



**TRAFFIC IMPACT ASSESSMENT
RESIDENTIAL DEVELOPMENT
6TH CONCESSION ROAD
WINDSOR, ONTARIO**

PROJECT NO. 21-150

DATED: AUGUST 19, 2022

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TABLE OF CONTENT

1.	INTRODUCTION	1
1.1	Scope	1
1.2	Analysis Methodology	2
2.0	EXISTING CONDITIONS	3
2.1	Existing Site	3
2.2	Road Network Characteristics	3
2.3	Key Intersections	3
2.4	Existing Traffic Volumes	4
3.0	FUTURE CONDITIONS	4
3.1	Growth Rate.....	4
3.2	Future Background Development	4
4.0	DEVELOPMENT TRAFFIC.....	4
4.1	Development Access	4
4.2	Trip Generation	5
4.3	Trip Distribution and Assignment	5
4.4	Future Condition	6
5.0	INTERSECTION OPERATIONS.....	6
6.0	WARRANT ANALYSIS.....	8
6.1	Left and Right Turn Lane Warrants	8
6.2	Signal Warrant.....	9
6.3	Improved Intersection Analysis	9
7.0	CONCLUSION	10

TABLES

Table 1: Trip Generation 5

Table 2: Trip Distribution 5

Table 3: 2025 Traffic Condition – Level of Service 6

Table 4: 2030 Traffic Condition – Level of Service 7

Table 5: 2035 Traffic Condition – Level of Service 7

Table 6: 2035 Left Warrants – Intersection of 6th Concession Rd and Holburn St 8

Table 7: Traffic Condition – Level of Service 9

FIGURES

Exhibit 1: Location Map

APPENDIX

- Appendix A Background Traffic Data and Other Related Information
- Appendix B Future Background Traffic, Development Traffic and Total Traffic Volumes
- Appendix C Capacity Analysis
- Appendix D Warrants Analysis
- Appendix E Site Plans and Photos

1. INTRODUCTION

Baird AE has been retained to prepare a Traffic Impact Assessment in support of the residential development in City of Windsor. The site is approximately 0.844 hectares (ha) in size and bounded by 6th Concession Road to the west, Holburn Street to the north, Spago Crescent to the south and residential development to the north and east.

The proposed development will consist of twenty-six single-family houses, a roadway and a landscape area. The site will generate an additional 248 daily, 20 morning and 26 evening peak traffic. Exhibit 1 shows the location.

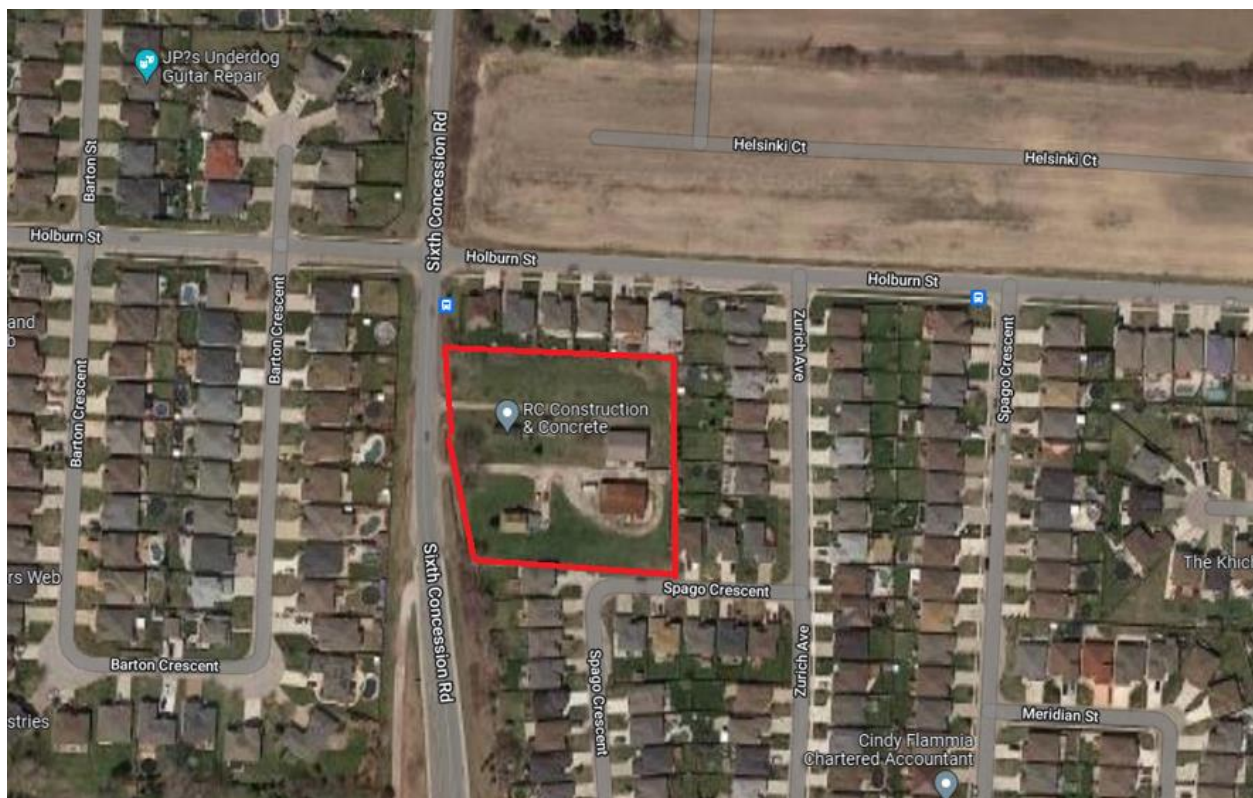


Exhibit 1 - Location Plan

1.1 Scope

The development currently has a house, shed and storage buildings. All existing buildings will be removed and replaced with townhouses, a new roadway and a landscape area. Access to the site will be provided from Spago Crescent. The development is projected to be built by 2025 and as a result, the following future horizon periods (conditions) were established as part of this study:

- 2025 Future Condition;
- 2030 Short Term Future Condition; and
- 2035 Long Term Future Condition.

The following intersection were included in the study in order to determine the impact of the proposed development:

- 6th Concession Road ad Holburn Street
- Holburn Street and Zurich Avenue

1.2 Analysis Methodology

A transportation analysis was completed to determine the existing and future operating conditions of intersection and individual turning movements. The operational analyses were primarily based on procedures set out in the Highway Capacity Manual (2010) with the assistance of Synchro 10. Several performance measures are used in the analysis of signalized and unsignalized intersections including the following:

- Level of Service (LOS) – a measure of the average vehicle delay experienced by the motorists attempting to travel through the intersection. LOS is measured from “A” to “F” with peak hour LOS in the “A” to “D” range being considered acceptable by most and a LOS of F representing unacceptable delays;
- Delay – the additional travel time experienced by a driver compared to free-flow conditions; and
- Queue Lengths – the Synchro Software measures both the 50th percentile and 95th percentile maximum queue lengths. The 50th percentile queue (the median) is the maximum back of queue length during a typical traffic cycle. The 95th percentile queue is the maximum back of queue length during a typical traffic cycle with 95th percentile traffic volumes. The 95th percentile queue measures the queue length that 95 percent of the sample lies below. The 95th percentile critical queue lengths were identified for movements where the queue surpassed the estimated length of the storage bay.

These measures provide an indication of delay and the number of vehicles that can be accommodated through an intersection.

2.0 EXISTING CONDITIONS

2.1 Existing Site

The existing development consists of three existing buildings. The total area of development is approximately 0.84ha.

2.2 Road Network Characteristics

The existing road network, lane configuration and existing traffic control for the study area are described below:

6th Concession Road is a local two-lane north-south roadway with a posted speed limit of 50 km/h. It has a gravel pathway on both sides.

Holburn Street is a local two-lane east-west roadway with a posted speed limit of 50 km/h. It has a sidewalk on both sides.

2.3 Key Intersections

Holburn Street with 6th Concession Road and Zurich Avenue are 4-leg and 3-leg unsignalized intersections. The intersections have the following configuration:

6th Concession Road and Holburn Street

- Northbound approach has one left-through shared lane.
- Southbound approach has one through-right shared lane.
- Eastbound approach has one through-right shared lane, and “Stop” Control.
- Westbound approach has one through-right shared lane, and “Stop” Control.

6th Concession Road and Zurich Avenue

- Northbound approach has one left-through shared lane, and “Stop” Control.
- Eastbound approach has one left-right shared lane.
- Westbound approach has one left-right shared lane.

2.4 Existing Traffic Volumes

Traffic counts were taken at the intersections of 6th Concession Road with Holburn Street on July 26, 2022. Counts were taken by our sub-consultant; Pyramid Traffic Inc. Counts were recorded in 15-minute increments from 8:00am to 5:30pm. The existing traffic volumes and other relevant data are included in Appendix A.

3.0 FUTURE CONDITIONS

3.1 Growth Rate

For this study, a conservative growth rate of 3% per year was assumed to reflect growth in background traffic volumes. The projected traffic volumes are provided in Appendix B.

3.2 Future Background Development

The surrounding users of 6th Concession Road and Holburn Street will continue to grow. At this time, no new future development is known within the vicinity of development except one to the north of Holburn Street, which is newly constructed. Hence, it is assumed that this new development's traffic is already accounted for in the traffic counts.

4.0 DEVELOPMENT TRAFFIC

This section will describe the development access, trip generation, trip distribution and ultimate peak hour traffic.

4.1 Development Access

Access to the development is provided from Spago Crescent. The developments' site plan is provided in Appendix A and new intersections have the following configuration:

6th Concession Road and Access Road 1

- Eastbound approach has left-right shared lane.
- Southbound approach has one left-through shared lane.
- Northbound approach has one through-right shared lane.

4.2 Trip Generation

The number of vehicle trips anticipated to be generated by the proposed development was calculated based on trip generation rates published by The Institution of Transportation Engineers (ITE) Trip Generation 9th Edition.

The development will consist of 26 townhouses. Based on ITE manual, ITE 210 single-family houses represent the worst case scenario and will be use to estimate development's trip.

Description of Land use, ITE codes, unit sizes, trip generation rate and trip generation for daily and peak hours are provided in Table 1. Appendix B provides detailed calculations and all relevant charts.

Table 1: Trip Generation

Use	ITE	UNITS	AADT	Trip Generated			
				AM Hour		PM Hour	
				In	Out	In	Out
Proposed Development							
Proposed Development Single Family House	210	26	248	5	15	16	10
Total Trips			885	5	15	16	10

4.3 Trip Distribution and Assignment

The proposed development traffic trip is based on shortest route to reach major city i.e., City of Windsor. The proposed traffic distribution is shown below and in figures 1.2, 2.2 and 3.2 (see Appendix B).

Table 2: Trip Distribution

From/To	Distribution
6th Concession Road	80%
Zurich Ave	20%
Total	100%

Detailed travelled patterns and trip assignment at intersections are provided in Figures 1.1, 2.1 and 3.1 (see Appendix B).

4.4 Future Condition

Development traffic volumes were added to the forecasted (2025, 2030 and 2035) background traffic volumes to obtain corresponding total traffic volumes at intersections. The projected total future volumes are provided in Figures 1.3, 2.3, and 3.3 (see Appendix B).

5.0 INTERSECTION OPERATIONS

The forecasted 2025, 2030 and 2035 traffic volumes for the study intersections are evaluated using the Synchro/Sim Traffic software, which automates the procedures contained in the Highway Capacity Manual 2010.

The future peak hours analysis results are included in Table 3, 4 and 5, and corresponding worksheets in Appendix C.

Table 3: 2025 Traffic Condition – Level of Service

Intersection	A.M. Peak Hour			P.M. Peak Hour		
	LOS	v/c	Delay (sec)	LOS	v/c	Delay (sec)
Holburn Street and 6th Concession Rd (Unsignalized)						
EB LTR	B	0.10	10.8	C	0.21	16.6
WB LTR	c	0.34	15.3	D	0.57	29.4
NB LTR	A	0.01	0.4	A	0.04	1.4
SB LTR	A	0.01	0.7	A	0.03	1.4
Overall LOS	A			A		
Holburn Street and Zurich Avenue (Unsignalized)						
EB TR	A	0.04	0.0	A	0.13	0.0
WB LT	A	0.0	0.1	A	0.01	0.5
NB LR	A	0.06	9.9	A	0.05	11.0
Overall LOS	A			A		

Note: NB – Northbound SB – Southbound EB – Eastbound WB – Westbound; LTR – Left/Through/Right turn

Table 4: 2030 Traffic Condition – Level of Service

Intersection	A.M. Peak Hour			P.M. Peak Hour		
	LOS	v/c	Delay (sec)	LOS	v/c	Delay (sec)
Holburn Street and 6th Concession Rd (Unsignalized)						
EB LTR	B	0.11	11.0	C	0.27	19.6
WB LTR	C	0.37	15.0	F	0.77	20.9
NB LTR	A	0.01	0.4	A	0.05	1.5
SB LTR	A	0.01	0.7	A	0.04	1.5
Overall LOS	A			A		
Holburn Street and Zurich Avenue (Unsignalized)						
EB TR	A	0.05	0.0	A	0.15	0.0
WB LT	A	0.0	0.1	A	0.01	0.4
NB LR	A	0.06	10.1	A	0.05	11.5
Overall LOS	A			A		

Table 5: 2035 Traffic Condition – Level of Service

Intersection	A.M. Peak Hour			P.M. Peak Hour		
	LOS	v/c	Delay (sec)	LOS	v/c	Delay (sec)
Holburn Street and 6th Concession Rd (Unsignalized)						
EB LTR	B	0.13	11.5	C	0.36	24.4
WB LTR	C	0.43	17.0	F	1.03	111.1
NB LTR	A	0.01	0.4	A	0.05	1.6
SB LTR	A	0.01	0.7	A	0.05	1.5
Overall LOS	A			B		
Holburn Street and Zurich Avenue (Unsignalized)						
EB TR	A	0.06	0.0	A	0.17	0.0
WB LT	A	0.0	0.1	A	0.01	0.4
NB LR	A	0.06	10.3	B	0.05	12.0
Overall LOS	A			A		

Under 2025, 2030 and 2035 future conditions, the intersections are projected to operate at an acceptable LOS during peak hours. However, westbound turning traffic operates at LOS F during 2030 and 2035 evening conditions. Hence, mitigation measures are required. Warrant analysis was completed and details are provided in the section below.

6.0 WARRANT ANALYSIS

6.1 Left and Right Turn Lane Warrants

Left Turn Lane

An assessment for the requirement of a left turn lane was completed for westbound traffic at the intersection of 6th Concession Road with Holburn Street using the MTO Geometric Design Guide. The results of the assessment are summarized in the table below:

Table 6: 2035 Left Warrants – Intersection of 6th Concession Rd and Holburn St

Criteria	AM Peak Hour Traffic Volumes	PM Peak Hour Traffic Volumes
Westbound Left Turn (WBL)	175	162
Advancing WB Volumes; Va	192	224
% Left Turn in Va	90%	72%
Opposing Traffic Southbound (EB)	76	96
Requirement; Justification	Not Req'd	Not Req'd

Figures EA-2 and EA-3 (see Appendix D) show that a left turn lane is not warranted on Bevel Line Road (CR33) and Torrey Pine Drive intersection. Results are provided in Appendix D.

Right Turn Lane

The right turn warrant analysis was carried out for the intersection of 6th Concession Road and Holburn Street. Based on MTO guidelines (Geometric Design Standards for Ontario Highways), if right-turning vehicles are more than 60vph or right turning vehicles create a hazard or reduce capacity at the intersection, right-turn lane warrants are needed.

Based on forecasted total traffic counts, an exclusive northbound right turn lane is needed for the 2025 condition.

6.2 Signal Warrant

Traffic signal warrant analysis was undertaken for the intersections of 6th Concession Road with Holburn Street. The analysis was based on the Transportation Association of Canada (TAC) traffic signal procedure which requires 100 warrant points to trigger a signal at the intersection.

Based on 2035 background traffic volumes, signals are warranted. Detailed calculations are provided in Appendix D.

6.3 Improved Intersection Analysis

As described in section 6.0, the improved intersection analysis was conducted and results are included in Table 7 and corresponding worksheets are included in Appendix C.

Table 7: Traffic Condition – Level of Service

Intersection	2030 PM PEAK TRAFFIC			2035 PM PEAK TRAFFIC		
	LOS	v/c	Delay (sec)	LOS	v/c	Delay (sec)
Holburn Street and 6th Concession Rd (Unsignalized)						
EB LTR	A	0.1	8.6	A	0.17	8.8
WB LTR	B	0.44	14.6	B	0.50	15.7
NB LTR	B	0.44	10.2	A	0.50	10.9
SB LTR	B	0.54	16.2	A	0.61	17.8
Overall LOS	A			A		

The intersection operates at an acceptable level of service during the 2030 and 2035 evening conditions.

7.0 CONCLUSION

Based on our review, we provide the following preliminary comments for the development:

- The existing site consists of three (3) buildings that be removed.
- The proposed development will have 26 townhouses, roadway and landscape areas in a 0.84ha area.
- The background growth rate of 2 percent was considered in the modelling as it represents the worst-case scenario.
- One full access road from Spago Crescent will be provided to serve the development. Spago Crescent forms the west-leg with Zurich Avenue within proximity of development.
- The proposed development is expected to generate 76 two-way trips during morning peak hours and 86 two-way trips during evening peak hours. It is anticipated that the development will be completed by 2023.
- The proposed access is a “3” leg intersection with a “Stop” control on the access road.
- Under future conditions, the intersections of Holburn Street with 6th Concession Road operates at an overall acceptable level of service during 2025, 2030 and 2035 morning and evening peak hours. However, westbound turning traffic operates at LOS F during 2030 evening conditions. Hence, improvement is required.
- Under future conditions, the intersections of 6th Concession Rd with Zurich Avenue operates at an overall acceptable level of service during 2025, 2030 and 2035 morning and evening peak hours.
- An exclusive right-turn lane is required for the 2025 condition.
- A traffic signal is warranted for the intersection of 6th Concession Road with Holburn Street under 2025 background and total traffic conditions.

- The improved Holburn Street with 6th Concession Road operates at an acceptable level of service.
- An adequate sight line distance is provided for a safe departure from the development.

In conclusion, upgrades are required for the existing intersection of 6th Concession Road with Holburn Street infrastructure in 2030 and 2035 background conditions. These upgrades are not due to the proposed development as the development's traffic will have minimum impact on the operation of existing intersections. Hence, we believe this conclusion is satisfactory for the City's.

All of which is respectfully submitted.

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Lead Engineer
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Appendix A

BACKGROUND TRAFFIC DATA AND OTHER RELATED INFORMATION

Sixth Concession Rd @ Holburn St

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 9:00:00

One Hour Peak

From: 8:00:00

To: 9:00:00

Municipality: Windsor
Site #: 000000001
Intersection: Sixth Concession Rd & Holburn St
TFR File #: 1
Count date: 26-Jul-2022

Weather conditions:
 Cloudy/Dry
Person(s) who counted:
 Matt

**** Non-Signalized Intersection ****

Major Road: Sixth Concession Rd runs N/S

North Leg Total: 250

North Entering: 84

North Peds: 4

Peds Cross: \times

Heavys	0	2	0	2
Trucks	1	2	0	3
Cars	5	67	7	79
Totals	6	71	7	



Heavys 1

Trucks 5

Cars 160

Totals 166

East Leg Total: 202

East Entering: 142

East Peds: 0

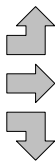
Peds Cross: \times

Heavys	0	Trucks	1	Cars	19	Totals	20
--------	---	--------	---	------	----	--------	----

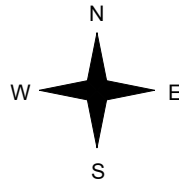


Holburn St

Heavys	0	Trucks	1	Cars	20	Totals	21
	0		0		11		11
	0		0		23		23
	0		1		54		



Sixth Concession Rd



Cars	16	Trucks	0	Heavys	1	Totals	17
	6		0		0		6
	118		1		0		119
	140		1		1		

Holburn St



Cars	60	Trucks	0	Heavys	0	Totals	60
------	----	--------	---	--------	---	--------	----

Peds Cross: \times

West Peds: 0

West Entering: 55

West Leg Total: 75

Cars	208	Cars	8	124	42	174
Trucks	3	Trucks	0	4	0	4
Heavys	2	Heavys	0	0	0	0
Totals	213	Totals	8	128	42	



Peds Cross: \times

South Peds: 1

South Entering: 178

South Leg Total: 391

Comments

Sixth Concession Rd @ Holburn St

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 14:00:00

One Hour Peak

From: 11:45:00

To: 12:45:00

Municipality: Windsor
Site #: 000000001
Intersection: Sixth Concession Rd & Holburn St
TFR File #: 1
Count date: 26-Jul-2022

Weather conditions:
 Cloudy/Dry
Person(s) who counted:
 Matt

**** Non-Signalized Intersection ****

Major Road: Sixth Concession Rd runs N/S

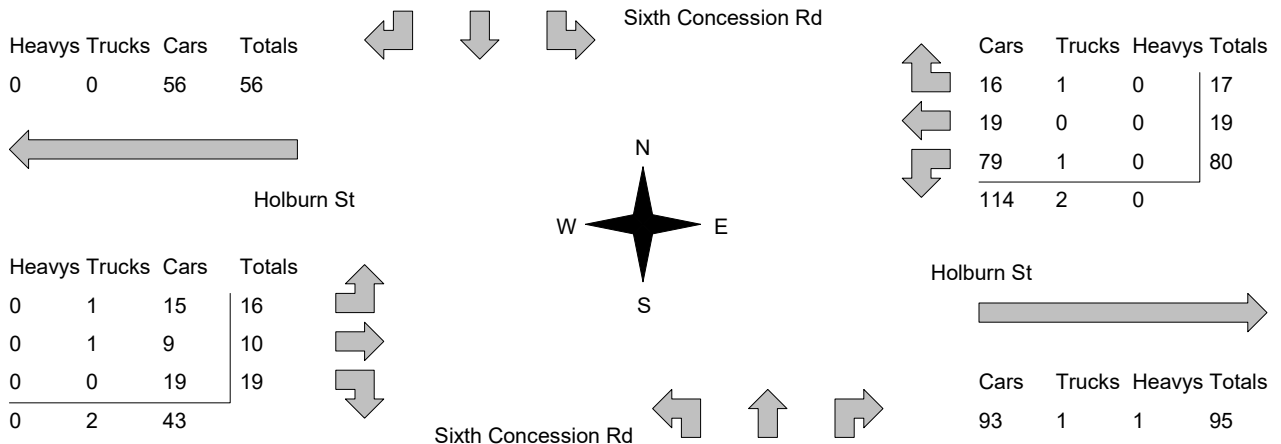
North Leg Total: 347
 North Entering: 189
 North Peds: 1
 Peds Cross: \times

Heavys	0	5	0	5
Trucks	0	2	0	2
Cars	15	150	17	182
Totals	15	157	17	



Heavys	0
Trucks	4
Cars	154
Totals	158

East Leg Total: 211
 East Entering: 116
 East Peds: 2
 Peds Cross: \times



Peds Cross: \times
 West Peds: 1
 West Entering: 45
 West Leg Total: 101

Cars	248	Cars	22	123	67	212
Trucks	3	Trucks	0	2	0	2
Heavys	5	Heavys	0	0	1	1
Totals	256	Totals	22	125	68	

Peds Cross: \times
 South Peds: 0
 South Entering: 215
 South Leg Total: 471

Comments

Sixth Concession Rd @ Holburn St

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Municipality: Windsor
Site #: 000000001
Intersection: Sixth Concession Rd & Holburn St
TFR File #: 1
Count date: 26-Jul-2022

Weather conditions:
 Cloudy/Dry
Person(s) who counted:
 Matt

**** Non-Signalized Intersection ****

Major Road: Sixth Concession Rd runs N/S

North Leg Total: 440
 North Entering: 246
 North Peds: 5
 Peds Cross: \times

Heavys	0	0	0	0	0
Trucks	0	0	0	0	0
Cars	23	190	33		246
Totals	23	190	33		



Heavys	0
Trucks	1
Cars	193
Totals	194

East Leg Total: 333
 East Entering: 155
 East Peds: 1
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
0	0	87	87

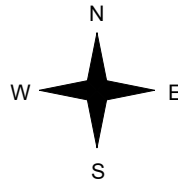


Holburn St

Heavys	Trucks	Cars	Totals
0	0	27	27
0	0	16	16
0	0	25	25
0	0	68	



Sixth Concession Rd



Cars	Trucks	Heavys	Totals
22	0	0	22
21	0	0	21
110	2	0	112
153	2	0	

Holburn St



Cars	Trucks	Heavys	Totals
177	0	1	178

Peds Cross: \times
 West Peds: 2
 West Entering: 68
 West Leg Total: 155

Cars	325	Cars	43	144	128	315
Trucks	2	Trucks	0	1	0	1
Heavys	0	Heavys	0	0	1	1
Totals	327	Totals	43	145	129	



Peds Cross: \times
 South Peds: 5
 South Entering: 317
 South Leg Total: 644

Comments

Sixth Concession Rd @ Holburn St

Total Count Diagram

Municipality: Windsor
Site #: 000000001
Intersection: Sixth Concession Rd & Holburn St
TFR File #: 1
Count date: 26-Jul-2022

Weather conditions:
 Cloudy/Dry
Person(s) who counted:
 Matt

**** Non-Signalized Intersection ****

Major Road: Sixth Concession Rd runs N/S

North Leg Total: 2657
 North Entering: 1356
 North Peds: 19
 Peds Cross: \times

Heavys	0	7	1	8
Trucks	3	11	0	14
Cars	146	1027	161	1334
Totals	149	1045	162	



Heavys	6
Trucks	19
Cars	1276
Totals	1301

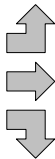
East Leg Total: 1805
 East Entering: 986
 East Peds: 8
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
1	8	448	457

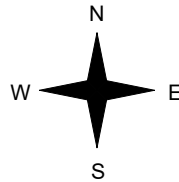


Holburn St

Heavys	Trucks	Cars	Totals
1	2	147	150
0	3	83	86
0	1	186	187
1	6	416	



Sixth Concession Rd



Cars	Trucks	Heavys	Totals
146	2	1	149
113	4	0	117
714	5	1	720
973	11	2	

Holburn St



Cars	Trucks	Heavys	Totals
804	3	12	819

Peds Cross: \times
 West Peds: 4
 West Entering: 423
 West Leg Total: 880

Cars	1927	Cars	189	983	560	1732
Trucks	17	Trucks	1	15	0	16
Heavys	8	Heavys	1	4	11	16
Totals	1952	Totals	191	1002	571	



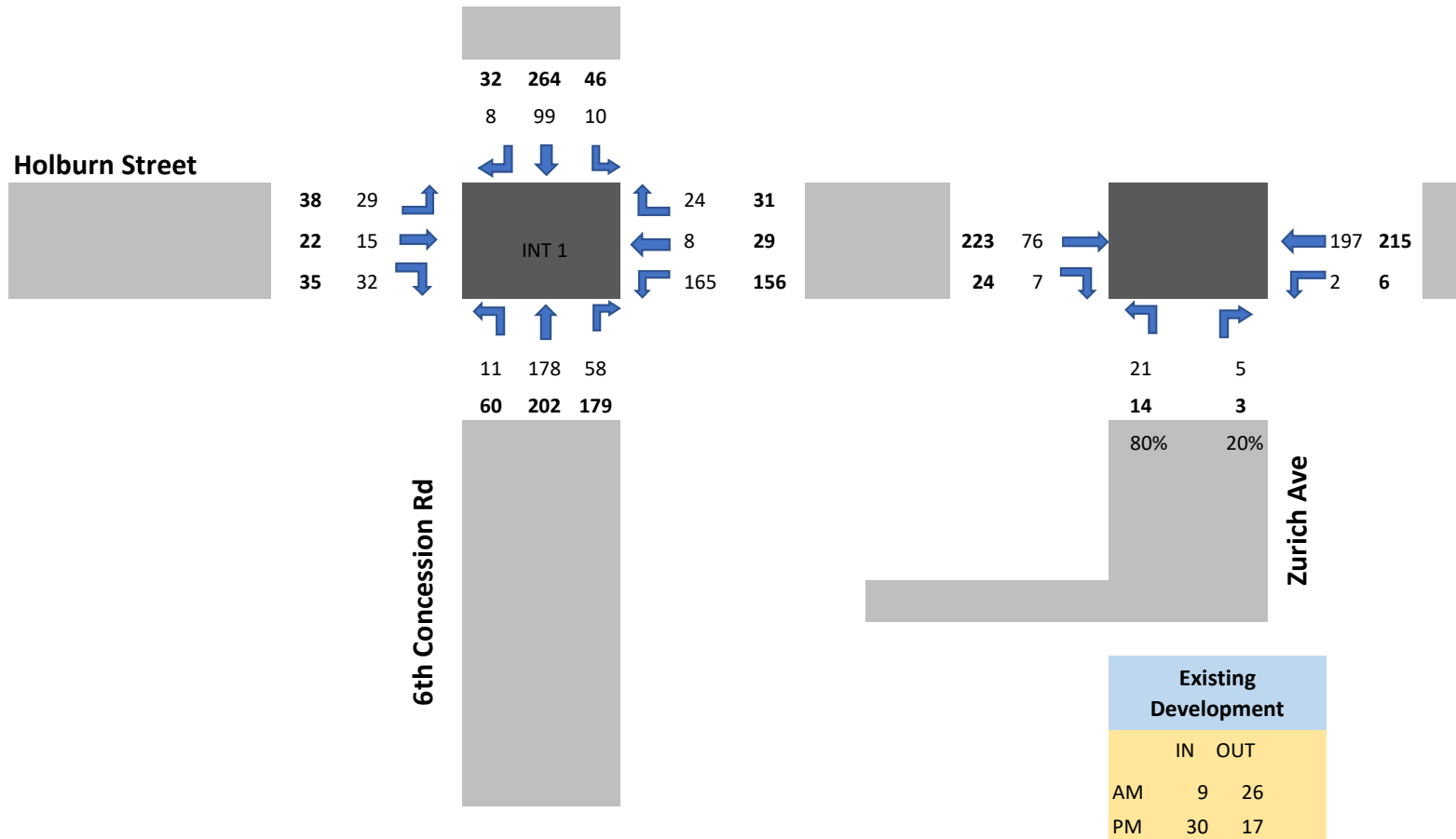
Peds Cross: \times
 South Peds: 20
 South Entering: 1764
 South Leg Total: 3716

Comments

Appendix B

FUTURE TRAFFIC, DEVELOPMENT TRAFFIC AND TOTAL TRAFFIC VOLUMES

RESIDENTIAL DEVELOPMENT



PROJECT NAME 6TH Concession Development

SHEET TITLE 2035 BACKGROUND TRAFFIC

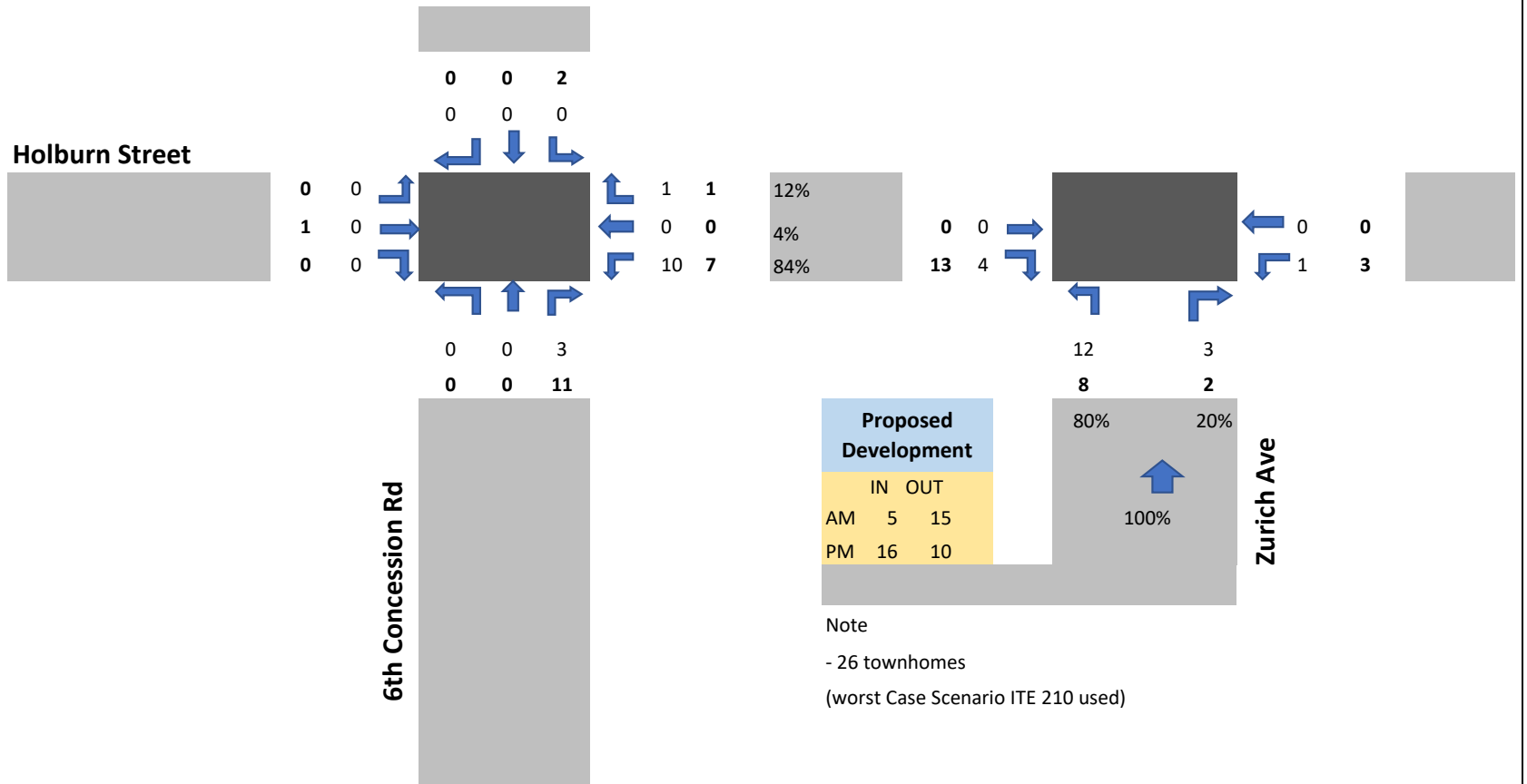


DATE: 16-Aug-22

PROJECT NO: 21-150

FIGURE NO: Figure 3.1

RESIDENTIAL DEVELOPMENT



LEGEND

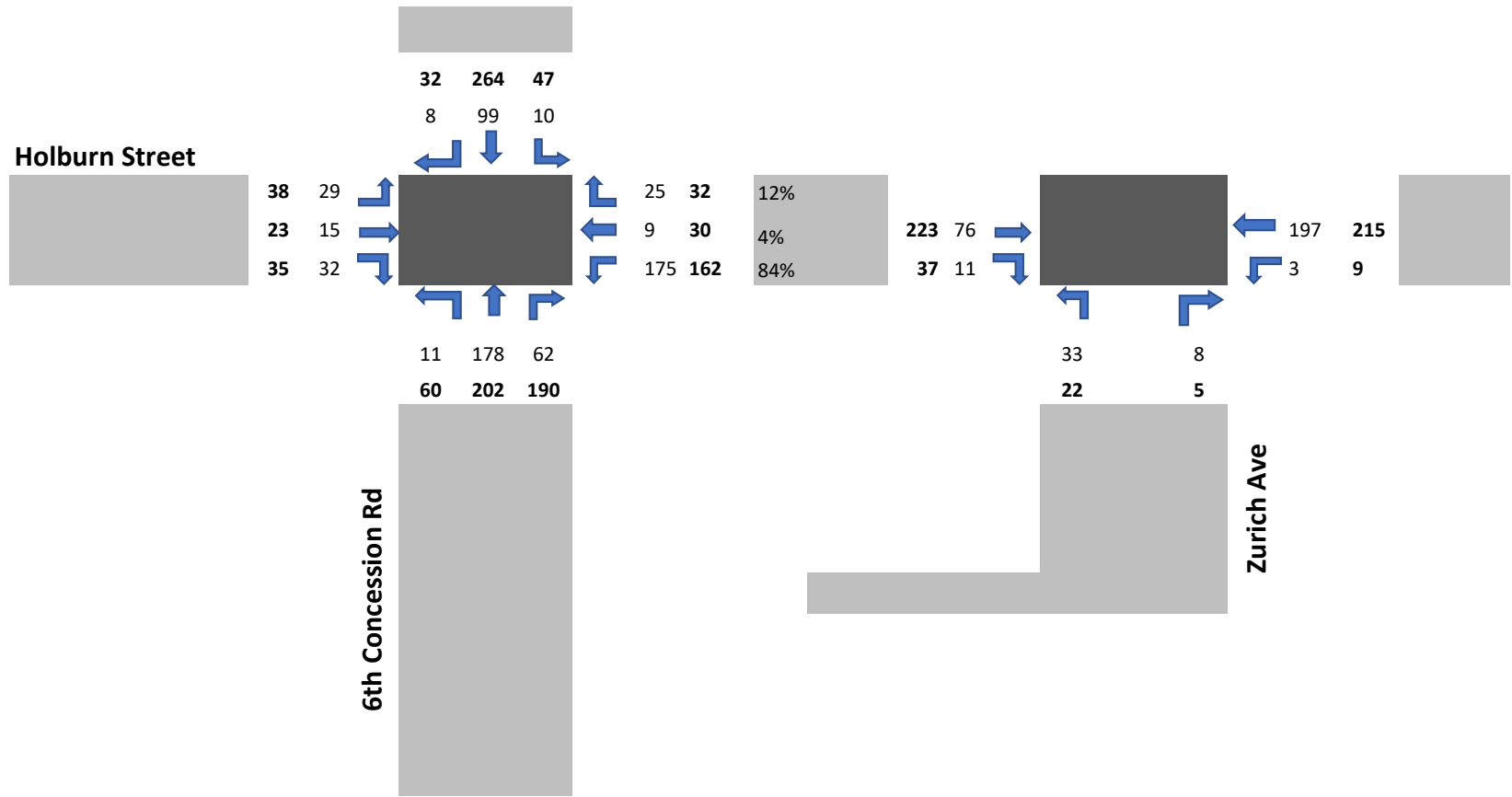
AM 33
PM 33

PROJECT NAME	6TH Concession Development
SHEET TITLE	2035 DEVELOPMENT TRAFFIC



DATE:	16-Aug-22
PROJECT NO:	21-150
FIGURE NO:	Figure 3.2

RESIDENTIAL DEVELOPMENT



LEGEND

AM 33
PM 33

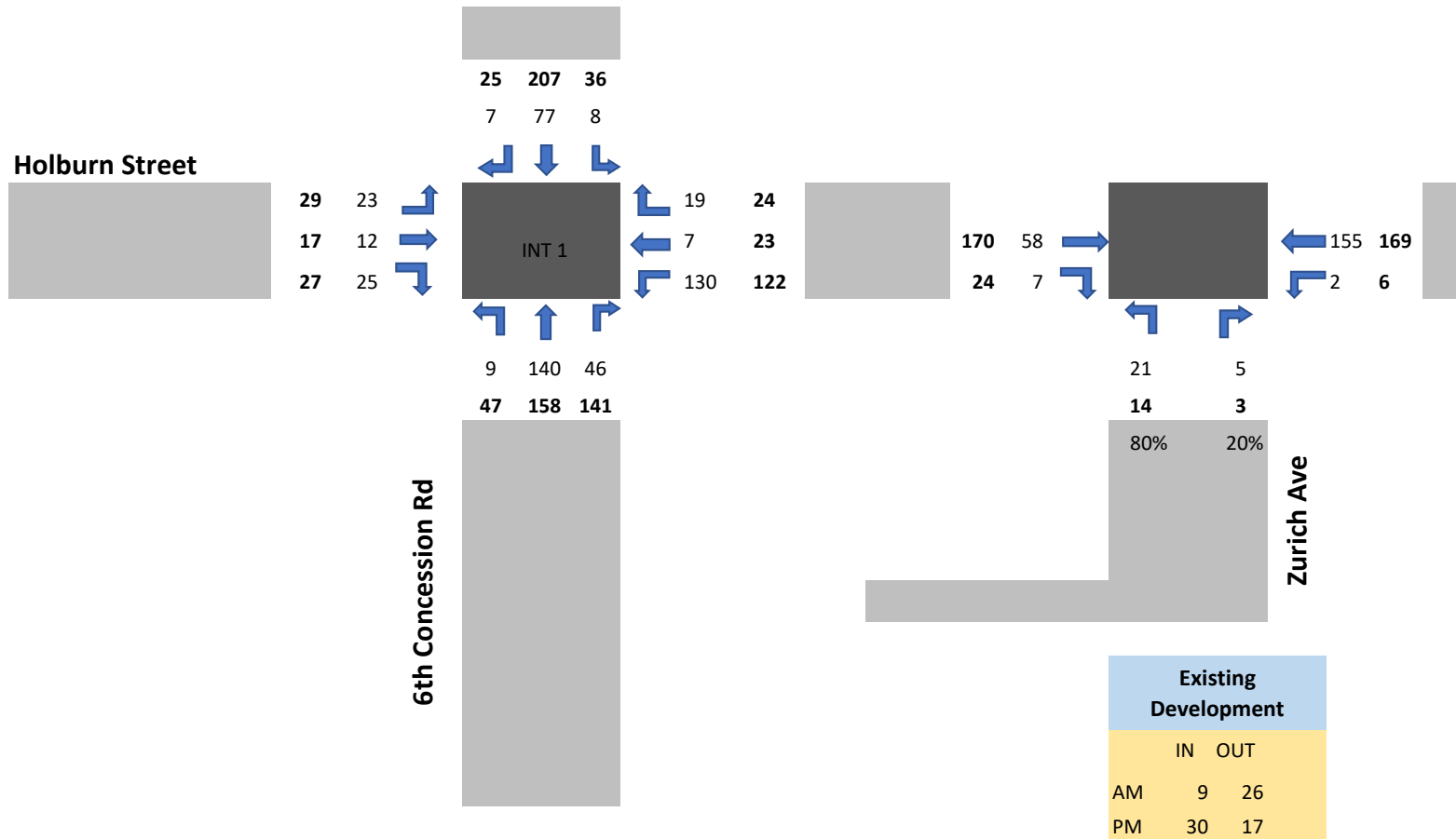
PROJECT NAME 6TH Concession Development

SHEET TITLE 2035 TOTAL TRAFFIC



DATE: 16-Aug-22
PROJECT NO: 21-150
FIGURE NO: Figure 3.3

RESIDENTIAL DEVELOPMENT



LEGEND

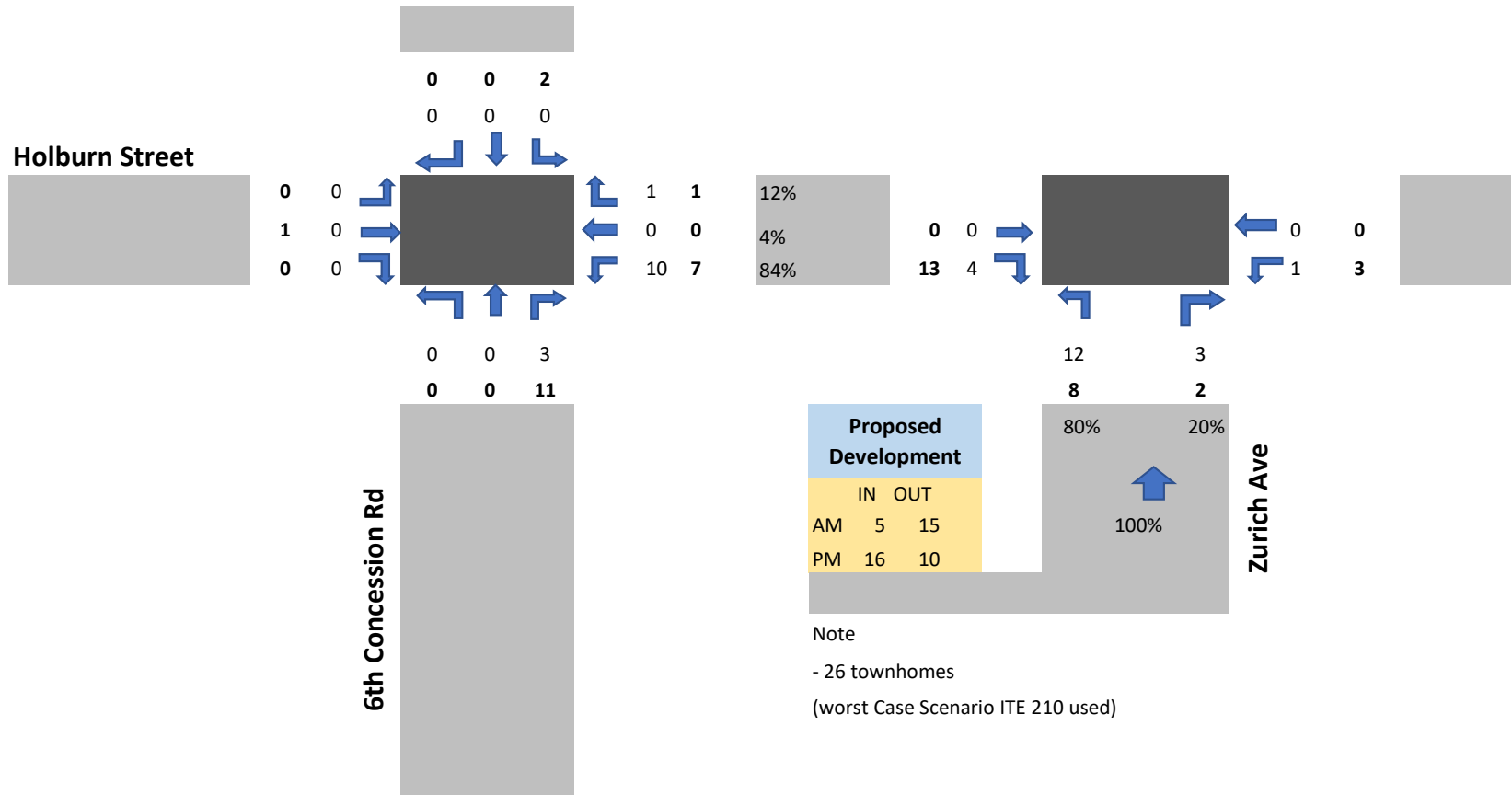
AM 33
PM 33

PROJECT NAME 6TH Concession Development
SHEET TITLE 2025 BACKGROUND TRAFFIC



DATE: 16-Aug-22
PROJECT NO: 21-150
FIGURE NO: Figure 1.1

RESIDENTIAL DEVELOPMENT



LEGEND

AM	33
PM	33

PROJECT NAME 6TH Concession Development

SHEET TITLE 2025 DEVELOPMENT TRAFFIC

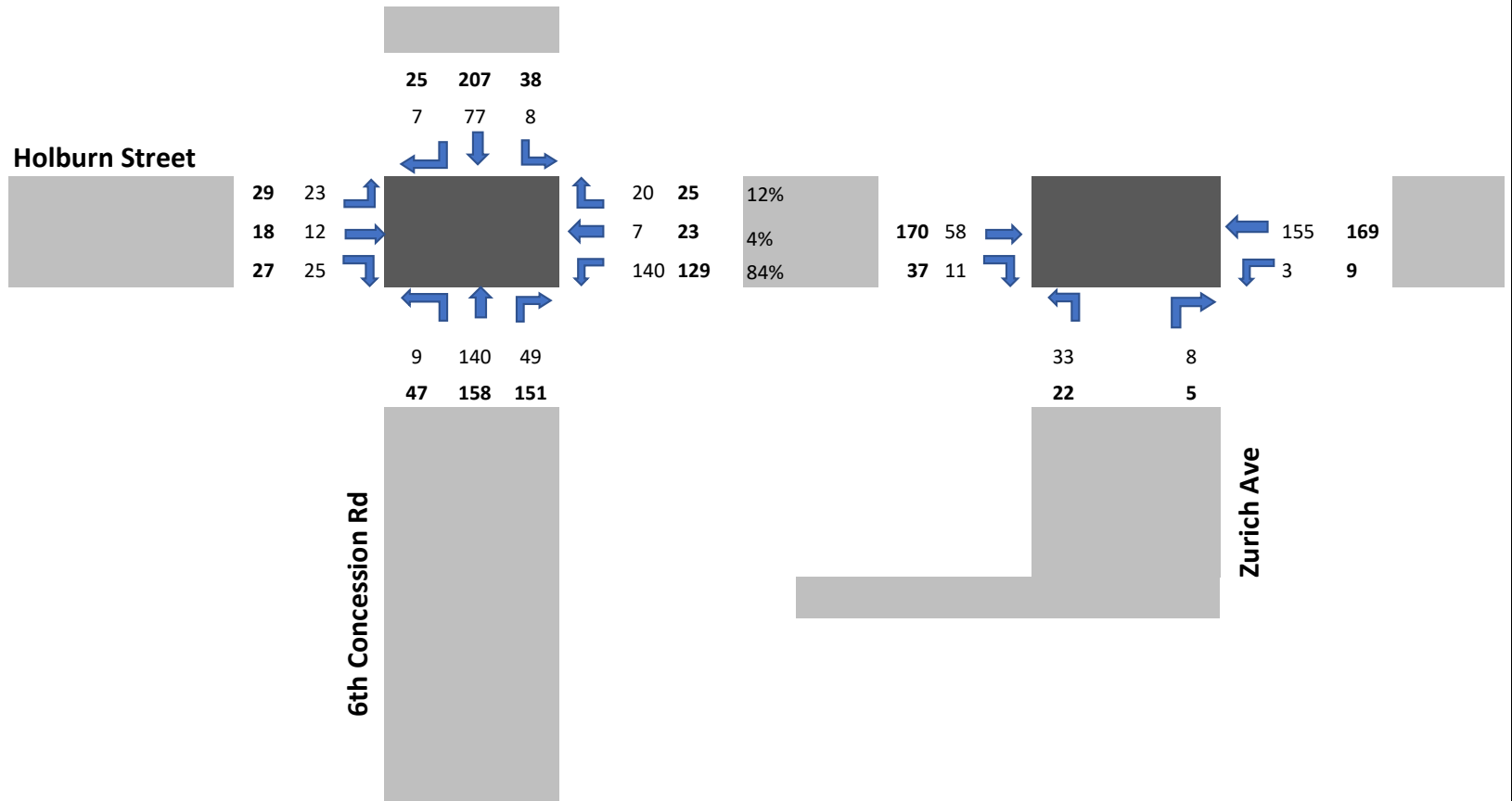


DATE: 16-Aug-22

PROJECT NO: 21-150

FIGURE NO: Figure 1.2

RESIDENTIAL DEVELOPMENT



LEGEND

AM 33
PM 33

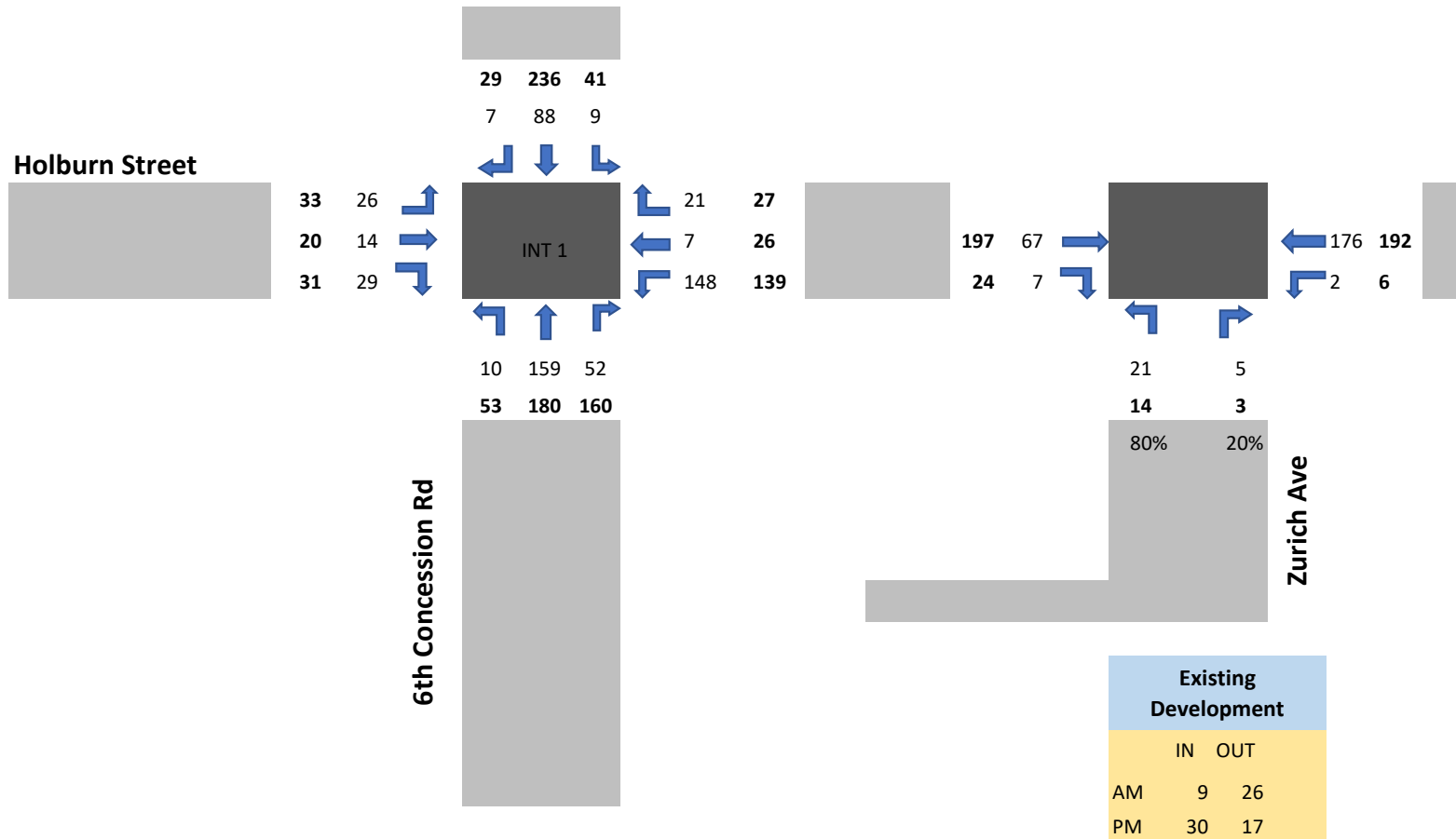
PROJECT NAME 6TH Concession Development

SHEET TITLE 2025 TOTAL TRAFFIC



DATE: 16-Aug-22
PROJECT NO: 21-150
FIGURE NO: Figure 1.3

RESIDENTIAL DEVELOPMENT



LEGEND

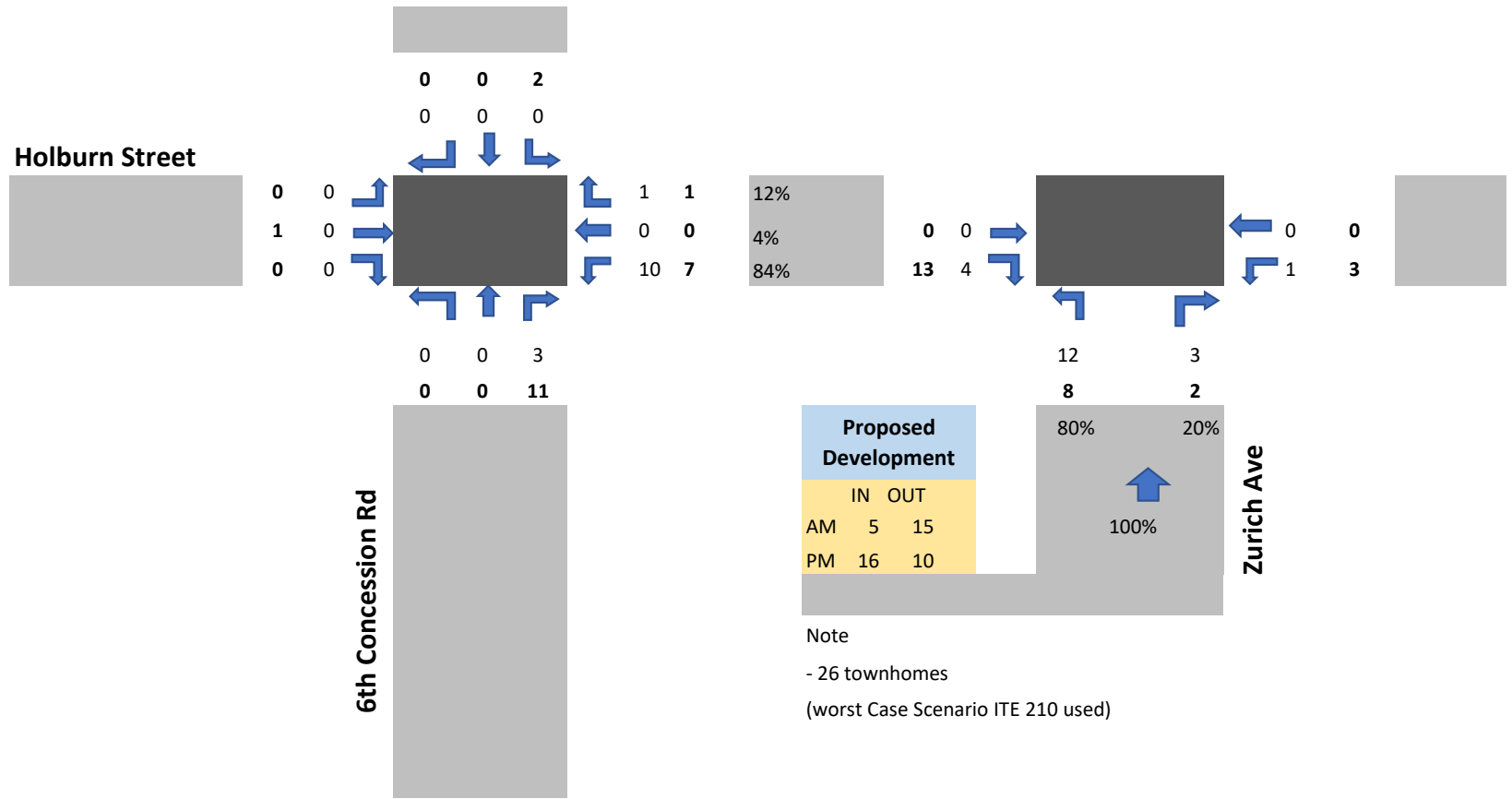
AM 33
PM 33

PROJECT NAME 6TH Concession Development
SHEET TITLE 2030 BACKGROUND TRAFFIC



DATE: 16-Aug-22
PROJECT NO: 21-150
FIGURE NO: Figure 2.1

RESIDENTIAL DEVELOPMENT



LEGEND

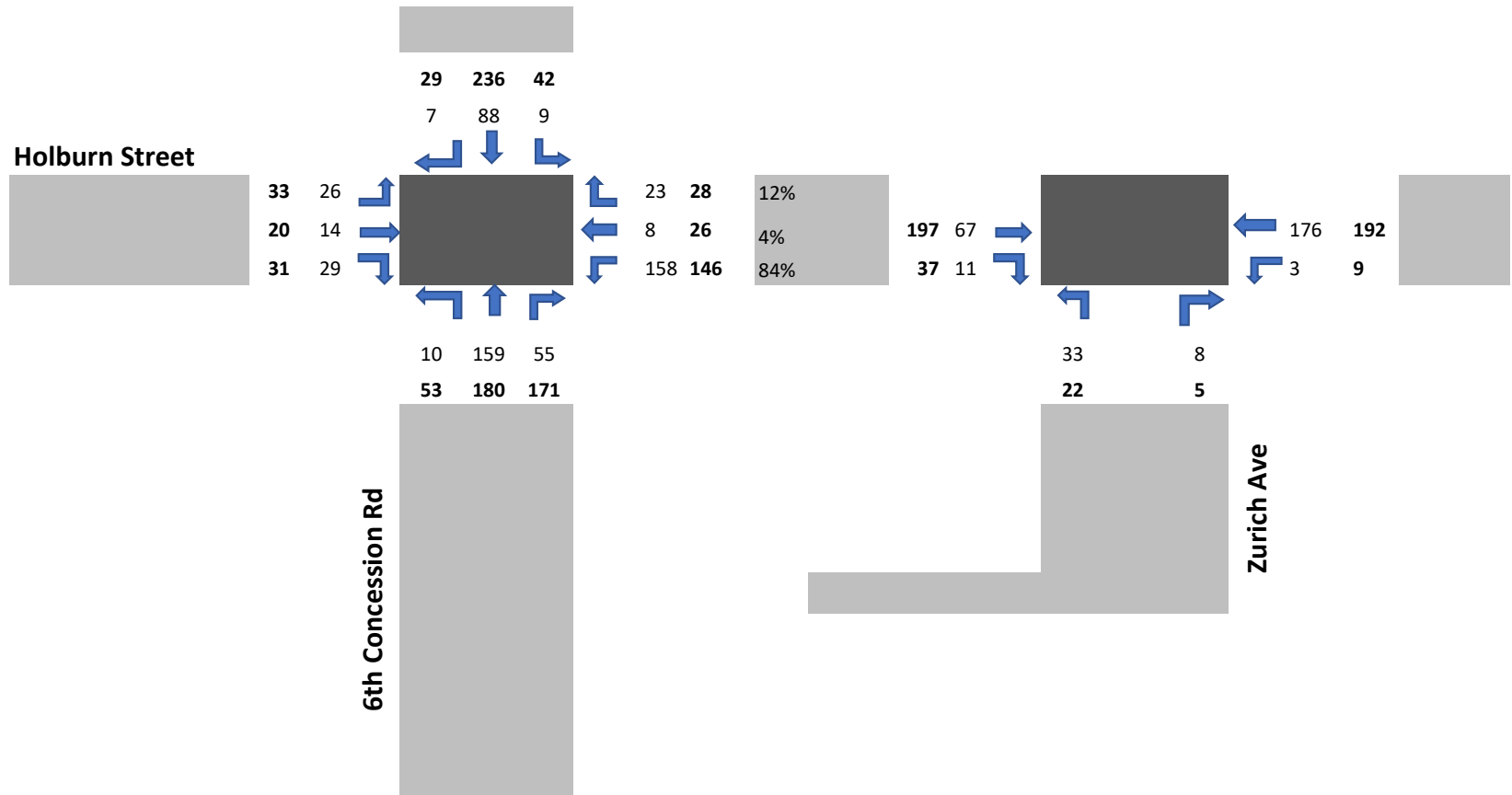
AM	33
PM	33

PROJECT NAME	6TH Concession Development
SHEET TITLE	2030 DEVELOPMENT TRAFFIC



DATE:	16-Aug-22
PROJECT NO:	21-150
FIGURE NO:	Figure 2.2

RESIDENTIAL DEVELOPMENT



LEGEND

AM 33
 PM 33

PROJECT NAME 6TH Concession Development

SHEET TITLE 2030 TOTAL TRAFFIC



DATE: 16-Aug-22
PROJECT NO: 21-150
FIGURE NO: Figure 2.3

Appendix C

CAPACITY ANALYSIS

HCM Unsignalized Intersection Capacity Analysis
2: 6th Concession Rd & Holburn St

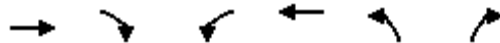
2025 TOTAL PM TRAFFIC
08-12-2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	29	18	27	129	23	25	47	158	151	38	207	25
Future Volume (Veh/h)	29	18	27	129	23	25	47	158	151	38	207	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	20	29	140	25	27	51	172	164	41	225	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	716	758	238	716	690	254	252			336		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	716	758	238	716	690	254	252			336		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	94	96	53	93	97	96			97		
cM capacity (veh/h)	298	312	800	300	342	785	1313			1223		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	81	192	387	293								
Volume Left	32	140	51	41								
Volume Right	29	27	164	27								
cSH	390	334	1313	1223								
Volume to Capacity	0.21	0.57	0.04	0.03								
Queue Length 95th (m)	6.2	27.2	1.0	0.8								
Control Delay (s)	16.6	29.4	1.4	1.4								
Lane LOS	C	D	A	A								
Approach Delay (s)	16.6	29.4	1.4	1.4								
Approach LOS	C	D										
Intersection Summary												
Average Delay			8.3									
Intersection Capacity Utilization			49.6%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
3: Zurich Ave & Holburn St

















2025 TOTAL PM TRAFFIC
08-12-2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	170	37	9	169	22	5
Future Volume (Veh/h)	170	37	9	169	22	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	185	40	10	184	24	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			225		409	205
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			225		409	205
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	99
cM capacity (veh/h)			1344		594	836
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	225	194	29			
Volume Left	0	10	24			
Volume Right	40	0	5			
cSH	1700	1344	625			
Volume to Capacity	0.13	0.01	0.05			
Queue Length 95th (m)	0.0	0.2	1.2			
Control Delay (s)	0.0	0.5	11.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.5	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			26.2%	ICU Level of Service	A	
Analysis Period (min)			15			

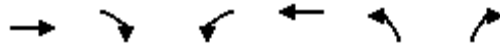
HCM Unsignalized Intersection Capacity Analysis
 2: 6th Concession Rd & Holburn St

2030 TOTAL AM TRAFFIC
 08-12-2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	14	29	158	8	23	10	159	55	9	88	7
Future Volume (Veh/h)	26	14	29	158	8	23	10	159	55	9	88	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	15	32	172	9	25	11	173	60	10	96	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								321				
pX, platoon unblocked												
vC, conflicting volume	374	375	100	384	349	203	104			233		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	374	375	100	384	349	203	104			233		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	97	97	68	98	97	99			99		
cM capacity (veh/h)	552	548	956	537	566	838	1488			1335		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	75	206	244	114								
Volume Left	28	172	11	10								
Volume Right	32	25	60	8								
cSH	672	563	1488	1335								
Volume to Capacity	0.11	0.37	0.01	0.01								
Queue Length 95th (m)	3.0	13.4	0.2	0.2								
Control Delay (s)	11.0	15.0	0.4	0.7								
Lane LOS	B	C	A	A								
Approach Delay (s)	11.0	15.0	0.4	0.7								
Approach LOS	B	C										
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization			38.0%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
3: Zurich Ave & Holburn St

















2030 TOTAL AM TRAFFIC
08-12-2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Traffic Volume (veh/h)	67	11	3	176	33	8
Future Volume (Veh/h)	67	11	3	176	33	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	73	12	3	191	36	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			85		276	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		276	79
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	99
cM capacity (veh/h)			1512		712	981
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	85	194	45			
Volume Left	0	3	36			
Volume Right	12	0	9			
cSH	1700	1512	754			
Volume to Capacity	0.05	0.00	0.06			
Queue Length 95th (m)	0.0	0.0	1.5			
Control Delay (s)	0.0	0.1	10.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.1	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			21.7%	ICU Level of Service	A	
Analysis Period (min)			15			

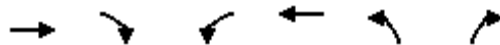
HCM Unsignalized Intersection Capacity Analysis
2: 6th Concession Rd & Holburn St

2030 TOTAL PM TRAFFIC
08-12-2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	20	31	146	26	28	53	180	171	42	236	29
Future Volume (Veh/h)	33	20	31	146	26	28	53	180	171	42	236	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	22	34	159	28	30	58	196	186	46	257	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								321				
pX, platoon unblocked												
vC, conflicting volume	814	863	273	815	786	289	289			382		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	814	863	273	815	786	289	289			382		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	92	96	36	91	96	95			96		
cM capacity (veh/h)	248	268	766	249	297	750	1273			1176		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	92	217	440	335								
Volume Left	36	159	58	46								
Volume Right	34	30	186	32								
cSH	339	280	1273	1176								
Volume to Capacity	0.27	0.77	0.05	0.04								
Queue Length 95th (m)	8.7	47.1	1.1	1.0								
Control Delay (s)	19.6	50.9	1.5	1.5								
Lane LOS	C	F	A	A								
Approach Delay (s)	19.6	50.9	1.5	1.5								
Approach LOS	C	F										
Intersection Summary												
Average Delay			12.9									
Intersection Capacity Utilization			54.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
3: Zurich Ave & Holburn St

















2030 TOTAL PM TRAFFIC
08-12-2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	197	37	9	192	22	5
Future Volume (Veh/h)	197	37	9	192	22	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	214	40	10	209	24	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			254		463	234
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			254		463	234
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	99
cM capacity (veh/h)			1311		553	805
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	254	219	29			
Volume Left	0	10	24			
Volume Right	40	0	5			
cSH	1700	1311	584			
Volume to Capacity	0.15	0.01	0.05			
Queue Length 95th (m)	0.0	0.2	1.3			
Control Delay (s)	0.0	0.4	11.5			
Lane LOS			A			B
Approach Delay (s)	0.0	0.4	11.5			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			27.4%	ICU Level of Service	A	
Analysis Period (min)			15			

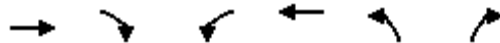
HCM Unsignalized Intersection Capacity Analysis
2: 6th Concession Rd & Holburn St

2035 TOTAL AM TRAFFIC
08-16-2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	15	32	175	9	25	11	178	62	10	99	8
Future Volume (Veh/h)	29	15	32	175	9	25	11	178	62	10	99	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	16	35	190	10	27	12	193	67	11	108	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								321				
pX, platoon unblocked												
vC, conflicting volume	417	418	112	428	390	226	117			260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	417	418	112	428	390	226	117			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	96	62	98	97	99			99		
cM capacity (veh/h)	514	517	940	499	537	813	1471			1304		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	83	227	272	128								
Volume Left	32	190	12	11								
Volume Right	35	27	67	9								
cSH	636	524	1471	1304								
Volume to Capacity	0.13	0.43	0.01	0.01								
Queue Length 95th (m)	3.6	17.3	0.2	0.2								
Control Delay (s)	11.5	17.0	0.4	0.7								
Lane LOS	B	C	A	A								
Approach Delay (s)	11.5	17.0	0.4	0.7								
Approach LOS	B	C										
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utilization			40.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
3: Zurich Ave & Holburn St

















2035 TOTAL AM TRAFFIC
08-12-2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	76	11	3	197	33	8
Future Volume (Veh/h)	76	11	3	197	33	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	12	3	214	36	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			95		309	89
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			95		309	89
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	99
cM capacity (veh/h)			1499		682	969
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	95	217	45			
Volume Left	0	3	36			
Volume Right	12	0	9			
cSH	1700	1499	725			
Volume to Capacity	0.06	0.00	0.06			
Queue Length 95th (m)	0.0	0.0	1.6			
Control Delay (s)	0.0	0.1	10.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.1	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			22.8%	ICU Level of Service	A	
Analysis Period (min)			15			

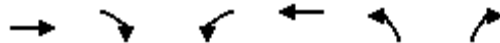
HCM Unsignalized Intersection Capacity Analysis
2: 6th Concession Rd & Holburn St

2035 TOTAL PM TRAFFIC
08-12-2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	23	35	162	30	32	60	202	190	47	264	32
Future Volume (Veh/h)	38	23	35	162	30	32	60	202	190	47	264	32
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	25	38	176	33	35	65	220	207	51	287	35
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								321				
pX, platoon unblocked												
vC, conflicting volume	912	964	304	910	878	324	322			427		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	912	964	304	910	878	324	322			427		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	80	89	95	15	87	95	95			95		
cM capacity (veh/h)	203	231	735	206	259	717	1238			1132		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	104	244	492	373								
Volume Left	41	176	65	51								
Volume Right	38	35	207	35								
cSH	288	237	1238	1132								
Volume to Capacity	0.36	1.03	0.05	0.05								
Queue Length 95th (m)	12.7	80.2	1.3	1.1								
Control Delay (s)	24.4	111.1	1.6	1.5								
Lane LOS	C	F	A	A								
Approach Delay (s)	24.4	111.1	1.6	1.5								
Approach LOS	C	F										
Intersection Summary												
Average Delay			25.6									
Intersection Capacity Utilization			59.7%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
3: Zurich Ave & Holburn St

















2035 TOTAL PM TRAFFIC
08-12-2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	223	37	9	215	22	5
Future Volume (Veh/h)	223	37	9	215	22	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	242	40	10	234	24	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			282		516	262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			282		516	262
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		95	99
cM capacity (veh/h)			1280		515	777
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	282	244	29			
Volume Left	0	10	24			
Volume Right	40	0	5			
cSH	1700	1280	547			
Volume to Capacity	0.17	0.01	0.05			
Queue Length 95th (m)	0.0	0.2	1.3			
Control Delay (s)	0.0	0.4	12.0			
Lane LOS			A			B
Approach Delay (s)	0.0	0.4	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			28.6%	ICU Level of Service	A	
Analysis Period (min)			15			

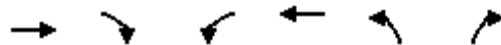
HCM Unsignalized Intersection Capacity Analysis
2: 6th Concession Rd & Holburn St

2025 TOTAL AM TRAFFIC
08-12-2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	12	25	140	7	20	9	140	49	8	77	7
Future Volume (Veh/h)	23	12	25	140	7	20	9	140	49	8	77	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	13	27	152	8	22	10	152	53	9	84	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								321				
pX, platoon unblocked												
vC, conflicting volume	330	331	88	338	308	178	92			205		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	330	331	88	338	308	178	92			205		
tC, single (s)	7.1	6.6	6.5	7.6	6.8	6.4	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.6	4.0	4.3	3.5	2.4			2.2		
p0 queue free %	96	98	97	70	99	97	99			99		
cM capacity (veh/h)	589	571	896	504	550	820	1391			1366		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	65	182	215	101								
Volume Left	25	152	10	9								
Volume Right	27	22	53	8								
cSH	682	531	1391	1366								
Volume to Capacity	0.10	0.34	0.01	0.01								
Queue Length 95th (m)	2.5	12.1	0.2	0.2								
Control Delay (s)	10.8	15.3	0.4	0.7								
Lane LOS	B	C	A	A								
Approach Delay (s)	10.8	15.3	0.4	0.7								
Approach LOS	B	C										
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utilization			35.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
3: Zurich Ave & Holburn St

2025 TOTAL AM TRAFFIC
08-12-2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↗
Traffic Volume (veh/h)	58	11	3	155	33	8
Future Volume (Veh/h)	58	11	3	155	33	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	12	3	168	36	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			75		243	69
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			75		243	69
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	99
cM capacity (veh/h)			1524		744	994
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	75	171	45			
Volume Left	0	3	36			
Volume Right	12	0	9			
cSH	1700	1524	783			
Volume to Capacity	0.04	0.00	0.06			
Queue Length 95th (m)	0.0	0.0	1.5			
Control Delay (s)	0.0	0.1	9.9			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.1	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			20.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
2: 6th Concession Rd & Holburn St

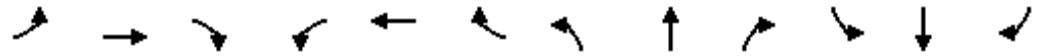
2030 TOTAL PM TRAFFIC - Attenuated
08-16-2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Volume (vph)	33	20	31	146	26	28	53	180	171	42	236	29
Future Volume (vph)	33	20	31	146	26	28	53	180	171	42	236	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.950			0.981				0.850		0.987	
Flt Protected		0.981			0.965			0.989			0.993	
Satd. Flow (prot)	0	1755	0	0	1783	0	0	1863	1601	0	1846	0
Flt Permitted		0.819			0.725			0.856			0.915	
Satd. Flow (perm)	0	1465	0	0	1340	0	0	1612	1601	0	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			18				186			12
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.0			160.0			320.5			415.9	
Travel Time (s)		18.6			11.5			23.1			29.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	22	34	159	28	30	58	196	186	46	257	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	0	0	217	0	0	254	186	0	335	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Minimum Split (s)	25.0	25.0		25.0	25.0		25.0	25.0	25.0	25.0	25.0	
Total Split (s)	25.0	25.0		25.0	25.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0	18.0	18.0	18.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		7.0			7.0			7.0	7.0		7.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		18.0			18.0			18.0	18.0		18.0	
Actuated g/C Ratio		0.36			0.36			0.36	0.36		0.36	
v/c Ratio		0.17			0.44			0.44	0.27		0.54	
Control Delay		8.6			14.6			15.1	3.5		16.2	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		8.6			14.6			15.1	3.5		16.2	
LOS		A			B			B	A		B	
Approach Delay		8.6			14.6			10.2			16.2	
Approach LOS		A			B			B			B	
Queue Length 50th (m)		3.5			13.5			17.4	0.0		23.1	
Queue Length 95th (m)		11.0			29.1			33.7	9.7		43.3	

Lanes, Volumes, Timings
2: 6th Concession Rd & Holburn St

2030 TOTAL PM TRAFFIC - Attenuated
08-16-2022

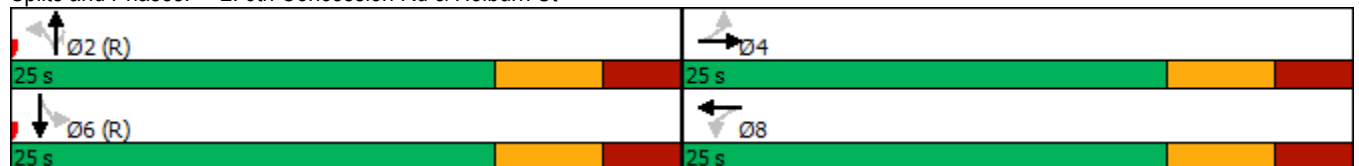


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (m)		235.0			136.0			296.5				391.9
Turn Bay Length (m)									30.0			
Base Capacity (vph)		549			493			580	695			620
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.17			0.44			0.44	0.27			0.54

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	12.8
Intersection LOS:	B
Intersection Capacity Utilization	64.2%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 2: 6th Concession Rd & Holburn St



Lanes, Volumes, Timings
2: 6th Concession Rd & Holburn St

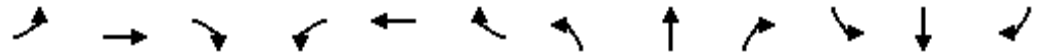
2035 TOTAL PM TRAFFIC - Attenuated
08-16-2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Volume (vph)	38	23	35	162	30	32	60	202	190	47	264	32
Future Volume (vph)	38	23	35	162	30	32	60	202	190	47	264	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.981				0.850		0.987	
Flt Protected		0.981			0.965			0.989			0.993	
Satd. Flow (prot)	0	1757	0	0	1783	0	0	1863	1601	0	1846	0
Flt Permitted		0.803			0.721			0.839			0.907	
Satd. Flow (perm)	0	1438	0	0	1332	0	0	1580	1601	0	1686	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			19				207			12
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.0			160.0			320.5			415.9	
Travel Time (s)		18.6			11.5			23.1			29.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	25	38	176	33	35	65	220	207	51	287	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	244	0	0	285	207	0	373	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Minimum Split (s)	25.0	25.0		25.0	25.0		25.0	25.0	25.0	25.0	25.0	
Total Split (s)	25.0	25.0		25.0	25.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0	18.0	18.0	18.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)		7.0			7.0			7.0	7.0		7.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		18.0			18.0			18.0	18.0		18.0	
Actuated g/C Ratio		0.36			0.36			0.36	0.36		0.36	
v/c Ratio		0.19			0.50			0.50	0.29		0.61	
Control Delay		8.8			15.7			16.3	3.5		17.8	
Queue Delay		0.0			0.0			0.0	0.0		0.0	
Total Delay		8.8			15.7			16.3	3.5		17.8	
LOS		A			B			B	A		B	
Approach Delay		8.8			15.7			10.9			17.8	
Approach LOS		A			B			B			B	
Queue Length 50th (m)		4.0			15.7			20.1	0.0		26.5	
Queue Length 95th (m)		12.1			33.0			38.6	10.3		49.7	

Lanes, Volumes, Timings
2: 6th Concession Rd & Holburn St

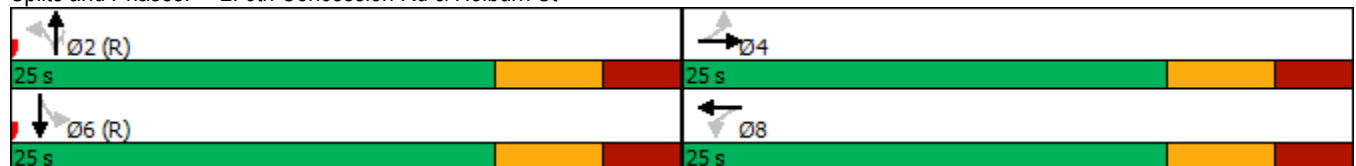
2035 TOTAL PM TRAFFIC - Attenuated
08-16-2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (m)		235.0			136.0			296.5				391.9
Turn Bay Length (m)									30.0			
Base Capacity (vph)		542			491			568	708			614
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.19			0.50			0.50	0.29			0.61

Intersection Summary	
Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	13.8
Intersection LOS:	B
Intersection Capacity Utilization:	69.1%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 2: 6th Concession Rd & Holburn St



Appendix D

WARRANTS ANALYSIS



Canadian Traffic Signal Warrant Analysis

Main Street Side Street

MainStreet1Lanes	(#)	1
MainStreet2Lanes	(#)	1
MainStreetLT Lanes	(#)	1
SideStreet1Lanes	(#)	1
SideStreet2Lanes	(#)	1
MainStreetSpeedLimit	(km/h)	80
MainStreetTrucks/Buses	(%)	5.0%
Refuge Width on Median	(m)	0.0

6th Concession Road - 2030 Pre Development				
Holburn Street - 2030 Pre Development				
Distance to next signal	(m)	550		
Elementary School	(y/n)	n		
Senior's Complex	(y/n)	n		
Pathway to School	(y/n)	n		
Metro Area Population	(#)	1,000		
Side Street Bus Route	(y/n)	n		
Side Street Trucks	(%)	5.0%		
T or 1-Way Intersection	(y/n)	n		
Central Business District	(y/n)	n		

Date: August 16, 2022

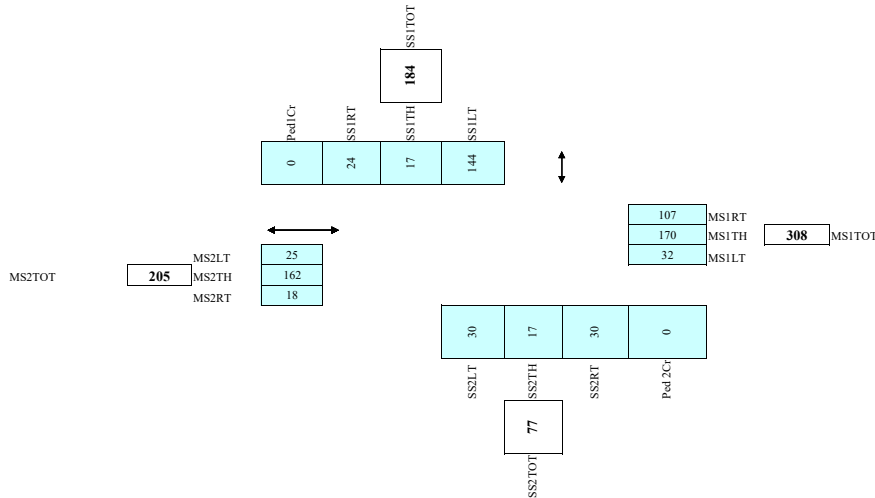
City: City of Windsor

Vm =	513 (MainSt Vol Total)	Cs =	1.005 (Int SpacingFactor)
Vs =	184 (SideSt Vol Highest)	Cmt =	1.000 (MainStTruckFactor)
Pc =	0 Peds Crossing Main	Cv =	1.100 (SpeedFactor)
K1 =	1,400 veh/veh const	Cp =	1.200 (PopDemoFactor)
K2 =	5,000 veh/ped const	Csb =	1.000 (SideStBusFactor)
L =	3.0 TotalMainStLanes	Cst =	1.000 (SideStTruckFactor)
F =	1.000 (PedDemoFactor)	Vmx =	308 (MainStHighest)
Vm1 =	513 (MainStVeh-Veh#)	Vm2 =	513 (MainStVeh-Ped#)
Cvp =	1.327 (product of Cs,Cmt,Cv,Cp)	Cbt =	1.000 (maximum of Csb,Cst)
Ct1 =	1.000 T Int / one way factor		

	←	→	↓	↑										
	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	10	159	52	9	88	7	148	7	21	26	14	29	0	0
8:00 - 9:00	10	159	52	9	88	7	148	7	21	26	14	29	0	0
11:00 - 12:00	10	159	52	9	88	7	148	7	21	26	14	29	0	0
12:00 - 13:00	53	180	162	41	236	29	139	26	27	33	20	31	0	0
16:00 - 17:00	53	180	162	41	236	29	139	26	27	33	20	31	0	0
17:00 - 18:00	53	180	162	41	236	29	139	26	27	33	20	31	0	0
Average	32	170	107	25	162	18	144	17	24	30	17	30	0	0

*** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day

*** Enter the peak pedestrian volume crossing the main street averaged over the same hours



$$W = [Ct1 \times Cbt \times (Vm1 \times Vs) / K1 + (F \times (Vm2 \times Pc) \times L) / K2] \times Cvp$$

W = 89 Veh NOT Warranted 89 0 Ped

Roadway, Vehicle and Pedestrian Factors	Range			
	Min	@	Max	@
Cs = (Int SpacingFactor)	0.90	<200 m	1.10	isolated
Cmt = (MainStTruckFactor)	1.00	<5%	1.15	>20%
Cv = (SpeedFactor)	1.00	<60 km/h	1.10	>80 km/h
Cp = (PopDemoFactor)	1.00	>250,000	1.20	<10,000
Csb = (SideStBusFactor)	1.00	no	1.05	yes
Cst = (SideStTruckFactor)	1.00	<10%	1.05	>10%
F = (Ped DemoFactor)				
(max of)	Elementary School	1.20		
	Seniors Complex	1.10		
	Path to School	1.10		

Explanation of Factors:

- Cbt** = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00. (it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
- Ci** = the product of the other 4 geographic factors (Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
- Vm1** = the main street volume - either the total of the two approaches or the highest single approach (if the median is >=10.0 metres) (averaged over 6 peak hours)
- Vm2** = the main street volume - either the total of the two approaches or the highest single approach (if the median is >=6.0 metres) (averaged over 6 peak hours)
- Vs** = the highest side street approach volume (averaged over 6 peak hours)
- *** note: it has been determined that Vs must be > 75 for signals to be considered ***
- F** = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
- Pc** = the total pedestrian volume crossing the mainstreet (averaged over 6 peak hours)
- L** = number of lanes that the pedestrians have to cross (only half the street if the median is >=5.0 metres)
- Kv** = Vehicle - Vehicle denominator constant (Kv = 1,100 if L<=3, Kv = 1,400 if L >3)
- Kp** = Vehicle - Pedestrian denominator constant (Kp = 2,000 if L<=3, Kp = 5,000 if L >3)



Canadian Traffic Signal Warrant Analysis

Main Street Side Street

MainStreet1Lanes	(#)	1
MainStreet2Lanes	(#)	1
MainStreet LT Lanes	(#)	1
SideStreet1Lanes	(#)	1
SideStreet2Lanes	(#)	1
MainStreetSpeedLimit	(km/h)	80
MainStreetTrucks/Buses	(%)	5.0%
Refuge Width on Median	(m)	0.0

6th Concession Road - 2035 Pre Development				
Holburn Street - 2035 Pre Development				
(#)	1	←	Distance to next signal (m)	550
(#)	1	→	Elementary School	n
(#)	1	↗	Senior's Complex	n
(#)	1	↘	Pathway to School	n
(#)	1	↑	Metro Area Population	1,000
(km/h)	80		Side Street Bus Route	n
(%)	5.0%		Side Street Trucks	5.0%
(m)	0.0		T or 1-Way Intersection	n
			Central Business District	n

Date: August 16, 2022

City: City of Windsor

Vm =	574 (MainSt Vol Total)	Cs =	1.005 (Int SpacingFactor)
Vs =	207 (SideSt Vol Highest)	Cmt =	1.000 (MainStTruckFactor)
Pc =	0 Peds Crossing Main	Cv =	1.100 (SpeedFactor)
K1 =	1,400 veh/veh const	Cp =	1.200 (PopDemoFactor)
K2 =	5,000 veh/ped const	Csb =	1.000 (SideStBusFactor)
L =	3.0 TotalMainStLanes	Cst =	1.000 (SideStTruckFactor)
F =	1.000 (PedDemoFactor)	Vmx =	344 (MainStHighest)
Vm1 =	574 (MainStVeh-Veh#)	Vm2 =	574 (MainStVeh-Ped#)
Cvp =	1.327 (product of Cs,Cmt,Cv,Cp)	Cbt =	1.000 (maximum of Csb,Cst)
Ct1 =	1.000 T Int / one way Factor		

	←	→	↓	↑										
	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	11	178	58	10	99	8	165	8	24	29	15	32	0	0
8:00 - 9:00	11	178	58	10	99	8	165	8	24	29	15	32	0	0
11:00 - 12:00	11	178	58	10	99	8	165	8	24	29	15	32	0	0
12:00 - 13:00	60	202	179	46	264	32	156	29	31	38	22	35	0	0
16:00 - 17:00	60	202	179	46	264	32	156	29	31	38	22	35	0	0
17:00 - 18:00	60	202	179	46	264	32	156	29	31	38	22	35	0	0
Average	36	190	119	28	182	20	161	19	28	34	19	34	0	0

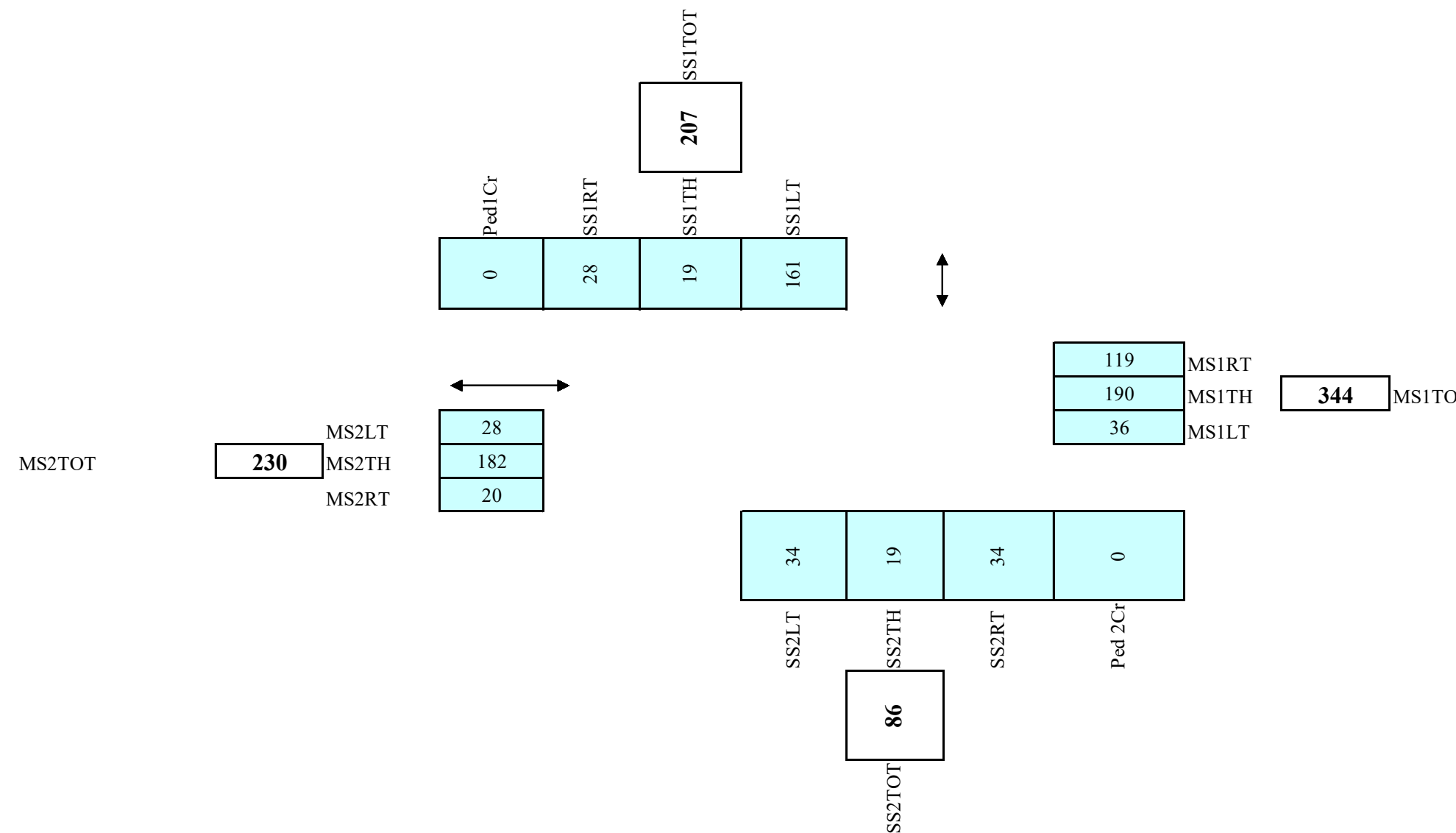
*** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day

*** Enter the peak pedestrian volume crossing the main street averaged over the same hours

$$W = [Ct1xCbt(Vm1 \times Vs)/K1 + (F(Vm2 \times Pc)L)/K2] \times Cvp$$

W = 112 112 0

Warranted Veh Ped



Roadway, Vehicle and Pedestrian Factors		Range			
		Min	@	Max	@
Cs =	(Int SpacingFactor)	0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)	1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)	1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)	1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)	1.00	no	1.05	yes
Cst =	(SideStTruckFactor)	1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)				
	(max of)				
	Elementary School	1.20			
	Seniors Complex	1.10			
	Path to School	1.10			

Explanation of Factors:

- Cbt** = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00. (it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
- Ci** = the product of the other 4 geographic factors (Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
- Vm1** = the main street volume - either the total of the two approaches or the highest single approach (if the median is >=10.0 metres) (averaged over 6 peak hours)
- Vm2** = the main street volume - either the total of the two approaches or the highest single approach (if the median is >=6.0 metres) (averaged over 6 peak hours)
- Vs** = the highest side street approach volume (averaged over 6 peak hours) *** note: it has been determined that Vs must be > 75 for signals to be considered ***
- F** = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
- Pc** = the total pedestrian volume crossing the mainstreet (averaged over 6 peak hours)
- L** = number of lanes that the pedestrians have to cross (only half the street if the median is >=5.0 metres)
- Kv** = Vehicle - Vehicle denominator constant (Kv = 1,100 if L<=3, Kv = 1,400 if L >3)
- Kp** = Vehicle - Pedestrian denominator constant (Kp = 2,000 if L<=3, Kp = 5,000 if L >3)



Canadian Traffic Signal Warrant Analysis

Main Street Side Street

MainStreet1Lanes	(#)	1
MainStreet2Lanes	(#)	1
MainStreetLT Lanes	(#)	1
SideStreet1Lanes	(#)	1
SideStreet2Lanes	(#)	1
MainStreetSpeedLimit	(km/h)	80
MainStreetTrucks/Buses	(%)	5.0%
Refuge Width on Median	(m)	0.0

6th Concession Road - 2030 Post Development Holburn Street - 2030 Post Development

(#)	1	←	Distance to next signal	(m)	550
(#)	1	→	Elementary School	(y/n)	n
(#)	1	↖	Senior's Complex	(y/n)	n
(#)	1	↙	Pathway to School	(y/n)	n
(#)	1	↑	Metro Area Population	(#)	1,000
(#)	1	↓	Metro Area Population	(#)	1,000
(km/h)	80		Side Street Bus Route	(y/n)	n
(%)	5.0%		Side Street Trucks	(%)	5.0%
(m)	0.0		T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Date: August 16, 2022

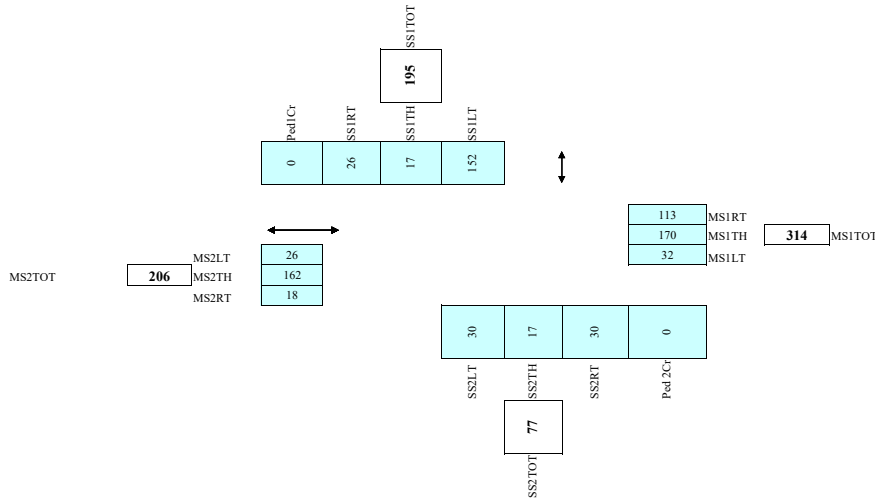
City: City of Windsor

Vm =	520	(MainSt Vol Total)	Cs =	1.005	(Int SpacingFactor)
Vs =	195	(SideSt Vol Highest)	Cmt =	1.000	(MainStTruckFactor)
Pc =	0	(Peds Crossing Main)	Cv =	1.100	(SpeedFactor)
K1 =	1,400	veh/veh const	Cp =	1.200	(PopDemoFactor)
K2 =	5,000	veh/ped const	Csb =	1.000	(SideStBusFactor)
L =	3.0	TotalMainStLanes	Cst =	1.000	(SideStTruckFactor)
F =	1.000	(PedDemoFactor)	Vmx =	314	(MainStHighest)
Vm1 =	520	(MainStVeh-Veh#)	Vm2 =	520	(MainStVeh-Ped#)
Cvp =	1.327	(product of Cs,Cmt,Cv,Cp)	Cbt =	1.000	(maximum of Csb,Cst)
Ct1 =	1.000	T Int / one way factor			

	←	→	↓	↑	PedC1	PedC2								
	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT		
7:00 - 8:00	10	159	55	9	88	7	158	8	23	26	14	29	0	0
8:00 - 9:00	10	159	55	9	88	7	158	8	23	26	14	29	0	0
11:00 - 12:00	10	159	55	9	88	7	158	8	23	26	14	29	0	0
12:00 - 13:00	53	180	171	42	236	29	146	26	28	33	20	31	0	0
16:00 - 17:00	53	180	171	42	236	29	146	26	28	33	20	31	0	0
17:00 - 18:00	53	180	171	42	236	29	146	26	28	33	20	31	0	0
Average	32	170	113	26	162	18	152	17	26	30	17	30	0	0

*** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day

*** Enter the peak pedestrian volume crossing the main street averaged over the same hours



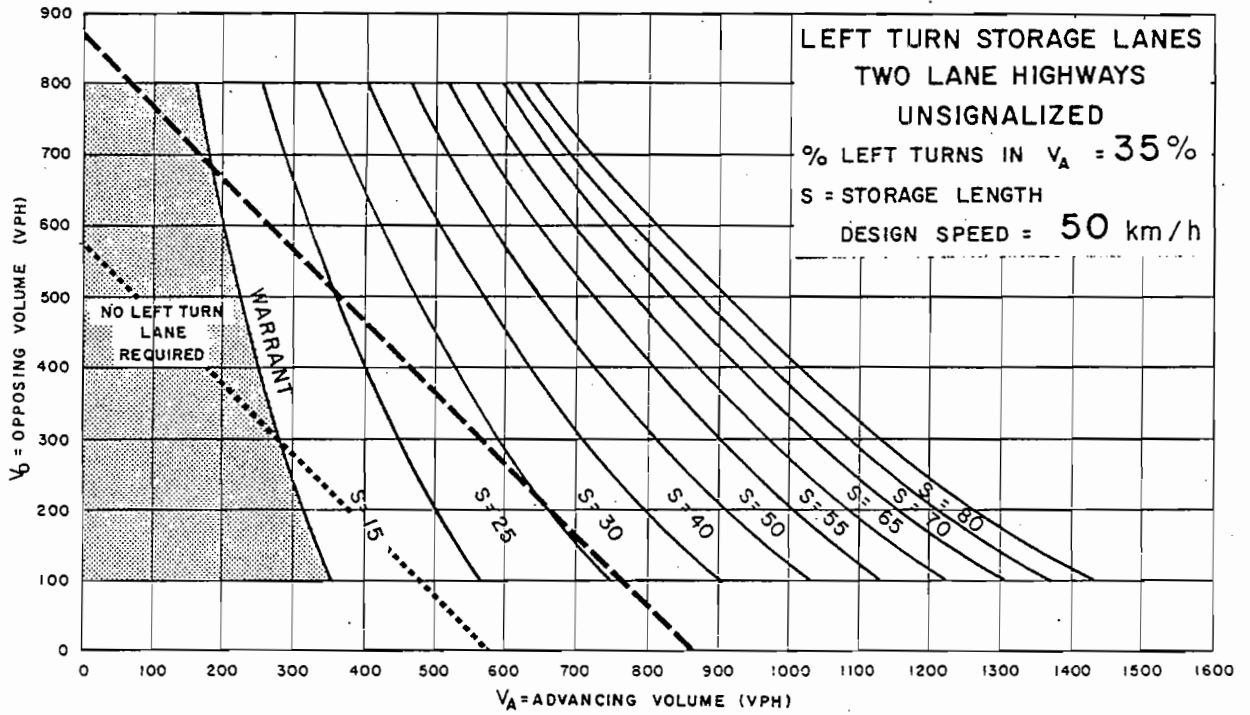
$$W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp$$

W = 96 Veh NOT Warranted 96 Ped

Roadway, Vehicle and Pedestrian Factors	Range			
	Min	@	Max	@
Cs = (Int SpacingFactor)	0.90	<200 m	1.10	isolated
Cmt = (MainStTruckFactor)	1.00	<5%	1.15	>20%
Cv = (SpeedFactor)	1.00	<60 km/h	1.10	>80 km/h
Cp = (PopDemoFactor)	1.00	>250,000	1.20	<10,000
Csb = (SideStBusFactor)	1.00	no	1.05	yes
Cst = (SideStTruckFactor)	1.00	<10%	1.05	>10%
F = (Ped DemoFactor)				
(max of)	Elementary School	1.20		
	Seniors Complex	1.10		
	Path to School	1.10		

Explanation of Factors:

- Cbt** = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00. (it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
- Ci** = the product of the other 4 geographic factors (Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
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- Vs** = the highest side street approach volume (averaged over 6 peak hours)
- *** note: it has been determined that Vs must be > 75 for signals to be considered ***
- F** = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
- Pc** = the total pedestrian volume crossing the mainstreet (averaged over 6 peak hours)
- L** = number of lanes that the pedestrians have to cross (only half the street if the median is >=5.0 metres)
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--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW
 TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

— 2035 AM Traffic
 — 2035 PM Traffic

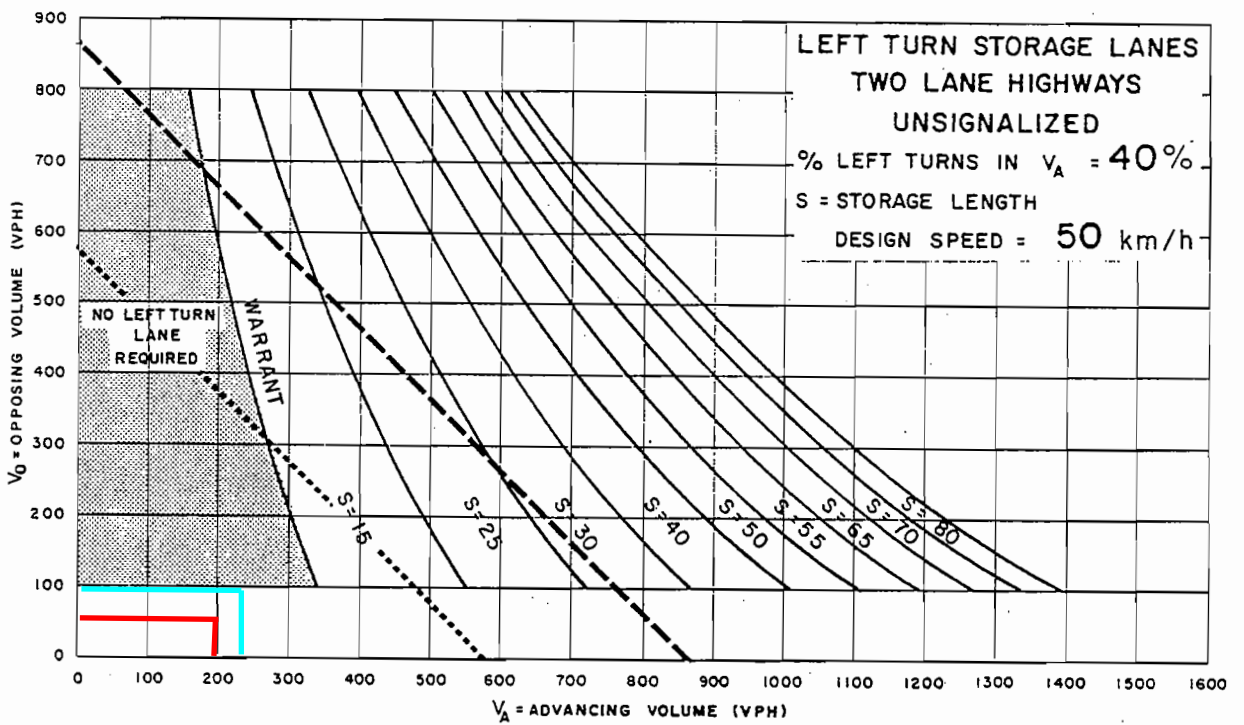


Figure EA-5

Appendix E

SITE PLANS AND PHOTOS

