780 Baseline Road, 7-9 Hilliard Avenue – Phase 1

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report (SPA) (Rev#1)

Prepared for:

Theberge Developments Ltd.
1600 Laperriere Avenue, Suite 205
Ottawa ON K1Z 8P5

Prepared by:

6 Plaza Court
Ottawa, ON K2H 7W1

October 2023

PN: 2021-083

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1 Screening

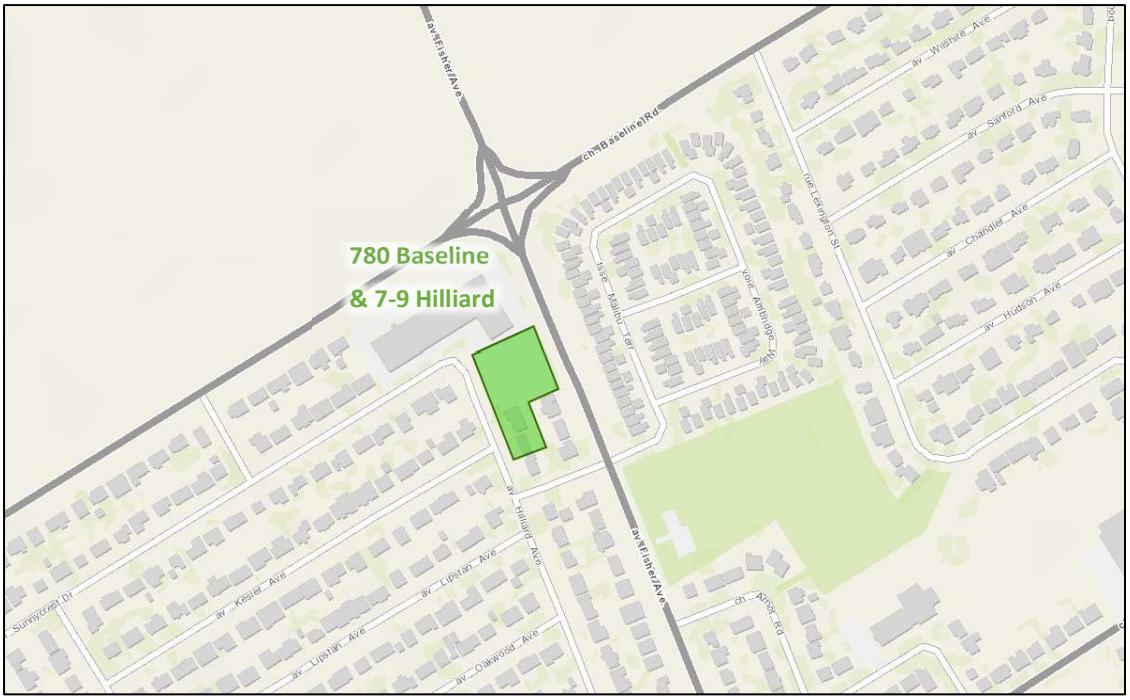
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is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

2 Existing and Planned Conditions

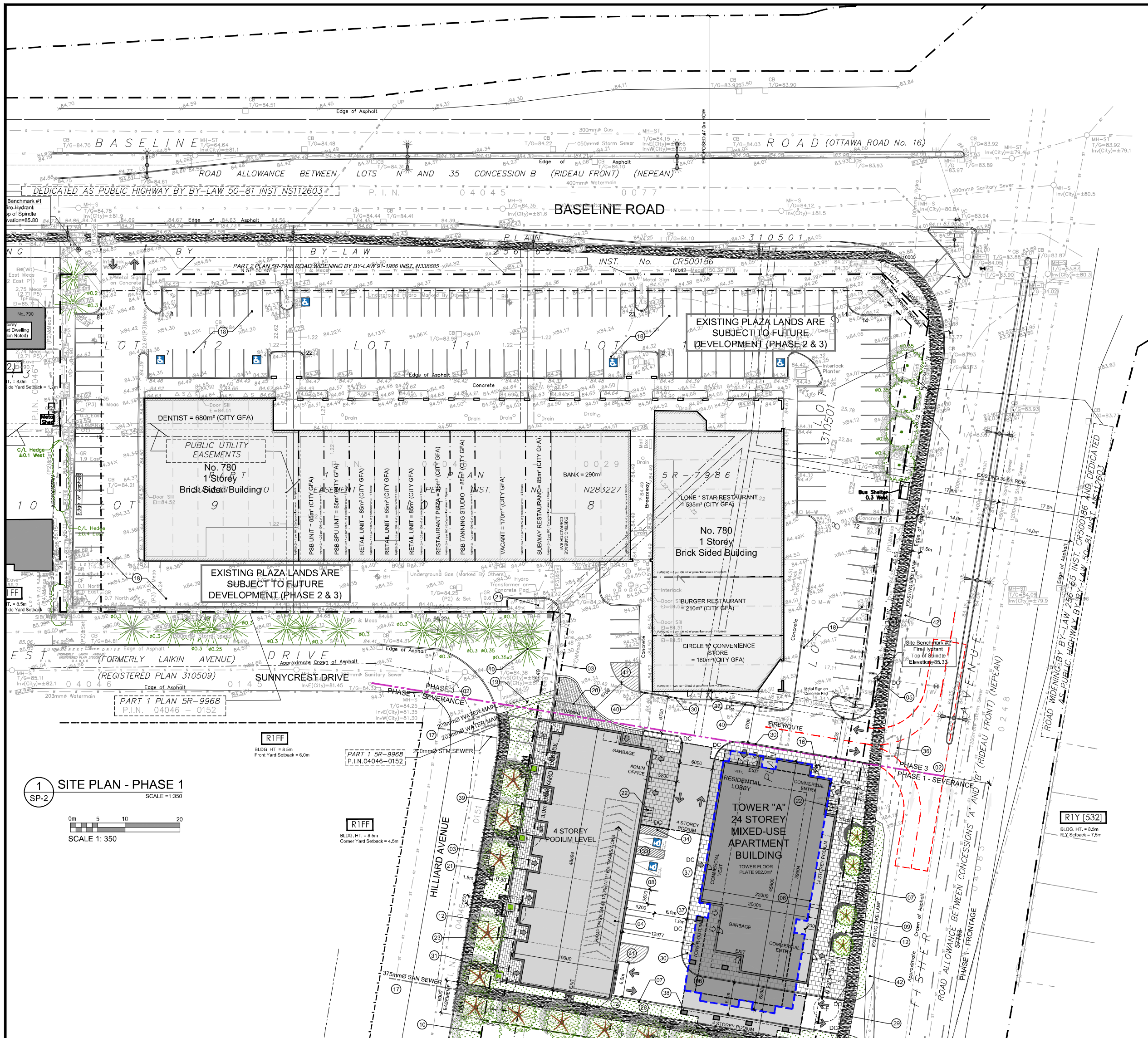
2.1 Proposed Development

The existing site is the southern portion of the 780 Baseline Road and the 7-9 Hilliard Avenue parcels (currently zoned as General Mixed Use (GM) and Residential First Density (R1FF), and it is under a rezoning application to establish a site-specific height schedule and to remove the floor space index provisions), and presently consists of a surface parking lot and two detached dwellings. The proposed redevelopment is the first phase of a multiphase project which was the subject of a recent rezoning application. The first phase comprises a 24-storey mixed-used building including a total of 320 dwelling units and 7,650 sq. ft commercial space on the 780 Baseline Road parcel and a park on the 7-9 Hilliard Avenue parcels. The anticipated build-out horizon is 2026. The development proposes a new access permitting all movements except the northbound left-turn movement, which is to be restricted via signage on Fisher Avenue, and a connection to the existing surface parking facilities of the retail plaza on the north side of the 780 Baseline Road parcel. A total of 328 residential, 30 visitor, 12 commercial vehicle parking spaces, and 328 bicycle parking spaces are proposed. The site is located within the Carleton Heights Secondary Plan area. Figure 1 illustrates the Study Area Context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan

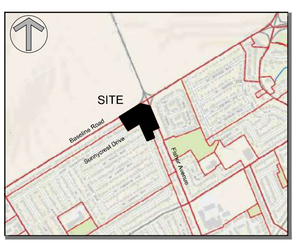


Source: http://maps.ottawa.ca/geoOttawa/ Accessed: April 18, 2023



1 SP-2 SITE PLAN - PHASE 1
SCALE = 1:350

SCALE 1: 350



KEY MAP

PROJECT DEVELOPER

Theberge Developments Ltd.
1600 Laperriere Ave Suite 205
Ottawa, ON K1Z 1B7
Tel: (613) 421-1515
Cell: (613) 880-5491
Email: joeytheberge@thebergehomes.com
Email: Jeremy@thebergehomes.com

URBAN PLANNER

Fotenn Consultants Inc.
396 Cooper Street, Suite 300
Ottawa, ON Canada, K2P 2H7
Tel.: (613) 730-5709
Fax: (613) 730-1136
E-Mail: alain@fotenn.com

TRANSPORTATION ENGINEER

CGH Transportation Inc.
6 Plaza Court
Ottawa, ON K2H 7W1
Tel: (343) 999-9117
Cell: (613) 697-3797
Email: Christopher.Gordon@CGHTransportation.com
Email: john.kingsley@cghtransportation.com

WIND / NOISE ENGINEER

Gradient Wind Engineering
127 Walgreen Road,
Ottawa, ON, Canada K0A 1L0
Tel: (613) 836-0934
Cell: (613) 226-5273
Email: joshua.foster@gradientwind.com

CIVIL ENGINEER

McIntosh Perry
115 Walgreen Road
Ottawa, ON K0A 1L0
Tel: (613) 836-2184
Fax: (613) 836-3742
Email: r.robineau@mcintoshperry.com

SURVEYOR

Farley, Smith & Denis Surveying Ltd.
30 Colonnade Road North, unit 275
Ottawa, Ontario K2E 7J6
Tel: (613) 727-8226
Fax: (613) 727-1823
Email: jleslie@bellnet.ca

LANDSCAPE ARCHITECT

James B. Lennox & Associates Inc.
Landscape Architects
3332 Carling Ave.
Ottawa, Ontario K2H 5A8
Tel: 613-722-5168
Fax: 1-866-343-3942
Email: ml@jbla.ca

LEGAL DESCRIPTION

TOPOGRAPHIC PLAN OF SURVEY OF

LOT 6 AND
PART OF LOTS 5, 7, 8, 9, 10, 11 & 12
REGISTERED PLAN 310501
& PART OF LOTS 5, 6, 7, 8 & 9
REGISTERED PLAN 310509
CITY OF OTTAWA

FARLEY, SMITH & DENIS SURVEYING LTD. 2023

SITE PLAN LEGEND

- UNIT PAVERS SURFACE
- PRIVATE TERRACE
- NEW CONCRETE SIDEWALK
- EXISTING CONCRETE SIDEWALK
- SOFT LANDSCAPING
- PARKLAND DEDICATION
- BIKE RACK
- TWO WAY VEHICLE CIRCULATION
- RESIDENTIAL / COMMERCIAL DOOR
- PROPERTY LINE
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED

PROJECT INFORMATION

Zoning By-law 2008-250 Consolidation GM R1FF — SITE AREA 1.57 ha. 15,688.6 sq. m. / 168,870 sq. ft.

ZONING		REQUIRED	PROVIDED
BUILDING HEIGHT	BUILDING 'A'	18.0m	24 STOREY'S / 78.0m
ALLOWABLE PROJECTION - AMENITY LEVEL		0.0m	4.0m
DENSITY - MAXIMUM FLOOR SPACE INDEX (FULL SITE)		2.0 = 28,588.8 sq. m	4.6 = 64,056.5 sq. m
TOWER SEPARATION		23.0m	60.0m
TOWER FOOTPRINT		750m²	902m²
FRONT YARD SETBACK		3.0m	3.0m
INTERIOR SIDE YARD SETBACK		5.0m	6.5m
REAR YARD SETBACK		3.0m	3.0m
MINIMUM WIDTH OF LANDSCAPE AREA	(ABUTTING A STREET OR RESIDENTIAL ZONE)	3.0m	6.5m
MINIMUM WIDTH OF LANDSCAPE BUFFER @ PARKING LOT		3.0m	8.6m
TOTAL RESIDENTIAL UNIT COUNT		-	320
PARKING - RESIDENTIAL (AFTER 12 UNITS PER BLDG.) - 0.5 PER UNIT		154	328
PARKING - VISITOR ONLY (AFTER 12 UNITS PER BLDG.) - 0.1 PER UNIT		30	30
PARKING - COMM. MEDICAL (UNDER 500m² GFA NOT REQUIRED) - 2 PER 100m² GFA		9	9
PARKING - COMM. OFFICE - 1 PER 100m² GFA		2	3
BICYCLE PARKING - RESIDENTIAL - 0.5 PER UNIT		160	320
BICYCLE PARKING - COMMERCIAL - 1 PER 250m² GFA		3	8
AISLE & DRIVEWAY MINIMUM / MAXIMUM WIDTH		6.0m / 6.7m	6.0m / 6.7m
AMENITY AREA - TOTAL PER UNIT - 6.0m²		1,920.0m²	2,770.0m²
AMENITY AREA - 50% COMMUNAL PER UNIT - 3.0m²		960.0m²	1,320.0m²

SITE STATISTICS

GROSS BUILDING - AREA
(CITY OF OTTAWA'S DEFINITION)

EXISTING PLAZA - BASELINE (ESTIMATE 80% EFFICIENCY)	1,807.9 sq. m. 19,460 sq. ft.
EXISTING PLAZA - FISHER (ESTIMATE 80% EFFICIENCY)	925.3 sq. m. 9,960 sq. ft.
PROPOSED TOWER 'A'	20,136.9 sq. m. 216,752 sq. ft.
TOTAL AREA	22,870.0 sq. m. 246,172 sq. ft.

PARKING SPACE PROVIDED

COMMERCIAL RESTAURANT	- 5 PER 100m² GFA	200m²	46
COMMERCIAL MEDICAL	- 2 PER 100m² GFA	200m²	14
COMMERCIAL BANK	- 1.25 PER 100m² GFA	700m²	4
COMMERCIAL RETAIL	- 1.25 PER 100m² GFA	700m²	5
COMMERCIAL P.S.B.	- 1.25 PER 100m² GFA	1,300m²	5
TOTAL (EXISTING PLAZA)			138
PROPOSED TOWER 'A'			370

BICYCLE SPACE PROVIDED

EXISTING PLAZA - BASELINE	6
EXISTING PLAZA - FISHER	2
PROPOSED TOWER 'A'	328
TOTAL	336

LOT COVERAGE

EXISTING PLAZA - BASELINE	2,260.3m²	14.4%
EXISTING PLAZA - FISHER	1,156.7m²	7.4%
PROPOSED TOWER 'A'	1,721.7m²	11.0%
PAVED SURFACE	5,634.1m²	35.9%
LANDSCAPE OPEN SPACE	4,915.8m²	31.3%
TOTAL	15,688.6m²	100.0%

BUILDING STATISTICS - PHASE 1

GROSS BUILDING - AREA
(CITY OF OTTAWA'S DEFINITION)

PARKING LEVEL		0.0 sq. m. 000 sq. ft.
GROUND FLOOR	474.6 + 455.8 sq. m. 5,109 + 4,908 sq. ft.	930.6 sq. m. 10,017 sq. ft.
2nd FLOOR		1,691.2 sq. m. 18,204 sq. ft.
3rd FLOOR		1,692.0 sq. m. 18,212 sq. ft.
4th FLOOR		1,687.7 sq. m. 18,166 sq. ft.
5th FLOOR		393.1 sq. m. 4,231 sq. ft.
6th - 20th FLOOR - TOWER	15 x 743.2 sq. m. 15 x 8,000 sq. ft.	1,604.8 sq. m. 120,000 sq. ft.
21st & 22nd FLOOR	2 x 667.8 sq. m. 2 x 7,188 sq. ft.	1,335.6 sq. m. 14,376 sq. ft.
23rd & 24th FLOOR	2 x 629.2 sq. m. 2 x 6,773 sq. ft.	1,258.5 sq. m. 13,546 sq. ft.
AMENITY / MECHANICAL PENTHOUSE		0.0 sq. m. 000 sq. ft.
TOTAL AREA		20,136.9 sq. m. 216,752 sq. ft.
TOWER FOOTPRINT AREA (BALCONIES NOT INCLUDED)		902.0 sq. m. 9,709 sq. ft.

UNIT STATISTICS

STUDIO UNIT	5.3%	17
1 BEDROOM UNIT	50.9%	163
2 BEDROOM UNIT	41.6%	133
3 BEDROOM	2.2%	7
TOTAL		320
COMMERCIAL MEDICAL / OFFICE		674.9 sq. m. 7,265 sq. ft.

CAR PARKING — AREA 'X' on SCHEDULE 1A

MINIMUM REQUIRED		
RESIDENCE (AFTER 12 UNITS)	- 0.5 PER DWELLING UNIT	154
VISITOR (AFTER 12 UNITS)	- 0.1 PER DWELLING UNIT	30
COMM. MEDICAL FACILITY	- 2 PER 100m² of GFA	9
COMM. OFFICE (ABOVE THE FIRST FLOOR)	- 1 PER 100m² of GFA	2
TOTAL		186

MAXIMUM REQUIRED		
RESIDENCE	- 1.75 PER DWELLING UNIT	560
COMM. MEDICAL FACILITY	- 5 PER 100m² of GFA	24
COMM. OFFICE (ABOVE THE FIRST FLOOR)	- 2.7 PER 100m² of GFA	7
TOTAL		591

PROVIDED		
RESIDENCE	- 1.0 PER UNIT	328
VISITOR	- 0.1 PER UNIT (MAX. 30)	30
COMM. MEDICAL FACILITY (GROUND FLOOR)	- 2 PER 100m² of GFA	9
COMM. OFFICE (ABOVE THE FIRST FLOOR)	- 1 PER 100m² of GFA	3
TOTAL		370
EXTERIOR		9
PARKING GARAGE		361

BICYCLE PARKING

REQUIRED		
RESIDENCE	- 0.5 PER UNIT (320 UNITS)	160
COMM. MEDICAL	- 1.0 PER 250m² OF G.F.A.	2
COMM. OFFICE	- 1.0 PER 250m² OF G.F.A.	1
TOTAL		163

PROVIDED	
EXTERIOR	8
PARKING GARAGE	320
TOTAL	328

AMENITY SPACE

EXTERIOR AT GRADE - PRIVATE =	150.0 sq. m.
EXTERIOR AT GRADE - COMMUNAL =	400.0 sq. m.
5th FLOOR INTERIOR COMMUNAL =	370.0 sq. m.
5th FLOOR COMMUNAL TERRACE =	300.0 sq. m.
ROOF TOP COMMUNAL TERRACE =	100.0 sq. m.
ROOF TOP AMENITY ROOM =	130.0 sq. m.
PRIVATE TERRACE =	100.0 sq. m.
PRIVATE BALCONIES =	1,200.0 sq. m.
TOTAL =	2,750.0 sq. m.
TOTAL COMMUNAL =	1,300.0 sq. m.
REQUIRED - 6.0M² PER UNIT (320) =	1,920.0 sq. m.
REQUIRED COMMUNAL @ 50% =	960.0 sq. m.

WASTE REQUIREMENT (320 UNITS)

GARBAGE	- 0.11 PER UNIT	36 YARDS
RECYCLING GMP	- 0.018 PER UNIT	6 YARDS
RECYCLING FIBER	- 0.038 PER UNIT	12 YARDS
COMPOST	- 240L PER 50 UNITS	7

LAND PHASE AREA

PHASE 1 - BUILDING "A" =	3,519.2 sq. m.	22.43%
PHASE 1 PARKLAND =	352.0 sq. m.	2.24%
FUTURE PHASES - EX. PLAZA =	10,900.4 sq. m.	69.48%
FUTURE PHASES PARKLAND =	917.0 sq. m.	5.85%
TOTAL =	15,688.6 sq. m.	100.00%

DRAWING NOTES

1. PROPERTY LINE
2. PHASE LINE
3. BUILDING SETBACK LINES
4. INTERNAL RAMP TO U/G GARAGE WITH TRENCH DRAIN
5. EXISTING FIRE HYDRANT
6. OUTLINE OF TOWER ABOVE
7. OUTLINE OF PHASE 1 PARKING GARAGE
8. SURFACE PARKING SPACE 2.6 X 5.2 M
9. 2.0m WIDE CITY SIDEWALK
10. EXISTING TREE TO REMAIN, PROTECT AS REQUIRED
11. EXISTING CONCRETE STREET CURB AND SIDEWALK
12. SOFT LANDSCAPING, SEE LANDSCAPE PLAN
13. BELOW GRADE CISTERN IN PARKING GARAGE
14. 1.2 X 1.8 CONCRETE PAD FOR GAS EQUIPMENT (GAS BLOW OFF)
15. HYDRO VAULT LOCATION IN PARKING GARAGE
16. SIAMESE CONNECTION
17. PROPOSED UTILITIES, SEE CIVIL
18. EXISTING COMMERCIAL PLAZA / PARKING TO REMAIN
19. EXISTING PEDESTRIAN WALKWAY
20. INTERIM LOADING BAY ON HARD LANDSCAPED SURFACE WITH MOUNTABLE CURB
21. EXISTING MAIL BOXES / UTILITY EQUIPMENT / KIOSK
22. BICYCLE RACK, SEE LANDSCAPING
23. PRIVACY SCREEN
24. 2.1m HT. SOLID WOOD PRIVACY FENCE
25. METAL GRATE - AIR SHAFT
26. TEMPORARY SNOW STORAGE
27. PARKLAND AREA / INTERIM CONSTRUCTION STAGING AREA WITH CONSTRUCTION FENCING
28. PHASE 1 PARKLAND DEDICATION
29. DEPRESSED CURB WITH 2.0m WIDE CONTINUOUS SIDEWALK TO CITY STANDARDS, SEE CIVIL
30. 150mm HT CONCRETE BARRIER CURB
31. 1.5m WIDE PRIVATE WALK
32. EXISTING CEDAR HEDGE TO REMAIN
33. ACCESSIBLE PARKING SPACES
34. DEPRESSED CURB WITH 1.5m WIDE ACCESSIBLE AISLE
35. 2.0m WIDE CONCRETE WALK
36. EXISTING ISLAND TO BE REMOVED
37. DEPRESSED CURB
38. STRUCTURAL SUPPORT FOR BUILDING ABOVE
39. PRIVATE TERRACES FOR TOWNHOUSE STYLE UNITS
40. RE- ALINE EXISTING CURB AND DRIVEWAY
41. PAINTED ISLAND
42. EXISTING 1.5m BIKE LANE ON CITY STREET
43. EXISTING RESIDENTIAL HOUSE / LOT TO BE CLEARED
44. EXISTING UTILITY POLE

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:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- ◇00 INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- ⬡00 INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (000) 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
8		
7		
6		
5		
4		
3	REVISED AS PER ROUND 1 SPC COMMENTS	Sept 29, 23
2	ISSUED FOR SPC APPLICATION	June 09, 23
1	ISSUED FOR OWNER / CONSULTANT REVIEW	Apr. 13, 23

REVISIONS:

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK LAHEY — LICENCE 4375
SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT: THEBERGE HOMES
Theberge Developments Ltd.

ARCHITECT:
RODERICKLAHEY ARCHITECT INC
56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rodericklahey.ca

PROJECT TITLE:
780 Baseline Road
PHASE 1
OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN
PHASE 1

DRAWN: RV — CHECKED: T.Z.
SCALE: 1:350 — SHEET No.: SP-2
PROJECT No.: 2131

D07-12-23-0076

Plan No.: # ______

PAPER SIZE: ISO Full Bleed B1 (707.00 X 1000.00 MM) — PLOT DATE: Monday, October 02, 2023 — PLOT SCALE: 1:1 — PEN STYLE: 0-RLA-MASTER-100%.ctb — F:\2021\2131 - Baseline & Fisher\01 Design Development\01 Site Plan\2131 - Baseline SP-1 Site Plan 2023 10 02.dwg

2.2 Existing Conditions

2.2.1 Area Road Network

Baseline Road: Baseline Road is a City of Ottawa arterial road with a divided four-lane urban cross-section. Sidewalks are provided on the south side of the roadway, at intersections and bus stops on the north side of the road within the study area. The posted speed limit is 60 km/h. Within the study area, the City-protected right of way is 37.0 metres west of Marson Street, 47.0 metres between Marson Street and Fisher Avenue, and 35.8 metres east of Fisher Avenue. Baseline Road is designated as a truck route.

Fisher Avenue: Fisher Avenue is a City of Ottawa arterial road with a two-lane rural cross-section with paved shoulders on both sides of the road. North of Baseline Road, a sidewalk is present on the west side of the road and sidewalks are present on both sides of the road to the south. The posted speed limit is 50 km/h. Within the study area, the City-protected right of way is 34.0 north of Baseline Road, and the measured right of way is 35.0 metres along the site frontage and reduces to 25.0 metres to the south of the site. Fisher Avenue is designated as a truck route.

Sunnycrest Drive: Sunnycrest Drive is a City of Ottawa local road with a two-lane urban cross-section with on-street parking permitted on both sides of the road. The posted speed limit is 40 km/h and the measured right of way is 20.0 metres.

Hilliard Avenue: Hilliard Avenue is a City of Ottawa local road with a two-lane urban cross-section with on-street parking permitted on both sides of the road. The posted speed limit is 40 km/h and the measured right of way is 20.0 metres.

Malibu Terrace: Malibu Terrace is a City of Ottawa local road with a two-lane urban cross-section with on-street parking permitted on both sides of the road. A 40 metres sidewalk is present on the north side of the road east of Fisher Avenue. The posted speed limit is 40 km/h and the measured right of way is 20.0 metres.

2.2.2 Existing Intersections

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

Fisher Avenue at Baseline Road	The intersection of Fisher Avenue at Baseline Road is a signalized intersection. Each approach consists of an auxiliary left-turn lane, two through lanes, and a channelized auxiliary right-turn lane. Eastbound and westbound U-turn movements are prohibited, and trucks are prohibited from making westbound left turns.

2.2.3 Existing Driveways

Within 200 metres of the site accesses, eight driveways semi-detached and detached dwellings are located on the west side of Baseline Road. Eight driveways semi-detached and detached dwellings are present on the south side of Fisher Avenue. None of the driveways within the area of consideration are significant traffic generators. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways

Source: http://maps.ottawa.ca/geoOttawa/ Accessed: April 18, 2023

2.2.4 Cycling and Pedestrian Facilities

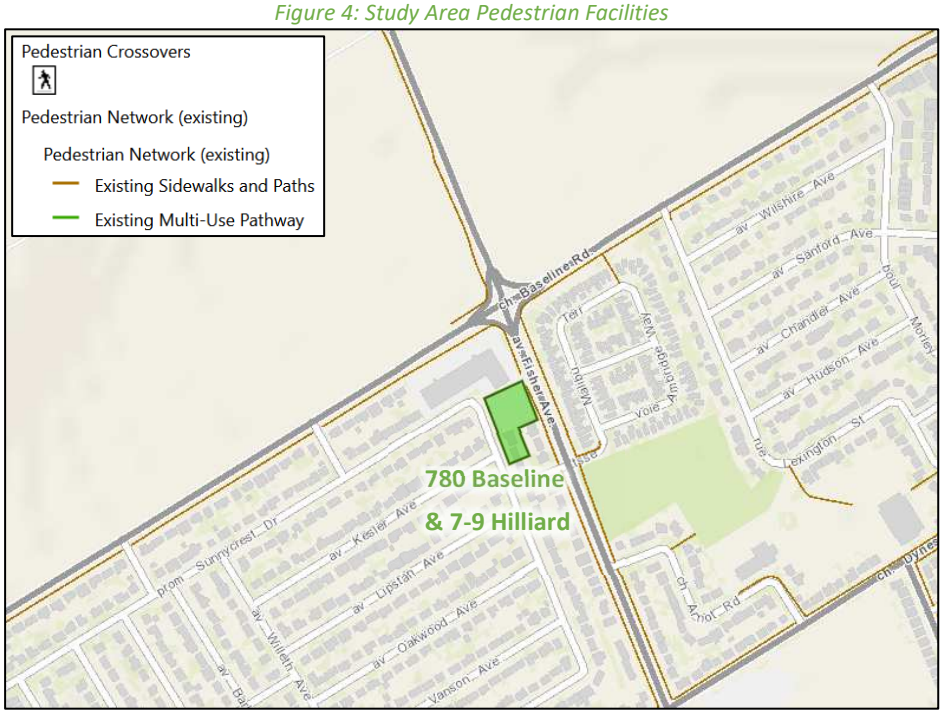
Figure 4 illustrates the pedestrian facilities in the study area and Figure 5 illustrates the cycling facilities.

Sidewalks are provided along the south side of Baseline Road, on the west side of Fisher Avenue north of Baseline Road, and on both sides of Fisher Avenue south of Baseline Road. Sidewalks are also present at intersections and bus stops on the north side of Baseline Road to the west of Fisher Avenue.

A paved shoulder is present on both sides of Fisher Avenue except through the intersection with Baseline Avenue where bike lanes are present and on the east side of the road between Malibu Terrace and the auxiliary northbound right turn lane taper at Baseline Road where a cycletrack is present. Cycletracks are also present at the Fisher Avenue at Deer Park Road/Dynes Road intersection, and bike lanes are present along Dynes Road and Deer Park Road.

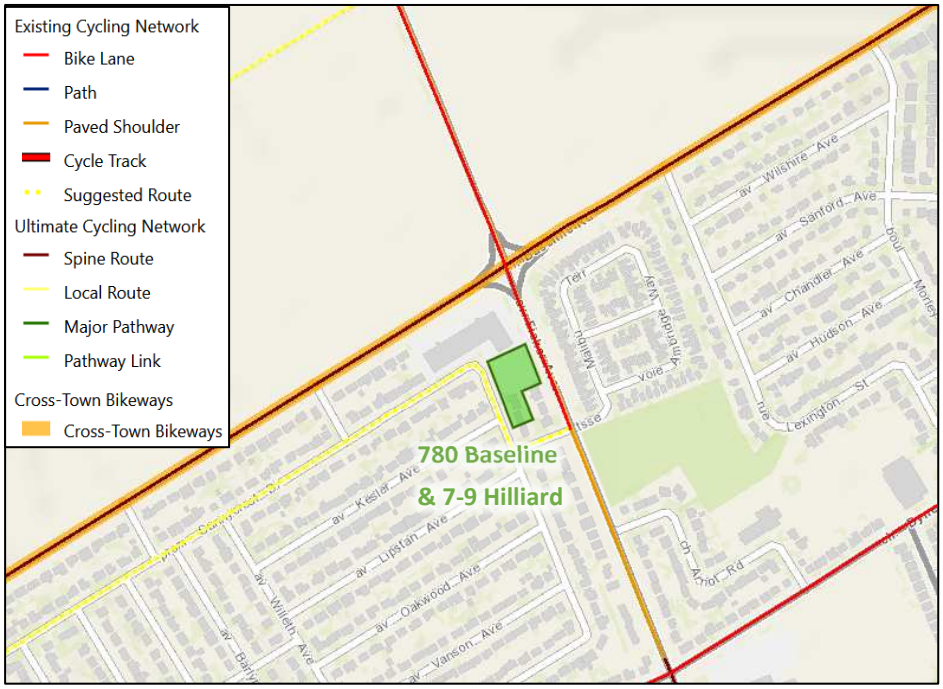
Fisher Avenue and Baseline Road are spine routes. Baseline Road is a cross-town bikeway. Malibu Terrace west of Fisher Avenue, Hilliard Avenue north of Malibu Terrace, Sunnycrest Drive, Deer Park Road, and Dynes Road are local routes.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 26, 2023

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 26, 2023

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

Figure 6: Existing Pedestrian Volumes

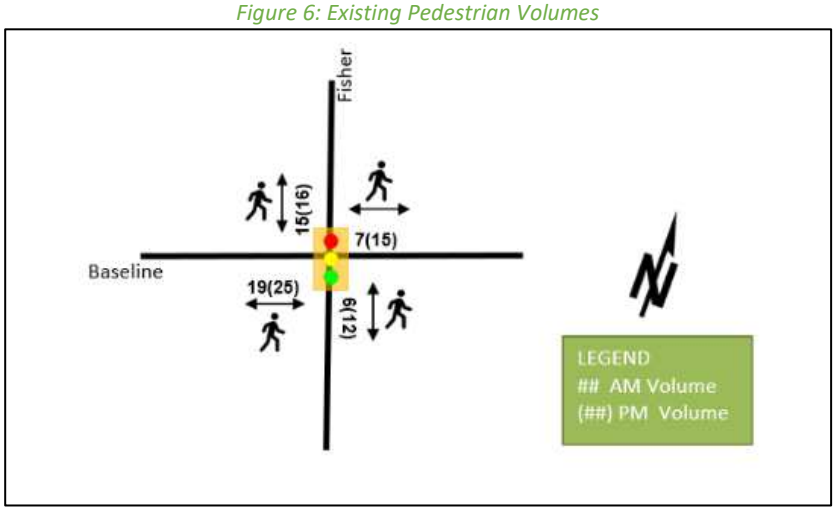
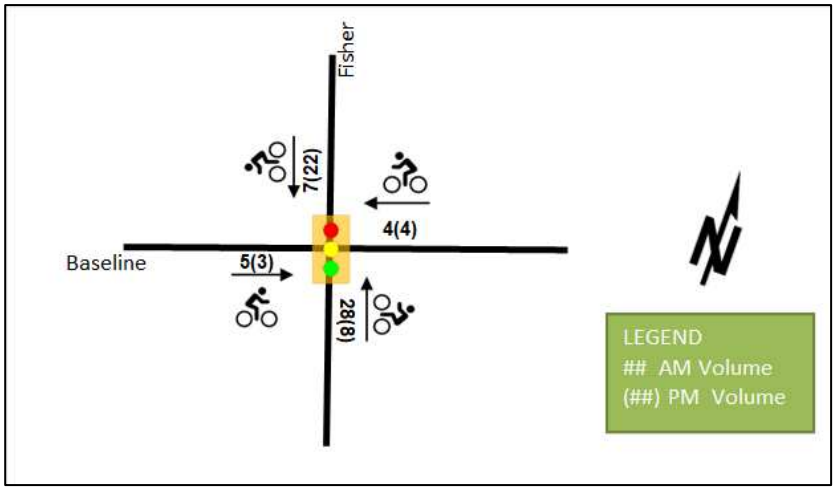


Figure 7: Existing Cyclist Volumes



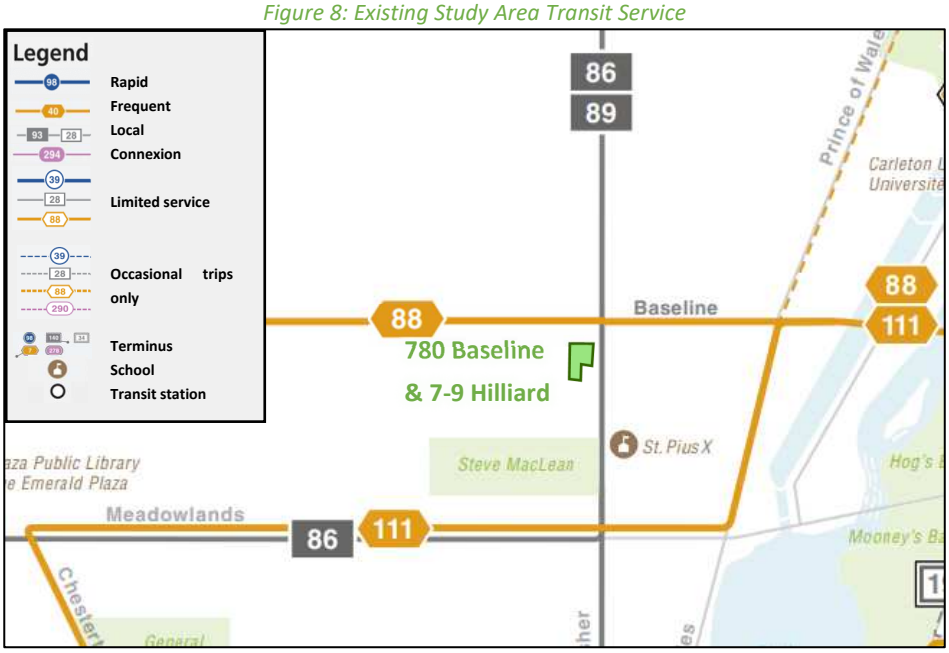
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from April 18, 2023 and is included for general information purposes and context to the surrounding area.

Within the study area, routes #86 and #89 travel along Fisher Avenue and route #88 travels along Baseline Road and Heron Road. Primary stops are located at Marson Street at Baseline Road and Fisher Avenue at Baseline Road intersections. The frequency of these routes within proximity of the proposed site based on April 18, 2023 service levels are:

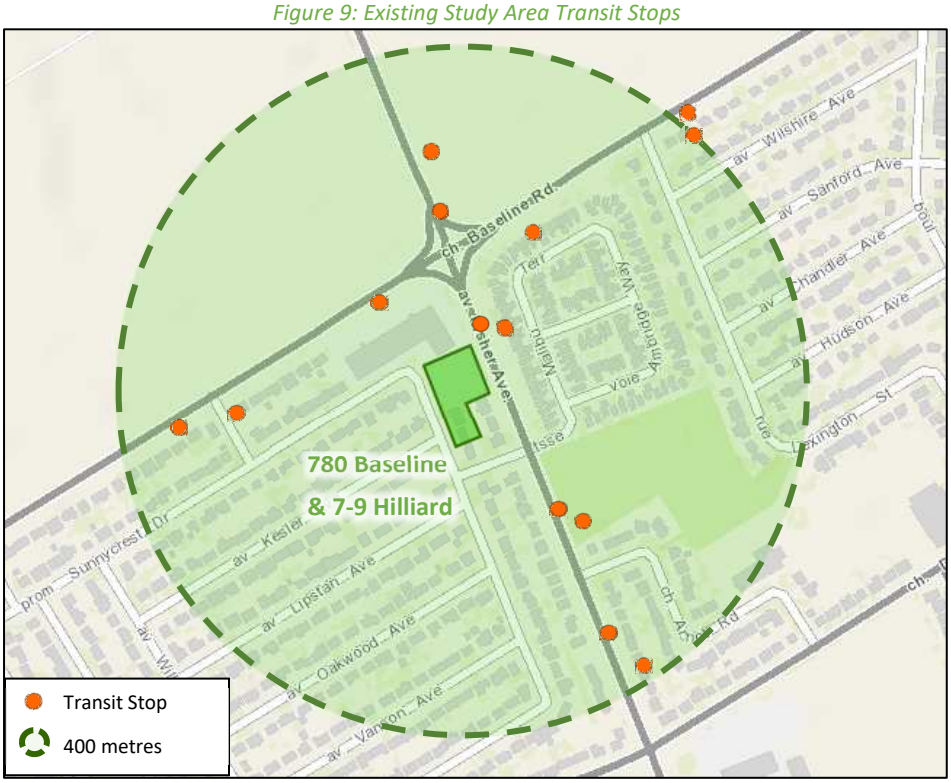
- Route # 86 – 15-minute service in the peak period/direction, 30-minute service all day
- Route # 88 – 10-12-minute service in the peak period/direction, 15-minute service all day
- Route # 89 – 15-minute service in the peak period/direction, 30-minute service all day

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: April 18, 2023

Figure 9: Existing Study Area Transit Stops



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: April 18, 2023

2.2.6 Existing Area Traffic Management Measures

The primary traffic calming measure within the study area is on-road messaging stating the speed limit on Sunnycrest Drive.

2.2.7 Existing Peak Hour Travel Demand

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

Table 1: Intersection Count Date

Intersection	Count Date
Fisher Avenue at Baseline Road	Wednesday, August 03, 2016

The turning movements at the existing Access #1 and Access #2 were estimated from the trip generation for the retail plaza and the trip generation is provided in Appendix B. Figure 10 illustrates the existing traffic volumes, balanced along the roadways to approximate 2023 volumes. It is noted that subsequent to this study, the City direction has been to discontinue the prior request for balancing. Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on the volume to capacity ratio (v/c) calculation for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Detailed turning movement count data is included in Appendix C and the Synchro worksheets are provided in Appendix D.

Figure 10: Existing Traffic Counts

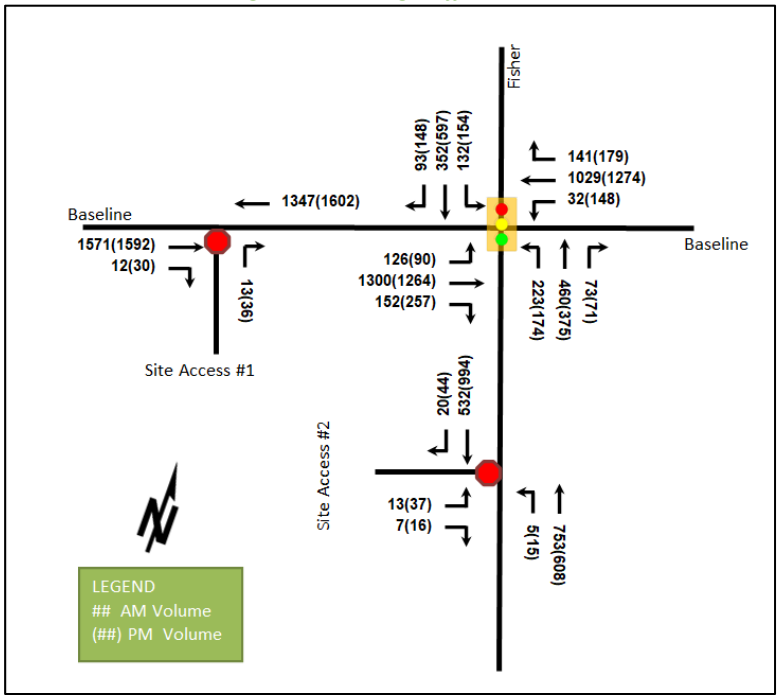


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fisher Avenue at Baseline Road *Signalized*	EBL	B	0.70	73.0	55.3	B	0.64	74.7	43.2
	EBT	E	0.96	50.4	**#272.2**	**F**	**1.16**	**117.8**	**#266.1**
	EBR	A	0.23	3.8	12.2	A	0.44	10.9	36.6
	WBL	A	0.42	74.8	20.6	D	0.90	**101.1**	**#82.6**
	WBT	E	0.99	65.3	**#232.6**	**F**	**1.10**	**96.5**	**#268.1**
	WBR	A	0.24	1.3	1.3	A	0.31	9.1	25.0
	NBL	D	0.86	78.6	**#100.0**	D	0.85	**86.3**	**#86.3**
	NBT	C	0.73	53.6	81.1	B	0.63	53.3	70.8
	NBR	A	0.18	0.9	0.0	A	0.21	2.5	2.6
	SBL	C	0.76	79.3	**#62.8**	C	0.79	79.9	**#72.4**
	SBT	C	0.76	62.4	66.7	**F**	**1.05**	**99.8**	**#138.3**
	SBR	A	0.25	1.4	0.0	A	0.43	14.1	25.1
	Overall	**E**	**0.95**	**53.5**	**-**	**F**	**1.04**	**86.1**	**-**
Baseline Road at Access #1 *Unsignalized*	EBT/R	-	-	-	-	-	-	-	-
	WBT	-	-	-	-	-	-	-	-
	NBR	C	0.05	18.1	1.5	C	0.14	19.9	3.8
	Overall	**A**	**-**	**0.1**	**-**	**A**	**-**	**0.2**	**-**
Fisher Avenue at Access #2 *Unsignalized*	EBL/R	C	0.06	15.4	1.5	D	0.31	32.2	9.8
	NBL/T	A	0.01	8.8	0.0	B	0.03	11.2	0.8
	SBT	-	-	-	-	-	-	-	-
	SBR	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.3**	**-**	**A**	**-**	**1.2**	-

Notes: Saturation flow rate of 1800 veh/h/lane; Queue is measured in metres; Peak Hour Factor = 0.90; V/C = volume-to-capacity ratio; m = metered queue; # = volume for the 95th %ile cycle exceeds capacity

At the intersection of Fisher Avenue at Baseline Road, the eastbound through, westbound through, and southbound through movements are over theoretical capacity and may be subject to high delays and extended queues during PM peak hour. Extended queues may also be exhibited on the eastbound through, and westbound through movements during AM peak hour, and on the northbound and southbound left-turn movements during both peak hours. High delays may be experienced on the westbound left-turn and northbound left-turn movements during PM peak hour. The overall intersection operates over theoretical capacity with high delays during the PM peak hour.

The existing intersections of Baseline Road at Access #1 and Fisher Avenue at Access #2 operate well during both peak hours at this horizon.

2.2.8 Collision Analysis

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

Table 3: Study Area Collision Summary, 2016-2020

		Number	%
Total Collisions		**121**	**100%**
Classification	**Fatality**	1	1%
	Non-Fatal Injury	27	22%
	Property Damage Only	93	77%
Initial Impact Type	**Approaching**	1	1%
	Angle	8	7%
	Rear end	74	61%
	Sideswipe	18	15%
	Turning Movement	8	7%
	SMV Unattended	1	1%
	SMV Other	7	6%
	Other	4	3%
Road Surface Condition	**Dry**	88	73%
	Wet	15	12%
	Loose Snow	6	5%
	Slush	3	2%
	Packed Snow	4	3%
	Ice	5	4%
Pedestrian Involved		4	3%
Cyclists Involved		1	1%

Figure 11: Study Area Collision Records

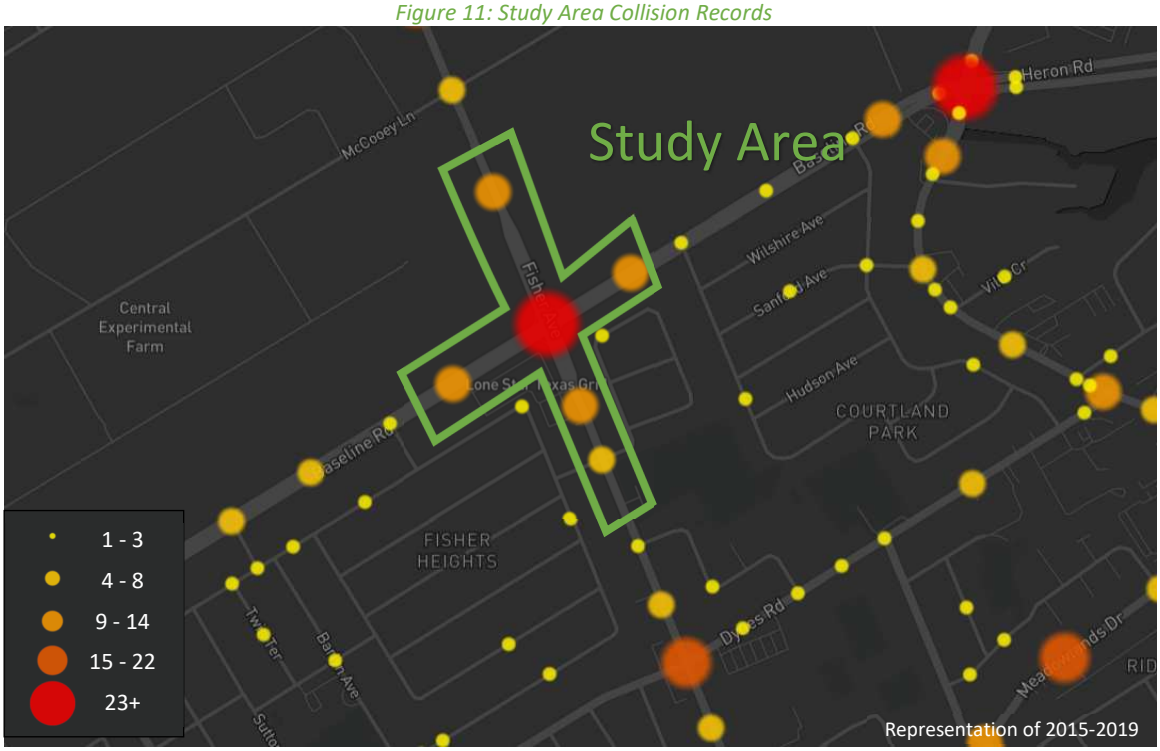


Table 4: Summary of Collision Locations, 2016-2020

	Number	%
Intersections / Segments	**121**	**100%**
Fisher Ave @ Baseline Rd	75	62%
Baseline Rd btwn Marson St & Fisher Ave	12	10%
Fisher Ave btwn McCooey Lane & Baseline Rd	11	9%
Baseline Rd btwn Fisher Ave & Lexington St	10	8%
Fisher Ave btwn Baseline Rd & Malibu Ter	7	6%
Fisher Ave @ Malibu Ter	6	5%

Within the study area, the intersection of Fisher Avenue at Baseline Road and segments of Baseline Road between Marson Street and Fisher Avenue, and Fisher Avenue between McCooey Lane and Baseline Road are noted to have experienced higher collisions than other locations. Table 5, Table 6 , and Table 7 summarize the collision types and conditions for each of these locations respectively.

Table 5: Fisher Avenue at Baseline Road Collision Summary

		Number	%
Total Collisions		**75**	**100%**
Classification	**Fatality**	1	1%
	Non-Fatal Injury	10	13%
	Property Damage Only	64	85%
Initial Impact Type	**Angle**	2	3%
	Rear end	52	69%
	Sideswipe	12	16%
	Turning Movement	3	4%
	SMV Unattended	1	1%
	SMV Other	4	5%
	Other	1	1%
Road Surface Condition	**Dry**	56	75%
	Wet	7	9%
	Loose Snow	4	5%
	Slush	2	3%
	Packed Snow	2	3%
	Ice	4	5%
Pedestrian Involved		3	4%
Cyclists Involved		1	1%

The Fisher Avenue at Baseline Road intersection had a total of 75 collisions during the 2016-2020 time period, including one angle collision involving a fatality. The fatality occurred in November 2018 at 7:46 AM in dry driving conditions, where a pedestrian was killed as a result of a two-vehicle collision. Sixty-four of the collisions had property damage only and the remaining ten had non-fatal injuries. The collision types are most represented by rear end with 52, followed by 12 sideswipe collisions, four SMV other collisions, three turning movement collisions, two angle collisions, and with the remaining collisions as SMV unattended and other. Rear end and sideswipe collisions are typical of congested areas. No further patterns are noted. Weather conditions do not affect collisions at this location. The City has developed a protected intersection design as part of the Baseline Road Rapid Transit Corridor project to improve active mode safety. No further examination of collisions at this location is required as part of this study.

Table 6: Baseline Road between Marson Street and Fisher Avenue Collision Summary

		Number	%
Total Collisions		**12**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	5	42%
	Property Damage Only	7	58%
Initial Impact Type	Angle	1	8%
	Rear end	8	67%
	Sideswipe	3	25%
Road Surface Condition	**Dry**	8	67%
	Wet	3	25%
	Packed Snow	1	8%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The segment of Baseline Road between Marson Street and Fisher Avenue had a total of 12 collisions during the 2016-2020 time period, with seven involving property damage only and the remaining five having non-fatal injuries. The collision types are most represented by rear end with eight collisions, followed by three sideswipe collisions and one angle collision. Rear end and sideswipe collisions are typical of congested conditions and may also be influenced by private driveways accessing Baseline Road. Weather conditions are not considered to affect collisions at this location. No further examination of collisions at this location is required as part of this study.

Table 7: Fisher Avenue between McCooey Lane and Baseline Road Collision Summary

		Number	%
Total Collisions		**11**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	3	27%
	Property Damage Only	8	73%
Initial Impact Type	**Approaching**	1	9%
	Rear end	5	45%
	Sideswipe	1	9%
	Turning Movement	2	18%
	SMV Other	2	18%
Road Surface Condition	**Dry**	7	64%
	Wet	2	18%
	Slush	1	9%
	Packed Snow	1	9%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The segment of Fisher Avenue between McCooey Lane and Baseline Road had a total of 11 collisions during the 2016-2020 time period, with wight involving property damage only and the remaining three having non-fatal injuries. The collision types are most represented by rear end, two collisions each for turning movement and SMV other, with the remaining collisions split between approaching and sideswipe. Rear end collisions are typical of congested areas and possible collisions could be related to the northbound merging and bus stop. Weather conditions are not considered to affect collisions at this location. No further examination of collisions at this location is required as part of this study.

2.3 Planned Conditions

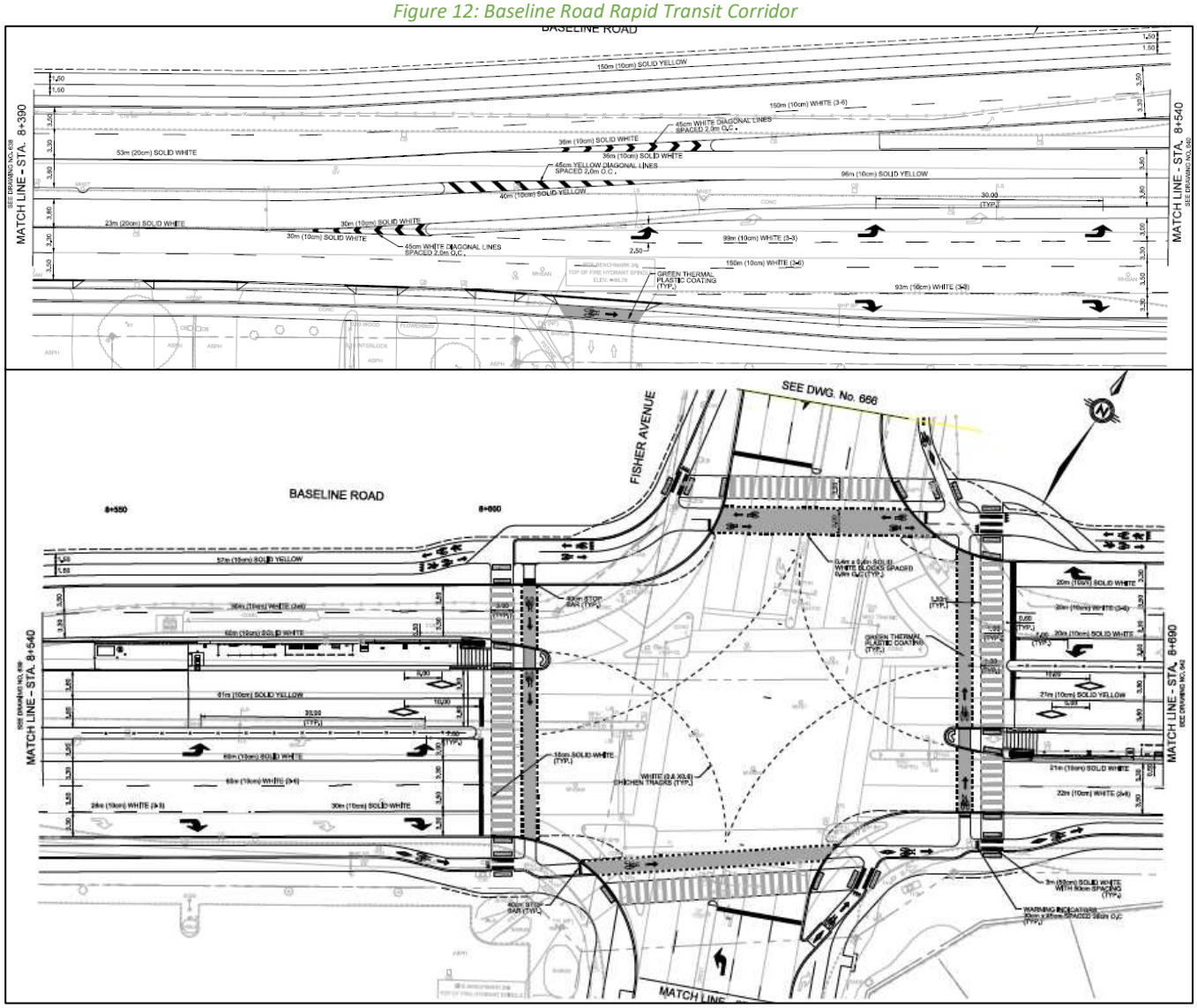
2.3.1 Changes to the Area Transportation Network

The Transportation Master Plan's (TMP) Rapid Transit and Transit Priority Network (RTTP) identifies Bus Rapid Transit (BRT) along Baseline Road and Heron Road, and isolated transit priority measures along Fisher Avenue within the Affordable Network diagram.

The timing of the Baseline Road Rapid Transit Corridor project is subject to the timing of funding sources. The project includes median BRT lanes and segregated cycling facilities on Baseline Road through the study area. Changes along the site frontage include a new eastbound cycletrack along the south side of Baseline Road and crossrides to the adjacent intersection quadrants, but notably no tie-ins for cycling facilities along Fisher Avenue.

The Baseline Road Rapid Transit Corridor project is assumed to be build-out beyond 2031 and will not be analyzed in the future horizons. The future geometry is based upon the preliminary detailed design from the Baseline Road Rapid Transit Corridor project for the site frontage and the Baseline Road at Fisher Avenue intersection provided by the City and illustrated in Figure 12.

Figure 12: Baseline Road Rapid Transit Corridor



2.3.2 Other Study Area Developments

1111 Prince of Wales Drive

The proposed development includes a site plan for additional parking spaces for the office building. The reconfiguration is expected to provide a total of 319 parking spaces. No new trips are expected to / from the site, and the site trips will be reassigned due to the new driveway. (Novatech, 2020)

222 Baseline Road

The proposed development includes a zoning by-law amendment for additional parking spaces for a low-rise apartment dwelling use with a total of 18 units proposed. No TIA is required.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of Fisher Avenue at Baseline Road, the existing site accesses onto Baseline Road and Fisher Avenue, and the proposed site access onto Fisher Avenue in the future conditions.

The boundary roads will be Fisher Avenue and Hilliard Avenue. TRANS screenlines SL20 and SL27 are located to the east along the Rideau River/Canal and will not be assessed in this study.

3.2 Time Periods

As the proposed development is mixed-use development with residential units and commercial units, the AM and PM peak hours will be examined.

3.3 Horizon Years

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

4 Exemption Review

Table 8 summarizes the exemptions for this TIA.

Table 8: Exemption Review

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

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

5 Development-Generated Travel Demand

5.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Merivale have been summarized in Table 9.

Table 9: TRANS Trip Generation Manual Recommended Mode Shares – Merivale

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	41%	41%	71%	61%
Auto Passenger	6%	11%	19%	16%
Transit	42%	33%	1%	8%
Cycling	2%	2%	0%	1%
Walking	9%	13%	9%	14%
Total	**100%**	**100%**	**100%**	**100%**

5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 11th Edition (2017) using the City-prescribed conversion factor of 1.28. Table 10 summarizes the person trip rates for the proposed residential land use for each peak period and the person trip rates for the non-residential land use by peak hour.

Table 10: Trip Generation Person Trip Rates

Land Use	Land Use Code	Peak	Peak Period		Peak Hour	
			Vehicle Trip Rate	Person Trip Rates	Vehicle Trip Rate	Person Trip Rates
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	-	0.80	-	-
		PM	-	0.90	-	-
Strip Retail Plaza (<40k sq. ft.)	822 (ITE)	AM	-	-	2.36	3.02
		PM	-	-	6.59	8.36

Using the above person trip rates, the total person trip generation has been estimated. Table 11 summarizes the total person trip generation for the residential land use and for the non-residential land use.

Table 11: Total Person Trip Generation

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	320	79	177	256	167	121	288
Land Use	**GFA (sq. ft.)**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Strip Retail Plaza (<40k sq. ft.)	7,650	14	9	23	33	33	65

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 12 represent the percentage of trips to/from the retail use based on the residential component.

Table 12: Internal Capture Rates

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

Pass-by/diverted reductions applied to the retail trip generation at a rate of 40% have been included using 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.)".

Using the above mode share targets, 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 13 summarizes the total trip generation.

Table 13: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**41%**	15	35	50	**41%**	30	22	52
	Auto Passenger	**6%**	2	5	7	**11%**	8	6	14
	Transit	**42%**	18	41	59	**33%**	26	19	45
	Cycling	**2%**	1	2	3	**2%**	1	1	2
	Walking	**8%**	3	8	11	**13%**	11	8	19
	Total	**100%**	**39**	**91**	**130**	**100%**	**76**	**56**	**132**
Retail (<40k sq. ft.)	Auto Driver	**71%**	3	2	5	**61%**	6	4	10
	Auto Passenger	**19%**	2	2	4	**16%**	5	4	9
	Transit	**1%**	0	0	0	**8%**	2	2	4
	Cycling	**0%**	0	0	0	**1%**	0	0	0
	Walking	**9%**	1	1	2	**14%**	4	4	8
	Pass-by/diverted	*40%*	*-6*	*-4*	*-10*	*40%*	*-13*	*-13*	*-26*
	Internal Capture	*varies*	*-1*	*-1*	*-2*	*varies*	*-2*	*-5*	*-7*
	Total	**100%**	**6**	**5**	**11**	**100%**	**17**	**14**	**31**
Total	Auto Driver	-	18	37	55	-	36	26	62
	Auto Passenger	-	4	7	11	-	13	10	23
	Transit	-	18	41	59	-	28	21	49
	Cycling	-	1	2	3	-	1	1	2
	Walking	-	4	9	13	-	15	12	27
	Total	-	**45**	**96**	**141**	-	**93**	**70**	**163**

As shown above, a total of 55 AM and 62 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel, and these patterns were applied based on the build-out of Merivale. Table 14 below summarizes the distributions.

Table 14: OD Survey Distribution – Merivale

To/From	% of Trips
North	30%
South	25%
East	20%
West	25%
Total	**100%**

5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 15 summarizes the proportional assignment to the study area roadways, and Figure 13 and Figure 14 illustrate the new site generated volumes and pass-by/diverted volumes, respectively.

Table 15: Trip Assignment

To/From	Via
North	20% Fisher Ave (N) 10% Baseline Rd (E)
South	25% Fisher Ave (S)
East	20% Baseline Rd (E)
West	20% Baseline Rd (W) 5% Fisher Ave (N)
Total	**100%**

Figure 13: New Site Generation Auto Volumes

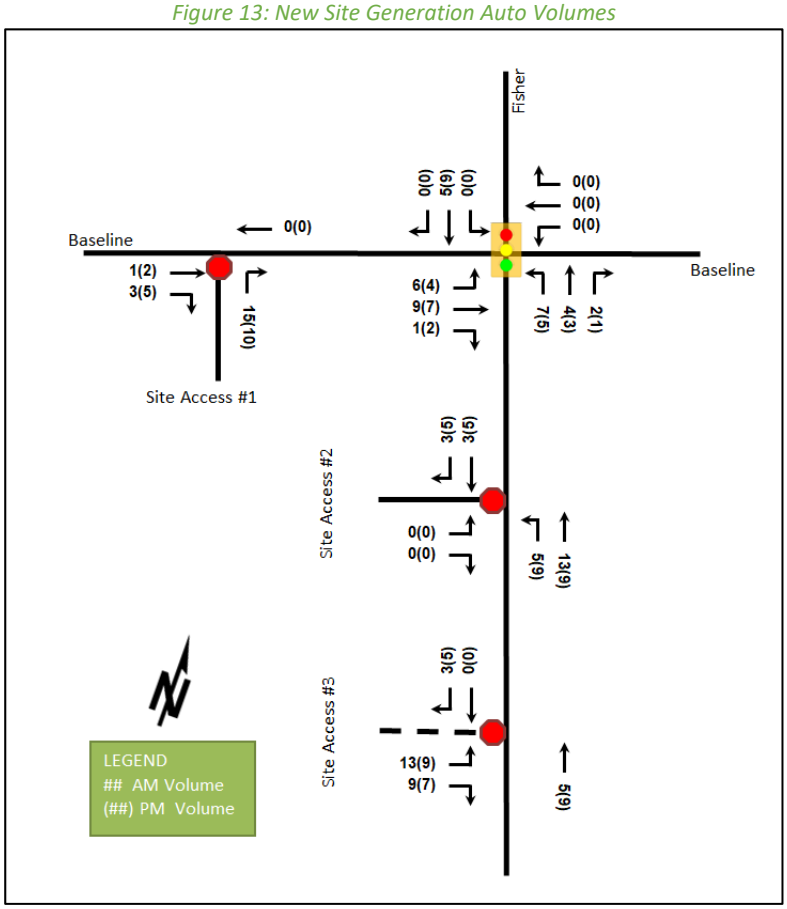
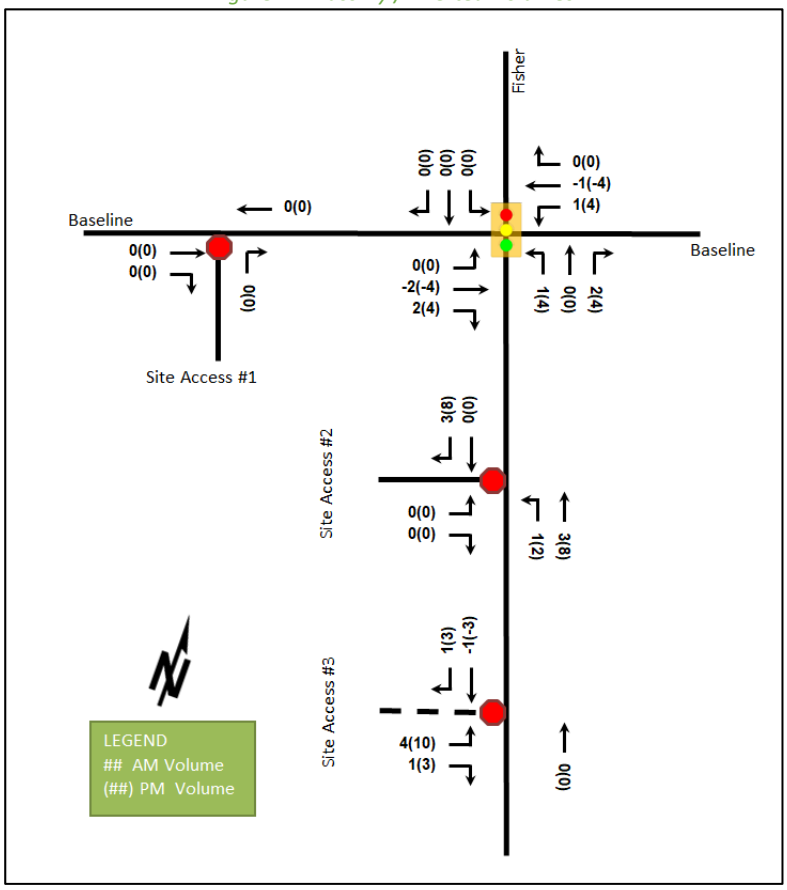


Figure 14: Pass-By /Diverted Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The Baseline Road Rapid Transit Corridor project is beyond the study horizons and will not be incorporated into the road network analysis. No other improvements impacting the transportation network elements or traffic were noted within the study area.

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 16 and the TRANS model plots are provided in Appendix F.

Table 16: TRANS Regional Model Projections – Study Area Growth Rates

Street	TRANS Rate	
	Eastbound	**Westbound**
Baseline Road	-0.28%	0.07%
	Northbound	**Southbound**
Fisher Avenue	0.61%	0.12%

The growth rates derived from the 2011 and 2031 TRANS model horizons are projected to be negative growth in the eastbound and negligible growth in the westbound direction along Baseline Road, and slightly positive growth in the northbound and southbound directions along Fisher Avenue. Annual growth rates rounded to the nearest

0.25% will be applied to the mainline volumes of Fisher Avenue in the AM peak hour and reversed in the PM peak hour. Table 17 summarizes the growth rates applied.

Table 17: Study Area Growth Rates Applied

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Baseline Road	-	-	-	-
	Northbound	**Southbound**	**Northbound**	**Southbound**
Fisher Avenue	0.50%	0.25%	0.25%	0.50%

6.3 Other Developments

The background developments explicitly considered in the background conditions include 1111 Prince of Wales Drive, however no increase in traffic for the study area intersections is resultant from this development.

7 Demand Rationalization

7.1 2026 Future Background Operations

Figure 15 illustrates the 2026 background volumes and Table 18 summarizes the 2026 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2026 future background horizon are provided in Appendix G.

Figure 15: 2026 Future Background Volumes

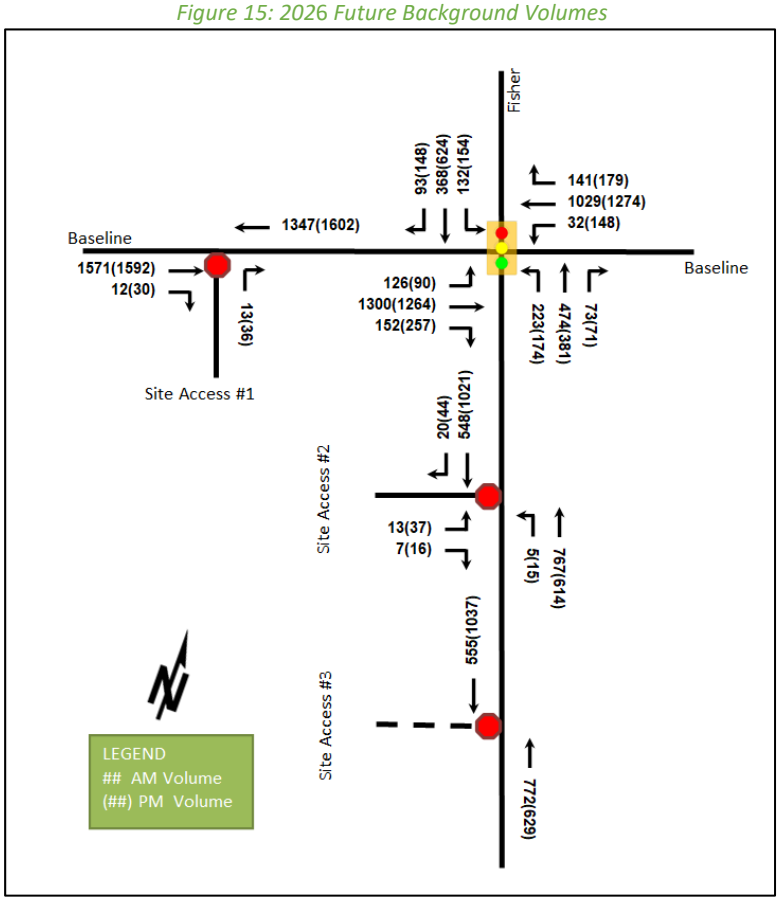


Table 18: 2026 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fisher Avenue at Baseline Road *Signalized*	EBL	B	0.67	71.5	50.4	A	0.60	72.6	39.5
	EBT	D	0.84	37.9	**#231.6**	**F**	**1.03**	**74.5**	**#226.9**
	EBR	A	0.20	2.7	8.6	A	0.39	8.6	28.4
	WBL	A	0.38	72.7	18.9	D	0.84	**91.7**	**#72.0**
	WBT	D	0.84	45.9	**#200.1**	E	0.98	61.0	**#228.0**
	WBR	A	0.21	0.7	0.0	A	0.28	7.4	20.0
	NBL	D	0.82	75.4	**#82.3**	C	0.80	**80.6**	**#74.1**
	NBT	B	0.70	53.3	74.8	A	0.56	50.7	64.6
	NBR	A	0.17	0.8	0.0	A	0.18	1.0	0.4
	SBL	C	0.71	76.5	53.7	C	0.75	77.2	60.8
	SBT	C	0.74	61.4	62.8	E	0.96	78.7	**#126.8**
	SBR	A	0.22	1.2	0.0	A	0.39	12.3	21.2
	Overall	**D**	**0.86**	**44.2**	**-**	**E**	**0.95**	**61.3**	**-**
Baseline Road at Access #1 *Unsignalized*	EBT/R	-	-	-	-	-	-	-	-
	WBT	-	-	-	-	-	-	-	-
	NBR	C	0.04	16.3	0.8	C	0.11	17.6	3.0
	Overall	**A**	**-**	**0.1**	**-**	**A**	**-**	**0.2**	**-**
Fisher Avenue at Access #2 *Unsignalized*	EBL/R	B	0.05	14.4	1.5	D	0.24	26.5	6.8
	NBL/T	A	0.01	8.6	0.0	B	0.02	10.7	0.8
	SBT	-	-	-	-	-	-	-	-
	SBR	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.3**	**-**	**A**	**-**	**0.9**	-

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

The study area intersections at the 2026 future background horizon will operate similarly to the existing conditions with the incremental improvement to the intersection operations with the peak hour factor of 1.00 for forecasted conditions. Forecasted reductions to v/c result in the eastbound through movement being at capacity and the westbound through movement approaching capacity each during the PM peak hour at the intersection of Fisher Avenue at Baseline Road at this horizon. No new capacity issues are noted.

During the PM peak hour, shifting two seconds of split from the northbound and southbound left-turn phases to the eastbound and westbound through phases would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.2 2031 Future Background Operations

Figure 16 illustrates the 2031 background volumes and Table 19 summarizes the 2031 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2031 future background horizon are provided in Appendix H.

Figure 16: 2031 Future Background Volumes

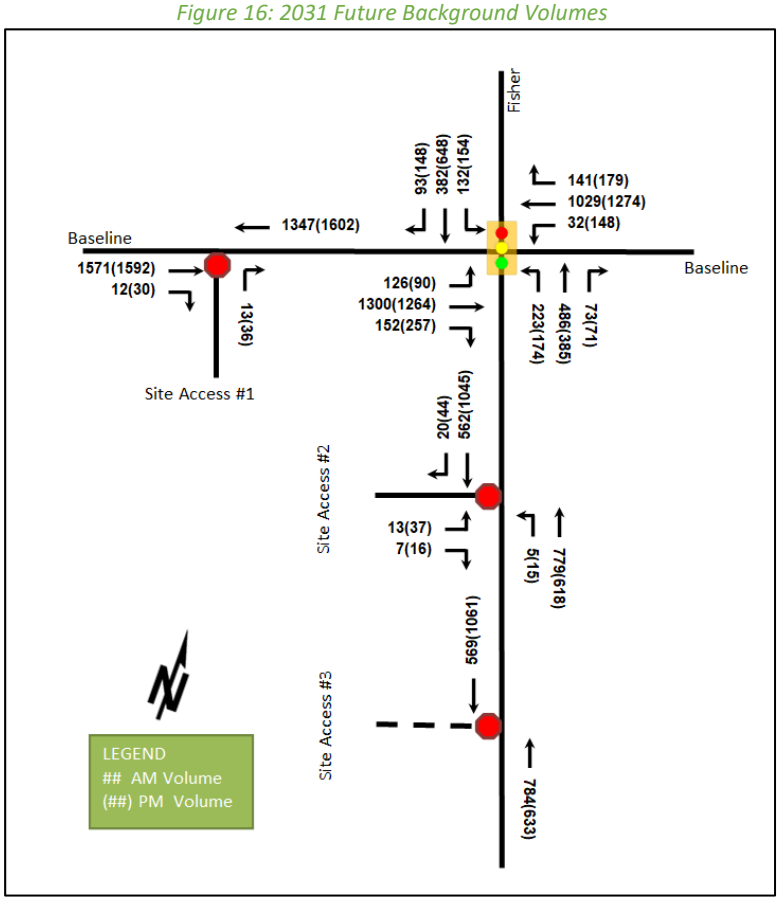


Table 19: 2031 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fisher Avenue at Baseline Road ***Signalized***	EBL	B	0.67	71.5	50.4	A	0.60	72.6	39.5
	EBT	D	0.84	38.3	**#231.6**	**F**	**1.03**	**74.5**	**#226.9**
	EBR	A	0.20	2.7	8.6	A	0.39	8.6	28.4
	WBL	A	0.38	72.7	18.9	D	0.84	**91.7**	**#72.0**
	WBT	D	0.85	46.4	**#200.1**	E	0.98	61.0	**#228.0**
	WBR	A	0.21	0.7	0.0	A	0.28	7.4	20.0
	NBL	D	0.82	75.4	**#82.3**	C	0.80	**80.6**	**#74.1**
	NBT	C	0.71	53.4	76.8	A	0.57	50.8	65.4
	NBR	A	0.17	0.8	0.0	A	0.18	1.0	0.4
	SBL	C	0.71	76.5	53.7	C	0.75	77.2	60.8
	SBT	C	0.75	61.9	65.1	E	1.00	**86.8**	**#133.8**
	SBR	A	0.22	1.2	0.0	A	0.39	13.4	22.5
	Overall	**D**	**0.87**	**44.6**	**-**	**E**	**0.96**	**62.5**	**-**
Baseline Road at Access #1 ***Unsignalized***	EBT/R	-	-	-	-	-	-	-	-
	WBT	-	-	-	-	-	-	-	-
	NBR	C	0.04	16.3	0.8	C	0.11	17.6	3.0
	Overall	**A**	**-**	**0.1**	**-**	**A**	**-**	**0.2**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fisher Avenue at Access #2 ***Unsignalized***	EBL/R	B	0.05	14.7	1.5	D	0.25	27.4	6.8
	NBL/T	A	0.01	8.7	0.0	B	0.02	10.8	0.8
	SBT	-	-	-	-	-	-	-	-
	SBR	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.3**	**-**	**A**	**-**	**1.0**	**-**

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

During both peak hours, the study area intersections at the 2031 future background horizon will operate similarly to the 2026 background condition. No new capacity issues are noted.

During the PM peak hour, shifting two seconds of split from the northbound and southbound left-turn phases to the eastbound and westbound through phases and shifting a further two seconds of split from the northbound left-turn phase to the southbound through phase would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.3 2026 Future Total Operations

Figure 17 illustrates the 2026 future total volumes and Table 20 summarizes the 2026 future total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2026 future total horizon are provided in Appendix I.

Figure 17: 2026 Future Total Volumes

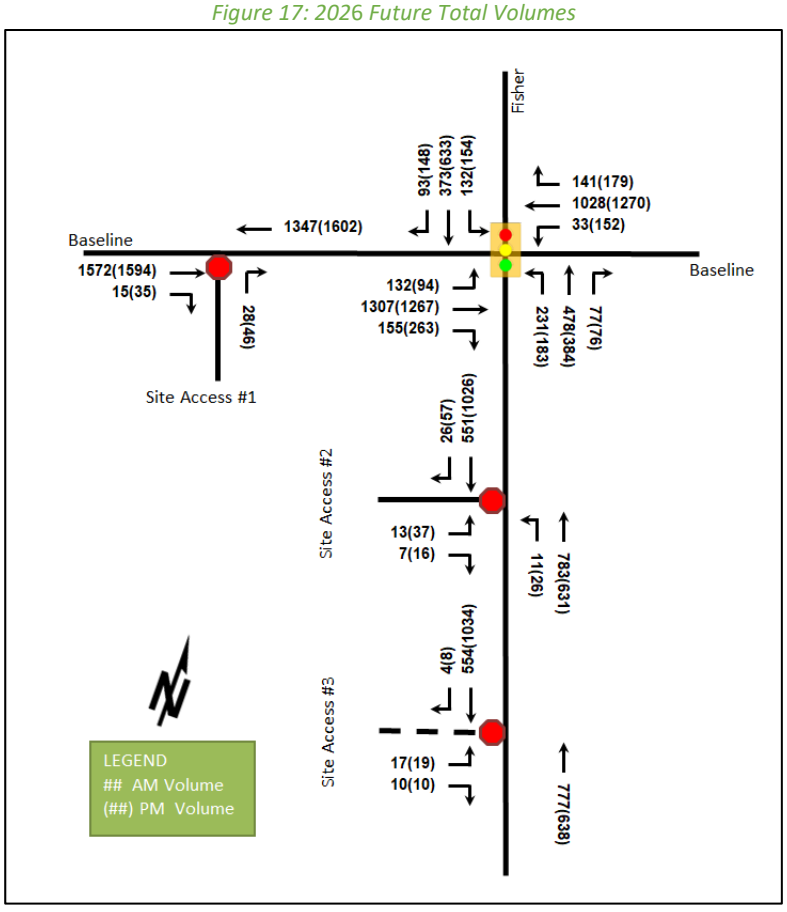


Table 20: 2026 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fisher Avenue at Baseline Road *Signalized*	EBL	B	0.68	72.2	52.4	B	0.61	73.1	40.9
	EBT	D	0.86	40.2	**#233.5**	**F**	**1.04**	**75.7**	**#227.7**
	EBR	A	0.21	2.9	9.3	A	0.41	8.9	29.5
	WBL	A	0.39	73.1	19.5	D	0.85	**94.2**	**#74.6**
	WBT	D	0.87	49.0	**#199.8**	E	0.99	61.6	**#226.6**
	WBR	A	0.21	0.7	0.0	A	0.28	7.4	20.0
	NBL	D	0.83	76.1	**#89.9**	D	0.83	**83.4**	**#79.9**
	NBT	B	0.67	51.3	75.4	A	0.56	50.8	65.2
	NBR	A	0.17	0.8	0.0	A	0.20	1.9	1.7
	SBL	C	0.71	76.5	53.7	C	0.75	77.2	60.8
	SBT	C	0.72	59.5	63.5	E	0.99	**84.5**	**#129.6**
	SBR	A	0.22	1.2	0.0	A	0.40	13.0	21.8
	Overall	**D**	**0.87**	**45.4**	**-**	**E**	**0.96**	**62.7**	**-**
Baseline Road at Access #1 *Unsignalized*	EBT/R	-	-	-	-	-	-	-	-
	WBT	-	-	-	-	-	-	-	-
	NBR	C	0.09	16.9	2.3	C	0.14	18.1	3.8
	Overall	**A**	**-**	**0.2**	**-**	**A**	**-**	**0.3**	**-**
Fisher Avenue at Access #2 *Unsignalized*	EBL/R	B	0.05	14.8	1.5	D	0.26	28.4	7.5
	NBL/T	A	0.01	8.7	0.0	B	0.04	10.9	0.8
	SBT	-	-	-	-	-	-	-	-
	SBR	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.3**	**-**	**A**	**-**	**1.1**	**-**
Fisher Avenue at Access #3 *Unsignalized*	EBL/R	C	0.12	23.0	3.0	E	0.22	39.1	6.0
	NBT	-	-	-	-	-	-	-	-
	SBT	-	-	-	-	-	-	-	-
	SBR	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.5**	**-**	**A**	**-**	**0.7**	**-**

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

During both peak hours, the study area intersections at the 2026 future total horizon will operate similarly to the 2026 future background conditions.

Similar to the exiting conditions, the eastbound though movement is forecast to be over theoretical capacity at this horizon with an increase of v/c from the background conditions of 0.01.

During the PM peak hour, shifting two seconds of split from the northbound and southbound left-turn phases to the eastbound and westbound through phases and shifting a further two seconds of split from the northbound left-turn phase to the southbound through phase would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.4 2031 Future Total Operations

Figure 18 illustrates the 2032 future total volumes and Table 21 summarizes the 2031 future total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2031 future total horizon are provided in Appendix J.

Figure 18: 2031 Future Total Volumes

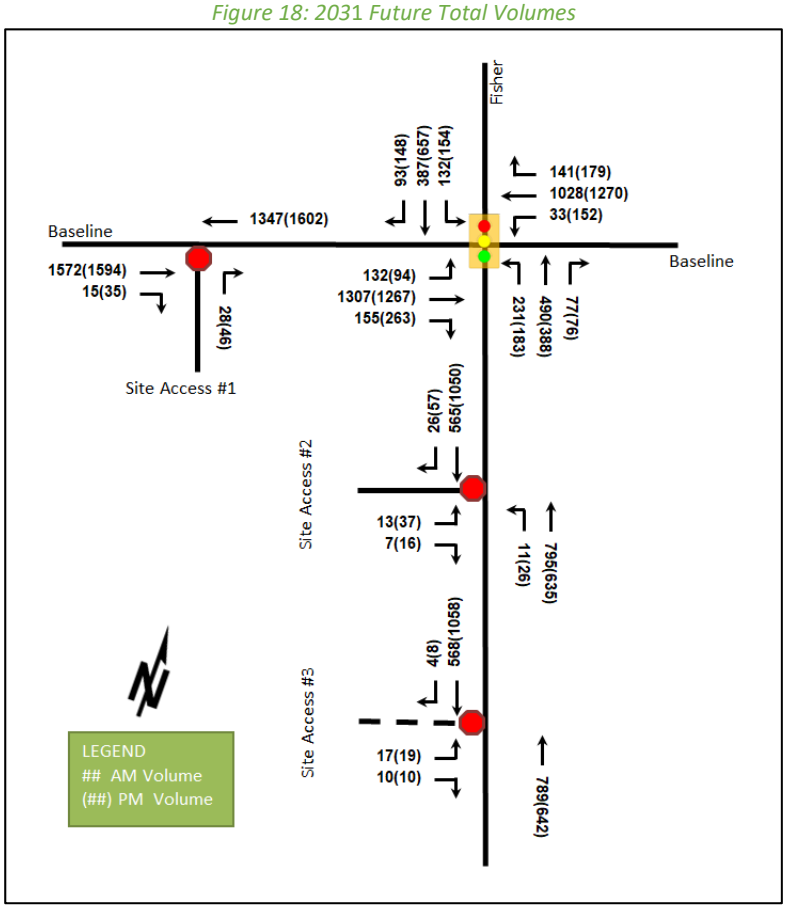


Table 21: 2031 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fisher Avenue at Baseline Road *Signalized*	EBL	B	0.68	72.2	52.4	B	0.61	73.1	40.9
	EBT	D	0.86	40.5	**#233.5**	**F**	**1.04**	**75.7**	**#227.7**
	EBR	A	0.21	2.9	9.3	A	0.41	8.9	29.5
	WBL	A	0.39	73.1	19.5	D	0.85	**94.2**	**#74.6**
	WBT	D	0.87	49.4	**#199.8**	E	0.99	61.6	**#226.6**
	WBR	A	0.21	0.7	0.0	A	0.28	7.4	20.0
	NBL	D	0.83	76.1	**#89.9**	D	0.83	**83.4**	**#79.9**
	NBT	B	0.69	51.6	77.6	A	0.57	51.0	65.8
	NBR	A	0.17	0.8	0.0	A	0.20	1.9	1.7
	SBL	C	0.71	76.5	53.7	C	0.75	77.2	60.8
	SBT	C	0.74	60.3	65.9	**F**	**1.02**	**92.9**	**#136.6**
	SBR	A	0.22	1.2	0.0	A	0.40	14.1	23.2
	Overall	**D**	**0.87**	**45.8**	-	**E**	**0.97**	**64.0**	-
Baseline Road at Access #1 *Unsignalized*	EBT/R	-	-	-	-	-	-	-	-
	WBT	-	-	-	-	-	-	-	-
	NBR	C	0.09	16.9	2.3	C	0.14	18.1	3.8
	Overall	**A**	-	**0.2**	-	**A**	-	**0.3**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Fisher Avenue at Access #2 ***Unsignalized***	EBL/R	C	0.05	15.0	1.5	D	0.27	29.5	7.5
	NBL/T	A	0.01	8.7	0.0	B	0.04	11.0	0.8
	SBT	-	-	-	-	-	-	-	-
	SBR	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.3**	**-**	**A**	**-**	**1.1**	**-**
Fisher Avenue at Access #3 ***Unsignalized***	EBL/R	C	0.12	23.6	3.0	E	0.23	40.8	6.0
	NBT	A	0.01	8.6	0.0	B	0.02	10.6	0.8
	SBT	-	-	-	-	-	-	-	-
	SBR	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.5**	**-**	**A**	**-**	**0.7**	**-**

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

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

Similar to the exiting and 2026 future total conditions, the eastbound though movement is forecast to be over theoretical capacity at this horizon with an increase of v/c from the background conditions of 0.01. Similar to the existing conditions, the southbound though movement is forecast to be over theoretical capacity at this horizon, with the v/c increasing 0.02 from the background conditions.

During the PM peak hour, shifting two seconds of split from the northbound and southbound left-turn phases to the eastbound and westbound through phases and shifting a further two seconds of split from the northbound left-turn phase to the southbound through phase would reduce the v/c of all movements at the intersection to 1.00 or below at this horizon.

7.5 Modal Share Sensitivity and Demand Rationalization Conclusions

7.5.1 Network Rationalization

With respect to rationalization of background traffic, while existing capacity issues during the PM peak hour are forecast to persist into the future, these are anticipated to be mitigable by signal timing adjustment. Furthermore, once operational beyond the study horizons, the Baseline Road Rapid Transit Corridor project is anticipated to produce shifts in area mode shares for background traffic. Therefore, no further rationalization for background travel demand is required for this study.

7.5.2 Development Rationalization

The mode shares used within the TIA represent the unmodified district mode shares for Merivale. The selected mode shares and site trip generation was found to have minor impact on the network. The overall v/c at Fisher Avenue at Baseline Road will be less than 1.00 and capacity issues during the PM peak hour can be mitigated through signal timing adjustments. Therefore, no further rationalization for site traffic or modal share selection is required.

8 Development Design

8.1 Design for Sustainable Modes

The proposed development includes a high-rise mixed-used building with a new full-movement access on Fisher Avenue and a connection to the existing surface parking facilities of the retail plaza on the north side of the 780

Baseline Road parcel. The site plan proposes 370 total vehicle parking spaces with 361 spaces provided below ground and nine spaces at ground level. A total of 328 bicycle parking spaces are proposed with 320 spaces provided below ground and eight spaces at ground level. The underground vehicle and bicycle parking are proposed to be access a parking garage ramp with a 12% slope. Hard surface connections are provided from the building entrances to newly proposed sidewalks along a formalized Fisher Avenue frontage, and a midblock connection is provided to Hilliard Avenue in addition to the existing midblock connection.

The infrastructure TDM checklist is provided in Appendix K.

8.2 Circulation and Access

A total of three accesses will be provided for the development including an existing access on Baseline Road (designated Access #1 for the purposes of this TIA), an existing access on Fisher Avenue (Access #2), and one proposed access on Fisher Avenue (Access #3). All accesses are proposed connect to the surface parking and the parking garage. Garbage collection is anticipated to take place within the drive aisle and emergency services are anticipated to circulate the site. Turning templates are provided in Appendix L.

9 Parking

9.1 Parking Supply

The site is to provide a total of 370 vehicle parking including 328 residential parking spaces, 30 visitor parking spaces, and 12 commercial parking spaces. A total of 361 vehicle parking spaces are provided below ground and nine spaces are provided at ground level.

The site provides a total of 328 bicycle parking spaces. A total of 320 spaces are provided below ground and eight spaces within surface racks.

The minimum parking provision is 186 spaces including 154 residential, 30 visitor, and two commercial parking spaces. The maximum parking provision is 560 spaces for residents given the proximity to a rapid transit station. The minimum bicycle parking provision is 163 spaces including 160 residential parking and three commercial parking. Therefore, minimum and maximum vehicle parking and minimum bicycle parking requirements are satisfied.

10 Boundary Street Design

Table 22 summarizes the MMLOS analysis for the boundary streets of Hilliard Avenue and Fisher Avenue. Where the existing and future conditions will be the same, they are considered in one row. The boundary street analysis is based on the land used of “Within 600m of a rapid transit station”. The MMLOS worksheets has been provided in Appendix M.

Table 22: Boundary Street MMLOS Analysis

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

The pedestrian LOS will not be met along all boundary roads. Despite proposing the most robust sidewalk configuration that the MMLOS analysis considers, the future pedestrian facilities on Fisher Avenue cannot meet targets due to volumes on the road. To meet the pedestrian LOS targets along Hilliar Avenue, at least a 1.8-metre

sidewalk with a 2.0-metre boulevard, or a 2.0-metre sidewalk with a 0.5-metre boulevard would be required. The proposed Hilliard Avenue frontage is consistent with the remainder of the road, and the site proposes midblock connections from Hilliard Avenue to Fisher Avenue/Baseline Road.

No further treatments or mitigation for the boundary streets are required as part of this application for this first phase of development.

11 Access Intersections Design

11.1 Location and Design of Access

A total of three accesses will be provided for the development including existing Access #1 on Baseline Road, the existing Access #2 on Fisher Avenue, and the proposed Access #3 on Fisher Avenue.

No changes are proposed to the right-in/right-out Access #1 on Baseline Road.

Access #2 is currently a full-movement access, with a width of 14.18 metres including two informal inbound lanes separated by a right-turn channel for the southbound right-turn, and one outbound lane. The development proposes modifying the access width to be 7.23 metres, with one inbound and one outbound lane and corner radii of 5.0 metres.

Access #3 is proposed as permitting all movements except the northbound left-turn movement, which is to be restricted via signage. The proposed signage plan is provided in Appendix N. The access is proposed as having a width of 6.0 metres, radii of 5.0 metres, a throat length of approximately 31 metres, and an offset from the adjacent property line of approximately 8.6 metres. The access will meet the private approach by-law minimum and maximum width requirements, and minimum offset from the property line. Access #3 is recommended to provide a depressed curb through the planned sidewalk at the roadway edge, in compliance with City standard SC7.1.

The TAC Geometric Design Guidelines' throat length recommendation for apartments with greater than 200 units on an arterial road is 40.0 metres, as measured from the end of the corner radii. Access #3 will have a throat length of 31.0 metres. The property is limited in depth to 60 metres and cannot accommodate the full 40 metre length for the TAC guidance. Given there are three site accesses to the subject development and the forecasted traffic at this access is 20 inbound PM peak hour vehicles (averaging to one vehicle every three minutes), the throat length is considered to be adequate for the subject site.

The private approach by-law specifies that developments fronting arterial roads, residential developments with 300 parking spaces is to have a minimum distance of 60 metres between private approaches, and commercial developments with greater than 100 but fewer than 200 parking spaces are to have a minimum distance between private approaches of 45 metres. The distance between Access #2 and Access #3 on Fisher Avenue is approximately 43 metres. While the forecasted access volumes are low, and clear sightlines between the two accesses are present, the site will require an exemption from the private approach by-law for the minimum spacing between accesses.

11.2 Intersection Control

The existing Access #1 and Access #2 are to remain minor stop controlled. Proposed Access #3 will have stop-control on the minor approach.

11.3 Access Intersection Design

11.3.1 Future Access Intersection Operations

The operations are noted in Section 7.4 and no mitigation is required for the access operations.

11.3.2 Access Intersection MMLOS

As the access intersections are not to be signalized, no access intersection MMLOS analysis is required.

11.3.3 Recommended Design Elements

Existing sidewalks are provided along Fisher Avenue and Access #3 is recommended to comply with City standard SC7.1.

12 Transportation Demand Management

12.1 Context for TDM

The mode shares used within the TIA represent the unmodified district mode shares. As the future Baseline Road Rapid Transit Corridor project will enhance the cycling connectivity and transit access of the development and result in residual trip capacity for these modes, future increases in these mode shares are likely to be achieved. Supportive TDM measures should be included aimed at ensuring early adoption of transit on the existing isolated measures transit priority corridor.

The subject site is not within a design priority area. Total bedrooms within the development are 567 across 180 bachelor and one-bedroom units, 133 two-bedroom units, and seven three-bedroom units. No age restrictions are noted.

12.2 Need and Opportunity

The subject site has been assumed to rely on auto travel and those assumptions have been carried through the analysis. An increase in transit ridership and cycling are anticipated to occur beyond the study horizons with the immediate proximity to the future BRT corridor. Risks associated with failing to meet the unmodified district mode share targets may be increased volumes on the existing overcapacity eastbound through movement at the intersections of Fisher Avenue at Baseline Road, however such impacts are anticipated to be further mitigable by signal adjustments given the residual capacity on the conflicting turn movement.

12.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklist for the residential land uses. The checklist is provided in Appendix K.

The key TDM measures recommended to be considered as part of this site plan application 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 on-site bikeshare (or other micro-mobility, e.g., scootershare)
- Contract with providers to install on-site carshare spaces
- Inclusion of a 1-year Presto card for the initial purchase of condo purchase and/or rental of apartment
- Unbundle parking cost from purchase or rental costs

13 Transit

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 23 summarizes the transit trip generation.

Table 23: Trip Generation by Transit Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	Varies	18	41	59	28	21	49

The proposed development is anticipated to generate 59 AM and 49 PM peak hour two-way transit trips. From the trip distribution found in section 5.3, these values can be further broken down. Table 24 summarizes forecasted site-generated transit ridership trips by direction and the equivalent bus loads. It is assumed that trips to the north and south may be taken by connecting to the LRT Trillium Line east of the site via the bus routes.

Table 24: Forecasted Site-Generated Transit Ridership

Direction	AM Peak Hour		PM Peak Hour		Service Type	Equivalent Service Increase
	In	Out	In	Out		
North	5	12	8	7	Bus	One-Fifth of a standard bus
South	5	10	7	5		One-Fifth of a standard bus
East	3	9	6	4		Negligible
West	5	10	7	5		One-Fifth of a standard bus

13.1 Transit Priority

Examining the study area intersection operations, negligible impacts on delay are anticipated on transit movements at the study area intersections as a result of the development site traffic. Presently, no transit turning movements exist between Baseline Road and the isolated transit priority corridor on Fisher Avenue. The site design accommodates the future Baseline Road Rapid Transit Corridor design.

14 Network Intersection Design

14.1 Network Intersection Control

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

14.2 Network Intersection Design

14.2.1 2026 & 2031 Future Total Network Intersection Operations

The operations are noted in Section 7.4. Capacity issues are anticipated to persist at the intersection of Fisher Avenue at Baseline Road as in the existing and future background conditions. Signal timing adjustments could address the capacity issues at all future horizons.

14.2.2 Network Intersection MMLOS

Table 25 summarizes the MMLOS analysis for the network intersections within the study area. The intersection analysis is based on the policy area of "Within 600m of a rapid transit station". The MMLOS worksheets has been provided in Appendix M.

Table 25: Study Area Intersection MMLOS Analysis

Intersection	Horizon	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Fisher Ave at Baseline Rd	Existing	F	A	F	A	F	A	A	D	F	E
	Future	F	A	A	A	F	A	A	D	E	E

The pedestrian LOS targets will not be met at the intersection of Fisher Avenue at Baseline Road. As is typical for arterial roads, the crossing distances do not permit the targets to be met. To meet pedestrian LOS targets, the maximum crossing distance on all pedestrian crossings would need to be reduced to two lane-widths.

The bicycle LOS does not meet targets in the existing conditions at the intersection of Fisher Avenue at Baseline Road. Beyond the study horizons, it is expected that the bicycle LOS target will be met once the future Baseline Road Rapid Transit Corridor is completed.

The transit LOS will not be met at the intersection of Fisher Avenue at Baseline Road. To meet transit LOS, the delay would need to be reduced to zero seconds on all transit movements. Beyond the study horizons, the future Baseline Road Rapid Transit Corridor is anticipated to improve the eastbound and westbound transit operations, but the northbound and southbound movements are not anticipated meet the transit LOS target of zero seconds.

Fisher Avenue at Baseline Road does not meet the auto LOS at the existing intersection of, but it targets are forecast to be met at the 2031 future total conditions.

It is assumed that the future Baseline Road Rapid Transit Corridor is expected to satisfy the City's desired balance of MMLOS tradeoffs, and not further mitigations are required beyond this project, and no modifications are the responsibility of the developer.

14.2.3 Recommended Design Elements

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

15 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The proposed redevelopment is the first phase of a multiphase project which was the subject of a recent rezoning application
- The proposed development comprises a 24-storey mixed-used building including a total of 320 dwelling units and 7,650 sq. ft commercial space on the 780 Baseline Road parcel and a park on the 7-9 Hilliard Avenue parcels
- The development proposes a full-movement access permitting all movements except the northbound left-turn movement, which is to be restricted via signage on Fisher Avenue, and a connection to the existing surface parking facilities of the retail plaza on the north side of the 780 Baseline Road parcel
- A total of 328 residential, 30 visitor, 12 commercial vehicle parking spaces, and 328 bicycle parking spaces are proposed
- The anticipated build-out horizon is 2026
- The trip generation, location, and safety triggers were met for the TIA Screening
- This report accompanies a site plan application

Existing Conditions

- Baseline Road and Fisher Avenue are arterial roads in the study area
- Sidewalks are provided along the south side of Baseline Road, on the west side of Fisher Avenue north of Baseline Road, on both sides of Fisher Avenue south of Baseline Road
- A paved shoulder is present on both sides of Fisher Avenue except through the intersection with Baseline Avenue where bike lanes are present, bike lanes are present on Dynes Road and Deer Park Road

- Baseline Road and Fisher Avenue are spine routes, and Baseline Road is a cross-town bikeway, Malibu Terrace west of Fisher Avenue, Hilliard Avenue north of Malibu Terrace, Sunnycrest Drive, Deer Park Road, Dynes Road, and McCooey Lane are local routes
- The high volumes roadways have produced a high number of collisions at the study area intersections, primarily at the Fisher Avenue at Baseline Road intersection
- The City has developed a protected intersection design as part of the Baseline Road Rapid Transit Corridor project to improve active mode safety
- No further examination of collisions at the Fisher Avenue at Baseline Road intersection is required as part of this study
- The study area intersection of Fisher Avenue at Baseline Road experiences capacity issues and high delays and extended queuing during both peak hours
- The existing intersections of Baseline Road at Access #1 and Baseline Road at Access #2 operate well during both peak hours at this horizon

Development Generated Travel Demand

- The proposed development is forecasted produce 55 two-way vehicle trips during the AM peak hour and 62 two-way vehicle trips during the PM peak hour
- Of the forecasted trips, 30% are anticipated to travel north, 25% to travel south and the west, and 20% to travel east

Background Conditions

- In addition to accounting for changes in volumes from the background developments, the annual background growth derived from the two TRANS model horizons was rounded to the nearest 0.25% and applied along Fisher Avenue in the AM peak hour and reversed int the PM peak hour

Demand Rationalization

- Existing capacity issues during the PM peak hour are anticipated to persist but are mitigable by signal timing adjustment
- Beyond the study horizons, the Baseline Road Rapid Transit Corridor project is anticipated to produce shifts in area mode shares for background traffic
- The selected mode shares and site trip generation was found to have minor impact on the network
- The overall v/c at Fisher Avenue at Baseline Road will be less than 1.00 and capacity issues during the PM peak hour can be mitigated through signal timing adjustments
- No further demand rationalization is required for the network or site

Development Design

- A total of 328 bicycle parking spaces are proposed with 320 spaces provided below ground and eight spaces at ground level
- The underground vehicle and bicycle parking are proposed to be access a parking garage ramp with a 12% slope
- Hard surface connections are provided from the building entrances to newly proposed sidewalks along a formalized Fisher Avenue frontage, and a midblock connection is provided to Hilliard Avenue in addition to the existing midblock connection

- Garbage collection is anticipated to take place within the drive aisle and emergency services are anticipated to circulate the site

Parking

- The site is to provide a total of 370 vehicle parking including 328 residential parking, 30 visitor parking, and 12 commercial parking spaces
- The site provides a total of 328 bicycle parking spaces
- A total of 320 spaces are provided below ground and eight spaces within surface racks
- The minimum and maximum vehicle parking and minimum bicycle parking requirements are satisfied

Boundary Street Design

- The pedestrian LOS will not be met along all boundary roads, at least 1.8-metre sidewalk with a 2.0-metre boulevard, or a 2.0-metre sidewalk with a 0.5-metre boulevard would need along the Hilliard Avenue to meet the PLOS target
- The proposed Hilliard Avenue frontage is consistent with the remainder of the road, and the site proposes midblock connections on to Hilliard Avenue
- Despite proposing the most robust sidewalk configuration that the MMLOS analysis considers, the future pedestrian facilities on Fisher Avenue cannot meet targets due to volumes on the road
- No further treatments or mitigation for the boundary streets are required as part of this application

Access Intersections Design

- A total of three accesses will be provided for the development including existing Access #1 on Baseline Road, the existing Access #2 on Fisher Avenue, and the proposed Access #3 on Fisher Avenue
- No changes are proposed to the right-in/right-out Access #1 on Baseline Road
- Access #2 is proposed to be 7.23 metres wide, with one inbound and one outbound lane and radii of 5.0 metres
- Access #3 is proposed to be a full-movement access permitting all movements except the northbound left-turn movement, which is to be restricted via signage on Fisher Avenue
- Access #3 is proposed with a width of 6.0 metres, radii of 5.0 metres, a throat length of approximately 31 metres, and an offset from the adjacent property line of approximately 8.6 metres
- Access #3 will meet the private approach by-law minimum and maximum width requirements, and minimum offset from the property line
- The total lot width of approximately 60 metres between Fisher Avenue and Hilliard Avenue cannot accommodate the TAC guidance for a 40 metre throat length, although the three accesses to the site and minimal inbound volumes of 20 PM peak hour vehicles mitigates this concern
- Access #3 is recommended to provide a depressed curb through the planned sidewalk at the roadway edge, in compliance with City standard SC7.1
- The distance between Access #2 and Access #3 on Fisher Avenue is approximately 43 metres
- The site will require an exemption from the private approach by-law for the minimum spacing between accesses
- The existing Access #1 and Access #2 are to remain minor stop controlled
- Proposed Access #3 will have stop-control on the minor approach

TDM

- Supportive TDM measures to be included within the proposed development should 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 on-site bikeshare (or other micro-mobility, e.g., scootershare)
    - Contract with providers to install on-site carshare spaces
    - Inclusion of a 1-year Presto card for the initial purchase of condo purchase and/or rental of apartment
    - Unbundle parking cost from purchase or rental costs

Transit

- The forecasted transit trips will include 59 two-way trips during the AM peak and 49 two-way trips during the PM peak
- Peak hour increases in transit ridership resulting from the site equate to a one-fifth of bus load northerly, southerly, and westerly of the site, and negligible impact easterly of the site
- Negligible impacts are anticipated on transit movement delays at the study area intersections from the subject development
- Presently, no transit turning movements exist between Baseline Road and the isolated transit priority corridor on Fisher Avenue
- The site design accommodates the future Baseline Road Rapid Transit Corridor design

Network Intersection Design

- The future total operations are similar to the future background operation and the traffic impacts from the redevelopment are anticipated to be negligible
- No intersection design elements would be required to support the development in this scenario
- The pedestrian LOS targets will not be met at the intersection of Fisher Avenue at Baseline Road, and two lane-widths pedestrian crossings would need on all approaches
- The bicycle LOS does not meet targets at the existing intersection of Fisher Avenue at Baseline Road, but targets will be met once the future Baseline Road Rapid Transit Corridor is completed
- The transit LOS targets will not be met at the intersection of Fisher Avenue at Baseline Road, but the future Baseline Road Rapid Transit Corridor is anticipated to improve the eastbound and westbound operations
- Fisher Avenue at Baseline Road does not meet the auto LOS at the existing conditions, but it targets are forecast to be met at the 2031 future total conditions
- It is assumed that the future Baseline Road Rapid Transit Corridor is expected to satisfy the City's desired balance of MMLOS tradeoffs, and not further mitigations are required beyond this project, and no modifications are the responsibility of the developer

16 Conclusion

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

Prepared By:	Reviewed By:
	
Yu-Chu Chen, EIT Transportation Engineering-Intern	Christopher Gordon, P.Eng. Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 31-May-23
Project Number: 2023-057
Project Reference: 780 Baseline Phase 1

1.1 Description of Proposed Development	
Municipal Address	780 Baseline Road and 7-9 Hilliard Avenue
Description of Location	Southwest coner of Fisher Avenue at Baseline Road intersection
Land Use Classification	General Mixed Use (GM)
Development Size	A 24-storey mixed-used building including a total of 320 dwelling units and 7,650 sq. ft commercial space
Accesses	A proposed full-movement access on Fisher Avenue, an eixsitng right-in/right-out access on Baseline Road, and an existing full-movement access on Fisher Avenue
Phase of Development	Single
Buildout Year	2026
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	320	Units
Trip Generation Trigger	Yes	

1.3 Location Triggers		
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	Yes	Transit Priority and Spine Route
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?	No	
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	Within 150 m of Fisher Avenue at Baseline Road intersection
Is the proposed driveway within auxiliary lanes of an intersection?	No	
Does the proposed driveway make use of an existing median break that serves an existing site?	No	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	Yes	High collision at Fisher Avenue at Baseline Road intersection
Does the development include a drive-thru facility?	No	
Safety Trigger	Yes	

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

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

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

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

Name: _____Andrew Harte_____
(Please Print)

Professional Title: _____Professional Engineer_____

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

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

Appendix B

Existing Retail Plaza Trip Generation

Trip Generation by Mode – Existing Retail

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	**In**	**Out**	**Total**	**Mode Share**	**In**	**Out**	**Total**
Retail (<40k sq. ft.)	Auto Driver	**64%**	15	10	25	**60%**	30	30	60
	Auto Passenger	**9%**	6	4	10	**20%**	30	30	60
	Transit	**12%**	8	5	13	**9%**	13	13	26
	Cycling	**1%**	1	0	1	**0%**	0	0	0
	Walking	**14%**	9	6	15	**11%**	16	16	32
	Pass-by	*40%*	*-26*	*-17*	*-42*	*40%*	*-59*	*-59*	*-118*
	Total	**100%**	**39**	**25**	**64**	**100%**	**89**	**89**	**178**

Appendix C

Turning Movement Counts

CGH TRANSPORTATION

Transportation Services - Traffic Services

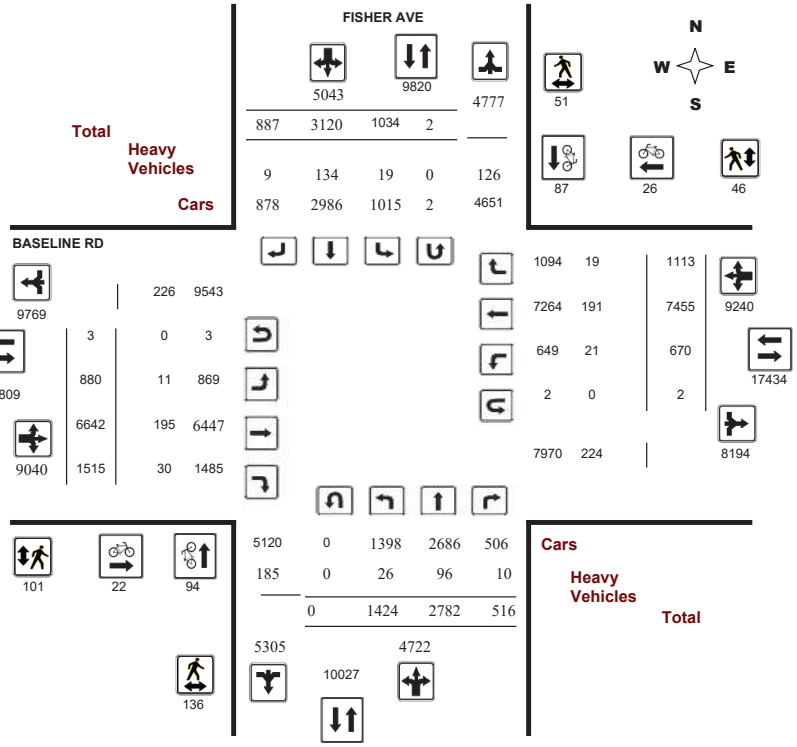
Turning Movement Count - Study Results

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study Diagram



Transportation Services - Traffic Services

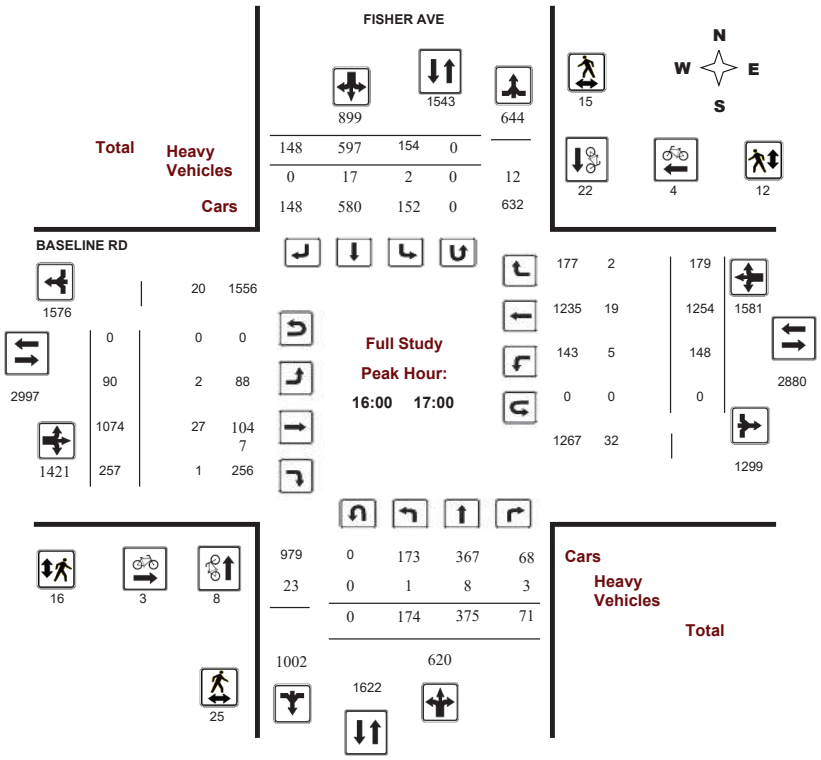
Turning Movement Count - Study Results

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study Peak Hour Diagram



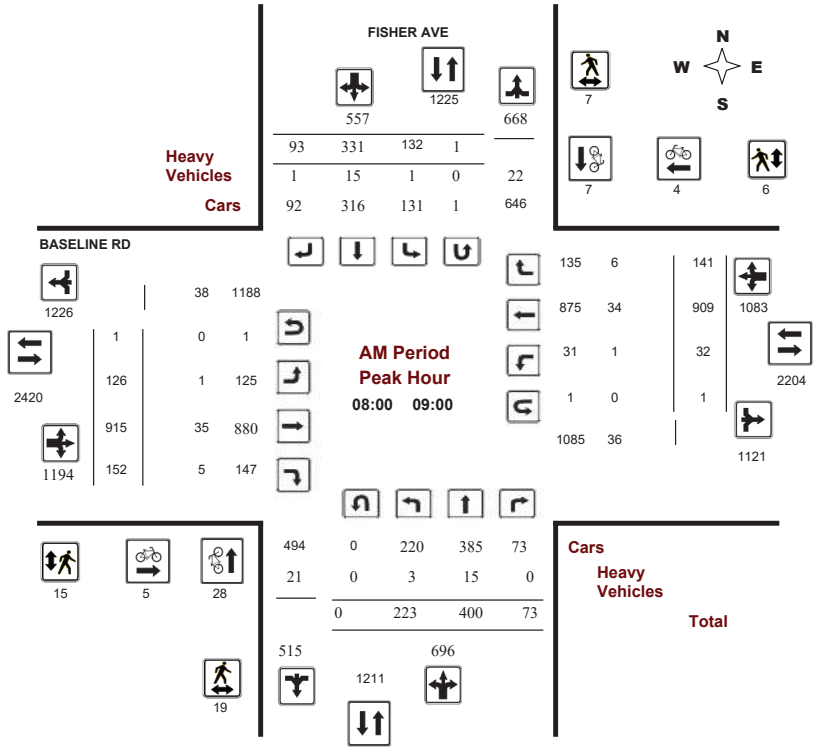
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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



Comments

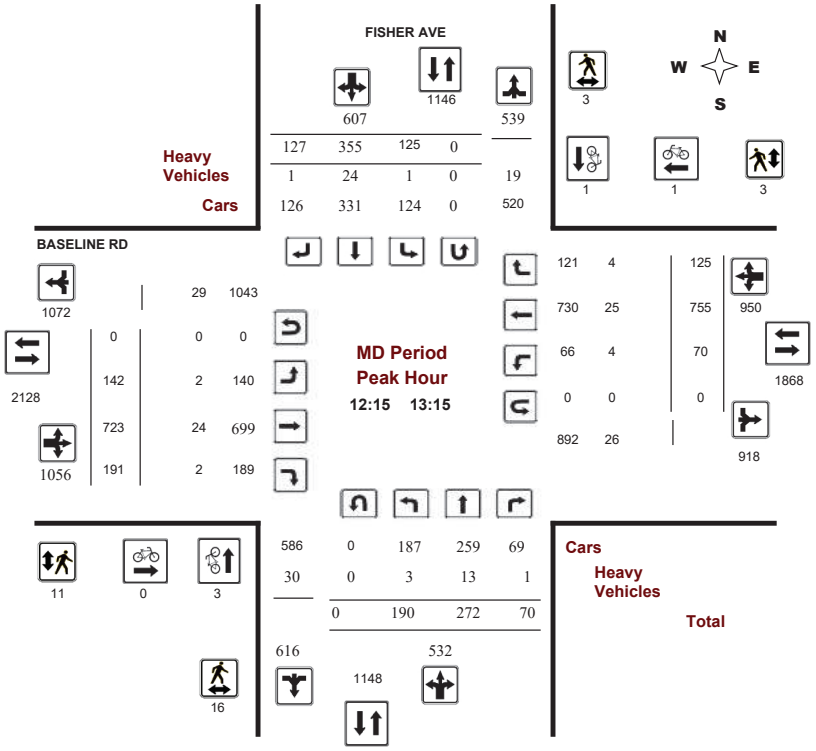
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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



Comments

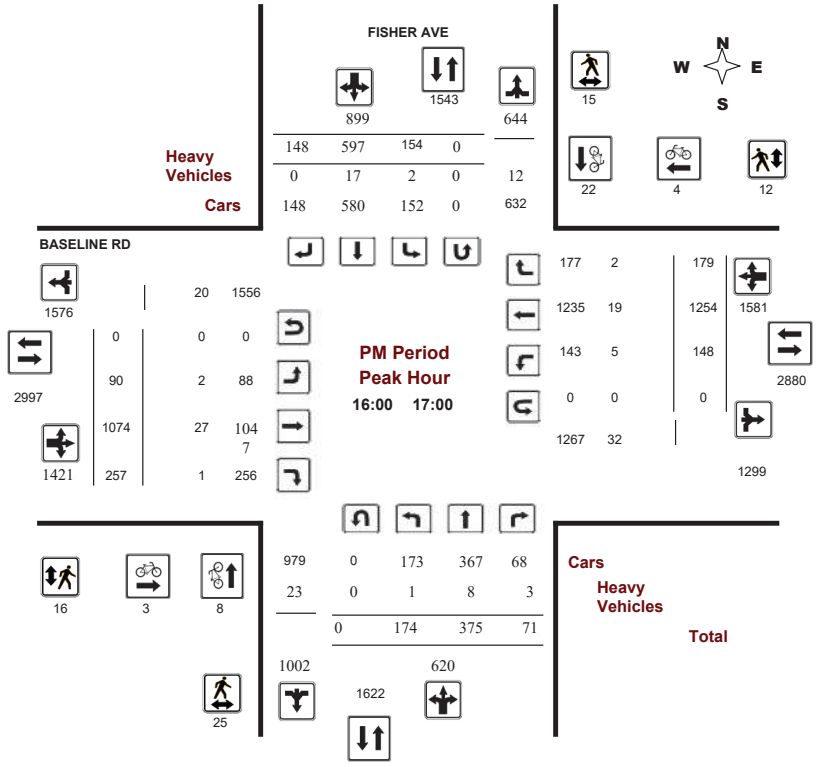
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, August 03, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 2

Eastbound: 3 Westbound: 2

AADT Factor .90

	FISHER AVE								BASELINE 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	174	406	68	**648**	121	309	57	**487**	**1135**	104	835	106	**1045**	36	702	105	**843**	**1888**	**3023**
08:00 09:00	223	400	73	**696**	132	331	93	**556**	**1252**	126	915	152	**1193**	32	909	141	**1082**	**2275**	**3527**
09:00 10:00	172	343	55	**570**	121	269	96	**486**	**1056**	70	670	151	**891**	58	685	120	**863**	**1754**	**2810**
11:30 12:30	172	276	59	**507**	121	365	135	**621**	**1128**	128	658	187	**973**	71	802	123	**996**	**1969**	**3097**
12:30 13:30	168	283	68	**519**	108	337	124	**569**	**1088**	139	707	211	**1057**	71	718	125	**914**	**1971**	**3059**
15:00 16:00	153	345	52	**550**	128	442	120	**690**	**1240**	115	848	212	**1175**	113	1179	173	**1465**	**2640**	**3880**
16:00 17:00	174	375	71	**620**	154	597	148	**899**	**1519**	90	1074	257	**1421**	148	1254	179	**1581**	**3002**	**4521**
17:00 18:00	188	354	70	**612**	149	470	114	**733**	**1345**	108	935	239	**1282**	141	1206	147	**1494**	**2776**	**4121**
Sub Total	1424	2782	516	**4722**	1034	3120	887	**5041**	**9763**	880	6642	1515	**9037**	670	7455	1113	**9238**	**18275**	**28038**
U Turns	0			**0**	2			**2**	**2**	3			**3**	2			**2**	**5**	**7**
Total	1424	2782	516	**4722**	1036	3120	887	**5043**	**9765**	883	6642	1515	**9040**	672	7455	1113	**9240**	**18280**	**28045**
EQ 12Hr	1979	3867	717	**6563**	1440	4337	1233	**7010**	**13573**	1227	9232	2106	**12565**	934	10362	1547	**12843**	**25408**	**38981**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1781	3480	645	**5906**	1296	3903	1110	**6309**	**12215**	1104	8309	1895	**11308**	841	9326	1392	**11559**	**22867**	**35082**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	2333	4559	845	**7737**	1698	5113	1454	**8265**	**16002**	1446	10885	2482	**14813**	1102	12217	1824	**15143**	**29956**	**45958**
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

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study 15 Minute Increments

		FISHER AVE									BASELINE 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	34	104	20	158	20	70	7	97	**255**	14	183	22	219	5	120	21	146	**365**	**620**
07:15	07:30	34	92	19	145	25	68	13	106	**251**	33	202	21	256	8	165	23	196	**452**	**703**
07:30	07:45	53	100	15	168	44	91	16	151	**319**	23	232	34	289	10	214	23	247	**536**	**855**
07:45	08:00	53	110	14	177	32	80	21	133	**310**	34	218	29	281	13	203	38	254	**535**	**845**
08:00	08:15	52	77	16	145	30	98	16	144	**289**	34	255	32	321	8	206	38	252	**573**	**862**
08:15	08:30	53	103	13	169	40	73	20	133	**302**	40	202	38	280	10	223	32	265	**545**	**847**
08:30	08:45	63	106	18	187	21	77	18	116	**303**	23	251	47	321	8	240	30	278	**599**	**902**
08:45	09:00	55	114	26	195	42	83	39	164	**359**	30	207	35	272	7	240	41	288	**560**	**919**
09:00	09:15	43	109	12	164	39	61	25	125	**289**	17	193	36	246	14	186	28	228	**474**	**763**
09:15	09:30	33	91	14	138	22	77	23	122	**260**	19	177	42	238	16	154	23	193	**431**	**691**
09:30	09:45	53	68	10	131	35	61	22	118	**249**	16	155	41	212	13	184	30	227	**439**	**688**
09:45	10:00	43	75	19	137	25	70	26	121	**258**	18	145	32	195	15	161	39	215	**410**	**668**
11:30	11:45	33	69	14	116	23	84	41	148	**264**	40	153	54	247	19	185	28	232	**479**	**743**
11:45	12:00	42	65	22	129	28	93	29	150	**279**	25	146	55	226	20	195	37	252	**478**	**757**
12:00	12:15	43	76	11	130	28	88	30	146	**276**	36	177	41	254	12	197	28	237	**491**	**767**
12:15	12:30	54	66	12	132	42	100	35	177	**309**	29	182	37	248	21	225	30	276	**524**	**833**
12:30	12:45	52	78	11	141	22	93	29	144	**285**	41	179	45	265	14	162	33	209	**474**	**759**
12:45	13:00	41	58	31	130	38	86	23	147	**277**	42	187	50	279	15	181	29	225	**504**	**781**
13:00	13:15	43	70	16	129	23	76	40	139	**268**	30	175	59	264	20	187	33	240	**504**	**772**
13:15	13:30	32	77	10	119	25	82	32	139	**258**	26	166	57	249	22	188	30	240	**489**	**747**
15:00	15:15	33	75	16	124	30	104	34	168	**292**	30	196	44	270	20	257	37	314	**584**	**876**
15:15	15:30	38	80	10	128	27	96	31	154	**282**	31	165	52	248	33	313	38	384	**632**	**914**
15:30	15:45	36	106	12	154	37	115	31	183	**337**	28	239	52	319	30	281	48	359	**678**	**1015**
15:45	16:00	46	84	14	144	34	127	24	185	**329**	26	248	64	338	30	328	50	408	**746**	**1075**
16:00	16:15	48	91	13	152	42	139	44	225	**377**	27	299	50	376	32	323	39	394	**770**	**1147**
16:15	16:30	41	106	25	172	37	159	31	227	**399**	25	291	66	382	38	318	40	396	**778**	**1177**
16:30	16:45	40	85	16	141	34	144	24	202	**343**	21	264	74	359	40	300	50	390	**749**	**1092**
16:45	17:00	45	93	17	155	41	155	49	245	**400**	17	220	67	304	38	313	50	401	**705**	**1105**
17:00	17:15	56	103	11	170	39	119	30	188	**358**	23	248	67	338	44	333	43	420	**758**	**1116**
17:15	17:30	39	86	20	145	38	132	36	206	**351**	27	222	52	301	46	327	38	411	**712**	**1063**
17:30	17:45	48	96	19	163	38	89	31	158	**321**	32	229	60	321	27	312	35	374	**695**	**1016**
17:45	18:00	45	69	20	134	35	130	17	182	**316**	26	236	60	322	24	234	31	289	**611**	**927**
Total:		1424	2782	516	4722	1036	3120	887	5043	**9765**	883	6642	1515	9040	672	7455	1113	9240	**9765**	**28,045**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study Cyclist Volume

		FISHER AVE			BASELINE RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	5	4	**9**	0	0	**0**	**9**
07:15	07:30	5	2	**7**	0	0	**0**	**7**
07:30	07:45	12	2	**14**	0	0	**0**	**14**
07:45	08:00	8	2	**10**	1	2	**3**	**13**
08:00	08:15	7	2	**9**	2	0	**2**	**11**
08:15	08:30	9	1	**10**	1	2	**3**	**13**
08:30	08:45	10	4	**14**	1	0	**1**	**15**
08:45	09:00	2	0	**2**	1	2	**3**	**5**
09:00	09:15	3	4	**7**	2	1	**3**	**10**
09:15	09:30	1	1	**2**	0	2	**2**	**4**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	2	2	**4**	0	0	**0**	**4**
11:30	11:45	1	1	**2**	0	0	**0**	**2**
11:45	12:00	0	0	**0**	1	0	**1**	**1**
12:00	12:15	0	1	**1**	0	1	**1**	**2**
12:15	12:30	2	1	**3**	0	0	**0**	**3**
12:30	12:45	0	0	**0**	0	1	**1**	**1**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	1	0	**1**	0	0	**0**	**1**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	2	2	**4**	1	0	**1**	**5**
15:15	15:30	1	1	**2**	3	0	**3**	**5**
15:30	15:45	0	3	**3**	0	0	**0**	**3**
15:45	16:00	1	5	**6**	1	0	**1**	**7**
16:00	16:15	2	2	**4**	0	0	**0**	**4**
16:15	16:30	4	7	**11**	2	3	**5**	**16**
16:30	16:45	1	9	**10**	0	1	**1**	**11**
16:45	17:00	1	4	**5**	1	0	**1**	**6**
17:00	17:15	2	8	**10**	1	3	**4**	**14**
17:15	17:30	5	6	**11**	2	6	**8**	**19**
17:30	17:45	4	8	**12**	1	0	**1**	**13**
17:45	18:00	3	5	**8**	1	2	**3**	**11**
Total		94	87	**181**	22	26	**48**	**229**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study Pedestrian Volume

		FISHER AVE			BASELINE 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	6	3	**9**	5	3	**8**	**17**
07:15	07:30	2	2	**4**	3	3	**6**	**10**
07:30	07:45	5	1	**6**	3	3	**6**	**12**
07:45	08:00	4	2	**6**	4	2	**6**	**12**
08:00	08:15	3	1	**4**	4	1	**5**	**9**
08:15	08:30	5	3	**8**	3	3	**6**	**14**
08:30	08:45	3	2	**5**	4	1	**5**	**10**
08:45	09:00	8	1	**9**	4	1	**5**	**14**
09:00	09:15	0	1	**1**	2	1	**3**	**4**
09:15	09:30	3	1	**4**	3	2	**5**	**9**
09:30	09:45	0	1	**1**	1	1	**2**	**3**
09:45	10:00	1	0	**1**	1	1	**2**	**3**
11:30	11:45	1	1	**2**	1	1	**2**	**4**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	1	0	**1**	1	1	**2**	**3**
12:15	12:30	4	0	**4**	2	1	**3**	**7**
12:30	12:45	5	0	**5**	3	0	**3**	**8**
12:45	13:00	2	2	**4**	3	2	**5**	**9**
13:00	13:15	5	1	**6**	3	0	**3**	**9**
13:15	13:30	3	1	**4**	2	0	**2**	**6**
15:00	15:15	5	0	**5**	8	0	**8**	**13**
15:15	15:30	0	3	**3**	2	1	**3**	**6**
15:30	15:45	3	3	**6**	1	1	**2**	**8**
15:45	16:00	15	0	**15**	4	1	**5**	**20**
16:00	16:15	6	10	**16**	6	4	**10**	**26**
16:15	16:30	7	1	**8**	1	0	**1**	**9**
16:30	16:45	9	3	**12**	3	4	**7**	**19**
16:45	17:00	3	1	**4**	6	4	**10**	**14**
17:00	17:15	8	2	**10**	5	1	**6**	**16**
17:15	17:30	10	2	**12**	4	0	**4**	**16**
17:30	17:45	5	2	**7**	6	2	**8**	**15**
17:45	18:00	4	1	**5**	3	1	**4**	**9**
Total	.....	136	51	**187**	101	46	**147**	**334**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study Heavy Vehicles

		FISHER AVE									BASELINE 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	3	7	0	**10**	1	1	0	**2**	**12**	0	4	0	**4**	0	6	0	**6**	**10**	**22**
07:15	07:30	1	1	0	**2**	0	5	0	**5**	**7**	0	7	1	**8**	0	8	1	**9**	**17**	**24**
07:30	07:45	0	6	0	**6**	0	2	0	**2**	**8**	0	5	0	**5**	0	5	0	**5**	**10**	**18**
07:45	08:00	1	4	0	**5**	0	3	1	**4**	**9**	1	10	1	**12**	0	4	2	**6**	**18**	**27**
08:00	08:15	0	2	0	**2**	0	4	0	**4**	**6**	0	8	0	**8**	0	8	2	**10**	**18**	**24**
08:15	08:30	2	6	0	**8**	1	4	0	**5**	**13**	1	6	4	**11**	0	7	1	**8**	**19**	**32**
08:30	08:45	0	3	0	**3**	0	2	0	**2**	**5**	0	11	1	**12**	1	9	2	**12**	**24**	**29**
08:45	09:00	1	4	0	**5**	0	5	1	**6**	**11**	0	10	0	**10**	0	10	1	**11**	**21**	**32**
09:00	09:15	3	2	0	**5**	0	4	0	**4**	**9**	0	6	2	**8**	0	13	0	**13**	**21**	**30**
09:15	09:30	1	3	1	**5**	0	6	0	**6**	**11**	1	6	2	**9**	1	6	0	**7**	**16**	**27**
09:30	09:45	0	3	0	**3**	3	2	1	**6**	**9**	1	5	1	**7**	0	9	0	**9**	**16**	**25**
09:45	10:00	1	2	0	**3**	1	3	0	**4**	**7**	0	3	2	**5**	2	6	0	**8**	**13**	**20**
11:30	11:45	1	3	2	**6**	2	2	1	**5**	**11**	0	8	2	**10**	0	5	1	**6**	**16**	**27**
11:45	12:00	2	3	1	**6**	0	2	0	**2**	**8**	0	3	2	**5**	1	6	1	**8**	**13**	**21**
12:00	12:15	3	2	0	**5**	0	4	1	**5**	**10**	1	7	1	**9**	0	8	0	**8**	**17**	**27**
12:15	12:30	0	3	1	**4**	0	7	1	**8**	**12**	1	6	1	**8**	2	8	1	**11**	**19**	**31**
12:30	12:45	0	3	0	**3**	0	8	0	**8**	**11**	1	4	0	**5**	0	7	2	**9**	**14**	**25**
12:45	13:00	2	4	0	**6**	1	5	0	**6**	**12**	0	5	1	**6**	2	4	1	**7**	**13**	**25**
13:00	13:15	1	3	0	**4**	0	4	0	**4**	**8**	0	9	0	**9**	0	6	0	**6**	**15**	**23**
13:15	13:30	0	3	0	**3**	1	3	1	**5**	**8**	1	7	2	**10**	1	8	1	**10**	**20**	**28**
15:00	15:15	1	3	0	**4**	1	6	0	**7**	**11**	0	5	0	**5**	1	6	0	**7**	**12**	**23**
15:15	15:30	0	2	0	**2**	1	4	1	**6**	**8**	0	5	2	**7**	0	4	0	**4**	**11**	**19**
15:30	15:45	0	6	0	**6**	1	4	0	**5**	**11**	1	6	1	**8**	1	6	0	**7**	**15**	**26**
15:45	16:00	2	2	0	**4**	0	3	0	**3**	**7**	0	5	1	**6**	1	3	1	**5**	**11**	**18**
16:00	16:15	0	1	1	**2**	1	4	0	**5**	**7**	1	8	0	**9**	1	6	1	**8**	**17**	**24**
16:15	16:30	0	2	1	**3**	0	4	0	**4**	**7**	0	6	0	**6**	1	4	0	**5**	**11**	**18**
16:30	16:45	0	2	0	**2**	0	4	0	**4**	**6**	1	11	1	**13**	1	5	0	**6**	**19**	**25**
16:45	17:00	1	3	1	**5**	1	5	0	**6**	**11**	0	2	0	**2**	2	4	1	**7**	**9**	**20**
17:00	17:15	0	1	0	**1**	2	5	0	**7**	**8**	0	4	0	**4**	1	4	0	**5**	**9**	**17**
17:15	17:30	0	3	0	**3**	1	7	0	**8**	**11**	0	3	0	**3**	2	2	0	**4**	**7**	**18**
17:30	17:45	0	3	1	**4**	0	5	1	**6**	**10**	0	6	0	**6**	0	3	0	**3**	**9**	**19**
17:45	18:00	0	1	1	**2**	1	7	0	**8**	**10**	0	4	2	**6**	0	1	0	**1**	**7**	**17**
Total:	None	26	96	10	**132**	19	134	9	**162**	**294**	11	195	30	**236**	21	191	19	**231**	**467**	**761**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BASELINE RD @ FISHER AVE

Survey Date: Wednesday, August 03, 2016 **WO No:** 36121

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

Full Study 15 Minute U-Turn Total

Time Period		FISHER AVE Northbound U-Turn Total	FISHER AVE Southbound U-Turn Total	BASELINE RD Eastbound U-Turn Total	BASELINE RD Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	1	1	0	**2**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	1	**1**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	1	1	**2**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	1	0	**1**
12:15	12:30	0	0	0	0	**0**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	0	0	0	0	**0**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	0	**0**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	1	0	0	**1**
Total		0	2	3	2	**7**

Appendix D

Synchro Intersection Worksheets – Existing Conditions

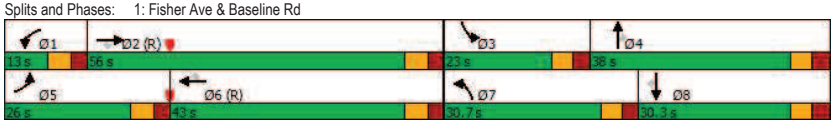
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1300	152	32	1029	141	223	460	73	132	352	93
Future Volume (vph)	126	1300	152	32	1029	141	223	460	73	132	352	93
Satd. Flow (prot)	1658	3252	1469	1642	3252	1455	1658	3252	1483	1658	3221	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1653	3252	1401	1635	3252	1416	1633	3252	1414	1650	3221	1418
Satd. Flow (RTOR)			180			232			181			231
Lane Group Flow (vph)	140	1444	169	36	1143	157	248	511	81	147	391	103
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.1	29.1	11.3	29.1	29.1	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	26.0	56.0	56.0	13.0	43.0	43.0	30.7	38.0	38.0	23.0	30.3	30.3
Total Split (%)	20.0%	43.1%	43.1%	10.0%	33.1%	33.1%	23.6%	29.2%	29.2%	17.7%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	15.7	60.2	60.2	6.8	46.4	46.4	22.7	28.1	28.1	15.2	20.7	20.7
Actuated g/C Ratio	0.12	0.46	0.46	0.05	0.36	0.36	0.17	0.22	0.22	0.12	0.16	0.16
v/c Ratio	0.70	0.96	0.23	0.42	0.99	0.24	0.86	0.73	0.18	0.76	0.76	0.25
Control Delay	73.0	50.4	3.8	74.8	65.3	1.3	78.6	53.6	0.9	79.3	62.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	50.4	3.8	74.8	65.3	1.3	78.6	53.6	0.9	79.3	62.4	1.4
LOS	E	D	A	E	E	A	E	D	A	E	E	A
Approach Delay		47.7			58.1			55.9			56.5	
Approach LOS		D			E			E			E	
Queue Length 50th (m)	34.8	~224.0	0.0	9.0	~167.7	0.0	61.1	64.1	0.0	36.5	51.0	0.0
Queue Length 95th (m)	55.3	#272.2	12.2	20.6	#232.6	1.3	#100.0	81.1	0.0	#62.8	66.7	0.0
Internal Link Dist (m)		145.0			163.5			86.9			77.9	
Turn Bay Length (m)	124.5		58.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	251	1507	745	88	1159	654	316	792	481	218	594	450
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.96	0.23	0.41	0.99	0.24	0.78	0.65	0.17	0.67	0.66	0.23

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 119 (92%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99
Intersection Signal Delay: 53.5 — Intersection LOS: D
Intersection Capacity Utilization 89.7% — ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Fisher Ave & Baseline Rd



Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1571	12	0	1347	0	13
Future Vol, veh/h	1571	12	0	1347	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1746	13	0	1497	0	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	880
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	290
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	290
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	290	-	-	-
HCM Lane V/C Ratio	0.05	-	-	-
HCM Control Delay (s)	18.1	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	5	753	532	20
Future Vol, veh/h	13	7	5	753	532	20
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	8	6	837	591	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	938	296	613	0	-	0
Stage 1	591	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	296	700	962	-	-	-
Stage 1	501	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	292	700	962	-	-	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	495	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.4	0.1	0
HCM LOS	C		

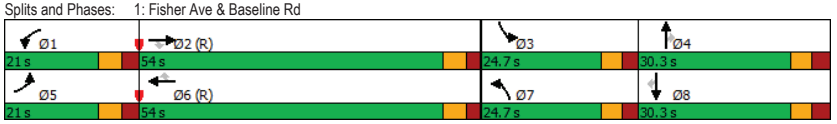
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	962	-	367	-	-
HCM Lane V/C Ratio	0.006	-	0.061	-	-
HCM Control Delay (s)	8.8	0	15.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1264	257	148	1274	179	174	375	71	154	597	148
Future Volume (vph)	90	1264	257	148	1274	179	174	375	71	154	597	148
Satd. Flow (prot)	1658	3283	1483	1642	3316	1483	1658	3316	1455	1658	3283	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1652	3283	1401	1632	3316	1425	1641	3316	1396	1640	3283	1390
Satd. Flow (RTOR)			208			153			128			142
Lane Group Flow (vph)	100	1404	286	164	1416	199	193	417	79	171	663	164
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.2	29.2	11.3	29.2	29.2	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	21.0	54.0	54.0	21.0	54.0	54.0	24.7	30.3	30.3	24.7	30.3	30.3
Total Split (%)	16.2%	41.5%	41.5%	16.2%	41.5%	41.5%	19.0%	23.3%	23.3%	19.0%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	12.3	48.1	48.1	14.5	50.3	50.3	17.8	25.8	25.8	17.0	25.0	25.0
Actuated g/C Ratio	0.09	0.37	0.37	0.11	0.39	0.39	0.14	0.20	0.20	0.13	0.19	0.19
v/c Ratio	0.64	1.16	0.44	0.90	1.10	0.31	0.85	0.63	0.21	0.79	1.05	0.43
Control Delay	74.7	117.8	10.9	101.1	96.5	9.1	86.3	53.3	2.5	79.9	99.8	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.7	117.8	10.9	101.1	96.5	9.1	86.3	53.3	2.5	79.9	99.8	14.1
LOS	E	F	B	F	F	A	F	D	A	E	F	B
Approach Delay		98.3			87.2			56.7			82.3	
Approach LOS		F			F			E			F	
Queue Length 50th (m)	24.9	~223.8	13.3	42.0	~219.7	7.5	48.5	53.0	0.0	42.3	~100.8	4.7
Queue Length 95th (m)	43.2	#266.1	36.6	#82.6	#268.1	25.0	#86.3	70.8	2.6	#72.4	#138.3	25.1
Internal Link Dist (m)		142.5			131.2			85.7			73.1	
Turn Bay Length (m)	124.5		85.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	187	1214	649	185	1282	645	239	659	380	239	632	382
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	1.16	0.44	0.89	1.10	0.31	0.81	0.63	0.21	0.72	1.05	0.43

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 123 (95%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16
Intersection Signal Delay: 86.1 Intersection LOS: F
Intersection Capacity Utilization 94.7% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Fisher Ave & Baseline Rd



Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1592	30	0	1602	0	36
Future Vol, veh/h	1592	30	0	1602	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1769	33	0	1780	0	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	901
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	281
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	281
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	281	-	-	-
HCM Lane V/C Ratio	0.142	-	-	-
HCM Control Delay (s)	19.9	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	16	15	608	994	44
Future Vol, veh/h	37	16	15	608	994	44
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	18	17	676	1104	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1408	552	1153	0	-	0
Stage 1	1104	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	158	477	602	-	-	-
Stage 1	273	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	151	477	602	-	-	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	261	-	-	-	-	-
Stage 2	685	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.2	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	602	-	190	-	-
HCM Lane V/C Ratio	0.028	-	0.31	-	-
HCM Control Delay (s)	11.2	0.2	32.2	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Appendix E

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
10/15/2016	2016	12:50	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
10/11/2016	2016	16:15	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
10/19/2016	2016	3:08	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	1	0	0	0
11/2/2016	2016	18:06	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
11/26/2016	2016	21:20	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
1/28/2016	2016	16:44	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
1/5/2016	2016	9:17	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
12/21/2016	2016	16:48	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
3/22/2016	2016	12:14	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
4/1/2016	2016	16:56	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	2
7/20/2016	2016	16:30	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
7/16/2016	2016	20:52	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
9/20/2016	2016	17:20	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
10/6/2017	2017	9:29	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
10/3/2017	2017	13:32	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
12/6/2017	2017	16:43	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
12/11/2017	2017	17:30	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
12/23/2017	2017	12:15	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	04 - Slush	2	0	0	0
2/15/2017	2017	10:48	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	03 - Loose snow	1	0	0	1
1/5/2017	2017	10:47	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	05 - Packed snow	3	0	0	0
3/5/2017	2017	9:38	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
3/9/2017	2017	11:52	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
1/12/2017	2017	17:55	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
7/21/2017	2017	9:19	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	2	0	1	0
9/11/2017	2017	16:16	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
9/7/2017	2017	7:30	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
10/20/2018	2018	16:35	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
1/2/2018	2018	17:00	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	05 - Packed snow	2	0	0	0
11/23/2018	2018	7:46	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	01 - Fatal injury	02 - Angle	01 - Dry	2	0	0	1
12/12/2018	2018	17:52	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
12/29/2018	2018	13:06	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2/27/2018	2018	16:26	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
3/26/2018	2018	7:07	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
3/16/2018	2018	17:31	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
3/16/2018	2018	20:07	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0	0	0
3/18/2018	2018	15:06	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
5/7/2018	2018	17:53	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
4/13/2018	2018	13:20	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
5/11/2018	2018	15:54	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
5/29/2018	2018	15:44	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	3	0	0	0
7/17/2018	2018	16:25	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
8/15/2018	2018	6:50	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
1/20/2019	2019	15:00	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	06 - Ice	2	0	0	0
9/23/2019	2019	5:15	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
9/27/2019	2019	14:45	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
9/29/2019	2019	13:34	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
9/17/2019	2019	17:40	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
10/5/2019	2019	15:44	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
10/2/2019	2019	15:50	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
10/3/2019	2019	11:45	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
10/23/2019	2019	10:37	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
12/14/2019	2019	17:36	BASELINE RD @ FISHER AVE (0002346)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
12/20/2019	2019	7:12	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
1/30/2019	2019	16:00	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2/8/2019	2019	17:43	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	06 - Ice	2	0	0	0
1/9/2019	2019	10:51	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
3/13/2019	2019	18:00	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	04 - Slush	2	0	0	0
4/24/2019	2019	21:00	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
5/10/2019	2019	10:04	BASELINE RD @ FISHER AVE (0002346)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	02 - Wet	3	0	0	0
5/12/2019	2019	16:50	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
6/17/2019	2019	17:15	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
6/17/2019	2019	7:20	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
7/11/2019	2019	15:36	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2/2/2020	2020	16:00	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2/15/2020	2020	14:40	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0	0	0
2/14/2020	2020	18:20	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	06 - Ice	3	0	0	0
2/8/2020	2020	8:31	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	03 - Loose snow	2	0	0	0
1/8/2020	2020	18:10	BASELINE RD @ FISHER AVE (0002346)	03 - Snow	07 - Dark	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	06 - Ice	2	0	0	0
3/6/2020	2020	17:00	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
6/15/2020	2020	12:02	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
9/7/2020	2020	12:50	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
9/19/2020	2020	10:45	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
9/24/2020	2020	20:47	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
12/6/2020	2020	14:56	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	99 - Other	01 - Dry	2	0	0	0
12/4/2020	2020	23:04	BASELINE RD @ FISHER AVE (0002346)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
10/17/2016	2016	16:36	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	3	0	0	0
3/23/2016	2016	17:56	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
6/4/2016	2016	11:05	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
10/27/2017	2017	10:19	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
12/6/2018	2018	8:54	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	0
2/12/2018	2018	16:44	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	05 - Packed snow	2	0	0	0
5/4/2018	2018	21:32	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	06 - Strong wind	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
5/25/2018	2018	17:53	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	02 - Rain	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	3	0	0	0
9/17/2019	2019	7:50	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
1/25/2019	2019	15:30	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	04 - Slush	2	0	0	0
3/9/2020	2020	20:36	FISHER AVE btwn MCCOOEY LANE & BASELINE RD (__3ZA4JS)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	01 - Approaching	01 - Dry	2	0	0	0
1/4/2017	2017	15:21	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	05 - Packed snow	2	0	0	0
8/8/2017	2017	17:09	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
9/12/2017	2017	10:35	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
1/24/2018	2018	18:06	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
6/19/2018	2018	6:40	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
9/21/2018	2018	8:36	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	02 - Rain	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	02 - Wet	3	0	0	0
9/11/2019	2019	13:04	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
12/5/2019	2019	17:00	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
1/10/2019	2019	13:42	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2/3/2020	2020	5:43	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
1/15/2020	2020	20:02	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
12/21/2020	2020	16:00	BASELINE RD btwn MARSON ST & FISHER AVE (__3ZA4JL)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
11/8/2016	2016	17:55	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
5/11/2016	2016	17:43	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
6/5/2017	2017	8:40	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
10/30/2018	2018	17:53	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	05 - Dusk	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
9/15/2018	2018	13:06	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
11/10/2019	2019	20:17	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
2/12/2019	2019	17:47	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	03 - Snow	05 - Dusk	10 - No control	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	2	0	0	0
6/25/2019	2019	15:49	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
3/10/2020	2020	22:58	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	99 - Other	06 - Ice	2	0	0	0
10/31/2020	2020	13:34	BASELINE RD btwn FISHER AVE & LEXINGTON ST (__3ZA4JR)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0

10/22/2016	2016	8:27	FISHER AVE btwn BASELINE RD & MALIBU TER (__3ZA4JK)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
8/26/2016	2016	18:16	FISHER AVE btwn BASELINE RD & MALIBU TER (__3ZA4JK)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	3	0	0	0
12/7/2017	2017	17:30	FISHER AVE btwn BASELINE RD & MALIBU TER (__3ZA4JK)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
4/30/2018	2018	17:22	FISHER AVE btwn BASELINE RD & MALIBU TER (__3ZA4JK)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
8/17/2019	2019	13:14	FISHER AVE btwn BASELINE RD & MALIBU TER (__3ZA4JK)	02 - Rain	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	02 - Wet	2	0	0	0
5/26/2020	2020	8:51	FISHER AVE btwn BASELINE RD & MALIBU TER (__3ZA4JK)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
9/16/2020	2020	13:30	FISHER AVE btwn BASELINE RD & MALIBU TER (__3ZA4JK)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	3	0	0	0
9/30/2017	2017	10:05	FISHER AVE @ MALIBU TER (0003121)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
10/18/2018	2018	8:00	FISHER AVE @ MALIBU TER (0003121)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	1
2/15/2018	2018	16:01	FISHER AVE @ MALIBU TER (0003121)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	02 - Wet	2	0	0	0
1/26/2019	2019	10:40	FISHER AVE @ MALIBU TER (0003121)	01 - Clear	01 - Daylight	02 - Stop sign	00 - Unknown	02 - Non-fatal injury	03 - Rear end	02 - Wet	2	0	0	0
1/27/2020	2020	8:25	FISHER AVE @ MALIBU TER (0003121)	01 - Clear	01 - Daylight	02 - Stop sign	04 - Missing/Damaged	02 - Non-fatal injury	02 - Angle	03 - Loose snow	2	0	0	0
1/20/2020	2020	9:00	FISHER AVE @ MALIBU TER (0003121)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0

Appendix F

TRANS Model Plots

CGH TRANSPORTATION

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Network Mapping

2031 Model - Base case

N/A

User Initials: TIMW
Plot Prepared: May 31, 2021
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 500

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Network Mapping

2011 Model - Base case

N/A

User Initials: TIMW
Plot Prepared: May 31, 2021
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 500

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.

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Network Mapping

2031 Model - Base case

N/A

User Initials: TIMW
Plot Prepared: May 31, 2021
EMME Scenario: 21711

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 500

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.

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Network Mapping

2011 Model - Base case

N/A

User Initials: TIMW
Plot Prepared: May 31, 2021
EMME Scenario: 21711

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 500

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.

Appendix G

Synchro Intersection Worksheets – 2026 Future Background Conditions

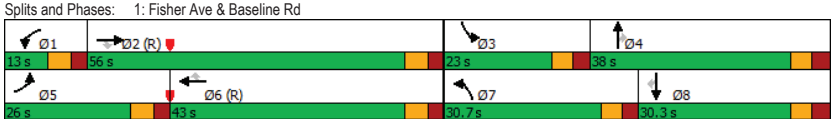
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1300	152	32	1029	141	223	474	73	132	368	93
Future Volume (vph)	126	1300	152	32	1029	141	223	474	73	132	368	93
Satd. Flow (prot)	1658	3252	1469	1642	3252	1455	1658	3252	1483	1658	3221	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1653	3252	1401	1633	3252	1416	1634	3252	1414	1649	3221	1418
Satd. Flow (RTOR)			180			232			181			231
Lane Group Flow (vph)	126	1300	152	32	1029	141	223	474	73	132	368	93
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.1	29.1	11.3	29.1	29.1	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	26.0	56.0	56.0	13.0	43.0	43.0	30.7	38.0	38.0	23.0	30.3	30.3
Total Split (%)	20.0%	43.1%	43.1%	10.0%	33.1%	33.1%	23.6%	29.2%	29.2%	17.7%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	14.9	62.1	62.1	6.7	49.0	49.0	21.4	27.0	27.0	14.5	20.2	20.2
Actuated g/C Ratio	0.11	0.48	0.48	0.05	0.38	0.38	0.16	0.21	0.21	0.11	0.16	0.16
v/c Ratio	0.67	0.84	0.20	0.38	0.84	0.21	0.82	0.70	0.17	0.71	0.74	0.22
Control Delay	71.5	37.9	2.7	72.7	45.9	0.7	75.4	53.3	0.8	76.5	61.4	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	37.9	2.7	72.7	45.9	0.7	75.4	53.3	0.8	76.5	61.4	1.2
LOS	E	D	A	E	D	A	E	D	A	E	E	A
Approach Delay		37.2			41.3			54.7			55.3	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	31.4	166.6	0.0	8.0	127.7	0.0	55.1	59.7	0.0	32.8	48.0	0.0
Queue Length 95th (m)	50.4	#231.6	8.6	18.9	#200.1	0.0	#82.3	74.8	0.0	53.7	62.8	0.0
Internal Link Dist (m)		145.0			163.5			86.9			77.9	
Turn Bay Length (m)	124.5		58.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	251	1554	763	87	1225	678	316	792	481	218	594	450
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.84	0.20	0.37	0.84	0.21	0.71	0.60	0.15	0.61	0.62	0.21

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 119 (92%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84
Intersection Signal Delay: 44.2 — Intersection LOS: D
Intersection Capacity Utilization 90.0% — 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.

Splits and Phases: 1: Fisher Ave & Baseline Rd



Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1571	12	0	1347	0	13
Future Vol, veh/h	1571	12	0	1347	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1571	12	0	1347	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	792
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	332
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	332
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	332	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-
HCM Control Delay (s)	16.3	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	5	767	548	20
Future Vol, veh/h	13	7	5	767	548	20
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	7	5	767	548	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	865	274	568	0	-	0
Stage 1	548	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	326	724	1000	-	-	-
Stage 1	526	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	323	724	1000	-	-	-
Mov Cap-2 Maneuver	323	-	-	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	674	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1000	-	401	-	-
HCM Lane V/C Ratio	0.005	-	0.05	-	-
HCM Control Delay (s)	8.6	0	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1264	257	148	1274	179	174	381	71	154	624	148
Future Volume (vph)	90	1264	257	148	1274	179	174	381	71	154	624	148
Satd. Flow (prot)	1658	3283	1483	1642	3316	1483	1658	3316	1455	1658	3283	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1651	3283	1401	1630	3316	1425	1640	3316	1396	1639	3283	1390
Satd. Flow (RTOR)			208			153			128			136
Lane Group Flow (vph)	90	1264	257	148	1274	179	174	381	71	154	624	148
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.2	29.2	11.3	29.2	29.2	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	21.0	54.0	54.0	21.0	54.0	54.0	24.7	30.3	30.3	24.7	30.3	30.3
Total Split (%)	16.2%	41.5%	41.5%	16.2%	41.5%	41.5%	19.0%	23.3%	23.3%	19.0%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	11.8	48.5	48.5	14.1	50.8	50.8	17.1	26.7	26.7	16.1	25.7	25.7
Actuated g/C Ratio	0.09	0.37	0.37	0.11	0.39	0.39	0.13	0.21	0.21	0.12	0.20	0.20
v/c Ratio	0.60	1.03	0.39	0.84	0.98	0.28	0.80	0.56	0.18	0.75	0.96	0.39
Control Delay	72.6	74.5	8.6	91.7	61.0	7.4	80.6	50.7	1.0	77.2	78.7	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	74.5	8.6	91.7	61.0	7.4	80.6	50.7	1.0	77.2	78.7	12.3
LOS	E	E	A	F	E	A	F	D	A	E	E	B
Approach Delay		63.9			57.9			53.4			67.8	
Approach LOS		E			E			D			E	
Queue Length 50th (m)	22.4	~184.6	8.2	37.6	169.6	4.1	43.2	47.1	0.0	38.3	~89.8	2.6
Queue Length 95th (m)	39.5	#226.9	28.4	#72.0	#228.0	20.0	#74.1	64.6	0.4	60.8	#126.8	21.2
Internal Link Dist (m)		142.5			131.2			85.7			73.1	
Turn Bay Length (m)	124.5		85.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	187	1224	653	185	1294	649	239	681	388	239	649	384
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.03	0.39	0.80	0.98	0.28	0.73	0.56	0.18	0.64	0.96	0.39

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 123 (95%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03
Intersection Signal Delay: 61.3 — Intersection LOS: E
Intersection Capacity Utilization 95.2% — ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Fisher Ave & Baseline Rd

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1592	30	0	1602	0	36
Future Vol, veh/h	1592	30	0	1602	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1592	30	0	1602	0	36

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	811
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	322
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	322
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	322	-	-	-
HCM Lane V/C Ratio	0.112	-	-	-
HCM Control Delay (s)	17.6	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	16	15	614	1021	44
Future Vol, veh/h	37	16	15	614	1021	44
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	16	15	614	1021	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1297	511	1065	0	-	0
Stage 1	1021	-	-	-	-	-
Stage 2	276	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	183	508	650	-	-	-
Stage 1	301	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	177	508	650	-	-	-
Mov Cap-2 Maneuver	177	-	-	-	-	-
Stage 1	290	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.5	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	650	-	220	-	-
HCM Lane V/C Ratio	0.023	-	0.241	-	-
HCM Control Delay (s)	10.7	0.1	26.5	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Appendix H

Synchro Intersection Worksheets – 2031 Future Background Conditions

CGH TRANSPORTATION

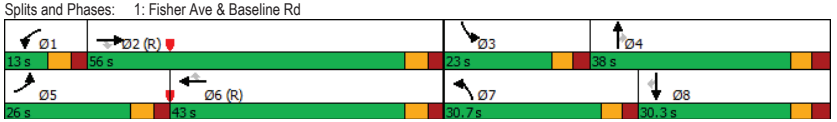
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1300	152	32	1029	141	223	486	73	132	382	93
Future Volume (vph)	126	1300	152	32	1029	141	223	486	73	132	382	93
Satd. Flow (prot)	1658	3252	1469	1642	3252	1455	1658	3252	1483	1658	3221	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1653	3252	1401	1633	3252	1416	1634	3252	1414	1650	3221	1418
Satd. Flow (RTOR)			180			232			181			231
Lane Group Flow (vph)	126	1300	152	32	1029	141	223	486	73	132	382	93
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.1	29.1	11.3	29.1	29.1	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	26.0	56.0	56.0	13.0	43.0	43.0	30.7	38.0	38.0	23.0	30.3	30.3
Total Split (%)	20.0%	43.1%	43.1%	10.0%	33.1%	33.1%	23.6%	29.2%	29.2%	17.7%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	14.9	61.8	61.8	6.7	48.6	48.6	21.4	27.4	27.4	14.5	20.5	20.5
Actuated g/C Ratio	0.11	0.48	0.48	0.05	0.37	0.37	0.16	0.21	0.21	0.11	0.16	0.16
v/c Ratio	0.67	0.84	0.20	0.38	0.85	0.21	0.82	0.71	0.17	0.71	0.75	0.22
Control Delay	71.5	38.3	2.7	72.7	46.4	0.7	75.4	53.4	0.8	76.5	61.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	38.3	2.7	72.7	46.4	0.7	75.4	53.4	0.8	76.5	61.9	1.2
LOS	E	D	A	E	D	A	E	D	A	E	E	A
Approach Delay		37.6			41.8			54.7			55.8	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	31.4	168.0	0.0	8.0	128.7	0.0	55.1	61.1	0.0	32.8	49.8	0.0
Queue Length 95th (m)	50.4	#231.6	8.6	18.9	#200.1	0.0	#82.3	76.8	0.0	53.7	65.1	0.0
Internal Link Dist (m)		145.0			163.5			86.9			77.9	
Turn Bay Length (m)	124.5		58.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	251	1545	760	87	1216	675	316	792	481	218	594	450
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.84	0.20	0.37	0.85	0.21	0.71	0.61	0.15	0.61	0.64	0.21

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 119 (92%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85
Intersection Signal Delay: 44.6 Intersection LOS: D
Intersection Capacity Utilization 90.3% 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.

Splits and Phases: 1: Fisher Ave & Baseline Rd



Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1571	12	0	1347	0	13
Future Vol, veh/h	1571	12	0	1347	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1571	12	0	1347	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	792
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	332
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	332
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	332	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-
HCM Control Delay (s)	16.3	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	5	779	562	20
Future Vol, veh/h	13	7	5	779	562	20
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	7	5	779	562	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	884	281	582	0	-	0
Stage 1	562	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	318	716	988	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	315	716	988	-	-	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	513	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	988	-	392	-	-
HCM Lane V/C Ratio	0.005	-	0.051	-	-
HCM Control Delay (s)	8.7	0	14.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1264	257	148	1274	179	174	385	71	154	648	148
Future Volume (vph)	90	1264	257	148	1274	179	174	385	71	154	648	148
Satd. Flow (prot)	1658	3283	1483	1642	3316	1483	1658	3316	1455	1658	3283	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1651	3283	1401	1630	3316	1425	1640	3316	1396	1639	3283	1390
Satd. Flow (RTOR)			208			153			128			131
Lane Group Flow (vph)	90	1264	257	148	1274	179	174	385	71	154	648	148
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.2	29.2	11.3	29.2	29.2	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	21.0	54.0	54.0	21.0	54.0	54.0	24.7	30.3	30.3	24.7	30.3	30.3
Total Split (%)	16.2%	41.5%	41.5%	16.2%	41.5%	41.5%	19.0%	23.3%	23.3%	19.0%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	11.8	48.5	48.5	14.1	50.8	50.8	17.1	26.7	26.7	16.1	25.7	25.7
Actuated g/C Ratio	0.09	0.37	0.37	0.11	0.39	0.39	0.13	0.21	0.21	0.12	0.20	0.20
v/c Ratio	0.60	1.03	0.39	0.84	0.98	0.28	0.80	0.57	0.18	0.75	1.00	0.39
Control Delay	72.6	74.5	8.6	91.7	61.0	7.4	80.6	50.8	1.0	77.2	86.8	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	74.5	8.6	91.7	61.0	7.4	80.6	50.8	1.0	77.2	86.8	13.4
LOS	E	E	A	F	E	A	F	D	A	E	F	B
Approach Delay		63.9			57.9			53.5			73.8	
Approach LOS		E			E			D			E	
Queue Length 50th (m)	22.4	~184.6	8.2	37.6	169.6	4.1	43.2	47.6	0.0	38.3	~96.6	3.7
Queue Length 95th (m)	39.5	#226.9	28.4	#72.0	#228.0	20.0	#74.1	65.4	0.4	60.8	#133.8	22.5
Internal Link Dist (m)		142.5			131.2			85.7			73.1	
Turn Bay Length (m)	124.5		85.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	187	1224	653	185	1294	649	239	681	388	239	649	380
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.03	0.39	0.80	0.98	0.28	0.73	0.57	0.18	0.64	1.00	0.39

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 123 (95%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03
Intersection Signal Delay: 62.5 — Intersection LOS: E
Intersection Capacity Utilization 95.6% — ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Fisher Ave & Baseline Rd

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1592	30	0	1602	0	36
Future Vol, veh/h	1592	30	0	1602	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1592	30	0	1602	0	36

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	811
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	322
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	322
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	322	-	-	-
HCM Lane V/C Ratio	0.112	-	-	-
HCM Control Delay (s)	17.6	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	16	15	618	1045	44
Future Vol, veh/h	37	16	15	618	1045	44
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	16	15	618	1045	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1322	523	1089	0	-	0
Stage 1	1045	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	177	499	636	-	-	-
Stage 1	293	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	171	499	636	-	-	-
Mov Cap-2 Maneuver	171	-	-	-	-	-
Stage 1	282	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.4	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	636	-	213	-	-
HCM Lane V/C Ratio	0.024	-	0.249	-	-
HCM Control Delay (s)	10.8	0.1	27.4	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Appendix I

Synchro Intersection Worksheets – 2026 Future Total Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1307	155	33	1028	141	231	478	77	132	373	93
Future Volume (vph)	132	1307	155	33	1028	141	231	478	77	132	373	93
Satd. Flow (prot)	1658	3252	1469	1642	3252	1455	1658	3252	1483	1658	3221	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1652	3252	1350	1624	3252	1414	1603	3252	1412	1648	3221	1374
Satd. Flow (RTOR)			180			232			181			231
Lane Group Flow (vph)	132	1307	155	33	1028	141	231	478	77	132	373	93
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.1	29.1	11.3	29.1	29.1	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	26.0	56.0	56.0	13.0	43.0	43.0	30.7	38.0	38.0	23.0	30.3	30.3
Total Split (%)	20.0%	43.1%	43.1%	10.0%	33.1%	33.1%	23.6%	29.2%	29.2%	17.7%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	15.2	60.8	60.8	6.7	47.3	47.3	21.8	28.4	28.4	14.5	21.0	21.0
Actuated g/C Ratio	0.12	0.47	0.47	0.05	0.36	0.36	0.17	0.22	0.22	0.11	0.16	0.16
v/c Ratio	0.68	0.86	0.21	0.39	0.87	0.21	0.83	0.67	0.17	0.71	0.72	0.22
Control Delay	72.2	40.2	2.9	73.1	49.0	0.7	76.1	51.3	0.8	76.5	59.5	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.2	40.2	2.9	73.1	49.0	0.7	76.1	51.3	0.8	76.5	59.5	1.2
LOS	E	D	A	E	D	A	E	D	A	E	E	A
Approach Delay		39.2			44.0			53.6			54.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	32.8	~191.2	0.0	8.3	136.5	0.0	56.9	57.3	0.0	32.8	46.8	0.0
Queue Length 95th (m)	52.4	#233.5	9.3	19.5	#199.8	0.0	#89.9	75.4	0.0	53.7	63.5	0.0
Internal Link Dist (m)		145.0			163.5			86.9			77.9	
Turn Bay Length (m)	124.5		58.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	251	1520	727	88	1183	662	316	793	481	218	594	442
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.86	0.21	0.38	0.87	0.21	0.73	0.60	0.16	0.61	0.63	0.21

Intersection Summary

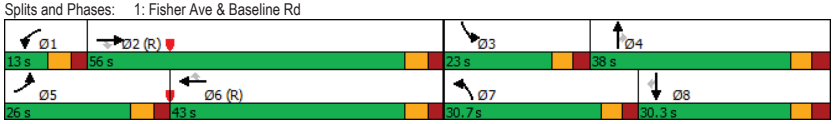
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 119 (92%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 45.4	Intersection LOS: D
Intersection Capacity Utilization 93.4%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 1: Fisher Ave & Baseline Rd



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	10	0	777	554	4
Future Vol, veh/h	17	10	0	777	554	4
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	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	10	0	777	554	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1331	554	-	0	-	0
Stage 1	554	-	-	-	-	-
Stage 2	777	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	170	532	0	-	-	-
Stage 1	575	-	0	-	-	-
Stage 2	453	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	170	532	-	-	-	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	575	-	-	-	-	-
Stage 2	453	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	227	-	-
HCM Lane V/C Ratio	-	0.119	-	-
HCM Control Delay (s)	-	23	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1572	15	0	1347	0	28
Future Vol, veh/h	1572	15	0	1347	0	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1572	15	0	1347	0	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	794
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	331
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	331
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	331	-	-	-
HCM Lane V/C Ratio	0.085	-	-	-
HCM Control Delay (s)	16.9	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	11	783	551	26
Future Vol, veh/h	13	7	11	783	551	26
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	7	11	783	551	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	886	276	577	0	-	0
Stage 1	551	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	317	721	993	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	311	721	993	-	-	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	993	-	388	-	-
HCM Lane V/C Ratio	0.011	-	0.052	-	-
HCM Control Delay (s)	8.7	0.1	14.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	1267	263	152	1270	179	183	384	76	154	633	148
Future Volume (vph)	94	1267	263	152	1270	179	183	384	76	154	633	148
Satd. Flow (prot)	1658	3283	1483	1642	3316	1483	1658	3316	1455	1658	3283	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1650	3283	1352	1620	3316	1423	1620	3316	1394	1637	3283	1350
Satd. Flow (RTOR)			212			153			128			134
Lane Group Flow (vph)	94	1267	263	152	1270	179	183	384	76	154	633	148
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.2	29.2	11.3	29.2	29.2	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	21.0	54.0	54.0	21.0	54.0	54.0	24.7	30.3	30.3	24.7	30.3	30.3
Total Split (%)	16.2%	41.5%	41.5%	16.2%	41.5%	41.5%	19.0%	23.3%	23.3%	19.0%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	12.1	48.4	48.4	14.2	50.5	50.5	17.4	26.7	26.7	16.1	25.4	25.4
Actuated g/C Ratio	0.09	0.37	0.37	0.11	0.39	0.39	0.13	0.21	0.21	0.12	0.20	0.20
v/c Ratio	0.61	1.04	0.41	0.85	0.99	0.28	0.83	0.56	0.20	0.75	0.99	0.40
Control Delay	73.1	75.7	8.9	94.2	61.6	7.4	83.4	50.8	1.9	77.2	84.5	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	75.7	8.9	94.2	61.6	7.4	83.4	50.8	1.9	77.2	84.5	13.0
LOS	E	E	A	F	E	A	F	D	A	E	F	B
Approach Delay		64.8			58.7			54.3			72.0	
Approach LOS		E			E			D			E	
Queue Length 50th (m)	23.4	~185.4	8.5	38.7	169.5	4.2	45.7	47.5	0.0	38.3	~92.4	3.0
Queue Length 95th (m)	40.9	#227.7	29.5	#74.6	#226.6	20.0	#79.9	65.2	1.7	60.8	#129.6	21.8
Internal Link Dist (m)		142.5			131.2			85.7			73.1	
Turn Bay Length (m)	124.5		85.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	187	1222	636	185	1288	646	239	681	388	239	642	371
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.04	0.41	0.82	0.99	0.28	0.77	0.56	0.20	0.64	0.99	0.40

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 123 (95%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 62.7	Intersection LOS: E
Intersection Capacity Utilization 96.6%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 1: Fisher Ave & Baseline Rd

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	10	0	638	1034	8
Future Vol, veh/h	19	10	0	638	1034	8
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	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	10	0	638	1034	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1672	1034	-	0	-	0
Stage 1	1034	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	105	282	0	-	-	-
Stage 1	343	-	0	-	-	-
Stage 2	526	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	105	282	-	-	-	-
Mov Cap-2 Maneuver	105	-	-	-	-	-
Stage 1	343	-	-	-	-	-
Stage 2	526	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	134	-	-
HCM Lane V/C Ratio	-	0.216	-	-
HCM Control Delay (s)	-	39.1	-	-
HCM Lane LOS	-	E	-	-
HCM 95th %tile Q(veh)	-	0.8	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1594	35	0	1602	0	46
Future Vol, veh/h	1594	35	0	1602	0	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1594	35	0	1602	0	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	815
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	321
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	321
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	321	-	-	-
HCM Lane V/C Ratio	0.143	-	-	-
HCM Control Delay (s)	18.1	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	16	26	631	1026	57
Future Vol, veh/h	37	16	26	631	1026	57
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	16	26	631	1026	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1330	513	1083	0	-	0
Stage 1	1026	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	175	506	640	-	-	-
Stage 1	299	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	164	506	640	-	-	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	280	-	-	-	-	-
Stage 2	685	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.4	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	640	-	206	-	-
HCM Lane V/C Ratio	0.041	-	0.257	-	-
HCM Control Delay (s)	10.9	0.2	28.4	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Appendix J

Synchro Intersection Worksheets – 2031 Future Total Conditions

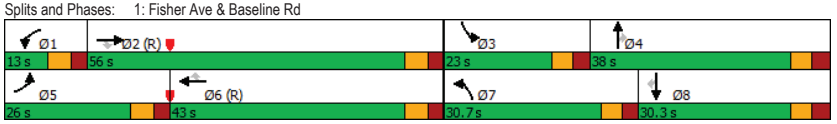
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1307	155	33	1028	141	231	490	77	132	387	93
Future Volume (vph)	132	1307	155	33	1028	141	231	490	77	132	387	93
Satd. Flow (prot)	1658	3252	1469	1642	3252	1455	1658	3252	1483	1658	3221	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1652	3252	1350	1624	3252	1414	1604	3252	1412	1648	3221	1374
Satd. Flow (RTOR)			180			232			181			231
Lane Group Flow (vph)	132	1307	155	33	1028	141	231	490	77	132	387	93
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.1	29.1	11.3	29.1	29.1	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	26.0	56.0	56.0	13.0	43.0	43.0	30.7	38.0	38.0	23.0	30.3	30.3
Total Split (%)	20.0%	43.1%	43.1%	10.0%	33.1%	33.1%	23.6%	29.2%	29.2%	17.7%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	15.2	60.6	60.6	6.7	47.1	47.1	21.8	28.6	28.6	14.5	21.2	21.2
Actuated g/C Ratio	0.12	0.47	0.47	0.05	0.36	0.36	0.17	0.22	0.22	0.11	0.16	0.16
v/c Ratio	0.68	0.86	0.21	0.39	0.87	0.21	0.83	0.69	0.17	0.71	0.74	0.22
Control Delay	72.2	40.5	2.9	73.1	49.4	0.7	76.1	51.6	0.8	76.5	60.3	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.2	40.5	2.9	73.1	49.4	0.7	76.1	51.6	0.8	76.5	60.3	1.2
LOS	E	D	A	E	D	A	E	D	A	E	E	A
Approach Delay		39.4			44.4			53.8			54.8	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	32.8	~191.2	0.0	8.3	136.5	0.0	56.9	59.0	0.0	32.8	48.8	0.0
Queue Length 95th (m)	52.4	#233.5	9.3	19.5	#199.8	0.0	#89.9	77.6	0.0	53.7	65.9	0.0
Internal Link Dist (m)		145.0			163.5			86.9			77.9	
Turn Bay Length (m)	124.5		58.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	251	1515	725	88	1178	660	316	793	481	218	594	442
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.86	0.21	0.38	0.87	0.21	0.73	0.62	0.16	0.61	0.65	0.21

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 119 (92%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87
Intersection Signal Delay: 45.8 — Intersection LOS: D
Intersection Capacity Utilization 93.5% — ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Fisher Ave & Baseline Rd



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	10	0	789	568	4
Future Vol, veh/h	17	10	0	789	568	4
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	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	10	0	789	568	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1357	568	-	0	-	0
Stage 1	568	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	164	522	0	-	-	-
Stage 1	567	-	0	-	-	-
Stage 2	448	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	164	522	-	-	-	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	567	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	220	-	-
HCM Lane V/C Ratio	-	0.123	-	-
HCM Control Delay (s)	-	23.6	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1572	15	0	1347	0	28
Future Vol, veh/h	1572	15	0	1347	0	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1572	15	0	1347	0	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	794
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	331
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	331
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	331	-	-	-
HCM Lane V/C Ratio	0.085	-	-	-
HCM Control Delay (s)	16.9	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	11	795	565	26
Future Vol, veh/h	13	7	11	795	565	26
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	7	11	795	565	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	905	283	591	0	-	0
Stage 1	565	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	309	714	981	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	303	714	981	-	-	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	981	-	379	-	-
HCM Lane V/C Ratio	0.011	-	0.053	-	-
HCM Control Delay (s)	8.7	0.1	15	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	1267	263	152	1270	179	183	388	76	154	657	148
Future Volume (vph)	94	1267	263	152	1270	179	183	388	76	154	657	148
Satd. Flow (prot)	1658	3283	1483	1642	3316	1483	1658	3316	1455	1658	3283	1483
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1650	3283	1352	1620	3316	1423	1621	3316	1394	1637	3283	1350
Satd. Flow (RTOR)			212			153			128			129
Lane Group Flow (vph)	94	1267	263	152	1270	179	183	388	76	154	657	148
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.3	29.2	29.2	11.3	29.2	29.2	10.9	30.3	30.3	10.9	30.3	30.3
Total Split (s)	21.0	54.0	54.0	21.0	54.0	54.0	24.7	30.3	30.3	24.7	30.3	30.3
Total Split (%)	16.2%	41.5%	41.5%	16.2%	41.5%	41.5%	19.0%	23.3%	23.3%	19.0%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.4	2.4	2.6	2.4	2.4	2.6	3.0	3.0	2.6	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.1	6.1	6.3	6.1	6.1	5.9	6.3	6.3	5.9	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	12.1	48.4	48.4	14.2	50.5	50.5	17.4	26.7	26.7	16.1	25.4	25.4
Actuated g/C Ratio	0.09	0.37	0.37	0.11	0.39	0.39	0.13	0.21	0.21	0.12	0.20	0.20
v/c Ratio	0.61	1.04	0.41	0.85	0.99	0.28	0.83	0.57	0.20	0.75	1.02	0.40
Control Delay	73.1	75.7	8.9	94.2	61.6	7.4	83.4	51.0	1.9	77.2	92.9	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	75.7	8.9	94.2	61.6	7.4	83.4	51.0	1.9	77.2	92.9	14.1
LOS	E	E	A	F	E	A	F	D	A	E	F	B
Approach Delay		64.8			58.7			54.4			78.2	
Approach LOS		E			E			D			E	
Queue Length 50th (m)	23.4	~185.4	8.5	38.7	169.5	4.2	45.7	48.1	0.0	38.3	~99.1	4.1
Queue Length 95th (m)	40.9	#227.7	29.5	#74.6	#226.6	20.0	#79.9	65.8	1.7	60.8	#136.6	23.2
Internal Link Dist (m)		142.5			131.2			85.7			73.1	
Turn Bay Length (m)	124.5		85.5	134.0		91.5			85.0	65.0		60.0
Base Capacity (vph)	187	1222	636	185	1288	646	239	681	388	239	642	367
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.04	0.41	0.82	0.99	0.28	0.77	0.57	0.20	0.64	1.02	0.40

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 123 (95%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 64.0	Intersection LOS: E
Intersection Capacity Utilization 96.8%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 1: Fisher Ave & Baseline Rd

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	10	0	642	1058	8
Future Vol, veh/h	19	10	0	642	1058	8
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	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	10	0	642	1058	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1700	1058	-	0	-	0
Stage 1	1058	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	101	273	0	-	-	-
Stage 1	334	-	0	-	-	-
Stage 2	524	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	101	273	-	-	-	-
Mov Cap-2 Maneuver	101	-	-	-	-	-
Stage 1	334	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40.8	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	129	-	-
HCM Lane V/C Ratio	-	0.225	-	-
HCM Control Delay (s)	-	40.8	-	-
HCM Lane LOS	-	E	-	-
HCM 95th %tile Q(veh)	-	0.8	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1594	35	0	1602	0	46
Future Vol, veh/h	1594	35	0	1602	0	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1594	35	0	1602	0	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	815
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	321
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	321
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	321	-	-	-
HCM Lane V/C Ratio	0.143	-	-	-
HCM Control Delay (s)	18.1	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	16	26	635	1050	57
Future Vol, veh/h	37	16	26	635	1050	57
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	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	16	26	635	1050	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1356	525	1107	0	-	0
Stage 1	1050	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	169	497	626	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	158	497	626	-	-	-
Mov Cap-2 Maneuver	158	-	-	-	-	-
Stage 1	272	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.5	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	626	-	199	-	-
HCM Lane V/C Ratio	0.042	-	0.266	-	-
HCM Control Delay (s)	11	0.2	29.5	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Appendix K

TDM Checklist

CGH TRANSPORTATION

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

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

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

		TDM-supportive 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:
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: *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	☐

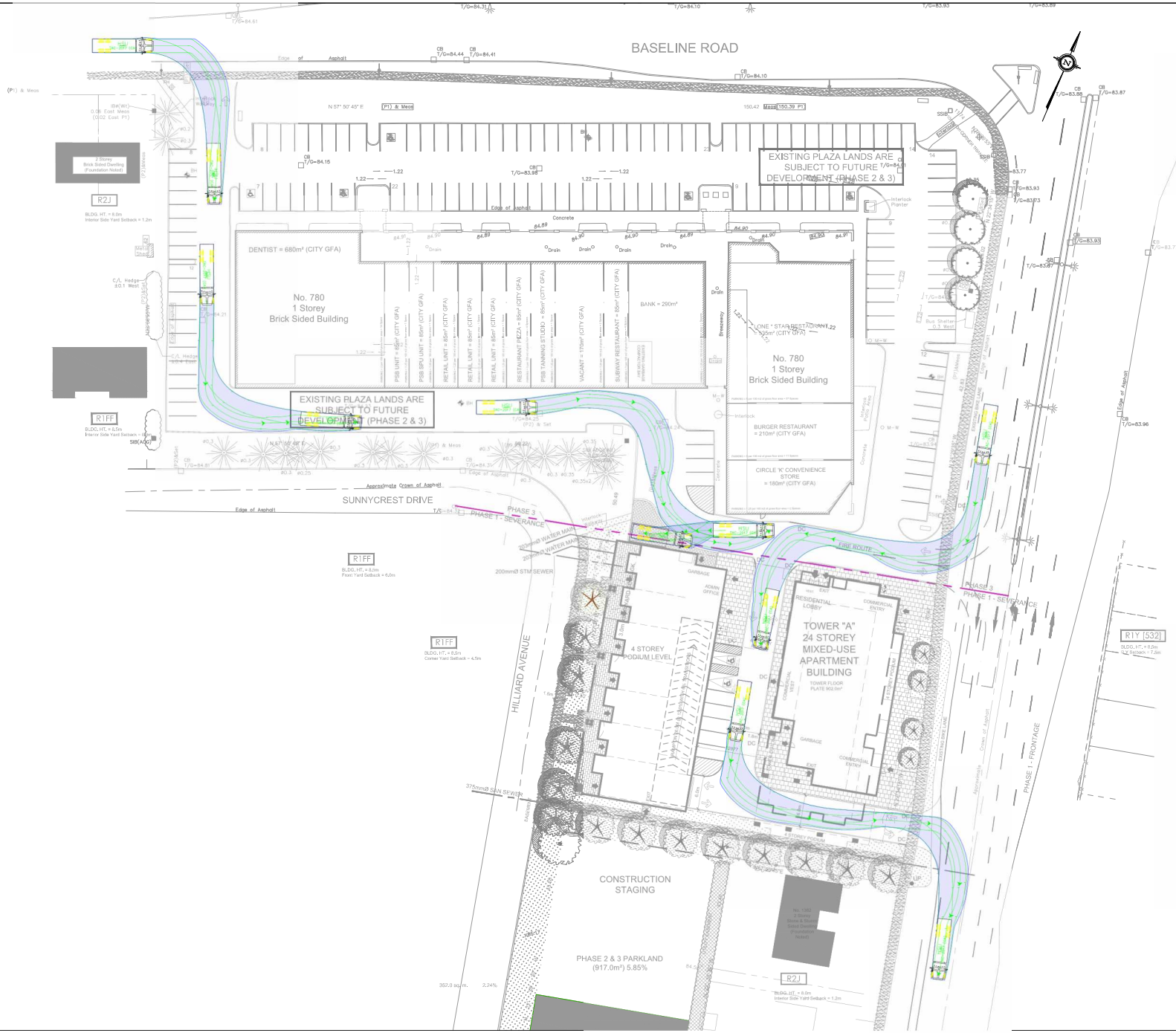
			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☑
BETTER		3.1.2	Provide real-time arrival information display at entrances *(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	☑ For each residential unit
		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 L

Turning Templates

CGH TRANSPORTATION



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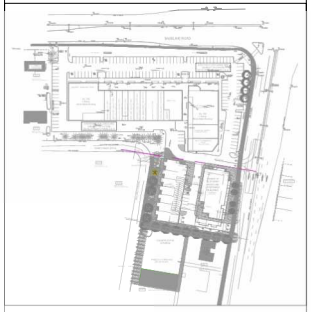
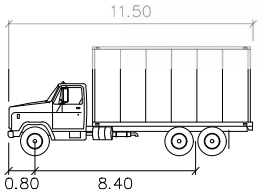




HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	AN	2023-10-02

STATUS:

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

CLIENT: Theberge Homes

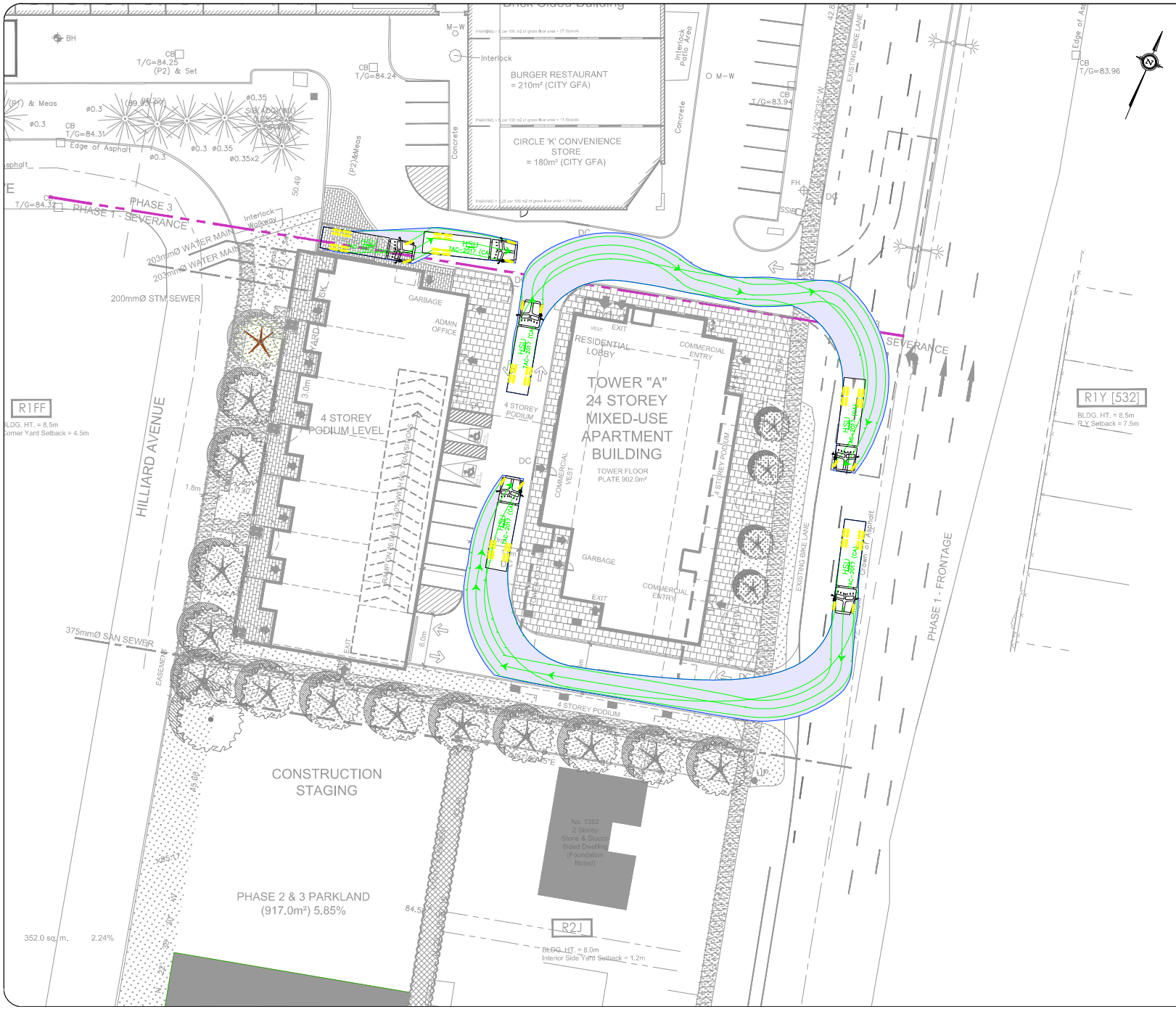
ARCHITECT:

SITE: 780 Baseline Road

TITLE: HSU Turning Movement (1)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-10-02	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-057	002	02



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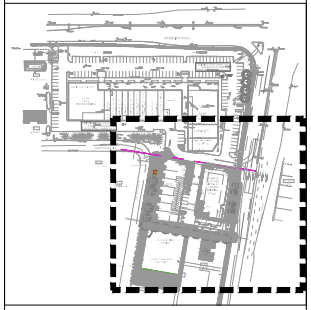
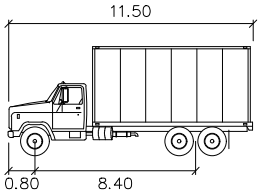




HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
02	Issued for Review	AN	2023-10-02

STATUS:

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

CLIENT: Theberge Homes

ARCHITECT:

SITE: 780 Baseline Road

TITLE: HSU Turning Movement (2)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-10-02	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-057	002	02

Appendix M

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation Inc.**	**Project**	**2023-057**
Scenario	**Existing/Future**	**Date**	**10/2/2023**
Comments			

	INTERSECTIONS	Fisher Avenue at Baseline Road (Existing)				Fisher Avenue at Baseline Road (Future)			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	6	7	6	7	7	9	10+	10+
	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	Median > 2.4 m	Median > 2.4 m
	Conflicting Left Turns	Protected	Protected	Protected	Protected	Protected	Protected	Protected	Protected
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No
	Right Turn Channel	Conventional with Receiving Lane	Conventional with Receiving Lane	Conventional with Receiving Lane	Conventional with Receiving Lane	No Channel	No Channel	No Channel	No Channel
	Corner Radius	15-25m	15-25m	15-25m	15-25m	15-25m	15-25m	15-25m	15-25m
	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
	PETSI Score	**27**	**11**	**27**	**11**	**13**	**-20**	**-26**	**-26**
	Ped. Exposure to Traffic LoS	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
	Cycle Length	130	130	130	130	130	130	130	130
	Effective Walk Time	7	7	21	34	9	7	28	31
	Average Pedestrian Delay	**58**	**58**	**46**	**35**	**56**	**58**	**40**	**38**
	Pedestrian Delay LoS	**E**	**E**	**E**	**D**	**E**	**E**	**E**	**D**
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
		F				**F**			
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	Not Applicable	Not Applicable	> 50 m	> 50 m	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Right Turning Speed	Not Applicable	Not Applicable	>25 km/h	>25 km/h	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Cyclist relative to RT motorists	**Not Applicable**	**Not Applicable**	**F**	**F**	**Not Applicable**	**Not Applicable**	**Not Applicable**	**Not Applicable**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Separated**	**Separated**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	One lane crossed	2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box
	Operating Speed	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	**F**	**F**	**F**	**F**	**A**	**A**	**A**	**A**
	Level of Service	**F**	**F**	**F**	**F**	**A**	**A**	**A**	**A**
		F				**A**			
Transit	Average Signal Delay	> 40 sec	> 40 sec	> 40 sec	> 40 sec	> 40 sec	> 40 sec	> 40 sec	> 40 sec
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
		F				**F**			
Truck	Effective Corner Radius	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	≥ 2	≥ 2	≥ 2	≥ 2	≥ 2	≥ 2	≥ 2	≥ 2
	Level of Service	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
		A				**A**			
Auto	Volume to Capacity Ratio	> 1.00				> 1.00			
	Level of Service	**F**				**F**			

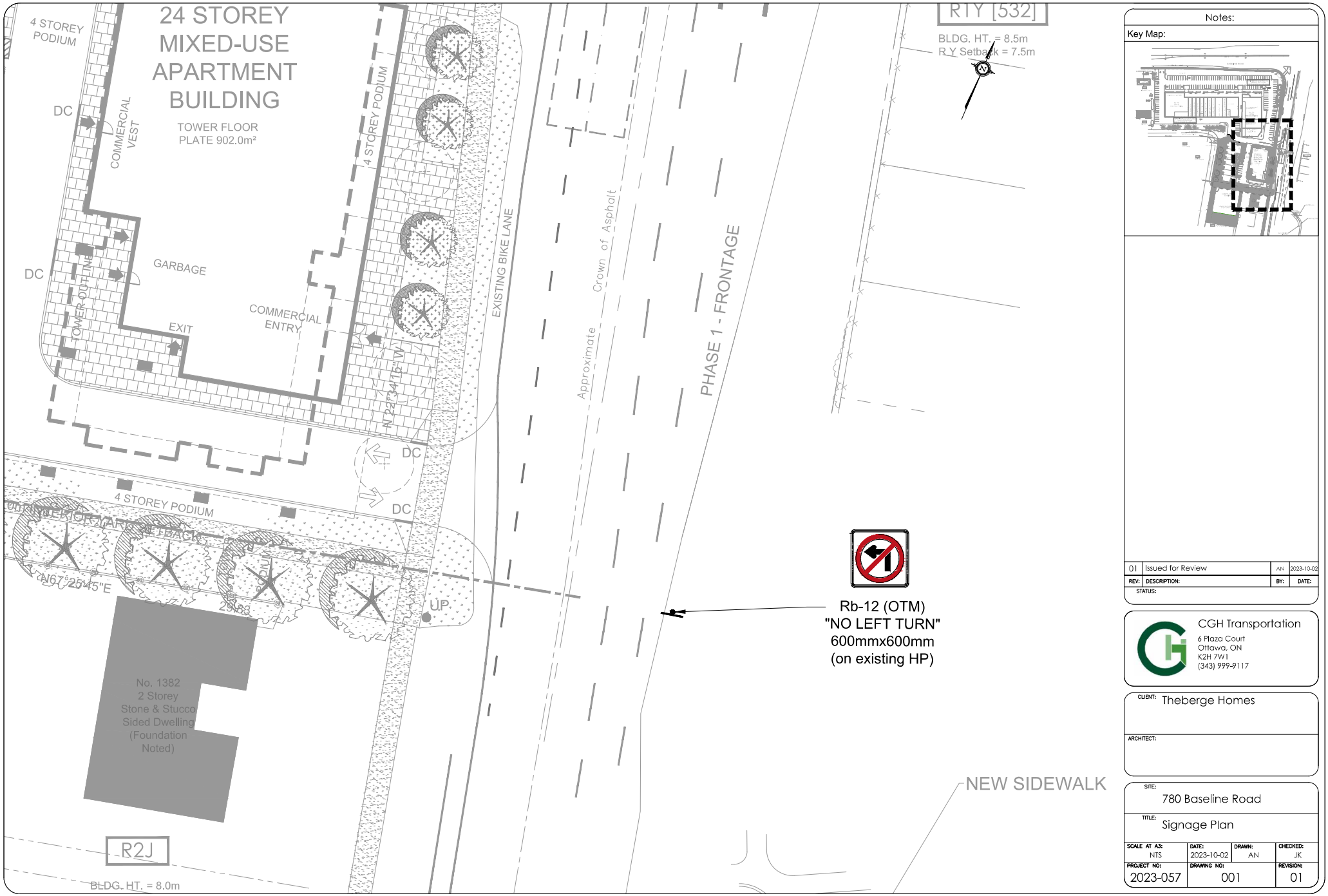
Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc.**	**Project**	**2023-057**
Scenario	**Existing/Future**	**Date**	**10/2/2023**
Comments			

SEGMENTS			Hilliard Avenue Existing/Future	Fisher Ave Exisiting	Fisher Ave Future
Pedestrian	Sidewalk Width Boulevard Width	-	no sidewalk n/a	≥ 2 m < 0.5	≥ 2 m > 2 m
	Avg Daily Curb Lane Traffic Volume		≤ 3000	> 3000	> 3000
	Operating Speed On-Street Parking		> 30 to 50 km/h no	> 50 to 60 km/h no	> 50 to 60 km/h no
	Exposure to Traffic PLoS		**F**	**E**	**C**
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		**-**	**-**	**-**
	Level of Service		**-**	**-**	**-**
Bicycle	Type of Cycling Facility	**C**	Mixed Traffic	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes		≤ 2 (no centreline)	≤ 1 each direction	≤ 1 each direction
	Operating Speed		>40 to <50 km/h	>50 to 70 km/h	>50 to 70 km/h
	# of Lanes & Operating Speed LoS		**B**	**C**	**C**
	Bike Lane (+ Parking Lane) Width			≥1.5 to <1.8 m	≥1.5 to <1.8 m
	Bike Lane Width LoS		**-**	**B**	**B**
	Bike Lane Blockages			Rare	Rare
	Blockage LoS		**-**	**A**	**A**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		>40 to 50 km/h	>50 to 60 km/h	>50 to 60 km/h
	Unsignalized Crossing - Lowest LoS		**B**	**B**	**B**
	Level of Service		**B**	**C**	**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	**A**		> 3.7 m	> 3.7 m
	Travel Lanes per Direction			> 1	> 1
	Level of Service		**-**	**A**	**A**

Appendix N

Signage Plan



Notes:

Key Map:

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review	AN	2023-10-02

STATUS:

CGH Transportation
6 Plaza Court
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CLIENT: Theberge Homes

ARCHITECT:

SITE: 780 Baseline Road

TITLE: Signage Plan

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-10-02	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-057	001	01