8	0	2	0	0		2	7	18	3	0		28	0	17	1	0		18	56
% Trucks	2.2	0.5	0.7	0		1.3	0	1	0	0		0.5	4.9	2.2	1.3	0		2.4	0	1.6	3.7	0		1.5	1.6
Bicycles	0	1	0	0		1	0	0	0	0		0	0	12	2	0		14	0	5	0	0		5	20
% Bicycles	0	0.5	0	0		0.2	0	0	0	0		0	0	1.5	0.9	0		1.2	0	0.5	0	0		0.4	0.6
Peds					38	-					12	-					29	-					11	-	90
% Peds					42.2	-					13.3	-					32.2	-					12.2	-	

Transportation Services - Traffic Services

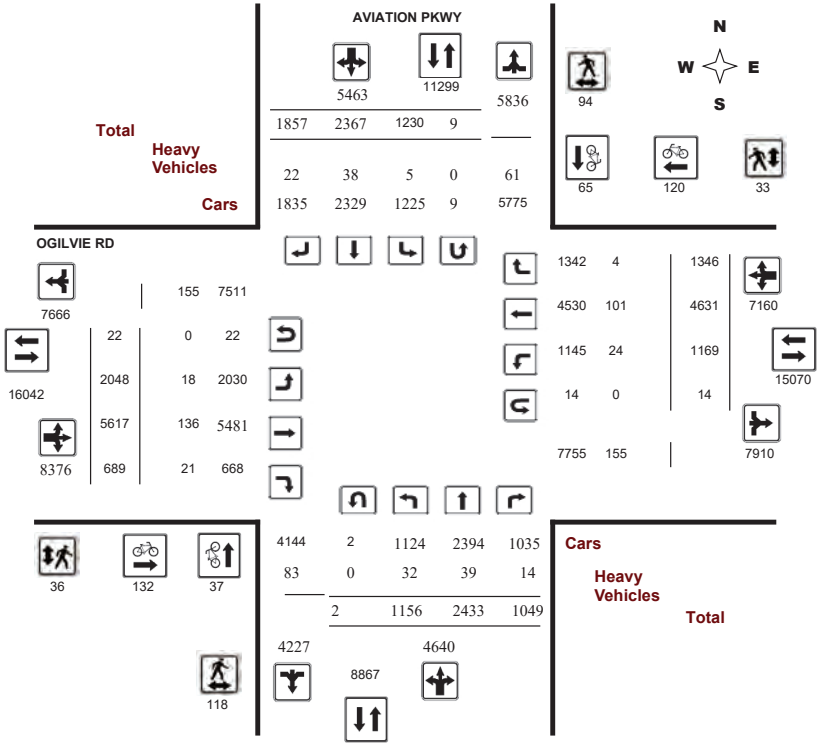
Turning Movement Count - Study Results

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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

Full Study Diagram



Transportation Services - Traffic Services

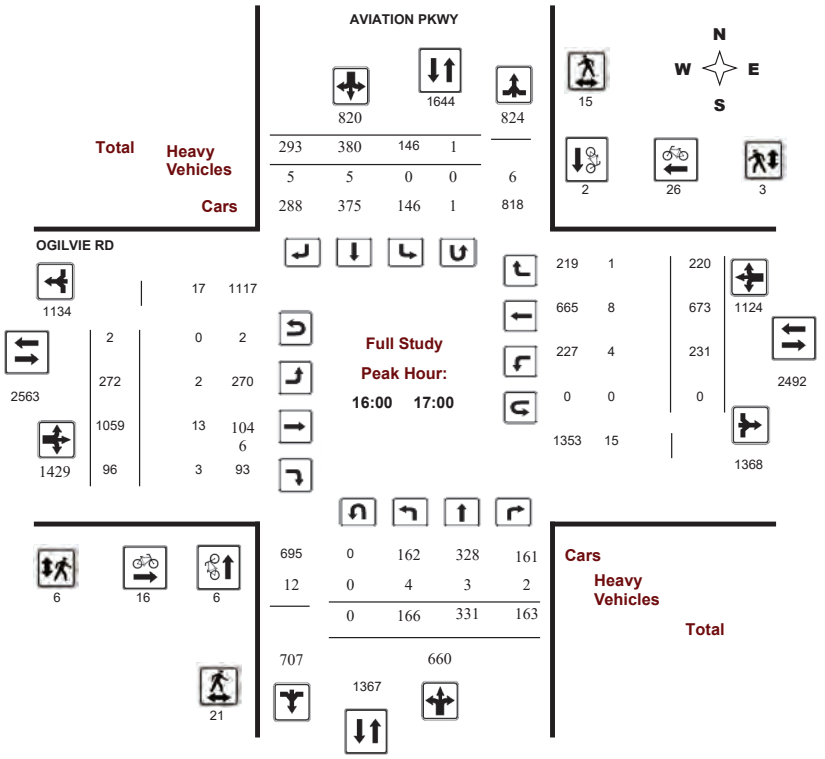
Turning Movement Count - Study Results

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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

Full Study Peak Hour Diagram



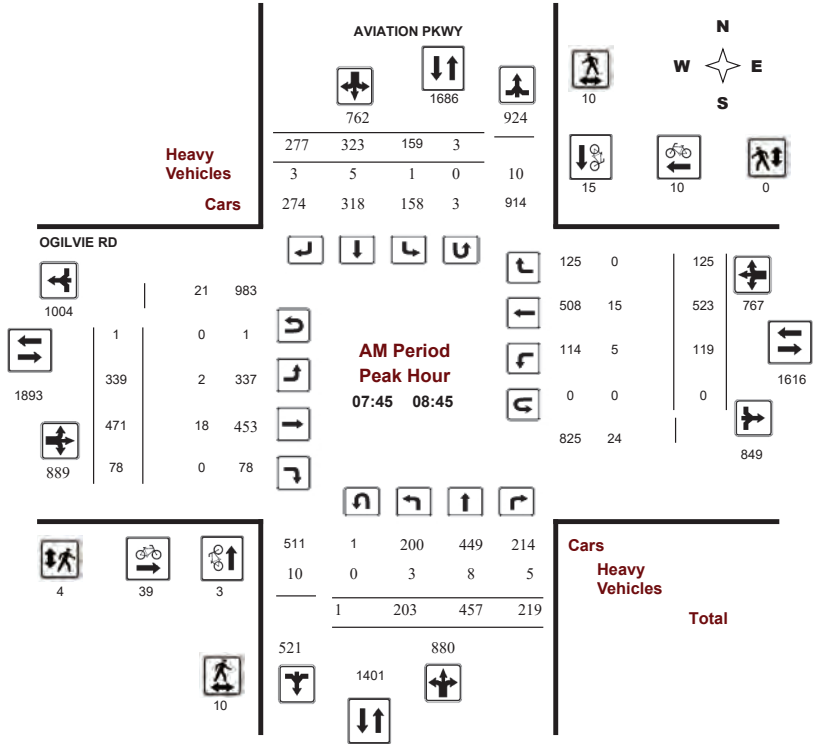
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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



Comments

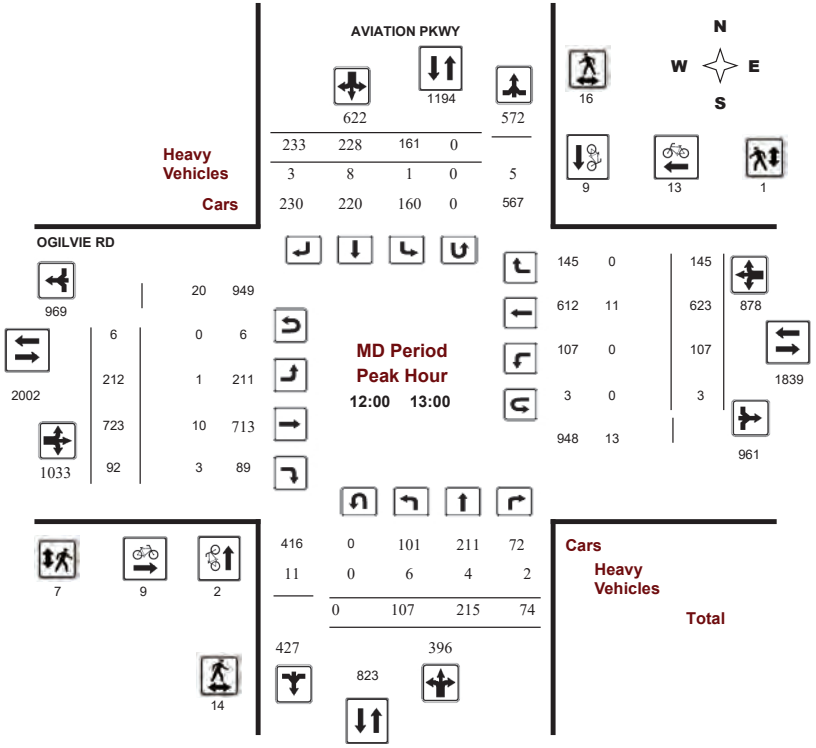
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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



Comments

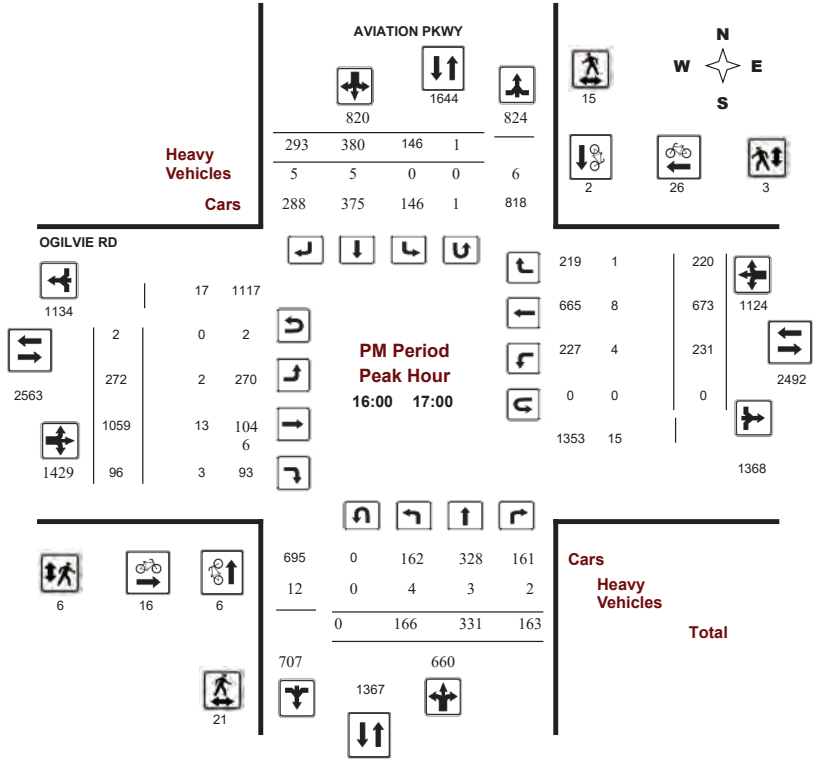
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, September 28, 2023

Total Observed U-Turns

Northbound: 2 Southbound: 9

Eastbound: 22 Westbound: 14

AADT Factor 1.00

	AVIATION PKWY								OGILVIE RD									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	150	404	186	**740**	122	247	205	**574**	**1314**	317	321	67	**705**	107	409	116	**632**	**1337**	**2651**
08:00 09:00	200	416	204	**820**	175	306	242	**723**	**1543**	320	510	67	**897**	109	540	137	**786**	**1683**	**3226**
09:00 10:00	134	257	105	**496**	148	238	176	**562**	**1058**	229	479	62	**770**	93	490	102	**685**	**1455**	**2513**
11:30 12:30	110	204	85	**399**	158	223	246	**627**	**1026**	199	724	77	**1000**	105	624	156	**885**	**1885**	**2911**
12:30 13:30	108	230	74	**412**	135	227	206	**568**	**980**	224	665	87	**976**	111	559	155	**825**	**1801**	**2781**
15:00 16:00	152	324	94	**570**	191	427	294	**912**	**1482**	240	892	110	**1242**	232	732	262	**1226**	**2468**	**3950**
16:00 17:00	166	331	163	**660**	146	380	293	**819**	**1479**	272	1059	96	**1427**	231	673	220	**1124**	**2551**	**4030**
17:00 18:00	136	267	138	**541**	155	319	195	**669**	**1210**	247	967	123	**1337**	181	604	198	**983**	**2320**	**3530**
Sub Total	1156	2433	1049	**4638**	1230	2367	1857	**5454**	**10092**	2048	5617	689	**8354**	1169	4631	1346	**7146**	**15500**	**25592**
U Turns				**2**				**9**	**11**				**22**				**14**	**36**	**47**
Total	1156	2433	1049	**4640**	1230	2367	1857	**5463**	**10103**	2048	5617	689	**8376**	1169	4631	1346	**7160**	**15536**	**25639**
EQ 12Hr	1607	3382	1458	**6450**	1710	3290	2581	**7594**	**14043**	2847	7808	958	**11643**	1625	6437	1871	**9952**	**21595**	**35638**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1607	3382	1458	**6450**	1710	4310	3381	**7594**	**14043**	2847	7808	958	**11643**	1625	6437	1871	**9952**	**21595**	**35638**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	2105	4430	1910	**8450**	2240	5646	4429	**9948**	**18396**	3730	10228	1255	**15252**	2129	8432	2451	**13037**	**28289**	**46686**
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

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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

Full Study 15 Minute Increments

		AVIATION PKWY									OGILVIE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	32	93	45	170	24	45	32	101	271	63	64	12	139	23	73	25	121	260	531
07:15	07:30	40	75	48	163	28	55	41	124	287	64	63	11	138	14	95	29	138	276	563
07:30	07:45	29	111	37	177	36	64	55	155	332	89	95	21	206	37	104	37	179	385	717
07:45	08:00	49	125	56	231	34	83	77	194	425	101	99	23	223	33	137	25	195	418	843
08:00	08:15	47	113	56	216	40	78	68	187	403	71	90	24	185	36	135	40	211	396	799
08:15	08:30	52	107	53	212	37	99	66	203	415	94	138	15	248	23	133	26	182	430	845
08:30	08:45	55	112	54	221	48	63	66	178	399	73	144	16	233	27	118	34	179	412	811
08:45	09:00	46	84	41	171	50	66	42	158	329	82	138	12	232	23	154	37	214	446	775
09:00	09:15	40	70	37	147	41	77	59	177	324	66	137	14	218	24	123	33	181	399	723
09:15	09:30	39	70	27	136	37	55	34	126	262	62	106	20	188	19	130	20	169	357	619
09:30	09:45	33	67	23	123	42	57	40	139	262	48	131	15	194	29	118	28	176	370	632
09:45	10:00	22	50	18	90	28	49	43	120	210	53	105	13	171	21	119	21	162	333	543
11:30	11:45	26	55	24	105	36	44	48	128	233	49	175	19	243	23	149	42	214	457	690
11:45	12:00	28	52	24	104	39	64	60	164	268	52	164	15	231	25	152	43	220	451	719
12:00	12:15	27	45	22	94	47	60	69	176	270	44	195	18	259	26	152	31	209	468	738
12:15	12:30	29	52	15	96	36	55	69	160	256	54	190	25	272	31	171	40	243	515	771
12:30	12:45	29	61	18	108	33	50	47	130	238	43	169	21	233	31	163	34	229	462	700
12:45	13:00	22	57	19	98	45	63	48	156	254	71	169	28	269	19	137	40	197	466	720
13:00	13:15	29	59	15	103	29	58	51	138	241	61	163	17	242	33	136	37	207	449	690
13:15	13:30	28	53	22	103	28	56	60	144	247	49	164	21	234	28	123	44	195	429	676
15:00	15:15	37	86	15	138	44	101	75	220	358	56	183	25	265	63	185	64	313	578	936
15:15	15:30	48	68	24	140	47	85	71	205	345	65	245	38	349	59	215	60	335	684	1029
15:30	15:45	31	96	22	149	51	124	79	254	403	52	199	28	280	64	164	61	290	570	973
15:45	16:00	36	74	33	143	49	117	69	236	379	67	265	19	351	46	168	77	291	642	1021
16:00	16:15	34	77	27	138	40	109	82	231	369	58	243	16	318	51	172	58	281	599	968
16:15	16:30	35	79	42	156	43	87	77	207	363	63	275	23	362	66	163	45	274	636	999
16:30	16:45	42	86	49	177	31	91	76	199	376	68	264	29	361	70	169	55	294	655	1031
16:45	17:00	55	89	45	189	32	93	58	183	372	83	277	28	388	44	169	62	275	663	1035
17:00	17:15	33	85	36	154	36	91	57	184	338	72	258	33	363	62	143	48	253	616	954
17:15	17:30	40	61	26	127	37	84	44	165	292	65	255	32	357	48	179	53	281	638	930
17:30	17:45	28	64	39	131	35	79	46	161	292	65	224	33	322	41	147	49	237	559	851
17:45	18:00	35	57	37	130	47	65	48	160	290	45	230	25	302	30	135	48	215	517	807
Total:		1156	2433	1049	4640	1230	2367	1857	5463	10103	2048	5617	689	8376	1169	4631	1346	7160	15536	25,639

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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

Full Study Cyclist Volume

		AVIATION PKWY			OGILVIE RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	3	3	1	1	2	5
07:15	07:30	2	4	6	3	5	8	14
07:30	07:45	0	2	2	4	6	10	12
07:45	08:00	0	1	1	12	3	15	16
08:00	08:15	2	5	7	11	1	12	19
08:15	08:30	0	4	4	6	2	8	12
08:30	08:45	1	5	6	10	4	14	20
08:45	09:00	3	0	3	8	3	11	14
09:00	09:15	0	3	3	10	1	11	14
09:15	09:30	0	0	0	3	2	5	5
09:30	09:45	1	0	1	5	1	6	7
09:45	10:00	0	0	0	3	0	3	3
11:30	11:45	0	2	2	1	0	1	3
11:45	12:00	0	1	1	1	2	3	4
12:00	12:15	0	2	2	0	3	3	5
12:15	12:30	2	3	5	5	2	7	12
12:30	12:45	0	4	4	2	4	6	10
12:45	13:00	0	0	0	2	4	6	6
13:00	13:15	0	0	0	3	0	3	3
13:15	13:30	0	1	1	1	3	4	5
15:00	15:15	1	1	2	0	7	7	9
15:15	15:30	4	0	4	1	6	7	11
15:30	15:45	5	1	6	3	4	7	13
15:45	16:00	1	3	4	3	1	4	8
16:00	16:15	1	0	1	4	3	7	8
16:15	16:30	2	1	3	5	2	7	10
16:30	16:45	1	1	2	4	11	15	17
16:45	17:00	2	0	2	3	10	13	15
17:00	17:15	5	6	11	4	12	16	27
17:15	17:30	1	3	4	4	7	11	15
17:30	17:45	0	7	7	6	5	11	18
17:45	18:00	3	2	5	4	5	9	14
Total		37	65	**102**	132	120	252	354

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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

Full Study Pedestrian Volume

		AVIATION PKWY			OGILVIE RD			
Time Period		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	1	1	**2**	0	0	**0**	**2**
07:15	07:30	2	1	**3**	1	0	**1**	**4**
07:30	07:45	5	2	**7**	1	1	**2**	**9**
07:45	08:00	3	0	**3**	1	0	**1**	**4**
08:00	08:15	1	3	**4**	2	0	**2**	**6**
08:15	08:30	3	3	**6**	0	0	**0**	**6**
08:30	08:45	3	4	**7**	1	0	**1**	**8**
08:45	09:00	5	1	**6**	1	0	**1**	**7**
09:00	09:15	3	1	**4**	0	1	**1**	**5**
09:15	09:30	10	1	**11**	2	0	**2**	**13**
09:30	09:45	5	2	**7**	2	0	**2**	**9**
09:45	10:00	1	2	**3**	1	1	**2**	**5**
11:30	11:45	0	3	**3**	1	9	**10**	**13**
11:45	12:00	3	2	**5**	0	1	**1**	**6**
12:00	12:15	1	4	**5**	2	0	**2**	**7**
12:15	12:30	1	5	**6**	2	0	**2**	**8**
12:30	12:45	6	4	**10**	1	0	**1**	**11**
12:45	13:00	6	3	**9**	2	1	**3**	**12**
13:00	13:15	5	4	**9**	0	0	**0**	**9**
13:15	13:30	4	4	**8**	2	2	**4**	**12**
15:00	15:15	3	3	**6**	2	1	**3**	**9**
15:15	15:30	2	4	**6**	0	1	**1**	**7**
15:30	15:45	6	3	**9**	0	5	**5**	**14**
15:45	16:00	1	2	**3**	2	5	**7**	**10**
16:00	16:15	3	3	**6**	0	0	**0**	**6**
16:15	16:30	5	7	**12**	3	3	**6**	**18**
16:30	16:45	6	0	**6**	1	0	**1**	**7**
16:45	17:00	7	5	**12**	2	0	**2**	**14**
17:00	17:15	6	5	**11**	0	1	**1**	**12**
17:15	17:30	5	3	**8**	2	1	**3**	**11**
17:30	17:45	4	4	**8**	2	0	**2**	**10**
17:45	18:00	2	5	**7**	0	0	**0**	**7**
Total	.....	118	94	**212**	36	33	**69**	**281**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

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

Full Study Heavy Vehicles

		AVIATION PKWY									OGILVIE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	1	1	0	**3**	0	1	0	**4**	**7**	2	7	0	**12**	0	2	0	**9**	**21**	**14**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**8**	0	5	0	**8**	**16**	**8**
07:30	07:45	0	1	0	**3**	0	0	0	**2**	**5**	1	7	0	**9**	2	1	0	**10**	**19**	**12**
07:45	08:00	2	2	0	**9**	1	2	0	**5**	**14**	0	3	0	**8**	3	3	0	**10**	**18**	**16**
08:00	08:15	0	2	2	**8**	0	3	2	**8**	**16**	1	1	0	**11**	1	7	0	**11**	**22**	**19**
08:15	08:30	1	3	2	**7**	0	0	1	**5**	**12**	1	7	0	**13**	1	3	0	**13**	**26**	**19**
08:30	08:45	0	1	1	**2**	0	0	0	**1**	**3**	0	7	0	**9**	0	2	0	**10**	**19**	**11**
08:45	09:00	2	2	0	**4**	0	0	2	**4**	**8**	0	9	0	**15**	0	2	0	**11**	**26**	**17**
09:00	09:15	0	3	1	**7**	0	0	0	**4**	**11**	1	4	2	**15**	1	8	0	**14**	**29**	**20**
09:15	09:30	0	5	0	**11**	1	2	0	**9**	**20**	1	5	2	**13**	2	5	0	**13**	**26**	**23**
09:30	09:45	5	0	1	**8**	0	2	2	**5**	**13**	1	8	0	**19**	0	3	0	**12**	**31**	**22**
09:45	10:00	1	0	0	**2**	0	0	2	**3**	**5**	0	5	1	**13**	0	4	1	**10**	**23**	**14**
11:30	11:45	0	1	0	**1**	0	0	0	**5**	**6**	2	7	0	**12**	0	3	2	**12**	**24**	**15**
11:45	12:00	1	1	0	**6**	0	3	1	**6**	**12**	1	4	1	**10**	0	2	0	**6**	**16**	**14**
12:00	12:15	2	1	0	**6**	0	3	1	**5**	**11**	0	3	0	**13**	0	7	0	**10**	**23**	**17**
12:15	12:30	0	0	0	**3**	0	1	0	**1**	**4**	0	1	2	**5**	0	2	0	**3**	**8**	**6**
12:30	12:45	3	2	1	**7**	0	1	1	**5**	**12**	1	2	0	**7**	0	0	0	**3**	**10**	**11**
12:45	13:00	1	1	1	**7**	1	3	1	**6**	**13**	0	4	1	**9**	0	2	0	**8**	**17**	**15**
13:00	13:15	1	3	0	**9**	0	1	0	**5**	**14**	1	5	1	**10**	3	2	0	**10**	**20**	**17**
13:15	13:30	1	1	0	**5**	0	1	1	**5**	**10**	2	2	0	**11**	2	5	0	**9**	**20**	**15**
15:00	15:15	1	2	0	**7**	0	0	2	**5**	**12**	1	10	3	**20**	1	3	0	**14**	**34**	**23**
15:15	15:30	0	1	1	**5**	0	1	0	**2**	**7**	0	6	1	**15**	1	8	0	**16**	**31**	**19**
15:30	15:45	0	1	0	**3**	0	1	0	**2**	**5**	0	2	0	**4**	1	2	0	**5**	**9**	**7**
15:45	16:00	1	0	0	**3**	2	0	0	**2**	**5**	0	4	0	**11**	2	6	0	**14**	**25**	**15**
16:00	16:15	0	3	2	**9**	0	2	2	**8**	**17**	0	5	1	**11**	1	3	1	**12**	**23**	**20**
16:15	16:30	0	0	0	**3**	0	1	1	**2**	**5**	0	3	0	**6**	2	2	0	**7**	**13**	**9**
16:30	16:45	2	0	0	**4**	0	0	1	**1**	**5**	0	2	1	**8**	1	2	0	**5**	**13**	**9**
16:45	17:00	2	0	0	**5**	0	2	1	**5**	**10**	2	3	1	**10**	0	1	0	**4**	**14**	**12**
17:00	17:15	3	0	1	**7**	0	3	1	**4**	**11**	0	3	0	**8**	0	1	0	**5**	**13**	**12**
17:15	17:30	1	2	0	**5**	0	0	0	**2**	**7**	0	2	2	**7**	0	2	0	**4**	**11**	**9**
17:30	17:45	1	0	0	**5**	0	2	0	**2**	**7**	0	1	2	**5**	0	1	0	**2**	**7**	**7**
17:45	18:00	0	0	1	**4**	0	3	0	**3**	**7**	0	1	0	**3**	0	2	0	**4**	**7**	**7**
Total:	None	32	39	14	**168**	5	38	22	**126**	**294**	18	136	21	**330**	24	101	4	**284**	**614**	**454**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVIATION PKWY @ OGILVIE RD

Survey Date: Thursday, September 28, 2023 **WO No:** 41205

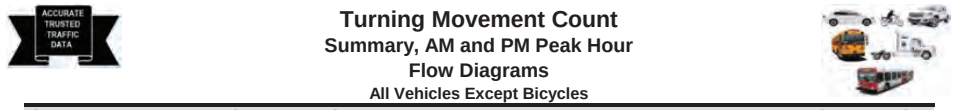
Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

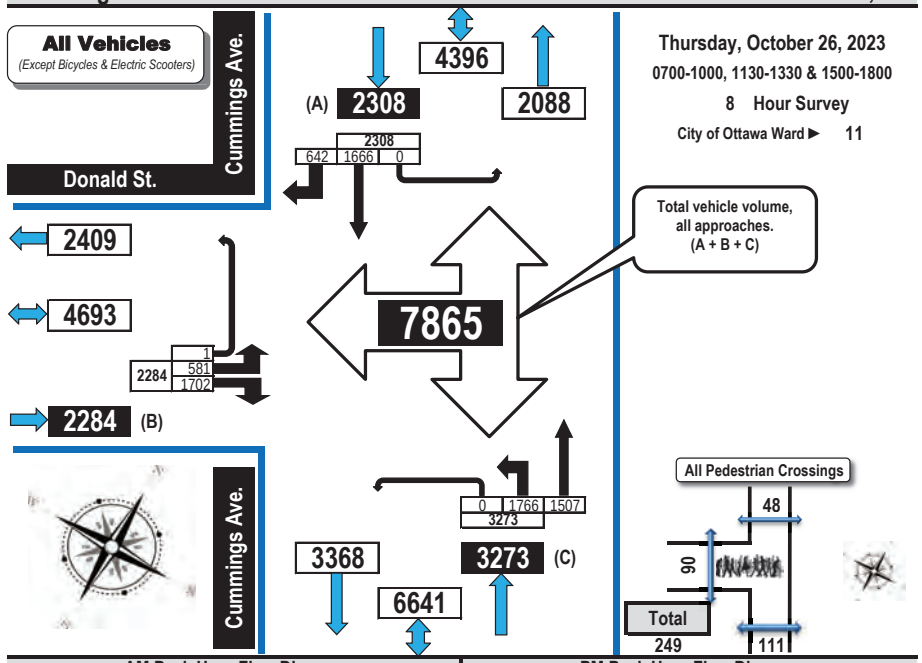
		AVIATION PKWY		OGILVIE RD		
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	1	1	2
07:45	08:00	1	0	0	0	1
08:00	08:15	0	1	0	0	1
08:15	08:30	0	1	1	0	2
08:30	08:45	0	1	0	0	1
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	1	1	2
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	1	1
09:45	10:00	0	0	0	1	1
11:30	11:45	0	0	0	0	0
11:45	12:00	0	1	0	0	1
12:00	12:15	0	0	2	0	2
12:15	12:30	0	0	3	1	4
12:30	12:45	0	0	0	1	1
12:45	13:00	0	0	1	1	2
13:00	13:15	0	0	1	1	2
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	1	1	2
15:15	15:30	0	2	1	1	4
15:30	15:45	0	0	1	1	2
15:45	16:00	0	1	0	0	1
16:00	16:15	0	0	1	0	1
16:15	16:30	0	0	1	0	1
16:30	16:45	0	1	0	0	1
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	5	1	6
17:30	17:45	0	1	0	0	1
17:45	18:00	1	0	2	2	5
Total		2	9	22	14	47

ACCURATE TRUSTED TRAFFIC DATA

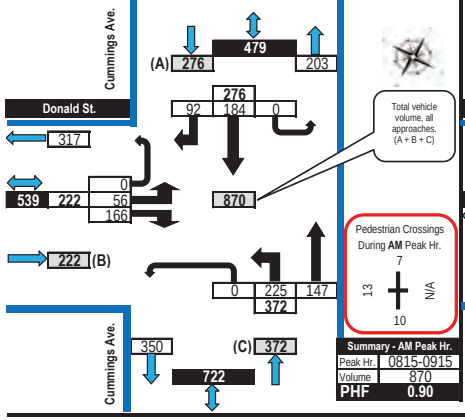
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles



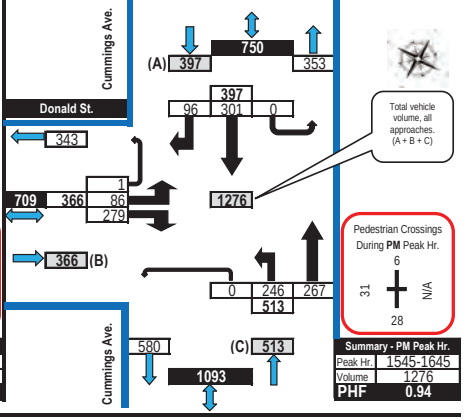
Cummings Avenue & Donald Street — **Ottawa, ON**



AM Peak Hour Flow Diagram

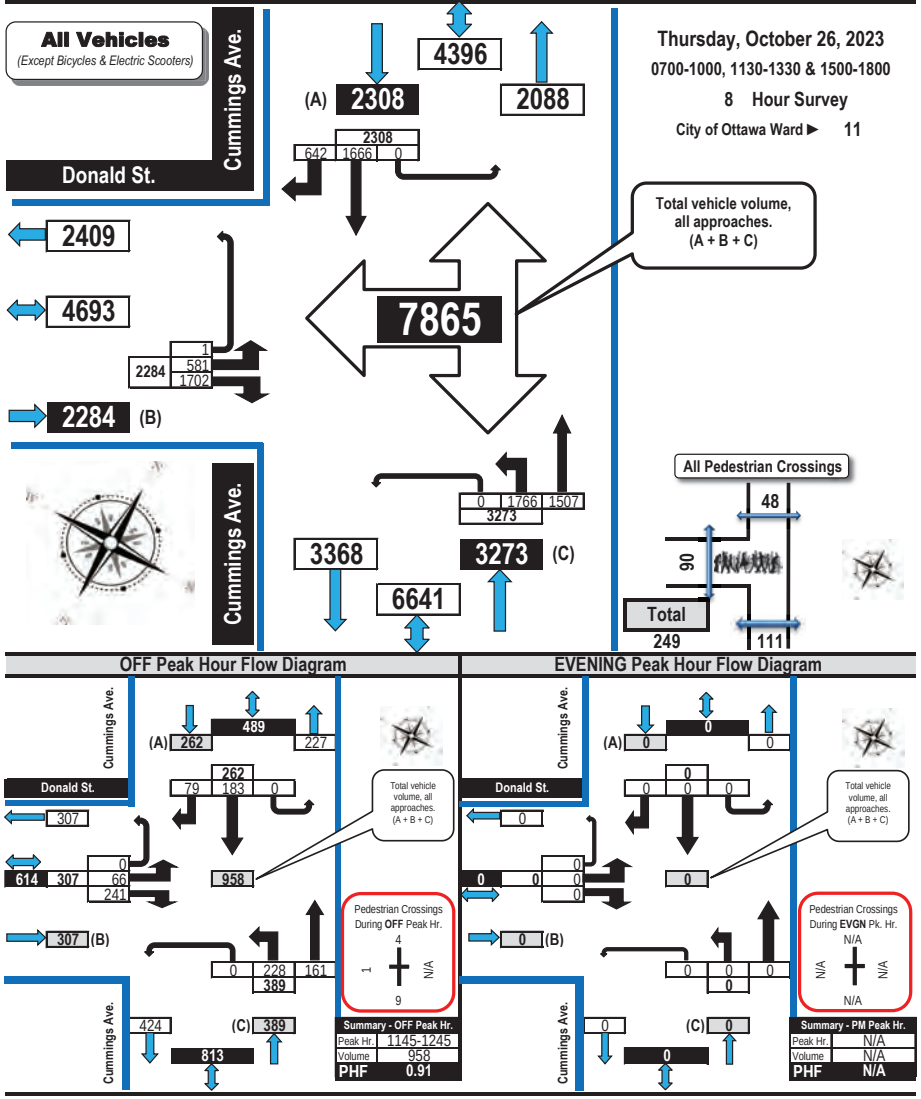


PM Peak Hour Flow Diagram



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

Cummings Avenue & Donald Street — Ottawa, ON



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

Cummings Avenue & Donald Street — Ottawa, ON

Survey Date: Thursday, October 26, 2023 **Start Time:** 0700 **AADT Factor:** 0.9
Weather AM: Overcast 14º C **Survey Duration:** 8 Hrs. **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800
Weather PM: Overcast 17º C **Surveyor(s):** T. Carmody

	Donald St.					N/A					Cummings Ave.					Cummings Ave.					
	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	42		104	0	146						146	107	114		0	221		202	47	0	249	470	616
0800-0900	54		160	0	214						214	224	154		0	378		186	89	0	275	653	867
0900-1000	60		180	0	240						240	202	124		0	326		177	79	0	256	582	822
1130-1230	57		236	0	293						293	231	156		0	387		175	82	0	257	644	937
1230-1330	72		228	0	300						300	201	172		0	373		150	82	0	232	605	905
1500-1600	87		268	0	355						355	287	241		0	528		242	92	0	334	862	1217
1600-1700	89		269	1	359						359	227	284		0	511		285	92	0	377	888	1247
1700-1800	120		257	0	377						377	287	262		0	549		249	79	0	328	877	1254
Totals	581		1702	1	2284						2284	1766	1507		0	3273		1666	642	0	2308	5581	7865

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	808	0	2366	1	3175	0	0	0	0	0	3175	2455	2095	0	0	4549	0	2316	892	0	3208	7758	10932
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	727	0	2129	1	2857	0	0	0	0	0	2857	2209	1885	0	0	4095	0	2084	803	0	2887	6982	9839
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	952	0	2789	2	3743	0	0	0	0	0	3743	2894	2470	0	0	5364	0	2730	1052	0	3782	9146	12889

AADT and expansion factors provided by the City of Ottawa

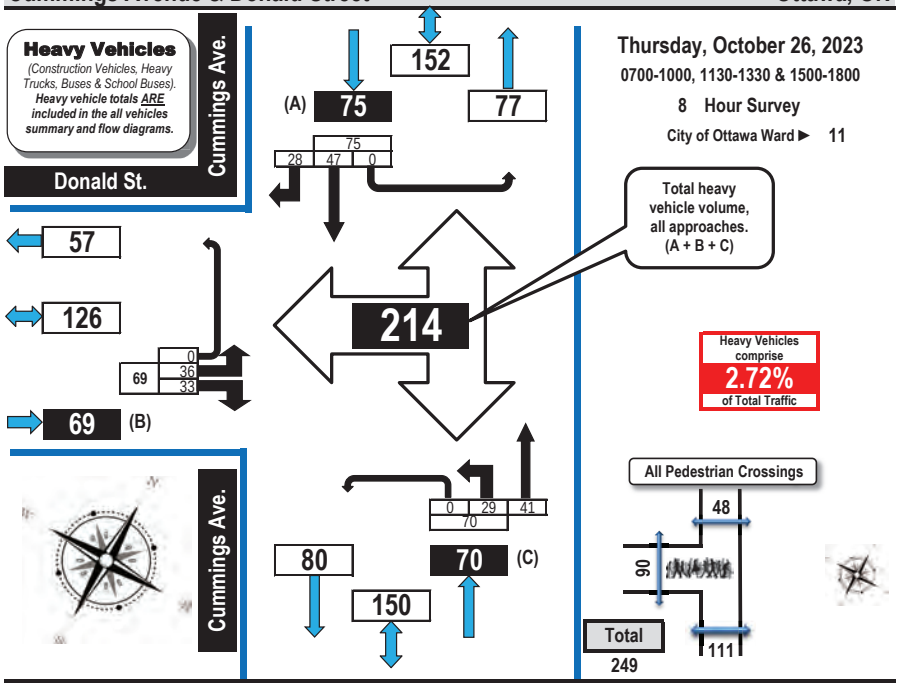
AM Peak Hour Factor ➡ 0.91												Highest Hourly Vehicle Volume Between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0815-0915	56	0	166	0	222	0	0	0	0	0	222	225	147	0	0	372	0	184	92	0	276	648	870
OFF Peak Hour Factor ➡ 0.90												Highest Hourly Vehicle Volume Between 1130h & 1330h										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1145-1245	66	0	241	0	307	0	0	0	0	0	307	228	161	0	0	389	0	183	79	0	262	651	958
PM Peak Hour Factor ➡ 0.94												Highest Hourly Vehicle Volume Between 1500h & 1800h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1545-1645	86	0	279	1	366	0	0	0	0	0	366	246	267	0	0	513	0	301	96	0	397	910	1276

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 44.86% of the heavy vehicle traffic.

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

Cummings Avenue & Donald Street — **Ottawa, ON**

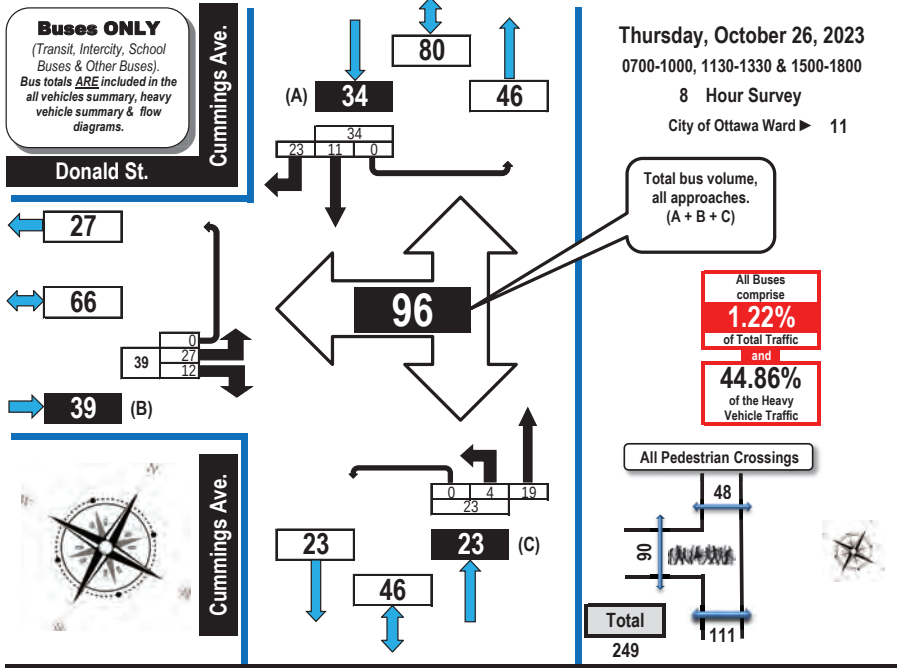


	Donald St.					N/A					Cummings Ave.					Cummings Ave.				
	Eastbound					Westbound					Northbound					Southbound				
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	6		3	0	9						8	5		0	13		4	5	0	9	31
0800-0900	2		7	0	9						5	8		0	13		3	6	0	9	31
0900-1000	5		2	0	7						3	8		0	11		10	4	0	14	32
1130-1230	5		4	0	9						3	4		0	7		5	3	0	8	24
1230-1330	3		5	0	8						3	0		0	3		8	2	0	10	21
1500-1600	5		3	0	8						2	6		0	8		8	3	0	11	27
1600-1700	5		7	0	12						4	7		0	11		7	3	0	10	33
1700-1800	5		2	0	7						1	3		0	4		2	2	0	4	15
Totals	36		33	0	69						29	41		0	70		47	28	0	75	214

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 44.86% of the heavy vehicle traffic.

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

Cummings Avenue & Donald Street — **Ottawa, ON**

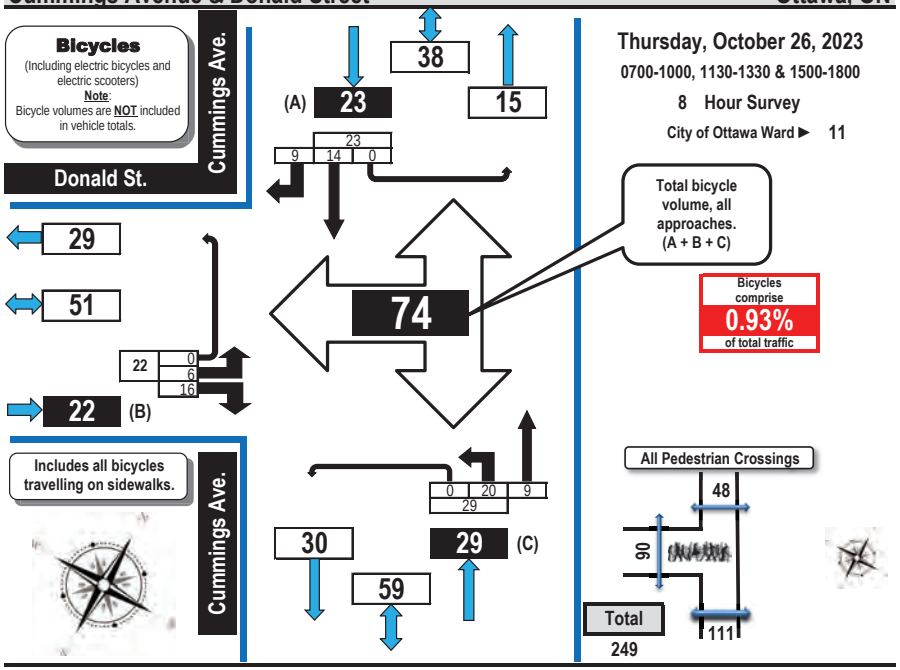


	Donald St.					N/A					Cummings Ave.					Cummings Ave.				
	Eastbound					Westbound					Northbound					Southbound				
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	5		1	0	6						3	3		0	6		1	4	0	5	17
0800-0900	2		5	0	7						0	3		0	3		0	4	0	4	14
0900-1000	2		1	0	3						0	1		0	1		4	3	0	7	11
1130-1230	4		0	0	4						0	1		0	1		0	3	0	3	8
1230-1330	2		1	0	3						0	0		0	0		2	2	0	4	7
1500-1600	4		2	0	6						1	5		0	6		2	3	0	5	17
1600-1700	4		2	0	6						0	6		0	6		1	2	0	3	15
1700-1800	4		0	0	4						0	0		0	0		1	2	0	3	7
Totals	27		12	0	39						4	19		0	23		11	23	0	34	96

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 44.86% of the heavy vehicle traffic.

Turning Movement Count
Bicycle Summary
Flow Diagram

Cummings Avenue & Donald Street — **Ottawa, ON**



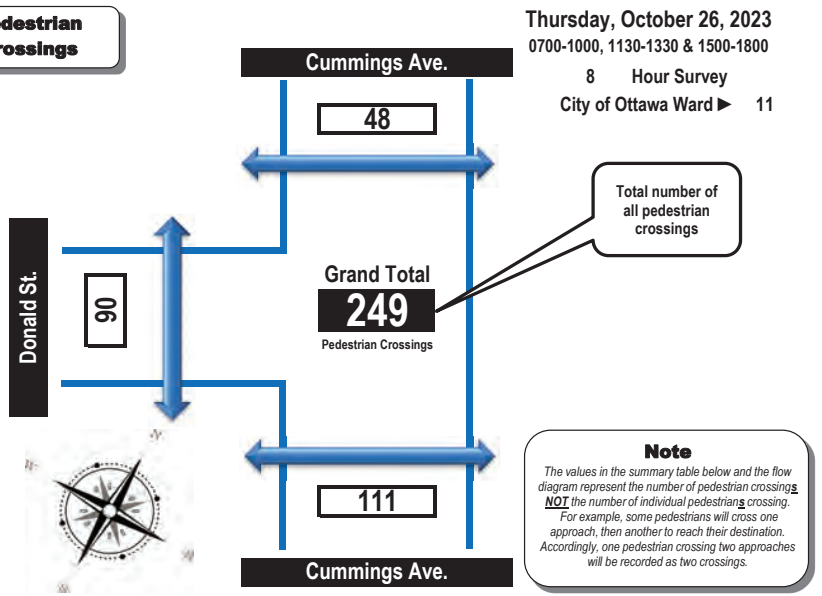
Thursday, October 26, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 11

	Donald St.					N/A					Cummings Ave.					Cummings Ave.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0		6	0	6						3	0		0	3		4	0	0	4	13
0800-0900	1		4	0	5						3	0		0	3		4	1	0	5	13
0900-1000	0		0	0	0						1	2		0	3		1	1	0	2	5
1130-1230	0		0	0	0						0	2		0	2		1	3	0	4	6
1230-1330	0		0	0	0						0	1		0	1		0	1	0	1	2
1500-1600	1		3	0	4						3	1		0	4		2	0	0	2	10
1600-1700	3		3	0	6						4	3		0	7		0	2	0	2	15
1700-1800	1		0	0	1						6	0		0	6		2	1	0	3	10
Totals	6		16	0	22						20	9		0	29		14	9	0	23	74

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 44.86% of the heavy vehicle traffic.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Cummings Avenue & Donald Street — **Ottawa, ON**



Thursday, October 26, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 11

Time Period	West Side Crossing Donald St.	East Side Crossing N/A	Street Total	South Side Crossing Cummings Ave.	North Side Crossing Cummings Ave.	Street Total	Grand Total
0700-0800	6		6	3	5	8	14
0800-0900	11		11	8	6	14	25
0900-1000	5		5	11	5	16	21
1130-1230	7		7	7	2	9	16
1230-1330	8		8	12	3	15	23
1500-1600	20		20	21	9	30	50
1600-1700	24		24	28	6	34	58
1700-1800	9		9	21	12	33	42
Totals	90		90	111	48	159	249

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 44.86% of the heavy vehicle traffic.

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

Cummings Avenue/Labelle Street & Cyrville Road — Ottawa, ON

Survey Date: Thursday, October 26, 2023 | **Start Time:** 0700 | **AADT Factor:** 0.9
Weather AM: Overcast 14º C | **Survey Duration:** 8 Hrs. | **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800
Weather PM: Overcast 17º C | **Surveyor(s):** T. Carmody

	Cyrville Rd. Eastbound					Cyrville Rd. Westbound						Labelle St. Northbound					Cummings Ave. 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	11	155	24	0	190	71	228	106	0	405	595	1	8	31	0	40	113	21	8	0	142	182	777
0800-0900	20	205	39	0	264	104	359	155	0	618	882	6	14	26	0	46	125	43	21	0	189	235	1117
0900-1000	17	210	25	0	252	40	227	152	0	419	671	1	16	29	0	46	155	20	18	0	193	239	910
1130-1230	48	295	21	0	364	54	244	203	0	501	865	11	28	41	0	80	180	37	30	0	247	327	1192
1230-1330	46	315	19	0	380	45	223	188	0	456	836	8	16	22	0	46	180	37	35	0	252	298	1134
1500-1600	71	404	13	0	488	72	238	229	0	539	1027	7	45	45	0	97	223	42	27	0	292	389	1416
1600-1700	60	476	17	0	553	70	299	259	0	628	1181	10	52	68	0	130	215	46	32	0	293	423	1604
1700-1800	81	367	14	0	462	71	241	232	0	544	1006	3	23	29	0	55	168	27	18	0	213	268	1274
Totals	354	2427	172	0	2953	527	2059	1524	0	4110	7063	47	202	291	0	540	1359	273	189	0	1821	2361	9424

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	492	3374	239	0	4105	733	2862	2118	0	5713	9818	65	281	404	0	751	1889	379	263	0	2531	3282	13099

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	443	3036	215	0	3694	659	2576	1907	0	5142	8836	59	253	364	0	676	1700	342	236	0	2278	2954	11789

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	580	3977	282	0	4839	864	3374	2498	0	6736	11575	77	331	477	0	885	2227	447	310	0	2984	3869	15444

AADT and expansion factors provided by the City of Ottawa

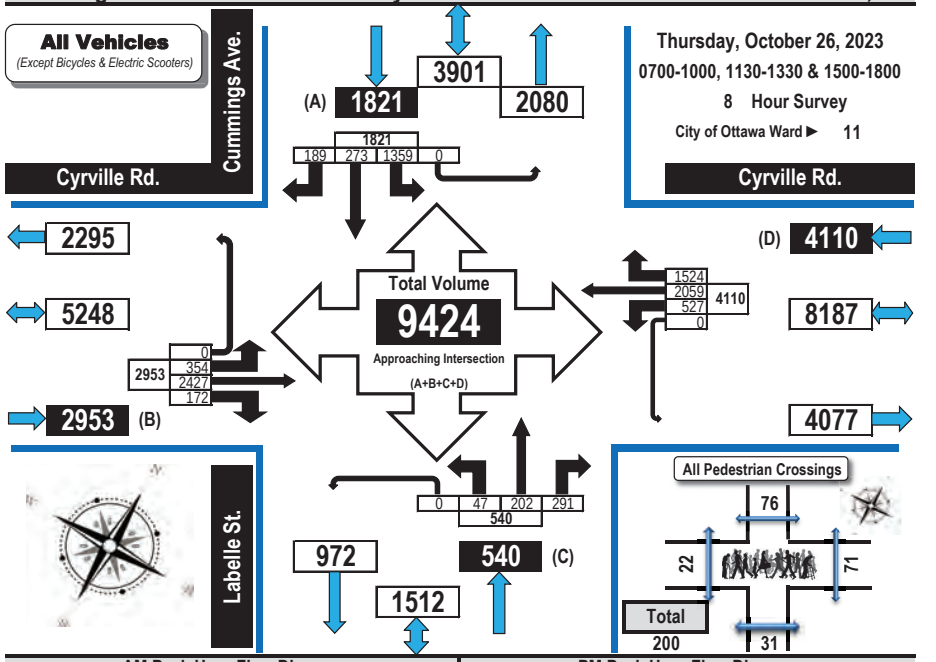
AM Peak Hour Factor ➡ 0.91												Highest Hourly Vehicle Volume Between 0700h & 1000h											
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0745-0845	21	201	37	0	259	111	367	158	0	636	895	5	13	31	0	49	127	41	20	0	188	237	1132
OFF Peak Hour Factor ➡ 0.95												Highest Hourly Vehicle Volume Between 1130h & 1330h											
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1200-1300	51	317	22	0	390	53	237	192	0	482	872	11	24	41	0	76	190	35	34	0	259	335	1207
PM Peak Hour Factor ➡ 0.96												Highest Hourly Vehicle Volume Between 1500h & 1800h											
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1600-1700	60	476	17	0	553	70	299	259	0	628	1181	10	52	68	0	130	215	46	32	0	293	423	1604

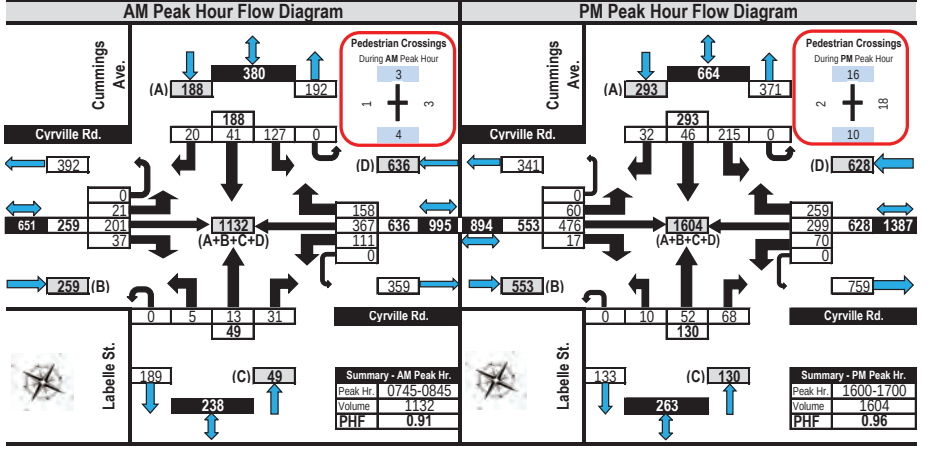
Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 12.22% of the heavy vehicle traffic.

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

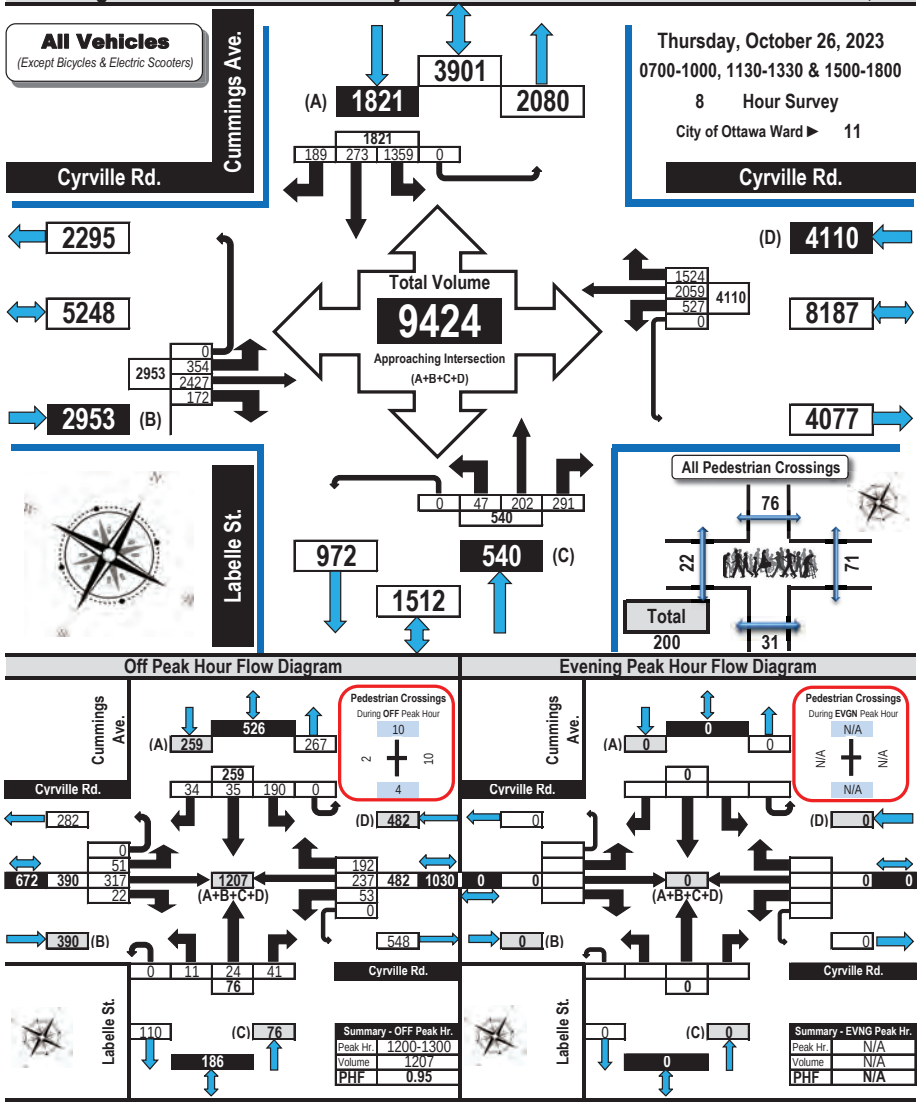
Cummings Avenue/Labelle Street & Cyrville Road — Ottawa, ON





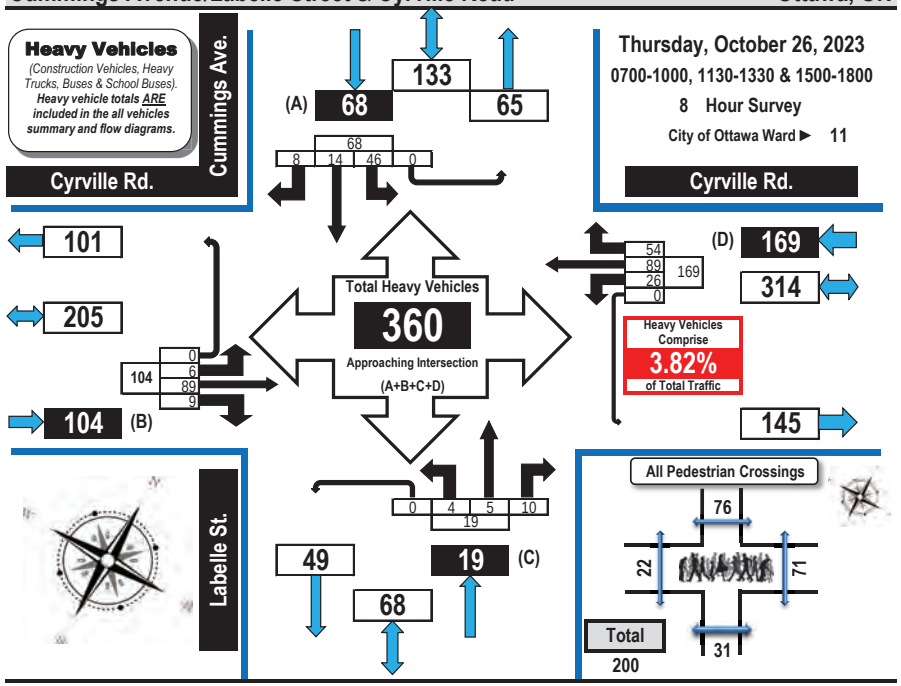
Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Cummings Avenue/Labelle Street & Cyrville Road — Ottawa, ON



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

Cummings Avenue/Labelle Street & Cyrville Road — Ottawa, ON

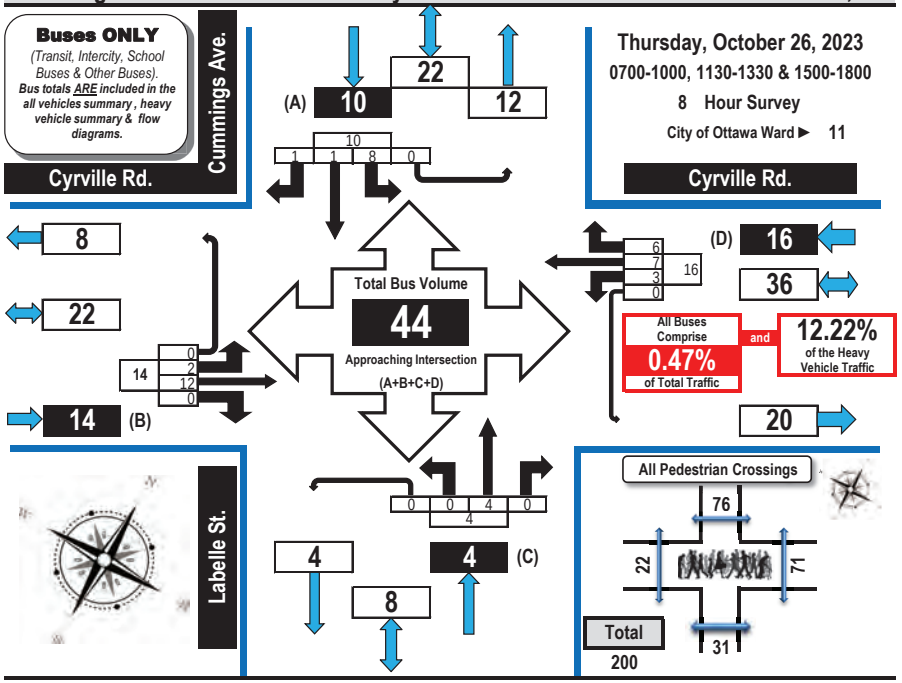


	Cyrville Rd. Eastbound					Cyrville Rd. Westbound					Labelle St. Northbound					Cummings Ave. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	1	4	1	0	6	3	16	12	0	31	1	3	1	0	5	2	1	0	0	3	45
0800-0900	2	13	1	0	16	5	20	10	0	35	0	0	2	0	2	6	3	3	0	12	65
0900-1000	2	10	4	0	16	2	19	9	0	30	1	1	1	0	3	7	2	0	0	9	58
1130-1230	0	7	2	0	9	5	12	9	0	26	0	0	4	0	4	5	6	1	0	12	51
1230-1330	0	16	0	0	16	2	8	9	0	19	1	0	0	0	1	8	1	2	0	11	47
1500-1600	1	14	0	0	15	4	8	2	0	14	1	1	0	0	2	6	1	2	0	9	40
1600-1700	0	15	1	0	16	4	2	1	0	7	0	0	1	0	1	10	0	0	0	10	34
1700-1800	0	10	0	0	10	1	4	2	0	7	0	0	1	0	1	2	0	0	0	2	20
Totals	6	89	9	0	104	26	89	54	0	169	4	5	10	0	19	46	14	8	0	68	360

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 12.22% of the heavy vehicle traffic.

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

Cummings Avenue/Labelle Street & Cyrville Road — **Ottawa, ON**

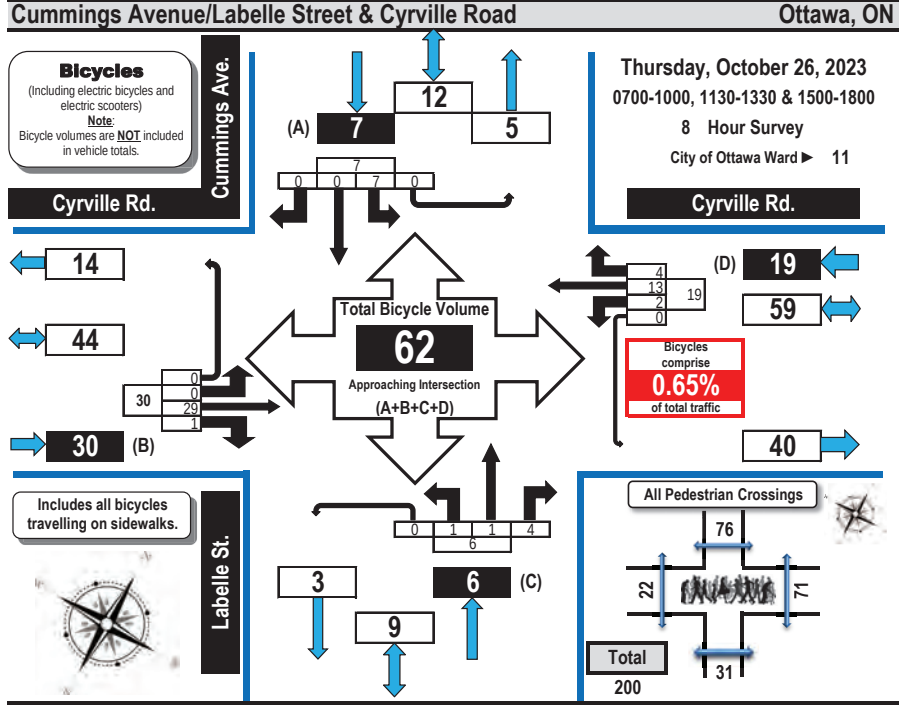


	Cyrville Rd. Eastbound					Cyrville Rd. Westbound					Labelle St. Northbound					Cummings Ave. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	0	0	0	0	0	2	4	0	6	0	3	0	0	3	0	0	0	0	0	9
0800-0900	2	1	0	0	3	0	4	0	0	4	0	0	0	0	0	1	0	0	0	1	8
0900-1000	0	4	0	0	4	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	6
1130-1230	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2
1230-1330	0	1	0	0	1	2	0	1	0	3	0	0	0	0	0	2	0	0	0	2	6
1500-1600	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	1	1	0	2	5
1600-1700	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	6
1700-1800	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Totals	2	12	0	0	14	3	7	6	0	16	0	4	0	0	4	8	1	1	0	10	44

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 12.22% of the heavy vehicle traffic.

Turning Movement Count
Bicycle Summary
Flow Diagram

Cummings Avenue/Labelle Street & Cyrville Road — **Ottawa, ON**



	Cyrville Rd. Eastbound					Cyrville Rd. Westbound					Labelle St. Northbound					Cummings Ave. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	4	1	0	5	1	0	0	0	1	0	0	1	0	1	1	0	0	0	1	8
0800-0900	0	2	0	0	2	0	3	1	0	4	0	0	0	0	0	3	0	0	0	3	9
0900-1000	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
1130-1230	0	4	0	0	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	5
1230-1330	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1500-1600	0	2	0	0	2	0	2	1	0	3	0	0	1	0	1	1	0	0	0	1	7
1600-1700	0	12	0	0	12	1	2	0	0	3	1	1	2	0	4	0	0	0	0	0	19
1700-1800	0	2	0	0	2	0	2	2	0	4	0	0	0	0	0	2	0	0	0	2	8
Totals	0	29	1	0	30	2	13	4	0	19	1	1	4	0	6	7	0	0	0	7	62

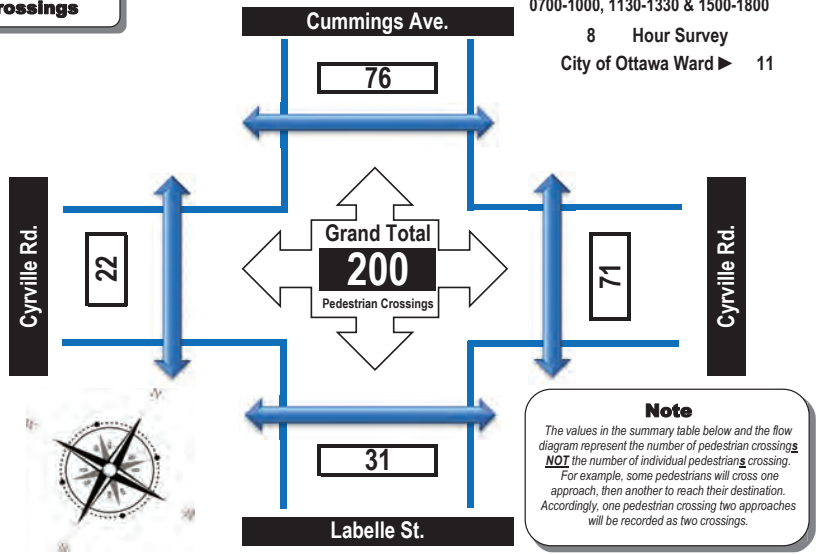
Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 12.22% of the heavy vehicle traffic.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Cummings Avenue/Labelle Street & Cyrville Road — Ottawa, ON

Pedestrian Crossings

Thursday, October 26, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 11



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.*

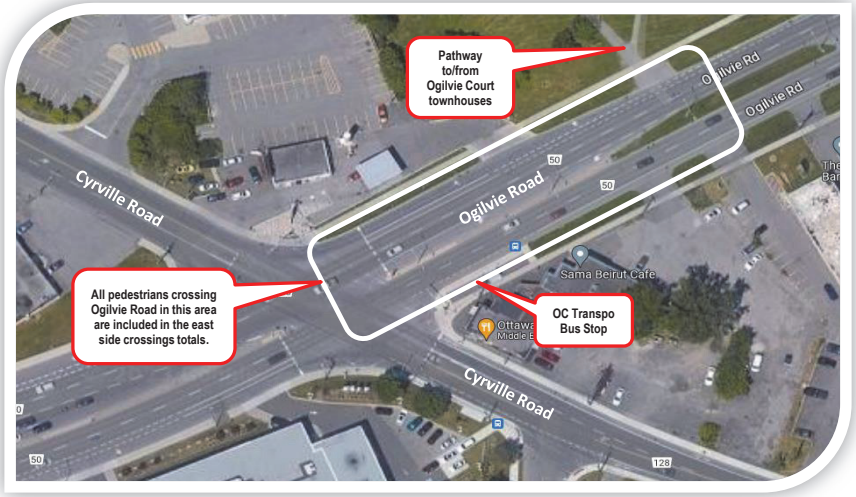
Time Period	West Side Crossing Cyrville Rd.	East Side Crossing Cyrville Rd.	Street Total	South Side Crossing Labelle St.	North Side Crossing Cummings Ave.	Street Total	Grand Total
0700-0800	0	4	4	1	2	3	7
0800-0900	2	2	4	4	4	8	12
0900-1000	2	0	2	2	6	8	10
1130-1230	3	8	11	1	10	11	22
1230-1330	5	9	14	8	7	15	29
1500-1600	0	15	15	0	10	10	25
1600-1700	2	18	20	10	16	26	46
1700-1800	8	15	23	5	21	26	49
Totals	22	71	93	31	76	107	200

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 12.22% of the heavy vehicle traffic.

Diagrams, Maps and Photographs

Cyrville Road & Ogilvie Road

Thursday, October 26, 2023



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

Cyrville Road & Ogilvie Road — Ottawa, ON

Survey Date: Thursday, October 26, 2023 | **Start Time:** 0700 | **AADT Factor:** 0.9
Weather AM: Overcast 14º C | **Survey Duration:** 8 Hrs. | **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800
Weather PM: Overcast 17º C | **Surveyor(s):** T. Carmody

	Ogilvie Rd. Eastbound					Ogilvie Rd. Westbound						Cyrville Rd. Northbound					Cyrville Rd. Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	0	476	87	0	563	23	587	71	1	682	1245	72	126	16	0	214	26	91	26	0	143	357	1602
0800-0900	0	576	135	0	711	34	740	134	0	908	1619	149	187	26	0	362	47	105	43	1	196	558	2177
0900-1000	1	512	139	0	652	24	493	106	0	623	1275	87	139	12	0	238	69	121	74	1	265	503	1778
1130-1230	2	646	184	0	832	26	590	149	0	765	1597	101	152	31	0	284	112	136	131	0	379	663	2260
1230-1330	0	654	202	1	857	32	539	128	2	701	1558	85	151	32	0	268	99	145	146	0	390	658	2216
1500-1600	0	779	203	0	982	41	707	183	1	932	1914	84	173	28	0	285	122	196	134	0	452	737	2651
1600-1700	0	923	254	0	1177	31	709	156	2	898	2075	111	235	26	0	372	147	237	149	0	533	905	2980
1700-1800	1	879	208	0	1088	33	666	152	1	852	1940	64	193	38	0	295	146	178	148	0	472	767	2707
Totals	4	5445	1412	1	6862	244	5031	1079	7	6361	13223	753	1356	209	0	2318	768	1209	851	2	2830	5148	18371

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	6	7569	1963	1	9538	339	6993	1500	10	8842	18380	1047	1885	291	0	3222	1068	1681	1183	3	3934	7156	25536
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	5	6812	1766	1	8584	305	6294	1350	9	7958	16542	942	1696	261	0	2900	961	1512	1065	3	3540	6440	22982
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	7	8923	2314	2	11246	400	8245	1768	11	10424	21670	1234	2222	343	0	3799	1259	1981	1395	3	4638	8437	30107

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.93												Highest Hourly Vehicle Volume Between 0700h & 1000h											
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0800-0900	0	576	135	0	711	34	740	134	0	908	1619	149	187	26	0	362	47	105	43	1	196	558	2177
OFF Peak Hour Factor ➡ 0.97												Highest Hourly Vehicle Volume Between 1130h & 1330h											
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1200-1300	2	668	207	0	877	41	589	151	0	781	1658	94	151	36	0	281	105	145	136	0	386	667	2325
PM Peak Hour Factor ➡ 0.95												Highest Hourly Vehicle Volume Between 1500h & 1800h											
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1615-1715	1	966	255	0	1222	32	703	149	1	885	2107	91	233	24	0	348	147	243	140	0	530	878	2985

Comments:

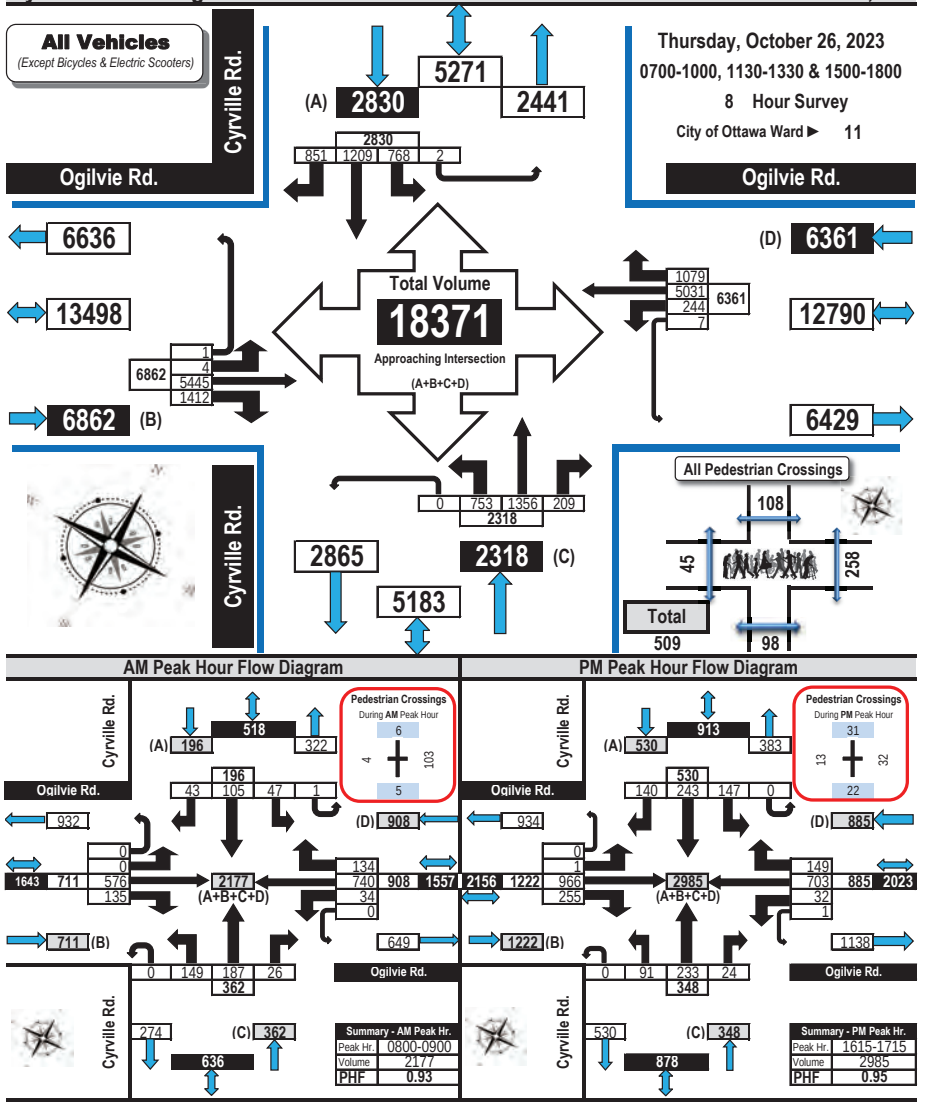
OC Transpo and Para Transpo buses, private buses and school buses comprise 33.16% of the heavy vehicle traffic. The east side pedestrian crossings totals include all pedestrians crossing Ogilvie Road between Cyrville Road & the pedestrian pathway to the Ogilvie Court townhouses as the origin & destination of all pedestrians crossings to and from this pathway is the OC Transpo bus stop on the southeast corner of Cyrville Road & Ogilvie Road.

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.

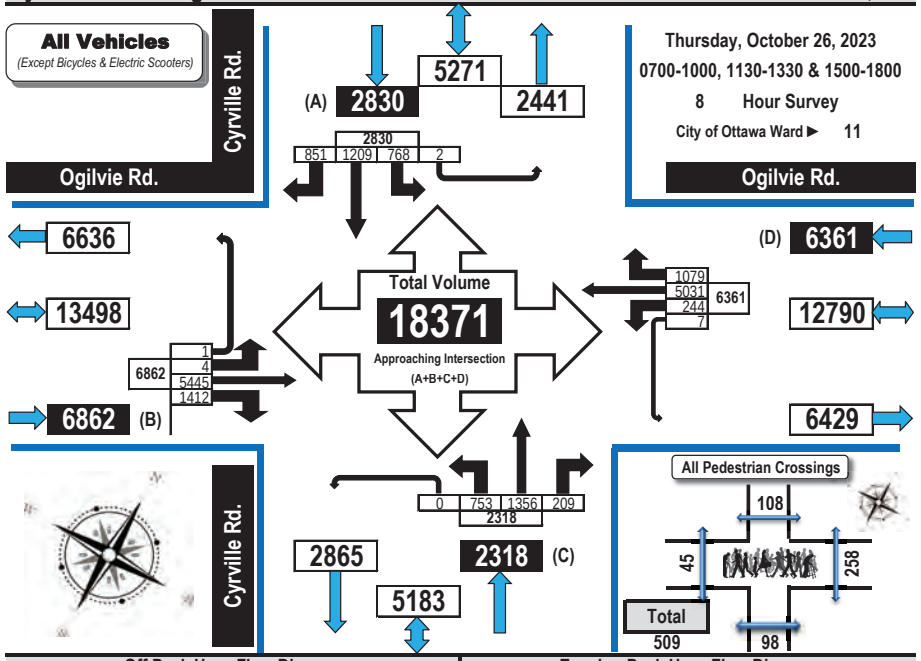
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Cyrville Road & Ogilvie Road — Ottawa, ON

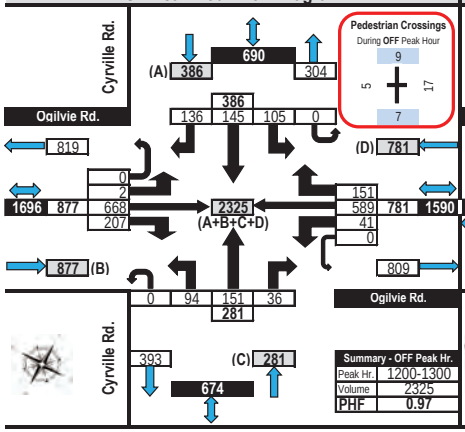


Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles

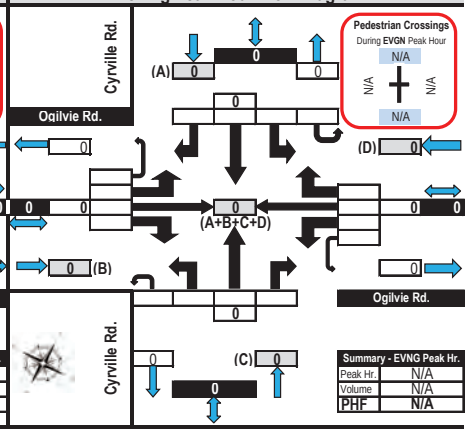
Cyrville Road & Ogilvie Road — **Ottawa, ON**



Off Peak Hour Flow Diagram

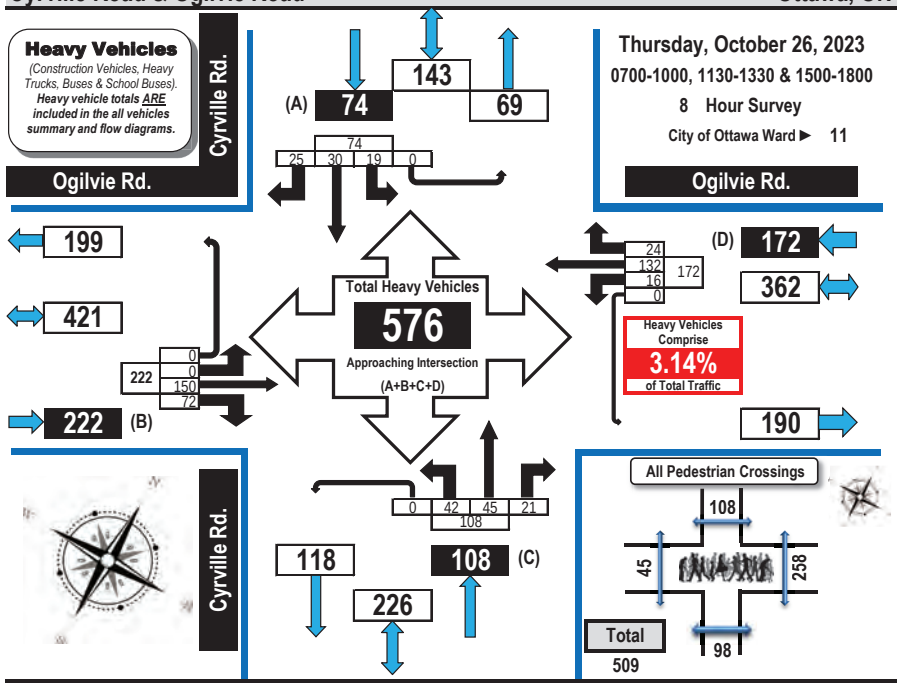


Evening Peak Hour Flow Diagram



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

Cyrville Road & Ogilvie Road — **Ottawa, ON**



	Ogilvie Rd. Eastbound					Ogilvie Rd. Westbound					Cyrville Rd. Northbound					Cyrville Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	17	3	0	20	4	17	6	0	27	8	6	3	0	17	1	5	5	0	11	75
0800-0900	0	23	8	0	31	3	14	5	0	22	10	9	11	0	30	4	5	6	0	15	98
0900-1000	0	20	9	0	29	1	13	2	0	16	5	10	0	0	15	1	4	6	0	11	71
1130-1230	0	24	10	0	34	2	21	2	0	25	5	7	4	0	16	3	3	3	0	9	84
1230-1330	0	19	12	0	31	3	16	4	0	23	7	3	1	0	11	5	4	2	0	11	76
1500-1600	0	24	8	0	32	2	25	3	0	30	5	5	2	0	12	4	3	1	0	8	82
1600-1700	0	13	11	0	24	0	15	1	0	16	1	3	0	0	4	1	4	1	0	6	50
1700-1800	0	10	11	0	21	1	11	1	0	13	1	2	0	0	3	0	2	1	0	3	40
Totals	0	150	72	0	222	16	132	24	0	172	42	45	21	0	108	19	30	25	0	74	576

Comments:

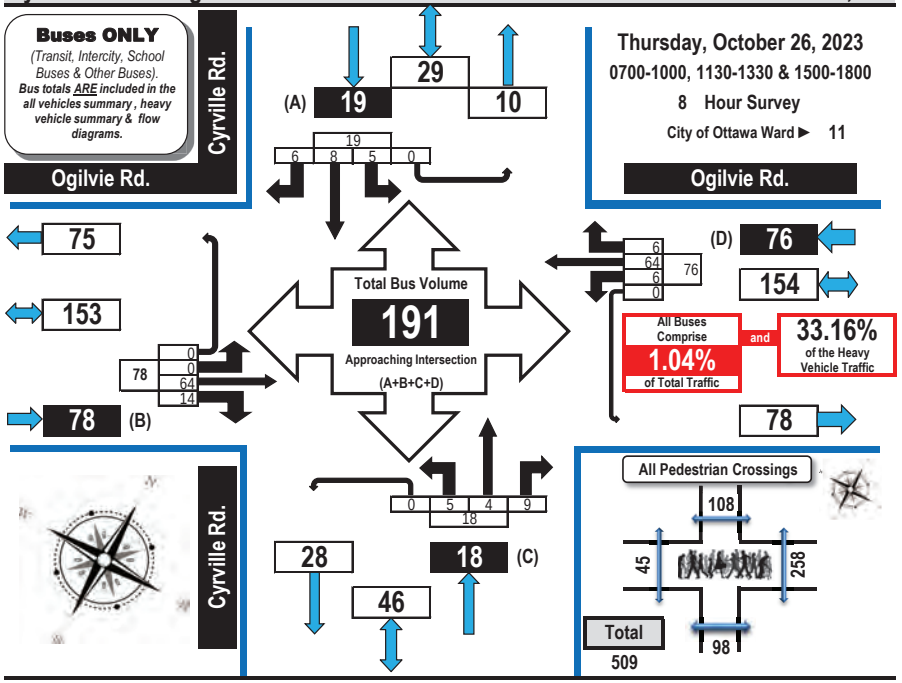
OC Transpo and Para Transpo buses, private buses and school buses comprise 33.16% of the heavy vehicle traffic. The east side pedestrian crossings totals include all pedestrians crossing Ogilvie Road between Cyrville Road & the pedestrian pathway to the Ogilvie Court townhouses as the origin & destination of all pedestrians crossings to and from this pathway is the OC Transpo bus stop on the southeast corner of Cyrville Road & Ogilvie Road.

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

Cyrville Road & Ogilvie Road — **Ottawa, ON**

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

Thursday, October 26, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 11



	Ogilvie Rd. Eastbound					Ogilvie Rd. Westbound					Cyrville Rd. Northbound					Cyrville Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	8	1	0	9	2	6	2	0	10	1	1	0	0	2	1	0	1	0	2	23
0800-0900	0	8	3	0	11	3	10	1	0	14	3	1	8	0	12	1	1	1	0	3	40
0900-1000	0	4	0	0	4	0	7	0	0	7	0	1	0	0	1	0	3	2	0	5	17
1130-1230	0	7	3	0	10	1	8	1	0	10	1	0	0	0	1	1	1	0	0	2	23
1230-1330	0	5	1	0	6	0	4	0	0	4	0	0	0	0	0	1	0	1	0	2	12
1500-1600	0	16	2	0	18	0	14	1	0	15	0	0	1	0	1	1	0	0	0	1	35
1600-1700	0	9	1	0	10	0	8	0	0	8	0	1	0	0	1	0	2	0	0	2	21
1700-1800	0	7	3	0	10	0	7	1	0	8	0	0	0	0	0	0	1	1	0	2	20
Totals	0	64	14	0	78	6	64	6	0	76	5	4	9	0	18	5	8	6	0	19	191

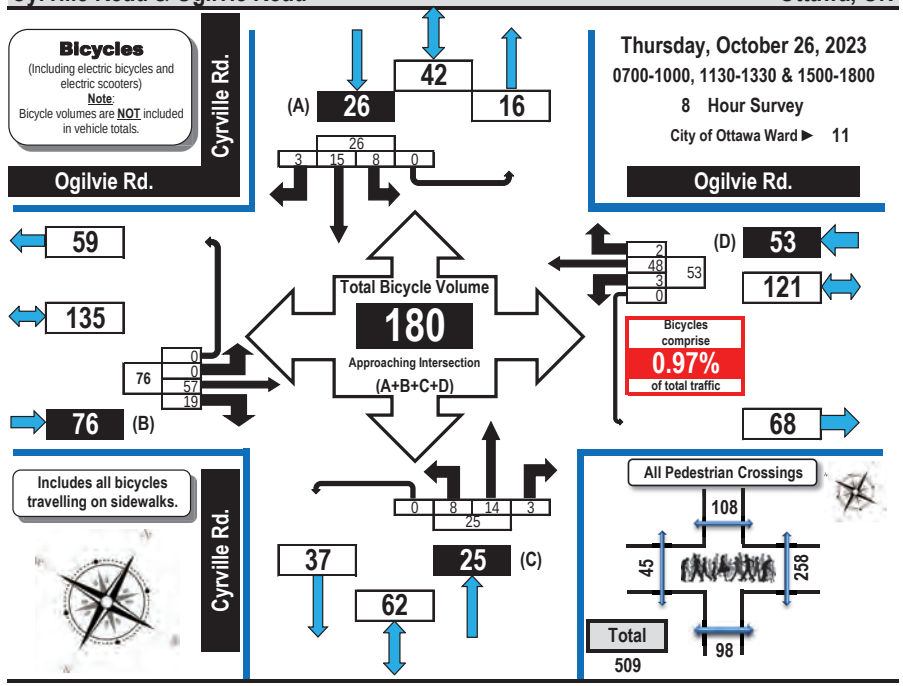
Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 33.16% of the heavy vehicle traffic. The east side pedestrian crossings totals include all pedestrians crossing Ogilvie Road between Cyrville Road & the pedestrian pathway to the Ogilvie Court townhouses as the origin & destination of all pedestrians crossings to and from this pathway is the OC Transpo bus stop on the southeast corner of Cyrville Road & Ogilvie Road.

Turning Movement Count
Bicycle Summary
Flow Diagram

Cyrville Road & Ogilvie Road — **Ottawa, ON**

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

Thursday, October 26, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 11



	Ogilvie Rd. Eastbound					Ogilvie Rd. Westbound					Cyrville Rd. Northbound					Cyrville Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	9	2	0	11	0	7	0	0	7	0	1	1	0	2	1	3	2	0	6	26
0800-0900	0	15	3	0	18	0	12	0	0	12	2	1	1	0	4	1	1	1	0	3	37
0900-1000	0	6	1	0	7	0	1	0	0	1	0	1	1	0	2	1	1	0	0	2	12
1130-1230	0	2	1	0	3	0	4	1	0	5	1	0	0	0	1	3	2	0	0	5	14
1230-1330	0	4	1	0	5	2	4	1	0	7	0	2	0	0	2	1	0	0	0	1	15
1500-1600	0	3	3	0	6	0	7	0	0	7	1	1	0	0	2	0	1	0	0	1	16
1600-1700	0	8	7	0	15	0	8	0	0	8	3	2	0	0	5	0	7	0	0	7	35
1700-1800	0	10	1	0	11	1	5	0	0	6	1	6	0	0	7	1	0	0	0	1	25
Totals	0	57	19	0	76	3	48	2	0	53	8	14	3	0	25	8	15	3	0	26	180

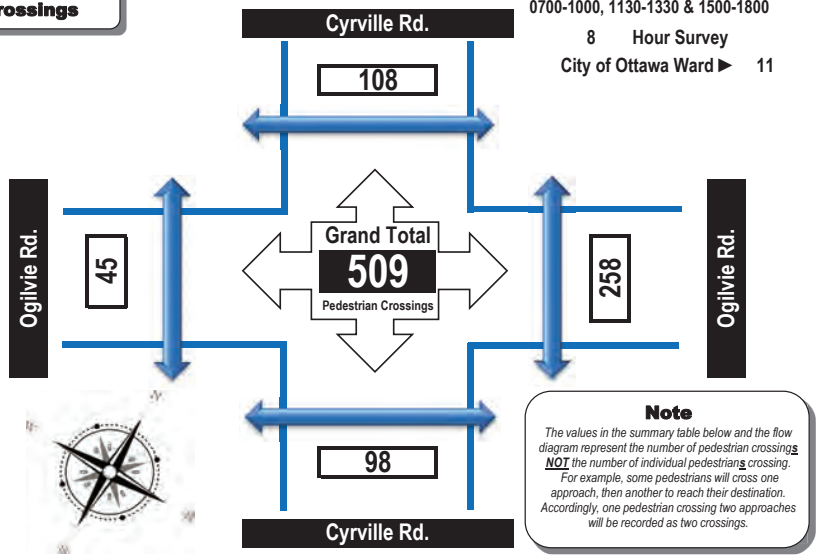
Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 33.16% of the heavy vehicle traffic. The east side pedestrian crossings totals include all pedestrians crossing Ogilvie Road between Cyrville Road & the pedestrian pathway to the Ogilvie Court townhouses as the origin & destination of all pedestrians crossings to and from this pathway is the OC Transpo bus stop on the southeast corner of Cyrville Road & Ogilvie Road.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Cyrville Road & Ogilvie Road — **Ottawa, ON**

Pedestrian Crossings

Thursday, October 26, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 11



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 Ogilvie Rd.	East Side Crossing Ogilvie Rd.	Street Total	South Side Crossing Cyrville Rd.	North Side Crossing Cyrville Rd.	Street Total	Grand Total
0700-0800	3	24	27	10	10	20	47
0800-0900	4	103	107	5	6	11	118
0900-1000	2	16	18	3	7	10	28
1130-1230	3	18	21	7	6	13	34
1230-1330	10	16	26	13	12	25	51
1500-1600	5	19	24	21	10	31	55
1600-1700	14	26	40	18	38	56	96
1700-1800	4	36	40	21	19	40	80
Totals	**45**	**258**	**303**	**98**	**108**	**206**	**509**

Comments:

OC Transpo and Para Transpo buses, private buses and school buses comprise 33.16% of the heavy vehicle traffic. The east side pedestrian crossings totals include all pedestrians crossing Ogilvie Road between Cyrville Road & the pedestrian pathway to the Ogilvie Court townhouses as the origin & destination of all pedestrians crossings to and from this pathway is the OC Transpo bus stop on the southeast corner of Cyrville Road & Ogilvie Road.

Appendix C

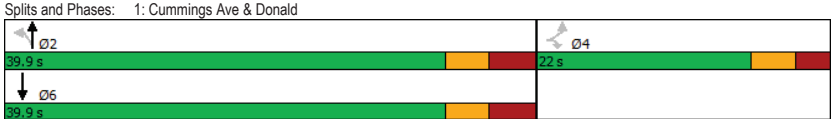
Synchro Intersection Worksheets – Existing Conditions

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	166	225	147	184	92
Future Volume (vph)	56	166	225	147	184	92
Satd. Flow (prot)	1626	1455	1658	1695	1640	0
Flt Permitted	0.950		0.574			
Satd. Flow (perm)	1626	1455	1002	1695	1640	0
Satd. Flow (RTOR)		184			62	
Lane Group Flow (vph)	62	184	250	163	306	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.2	10.2	37.5	37.5	37.5	
Actuated g/C Ratio	0.18	0.18	0.67	0.67	0.67	
v/c Ratio	0.21	0.44	0.37	0.14	0.27	
Control Delay	21.5	7.7	8.2	5.6	5.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.5	7.7	8.2	5.6	5.2	
LOS	C	A	A	A	A	
Approach Delay	11.2			7.2	5.2	
Approach LOS	B			A	A	
Queue Length 50th (m)	5.4	0.0	11.9	6.5	10.2	
Queue Length 95th (m)	13.8	13.2	26.5	13.7	21.5	
Internal Link Dist (m)	296.9			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	465	547	671	1135	1119	
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	0.13	0.34	0.37	0.14	0.27	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 55.9
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44

Intersection Signal Delay: 7.6 Intersection LOS: A
Intersection Capacity Utilization 54.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Cummings Ave & Donald



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	576	135	34	740	134	149	187	26	48	105	43
Future Volume (vph)	0	576	135	34	740	134	149	187	26	48	105	43
Satd. Flow (prot)	0	3252	1427	1551	3316	1455	1580	1592	0	1566	1570	0
Flt Permitted				0.395			0.573			0.418		
Satd. Flow (perm)	0	3252	1338	638	3316	1301	947	1592	0	687	1570	0
Satd. Flow (RTOR)			150			149		6			17	
Lane Group Flow (vph)	0	640	150	38	822	149	166	237	0	53	165	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		89.7	89.7	89.7	89.7	89.7	27.0	27.0		27.0	27.0	
Actuated g/C Ratio		0.69	0.69	0.69	0.69	0.69	0.21	0.21		0.21	0.21	
v/c Ratio		0.29	0.15	0.09	0.36	0.16	0.85	0.71		0.37	0.49	
Control Delay		9.2	2.0	2.2	1.9	0.3	81.9	57.0		48.6	43.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		9.2	2.0	2.2	1.9	0.3	81.9	57.0		48.6	43.6	
LOS		A	A	A	A	A	F	E		D	D	
Approach Delay		7.9			1.7			67.3			44.8	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		29.8	0.0	0.4	3.9	0.0	41.5	55.9		11.8	33.9	
Queue Length 95th (m)		53.3	8.5	m1.1	20.3	m0.4	60.3	73.2		21.7	48.4	
Internal Link Dist (m)		113.5			313.9			407.2			190.6	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2244	970	440	2288	944	312	529		226	529	
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		0.29	0.15	0.09	0.36	0.16	0.53	0.45		0.23	0.31	

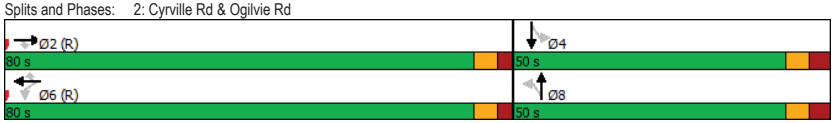
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd

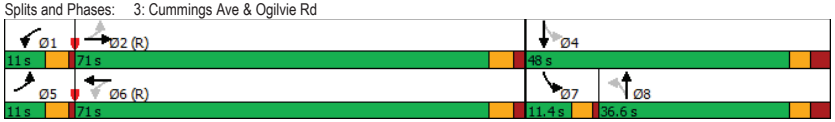


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	598	13	108	1042	209	17	124	77	167	109	101
Future Volume (vph)	72	598	13	108	1042	209	17	124	77	167	109	101
Satd. Flow (prot)	1580	3265	0	1642	3168	0	1658	1545	0	1642	1602	0
Flt Permitted	0.091			0.339			0.613			0.373		
Satd. Flow (perm)	151	3265	0	577	3168	0	1065	1545	0	619	1602	0
Satd. Flow (RTOR)		2			26			22			38	
Lane Group Flow (vph)	80	678	0	120	1390	0	19	224	0	186	233	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		36.6	36.6		11.4	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.2%	28.2%		8.8%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	75.7	68.5		75.9	68.6		26.8	26.8		40.5	38.2	
Actuated g/C Ratio	0.58	0.53		0.58	0.53		0.21	0.21		0.31	0.29	
v/c Ratio	0.51	0.39		0.31	0.83		0.09	0.67		0.75	0.47	
Control Delay	35.1	16.7		13.8	29.9		40.5	52.2		55.4	33.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.1	16.7		13.8	29.9		40.5	52.2		55.4	33.6	
LOS	D	B		B	C		D	D		E	C	
Approach Delay		18.7			28.7			51.3			43.3	
Approach LOS		B			C			D			D	
Queue Length 50th (m)	7.7	45.3		13.6	180.2		3.9	46.6		35.6	39.3	
Queue Length 95th (m)	26.2	52.8		m19.8	m209.8		10.7	73.9		#58.9	63.3	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	157	1720		388	1683		245	373		248	536	
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	0.51	0.39		0.31	0.83		0.08	0.60		0.75	0.43	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83
Intersection Signal Delay: 30.0 Intersection LOS: C
Intersection Capacity Utilization 92.5% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	340	471	78	119	523	125	204	457	219	162	323	277
Future Volume (vph)	340	471	78	119	523	125	204	457	219	162	323	277
Satd. Flow (prot)	1658	3252	1483	1626	3283	1483	1658	3153	0	1658	3087	0
Flt Permitted	0.273			0.435			0.950			0.950		
Satd. Flow (perm)	476	3252	1483	745	3283	1483	1658	3153	0	1658	3087	0
Satd. Flow (RTOR)			164			164		63			147	
Lane Group Flow (vph)	378	523	87	132	581	139	227	751	0	180	667	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	32.9	45.0		18.0	30.1	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.3%	34.6%		13.8%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		5.9	6.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	63.5	47.7	47.7	53.7	40.9	40.9	22.2	36.1		12.1	26.0	
Actuated g/C Ratio	0.49	0.37	0.37	0.41	0.31	0.31	0.17	0.28		0.09	0.20	
v/c Ratio	0.95	0.44	0.13	0.34	0.56	0.24	0.80	0.82		1.17	0.91	
Control Delay	71.1	33.3	3.3	21.7	39.7	3.9	72.5	47.8		175.5	56.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	71.1	33.3	3.3	21.7	39.7	3.9	72.5	47.8		175.5	56.6	
LOS	E	C	A	C	D	A	E	D		F	E	
Approach Delay		45.1			31.0			53.5			81.9	
Approach LOS		D			C			D			F	
Queue Length 50th (m)	~91.1	52.5	0.8	18.7	65.1	0.0	56.1	84.7		~54.7	69.4	
Queue Length 95th (m)	#127.8	72.3	m5.0	31.1	83.8	9.7	81.6	108.2		#100.5	#111.2	
Internal Link Dist (m)		393.6			270.9			298.0			298.9	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	397	1192	647	433	1032	578	344	987		154	735	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.95	0.44	0.13	0.30	0.56	0.24	0.66	0.76		1.17	0.91	

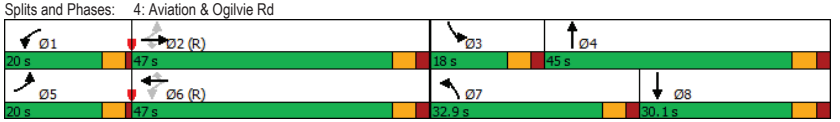
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 52.6	Intersection LOS: D
Intersection Capacity Utilization 84.9%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	201	37	111	367	158	5	13	31	127	41	20
Future Volume (vph)	21	201	37	111	367	158	5	13	31	127	41	20
Satd. Flow (prot)	1537	1635	0	1610	1586	0	1658	1358	0	1610	1528	0
Flt Permitted	0.237			0.596			0.713			0.560		
Satd. Flow (perm)	380	1635	0	994	1586	0	1230	1358	0	834	1528	0
Satd. Flow (RTOR)		19			31			34			22	
Lane Group Flow (vph)	23	264	0	123	584	0	6	48	0	141	68	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.3		34.3	34.3		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Total Split (%)	17.6%	49.4%		49.4%	49.4%		27.1%	27.1%		27.1%	27.1%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.9	40.9		36.2	36.2		14.5	14.5		14.5	14.5	
Actuated g/C Ratio	0.56	0.56		0.50	0.50		0.20	0.20		0.20	0.20	
v/c Ratio	0.07	0.28		0.25	0.72		0.02	0.16		0.84	0.21	
Control Delay	7.9	8.7		14.9	22.8		25.8	14.5		70.5	20.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.9	8.7		14.9	22.8		25.8	14.5		70.5	20.8	
LOS	A	A		B	C		C	B		E	C	
Approach Delay		8.7			21.4			15.7			54.3	
Approach LOS		A			C			B			D	
Queue Length 50th (m)	1.4	16.9		8.2	50.8		0.6	1.4		16.7	4.7	
Queue Length 95th (m)	4.3	29.4		25.0	#137.1		3.8	10.4		#52.2	16.4	
Internal Link Dist (m)		407.2			322.8			177.3			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	355	1166		496	808		301	358		204	391	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.23		0.25	0.72		0.02	0.13		0.69	0.17	

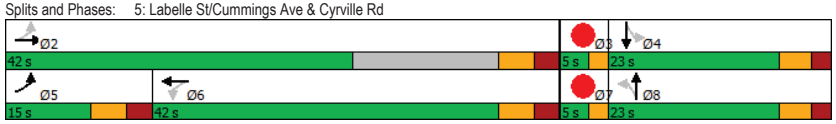
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 72.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection Signal Delay: 23.7 Intersection LOS: C
Intersection Capacity Utilization 64.6% 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: 5: Labelle St/Cummings Ave & Cyrville Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	279	246	267	301	96
Future Volume (vph)	87	279	246	267	301	96
Satd. Flow (prot)	1595	1469	1658	1728	1684	0
Flt Permitted	0.950		0.495			
Satd. Flow (perm)	1595	1469	864	1728	1684	0
Satd. Flow (RTOR)		310			40	
Lane Group Flow (vph)	97	310	273	297	441	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	1.0	1.0	10.0	
Minimum Split (s)	22.0	22.0	7.9	7.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.8	10.8	33.0	33.0	33.0	
Actuated g/C Ratio	0.19	0.19	0.58	0.58	0.58	
v/c Ratio	0.32	0.59	0.54	0.29	0.44	
Control Delay	22.9	8.0	12.7	7.2	7.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.9	8.0	12.7	7.2	7.9	
LOS	C	A	B	A	A	
Approach Delay	11.6			9.8	7.9	
Approach LOS	B			A	A	
Queue Length 50th (m)	8.7	0.0	14.3	12.8	18.8	
Queue Length 95th (m)	19.4	16.4	38.6	27.9	41.6	
Internal Link Dist (m)	296.3			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	450	637	503	1007	997	
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	0.22	0.49	0.54	0.29	0.44	

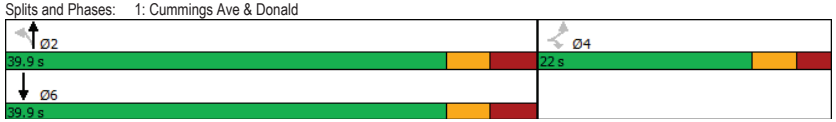
Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59

Lanes, Volumes, Timings
1: Cummings Ave & Donald

01/22/2025

Intersection Signal Delay: 9.7	Intersection LOS: A
Intersection Capacity Utilization 62.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cummings Ave & Donald



Lanes, Volumes, Timings
2: Cyrville Rd & Ogilvie Rd

01/22/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	967	255	33	703	149	91	233	24	147	243	140
Future Volume (vph)	0	967	255	33	703	149	91	233	24	147	243	140
Satd. Flow (prot)	0	3316	1455	1658	3316	1483	1658	1718	0	1658	1635	0
Flt Permitted				0.208			0.227			0.433		
Satd. Flow (perm)	0	3316	1366	361	3316	1333	395	1718	0	754	1635	0
Satd. Flow (RTOR)			283			166		5			27	
Lane Group Flow (vph)	0	1074	283	37	781	166	101	286	0	163	426	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		72.0	72.0	72.0	72.0	72.0	34.7	34.7		34.7	34.7	
Actuated g/C Ratio		0.60	0.60	0.60	0.60	0.60	0.29	0.29		0.29	0.29	
v/c Ratio		0.54	0.30	0.17	0.39	0.19	0.89	0.57		0.75	0.87	
Control Delay		16.5	2.5	24.3	23.3	10.1	99.5	39.4		59.0	55.5	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		16.5	2.5	24.3	23.3	10.1	99.5	39.4		59.0	55.5	
LOS		B	A	C	C	B	F	D		E	E	
Approach Delay		13.6			21.1			55.1			56.5	
Approach LOS		B			C			E			E	
Queue Length 50th (m)		75.4	0.0	5.4	62.1	10.1	22.5	55.9		34.5	89.1	
Queue Length 95th (m)		109.4	12.6	m6.3	m61.2	m10.5	#50.2	75.7		56.2	118.2	
Internal Link Dist (m)		113.8			313.9			407.0			190.4	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		1990	932	216	1990	866	141	617		269	601	
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		0.54	0.30	0.17	0.39	0.19	0.72	0.46		0.61	0.71	

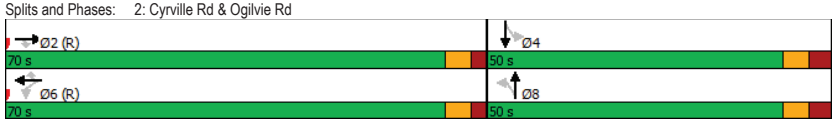
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 28.3	Intersection LOS: C
Intersection Capacity Utilization 79.6%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	1047	27	148	801	224	35	204	202	273	192	137
Future Volume (vph)	155	1047	27	148	801	224	35	204	202	273	192	137
Satd. Flow (prot)	1658	3294	0	1610	3120	0	1658	1526	0	1658	1623	0
Flt Permitted	0.102			0.102			0.544			0.147		
Satd. Flow (perm)	178	3294	0	173	3120	0	946	1526	0	252	1623	0
Satd. Flow (RTOR)		2			32			41			39	
Lane Group Flow (vph)	172	1193	0	164	1139	0	39	451	0	303	365	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0		20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%		16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	50.6	39.3		50.6	39.3		33.4	33.4		55.7	53.4	
Actuated g/C Ratio	0.42	0.33		0.42	0.33		0.28	0.28		0.46	0.44	
v/c Ratio	0.85	1.10		0.84	1.09		0.15	0.99		1.01	0.49	
Control Delay	68.4	90.4		61.9	92.5		34.6	80.5		82.8	23.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	68.4	90.4		61.9	92.5		34.6	80.5		82.8	23.6	
LOS	E	F		E	F		C	F		F	C	
Approach Delay		87.6			88.7			76.8			50.5	
Approach LOS		F			F			E			D	
Queue Length 50th (m)	20.7	~169.6		31.7	~148.7		6.9	98.3		~51.6	53.2	
Queue Length 95th (m)	#64.2	#211.9		m#49.2	m#168.7		16.1	#165.4		#108.8	80.2	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	202	1080		196	1043		263	454		300	743	
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	0.85	1.10		0.84	1.09		0.15	0.99		1.01	0.49	

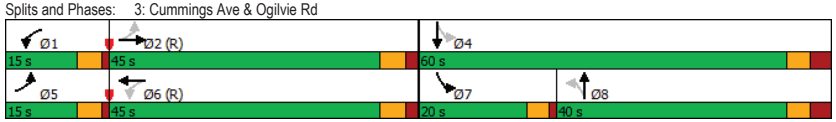
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 80.1	Intersection LOS: F
Intersection Capacity Utilization 100.6%	ICU Level of Service G
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	1059	96	231	673	220	166	331	163	146	380	293
Future Volume (vph)	274	1059	96	231	673	220	166	331	163	146	380	293
Satd. Flow (prot)	1658	3316	1469	1658	3316	1483	1658	3153	0	1658	3100	0
Flt Permitted	0.250			0.088			0.950			0.950		
Satd. Flow (perm)	436	3316	1469	154	3316	1483	1658	3153	0	1658	3100	0
Satd. Flow (RTOR)			136			244		63			142	
Lane Group Flow (vph)	304	1177	107	257	748	244	184	549	0	162	748	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		12.2	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	18.9	30.1		18.9	30.1	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.1%		15.8%	25.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.5	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		3.7	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.2	2.4	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		9.4	8.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	61.2	44.9	44.9	62.0	45.3	45.3	13.0	24.0		9.5	21.6	
Actuated g/C Ratio	0.51	0.37	0.37	0.52	0.38	0.38	0.11	0.20		0.08	0.18	
v/c Ratio	0.82	0.95	0.17	0.95	0.60	0.34	1.03	0.81		1.24	1.11	
Control Delay	33.3	37.6	4.9	76.0	32.5	4.5	127.3	50.7		201.1	105.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.3	37.6	4.9	76.0	32.5	4.5	127.3	50.7		201.1	105.7	
LOS	C	D	A	E	C	A	F	D		F	F	
Approach Delay		34.6			36.0			69.9			122.7	
Approach LOS		C			D			E			F	
Queue Length 50th (m)	49.2	91.2	1.9	45.6	74.1	0.0	~46.2	58.3		~47.2	~90.7	
Queue Length 95th (m)	m43.9	m85.2	m1.6	#96.2	94.1	16.2	#90.7	#79.3		#89.9	#129.3	
Internal Link Dist (m)		393.6			260.7			297.6			298.7	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	379	1240	634	271	1252	712	179	681		131	674	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.80	0.95	0.17	0.95	0.60	0.34	1.03	0.81		1.24	1.11	

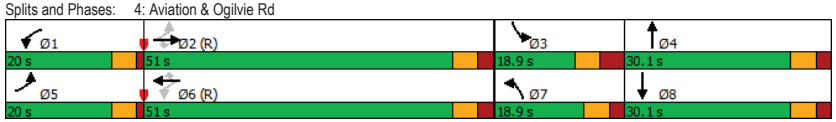
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 58.7	Intersection LOS: E
Intersection Capacity Utilization 96.1%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	52	68	70	299	259	10	52	68	60	476	17
Future Volume (vph)	10	52	68	70	299	259	10	52	68	60	476	17
Satd. Flow (prot)	1658	1387	0	1595	1573	0	1658	1442	0	1445	1734	0
Flt Permitted	0.172			0.671			0.312			0.433		
Satd. Flow (perm)	300	1387	0	1102	1573	0	544	1442	0	575	1734	0
Satd. Flow (RTOR)		76			49			69			2	
Lane Group Flow (vph)	11	134	0	78	620	0	11	134	0	67	548	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.3		34.3	34.3		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	43.0		43.0	43.0		37.0	37.0		37.0	37.0	
Total Split (%)	15.0%	43.0%		43.0%	43.0%		37.0%	37.0%		37.0%	37.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.6		2.6	2.6		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.5	38.9		36.8	36.8		23.2	23.2		31.6	31.6	
Actuated g/C Ratio	0.49	0.47		0.45	0.45		0.28	0.28		0.38	0.38	
v/c Ratio	0.05	0.19		0.16	0.85		0.07	0.29		0.30	0.82	
Control Delay	10.7	6.5		15.8	32.6		22.7	13.4		23.9	35.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.7	6.5		15.8	32.6		22.7	13.4		23.9	35.9	
LOS	B	A		B	C		C	B		C	D	
Approach Delay		6.8			30.8			14.1			34.6	
Approach LOS		A			C			B			C	
Queue Length 50th (m)	0.8	4.8		6.6	73.3		1.1	6.8		6.8	71.7	
Queue Length 95th (m)	3.2	13.6		18.1	#164.7		5.5	22.6		20.5	#152.7	
Internal Link Dist (m)		407.0			322.8			177.5			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	318	902		492	730		209	596		220	666	
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	0.15		0.16	0.85		0.05	0.22		0.30	0.82	

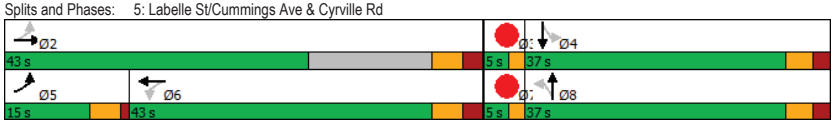
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 82.3
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.85

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	

Intersection Signal Delay: 28.6 Intersection LOS: C
Intersection Capacity Utilization 71.8% 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: 5: Labelle St/Cummings Ave & Cyrville Rd



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
2018-03-24	2018	18:25	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	05 - Dusk	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2018-04-12	2018	11:01	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2018-05-05	2018	18:14	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2018-05-25	2018	15:00	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2018-06-11	2018	18:00	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2018-07-23	2018	9:30	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-08-20	2018	17:00	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	1	0
2018-09-19	2018	17:07	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	1	0
2018-10-10	2018	15:15	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2018-11-21	2018	16:10	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	05 - Packed snow	0	0	0	0
2018-12-08	2018	18:00	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	0	0	0	0
2019-01-11	2019	16:08	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2019-01-23	2019	12:30	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	05 - Packed snow	0	0	0	0
2019-01-28	2019	9:30	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	02 - Wet	0	0	0	0
2019-02-09	2019	16:15	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	06 - Ice	0	0	0	0
2019-03-06	2019	9:59	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	02 - Wet	0	0	0	0
2019-03-13	2019	18:40	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	02 - Angle	05 - Packed snow	0	0	0	0
2019-03-25	2019	11:00	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-05-12	2019	13:19	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2019-06-27	2019	12:51	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2019-07-20	2019	13:47	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-07-30	2019	12:30	CUMMINGS AVE @ OGILVIE RD (0009923)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	02 - Wet	0	0	0	0
2019-08-01	2019	18:04	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-08-11	2019	15:12	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-11-16	2019	21:55	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	06 - Ice	0	0	0	0
2019-11-25	2019	9:53	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2020-01-06	2020	7:45	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	06 - Ice	0	0	0	0
2020-01-10	2020	12:23	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2020-01-11	2020	14:55	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	03 - Loose snow	0	0	0	0
2020-02-07	2020	17:45	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	0	0	0	0
2020-03-06	2020	7:38	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2020-07-13	2020	18:04	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2020-08-01	2020	15:22	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2020-10-11	2020	15:40	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2020-12-11	2020	18:16	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2021-02-24	2021	17:58	CUMMINGS AVE @ OGILVIE RD (0009923)	03 - Snow	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	05 - Packed snow	0	0	0	0
2021-06-06	2021	17:47	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
2021-06-08	2021	18:01	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2021-08-20	2021	19:40	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2021-09-30	2021	23:10	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
2021-11-06	2021	14:42	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
2021-12-02	2021	12:19	CUMMINGS AVE @ OGILVIE RD (0009923)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
2022-04-07	2022	16:30	CUMMINGS AVE @ OGILVIE RD (0009923)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	1	0
2022-05-01	2022	8:38	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	0	1	0	0
2022-06-25	2022	18:40	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2022-07-18	2022	16:51	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2022-10-24	2022	18:29	CUMMINGS AVE @ OGILVIE RD (0009923)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
2018-02-25	2018	10:00	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	06 - Ice	0	0	0	0
2018-04-30	2018	14:37	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-09-17	2018	10:12	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
2018-11-25	2018	2:45	CUMMINGS AVE @ DONALD ST (0009936)	04 - Freezing Rain	07 - Dark	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	06 - Ice	0	0	0	0
2019-07-13	2019	10:30	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-07-22	2019	15:16	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2020-01-10	2020	20:54	CUMMINGS AVE @ DONALD ST (0009936)	03 - Snow	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	0	0	0	1
2020-01-11	2020	14:44	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2020-06-12	2020	21:14	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	05 - Dusk	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2021-10-15	2021	5:56	CUMMINGS AVE @ DONALD ST (0009936)	02 - Rain	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	0	0	0	1
2021-12-02	2021	15:35	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
2021-12-20	2021	16:59	CUMMINGS AVE @ DONALD ST (0009936)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	04 - Slush	0	0	0	0
2022-01-13	2022	22:25	CUMMINGS AVE @ DONALD ST (0009936)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	0	0	0	1
2018-02-21	2018	16:40	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	05 - Packed snow	0	0	0	0
2018-06-16	2018	14:44	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2019-10-25	2019	21:38	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2019-11-05	2019	18:55	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2019-11-27	2019	17:40	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	02 - Rain	07 - Dark	10 - No control	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
2020-02-24	2020	16:11	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	02 - Wet	0	0	0	0
2020-07-07	2020	15:00	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2021-01-10	2021	11:53	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
2021-05-20	2021	14:25	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	1	0
2021-08-05	2021	17:29	CUMMINGS AVE btwn OGILVIE RD & WELDON DR (__3ZA7UQ)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2018-10-25	2018	6:50	OGILVIE RD btwn BEAULIEU PL & CUMMINGS AVE (__54PO0D)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	1	0
2019-04-09	2019	14:14	OGILVIE RD btwn BEAULIEU PL & CUMMINGS AVE (__54PO0D)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	04 - Slush	0	0	0	0
2021-09-14	2021	Unknown	OGILVIE RD btwn BEAULIEU PL & CUMMINGS AVE (__54PO0D)	01 - Clear	00 - Unknown	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
2022-05-28	2022	22:38	OGILVIE RD btwn BEAULIEU PL & CUMMINGS AVE (__54PO0D)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2018-02-09	2018	10:14	CUMMINGS AVE btwn EADY CRT & STRATHAVEN PRIV (__5J9TPH)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	05 - Turning movement	04 - Slush	0	0	0	0
2019-03-01	2019	19:30	CUMMINGS AVE btwn EADY CRT & STRATHAVEN PRIV (__5J9TPH)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
2019-08-17	2019	15:42	CUMMINGS AVE btwn EADY CRT & STRATHAVEN PRIV (__5J9TPH)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2020-01-10	2020	18:00	OGILVIE RD btwn CUMMINGS AVE & MURDOCK GT (__3ZBN9A)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2020-08-06	2020	17:14	OGILVIE RD btwn CUMMINGS AVE & MURDOCK GT (__3ZBN9A)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
2018-09-16	2018	17:44	CUMMINGS AVE btwn DONALD ST & EADY CRT (__3ZBO9T)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE @ DONALD ST

Traffic Control: Traffic signal

Total Collisions: 17

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jan-09, Mon,19:20	Clear	Turning movement	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Apr-20, Thu,13:05	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-07, Mon,16:06	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Aug-08, Tue,13:20	Clear	Rear end	P.D. only	Dry	South	Going ahead	Passenger van	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-26, Sun,21:00	Drifting Snow	Angle	P.D. only	Ice	North	Unknown	Tow truck	Other motor vehicle	0
					East	Unknown	Automobile, station wagon	Other motor vehicle	
2018-Feb-25, Sun,10:00	Clear	Angle	P.D. only	Ice	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Apr-30, Mon,14:37	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Sep-17, Mon,10:12	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-25, Sun,02:45	Freezing Rain	SMV other	P.D. only	Ice	East	Turning right	Automobile, station wagon	Skidding/sliding	0
2019-Jul-13, Sat,10:30	Clear	Rear end	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-22, Mon,15:16	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jan-10, Fri,20:54	Snow	SMV other	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Pedestrian	1
2020-Jan-11, Sat,14:44	Clear	Rear end	P.D. only	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle	0
					North	Unknown	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE @ DONALD ST

Traffic Control: Traffic signal

Total Collisions: 17

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jun-12, Fri,21:14	Clear	Sideswipe	P.D. only	Dry	South	Overtaking	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2021-Oct-15, Fri,05:56	Rain	SMV other	Non-fatal injury	Wet	North	Turning left	Pick-up truck	Pedestrian	1
2021-Dec-02, Thu,15:35	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2021-Dec-20, Mon,16:59	Snow	Turning movement	P.D. only	Slush	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE @ OGILVIE RD

Traffic Control: Traffic signal

Total Collisions: 54

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jan-30, Mon,19:00	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Feb-08, Wed,16:20	Clear	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Feb-15, Wed,08:17	Snow	Turning movement	P.D. only	Loose snow	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2017-Mar-02, Thu,15:28	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-08, Wed,10:45	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Aug-02, Wed,12:40	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Aug-03, Thu,07:50	Clear	Turning movement	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	
2017-Aug-27, Sun,00:11	Clear	Angle	P.D. only	Dry	South	Going ahead	Police vehicle	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Sep-08, Fri,08:37	Rain	Rear end	P.D. only	Wet	North	Unknown	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-12, Tue,12:30	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Delivery van	Other motor vehicle	
2017-Sep-20, Wed,14:47	Clear	Sideswipe	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Motorcycle	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE @ OGILVIE RD

Traffic Control: Traffic signal

Total Collisions: 54

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Oct-27, Fri,11:30	Clear	Turning movement	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	
2018-Mar-24, Sat,18:25	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Passenger van	Other motor vehicle	
2018-Apr-12, Thu,11:01	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Unknown	Other motor vehicle	
2018-May-05, Sat,18:14	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-25, Fri,15:00	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-11, Mon,18:00	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Jul-23, Mon,09:30	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Aug-20, Mon,17:00	Clear	Turning movement	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	
2018-Sep-19, Wed,17:07	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	
2018-Oct-10, Wed,15:15	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-21, Wed,16:10	Clear	Turning movement	P.D. only	Packed snow	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE @ OGILVIE RD

Traffic Control: Traffic signal **Total Collisions:** 54

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Dec-08, Sat,18:00	Snow	Sideswipe	P.D. only	Loose snow	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-11, Fri,16:08	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-23, Wed,12:30	Snow	Sideswipe	P.D. only	Packed snow	East	Changing lanes	Delivery van	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-28, Mon,09:30	Clear	Other	P.D. only	Wet	South	Reversing	Pick-up truck	Other motor vehicle	0
					North	Stopped	Passenger van	Other motor vehicle	
2019-Feb-09, Sat,16:15	Clear	Rear end	P.D. only	Ice	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-06, Wed,09:59	Clear	Rear end	Non-fatal injury	Wet	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-13, Wed,18:40	Snow	Angle	P.D. only	Packed snow	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-25, Mon,11:00	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-May-12, Sun,13:19	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-27, Thu,12:51	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-20, Sat,13:47	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE @ OGILVIE RD

Traffic Control: Traffic signal **Total Collisions:** 54

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jul-30, Tue,12:30	Rain	Angle	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-01, Thu,18:04	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-11, Sun,15:12	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-16, Sat,21:55	Clear	Rear end	P.D. only	Ice	North	Unknown	Unknown	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-25, Mon,09:53	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-06, Mon,07:45	Snow	Turning movement	P.D. only	Ice	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jan-10, Fri,12:23	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2020-Jan-11, Sat,14:55	Snow	Turning movement	P.D. only	Loose snow	North	Going ahead	Unknown	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Feb-07, Fri,17:45	Snow	Sideswipe	P.D. only	Loose snow	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Mar-06, Fri,07:38	Snow	Rear end	P.D. only	Wet	East	Turning left	Pick-up truck	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Jul-13, Mon,18:04	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE @ OGILVIE RD

Traffic Control: Traffic signal **Total Collisions:** 54

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Aug-01, Sat,15:22	Clear	Turning movement	P.D. only	Dry	South	Turning left	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Oct-11, Sun,15:40	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2020-Dec-11, Fri,18:16	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-Feb-24, Wed,17:58	Snow	Turning movement	Non-fatal injury	Packed snow	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-Jun-06, Sun,17:47	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-Jun-08, Tue,18:01	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2021-Aug-20, Fri,19:40	Clear	Turning movement	P.D. only	Dry	South	Turning left	Delivery van	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2021-Sep-30, Thu,23:10	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					North	Turning left	Police vehicle	Other motor vehicle	
2021-Nov-06, Sat,14:42	Clear	Turning movement	Non-fatal injury	Dry	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-Dec-02, Thu,12:19	Rain	Turning movement	P.D. only	Wet	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE btwn WELDON DR & OGILVIE RD

Traffic Control: No control **Total Collisions:** 11

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Mar-08, Wed,09:19	Clear	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-21, Wed,16:40	Clear	Angle	P.D. only	Packed snow	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-16, Sat,14:44	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-25, Fri,21:38	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2019-Nov-05, Tue,18:55	Clear	Angle	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-27, Wed,17:40	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2020-Feb-24, Mon,16:11	Clear	Angle	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Jul-07, Tue,15:00	Clear	Angle	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Delivery van	Other motor vehicle	
2021-Jan-10, Sun,11:53	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-May-20, Thu,14:25	Clear	Angle	P.D. only	Dry	East	Turning left	Bicycle	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Cyclist	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2017 **To:** December 31, 2021

Location: CUMMINGS AVE btwn WELDON DR & OGILVIE RD

Traffic Control: No control **Total Collisions:** 11

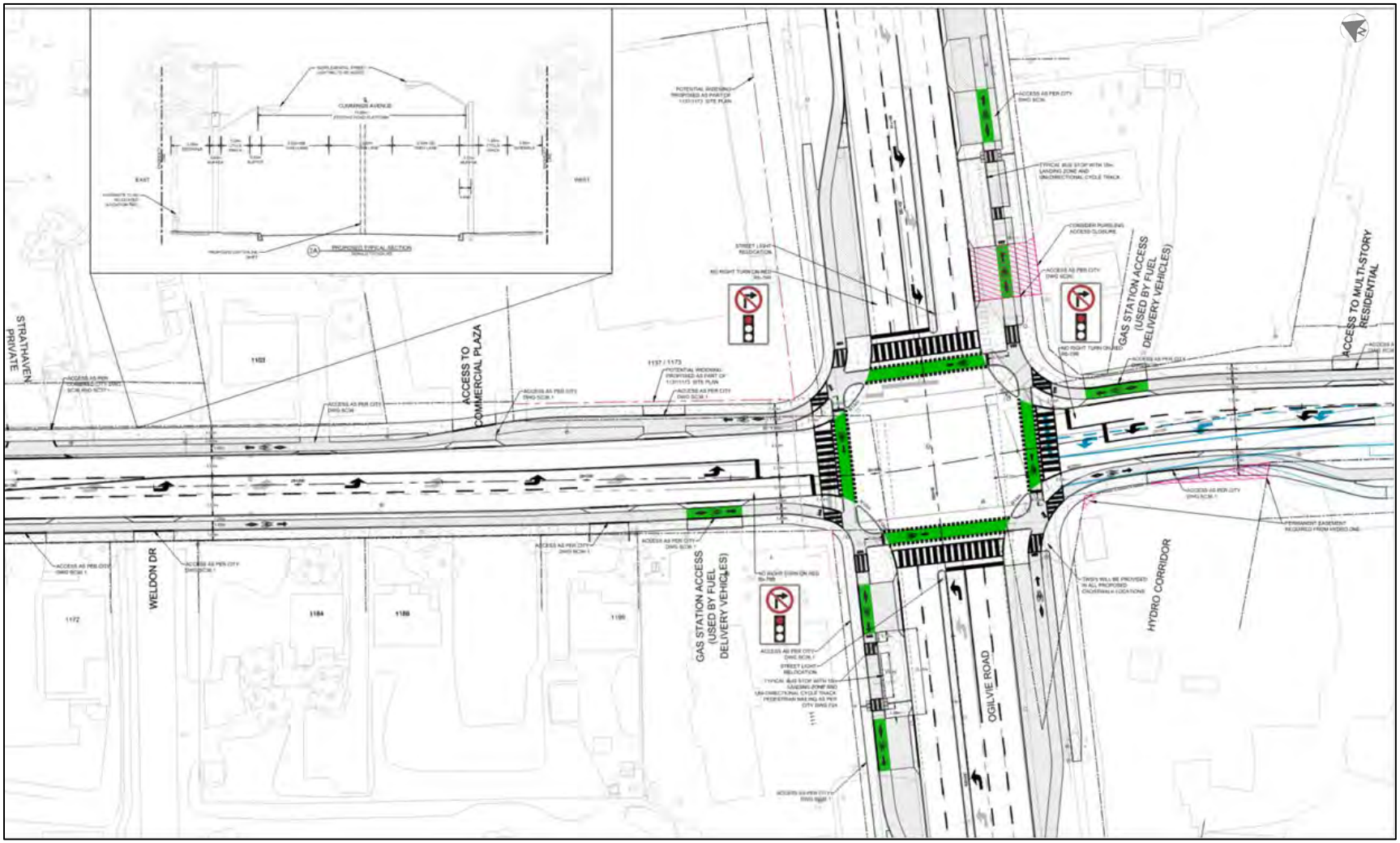
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2021-Aug-05, Thu,17:29	Clear	Angle	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	

Appendix E

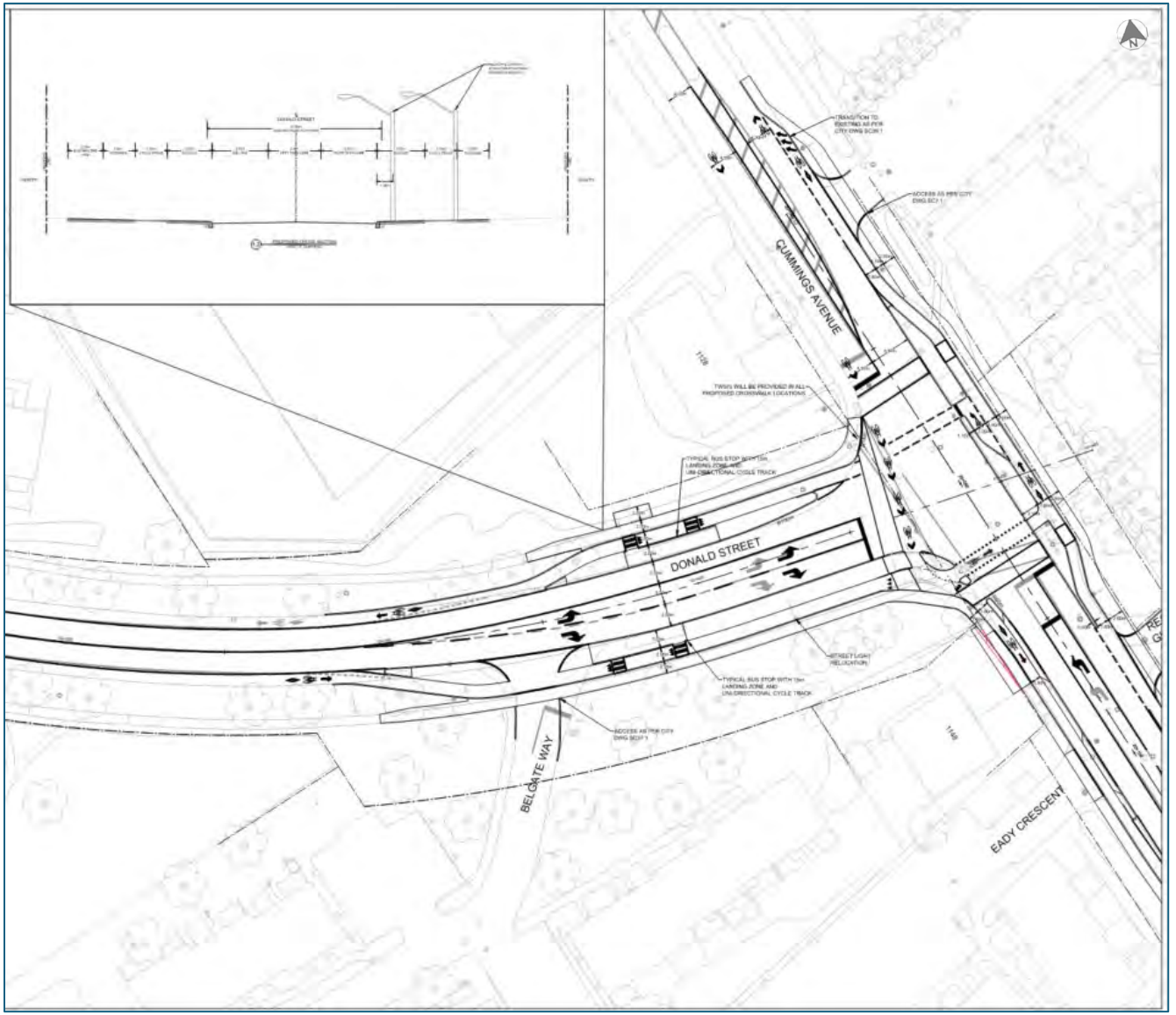
City Draft Concepts for Cummings Cycling Project Functional Design

CGH TRANSPORTATION

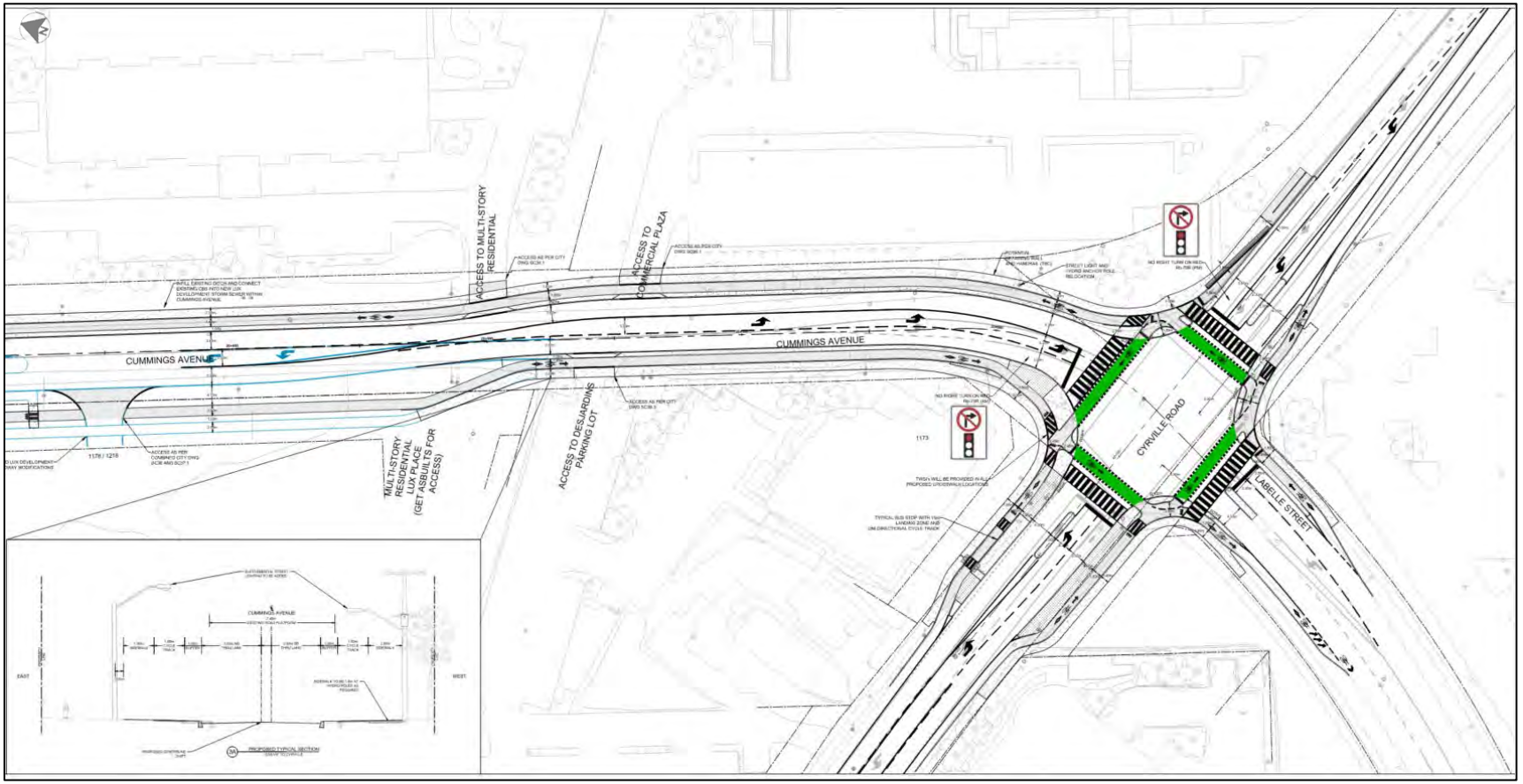
Ogilvie Road at Cummings Avenue intersection



Donald Street at Cummings Avenue intersection



Cyrville Road at Cummings Avenue intersection



Appendix F

TDM Checklist

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 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-Supportive Development Design and Infrastructure Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

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

Legend

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

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

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

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

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

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 Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

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

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

Legend

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

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

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

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

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

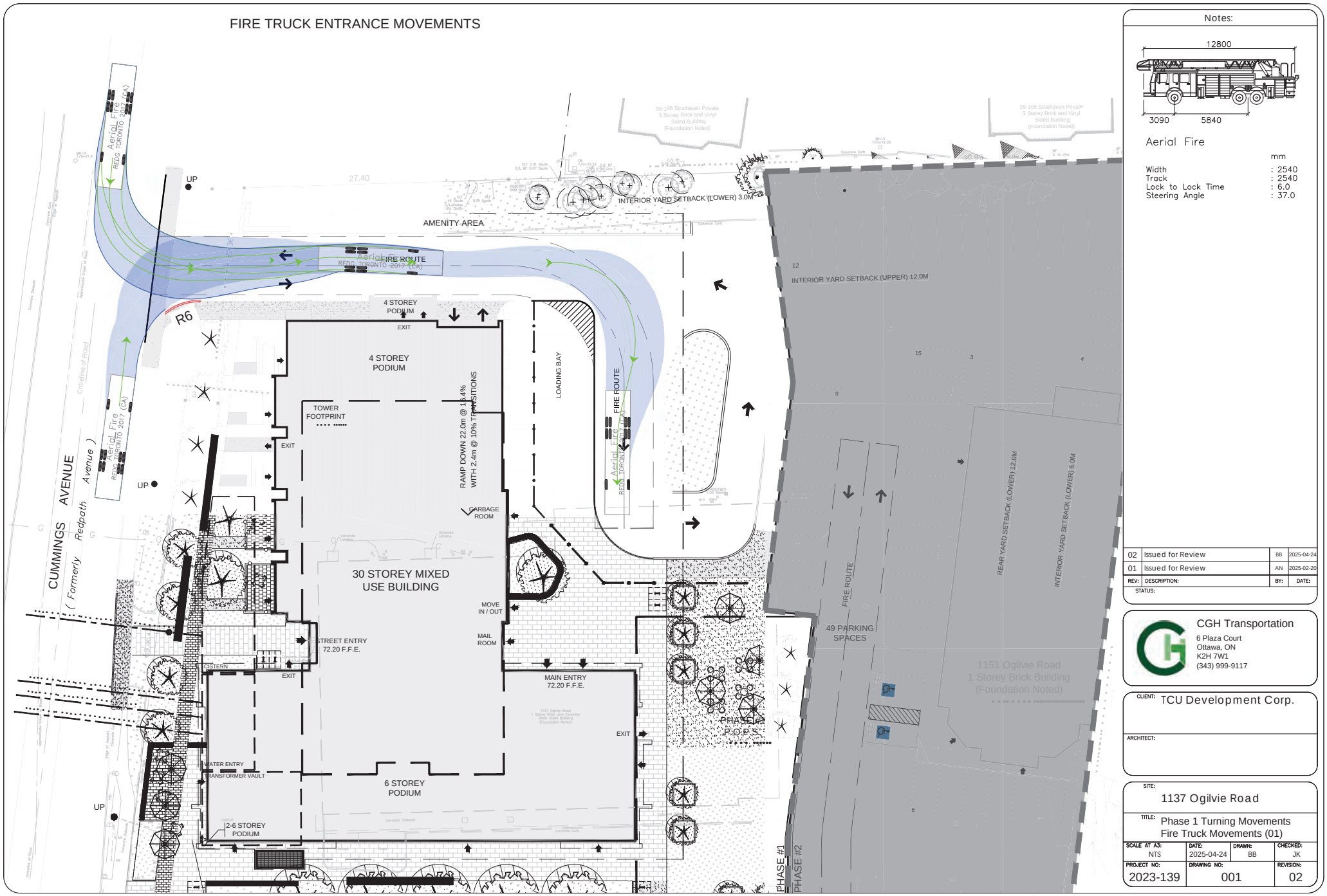
			TDM measures: *Residential developments*	Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☑
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1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

Appendix G

Turning Templates

CGH TRANSPORTATION

FIRE TRUCK ENTRANCE MOVEMENTS



Notes:

Aerial Fire

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Width	: 2540
Track	: 2540
Lock to Lock Time	: 6.0
Steering Angle	: 37.0

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

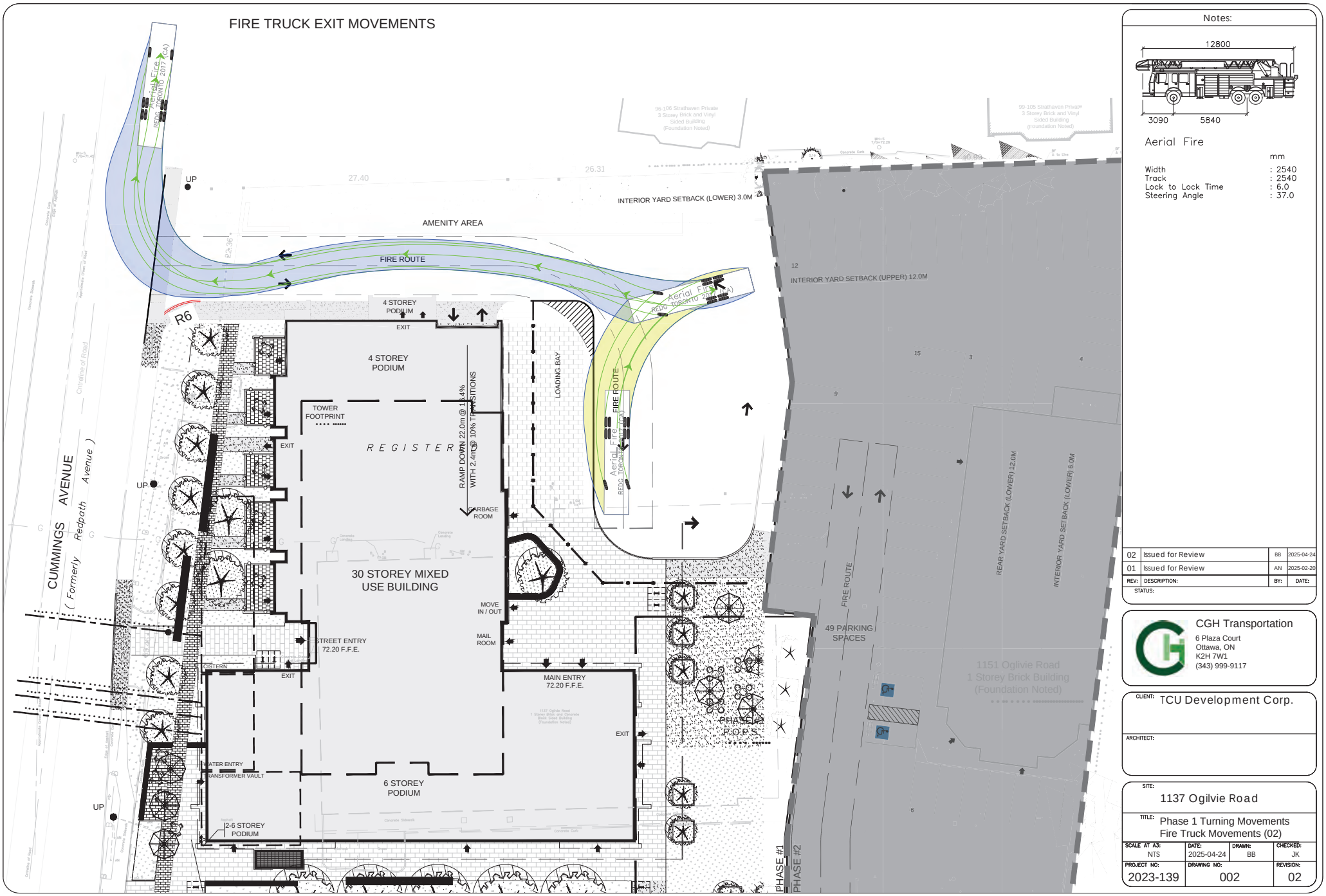
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
Fire Truck Movements (01)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	001	02

FIRE TRUCK EXIT MOVEMENTS



Notes:

Aerial Fire

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Width	: 2540
Track	: 2540
Lock to Lock Time	: 6.0
Steering Angle	: 37.0

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

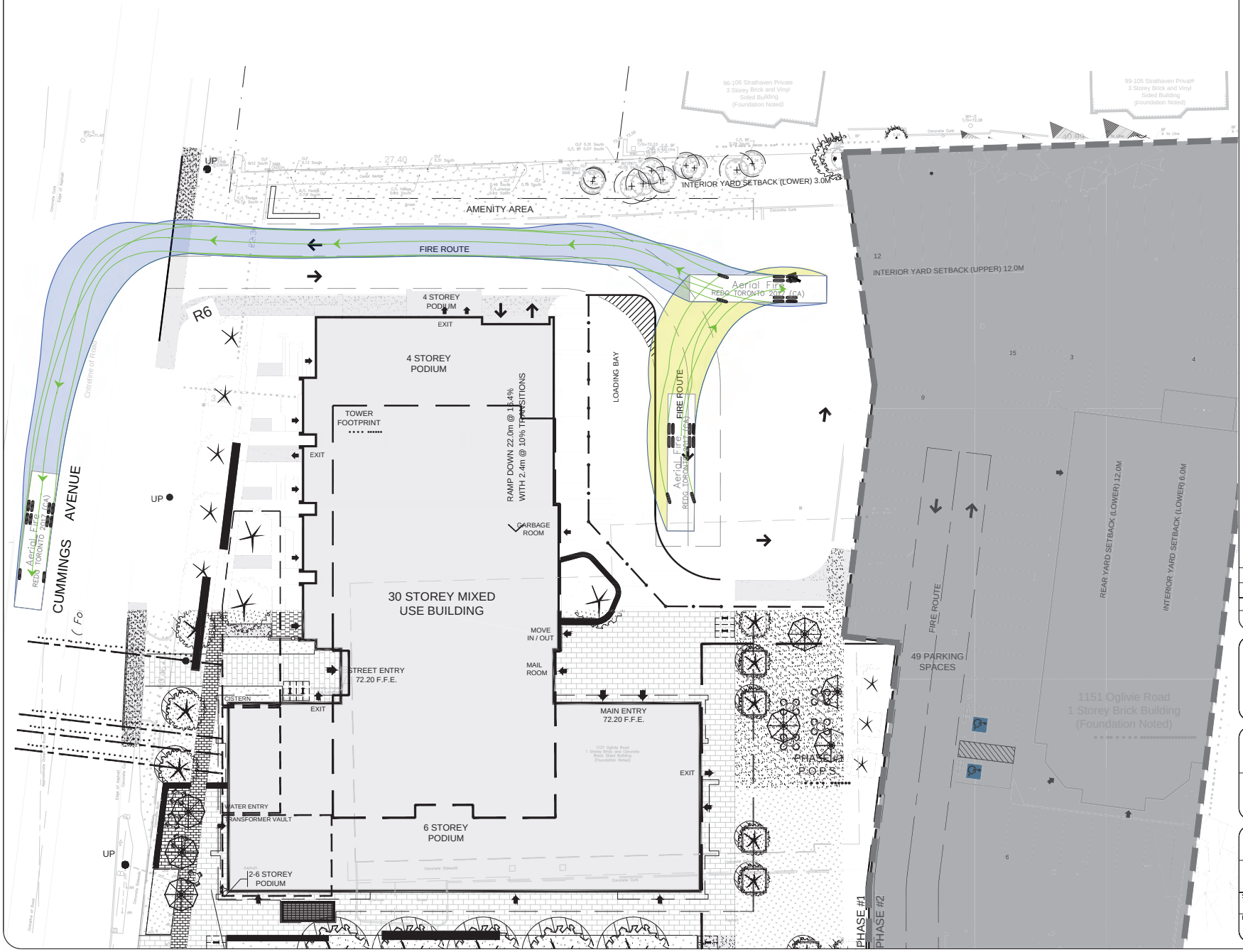
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
Fire Truck Movements (02)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	002	02

FIRE TRUCK EXIT MOVEMENTS



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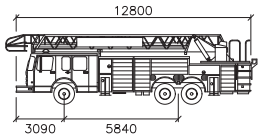

Aerial Fire

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Width	: 2540
Track	: 2540
Lock to Lock Time	: 6.0
Steering Angle	: 37.0

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
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STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

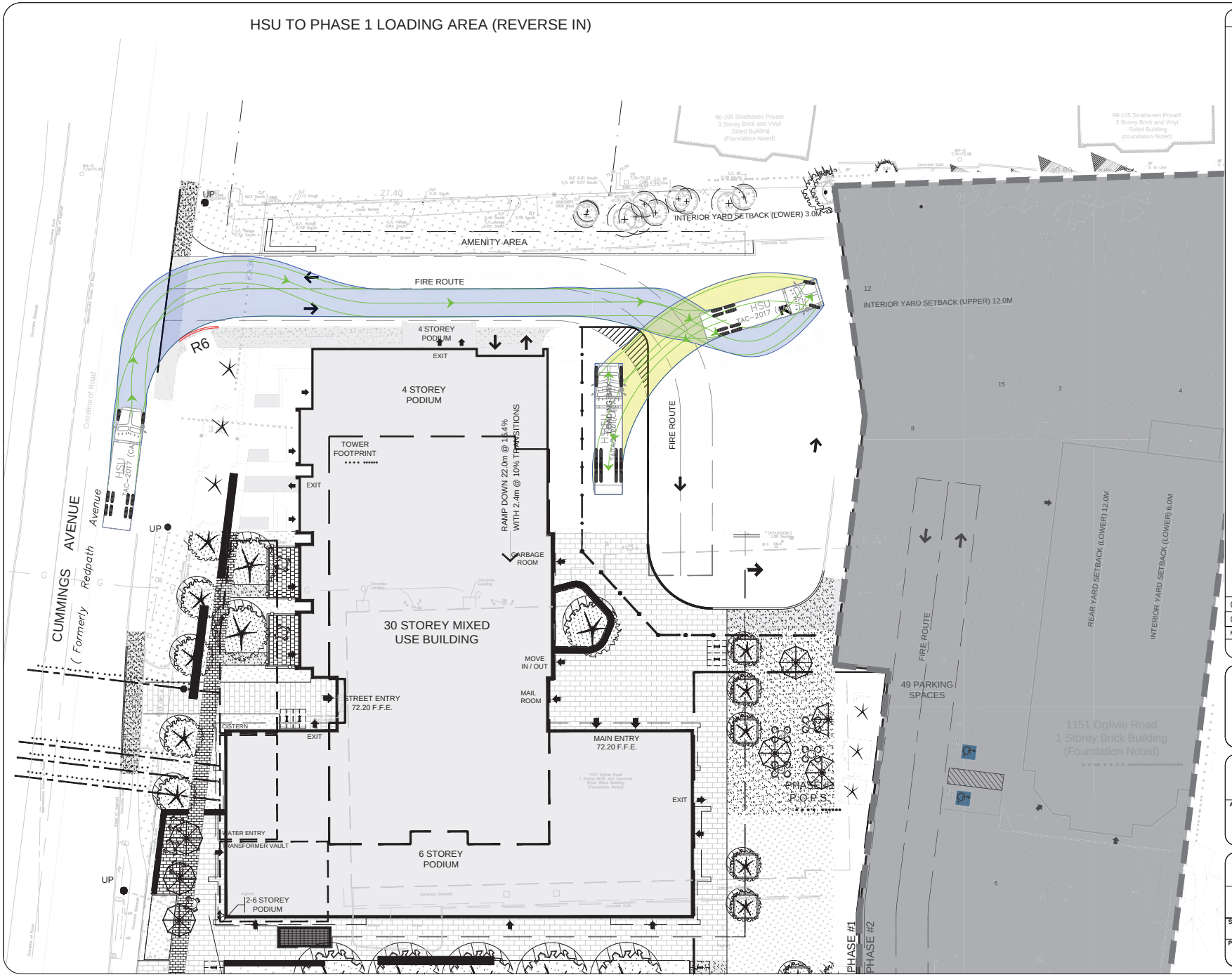
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
Fire Truck Movements (03)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	003	02

HSU TO PHASE 1 LOADING AREA (REVERSE IN)



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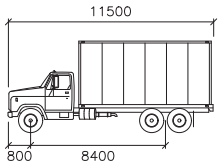

HSU

mm

Width	: 2600
Track	: 2600
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Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

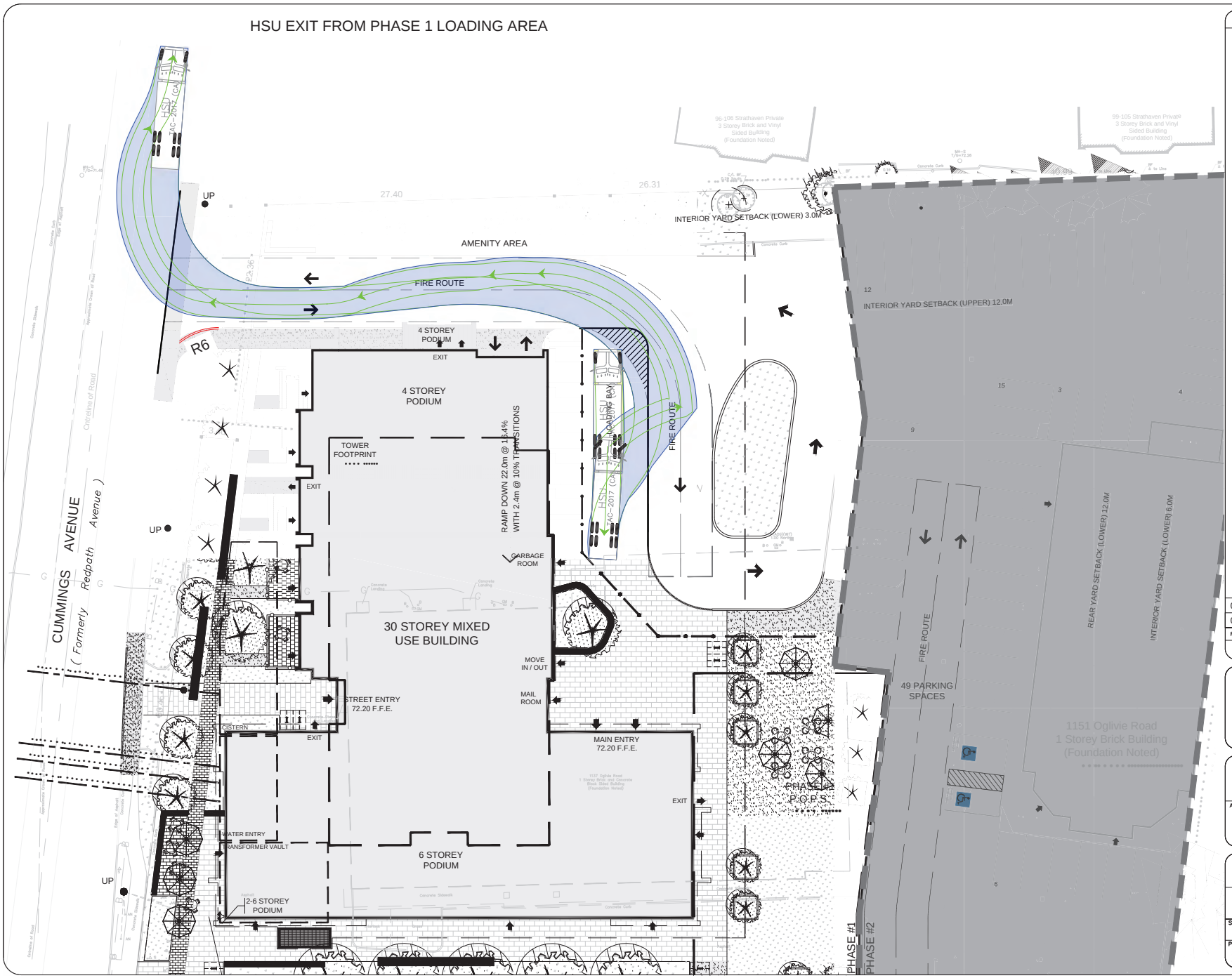
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
HSU Movements (01)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	004	02

HSU EXIT FROM PHASE 1 LOADING AREA



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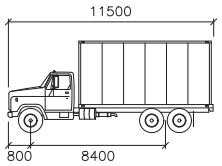

HSU

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

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

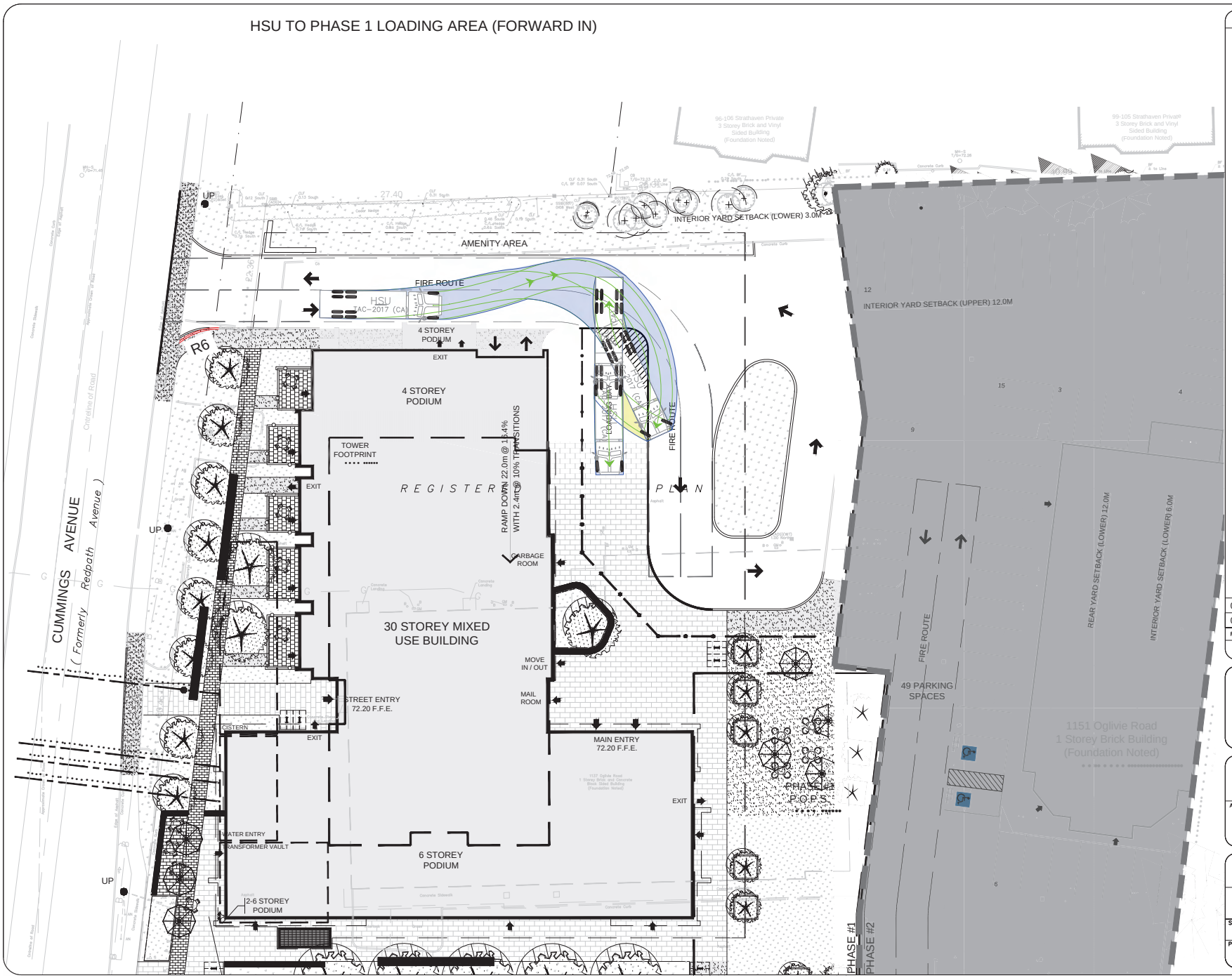
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
HSU Movements (02)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	005	02

HSU TO PHASE 1 LOADING AREA (FORWARD IN)



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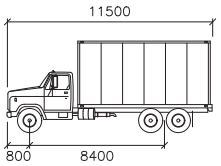

HSU

mm

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Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
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01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

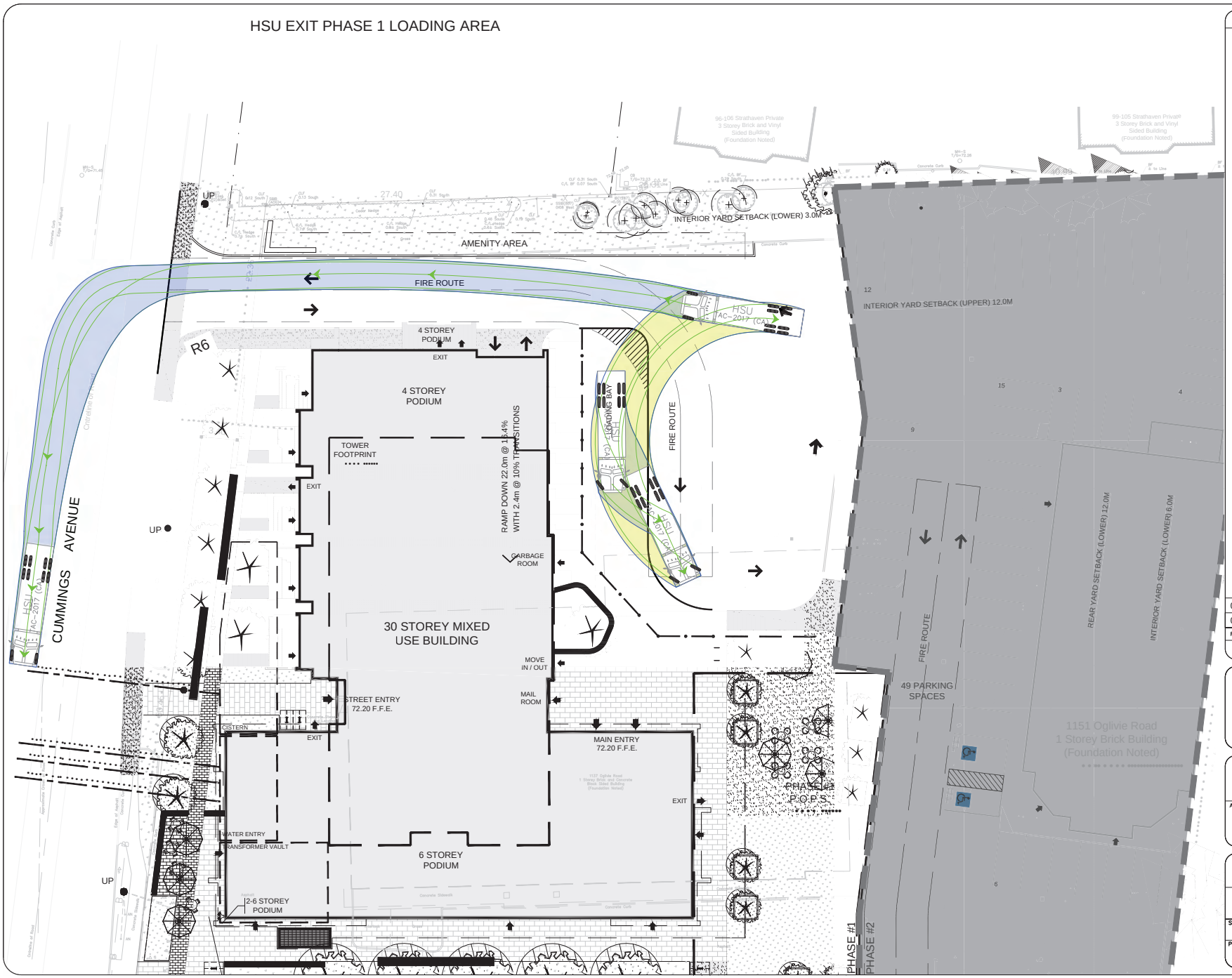
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
HSU Movements (03)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	006	02

HSU EXIT PHASE 1 LOADING AREA



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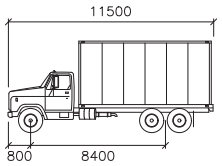

HSU

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

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K2H 7W1
(343) 999-9117

CLIENT: TCU Development Corp.

ARCHITECT:

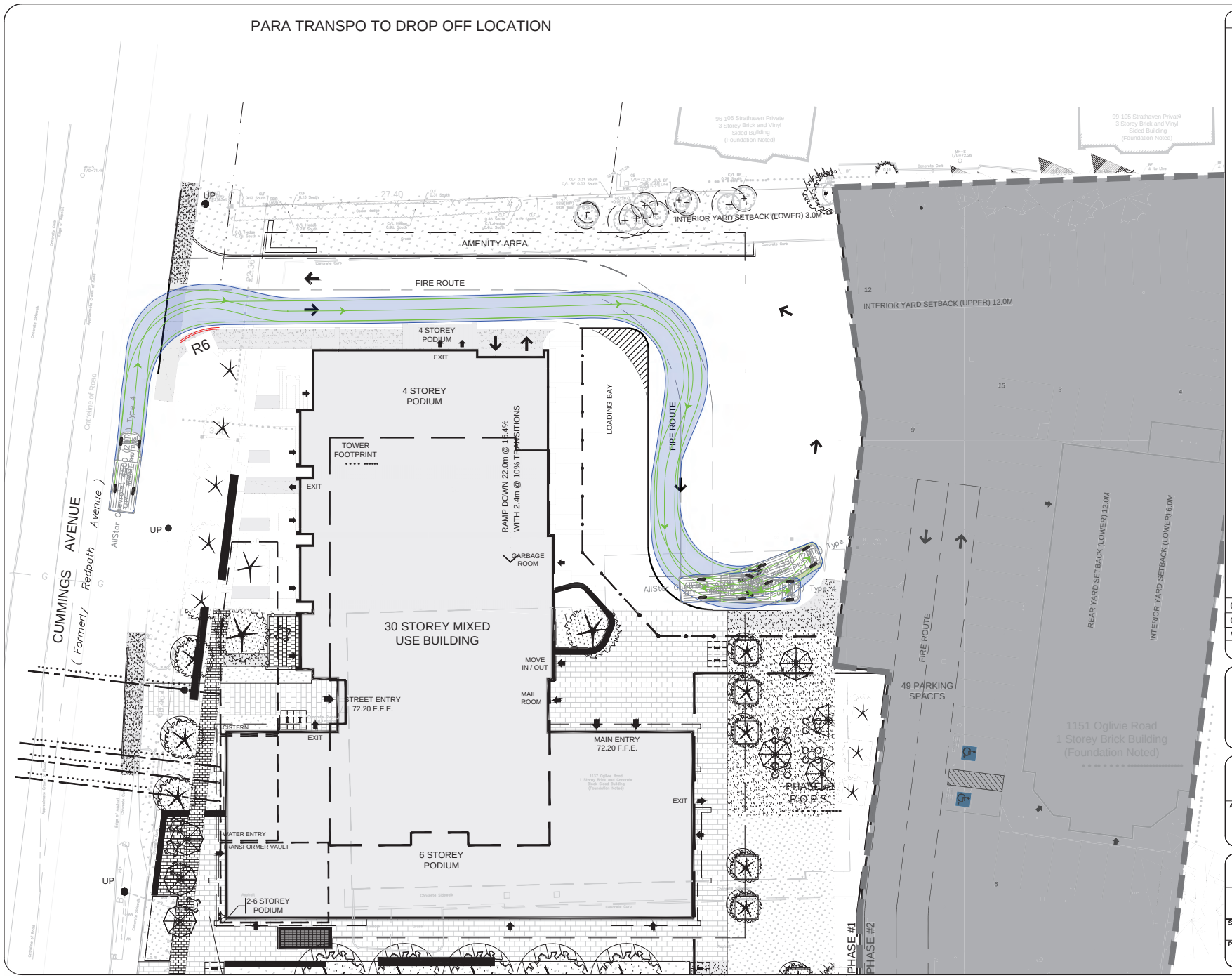
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
HSU Movements (03)

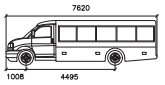
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	007	02

PARA TRANSPO TO DROP OFF LOCATION



Notes:



AllStar Chevrolet 4500 (2016) Type 4

	mm
Width	: 2438
Track	: 1957
Lock to Lock Time	: 6.0
Steering Angle	: 34.2

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

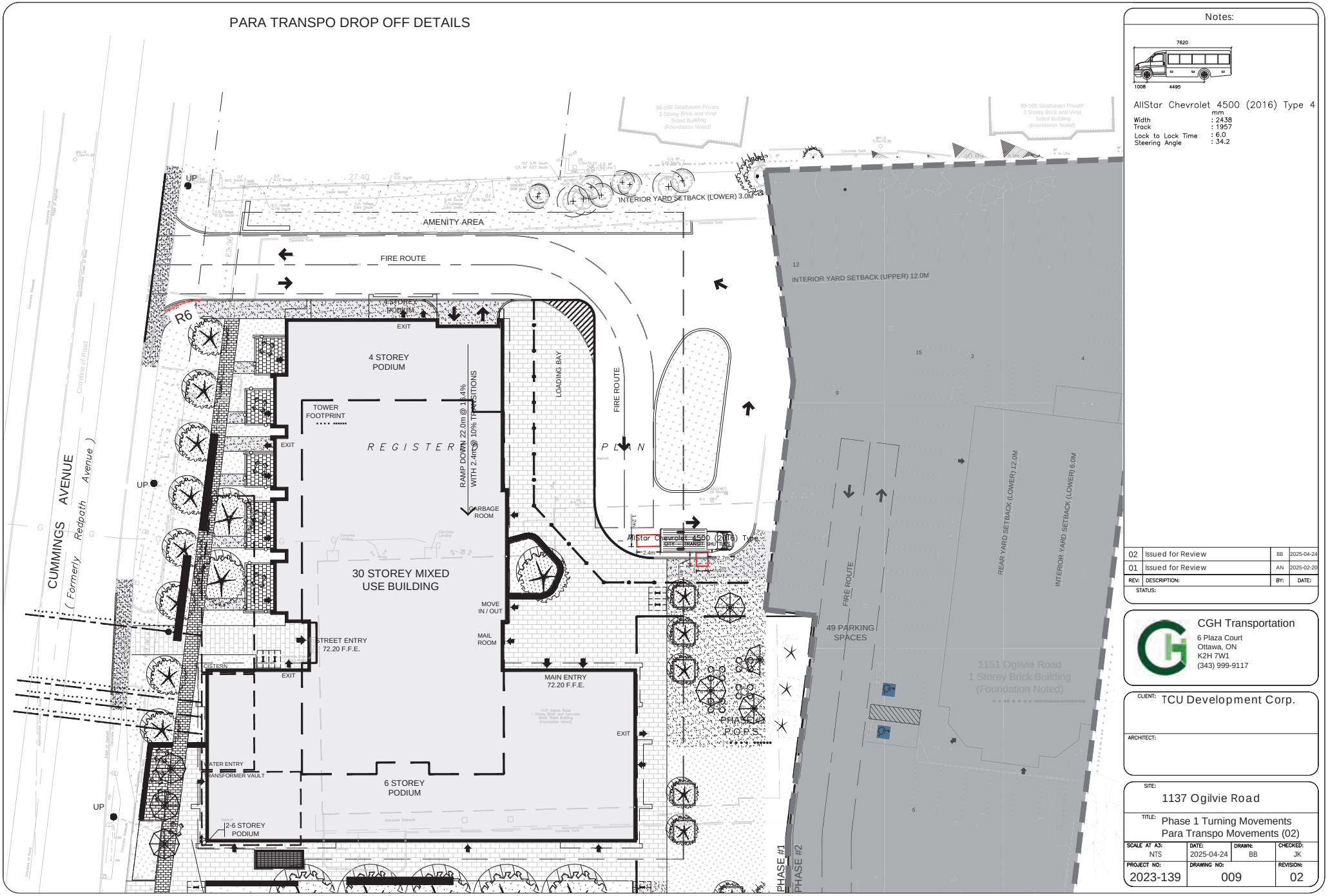
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
Para Transpo Movements (01)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	008	02

PARA TRANSPO DROP OFF DETAILS



Notes:

AllStar Chevrolet 4500 (2016) Type 4

	mm
Width	: 2438
Track	: 1957
Lock to Lock Time	: 6.0
Steering Angle	: 34.2

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

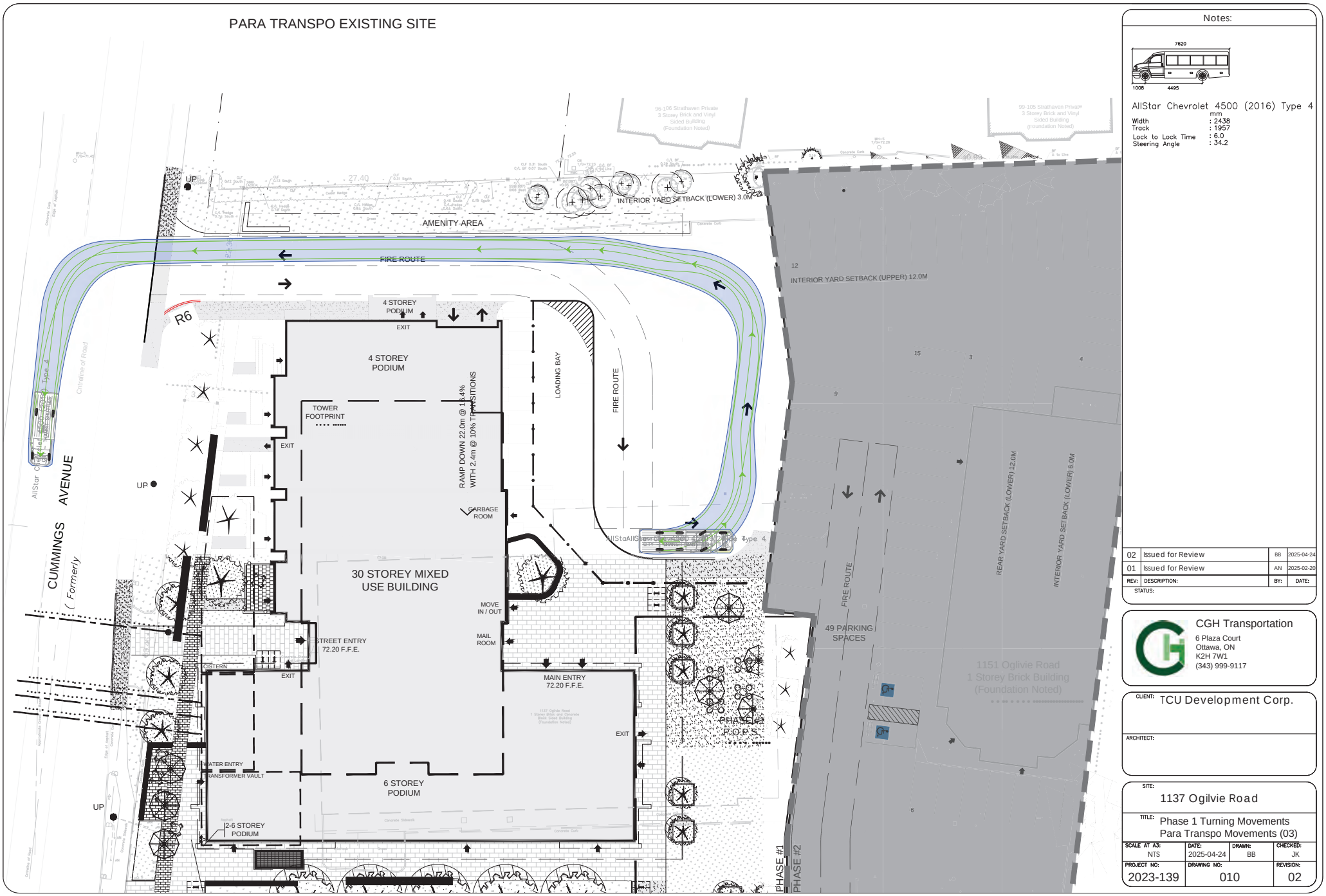
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
Para Transpo Movements (02)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	009	02

PARA TRANSPO EXISTING SITE



Notes:

AllStar Chevrolet 4500 (2016) Type 4

	mm
Width	: 2438
Track	: 1957
Lock to Lock Time	: 6.0
Steering Angle	: 34.2

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

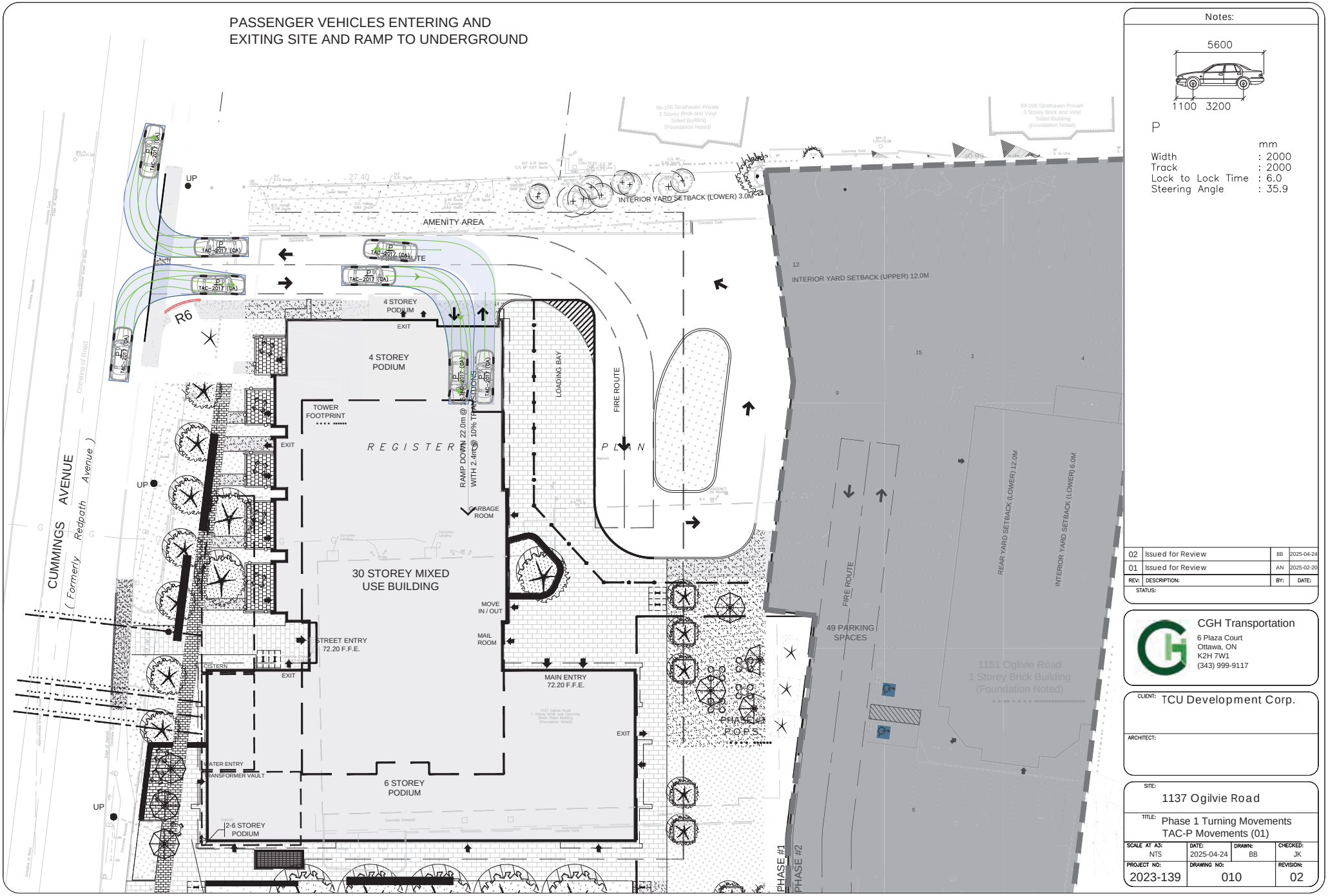
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
Para Transpo Movements (03)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	010	02

PASSENGER VEHICLES ENTERING AND
EXITING SITE AND RAMP TO UNDERGROUND



Notes:

P

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

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

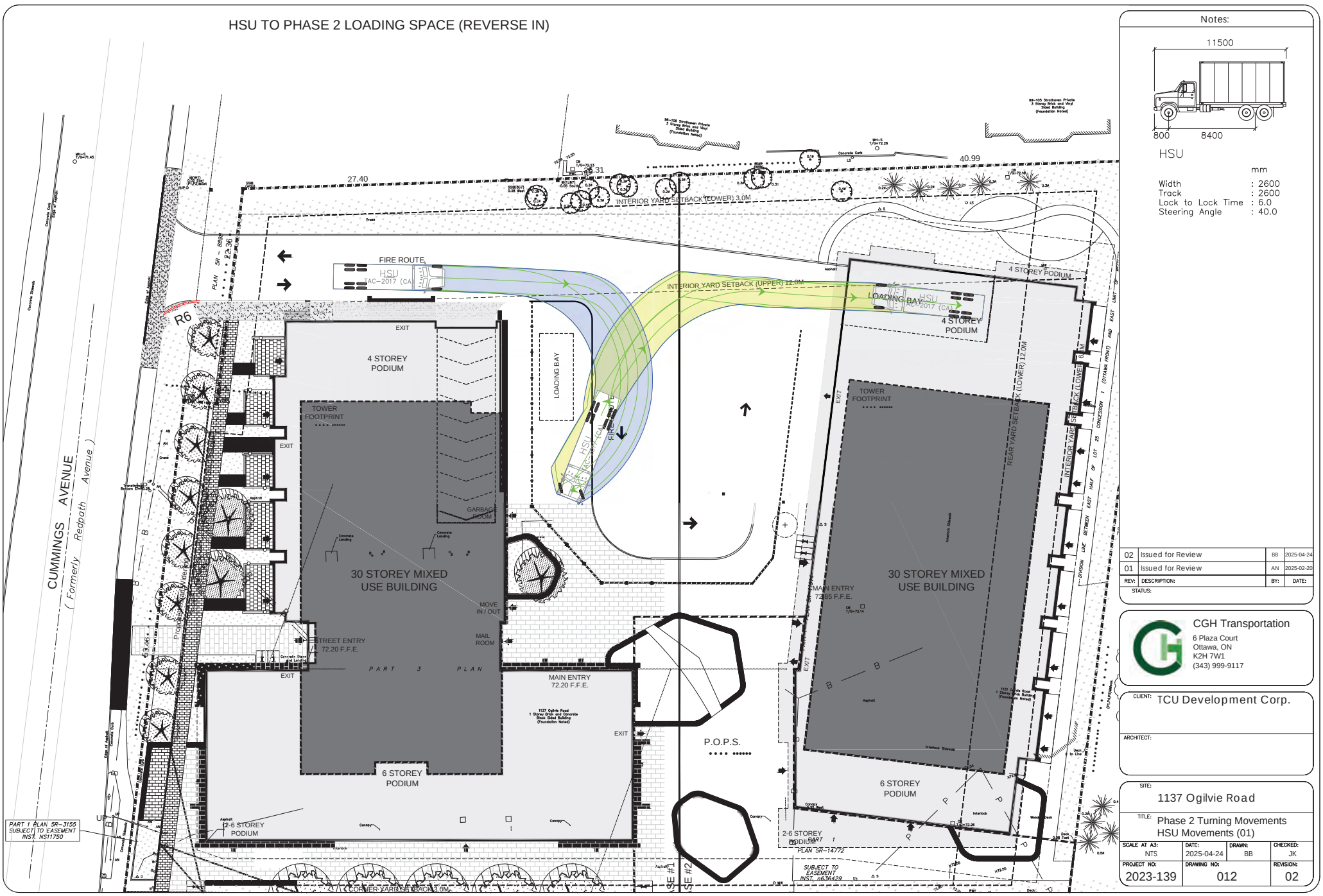
SITE: 1137 Ogilvie Road

TITLE: Phase 1 Turning Movements
TAC-P Movements (01)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	010	02

HSU TO PHASE 2 LOADING SPACE (REVERSE IN)



Notes:

HSU

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

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

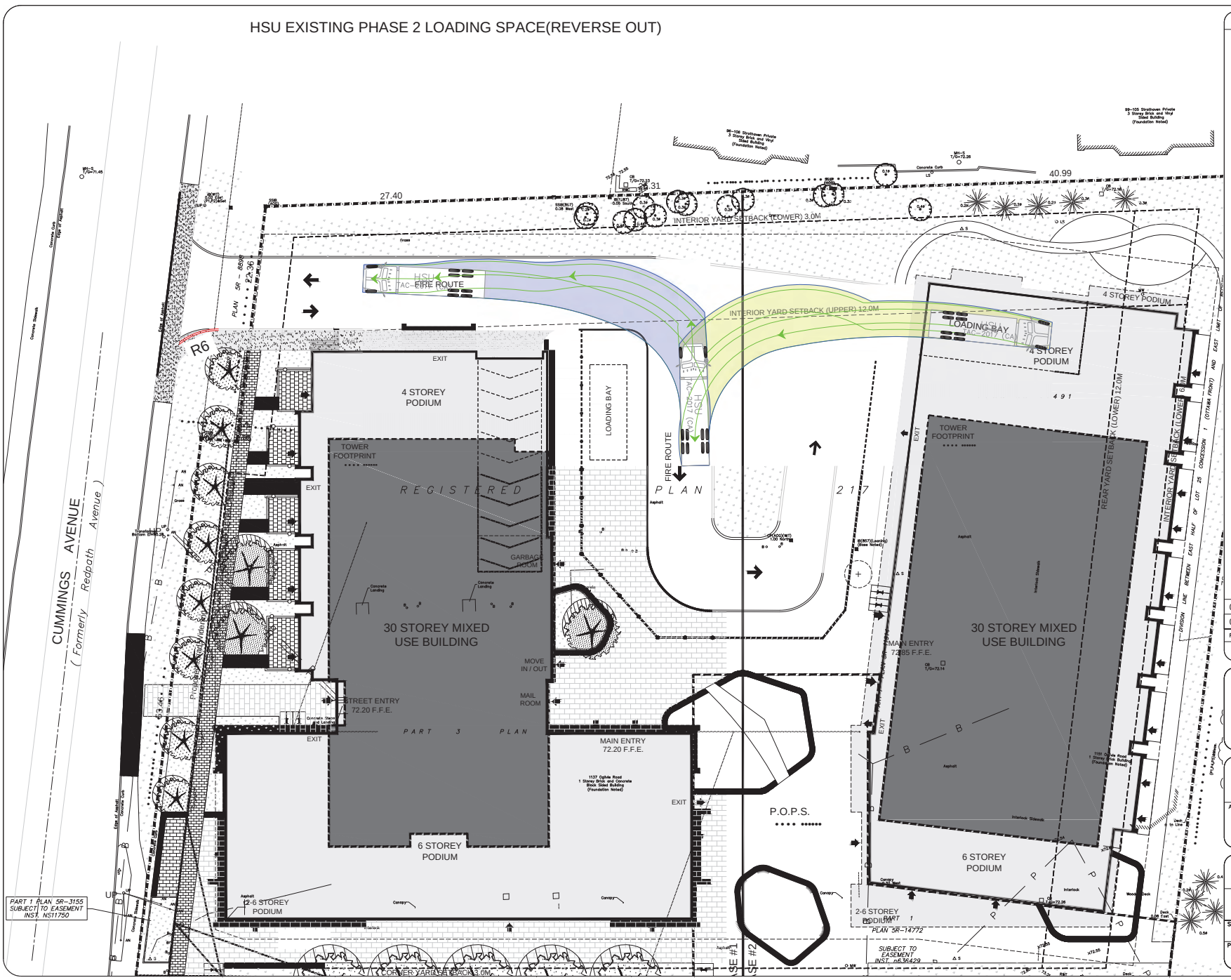
SITE: 1137 Ogilvie Road

TITLE: Phase 2 Turning Movements
HSU Movements (01)

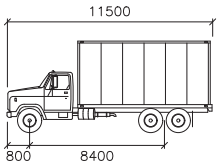
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	012	02

HSU EXISTING PHASE 2 LOADING SPACE(REVERSE OUT)



Notes:



HSU

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

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	BB	2025-04-24
01	Issued for Review	AN	2025-02-20

STATUS:

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

CLIENT: TCU Development Corp.

ARCHITECT:

SITE: 1137 Ogilvie Road

TITLE: Phase 2 Turning Movements
HSU Movements (02)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-04-24	BB	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-139	013	02

Appendix H

MMLOS Sheets

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc**	**Project**	**1137 Ogilvie Road & 1111 Cummings Avenue**
Scenario	**Existing/Future**	**Date**	**2024-11-07**
Comments			

SEGMENTS			Ogilvie Rd Existing	Ogilvie Rd Future	Cummings Ave Existing	Cummings Ave Future	
Pedestrian	Sidewalk Width Boulevard Width	-	1.5 m > 2 m	≥ 2 m > 2 m	1.5 m < 0.5 m	≥ 2 m > 2 m	
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000	> 3000	
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 50 to 60 km/h no	> 50 to 60 km/h no	
	Exposure to Traffic PLoS		**E**	**D**	**F**	**C**	**-**
	Effective Sidewalk Width						
	Pedestrian Volume						
	Crowding PLoS		**-**	**-**	**-**	**-**	**-**
	Level of Service		**-**	**-**	**-**	**-**	**-**
Bicycle	Type of Cycling Facility	**E**	Curbside Bike Lane	Physically Separated	Mixed Traffic	Physically Separated	
	Number of Travel Lanes		≥ 3 each direction		2-3 lanes total		
	Operating Speed		>50 to 70 km/h		≥ 50 to 60 km/h		
	# of Lanes & Operating Speed LoS		**D**	**-**	**E**	**-**	**-**
	Bike Lane (+ Parking Lane) Width		≥1.5 to <1.8 m				
	Bike Lane Width LoS		**B**	**-**	**-**	**-**	**-**
	Bike Lane Blockages		Rare				
	Blockage LoS		**A**	**-**	**-**	**-**	**-**
	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		**D**	**D**	**E**	**C**	**-**
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic			
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8			
	Level of Service		**D**	**D**	**-**	**-**	**-**
Truck	Truck Lane Width	**B**	≤ 3.5 m	≤ 3.5 m	> 3.7 m	> 3.7 m	
	Travel Lanes per Direction		> 1	> 1	1	1	
	Level of Service		**A**	**A**	**B**	**B**	**-**
Auto	**Level of Service**	**Not Applicable**					

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation Inc**	**Project**	**1137 Ogilvie Road & 1111 Cummings Avenue**
Scenario	**Existing/Future**	**Date**	**2025-04-21**
Comments			

INTERSECTIONS		**Donald Street at Cummings Avenue (Existing)**				**Donald Street at Cummings Avenue (Future)**				**Ogilvie Road at Cyrville Road**				**Ogilvie Road at Cummings Avenue (Exisiting)**			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	3	3		6	3	3		6	9	6	10+	10+	5	7	10+	8
	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	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	No left turn / Prohib.	Permissive	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive	Protected/ Permissive	Permissive
	Conflicting Right Turns	No right turn	Permissive or yield control		Permissive or yield control	No right turn	Permissive or yield control		Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR prohibited		RTOR allowed	RTOR allowed	RTOR prohibited		RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No		No	No	No		No	No	No	No	No	No	No	No	No
	Right Turn Channel	No Channel	No Right Turn		No Channel	No Channel	No Right Turn		No Channel	Conventional with Receiving Lane	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane	No Channel	No Channel
	Corner Radius	10-15m	No Right Turn		10-15m	10-15m	No Right Turn		10-15m	5-10m	5-10m	>25m	>25m	10-15m	15-25m	5-10m	5-10m
	Crosswalk Type	Std transverse markings	Std transverse markings		Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**75**	**83**		**20**	**75**	**83**		**20**	**-19**	**21**	**-48**	**-48**	**37**	**6**	**-44**	**-11**
	Ped. Exposure to Traffic LoS	**B**	**B**	**-**	**F**	**B**	**B**	**-**	**F**	**#N/A**	**F**	**#N/A**	**#N/A**	**E**	**F**	**#N/A**	**F**
	Cycle Length	62	62		62	62	62		62	130	130	120	120	130	130	120	120
	Effective Walk Time	33	14		7	33	14		7	30	30	27	27	18	6	27	27
	Average Pedestrian Delay	**7**	**19**		**24**	**7**	**19**		**24**	**38**	**38**	**36**	**36**	**48**	**59**	**36**	**36**
	Pedestrian Delay LoS	**A**	**B**	**-**	**C**	**A**	**B**	**-**	**C**	**D**	**D**	**D**	**D**	**E**	**E**	**D**	**D**
	Level of Service	**B**	**B**	**-**	**F**	**B**	**B**	**-**	**F**	**#N/A**	**F**	**#N/A**	**#N/A**	**E**	**F**	**#N/A**	**F**
		F				**F**				**#N/A**				**#N/A**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic		Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic	Pocket Bike Lane	Curb Bike Lane, Cycletrack or MUP
	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	**#N/A**	**#N/A**	**-**	**#VALUE!**	**#N/A**	**Not Applicable**	**-**	**Not Applicable**	**#N/A**	**Not Applicable**	**Not Applicable**	**Not Applicable**	**#N/A**	**#N/A**	**#N/A**	**Not Applicable**
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**-**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**-**	**Separated**	**Mixed Traffic**	**Separated**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**
	Left Turn Approach		One lane crossed		One lane crossed		2-stage, LT box		2-stage, LT box	One lane crossed	1 lane crossed	≥ 2 lanes crossed		One lane crossed	One lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed
	Operating Speed		> 50 to < 60 km/h		> 50 to < 60 km/h		> 50 to < 60 km/h		> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h		> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	**-**	**E**	**-**	**E**	**-**	**A**	**-**	**A**	**F**	**E**	**F**	**-**	**E**	**E**	**F**	**F**
	Level of Service	**#N/A**	**#N/A**	**-**	**#VALUE!**	**#N/A**	**A**	**-**	**A**	**#N/A**	**E**	**F**	**-**	**#N/A**	**#N/A**	**#N/A**	**F**
		#N/A				**#N/A**				**#N/A**				**#N/A**			
Transit	Average Signal Delay											≤ 30 sec	≤ 20 sec			> 40 sec	> 40 sec
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**D**	**C**	**-**	**-**	**F**	**F**
		-				**-**				**D**				**F**			
Truck	Effective Corner Radius				10 - 15 m				10 - 15 m	< 10 m	< 10 m	> 15 m	> 15 m	10 - 15 m	> 15 m	10 - 15 m	10 - 15 m
	Number of Receiving Lanes on Departure from Intersection				1				1	≥ 2	≥ 2	1	1	≥ 2	≥ 2	1	1
	Level of Service	**-**	**-**	**-**	**E**	**-**	**-**	**-**	**E**	**D**	**D**	**C**	**C**	**B**	**A**	**E**	**E**
		E				**E**				**D**				**E**			
Auto	Volume to Capacity Ratio	0.0 - 0.60				0.0 - 0.60				0.61 - 0.70				> 1.00			
	Level of Service	**A**				**A**				**B**				**F**			

Ogilvie Road at Cummings Avenue (Future)			
NORTH	SOUTH	EAST	WEST
4	4	6	6
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
Protected	Protected	Protected	Protected
Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited
No	No	No	No
No Channel	No Channel	No Channel	No Channel
10-15m	10-15m	10-15m	10-15m
Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
67	**67**	**34**	**34**
C	**C**	**E**	**E**
130	130	120	120
18	6	27	27
48	**59**	**36**	**36**
E	**E**	**D**	**D**
E	**E**	**E**	**E**
E			
NORTH	SOUTH	EAST	WEST
Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
Not Applicable	**Not Applicable**	**Not Applicable**	**Not Applicable**
Separated	**Separated**	**Separated**	**Separated**
2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box
> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h
A	**A**	**A**	**A**
A	**A**	**A**	**A**
A			
		> 40 sec	> 40 sec
-	**-**	**F**	**F**
F			
10 - 15 m	10 - 15 m	10 - 15 m	10 - 15 m
≥ 2	≥ 2	1	1
B	**B**	**E**	**E**
E			
> 1.00			
F			

Cyrville Road at Cummings Avenue/Labelle Street (Existing)			
NORTH	SOUTH	EAST	WEST
6	7	5	5
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
Protected/ Permissive	Permissive	Permissive	Permissive
Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
Yes	Yes	No	No
No Channel	No Channel	No Channel	No Channel
5-10m	15-25m	10-15m	10-15m
Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
23	**4**	**37**	**37**
F	**F**	**E**	**E**
85	85	85	85
8	8	15	15
35	**35**	**29**	**29**
D	**D**	**C**	**C**
F	**F**	**E**	**E**
F			
NORTH	SOUTH	EAST	WEST
Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
#N/A	**#N/A**	**Not Applicable**	**Not Applicable**
Mixed Traffic	**Mixed Traffic**	**Separated**	**Separated**
One lane crossed	One lane crossed	1 lane crossed	1 lane crossed
> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h
E	**E**	**E**	**E**
#N/A	**#N/A**	**E**	**E**
#N/A			
-	**-**	**-**	**-**
-			
> 15 m	10 - 15 m	> 15 m	10 - 15 m
1	1	1	1
C	**E**	**C**	**E**
E			
0.81 - 0.90			
D			

Cyrville Road at Cummings Avenue/Labelle Street (Future)			
NORTH	SOUTH	EAST	WEST
5	5	4	4
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
Protected/ Permissive	Permissive	Permissive	Permissive
Permissive or yield control	Protected	Permissive or yield control	Protected
RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR allowed
Yes	Yes	No	No
No Channel	No Channel	No Channel	No Channel
5-10m	15-25m	10-15m	10-15m
Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
46	**45**	**59**	**61**
D	**D**	**D**	**C**
85	85	85	85
8	8	15	15
35	**35**	**29**	**29**
D	**D**	**C**	**C**
D	**D**	**D**	**C**
D			
NORTH	SOUTH	EAST	WEST
Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
Not Applicable	**Not Applicable**	**Not Applicable**	**Not Applicable**
Separated	**Separated**	**Separated**	**Separated**
2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box
> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h
A	**A**	**A**	**A**
A	**A**	**A**	**A**
A			
-	**-**	**-**	**-**
-			
10 - 15 m	10 - 15 m	10 - 15 m	10 - 15 m
1	1	1	1
E	**E**	**E**	**E**
E			
0.91 - 1.00			
E			

Ogilvie Road at Aviation Parkway			
NORTH	SOUTH	EAST	WEST
10+	10+	10+	10+
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
Protected/ Permissive	Protected/ Permissive	Protected	Protected
Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
No	No	No	No
Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Smart Channel	Smart Channel
15-25m	15-25m	15-25m	10-15m
Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
-43	**-43**	**-33**	**-31**
#N/A	**#N/A**	**#N/A**	**#N/A**
120	120	130	130
7	7	24	24
53	**53**	**43**	**43**
E	**E**	**E**	**E**
#N/A	**#N/A**	**#N/A**	**#N/A**
#N/A			
NORTH	SOUTH	EAST	WEST
Mixed Traffic	Mixed Traffic	Pocket Bike Lane > 50 m Introduced right turn lane >25 to 30 km/h	Pocket Bike Lane > 50 m Introduced right turn lane ≤ 25 km/h
#N/A	**#N/A**	**D**	**D**
Mixed Traffic	**Mixed Traffic**	**Separated**	**Separated**
≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed
≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h
F	**F**	**F**	**F**
#N/A	**#N/A**	**F**	**F**
#N/A			
		≤ 40 sec	≤ 40 sec
-	**-**	**E**	**E**
E			
> 15 m	> 15 m	10 - 15 m	> 15 m
≥ 2	≥ 2	≥ 2	≥ 2
A	**A**	**B**	**A**
B			
0.91 - 1.00			
E			

Appendix I

TRANS Model Plots

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Cyrville - St. Laurent Area Growth

2011 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: August 10, 2020
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

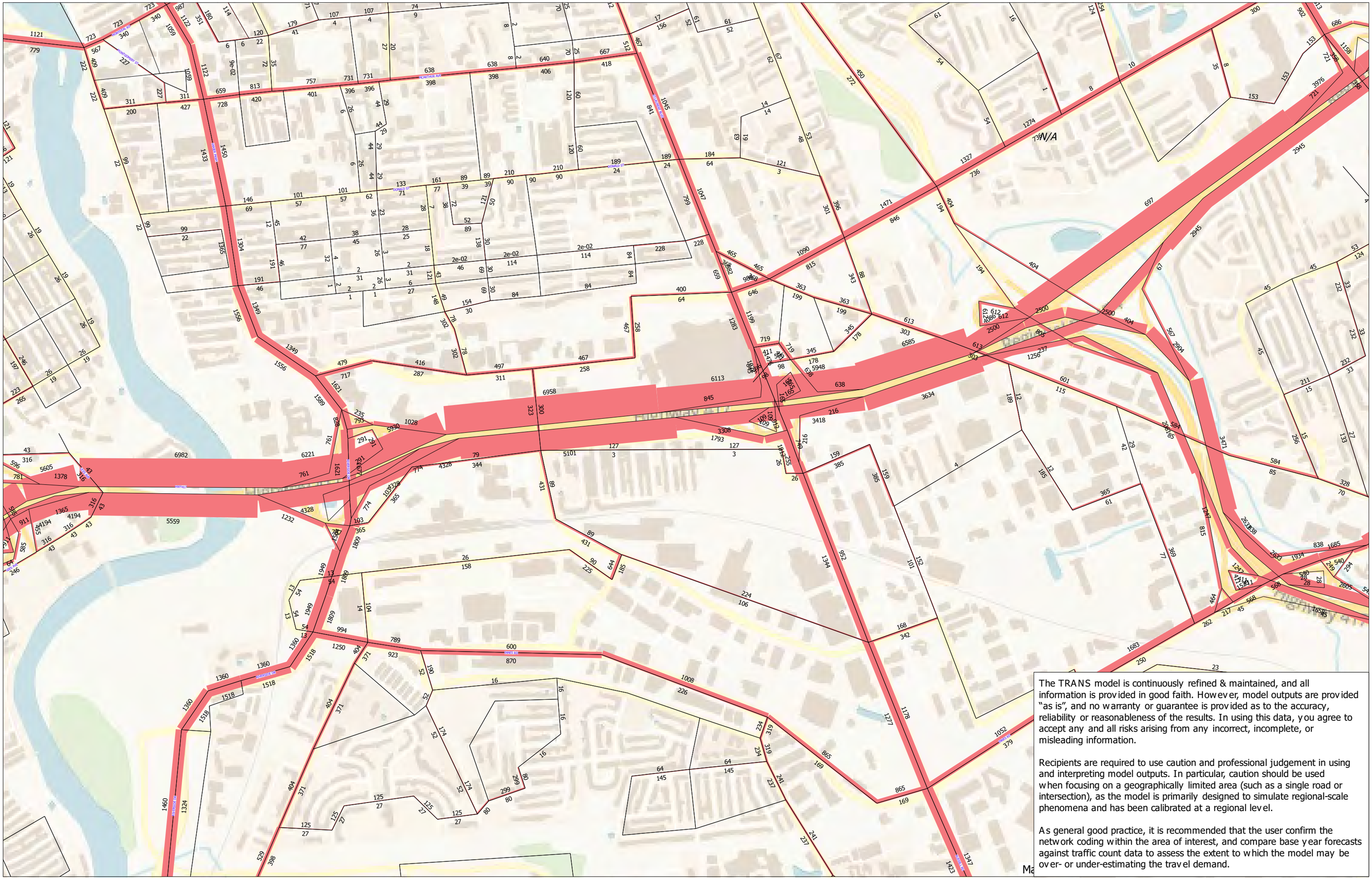
Distance (m)

100 200 300 400 500

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

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

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



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

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

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Cyrville - St. Laurent Area Growth

2031 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: August 10, 2020
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 200 300 400 500

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

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

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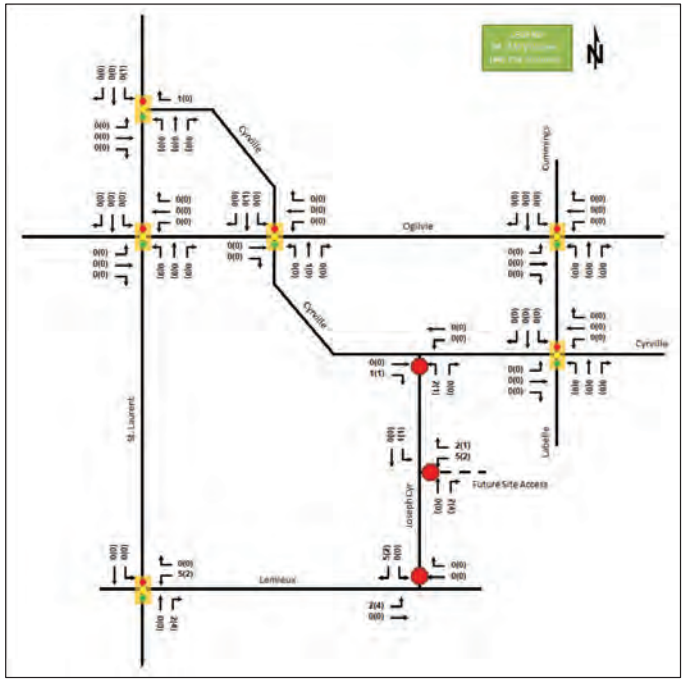
As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

Appendix J

Background Developments

CGH TRANSPORTATION

Figure 9: New Site Generation Auto Volumes



6 Background Network Travel Demands

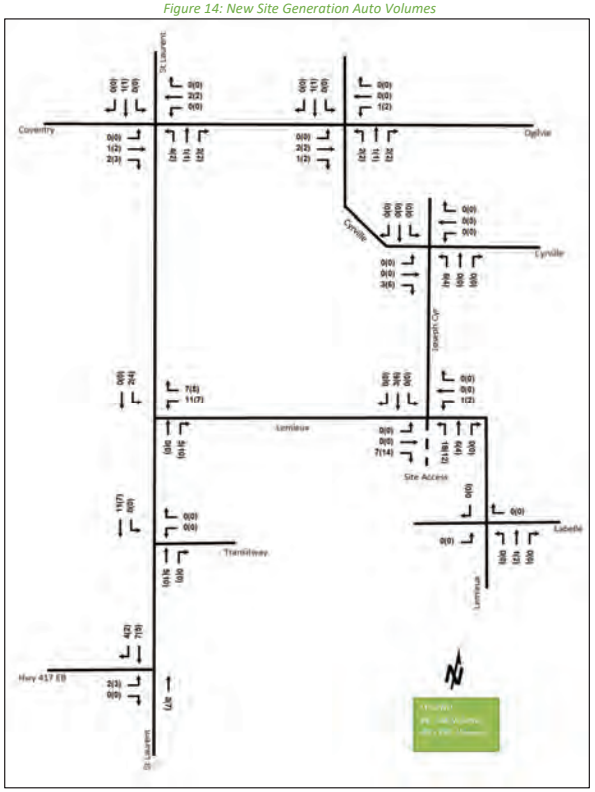
6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. None of the listed projects will have a notable impact on the study area traffic volumes and travel patterns.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. Table 15 summarizes the results of the model, and the projections are provided in Appendix E.

Figure 14: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The widening of Cyrville Road is assumed to be beyond 2031, and none of the proposed changes are considered to have any notable impact on the study area traffic volumes and travel patterns.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The background TRANS model growth rates are summarized in Table 15 and the TRANS model plots are provided in Appendix E.

Figure 15: New Site Generation Auto Volumes

6 Background Network Travel Demands

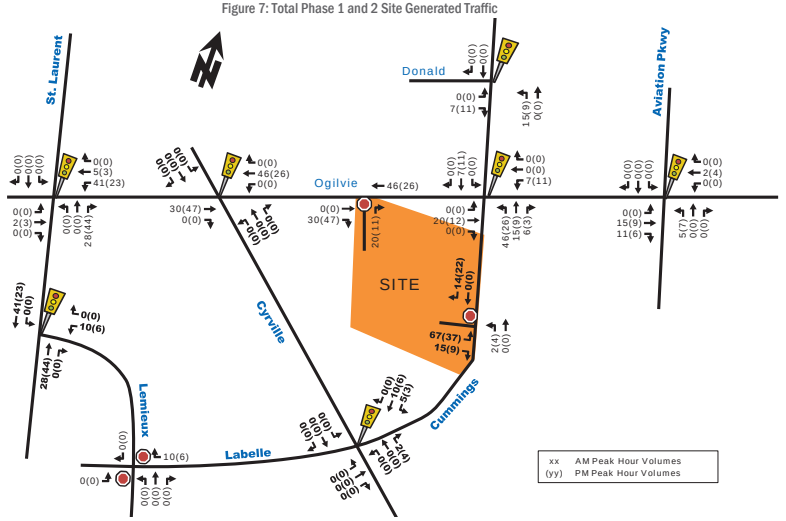
6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3 and will not have any notable impact on the study area traffic volumes and travel patterns.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The volumes along Donald Street are significantly underestimated when compared to traffic counts and should not be considered for the area. The background TRANS model growth rates are summarized in Table 15 and the TRANS model plots are provided in Appendix E.

Figure 7: Total Phase 1 and 2 Site Generated Traffic



3.2. BACKGROUND NETWORK TRAVEL DEMANDS

3.2.1. TRANSPORTATION NETWORK PLANS

See Section 2.1.3.

3.2.2. BACKGROUND GROWTH

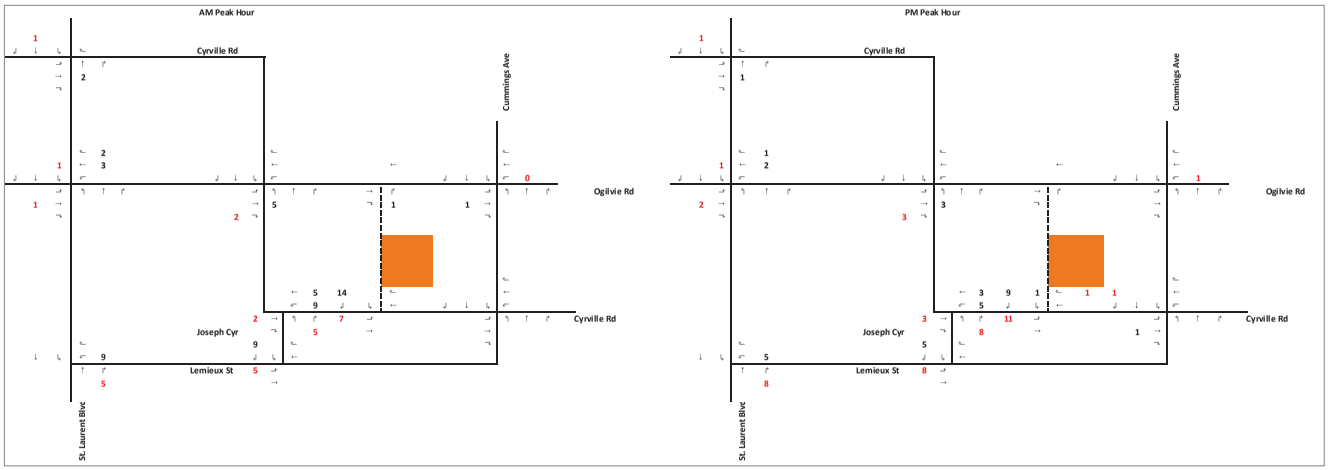
The following background traffic growth through the immediate study area (summarized in **Table 15**) was calculated based on historical traffic count data (years 2001, 2009, and 2018) provided by the City of Ottawa at the Ogilvie/Cyrville intersection. Detailed background traffic growth analysis is included as Appendix E.

Table 15: Ogilvie/Cyrville Historical Background Growth (2001 – 2018)

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	2.20%	0.80%	1.24%	1.02%	**1.23%**
AM Peak	2.75%	2.53%	1.72%	1.97%	**2.07%**
PM Peak	1.25%	0.37%	0.45%	0.54%	**0.58%**

As shown in **Table 15**, the Ogilvie/Cyrville intersection has experienced an approximate 0.5% to 2% annual increase overall in vehicle traffic within recent years. To account for area development within the surrounding area, a 1% per annum growth factor was applied to existing traffic volumes along the arterial roadways, namely St. Laurent Boulevard, Ogilvie Road, Cyrville Road, Cummings Avenue and Aviation Parkway. Background traffic volumes for the 2022 built-out horizon year, 2024 built-out horizon year and 2029 (5-years beyond site build-out) are depicted within **Figure 8**, **Figure 9**, and **Figure 10**, respectively.

Figure 10 - Site Traffic Assignment



Appendix K

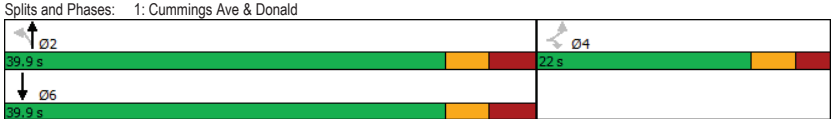
Synchro Worksheets -2027 Future Background Horizon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	186	245	152	192	92
Future Volume (vph)	56	186	245	152	192	92
Satd. Flow (prot)	1626	1455	1658	1695	1642	0
Flt Permitted	0.950		0.586			
Satd. Flow (perm)	1626	1455	1023	1695	1642	0
Satd. Flow (RTOR)		186			60	
Lane Group Flow (vph)	56	186	245	152	284	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.2	10.2	37.3	37.3	37.3	
Actuated g/C Ratio	0.18	0.18	0.67	0.67	0.67	
v/c Ratio	0.19	0.44	0.36	0.13	0.25	
Control Delay	21.2	7.7	8.0	5.6	5.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.2	7.7	8.0	5.6	5.1	
LOS	C	A	A	A	A	
Approach Delay	10.8			7.1	5.1	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.9	0.0	11.5	6.0	9.2	
Queue Length 95th (m)	12.8	13.3	25.5	12.8	19.8	
Internal Link Dist (m)	296.9			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	467	551	685	1135	1119	
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	0.12	0.34	0.36	0.13	0.25	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 55.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44

Intersection Signal Delay: 7.4 Intersection LOS: A
Intersection Capacity Utilization 55.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Cummings Ave & Donald

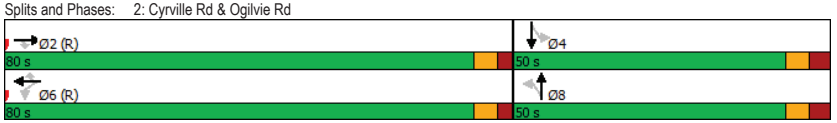


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	629	143	35	809	134	159	193	28	48	110	43
Future Volume (vph)	0	629	143	35	809	134	159	193	28	48	110	43
Satd. Flow (prot)	0	3252	1427	1551	3316	1455	1580	1588	0	1566	1575	0
Flt Permitted				0.401			0.595			0.442		
Satd. Flow (perm)	0	3252	1338	647	3316	1301	984	1588	0	727	1575	0
Satd. Flow (RTOR)			143			134		6			16	
Lane Group Flow (vph)	0	629	143	35	809	134	159	221	0	48	153	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		90.7	90.7	90.7	90.7	90.7	26.0	26.0		26.0	26.0	
Actuated g/C Ratio		0.70	0.70	0.70	0.70	0.70	0.20	0.20		0.20	0.20	
v/c Ratio		0.28	0.15	0.08	0.35	0.14	0.81	0.69		0.33	0.47	
Control Delay		8.8	2.0	4.7	4.9	0.6	77.2	56.5		47.2	43.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		8.8	2.0	4.7	4.9	0.6	77.2	56.5		47.2	43.6	
LOS		A	A	A	A	A	E	E		D	D	
Approach Delay		7.6			4.3			65.2			44.4	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		28.1	0.0	0.9	10.8	0.0	39.6	52.0		10.7	31.5	
Queue Length 95th (m)		52.2	8.4	m3.1	51.1	1.2	56.6	68.3		19.9	45.2	
Internal Link Dist (m)		113.5			313.9			407.2			190.6	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2268	976	451	2312	947	324	528		239	530	
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		0.28	0.15	0.08	0.35	0.14	0.49	0.42		0.20	0.29	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81
Intersection Signal Delay: 18.8 Intersection LOS: B
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	651	13	99	808	170	63	147	88	169	137	109
Future Volume (vph)	65	651	13	99	808	170	63	147	88	169	137	109
Satd. Flow (prot)	1580	3265	0	1642	3162	0	1658	1551	0	1642	1614	0
Flt Permitted	0.219			0.339			0.606			0.354		
Satd. Flow (perm)	364	3265	0	577	3162	0	1053	1551	0	588	1614	0
Satd. Flow (RTOR)		2			27			22			32	
Lane Group Flow (vph)	65	664	0	99	978	0	63	235	0	169	246	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		36.6	36.6		11.4	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.2%	28.2%		8.8%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	75.6	68.4		76.6	70.6		26.9	26.9		40.6	38.3	
Actuated g/C Ratio	0.58	0.53		0.59	0.54		0.21	0.21		0.31	0.29	
v/c Ratio	0.24	0.39		0.25	0.57		0.29	0.70		0.70	0.49	
Control Delay	13.1	16.9		13.6	20.4		45.5	53.8		51.4	35.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	13.1	16.9		13.6	20.4		45.5	53.8		51.4	35.5	
LOS	B	B		B	C		D	D		D	D	
Approach Delay		16.6			19.8			52.1			42.0	
Approach LOS		B			B			D			D	
Queue Length 50th (m)	6.0	44.9		11.7	63.5		13.3	49.5		32.0	43.5	
Queue Length 95th (m)	13.1	52.1		m16.3	74.1		26.6	77.7		50.9	68.6	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	271	1718		391	1728		243	374		241	535	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.24	0.39		0.25	0.57		0.26	0.63		0.70	0.46	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 26.4	Intersection LOS: C
Intersection Capacity Utilization 84.8%	ICU Level of Service E
Analysis Period (min) 15	

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

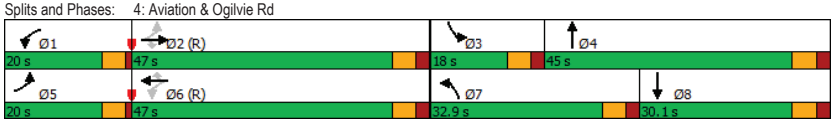
Splits and Phases: 3: Cummings Ave & Ogilvie Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	502	89	119	532	125	209	476	219	162	339	291
Future Volume (vph)	354	502	89	119	532	125	209	476	219	162	339	291
Satd. Flow (prot)	1658	3252	1483	1626	3283	1483	1658	3160	0	1658	3087	0
Flt Permitted	0.316			0.459			0.950			0.950		
Satd. Flow (perm)	551	3252	1483	786	3283	1483	1658	3160	0	1658	3087	0
Satd. Flow (RTOR)			164			164		59			148	
Lane Group Flow (vph)	354	502	89	119	532	125	209	695	0	162	630	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	32.9	45.0		18.0	30.1	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.3%	34.6%		13.8%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		5.9	6.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	65.8	50.1	50.1	55.4	43.3	43.3	21.1	34.3		12.1	25.2	
Actuated g/C Ratio	0.51	0.39	0.39	0.43	0.33	0.33	0.16	0.26		0.09	0.19	
v/c Ratio	0.83	0.40	0.13	0.29	0.49	0.21	0.78	0.79		1.05	0.88	
Control Delay	50.7	31.4	3.6	20.4	37.1	2.6	71.0	47.5		142.8	53.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	50.7	31.4	3.6	20.4	37.1	2.6	71.0	47.5		142.8	53.1	
LOS	D	C	A	C	D	A	E	D		F	D	
Approach Delay		36.0			29.0			52.9			71.4	
Approach LOS		D			C			D			E	
Queue Length 50th (m)	76.2	49.2	0.9	16.3	58.6	0.0	51.7	77.8		~45.2	63.4	
Queue Length 95th (m)	#98.0	68.7	m5.7	28.4	76.1	6.5	75.3	98.5		#89.3	#99.6	
Internal Link Dist (m)		393.6			270.9			298.0			298.9	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	428	1254	672	461	1093	602	344	986		154	723	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.83	0.40	0.13	0.26	0.49	0.21	0.61	0.70		1.05	0.87	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05
Intersection Signal Delay: 47.1 Intersection LOS: D
Intersection Capacity Utilization 87.2% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	209	37	111	374	163	5	23	41	137	70	20
Future Volume (vph)	21	209	37	111	374	163	5	23	41	137	70	20
Satd. Flow (prot)	1537	1635	0	1610	1584	0	1658	1392	0	1610	1570	0
Flt Permitted	0.273			0.606			0.699			0.552		
Satd. Flow (perm)	437	1635	0	1011	1584	0	1206	1392	0	824	1570	0
Satd. Flow (RTOR)		19			32			41			15	
Lane Group Flow (vph)	21	246	0	111	537	0	5	64	0	137	90	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.3		34.3	34.3		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Total Split (%)	17.6%	49.4%		49.4%	49.4%		27.1%	27.1%		27.1%	27.1%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.9	40.9		36.3	36.3		14.5	14.5		14.5	14.5	
Actuated g/C Ratio	0.56	0.56		0.50	0.50		0.20	0.20		0.20	0.20	
v/c Ratio	0.06	0.26		0.22	0.66		0.02	0.21		0.84	0.28	
Control Delay	7.8	8.5		14.6	20.3		25.8	15.1		68.9	24.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.8	8.5		14.6	20.3		25.8	15.1		68.9	24.8	
LOS	A	A		B	C		C	B		E	C	
Approach Delay		8.5			19.3			15.9			51.4	
Approach LOS		A			B			B			D	
Queue Length 50th (m)	1.3	15.5		7.3	44.3		0.5	2.3		16.1	7.7	
Queue Length 95th (m)	3.9	27.2		22.5	#111.7		3.4	12.8		#50.7	22.3	
Internal Link Dist (m)		407.2			322.8			177.3			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	380	1167		505	808		295	372		202	396	
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	0.06	0.21		0.22	0.66		0.02	0.17		0.68	0.23	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 72.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

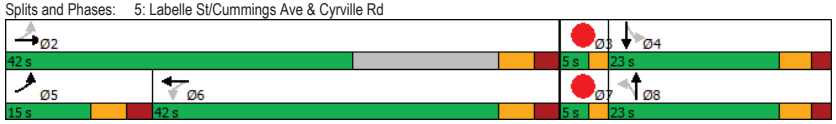
Intersection Summary

Lanes, Volumes, Timings
5: Labelle St/Cummings Ave & Cyrville Rd

01/30/2025

Intersection Signal Delay: 22.7 — Intersection LOS: C
Intersection Capacity Utilization 65.9% — 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: 5: Labelle St/Cummings Ave & Cyrville Rd



Lanes, Volumes, Timings
1: Cummings Ave & Donald

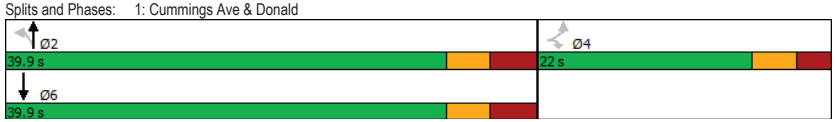
01/30/2025

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	309	265	279	309	96
Future Volume (vph)	87	309	265	279	309	96
Satd. Flow (prot)	1595	1469	1658	1728	1685	0
Flt Permitted	0.950		0.524			
Satd. Flow (perm)	1595	1469	914	1728	1685	0
Satd. Flow (RTOR)		309			39	
Lane Group Flow (vph)	87	309	265	279	405	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	1.0	1.0	10.0	
Minimum Split (s)	22.0	22.0	7.9	7.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.8	10.8	33.0	33.0	33.0	
Actuated g/C Ratio	0.19	0.19	0.58	0.58	0.58	
v/c Ratio	0.29	0.59	0.50	0.28	0.41	
Control Delay	22.4	8.0	11.4	7.1	7.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.4	8.0	11.4	7.1	7.5	
LOS	C	A	B	A	A	
Approach Delay	11.2			9.2	7.5	
Approach LOS	B			A	A	
Queue Length 50th (m)	7.8	0.0	13.3	11.9	16.7	
Queue Length 95th (m)	17.7	16.3	35.1	26.2	37.1	
Internal Link Dist (m)	296.3			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	450	637	532	1007	997	
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	0.19	0.49	0.50	0.28	0.41	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 63.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cummings Ave & Donald



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1037	265	35	757	149	100	243	26	147	250	140
Future Volume (vph)	0	1037	265	35	757	149	100	243	26	147	250	140
Satd. Flow (prot)	0	3316	1455	1658	3316	1483	1658	1718	0	1658	1637	0
Flt Permitted				0.225			0.254			0.444		
Satd. Flow (perm)	0	3316	1366	391	3316	1333	442	1718	0	773	1637	0
Satd. Flow (RTOR)			265			149		5			26	
Lane Group Flow (vph)	0	1037	265	35	757	149	100	269	0	147	390	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		74.0	74.0	74.0	74.0	74.0	32.7	32.7		32.7	32.7	
Actuated g/C Ratio		0.62	0.62	0.62	0.62	0.62	0.27	0.27		0.27	0.27	
v/c Ratio		0.51	0.28	0.15	0.37	0.17	0.83	0.57		0.70	0.84	
Control Delay		15.0	2.4	22.6	20.6	9.2	87.4	40.7		55.9	54.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.0	2.4	22.6	20.6	9.2	87.4	40.7		55.9	54.1	
LOS		B	A	C	C	A	F	D		E	D	
Approach Delay		12.5			18.9			53.4			54.6	
Approach LOS		B			B			D			D	
Queue Length 50th (m)		67.2	0.0	4.6	59.3	5.8	22.2	53.6		31.1	81.5	
Queue Length 95th (m)		103.8	12.1	m6.9	m70.6	m12.1	#45.3	71.1		49.3	105.6	
Internal Link Dist (m)		113.8			313.9			407.0			190.4	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2046	944	241	2046	879	158	617		276	601	
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		0.51	0.28	0.15	0.37	0.17	0.63	0.44		0.53	0.65	

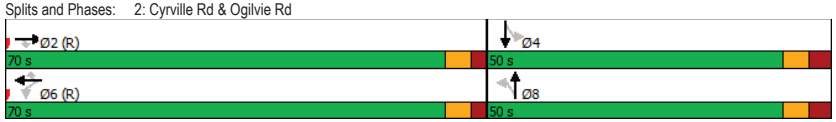
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 26.4	Intersection LOS: C
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	1017	27	163	786	226	61	175	176	274	228	122
Future Volume (vph)	162	1017	27	163	786	226	61	175	176	274	228	122
Satd. Flow (prot)	1658	3294	0	1610	3118	0	1658	1525	0	1658	1643	0
Flt Permitted	0.105			0.094			0.551			0.231		
Satd. Flow (perm)	183	3294	0	159	3118	0	958	1525	0	392	1643	0
Satd. Flow (RTOR)		2			33			42			29	
Lane Group Flow (vph)	162	1044	0	163	1012	0	61	351	0	274	350	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0		20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%		16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	54.2	42.4		54.7	42.6		29.5	29.5		51.8	49.5	
Actuated g/C Ratio	0.45	0.35		0.46	0.36		0.25	0.25		0.43	0.41	
v/c Ratio	0.75	0.90		0.79	0.90		0.26	0.86		0.82	0.50	
Control Delay	53.1	39.5		57.1	47.6		37.9	58.8		43.6	26.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	53.1	39.5		57.1	47.6		37.9	58.8		43.6	26.0	
LOS	D	D		E	D		D	E		D	C	
Approach Delay		41.3			48.9			55.7			33.7	
Approach LOS		D			D			E			C	
Queue Length 50th (m)	15.1	38.5		30.7	98.6		11.5	70.1		42.4	54.2	
Queue Length 95th (m)	#57.1	#119.7		m#52.2	m#140.8		22.9	#110.3		#68.3	77.9	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	219	1164		209	1128		266	454		334	747	
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	0.74	0.90		0.78	0.90		0.23	0.77		0.82	0.47	

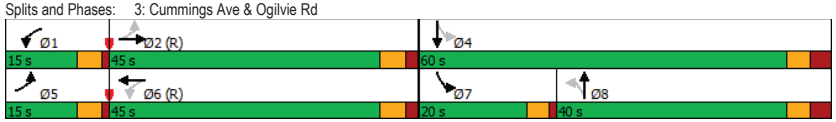
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 44.3	Intersection LOS: D
Intersection Capacity Utilization 99.0%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	1084	102	231	696	220	173	348	163	146	395	305
Future Volume (vph)	288	1084	102	231	696	220	173	348	163	146	395	305
Satd. Flow (prot)	1658	3316	1469	1658	3316	1483	1658	3157	0	1658	3100	0
Flt Permitted	0.278			0.100			0.950			0.950		
Satd. Flow (perm)	485	3316	1469	175	3316	1483	1658	3157	0	1658	3100	0
Satd. Flow (RTOR)			136			220		58			141	
Lane Group Flow (vph)	288	1084	102	231	696	220	173	511	0	146	700	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		12.2	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	18.9	30.1		18.9	30.1	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.1%		15.8%	25.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.5	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		3.7	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.2	2.4	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		9.4	8.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	61.6	45.7	45.7	61.6	45.7	45.7	13.0	24.0		9.5	21.6	
Actuated g/C Ratio	0.51	0.38	0.38	0.51	0.38	0.38	0.11	0.20		0.08	0.18	
v/c Ratio	0.74	0.86	0.16	0.86	0.55	0.31	0.97	0.75		1.11	1.04	
Control Delay	33.6	35.1	4.5	56.5	31.3	4.5	112.8	48.0		162.9	83.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.6	35.1	4.5	56.5	31.3	4.5	112.8	48.0		162.9	83.9	
LOS	C	D	A	E	C	A	F	D		F	F	
Approach Delay		32.6			31.3			64.4			97.5	
Approach LOS		C			C			E			F	
Queue Length 50th (m)	43.9	81.5	1.5	36.0	67.6	0.0	41.2	53.5		~39.4	~78.3	
Queue Length 95th (m)	m54.0	m94.1	m2.5	#77.2	86.5	15.5	#84.9	73.1		#80.6	#116.1	
Internal Link Dist (m)		393.6			260.7			297.6			298.7	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	401	1262	643	279	1263	701	179	677		131	673	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.72	0.86	0.16	0.83	0.55	0.31	0.97	0.75		1.11	1.04	

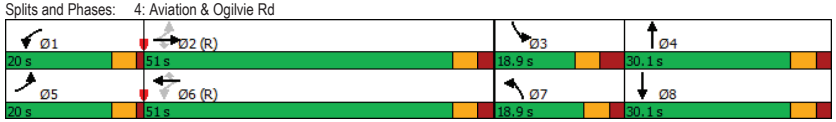
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 50.7	Intersection LOS: D
Intersection Capacity Utilization 98.1%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	53	68	74	311	274	10	73	68	62	457	11
Future Volume (vph)	10	53	68	74	311	274	10	73	68	62	457	11
Satd. Flow (prot)	1658	1387	0	1595	1573	0	1658	1486	0	1445	1737	0
Flt Permitted	0.241			0.679			0.283			0.536		
Satd. Flow (perm)	421	1387	0	1114	1573	0	494	1486	0	714	1737	0
Satd. Flow (RTOR)		68			50			49			1	
Lane Group Flow (vph)	10	121	0	74	585	0	10	141	0	62	468	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.3		34.3	34.3		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	43.0		43.0	43.0		37.0	37.0		37.0	37.0	
Total Split (%)	15.0%	43.0%		43.0%	43.0%		37.0%	37.0%		37.0%	37.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.6		2.6	2.6		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.6	39.0		37.1	37.1		20.4	20.4		25.4	25.4	
Actuated g/C Ratio	0.53	0.51		0.49	0.49		0.27	0.27		0.33	0.33	
v/c Ratio	0.03	0.16		0.14	0.74		0.08	0.33		0.26	0.81	
Control Delay	10.0	6.2		14.5	23.9		23.3	17.4		22.5	35.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.0	6.2		14.5	23.9		23.3	17.4		22.5	35.9	
LOS	A	A		B	C		C	B		C	D	
Approach Delay		6.5			22.8			17.7			34.4	
Approach LOS		A			C			B			C	
Queue Length 50th (m)	0.7	3.7		5.4	56.6		1.0	9.9		6.1	57.4	
Queue Length 95th (m)	3.0	12.7		17.4	#150.2		5.3	27.3		17.9	#118.8	
Internal Link Dist (m)		407.0			322.8			177.5			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	392	970		541	790		206	648		297	725	
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	0.12		0.14	0.74		0.05	0.22		0.21	0.65	

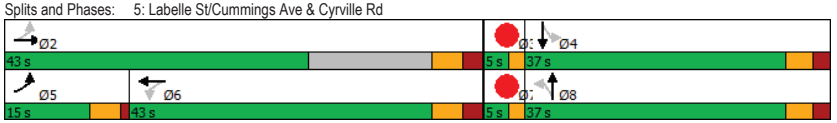
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 76.4
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.81

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	

Intersection Signal Delay: 25.0 Intersection LOS: C
Intersection Capacity Utilization 93.0% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Labelle St/Cummings Ave & Cyrville Rd



Appendix L

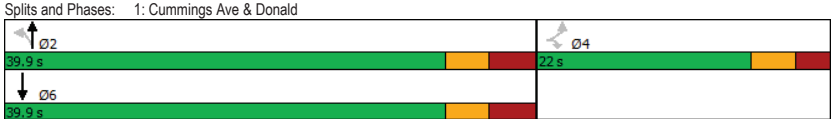
Synchro Worksheets -2029 Future Background Horizon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	189	247	153	196	92
Future Volume (vph)	56	189	247	153	196	92
Satd. Flow (prot)	1626	1455	1658	1695	1644	0
Flt Permitted	0.950		0.583			
Satd. Flow (perm)	1626	1455	1017	1695	1644	0
Satd. Flow (RTOR)		189			58	
Lane Group Flow (vph)	56	189	247	153	288	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.2	10.2	34.1	34.1	34.1	
Actuated g/C Ratio	0.18	0.18	0.60	0.60	0.60	
v/c Ratio	0.19	0.46	0.41	0.15	0.29	
Control Delay	21.3	7.8	8.9	5.8	5.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.3	7.8	8.9	5.8	5.5	
LOS	C	A	A	A	A	
Approach Delay	10.9			7.7	5.5	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.9	0.0	11.7	6.0	9.5	
Queue Length 95th (m)	12.8	13.4	26.0	13.0	20.3	
Internal Link Dist (m)	296.9			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	454	542	605	1009	1003	
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	0.12	0.35	0.41	0.15	0.29	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 57.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.46

Intersection Signal Delay: 7.9 Intersection LOS: A
Intersection Capacity Utilization 56.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Cummings Ave & Donald

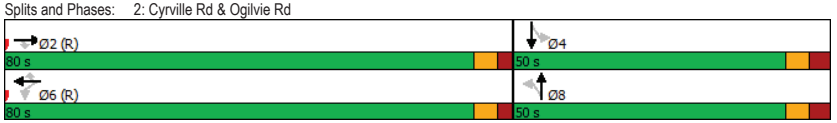


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	641	146	35	818	134	161	195	28	48	112	43
Future Volume (vph)	0	641	146	35	818	134	161	195	28	48	112	43
Satd. Flow (prot)	0	3252	1427	1551	3316	1455	1580	1589	0	1566	1575	0
Flt Permitted				0.395			0.591			0.439		
Satd. Flow (perm)	0	3252	1338	638	3316	1301	977	1589	0	722	1575	0
Satd. Flow (RTOR)			146			134		6			16	
Lane Group Flow (vph)	0	641	146	35	818	134	161	223	0	48	155	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		90.6	90.6	90.6	90.6	90.6	26.1	26.1		26.1	26.1	
Actuated g/C Ratio		0.70	0.70	0.70	0.70	0.70	0.20	0.20		0.20	0.20	
v/c Ratio		0.28	0.15	0.08	0.35	0.14	0.82	0.69		0.33	0.47	
Control Delay		8.9	2.0	3.8	3.4	0.2	78.6	56.5		47.2	43.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		8.9	2.0	3.8	3.4	0.2	78.6	56.5		47.2	43.7	
LOS		A	A	A	A	A	E	E		D	D	
Approach Delay		7.6			3.0			65.8			44.5	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		28.8	0.0	1.1	13.0	0.0	40.2	52.5		10.7	31.9	
Queue Length 95th (m)		53.4	8.5	m1.6	15.2	m0.0	57.7	68.8		19.9	45.9	
Internal Link Dist (m)		113.5			313.9			407.2			190.6	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2265	976	444	2309	946	322	528		238	530	
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		0.28	0.15	0.08	0.35	0.14	0.50	0.42		0.20	0.29	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82
Intersection Signal Delay: 18.3 Intersection LOS: B
Intersection Capacity Utilization 72.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd

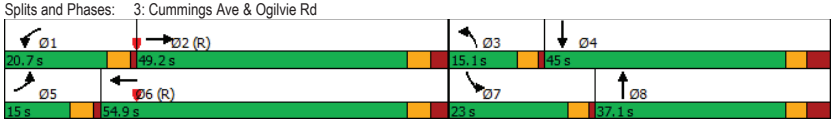


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	663	13	100	817	170	63	150	88	169	144	109
Future Volume (vph)	65	663	13	100	817	170	63	150	88	169	144	109
Satd. Flow (prot)	1580	3265	0	1642	3159	0	1658	1549	0	1642	1616	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1546	3265	0	1609	3159	0	1649	1549	0	1553	1616	0
Satd. Flow (RTOR)		2										
Lane Group Flow (vph)	65	676	0	100	987	0	63	238	0	169	253	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	37.1		9.3	37.1	
Total Split (s)	15.0	49.2		20.7	54.9		15.1	37.1		23.0	45.0	
Total Split (%)	11.5%	37.8%		15.9%	42.2%		11.6%	28.5%		17.7%	34.6%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.3	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	9.6	51.7		12.7	57.1		9.3	25.8		16.9	35.5	
Actuated g/C Ratio	0.07	0.40		0.10	0.44		0.07	0.20		0.13	0.27	
v/c Ratio	0.56	0.52		0.62	0.71		0.53	0.78		0.79	0.57	
Control Delay	78.6	28.4		83.9	32.6		74.2	66.2		80.1	46.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.6	28.4		83.9	32.6		74.2	66.2		80.1	46.3	
LOS	E	C		F	C		E	E		F	D	
Approach Delay		32.8			37.3			67.9			59.9	
Approach LOS		C			D			E			E	
Queue Length 50th (m)	16.5	52.1		27.1	130.7		15.7	57.6		41.9	56.1	
Queue Length 95th (m)	32.7	68.3		m41.7	m157.6		30.6	84.8		#72.3	81.9	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	129	1300		202	1387		137	357		236	471	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.50	0.52		0.50	0.71		0.46	0.67		0.72	0.54	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79
Intersection Signal Delay: 43.3 Intersection LOS: D
Intersection Capacity Utilization 84.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cummings Ave & Ogilvie Rd

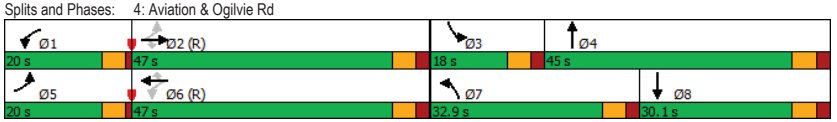


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	361	507	89	119	535	125	209	485	219	162	348	298
Future Volume (vph)	361	507	89	119	535	125	209	485	219	162	348	298
Satd. Flow (prot)	1658	3252	1483	1626	3283	1483	1658	3160	0	1658	3087	0
Flt Permitted	0.313			0.451			0.950			0.950		
Satd. Flow (perm)	546	3252	1483	772	3283	1483	1658	3160	0	1658	3087	0
Satd. Flow (RTOR)			164			164		57			147	
Lane Group Flow (vph)	361	507	89	119	535	125	209	704	0	162	646	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	32.9	45.0		18.0	30.1	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.3%	34.6%		13.8%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		5.9	6.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	65.2	49.5	49.5	55.1	43.0	43.0	21.1	34.8		12.1	25.8	
Actuated g/C Ratio	0.50	0.38	0.38	0.42	0.33	0.33	0.16	0.27		0.09	0.20	
v/c Ratio	0.86	0.41	0.13	0.30	0.49	0.21	0.78	0.79		1.05	0.88	
Control Delay	62.2	51.7	12.0	20.7	37.3	2.6	71.0	47.3		142.8	53.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	62.2	51.7	12.0	20.7	37.3	2.6	71.0	47.3		142.8	53.8	
LOS	E	D	B	C	D	A	E	D		F	D	
Approach Delay		52.0			29.2			52.7			71.6	
Approach LOS		D			C			D			E	
Queue Length 50th (m)	92.3	71.4	2.7	16.7	59.0	0.0	51.7	78.5		~45.2	65.3	
Queue Length 95th (m)	#155.1	89.8	m11.8	28.4	76.6	6.5	75.3	100.5		#89.3	#104.6	
Internal Link Dist (m)		393.6			270.9			298.0			298.9	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	422	1239	666	454	1085	599	344	985		154	734	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.86	0.41	0.13	0.26	0.49	0.21	0.61	0.71		1.05	0.88	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05
Intersection Signal Delay: 51.6 Intersection LOS: D
Intersection Capacity Utilization 88.2% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	213	37	111	378	165	5	24	47	140	75	20
Future Volume (vph)	21	213	37	111	378	165	5	24	47	140	75	20
Satd. Flow (prot)	1537	1636	0	1610	1581	0	1658	1373	0	1610	1574	0
Flt Permitted	0.282			0.604			0.695			0.539		
Satd. Flow (perm)	451	1636	0	1005	1581	0	1199	1373	0	799	1574	0
Satd. Flow (RTOR)		18										
Lane Group Flow (vph)	21	250	0	111	543	0	5	71	0	140	95	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.8		34.8	34.8		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Total Split (%)	17.6%	49.4%		49.4%	49.4%		27.1%	27.1%		27.1%	27.1%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	41.8	39.7		35.6	35.6		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.58	0.55		0.49	0.49		0.20	0.20		0.20	0.20	
v/c Ratio	0.06	0.28		0.22	0.70		0.02	0.26		0.90	0.31	
Control Delay	7.2	9.1		14.5	22.7		26.0	28.9		83.3	29.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.2	9.1		14.5	22.7		26.0	28.9		83.3	29.2	
LOS	A	A		B	C		C	C		F	C	
Approach Delay		9.0			21.3			28.7			61.4	
Approach LOS		A			C			C			E	
Queue Length 50th (m)	1.2	16.2		7.5	49.5		0.5	7.5		17.0	10.1	
Queue Length 95th (m)	3.8	28.4		21.9	#124.2		3.3	20.7		#53.2	25.6	
Internal Link Dist (m)		407.2			322.8			177.3			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	417	1153		494	778		276	316		184	362	
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	0.22		0.22	0.70		0.02	0.22		0.76	0.26	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 72.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.90

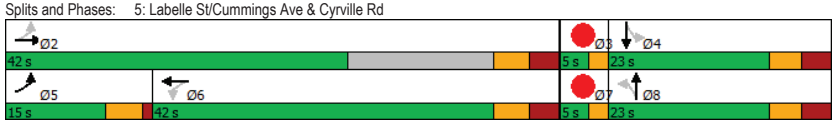
Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection Signal Delay: 26.7	Intersection LOS: C
Intersection Capacity Utilization 66.3%	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: 5: Labelle St/Cummings Ave & Cyrville Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	311	270	284	320	96
Future Volume (vph)	87	311	270	284	320	96
Satd. Flow (prot)	1595	1469	1658	1728	1687	0
Flt Permitted	0.950		0.516			
Satd. Flow (perm)	1595	1469	900	1728	1687	0
Satd. Flow (RTOR)		311			37	
Lane Group Flow (vph)	87	311	270	284	416	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	1.0	1.0	10.0	
Minimum Split (s)	22.0	22.0	7.9	7.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.8	10.8	33.0	33.0	33.0	
Actuated g/C Ratio	0.19	0.19	0.58	0.58	0.58	
v/c Ratio	0.29	0.59	0.52	0.28	0.42	
Control Delay	22.4	8.0	11.9	7.1	7.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.4	8.0	11.9	7.1	7.7	
LOS	C	A	B	A	A	
Approach Delay	11.1			9.4	7.7	
Approach LOS	B			A	A	
Queue Length 50th (m)	7.8	0.0	13.8	12.1	17.5	
Queue Length 95th (m)	17.7	16.3	36.5	26.7	38.5	
Internal Link Dist (m)	296.3			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	450	638	524	1007	998	
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	0.19	0.49	0.52	0.28	0.42	

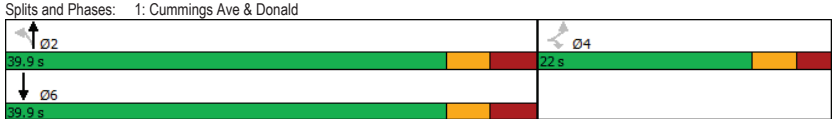
Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59

Lanes, Volumes, Timings
1: Cummings Ave & Donald

01/31/2025

Intersection Signal Delay: 9.4	Intersection LOS: A
Intersection Capacity Utilization 64.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Cummings Ave & Donald



Lanes, Volumes, Timings
2: Cyrville Rd & Ogilvie Rd

01/31/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1046	268	35	768	149	102	248	26	147	252	140
Future Volume (vph)	0	1046	268	35	768	149	102	248	26	147	252	140
Satd. Flow (prot)	0	3316	1455	1658	3316	1483	1658	1718	0	1658	1637	0
Flt Permitted				0.221			0.253			0.437		
Satd. Flow (perm)	0	3316	1366	384	3316	1333	440	1718	0	761	1637	0
Satd. Flow (RTOR)			268			149		5			26	
Lane Group Flow (vph)	0	1046	268	35	768	149	102	274	0	147	392	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		73.9	73.9	73.9	73.9	73.9	32.8	32.8		32.8	32.8	
Actuated g/C Ratio		0.62	0.62	0.62	0.62	0.62	0.27	0.27		0.27	0.27	
v/c Ratio		0.51	0.28	0.15	0.38	0.17	0.85	0.58		0.71	0.84	
Control Delay		15.2	2.4	4.1	3.3	0.1	90.5	40.9		56.7	54.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.2	2.4	4.1	3.3	0.1	90.5	40.9		56.7	54.0	
LOS		B	A	A	A	A	F	D		E	D	
Approach Delay		12.6			2.8			54.3			54.7	
Approach LOS		B			A			D			D	
Queue Length 50th (m)		68.5	0.0	0.8	8.7	0.0	22.7	54.7		31.2	81.8	
Queue Length 95th (m)		105.1	12.2	m0.9	m9.7	m0.0	#46.8	72.6		49.6	106.2	
Internal Link Dist (m)		113.8			313.9			407.0			190.4	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2041	943	236	2041	877	157	617		272	601	
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		0.51	0.28	0.15	0.38	0.17	0.65	0.44		0.54	0.65	

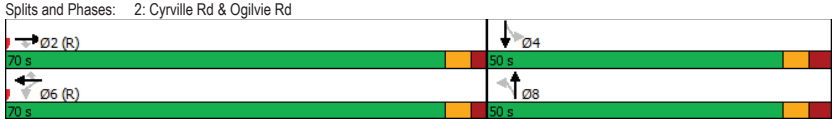
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 21.7	Intersection LOS: C
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	1026	27	164	797	226	61	185	179	274	241	122
Future Volume (vph)	162	1026	27	164	797	226	61	185	179	274	241	122
Satd. Flow (prot)	1658	3294	0	1610	3118	0	1658	1519	0	1658	1646	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1626	3294	0	1593	3118	0	1651	1519	0	1589	1646	0
Satd. Flow (RTOR)		2										
Lane Group Flow (vph)	162	1053	0	164	1023	0	61	364	0	274	363	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	34.1		9.3	37.1	
Total Split (s)	16.8	43.8		17.0	44.0		11.5	36.6		22.6	47.7	
Total Split (%)	14.0%	36.5%		14.2%	36.7%		9.6%	30.5%		18.8%	39.8%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.5	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.5	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	12.1	37.1		12.3	37.3		6.8	29.5		18.3	42.9	
Actuated g/C Ratio	0.10	0.31		0.10	0.31		0.06	0.25		0.15	0.36	
v/c Ratio	0.97	1.03		0.99	1.06		0.65	0.98		1.09	0.62	
Control Delay	112.3	85.6		102.9	77.4		86.0	86.4		129.6	38.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	112.3	85.6		102.9	77.4		86.0	86.4		129.6	38.3	
LOS	F	F		F	E		F	F		F	D	
Approach Delay		89.2			80.9			86.4			77.5	
Approach LOS		F			F			F			E	
Queue Length 50th (m)	39.8	~121.4		40.0	~138.4		14.3	85.4		~72.3	72.2	
Queue Length 95th (m)	#82.8	#186.1		m#65.6	m#160.3		#34.1	#144.7		#124.7	105.6	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	167	1019		165	969		96	373		252	588	
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	0.97	1.03		0.99	1.06		0.64	0.98		1.09	0.62	

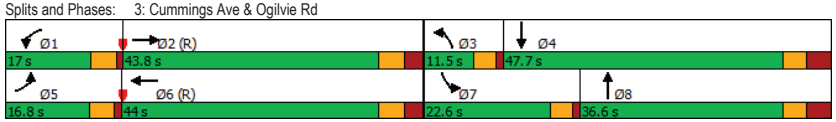
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 83.9	Intersection LOS: F
Intersection Capacity Utilization 99.7%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	295	1089	102	231	702	220	173	357	163	146	403	311
Future Volume (vph)	295	1089	102	231	702	220	173	357	163	146	403	311
Satd. Flow (prot)	1658	3316	1469	1658	3316	1483	1658	3160	0	1658	3100	0
Flt Permitted	0.272			0.099			0.950			0.950		
Satd. Flow (perm)	475	3316	1469	173	3316	1483	1658	3160	0	1658	3100	0
Satd. Flow (RTOR)			136			220		55			142	
Lane Group Flow (vph)	295	1089	102	231	702	220	173	520	0	146	714	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		12.2	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	18.9	30.1		18.9	30.1	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.1%		15.8%	25.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.5	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		3.7	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.2	2.4	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		9.4	8.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	61.7	45.7	45.7	61.5	45.5	45.5	13.0	24.0		9.5	21.6	
Actuated g/C Ratio	0.51	0.38	0.38	0.51	0.38	0.38	0.11	0.20		0.08	0.18	
v/c Ratio	0.76	0.86	0.16	0.86	0.56	0.31	0.97	0.77		1.11	1.06	
Control Delay	12.0	26.4	3.2	56.9	31.6	4.5	112.8	49.1		162.9	89.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	12.0	26.4	3.2	56.9	31.6	4.5	112.8	49.1		162.9	89.3	
LOS	B	C	A	E	C	A	F	D		F	F	
Approach Delay		21.9			31.5			65.0			101.8	
Approach LOS		C			C			E			F	
Queue Length 50th (m)	10.2	132.5	3.9	36.3	68.3	0.0	41.2	55.2		~39.4	~81.7	
Queue Length 95th (m)	m9.6	m125.6	m3.6	#77.6	87.3	15.5	#84.9	74.9		#80.6	#120.1	
Internal Link Dist (m)		393.6			260.7			297.6			298.7	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	397	1261	642	279	1257	699	179	676		131	674	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.74	0.86	0.16	0.83	0.56	0.31	0.97	0.77		1.11	1.06	

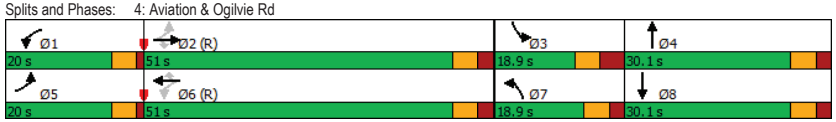
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 48.1	Intersection LOS: D
Intersection Capacity Utilization 98.7%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	54	68	77	317	279	10	81	68	63	470	11
Future Volume (vph)	10	54	68	77	317	279	10	81	68	63	470	11
Satd. Flow (prot)	1658	1382	0	1595	1567	0	1658	1493	0	1445	1738	0
Flt Permitted	0.218			0.679			0.294			0.540		
Satd. Flow (perm)	380	1382	0	1110	1567	0	513	1493	0	713	1738	0
Satd. Flow (RTOR)		68						43				
Lane Group Flow (vph)	10	122	0	77	596	0	10	149	0	63	481	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.8		34.8	34.8		23.5	23.5		23.5	23.5	
Total Split (s)	15.0	43.0		43.0	43.0		37.0	37.0		37.0	37.0	
Total Split (%)	15.0%	43.0%		43.0%	43.0%		37.0%	37.0%		37.0%	37.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.6	38.4		36.5	36.5		21.9	21.9		27.0	27.0	
Actuated g/C Ratio	0.52	0.49		0.46	0.46		0.28	0.28		0.34	0.34	
v/c Ratio	0.03	0.17		0.15	0.82		0.07	0.33		0.26	0.81	
Control Delay	10.4	6.7		15.6	31.9		23.5	18.7		22.8	36.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.4	6.7		15.6	31.9		23.5	18.7		22.8	36.5	
LOS	B	A		B	C		C	B		C	D	
Approach Delay		7.0			30.1			19.0			34.9	
Approach LOS		A			C			B			C	
Queue Length 50th (m)	0.7	4.3		6.4	74.0		1.0	11.7		6.3	61.1	
Queue Length 95th (m)	3.0	12.8		18.1	#166.8		5.3	30.4		18.6	#127.9	
Internal Link Dist (m)		407.0			322.8			177.5			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	363	928		514	725		200	608		278	677	
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	0.13		0.15	0.82		0.05	0.25		0.23	0.71	

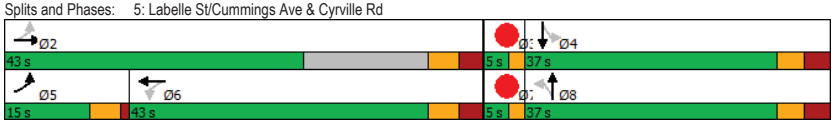
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 78.8
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.82

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	

Intersection Signal Delay: 28.6 Intersection LOS: C
Intersection Capacity Utilization 96.4% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Labelle St/Cummings Ave & Cyrville Rd



Appendix M

Synchro Worksheets -2034 Future Background Horizon

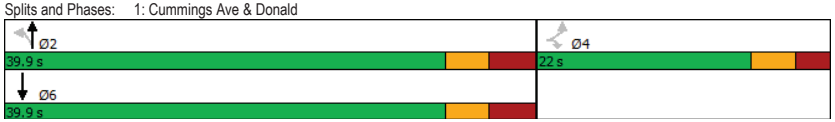
CGH TRANSPORTATION

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	192	253	157	206	92
Future Volume (vph)	56	192	253	157	206	92
Satd. Flow (prot)	1626	1455	1658	1695	1647	0
Flt Permitted	0.950		0.578			
Satd. Flow (perm)	1626	1455	1009	1695	1647	0
Satd. Flow (RTOR)		192			56	
Lane Group Flow (vph)	56	192	253	157	298	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.2	10.2	33.8	33.8	33.8	
Actuated g/C Ratio	0.18	0.18	0.59	0.59	0.59	
v/c Ratio	0.19	0.46	0.42	0.16	0.30	
Control Delay	21.3	7.8	9.2	5.8	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.3	7.8	9.2	5.8	5.6	
LOS	C	A	A	A	A	
Approach Delay	10.9			7.9	5.6	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.9	0.0	12.0	6.2	10.2	
Queue Length 95th (m)	12.8	13.5	26.9	13.3	21.3	
Internal Link Dist (m)	296.9			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	456	546	599	1006	1000	
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	0.12	0.35	0.42	0.16	0.30	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 57
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.46

Intersection Signal Delay: 8.0 Intersection LOS: A
Intersection Capacity Utilization 57.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Cummings Ave & Donald



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	670	154	35	840	134	164	200	28	48	118	43
Future Volume (vph)	0	670	154	35	840	134	164	200	28	48	118	43
Satd. Flow (prot)	0	3252	1427	1551	3316	1455	1580	1592	0	1566	1580	0
Flt Permitted				0.382			0.579			0.431		
Satd. Flow (perm)	0	3252	1338	617	3316	1301	957	1592	0	708	1580	0
Satd. Flow (RTOR)			154			134		6			15	
Lane Group Flow (vph)	0	670	154	35	840	134	164	228	0	48	161	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		90.3	90.3	90.3	90.3	90.3	26.4	26.4		26.4	26.4	
Actuated g/C Ratio		0.69	0.69	0.69	0.69	0.69	0.20	0.20		0.20	0.20	
v/c Ratio		0.30	0.16	0.08	0.36	0.14	0.85	0.70		0.34	0.48	
Control Delay		9.2	2.0	3.8	3.3	0.2	82.3	56.6		47.2	44.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		9.2	2.0	3.8	3.3	0.2	82.3	56.6		47.2	44.3	
LOS		A	A	A	A	A	F	E		D	D	
Approach Delay		7.8			2.9			67.4			45.0	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		31.0	0.0	1.0	13.0	0.0	41.1	53.7		10.7	33.5	
Queue Length 95th (m)		56.3	8.6	m1.5	15.3	m0.0	59.4	70.4		19.9	47.8	
Internal Link Dist (m)		113.5			313.9			407.2			190.6	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2257	975	428	2302	944	315	529		233	531	
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		0.30	0.16	0.08	0.36	0.14	0.52	0.43		0.21	0.30	

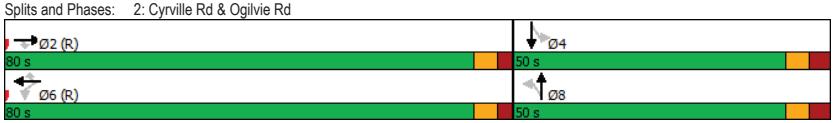
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	692	13	105	839	170	63	160	90	169	157	109
Future Volume (vph)	65	692	13	105	839	170	63	160	90	169	157	109
Satd. Flow (prot)	1580	3265	0	1642	3164	0	1658	1553	0	1642	1623	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1546	3265	0	1610	3164	0	1649	1553	0	1555	1623	0
Satd. Flow (RTOR)		1										
Lane Group Flow (vph)	65	705	0	105	1009	0	63	250	0	169	266	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	37.1		9.3	37.1	
Total Split (s)	15.0	48.8		21.1	54.9		15.1	37.1		23.0	45.0	
Total Split (%)	11.5%	37.5%		16.2%	42.2%		11.6%	28.5%		17.7%	34.6%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.3	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	9.4	51.1		13.1	56.9		9.3	26.2		16.9	35.8	
Actuated g/C Ratio	0.07	0.39		0.10	0.44		0.07	0.20		0.13	0.28	
v/c Ratio	0.57	0.55		0.64	0.73		0.53	0.80		0.79	0.60	
Control Delay	79.6	29.8		83.0	32.8		74.2	68.3		80.1	46.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	79.6	29.8		83.0	32.8		74.2	68.3		80.1	46.9	
LOS	E	C		F	C		E	E		F	D	
Approach Delay		34.0			37.6			69.5			59.8	
Approach LOS		C			D			E			E	
Queue Length 50th (m)	16.8	54.3		28.5	134.2		15.7	61.0		41.9	59.5	
Queue Length 95th (m)	32.4	74.2		m43.1	m161.2		30.6	89.0		#72.3	86.0	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	127	1283		207	1386		137	358		236	473	
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	0.51	0.55		0.51	0.73		0.46	0.70		0.72	0.56	

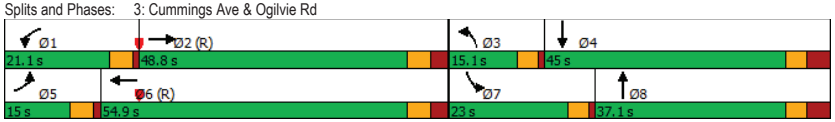
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 44.0	Intersection LOS: D
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd

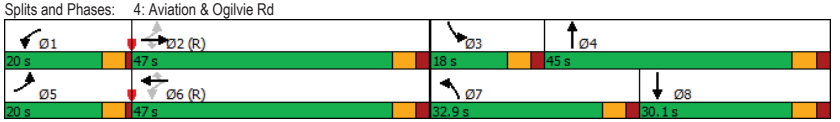


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	520	89	119	542	125	209	510	219	162	370	318
Future Volume (vph)	379	520	89	119	542	125	209	510	219	162	370	318
Satd. Flow (prot)	1658	3252	1483	1626	3283	1483	1658	3166	0	1658	3087	0
Flt Permitted	0.298			0.433			0.950			0.950		
Satd. Flow (perm)	520	3252	1483	741	3283	1483	1658	3166	0	1658	3087	0
Satd. Flow (RTOR)			164			164		52			146	
Lane Group Flow (vph)	379	520	89	119	542	125	209	729	0	162	688	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	32.9	45.0		18.0	30.1	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.3%	34.6%		13.8%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		5.9	6.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	63.0	47.3	47.3	53.1	40.9	40.9	21.1	37.0		12.1	27.9	
Actuated g/C Ratio	0.48	0.36	0.36	0.41	0.31	0.31	0.16	0.28		0.09	0.21	
v/c Ratio	0.94	0.44	0.14	0.32	0.53	0.22	0.78	0.78		1.05	0.88	
Control Delay	76.8	53.7	12.3	21.5	38.8	2.7	71.0	45.8		142.8	53.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	76.8	53.7	12.3	21.5	38.8	2.7	71.0	45.8		142.8	53.1	
LOS	E	D	B	C	D	A	E	D		F	D	
Approach Delay		58.8			30.4			51.4			70.2	
Approach LOS		E			C			D			E	
Queue Length 50th (m)	97.9	73.4	2.7	16.7	59.9	0.0	51.7	82.7		~45.2	72.1	
Queue Length 95th (m)	#168.3	91.7	m12.2	28.4	77.7	6.5	75.3	105.6		#89.3	#117.7	
Internal Link Dist (m)		393.6			270.9			298.0			298.9	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	403	1183	644	432	1032	578	344	983		154	778	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.94	0.44	0.14	0.28	0.53	0.22	0.61	0.74		1.05	0.88	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05
Intersection Signal Delay: 53.3 Intersection LOS: D
Intersection Capacity Utilization 90.8% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	224	37	111	388	169	5	32	65	147	86	20
Future Volume (vph)	21	224	37	111	388	169	5	32	65	147	86	20
Satd. Flow (prot)	1537	1638	0	1610	1581	0	1658	1368	0	1610	1584	0
Flt Permitted	0.271			0.598			0.689			0.527		
Satd. Flow (perm)	433	1638	0	995	1581	0	1188	1368	0	786	1584	0
Satd. Flow (RTOR)		17										
Lane Group Flow (vph)	21	261	0	111	557	0	5	97	0	147	106	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.8		34.8	34.8		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Total Split (%)	17.6%	49.4%		49.4%	49.4%		27.1%	27.1%		27.1%	27.1%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	41.8	39.7		35.6	35.6		14.3	14.3		14.3	14.3	
Actuated g/C Ratio	0.58	0.55		0.49	0.49		0.20	0.20		0.20	0.20	
v/c Ratio	0.06	0.29		0.23	0.72		0.02	0.36		0.95	0.34	
Control Delay	7.2	9.3		14.6	23.6		26.0	30.7		94.9	29.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.2	9.3		14.6	23.6		26.0	30.7		94.9	29.7	
LOS	A	A		B	C		C	C		F	C	
Approach Delay		9.2			22.1			30.5			67.6	
Approach LOS		A			C			C			E	
Queue Length 50th (m)	1.2	17.1		7.5	51.5		0.5	10.5		18.1	11.4	
Queue Length 95th (m)	3.8	29.8		21.9	#129.4		3.3	26.7		#56.6	28.1	
Internal Link Dist (m)		407.2			322.8			177.3			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	408	1151		488	776		273	314		180	364	
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	0.23		0.23	0.72		0.02	0.31		0.82	0.29	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 72.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.95

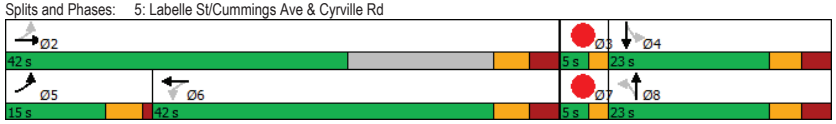
Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection Signal Delay: 28.8	Intersection LOS: C
Intersection Capacity Utilization 67.6%	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: 5: Labelle St/Cummings Ave & Cyrville Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	314	283	299	328	96
Future Volume (vph)	87	314	283	299	328	96
Satd. Flow (prot)	1595	1469	1658	1728	1687	0
Flt Permitted	0.950		0.509			
Satd. Flow (perm)	1595	1469	888	1728	1687	0
Satd. Flow (RTOR)		314			36	
Lane Group Flow (vph)	87	314	283	299	424	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	1.0	1.0	10.0	
Minimum Split (s)	22.0	22.0	7.9	7.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.8	10.8	33.0	33.0	33.0	
Actuated g/C Ratio	0.19	0.19	0.58	0.58	0.58	
v/c Ratio	0.29	0.59	0.55	0.30	0.43	
Control Delay	22.4	8.0	12.7	7.2	7.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.4	8.0	12.7	7.2	7.8	
LOS	C	A	B	A	A	
Approach Delay	11.1			9.9	7.8	
Approach LOS	B			A	A	
Queue Length 50th (m)	7.8	0.0	14.9	12.9	18.1	
Queue Length 95th (m)	17.7	16.4	40.0	28.3	39.9	
Internal Link Dist (m)	296.3			237.9	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	450	640	517	1006	997	
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	0.19	0.49	0.55	0.30	0.43	

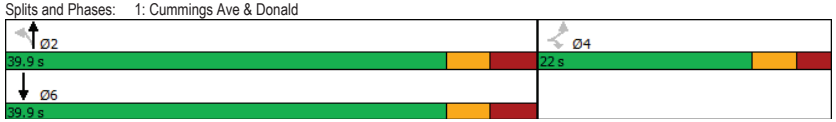
Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59

Lanes, Volumes, Timings
1: Cummings Ave & Donald

01/31/2025

Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 65.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Cummings Ave & Donald



Lanes, Volumes, Timings
2: Cyrville Rd & Ogilvie Rd

01/31/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1069	274	35	777	149	107	261	26	147	259	140
Future Volume (vph)	0	1069	274	35	777	149	107	261	26	147	259	140
Satd. Flow (prot)	0	3316	1455	1658	3316	1483	1658	1718	0	1658	1639	0
Flt Permitted				0.213			0.247			0.419		
Satd. Flow (perm)	0	3316	1366	370	3316	1333	430	1718	0	730	1639	0
Satd. Flow (RTOR)			274			149		5			25	
Lane Group Flow (vph)	0	1069	274	35	777	149	107	287	0	147	399	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		73.5	73.5	73.5	73.5	73.5	33.2	33.2		33.2	33.2	
Actuated g/C Ratio		0.61	0.61	0.61	0.61	0.61	0.28	0.28		0.28	0.28	
v/c Ratio		0.53	0.29	0.15	0.38	0.17	0.90	0.60		0.73	0.85	
Control Delay		15.6	2.4	4.2	3.4	0.1	101.2	41.3		59.0	54.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.6	2.4	4.2	3.4	0.1	101.2	41.3		59.0	54.3	
LOS		B	A	A	A	A	F	D		E	D	
Approach Delay		12.9			2.9			57.5			55.6	
Approach LOS		B			A			E			E	
Queue Length 50th (m)		71.5	0.0	0.7	8.7	0.0	24.2	57.5		31.3	83.6	
Queue Length 95th (m)		108.8	12.3	m0.9	m9.8	m0.0	#50.5	76.2		50.4	108.7	
Internal Link Dist (m)		113.8			313.9			407.0			190.4	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2029	942	226	2029	873	153	617		260	602	
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		0.53	0.29	0.15	0.38	0.17	0.70	0.47		0.57	0.66	

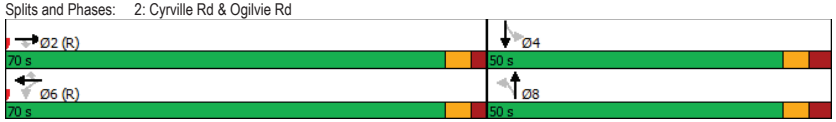
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 22.6	Intersection LOS: C
Intersection Capacity Utilization 82.5%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	1049	27	189	806	226	61	213	188	274	252	122
Future Volume (vph)	162	1049	27	189	806	226	61	213	188	274	252	122
Satd. Flow (prot)	1658	3294	0	1610	3119	0	1658	1530	0	1658	1648	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1626	3294	0	1593	3119	0	1651	1530	0	1592	1648	0
Satd. Flow (RTOR)		2										
Lane Group Flow (vph)	162	1076	0	189	1032	0	61	401	0	274	374	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	34.1		9.3	37.1	
Total Split (s)	16.4	43.4		18.0	45.0		11.5	36.6		22.0	47.1	
Total Split (%)	13.7%	36.2%		15.0%	37.5%		9.6%	30.5%		18.3%	39.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.5	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.5	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	11.7	36.7		13.3	38.3		6.8	29.5		17.7	42.3	
Actuated g/C Ratio	0.10	0.31		0.11	0.32		0.06	0.25		0.15	0.35	
v/c Ratio	1.01	1.07		1.06	1.04		0.65	1.07		1.12	0.64	
Control Delay	121.5	96.2		115.1	70.7		86.0	108.8		141.3	39.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	121.5	96.2		115.1	70.7		86.0	108.8		141.3	39.7	
LOS	F	F		F	E		F	F		F	D	
Approach Delay		99.5			77.6			105.8			82.6	
Approach LOS		F			E			F			F	
Queue Length 50th (m)	~40.4	~132.4		~49.6	~137.0		14.3	~104.3		~74.4	75.6	
Queue Length 95th (m)	#84.0	#194.8		m#74.8	m#155.4		#34.1	#164.1		#126.8	110.0	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	161	1008		178	995		96	376		244	581	
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	1.01	1.07		1.06	1.04		0.64	1.07		1.12	0.64	

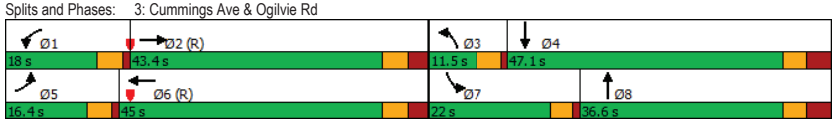
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 89.8	Intersection LOS: F
Intersection Capacity Utilization 103.5%	ICU Level of Service G
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	314	1102	102	231	720	220	173	379	163	146	424	327
Future Volume (vph)	314	1102	102	231	720	220	173	379	163	146	424	327
Satd. Flow (prot)	1658	3316	1469	1658	3316	1483	1658	3166	0	1658	3100	0
Flt Permitted	0.261			0.093			0.950			0.950		
Satd. Flow (perm)	455	3316	1469	162	3316	1483	1658	3166	0	1658	3100	0
Satd. Flow (RTOR)			136			220		50			142	
Lane Group Flow (vph)	314	1102	102	231	720	220	173	542	0	146	751	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		12.2	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	18.9	30.1		18.9	30.1	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.1%		15.8%	25.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.5	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		3.7	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.2	2.4	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		9.4	8.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	61.9	45.6	45.6	61.3	45.3	45.3	13.0	24.0		9.5	21.6	
Actuated g/C Ratio	0.52	0.38	0.38	0.51	0.38	0.38	0.11	0.20		0.08	0.18	
v/c Ratio	0.82	0.87	0.16	0.88	0.58	0.32	0.97	0.81		1.11	1.11	
Control Delay	14.7	26.7	3.3	61.0	32.1	4.6	112.8	51.8		162.9	107.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.7	26.7	3.3	61.0	32.1	4.6	112.8	51.8		162.9	107.3	
LOS	B	C	A	E	C	A	F	D		F	F	
Approach Delay		22.7			32.6			66.5			116.3	
Approach LOS		C			C			E			F	
Queue Length 50th (m)	12.0	136.4	4.0	37.5	70.6	0.0	41.2	59.0		~39.4	~91.5	
Queue Length 95th (m)	m10.4	m121.2	m3.3	#79.7	90.0	15.5	#84.9	#80.0		#80.6	#130.1	
Internal Link Dist (m)		393.6			260.7			297.6			298.7	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	389	1260	642	274	1251	696	179	673		131	674	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.81	0.87	0.16	0.84	0.58	0.32	0.97	0.81		1.11	1.11	

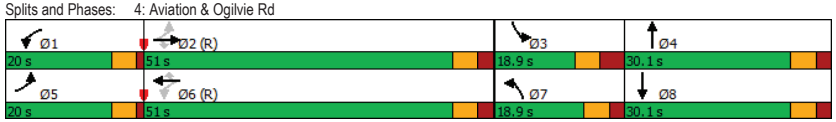
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 52.2	Intersection LOS: D
Intersection Capacity Utilization 100.2%	ICU Level of Service G
Analysis Period (min) 15	

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

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	55	68	82	334	293	10	104	68	64	505	11
Future Volume (vph)	10	55	68	82	334	293	10	104	68	64	505	11
Satd. Flow (prot)	1658	1383	0	1595	1568	0	1658	1525	0	1445	1739	0
Flt Permitted	0.176			0.678			0.267			0.540		
Satd. Flow (perm)	307	1383	0	1109	1568	0	466	1525	0	719	1739	0
Satd. Flow (RTOR)		68						34				
Lane Group Flow (vph)	10	123	0	82	627	0	10	172	0	64	516	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.8		34.8	34.8		23.5	23.5		23.5	23.5	
Total Split (s)	15.0	43.0		43.0	43.0		37.0	37.0		37.0	37.0	
Total Split (%)	15.0%	43.0%		43.0%	43.0%		37.0%	37.0%		37.0%	37.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.5	38.4		36.3	36.3		24.8	24.8		29.8	29.8	
Actuated g/C Ratio	0.50	0.47		0.45	0.45		0.30	0.30		0.37	0.37	
v/c Ratio	0.04	0.18		0.17	0.90		0.07	0.35		0.24	0.81	
Control Delay	10.6	6.8		16.2	40.2		23.6	20.7		22.2	36.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.6	6.8		16.2	40.2		23.6	20.7		22.2	36.3	
LOS	B	A		B	D		C	C		C	D	
Approach Delay		7.1			37.4			20.8			34.7	
Approach LOS		A			D			C			C	
Queue Length 50th (m)	0.8	4.6		7.1	83.5		1.0	15.6		6.5	67.4	
Queue Length 95th (m)	3.0	13.0		19.1	#179.3		5.4	36.8		18.7	#142.2	
Internal Link Dist (m)		407.0			322.8			177.5			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	323	897		494	699		174	594		270	652	
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	0.14		0.17	0.90		0.06	0.29		0.24	0.79	

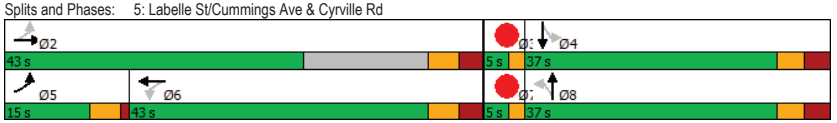
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 81.5
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.90

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	

Intersection Signal Delay: 32.0 Intersection LOS: C
Intersection Capacity Utilization 100.2% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Labelle St/Cummings Ave & Cyrville Rd



Appendix N

Synchro Worksheets -2027 Future Total Horizon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	188	248	154	193	92
Future Volume (vph)	56	188	248	154	193	92
Satd. Flow (prot)	1626	1455	1658	1695	1642	0
Flt Permitted	0.950		0.585			
Satd. Flow (perm)	1626	1455	1021	1695	1642	0
Satd. Flow (RTOR)		188			59	
Lane Group Flow (vph)	56	188	248	154	285	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.3	10.3	34.3	34.3	34.3	
Actuated g/C Ratio	0.18	0.18	0.60	0.60	0.60	
v/c Ratio	0.19	0.46	0.41	0.15	0.28	
Control Delay	21.3	7.9	8.9	5.8	5.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.3	7.9	8.9	5.8	5.4	
LOS	C	A	A	A	A	
Approach Delay	10.9			7.7	5.4	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.9	0.0	11.7	6.0	9.4	
Queue Length 95th (m)	12.8	13.3	26.1	13.0	20.0	
Internal Link Dist (m)	296.9			155.2	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	453	541	609	1011	1003	
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	0.12	0.35	0.41	0.15	0.28	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 57.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.46

Intersection Signal Delay: 7.8	Intersection LOS: A
Intersection Capacity Utilization 56.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cummings Ave & Donald

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	639	143	35	828	134	159	193	28	48	110	43
Future Volume (vph)	0	639	143	35	828	134	159	193	28	48	110	43
Satd. Flow (prot)	0	3252	1427	1551	3316	1455	1580	1588	0	1566	1575	0
Flt Permitted				0.396			0.595			0.442		
Satd. Flow (perm)	0	3252	1338	639	3316	1301	984	1588	0	727	1575	0
Satd. Flow (RTOR)			143			134		6			16	
Lane Group Flow (vph)	0	639	143	35	828	134	159	221	0	48	153	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		90.7	90.7	90.7	90.7	90.7	26.0	26.0		26.0	26.0	
Actuated g/C Ratio		0.70	0.70	0.70	0.70	0.70	0.20	0.20		0.20	0.20	
v/c Ratio		0.28	0.15	0.08	0.36	0.14	0.81	0.69		0.33	0.47	
Control Delay		8.8	2.0	5.2	5.4	0.7	77.5	56.7		47.3	43.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		8.8	2.0	5.2	5.4	0.7	77.5	56.7		47.3	43.7	
LOS		A	A	A	A	A	E	E		D	D	
Approach Delay		7.6			4.7			65.4			44.5	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		28.5	0.0	1.0	12.6	0.0	39.7	52.1		10.8	31.5	
Queue Length 95th (m)		53.2	8.4	m3.3	56.4	1.3	56.6	68.3		19.9	45.2	
Internal Link Dist (m)		113.5			313.9			407.2			190.6	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2269	977	446	2314	948	324	528		239	530	
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		0.28	0.15	0.08	0.36	0.14	0.49	0.42		0.20	0.29	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 18.8	Intersection LOS: B
Intersection Capacity Utilization 71.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	650	13	99	807	173	63	149	88	175	140	129
Future Volume (vph)	76	650	13	99	807	173	63	149	88	175	140	129
Satd. Flow (prot)	1580	3265	0	1642	3161	0	1658	1551	0	1642	1603	0
Flt Permitted	0.218			0.340			0.594			0.351		
Satd. Flow (perm)	363	3265	0	579	3161	0	1032	1551	0	583	1603	0
Satd. Flow (RTOR)		2			28			21			37	
Lane Group Flow (vph)	76	663	0	99	980	0	63	237	0	175	269	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		36.6	36.6		11.4	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.2%	28.2%		8.8%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	75.6	68.4		76.6	70.5		27.0	27.0		40.7	38.4	
Actuated g/C Ratio	0.58	0.53		0.59	0.54		0.21	0.21		0.31	0.30	
v/c Ratio	0.28	0.39		0.25	0.57		0.29	0.70		0.73	0.54	
Control Delay	15.0	17.0		13.6	20.4		45.8	54.4		54.0	36.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.0	17.0		13.6	20.4		45.8	54.4		54.0	36.5	
LOS	B	B		B	C		D	D		D	D	
Approach Delay		16.7			19.8			52.6			43.4	
Approach LOS		B			B			D			D	
Queue Length 50th (m)	7.0	45.0		11.7	63.5		13.3	50.3		33.2	48.1	
Queue Length 95th (m)	16.5	52.1		m16.4	m74.0		26.7	78.6		#54.8	74.9	
Internal Link Dist (m)		313.9			393.6			302.0			58.8	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	270	1718		392	1727		238	374		239	535	
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	0.28	0.39		0.25	0.57		0.26	0.63		0.73	0.50	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 26.9	Intersection LOS: C
Intersection Capacity Utilization 85.5%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	505	91	119	534	125	210	476	219	162	339	291
Future Volume (vph)	354	505	91	119	534	125	210	476	219	162	339	291
Satd. Flow (prot)	1658	3252	1483	1626	3283	1483	1658	3160	0	1658	3087	0
Flt Permitted	0.315			0.456			0.950			0.950		
Satd. Flow (perm)	550	3252	1483	780	3283	1483	1658	3160	0	1658	3087	0
Satd. Flow (RTOR)			164			164		59			148	
Lane Group Flow (vph)	354	505	91	119	534	125	210	695	0	162	630	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	32.9	45.0		18.0	30.1	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.3%	34.6%		13.8%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		5.9	6.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	65.8	50.1	50.1	55.4	43.3	43.3	21.2	34.3		12.1	25.2	
Actuated g/C Ratio	0.51	0.39	0.39	0.43	0.33	0.33	0.16	0.26		0.09	0.19	
v/c Ratio	0.83	0.40	0.14	0.30	0.49	0.21	0.78	0.79		1.05	0.88	
Control Delay	50.5	31.3	3.6	20.4	37.1	2.6	71.0	47.4		142.8	53.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	50.5	31.3	3.6	20.4	37.1	2.6	71.0	47.4		142.8	53.2	
LOS	D	C	A	C	D	A	E	D		F	D	
Approach Delay		35.8			29.0			52.9			71.5	
Approach LOS		D			C			D			E	
Queue Length 50th (m)	76.1	49.7	0.9	16.3	58.8	0.0	52.0	77.8		~45.2	63.4	
Queue Length 95th (m)	#98.7	69.3	m5.7	28.4	76.4	6.5	75.7	98.5		#89.3	#99.6	
Internal Link Dist (m)		393.6			270.9			298.0			298.9	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	427	1253	672	459	1092	602	344	986		154	723	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.83	0.40	0.14	0.26	0.49	0.21	0.61	0.70		1.05	0.87	

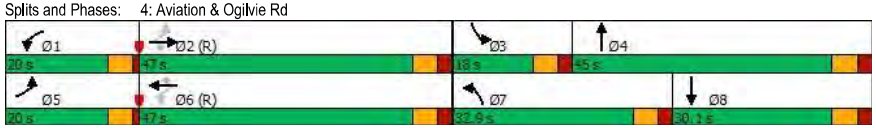
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

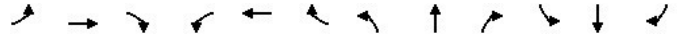
Maximum v/c Ratio: 1.05

Intersection Signal Delay: 47.0	Intersection LOS: D
Intersection Capacity Utilization 87.3%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 4: Aviation & Ogilvie Rd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	209	37	111	374	164	5	24	41	139	72	20
Future Volume (vph)	21	209	37	111	374	164	5	24	41	139	72	20
Satd. Flow (prot)	1537	1635	0	1610	1584	0	1658	1396	0	1610	1571	0
Flt Permitted	0.272			0.606			0.697			0.552		
Satd. Flow (perm)	435	1635	0	1011	1584	0	1203	1396	0	825	1571	0
Satd. Flow (RTOR)		19			32			41			15	
Lane Group Flow (vph)	21	246	0	111	538	0	5	65	0	139	92	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.3		34.3	34.3		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Total Split (%)	17.6%	49.4%		49.4%	49.4%		27.1%	27.1%		27.1%	27.1%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	2.6		2.6	2.6		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.9	40.9		36.3	36.3		14.6	14.6		14.6	14.6	
Actuated g/C Ratio	0.56	0.56		0.50	0.50		0.20	0.20		0.20	0.20	
v/c Ratio	0.06	0.26		0.22	0.67		0.02	0.21		0.84	0.28	
Control Delay	7.8	8.5		14.6	20.4		25.8	15.3		69.9	24.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.8	8.5		14.6	20.4		25.8	15.3		69.9	24.9	
LOS	A	A		B	C		C	B		E	C	
Approach Delay		8.5			19.4			16.0			52.0	
Approach LOS		A			B			B			D	
Queue Length 50th (m)	1.3	15.5		7.3	44.4		0.5	2.4		16.4	8.0	
Queue Length 95th (m)	3.9	27.2		22.5	#112.4		3.4	13.1		#51.3	22.8	
Internal Link Dist (m)		407.2			322.8			177.3			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	379	1166		505	808		294	373		202	396	
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	0.06	0.21		0.22	0.67		0.02	0.17		0.69	0.23	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 72.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84

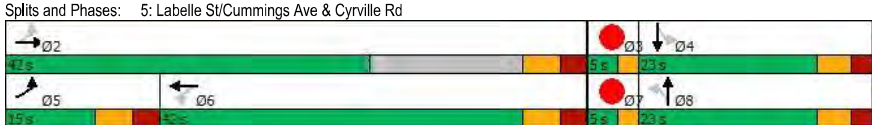
Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection Signal Delay: 23.0	Intersection LOS: C
Intersection Capacity Utilization 66.1%	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: 5: Labelle St/Cummings Ave & Cyrville Rd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	28	5	380	16	2	404
Future Volume (vph)	28	5	380	16	2	404
Satd. Flow (prot)	1640	0	1736	0	0	3316
Flt Permitted	0.959					
Satd. Flow (perm)	1640	0	1736	0	0	3316
Lane Group Flow (vph)	33	0	396	0	0	406
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 32.1%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	5	380	16	2	404
Future Vol, veh/h	28	5	380	16	2	404
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	-	-	-	90	-
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	28	5	380	16	2	404

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	594	388	0	0	396	0
Stage 1	388	-	-	-	-	-
Stage 2	206	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	452	659	-	-	1161	-
Stage 1	685	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	451	659	-	-	1161	-
Mov Cap-2 Maneuver	451	-	-	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 474	1161	-
HCM Lane V/C Ratio	-	- 0.07	0.002	-
HCM Control Delay (s)	-	- 13.2	8.1	0
HCM Lane LOS	-	- B	A	A
HCM 95th %tile Q(veh)	-	- 0.2	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	305	261	276	306	96
Future Volume (vph)	87	305	261	276	306	96
Satd. Flow (prot)	1595	1469	1658	1728	1685	0
Flt Permitted	0.950		0.526			
Satd. Flow (perm)	1595	1469	918	1728	1685	0
Satd. Flow (RTOR)		305			39	
Lane Group Flow (vph)	87	305	261	276	402	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	1.0	1.0	10.0	
Minimum Split (s)	22.0	22.0	7.9	7.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.7	10.7	33.0	33.0	33.0	
Actuated g/C Ratio	0.19	0.19	0.58	0.58	0.58	
v/c Ratio	0.29	0.58	0.49	0.27	0.40	
Control Delay	22.4	8.0	11.2	7.0	7.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.4	8.0	11.2	7.0	7.5	
LOS	C	A	B	A	A	
Approach Delay	11.2			9.0	7.5	
Approach LOS	B			A	A	
Queue Length 50th (m)	7.8	0.0	13.0	11.8	16.5	
Queue Length 95th (m)	17.7	16.2	33.9	25.7	36.6	
Internal Link Dist (m)	296.3			143.5	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	450	634	534	1007	998	
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	0.19	0.48	0.49	0.27	0.40	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.58

Lanes, Volumes, Timings
1: Cummings Ave & Donald

04-25-2025

Intersection Signal Delay: 9.2	Intersection LOS: A
Intersection Capacity Utilization 63.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cummings Ave & Donald

Lanes, Volumes, Timings
2: Cyrville Rd & Ogilvie Rd

04-25-2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1044	265	35	761	149	100	243	26	147	250	140
Future Volume (vph)	0	1044	265	35	761	149	100	243	26	147	250	140
Satd. Flow (prot)	0	3316	1455	1658	3316	1483	1658	1718	0	1658	1637	0
Flt Permitted				0.222			0.254			0.444		
Satd. Flow (perm)	0	3316	1366	386	3316	1333	442	1718	0	773	1637	0
Satd. Flow (RTOR)			265			149		5			26	
Lane Group Flow (vph)	0	1044	265	35	761	149	100	269	0	147	390	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		74.0	74.0	74.0	74.0	74.0	32.7	32.7		32.7	32.7	
Actuated g/C Ratio		0.62	0.62	0.62	0.62	0.62	0.27	0.27		0.27	0.27	
v/c Ratio		0.51	0.28	0.15	0.37	0.17	0.83	0.57		0.70	0.84	
Control Delay		15.1	2.4	22.6	20.8	9.2	87.4	40.7		55.9	54.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.1	2.4	22.6	20.8	9.2	87.4	40.7		55.9	54.1	
LOS		B	A	C	C	A	F	D		E	D	
Approach Delay		12.5			19.0			53.4			54.6	
Approach LOS		B			B			D			D	
Queue Length 50th (m)		67.8	0.0	4.6	60.0	5.7	22.2	53.6		31.1	81.5	
Queue Length 95th (m)		104.7	12.1	m6.9	m70.7	m11.9	#45.3	71.1		49.3	105.6	
Internal Link Dist (m)		113.8			313.9			407.0			190.4	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2046	944	238	2046	879	158	617		276	601	
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		0.51	0.28	0.15	0.37	0.17	0.63	0.44		0.53	0.65	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 26.4	Intersection LOS: C
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	1015	27	163	781	233	61	174	176	273	227	131
Future Volume (vph)	171	1015	27	163	781	233	61	174	176	273	227	131
Satd. Flow (prot)	1658	3294	0	1610	3112	0	1658	1525	0	1658	1637	0
Flt Permitted	0.102			0.095			0.547			0.232		
Satd. Flow (perm)	178	3294	0	161	3112	0	951	1525	0	394	1637	0
Satd. Flow (RTOR)		2			35			42			31	
Lane Group Flow (vph)	171	1042	0	163	1014	0	61	350	0	273	358	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0		20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%		16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	54.6	42.4		54.4	42.3		29.5	29.5		51.8	49.5	
Actuated g/C Ratio	0.46	0.35		0.45	0.35		0.25	0.25		0.43	0.41	
v/c Ratio	0.78	0.90		0.79	0.91		0.26	0.86		0.81	0.52	
Control Delay	56.3	39.2		56.7	48.3		38.0	58.6		43.2	26.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	56.3	39.2		56.7	48.3		38.0	58.6		43.2	26.2	
LOS	E	D		E	D		D	E		D	C	
Approach Delay		41.6			49.5			55.6			33.5	
Approach LOS		D			D			E			C	
Queue Length 50th (m)	17.3	38.3		30.7	98.6		11.5	69.8		42.3	55.7	
Queue Length 95th (m)	#64.0	#116.2		m#52.1	m#141.2		22.9	#109.8		#67.5	79.5	
Internal Link Dist (m)		313.9			393.6			302.0			70.4	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	221	1164		209	1118		264	454		335	745	
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	0.77	0.90		0.78	0.91		0.23	0.77		0.81	0.48	

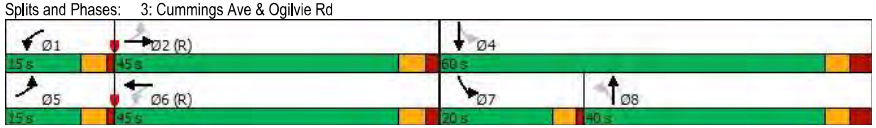
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 44.5	Intersection LOS: D
Intersection Capacity Utilization 99.6%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	1080	103	231	692	220	175	348	163	146	395	305
Future Volume (vph)	288	1080	103	231	692	220	175	348	163	146	395	305
Satd. Flow (prot)	1658	3316	1469	1658	3316	1483	1658	3157	0	1658	3100	0
Flt Permitted	0.280			0.101			0.950			0.950		
Satd. Flow (perm)	489	3316	1469	176	3316	1483	1658	3157	0	1658	3100	0
Satd. Flow (RTOR)			136			220		58			141	
Lane Group Flow (vph)	288	1080	103	231	692	220	175	511	0	146	700	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		12.2	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	18.9	30.1		18.9	30.1	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.1%		15.8%	25.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.5	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		3.7	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.2	2.4	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		9.4	8.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	61.5	45.7	45.7	61.7	45.7	45.7	13.0	24.0		9.5	21.6	
Actuated g/C Ratio	0.51	0.38	0.38	0.51	0.38	0.38	0.11	0.20		0.08	0.18	
v/c Ratio	0.74	0.86	0.16	0.86	0.55	0.31	0.98	0.75		1.11	1.04	
Control Delay	33.3	34.9	4.6	56.0	31.3	4.5	115.5	48.0		162.9	83.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.3	34.9	4.6	56.0	31.3	4.5	115.5	48.0		162.9	83.9	
LOS	C	C	A	E	C	A	F	D		F	F	
Approach Delay		32.5			31.1			65.2			97.5	
Approach LOS		C			C			E			F	
Queue Length 50th (m)	43.7	81.0	1.6	35.9	67.1	0.0	41.7	53.5		~39.4	~78.3	
Queue Length 95th (m)	m54.0	m94.0	m2.5	#77.0	85.8	15.5	#85.9	73.1		#80.6	#116.1	
Internal Link Dist (m)		393.6			260.7			297.6			298.7	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	403	1262	643	280	1263	701	179	677		131	673	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.71	0.86	0.16	0.82	0.55	0.31	0.98	0.75		1.11	1.04	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 50.8	Intersection LOS: D
Intersection Capacity Utilization 98.1%	ICU Level of Service F
Analysis Period (min) 15	

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

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

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

Splits and Phases: 4: Aviation & Ogilvie Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	53	68	74	311	272	10	75	68	60	458	11
Future Volume (vph)	10	53	68	74	311	272	10	75	68	60	458	11
Satd. Flow (prot)	1658	1387	0	1595	1573	0	1658	1489	0	1445	1737	0
Flt Permitted	0.242			0.679			0.284			0.536		
Satd. Flow (perm)	422	1387	0	1114	1573	0	496	1489	0	714	1737	0
Satd. Flow (RTOR)		68			50			48			1	
Lane Group Flow (vph)	10	121	0	74	583	0	10	143	0	60	469	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.3		34.3	34.3		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	43.0		43.0	43.0		37.0	37.0		37.0	37.0	
Total Split (%)	15.0%	43.0%		43.0%	43.0%		37.0%	37.0%		37.0%	37.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.6		2.6	2.6		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.6	39.0		37.1	37.1		20.5	20.5		25.6	25.6	
Actuated g/C Ratio	0.53	0.51		0.48	0.48		0.27	0.27		0.33	0.33	
v/c Ratio	0.03	0.16		0.14	0.74		0.08	0.33		0.25	0.81	
Control Delay	10.0	6.2		14.6	23.9		23.2	17.6		22.3	35.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.0	6.2		14.6	23.9		23.2	17.6		22.3	35.9	
LOS	A	A		B	C		C	B		C	D	
Approach Delay		6.5			22.8			17.9			34.3	
Approach LOS		A			C			B			C	
Queue Length 50th (m)	0.7	3.7		5.4	56.6		1.0	10.2		5.9	57.6	
Queue Length 95th (m)	3.0	12.7		17.4	#149.1		5.3	27.7		17.4	#119.6	
Internal Link Dist (m)		407.0			322.8			177.5			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	392	969		540	789		206	648		297	724	
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	0.12		0.14	0.74		0.05	0.22		0.20	0.65	

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 76.5
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.81

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	

Intersection Signal Delay: 25.0 Intersection LOS: C
Intersection Capacity Utilization 92.9% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Labelle St/Cummings Ave & Cyrville Rd

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	24	3	554	31	5	618
Future Volume (vph)	24	3	554	31	5	618
Satd. Flow (prot)	1645	0	1733	0	0	3316
Flt Permitted	0.957					
Satd. Flow (perm)	1645	0	1733	0	0	3316
Lane Group Flow (vph)	27	0	585	0	0	623
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	3	554	31	5	618
Future Vol, veh/h	24	3	554	31	5	618
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	-	-	-	90	-
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	24	3	554	31	5	618

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	889	570	0	0	585	0
Stage 1	570	-	-	-	-	-
Stage 2	319	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	298	520	-	-	988	-
Stage 1	565	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	296	520	-	-	988	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	311	988	-
HCM Lane V/C Ratio	-	-	0.087	0.005	-
HCM Control Delay (s)	-	-	17.7	8.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Appendix O

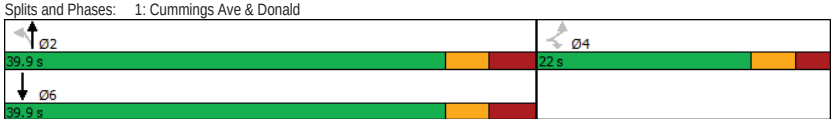
Synchro Worksheets -2029 Future Total Horizon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	192	253	156	197	92
Future Volume (vph)	56	192	253	156	197	92
Satd. Flow (prot)	1626	1455	1658	1695	1644	0
Flt Permitted	0.950		0.583			
Satd. Flow (perm)	1626	1455	1017	1695	1644	0
Satd. Flow (RTOR)		192			58	
Lane Group Flow (vph)	56	192	253	156	289	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.2	10.2	33.8	33.8	33.8	
Actuated g/C Ratio	0.18	0.18	0.59	0.59	0.59	
v/c Ratio	0.19	0.46	0.42	0.16	0.29	
Control Delay	21.3	7.8	9.1	5.8	5.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.3	7.8	9.1	5.8	5.5	
LOS	C	A	A	A	A	
Approach Delay	10.9			7.9	5.5	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.9	0.0	12.0	6.1	9.6	
Queue Length 95th (m)	12.8	13.5	26.9	13.2	20.3	
Internal Link Dist (m)	296.9			155.2	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	456	546	603	1006	999	
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	0.12	0.35	0.42	0.16	0.29	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 57
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.46

Intersection Signal Delay: 7.9 Intersection LOS: A
Intersection Capacity Utilization 56.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Cummings Ave & Donald



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	658	146	35	853	134	161	195	28	48	112	43
Future Volume (vph)	0	658	146	35	853	134	161	195	28	48	112	43
Satd. Flow (prot)	0	3252	1427	1551	3316	1455	1580	1589	0	1566	1575	0
Flt Permitted				0.388			0.591			0.439		
Satd. Flow (perm)	0	3252	1338	626	3316	1301	977	1589	0	722	1575	0
Satd. Flow (RTOR)			146			134		6			16	
Lane Group Flow (vph)	0	658	146	35	853	134	161	223	0	48	155	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		90.6	90.6	90.6	90.6	90.6	26.1	26.1		26.1	26.1	
Actuated g/C Ratio		0.70	0.70	0.70	0.70	0.70	0.20	0.20		0.20	0.20	
v/c Ratio		0.29	0.15	0.08	0.37	0.14	0.82	0.69		0.33	0.47	
Control Delay		9.0	2.0	4.6	4.1	0.2	78.6	56.5		47.2	43.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		9.0	2.0	4.6	4.1	0.2	78.6	56.5		47.2	43.7	
LOS		A	A	A	A	A	E	E		D	D	
Approach Delay		7.7			3.6			65.8			44.5	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		29.8	0.0	1.3	17.5	0.0	40.2	52.5		10.7	31.9	
Queue Length 95th (m)		55.0	8.5	m2.0	20.3	m0.0	57.7	68.8		19.9	45.9	
Internal Link Dist (m)		113.5			313.9			407.2			190.6	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2265	976	436	2309	946	322	528		238	530	
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		0.29	0.15	0.08	0.37	0.14	0.50	0.42		0.20	0.29	

Intersection Summary

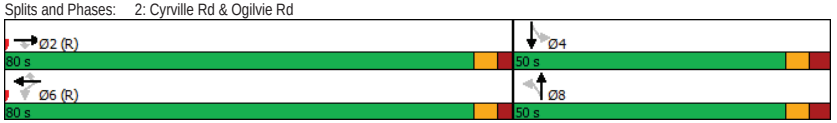
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 18.3	Intersection LOS: B
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



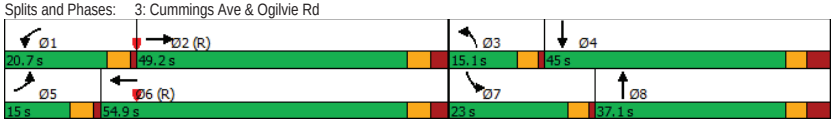
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	662	13	100	816	175	63	153	88	179	150	145
Future Volume (vph)	83	662	13	100	816	175	63	153	88	179	150	145
Satd. Flow (prot)	1580	3265	0	1642	3157	0	1658	1550	0	1642	1598	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1546	3265	0	1609	3157	0	1650	1550	0	1554	1598	0
Satd. Flow (RTOR)		2										
Lane Group Flow (vph)	83	675	0	100	991	0	63	241	0	179	295	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	37.1		9.3	37.1	
Total Split (s)	15.0	49.2		20.7	54.9		15.1	37.1		23.0	45.0	
Total Split (%)	11.5%	37.8%		15.9%	42.2%		11.6%	28.5%		17.7%	34.6%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.3	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	10.5	51.3		12.7	53.6		9.3	25.9		17.2	35.9	
Actuated g/C Ratio	0.08	0.39		0.10	0.41		0.07	0.20		0.13	0.28	
v/c Ratio	0.65	0.52		0.62	0.76		0.53	0.78		0.82	0.67	
Control Delay	83.5	28.8		84.1	35.3		74.2	66.8		83.3	50.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.5	28.8		84.1	35.3		74.2	66.8		83.3	50.1	
LOS	F	C		F	D		E	E		F	D	
Approach Delay		34.8			39.7			68.3			62.6	
Approach LOS		C			D			E			E	
Queue Length 50th (m)	21.1	51.7		27.2	132.9		15.7	58.5		44.7	67.7	
Queue Length 95th (m)	#45.1	69.2		m41.7	m158.3		30.6	85.8		#78.7	97.0	
Internal Link Dist (m)		313.9			393.6			302.0			58.8	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	133	1290		202	1301		137	357		236	465	
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	0.62	0.52		0.50	0.76		0.46	0.68		0.76	0.63	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82
Intersection Signal Delay: 45.7 Intersection LOS: D
Intersection Capacity Utilization 85.7% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cummings Ave & Ogilvie Rd

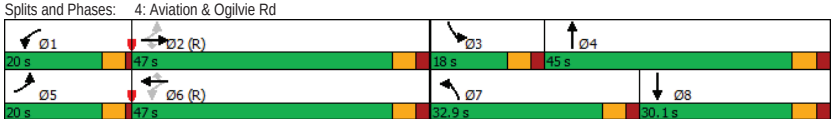


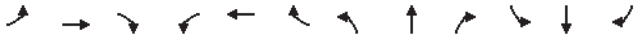
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	361	513	92	119	538	125	210	485	219	162	348	298
Future Volume (vph)	361	513	92	119	538	125	210	485	219	162	348	298
Satd. Flow (prot)	1658	3252	1483	1626	3283	1483	1658	3160	0	1658	3087	0
Flt Permitted	0.311			0.447			0.950			0.950		
Satd. Flow (perm)	543	3252	1483	765	3283	1483	1658	3160	0	1658	3087	0
Satd. Flow (RTOR)			164			164		57			147	
Lane Group Flow (vph)	361	513	92	119	538	125	210	704	0	162	646	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	32.9	45.0		18.0	30.1	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.3%	34.6%		13.8%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		5.9	6.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	65.2	49.5	49.5	55.1	42.9	42.9	21.2	34.8		12.1	25.7	
Actuated g/C Ratio	0.50	0.38	0.38	0.42	0.33	0.33	0.16	0.27		0.09	0.20	
v/c Ratio	0.86	0.41	0.14	0.30	0.50	0.21	0.78	0.79		1.05	0.89	
Control Delay	62.2	51.9	12.5	20.7	37.4	2.6	71.0	47.3		142.8	54.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	62.2	51.9	12.5	20.7	37.4	2.6	71.0	47.3		142.8	54.0	
LOS	E	D	B	C	D	A	E	D		F	D	
Approach Delay		52.0			29.3			52.7			71.8	
Approach LOS		D			C			D			E	
Queue Length 50th (m)	92.5	72.4	2.9	16.7	59.4	0.0	52.0	78.5		~45.2	65.3	
Queue Length 95th (m)	#154.9	90.5	m11.8	28.4	77.0	6.5	75.7	100.5		#89.3	#104.6	
Internal Link Dist (m)		393.6			270.9			298.0			298.9	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	421	1238	666	452	1083	599	344	985		154	734	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.86	0.41	0.14	0.26	0.50	0.21	0.61	0.71		1.05	0.88	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05
Intersection Signal Delay: 51.7 Intersection LOS: D
Intersection Capacity Utilization 88.3% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Aviation & Ogilvie Rd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	213	37	111	378	166	5	25	47	143	78	20
Future Volume (vph)	21	213	37	111	378	166	5	25	47	143	78	20
Satd. Flow (prot)	1537	1636	0	1610	1580	0	1658	1377	0	1610	1576	0
Flt Permitted	0.264			0.604			0.694			0.538		
Satd. Flow (perm)	422	1636	0	1005	1580	0	1197	1377	0	797	1576	0
Satd. Flow (RTOR)		18						47				
Lane Group Flow (vph)	21	250	0	111	544	0	5	72	0	143	98	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.8		34.8	34.8		23.5	23.5		22.5	22.5	
Total Split (s)	15.0	42.0		42.0	42.0		23.5	23.5		23.0	23.0	
Total Split (%)	17.5%	49.1%		49.1%	49.1%		27.5%	27.5%		26.9%	26.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.8	40.3		35.7	35.7		14.2	14.2		14.2	14.2	
Actuated g/C Ratio	0.56	0.55		0.49	0.49		0.19	0.19		0.19	0.19	
v/c Ratio	0.06	0.27		0.23	0.71		0.02	0.24		0.93	0.32	
Control Delay	7.8	9.0		15.0	23.6		26.6	15.4		90.0	30.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.8	9.0		15.0	23.6		26.6	15.4		90.0	30.0	
LOS	A	A		B	C		C	B		F	C	
Approach Delay		8.9			22.1			16.1			65.6	
Approach LOS		A			C			B			E	
Queue Length 50th (m)	1.3	16.2		7.5	49.7		0.5	2.6		17.5	10.5	
Queue Length 95th (m)	3.9	28.3		22.8	#128.9		3.4	14.1		#56.0	27.1	
Internal Link Dist (m)		407.2			322.8			177.3			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	370	1145		491	771		282	360		188	371	
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	0.06	0.22		0.23	0.71		0.02	0.20		0.76	0.26	

Intersection Summary
Cycle Length: 85.5
Actuated Cycle Length: 73
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.93

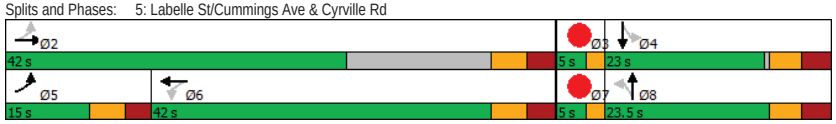
Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection Signal Delay: 27.3	Intersection LOS: C
Intersection Capacity Utilization 67.9%	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: 5: Labelle St/Cummings Ave & Cyrville Rd



Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	9	383	27	4	411
Future Vol, veh/h	52	9	383	27	4	411
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	-	-	-	90	-
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	52	9	383	27	4	411

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	611	397	0	0	410	0
Stage 1	397	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	441	652	-	-	1147	-
Stage 1	678	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	439	652	-	-	1147	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	678	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0.1
HCM LOS	B		

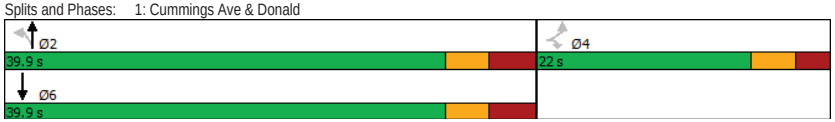
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	1147	-
HCM Lane V/C Ratio	-	-	0.132	0.003	-
HCM Control Delay (s)	-	-	14	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	307	267	281	316	96
Future Volume (vph)	87	307	267	281	316	96
Satd. Flow (prot)	1595	1469	1658	1728	1687	0
Flt Permitted	0.950		0.519			
Satd. Flow (perm)	1595	1469	906	1728	1687	0
Satd. Flow (RTOR)		307			38	
Lane Group Flow (vph)	87	307	267	281	412	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	1.0	1.0	10.0	
Minimum Split (s)	22.0	22.0	7.9	7.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.7	10.7	33.0	33.0	33.0	
Actuated g/C Ratio	0.19	0.19	0.58	0.58	0.58	
v/c Ratio	0.29	0.58	0.51	0.28	0.41	
Control Delay	22.4	8.0	11.6	7.1	7.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.4	8.0	11.6	7.1	7.6	
LOS	C	A	B	A	A	
Approach Delay	11.2			9.3	7.6	
Approach LOS	B			A	A	
Queue Length 50th (m)	7.8	0.0	13.5	12.0	17.2	
Queue Length 95th (m)	17.7	16.3	35.5	26.3	37.8	
Internal Link Dist (m)	296.3			143.5	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	450	635	527	1007	999	
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	0.19	0.48	0.51	0.28	0.41	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.58

Intersection Signal Delay: 9.3 Intersection LOS: A
Intersection Capacity Utilization 64.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Cummings Ave & Donald



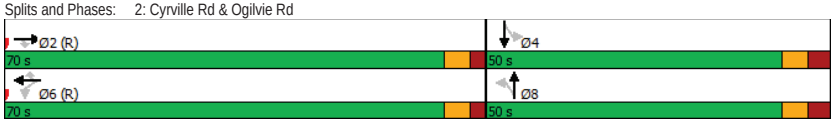
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1064	268	35	781	149	102	248	26	147	252	140
Future Volume (vph)	0	1064	268	35	781	149	102	248	26	147	252	140
Satd. Flow (prot)	0	3316	1455	1658	3316	1483	1658	1718	0	1658	1637	0
Flt Permitted				0.216			0.253			0.437		
Satd. Flow (perm)	0	3316	1366	375	3316	1333	440	1718	0	761	1637	0
Satd. Flow (RTOR)			268			149		5			26	
Lane Group Flow (vph)	0	1064	268	35	781	149	102	274	0	147	392	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		73.9	73.9	73.9	73.9	73.9	32.8	32.8		32.8	32.8	
Actuated g/C Ratio		0.62	0.62	0.62	0.62	0.62	0.27	0.27		0.27	0.27	
v/c Ratio		0.52	0.28	0.15	0.38	0.17	0.85	0.58		0.71	0.84	
Control Delay		15.3	2.4	4.7	3.9	0.1	90.5	40.9		56.7	54.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.3	2.4	4.7	3.9	0.1	90.5	40.9		56.7	54.0	
LOS		B	A	A	A	A	F	D		E	D	
Approach Delay		12.7			3.3			54.3			54.7	
Approach LOS		B			A			D			D	
Queue Length 50th (m)		70.1	0.0	0.9	10.5	0.0	22.7	54.7		31.2	81.8	
Queue Length 95th (m)		107.7	12.2	m1.1	m11.5	m0.0	#46.8	72.6		49.6	106.2	
Internal Link Dist (m)		113.8			313.9			407.0			190.4	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2041	943	230	2041	877	157	617		272	601	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.52	0.28	0.15	0.38	0.17	0.65	0.44		0.54	0.65	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85
Intersection Signal Delay: 21.8 Intersection LOS: C
Intersection Capacity Utilization 82.0% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



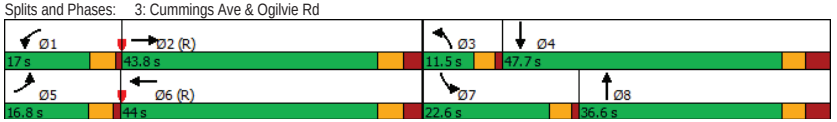
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	1033	27	164	790	238	61	186	179	266	241	142
Future Volume (vph)	173	1033	27	164	790	238	61	186	179	266	241	142
Satd. Flow (prot)	1658	3294	0	1610	3107	0	1658	1520	0	1658	1634	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1626	3294	0	1593	3107	0	1651	1520	0	1589	1634	0
Satd. Flow (RTOR)		2										
Lane Group Flow (vph)	173	1060	0	164	1028	0	61	365	0	266	383	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	36.6		9.3	36.6	
Total Split (s)	16.8	43.8		17.0	44.0		11.5	36.6		22.6	47.7	
Total Split (%)	14.0%	36.5%		14.2%	36.7%		9.6%	30.5%		18.8%	39.8%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.3	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	12.1	37.1		12.3	37.3		7.0	29.5		18.3	42.9	
Actuated g/C Ratio	0.10	0.31		0.10	0.31		0.06	0.25		0.15	0.36	
v/c Ratio	1.04	1.04		0.99	1.07		0.64	0.98		1.06	0.66	
Control Delay	127.4	87.4		103.2	80.5		83.6	87.0		121.0	39.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	127.4	87.4		103.2	80.5		83.6	87.0		121.0	39.7	
LOS	F	F		F	F		F	F		F	D	
Approach Delay		93.1			83.6			86.5			73.0	
Approach LOS		F			F			F			E	
Queue Length 50th (m)	~44.4	~123.6		40.1	~140.3		14.3	85.7		~68.4	77.6	
Queue Length 95th (m)	#89.9	#188.3		m#65.0	m#161.4		#33.5	#145.1		#120.3	112.6	
Internal Link Dist (m)		313.9			393.6			302.0			70.4	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	167	1019		165	965		99	373		252	583	
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	1.04	1.04		0.99	1.07		0.62	0.98		1.06	0.66	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07
Intersection Signal Delay: 85.3 Intersection LOS: F
Intersection Capacity Utilization 100.2% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



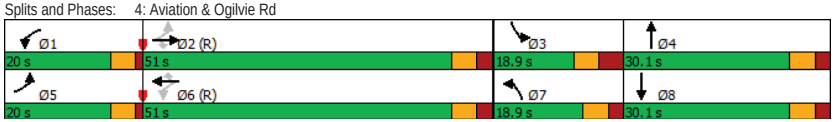
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	295	1086	104	231	698	220	176	357	163	146	403	311
Future Volume (vph)	295	1086	104	231	698	220	176	357	163	146	403	311
Satd. Flow (prot)	1658	3316	1469	1658	3316	1483	1658	3160	0	1658	3100	0
Flt Permitted	0.275			0.100			0.950			0.950		
Satd. Flow (perm)	480	3316	1469	175	3316	1483	1658	3160	0	1658	3100	0
Satd. Flow (RTOR)			136			220		55			142	
Lane Group Flow (vph)	295	1086	104	231	698	220	176	520	0	146	714	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		12.2	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	18.9	30.1		18.9	30.1	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.1%		15.8%	25.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.5	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		3.7	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.2	2.4	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		9.4	8.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	61.7	45.7	45.7	61.5	45.5	45.5	13.0	24.0		9.5	21.6	
Actuated g/C Ratio	0.51	0.38	0.38	0.51	0.38	0.38	0.11	0.20		0.08	0.18	
v/c Ratio	0.76	0.86	0.16	0.86	0.56	0.31	0.98	0.77		1.11	1.06	
Control Delay	11.8	26.4	3.3	56.7	31.5	4.5	116.9	49.1		162.9	89.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.8	26.4	3.3	56.7	31.5	4.5	116.9	49.1		162.9	89.3	
LOS	B	C	A	E	C	A	F	D		F	F	
Approach Delay		21.9			31.4			66.2			101.8	
Approach LOS		C			C			E			F	
Queue Length 50th (m)	10.1	132.3	4.2	36.0	67.8	0.0	42.0	55.2		~39.4	~81.7	
Queue Length 95th (m)	m9.8	m125.9	m4.0	#77.2	86.6	15.5	#86.3	74.9		#80.6	#120.1	
Internal Link Dist (m)		393.6			260.7			297.6			298.7	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	399	1261	642	279	1257	699	179	676		131	674	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.74	0.86	0.16	0.83	0.56	0.31	0.98	0.77		1.11	1.06	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11
Intersection Signal Delay: 48.3 Intersection LOS: D
Intersection Capacity Utilization 98.8% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	54	68	77	317	277	10	84	68	61	472	11
Future Volume (vph)	10	54	68	77	317	277	10	84	68	61	472	11
Satd. Flow (prot)	1658	1382	0	1595	1568	0	1658	1497	0	1445	1738	0
Flt Permitted	0.220			0.679			0.292			0.539		
Satd. Flow (perm)	384	1382	0	1110	1568	0	510	1497	0	712	1738	0
Satd. Flow (RTOR)		68						42				
Lane Group Flow (vph)	10	122	0	77	594	0	10	152	0	61	483	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.7	30.8		30.8	30.8		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	43.0		43.0	43.0		37.0	37.0		37.0	37.0	
Total Split (%)	15.0%	43.0%		43.0%	43.0%		37.0%	37.0%		37.0%	37.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.6	38.5		36.5	36.5		22.1	22.1		27.1	27.1	
Actuated g/C Ratio	0.51	0.49		0.46	0.46		0.28	0.28		0.34	0.34	
v/c Ratio	0.03	0.17		0.15	0.82		0.07	0.34		0.25	0.81	
Control Delay	10.5	6.7		15.7	31.9		23.5	18.9		22.6	36.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.5	6.7		15.7	31.9		23.5	18.9		22.6	36.4	
LOS	B	A		B	C		C	B		C	D	
Approach Delay		7.0			30.0			19.2			34.9	
Approach LOS		A			C			B			C	
Queue Length 50th (m)	0.8	4.4		6.4	73.9		1.0	12.2		6.1	61.4	
Queue Length 95th (m)	3.0	12.8		18.1	#166.0		5.3	31.1		18.1	#128.6	
Internal Link Dist (m)		407.0			322.8			177.5			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	364	926		512	724		198	608		277	676	
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	0.13		0.15	0.82		0.05	0.25		0.22	0.71	

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 79
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.82

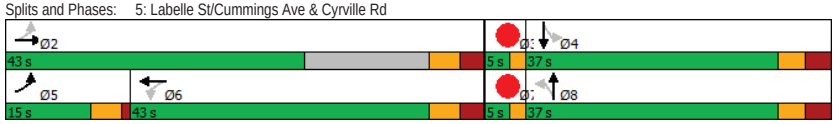
Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection Signal Delay: 28.6	Intersection LOS: C
Intersection Capacity Utilization 96.4%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 5: Labelle St/Cummings Ave & Cyrville Rd



Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	6	564	55	9	631
Future Vol, veh/h	43	6	564	55	9	631
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	-	-	-	90	-
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	43	6	564	55	9	631

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	926	592	0	0	619	0
Stage 1	592	-	-	-	-	-
Stage 2	334	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	283	505	-	-	959	-
Stage 1	552	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	279	505	-	-	959	-
Mov Cap-2 Maneuver	279	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.6	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	295	959	-
HCM Lane V/C Ratio	-	-	0.166	0.009	-
HCM Control Delay (s)	-	-	19.6	8.8	0.1
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Appendix P

Synchro Worksheets -2034 Future Total Horizon

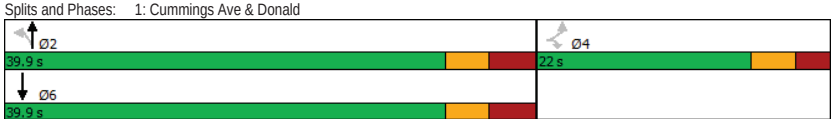
CGH TRANSPORTATION

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	195	259	160	207	92
Future Volume (vph)	56	195	259	160	207	92
Satd. Flow (prot)	1626	1455	1658	1695	1647	0
Flt Permitted	0.950		0.578			
Satd. Flow (perm)	1626	1455	1009	1695	1647	0
Satd. Flow (RTOR)		195			55	
Lane Group Flow (vph)	56	195	259	160	299	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.3	10.3	33.7	33.7	33.7	
Actuated g/C Ratio	0.18	0.18	0.59	0.59	0.59	
v/c Ratio	0.19	0.46	0.43	0.16	0.30	
Control Delay	21.2	7.8	9.4	5.9	5.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.2	7.8	9.4	5.9	5.7	
LOS	C	A	A	A	A	
Approach Delay	10.8			8.0	5.7	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.9	0.0	12.5	6.3	10.2	
Queue Length 95th (m)	12.8	13.5	28.0	13.7	21.6	
Internal Link Dist (m)	296.9			155.2	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	457	549	597	1004	998	
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	0.12	0.36	0.43	0.16	0.30	

Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.9
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.46

Intersection Signal Delay: 8.0 Intersection LOS: A
Intersection Capacity Utilization 57.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Cummings Ave & Donald

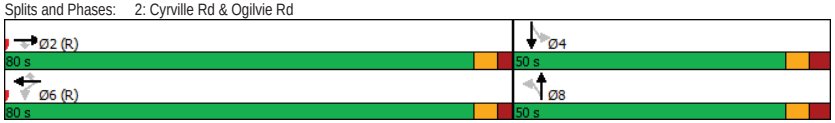


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	687	154	35	875	134	164	200	28	48	118	43
Future Volume (vph)	0	687	154	35	875	134	164	200	28	48	118	43
Satd. Flow (prot)	0	3252	1427	1551	3316	1455	1580	1592	0	1566	1580	0
Flt Permitted				0.374			0.580			0.433		
Satd. Flow (perm)	0	3252	1338	604	3316	1301	959	1592	0	712	1580	0
Satd. Flow (RTOR)			154			134		6			15	
Lane Group Flow (vph)	0	687	154	35	875	134	164	228	0	48	161	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		80.0	80.0	80.0	80.0	80.0	50.0	50.0		50.0	50.0	
Total Split (%)		61.5%	61.5%	61.5%	61.5%	61.5%	38.5%	38.5%		38.5%	38.5%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		90.1	90.1	90.1	90.1	90.1	26.6	26.6		26.6	26.6	
Actuated g/C Ratio		0.69	0.69	0.69	0.69	0.69	0.20	0.20		0.20	0.20	
v/c Ratio		0.30	0.16	0.08	0.38	0.14	0.84	0.69		0.33	0.48	
Control Delay		9.3	2.0	4.6	4.0	0.2	80.8	56.2		46.8	44.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		9.3	2.0	4.6	4.0	0.2	80.8	56.2		46.8	44.1	
LOS		A	A	A	A	A	F	E		D	D	
Approach Delay		7.9			3.6			66.5			44.7	
Approach LOS		A			A			E			D	
Queue Length 50th (m)		32.2	0.0	1.3	17.4	0.0	40.9	53.5		10.7	33.4	
Queue Length 95th (m)		57.9	8.6	m1.8	20.4	m0.0	59.3	70.4		19.9	47.8	
Internal Link Dist (m)		113.5			313.9			407.2			190.6	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2253	974	418	2298	942	316	529		234	531	
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		0.30	0.16	0.08	0.38	0.14	0.52	0.43		0.21	0.30	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 72.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	691	13	105	838	175	63	163	90	179	163	145
Future Volume (vph)	83	691	13	105	838	175	63	163	90	179	163	145
Satd. Flow (prot)	1580	3265	0	1642	3159	0	1658	1556	0	1642	1604	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1547	3265	0	1610	3159	0	1650	1556	0	1555	1604	0
Satd. Flow (RTOR)		1										
Lane Group Flow (vph)	83	704	0	105	1013	0	63	253	0	179	308	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	37.1		9.3	37.1	
Total Split (s)	15.0	48.8		21.1	54.9		15.1	37.1		23.0	45.0	
Total Split (%)	11.5%	37.5%		16.2%	42.2%		11.6%	28.5%		17.7%	34.6%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.3	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	10.3	50.7		13.1	53.4		9.3	26.2		17.2	36.2	
Actuated g/C Ratio	0.08	0.39		0.10	0.41		0.07	0.20		0.13	0.28	
v/c Ratio	0.66	0.55		0.64	0.78		0.53	0.81		0.82	0.69	
Control Delay	84.9	30.2		83.1	35.6		74.2	68.7		83.3	50.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	84.9	30.2		83.1	35.6		74.2	68.7		83.3	50.8	
LOS	F	C		F	D		E	E		F	D	
Approach Delay		36.0			40.1			69.8			62.7	
Approach LOS		D			D			E			E	
Queue Length 50th (m)	21.4	54.1		28.5	136.3		15.7	61.8		44.7	71.3	
Queue Length 95th (m)	#44.3	75.0		m43.1	m162.0		30.6	90.3		#78.7	101.4	
Internal Link Dist (m)		313.9			393.6			302.0			58.8	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	131	1273		207	1298		137	359		236	467	
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	0.63	0.55		0.51	0.78		0.46	0.70		0.76	0.66	

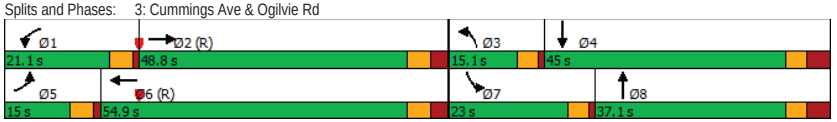
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 46.4	Intersection LOS: D
Intersection Capacity Utilization 86.5%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



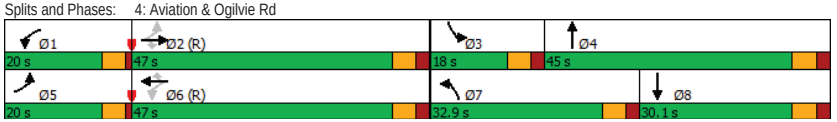
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	526	92	119	545	125	210	510	219	162	370	318
Future Volume (vph)	379	526	92	119	545	125	210	510	219	162	370	318
Satd. Flow (prot)	1658	3252	1483	1626	3283	1483	1658	3166	0	1658	3087	0
Flt Permitted	0.296			0.429			0.950			0.950		
Satd. Flow (perm)	517	3252	1483	734	3283	1483	1658	3166	0	1658	3087	0
Satd. Flow (RTOR)			164			164		52			146	
Lane Group Flow (vph)	379	526	92	119	545	125	210	729	0	162	688	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		10.9	30.1	
Total Split (s)	20.0	47.0	47.0	20.0	47.0	47.0	32.9	45.0		18.0	30.1	
Total Split (%)	15.4%	36.2%	36.2%	15.4%	36.2%	36.2%	25.3%	34.6%		13.8%	23.2%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		2.2	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		5.9	6.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	63.0	47.3	47.3	53.1	40.9	40.9	21.2	37.0		12.1	27.9	
Actuated g/C Ratio	0.48	0.36	0.36	0.41	0.31	0.31	0.16	0.28		0.09	0.21	
v/c Ratio	0.95	0.45	0.14	0.32	0.53	0.22	0.78	0.78		1.05	0.89	
Control Delay	77.2	53.8	12.8	21.5	38.9	2.7	71.0	45.8		142.8	53.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	77.2	53.8	12.8	21.5	38.9	2.7	71.0	45.8		142.8	53.2	
LOS	E	D	B	C	D	A	E	D		F	D	
Approach Delay		58.9			30.5			51.4			70.3	
Approach LOS		E			C			D			E	
Queue Length 50th (m)	98.0	74.5	2.9	16.7	60.3	0.0	52.0	82.7		~45.2	72.1	
Queue Length 95th (m)	#121.4	93.0	m12.6	28.4	78.0	6.5	75.7	105.6		#89.3	#117.7	
Internal Link Dist (m)		393.6			270.9			298.0			298.9	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	401	1182	643	430	1032	578	344	983		154	777	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.95	0.45	0.14	0.28	0.53	0.22	0.61	0.74		1.05	0.89	

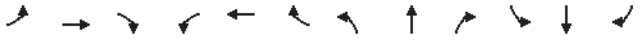
Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05
Intersection Signal Delay: 53.4 Intersection LOS: D
Intersection Capacity Utilization 90.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Aviation & Ogilvie Rd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	224	37	111	388	170	5	33	65	150	89	20
Future Volume (vph)	21	224	37	111	388	170	5	33	65	150	89	20
Satd. Flow (prot)	1537	1638	0	1610	1580	0	1658	1372	0	1610	1585	0
Flt Permitted	0.252			0.598			0.687			0.528		
Satd. Flow (perm)	403	1638	0	995	1580	0	1185	1372	0	787	1585	0
Satd. Flow (RTOR)		17						65				
Lane Group Flow (vph)	21	261	0	111	558	0	5	98	0	150	109	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.3	34.8		34.8	34.8		23.5	23.5		22.5	22.5	
Total Split (s)	15.0	42.0		42.0	42.0		23.5	23.5		23.0	23.0	
Total Split (%)	17.5%	49.1%		49.1%	49.1%		27.5%	27.5%		26.9%	26.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.6	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.8	40.3		35.6	35.6		14.4	14.4		14.4	14.4	
Actuated g/C Ratio	0.56	0.55		0.49	0.49		0.20	0.20		0.20	0.20	
v/c Ratio	0.07	0.29		0.23	0.73		0.02	0.31		0.97	0.35	
Control Delay	7.9	9.3		15.2	24.5		26.6	15.1		100.9	30.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.9	9.3		15.2	24.5		26.6	15.1		100.9	30.4	
LOS	A	A		B	C		C	B		F	C	
Approach Delay		9.1			23.0			15.7			71.3	
Approach LOS		A			C			B			E	
Queue Length 50th (m)	1.3	17.2		7.5	51.7		0.5	3.4		18.6	11.8	
Queue Length 95th (m)	3.9	29.7		22.9	#134.3		3.4	17.0		#59.3	29.5	
Internal Link Dist (m)		407.2			322.8			177.3			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	361	1142		484	769		278	372		185	372	
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	0.06	0.23		0.23	0.73		0.02	0.26		0.81	0.29	

Intersection Summary
Cycle Length: 85.5
Actuated Cycle Length: 73.2
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.97

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

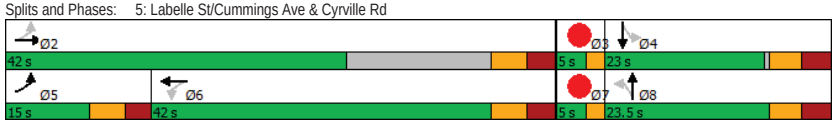
Lanes, Volumes, Timings
5: Labelle St/Cummings Ave & Cyrville Rd

02-18-2025

Intersection Signal Delay: 28.9	Intersection LOS: C
Intersection Capacity Utilization 69.1%	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: 5: Labelle St/Cummings Ave & Cyrville Rd



Lanes, Volumes, Timings
6: Cummings Ave & Access #1

02-18-2025

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	52	9	393	27	4	424
Future Volume (vph)	52	9	393	27	4	424
Satd. Flow (prot)	1640	0	1729	0	0	3316
Flt Permitted	0.959					
Satd. Flow (perm)	1640	0	1729	0	0	3316
Lane Group Flow (vph)	61	0	420	0	0	428
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 33.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	9	393	27	4	424
Future Vol, veh/h	52	9	393	27	4	424
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	-	-	-	90	-
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	52	9	393	27	4	424

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	627	407	0	0	420	0
Stage 1	407	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	431	643	-	-	1137	-
Stage 1	671	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	429	643	-	-	1137	-
Mov Cap-2 Maneuver	429	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	792	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	451	1137	-
HCM Lane V/C Ratio	-	-	0.135	0.004	-
HCM Control Delay (s)	-	-	14.2	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	310	280	296	324	96
Future Volume (vph)	87	310	280	296	324	96
Satd. Flow (prot)	1595	1469	1658	1728	1687	0
Flt Permitted	0.950		0.512			
Satd. Flow (perm)	1595	1469	893	1728	1687	0
Satd. Flow (RTOR)		310			37	
Lane Group Flow (vph)	87	310	280	296	420	0
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Detector Phase	4	4	2	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	1.0	1.0	10.0	
Minimum Split (s)	22.0	22.0	7.9	7.9	39.9	
Total Split (s)	22.0	22.0	39.9	39.9	39.9	
Total Split (%)	35.5%	35.5%	64.5%	64.5%	64.5%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7	3.6	3.6	3.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.9	6.9	6.9	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	
Act Effct Green (s)	10.8	10.8	33.0	33.0	33.0	
Actuated g/C Ratio	0.19	0.19	0.58	0.58	0.58	
v/c Ratio	0.29	0.59	0.54	0.29	0.42	
Control Delay	22.4	8.0	12.4	7.2	7.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.4	8.0	12.4	7.2	7.7	
LOS	C	A	B	A	A	
Approach Delay	11.1			9.7	7.7	
Approach LOS	B			A	A	
Queue Length 50th (m)	7.8	0.0	14.6	12.8	17.7	
Queue Length 95th (m)	17.7	16.4	39.0	27.9	39.2	
Internal Link Dist (m)	296.3			143.5	259.3	
Turn Bay Length (m)	60.0		60.0			
Base Capacity (vph)	450	637	520	1007	998	
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	0.19	0.49	0.54	0.29	0.42	

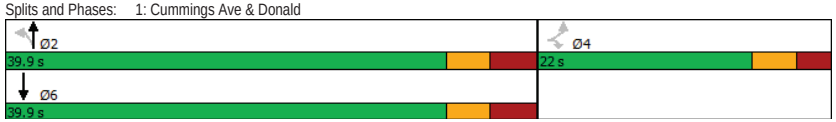
Intersection Summary
Cycle Length: 61.9
Actuated Cycle Length: 56.7
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59

Lanes, Volumes, Timings
1: Cummings Ave & Donald

02-18-2025

Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Cummings Ave & Donald



Lanes, Volumes, Timings
2: Cyrville Rd & Ogilvie Rd

02-18-2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1087	274	35	790	149	107	261	26	147	259	140
Future Volume (vph)	0	1087	274	35	790	149	107	261	26	147	259	140
Satd. Flow (prot)	0	3316	1455	1658	3316	1483	1658	1718	0	1658	1639	0
Flt Permitted				0.208			0.247			0.419		
Satd. Flow (perm)	0	3316	1366	361	3316	1333	430	1718	0	730	1639	0
Satd. Flow (RTOR)			274			149		5			25	
Lane Group Flow (vph)	0	1087	274	35	790	149	107	287	0	147	399	0
Turn Type		NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases			2	6		6	8			4		
Detector Phase		2	2	6	6	6	8	8		4	4	
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)		32.2	32.2	32.2	32.2	32.2	47.1	47.1		47.1	47.1	
Total Split (s)		70.0	70.0	70.0	70.0	70.0	50.0	50.0		50.0	50.0	
Total Split (%)		58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%		41.7%	41.7%	
Yellow Time (s)		3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)		2.5	2.5	2.5	2.5	2.5	3.4	3.4		3.4	3.4	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.2	6.2	6.2	6.2	6.2	7.1	7.1		7.1	7.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		73.5	73.5	73.5	73.5	73.5	33.2	33.2		33.2	33.2	
Actuated g/C Ratio		0.61	0.61	0.61	0.61	0.61	0.28	0.28		0.28	0.28	
v/c Ratio		0.54	0.29	0.16	0.39	0.17	0.90	0.60		0.73	0.85	
Control Delay		15.8	2.4	4.9	4.0	0.1	101.2	41.3		59.0	54.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.8	2.4	4.9	4.0	0.1	101.2	41.3		59.0	54.3	
LOS		B	A	A	A	A	F	D		E	D	
Approach Delay		13.1			3.4			57.5			55.6	
Approach LOS		B			A			E			E	
Queue Length 50th (m)		73.3	0.0	0.9	10.4	0.0	24.2	57.5		31.3	83.6	
Queue Length 95th (m)		111.3	12.3	m1.0	m11.6	m0.0	#50.5	76.2		50.4	108.7	
Internal Link Dist (m)		113.8			313.9			407.0			190.4	
Turn Bay Length (m)				62.0		71.0	50.0			82.0		
Base Capacity (vph)		2029	942	220	2029	873	153	617		260	602	
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		0.54	0.29	0.16	0.39	0.17	0.70	0.47		0.57	0.66	

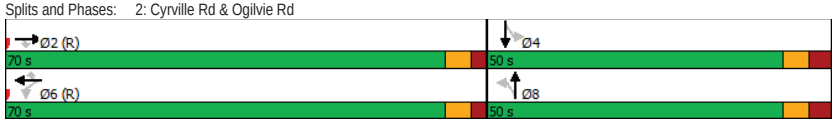
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 22.6	Intersection LOS: C
Intersection Capacity Utilization 83.0%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Cyrville Rd & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	1056	27	189	799	238	61	214	188	266	252	142
Future Volume (vph)	173	1056	27	189	799	238	61	214	188	266	252	142
Satd. Flow (prot)	1658	3294	0	1610	3112	0	1658	1531	0	1658	1638	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1627	3294	0	1594	3112	0	1651	1531	0	1592	1638	0
Satd. Flow (RTOR)		2										
Lane Group Flow (vph)	173	1083	0	189	1037	0	61	402	0	266	394	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	25.7		9.7	25.7		9.5	36.6		9.3	36.6	
Total Split (s)	16.4	43.4		18.0	45.0		11.5	36.6		22.0	47.1	
Total Split (%)	13.7%	36.2%		15.0%	37.5%		9.6%	30.5%		18.3%	39.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.8		1.0	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.7		4.7	6.7		4.3	7.1		4.3	7.1	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	11.7	36.7		13.3	38.3		7.0	29.5		17.7	42.3	
Actuated g/C Ratio	0.10	0.31		0.11	0.32		0.06	0.25		0.15	0.35	
v/c Ratio	1.07	1.07		1.06	1.04		0.64	1.07		1.09	0.68	
Control Delay	137.7	98.4		115.5	72.8		83.6	109.5		131.6	41.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	137.7	98.4		115.5	72.8		83.6	109.5		131.6	41.3	
LOS	F	F		F	E		F	F		F	D	
Approach Delay		103.8			79.4			106.1			77.7	
Approach LOS		F			E			F			E	
Queue Length 50th (m)	~45.8	~134.5		~49.8	~138.7		14.3	~104.8		~70.4	81.1	
Queue Length 95th (m)	#91.5	#196.7		m#75.2	m#156.0		#33.5	#165.0		#122.4	117.7	
Internal Link Dist (m)		313.9			393.6			302.0			70.4	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	161	1008		178	993		99	376		244	577	
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	1.07	1.07		1.06	1.04		0.62	1.07		1.09	0.68	

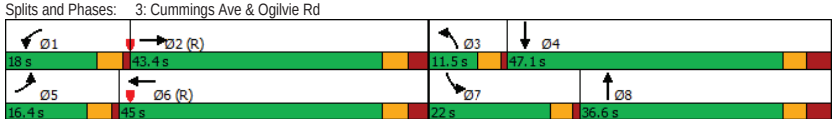
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 91.0	Intersection LOS: F
Intersection Capacity Utilization 103.3%	ICU Level of Service G
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	314	1099	104	231	716	220	176	379	163	146	424	327
Future Volume (vph)	314	1099	104	231	716	220	176	379	163	146	424	327
Satd. Flow (prot)	1658	3316	1469	1658	3316	1483	1658	3166	0	1658	3100	0
Flt Permitted	0.263			0.094			0.950			0.950		
Satd. Flow (perm)	459	3316	1469	164	3316	1483	1658	3166	0	1658	3100	0
Satd. Flow (RTOR)			136			220		50			142	
Lane Group Flow (vph)	314	1099	104	231	716	220	176	542	0	146	751	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	1	6	6	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	34.1	34.1	9.7	34.1	34.1	10.9	30.1		12.2	30.1	
Total Split (s)	20.0	51.0	51.0	20.0	51.0	51.0	18.9	30.1		18.9	30.1	
Total Split (%)	16.7%	42.5%	42.5%	16.7%	42.5%	42.5%	15.8%	25.1%		15.8%	25.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7		3.5	3.7	
All-Red Time (s)	1.0	2.4	2.4	1.0	2.4	2.4	2.2	2.4		3.7	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.2	2.4	
Total Lost Time (s)	4.7	6.1	6.1	4.7	6.1	6.1	5.9	6.1		9.4	8.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	62.0	45.6	45.6	61.2	45.3	45.3	13.0	24.0		9.5	21.6	
Actuated g/C Ratio	0.52	0.38	0.38	0.51	0.38	0.38	0.11	0.20		0.08	0.18	
v/c Ratio	0.81	0.87	0.16	0.88	0.57	0.32	0.98	0.81		1.11	1.11	
Control Delay	14.4	26.8	3.4	60.2	32.0	4.6	116.9	51.8		162.9	107.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.4	26.8	3.4	60.2	32.0	4.6	116.9	51.8		162.9	107.3	
LOS	B	C	A	E	C	A	F	D		F	F	
Approach Delay		22.6			32.4			67.7			116.3	
Approach LOS		C			C			E			F	
Queue Length 50th (m)	12.1	136.3	4.3	37.3	70.1	0.0	42.0	59.0		~39.4	~91.5	
Queue Length 95th (m)	m10.5	m121.4	m3.6	#79.3	89.3	15.5	#86.3	#80.0		#80.6	#130.1	
Internal Link Dist (m)		393.6			260.7			297.6			298.7	
Turn Bay Length (m)	80.0		65.0	50.0		60.0	100.0			110.0		
Base Capacity (vph)	391	1260	642	275	1251	696	179	673		131	674	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.80	0.87	0.16	0.84	0.57	0.32	0.98	0.81		1.11	1.11	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

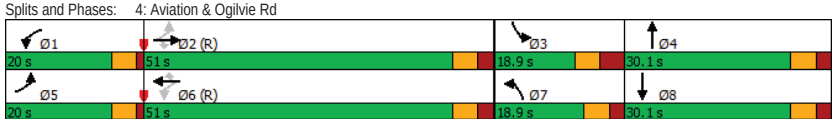
Intersection Signal Delay: 52.4	Intersection LOS: D
Intersection Capacity Utilization 100.3%	ICU Level of Service G
Analysis Period (min) 15	

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

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

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

Splits and Phases: 4: Aviation & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	55	68	82	334	291	10	107	68	62	507	11
Future Volume (vph)	10	55	68	82	334	291	10	107	68	62	507	11
Satd. Flow (prot)	1658	1383	0	1595	1568	0	1658	1529	0	1445	1739	0
Flt Permitted	0.177			0.678			0.265			0.538		
Satd. Flow (perm)	309	1383	0	1109	1568	0	462	1529	0	717	1739	0
Satd. Flow (RTOR)		68						33				
Lane Group Flow (vph)	10	123	0	82	625	0	10	175	0	62	518	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.7	30.8		30.8	30.8		22.5	22.5		22.5	22.5	
Total Split (s)	15.0	43.0		43.0	43.0		37.0	37.0		37.0	37.0	
Total Split (%)	15.0%	43.0%		43.0%	43.0%		37.0%	37.0%		37.0%	37.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.1		3.1	3.1		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.8		6.8	6.8		6.5	6.5		6.5	6.5	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	40.4	38.3		36.3	36.3		24.9	24.9		29.9	29.9	
Actuated g/C Ratio	0.50	0.47		0.44	0.44		0.31	0.31		0.37	0.37	
v/c Ratio	0.04	0.18		0.17	0.90		0.07	0.36		0.24	0.81	
Control Delay	10.6	6.8		16.2	40.0		23.6	20.9		22.1	36.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.6	6.8		16.2	40.0		23.6	20.9		22.1	36.3	
LOS	B	A		B	D		C	C		C	D	
Approach Delay		7.1			37.3			21.1			34.8	
Approach LOS		A			D			C			C	
Queue Length 50th (m)	0.8	4.6		7.1	82.9		1.0	16.1		6.3	67.9	
Queue Length 95th (m)	3.0	13.0		19.1	#178.6		5.4	37.9		18.2	#142.9	
Internal Link Dist (m)		407.0			322.8			177.5			302.0	
Turn Bay Length (m)	98.0			67.0			35.0			38.0		
Base Capacity (vph)	324	895		493	697		173	594		268	651	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.14		0.17	0.90		0.06	0.29		0.23	0.80	

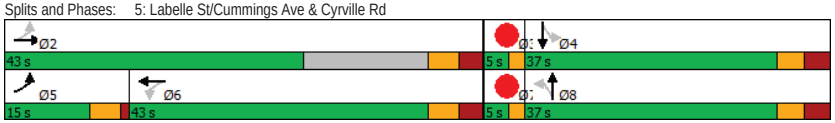
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 81.6
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.90

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	

Intersection Signal Delay: 32.0 Intersection LOS: C
Intersection Capacity Utilization 100.2% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Labelle St/Cummings Ave & Cyrville Rd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	6	592	55	9	642
Future Volume (vph)	43	6	592	55	9	642
Satd. Flow (prot)	1643	0	1726	0	0	3312
Flt Permitted	0.958					0.999
Satd. Flow (perm)	1643	0	1726	0	0	3312
Lane Group Flow (vph)	49	0	647	0	0	651
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	6	592	55	9	642
Future Vol, veh/h	43	6	592	55	9	642
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	-	-	-	90	-
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	43	6	592	55	9	642

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	959	620	0	0	647	0
Stage 1	620	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	270	487	-	-	937	-
Stage 1	535	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	266	487	-	-	937	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.4	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	282	937	-
HCM Lane V/C Ratio	-	-	0.174	0.01	-
HCM Control Delay (s)	-	-	20.4	8.9	0.1
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Appendix Q

Synchro Worksheets -2034 Sensitivity Analysis

CGH TRANSPORTATION

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	692	13	105	839	170	63	160	90	169	157	109
Future Volume (vph)	65	692	13	105	839	170	63	160	90	169	157	109
Satd. Flow (prot)	1580	3266	0	1642	3167	0	1658	1557	0	1642	1624	0
Flt Permitted	0.208			0.319			0.595			0.329		
Satd. Flow (perm)	346	3266	0	544	3167	0	1034	1557	0	548	1624	0
Satd. Flow (RTOR)		2			26			20			28	
Lane Group Flow (vph)	65	705	0	105	1009	0	63	250	0	169	266	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		36.6	36.6		11.4	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.2%	28.2%		8.8%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	75.3	68.2		76.4	70.4		27.1	27.1		40.8	38.5	
Actuated g/C Ratio	0.58	0.52		0.59	0.54		0.21	0.21		0.31	0.30	
v/c Ratio	0.25	0.41		0.28	0.58		0.29	0.74		0.73	0.53	
Control Delay	13.9	17.6		13.7	20.8		45.7	56.9		54.4	37.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	13.9	17.6		13.7	20.8		45.7	56.9		54.4	37.5	
LOS	B	B		B	C		D	E		D	D	
Approach Delay		17.3			20.1			54.7			44.1	
Approach LOS		B			C			D			D	
Queue Length 50th (m)	6.1	48.4		12.5	67.1		13.3	54.1		32.0	49.2	
Queue Length 95th (m)	14.1	57.6		m17.2	m77.4		26.7	83.5		#54.0	75.7	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	261	1713		373	1725		238	374		231	536	
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	0.25	0.41		0.28	0.58		0.26	0.67		0.73	0.50	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74
Intersection Signal Delay: 27.4 — Intersection LOS: C
Intersection Capacity Utilization 85.8% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cummings Ave & Ogilvie Rd

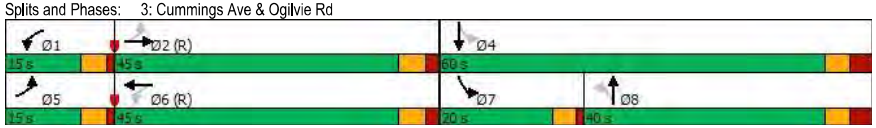
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	1049	27	189	806	226	61	213	188	274	252	122
Future Volume (vph)	162	1049	27	189	806	226	61	213	188	274	252	122
Satd. Flow (prot)	1658	3294	0	1610	3120	0	1658	1539	0	1658	1649	0
Flt Permitted	0.100			0.097			0.539			0.187		
Satd. Flow (perm)	175	3294	0	164	3120	0	937	1539	0	319	1649	0
Satd. Flow (RTOR)		2			32			37			26	
Lane Group Flow (vph)	162	1076	0	189	1032	0	61	401	0	274	374	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0		20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%		16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	51.5	40.1		53.5	41.1		31.5	31.5		53.8	51.5	
Actuated g/C Ratio	0.43	0.33		0.45	0.34		0.26	0.26		0.45	0.43	
v/c Ratio	0.80	0.98		0.90	0.95		0.25	0.93		0.86	0.52	
Control Delay	60.3	51.5		70.4	53.9		37.0	68.2		48.6	25.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	60.3	51.5		70.4	53.9		37.0	68.2		48.6	25.8	
LOS	E	D		E	D		D	E		D	C	
Approach Delay		52.7			56.4			64.1			35.5	
Approach LOS		D			E			E			D	
Queue Length 50th (m)	16.7	39.3		38.3	101.9		11.1	83.1		40.4	57.2	
Queue Length 95th (m)	#58.8	#150.8		m#55.9	m#141.4		23.0	#138.6		#81.0	84.9	
Internal Link Dist (m)		313.9			393.6			302.0			237.9	
Turn Bay Length (m)	80.0			100.0			34.0			153.0		
Base Capacity (vph)	206	1101		210	1090		260	455		318	748	
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	0.79	0.98		0.90	0.95		0.23	0.88		0.86	0.50	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98
Intersection Signal Delay: 52.3 — Intersection LOS: D
Intersection Capacity Utilization 102.3% — ICU Level of Service G
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cummings Ave & Ogilvie Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	691	13	105	838	175	63	163	90	179	163	145
Future Volume (vph)	83	691	13	105	838	175	63	163	90	179	163	145
Satd. Flow (prot)	1580	3266	0	1642	3162	0	1658	1560	0	1642	1605	0
Flt Permitted	0.199			0.325			0.555			0.325		
Satd. Flow (perm)	331	3266	0	554	3162	0	964	1560	0	541	1605	0
Satd. Flow (RTOR)		2			27			20			36	
Lane Group Flow (vph)	83	704	0	105	1013	0	63	253	0	179	308	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	11.0	71.0		11.0	71.0		36.6	36.6		11.4	48.0	
Total Split (%)	8.5%	54.6%		8.5%	54.6%		28.2%	28.2%		8.8%	36.9%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	75.3	68.1		75.5	68.2		27.2	27.2		40.9	38.6	
Actuated g/C Ratio	0.58	0.52		0.58	0.52		0.21	0.21		0.31	0.30	
v/c Ratio	0.33	0.41		0.28	0.61		0.31	0.74		0.78	0.61	
Control Delay	17.4	17.8		13.6	21.7		46.5	57.3		59.3	39.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.4	17.8		13.6	21.7		46.5	57.3		59.3	39.6	
LOS	B	B		B	C		D	E		E	D	
Approach Delay		17.8			20.9			55.2			46.9	
Approach LOS		B			C			E			D	
Queue Length 50th (m)	7.9	48.1		12.4	67.2		13.4	54.9		34.1	58.1	
Queue Length 95th (m)	20.9	59.0		m17.2	m77.5		27.0	84.8		#61.1	88.2	
Internal Link Dist (m)		313.9			393.6			302.0			58.8	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	252	1711		374	1670		222	375		229	535	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.33	0.41		0.28	0.61		0.28	0.67		0.78	0.58	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 28.7	Intersection LOS: C
Intersection Capacity Utilization 87.3%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	1056	27	189	799	238	61	214	188	266	252	142
Future Volume (vph)	173	1056	27	189	799	238	61	214	188	266	252	142
Satd. Flow (prot)	1658	3294	0	1610	3112	0	1658	1539	0	1658	1639	0
Flt Permitted	0.100			0.098			0.529			0.186		
Satd. Flow (perm)	175	3294	0	166	3112	0	920	1539	0	317	1639	0
Satd. Flow (RTOR)		2			34			37			30	
Lane Group Flow (vph)	173	1083	0	189	1037	0	61	402	0	266	394	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	24.7		9.7	24.7		36.6	36.6		9.3	36.6	
Total Split (s)	15.0	45.0		15.0	45.0		40.0	40.0		20.0	60.0	
Total Split (%)	12.5%	37.5%		12.5%	37.5%		33.3%	33.3%		16.7%	50.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	2.0		1.0	2.0		3.3	3.3		1.0	3.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	5.7		4.7	5.7		6.6	6.6		4.3	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	51.6	40.0		53.3	40.9		31.5	31.5		53.8	51.5	
Actuated g/C Ratio	0.43	0.33		0.44	0.34		0.26	0.26		0.45	0.43	
v/c Ratio	0.84	0.98		0.90	0.96		0.25	0.93		0.84	0.55	
Control Delay	65.4	52.9		70.1	55.4		37.2	68.5		45.8	26.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.4	52.9		70.1	55.4		37.2	68.5		45.8	26.4	
LOS	E	D		E	E		D	E		D	C	
Approach Delay		54.6			57.7			64.3			34.2	
Approach LOS		D			E			E			C	
Queue Length 50th (m)	19.0	~39.7		38.3	102.3		11.1	83.5		39.0	60.8	
Queue Length 95th (m)	#66.3	#152.6		m#56.0	m#141.7		23.0	#139.6		#76.9	90.3	
Internal Link Dist (m)		313.9			393.6			302.0			70.4	
Turn Bay Length (m)	80.0			100.0			34.0					
Base Capacity (vph)	206	1100		210	1082		256	455		317	746	
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	0.84	0.98		0.90	0.96		0.24	0.88		0.84	0.53	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 53.2	Intersection LOS: D
Intersection Capacity Utilization 102.0%	ICU Level of Service G
Analysis Period (min) 15	

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

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

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

Splits and Phases: 3: Cummings Ave & Ogilvie Rd