



Mixed-Use Building Development

**284 & 286 Dunlop Street West and
119 & 121 Henry Street**

City of Barrie

Traffic Impact Study

Prepared by:

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Prepared for:

The Arden Development Group

May, 2021



May 17, 2021

Mr. Dean Artenosi
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**Re: Traffic Impact Assessment for the Proposed Market
Rental Apartment Building with Commercial Uses, 284-
286 Dunlop Street, 119-121 Henry Street, City of Barrie**

Enclosed, please find our traffic impact study report in support of the proposed mixed-use development to be located in the northwestern quadrant of the Dunlop Street/Anne Street intersection. It is a 16-storey building consisting of 124 market rental apartment units and approximately 1,053 sq. m. (approximately 11,331 sq. ft.) of commercial floor spaces on the first two floors. The following are the conclusions and recommendations:

- Currently the study area intersections are operating well, although some left turn movements are experiencing congestion.
- With the projected growth in background traffic, the existing road network will reach capacity by 2025 and will be beyond capacity by 2031. However, with the approved improvements (Design Concept 3) along Dunlop Street, the intersections are projected to operate at acceptable Levels of Service in 2031.
- The proposed mixed-use development is expected to generate approximately 61 vehicle trips (23 inbound, 38 outbound) during the morning peak hour and approximately 64 vehicle trips during the afternoon peak hour (33 inbound, 31 outbound). All traffic to/from the site will be using a single driveway on Henry Street.
- The impact of the site traffic on the study area intersections in 2025 and 2031 is minimal. In 2031 the site traffic will add less than two seconds to the average delay at each intersection (with the exception of the Dunlop/Anne Street intersection where the increase is approximately six



seconds in the PM peak). The site traffic also has minimal impact on the volume/capacity ratios.

- The site driveway on Henry Street is forecast to operate at a very good Level of Service.
- The site has 158 parking spaces (147 spaces plus 11 spaces within MTO setback area) on site where the Zoning By-law requires 160 spaces. The 158 spaces are considered to be adequate because:
 - Visitor parking spaces can do double duty satisfying resident demand and commercial demand that tend to occur at different times of day.
 - The TDM measures and nearby Active Transportation facilities will reduce parking demand at the site.
 - Based on parking demand rates from ITE Parking Generation (Shared Parking for Mixed-Use Developments) and the TTS survey of vehicle ownership by apartment dwellers in the City of Barrie, the development only needs 147 spaces.

Please do not hesitate to call if you have any questions.

Yours truly,

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Reviewed By

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1.0 INTRODUCTION

The Arten Development Group is proposing a 16-storey mixed-use building at 284 & 286 Dunlop Street West and 119 & 121 Henry Street in the City of Barrie (see **Exhibit 1.1 – Key Map**). It is located on the northwest quadrant of the Dunlop Street West and Anne Street South intersection. The proposed development consists of 124 market rental apartment units and approximately 1,053 sq. m. (approximately 11,331 sq. ft.) of commercial floor spaces in the first two floors (see **Exhibit 1.2 – Proposed Site Plan**).

Tranplan Associates (“Tranplan”) has been retained by the Arten Development Group to carry out this traffic impact study in support of the proposed Re-Zoning and Site Plan Application for the proposed development. The study provides a traffic impact assessment of the proposed development based on the Terms of Reference approved by City of Barrie (“City”) staff (see **Appendix A1**) using a combination of traffic data obtained from the City, Ministry of Transportation, Ontario (MTO) as well as data collected by Tranplan at the study area intersections. The study area intersections were analyzed for existing (2020) conditions and for 2025 and 2031 planning horizons for future background and total traffic conditions.

The traffic impact assessments have been carried out for the following intersections:

- Anne Street and Dunlop Street;
- Anne Street and Henry Street;
- Anne Street and Donald Street; and
- Highway 400 Ramps (East and West on Dunlop Street).
- Henry Street and the Site Driveway.

This report describes the study methodology and presents the findings and recommendations from the analysis.

EXHIBIT 1.1: KEY MAP

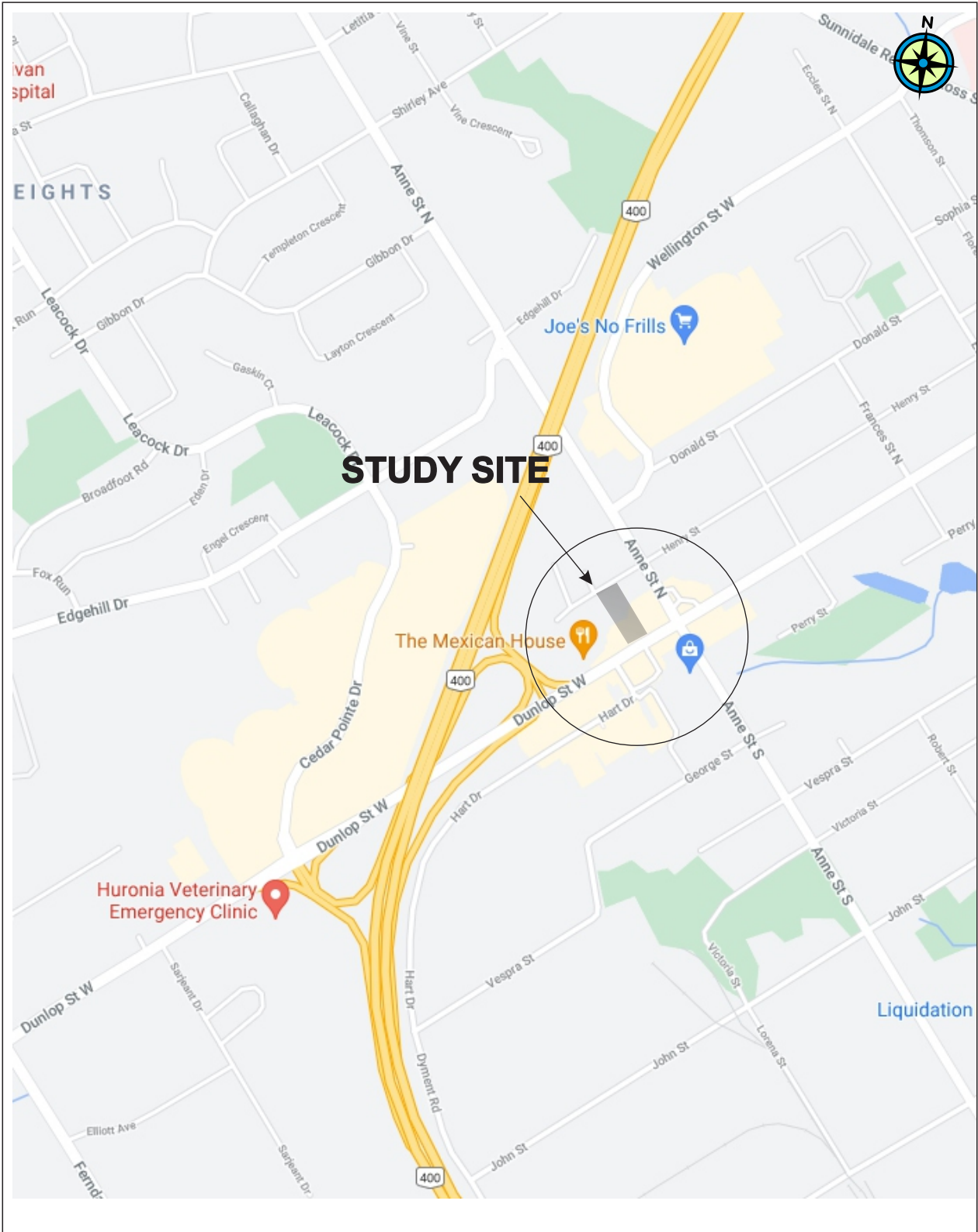
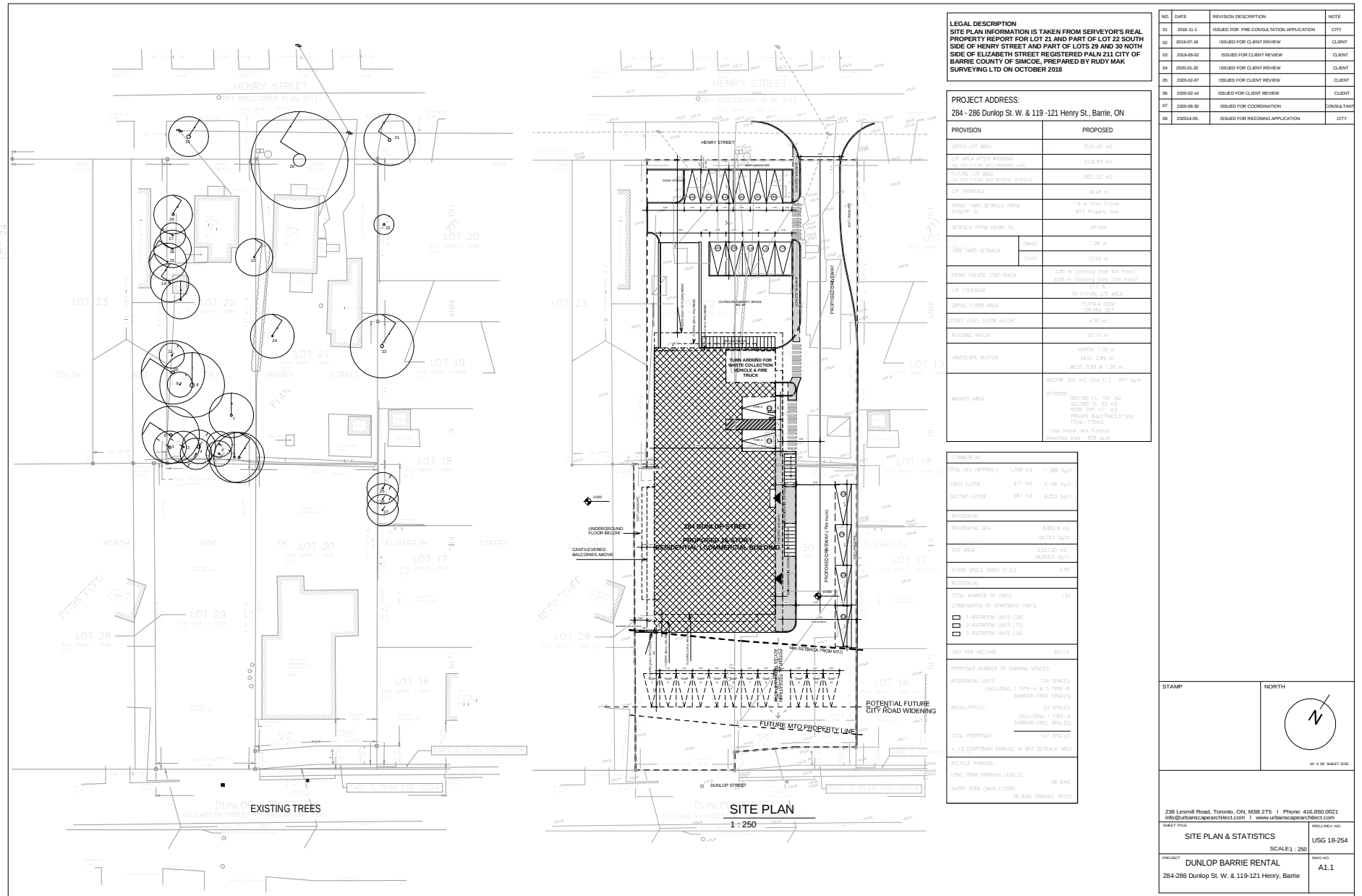


EXHIBIT 1.2: PROPOSED SITE PLAN



2.0 EXISTING CONDITIONS

2.1 The Study Site

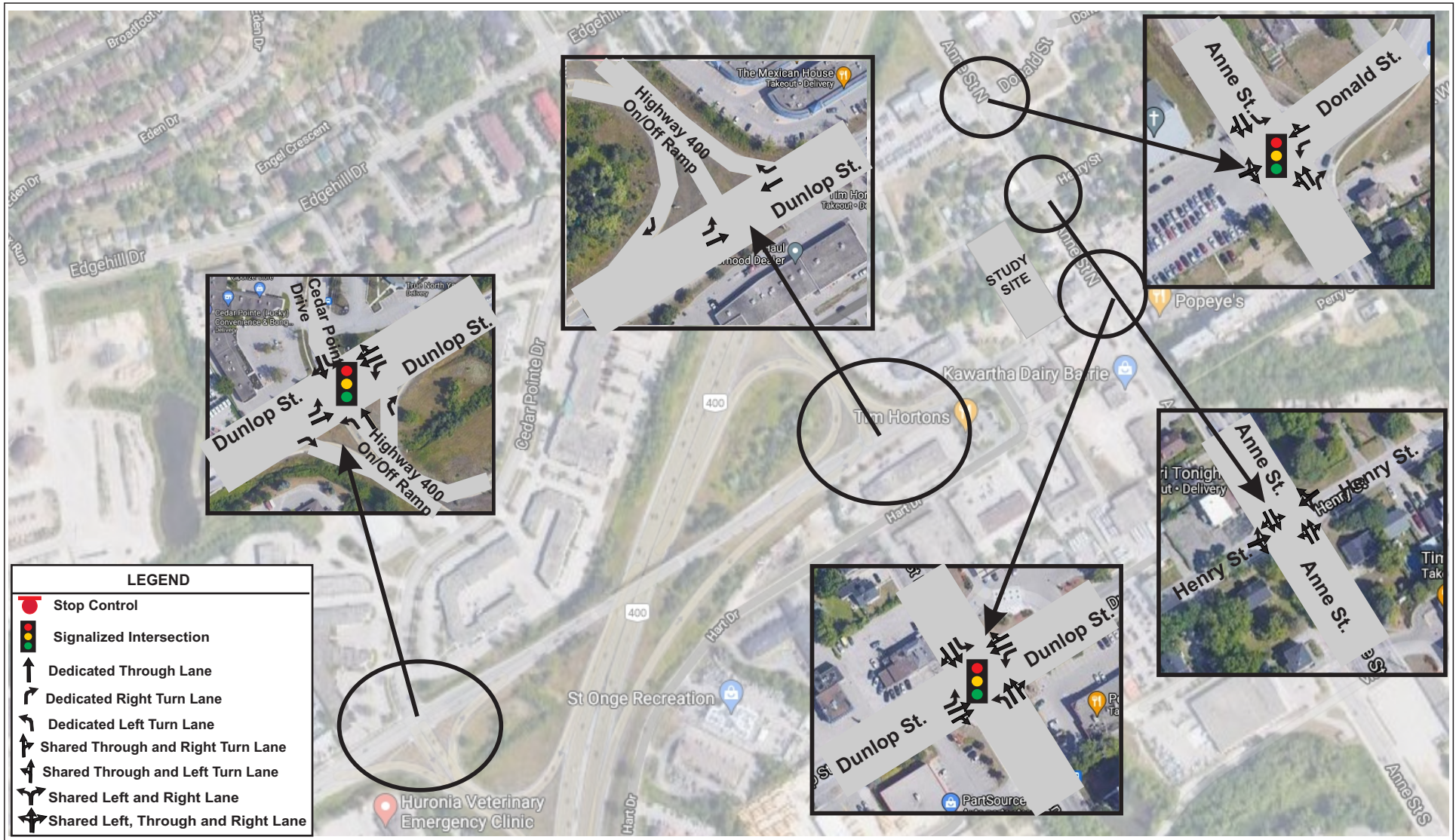
The study site is located in Ward 2, in the Queen's Park Planning Area of City of Barrie, in the general area east of Highway 400. Specifically, it is located between Dunlop Street to south and Henry Street to north in the area bounded by Highway 400 to the west and Anne Street to the east with municipal addresses, 284 & 286 Dunlop Street West and 119 & 121 Henry Street. The study site is currently occupied by commercial buildings on Dunlop Street and residential dwellings on Henry Street. Similarly, adjacent to the study site on Dunlop Street are commercial uses of various kind and single-family dwellings on Henry Street. The study site along with existing traffic controls and lane configurations at the study intersections are illustrated in **Exhibit 2.1A**.

2.2 Vehicular Access to the Study Site

Dunlop Street is a four-lane major arterial road in the vicinity of the study site (the lanes are reduced to one lane in each direction over the Highway 400 bridge). The Dunlop Street corridor runs east-west direction (from County Road 27 in the west to Collier Street in the east) serving various general commercial/industrial, and residential areas as well as providing connections to the Highway 400/Dunlop Street Interchange. In the study area, Dunlop Street has sidewalks on both sides of the street, has a posted speed limit of 50 km/h and a 2017 Average Daily Traffic (ADT) volume of approximately 25,000 vehicles per day.

Anne Street is a major arterial road running in a north-south direction. It runs north from Adelaide Street to Carson Road. In the vicinity of the study site, Anne Street north operates as a four-lane major arterial road with sidewalks on both sides of the street and has a posted speed limit of 50 km/h. The 2017 ADT is estimated to be approximately 22,500 vehicles per day.

EXHIBIT 2.1A: EXISTING TRAFFIC CONTROL and LANE CONFIGURATIONS



Henry Street is classified as a local road, running east-west from west of Anne Street to Eccles Street. In the vicinity of the study site, west of Anne Street, it comes to a dead-end and provides access to approximately ten residential dwelling units on Henry Street. It has a posted speed of 50 km/h and an AADT of 500 vehicles.

2.3 Transit Access to the Study Site

The study site is served by several Barrie Transit bus routes. The bus routes and the near-by transit systems are illustrated in **Exhibit 2.1B**. The bus routes 2, 6 and 8 provide access to the rest of the city and beyond. The GO Bus connection is available at the Downtown terminal and GO Train is available at Allendale Waterfront GO Station.

2.4 Pedestrian and Cycling Access to the Study Site

For pedestrians, sidewalks are provided on both sides of the street on Anne Street and on Dunlop Street. Currently, no sidewalk is provided on Henry Street. **Exhibit 2.1C** illustrates existing Multi-Use Trails and Cultural Trail Routes in relation to the study site. While no established trails are in the vicinity of the study site, opportunities to access to these walking facilities can be made by local transit available in the immediate vicinity of the study site.

Similarly, for cyclist, the established cycling routes and designated Bike Lanes are not available in the immediate vicinity of the study site, see **Exhibit 2.1D**. However, the City's future cycling network, see **Exhibit 2.1E**, indicates that a dedicated Bike Lane is planned along Hart Drive and Cycle Track, an exclusive bike facility physically separated from motor traffic and sidewalk/pedestrian is planned on Anne Street.

2.5 Peak Hour Traffic Volumes

The baseline traffic data was gathered from several sources. The City and MTO provided available traffic data from their files. Tranplan collected peak hour

EXHIBIT 2.1B: TRANSIT SYSTEM AVAILABILITY

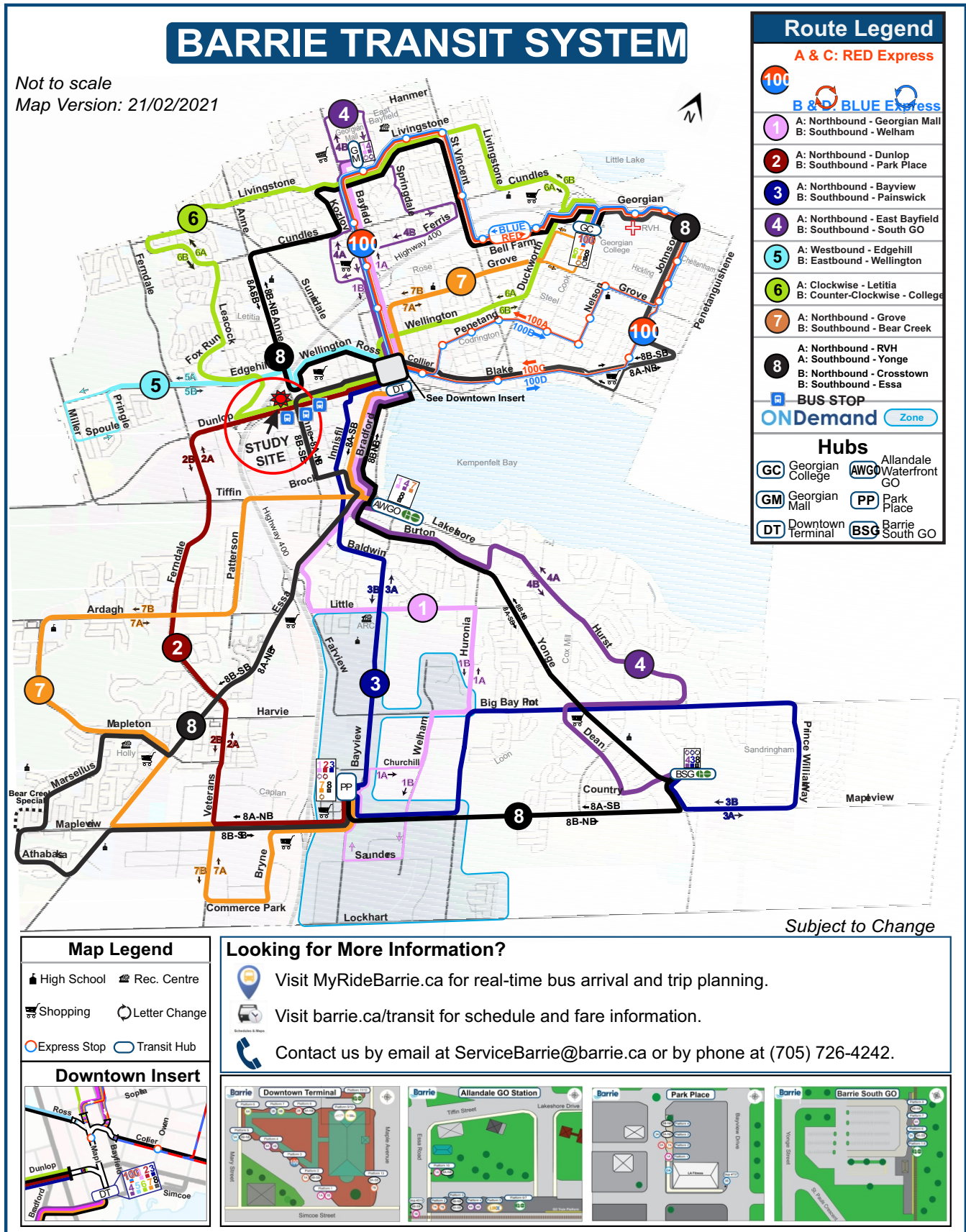


EXHIBIT 2.1C: ACTIVE TRANSPORTATION - MAP OF WALKING ROUTES

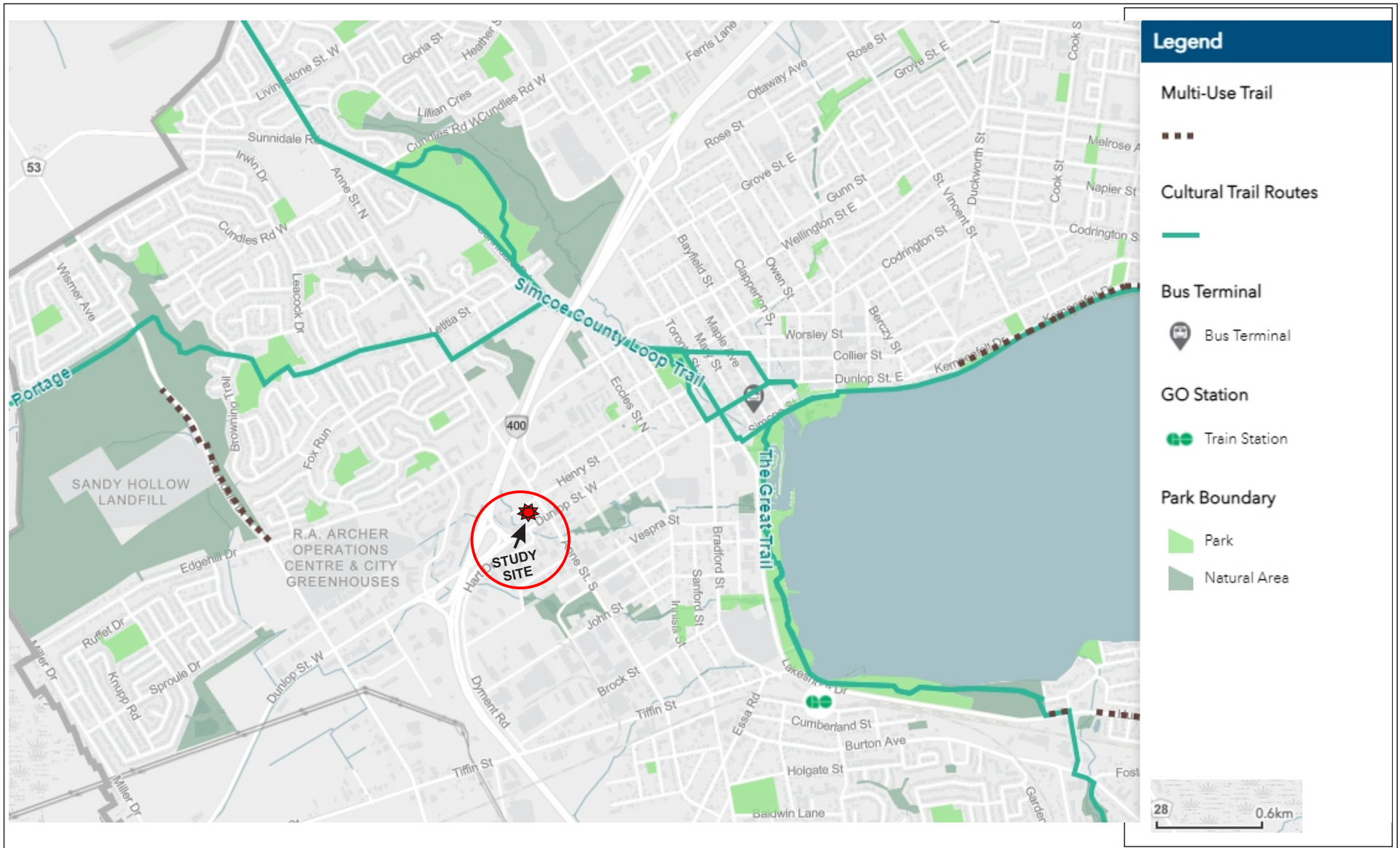


EXHIBIT 2.1D: ACTIVE TRANSPORTATION - MAP OF CYCLING ROUTES

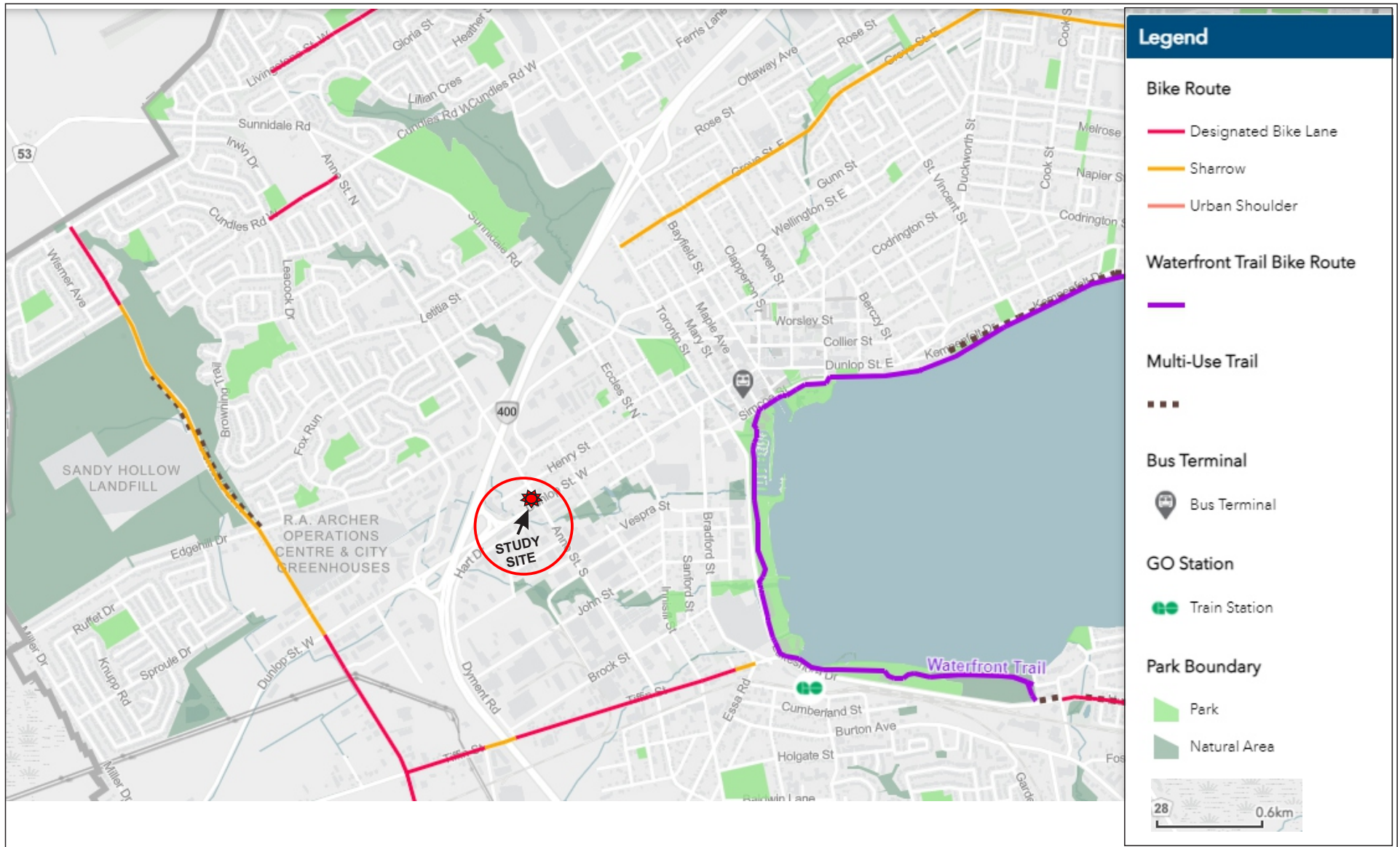
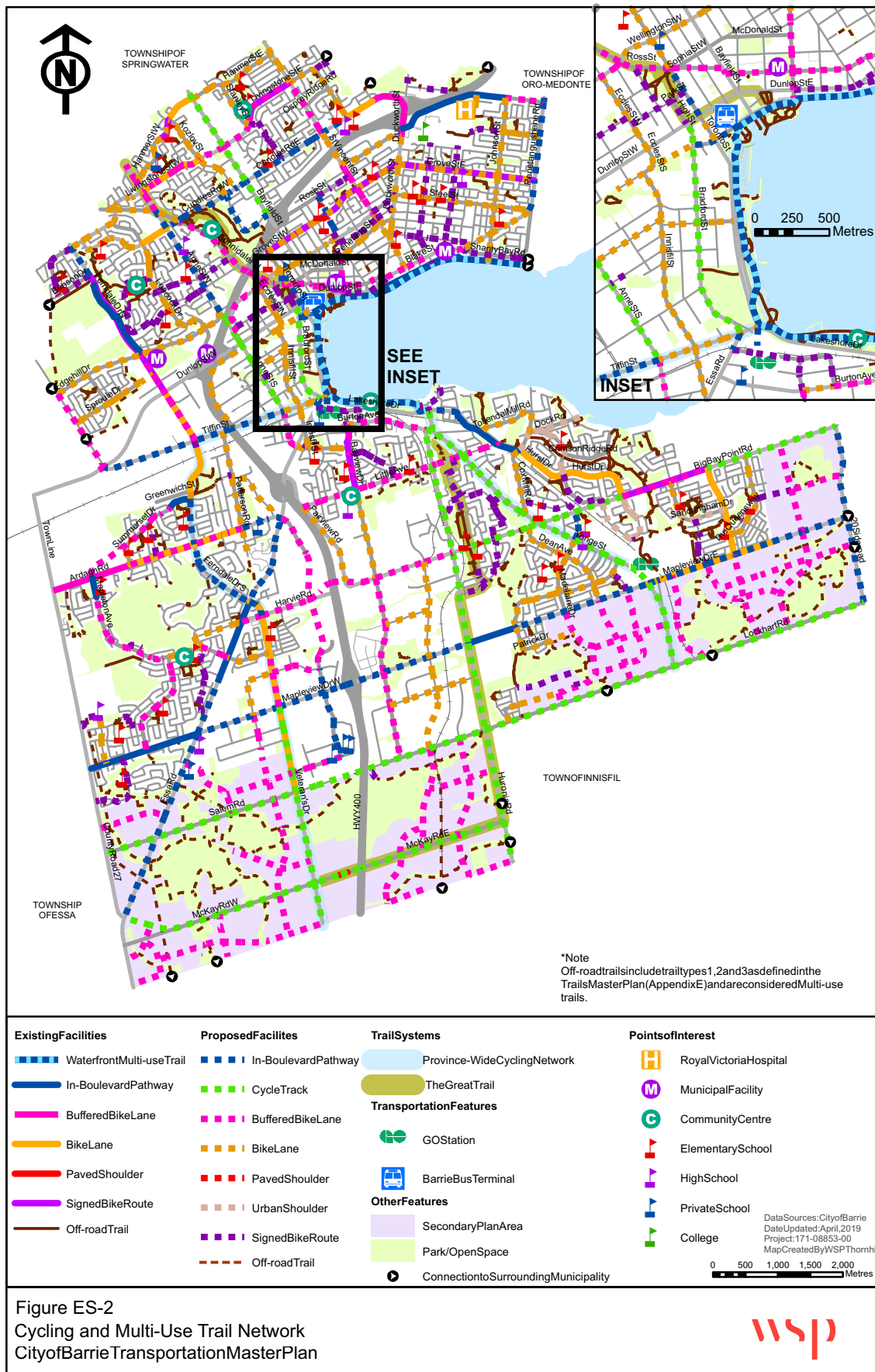


EXHIBIT 2.1E: FUTURE ACTIVE TRANSPORTATION FACILITIES



data at the study intersections where data was not available. The following **Table 2.1** provides a summary of baseline traffic data used for study analysis and provided in the Technical Appendix (see **Appendix A2**):

Table 2.1: Summary of Traffic Data Information

Turning Movement Count (TMC)	Date of the Count	Source
Anne Street and Dunlop Street	2019-April-11 (Thu)	City of Barrie
Anne Street and Donald Street	2020-Nov-19, 20 (Thu, Fri)	Tranplan
Anne Street and Henry Street	2020-Nov-19, 20 (Thu, Fri)	Tranplan
Highway 400 On/Off Ramps (West)	2019-April-11 (Thu) 2016-Aug-03 (Wed)	City of Barrie MTO
Highway 400 Ramp On/Off Ramps (East)	2017-July-20 (Thu)	MTO

The traffic data was not only gathered from different sources, it was collected during different years, and the most recent counts by Tranplan were collected under the COVID-19 pandemic conditions. The study intersections had their peak hours at different times.

For study purposes, the intersection volumes were balanced between the intersections using the Dunlop Street/Anne Street intersection, that has the highest volumes, as the key for adjusting the others. **Exhibit 2.2A** shows the adjusted 2020 peak hour traffic volumes, to represent the existing conditions in the study analysis.

2.6 Level of Service (LOS)

The existing peak hour traffic volumes were assessed against the capacity of the study area intersections in terms of Level of Service¹ and volume/capacity (v/c) ratios using the Highway Capacity Manual reports produced by *Trafficware Traffic Signal Timing Software -Synchro Version 9.0*. The results are summarized in **Table 2.2: Summary of Intersection Analysis**. Detailed reports from the

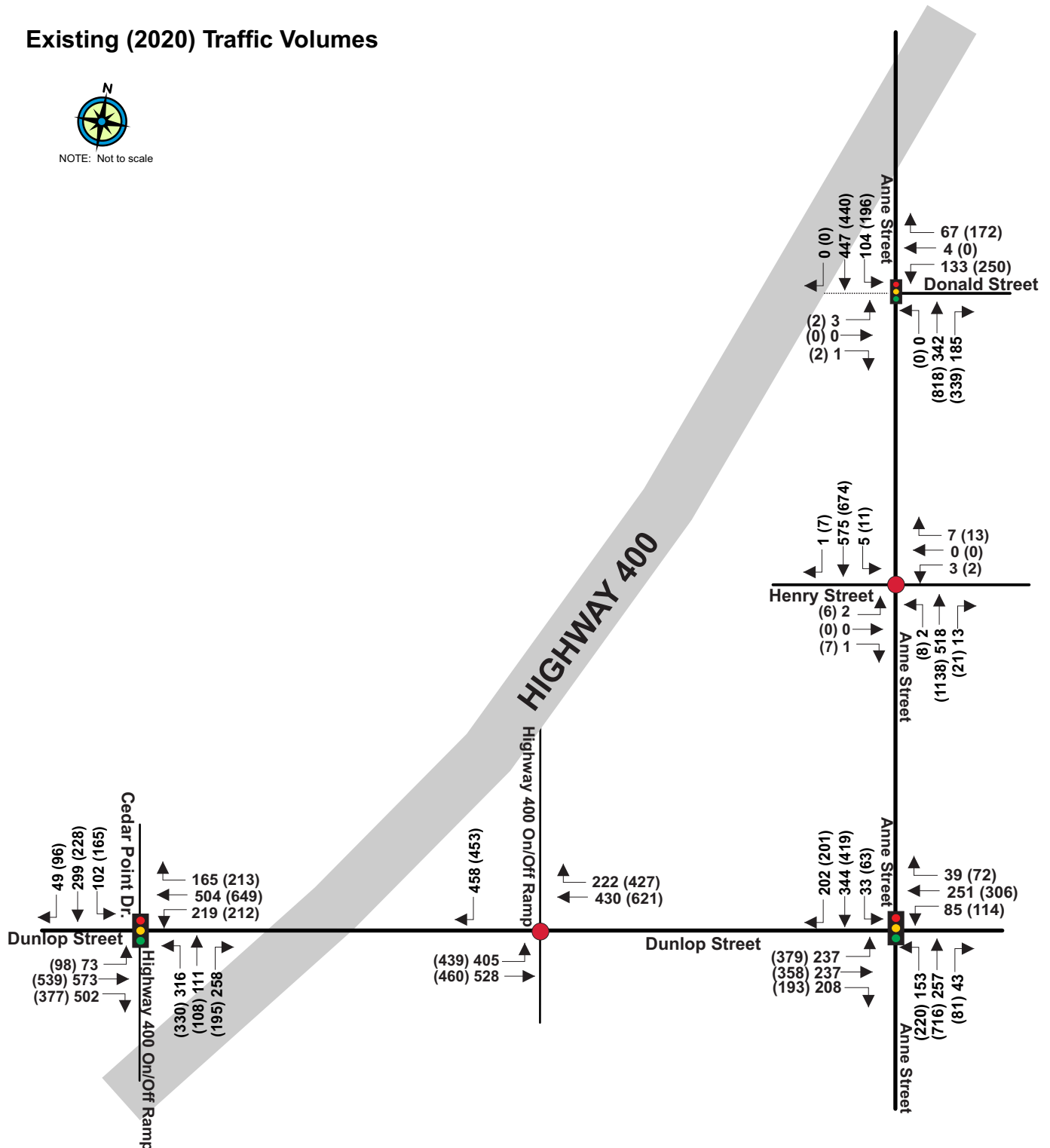
¹ Level of Service (LOS) is commonly used in traffic engineering to describe the level of congestion along a roadway or at an intersection. Levels from "A" to "F" denote increasing amounts of congestion with "F" representing a complete breakdown in traffic flow. Level of Service "C" and "D" are commonly used as design standards. However, many individual turning movements at TWSC intersections and commercial entrances along urban arterial corridor operate at LOS "F" during peak periods. Synchro 9 software capable of producing Highway Capacity Manual results for unsignalized intersections was used to calculate the Levels of Service.

EXHIBIT 2.2A: BACKGROUND TRAFFIC VOLUMES

Existing (2020) Traffic Volumes



NOTE: Not to scale



LEGEND



Unsignalized Intersection



Signalized Intersection

128 (336) : AM (PM)



analysis are contained in **Appendix B** *Intersection Capacity Analysis*.

The Dunlop Street/Anne Street signalized intersection currently operates at an overall intersection average delay of approximately 23 seconds (LOS "C") and 34 seconds (LOS "C") per vehicle during the AM peak hour and PM peak hour respectively. The highest volume to capacity ratio is associated with the eastbound left turn lane at 0.99 during the PM peak hour. The same movement also produces the longest 95th percentile queue length of more than 139m (approximately 19 vehicles).

The Anne Street/Donald Street signalized intersection currently operates at an overall intersection average delay of approximately 10 seconds (LOS "A") and 16 seconds (LOS "B") per vehicle under the AM peak hour and PM peak hour conditions, respectively. The highest volume to capacity ratio is associated with the westbound left turn lane at 0.77 during the PM peak hour. The northbound shared left turn and through lanes produce the longest 95th percentile queue length of approximately 79 m (approximately 10 vehicles) during PM peak hour.

The Dunlop Street/Highway 400 Ramps (West)/Cedar Pointe Drive signalized intersection, under MTO jurisdiction, currently operates at an overall intersection average delay of approximately 51 seconds (LOS "D") and 48 seconds (LOS "D") per vehicle during the AM peak hour and PM peak hour respectively. Under the current signal timing plan and lane configurations, the highest volume to capacity ratio is associated with the northbound left turn lane (off-ramp from Highway 400 southbound) at 1.34 and 1.35 during the AM peak hour and PM peak hour respectively. Similarly, the eastbound through lane also operates near capacity during the AM peak hour with v/c ratio at 0.92 and the 95th percentile queue length of more than 195 m (approximately 26 vehicles).

Table 2.2: Summary of Intersection Capacity Analysis: Existing Conditions

Intersection	Existing Conditions							
	AM Peak				PM Peak			
Dunlop Street & Anne Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	C	29.0	58.7	0.60	E	72.6	#138.5	0.99
EB - TR	B	16.8	39.7	0.40	C	27.4	67.8	0.52
WB - L	C	20.6	22.8	0.26	C	23.6	29.3	0.41
WB - TR	C	28.2	39.2	0.29	C	28.7	50.3	0.37
NB - L	C	22.1	36.1	0.49	C	31.3	#52.3	0.71
NB - TR	C	22.0	37.7	0.23	C	31.0	110.0	0.63
SB - L	B	16.4	10.2	0.08	B	18.9	16.5	0.26
SB - TR	C	24.7	64.1	0.49	C	29.1	79.2	0.56
Intersection Average	C	23.1			C	34.3		
Anne Street & Donald Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	A	0.2	0.0	0.02	A	0.0	0.0	0.01
WB - L	C	35.0	35.3	0.57	D	14.4	64.5	0.77
WB - TR	A	9.1	10.4	0.24	A	3.2	8.1	0.34
NB - LT	B	10.8	26.0	0.21	B	18.0	79.0	0.56
NB - R	A	2.7	10.7	0.22	B	10.8	47.1	0.47
SB - L	A	5.4	12.0	0.18	B	14.5	27.6	0.58
SB - TR	A	5.9	23.3	0.22	A	8.5	29.6	0.23
Intersection Average	A	9.9			B	16.2		
Dunlop Street & Highway 400 SB (West) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	B	12.8	14.9	0.21	B	15.5	18.9	0.37
EB - T	D	52.0	#194.5	0.92	D	43.0	#171.9	0.85
EB - R	B	12.0	64.7	0.67	A	4.7	19.2	0.51
WB - L	E	58.7	#78.4	0.91	C	33.3	#58.3	0.77
WB - TR	C	22.0	75.7	0.50	C	27.6	107.0	0.69
NB - L	F	201.8	#139.2	1.34	F	206.8	#142.3	1.35
NB - T	D	35.9	38.6	0.28	D	36.0	37.8	0.28
NB - R	A	7.6	21.8	0.49	A	8.1	19.6	0.44
SB - L	C	23.4	28.3	0.25	C	25.0	43.1	0.37
SB - TR	E	75.3	#138.3	0.95	E	61.3	#124.0	0.88
Intersection Average	D	51.3			D	48.3		
Dunlop Street & Highway 400 NB (East) Ramp (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	B	10.9	17.0	0.42	B	13.6	26.0	0.54
EB - T	-	0.0	0.0	0.34	-	0.0	0.0	0.29
WB - L	-	0.0	0.0	0.27	-	0.0	0.0	0.40
WB - T	-	0.0	0.0	0.14	-	0.0	0.0	0.27
SB - R	E	35.4	72.3	0.84	F	98.0	130.2	1.09
Anne Street & Henry Street (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	B	14.1	0.2	0.01	C	15.7	1.1	0.04
WB - LTR	B	11.2	0.5	0.02	C	16.7	1.2	0.05
NB - LT	A	0.1	0.0	0.00	A	0.3	0.2	0.01
NB - TR	-	0.0	0.0	0.17	-	0.0	0.0	0.38
SB - LT	A	0.2	0.1	0.00	A	0.6	0.5	0.02
SB - TR	-	0.0	0.0	0.18	-	0.0	0.0	0.22

NOTE: Delay in seconds (as per Synchro Signalized intersection report; 95th percentile queue in metres for signalized intersection (Queue shown is maximum after two cycles) and # indicates 95th percentile volume exceeds capacity, queue may be longer; 95th percentile queue in metres for signalized intersection and in vehicles for unsignalized intersections as provided in Synchro detail and HCM 2010 outputs, see Appendix B

The Dunlop Street/Highway 400 Ramps (East) currently operates as an unsignalized intersection with yield signs facing all (channelized) movements except the eastbound left turn movement onto Highway 400 northbound. The poorest level of service is associated with the southbound right turn lane, a merge lane from the Highway 400 off ramp onto the Dunlop Street westbound lane. It is currently operating at LOS "F" with v/c ratio at 1.09 and the 95th percentile queue length of approximately 130 m (approximately 17 vehicles) during the PM peak hour. All other movements at the intersection are currently operating well at acceptable Levels of Service.

The Anne Street/Henry Street currently operates as a Two-Way-Stop-Control (TWSC) with stop signs facing Henry Street. Left turns from Henry Street are the critical movement. The Anne Street/Henry Street intersection outbound left turns from both sides of Henry Street are currently operating at acceptable Levels of Service during both peak hour periods.

3. TRAFFIC FORECASTS

3.1 Future Background Traffic

Background traffic is defined as all traffic within the study area that is not related to the proposed development. Most relevant to the study site is the recommended and recently approved Environmental Assessment (EA) Study “Dunlop Street West from Ferndale Drive to Anne Street North” prepared by McIntosh Perry Consulting Engineers Ltd. for City of Barrie, the future road network. The study has been informed that the City Council has approved the Concept 3 Design, see **Appendix A2** and **Exhibit 2.2B**. Furthermore, the EA Study also provided future 2031 volumes for existing conditions and future network scenarios tested generated from City wide EMME 2 model runs. The study assumed (as indicated in the EA Study Report) that all approved developments and planned improvements (City wide) have been incorporated in the model. For planning purposes, and considering the “worst case” scenario, the study developed 2025 and 2031 background traffic using the following methodology and provided in **Exhibits 2C** and **2D**:

- Used Existing Lane Configuration Traffic Volumes – 2031, Dunlop Street/Anne Street intersection peak hour (TMC) volumes (from the EA Study) as control total for all study intersections. See **Appendix A2**.
- The study 2031 background traffic volumes used EA Study 2031 Existing Lane Configuration Traffic Volumes. The study intersections not accounted for in the EA Study were produced by applying the calculated growth rate per year for all approaches at the control intersection and balancing the volumes to the approach/exit volumes at the study intersections.
- Growth per year between 2020 (Existing Conditions) and 2031 was calculated for each movement of the control intersection. The growth rate per year was applied to 2020 balanced study road network to produce 2025 background traffic volumes for study analysis.

EXHIBIT 2.2B: FUTURE ROAD NETWORK CONFIGURATIONS

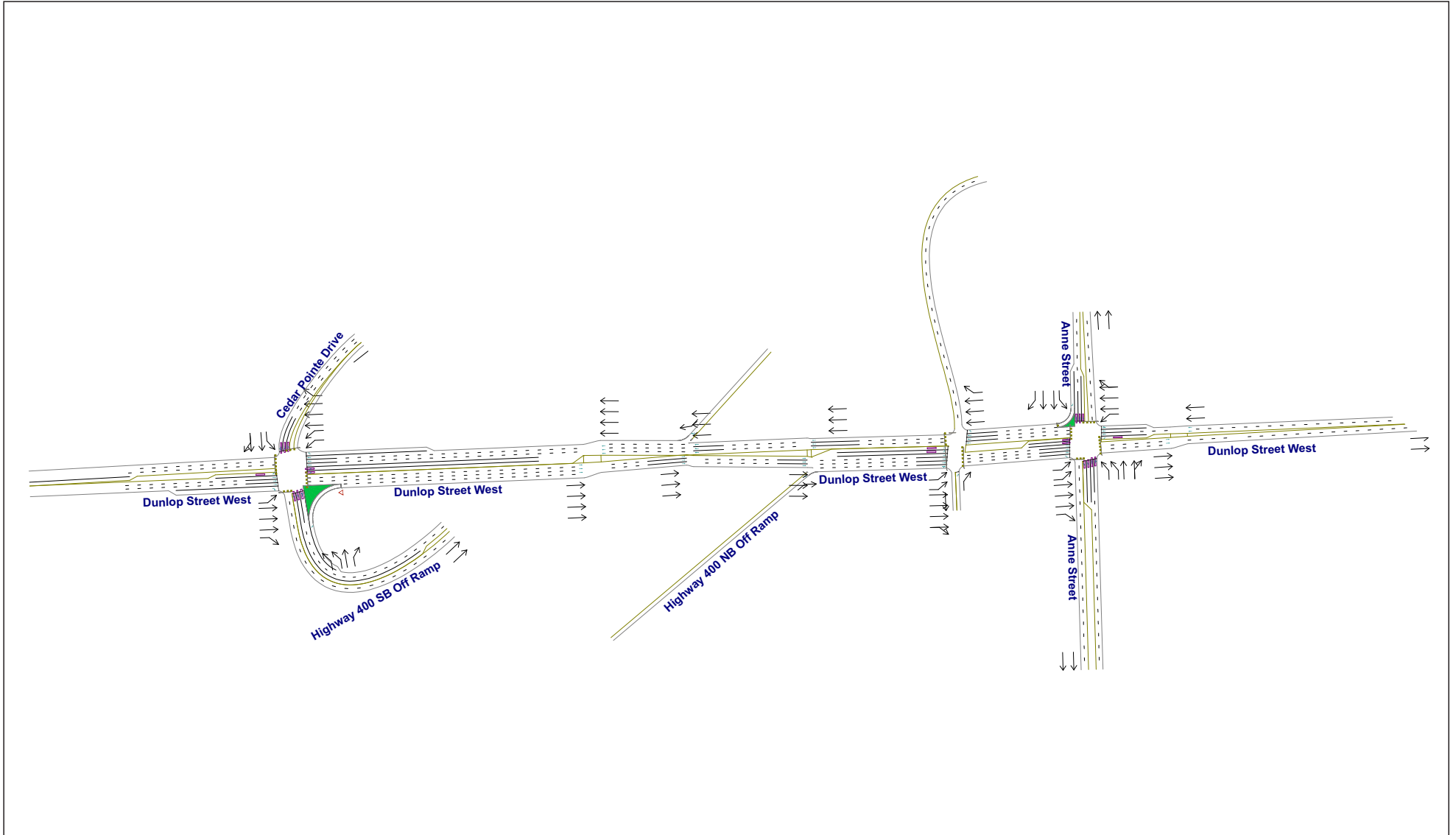


EXHIBIT 2.2C: BACKGROUND TRAFFIC VOLUMES

Future (2025) Background Traffic Volumes



NOTE: Not to scale

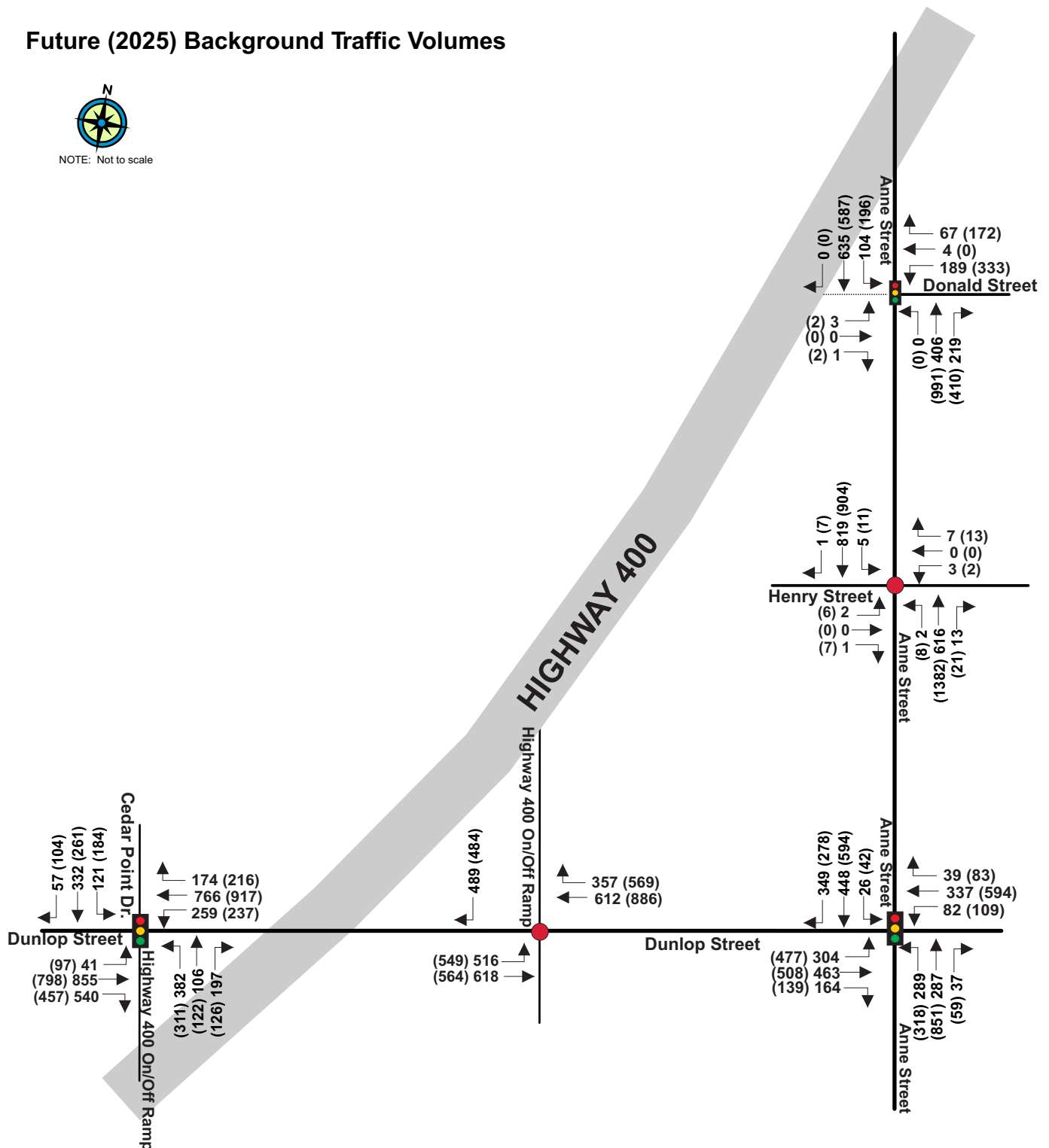
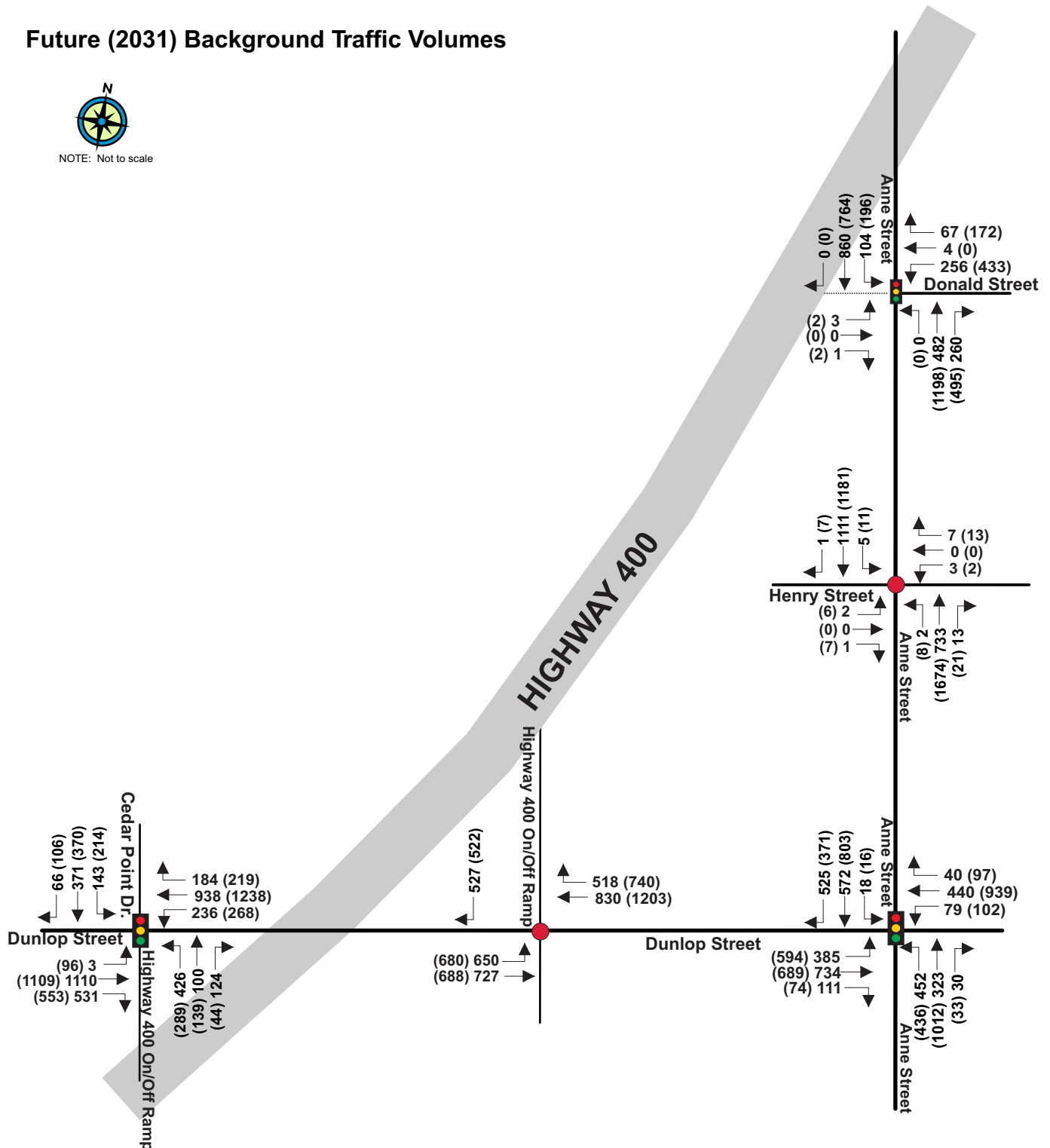


EXHIBIT 2.2D: BACKGROUND TRAFFIC VOLUMES

Future (2031) Background Traffic Volumes



NOTE: Not to scale



LEGEND



Unsignalized Intersection



Signalized Intersection

128 (336) : AM (PM)



- At the Anne Street/Donald Street intersection, the southbound left turn and westbound right turn movements volumes were not adjusted since both turning volumes do not contribute to the control intersection.

3.2 Traffic Generation by the Proposed Development

The proposed development consists of the following:

- Market Rental Apartments – 124 units
- Commercial Floor Space – 1,052.6 sq. m. (11,330.19 sq. ft.)

Forecasts of future site trip generation were developed using the trip generation relationships taken from the current Institute of Transportation Engineers (ITE) *Trip Generation Manual*². The forecast peak hour vehicular trip generation by the proposed 124 residential apartments and commercial floor spaces on the first two levels of the building is provided in **Table 3.1** below:

Table 3.1: Proposed Site Trip Generation

LAND USE	WEEKDAY AM PEAK HOUR				WEEKDAY PM PEAK HOUR			
	Trip Generation Rate (ITE Trip Generation Manual - 10 th Edition)	Vehicle Trips			Trip Generation Rate (ITE Trip Generation Manual - 10 th Edition)	Vehicle Trips		
		Total	In	Out		Total	In	Out
(ITE Land Use #222 Multifamily Housing (High-Rise) General Urban/Suburban 124 Units)	<u>Trips/Dwelling Units</u> (LU 222) Equation: $T=0.28(X)+12.86$ $T=\text{trips}$ $X=\text{number of units}$	48	24% 11	76% 36	<u>Trips/Dwelling Units</u> (LU 222) Equation: $T=0.34(X)+8.56$ $T=\text{trips}$ $X=\text{number of units}$	51	61% 31	39% 20
(ITE Land Use #710 General Office Building, General Urban/Suburban 11,330 sq. ft.)	<u>Trips/1,000 ft² Gross Floor Area</u> (LU 710) Average Rate $T=1.16 (X)$ $T=\text{trips}$ $X=1,000 \text{ ft GFA}$	13	86% 11	14% 2	<u>Trips/1,000 ft² Gross Floor Area</u> (LU 710) Average Rate $T=1.15 (X)$ $T=\text{trips}$ $X=1,000 \text{ ft GFA}$	13	16% 2	84% 11
Total		61	23	38		64	33	31

Note:

Totals may not add up exactly due to rounding

² The Institute of Transportation Engineers, based in the United States, is an international association for traffic engineers and transportation planners. The organization publishes a number of handbooks and manuals, including the Trip Generation Manual which is based on American and Canadian experience. The tenth edition of this publication was used.

3.3 Site Traffic Distribution

The study determined that the most of the vehicular traffic to/from the study site will be from the following gateway corridors, to/from north and south on Anne Street, to/from west and east on Dunlop Street (including Highway 400 NB and SB trips). The forecast site traffic distribution to these gateway corridors were assigned to the study road network based on existing turning movement patterns at the study intersections. The directional traffic distribution of the site traffic on the road network is provided in **Table 3.2** and illustrated in **Exhibits 3.1A** through **3.1C**.

Table 3.2: Site Traffic Distribution

To/From Corridor	Residential Traffic	Commercial Traffic
North on Anne Street	10%	20%
North on Anne Street then East on Donald Street	10%	10%
South on Anne Street then East on Dunlop Street	30%	30%
South on Anne Street at Dunlop Street	10%	20%
South on Anne Street then West on Dunlop Street	40%	20%
Then west on Dunlop Street to Highway 400 NB On Ramp	15%	5%
Then west on Dunlop Street to Highway 400 SB On Ramp	25%	5%
Then west on Dunlop Street Past Highway 400 SB On Ramp	0%	10%
Total	100%	100%

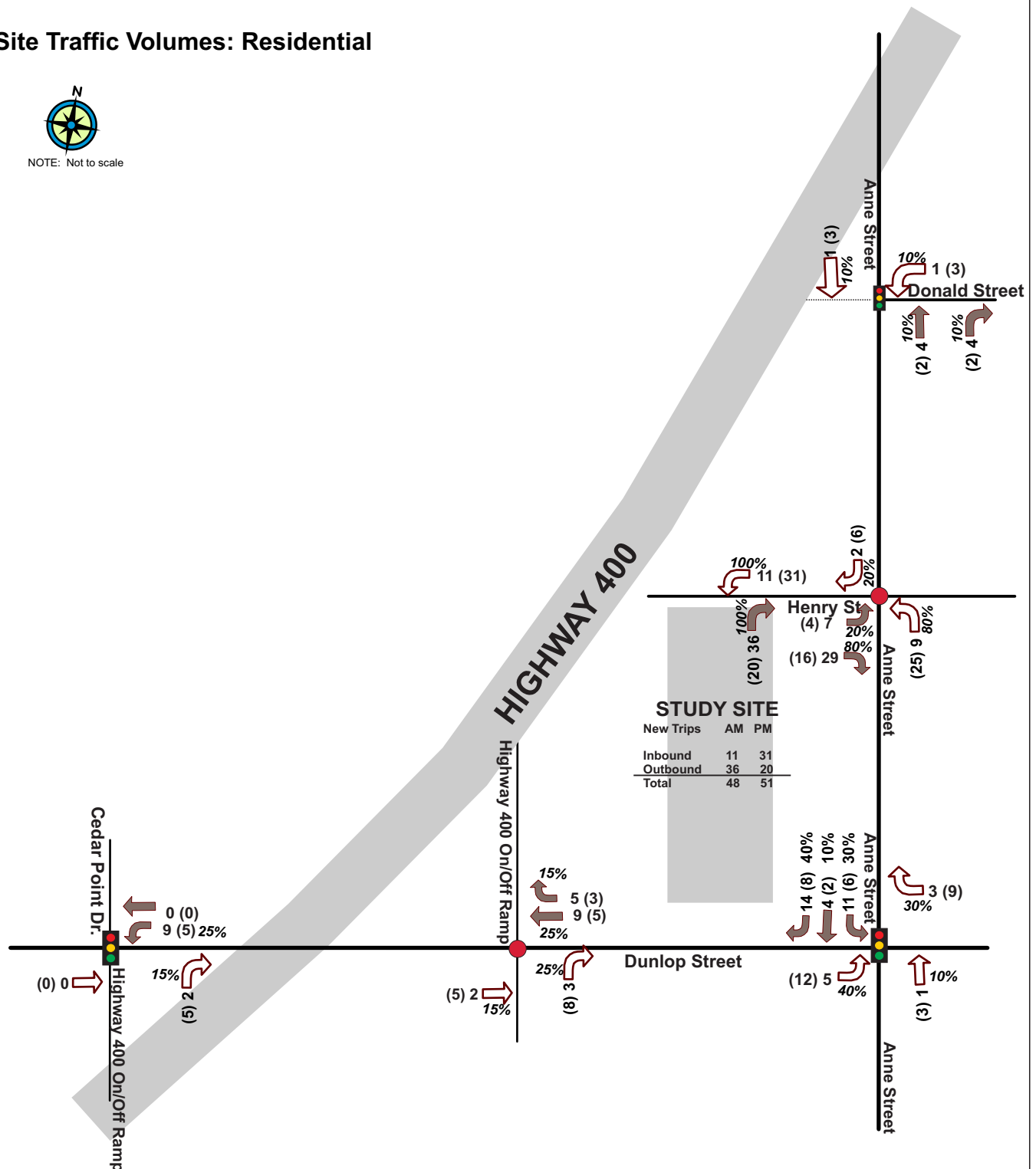
The resulting 2025 and 2031 total traffic volumes are provided in **Exhibit 3.2A** and **Exhibit 3.2B**, respectively.

EXHIBIT 3.1A: SITE TRAFFIC DISTRIBUTION: RESIDENTIAL

Site Traffic Volumes: Residential



NOTE: Not to scale



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- 40% : Distribution %**
- 128 (336) : AM (PM)**
- Inbound
- Outbound



EXHIBIT 3.1B: SITE TRAFFIC DISTRIBUTION: COMMERCIAL

Site Traffic Volumes: Commercial



NOTE: Not to scale

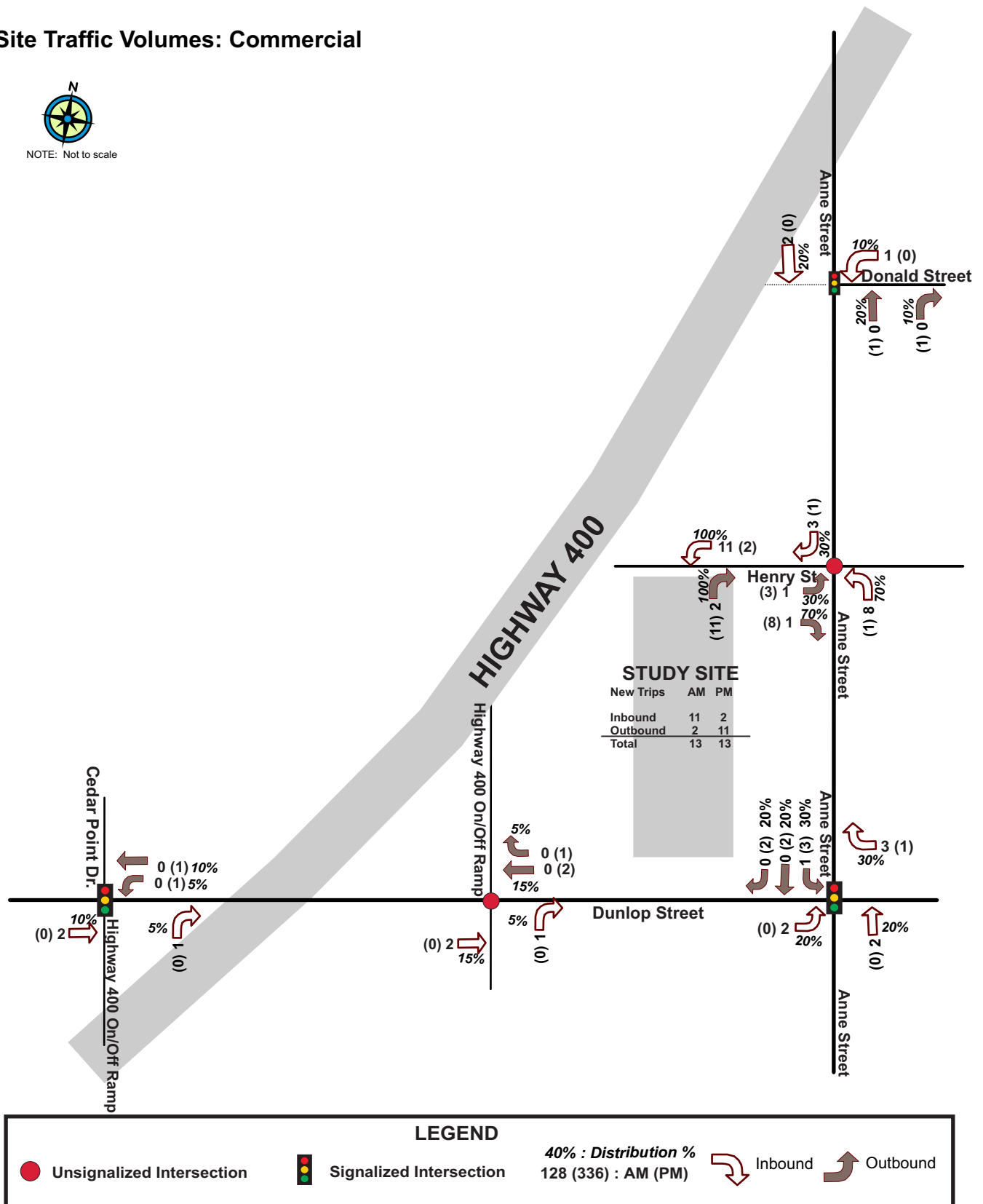
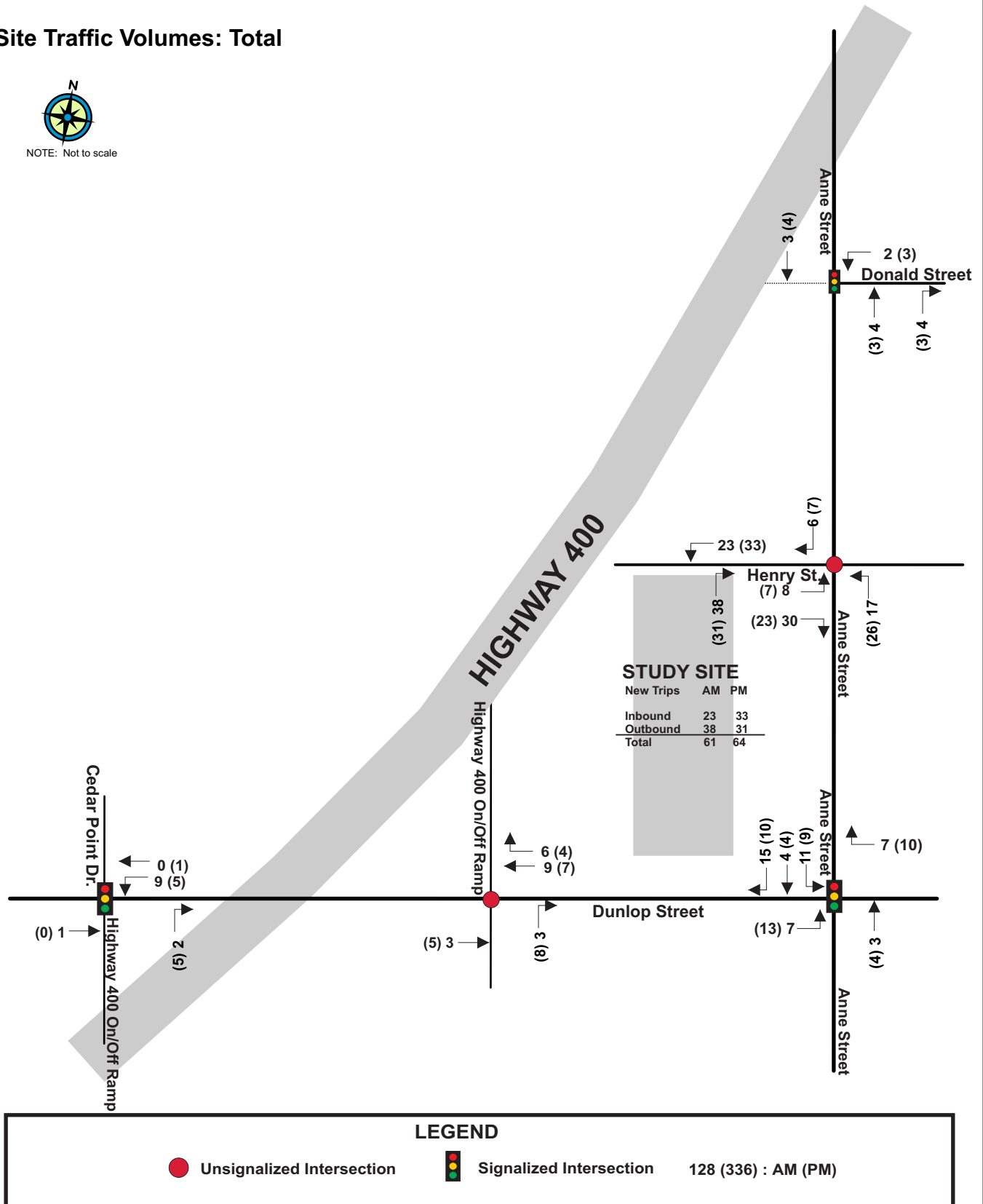


EXHIBIT 3.1C: SITE TRAFFIC DISTRIBUTION: TOTAL

Site Traffic Volumes: Total



NOTE: Not to scale



4.0 TRAFFIC OPERATIONS ASSESSMENT

The forecast future background and total traffic volumes (under existing road network configurations and future road network configurations) were assessed against the capacity of the study intersection in terms of Level of Service, 95th percentile queue length and volume/capacity ratio, using the Highway Capacity Manual reports produced by *Trafficware Traffic Signal Timing Software -Synchro Version 9.0*. The results are summarized in the following sections of this chapter and detailed reports from the analysis are contained in **Appendix B**.

The discussion of intersection capacity analysis focuses mainly on the 2031 planning horizon (afternoon peak hour) because the 2031 planning horizon is the “worst case” scenario and the impacts of the site traffic on the study intersections (in most instances) are greater in the afternoon peak hour than in the morning peak hour.

4.1 Background Traffic: Existing Conditions Intersection Analysis (Table 4.1A and Table 4.1B)

Under the future background conditions, the Dunlop Street/Anne Street signalized intersection is projected to operate at an overall intersection average delay of approximately 45 seconds (LOS “D”) and approximately 100 seconds (LOS “F”) per vehicle under the 2025 AM peak hour and PM peak hour conditions, respectively. It is projected that the overall intersection average delay will be further reduced to approximately 130 seconds (LOS “F”) and approximately 214 seconds (LOS “F”) per vehicle under the 2031 AM peak hour and PM peak hour conditions respectively, based on existing lane configurations with exiting signal timing plan.

The Anne Street/Donald Street signalized intersection is projected to maintain its current LOS, forecast to operate at an overall intersection average delay of approximately 12 seconds (LOS “B”) and 22 seconds (LOS “B”) per vehicle under

**Table 4.1A: Summary of Intersection Capacity Analysis: 2025 Background
(Existing Road Network Configurations)**

2025 Background Conditions								
Intersection	AM Peak				PM Peak			
Dunlop Street & Anne Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	D	50.0	#96.7	0.87	F	457.9	#254.9	1.94
EB - TR	C	31.2	85.3	0.59	C	33.1	89.6	0.62
WB - L	C	22.1	22.0	0.33	C	25.1	28.0	0.45
WB - TR	C	30.2	51.4	0.38	D	35.6	97.6	0.65
NB - L	F	168.6	#126.4	1.26	F	240.4	#149.3	1.44
NB - TR	C	22.5	41.1	0.25	C	33.6	130.8	0.72
SB - L	B	16.2	8.5	0.06	B	18.4	12.2	0.21
SB - TR	C	27.9	97.2	0.69	D	37.1	124.6	0.80
Intersection Average	D	44.8			F	100.4		
Anne Street & Donald Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	A	0.0	0.0	0.01	A	0.0	0.0	0.01
WB - L	D	36.4	48.4	0.66	D	51.1	#101.4	0.88
WB - TR	A	7.9	10.0	0.20	A	4.0	11.0	0.32
NB - LT	B	13.0	35.0	0.26	C	22.9	101.4	0.71
NB - R	A	3.8	15.0	0.28	B	15.1	65.8	0.59
SB - L	A	7.1	14.7	0.20	C	33.1	#50.2	0.78
SB - TR	A	8.1	41.2	0.33	B	10.6	40.2	0.33
Intersection Average	B	11.9			C	22.0		
Dunlop Street & Highway 400 SB (West) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	B	12.7	9.6	0.17	B	19.6	19.9	0.47
EB - T	F	200.4	#338.2	1.36	F	148.2	#304.9	1.24
EB - R	B	16.6	87.9	0.73	B	11.3	57.6	0.64
WB - L	F	140.7	#111.5	1.18	E	78.7	#92.4	0.98
WB - TR	C	24.5	117.7	0.66	D	37.4	#175.3	0.89
NB - L	F	324.8	#175.4	1.63	F	212.8	#136.6	1.36
NB - T	D	36.1	37.1	0.27	D	37.3	42.2	0.33
NB - R	A	7.6	19.3	0.42	A	9.5	17.2	0.34
SB - L	C	24.1	32.8	0.29	C	26.5	48.0	0.43
SB - TR	F	105.8	#161.2	1.07	F	88.9	#146.9	1.01
Intersection Average	F	108.0			E	77.2		
Dunlop Street & Highway 400 NB (East) Ramp (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	C	16.5	39.3	0.65	E	48.7	103.1	0.54
EB - T	-	0.0	0.0	0.40	-	0.0	0.0	0.29
WB - L	-	0.0	0.0	0.39	-	0.0	0.0	0.40
WB - T	-	0.0	0.0	0.23	-	0.0	0.0	0.27
SB - R	F	130.1	160.6	1.18	F	402.2	278.7	1.80
Anne Street & Henry Street (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	C	17.4	0.2	0.01	C	19.4	1.4	0.06
WB - LTR	B	12.1	0.5	0.02	C	21.9	1.8	0.07
NB - LT	A	0.1	0.1	0.00	A	0.3	0.3	0.01
NB - TR	-	0.0	0.0	0.21	-	0.0	0.0	0.46
SB - LT	A	0.2	0.1	0.01	A	0.7	0.6	0.02
SB - TR	-	0.0	0.0	0.26	-	0.0	0.0	0.29

NOTE: Delay in seconds (as per Synchro Signalized intersection report; 95th percentile queue in metres for signalized intersection (Queue shown is maximum after two cycles) and # indicates 95th percentile volume exceeds capacity, queue may be longer; 95th percentile queue in metres for signalized intersection and in vehicles for unsignalized intersections as provided in Synchro detail and HCM 2010 outputs, see Appendix B

**Table 4.1B: Summary of Intersection Capacity Analysis: 2031 Background
(Existing Road Network Configurations)**

	2031 Background Conditions							
Intersection	AM Peak				PM Peak			
Dunlop Street & Anne Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	F	174.2	#174.3	1.28	F	1068.5	#330.1	3.31
EB - TR	D	39.2	127.7	0.79	D	36.4	111.4	0.70
WB - L	C	26.6	21.6	0.46	C	27.7	26.6	0.51
WB - TR	C	32.1	66.4	0.48	E	60.4	#186.0	0.98
NB - L	F	678.6	#247.3	2.43	F	558.6	#232.8	2.16
NB - TR	C	21.6	45.3	0.26	C	32.9	159.7	0.75
SB - L	B	16.1	6.7	0.05	B	17.1	6.2	0.09
SB - TR	D	44.7	#171.7	0.94	F	85.7	#216.7	1.08
Intersection Average	F	129.7			F	214.3		
Anne Street & Donald Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	A	0.0	0.0	0.01	A	0.0	0.0	0.01
WB - L	D	41.7	66.9	0.78	F	90.2	#145.0	1.06
WB - TR	A	7.3	9.9	0.18	A	4.5	12.7	0.31
NB - LT	B	15.2	43.8	0.33	C	32.1	#146.4	0.89
NB - R	A	5.7	22.5	0.34	C	20.9	91.5	0.73
SB - L	A	8.6	15.7	0.23	D	51.9	#58.6	0.88
SB - TR	B	10.8	63.4	0.47	B	12.4	54.6	0.44
Intersection Average	B	14.8			C	33.2		
Dunlop Street & Highway 400 SB (West) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	B	11.0	1.7	0.01	B	19.5	19.7	0.46
EB - T	F	376.2	#465.8	1.77	F	353.9	#460.5	1.72
EB - R	B	19.8	98.4	0.75	C	22.6	#110.3	0.80
WB - L	F	108.8	#98.1	1.08	F	116.7	#110.0	1.11
WB - TR	C	23.3	150.3	0.72	F	100.9	#261.0	1.14
NB - L	F	405.7	#198.8	1.82	F	175.1	#124.2	1.27
NB - T	D	36.1	35.4	0.26	D	38.2	47.1	0.37
NB - R	A	8.0	15.6	0.31	A	0.7	0.0	0.12
SB - L	C	24.7	37.9	0.33	C	28.7	55.8	0.52
SB - TR	F	150.6	#187.2	1.21	F	193.0	#207.3	1.32
Intersection Average	F	171.7			F	159.1		
Dunlop Street & Highway 400 NB (East) Ramp (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	F	70.2	144.9	1.04	F	557.3	437.7	2.16
EB - T	-	0.0	0.0	0.46	-	0.0	0.0	0.44
WB - L	-	0.0	0.0	0.53	-	0.0	0.0	0.77
WB - T	-	0.0	0.0	0.33	-	0.0	0.0	0.47
SB - R	F	401.0	300.7	1.80	F	-*	-*	4.22
Anne Street & Henry Street (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	C	24.3	0.4	0.02	D	27.2	2.2	0.08
WB - LTR	B	13.6	0.6	0.03	E	35.2	3.1	0.12
NB - LT	A	0.1	0.1	0.00	A	0.5	0.4	0.02
NB - TR	-	0.0	0.0	0.24	-	0.0	0.0	0.55
SB - LT	A	0.2	0.1	0.01	A	1.1	0.8	0.03
SB - TR	-	0.0	0.0	0.36	-	0.0	0.0	0.38

NOTE: Delay in seconds (as per Synchro Signalized intersection report; 95th percentile queue in metres for signalized intersection (Queue shown is maximum after two cycles) and # indicates 95th percentile volume exceeds capacity, queue may be longer; 95th percentile queue in metres for signalized intersection and in vehicles for unsignalized intersections as provided in Synchro detail and HCM 2010 outputs, see Appendix B

the 2025 AM peak hour and PM peak hour conditions, respectively. By 2031 planning horizon, it is projected to continue to maintain its good intersection average LOS, operating at an overall intersection average delay of approximately 15 seconds (LOS "B") and 33 seconds (LOS "C") per vehicle under AM peak hour and PM peak hour conditions, respectively.

The Dunlop Street/Highway 400 Ramps (West)/Cedar Pointe Drive signalized intersection, is projected to operate at an overall intersection average delay of approximately 108 seconds (LOS "F") and approximately 77 seconds (LOS "E") per vehicle under the 2025 AM peak hour and PM peak hour conditions, respectively. Under the current signal timing plan and lane configurations, the intersection's overall LOS will be further reduced to approximately 172 seconds (LOS "F") and approximately 159 seconds (LOS "F") per vehicle under the 2031 AM peak hour and PM peak hour conditions respectively.

The Dunlop Street/Highway 400 Ramps (East) operating as an unsignalized intersection with yield signs facing all (channelized) movements except the eastbound left turn movement onto Highway 400 northbound. The worst operation/movement is associated with the southbound right turn lane, a merging lane from Highway 400 off ramp with Dunlop Street westbound lane. It's LOS is projected to continue to deteriorate operating at LOS "F" with v/c ratio at 1.80 with long delays and associated queue length in 2025 PM peak hour to beyond measurable LOS with forecast v/c ratio at 4.22 in 2031 planning horizon.

The Anne Street/Henry Street (TWSC) with stop signs facing Henry Street is projected to operate at acceptable LOS during study peak hours under 2025 and 2031 planning horizons.

4.2 Background Traffic: Future Conditions Intersection Analysis

(Table 4.1C)

Under the future background conditions with approved and Design Concept 3 configurations, the Dunlop Street/Anne Street signalized intersection is forecast to operate at an overall intersection average delay of approximately 41 seconds

**Table 4.1C: Summary of Intersection Capacity Analysis: 2031 Background
(Future Concept 3 Road Network Configurations)**

2031 Background Conditions Concept 3 Road Network								
Intersection	AM Peak				PM Peak			
Dunlop Street & Anne Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	E	76.2	67.6	0.78	F	105.2	#131.6	1.09
EB - T	B	19.0	41.6	0.49	C	24.8	72.0	0.43
EB - R	A	1.2	1.0	0.22	A	0.9	0.2	0.14
WB - L	C	31.2	25.7	0.38	C	26.4	28.9	0.40
WB - TR	D	49.0	60.5	0.48	F	108.8	#137.3	0.94
NB - L	E	72.1	#99.8	0.87	F	123.5	#110.1	1.10
NB - TR	C	24.2	50.9	0.24	D	36.9	179.6	0.77
SB - L	B	19.7	7.5	0.06	C	20.5	6.8	0.11
SB - T	D	45.5	106.6	0.59	D	52.7	143.9	0.85
SB - R	C	29.9	155.1	0.74	B	17.9	51.5	0.51
Intersection Average	D	41.1			E	65.2		
Anne Street & Donald Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	A	0.0	0.0	0.01	A	0.0	0.0	0.01
WB - L	D	41.7	66.9	0.78	E	73.2	#182.2	0.97
WB - TR	A	7.3	9.9	0.18	A	2.8	8.9	0.29
NB - LT	B	15.2	43.8	0.33	D	45.4	#206.8	0.92
NB - R	A	5.7	22.5	0.34	C	32.4	140.3	0.77
SB - L	A	8.6	15.7	0.23	E	74.7	#87.1	0.93
SB - TR	B	10.8	63.4	0.47	B	17.2	78.4	0.44
Intersection Average	B	14.8			D	40.1		
Dunlop Street & Highway 400 SB (West) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	E	64.3	4.3	0.03	E	78.4	49.4	0.64
EB - T	D	47.8	136.6	0.78	D	47.5	142.2	0.77
EB - R	C	22.9	136.3	0.66	C	27.0	159.3	0.72
WB - L	F	102.2	#57.5	0.78	E	68.0	56.6	0.71
WB - T	B	10.5	33.1	0.48	D	44.4	151.9	0.78
WB - R	A	0.7	0.0	0.25	A	5.1	18.9	0.33
NB - L	E	66.9	85.8	0.81	E	66.3	60.5	0.70
NB - T	D	37.2	40.5	0.18	D	45.2	57.9	0.31
NB - R	A	6.9	16.2	0.23	A	0.4	0.0	0.10
SB - L	E	78.5	67.5	0.73	F	87.4	#108.9	0.87
SB - TR	D	45.7	81.1	0.51	D	44.5	87.4	0.54
Intersection Average	D	38.7			D	46.2		
Dunlop Street & Highway 400 NB (East) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	D	36.0	60.7	0.86	E	66.7	#135.8	0.93
EB - T	A	3.8	10.9	0.33	B	12.1	50.6	0.34
WB - T	D	46.0	95.5	0.64	F	80.1	m103.5	0.80
WB - R	A	9.2	m48.6	0.68	D	36.5	m124.8	0.90
NB - R	B	14.6	31.5	0.25	C	22.7	43.0	0.33
Intersection Average	C	22.5			D	47.0		
Anne Street & Henry Street (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	C	16.5	0.2	0.01	C	17.0	1.2	0.05
WB - LTR	B	11.5	0.5	0.02	B	14.1	1.0	0.04
NB - LT	A	1.0	0.1	0.00	A	0.5	0.4	0.02
NB - TR	-	0.0	0.0	0.24	-	0.0	0.0	0.55
SB - LT	A	0.2	0.1	0.01	A	1.1	0.8	0.03
SB - TR	-	0.0	0.0	0.36	-	0.0	0.0	0.38

NOTE: Delay in seconds (as per Synchro Signalized intersection report; 95th percentile queue in metres for signalized intersection (Queue shown is maximum after two cycles) and # indicates 95th percentile volume exceeds capacity, queue may be longer; 95th percentile queue in metres for signalized intersection and in vehicles for unsignalized intersections as provided in Synchro detail and HCM 2010 outputs, see Appendix B

(LOS "D") and approximately 65 seconds (LOS "E") per vehicle under the 2031 AM peak hour and PM peak hour conditions, respectively.

The Anne Street/Donald Street signalized intersection is projected to maintain its current lane configurations. By 2031 planning horizon, it is projected to continue to maintain its good intersection average LOS, operating at an overall intersection average delay of approximately 15 seconds (LOS "B") and 40 seconds (LOS "D") per vehicle under improved conditions along Dunlop Street corridor during AM peak hour and PM peak hour conditions, respectively.

The Dunlop Street/Highway 400 Ramps (West)/Cedar Pointe Drive signalized intersection, is forecast to be re-located and add capacity at the intersection. With improvements, it is projected to operate at an overall intersection average delay of approximately 39 seconds (LOS "D") and approximately 46 seconds (LOS "D") per vehicle under the 3031 AM peak hour and PM peak hour conditions, respectively.

The Dunlop Street/Highway 400 Ramps (East) operating as an unsignalized intersection will be re-located and signalized. With improvements, it is projected to operate at an overall intersection average delay of approximately 23 seconds (LOS "C") and approximately 47 seconds (LOS "D") per vehicle under the 3031 AM peak hour and PM peak hour conditions, respectively.

The Anne Street/Henry Street (TWSC) with stop signs facing Henry Street is projected to operate with additional centre lane on Anne Street. With improvements, it is projected to continue to maintain acceptable LOS during study peak hours under improved conditions on Anne Street and on Dunlop Street corridor.

4.3 Total Traffic: Existing Conditions Intersection Analysis (Table 4.2A and Table 4.2B)

Future total peak hour traffic volumes were computed by adding the future site-generated traffic from the proposed development to the future background

**Table 4.2A: Summary of Intersection Capacity Analysis: 2025 Total
(Existing Road Network Configurations)**

Intersection	2025 Total Conditions							
	AM Peak				PM Peak			
Dunlop Street & Anne Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	D	54.6	#102.9	0.90	F	495.9	#263.7	2.03
EB - TR	C	31.2	85.3	0.59	C	33.1	89.6	0.62
WB - L	C	22.1	22.0	0.33	C	25.1	28.0	0.45
WB - TR	C	30.1	52.2	0.38	D	35.8	99.3	0.66
NB - L	F	181.3	#129.3	1.29	F	251.3	#151.4	1.46
NB - TR	C	22.6	41.5	0.25	C	33.6	131.2	0.72
SB - L	B	16.6	11.2	0.09	B	19.1	14.1	0.25
SB - TR	C	28.3	100.1	0.71	D	37.6	126.9	0.81
Intersection Average	D	46.4			F	106.5		
Anne Street & Donald Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	A	0.0	0.0	0.01	A	0.0	0.0	0.01
WB - L	D	36.5	49.0	0.66	D	51.5	#102.8	0.88
WB - TR	A	7.9	10.0	0.20	A	4.0	11.0	0.32
NB - LT	B	13.1	35.6	0.27	C	23.0	101.7	0.71
NB - R	A	3.9	15.6	0.28	B	15.2	66.2	0.59
SB - L	A	7.2	14.8	0.20	C	33.9	#50.7	0.78
SB - TR	A	8.2	41.8	0.33	B	10.6	40.5	0.33
Intersection Average	B	12.1			C	22.2		
Dunlop Street & Highway 400 SB (West) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	B	12.7	9.6	0.17	B	19.6	19.9	0.47
EB - T	F	201.1	#338.6	1.36	F	148.2	#304.9	1.24
EB - R	B	16.7	88.4	0.73	B	11.3	57.6	0.64
WB - L	F	156.1	#116.0	1.18	F	84.7	#92.4	0.98
WB - TR	C	24.5	117.7	0.66	D	37.5	#175.3	0.89
NB - L	F	324.8	#175.4	1.63	F	212.8	#136.6	1.36
NB - T	D	36.1	37.1	0.27	D	37.3	42.2	0.33
NB - R	A	7.6	19.2	0.42	A	9.5	17.2	0.34
SB - L	C	24.1	32.8	0.29	C	26.5	48.0	0.43
SB - TR	F	105.8	#161.2	1.07	F	88.9	#146.9	1.01
Intersection Average	F	109.3			E	77.5		
Dunlop Street & Highway 400 NB (East) Ramp (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	C	16.8	40.2	0.66	E	45.0	98.2	0.93
EB - T	-	0.0	0.0	0.40	-	0.0	0.0	0.36
WB - L	-	0.0	0.0	0.40	-	0.0	0.0	0.57
WB - T	-	0.0	0.0	0.23	-	0.0	0.0	0.56
SB - R	F	136.9	164.9	1.20	F	405.2	279.6	1.80
Anne Street & Henry Street (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	B	13.8	2.6	0.10	C	18.6	4.2	0.15
WB - LTR	B	12.8	0.6	0.02	D	26.1	2.2	0.09
NB - LT	A	0.8	0.6	0.03	A	1.3	1.2	0.05
NB - TR	-	0.0	0.0	0.21	-	0.0	0.0	0.46
SB - LT	A	0.2	0.1	0.01	A	0.7	0.6	0.02
SB - TR	-	0.0	0.0	0.27	-	0.0	0.0	0.30
Henry Street & Site Driveway (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - TR	-	0.0	0.0	0.00	-	0.0	0.0	0.00
WB - LT	A	7.3	0.4	0.02	A	7.3	0.5	0.02
NB - LR	A	8.4	0.9	0.04	A	8.4	0.8	0.03

NOTE: Delay in seconds (as per Synchro Signalized intersection report; 95th percentile queue in metres for signalized intersection (Queue shown is maximum after two cycles) and # indicates 95th percentile volume exceeds capacity, queue may be longer; 95th percentile queue in metres for signalized intersection and in vehicles for unsignalized intersections as provided in Synchro detail and HCM 2010 outputs, see Appendix B

**Table 4.2B: Summary of Intersection Capacity Analysis: 2031 Total
(Existing Road Network Configurations)**

Intersection	2031 Total Conditions							
	AM Peak				PM Peak			
Dunlop Street & Anne Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	F	189.0	#182.6	1.31	F	1100.4	#337.1	3.38
EB - TR	D	39.2	127.7	0.79	D	36.4	111.4	0.70
WB - L	C	26.4	21.6	0.45	C	27.5	26.6	0.51
WB - TR	C	32.2	67.4	0.49	E	62.5	#188.6	0.99
NB - L	F	677.5	#246.9	2.43	F	553.3	#232.2	2.15
NB - TR	C	23.1	45.5	0.27	D	35.8	160.6	0.79
SB - L	B	16.3	9.4	0.08	B	18.1	8.5	0.15
SB - TR	D	47.0	#176.7	0.96	F	89.7	#220.4	1.09
Intersection Average	F	131.0			F	220.5		
Anne Street & Donald Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	A	0.0	0.0	0.01	A	0.0	0.0	0.01
WB - L	D	41.9	67.4	0.78	F	92.2	#146.4	1.07
WB - TR	A	7.3	9.9	0.18	A	4.5	12.8	0.31
NB - LT	B	15.2	44.2	0.33	C	32.2	#146.8	0.89
NB - R	A	5.8	23.2	0.34	C	21.1	92.8	0.74
SB - L	A	8.7	15.7	0.23	D	51.9	#58.6	0.88
SB - TR	B	10.9	63.8	0.47	B	12.4	55.1	0.44
Intersection Average	B	14.9			C	33.6		
Dunlop Street & Highway 400 SB (West) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	B	11.0	1.7	0.01	B	19.5	19.7	0.46
EB - T	F	376.8	#466.2	1.77	F	353.9	#460.5	1.72
EB - R	B	19.8	98.4	0.75	C	22.6	#110.3	0.80
WB - L	F	120.9	#103.1	1.12	F	124.4	#113.6	1.14
WB - TR	C	23.3	150.3	0.72	F	101.2	#261.2	1.14
NB - L	F	405.7	#198.8	1.82	F	175.1	#124.2	1.27
NB - T	D	36.1	35.4	0.26	D	38.2	47.1	0.37
NB - R	A	8.0	15.8	0.31	A	0.7	0.0	0.14
SB - L	C	24.7	37.9	0.33	C	28.7	55.8	0.52
SB - TR	F	150.6	#187.2	1.21	F	193.0	#207.3	1.32
Intersection Average	F	172.4			F	159.4		
Dunlop Street & Highway 400 NB (East) Ramp (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	F	73.6	148.7	1.05	F	576.0	443.5	2.20
EB - T	-	0.0	0.0	0.47	-	0.0	0.0	0.44
WB - L	-	0.0	0.0	0.54	-	0.0	0.0	0.77
WB - T	-	0.0	0.0	0.34	-	0.0	0.0	0.48
SB - R	F	413.6	304.9	1.83	F	-*	-*	4.32
Anne Street & Henry Street (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	C	17.3	3.6	0.13	D	26.1	6.4	0.22
WB - LTR	B	14.6	0.7	0.03	E	43.8	4.0	0.15
NB - LT	A	1.0	0.8	0.03	A	1.9	1.6	0.06
NB - TR	-	0.0	0.0	0.24	-	0.0	0.0	0.55
SB - LT	A	0.2	0.1	0.01	A	1.1	0.8	0.03
SB - TR	-	0.0	0.0	0.36	-	0.0	0.0	0.39
Henry Street & Site Driveway (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - TR	-	0.0	0.0	0.00	-	0.0	0.0	0.00
WB - LT	A	7.3	0.4	0.02	A	7.3	0.5	0.02
NB - LR	A	8.4	0.9	0.04	A	8.4	0.8	0.03

NOTE: Delay in seconds (as per Synchro Signalized intersection report; 95th percentile queue in metres for signalized intersection (Queue shown is maximum after two cycles) and # indicates 95th percentile volume exceeds capacity, queue may be longer; 95th percentile queue in metres for signalized intersection and in vehicles for unsignalized intersections as provided in Synchro detail and HCM 2010 outputs, see Appendix B

traffic volumes. The resulting peak hour volumes for the study intersections and at the site driveway are illustrated in **Exhibit 3.2A** for 2025 planning horizon and **Exhibit 3.2B** for 2031 planning horizon. The impact of the proposed development traffic on the study road network can be determined by comparing the intersection capacity analysis results without and with the site traffic (background traffic analysis vs. total traffic analysis).

In general, under the 2031 total conditions, the increase in the overall intersection average LOS is less than two seconds for most intersections with the exception of Dunlop and Anne Street intersection where the increase is approximately six seconds in the PM peak. If the study intersection is projected to fail under the background conditions, the site traffic will likely contribute exponentially the delay and associated long queues expected at the study intersections.

4.4 Future Conditions – Total Traffic Intersection Analysis (Table 4.2C)

In comparing future total peak hour traffic volumes under the future background and total conditions in 2031 planning horizon with approved and Design Concept 3 configurations, the impact of site traffic on the study road network is found to be minimal at all study intersections (increase in delay of less than two seconds during both peak periods).

4.5 Site Entrance Driveway

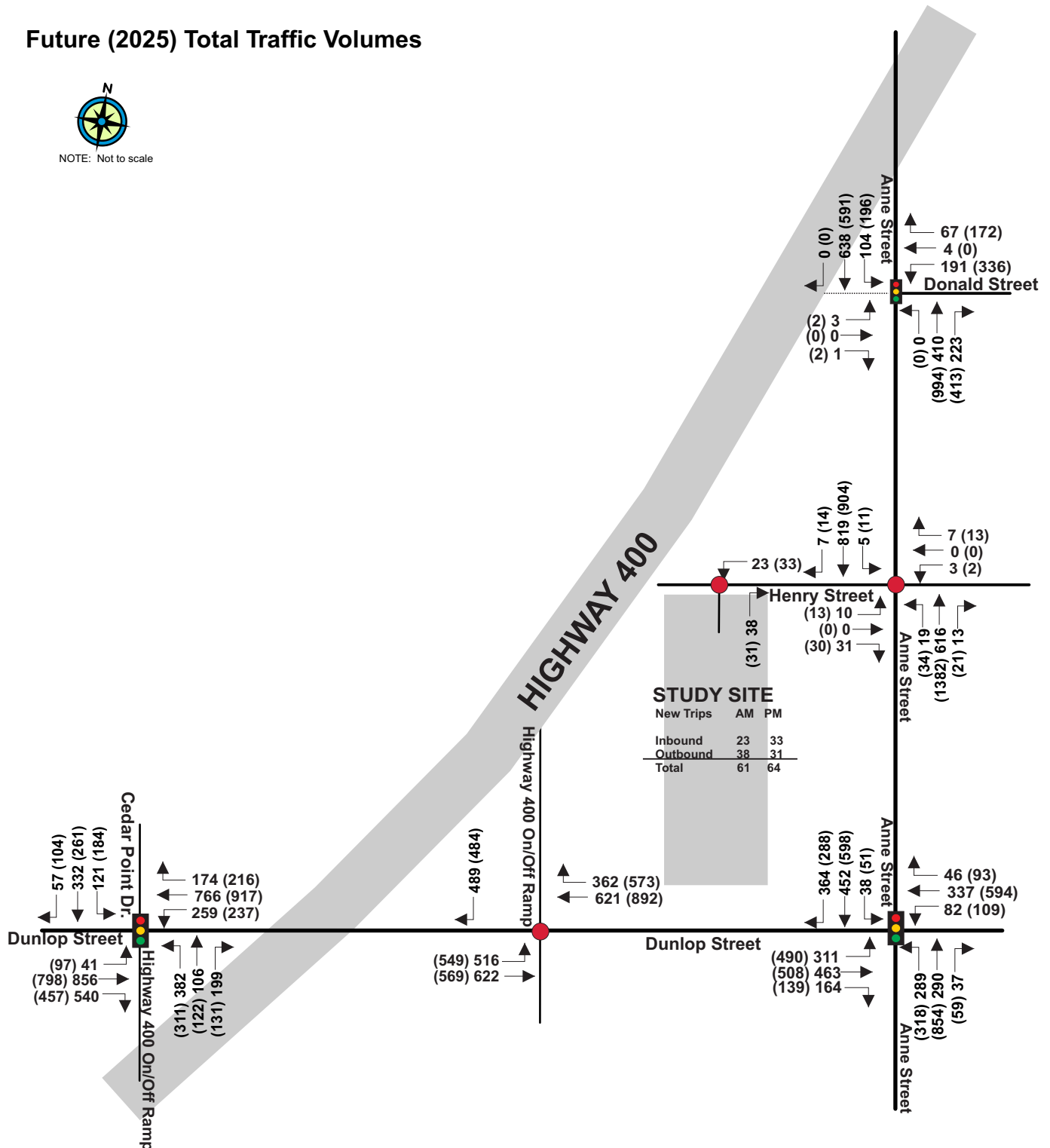
A new site driveway on Henry Street is proposed for the study site. In assessing the Intersection Measure of Effectiveness (MOE's - delay, queue length and v/c ratio), the intersection capacity analysis indicates that all movements at the study site driveway will provide good Levels of Service during the study peak hours with minor delay and the projected 95th percentile queue of less than one vehicle at the site driveway.

EXHIBIT 3.2A: 2025 TOTAL TRAFFIC VOLUMES

Future (2025) Total Traffic Volumes



NOTE: Not to scale



LEGEND



Unsignalized Intersection



Signalized Intersection

128 (336) : AM (PM)

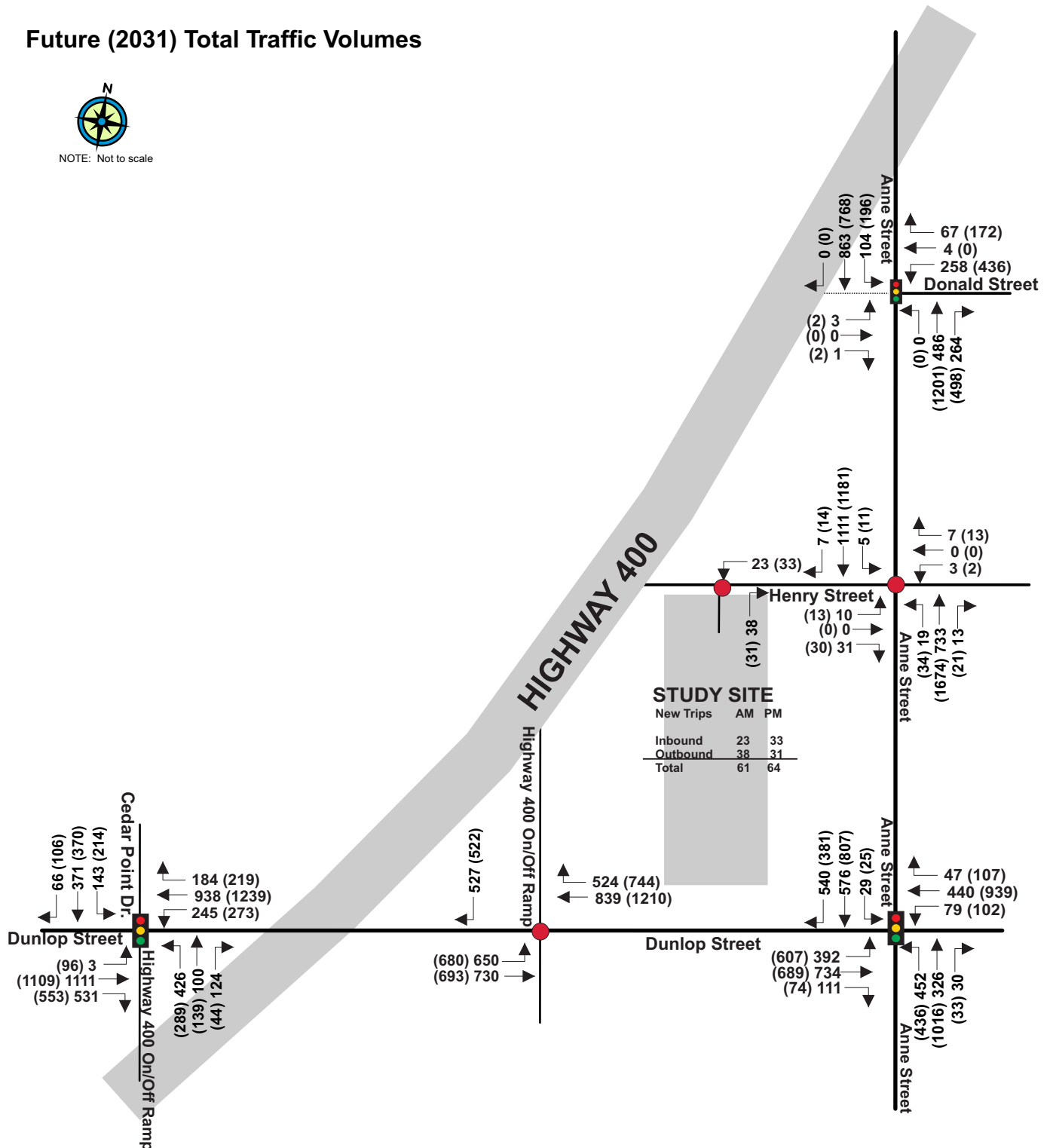


EXHIBIT 3.2B: 2031 TOTAL TRAFFIC VOLUMES

Future (2031) Total Traffic Volumes



NOTE: Not to scale



LEGEND



Unsignalized Intersection



Signalized Intersection

128 (336) : AM (PM)



**Table 4.2C: Summary of Intersection Capacity Analysis: 2031 Total
(Future Concept 3 Road Network Configurations)**

2031 Total Conditions Concept 3 Road Network								
Intersection	AM Peak				PM Peak			
Dunlop Street & Anne Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	E	76.5	67.6	0.78	F	113.2	#136.1	1.12
EB - T	B	18.9	41.6	0.49	C	24.7	72.0	0.43
EB - R	A	1.2	1.0	0.22	A	0.9	0.1	0.14
WB - L	C	31.2	25.7	0.38	C	26.4	28.9	0.40
WB - TR	D	49.0	60.5	0.48	F	109.0	#139.7	0.95
NB - L	E	72.1	#99.8	0.87	F	125.2	#110.1	1.10
NB - TR	C	24.4	50.9	0.24	D	40.0	180.5	0.81
SB - L	C	20.0	7.5	0.06	C	22.0	9.4	0.18
SB - T	D	45.8	106.6	0.59	D	53.0	144.6	0.86
SB - R	C	31.2	155.1	0.74	B	18.3	82.2	0.52
Intersection Average	D	41.4			E	67.0		
Anne Street & Donald Street (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	A	0.0	0.0	0.01	A	0.0	0.0	0.01
WB - L	D	41.9	67.4	0.78	E	73.9	#183.8	0.98
WB - TR	A	7.3	9.9	0.18	A	2.8	8.9	0.29
NB - LT	B	15.2	44.2	0.33	D	46.6	#209.5	0.93
NB - R	A	5.8	23.2	0.34	C	32.8	142.1	0.77
SB - L	A	8.7	15.7	0.23	E	74.9	#87.1	0.93
SB - TR	B	10.9	63.8	0.47	B	17.3	78.9	0.44
Intersection Average	B	14.9			D	40.6		
Dunlop Street & Highway 400 SB (West) Ramp (Signal)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	E	64.3	4.3	0.03	E	78.4	49.4	0.64
EB - T	D	47.9	136.7	0.78	D	47.9	142.7	0.78
EB - R	C	23.0	136.6	0.66	C	27.4	160.8	0.73
WB - L	F	103.5	#60.8	0.81	E	68.0	57.6	0.71
WB - T	B	10.4	32.8	0.48	D	44.4	152.0	0.78
WB - R	A	0.7	0.0	0.25	A	5.1	18.9	0.33
NB - L	E	66.9	85.8	0.81	E	66.3	60.5	0.70
NB - T	D	37.2	40.5	0.18	D	45.2	57.9	0.31
NB - R	A	6.8	16.5	0.24	A	0.5	0.0	0.11
SB - L	E	78.5	67.5	0.73	F	87.4	#108.9	0.87
SB - TR	D	45.7	81.1	0.51	D	44.5	87.4	0.54
Intersection Average	D	39.9			D	46.3		
Dunlop Street & Highway 400 NB (East) Ramp (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - L	D	36.1	61.3	0.86	E	66.7	#135.8	0.93
EB - T	A	3.8	11.0	0.33	B	12.0	51.3	0.34
WB - T	D	46.3	96.2	0.65	F	80.1	m104.1	0.80
WB - R	A	9.4	m48.6	0.69	D	38.5	m124.0	0.90
NB - R	B	15.0	32.1	0.25	C	23.2	43.5	0.33
Intersection Average	C	22.6			D	47.3		
Anne Street & Henry Street (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	B	13.2	2.4	0.09	C	15.7	3.3	0.12
WB - LTR	B	11.8	0.5	0.02	B	14.7	1.0	0.04
NB - LT	A	1.0	0.8	0.03	A	1.9	1.6	0.06
NB - TR	-	0.0	0.0	0.24	-	0.0	0.0	0.55
SB - LT	A	0.2	0.1	0.01	A	1.1	0.8	0.03
SB - TR	-	0.0	0.0	0.36	-	0.0	0.0	0.39
Henry Street & Site Driveway (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - TR	-	0.0	0.0	0.00	-	0.0	0.0	0.00
WB - LT	A	7.3	0.4	0.02	A	7.3	0.5	0.02
NB - LR	A	8.4	0.9	0.04	A	8.4	0.8	0.03

NOTE: Delay in seconds (as per Synchro Signalized intersection report; 95th percentile queue in metres for signalized intersection (Queue shown is maximum after two cycles) and # indicates 95th percentile queue exceeds capacity, queue may be longer; 95th percentile queue in metres for signalized intersection and in vehicles for unsignalized intersections as provided in Synchro detail and HCM 2010 outputs, see Appendix B

4.6 Transportation Demand Management (TDM)

The City of Barrie Transportation Master Plan (TMP) as well as the City of Barrie Multi-Modal Active Transportation Master Plan (MMATMP) identified the importance of the TDM strategies that should be incorporated into the residential developments in the following areas, in transit use and in active transportation, to reduce the single passenger automobile use/dependency.

Public Transit and Connection to Existing Sidewalks

Currently, City of Barrie Transit provides service in the vicinity of the study site. There are multiple routes available for the study site, benefitting from its close proximity (on route) to Downtown Barrie (see, **Exhibit 2.1B**, illustrates the travelled routes in the vicinity of the site as well as other nearby Regional transit system). There are two bus stops within very close proximity (less than 100 m) to the study site on Dunlop Street and on Anne Street. It is proposed that the proposed development will provide internal walkway system to connect to the existing sidewalk on the north side of Dunlop Street from the apartment buildings (see, **Exhibit 1.2**).

Bicycle Parking

The study site is situated close to the downtown core area, close to numerous shops, restaurants, commercial and recreational/cultural/government institutions which are all located within reasonable walking distance (approximately 1.5 km) from the study site. To further encourage “Active Transportation”, the proposed development is proposing bicycle storage for 104 bicycles on site (providing 56 indoor bicycle storage and 38 bicycle storage on the main floor). The location of the proposed development site and the proposed number of bicycle storage on site is expected to reduce the automobile dependency and encourage active transportation for both the residential/commercial tenants and the visitors to the proposed development.

5.0 PARKING REQUIREMENTS

A summary of the City's parking requirements based on Zoning By-Law 2009-141 for the proposed apartment building with commercial spaces and the proposed number of parking supply for each use is provided in the following **Table 5.1**.

Table 5.1: Summary of Parking Requirements and Supply

Type	Rate	Units/GFA	Required	Proposed
Apartment – Residential dwelling(s) in the Urban Growth Centre	1 space per dwelling unit(s) (By-law 2014-110)	124 units	124	124
Commercial - Office	1 space per 30m ² of gross floor area	1,052.6m ²	36	25
Total			160	149

5.1 Analysis of Parking Requirements and Demand

Projected Demand by ITE Parking Generation 5th Edition

The *ITE Parking Generation Manual* provides parking supply and demand data for several residential land-uses. The ITE land use code 222 Multifamily Housing parking rates for Dense Multi-use Urban (no near-by rail transit) location apartment buildings is considered to be directly applicable to the proposed development (see **Appendix C** for the relevant page from the ITE document).

Table 5.2 shows the parking requirements at the proposed apartment based on the ITE Parking Generation Manual. The average peak parking demand rate for residential apartment is 0.55 spaces per dwelling unit, or 69 spaces for the proposed 124-unit apartment building. The highest rate found in ITE survey is 0.73 spaces per dwelling unit which would indicate that 91 spaces are required to meet the normal peak demand for the proposed 124-unit apartment building. The rates are for total peak parking, including visitor parking.

**Table 5.2: ITE Parking Generation – Multifamily Housing (High-Rise)
And General Office Building**
(Dense Multi-use Urban – No Nearby Rail Transit)

Parking Rate	Residential	General Office	Peak Demand Per Unit or per 1,000 sq. ft. GFA	No. of Spaces Required by 124 DU's and 11,330 sq. ft. Commercial GFA
<i>Average Rate</i>	0.55	1.63	Residential – 69 Commercial - 19	88
<i>Range of Rates</i>	0.51 – 0.73	0.97 – 2.33	Residential: 64 – 91 Commercial: 11 - 27	75 - 118
<i>Fitted Curve Equation, where X = Number of DUs or GFAs</i>	Not Available	$P = 1.44(X) + 47.42$	Residential – N/A Commercial - 64	Not Available

It indicates that based on ITE range of parking demand rates, the study site as a “worst case” scenario, can function with 118 parking spaces in meeting the average normal peak demand occurring at the study site.

Mixed-Use Building/Shared Parking

There isn't one convenient parking supply rate available to be applied for the proposed mixed-use building either in the City of Barrie Zoning By-Law or in the ITE Parking Generation. Rather, when multiple uses are proposed for a single site, shared parking arrangements are often used (and encouraged) as a management strategy to maximize the efficiency of a parking facility. Shared parking is most effective where uses at a site have different peak parking demand periods. Commercial and residential uses are considered to have different peak parking demand periods and thus can be considered for shared parking (peak parking for commercial uses occur during the daytime on weekdays and Saturdays, whereas peak parking for residential uses occurs in the weekday evenings and overnight).

The *Victoria Transport Policy Institute (VTPI) TDM On-Line Encyclopedia* (<https://www.vtpi.org/tdm/tdm89.htm>), *Updated December 2015*, provides a shared parking calculation tool in establishing an appropriate parking supply for mixed-use developments where there is a potential for shared parking. The

calculation is based on typical parking occupancy rates required to support specific uses during various peak and off-peak periods, as shown in **Table 5.3**.

Table 5.3: VTPI Parking Occupancy Rates by Land Use and Time

Uses	Weekday Demand Periods		
	8 AM – 5 PM	6 PM – 12 AM	12 AM – 6 AM
Residential	60%	100%	100%
Commercial	90%	80%	5%

The Urban Land Institute (ULI) *Shared Parking 2nd Edition* by Mary S. Smith, also provides Recommended Time-of-Day Factors for Weekdays for various land uses and **Table 5.4** provides summary of peak demand for weekdays:

Table 5.4: Summary of Peak Demand Factors by Land Use and Time

Uses	Weekday Demand Periods		
	8 AM – 5 PM	6 PM – 12 AM	12 AM – 6 AM
Residential – Guest	20%	100%	50%
Residential – Reserved	100%	100%	100%
Residential - Resident	85% at 5 PM	100%	100%
Office/Commercial	100% at 10 AM	5% at 5 PM	-

*Only the applicable land uses for the proposed development are shown

An important aspect in the ULI Report is the distinction and acknowledgement of Reserved Parking from the normal Residential and Guest parking demand (as provided by the ULI data set). As for a simple definition, a space “Reserved” for an individual user is one that cannot be shared, at least for the period it is reserved. In the context of the residential apartment building, a parking space is often attached to an apartment unit for exclusive use by the renter of the unit/ parking space. As such, the reserved parking spaces peak demand is 100% for all hours of the day since the space cannot not be used by anyone else.

Based on the shared parking principles, it appears that the proposed development can/should manage its parking supply by utilizing proper allocation of the available parking spaces based on its use. As an example, a common visitor parking for residential and commercial uses can be established to serve both uses on site.

Vehicle Ownership Survey from 2016 Transportation Tomorrow Survey (TTS)

Vehicle ownership can be considered a key component in determining parking supply requirements. Data within the 2016 Transportation Tomorrow Survey (TTS) was reviewed to calculate the vehicle ownership rates for apartment dwellers (by searching Household database for apartment dwellers and the number of vehicles available for the household variables) for the City of Barrie and is summarized in the **Table 5.5**.

Table 5.5: Vehicle Ownership - Apartment Dwellings, City of Barrie

Number of Responded Households	Number of Vehicles Reported	Total Number of Vehicles Reported	Vehicle Ownership, % of Total
2,630	0	0	20%
8,120	1	8,120	62%
2,097	2	4,194	16%
251	3	753	2%
13,098 DUs		13,067 vehicles	0.99 vehicles/unit

As noted, the vehicle ownership rate for apartment units, as reported in the 2016 TTS, within the City of Barrie, is approximately 1 vehicle per unit. Furthermore, it is worth noting that approximately 20% of apartment dwellers in City of Barrie reported as not owning a vehicle.

5.2 Summary of Parking Demand and Parking Management Strategy

In summary, notwithstanding the City's Zoning By-law parking requirement of 160 spaces for the proposed development, the parking demand analysis based on industry standard published data, shared parking principles and vehicle ownership data from 2016 TTS indicate that the proposed 149 parking spaces, controlled/managed are sufficient for the proposed development. The key component of the site-specific consideration is the planned Parking Management Strategy to maximize the use of all parking spaces available on site by having flexibility to control most of the parking spaces on site in terms of

how and who can use the said parking spaces. The Parking Management Strategy will involve the following components:

- **Rental of An Apartment Unit Does Not Include A Parking Space:** It is proposed that the monthly rent payment for an apartment unit does not include a parking space. Since the vehicle ownership data indicates that not every apartment dweller will own a vehicle (approximately 20% of the apartment dwellers), there is no reason to include the cost of renting a parking space as part of an apartment rental payment. The cost of parking space rental will also be on a monthly basis to encourage vehicle sharing and/or temporary ownership of vehicles. The resulting strategy, is to unbundle the cost of renting a parking space from the rental of an apartment.
- **Maximum Number of Parking Spaces Available for Rental will be Equal to the Number of Units:** In order to discourage multiple vehicle ownership of a tenant, there will be only one parking space assigned per unit for rental. This is to make sure that each tenant at least has one parking space to rent, and to make sure that enough parking spaces are left on site for visitors. However, there may be residents that will require more than one parking space. It is recommended that any unrented residential parking spaces should then be offered for rent on a short-term/temporary bases.
- **Parking Facility Management/Shared Parking Arrangement:** The parking facility at the subject site will be separated into two sections, "Reserved" and "General" parking areas rather than Residential vs. Commercial, thus facilitating a shared parking arrangement for all visitors to the study site for all uses. The "General" parking area will have a time limit (likely not more than two hours) to discourage long term parking. The parking facility will be monitored through the Property Management office and if required, pay and display system can be implemented to control the parking demand on site.

- **Car Pooling/Ride-Sharing Dedicated Spaces:** As the demand for car pooling/ride-sharing increases, some of the “General” parking spaces could be “Reserved” for Car Pooling/Ride-Sharing service vehicles.
- **Transit:** Currently, Barrie Transit service is provided along Dunlop Street and Anne Street, with bus stops located in the vicinity/short walking distance of the study site. The proposed development, will be promoting and providing transit use incentives, by making aware/available literature/brochure, as well as websites for various transit authorities in the apartment website.
- The following parking allocation is recommended:

Table 5.6: Proposed Parking Allocation

Land Use	Proposed Number of Parking Spaces Allocation
<i>Reserved for Residential Tenants</i>	0.8 spaces per unit - 100 spaces
<i>Reserved for Commercial Tenants</i>	1.0 space per 50 m ² – 22 spaces
<i>General Shared Parking for Visitors (Residential or Commercial)</i>	12 spaces (over-night, underground) 13 spaces (short-term, surface parking)
<i>Total</i>	147 spaces
<i>Other Available Parking Spaces on Site (Temporary Parking for Visitors)</i>	11 spaces (overflow temporary surface parking)
Total Available Parking on Site	158 spaces

6.0 LOADING and FIRE TRUCK ACCESS

6.1 Loading Requirements

The proposed development is providing one Loading area to serve all proposed uses on site. The loading area was tested using using *AutoTurn* software for the Standard Front-Loading Garbage Truck, represented by 9.5 m (front-loading garbage truck when fork is up) and TAC HSU (11.5 m) large single unit truck used by commercial operators and municipalities in Ontario. The access to the loading area and the vehicle movements from the site entrance and maneuvering in and out of the loading area is provided in **Appendix "D"**. The vehicle turning diagram indicate that the garbage and HSU trucks can ingress/egress using the proposed driveway, access the appropriate loading area to load/unload and maneuver through to leave the study site.

6.2 Fire Truck Access

The site access and the internal circulation are based on the standard 12.1 m Aerial Ladder Fire Truck. The access to/from the site and the fire truck movements from the site entrance to the main entrance area and the maneuvering to make the three-points turn out of the site are provided in **Appendix "D"**. The vehicle turning diagram indicates that the fire trucks can travel along the fire route, stop and reverse out of the study site.

7.0 CONCLUSIONS AND RECOMMENDATIONS

This traffic study was carried out in support of the proposed 16-storey mixed-use building development to be located at 284 & 286 Dunlop Street West and 119 & 121 Henry Street in the City of Barrie. The proposed development consists of 124 market rental apartment units and approximately 1,053 sq. m. (approximately 11,331 sq. ft.) of commercial floor spaces in the first two floors. The traffic impact analyses described in this report have provided detailed examination of the anticipated impacts of future background and site-generated traffic for the proposed development.

In summary, the study analyses indicate that the impact of the forecast site generated vehicle trips will have minor impact on the adjacent road network. The study analyses indicate that the study intersections, under the current lane configurations, will not be able to accommodate projected growth in background traffic. However, the future infrastructure improvements recommended/adopted through the Dunlop Street EA Study will significantly increase the capacity at the study intersections and improve the Levels of Service accordingly. The impact of the projected site traffic will continue to be very minor. Furthermore, the proposed Transportation Demand Management Plan along with the Parking Management Plan will further reduce the amount of single-occupant vehicle trips to/from the proposed mixed-use development.

7.1 Existing Conditions and the Study Site

The study site is located in Ward 2, in the Queen's Park Planning Area of City of Barrie, in the general area east of Highway 400. Specifically, it is located between Dunlop Street to south and Henry Street to north in the area bounded by Highway 400 to the west and Anne Street to the east with municipal addresses, 284 & 286 Dunlop Street West and 119 & 121 Henry Street (in the area designated as Intensification Area in the City of Barrie).

The study considered the weekday AM and PM peak hour periods for analysis. Intersection capacity analysis of existing conditions indicate that the study

intersections are all operating well and currently provide acceptable Levels of Service. Some of the individual movements at the study intersections, however, currently operate at or beyond capacity with long queues and lengthy delays.

7.2 2025 and 2031 Planning Horizons - Background Traffic: Existing Configurations

Planning horizons to 2025 and 2031 were assumed for use in the study analyses. In order to determine the growth in the background traffic, the study used the Dunlop Street EA Study 2031 background traffic volumes at Dunlop Street/Anne Street intersection as control total to balance the rest of the study intersections. The growth rate per year between 2020 and 2031 was calculated for each movement of the control intersection and applied to produce 2025 background traffic volumes.

Under the existing lane configurations background conditions, the intersection capacity analysis indicates that the study (signalized) intersections Levels of Service along Dunlop Street are projected to worsen under 2025 conditions, operating at capacity and by 2031, it will further deteriorate beyond acceptable levels. Mitigation measures will be required at the study intersections.

2031 Planning Horizons - Background Traffic: Future Improved Configurations

With implementation of approved (Design Concept 3) improvements along Dunlop Street corridor by 2031, the intersection capacity analysis indicates that the study intersections are projected to operate at an overall intersection acceptable Levels of Service. It is expected that the future signalized intersection operations will be further improved through monitoring of traffic and optimization and synchronization of the appropriate intersections.

7.3 Proposed Development Forecast Vehicle Traffic

The traffic that will be generated by the proposed mixed-use building was developed using the trip generation relationships taken from the current ITE

Trip Generation Manual. The forecast peak hour vehicular trip generation by the proposed 124 residential apartments and commercial floor spaces on the first two levels of the building is summarized below (and in **Table 3.1**).

	<i>AM Pk Hr</i>	<i>PM Pk Hr</i>
<i>Inbound</i>	<i>23</i>	<i>33</i>
<i>Outbound</i>	<i>38</i>	<i>31</i>
<i>Total</i>	<i>61</i>	<i>64</i>

The traffic from the proposed development is expected to have a similar pattern to the existing traffic patterns found at the study intersections (see **Table 3.2**).

7.4 2025 and 2031 Planning Horizons - Total Traffic: Existing Configurations

The impact of the proposed development traffic on the study road network can be determined by comparing the intersection capacity analysis results without and with the site traffic (background traffic analysis vs. total traffic analysis). In general, as the “worst case” scenario, the impact of the site traffic is minor. Under the 2031 total conditions, the increase in the overall intersection average LOS is less than two seconds for most intersections with the exception of Dunlop and Anne Street intersection where the increase is approximately six seconds in the PM peak. In comparisons with the background traffic, if the study intersection was projected to fail under the background conditions, the site traffic will likely contribute exponentially the delay and associated long queues expected at the study intersections.

2031 Planning Horizons - Total Traffic: Future Improved Configurations

Similar to 2031 planning horizon background traffic assessed using improved conditions, in comparing future total peak hour traffic volumes under the future background and total conditions in 2031 planning horizon (with approved and Design Concept 3 configurations), the impact of site traffic on the study road network is found to be minimal at all study intersections (increase in delay of less than two seconds during both peak periods).

7.5 Proposed Transportation Demand Management (TDM) Plan

A TDM Plan has been prepared with the special emphasis on strategies to reduce the ownership/dependency of single-occupant vehicles for the proposed development. The key component of the TDM plan evolves around the proposed development providing access to existing and future local/Regional transit facilities. Active Transportation modes have been also been considered by providing indoor/outdoor storage facilities for bicycles and connections to existing and future bike routes in the vicinity of the study site.

7.6 Proposed Parking Plan

The proposed mixed-use building is proposing 147 parking spaces (plus 11 temporary parking spaces on MTO set-back area) for all uses on site. Based on review of ITE Parking Generation rates, Shared Parking for Mixed-use Developments as well as vehicle ownership of apartment dwellers in the City of Barrie from TTS search results, the following parking allocation/ management plan is recommended:

Land Use	Proposed Number of Parking Spaces Allocation
<i>Reserved for Residential Tenants</i>	0.8 spaces per unit - 100 spaces
<i>Reserved for Commercial Tenants</i>	1.0 space per 50 m ² – 22 spaces
<i>General Shared Parking for Visitors (Residential or Commercial)</i>	12 spaces (over-night, underground) 13 spaces (short-term, surface parking)
<i>Total*</i>	147 spaces
<i>Other Available Parking Spaces on Site (Temporary Parking for Visitors)</i>	11 spaces (overflow temporary surface parking)
Total Available Parking on Site	158 spaces

**May not add up due to rounding.*

TECHNICAL APPENDIX

APPENDIX A1: Terms of Reference

Hi Justin,

We have been retained to prepare a Traffic Impact Study (TIS) for the proposed residential development (with office use on the main floor) located at 284-286 Dunlop Street (see attached the latest site plan for your review).

The proposed scope of the study is based/as set out in the Traffic Impact Study Requirements (Appendix 2) of the *"City of Barrie Urban Design Manual (2014)"*. We will also incorporate the policies identified in the *"City of Barrie Multi-Modal Active Transportation Master Plan (MMATMP)"*. The following intersections under the City's jurisdiction will be assessed (the study peak hour assessment will be for weekday AM and PM peak hour):

- Anne Street and Dunlop Street;
 - Anne Street and Henry Street;
 - Anne Street and Donald Street; and
 - Henry Street and the Site Access.
-
- MTO indicated that the Highway 400 Ramps to be evaluated.

Please confirm if the City has any traffic data for the study intersections, for us to purchase/use for the study analysis. If the data collection is our responsibility, kindly provide how the City wishes to deal with the traffic data collected during COVID-19 pandemic (as well as the time of the year).

The proposed build-out of the study site is 2025. As well, planning horizon five years from full buildout has been selected for the analysis.

Forecast the future background traffic volumes for the 2025 and 2030 horizon years will be based on the following:

- Background traffic growth on boundary roadways at a 1%-2% annual growth rate, to be confirmed with the City.
- Other future approved developments or developments in planning approvals stages which may have direct impact on the study intersections, to be provided by the City.

Forecast of the site traffic will be based on the trip generation rates from the *Institute of Transportation Engineers' (ITE - 10th edition) Land Use 222 – Multifamily Housing (High-Rise) **either** General Urban/Suburban **or** Dense Multi-Use Urban Location rates*.

Assignment of site traffic to the study road network will be based on combination of existing traffic pattern observed at the study intersections as well as data from the Transportation Tomorrow Survey (TTS).

Site specific Transportation Demand Measures will be identified and the discussion on implementation of the measures will be provided, including providing both short-term and long-term bicycle parking on site.

On site circulation, parking spaces and the loading area will be tested. The vehicle movement diagrams will be included in the study.

Site Access requirements and geometrics will be evaluated in accordance with standards outlined in the TAC "Geometric Design Guide for Canadian Roads". The following will be evaluated:

- capacity
- safety
- adequacy of queue storage capacity
- available sight distances

The study findings, conclusions, including any mitigation measure will be clearly identified and appropriate time line will be provided with the recommendations.

Please provide your feedback and any items we missed that should be included in this study scope.

APPENDIX A2: Traffic Data
Dunlop Street EA Traffic Forecasts
TTS Data

Traffic Data

December 6, 2018

File: T07-SI

Dear Mr. Mehemed Delibasic,

RE: Traffic Signal Timings – Dunlop Street and Hart Drive

With respect to your inquiry on November 28, 2018, the above intersection traffic signal timings are as follows:

Roadway	Direction	Vehicular Indications				Pedestrian Indications	
		Minimum Green	Maximum Green	Amber	All Red	Walk	Flashing Don't Walk
Dunlop Street (Main Street)	Advanced Westbound Left Turn	7	12	3	1	N/A	N/A
Dunlop Street (Main Street)	Eastbound/ Westbound	40	40	4	2	26	14
Hart Drive (Side Street)	Northbound/ Southbound	12	24	4	2	10	14

NOTE: All times are recorded in seconds, based on full demand.

The side street phases are actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Actuation at this intersection occurs in two ways: first, for vehicles a loop detector is imbedded into the roadway at the painted stop bar; and secondly, pushbuttons are located on each corner for pedestrians to activate their movement. Vehicle presence only on the side street would result in a possible green time of between the minimum and maximum times noted above, depending on demand.

Pedestrian "Walk" and "Flashing Don't Walk" times on the side street as noted would be used in the event that the pedestrian push button was activated. Should there be no demand on the actuated phases; the signals would rest in a green indication for the main street.

Should you require any further information please feel free to contact me at (705) 739-4220 ext. 5178.

Yours truly,

December 6, 2018

File: T07-SI

Dear Mr. Mehemed Delibasic,

RE: Traffic Signal Timings – Dunlop Street and Cedar Pointe Drive (HWY 400- West Ramp)

With respect to your inquiry on November 28, 2018, the above intersection traffic signal timings are as follows:

Roadway	Direction	Vehicular Indications				Pedestrian Indications	
		Minimum Green	Maximum Green	Amber	All Red	Walk	Flashing Don't Walk
Dunlop Street (Main Street)	Advanced Westbound Left Turn	7	10	3	1	N/A	N/A
Dunlop Street (Main Street)	Advanced Eastbound Left Turn	7	7	3	1	N/A	N/A
Cedar Pointe Drive (Side Street)	Advanced Northbound Left Turn	7	17	3	1	N/A	N/A
Cedar Pointe Drive (Side Street)	Advanced Southbound Left Turn	7	10	3	1	N/A	N/A
Dunlop Street (Main Street)	Eastbound/ Westbound	36	36	4	2	22	14
Cedar Pointe Drive (Side Street)	Northbound/ Southbound	10	21	4	2	7	11

NOTE: All times are recorded in seconds, based on full demand.

The side street phases are actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Actuation at this intersection occurs in two ways: first, for vehicles a loop detector is imbedded into the roadway at the painted stop bar; and secondly, pushbuttons are located on each corner for pedestrians to activate their movement. Vehicle presence only on the side street would result in a possible green time of between the minimum and maximum times noted above, depending on demand.

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Cedar Pointe Drive (Side Street)	Advanced Southbound Left Turn	7	10	3	1	N/A	N/A
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NOTE: All times are recorded in seconds, based on full demand.

The side street phases are actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Actuation at this intersection occurs in two ways: first, for vehicles a loop detector is imbedded into the roadway at the painted stop bar; and secondly, pushbuttons are located on each corner for pedestrians to activate their movement. Vehicle presence only on the side street would result in a possible green time of between the minimum and maximum times noted above, depending on demand.

15 MINUTE REPORT

North-South Road: Anne Street North
East-West Road: Donald Street / Private Driveway

Municipality: Barrie
Weather: Partly Cloudy

Day: Friday
Survey Date: November 20, 2020



TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic		
	CAR & PICKUP				HEAVY		Ped	Bike	CAR & PICKUP				HEAVY		Ped	Bike	CAR & PICKUP				HEAVY		Ped	Bike												
	Left	Thru	Right		Left	Thru			Right	Left	Thru	Right	Left	Thru			Right	Left	Thru	Right	Left	Thru			Right	Left	Thru	Right								
7:00	11	78	0		0	0	0	0	0	26	0	6		0	0	0	0	0	1	46	18		0	2	0		1	0	0	0	0	0	0	188	1	
7:15	9	82	0		1	6	0	0	0	21	0	9		0	0	3	2	0	0	59	34		1	2	4		0	0	0	0	0	0	1	231	3	
7:30	18	116	0		2	0	0	0	0	23	0	14		1	0	0	2	0	0	50	35		0	2	0		0	0	1	0	0	0	0	262	2	
7:45	28	147	0		4	6	0	0	0	33	0	15		3	0	4	2	0	0	85	40		0	7	1		0	0	0	0	0	0	0	373	2	
8:00	18	104	0		0	10	0	0	0	31	1	5		1	0	1	0	0	0	81	50		0	5	0		0	0	0	0	3	0	0	0	310	0
8:15	29	101	0		2	2	0	4	0	33	0	17		2	0	2	2	0	0	90	39		0	6	1		0	0	0	0	0	0	0	324	6	
8:30	19	99	0		4	2	0	0	0	37	3	21		0	0	2	0	0	0	74	55		0	1	2		1	0	0	0	1	0	0	320	1	
8:45	41	112	1		1	1	0	3	0	28	0	20		2	0	2	1	0	0	71	43		0	2	3		0	0	0	0	1	0	0	327	4	

North-South Road: Anne Street North
East-West Road: Donald Street / Private Drive

Municipality: Barrie
Weather: Partly Cloudy

Day: Thursday
Survey Date: November 19, 2020

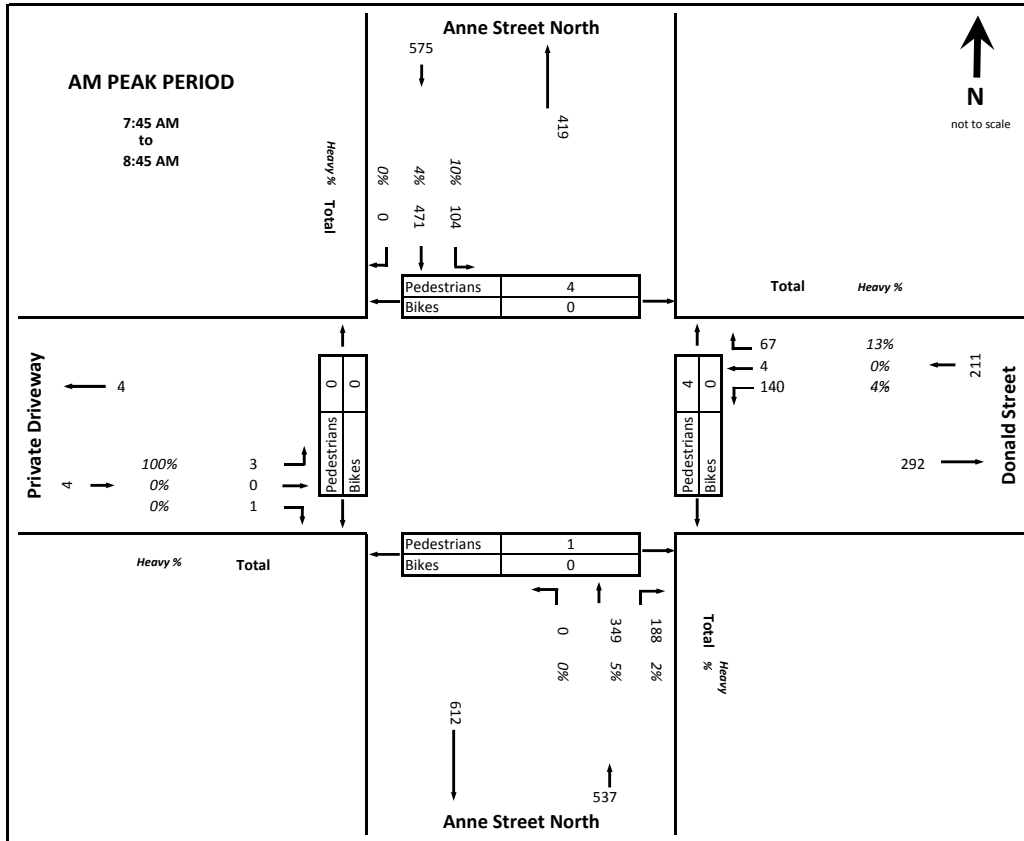
[illegible]

TURNING MOVEMENT DIAGRAMS

North-South Road: Anne Street North
East-West Road: Donald Street / Private Driveway

Municipality: Barrie
Weather: Partly Cloudy

Day: Friday
Survey Date: November 20, 2020



North-South Road: Anne Street North
East-West Road: Donald Street / Private Driveway

Municipality: Barrie
Weather: Partly Cloudy

Day: Thursday
Survey Date: November 19, 2020



15 MINUTE REPORT

North-South Road: Anne Street North
East-West Road: Henry Street

Municipality: Barrie
Weather: Partly Cloudy

Day: Friday
Survey Date: November 20, 2020



TIME BEGINNING	NORTH APPROACH								EAST APPROACH								SOUTH APPROACH								WEST APPROACH								Total Vehicular Traffic	Total PED/BIKE Traffic														
	CAR & PICKUP				HEAVY				Ped	Bike	CAR & PICKUP				HEAVY				Ped	Bike	CAR & PICKUP				HEAVY				Ped	Bike																		
	Left	Thru	Right		Left	Thru	Right				Left	Thru	Right		Left	Thru	Right				Left	Thru	Right		Left	Thru	Right				Left	Thru			Right		Left	Thru	Right									
7:00	0	104	0		0	0	0		1	0			0	0	0		0	0	0		2	0			1	59	0		0	2	0		0	0		1	0	1		0	0	0		2	0		168	5
7:15	2	100	1		0	5	0		2	0			3	0	0		0	0	0		1	0			1	87	3		0	6	0		0	0		0	0	0		0	0	0		2	1		207	6
7:30	0	139	0		0	1	0		0	0			1	0	1		0	0	0		4	0			0	87	0		0	5	0		1	0		0	0	0		0	0	0		0	0		234	5
7:45	3	159	0		0	8	1		0	0			1	0	5		0	0	0		4	0			0	115	4		0	11	0		0	0		2	0	0		0	0	0		1	0		309	5
8:00	1	149	0		0	13	0		0	0			0	0	1		0	0	0		5	0			0	122	3		0	5	0		0	0		0	0	0		0	0	0		0	0		294	5
8:15	0	138	0		0	4	0		0	0			0	0	0		0	0	0		5	0			1	137	2		0	6	0		0	0		0	0	0		0	0	0		1	0		288	6
8:30	1	145	0		0	3	0		0	0			2	0	1		0	0	0		1	0			1	127	4		0	5	0		0	0		0	0	1		0	0	0		1	0		290	2
8:45	1	136	0		0	2	0		1	0			0	0	0		0	0	0		2	1			1	128	5		0	6	0		0	0		0	0	0		0	0	0		0	1		279	5

North-South Road: Anne Street North
East-West Road: Henry Street

Municipality: Barrie
Weather: Partly Cloudy

Day: Thursday
Survey Date: November 19, 2020



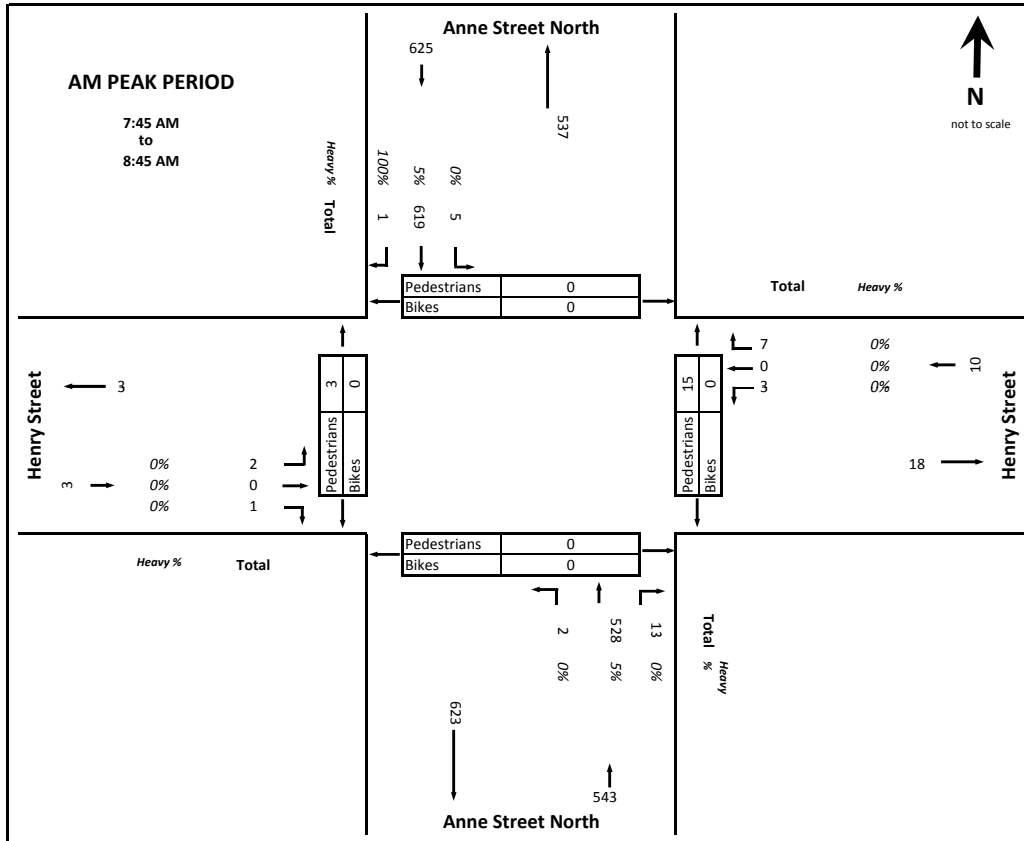
TIME BEGINNING	NORTH APPROACH							EAST APPROACH							SOUTH APPROACH							WEST APPROACH							Total Vehicular Traffic	Total PED/BIKE Traffic		
	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike	CAR & PICKUP			HEAVY			Ped	Bike								
	Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right	Left	Thru	Right			Left	Thru	Right					
16:00	2	205	0	0	8	0	0	0	0	0	1	0	0	0	11	1	1	279	2	0	2	0	0	0	2	0	0	0	0	0	502	16
16:15	0	188	2	0	10	0	1	0	0	0	2	1	0	0	12	2	1	285	3	0	4	0	0	0	1	0	0	0	0	0	495	17
16:30	5	161	3	0	5	0	0	0	0	0	5	0	0	0	12	0	1	293	4	0	2	0	0	0	2	0	4	0	0	0	482	16
16:45	1	188	1	0	6	0	0	0	0	0	1	1	0	0	2	0	4	306	6	0	3	0	2	0	0	0	2	0	0	0	518	8
17:00	5	180	1	0	1	0	0	0	0	0	5	0	0	0	11	0	2	312	8	0	5	0	0	0	3	0	1	0	0	0	522	15
17:15	1	152	1	0	2	0	0	0	1	0	3	0	0	0	2	1	0	307	5	0	3	0	1	0	1	0	3	0	0	0	478	7
17:30	0	145	0	0	6	0	2	0	0	0	3	0	0	0	11	0	5	235	4	1	0	0	0	0	2	0	1	0	0	0	402	15
17:45	2	138	3	0	0	0	0	0	1	0	0	0	0	0	2	0	3	201	4	0	1	0	0	0	1	0	5	1	0	0	357	5

TURNING MOVEMENT DIAGRAMS

North-South Road: Anne Street North
East-West Road: Henry Street

Municipality: Barrie
Weather: Partly Cloudy

Day: Friday
Survey Date: November 20, 2020



North-South Road: Anne Street North
East-West Road: Henry Street

Municipality: Barrie
Weather: Partly Cloudy

Day: Thursday
Survey Date: November 19, 2020



Trans-Plan Transportation Inc.

Site ID Code:
Intersection Location:
Municipality:
Count Date:
Weather and Temperature:
Surveyor:

Dunlop Street & Anne Street
Barrie, Ontario
Thursday April 11, 2019
Cloudy, 0 Degrees
TP

AM	NORTH APPROACH										Total	EAST APPROACH										Total	SOUTH APPROACH										Total	WEST APPROACH										Total	Grand Total	
	CAR			TRUCKS			CYCLISTS			Peds		CAR			TRUCKS			CYCLISTS			Peds		CAR			TRUCKS			CYCLISTS			Peds														
	L	T	R	L	T	R	L	T	R			L	T	R	L	T	R	L	T	R			L	T	R	L	T	R	L	T	R															
7:00	5	49	46	0	1	1	0	0	0	3	105	17	54	3	0	3	1	0	1	0	4	83	17	40	5	3	2	1	0	0	0	1	69	30	31	22	4	2	4	0	0	0	6	99	356	
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7:30	6	107	46	0	1	2	0	1	0	0	163	25	56	5	0	5	2	0	1	0	4	98	16	33	6	3	1	2	0	0	0	2	63	41	32	45	1	3	6	0	0	0	0	128	452	
7:45	10	116	43	1	2	1	0	0	0	4	177	29	73	4	2	1	1	0	0	0	4	114	26	63	5	5	5	1	0	0	0	0	105	66	51	67	6	3	4	0	0	0	7	204	600	
8:00	3	82	56	1	5	3	0	0	0	0	150	19	68	11	1	1	0	0	0	0	1	101	32	54	13	2	3	4	0	1	0	1	110	47	46	37	3	2	8	0	0	0	0	143	504	
8:15	7	68	48	2	2	2	0	0	0	0	129	11	55	12	1	2	0	0	1	0	6	88	39	61	9	7	2	1	0	0	0	2	121	49	53	38	2	4	4	0	0	0	0	150	488	
8:30	9	67	48	0	2	1	0	0	0	1	128	22	49	11	0	2	0	0	0	0	6	90	36	68	9	6	1	1	0	0	0	6	127	63	77	49	1	1	1	0	0	0	3	195	540	
8:45	17	97	60	1	4	1	0	0	0	2	182	19	45	9	1	2	0	0	0	0	3	79	24	91	9	4	1	0	0	0	0	2	131	63	81	46	3	3	1	1	0	0	3	201	593	
MD																																														
11:00	14	85	50	0	0	1	0	0	0	0	150	19	65	9	0	9	1	0	0	0	1	104	37	103	13	3	3	2	0	0	0	2	163	54	68	43	0	1	4	0	0	0	0	170	587	
11:15	13	67	49	0	0	1	0	0	0	1	131	24	69	16	1	5	0	0	0	0	2	117	33	89	17	4	2	0	0	0	0	0	145	81	82	37	1	3	1	0	0	0	1	206	599	
11:30	13	85	54	1	4	1	0	0	0	0	158	18	54	19	0	2	0	0	0	0	3	96	28	80	19	2	3	1	0	0	0	0	3	136	65	70	40	2	0	3	0	0	0	0	180	570
11:45	14	92	51	0	2	2	0	0	0	2	163	20	82	17	3	2	1	0	0	0	3	128	40	108	11	5	2	0	0	0	0	5	171	67	75	43	1	5	5	0	0	0	2	198	660	
12:00	13	85	51	1	2	2	0	0	0	4	158	31	74	16	1	4	0	0	0	0	8	134	38	127	19	2	0	1	0	0	0	5	192	80	78	44	2	3	6	0	0	0	0	213	697	
12:15	12	97	63	1	1	2	0	1	0	3	180	29	75	16	2	3	0	0	0	0	6	131	37	118	23	2	0	0	0	0	0	2	182	62	68	40	0	4	3	0	0	0	8	185	678	
12:30	10	91	54	0	3	1	0	0	0	2	161	27	57	15	1	2	0	0	0	0	3	105	42	96	20	2	1	2	0	0	0	0	163	74	72	42	4	0	1	0	0	0	3	196	625	
12:45	21	90	67	0	2	3	0	1	0	3	187	20	87	20	1	1	0	0	0	0	4	133	32	94	12	1	2	0	0	0	0	1	142	67	76	71	0	2	4	0	0	0	4	224	686	
13:00	14	92	40	1	3	4	0	0	0	2	156	15	86	16	1	1	0	0	0	0	3	122	38	89	11	4	1	2	0	0	0	4	149	56	83	43	3	2	3	0	0	0	2	192	619	
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13:30	12	112	50	0	2	2	0	0	0	2	180	28	55	16	0	6	0	0	0	0	7	112	41	106	14	4	2	2	0	0	0	2	171	67	79	36	3	0	0	0	0	0	4	189	652	
13:45	14	99	54	0	5	2	0	0	0	1	175	28	62	15	1	3	0	0	0	0	9	118	45	101	20	3	4	1	0	0	0	4	178	75	65	52	0	2	6	0	0	0	4	204	675	
PM																																														
15:00	16	83	50	0	1	0	0	0	0	7	157	19	70	13	4	3	0	0	0	0	8	117	53	146	15	1	2	1	0	0	0	5	223	77	67	51	1	0	2	0	0	0	1	199	696	
15:15	8	89	52	0	1	0	0	0	0	3	153	24	57	21	0	1	1	0	0	0	6	110	34	125	11	2	1	0	0	0	0	4	177	91	71	43	5	4	9	0	0	0	6	229	669	
15:30	13	100	52	2	5	3	0	1	0	0	176	12	82	17	1	2	0	0	0	0	5	119	38	142	21	4	2	1	0	0	0	0	208	70	63	55	0	1	4	0	0	0	1	194	697	
15:45	9	85	54	2	3	1	0	0	0	4	158	27	84	16	0	2	0	0	0	0	3	132	49	136	18	1	1	1	0	0	0	3	209	95	76	35	0	5	2	0	0	0	3	216	715	
16:00	15	105	57	1	4	0	0	0	0	0	182	16	74	17	2	3	0	0	0	0	3	115	50	125	17	2	5	1	0	0	0	2	202	87	77	55	1	0	4	0	1	0	4	229	728	
16:15	11	117	37	1	4	0	0	0	0	0	170	25	72	16	1	3	0	0	0	0	9	126	48	160	17	1	0	1	0	0	0	4	231	87	75	45	0	3	5	0	0	0	3	218	745	
16:30	21	99	53	0	6	0	0	0	0	0	179	28	64	11	0	2	0	0	0	0	7	112	63	191	20	0	1	1	0	0	0	2	278	87	98	38	0	0	6	0	0	0	3	232	801	
16:45	15	111	47	0	4	0	0	0	0	1	178	33	74	26	3	0	0	0	0	0	5	141	47	182	21	1	0	0	0	0	0	3	254	101	72	50	0	3	5	0	0	0	1	232	805	
17:00	11	94	49	0	0	0	0	0	0	0	154	23	98	22	1	2	0	0	0	0	2	148	55	178	18	1	1	2	0	0	0	2	257	90	85	47	0	1	2	0	0	0	2	227	786	
17:15	16	104	51	0	1	1	0	0	0	6	179	24	62	13	2	4	0	0	0	0	1	106	53	163	18	0	0	1	0	0	0	5	240	101	97	41	0	2	4	0	0	0	3	248	773	
17:30	15	100	42	0	1	0	0	0	0	1	159	28	45	19	1	3	0	0	0	0	2	98	46	146	12	1	2	0	0	0	0	3	210	83	71	43	0	2	1	0	0	0	9	209	676	
17:45	18	66	43	0	1	1	0	0	0	3	132	19	61	21	1	4	1	0	0	0	6	113	34	107	20	1	0	3	0	0	0	3	168	91	70	42	1	2	2	0	0	0	4	212	625	



Turning Movement Count Diagram

Intersection: Dunlop Street & Anne Street

Municipality: Barrie, Ontario

Intersection ID:

Date: Thursday April 11, 2019

AM Peak Hour: 7:45 to 8:45

Anne Street									
North Total 1113						East Total 689			
North Entering 579	Cyclists	0	0	0		East Entering 376			
North Receiving 534	Truck	7	11	4		East Receiving 313			
North Peds 5	Cars	195	333	29		East Peds 17			
		⬅	⬇	➡					
Dunlop Street	0	12	225	⬆		⬆	38	1	0
	0	10	227	➡		⬅	245	6	1
	0	17	191	⬇		⬇	81	4	0
		⬅	⬆	➡					
West Total 1289			133	246	36	South Total 1091			
West Entering 682		20	11	7		South Entering 454			
West Receiving 607		0	1	0		South Receiving 637			
West Peds 10						South Peds 9			

MD Peak Hour: 12:00 to 13:00

Anne Street									
North Total 1468						East Total 920			
North Entering 674	Cyclists	0	2	0		East Entering 482			
North Receiving 794	Truck	8	8	2		East Receiving 438			
North Peds 12	Cars	235	363	56		East Peds 21			
			←	↓	↘				
Dunlop Street	0	6	283	↗		↗	67	0	0
	0	9	294	→		←	293	10	0
	0	14	197	↘		↘	107	5	0
			←	↑	↗				
West Total 1505			149	435	74	South Total 1367			
West Entering 803			7	3	3	South Entering 671			
West Receiving 702			0	0	0	South Receiving 696			
West Peds 15						South Peds 8			

PM Peak Hour: 16:30 to 17:30

Anne Street									
North Total 1850						East Total 994			
North Entering 683	Cyclists	0	0	0		East Entering 492			
North Receiving 1167	Truck	1	11	0		East Receiving 502			
North Peds 7	Cars	200	408	63		East Peds 15			
		⬅	⬇	➡					
Dunlop Street	0	0	379	⬆		⬆	72	0	0
	0	6	352	➡		➡	298	8	0
	0	17	176	⬇		⬇	108	6	0
		⬅	⬆	➡					
West Total 1657			218	714	77	South Total 1743			
West Entering 930		2	2	4		South Entering 1017			
West Receiving 727		0	0	0		South Receiving 726			
West Peds 9						South Peds 12			

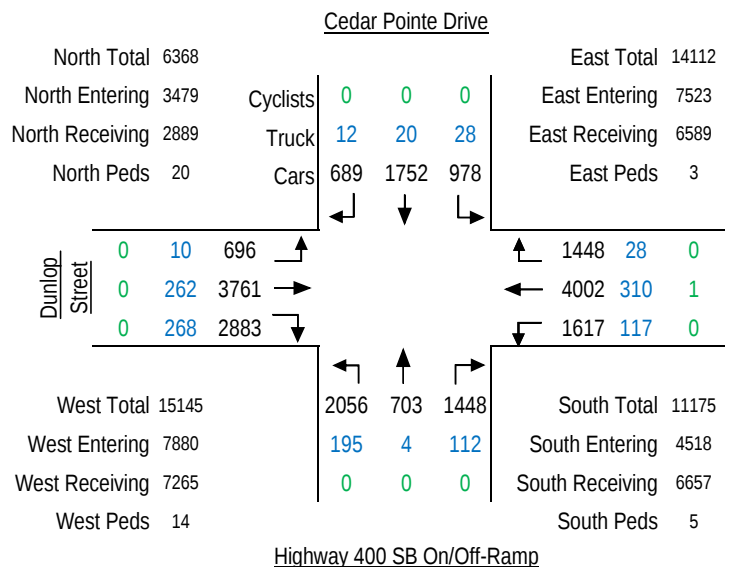
Total 8-Hour Count

Anne Street													
North Total 11364						East Total 6657							
North Entering 5042	Cyclists	0	4	0		East Entering 3474							
North Receiving 6322	Truck	40	74	16		East Receiving 3183							
North Peds 57	Cars	1598	2916	394		East Peds 150							
					←	↓	↘						
Dunlop Street	1	50	2271	↗						↖	466	8	0
	1	71	2203	→						←	2150	88	3
	0	121	1431	↘						↙	725	34	0
					↖	↗	↘						
West Total 11338			1227			3465	465	South Total 10639					
West Entering 6149			83	59	33	South Entering 5334							
West Receiving 5189			0	2	0	South Receiving 5305							
West Peds 93						South Peds 84							

Site ID Code:	
Intersection Location:	Dunlop Street & Highway 400 Southbound On/Off-Ramp / Cedar Pointe Drive
Municipality:	Barrie, Ontario
Count Date:	Thursday April 11, 2019
Weather and Temperature:	Cloudy, 0 Degrees
Surveyor:	TP

Site ID Code:	
Intersection Location:	Dunlop Street & Highway 400 Southbound On/Off-Ramp / Cedar Pointe Drive
Municipality:	Barrie, Ontario
Count Date:	Thursday April 11, 2019
Weather and Temperature:	Cloudy, 0 Degrees
Surveyor:	TP

NORTH APPROACH											Total	EAST APPROACH											Total	SOUTH APPROACH											Total	WEST APPROACH											Total	Grand Total
CAR			TRUCKS			CYCLISTS			Peds	CAR			TRUCKS			CYCLISTS			Peds	CAR				TRUCKS			CYCLISTS			Peds																		
L	T	R	L	T	R	L	T	R		L		T	R	L	T	R	L	T		R	L	T		R	L	T	R	L	T		R	L	T	R														
13	77	8	0	0	0	0	0	0	0	1	99	43	82	20	4	11	1	0	0	0	0	161	67	8	46	3	0	2	0	0	0	0	126	12	87	115	0	12	9	0	0	0	0	235	621			
21	61	9	1	0	0	0	0	0	0	1	93	49	98	17	6	8	2	0	0	0	0	180	98	16	73	2	0	4	0	0	0	0	193	5	84	132	1	7	7	0	0	0	1	237	703			
27	77	9	0	0	1	0	0	0	0	0	114	42	96	30	8	7	0	0	0	0	0	183	82	23	76	2	0	5	0	0	0	0	188	12	116	141	1	14	3	0	0	0	0	287	772			
29	74	15	1	0	0	0	0	0	0	0	119	47	123	36	3	9	1	0	0	0	0	219	81	22	85	7	0	4	0	0	0	0	199	17	143	119	0	8	9	0	0	0	0	296	833			
21	73	13	1	3	0	0	0	0	0	0	111	44	107	36	6	13	0	0	0	0	0	206	75	36	35	6	0	0	0	0	0	0	152	21	131	113	1	10	12	0	0	0	0	288	757			
22	72	11	1	0	0	0	0	0	0	0	106	50	107	50	4	8	1	0	0	0	0	220	60	30	49	3	0	4	0	0	0	0	146	21	141	102	0	10	3	0	0	0	0	277	749			
29	62	15	0	0	1	0	0	0	0	0	107	41	76	34	8	10	1	0	0	0	0	170	47	31	65	9	0	3	0	0	0	0	155	18	150	105	0	12	13	0	0	0	0	298	730			
26	74	16	2	1	0	0	0	0	0	1	120	38	81	49	9	10	1	0	0	0	0	189	52	23	51	8	0	4	0	0	0	0	1	139	32	133	115	2	11	12	0	0	0	0	305	753		
38	51	26	1	0	0	0	0	0	0	0	116	65	106	39	7	10	0	0	0	0	1	228	36	19	29	7	0	2	0	0	0	0	1	94	17	90	75	0	7	8	0	0	0	0	197	635		
34	38	18	2	0	2	0	0	0	0	5	99	48	125	46	4	20	2	0	0	0	1	246	46	15	30	3	0	0	0	0	0	0	94	26	112	76	1	10	11	0	0	0	3	239	678			
34	47	29	0	1	0	0	0	0	0	3	114	40	96	26	6	13	0	0	0	0	0	181	49	18	44	5	1	2	0	0	0	0	119	19	93	81	0	11	12	0	0	0	3	219	633			
25	43	24	4	0	1	0	0	0	0	1	98	63	127	38	5	11	1	0	0	0	0	245	49	25	41	6	0	7	0	0	0	0	128	28	119	90	0	9	8	0	0	0	3	257	728			
37	47	34	1	1	0	0	0	0	0	0	120	67	113	45	3	12	1	0	0	0	0	241	40	18	39	9	0	2	0	0	0	0	1	109	35	97	76	0	7	13	0	0	0	0	228	698		
32	56	34	1	2	2	0	0	0	0	0	127	70	109	45	3	10	1	0	0	0	0	238	41	28	41	3	0	1	0	0	0	0	114	30	106	66	1	12	11	0	0	0	0	226	705			
32	44	26	0	0	0	0	0	0	0	0	102	45	119	43	7	10	0	0	0	0	0	224	54	21	51	5	0	3	0	0	0	0	134	25	117	75	0	9	8	0	0	0	0	234	694			
31	60	29	1	0	0	0	0	0	0	0	121	56	103	45	4	8	1	0	0	0	0	217	70	30	49	8	0	4	0	0	0	0	161	23	105	75	0	13	10	0	0	0	0	226	725			
42	51	30	1	0	0	0	0	0	0	2	126	61	134	32	5	15	0	0	0	0	0	247	64	16	41	3	1	6	0	0	0	0	131	23	109	76	0	8	17	0	0	0	1	234	738			
40	38	18	1	2	0	0	0	0	0	0	99	61	134	55	5	13	1	0	0	0	0	269	60	20	40	4	1	2	0	0	0	0	127	27	116	77	0	7	6	0	0	0	0	233	728			
22	47	26	0	1	1	0	0	0	0	2	99	47	111	44	3	16	0	0	0	0	0	221	49	23	33	9	0	1	0	0	0	0	115	28	102	78	0	11	13	0	0	0	1	233	668			
27	48	22	1	2	1	0	0	0	0	0	101	47	123	39	0	11	2	0	0	0	0	222	53	16	44	13	0	4	0	0	0	0	1	131	28	115	83	0	10	9	0	0	0	0	245	699		
32	47	17	0	0	0	0	0	0	0	0	96	53	157	55	4	11	3	0	0	0	0	283	55	12	35	12	0	2	0	0	0	0	116	18	110	78	1	8	8	0	0	0	0	223	718			
26	50	25	1	1	0	0	0	0	0	1	104	49	125	49	0	14	2	0	0	0	0	239	79	21	51	4	0	3	0	0	0	0	0	158	17	110	82	0	11	7	0	0	0	0	227	728		
38	49	27	2	1	0	0	0	0	0	0	117	50	161	53	0	8	0	0	0	0	0	272	60	17	39	7	0	0	0	0	0	0	123	12	132	90	1	6	5	0	0	0	0	246	758			
33	43	19	1	0	1	0	0	0	0	0	97	58	154	64	2	8	0	0	0	0	0	286	90	27	39	12	0	7	0	0	0	0	175	19	131	68	0	10	6	0	0	0	0	234	792			
41	67	28	0	1	1	0	0	0	0	0	138	58	166	56	2	8	2	0	0	0	0	292	76	24	45	7	0	5	0	0	0	0	157	24	130	89	0	4	8	0	0	0	0	255	842			
37	57	22	2	0	0	0	0	0	0	1	119	41	157	44	1	7	1	0	0	0	0	251	62	26	48	10	0	11	0	0	0	0	157	22	128	79	0	6	6	0	0	0	1	242	769			
39	48	23	0	0	0	0	0	0	0	0	110	57	136	40	2	4	0	0	0	0	0	239	80	27	34	6	0	6	0	0	0	1	154	26	143	90	0	3	12	0	0	0	1	275	778			
45	54	22	1	1	0	0	0	0	0	0	123	51	164	69	0	7	1	0	0	0	0	292	81	31	38	8	0	8	0	0	0	0	166	25	119	87	1	6	6	0	0	0	0	244	825			
39	56	21	0	2	0	0	0	0	0	1	119	42	155	61	1	4	1	0	1	0	0	265	84	22	46	5	0	5	0	0	0	0	162	28	140	120	0	2	2	0	0	0	0	292	838			
20	49	23	1	1	1	0	0	0	0	1	96	61	150	63	2	4	1	0	0	0	0	281	78	23	43	3	0	3	0	0	0	0	150	19	129	73	0	2	2	0	0	0	0	225	752			
19	50	27	0	0	0	0	0	0	0	0	96	40	161	52	1	7	0	0	0	0	0	261	73	14	35	2	1	2	0	0	0	0	127	22	121	86	0	1	5	0	0	0	0	235	719			
27	42	23	1	0	0	0	0	0	0	0	93	33	146	73	2	3	1	0	0	0	0	258	65	21	33	4	0	0	0	0	0	0	123	17	102	71	0	5	7	0	0	0	0	202	676			





Ministry of Transportation
Ministère des Transports
2017

Intersection Layout Sheet

Version: 1.0 Feb 1, 2016

Contract # 9015-E-0009

Work Order # 527

Date: July / 20 Day: Th / Hrs: 7 - 10 + 12 - 14 + 15 - 18

Location: HWY 400 @ DUNLOP ST-SIMCOE RD 901C Ramps: ERT 126, 42, 52, 62

Reg/Mun: CR Town/City: Barrie Area: _____

File Name: 3468900000 Device: Gretch / Jamar Unit # 16 / Interval 1: (AM) NN / PM

Observer: Alex Marinskaya Weather: Cloudy / Rain Road Condition: Dry / Wet
Clean Dry

LHRS & O/S: 46890 0

GPS: G-Star IV

Datum: WGS 84 (Y) / N

Lat: 44.38131

Long: 78.70821

Comments:

SIGNALIZED Y / (N)

If intersection is unsignalized;

Sign Type: Stop / Yield

Sign Size: _____ cm x _____ cm

Sign Condition:

NA: New / Good / Poor / Missing

SA: New / Good / Poor / Missing

WA: New / Good / Poor / Missing

EA: New / Good / Poor / Missing

Photograph all approach's

including all Signs (Y) / N

30

Hwy / Street Name

HWY 400

(sign)



INDICATE LOCATION &
DIRECTION OF VEHICLE

Vehicle

N S E W

Hwy / Street Name

DUNLOP ST W 50

50 DUNLOP ST W

Note: Hwy / Street Name

Show all lanes approaching and
leaving the intersection.

Show all channelization

If there are two or more through
lane in one direction, indicate
if these lanes are not continuous

Show pedestrian crosswalks

Hwy / Street Name

(sign)

(km/hr)

Layout of "Special Condition"



Ministry of Transportation

TVIS II - Traffic Volume Information System

AdHoc Turning Movement Total Count and Peak Summary Report

Description: **HWY 400 @ DUNLOP STREET (ERT)**

Region: **CENTRAL**

Survey Type: **TM - Interchange**

Hwy: **400**

Start Date: **20-Jul-2017 (Thu)**

I/C Side: **E**

LHRS: **46890**

End Date: **20-Jul-2017 (Thu)**

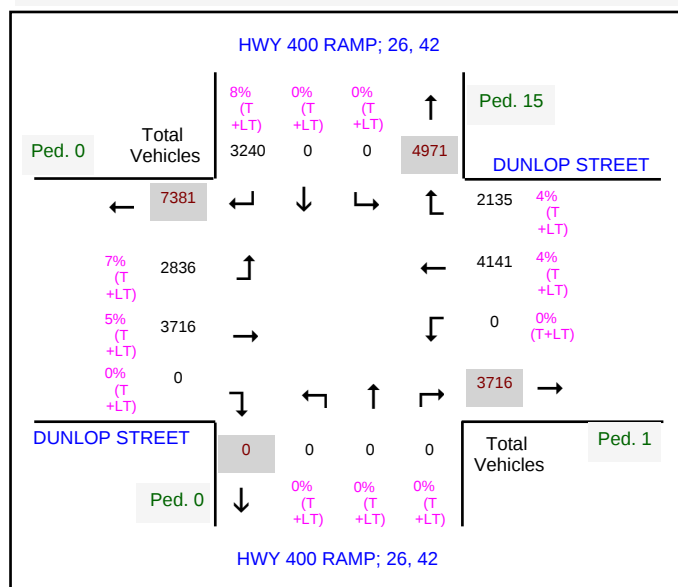
Int. Type: **T - N**

Offset: **0**

Schedule Summary: **TUES-THURS, 07:00-10:00, 12:00-14:00, 15:00-18:00**

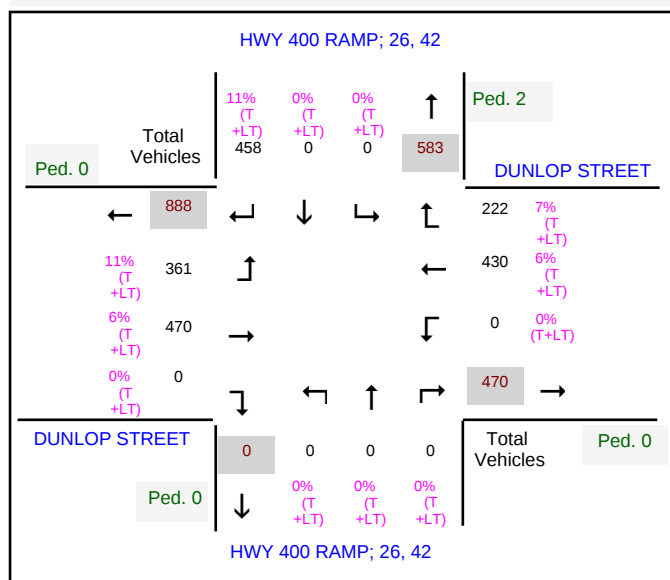
Total Count

Number of hours: 5



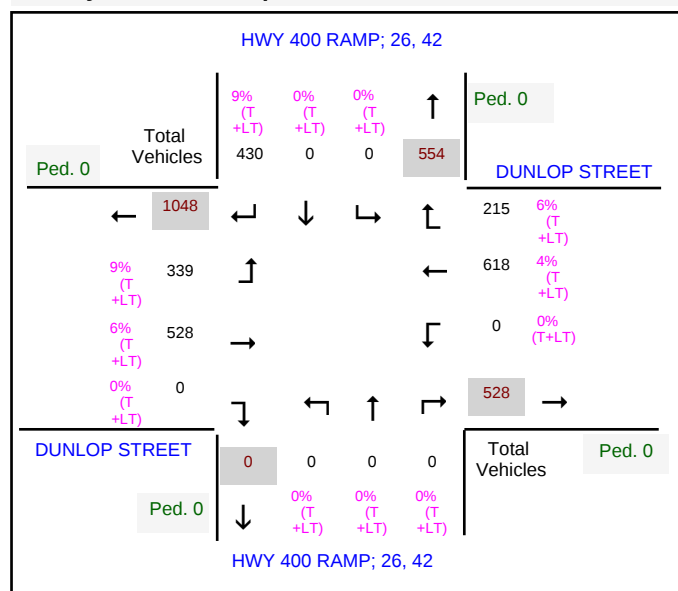
AM Peak Hour Report

Start Time: 07:45



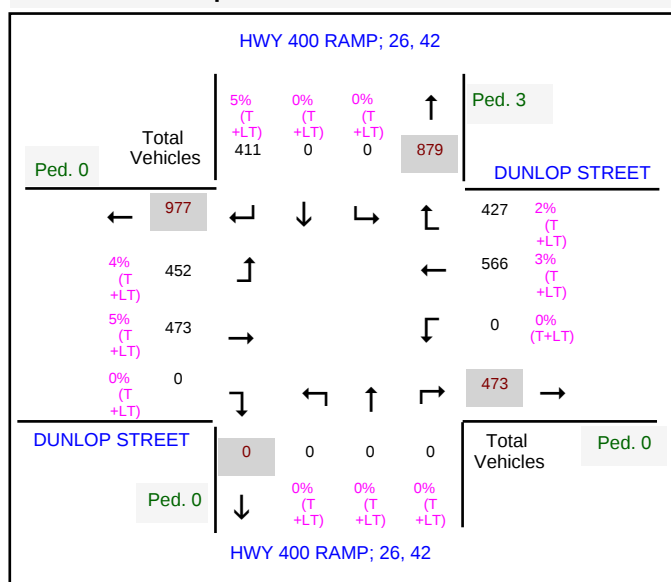
Midday Peak Hour Report

Start Time: 12:15



PM Peak Hour Report

Start Time: 16:00





Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: **HWY 400 @ DUNLOP STREET (ERT)**

Region: **CENTRAL**

Survey Type: **TM – Interchange**

Hwy: **400**

Start Date: **20-Jul-2017 (Thu)**

I/C Side: **E**

LHRS: **46890**

End Date: **20-Jul-2017 (Thu)**

Int. Type: **T - N**

Offset: **0**

Schedule Summary: **TUES-THURS, 07:00-10:00, 12:00-14:00, 15:00-18:00**

Start Time	Major Road Approaches																			Minor Road Approaches															Total Veh.							
	East										West									North										Not Configured												
	DUNLOP STREET										DUNLOP STREET									HWY 400 RAMP: Ramp(s): 26, 42																						
	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped		
←	↑	→	←	↑	→	←	↑	→	←		↑	→	←	↑	→	←	↑	→	←		↑	→	←	↑	→	←	↑	→	←		↑	→	←	↑	→	←	↑	→				
Period 1																																										
07:00	0	90	43	0	0	0	0	3	2	0	53	63	0	2	0	0	7	2	0	0	0	0	61	0	0	6	0	0	10	1												342
07:15	0	79	30	0	4	2	0	4	2	0	91	85	0	0	2	0	3	3	0	0	0	66	0	0	4	0	0	14	0												389	
07:30	0	86	49	0	4	2	0	8	5	0	76	93	0	0	2	0	5	4	0	0	0	77	0	0	6	0	0	8	1												425	
07:45	0	106	48	0	3	2	0	3	7	0	84	135	0	5	2	0	5	4	0	0	0	124	0	0	1	0	0	14	0												543	
08:00	0	95	46	0	1	1	0	3	1	0	70	84	0	3	1	0	8	7	0	0	0	104	0	0	2	0	0	10	1												436	
08:15	0	109	52	0	3	0	0	5	2	0	78	94	0	0	1	0	10	7	0	0	0	90	0	0	5	0	0	12	0												468	
08:30	0	95	60	0	2	0	0	5	3	0	90	128	0	0	6	0	8	1	0	0	0	91	0	0	1	0	0	4	1												494	
08:45	0	120	57	0	3	3	0	6	1	0	86	111	0	1	2	0	5	3	0	0	0	108	0	0	1	0	0	5	0												512	
09:00	0	98	29	0	2	0	0	5	1	0	58	99	0	1	0	0	9	2	0	0	0	87	0	0	2	0	0	5	0												398	
09:15	0	112	44	0	0	0	0	3	2	0	68	97	0	2	0	0	6	8	0	0	0	83	0	0	4	0	0	5	0												434	
09:30	0	123	52	0	2	0	0	11	3	0	66	112	0	0	1	0	6	0	0	0	0	79	0	0	6	0	0	6	0												467	
09:45	0	120	51	0	1	0	0	5	4	1	63	121	0	4	2	0	4	6	0	0	0	95	0	0	2	0	0	7	1												485	
Period 2																																										
12:00	0	153	52	0	3	1	0	4	4	0	63	122	0	3	2	0	2	1	0	0	0	94	0	0	3	0	0	2	0												509	
12:15	0	154	46	0	6	1	0	3	1	0	68	94	0	2	4	0	4	6	0	0	0	104	0	0	4	0	0	10	0												507	
12:30	0	140	53	0	1	1	0	3	2	0	78	136	0	1	10	0	3	3	0	0	0	102	0	0	3	0	0	3	0												539	
12:45	0	137	53	0	3	0	0	4	2	0	82	142	0	3	4	0	8	4	0	0	0	104	0	0	1	0	0	5	0												552	
13:00	0	164	51	0	0	1	0	3	4	0	80	122	0	2	0	0	8	3	0	0	0	81	0	0	6	0	0	7	0												532	
13:15	0	128	53	0	4	4	0	2	3	0	68	124	0	0	0	0	2	3	0	0	0	100	0	0	6	0	0	5	2												502	
13:30	0	169	52	0	2	2	0	3	3	0	56	104	0	1	2	0	5	3	0	0	0	108	0	0	1	0	0	6	0												517	
13:45	0	145	45	0	3	0	0	4	2	0	73	103	0	1	3	0	4	3	0	0	0	60	0	0	2	0	0	3	0												451	



Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: **HWY 400 @ DUNLOP STREET (ERT)**

Region: **CENTRAL**

Survey Type: **TM – Interchange**

Hwy: **400**

Start Date: **20-Jul-2017 (Thu)**

I/C Side: **E**

LHRS: **46890**

End Date: **20-Jul-2017 (Thu)**

Int. Type: **T - N**

Offset: **0**

Schedule Summary: **TUES-THURS, 07:00-10:00, 12:00-14:00, 15:00-18:00**

	Major Road Approaches																			Minor Road Approaches																
	East DUNLOP STREET										West DUNLOP STREET									North HWY 400 RAMP: Ramp(s): 26, 42										Not Configured						
Start Time	Cars ← ↑ →			Trucks ← ↑ →			Long Trucks ← ↑ →			Ped	Cars ← ↑ →			Trucks ← ↑ →			Long Trucks ← ↑ →			Ped	Cars ← ↑ →			Trucks ← ↑ →			Long Trucks ← ↑ →			Ped	Total Veh.					
Period 3																																				
15:00	0	142	86	0	1	0	0	2	2	0	79	135	0	2	0	0	2	2	0	0	0	0	76	0	0	1	0	0	1	2		531				
15:15	0	132	76	0	3	0	0	3	1	0	63	96	0	0	3	0	7	7	0	0	0	76	0	0	0	0	0	7	0		474					
15:30	0	118	82	0	4	0	0	1	1	0	93	118	0	0	2	0	5	4	0	0	0	88	0	0	0	0	0	2	1		518					
15:45	0	102	71	0	0	0	0	6	0	0	86	132	0	0	3	0	6	6	0	0	0	97	0	0	1	0	0	4	0		514					
16:00	0	156	112	0	1	0	0	2	1	0	102	122	0	2	4	0	5	4	0	0	0	100	0	0	2	0	0	4	1		617					
16:15	0	136	85	0	0	3	0	3	1	0	106	119	0	1	2	0	1	5	0	0	0	85	0	0	0	0	0	5	1		552					
16:30	0	125	118	0	2	0	0	3	2	0	113	101	0	2	0	0	2	4	0	0	0	104	0	0	2	0	0	5	0		583					
16:45	0	134	104	0	1	0	0	3	1	0	112	105	0	1	2	0	5	5	0	0	0	102	0	0	1	0	0	1	1		577					
17:00	0	143	107	0	0	1	0	0	0	0	107	107	0	2	0	0	1	1	0	0	0	97	0	0	3	0	0	5	0		574					
17:15	0	132	104	0	0	0	0	2	2	0	105	112	0	1	0	0	5	2	0	0	0	115	0	0	0	0	0	1	0		581					
17:30	0	121	74	0	0	1	0	2	0	0	116	105	0	1	0	0	6	1	0	0	0	108	0	0	3	0	0	0	1		538					
17:45	0	103	58	0	0	1	0	1	1	0	100	117	0	2	2	0	1	2	0	0	0	117	0	0	1	0	0	1	1		507					



Ministry of Transportation

Ministère des Transports

2016

Intersection Layout Sheet

Version: 1.0 Feb 1, 2016

Contract # **9015-E-0009**Work Order # **488**Date **August 03/** Day: **We** / Hrs: **7 - 10 + 12 - 14 + 15 - 18**Location: **HWY 400 @ DUNLOP ST - SIMCOE RD 90 IC SW RAMPS** Ramps: **West** /Reg/Mun: **CR** Town/City: **Barrie** Area: _____File Name: **4468900000** Device: **Gretch / Jamar** Unit # **9** / Interval 1: **(AM)** NN / PMObserver: **Renat Shuliko** Weather: **Clear** / Road Condition: **Good** /LHRS & O/S: **46890 0**

Comments:

GPS: **G - Star IV**Datum: WGS 84 **(Y)** / NLat: **44.378878**Long: **-79.713735**SIGNALIZED **(Y)** N

If intersection is unsignalized;

Sign Type: **Stop / Yield**

Sign Size: _____ cm x _____ cm

Sign Condition:

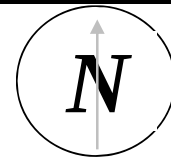
NA: New / Good / Poor / Missing

SA: New / Good / Poor / Missing

WA: New / Good / Poor / Missing

EA: New / Good / Poor / Missing

Photograph all approach's

including all Signs **(Y)** N**60**
(km/hr)**Cedar Pointe Dr**
Hwy / St
(sign)**3**
2
1INDICATE LOCATION &
DIRECTION OF VEHICLE

Vehicle

N S **(E)** **(W)**

Hwy / Street Name

Dunlop St**50**
(km/hr)**1** **2** **3****3** **2** **1****50**
(km/hr)**Dunlop St**

Hwy / Street Name

Note:Show all lanes approaching and
leaving the intersection.

Show all channelization

If there are two or more through

if these lanes are not continuous

lane in one direction, indicate

Show pedestrian crosswalks

Hwy / Street Name

to HWY 400**30**
(km/hr)**1** **2** **3**
RAMP

Layout of "Special Condition"



Ministry of Transportation

TVIS II - Traffic Volume Information System

AdHoc Turning Movement Total Count and Peak Summary Report

Description: **HWY 400 @ DUNLOP STREET (WRT)**

Region: **CENTRAL**

Survey Type: **TM - Interchange**

Hwy: **400**

Start Date: **03-Aug-2016 (Wed)**

I/C Side: **W**

LHRS: **46890**

End Date: **03-Aug-2016 (Wed)**

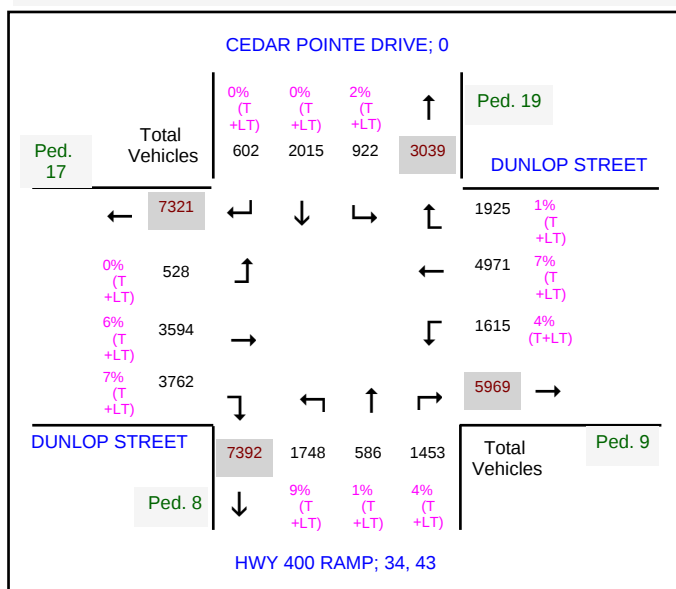
Int. Type: **Four Leg**

Offset: **0**

Schedule Summary: **TUES-THURS, 07:00-10:00, 12:00-14:00, 15:00-18:00**

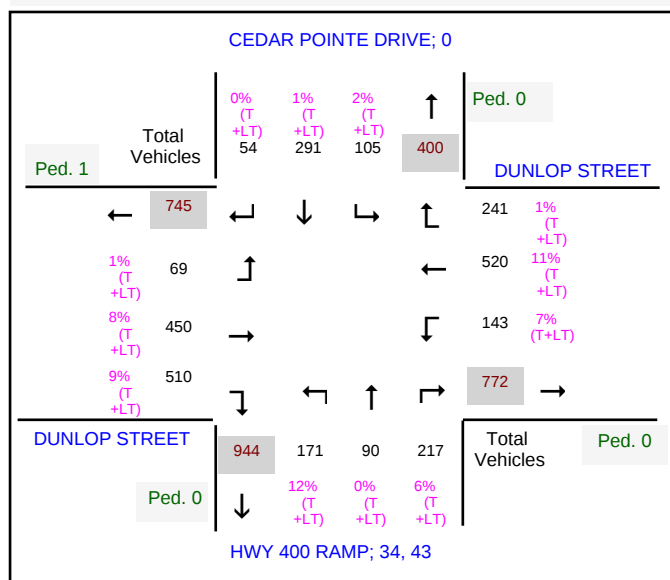
Total Count

Number of hours: 8



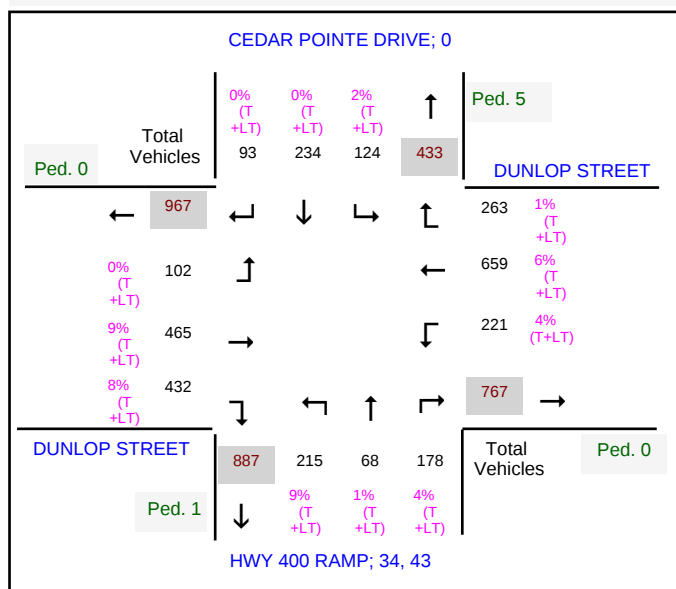
AM Peak Hour Report

Start Time: 08:00



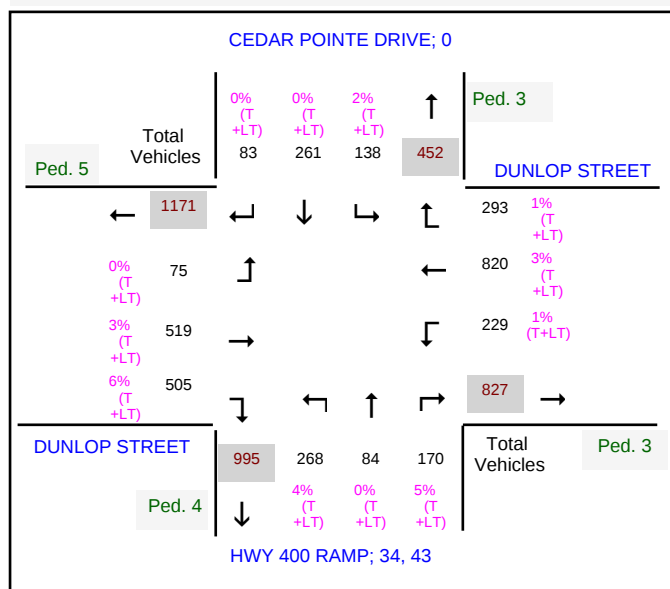
Midday Peak Hour Report

Start Time: 12:45



PM Peak Hour Report

Start Time: 16:30





Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: **HWY 400 @ DUNLOP STREET (WRT)**

Region: **CENTRAL**

Survey Type: **TM – Interchange**

Hwy: **400**

Start Date: **03-Aug-2016 (Wed)**

I/C Side: **W**

LHRS: **46890**

End Date: **03-Aug-2016 (Wed)**

Int. Type: **Four Leg**

Offset: **0**

Schedule Summary: **TUES-THURS, 07:00-10:00, 12:00-14:00, 15:00-18:00**

	Major Road Approaches																			Minor Road Approaches																			Total Veh.		
	East										West									North										South											
	DUNLOP STREET										DUNLOP STREET									CEDAR POINTE DRIVE: Ramp(s): 0										HWY 400 RAMP: Ramp(s): 34, 43											
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	
	←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		
Period 1																																									
07:00	28	77	12	0	14	0	3	5	0	0	3	55	116	0	3	2	0	5	3	0	19	53	5	0	0	0	0	0	0	54	13	49	1	0	0	6	0	0	0	526	
07:15	33	124	13	1	6	2	1	4	0	0	3	70	115	0	5	5	0	4	4	0	19	80	22	1	0	0	0	0	0	71	9	46	1	0	0	1	0	1	0	641	
07:30	31	106	42	2	7	0	1	6	0	0	4	108	106	0	8	1	0	3	4	0	21	90	13	0	0	0	0	0	0	53	14	60	1	0	0	2	0	0	0	683	
07:45	27	125	33	1	6	2	1	7	0	0	7	106	130	0	4	8	0	7	4	0	23	85	16	1	0	0	0	0	0	61	20	86	1	0	3	3	0	0	0	767	
08:00	26	115	47	0	14	0	1	1	0	0	14	98	103	0	5	4	0	4	3	1	25	73	12	0	1	0	0	0	0	40	19	45	3	0	2	5	0	1	0	661	
08:15	29	134	64	0	8	1	1	4	0	0	17	115	107	0	5	9	1	4	7	0	27	70	12	1	1	0	0	0	0	29	22	40	1	0	4	2	0	0	0	715	
08:30	42	93	66	0	8	0	2	3	0	0	15	102	103	0	6	6	0	4	2	0	23	71	12	0	0	0	0	0	0	42	25	62	3	0	2	2	0	1	0	695	
08:45	36	123	62	4	12	1	2	5	0	0	22	99	150	0	6	8	0	2	8	0	28	75	18	0	0	0	1	0	0	39	24	58	1	0	2	4	0	0	0	790	
09:00	37	95	47	1	11	0	1	5	0	0	9	81	117	0	1	6	0	7	5	0	22	51	20	0	0	0	0	0	0	44	12	26	2	0	1	3	0	0	0	604	
09:15	44	109	37	4	4	3	0	5	0	0	14	94	101	0	2	6	0	7	3	0	18	62	13	1	0	0	0	0	0	1	32	23	30	1	0	1	3	0	2	0	619
09:30	52	106	41	2	9	0	1	7	0	0	9	94	100	0	3	6	0	2	3	0	21	62	15	0	0	0	0	0	0	36	9	41	3	0	0	4	0	0	0	626	
09:45	60	126	52	1	7	2	1	5	0	2	17	84	98	0	4	9	0	5	10	3	33	43	15	1	0	0	0	0	0	4	41	20	40	1	0	0	0	0	1	0	676
Period 2																																									
12:00	66	178	50	2	5	1	1	4	1	1	15	102	97	0	4	2	0	3	3	2	34	56	22	0	1	0	0	0	0	1	39	19	47	2	0	3	4	0	1	0	762
12:15	47	135	65	0	9	2	1	2	0	0	18	91	87	0	3	2	0	3	5	0	35	59	30	1	0	1	0	0	0	1	37	20	27	5	1	2	6	0	0	0	694
12:30	48	142	61	2	2	0	1	3	0	0	27	110	116	0	4	8	0	5	4	0	32	63	29	0	0	0	0	0	0	47	11	44	4	0	0	0	0	0	0	763	
12:45	64	162	63	0	1	1	2	3	0	0	27	88	100	0	7	6	0	3	4	0	26	62	22	1	0	0	0	0	3	50	17	39	2	0	0	3	0	2	0	755	
13:00	42	152	68	2	8	0	2	1	0	0	25	102	89	0	9	7	0	5	2	0	28	58	24	0	0	0	0	0	0	44	16	41	3	1	1	3	0	2	0	735	
13:15	48	144	62	1	10	1	0	5	0	0	26	121	98	0	4	4	0	5	2	0	28	52	27	1	0	0	0	0	2	50	18	50	2	0	2	3	0	1	0	765	
13:30	59	161	68	0	6	0	1	6	0	0	24	111	112	0	6	6	0	4	2	0	40	62	20	0	0	0	0	0	0	51	16	40	3	0	0	1	0	0	1	799	
13:45	65	131	61	0	5	1	1	4	0	0	12	101	101	0	8	2	0	2	3	0	35	60	16	0	0	0	1	1	0	1	46	21	32	0	0	2	4	0	1	0	716



Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: **HWY 400 @ DUNLOP STREET (WRT)**

Region: **CENTRAL**

Survey Type: **TM – Interchange**

Hwy: **400**

Start Date: **03-Aug-2016 (Wed)**

I/C Side: **W**

LHRS: **46890**

End Date: **03-Aug-2016 (Wed)**

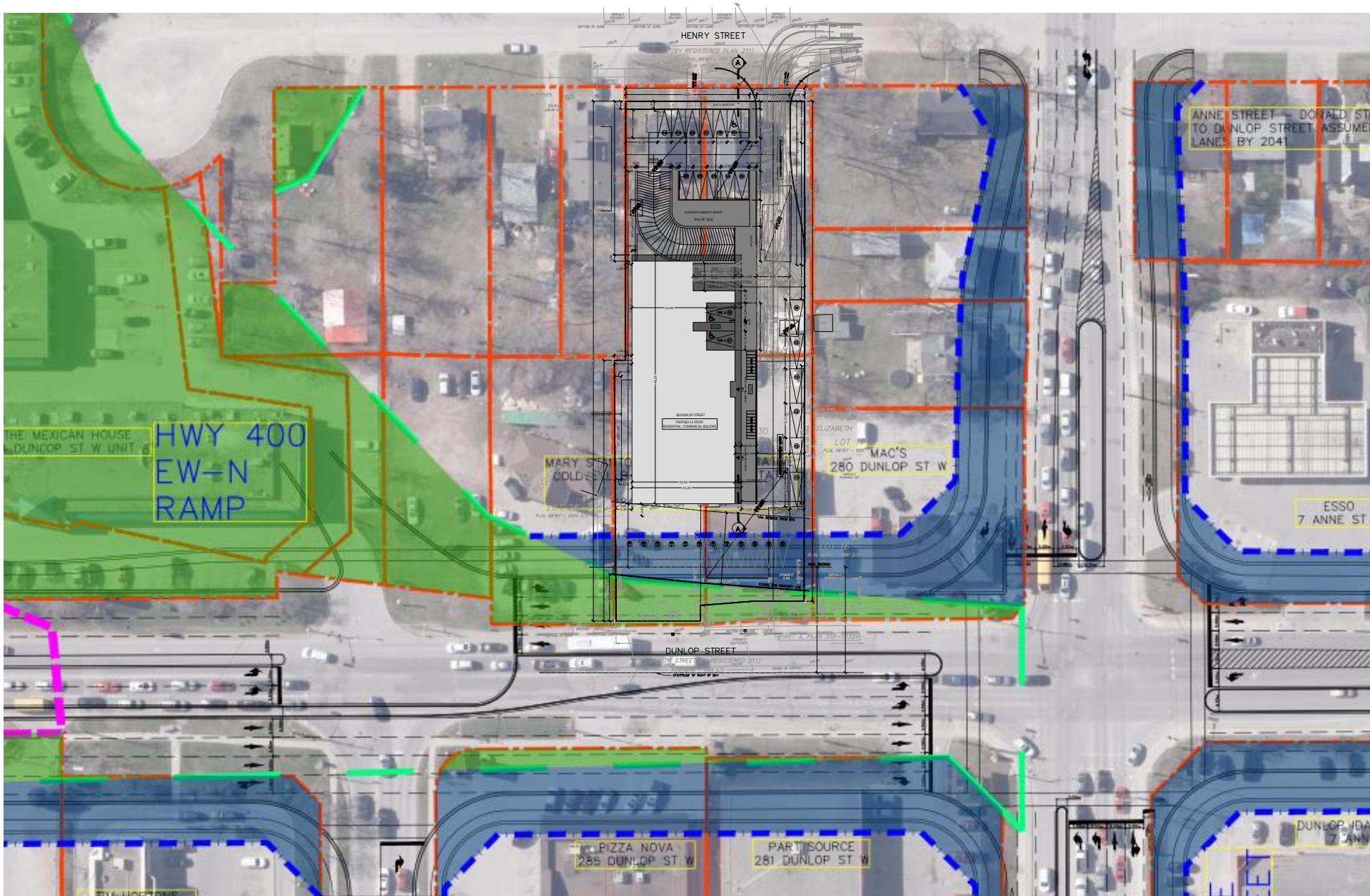
Int. Type: **Four Leg**

Offset: **0**

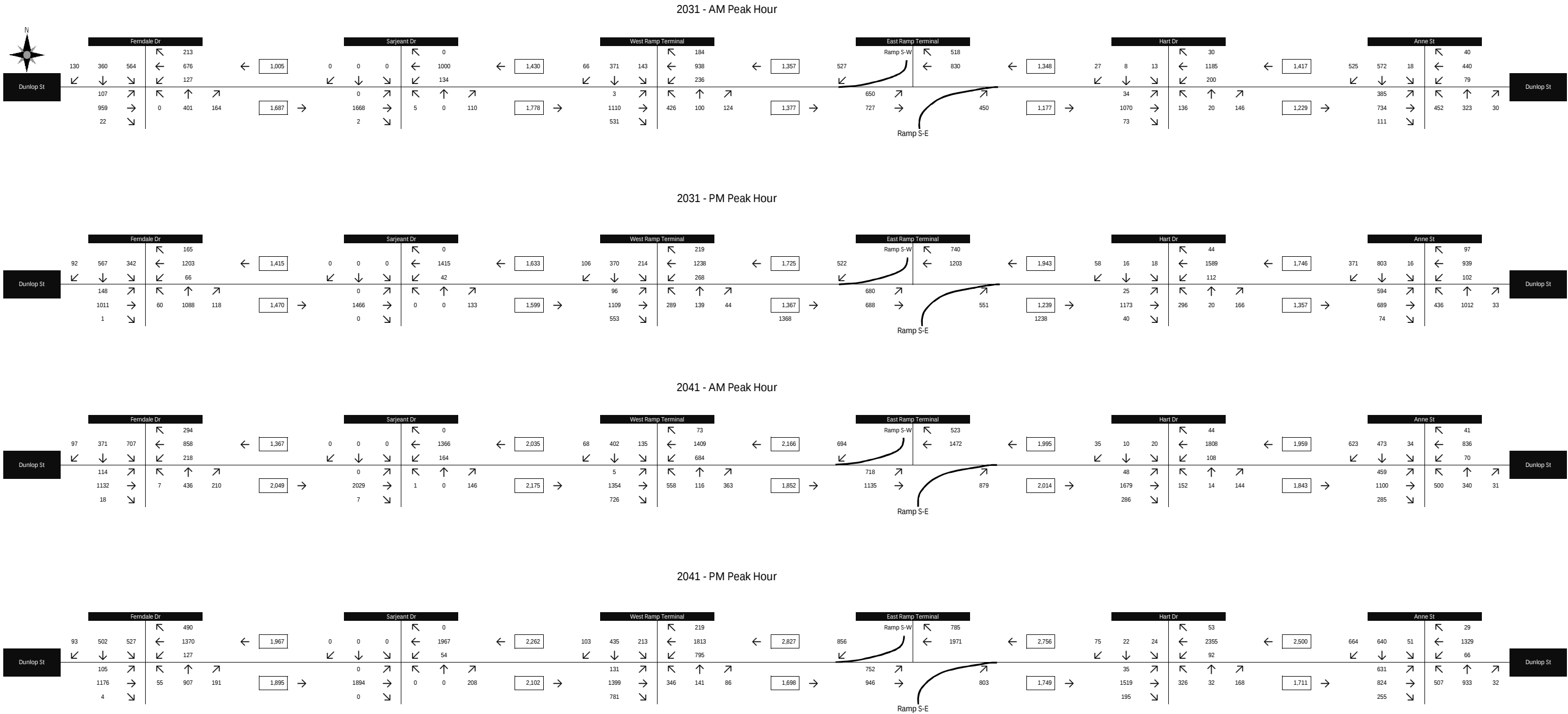
Schedule Summary: **TUES-THURS, 07:00-10:00, 12:00-14:00, 15:00-18:00**

Start Time	Major Road Approaches																		Minor Road Approaches																		Total Veh.				
	East									West									North									South													
	DUNLOP STREET									DUNLOP STREET									CEDAR POINTE DRIVE: Ramp(s): 0									HWY 400 RAMP: Ramp(s): 34, 43													
	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped											
	←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→		←	↑	→	←	↑	→	←	↑	→												
Period 3																																									
15:00	67	147	58	0	9	0	1	5	0	2	20	117	97	0	3	1	0	1	4	2	30	53	23	0	1	1	0	0	0	0	47	14	36	1	0	1	2	0	1	2	740
15:15	71	142	67	0	3	0	1	4	1	0	15	117	101	0	1	3	0	0	0	0	31	64	16	0	1	0	0	0	0	1	60	27	38	4	0	3	1	1	1	0	773
15:30	64	136	87	2	4	0	1	6	0	0	14	113	121	0	4	5	0	2	2	0	19	59	21	0	1	0	0	0	0	0	50	19	48	4	0	1	4	0	0	0	787
15:45	42	171	73	0	4	0	1	4	1	0	28	122	102	0	2	2	0	3	1	0	29	46	16	0	0	0	1	0	0	1	54	16	44	1	0	3	8	0	1	0	775
16:00	59	147	77	3	4	0	1	6	0	1	19	108	112	0	2	6	0	2	2	1	46	70	18	2	1	0	0	0	0	0	51	20	30	2	0	0	1	0	0	0	789
16:15	61	184	67	0	7	2	0	6	0	0	13	111	113	0	4	4	0	0	3	2	19	57	17	2	1	1	0	1	0	0	64	17	55	6	0	0	1	0	1	0	817
16:30	50	190	65	0	6	0	1	6	0	0	15	116	109	0	4	3	0	1	3	0	44	72	18	0	0	0	0	0	0	1	60	23	57	3	0	0	1	0	1	3	848
16:45	51	197	77	0	1	1	1	2	0	2	17	140	119	0	2	7	0	0	3	1	26	59	19	1	0	0	0	0	0	1	53	26	50	0	0	2	3	0	1	1	858
17:00	63	206	72	1	0	0	0	6	0	1	21	98	129	0	4	3	0	1	3	3	26	72	22	1	0	0	0	0	0	1	70	21	29	1	0	3	0	0	0	0	852
17:15	62	201	77	0	1	0	0	4	1	0	22	151	116	0	2	5	0	0	5	1	39	58	24	1	0	0	0	0	0	0	74	14	25	1	0	2	2	0	0	0	887
17:30	44	187	72	1	5	0	0	8	1	0	21	124	109	0	0	4	0	1	0	1	33	62	23	0	0	0	0	0	0	0	45	20	30	3	0	3	2	0	0	1	798
17:45	35	182	94	0	3	0	1	2	0	0	14	119	127	0	4	1	0	2	3	0	24	46	19	0	0	0	1	0	0	1	63	18	43	1	0	3	0	0	0	0	805

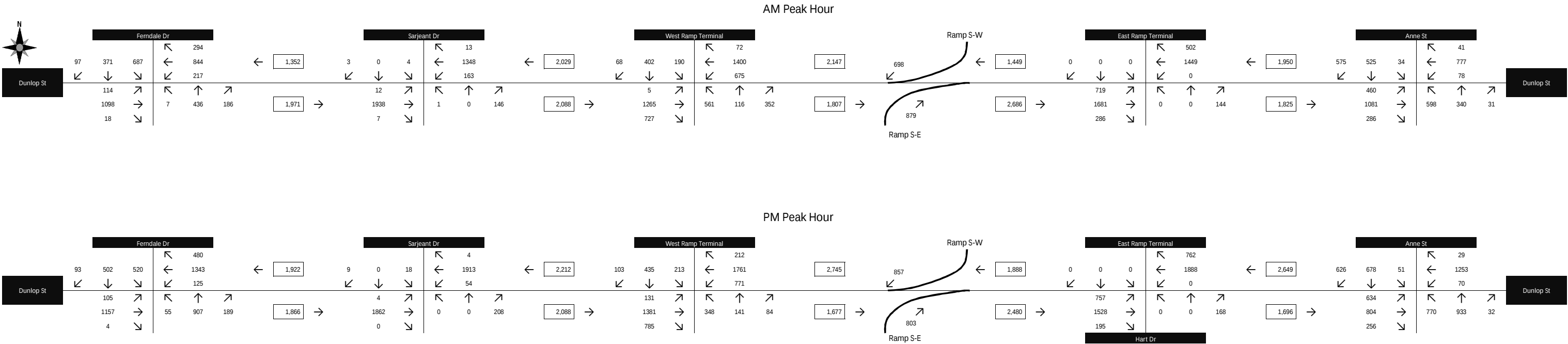
Dunlop Street EA Traffic Forecasts



Existing Lane Configuration
Traffic Volumes - 2031 and 2041



Alternative Design Concept 3
Traffic Volumes - 2041



TTS Data

Thu May 13 2021 16:51:50 GMT-0400 (Eastern Daylight Time) - Run Time: 363ms

Cross Tabulation Query Form - Household - 2016 v1.1

Row: Type of dwelling unit - dwell_type

Column: No. of vehicles in household - n_vehicle

Filters:

Planning district of household - pd_hhld In 81,
and

Type of dwelling unit - dwell_type In 2,

Household 2016

ROW : dwell_type

COLUMN : n_vehicle

dwell_type	n_vehicle	total
2	0	2630
2	1	8120
2	2	2097
2	3	251
2	99	18

APPENDIX B: Synchro Intersection Capacity Summaries

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Existing (2020) Traffic Volumes

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	237	208	85	251	39	153	257	43	33	344	202
Future Volume (vph)	237	237	208	85	251	39	153	257	43	33	344	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	1.00		1.00	1.00		0.99	0.99	
Frt		0.930			0.980			0.978			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3138	0	1719	3456	0	1597	3323	0	1612	3278	0
Flt Permitted	0.495			0.422			0.299			0.555		
Satd. Flow (perm)	893	3138	0	760	3456	0	501	3323	0	928	3278	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		210			16			19			112	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	5		9	9		5	10		17	17		10
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
Heavy Vehicles (%)	5%	4%	8%	5%	2%	3%	13%	4%	16%	12%	3%	3%
Adj. Flow (vph)	258	258	226	92	273	42	166	279	47	36	374	220
Shared Lane Traffic (%)												
Lane Group Flow (vph)	258	484	0	92	315	0	166	326	0	36	594	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Existing (2020) Traffic Volumes
AM Peak Hour

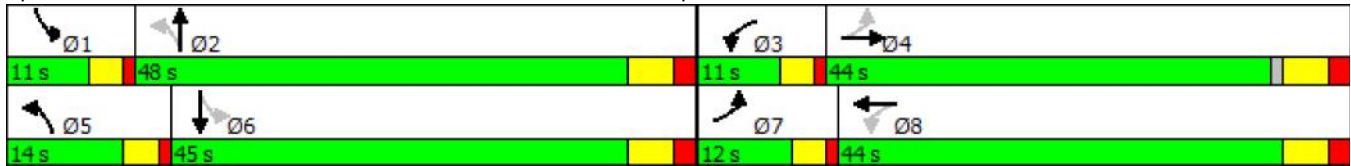
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	46.4	38.1		43.7	34.7		54.3	46.4		48.1	39.1	
Actuated g/C Ratio	0.42	0.34		0.39	0.31		0.49	0.42		0.43	0.35	
v/c Ratio	0.60	0.40		0.26	0.29		0.49	0.23		0.08	0.49	
Control Delay	29.0	16.8		20.6	28.2		22.1	22.0		16.4	24.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.0	16.8		20.6	28.2		22.1	22.0		16.4	24.7	
LOS	C	B		C	C		C	C		B	C	
Approach Delay		21.0			26.5			22.0			24.2	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	38.5	24.7		12.3	27.2		21.8	26.1		4.4	46.5	
Queue Length 95th (m)	58.7	39.7		22.8	39.2		36.1	37.7		10.2	64.1	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	429	1235		357	1190		342	1393		442	1221	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.60	0.39		0.26	0.26		0.49	0.23		0.08	0.49	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 111.6												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.60												
Intersection Signal Delay: 23.1							Intersection LOS: C					
Intersection Capacity Utilization 84.3%							ICU Level of Service E					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Existing (2020) Traffic Volumes
 AM Peak Hour

Analysis Period (min) 15

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Existing (2020) Traffic Volumes

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	1	133	4	67	0	342	185	104	447	0
Future Volume (vph)	3	0	1	133	4	67	0	342	185	104	447	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99				0.98	1.00		
Frt		0.966			0.858				0.850			
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1008	0	1736	1430	0	0	3438	1583	1641	3471	0
Flt Permitted		0.840		0.755						0.478		
Satd. Flow (perm)	0	876	0	1378	1430	0	0	3438	1544	823	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			73				201			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	4		1	1		4			4	4		
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
Heavy Vehicles (%)	100%	0%	0%	4%	0%	13%	0%	5%	2%	10%	4%	0%
Adj. Flow (vph)	3	0	1	145	4	73	0	372	201	113	486	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	145	77	0	0	372	201	113	486	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Existing (2020) Traffic Volumes

AM Peak Hour

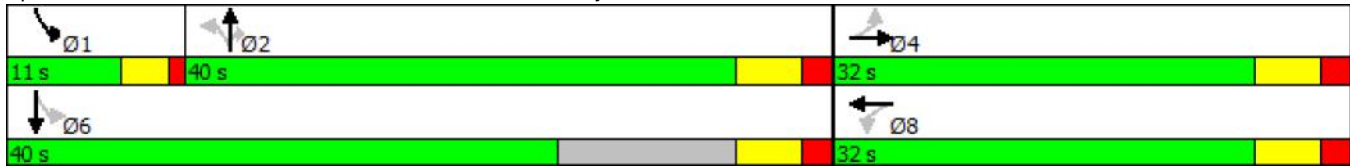
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		13.1		13.1	13.1			36.5	36.5	47.2	45.2	
Actuated g/C Ratio		0.19		0.19	0.19			0.52	0.52	0.67	0.64	
v/c Ratio		0.02		0.57	0.24			0.21	0.22	0.18	0.22	
Control Delay		0.2		35.0	9.1			10.8	2.7	5.4	5.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.2		35.0	9.1			10.8	2.7	5.4	5.9	
LOS		A		C	A			B	A	A	A	
Approach Delay		0.3			26.0			8.0			5.8	
Approach LOS		A			C			A			A	
Queue Length 50th (m)		0.0		18.4	0.5			14.3	0.0	4.4	12.2	
Queue Length 95th (m)		0.0		35.3	10.4			26.0	10.7	12.0	23.3	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		382		510	575			1784	897	634	2232	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.28	0.13			0.21	0.22	0.18	0.22	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 70.3												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.57												
Intersection Signal Delay: 9.9							Intersection LOS: A					
Intersection Capacity Utilization 82.3%							ICU Level of Service E					

Dunlop Street West - Mixed-Use Development
 6: Anne Street North & Church Driveway/Donald Street

Existing (2020) Traffic Volumes
 AM Peak Hour

Analysis Period (min) 15

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Existing (2020) Traffic Volumes

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	573	502	219	504	165	316	111	258	102	299	49
Future Volume (vph)	73	573	502	219	504	165	316	111	258	102	299	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.963				0.850		0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1776	1538	1641	3294	0	1703	1900	1538	1752	1839	0
Flt Permitted	0.323			0.118			0.169			0.679		
Satd. Flow (perm)	596	1776	1538	204	3294	0	303	1900	1538	1253	1839	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			381		49				280		7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
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
Heavy Vehicles (%)	3%	7%	5%	10%	7%	1%	6%	0%	5%	3%	1%	2%
Adj. Flow (vph)	79	623	546	238	548	179	343	121	280	111	325	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	623	546	238	727	0	343	121	280	111	378	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	

Dunlop Street West - Mixed-Use Development

Existing (2020) Traffic Volumes

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

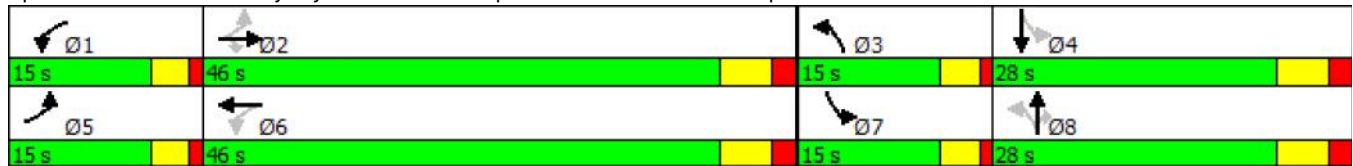
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Efect Green (s)	49.2	39.2	39.2	55.2	44.5		36.6	23.6	23.6	33.4	22.0	
Actuated g/C Ratio	0.48	0.38	0.38	0.53	0.43		0.35	0.23	0.23	0.32	0.21	
v/c Ratio	0.21	0.92	0.67	0.91	0.50		1.34	0.28	0.49	0.25	0.95	
Control Delay	12.8	52.0	12.0	58.7	22.0		201.8	35.9	7.6	23.4	75.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	12.8	52.0	12.0	58.7	22.0		201.8	35.9	7.6	23.4	75.3	
LOS	B	D	B	E	C		F	D	A	C	E	
Approach Delay		32.0			31.1			101.7			63.5	
Approach LOS		C			C			F			E	
Queue Length 50th (m)	7.5	123.7	25.2	29.8	55.2		~80.0	21.5	0.0	15.5	78.8	
Queue Length 95th (m)	14.9	#194.5	64.7	#78.4	75.7		#139.2	38.6	21.8	28.3	#138.3	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	425	688	829	262	1447		256	433	567	478	397	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.19	0.91	0.66	0.91	0.50		1.34	0.28	0.49	0.23	0.95	
Intersection Summary												
Area Type: Other												
Cycle Length: 104												
Actuated Cycle Length: 103.2												
Natural Cycle: 105												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.34												
Intersection Signal Delay: 51.3												
Intersection LOS: D												
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.

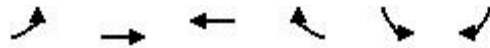
Queue shown is maximum after two cycles.

Splits and Phases: 9: Hiwyway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Existing (2020) Traffic Volumes
AM Peak Hour

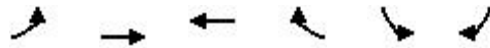


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	405	528	430	222	0	458
Future Volume (vph)	405	528	430	222	0	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1626	1792	1792	1509	0	1481
Flt Permitted	0.950					
Satd. Flow (perm)	1626	1792	1792	1509	0	1481
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	6%	6%	7%	0%	11%
Adj. Flow (vph)	440	574	467	241	0	498
Shared Lane Traffic (%)						
Lane Group Flow (vph)	440	574	467	241	0	498
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	57.7%			ICU Level of Service B		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Existing (2020) Traffic Volumes

AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	405	528	430	222	0	458
Future Volume (Veh/h)	405	528	430	222	0	458
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	440	574	467	241	0	498
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	467				1921	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	406				1946	406
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	58				100	16
cM capacity (veh/h)	1044				39	591
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	440	574	467	241	498	
Volume Left	440	0	0	0	0	
Volume Right	0	0	0	241	498	
cSH	1044	1700	1700	1700	591	
Volume to Capacity	0.42	0.34	0.27	0.14	0.84	
Queue Length 95th (m)	17.0	0.0	0.0	0.0	72.3	
Control Delay (s)	10.9	0.0	0.0	0.0	35.4	
Lane LOS	B				E	
Approach Delay (s)	4.7		0.0		35.4	
Approach LOS					E	
Intersection Summary						
Average Delay			10.1			
Intersection Capacity Utilization			57.7%		ICU Level of Service	B
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Existing (2020) Traffic Volumes

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	1	3	0	7	2	518	13	5	575	1
Future Volume (vph)	2	0	1	3	0	7	2	518	13	5	575	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955			0.902			0.996				
Flt Protected		0.968			0.987							
Satd. Flow (prot)	0	1756	0	0	1692	0	0	3429	0	0	3434	0
Flt Permitted		0.968			0.987							
Satd. Flow (perm)	0	1756	0	0	1692	0	0	3429	0	0	3434	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		146.0			105.8			125.2			115.2	
Travel Time (s)		10.5			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	5%	100%
Adj. Flow (vph)	2	0	1	3	0	8	2	563	14	5	625	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	11	0	0	579	0	0	631	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	29.4%											
Analysis Period (min)	15											
ICU Level of Service A												

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Existing (2020) Traffic Volumes

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	0	1	3	0	7	2	518	13	5	575	1
Future Volume (Veh/h)	2	0	1	3	0	7	2	518	13	5	575	1
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)	2	0	1	3	0	8	2	563	14	5	625	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								125			115	
pX, platoon unblocked	0.98	0.98	0.96	0.98	0.98	0.96	0.96			0.96		
vC, conflicting volume	929	1216	313	898	1210	288	626			577		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	696	990	200	664	984	168	526			470		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	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 %	99	100	100	99	100	99	100			100		
cM capacity (veh/h)	320	241	781	340	243	816	1008			1056		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	3	11	284	296	318	314						
Volume Left	2	3	2	0	5	0						
Volume Right	1	8	0	14	0	1						
cSH	398	591	1008	1700	1056	1700						
Volume to Capacity	0.01	0.02	0.00	0.17	0.00	0.18						
Queue Length 95th (m)	0.2	0.5	0.0	0.0	0.1	0.0						
Control Delay (s)	14.1	11.2	0.1	0.0	0.2	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	14.1	11.2	0.0		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			29.4%	ICU Level of Service					A			
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Existing (2020) Traffic Volumes
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	379	358	193	114	306	72	220	716	81	63	419	201
Future Volume (vph)	379	358	193	114	306	72	220	716	81	63	419	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		0.99	1.00		1.00	1.00		1.00	0.99	
Frt		0.947			0.972			0.985			0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3244	0	1719	3413	0	1787	3527	0	1805	3339	0
Flt Permitted	0.435			0.318			0.248			0.216		
Satd. Flow (perm)	823	3244	0	572	3413	0	465	3527	0	409	3339	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		95			26			12			76	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	7		12	12		7	9		15	15		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
Heavy Vehicles (%)	0%	2%	9%	5%	3%	0%	1%	0%	5%	0%	3%	0%
Adj. Flow (vph)	412	389	210	124	333	78	239	778	88	68	455	218
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	599	0	124	411	0	239	866	0	68	673	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Existing (2020) Traffic Volumes
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	48.0	38.0		46.0	37.0		54.2	44.2		48.0	39.0	
Actuated g/C Ratio	0.42	0.33		0.40	0.32		0.48	0.39		0.42	0.34	
v/c Ratio	0.99	0.52		0.41	0.37		0.71	0.63		0.26	0.56	
Control Delay	72.6	27.4		23.6	28.7		31.3	31.0		18.9	29.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	72.6	27.4		23.6	28.7		31.3	31.0		18.9	29.1	
LOS	E	C		C	C		C	C		B	C	
Approach Delay		45.8			27.5			31.1			28.1	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	67.7	49.7		16.9	36.1		32.5	87.3		8.4	59.6	
Queue Length 95th (m)	#138.5	67.8		29.3	50.3		#52.3	110.0		16.5	79.2	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	415	1172		301	1155		337	1375		257	1192	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.99	0.51		0.41	0.36		0.71	0.63		0.26	0.56	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 114												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.99												
Intersection Signal Delay: 34.3							Intersection LOS: C					
Intersection Capacity Utilization 93.9%							ICU Level of Service F					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

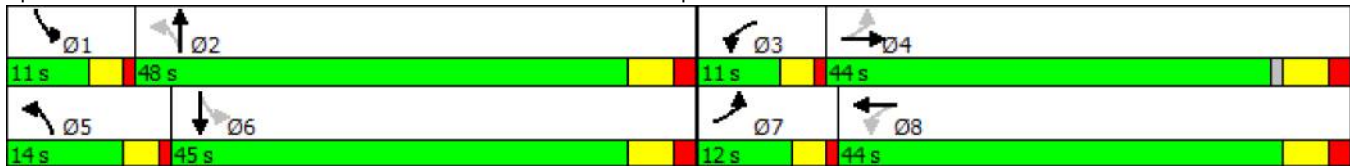
Existing (2020) Traffic Volumes
 PM Peak Hour

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Existing (2020) Traffic Volumes

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	2	250	0	172	0	818	339	196	440	0
Future Volume (vph)	2	0	2	250	0	172	0	818	339	196	440	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		1.00			0.98				0.97	1.00		
Frt		0.932			0.850				0.850			
Flt Protected		0.976		0.950						0.950		
Satd. Flow (prot)	0	1383	0	1787	1499	0	0	3574	1599	1752	3471	0
Flt Permitted		0.893		0.755						0.213		
Satd. Flow (perm)	0	1264	0	1420	1499	0	0	3574	1557	392	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			234				166			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	3					3			5	5		
Confl. Bikes (#/hr)						2						
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
Heavy Vehicles (%)	50%	0%	0%	1%	0%	6%	0%	1%	1%	3%	4%	0%
Adj. Flow (vph)	2	0	2	272	0	187	0	889	368	213	478	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	272	187	0	0	889	368	213	478	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Existing (2020) Traffic Volumes

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		19.1		19.1	19.1			34.1	34.1	47.2	45.2	
Actuated g/C Ratio		0.25		0.25	0.25			0.45	0.45	0.62	0.59	
v/c Ratio		0.01		0.77	0.34			0.56	0.47	0.58	0.23	
Control Delay		0.0		41.4	3.2			18.0	10.8	14.5	8.5	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		41.4	3.2			18.0	10.8	14.5	8.5	
LOS		A		D	A			B	B	B	A	
Approach Delay					25.8			15.9			10.3	
Approach LOS					C			B			B	
Queue Length 50th (m)		0.0		38.2	0.0			50.4	18.8	12.7	16.5	
Queue Length 95th (m)		0.0		64.5	8.1			79.0	47.1	27.6	29.6	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		493		486	666			1599	788	367	2055	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.56	0.28			0.56	0.47	0.58	0.23	

Intersection Summary

Area Type: Other

Cycle Length: 83

Actuated Cycle Length: 76.3

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 16.2

Intersection LOS: B

Dunlop Street West - Mixed-Use Development
 6: Anne Street North & Church Driveway/Donald Street

Existing (2020) Traffic Volumes

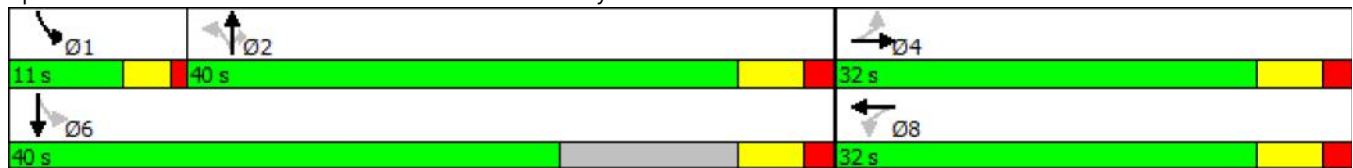
PM Peak Hour

Intersection Capacity Utilization 92.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Existing (2020) Traffic Volumes

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	539	377	212	649	213	330	108	195	165	228	96
Future Volume (vph)	98	539	377	212	649	213	330	108	195	165	228	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		0.99						1.00	
Frt			0.850		0.963				0.850		0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1827	1495	1770	3341	0	1656	1900	1404	1770	1791	0
Flt Permitted	0.184			0.150			0.207			0.682		
Satd. Flow (perm)	346	1827	1464	279	3341	0	361	1900	1404	1270	1791	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			410		50				212		18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
Confl. Bikes (#/hr)			1			1						2
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
Heavy Vehicles (%)	1%	4%	8%	2%	4%	2%	9%	0%	15%	2%	1%	1%
Adj. Flow (vph)	107	586	410	230	705	232	359	117	212	179	248	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	586	410	230	937	0	359	117	212	179	352	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development

Existing (2020) Traffic Volumes

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	49.0	38.4	38.4	53.0	40.4		35.7	22.7	22.7	34.3	22.0	
Actuated g/C Ratio	0.48	0.38	0.38	0.52	0.40		0.35	0.22	0.22	0.34	0.22	
v/c Ratio	0.37	0.85	0.51	0.77	0.69		1.35	0.28	0.44	0.37	0.88	
Control Delay	15.5	43.0	4.7	33.3	27.6		206.8	36.0	8.1	25.0	61.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.5	43.0	4.7	33.3	27.6		206.8	36.0	8.1	25.0	61.3	
LOS	B	D	A	C	C		F	D	A	C	E	
Approach Delay		26.1			28.7			116.5			49.0	
Approach LOS		C			C			F			D	
Queue Length 50th (m)	10.4	111.3	0.0	24.1	79.4		~82.4	21.1	0.0	26.1	70.0	
Queue Length 95th (m)	18.9	#171.9	19.2	#58.3	107.0		#142.3	37.8	19.6	43.1	#124.0	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	329	716	823	306	1368		266	421	477	489	400	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.33	0.82	0.50	0.75	0.68		1.35	0.28	0.44	0.37	0.88	
Intersection Summary												
Area Type:	Other											
Cycle Length: 104												
Actuated Cycle Length: 102												
Natural Cycle: 95												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.35												
Intersection Signal Delay: 48.3							Intersection LOS: D					
Intersection Capacity Utilization 94.5%							ICU Level of Service F					

Analysis Period (min) 15

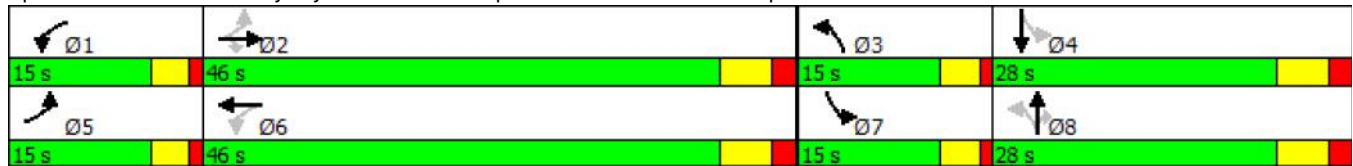
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

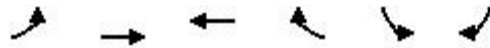
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

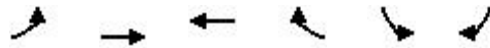
Existing (2020) Traffic Volumes
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	439	460	621	427	0	453
Future Volume (vph)	439	460	621	427	0	453
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1736	1810	1845	1583	0	1565
Flt Permitted	0.950					
Satd. Flow (perm)	1736	1810	1845	1583	0	1565
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	3%	2%	0%	5%
Adj. Flow (vph)	477	500	675	464	0	492
Shared Lane Traffic (%)						
Lane Group Flow (vph)	477	500	675	464	0	492
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	67.4%			ICU Level of Service C		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Existing (2020) Traffic Volumes
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	439	460	621	427	0	453
Future Volume (Veh/h)	439	460	621	427	0	453
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	477	500	675	464	0	492
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	675				2129	675
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	619				2172	619
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	46				100	0
cM capacity (veh/h)	891				23	453
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	477	500	675	464	492	
Volume Left	477	0	0	0	0	
Volume Right	0	0	0	464	492	
cSH	891	1700	1700	1700	453	
Volume to Capacity	0.54	0.29	0.40	0.27	1.09	
Queue Length 95th (m)	26.0	0.0	0.0	0.0	130.2	
Control Delay (s)	13.6	0.0	0.0	0.0	98.0	
Lane LOS	B				F	
Approach Delay (s)	6.6		0.0		98.0	
Approach LOS					F	
Intersection Summary						
Average Delay			21.0			
Intersection Capacity Utilization			67.4%		ICU Level of Service	C
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Existing (2020) Traffic Volumes

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	7	2	0	13	8	1138	21	11	674	7
Future Volume (vph)	6	0	7	2	0	13	8	1138	21	11	674	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.928			0.882			0.997			0.998	
Flt Protected		0.977			0.994						0.999	
Satd. Flow (prot)	0	1723	0	0	1481	0	0	3564	0	0	3497	0
Flt Permitted		0.977			0.994						0.999	
Satd. Flow (perm)	0	1723	0	0	1481	0	0	3564	0	0	3497	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		146.0			105.8			125.2			115.2	
Travel Time (s)		10.5			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	100%	0%	0%	0%	1%	0%	0%	3%	0%
Adj. Flow (vph)	7	0	8	2	0	14	9	1237	23	12	733	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	16	0	0	1269	0	0	753	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.7%						ICU Level of Service A					
Analysis Period (min)	15											

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Existing (2020) Traffic Volumes

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	0	7	2	0	13	8	1138	21	11	674	7
Future Volume (Veh/h)	6	0	7	2	0	13	8	1138	21	11	674	7
Sign Control	Stop				Stop				Free			
Grade	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)	7	0	8	2	0	14	9	1237	23	12	733	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)							125			115		
pX, platoon unblocked	0.83	0.83	0.95	0.83	0.83	0.81	0.95				0.81	
vC, conflicting volume	1412	2039	370	1665	2032	630	741				1260	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	813	1566	225	1117	1557	66	616				846	
tC, single (s)	7.5	6.5	6.9	9.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.5	4.0	3.3	2.2				2.2	
p0 queue free %	97	100	99	97	100	98	99				98	
cM capacity (veh/h)	219	91	743	63	92	800	922				646	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	15	16	628	642	378	374						
Volume Left	7	2	9	0	12	0						
Volume Right	8	14	0	23	0	8						
cSH	351	324	922	1700	646	1700						
Volume to Capacity	0.04	0.05	0.01	0.38	0.02	0.22						
Queue Length 95th (m)	1.1	1.2	0.2	0.0	0.5	0.0						
Control Delay (s)	15.7	16.7	0.3	0.0	0.6	0.0						
Lane LOS	C	C	A	A								
Approach Delay (s)	15.7	16.7	0.1	0.3								
Approach LOS	C	C										
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			47.7%	ICU Level of Service					A			
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	463	164	82	337	39	289	287	37	26	448	349
Future Volume (vph)	304	463	164	82	337	39	289	287	37	26	448	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	1.00		1.00	1.00		0.99	0.99	
Frt		0.961			0.985			0.983			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3283	0	1719	3476	0	1597	3355	0	1612	3238	0
Flt Permitted	0.416			0.277			0.159			0.541		
Satd. Flow (perm)	751	3283	0	500	3476	0	267	3355	0	905	3238	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			11			14			185	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	5		9	9		5	10		17	17		10
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
Heavy Vehicles (%)	5%	4%	8%	5%	2%	3%	13%	4%	16%	12%	3%	3%
Adj. Flow (vph)	330	503	178	89	366	42	314	312	40	28	487	379
Shared Lane Traffic (%)												
Lane Group Flow (vph)	330	681	0	89	408	0	314	352	0	28	866	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	46.3	38.1		43.7	34.7		54.5	46.6		48.1	39.1	
Actuated g/C Ratio	0.41	0.34		0.39	0.31		0.49	0.42		0.43	0.35	
v/c Ratio	0.87	0.59		0.33	0.38		1.26	0.25		0.06	0.69	
Control Delay	50.0	31.2		22.1	30.2		168.6	22.5		16.2	27.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.0	31.2		22.1	30.2		168.6	22.5		16.2	27.9	
LOS	D	C		C	C		F	C		B	C	
Approach Delay		37.3			28.7			91.4			27.6	
Approach LOS		D			C			F			C	
Queue Length 50th (m)	51.7	65.0		11.9	37.2		~68.6	29.0		3.4	73.2	
Queue Length 95th (m)	#96.7	85.3		22.0	51.4		#126.4	41.1		8.5	97.2	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	380	1178		271	1191		249	1406		433	1251	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.87	0.58		0.33	0.34		1.26	0.25		0.06	0.69	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 111.8												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.26												
Intersection Signal Delay: 44.8							Intersection LOS: D					
Intersection Capacity Utilization 95.7%							ICU Level of Service F					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Background Traffic
 AM Peak Hour

Analysis Period (min) 15

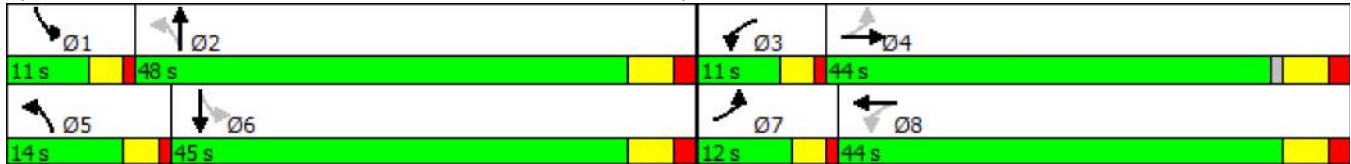
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2025) Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	1	189	4	67	0	406	219	104	635	0
Future Volume (vph)	3	0	1	189	4	67	0	406	219	104	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99				0.98	1.00		
Frt		0.966			0.858				0.850			
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1008	0	1736	1430	0	0	3438	1583	1641	3471	0
Flt Permitted		0.862		0.755						0.445		
Satd. Flow (perm)	0	899	0	1378	1430	0	0	3438	1544	767	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			73				217			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	4		1	1		4			4	4		
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
Heavy Vehicles (%)	100%	0%	0%	4%	0%	13%	0%	5%	2%	10%	4%	0%
Adj. Flow (vph)	3	0	1	205	4	73	0	441	238	113	690	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	205	77	0	0	441	238	113	690	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

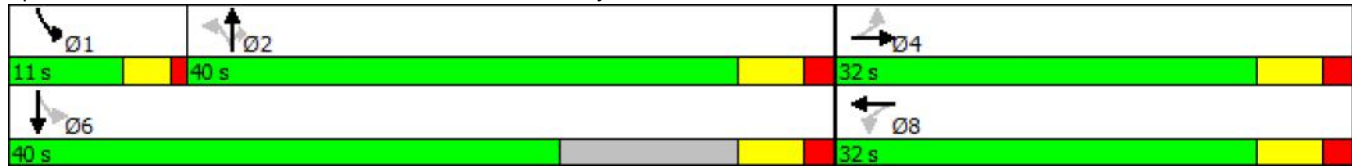
Future (2025) Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		16.0		16.0	16.0			34.5	34.5	44.9	42.9	
Actuated g/C Ratio		0.23		0.23	0.23			0.49	0.49	0.63	0.60	
v/c Ratio		0.01		0.66	0.20			0.26	0.28	0.20	0.33	
Control Delay		0.0		36.4	7.9			13.0	3.8	7.1	8.1	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		36.4	7.9			13.0	3.8	7.1	8.1	
LOS		A		D	A			B	A	A	A	
Approach Delay					28.6			9.8			7.9	
Approach LOS					C			A			A	
Queue Length 50th (m)		0.0		27.3	0.5			19.4	1.6	5.4	21.8	
Queue Length 95th (m)		0.0		48.4	10.0			35.0	15.0	14.7	41.2	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		391		511	577			1669	861	572	2230	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.40	0.13			0.26	0.28	0.20	0.31	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 71.1												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.66												
Intersection Signal Delay: 11.9							Intersection LOS: B					
Intersection Capacity Utilization 85.6%							ICU Level of Service E					

Analysis Period (min) 15

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Future (2025) Background Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	855	540	259	766	174	382	106	197	121	332	57
Future Volume (vph)	41	855	540	259	766	174	382	106	197	121	332	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972				0.850		0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1776	1538	1641	3314	0	1703	1900	1538	1752	1837	0
Flt Permitted	0.199			0.088			0.172			0.683		
Satd. Flow (perm)	367	1776	1538	152	3314	0	308	1900	1538	1260	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			349		30				214		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
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
Heavy Vehicles (%)	3%	7%	5%	10%	7%	1%	6%	0%	5%	3%	1%	2%
Adj. Flow (vph)	45	929	587	282	833	189	415	115	214	132	361	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	929	587	282	1022	0	415	115	214	132	423	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	

Dunlop Street West - Mixed-Use Development

Future (2025) Background Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	49.3	40.0	40.0	56.7	48.1		36.2	23.2	23.2	33.8	22.0	
Actuated g/C Ratio	0.47	0.38	0.38	0.55	0.46		0.35	0.22	0.22	0.32	0.21	
v/c Ratio	0.17	1.36	0.73	1.18	0.66		1.63	0.27	0.42	0.29	1.07	
Control Delay	12.7	200.4	16.6	140.7	24.5		324.8	36.1	7.6	24.1	105.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	12.7	200.4	16.6	140.7	24.5		324.8	36.1	7.6	24.1	105.8	
LOS	B	F	B	F	C		F	D	A	C	F	
Approach Delay		125.9			49.7			188.9			86.4	
Approach LOS		F			D			F			F	
Queue Length 50th (m)	4.2	~261.2	42.1	~56.7	90.2		~113.3	20.6	0.0	18.7	~99.1	
Queue Length 95th (m)	9.6	#338.2	87.9	#111.5	117.7		#175.4	37.1	19.3	32.8	#161.2	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	333	683	806	240	1548		254	422	508	476	394	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	1.36	0.73	1.18	0.66		1.63	0.27	0.42	0.28	1.07	

Intersection Summary

Area Type: Other

Cycle Length: 104

Actuated Cycle Length: 104

Natural Cycle: 125

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.63

Intersection Signal Delay: 108.0

Intersection LOS: F

Intersection Capacity Utilization 118.1%

ICU Level of Service H

Analysis Period (min) 15

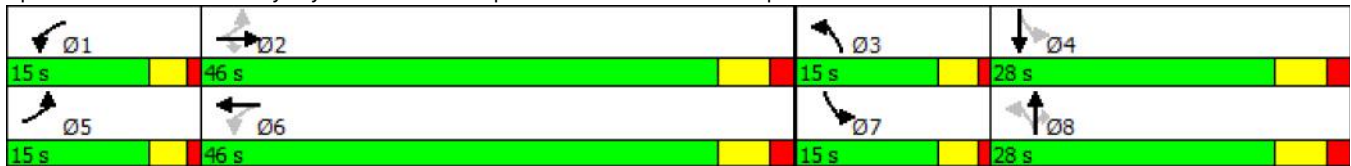
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

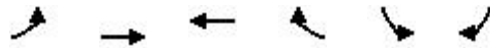
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

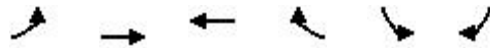
Future (2025) Background Traffic
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	516	618	612	357	0	489
Future Volume (vph)	516	618	612	357	0	489
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1626	1792	1792	1509	0	1481
Flt Permitted	0.950					
Satd. Flow (perm)	1626	1792	1792	1509	0	1481
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	6%	6%	7%	0%	11%
Adj. Flow (vph)	561	672	665	388	0	532
Shared Lane Traffic (%)						
Lane Group Flow (vph)	561	672	665	388	0	532
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	69.2%			ICU Level of Service C		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2025) Background Traffic
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	516	618	612	357	0	489
Future Volume (Veh/h)	516	618	612	357	0	489
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	561	672	665	388	0	532
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.91				0.91	0.91
vC, conflicting volume	665				2459	665
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	587				2549	587
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	35				100	0
cM capacity (veh/h)	864				10	451
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	561	672	665	388	532	
Volume Left	561	0	0	0	0	
Volume Right	0	0	0	388	532	
cSH	864	1700	1700	1700	451	
Volume to Capacity	0.65	0.40	0.39	0.23	1.18	
Queue Length 95th (m)	39.3	0.0	0.0	0.0	160.6	
Control Delay (s)	16.5	0.0	0.0	0.0	130.1	
Lane LOS	C				F	
Approach Delay (s)	7.5		0.0		130.1	
Approach LOS					F	
Intersection Summary						
Average Delay			27.8			
Intersection Capacity Utilization			69.2%		ICU Level of Service	C
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development
14: Anne Street North & Henry Street

Future (2025) Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	1	3	0	7	2	616	13	5	819	1
Future Volume (vph)	2	0	1	3	0	7	2	616	13	5	819	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955			0.902			0.997				
Flt Protected		0.968			0.987							
Satd. Flow (prot)	0	1756	0	0	1692	0	0	3432	0	0	3436	0
Flt Permitted		0.968			0.987							
Satd. Flow (perm)	0	1756	0	0	1692	0	0	3432	0	0	3436	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		146.0			105.8			125.2			115.2	
Travel Time (s)		10.5			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	5%	100%
Adj. Flow (vph)	2	0	1	3	0	8	2	670	14	5	890	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	11	0	0	686	0	0	896	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	36.2%				ICU Level of Service A							
Analysis Period (min)	15											

Dunlop Street West - Mixed-Use Development
14: Anne Street North & Henry Street

Future (2025) Background Traffic
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	0	1	3	0	7	2	616	13	5	819	1
Future Volume (Veh/h)	2	0	1	3	0	7	2	616	13	5	819	1
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)	2	0	1	3	0	8	2	670	14	5	890	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								125			115	
pX, platoon unblocked	0.94	0.94	0.91	0.94	0.94	0.95	0.91			0.95		
vC, conflicting volume	1248	1588	446	1137	1582	342	891			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	880	1245	194	762	1238	198	684			558		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	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 %	99	100	100	99	100	99	100			99		
cM capacity (veh/h)	225	163	747	277	165	775	837			970		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	3	11	337	349	450	446						
Volume Left	2	3	2	0	5	0						
Volume Right	1	8	0	14	0	1						
cSH	294	519	837	1700	970	1700						
Volume to Capacity	0.01	0.02	0.00	0.21	0.01	0.26						
Queue Length 95th (m)	0.2	0.5	0.1	0.0	0.1	0.0						
Control Delay (s)	17.4	12.1	0.1	0.0	0.2	0.0						
Lane LOS	C	B	A		A							
Approach Delay (s)	17.4	12.1	0.0		0.1							
Approach LOS	C	B										
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			36.2%	ICU Level of Service					A			
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	477	508	139	109	594	83	318	851	59	42	594	278
Future Volume (vph)	477	508	139	109	594	83	318	851	59	42	594	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	1.00		1.00	1.00		1.00	0.99	
Frt		0.968			0.982			0.990			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3358	0	1719	3446	0	1787	3555	0	1805	3342	0
Flt Permitted	0.212			0.251			0.117			0.156		
Satd. Flow (perm)	402	3358	0	452	3446	0	220	3555	0	296	3342	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			14			7			73	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	7		12	12		7	9		15	15		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
Heavy Vehicles (%)	0%	2%	9%	5%	3%	0%	1%	0%	5%	0%	3%	0%
Adj. Flow (vph)	518	552	151	118	646	90	346	925	64	46	646	302
Shared Lane Traffic (%)												
Lane Group Flow (vph)	518	703	0	118	736	0	346	989	0	46	948	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	48.0	38.0		46.0	37.0		54.2	44.2		48.0	39.0	
Actuated g/C Ratio	0.42	0.33		0.40	0.32		0.48	0.39		0.42	0.34	
v/c Ratio	1.94	0.62		0.45	0.65		1.44	0.72		0.21	0.80	
Control Delay	457.9	33.1		25.1	35.6		240.4	33.6		18.4	37.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	457.9	33.1		25.1	35.6		240.4	33.6		18.4	37.1	
LOS	F	C		C	D		F	C		B	D	
Approach Delay		213.3			34.2			87.2			36.2	
Approach LOS		F			C			F			D	
Queue Length 50th (m)	~172.6	69.0		16.1	76.1		~89.6	104.9		5.6	98.0	
Queue Length 95th (m)	#254.9	89.6		28.0	97.6		#149.3	130.8		12.2	124.6	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	267	1170		260	1158		241	1382		217	1191	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.94	0.60		0.45	0.64		1.44	0.72		0.21	0.80	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 114												
Natural Cycle: 140												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.94												
Intersection Signal Delay: 100.4							Intersection LOS: F					
Intersection Capacity Utilization 108.7%							ICU Level of Service G					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Background Traffic
 PM Peak Hour

Analysis Period (min) 15

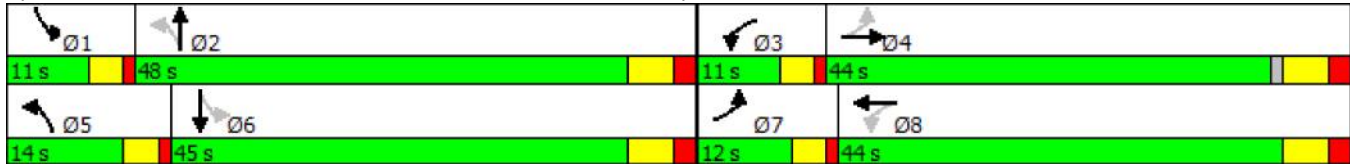
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2025) Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	2	333	0	172	0	991	410	196	587	0
Future Volume (vph)	2	0	2	333	0	172	0	991	410	196	587	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		1.00			0.98				0.97	1.00		
Frt		0.932			0.850				0.850			
Flt Protected		0.976		0.950						0.950		
Satd. Flow (prot)	0	1383	0	1787	1499	0	0	3574	1599	1752	3471	0
Flt Permitted		0.906		0.755						0.131		
Satd. Flow (perm)	0	1282	0	1420	1499	0	0	3574	1557	241	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			211				166			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	3					3			5	5		
Confl. Bikes (#/hr)						2						
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
Heavy Vehicles (%)	50%	0%	0%	1%	0%	6%	0%	1%	1%	3%	4%	0%
Adj. Flow (vph)	2	0	2	362	0	187	0	1077	446	213	638	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	362	187	0	0	1077	446	213	638	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2025) Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		23.4		23.4	23.4			34.1	34.1	47.1	45.1	
Actuated g/C Ratio		0.29		0.29	0.29			0.42	0.42	0.59	0.56	
v/c Ratio		0.01		0.88	0.32			0.71	0.59	0.78	0.33	
Control Delay		0.0		51.1	4.0			22.9	15.1	33.1	10.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		51.1	4.0			22.9	15.1	33.1	10.6	
LOS		A		D	A			C	B	C	B	
Approach Delay					35.1			20.6			16.2	
Approach LOS					D			C			B	
Queue Length 50th (m)		0.0		55.2	0.0			77.5	34.4	16.2	29.3	
Queue Length 95th (m)		0.0		#101.4	11.0			101.4	65.8	#50.2	40.2	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		477		459	628			1513	754	272	1944	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.79	0.30			0.71	0.59	0.78	0.33	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 80.5												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.88												
Intersection Signal Delay: 22.0	Intersection LOS: C											

Dunlop Street West - Mixed-Use Development
 6: Anne Street North & Church Driveway/Donald Street

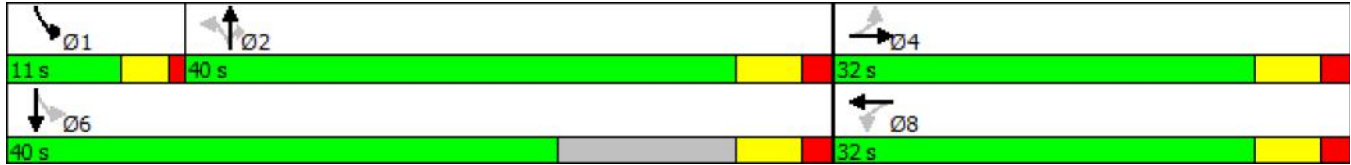
Future (2025) Background Traffic
 PM Peak Hour

Intersection Capacity Utilization 96.8% ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street

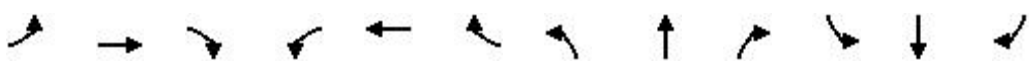


Dunlop Street West - Mixed-Use Development

Future (2025) Background Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	798	457	237	917	216	311	122	126	184	261	104
Future Volume (vph)	97	798	457	237	917	216	311	122	126	184	261	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00						1.00	
Frt			0.850		0.971				0.850		0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1827	1495	1770	3369	0	1656	1900	1404	1770	1793	0
Flt Permitted	0.100			0.095			0.179			0.669		
Satd. Flow (perm)	188	1827	1464	177	3369	0	312	1900	1404	1246	1793	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			355		32				130		17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
Confl. Bikes (#/hr)			1			1						2
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
Heavy Vehicles (%)	1%	4%	8%	2%	4%	2%	9%	0%	15%	2%	1%	1%
Adj. Flow (vph)	105	867	497	258	997	235	338	133	137	200	284	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	867	497	258	1232	0	338	133	137	200	397	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development

Future (2025) Background Traffic

9: Hiwyway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	50.7	40.0	40.0	55.3	42.3		35.4	22.4	22.4	34.6	22.0	
Actuated g/C Ratio	0.49	0.38	0.38	0.53	0.41		0.34	0.22	0.22	0.33	0.21	
v/c Ratio	0.47	1.24	0.64	0.98	0.89		1.36	0.33	0.34	0.43	1.01	
Control Delay	19.6	148.2	11.3	78.7	37.4		212.8	37.3	9.5	26.5	88.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.6	148.2	11.3	78.7	37.4		212.8	37.3	9.5	26.5	88.9	
LOS	B	F	B	E	D		F	D	A	C	F	
Approach Delay		92.7			44.6			128.6			68.0	
Approach LOS		F			D			F			E	
Queue Length 50th (m)	10.2	~229.3	20.6	37.9	122.2		~79.5	24.2	1.2	29.5	~83.5	
Queue Length 95th (m)	19.9	#304.9	57.6	#92.4	#175.3		#136.6	42.2	17.2	48.0	#146.9	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	264	702	781	262	1390		248	408	404	474	392	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.40	1.24	0.64	0.98	0.89		1.36	0.33	0.34	0.42	1.01	
Intersection Summary												
Area Type:	Other											
Cycle Length: 104												
Actuated Cycle Length: 104												
Natural Cycle: 135												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.36												
Intersection Signal Delay: 77.2	Intersection LOS: E											
Intersection Capacity Utilization 109.1%	ICU Level of Service H											

Analysis Period (min) 15

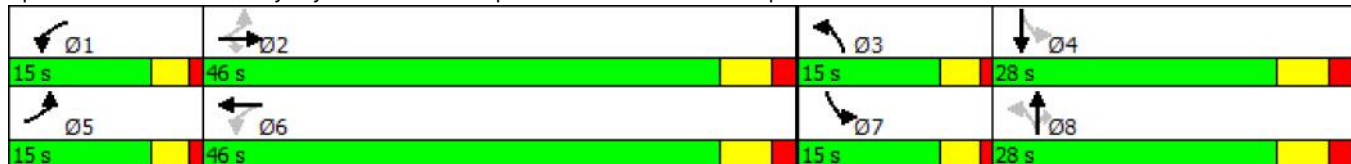
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

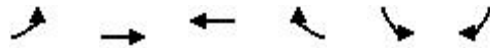
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

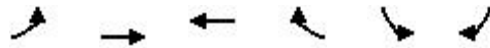
Future (2025) Background Traffic
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	549	564	886	569	0	484
Future Volume (vph)	549	564	886	569	0	484
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1736	1810	1845	1583	0	1565
Flt Permitted	0.950					
Satd. Flow (perm)	1736	1810	1845	1583	0	1565
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	3%	2%	0%	5%
Adj. Flow (vph)	597	613	963	618	0	526
Shared Lane Traffic (%)						
Lane Group Flow (vph)	597	613	963	618	0	526
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	83.7%			ICU Level of Service E		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2025) Background Traffic
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	549	564	886	569	0	484
Future Volume (Veh/h)	549	564	886	569	0	484
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	597	613	963	618	0	526
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.79				0.79	0.79
vC, conflicting volume	963				2770	963
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	822				3103	822
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	6				100	0
cM capacity (veh/h)	633				1	293
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	597	613	963	618	526	
Volume Left	597	0	0	0	0	
Volume Right	0	0	0	618	526	
cSH	633	1700	1700	1700	293	
Volume to Capacity	0.94	0.36	0.57	0.36	1.80	
Queue Length 95th (m)	103.1	0.0	0.0	0.0	278.7	
Control Delay (s)	48.7	0.0	0.0	0.0	402.2	
Lane LOS	E				F	
Approach Delay (s)	24.0		0.0		402.2	
Approach LOS					F	
Intersection Summary						
Average Delay			72.5			
Intersection Capacity Utilization			83.7%		ICU Level of Service	E
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development
14: Anne Street North & Henry Street

Future (2025) Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	7	2	0	13	8	1382	21	11	904	7
Future Volume (vph)	6	0	7	2	0	13	8	1382	21	11	904	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.928			0.882			0.998			0.999	
Flt Protected		0.977			0.994						0.999	
Satd. Flow (prot)	0	1723	0	0	1481	0	0	3568	0	0	3500	0
Flt Permitted		0.977			0.994						0.999	
Satd. Flow (perm)	0	1723	0	0	1481	0	0	3568	0	0	3500	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		146.0			105.8			125.2			115.2	
Travel Time (s)		10.5			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	100%	0%	0%	0%	1%	0%	0%	3%	0%
Adj. Flow (vph)	7	0	8	2	0	14	9	1502	23	12	983	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	16	0	0	1534	0	0	1003	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	54.5%				ICU Level of Service A							
Analysis Period (min)	15											

Dunlop Street West - Mixed-Use Development
14: Anne Street North & Henry Street

Future (2025) Background Traffic
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	0	7	2	0	13	8	1382	21	11	904	7
Future Volume (Veh/h)	6	0	7	2	0	13	8	1382	21	11	904	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)	7	0	8	2	0	14	9	1502	23	12	983	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)	125								115			
pX, platoon unblocked	0.81	0.81	0.91	0.81	0.81	0.77	0.91	0.77				
vC, conflicting volume	1794	2554	496	2055	2546	762	991	1525				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1000	1936	239	1322	1927	78	785	1074				
tC, single (s)	7.5	6.5	6.9	9.5	6.5	6.9	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.5	4.0	3.3	2.2	2.2				
p0 queue free %	95	100	99	95	100	98	99	98				
cM capacity (veh/h)	155	52	697	39	53	745	764	503				
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	15	16	760	774	504	500						
Volume Left	7	2	9	0	12	0						
Volume Right	8	14	0	23	0	8						
cSH	265	229	764	1700	503	1700						
Volume to Capacity	0.06	0.07	0.01	0.46	0.02	0.29						
Queue Length 95th (m)	1.4	1.8	0.3	0.0	0.6	0.0						
Control Delay (s)	19.4	21.9	0.3	0.0	0.7	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	19.4	21.9	0.2		0.4							
Approach LOS	C	C										
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			54.5%	ICU Level of Service					A			
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	385	734	111	79	440	40	452	323	30	18	572	525
Future Volume (vph)	385	734	111	79	440	40	452	323	30	18	572	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00	1.00			1.00		0.99	0.99	
Frt		0.980			0.988			0.987			0.928	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3375	0	1719	3489	0	1597	3382	0	1612	3214	0
Flt Permitted	0.329			0.138			0.088			0.524		
Satd. Flow (perm)	594	3375	0	249	3489	0	148	3382	0	877	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			9			10			218	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	5		9	9		5	10		17	17		10
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
Heavy Vehicles (%)	5%	4%	8%	5%	2%	3%	13%	4%	16%	12%	3%	3%
Adj. Flow (vph)	418	798	121	86	478	43	491	351	33	20	622	571
Shared Lane Traffic (%)												
Lane Group Flow (vph)	418	919	0	86	521	0	491	384	0	20	1193	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	46.3	38.1		43.7	34.7		54.7	48.8		48.1	39.1	
Actuated g/C Ratio	0.41	0.34		0.39	0.31		0.49	0.44		0.43	0.35	
v/c Ratio	1.28	0.79		0.46	0.48		2.43	0.26		0.05	0.94	
Control Delay	174.2	39.2		26.6	32.1		678.6	21.6		16.1	44.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	174.2	39.2		26.6	32.1		678.6	21.6		16.1	44.7	
LOS	F	D		C	C		F	C		B	D	
Approach Delay		81.4			31.4			390.3			44.2	
Approach LOS		F			C			F			D	
Queue Length 50th (m)	~97.0	101.5		11.5	49.8		~179.4	27.0		2.4	122.7	
Queue Length 95th (m)	#174.3	127.7		21.6	66.4		#247.3	45.3		6.7	#171.7	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	327	1189		189	1194		202	1481		423	1264	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.28	0.77		0.46	0.44		2.43	0.26		0.05	0.94	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 111.8												
Natural Cycle: 150												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 2.43												
Intersection Signal Delay: 129.7							Intersection LOS: F					
Intersection Capacity Utilization 118.4%							ICU Level of Service H					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Background Traffic
 AM Peak Hour

Analysis Period (min) 15

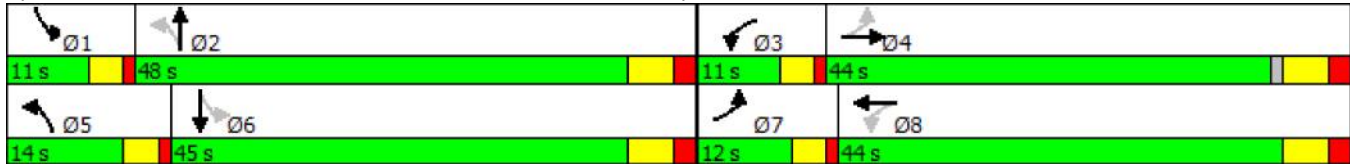
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	1	256	4	67	0	482	260	104	860	0
Future Volume (vph)	3	0	1	256	4	67	0	482	260	104	860	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99				0.98	1.00		
Frt		0.966			0.858				0.850			
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1008	0	1736	1430	0	0	3438	1583	1641	3471	0
Flt Permitted		0.878		0.755						0.395		
Satd. Flow (perm)	0	915	0	1378	1430	0	0	3438	1544	681	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			73				217			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	4		1	1		4			4	4		
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
Heavy Vehicles (%)	100%	0%	0%	4%	0%	13%	0%	5%	2%	10%	4%	0%
Adj. Flow (vph)	3	0	1	278	4	73	0	524	283	113	935	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	278	77	0	0	524	283	113	935	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

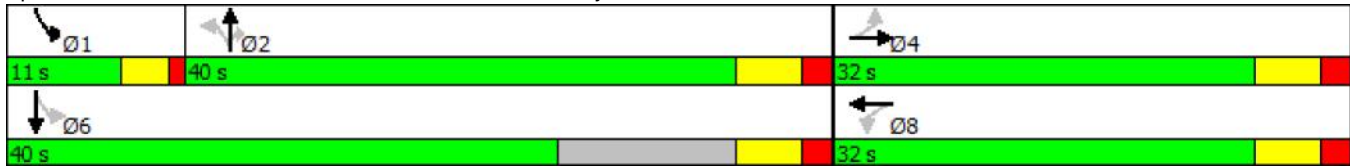
Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		19.3		19.3	19.3			34.6	34.6	45.0	43.0	
Actuated g/C Ratio		0.26		0.26	0.26			0.46	0.46	0.60	0.58	
v/c Ratio		0.01		0.78	0.18			0.33	0.34	0.23	0.47	
Control Delay		0.0		41.7	7.3			15.2	5.7	8.6	10.8	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		41.7	7.3			15.2	5.7	8.6	10.8	
LOS		A		D	A			B	A	A	B	
Approach Delay					34.2			11.9			10.6	
Approach LOS					C			B			B	
Queue Length 50th (m)		0.0		39.5	0.5			27.1	5.8	6.6	39.6	
Queue Length 95th (m)		0.0		66.9	9.9			43.8	22.5	15.7	63.4	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		384		489	555			1598	833	502	2135	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.57	0.14			0.33	0.34	0.23	0.44	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 74.5												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.78												
Intersection Signal Delay: 14.8							Intersection LOS: B					
Intersection Capacity Utilization 89.6%							ICU Level of Service E					

Analysis Period (min) 15

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Future (2031) Background Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1110	531	236	938	184	426	100	124	143	371	66
Future Volume (vph)	3	1110	531	236	938	184	426	100	124	143	371	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.975				0.850		0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1776	1538	1641	3320	0	1703	1900	1538	1752	1835	0
Flt Permitted	0.152			0.085			0.175			0.687		
Satd. Flow (perm)	280	1776	1538	147	3320	0	314	1900	1538	1267	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			296		25				135		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
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
Heavy Vehicles (%)	3%	7%	5%	10%	7%	1%	6%	0%	5%	3%	1%	2%
Adj. Flow (vph)	3	1207	577	257	1020	200	463	109	135	155	403	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1207	577	257	1220	0	463	109	135	155	475	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	

Dunlop Street West - Mixed-Use Development

Future (2031) Background Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

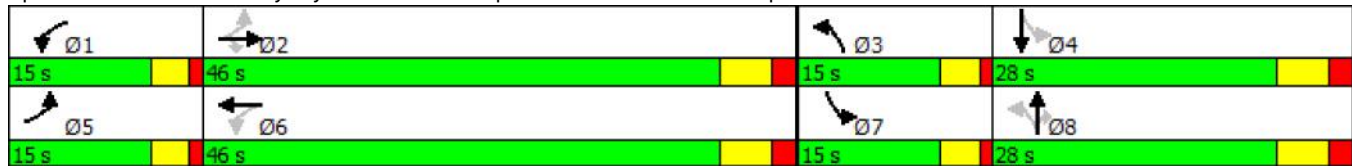
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	49.0	40.0	40.0	57.0	52.8		35.8	22.8	22.8	34.2	22.0	
Actuated g/C Ratio	0.47	0.38	0.38	0.55	0.51		0.34	0.22	0.22	0.33	0.21	
v/c Ratio	0.01	1.77	0.75	1.08	0.72		1.82	0.26	0.31	0.33	1.21	
Control Delay	11.0	376.2	19.8	108.8	23.3		405.7	36.1	8.0	24.7	150.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	11.0	376.2	19.8	108.8	23.3		405.7	36.1	8.0	24.7	150.6	
LOS	B	F	B	F	C		F	D	A	C	F	
Approach Delay		260.5			38.2			272.8			119.7	
Approach LOS		F			D			F			F	
Queue Length 50th (m)	0.3	~384.9	51.7	~46.4	94.8		~134.8	19.5	0.0	22.3	~122.8	
Queue Length 95th (m)	1.7	#465.8	98.4	#98.1	150.3		#198.8	35.4	15.6	37.9	#187.2	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	298	683	773	238	1697		255	416	442	477	394	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.01	1.77	0.75	1.08	0.72		1.82	0.26	0.31	0.32	1.21	
Intersection Summary												
Area Type:	Other											
Cycle Length: 104												
Actuated Cycle Length: 104												
Natural Cycle: 145												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.82												
Intersection Signal Delay: 171.7						Intersection LOS: F						
Intersection Capacity Utilization 135.3%						ICU Level of Service H						
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.

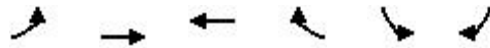
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2031) Background Traffic
AM Peak Hour

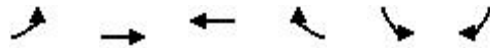


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	650	727	830	518	0	527
Future Volume (vph)	650	727	830	518	0	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1626	1792	1792	1509	0	1481
Flt Permitted	0.950					
Satd. Flow (perm)	1626	1792	1792	1509	0	1481
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	6%	6%	7%	0%	11%
Adj. Flow (vph)	707	790	902	563	0	573
Shared Lane Traffic (%)						
Lane Group Flow (vph)	707	790	902	563	0	573
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	86.4%			ICU Level of Service E		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2031) Background Traffic

AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	650	727	830	518	0	527
Future Volume (Veh/h)	650	727	830	518	0	527
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	707	790	902	563	0	573
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.88				0.88	0.88
vC, conflicting volume	902				3106	902
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	823				3319	823
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	0				0	0
cM capacity (veh/h)	679				0	318
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	707	790	902	563	573	
Volume Left	707	0	0	0	0	
Volume Right	0	0	0	563	573	
cSH	679	1700	1700	1700	318	
Volume to Capacity	1.04	0.46	0.53	0.33	1.80	
Queue Length 95th (m)	144.9	0.0	0.0	0.0	300.7	
Control Delay (s)	70.2	0.0	0.0	0.0	401.0	
Lane LOS	F				F	
Approach Delay (s)	33.2		0.0		401.0	
Approach LOS					F	
Intersection Summary						
Average Delay			79.0			
Intersection Capacity Utilization			86.4%		ICU Level of Service	E
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development
14: Anne Street North & Henry Street

Future (2031) Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	1	3	0	7	2	733	13	5	1111	1
Future Volume (vph)	2	0	1	3	0	7	2	733	13	5	1111	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955			0.902			0.997				
Flt Protected		0.968			0.987							
Satd. Flow (prot)	0	1756	0	0	1692	0	0	3431	0	0	3436	0
Flt Permitted		0.968			0.987							
Satd. Flow (perm)	0	1756	0	0	1692	0	0	3431	0	0	3436	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		146.0			105.8			125.2			115.2	
Travel Time (s)		10.5			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	5%	100%
Adj. Flow (vph)	2	0	1	3	0	8	2	797	14	5	1208	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	11	0	0	813	0	0	1214	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	44.2%											
Analysis Period (min)	15											
ICU Level of Service A												

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Future (2031) Background Traffic

AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	2	0	1	3	0	7	2	733	13	5	1111	1	
Future Volume (Veh/h)	2	0	1	3	0	7	2	733	13	5	1111	1	
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)	2	0	1	3	0	8	2	797	14	5	1208	1	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None								None				
Median storage (veh)													
Upstream signal (m)	125								115				
pX, platoon unblocked	0.88	0.88	0.85	0.88	0.88	0.94	0.85						0.94
vC, conflicting volume	1629	2034	604	1423	2027	406	1209						811
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1131	1593	172	896	1585	242	886						673
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	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 %	99	100	100	99	100	99	100						99
cM capacity (veh/h)	138	94	718	207	95	720	655						872
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	3	11	400	412	609	605							
Volume Left	2	3	2	0	5	0							
Volume Right	1	8	0	14	0	1							
cSH	189	430	655	1700	872	1700							
Volume to Capacity	0.02	0.03	0.00	0.24	0.01	0.36							
Queue Length 95th (m)	0.4	0.6	0.1	0.0	0.1	0.0							
Control Delay (s)	24.3	13.6	0.1	0.0	0.2	0.0							
Lane LOS	C	B	A	A									
Approach Delay (s)	24.3	13.6	0.0	0.1									
Approach LOS	C	B											
Intersection Summary													
Average Delay			0.2										
Intersection Capacity Utilization			44.2%	ICU Level of Service				A					
Analysis Period (min)			15										

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	594	689	74	102	939	97	436	1012	33	16	803	371
Future Volume (vph)	594	689	74	102	939	97	436	1012	33	16	803	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00	1.00			1.00			0.99	
Frt		0.986			0.986			0.995			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3458	0	1719	3459	0	1787	3583	0	1805	3346	0
Flt Permitted	0.103			0.178			0.088			0.123		
Satd. Flow (perm)	196	3458	0	321	3459	0	166	3583	0	234	3346	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			10			3			71	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	7		12	12		7	9		15	15		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
Heavy Vehicles (%)	0%	2%	9%	5%	3%	0%	1%	0%	5%	0%	3%	0%
Adj. Flow (vph)	646	749	80	111	1021	105	474	1100	36	17	873	403
Shared Lane Traffic (%)												
Lane Group Flow (vph)	646	829	0	111	1126	0	474	1136	0	17	1276	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	49.0	39.0		47.0	38.0		54.6	48.6		48.0	39.0	
Actuated g/C Ratio	0.43	0.34		0.41	0.33		0.47	0.42		0.42	0.34	
v/c Ratio	3.31	0.70		0.51	0.98		2.16	0.75		0.09	1.08	
Control Delay	1068.5	36.4		27.7	60.4		558.6	32.9		17.1	85.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	1068.5	36.4		27.7	60.4		558.6	32.9		17.1	85.7	
LOS	F	D		C	E		F	C		B	F	
Approach Delay		488.4			57.4			187.6			84.8	
Approach LOS		F			E			F			F	
Queue Length 50th (m)	~256.7	88.0		15.0	137.3		~165.2	108.7		2.1	~172.1	
Queue Length 95th (m)	#330.1	111.4		26.6	#186.0		#232.8	159.7		6.2	#216.7	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	195	1179		216	1149		219	1515		193	1181	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	3.31	0.70		0.51	0.98		2.16	0.75		0.09	1.08	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 115												
Natural Cycle: 150												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 3.31												
Intersection Signal Delay: 214.3							Intersection LOS: F					
Intersection Capacity Utilization 137.2%							ICU Level of Service H					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Background Traffic
 PM Peak Hour

Analysis Period (min) 15

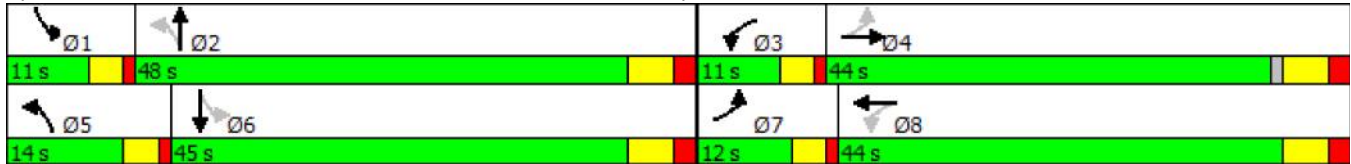
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔	↔	↔	↔	
Traffic Volume (vph)	2	0	2	433	0	172	0	1198	495	196	764	0
Future Volume (vph)	2	0	2	433	0	172	0	1198	495	196	764	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		1.00			0.98				0.97	1.00		
Frt		0.932			0.850				0.850			
Flt Protected		0.976		0.950						0.950		
Satd. Flow (prot)	0	1383	0	1787	1499	0	0	3574	1599	1752	3471	0
Flt Permitted		0.912		0.755						0.105		
Satd. Flow (perm)	0	1291	0	1420	1499	0	0	3574	1557	194	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			198				166			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	3					3			5	5		
Confl. Bikes (#/hr)						2						
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
Heavy Vehicles (%)	50%	0%	0%	1%	0%	6%	0%	1%	1%	3%	4%	0%
Adj. Flow (vph)	2	0	2	471	0	187	0	1302	538	213	830	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	471	187	0	0	1302	538	213	830	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		26.0		26.0	26.0			34.0	34.0	47.0	45.0	
Actuated g/C Ratio		0.31		0.31	0.31			0.41	0.41	0.57	0.54	
v/c Ratio		0.01		1.06	0.31			0.89	0.73	0.88	0.44	
Control Delay		0.0		90.2	4.5			32.1	20.9	51.9	12.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		90.2	4.5			32.1	20.9	51.9	12.4	
LOS		A		F	A			C	C	D	B	
Approach Delay					65.8			28.8			20.5	
Approach LOS					E			C			C	
Queue Length 50th (m)		0.0		~87.3	0.0			103.0	51.0	18.1	40.8	
Queue Length 95th (m)		0.0		#145.0	12.7			#146.4	91.5	#58.6	54.6	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		467		444	605			1464	735	241	1881	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		1.06	0.31			0.89	0.73	0.88	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 83

Actuated Cycle Length: 83

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 33.2

Intersection LOS: C

Dunlop Street West - Mixed-Use Development
 6: Anne Street North & Church Driveway/Donald Street

Future (2031) Background Traffic
 PM Peak Hour

Intersection Capacity Utilization 107.1% ICU Level of Service G

Analysis Period (min) 15

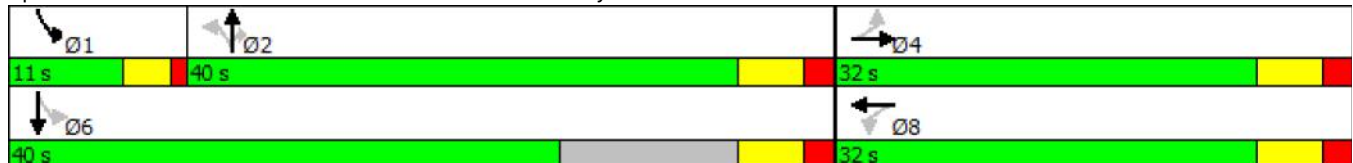
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street

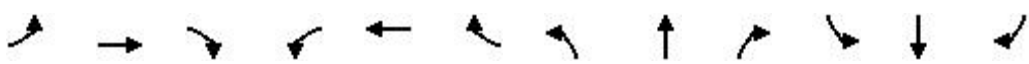


Dunlop Street West - Mixed-Use Development

Future (2031) Background Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1109	553	268	1238	219	289	139	44	214	370	106
Future Volume (vph)	96	1109	553	268	1238	219	289	139	44	214	370	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00						1.00	
Frt			0.850		0.977				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1827	1495	1770	3390	0	1656	1900	1404	1770	1813	0
Flt Permitted	0.100			0.094			0.180			0.622		
Satd. Flow (perm)	188	1827	1464	175	3390	0	314	1900	1404	1159	1813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			309		22				115		13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
Confl. Bikes (#/hr)			1			1						2
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
Heavy Vehicles (%)	1%	4%	8%	2%	4%	2%	9%	0%	15%	2%	1%	1%
Adj. Flow (vph)	104	1205	601	291	1346	238	314	151	48	233	402	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	1205	601	291	1584	0	314	151	48	233	517	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development

Future (2031) Background Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	50.6	40.0	40.0	55.4	42.4		35.2	22.2	22.2	34.8	22.0	
Actuated g/C Ratio	0.49	0.38	0.38	0.53	0.41		0.34	0.21	0.21	0.33	0.21	
v/c Ratio	0.46	1.72	0.80	1.11	1.14		1.27	0.37	0.12	0.52	1.32	
Control Delay	19.5	353.9	22.6	116.7	100.9		175.1	38.2	0.7	28.7	193.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.5	353.9	22.6	116.7	100.9		175.1	38.2	0.7	28.7	193.0	
LOS	B	F	C	F	F		F	D	A	C	F	
Approach Delay		231.5			103.4			118.5			141.9	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	10.1	~379.6	57.0	~54.0	~205.9		~68.4	27.7	0.0	35.2	~141.1	
Queue Length 95th (m)	19.7	#460.5	#110.3	#110.0	#261.0		#124.2	47.1	0.0	55.8	#207.3	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	264	702	753	261	1393		248	404	389	454	393	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.39	1.72	0.80	1.11	1.14		1.27	0.37	0.12	0.51	1.32	
Intersection Summary												
Area Type:	Other											
Cycle Length: 104												
Actuated Cycle Length: 104												
Natural Cycle: 145												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.72												
Intersection Signal Delay: 159.1							Intersection LOS: F					
Intersection Capacity Utilization 131.8%							ICU Level of Service H					

Analysis Period (min) 15

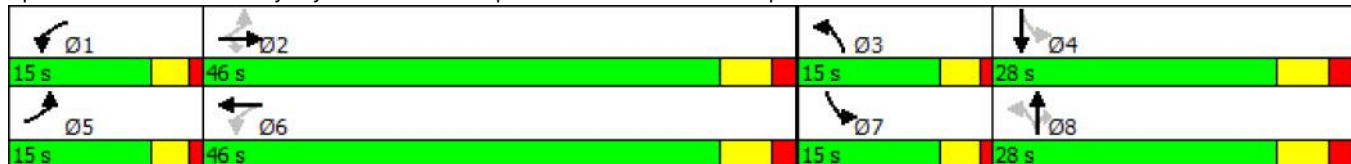
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

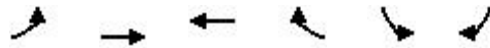
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

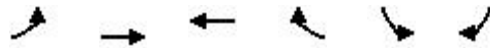
Future (2031) Background Traffic
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	680	688	1203	740	0	522
Future Volume (vph)	680	688	1203	740	0	522
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1736	1810	1845	1583	0	1565
Flt Permitted	0.950					
Satd. Flow (perm)	1736	1810	1845	1583	0	1565
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	3%	2%	0%	5%
Adj. Flow (vph)	739	748	1308	804	0	567
Shared Lane Traffic (%)						
Lane Group Flow (vph)	739	748	1308	804	0	567
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	107.7%			ICU Level of Service G		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2031) Background Traffic
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	680	688	1203	740	0	522
Future Volume (Veh/h)	680	688	1203	740	0	522
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	739	748	1308	804	0	567
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.58				0.58	0.58
vC, conflicting volume	1308				3534	1308
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1168				5016	1168
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	0				0	0
cM capacity (veh/h)	342				0	134
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	739	748	1308	804	567	
Volume Left	739	0	0	0	0	
Volume Right	0	0	0	804	567	
cSH	342	1700	1700	1700	134	
Volume to Capacity	2.16	0.44	0.77	0.47	4.22	
Queue Length 95th (m)	437.7	0.0	0.0	0.0	Err	
Control Delay (s)	557.3	0.0	0.0	0.0	Err	
Lane LOS	F				F	
Approach Delay (s)	277.0		0.0		Err	
Approach LOS					F	
Intersection Summary						
Average Delay		1459.7				
Intersection Capacity Utilization		107.7%		ICU Level of Service		G
Analysis Period (min)		15				

Dunlop Street West - Mixed-Use Development
14: Anne Street North & Henry Street

Future (2031) Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	7	2	0	13	8	1674	21	11	1181	7
Future Volume (vph)	6	0	7	2	0	13	8	1674	21	11	1181	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.928			0.882			0.998			0.999	
Flt Protected		0.977			0.994							
Satd. Flow (prot)	0	1723	0	0	1481	0	0	3568	0	0	3503	0
Flt Permitted		0.977			0.994							
Satd. Flow (perm)	0	1723	0	0	1481	0	0	3568	0	0	3503	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		146.0			105.8			125.2			115.2	
Travel Time (s)		10.5			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	100%	0%	0%	0%	1%	0%	0%	3%	0%
Adj. Flow (vph)	7	0	8	2	0	14	9	1820	23	12	1284	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	16	0	0	1852	0	0	1304	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	62.5%						ICU Level of Service B					
Analysis Period (min)	15											

Dunlop Street West - Mixed-Use Development
14: Anne Street North & Henry Street

Future (2031) Background Traffic
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	0	7	2	0	13	8	1674	21	11	1181	7
Future Volume (Veh/h)	6	0	7	2	0	13	8	1674	21	11	1181	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)	7	0	8	2	0	14	9	1820	23	12	1284	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)								125			115	
pX, platoon unblocked	0.80	0.80	0.86	0.80	0.80	0.73	0.86			0.73		
vC, conflicting volume	2254	3173	646	2524	3166	922	1292			1843		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1261	2415	256	1599	2405	134	1009			1405		
tC, single (s)	7.5	6.5	6.9	9.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	90	100	98	98			97		
cM capacity (veh/h)	97	25	643	21	25	650	596			357		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	15	16	919	933	654	650						
Volume Left	7	2	9	0	12	0						
Volume Right	8	14	0	23	0	8						
cSH	177	135	596	1700	357	1700						
Volume to Capacity	0.08	0.12	0.02	0.55	0.03	0.38						
Queue Length 95th (m)	2.2	3.1	0.4	0.0	0.8	0.0						
Control Delay (s)	27.2	35.2	0.5	0.0	1.1	0.0						
Lane LOS	D	E	A		A							
Approach Delay (s)	27.2	35.2	0.2		0.6							
Approach LOS	D	E										
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			62.5%		ICU Level of Service				B			
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	463	164	82	337	46	289	290	37	38	452	364
Future Volume (vph)	311	463	164	82	337	46	289	290	37	38	452	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	1.00		1.00	1.00		0.99	0.99	
Frt		0.961			0.982			0.983			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3283	0	1719	3464	0	1597	3355	0	1612	3234	0
Flt Permitted	0.410			0.277			0.150			0.539		
Satd. Flow (perm)	740	3283	0	500	3464	0	252	3355	0	902	3234	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			14			13			191	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	5		9	9		5	10		17	17		10
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
Heavy Vehicles (%)	5%	4%	8%	5%	2%	3%	13%	4%	16%	12%	3%	3%
Adj. Flow (vph)	338	503	178	89	366	50	314	315	40	41	491	396
Shared Lane Traffic (%)												
Lane Group Flow (vph)	338	681	0	89	416	0	314	355	0	41	887	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	46.3	38.1		43.7	34.7		54.5	46.6		48.1	39.1	
Actuated g/C Ratio	0.41	0.34		0.39	0.31		0.49	0.42		0.43	0.35	
v/c Ratio	0.90	0.59		0.33	0.38		1.29	0.25		0.09	0.71	
Control Delay	54.6	31.2		22.1	30.1		181.3	22.6		16.6	28.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	54.6	31.2		22.1	30.1		181.3	22.6		16.6	28.3	
LOS	D	C		C	C		F	C		B	C	
Approach Delay		39.0			28.7			97.1			27.8	
Approach LOS		D			C			F			C	
Queue Length 50th (m)	53.4	65.0		11.9	37.8		~71.6	29.4		5.0	75.6	
Queue Length 95th (m)	#102.9	85.3		22.0	52.2		#129.3	41.5		11.2	100.1	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	377	1178		271	1188		243	1406		432	1254	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.90	0.58		0.33	0.35		1.29	0.25		0.09	0.71	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 111.8												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.29												
Intersection Signal Delay: 46.4							Intersection LOS: D					
Intersection Capacity Utilization 96.7%							ICU Level of Service F					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Total Traffic
 AM Peak Hour

Analysis Period (min) 15

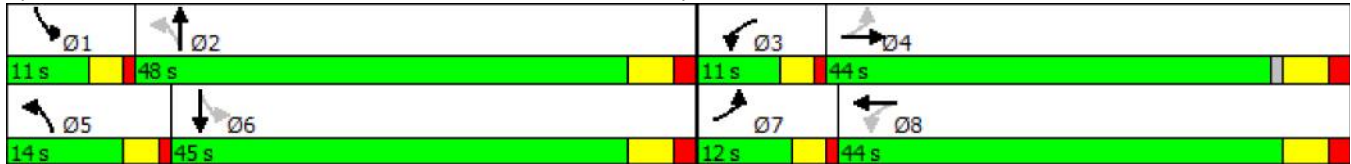
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2025) Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	1	191	4	67	0	410	223	104	638	0
Future Volume (vph)	3	0	1	191	4	67	0	410	223	104	638	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99				0.98	1.00		
Frt		0.966			0.858				0.850			
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1008	0	1736	1430	0	0	3438	1583	1641	3471	0
Flt Permitted		0.863		0.755						0.443		
Satd. Flow (perm)	0	900	0	1378	1430	0	0	3438	1544	763	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			73				218			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	4		1	1		4			4	4		
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
Heavy Vehicles (%)	100%	0%	0%	4%	0%	13%	0%	5%	2%	10%	4%	0%
Adj. Flow (vph)	3	0	1	208	4	73	0	446	242	113	693	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	208	77	0	0	446	242	113	693	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2025) Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		16.2		16.2	16.2			34.5	34.5	44.9	42.9	
Actuated g/C Ratio		0.23		0.23	0.23			0.48	0.48	0.63	0.60	
v/c Ratio		0.01		0.66	0.20			0.27	0.28	0.20	0.33	
Control Delay		0.0		36.5	7.9			13.1	3.9	7.2	8.2	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		36.5	7.9			13.1	3.9	7.2	8.2	
LOS		A		D	A			B	A	A	A	
Approach Delay					28.8			9.9			8.0	
Approach LOS					C			A			A	
Queue Length 50th (m)		0.0		27.8	0.5			19.7	1.8	5.4	22.2	
Queue Length 95th (m)		0.0		49.0	10.0			35.6	15.6	14.8	41.8	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		391		510	575			1665	860	568	2225	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.41	0.13			0.27	0.28	0.20	0.31	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 71.3												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.66												
Intersection Signal Delay: 12.1							Intersection LOS: B					
Intersection Capacity Utilization 85.7%							ICU Level of Service E					

Analysis Period (min) 15

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Future (2025) Total Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	856	540	269	766	174	382	106	199	121	332	57
Future Volume (vph)	41	856	540	269	766	174	382	106	199	121	332	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972				0.850		0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1776	1538	1641	3314	0	1703	1900	1538	1752	1837	0
Flt Permitted	0.199			0.088			0.172			0.683		
Satd. Flow (perm)	367	1776	1538	152	3314	0	308	1900	1538	1260	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			347		30				216		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
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
Heavy Vehicles (%)	3%	7%	5%	10%	7%	1%	6%	0%	5%	3%	1%	2%
Adj. Flow (vph)	45	930	587	292	833	189	415	115	216	132	361	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	930	587	292	1022	0	415	115	216	132	423	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	

Dunlop Street West - Mixed-Use Development
9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

Future (2025) Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	49.3	40.0	40.0	56.7	48.1		36.2	23.2	23.2	33.8	22.0	
Actuated g/C Ratio	0.47	0.38	0.38	0.55	0.46		0.35	0.22	0.22	0.32	0.21	
v/c Ratio	0.17	1.36	0.73	1.22	0.66		1.63	0.27	0.42	0.29	1.07	
Control Delay	12.7	201.1	16.7	156.1	24.5		324.8	36.1	7.6	24.1	105.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	12.7	201.1	16.7	156.1	24.5		324.8	36.1	7.6	24.1	105.8	
LOS	B	F	B	F	C		F	D	A	C	F	
Approach Delay		126.4			53.8			188.4			86.4	
Approach LOS		F			D			F			F	
Queue Length 50th (m)	4.2	~261.7	42.6	~61.2	90.2		~113.3	20.6	0.0	18.7	~99.1	
Queue Length 95th (m)	9.6	#338.6	88.4	#116.0	117.7		#175.4	37.1	19.2	32.8	#161.2	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	333	683	805	240	1548		254	422	510	476	394	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	1.36	0.73	1.22	0.66		1.63	0.27	0.42	0.28	1.07	

Intersection Summary

Area Type: Other

Cycle Length: 104

Actuated Cycle Length: 104

Natural Cycle: 135

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.63

Intersection Signal Delay: 109.3

Intersection LOS: F

Intersection Capacity Utilization 118.7%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Dunlop Street West - Mixed-Use Development
 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

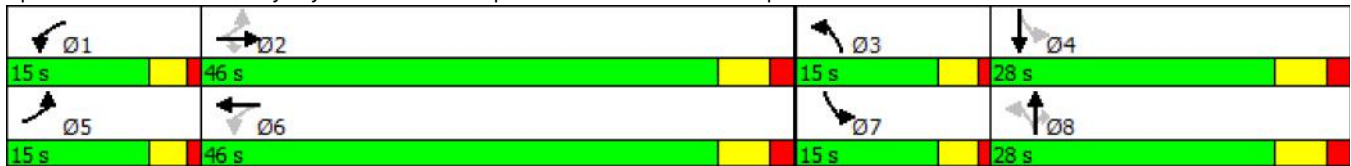
Future (2025) Total Traffic
 AM Peak Hour

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

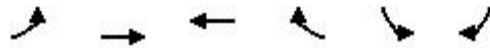
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2025) Total Traffic
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	516	622	621	362	0	489
Future Volume (vph)	516	622	621	362	0	489
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1626	1792	1792	1509	0	1481
Flt Permitted	0.950					
Satd. Flow (perm)	1626	1792	1792	1509	0	1481
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	6%	6%	7%	0%	11%
Adj. Flow (vph)	561	676	675	393	0	532
Shared Lane Traffic (%)						
Lane Group Flow (vph)	561	676	675	393	0	532
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	69.6%			ICU Level of Service C		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2025) Total Traffic
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	516	622	621	362	0	489
Future Volume (Veh/h)	516	622	621	362	0	489
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	561	676	675	393	0	532
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)			262			
pX, platoon unblocked	0.91				0.91	0.91
vC, conflicting volume	675				2473	675
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	598				2564	598
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	34				100	0
cM capacity (veh/h)	856				9	444
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	561	676	675	393	532	
Volume Left	561	0	0	0	0	
Volume Right	0	0	0	393	532	
cSH	856	1700	1700	1700	444	
Volume to Capacity	0.66	0.40	0.40	0.23	1.20	
Queue Length 95th (m)	40.2	0.0	0.0	0.0	164.9	
Control Delay (s)	16.8	0.0	0.0	0.0	136.9	
Lane LOS	C				F	
Approach Delay (s)	7.6		0.0		136.9	
Approach LOS					F	
Intersection Summary						
Average Delay			29.0			
Intersection Capacity Utilization			69.6%		ICU Level of Service	C
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Future (2025) Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	31	3	0	7	19	616	13	5	819	7
Future Volume (vph)	10	0	31	3	0	7	19	616	13	5	819	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.898			0.902			0.997			0.999	
Flt Protected		0.988			0.987			0.999				
Satd. Flow (prot)	0	1686	0	0	1692	0	0	3432	0	0	3408	0
Flt Permitted		0.988			0.987			0.999				
Satd. Flow (perm)	0	1686	0	0	1692	0	0	3432	0	0	3408	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.8			105.8			125.2			115.2	
Travel Time (s)		4.7			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	5%	100%
Adj. Flow (vph)	11	0	34	3	0	8	21	670	14	5	890	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	0	11	0	0	705	0	0	903	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	41.2%											
Analysis Period (min)	15											
	ICU Level of Service A											

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Future (2025) Total Traffic

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	31	3	0	7	19	616	13	5	819	7
Future Volume (Veh/h)	10	0	31	3	0	7	19	616	13	5	819	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)	11	0	34	3	0	8	21	670	14	5	890	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)								125			115	
pX, platoon unblocked	0.94	0.94	0.91	0.94	0.94	0.95	0.91			0.95		
vC, conflicting volume	1289	1630	449	1208	1627	342	898			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	919	1284	195	833	1281	195	688			556		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	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	100	95	99	100	99	97			99		
cM capacity (veh/h)	207	151	746	231	152	777	832			971		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	45	11	356	349	450	453						
Volume Left	11	3	21	0	5	0						
Volume Right	34	8	0	14	0	8						
cSH	456	472	832	1700	971	1700						
Volume to Capacity	0.10	0.02	0.03	0.21	0.01	0.27						
Queue Length 95th (m)	2.6	0.6	0.6	0.0	0.1	0.0						
Control Delay (s)	13.8	12.8	0.8	0.0	0.2	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	13.8	12.8	0.4		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			41.2%	ICU Level of Service					A			
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
17: Site Driveway & Henry Street

Future (2025) Total Traffic
AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	23	0	0	38
Future Volume (vph)	0	0	23	0	0	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected	0.950					
Satd. Flow (prot)	1863	0	0	1770	1611	0
Flt Permitted	0.950					
Satd. Flow (perm)	1863	0	0	1770	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	87.3			64.8	48.9	
Travel Time (s)	6.3			4.7	3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	25	0	0	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	25	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.3%			ICU Level of Service A		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
17: Site Driveway & Henry Street

Future (2025) Total Traffic
AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	23	0	0	38
Future Volume (Veh/h)	0	0	23	0	0	38
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)	0	0	25	0	0	41
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			0		50	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		50	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	96
cM capacity (veh/h)			1623		944	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	25	41			
Volume Left	0	25	0			
Volume Right	0	0	41			
cSH	1700	1623	1085			
Volume to Capacity	0.00	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	0.9			
Control Delay (s)	0.0	7.3	8.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	7.3	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			8.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	490	508	139	109	594	93	318	854	59	51	598	288
Future Volume (vph)	490	508	139	109	594	93	318	854	59	51	598	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	1.00			1.00		1.00	0.99	
Frt		0.968			0.980			0.990			0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3358	0	1719	3439	0	1787	3555	0	1805	3339	0
Flt Permitted	0.206			0.251			0.111			0.155		
Satd. Flow (perm)	391	3358	0	452	3439	0	209	3555	0	294	3339	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			16			7			76	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	7		12	12		7	9		15	15		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
Heavy Vehicles (%)	0%	2%	9%	5%	3%	0%	1%	0%	5%	0%	3%	0%
Adj. Flow (vph)	533	552	151	118	646	101	346	928	64	55	650	313
Shared Lane Traffic (%)												
Lane Group Flow (vph)	533	703	0	118	747	0	346	992	0	55	963	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	48.0	38.0		46.0	37.0		54.2	44.2		48.0	39.0	
Actuated g/C Ratio	0.42	0.33		0.40	0.32		0.48	0.39		0.42	0.34	
v/c Ratio	2.03	0.62		0.45	0.66		1.46	0.72		0.25	0.81	
Control Delay	495.9	33.1		25.1	35.8		251.3	33.6		19.1	37.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	495.9	33.1		25.1	35.8		251.3	33.6		19.1	37.6	
LOS	F	C		C	D		F	C		B	D	
Approach Delay		232.7			34.3			89.9			36.6	
Approach LOS		F			C			F			D	
Queue Length 50th (m)	~183.4	69.0		16.1	77.5		~91.7	105.4		6.7	99.8	
Queue Length 95th (m)	#263.7	89.6		28.0	99.3		#151.4	131.2		14.1	126.9	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	263	1170		260	1157		237	1382		216	1192	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	2.03	0.60		0.45	0.65		1.46	0.72		0.25	0.81	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 114												
Natural Cycle: 130												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 2.03												
Intersection Signal Delay: 106.5							Intersection LOS: F					
Intersection Capacity Utilization 109.8%							ICU Level of Service H					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2025) Total Traffic
 PM Peak Hour

Analysis Period (min) 15

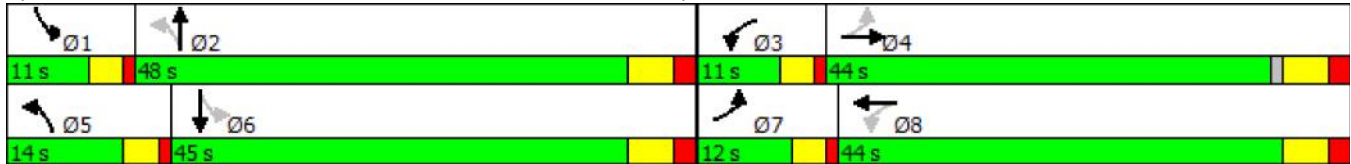
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2025) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	2	336	0	172	0	994	413	196	591	0
Future Volume (vph)	2	0	2	336	0	172	0	994	413	196	591	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		1.00			0.98				0.97	1.00		
Frt		0.932			0.850				0.850			
Flt Protected		0.976		0.950						0.950		
Satd. Flow (prot)	0	1383	0	1787	1499	0	0	3574	1599	1752	3471	0
Flt Permitted		0.907		0.755						0.129		
Satd. Flow (perm)	0	1283	0	1420	1499	0	0	3574	1557	238	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			211				167			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	3					3			5	5		
Confl. Bikes (#/hr)						2						
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
Heavy Vehicles (%)	50%	0%	0%	1%	0%	6%	0%	1%	1%	3%	4%	0%
Adj. Flow (vph)	2	0	2	365	0	187	0	1080	449	213	642	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	365	187	0	0	1080	449	213	642	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2025) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		23.5		23.5	23.5			34.1	34.1	47.1	45.1	
Actuated g/C Ratio		0.29		0.29	0.29			0.42	0.42	0.58	0.56	
v/c Ratio		0.01		0.88	0.32			0.72	0.60	0.79	0.33	
Control Delay		0.0		51.5	4.0			23.0	15.2	33.9	10.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		51.5	4.0			23.0	15.2	33.9	10.6	
LOS		A		D	A			C	B	C	B	
Approach Delay					35.4			20.7			16.4	
Approach LOS					D			C			B	
Queue Length 50th (m)		0.0		55.8	0.0			77.8	34.8	16.2	29.4	
Queue Length 95th (m)		0.0		#102.8	11.0			101.7	66.2	#50.7	40.5	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		477		458	627			1510	754	270	1941	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.80	0.30			0.72	0.60	0.79	0.33	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 80.6												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.88												
Intersection Signal Delay: 22.2	Intersection LOS: C											

Dunlop Street West - Mixed-Use Development
 6: Anne Street North & Church Driveway/Donald Street

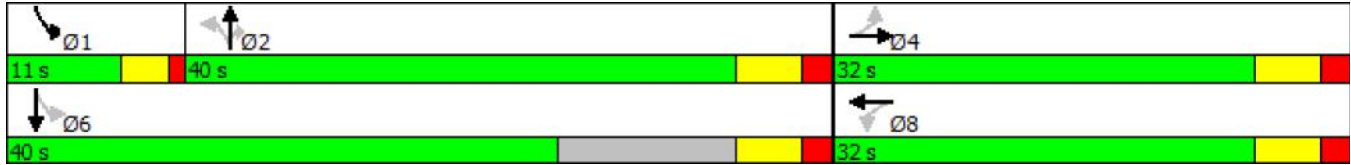
Future (2025) Total Traffic
 PM Peak Hour

Intersection Capacity Utilization 96.9% ICU Level of Service F

Analysis Period (min) 15

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

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Future (2025) Total Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	798	457	243	918	216	311	122	131	184	261	104
Future Volume (vph)	97	798	457	243	918	216	311	122	131	184	261	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00						1.00	
Frt			0.850		0.971				0.850		0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1827	1495	1770	3369	0	1656	1900	1404	1770	1793	0
Flt Permitted	0.100			0.095			0.179			0.669		
Satd. Flow (perm)	188	1827	1464	177	3369	0	312	1900	1404	1246	1793	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			355		32				135		17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
Confl. Bikes (#/hr)			1			1						2
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
Heavy Vehicles (%)	1%	4%	8%	2%	4%	2%	9%	0%	15%	2%	1%	1%
Adj. Flow (vph)	105	867	497	264	998	235	338	133	142	200	284	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	867	497	264	1233	0	338	133	142	200	397	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

Future (2025) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	50.7	40.0	40.0	55.3	42.3		35.4	22.4	22.4	34.6	22.0	
Actuated g/C Ratio	0.49	0.38	0.38	0.53	0.41		0.34	0.22	0.22	0.33	0.21	
v/c Ratio	0.47	1.24	0.64	1.01	0.89		1.36	0.33	0.35	0.43	1.01	
Control Delay	19.6	148.2	11.3	84.7	37.5		212.8	37.3	9.5	26.5	88.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.6	148.2	11.3	84.7	37.5		212.8	37.3	9.5	26.5	88.9	
LOS	B	F	B	F	D		F	D	A	C	F	
Approach Delay		92.7			45.8			127.6			68.0	
Approach LOS		F			D			F			E	
Queue Length 50th (m)	10.2	~229.3	20.6	~39.7	122.5		~79.5	24.2	1.2	29.5	~83.5	
Queue Length 95th (m)	19.9	#304.9	57.6	#95.6	#175.5		#136.6	42.2	17.4	48.0	#146.9	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	264	702	781	262	1390		248	408	408	474	392	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.40	1.24	0.64	1.01	0.89		1.36	0.33	0.35	0.42	1.01	
Intersection Summary												
Area Type:	Other											
Cycle Length: 104												
Actuated Cycle Length: 104												
Natural Cycle: 125												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.36												
Intersection Signal Delay: 77.5							Intersection LOS: E					
Intersection Capacity Utilization 109.4%							ICU Level of Service H					

Dunlop Street West - Mixed-Use Development
 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

Future (2025) Total Traffic
 PM Peak Hour

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.

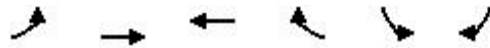
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2025) Total Traffic
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	549	569	892	873	0	484
Future Volume (vph)	549	569	892	873	0	484
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1736	1810	1845	1583	0	1565
Flt Permitted	0.950					
Satd. Flow (perm)	1736	1810	1845	1583	0	1565
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	3%	2%	0%	5%
Adj. Flow (vph)	597	618	970	949	0	526
Shared Lane Traffic (%)						
Lane Group Flow (vph)	597	618	970	949	0	526
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	91.1%			ICU Level of Service F		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2025) Total Traffic
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	549	569	892	873	0	484
Future Volume (Veh/h)	549	569	892	873	0	484
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	597	618	970	949	0	526
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	970				2782	970
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	870				3024	870
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	7				100	0
cM capacity (veh/h)	645				1	292
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	597	618	970	949	526	
Volume Left	597	0	0	0	0	
Volume Right	0	0	0	949	526	
cSH	645	1700	1700	1700	292	
Volume to Capacity	0.93	0.36	0.57	0.56	1.80	
Queue Length 95th (m)	98.2	0.0	0.0	0.0	279.6	
Control Delay (s)	45.0	0.0	0.0	0.0	405.2	
Lane LOS	E				F	
Approach Delay (s)	22.1		0.0		405.2	
Approach LOS					F	
Intersection Summary						
Average Delay			65.6			
Intersection Capacity Utilization			91.1%		ICU Level of Service	F
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Future (2025) Total Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	30	2	0	13	34	1382	21	11	904	14
Future Volume (vph)	13	0	30	2	0	13	34	1382	21	11	904	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.905			0.882			0.998			0.998	
Flt Protected		0.985			0.994			0.999			0.999	
Satd. Flow (prot)	0	1694	0	0	1481	0	0	3565	0	0	3497	0
Flt Permitted		0.985			0.994			0.999			0.999	
Satd. Flow (perm)	0	1694	0	0	1481	0	0	3565	0	0	3497	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		74.6			105.8			125.2			115.2	
Travel Time (s)		5.4			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	100%	0%	0%	0%	1%	0%	0%	3%	0%
Adj. Flow (vph)	14	0	33	2	0	14	37	1502	23	12	983	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	16	0	0	1562	0	0	1010	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	74.9%						ICU Level of Service D					
Analysis Period (min)	15											

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Future (2025) Total Traffic

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	30	2	0	13	34	1382	21	11	904	14
Future Volume (Veh/h)	13	0	30	2	0	13	34	1382	21	11	904	14
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)	14	0	33	2	0	14	37	1502	23	12	983	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								125			115	
pX, platoon unblocked	0.81	0.81	0.91	0.81	0.81	0.76	0.91			0.76		
vC, conflicting volume	1854	2614	499	2136	2610	762	998			1525		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1067	2003	240	1415	1998	74	790			1071		
tC, single (s)	7.5	6.5	6.9	9.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	95	93	100	98	95			98		
cM capacity (veh/h)	135	46	696	30	46	748	760			503		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	47	16	788	774	504	506						
Volume Left	14	2	37	0	12	0						
Volume Right	33	14	0	23	0	15						
cSH	311	187	760	1700	503	1700						
Volume to Capacity	0.15	0.09	0.05	0.46	0.02	0.30						
Queue Length 95th (m)	4.2	2.2	1.2	0.0	0.6	0.0						
Control Delay (s)	18.6	26.1	1.3	0.0	0.7	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	18.6	26.1	0.7		0.3							
Approach LOS	C	D										
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			74.9%		ICU Level of Service					D		
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
17: Site Driveway & Henry Street

Future (2025) Total Traffic
PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	33	0	0	31
Future Volume (vph)	0	0	33	0	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1863	0	0	1770	1611	0
Flt Permitted				0.950		
Satd. Flow (perm)	1863	0	0	1770	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	71.4			74.6	65.7	
Travel Time (s)	5.1			5.4	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	36	0	0	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	36	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.3%			ICU Level of Service A		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
17: Site Driveway & Henry Street

Future (2025) Total Traffic
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	33	0	0	31
Future Volume (Veh/h)	0	0	33	0	0	31
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)	0	0	36	0	0	34
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			0		72	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		72	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	97
cM capacity (veh/h)			1623		911	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	36	34			
Volume Left	0	36	0			
Volume Right	0	0	34			
cSH	1700	1623	1085			
Volume to Capacity	0.00	0.02	0.03			
Queue Length 95th (m)	0.0	0.5	0.8			
Control Delay (s)	0.0	7.3	8.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	7.3	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	392	734	111	79	440	47	452	326	30	29	576	540
Future Volume (vph)	392	734	111	79	440	47	452	326	30	29	576	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	1.00		1.00	1.00			1.00		0.99	0.99	
Frt		0.980			0.986			0.987			0.927	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3375	0	1719	3480	0	1597	3383	0	1612	3210	0
Flt Permitted	0.325			0.140			0.089			0.523		
Satd. Flow (perm)	587	3375	0	253	3480	0	150	3383	0	876	3210	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			11			10			222	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	5		9	9		5	10		17	17		10
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
Heavy Vehicles (%)	5%	4%	8%	5%	2%	3%	13%	4%	16%	12%	3%	3%
Adj. Flow (vph)	426	798	121	86	478	51	491	354	33	32	626	587
Shared Lane Traffic (%)												
Lane Group Flow (vph)	426	919	0	86	529	0	491	387	0	32	1213	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	46.3	38.1		43.7	34.7		54.5	46.6		48.1	39.1	
Actuated g/C Ratio	0.41	0.34		0.39	0.31		0.49	0.42		0.43	0.35	
v/c Ratio	1.31	0.79		0.45	0.49		2.43	0.27		0.08	0.96	
Control Delay	189.0	39.2		26.4	32.2		677.5	23.1		16.3	47.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	189.0	39.2		26.4	32.2		677.5	23.1		16.3	47.0	
LOS	F	D		C	C		F	C		B	D	
Approach Delay		86.7			31.4			389.1			46.2	
Approach LOS		F			C			F			D	
Queue Length 50th (m)	~102.1	101.5		11.5	50.6		~179.7	32.7		3.9	126.1	
Queue Length 95th (m)	#182.6	127.7		21.6	67.4		#246.9	45.5		9.4	#176.7	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	324	1189		191	1192		202	1416		423	1266	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.31	0.77		0.45	0.44		2.43	0.27		0.08	0.96	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 111.8												
Natural Cycle: 150												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 2.43												
Intersection Signal Delay: 131.0							Intersection LOS: F					
Intersection Capacity Utilization 119.4%							ICU Level of Service H					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Total Traffic
 AM Peak Hour

Analysis Period (min) 15

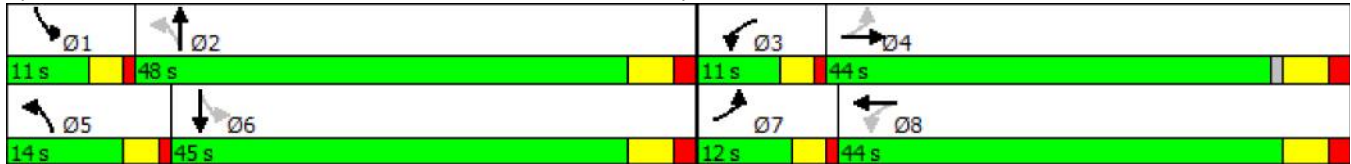
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	1	258	4	67	0	486	264	104	863	0
Future Volume (vph)	3	0	1	258	4	67	0	486	264	104	863	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99				0.98	1.00		
Frt		0.966			0.858				0.850			
Flt Protected		0.964		0.950						0.950		
Satd. Flow (prot)	0	1008	0	1736	1430	0	0	3438	1583	1641	3471	0
Flt Permitted		0.879		0.755						0.392		
Satd. Flow (perm)	0	917	0	1378	1430	0	0	3438	1544	676	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			73				218			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	4		1	1		4			4	4		
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
Heavy Vehicles (%)	100%	0%	0%	4%	0%	13%	0%	5%	2%	10%	4%	0%
Adj. Flow (vph)	3	0	1	280	4	73	0	528	287	113	938	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	280	77	0	0	528	287	113	938	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Total Traffic
AM Peak Hour

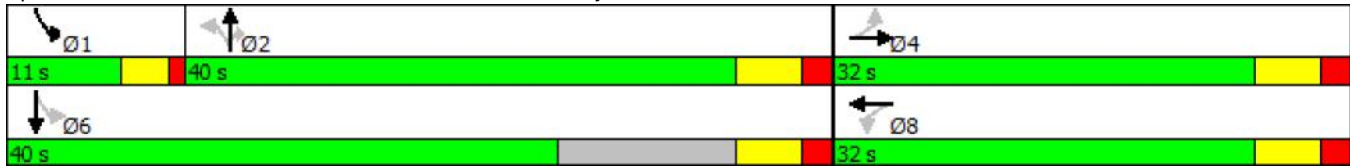
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		19.4		19.4	19.4			34.6	34.6	45.0	42.9	
Actuated g/C Ratio		0.26		0.26	0.26			0.46	0.46	0.60	0.58	
v/c Ratio		0.01		0.78	0.18			0.33	0.34	0.23	0.47	
Control Delay		0.0		41.9	7.3			15.2	5.8	8.7	10.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		41.9	7.3			15.2	5.8	8.7	10.9	
LOS		A		D	A			B	A	A	B	
Approach Delay					34.4			11.9			10.6	
Approach LOS					C			B			B	
Queue Length 50th (m)		0.0		39.9	0.5			27.4	6.0	6.7	40.0	
Queue Length 95th (m)		0.0		67.4	9.9			44.2	23.2	15.7	63.8	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		384		488	554			1595	833	499	2132	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		0.57	0.14			0.33	0.34	0.23	0.44	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 74.6												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.78												
Intersection Signal Delay: 14.9							Intersection LOS: B					
Intersection Capacity Utilization 89.7%							ICU Level of Service E					

Dunlop Street West - Mixed-Use Development
 6: Anne Street North & Church Driveway/Donald Street

Future (2031) Total Traffic
 AM Peak Hour

Analysis Period (min) 15

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Future (2031) Total Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1111	531	245	938	184	426	100	126	143	371	66
Future Volume (vph)	3	1111	531	245	938	184	426	100	126	143	371	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.975				0.850		0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1776	1538	1641	3320	0	1703	1900	1538	1752	1835	0
Flt Permitted	0.152			0.085			0.175			0.687		
Satd. Flow (perm)	280	1776	1538	147	3320	0	314	1900	1538	1267	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			296		25				137		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
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
Heavy Vehicles (%)	3%	7%	5%	10%	7%	1%	6%	0%	5%	3%	1%	2%
Adj. Flow (vph)	3	1208	577	266	1020	200	463	109	137	155	403	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1208	577	266	1220	0	463	109	137	155	475	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	

Dunlop Street West - Mixed-Use Development
9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

Future (2031) Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	49.0	40.0	40.0	57.0	52.8		35.8	22.8	22.8	34.2	22.0	
Actuated g/C Ratio	0.47	0.38	0.38	0.55	0.51		0.34	0.22	0.22	0.33	0.21	
v/c Ratio	0.01	1.77	0.75	1.12	0.72		1.82	0.26	0.31	0.33	1.21	
Control Delay	11.0	376.8	19.8	120.9	23.3		405.7	36.1	8.0	24.7	150.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	11.0	376.8	19.8	120.9	23.3		405.7	36.1	8.0	24.7	150.6	
LOS	B	F	B	F	C		F	D	A	C	F	
Approach Delay		261.0			40.7			272.0			119.7	
Approach LOS		F			D			F			F	
Queue Length 50th (m)	0.3	~385.3	51.7	~50.5	94.8		~134.8	19.5	0.0	22.3	~122.8	
Queue Length 95th (m)	1.7	#466.2	98.4	#103.1	150.3		#198.8	35.4	15.8	37.9	#187.2	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	298	683	773	238	1697		255	416	444	477	394	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.01	1.77	0.75	1.12	0.72		1.82	0.26	0.31	0.32	1.21	
Intersection Summary												
Area Type:	Other											
Cycle Length: 104												
Actuated Cycle Length: 104												
Natural Cycle: 145												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.82												
Intersection Signal Delay: 172.4						Intersection LOS: F						
Intersection Capacity Utilization 135.8%						ICU Level of Service H						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												

Dunlop Street West - Mixed-Use Development
 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

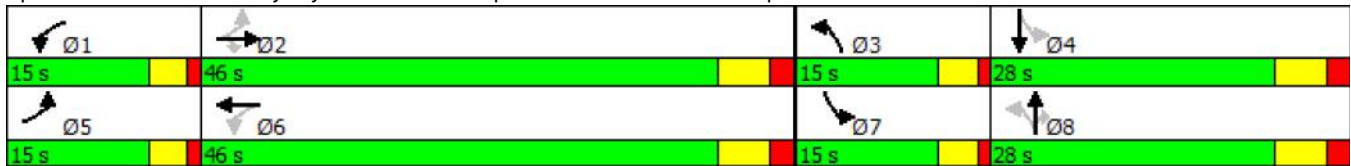
Future (2031) Total Traffic
 AM Peak Hour

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

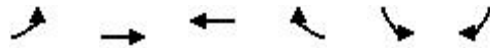
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

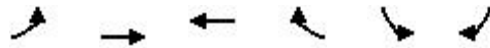
Future (2031) Total Traffic
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	650	730	839	524	0	527
Future Volume (vph)	650	730	839	524	0	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1626	1792	1792	1509	0	1481
Flt Permitted	0.950					
Satd. Flow (perm)	1626	1792	1792	1509	0	1481
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	6%	6%	7%	0%	11%
Adj. Flow (vph)	707	793	912	570	0	573
Shared Lane Traffic (%)						
Lane Group Flow (vph)	707	793	912	570	0	573
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	86.8%			ICU Level of Service E		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2031) Total Traffic
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	650	730	839	524	0	527
Future Volume (Veh/h)	650	730	839	524	0	527
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	707	793	912	570	0	573
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.88				0.88	0.88
vC, conflicting volume	912				3119	912
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	834				3334	834
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	0				0	0
cM capacity (veh/h)	672				0	313
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	707	793	912	570	573	
Volume Left	707	0	0	0	0	
Volume Right	0	0	0	570	573	
cSH	672	1700	1700	1700	313	
Volume to Capacity	1.05	0.47	0.54	0.34	1.83	
Queue Length 95th (m)	148.7	0.0	0.0	0.0	304.9	
Control Delay (s)	73.6	0.0	0.0	0.0	413.6	
Lane LOS	F				F	
Approach Delay (s)	34.7		0.0		413.6	
Approach LOS					F	
Intersection Summary						
Average Delay			81.3			
Intersection Capacity Utilization			86.8%		ICU Level of Service	E
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Future (2031) Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	31	3	0	7	19	733	13	5	1111	7
Future Volume (vph)	10	0	31	3	0	7	19	733	13	5	1111	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.898			0.902			0.997			0.999	
Flt Protected		0.988			0.987			0.999				
Satd. Flow (prot)	0	1686	0	0	1692	0	0	3431	0	0	3415	0
Flt Permitted		0.988			0.987			0.999				
Satd. Flow (perm)	0	1686	0	0	1692	0	0	3431	0	0	3415	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		68.6			105.8			125.2			115.2	
Travel Time (s)		4.9			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	5%	100%
Adj. Flow (vph)	11	0	34	3	0	8	21	797	14	5	1208	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	0	11	0	0	832	0	0	1221	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	44.4%						ICU Level of Service A					
Analysis Period (min)	15											

Dunlop Street West - Mixed-Use Development

Future (2031) Total Traffic

14: Anne Street North & Henry Street

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	31	3	0	7	19	733	13	5	1111	7
Future Volume (Veh/h)	10	0	31	3	0	7	19	733	13	5	1111	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)	11	0	34	3	0	8	21	797	14	5	1208	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)								125			115	
pX, platoon unblocked	0.88	0.88	0.85	0.88	0.88	0.94	0.85			0.94		
vC, conflicting volume	1670	2075	608	1494	2072	406	1216			811		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1164	1626	172	963	1622	233	891			666		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	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 %	91	100	95	98	100	99	97			99		
cM capacity (veh/h)	128	87	717	173	88	727	651			875		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	45	11	420	412	609	612						
Volume Left	11	3	21	0	5	0						
Volume Right	34	8	0	14	0	8						
cSH	337	388	651	1700	875	1700						
Volume to Capacity	0.13	0.03	0.03	0.24	0.01	0.36						
Queue Length 95th (m)	3.6	0.7	0.8	0.0	0.1	0.0						
Control Delay (s)	17.3	14.6	1.0	0.0	0.2	0.0						
Lane LOS	C	B	A		A							
Approach Delay (s)	17.3	14.6	0.5		0.1							
Approach LOS	C	B										
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			44.4%	ICU Level of Service					A			
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
17: Henry Street & Site Driveway

Future (2031) Total Traffic
AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	23	0	0	38
Future Volume (vph)	0	0	23	0	0	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1863	0	0	1770	1611	0
Flt Permitted				0.950		
Satd. Flow (perm)	1863	0	0	1770	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	77.4			68.6	46.2	
Travel Time (s)	5.6			4.9	3.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	25	0	0	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	25	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.3%			ICU Level of Service A		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
17: Henry Street & Site Driveway

Future (2031) Total Traffic
AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	23	0	0	38
Future Volume (Veh/h)	0	0	23	0	0	38
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)	0	0	25	0	0	41
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			0		50	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		50	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	96
cM capacity (veh/h)			1623		944	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	25	41			
Volume Left	0	25	0			
Volume Right	0	0	41			
cSH	1700	1623	1085			
Volume to Capacity	0.00	0.02	0.04			
Queue Length 95th (m)	0.0	0.4	0.9			
Control Delay (s)	0.0	7.3	8.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	7.3	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			8.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	607	689	74	102	939	107	436	1016	33	25	807	381
Future Volume (vph)	607	689	74	102	939	107	436	1016	33	25	807	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	28.0		0.0	112.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00	1.00			1.00			0.99	
Frt		0.986			0.985			0.995			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3458	0	1719	3456	0	1787	3583	0	1805	3342	0
Flt Permitted	0.103			0.180			0.090			0.106		
Satd. Flow (perm)	196	3458	0	325	3456	0	169	3583	0	201	3342	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			11			3			74	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.5			264.6			270.6			125.2	
Travel Time (s)		18.9			19.1			19.5			9.0	
Confl. Peds. (#/hr)	7		12	12		7	9		15	15		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
Heavy Vehicles (%)	0%	2%	9%	5%	3%	0%	1%	0%	5%	0%	3%	0%
Adj. Flow (vph)	660	749	80	111	1021	116	474	1104	36	27	877	414
Shared Lane Traffic (%)												
Lane Group Flow (vph)	660	829	0	111	1137	0	474	1140	0	27	1291	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development
3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	38.0		7.0	26.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	44.0		11.0	36.0		11.0	44.0		11.0	32.0	
Total Split (s)	12.0	44.0		11.0	44.0		14.0	48.0		11.0	45.0	
Total Split (%)	10.4%	38.3%		9.6%	38.3%		12.2%	41.7%		9.6%	39.1%	
Maximum Green (s)	8.0	38.0		7.0	38.0		10.0	42.0		7.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		14.0			14.0			10.0			10.0	
Flash Dont Walk (s)		16.0			16.0			16.0			16.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	49.0	39.0		47.0	38.0		54.4	46.4		48.0	39.0	
Actuated g/C Ratio	0.43	0.34		0.41	0.33		0.47	0.40		0.42	0.34	
v/c Ratio	3.38	0.70		0.51	0.99		2.15	0.79		0.15	1.09	
Control Delay	1100.4	36.4		27.5	62.5		553.3	35.8		18.1	89.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	1100.4	36.4		27.5	62.5		553.3	35.8		18.1	89.7	
LOS	F	D		C	E		F	D		B	F	
Approach Delay		508.0			59.4			187.8			88.2	
Approach LOS		F			E			F			F	
Queue Length 50th (m)	~263.8	88.0		15.0	139.2		~165.4	130.6		3.3	~175.7	
Queue Length 95th (m)	#337.1	111.4		26.6	#188.6		#232.2	160.6		8.5	#220.4	
Internal Link Dist (m)		238.5			240.6			246.6			101.2	
Turn Bay Length (m)	32.0			28.0			112.0			30.0		
Base Capacity (vph)	195	1179		217	1149		220	1447		181	1182	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	3.38	0.70		0.51	0.99		2.15	0.79		0.15	1.09	
Intersection Summary												
Area Type:	Other											
Cycle Length: 115												
Actuated Cycle Length: 115												
Natural Cycle: 150												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 3.38												
Intersection Signal Delay: 220.5							Intersection LOS: F					
Intersection Capacity Utilization 138.7%							ICU Level of Service H					

Dunlop Street West - Mixed-Use Development
 3: Anne Street South/Anne Street North & Dunlop Street

Future (2031) Total Traffic
 PM Peak Hour

Analysis Period (min) 15

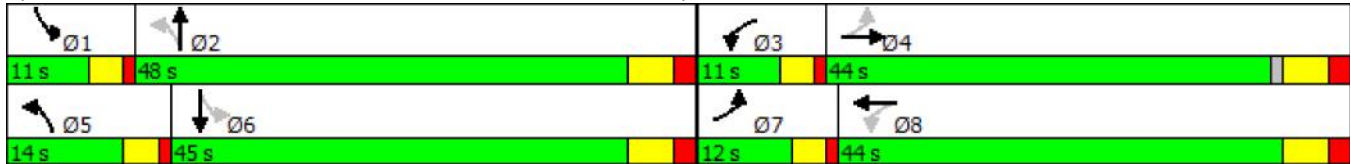
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Anne Street South/Anne Street North & Dunlop Street



Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	2	436	0	172	0	1201	498	196	768	0
Future Volume (vph)	2	0	2	436	0	172	0	1201	498	196	768	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	77.0		0.0	0.0		15.0	40.0		0.0
Storage Lanes	0		0	1		0	0		1	1		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	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		1.00			0.98				0.97	1.00		
Frt		0.932			0.850				0.850			
Flt Protected		0.976		0.950						0.950		
Satd. Flow (prot)	0	1383	0	1787	1499	0	0	3574	1599	1752	3471	0
Flt Permitted		0.912		0.755						0.105		
Satd. Flow (perm)	0	1291	0	1420	1499	0	0	3574	1557	194	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			197				166			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		73.4			77.1			115.2			84.1	
Travel Time (s)		5.3			5.6			8.3			6.1	
Confl. Peds. (#/hr)	3					3			5	5		
Confl. Bikes (#/hr)						2						
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
Heavy Vehicles (%)	50%	0%	0%	1%	0%	6%	0%	1%	1%	3%	4%	0%
Adj. Flow (vph)	2	0	2	474	0	187	0	1305	541	213	835	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	474	187	0	0	1305	541	213	835	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Dunlop Street West - Mixed-Use Development
6: Anne Street North & Church Driveway/Donald Street

Future (2031) Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA			NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		34.0	34.0	34.0	7.0	34.0	
Minimum Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (s)	32.0	32.0		32.0	32.0		40.0	40.0	40.0	11.0	40.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		48.2%	48.2%	48.2%	13.3%	48.2%	
Maximum Green (s)	26.0	26.0		26.0	26.0		34.0	34.0	34.0	7.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0	4.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0		20.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)		26.0		26.0	26.0			34.0	34.0	47.0	45.0	
Actuated g/C Ratio		0.31		0.31	0.31			0.41	0.41	0.57	0.54	
v/c Ratio		0.01		1.07	0.31			0.89	0.74	0.88	0.44	
Control Delay		0.0		92.2	4.5			32.2	21.1	51.9	12.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		0.0		92.2	4.5			32.2	21.1	51.9	12.4	
LOS		A		F	A			C	C	D	B	
Approach Delay					67.4			29.0			20.4	
Approach LOS					E			C			C	
Queue Length 50th (m)		0.0		~88.4	0.0			103.4	51.6	18.1	41.1	
Queue Length 95th (m)		0.0		#146.4	12.8			#146.8	92.8	#58.6	55.1	
Internal Link Dist (m)		49.4			53.1			91.2			60.1	
Turn Bay Length (m)				77.0					15.0	40.0		
Base Capacity (vph)		467		444	604			1464	735	241	1881	
Starvation Cap Reductn		0		0	0			0	0	0	0	
Spillback Cap Reductn		0		0	0			0	0	0	0	
Storage Cap Reductn		0		0	0			0	0	0	0	
Reduced v/c Ratio		0.01		1.07	0.31			0.89	0.74	0.88	0.44	
Intersection Summary												
Area Type:	Other											
Cycle Length: 83												
Actuated Cycle Length: 83												
Natural Cycle: 85												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.07												
Intersection Signal Delay: 33.6	Intersection LOS: C											

Dunlop Street West - Mixed-Use Development
 6: Anne Street North & Church Driveway/Donald Street

Future (2031) Total Traffic
 PM Peak Hour

Intersection Capacity Utilization 107.4% ICU Level of Service G

Analysis Period (min) 15

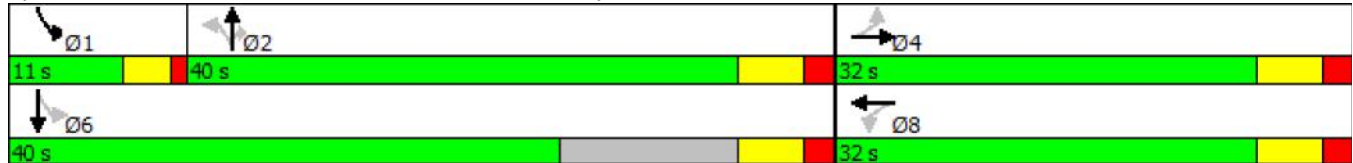
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Anne Street North & Church Driveway/Donald Street



Dunlop Street West - Mixed-Use Development

Future (2031) Total Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1109	553	273	1239	219	289	139	49	214	370	106
Future Volume (vph)	96	1109	553	273	1239	219	289	139	49	214	370	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	85.0		44.0	45.0		15.0	120.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00						1.00	
Frt			0.850		0.977				0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1827	1495	1770	3390	0	1656	1900	1404	1770	1813	0
Flt Permitted	0.100			0.094			0.180			0.622		
Satd. Flow (perm)	188	1827	1464	175	3390	0	314	1900	1404	1159	1813	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			309		22				115		13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		259.3			515.5			93.0			84.9	
Travel Time (s)		18.7			37.1			6.7			6.1	
Confl. Bikes (#/hr)			1			1						2
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
Heavy Vehicles (%)	1%	4%	8%	2%	4%	2%	9%	0%	15%	2%	1%	1%
Adj. Flow (vph)	104	1205	601	297	1347	238	314	151	53	233	402	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	1205	601	297	1585	0	314	151	53	233	517	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Dunlop Street West - Mixed-Use Development

Future (2031) Total Traffic

9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8		8	4		
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	36.0	36.0	7.0	36.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	11.0	46.0	46.0	11.0	46.0		11.0	24.0	24.0	11.0	24.0	
Total Split (s)	15.0	46.0	46.0	15.0	46.0		15.0	28.0	28.0	15.0	28.0	
Total Split (%)	14.4%	44.2%	44.2%	14.4%	44.2%		14.4%	26.9%	26.9%	14.4%	26.9%	
Maximum Green (s)	11.0	40.0	40.0	11.0	40.0		11.0	22.0	22.0	11.0	22.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)		26.0	26.0		26.0			7.0	7.0		7.0	
Flash Dont Walk (s)		14.0	14.0		14.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	50.6	40.0	40.0	55.4	42.4		35.2	22.2	22.2	34.8	22.0	
Actuated g/C Ratio	0.49	0.38	0.38	0.53	0.41		0.34	0.21	0.21	0.33	0.21	
v/c Ratio	0.46	1.72	0.80	1.14	1.14		1.27	0.37	0.14	0.52	1.32	
Control Delay	19.5	353.9	22.6	124.4	101.2		175.1	38.2	0.7	28.7	193.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.5	353.9	22.6	124.4	101.2		175.1	38.2	0.7	28.7	193.0	
LOS	B	F	C	F	F		F	D	A	C	F	
Approach Delay		231.5			104.9			117.3			141.9	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	10.1	~379.6	57.0	~56.7	~206.2		~68.4	27.7	0.0	35.2	~141.1	
Queue Length 95th (m)	19.7	#460.5	#110.3	#113.6	#261.2		#124.2	47.1	0.0	55.8	#207.3	
Internal Link Dist (m)		235.3			491.5			69.0			60.9	
Turn Bay Length (m)	120.0			85.0			45.0		15.0	120.0		
Base Capacity (vph)	264	702	753	261	1393		248	404	389	454	393	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.39	1.72	0.80	1.14	1.14		1.27	0.37	0.14	0.51	1.32	

Intersection Summary

Area Type: Other

Cycle Length: 104

Actuated Cycle Length: 104

Natural Cycle: 145

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.72

Intersection Signal Delay: 159.4

Intersection LOS: F

Intersection Capacity Utilization 132.1%

ICU Level of Service H

Dunlop Street West - Mixed-Use Development
 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street

Future (2031) Total Traffic
 PM Peak Hour

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.

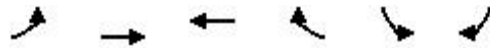
Queue shown is maximum after two cycles.

Splits and Phases: 9: Highway 400 SB Exit Ramp/Cedar Point Drive & Dunlop Street



Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

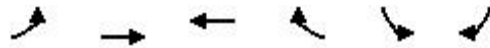
Future (2031) Total Traffic
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	680	693	1210	744	0	522
Future Volume (vph)	680	693	1210	744	0	522
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1736	1810	1845	1583	0	1565
Flt Permitted	0.950					
Satd. Flow (perm)	1736	1810	1845	1583	0	1565
Link Speed (k/h)		50	50		50	
Link Distance (m)		515.5	262.5		129.0	
Travel Time (s)		37.1	18.9		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	5%	3%	2%	0%	5%
Adj. Flow (vph)	739	753	1315	809	0	567
Shared Lane Traffic (%)						
Lane Group Flow (vph)	739	753	1315	809	0	567
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Yield	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	108.0%			ICU Level of Service G		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
12: Dunlop Street & Highway 400 NB Exit Ramp

Future (2031) Total Traffic
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	680	693	1210	744	0	522
Future Volume (Veh/h)	680	693	1210	744	0	522
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	739	753	1315	809	0	567
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)			262			
pX, platoon unblocked	0.57				0.57	0.57
vC, conflicting volume	1315				3546	1315
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1177				5077	1177
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	0				0	0
cM capacity (veh/h)	335				0	131
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	739	753	1315	809	567	
Volume Left	739	0	0	0	0	
Volume Right	0	0	0	809	567	
cSH	335	1700	1700	1700	131	
Volume to Capacity	2.20	0.44	0.77	0.48	4.32	
Queue Length 95th (m)	443.5	0.0	0.0	0.0	Err	
Control Delay (s)	576.0	0.0	0.0	0.0	Err	
Lane LOS	F				F	
Approach Delay (s)	285.3		0.0		Err	
Approach LOS					F	
Intersection Summary						
Average Delay		1457.1				
Intersection Capacity Utilization		108.0%		ICU Level of Service		G
Analysis Period (min)		15				

Dunlop Street West - Mixed-Use Development

14: Anne Street North & Henry Street

Future (2031) Total Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	30	2	0	13	34	1674	21	11	1181	14
Future Volume (vph)	13	0	30	2	0	13	34	1674	21	11	1181	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.905			0.882			0.998			0.998	
Flt Protected		0.985			0.994			0.999				
Satd. Flow (prot)	0	1694	0	0	1481	0	0	3565	0	0	3500	0
Flt Permitted		0.985			0.994			0.999				
Satd. Flow (perm)	0	1694	0	0	1481	0	0	3565	0	0	3500	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.4			105.8			125.2			115.2	
Travel Time (s)		4.6			7.6			9.0			8.3	
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
Heavy Vehicles (%)	0%	0%	0%	100%	0%	0%	0%	1%	0%	0%	3%	0%
Adj. Flow (vph)	14	0	33	2	0	14	37	1820	23	12	1284	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	16	0	0	1880	0	0	1311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	82.8%						ICU Level of Service E					
Analysis Period (min)	15											

Dunlop Street West - Mixed-Use Development

Future (2031) Total Traffic

14: Anne Street North & Henry Street

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	30	2	0	13	34	1674	21	11	1181	14
Future Volume (Veh/h)	13	0	30	2	0	13	34	1674	21	11	1181	14
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)	14	0	33	2	0	14	37	1820	23	12	1284	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								125			115	
pX, platoon unblocked	0.79	0.79	0.86	0.79	0.79	0.72	0.86			0.72		
vC, conflicting volume	2314	3232	650	2604	3228	922	1299			1843		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1311	2477	256	1680	2472	99	1015			1385		
tC, single (s)	7.5	6.5	6.9	9.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	95	87	100	98	94			97		
cM capacity (veh/h)	85	22	642	16	22	677	592			359		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	47	16	947	933	654	657						
Volume Left	14	2	37	0	12	0						
Volume Right	33	14	0	23	0	15						
cSH	217	108	592	1700	359	1700						
Volume to Capacity	0.22	0.15	0.06	0.55	0.03	0.39						
Queue Length 95th (m)	6.4	4.0	1.6	0.0	0.8	0.0						
Control Delay (s)	26.1	43.8	1.9	0.0	1.1	0.0						
Lane LOS	D	E	A		A							
Approach Delay (s)	26.1	43.8	1.0		0.5							
Approach LOS	D	E										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			82.8%		ICU Level of Service		E					
Analysis Period (min)			15									

Dunlop Street West - Mixed-Use Development
17: Site Driveway & Henry Street

Future (2031) Total Traffic
PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	33	0	0	31
Future Volume (vph)	0	0	33	0	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1863	0	0	1770	1611	0
Flt Permitted				0.950		
Satd. Flow (perm)	1863	0	0	1770	1611	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	81.5			64.4	38.8	
Travel Time (s)	5.9			4.6	2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	36	0	0	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	36	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.3%			ICU Level of Service A		
Analysis Period (min)	15					

Dunlop Street West - Mixed-Use Development
17: Site Driveway & Henry Street

Future (2031) Total Traffic
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	33	0	0	31
Future Volume (Veh/h)	0	0	33	0	0	31
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)	0	0	36	0	0	34
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			0		72	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		72	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	97
cM capacity (veh/h)			1623		911	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	36	34			
Volume Left	0	36	0			
Volume Right	0	0	34			
cSH	1700	1623	1085			
Volume to Capacity	0.00	0.02	0.03			
Queue Length 95th (m)	0.0	0.5	0.8			
Control Delay (s)	0.0	7.3	8.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	7.3	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

APPENDIX C: ITE Parking Generation LU 222 and LU 710 Data

Multifamily Housing (High Rise) (222)

Peak Period Parking Demand vs: Dwelling Units

On a: Weekday (Monday - Friday)

Setting/Location: Dense Multi-Use Urban (no nearby rail transit)

Peak Period of Parking Demand: 10:00 p.m. - 5:00 a.m.

Number of Studies: 2

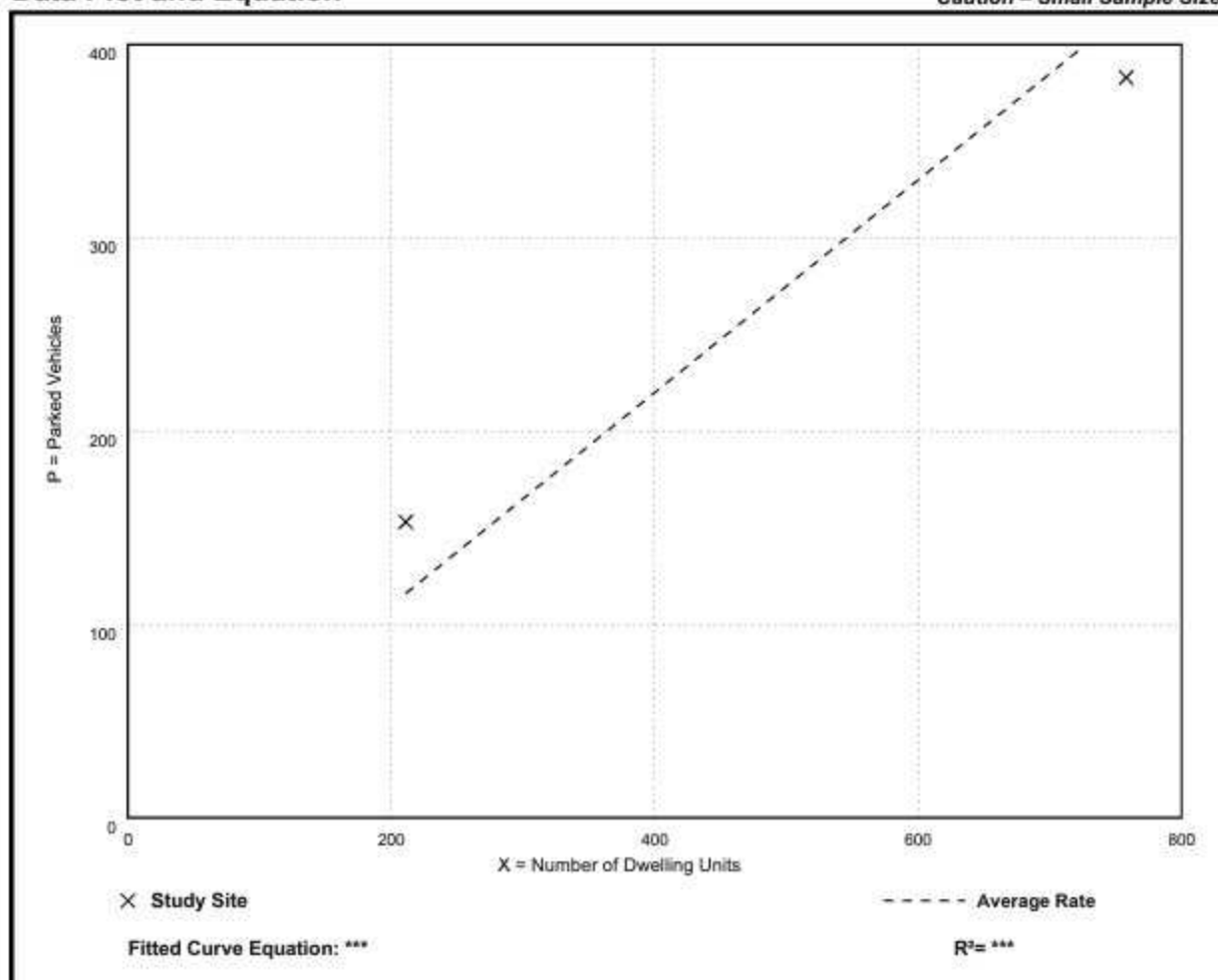
Avg. Num. of Dwelling Units: 485

Peak Period Parking Demand per Dwelling Unit

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.55	0.51 - 0.73	*** / ***	***	*** (***)

Data Plot and Equation

Caution – Small Sample Size



General Office Building (710)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA

On a: Weekday (Monday - Friday)

Setting/Location: Dense Multi-Use Urban

Peak Period of Parking Demand: 9:00 a.m. - 4:00 p.m.

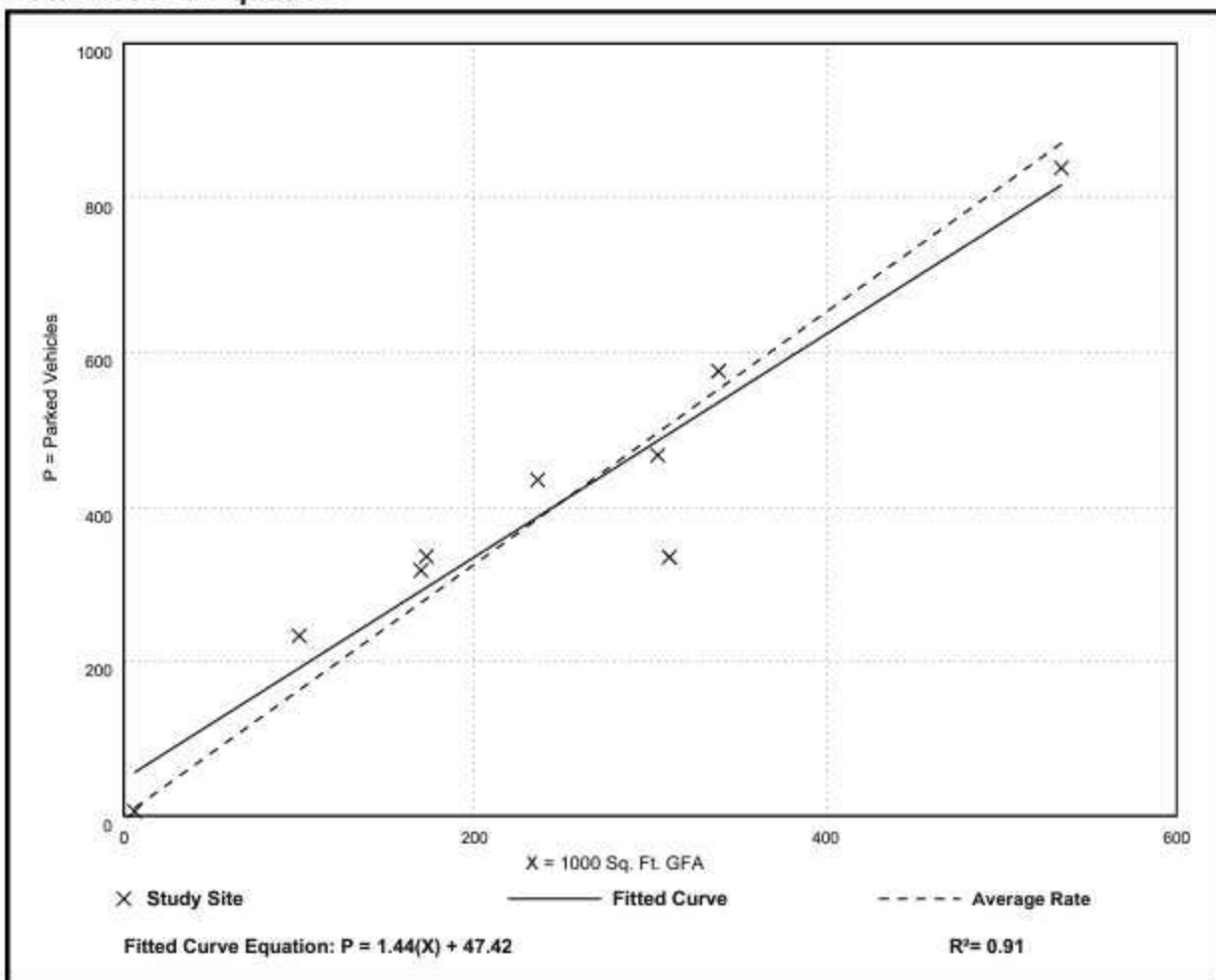
Number of Studies: 9

Avg. 1000 Sq. Ft. GFA: 241

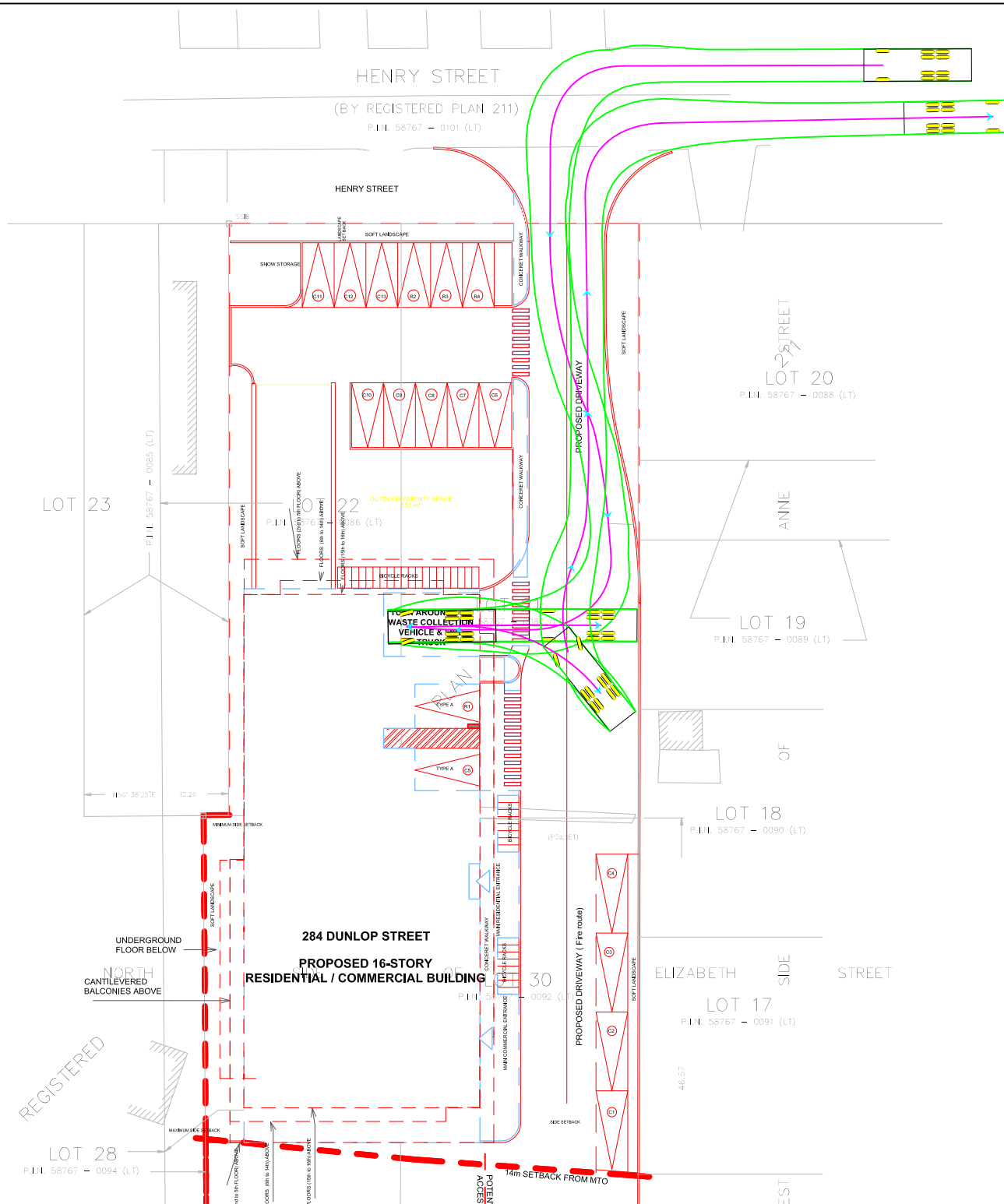
Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.63	0.97 - 2.33	1.55 / 2.14	***	0.32 (20%)

Data Plot and Equation

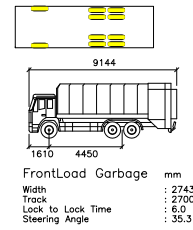


APPENDIX D: Loading Area/Fire Truck Vehicle Movement Diagrams



DESIGN VEHICLE

Front-Load Garbage TRUCK

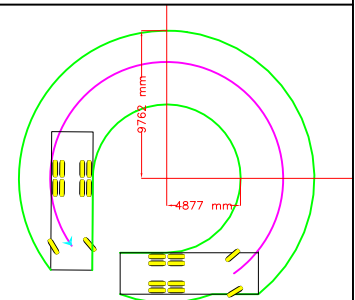


NOTE: above vehicle profiles are not to scale



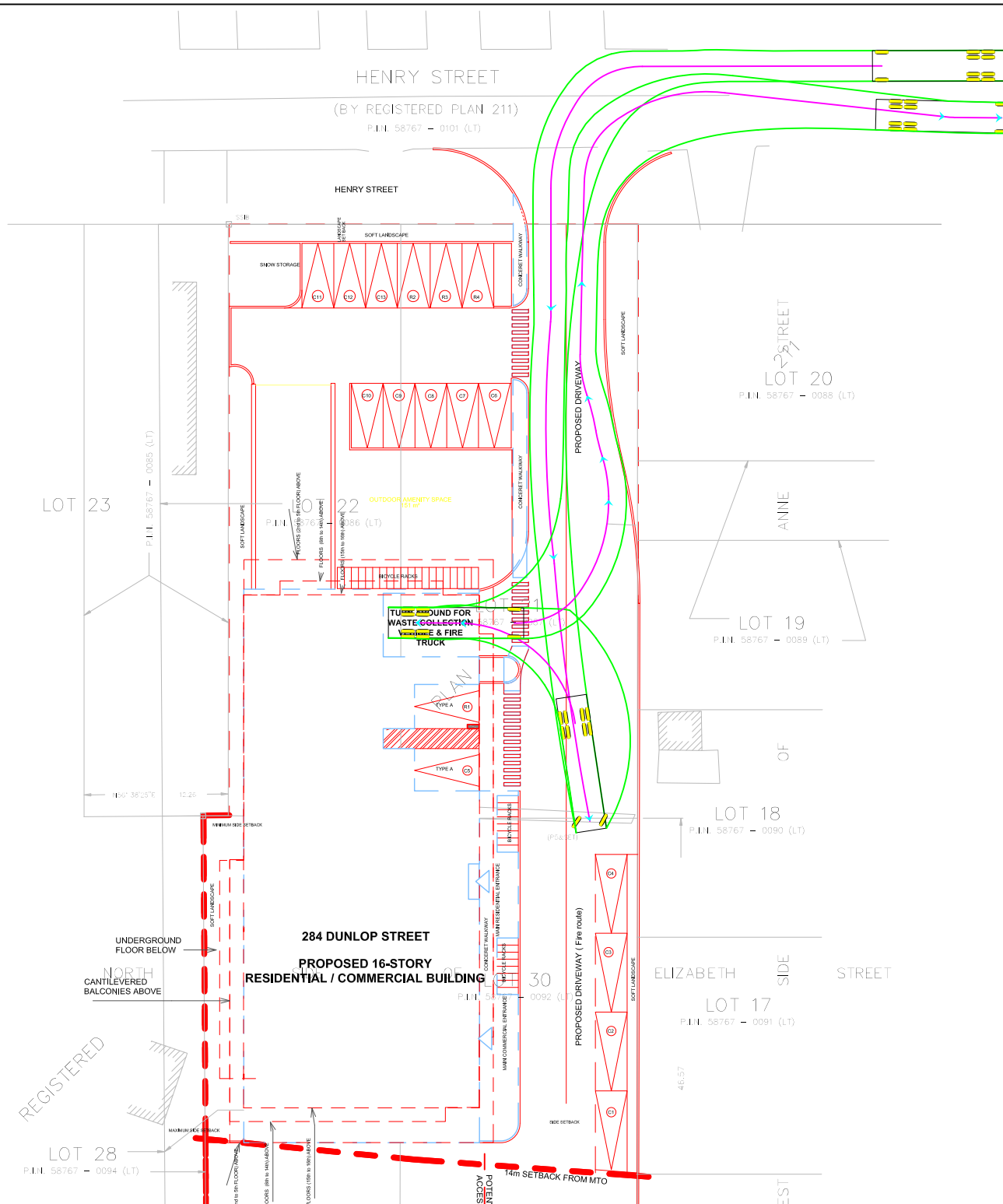
scale: 1:500

GARBAGE TRUCK
VEHICLE MOVEMENT
DIAGRAM
inbound and outbound
DOCK: #1



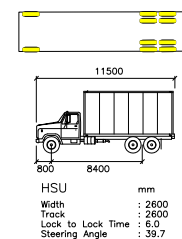
NOTE: above vehicle turning movement scaled at 1:500





DESIGN VEHICLE

TAC: HSU

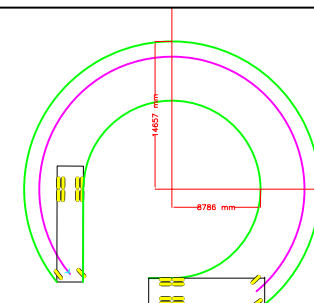


NOTE: above vehicle profiles are not to scale



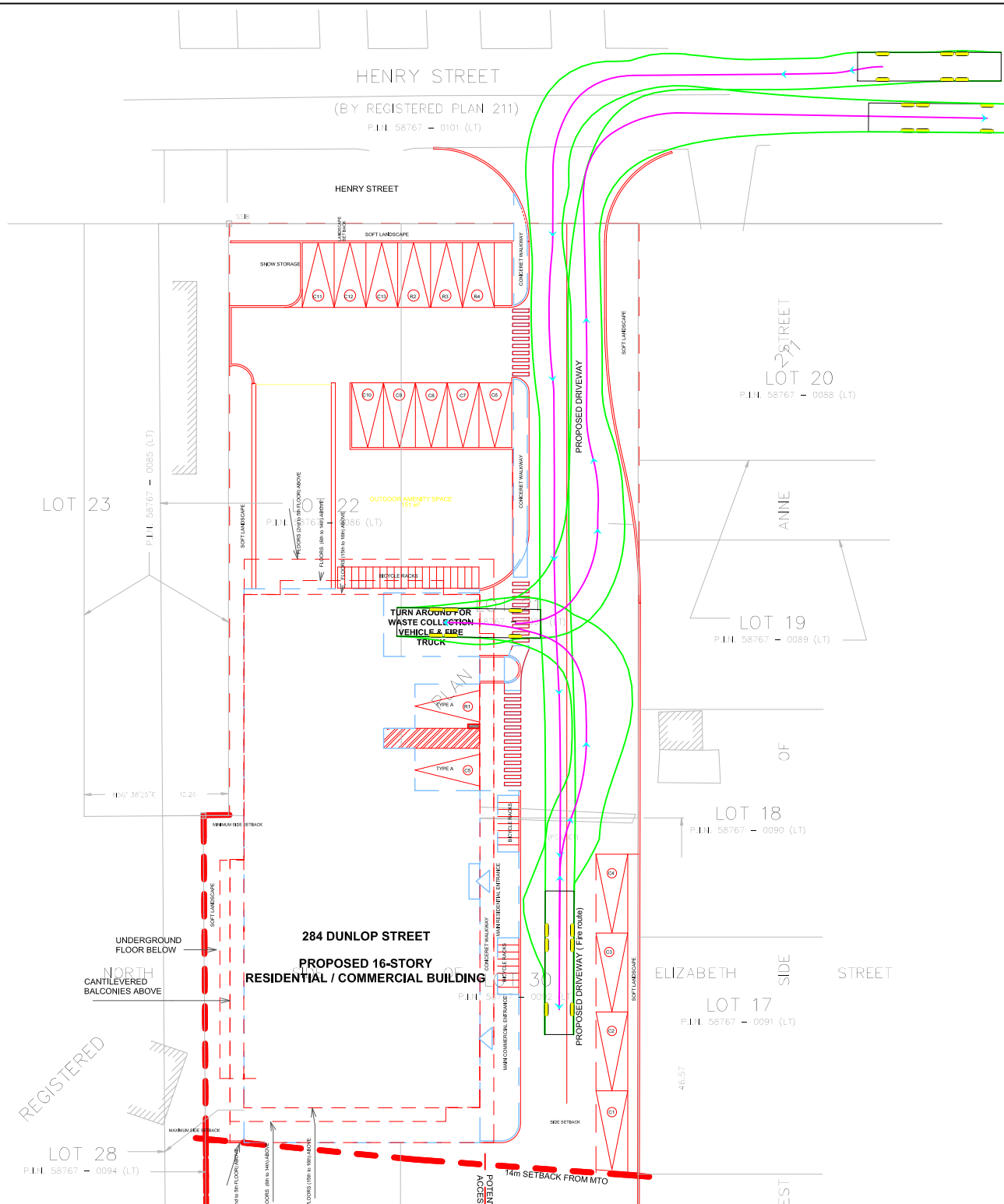
scale: 1:500

HEAVY TRUCK
VEHICLE MOVEMENT
DIAGRAM
inbound and outbound
DOCK: #1



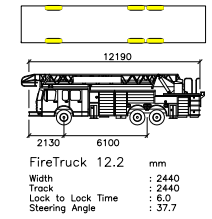
NOTE: above vehicle turning movement scaled at 1:750





DESIGN VEHICLE

Fire Truck 12.2m

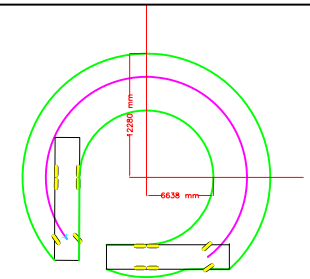


NOTE: above vehicle profiles are not to scale



scale: 1:500

FIRE TRUCK VEHICLE MOVEMENT DIAGRAM inbound and outbound



NOTE: above vehicle turning movement scaled at 1:750

