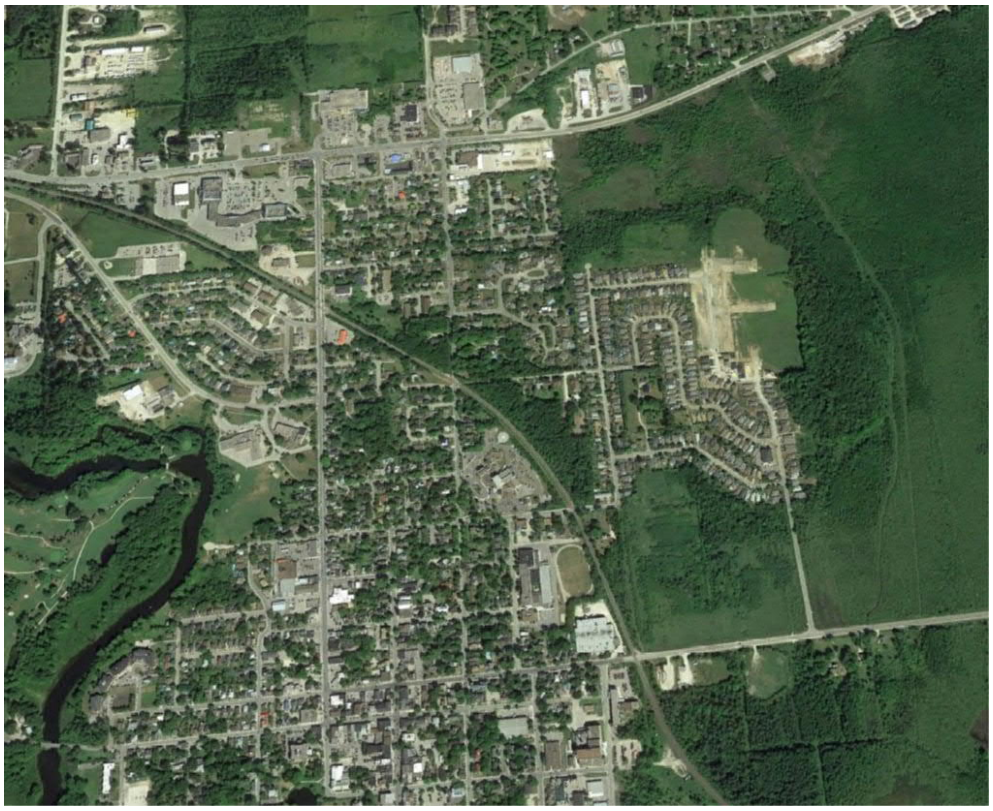
TRAFFIC IMPACT STUDY FOR PERTHMORE SUBDIVISION IN PERTH, ONTARIO



Project No.: OPP-13-9668

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December 2020

McINTOSH PERRY

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1.0 INTRODUCTION

McIntosh Perry Consulting Engineers Ltd. (MP) has been retained by Perthmore Enterprise Inc. to assist in the development of a Traffic Impact Study (TIS) for the proposed expansion of the Perthmore subdivision in the Town of Perth. The study is prepared in support of the site plan application and is submitted to the Town of Perth for their review and approval. The study will address traffic impacts of the development to the surround traffic network.

2.0 PROPOSED DEVELOPMENT

The proposed development will be an extension of the existing Perthmore subdivision located between Drummond Concession 2 (county road 10) and highway 7. The proposed development includes a mix of 42 single family detached homes, 23 duplexes and 4 blocks of multi family residential units (mid rise apartment). The development will have one access off of highway 7, while also using the existing traffic roadway networks to the west (Isabella Street) and south (Drummond Concession 2) of the development. The site plan is provided in Appendix A.

3.0 EXISTING CONDITIONS

3.1 Site Location

The site of the proposed development is located within the township of Perth towards the north-east border between Highway 7 and Drummond Concession 2. The development will be an expansion on the pre-existing Perthmore subdivision. The site of the expansion is currently vacant and is in Resident First Density (R1-h) Zone; Bylaw 3358-63. Figure 3.1 illustrates the site location and the surrounding area.

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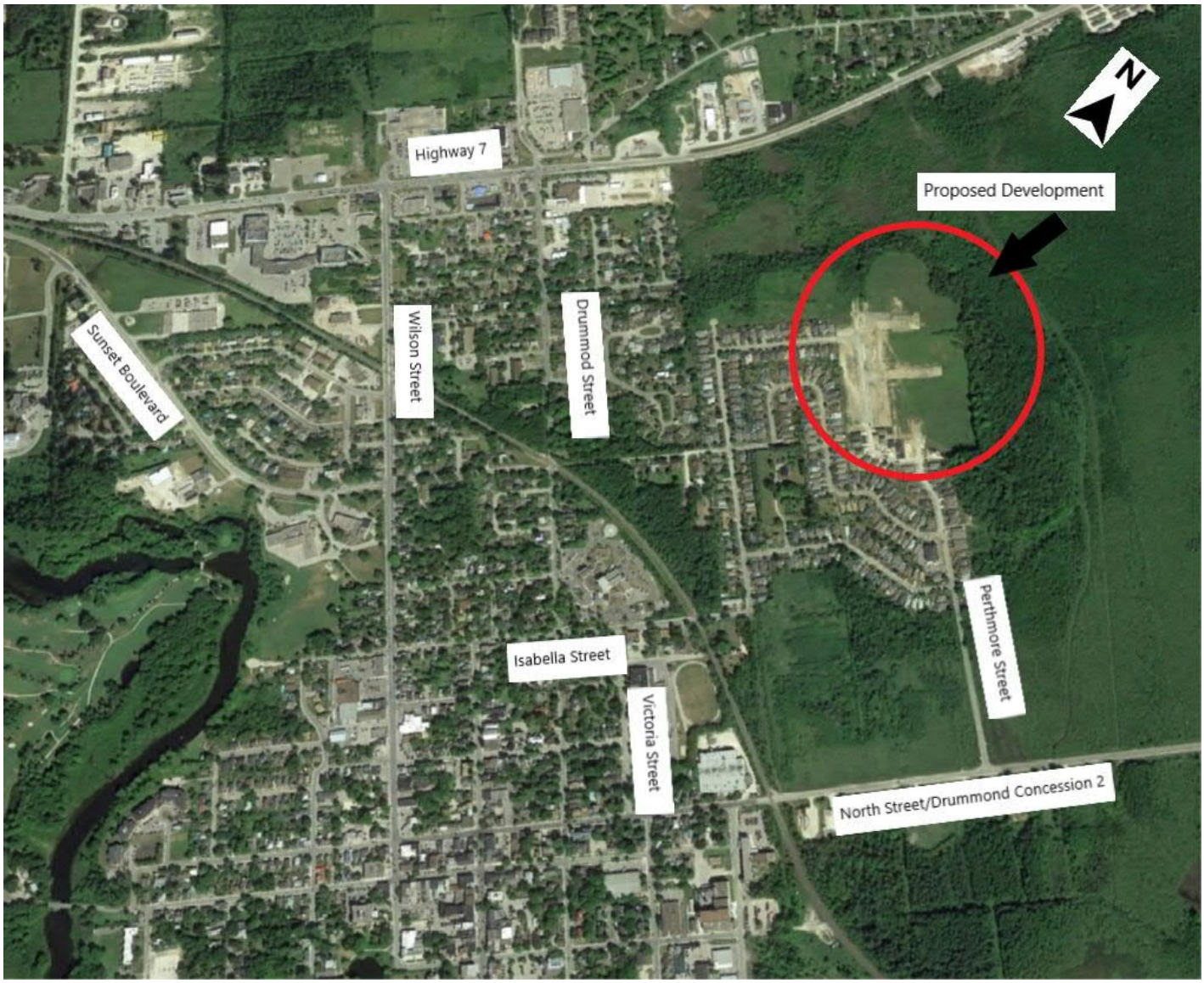
Figure 3.1.1 Proposed Site Location (Source: Google Earth)



3.2 Road Network

3.2.1 Roadways

The road networks surrounding the proposed development includes:

- Drummond Concession 2 (County Road 10)/ North Street;
- Perthmore Street;
- Drummond Street;
- Wilson Street West;
- Sunset Boulevard;
- Isabella Street;

- Victoria Street, and;
- Highway 7.

Drummond Concession 2 (County Road 10) is one of the major east-west commuter routes towards the Town of Smith Falls. Drummond Concession 2 is a two-lane undivided roadway with a posted speed limit of 50km/h but transitions to a posted speed of 60km/h approximately 375m to the east of the intersection of Drummond Concession 2/ North Street and Perthmore Street. Drummond Concession 2 ends at the intersection of Drummond Concession 2 and Perthmore Street in which County Road 10 continues west into the Town of Perth as North Street. North Street runs east-west from the intersection of Drummond Concession 2 / North Street and Perthmore Street in the east to Lustre Lane in the west approximately 1.5km away. North Street is a two-lane undivided roadway with a posted speed limit of 50km/h.

Perthmore Street is a local road that runs north-south, connecting the existing Perthmore subdivision to Drummond Concession 2. Perthmore Street has an unposted speed limit of 50km/h, with unpaved shoulders.

Drummond Street runs north-south within the Town of Perth. Drummond Street is a two-lane, undivided, arterial road with a posted speed limit of 50km/h. There are concrete curbs along both sides of the road and a concrete sidewalk along the east side of the road. There are posted no Heavy Vehicles and no Parking signs along Drummond Street in accordance with By-law 3961.

Wilson Street West runs north-south within the Town of Perth. Wilson Street is a two-lane, undivided, arterial roadway with a posted speed limit of 50km/h. There are concrete curbs and sidewalks on both sides of the street, designated bike lanes on both sides of the street as well as street parking within the downtown core. There are also several driveways along Wilson Street serving the various commercial businesses along the road.

Sunset Boulevard runs east-west within the Town of Perth. Sunset Boulevard is a two-lane, undivided arterial with a posted speed limit of 50km/h. There are concrete curbs along both sides of the roadway, a paved shoulder on the north side of the road and a concrete sidewalk on the south side of the road.

Isabella Street is a two-lane undivided local roadway with an unposted speed limit of 50km/h that runs east-west. There are concrete curbs and sidewalks along both sides of the road from Wilson Street to Gore Street. After Gore Street the sidewalk end on the south side of the road and only the concrete curb continues. There are posted no parking signs all along Isabella Street. Isabella Street services both the Hospital in Perth and the Perthmore Subdivision via Garden Avenue.

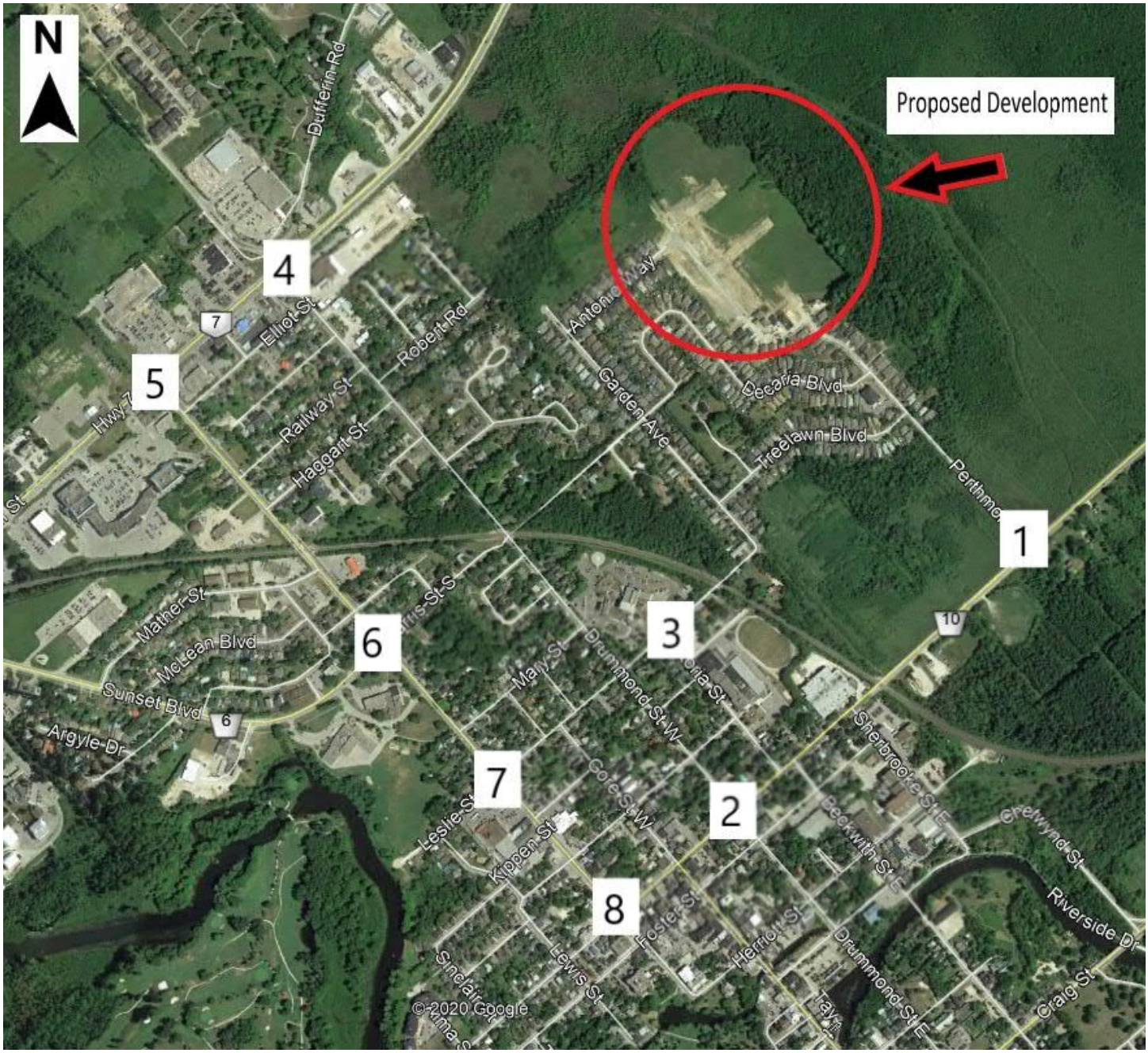
Victoria Street is a two-lane undivided local roadway with an unposted speed limit of 50km/h that runs north-south from North Street to Isabella Street. There are concrete sidewalks and curbs on both sides of the roadway, where the west side sidewalk ends after the intersection of Victoria Street and Darcy Street, where just the concrete curb continues hence for to the north. There are posted no parking signs from North Street to Darcy Street, north of that there is on street parking on the east side of the roadway.

Highway 7 runs east-west within the Town of Perth. Highway 7 is a four lane, undivided highway with a posted speed limit of 60km/h. Within the study limit, Highway 7 has unpaved shoulders and multiple commercial driveway access to the north and south of the roadway.

3.2.2 Intersections

This section summarizes the existing intersections to be included in the analysis, identifying their respective intersection control and lane configurations. Figure 3.2.1 shows the location of the intersections in relation to the proposed development.

Figure 3.2.1 Intersections (Source: Google Earth)



The image above shows the position of the following intersections in relation to the proposed development:

- 1: Perthmore Street and Drummond Concession 2/North Street
- 2: Drummond Street and North Street
- 3: Victoria Street and Isabella Street
- 4: Drummond Street and Highway 7
- 5: Wilson Street and Highway 7
- 6: Wilson Street and Sunset Boulevard
- 7: Wilson Street at Isabella Street
- 8: Wilson Street and North Street

3.2.2.1 Perthmore Street and Drummond Concession 2 / North Street

The intersection of Perthmore Street and Drummond Concession 2 is an unsignalized, two-way stop-controlled intersection. The westbound approach has a through lane and one auxiliary right turn lane. The eastbound approach has a shared through and left turn lane. The southbound approach has a stop-controlled shared left-right turning lane. Figure 3.2.2 illustrates this intersection.

Figure 3.2.2 Intersection of Perthmore Street and Drummond Concession 2 / North Street (Source: Google Earth)

3.2.2.2 Drummond Street and North Street

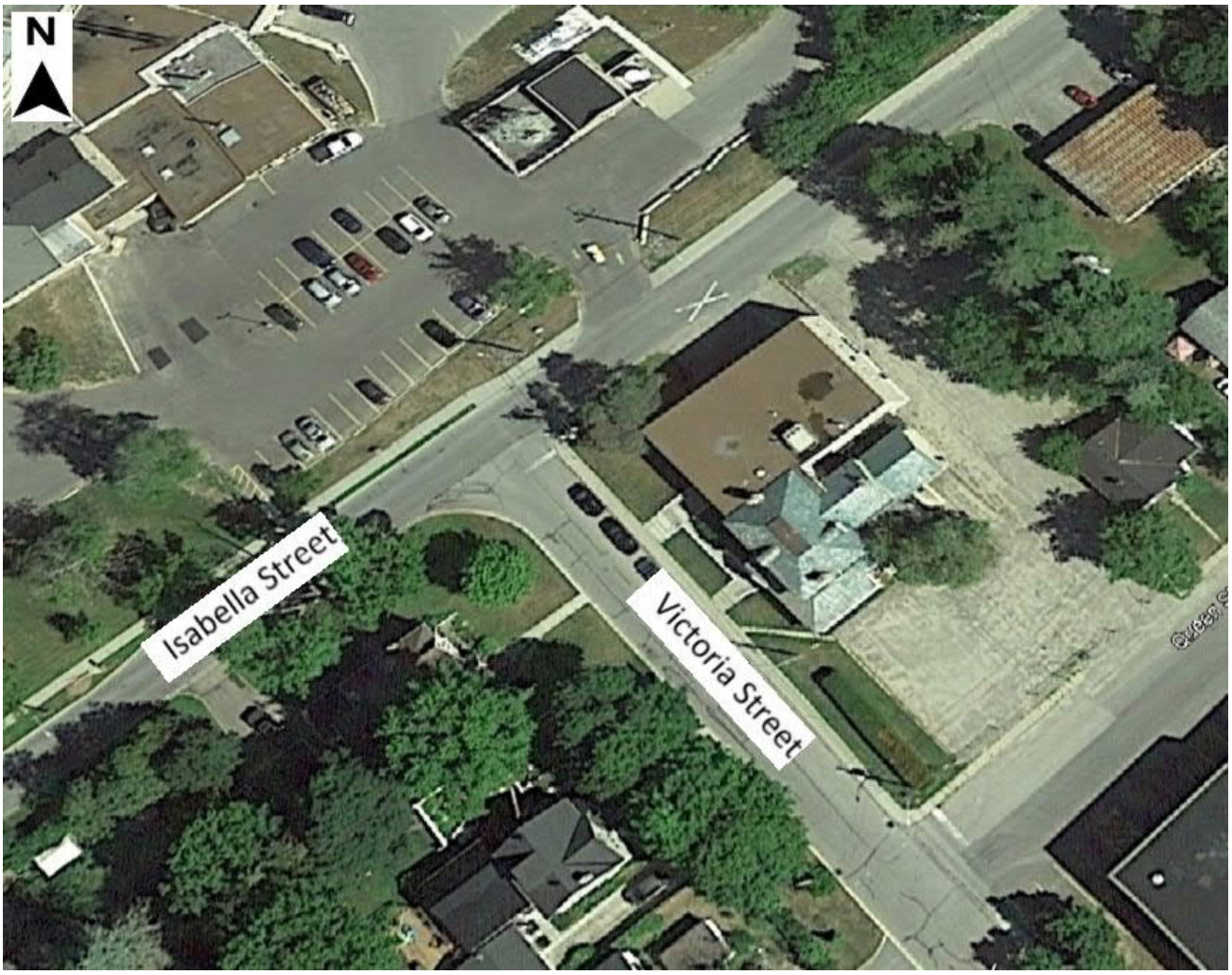
The intersection of Drummond street and North street is an unsignalized, all-way stop-controlled intersection. All legs of the intersection have a shared left-through-right lane. There is parking along the northeast bound lane of North street. Figure 3.2.3 illustrates the intersection.

Figure 3.2.3 Intersection of Drummond Street and North Street (Source: Google Earth)

3.2.2.3 Victoria Street and Isabella Street

The intersection of Victoria Street and Isabella Street is an unsignalized, two-way stop-controlled intersection. The eastbound approach has a shared right-through lane, the westbound lane has a shared left-through lane, and the northbound approach has a shared left-right turn lane. The visitor access to the Perth and Smith Falls District Hospital is directly to the east of the intersection along Isabella. There is also a school south of the intersection approximately 70m; Perth and District Collegiate School. Figure 3.2.4 illustrates the intersection.

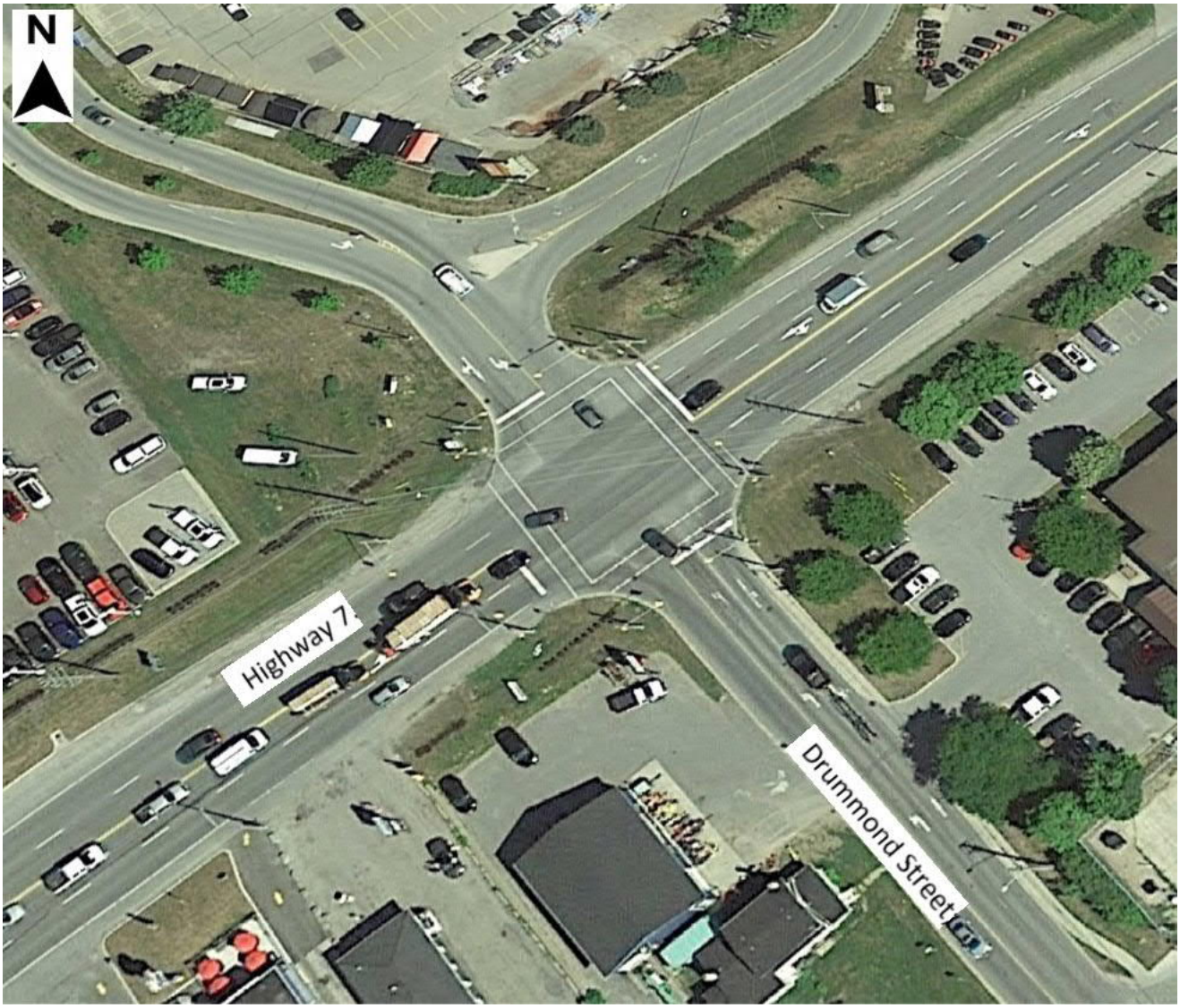
Figure 3.2.4. Intersection of Isabella Street and Victoria Street (Source: Google Earth)



3.2.2.4 Drummond Street and Highway 7

The intersection at Drummond Street and Highway 7 is a signalized intersection. The northbound approach and southbound approach each have a shared right through lane and an auxiliary left turn lane. The eastbound approach has a shared right-through lane and a share left-through lane. The westbound approach has a share left-through lane, a through lane and a right-turn auxiliary lane. Figure 3.2.5 illustrates this intersection

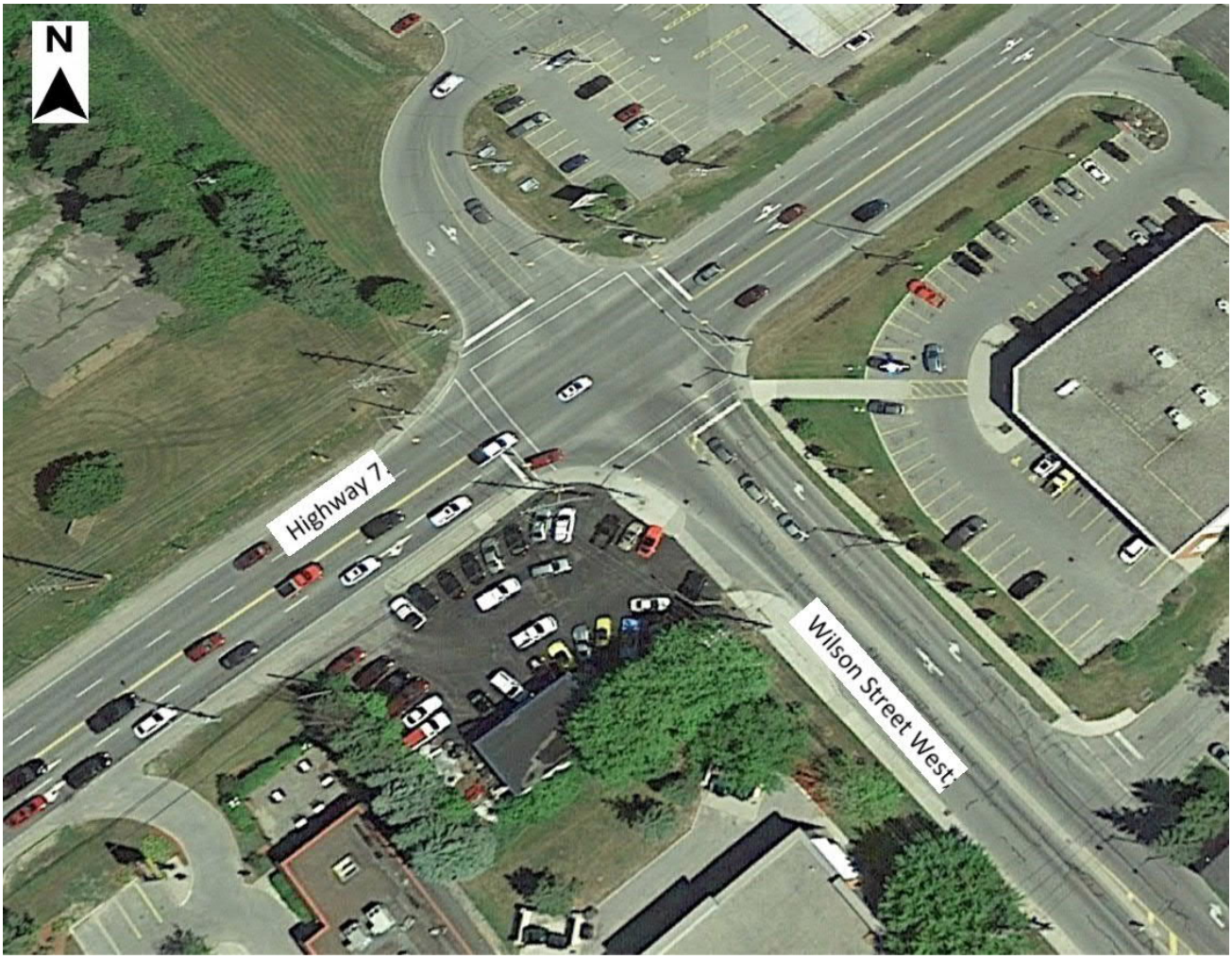
Figure 3.2.5 Intersection of Drummond Street and Highway 7 (Source: Google Earth)



3.2.2.5 Wilson Street and Highway 7

The intersection at Wilson Street and Highway7 is a signalized intersection. The northbound and southbound approaches both have a shared left-through lane and a right-turn lane. The east and westbound approaches both have a shared left-through and a shared right-through lane. Figure 3.2.6 illustrates the intersection.

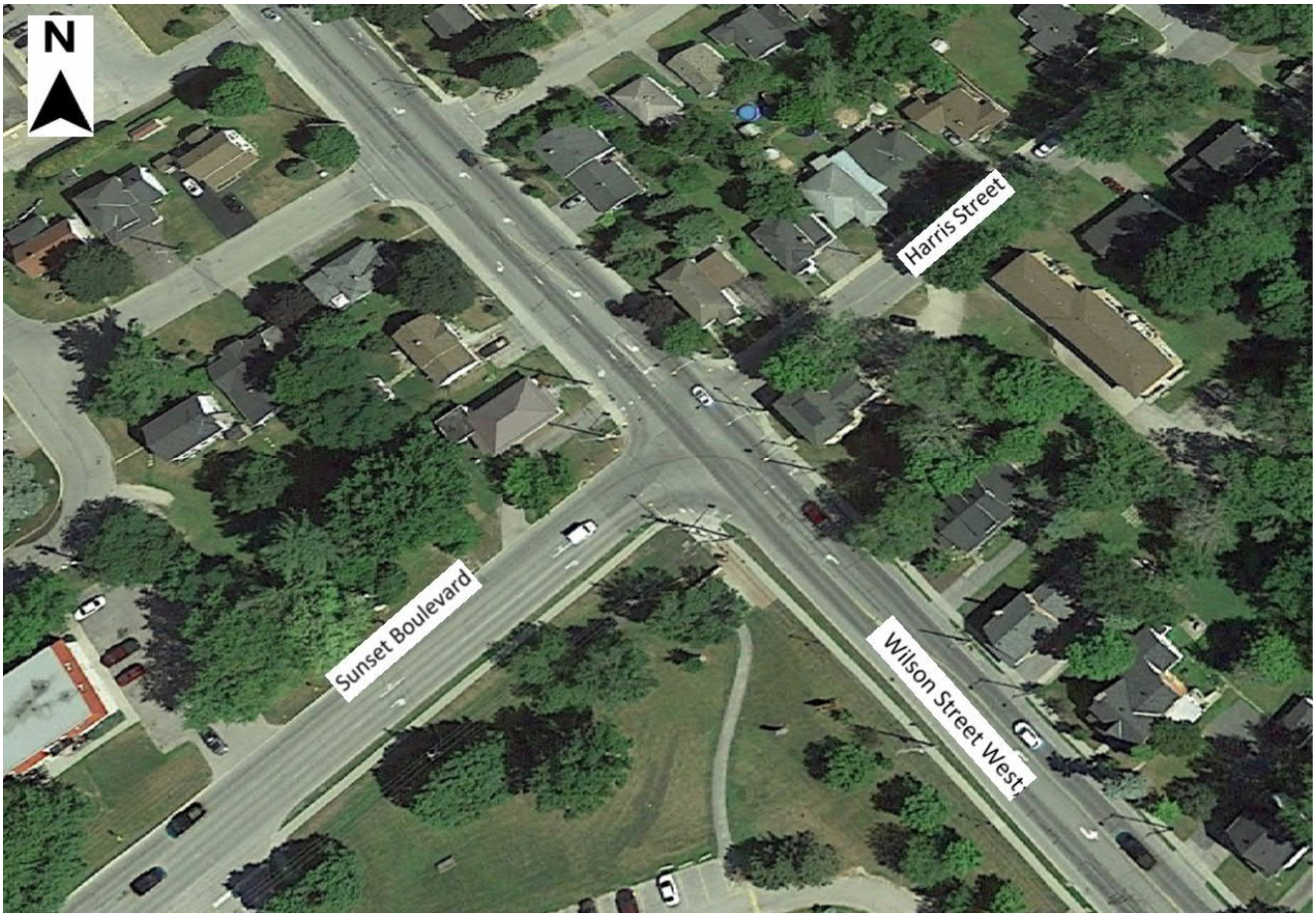
Figure 3.2.6 Intersection of Wilson Street and Highway 7 (Source: Google Earth)



3.2.2.6 Wilson Street and Sunset Boulevard/ Harris Street

The intersection of Wilson Street and Sunset Boulevard/Harris Street is a signalized intersection. The northbound approach has a shared right-through lane and an auxiliary left-turn lane. The southbound approach had a right-turn lane, a through lane and an auxiliary left-turn lane. The eastbound approach has a shared left-through lane and a right-turn lane. The westbound lane has a shared left-through-right lane. Figure 3.2.7 illustrates the intersection.

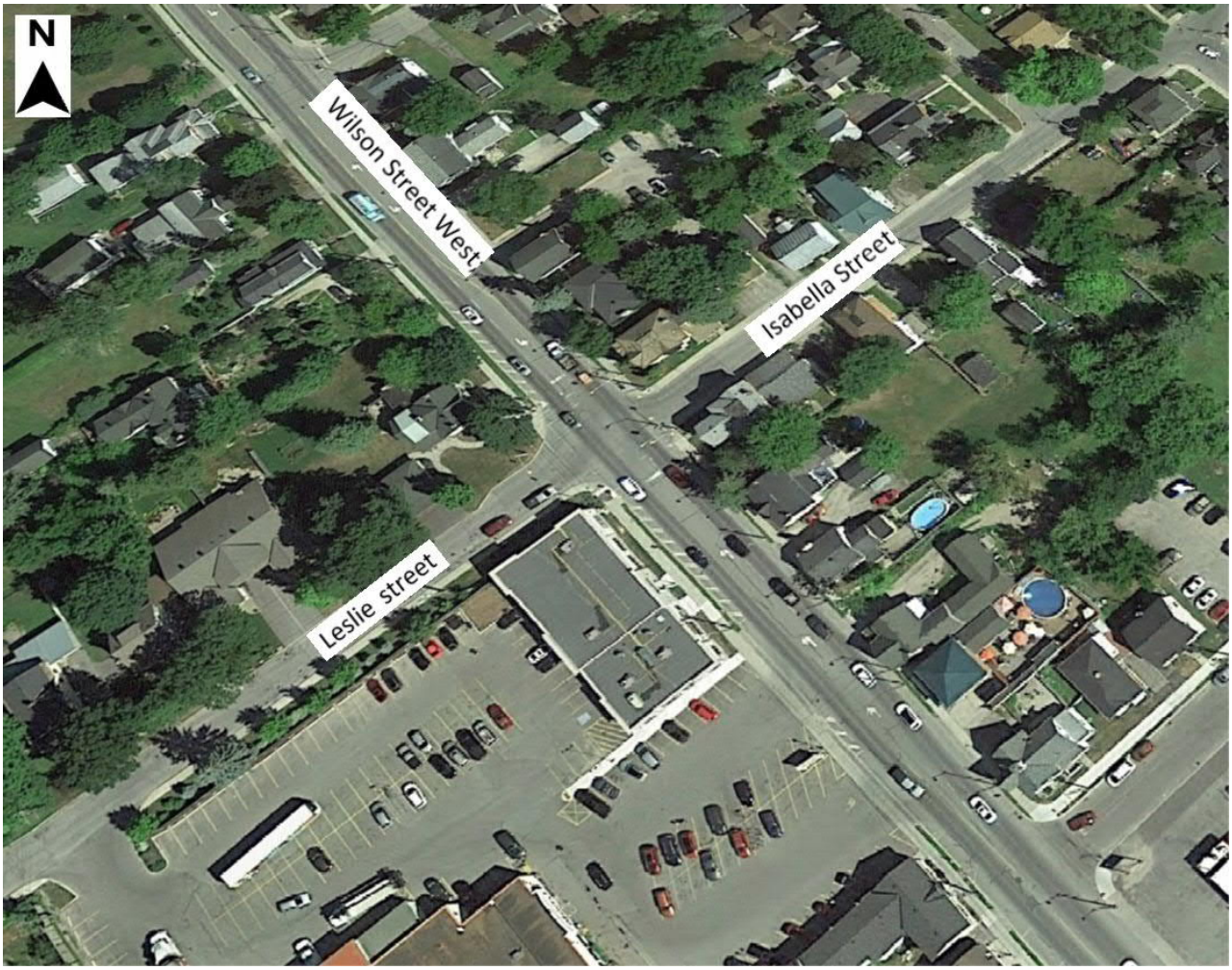
Figure 3.2.7 Intersection of Wilson Street and Sunset Boulevard/Harris Street (Source: Google Earth)



3.2.2.7 Wilson Street and Leslie Street/Isabella Street

The intersection of Wilson Street and Isabella Street is a signalized intersection. Both the north and southbound approached have a shared right-through lane and an auxiliary left-turn lane. Both the east and westbound lane have a shared left-through-right lane. Figure 3.2.8 illustrates the intersection.

Figure 3.2.8 Intersection of Wilson Street and Isabella Street/Leslie Street (Source: Google Earth)



3.2.2.8 Wilson Street and North Street

The intersection of Wilson Street and North Street is an unsignalized, two-way stop-controlled intersection. The southbound approach has a shared right-through lane and an auxiliary left turn lane. It was noted during the field review that the left turn lane is used as a shared left-through lane by residents. Therefore, for the purpose of the TIS, that lane will be analyzed as a left-through lane. The northbound approach has a shared left-through-right lane. Both the east and westbound approaches have a stop controlled, shared left-through-right lane. Figure 3.2.9 illustrates the intersection.

Figure 3.2.9 Intersection of Wilson Street and North Street (Source: Google Earth)

3.3 Transit

There is no public transit system in place for the Town of Perth. However, there is an interregional private bus service that travels from Perth to Ottawa daily during the work week. The bus has 2 stops in Perth and they are at the Giant Tiger (88 Dufferin Street) and at the corner of Highway 7 and Leach Road. The transit schedule can be found in Appendix B.

3.4 Traffic Volume and Characteristics

High-level trip distribution was taken from Table 2 of the 2016 Perth Transportation Master Plan, Future Traffic Forecasting Memo prepared by Stantec. Figure 3.4.1. shows the roadways mentioned in the table.

Figure 3.4.1 Road network for High Level Distribution (Source: Google Earth)

The higher-level trip distribution results in a 50 % heading south of the proposed development (Craig Street, Rideau Ferry Road, and South Street / Scotch Street), 25% heading west from the proposed development (Highway 7, and Sunset Boulevard) and 25% heading east (Highway 7, and North Street) from the proposed development.

MP collected Turning Movement Counts (TMC) data from 07:00-09:30 and 14:45-17:15 for intersections

- Perthmore street at Drummond concession 2/ North street (May 5, 2019);
- Isabella Street at Victoria Street (Jan 22, 2020);
- North Street at Wilson Street (Jan 23, 2020);
- Drummond Street at North Street (May 5, 2019);
- Sunset Boulevard/ Harris at Wilson Street (Jan 23, 2020), and;
- Isabella Street/ Leslie Street at Wilson Street (Jan 22, 2020).

Additionally, The Ministry of Transportation (MTO) provided TMC data and corresponding signal timing plans for the following intersections:

- Wilson Street at Highway 7 (December 1, 2016);
- Drummond Street at Highway 7 (November 29, 2016);

Provided TMC and signal timing data can be found in Appendix C.

Figure 3.4.2 shows the existing conditions volume figure, other volume figures can be found in Appendix D.

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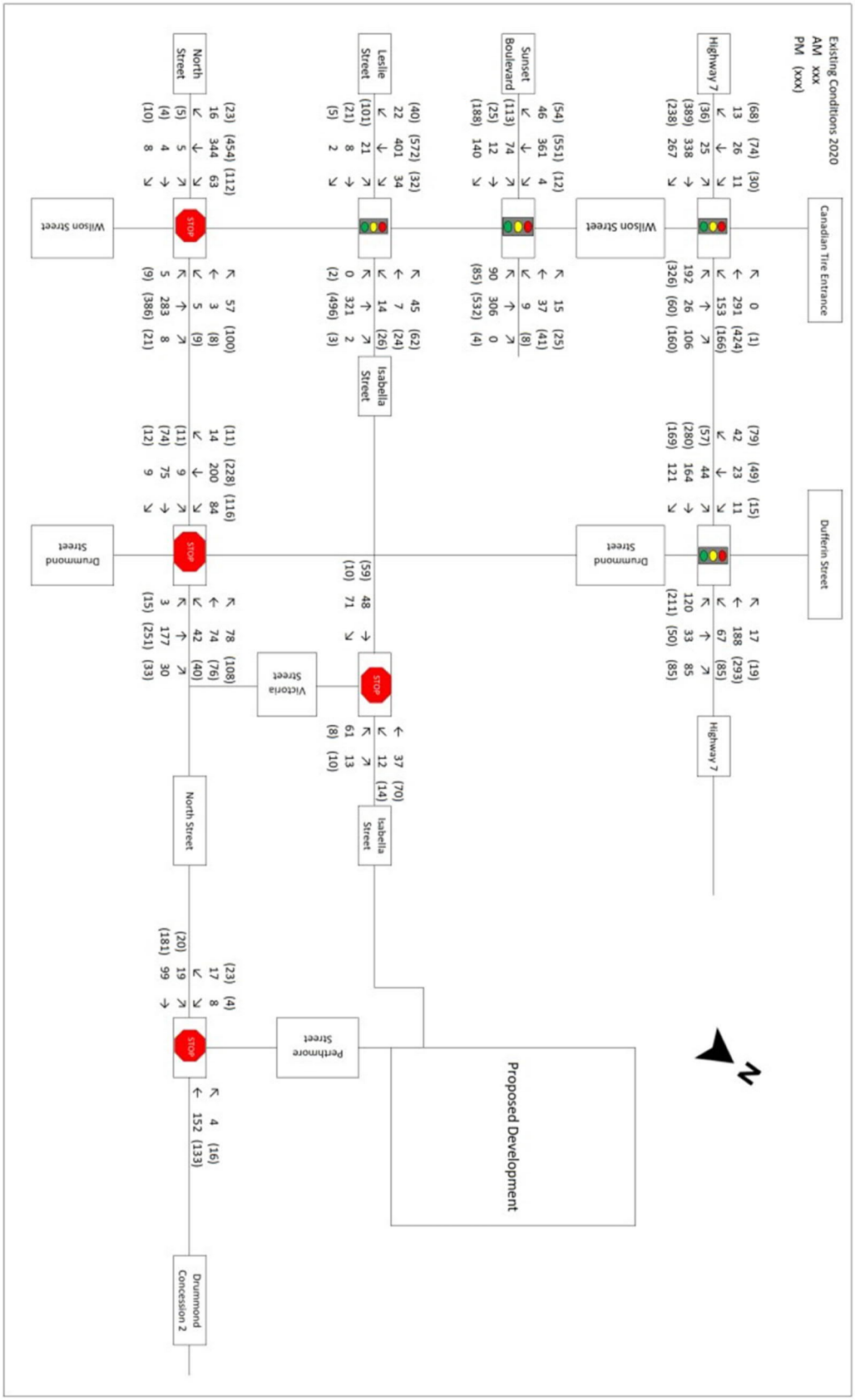
Figure 3.4.2 Existing Conditions Traffic Volumes



4.0 FUTURE CONDITIONS

4.1 Planning Context

The development area is currently within a Resident First Density (R1-h) Zone; Bylaw 3358-63.

4.2 Background Traffic Growth

Background traffic growth is a function of the projected population growth, changes to employment, roadway network modifications and other external factors. The Township of Perth's Growth Management Strategy (2014) indicated a population growth of 4,640 by the year of 2041 from 5,860 in 2014. This increase is a growth rate of 79% which translates to a yearly growth rate of 2.18%. The Lanark County Sustainable Communities Official Plan showed the total population of the Town of Perth increasing from 5,860 (2014) to 7,615 in 2031, this translates to a growth rate of 30% and a yearly growth rate of 1.55%. Therefore, a yearly growth rate of 2.5% will be used for the purpose of this study.

4.3 Other Planned Developments

Currently MTO has plans to widen Highway 7 between Wilson Street and Drummond Street, and potential geometric changes ta the intersections of Highway 7 at Wilson Street and Highway 7 at Drummond Street within the study area of this TIS. It is currently planned to be available for the 2023 construction year.

4.4 Trip Generation

Trip generation for the proposed development was calculated in accordance with Institute of Transportation Engineers (ITE) Trip Generation 10th Edition methodologies and data. The development is expected to include 64 lots split into 42 single family homes and 23 duplexes. For the purpose of the trip generation of this study each duplex shall be considered as two single family homes. There are also four blocks that are expected to be used as multi-family dwellings, medium density. The applicable land use codes for each of the dwelling types are summarized in Table 4.4.1.

Table 4.4.1 ITE Land Use and Land Use Code

Proposed Land Use	ITE Land Use	Land Use Code
Apartment	Multifamily Housing Mid-Rise	221
Duplex	Single Family Detached Housing	210
Detached House	Single Family Detached Housing	210

The number of dwellings has not yet been confirmed for the multi-family dwellings, only the gross area has been confirmed. As such, MP used the rate shown in the Town of Perth Official Plan, April 16, 2019. Section 8.1.3.4 states the following:

8.1.3.4 Housing Densities

a) Council's policy is to provide for different densities within the following ranges:

1. Low Density Housing (1-2 dwelling unit types): single detached and two unit housing (semi-detached, duplex, converted) at 15-25 units per gross hectare.

2. Medium Density Housing (3-6 dwelling units): row or town housing, multiplex and small block apartments (6 units) at 25-60 units per gross hectare.

3. High Density Housing (greater than 6 dwelling units): apartments at 60-100 units per gross hectare.

b) Housing densities may be achieved by encouraging innovative housing types, through the use of zero lot lines and bonusing (permitting an increase in the height or density in return for meeting a particular objective). Council will consider proposals for increased density where development proponents provide two of the following:

• affordable housing units;

• innovative designs that result in more efficient use/lower demand for municipal services (water, sanitary sewer, storm water, road maintenance) or utility infrastructure; and/or

• sustainable design that: has more recycled and reclaimable building materials, exceeds building code minimums for energy efficiency/ insulation; has green energy components; has more vegetated area than the minimum zoning standard and lower waste generating construction techniques.

As per the reference to the Official Plan, MP used a dwelling rate of 60 units per gross hectare as this covers both the higher end of the medium density housing, as well as the lower end of the high density housing to create a more conservative approach to trip generation.

Table 4.4.2, Table 4.4.3 and Table 4.4.4 show the number of trips generated by each land use. All trip generation rates were taken from the weekday peak hour of adjacent street traffic.

Table 4.4.2 ITE Trip Generation for Apartment Blocks.

Land Use	Block	Sq. m	Dwelling Rate per gross hectare	Dwellings	Land Use Code	ITE Trip Generation rate		Trips	
						AM	PM	AM	PM
Apartment	66	31,867	60	191	221	Ln(T)=0.98Ln(x)-0.98	Ln(T)=0.96Ln(x)-0.63	65	82
	67	34,258	60	206				69	89
	68	15,553	60	93				32	41
	69	6,482	60	39				14	18
Total	-	-	-	529	-	-	-	180	230

As shown in Table 4.4.2 the proposed apartment blocks of the development will generate 180 trips during the AM Peak hour and 230 Trips in the PM Peak hour.

Table 4.4.3 ITE Trip Generation for Duplex Homes.

Land Use	Units	Related Single Family Home Dwellings	Land Use Code	ITE Trip Generation rate		Trips	
				AM	PM	AM	PM
Duplex	23	46	210	T=0.71(x)+4.80	Ln(T)=0.96Ln(x)+0.20	37	48

As shown in Table 4.4.3 the proposed duplexes of the proposed development will generate 37 Trips during the AM peak and 48 Trips During the PM peak.

Table 4.4.4 ITE Trip Generation for Detached Homes.

Land Use	Units	Land Use Code	ITE Trip Generation rate		Trips	
			AM	PM	AM	PM
Detached House	42	210	T=0.71(x)+4.80	Ln(T)=0.96Ln(x)+0.20	35	44

As shown in Table 4.4.4 the proposed detached housing of the proposed development will generate 35 Trips during the AM peak hour and 44 Trips during the PM peak hour.

The total trips generated by the proposed development during the AM Peak hour is 252 and 322 during the PM Peak hour.

The recommended ITE procedure for estimating internal trip capture is only applicable for mixed use development. Therefore, internal trips were not considered in the trip generation analysis.

The proposed development's new residential units do not affect existing volumes through pass-by trips. Therefore, pass-by trips are not considered in the trip generation analysis.

Mode split will typically include other transportation mode, such as auto-passenger, transit, biking and walking. Due to a lack in available mode split data, it is assumed that the new trips will be made up entirely of new auto-driver trips in order to create a more conservative scenario.

4.5 Sensitivity Analysis Results

Table 4.5.1 illustrates the results from the sensitivity analysis done by MP in December 2020.

Table 4.5.1 Maximum Dwellings Supported by Each Development Access

	Existing 2020		Horizon 2030		Horizon 2040	
	Perthmore St @ Drummond Concession 2	HWY 7 @ Proposed New Arterial	Perthmore St @ Drummond Concession 2	HWY 7 @ Proposed New Arterial	Perthmore St @ Drummond Concession 2	HWY 7 @ Proposed New Arterial
Maximum Trips added	535	385	480	280	410	170
Maximum Dwellings	747	401	504	288	428	171
Total Dwellings	1148		792		599	

Table 4.5.1 shows that the intersection of Perthmore Street and Drummond Concession 2 can accommodate an addition of 747 dwellings (540 trips) during the existing 2020 scenario, 504 dwellings (480 trips) during the horizon 2030 scenario, and 428 dwellings (410 trips) during the horizon 2040 scenario before operating unacceptably and the trigger is met for the need of a new intersection at Highway 7 / Future bypass. The intersection will be connected to the northern part of the development.

The proposed development is expected to generate 252 trips during the AM Peak and 322 trips during the PM Peak. Therefore, for the purpose of this study the Future Conditions shall only consider the development entrances at Perthmore Street and Drummond Concession 2 as well as the entrance onto Isabelle Street in order to represent a more conservative scenario as the need for a third entrance to the north at Highway 7 and the proposed bypass has not been met. For the purpose of this TIS the generated traffic will have a distribution split of 80%/20% of vehicles using the entrances at Perthmore Street and Drummond Concession 2 to the entrance onto Isabella Street.

4.6 Trip Distribution and Trip Assignment

The distribution of trips is developed only considering new trips. As such, the new residential units will act as the origin and destination of the new trips during the respective peak hours. The apartment land use has a directional split of 32%/62% entering/exiting during the AM Peak hour, and a direction split of 61%/39% entering/exiting during the PM Peak Hour. The Duplex and the Detached house land use both have a directional split of 25%/75% entering/exiting during the AM Peak Hour and a split of 63%/37% entering/exiting during the PM Peak Hour.

Table 4.6.1 summarizes the directional distribution of the generated trips.

Table 4.6.1 Generated Trip Distribution

Land Use	AM			PM		
	Trips	In	Out	Trips	In	Out
Apartment	180	47	133	230	140	90
Duplex	37	9	28	48	30	18
Detached House	35	9	26	44	28	16
Total	252	65	187	322	198	124

As shown in the table above, the proposed development is expected to generate 252 trips during the AM Peak hour, 65 entering and 187 exiting, and 322 trips during the PM Peak hour, 198 entering and 124 exiting.

The new trip distribution was derived from Table 2 from the Township of Perth TMP and planning assumptions from Section 3.4. Trip Distribution and Assignment figures are provided in Appendix E. Figure 4.6.1 illustrates the trip distribution for the proposed development.

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Figure 4.6.1 Tip Distribution

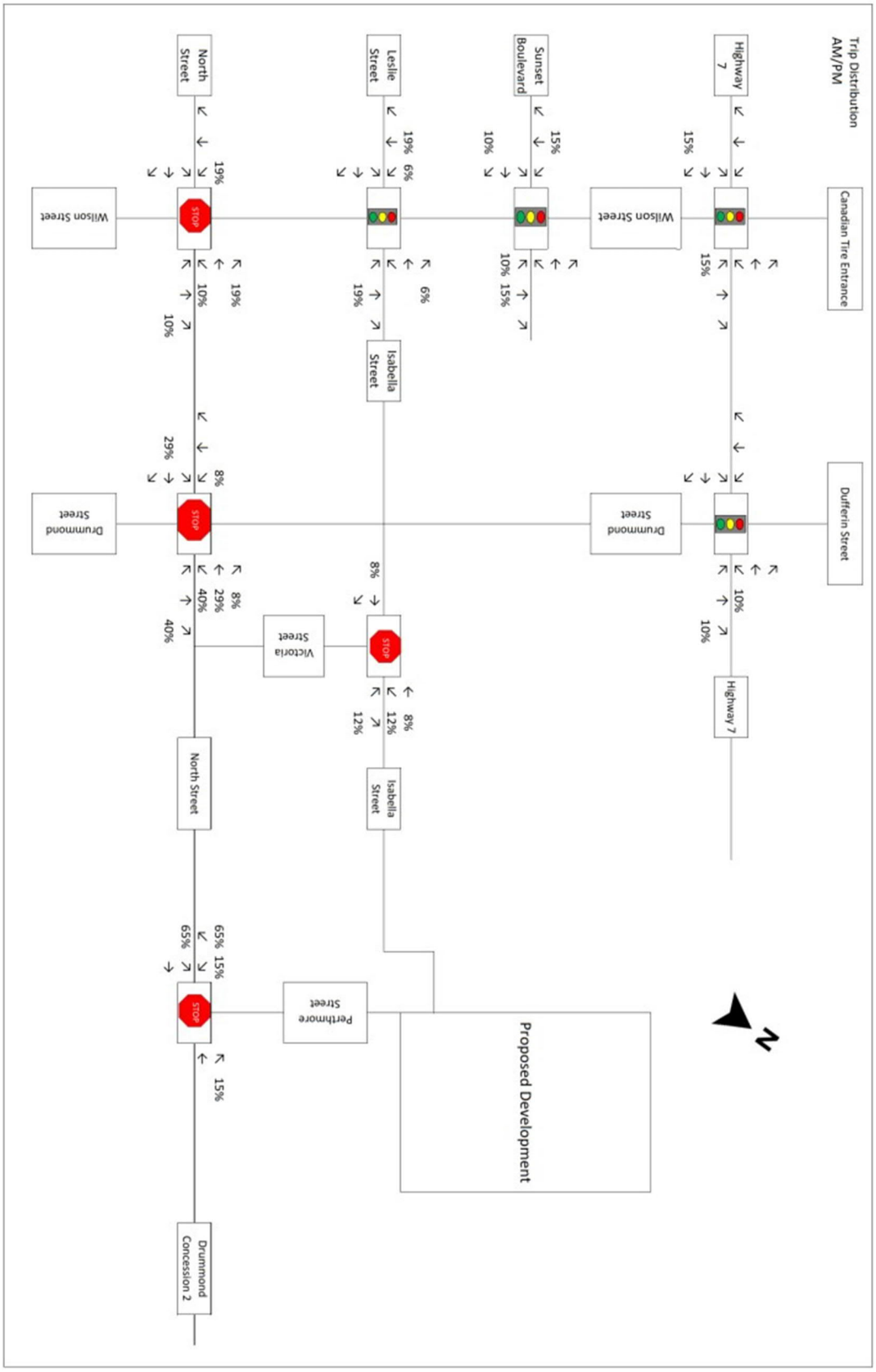
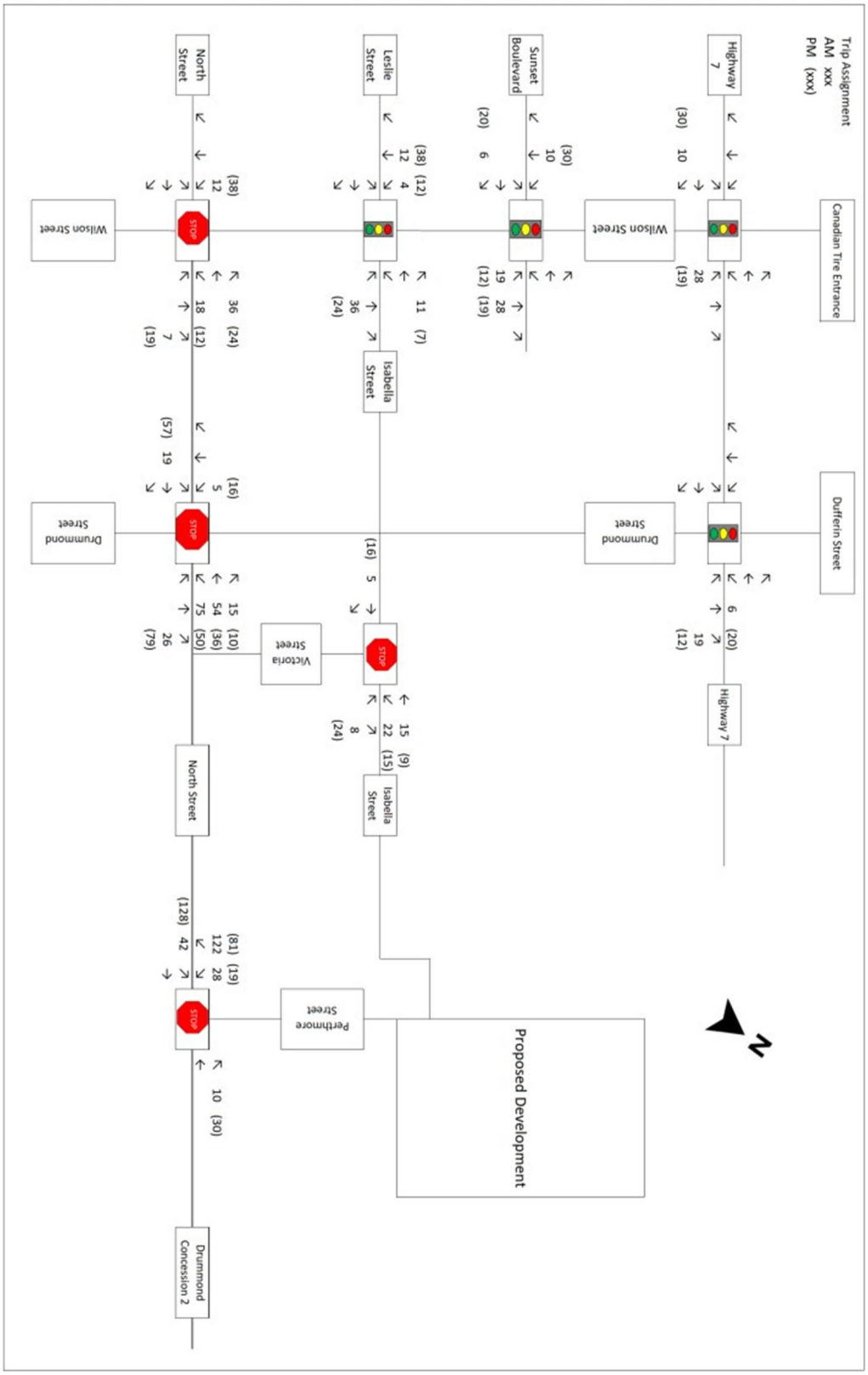


Figure 4.6.2 illustrates the trip assignment for the proposed development.

Figure 4.6.2 Trip Assignment



5.0 LEVEL OF SERVICE AND OPERATING CONDITIONS

5.1 Methodology

Level of Service (LOS) is a qualitative measure of the operating conditions, based on lane configuration, signal operation/phasing. LOS criteria for signalized intersection based on HCM 6th Edition, are illustrated in Table 5.1.1.

Table 5.1.1 Definition of LOS for a Signalized Intersection

Level of Service	Average Total Delay (Seconds)	v/c Ratio
A	< 10.0	< 0.9
B	10 to 20	< 0.9
C	20 to 35	< 0.9
D	35 to 55	< 0.9
E	55 to 80	< 0.9
F	> 80	> 0.9

LOS criteria for an unsignalized intersection is determined by the average total delay for specific turning movement. Based on HCM 6th Edition, the level of service categories are illustrated in Table 5.1.2.

Table 5.1.2 Definition of LOS for an Unsignalized Intersection

Level of Service	Average Total Delay (Seconds)	v/c Ratio
A	< 10.0	< 0.9
B	10 to 15	< 0.9
C	15 to 25	< 0.9
D	25 to 35	< 0.9
E	35 to 50	< 0.9
F	> 50	> 0.9

An intersection operates at an unsatisfactory condition when the critical approach movement has either a LOS of E or worse, or a v/c of 0.9 or greater.

Traffic operation analysis was performed using Synchro 10 software. Synchro 10 output sheets can be found in Appendix E.

5.2 Existing Conditions

The existing Traffic volumes were analyzed using Synchro 10 software. The existing traffic conditions for the AM and PM Peak hour were developed using the turning movement counts. Calibration of the model was done through the use of the peak hour factor (PHF) and heavy vehicle percentages (HV%) which was determined through the TMC data. Table 5.2.1 summarizes the 2020 existing traffic operations within the study area.

Table 5.2.1 Existing Traffic Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
Drummond Concession 2 at Perthmore Street						
Eastbound Left-Through	A	0.01	8.20	A	0.02	7.80
Westbound Through	-	-	-	-	-	-
Westbound Right	-	-	-	-	-	-
Southbound Left-Right	A	0.04	9.90	A	0.05	9.70
Isabella Street at Victoria Street						
Eastbound Through-Right	A	0.01	7.80	-	-	-
Westbound Left-through	A	-	0.00	A	0.01	7.40
Northbound Left-Right	B	0.24	11.10	A	0.03	9.30
North Street at Wilson Street						
Eastbound Left-Through-Right	C	0.09	19.10	D	0.15	28.00
Westbound Left-Through-Right	B	0.16	12.80	C	0.30	17.10
Northbound Left-Through-Right	A	0.01	8.30	A	0.01	8.50
Southbound Left-Through	A	0.08	8.70	A	0.12	9.00
Southbound Through-Right	A	-	0.30	A	-	0.50
North Street at Drummond Street						
Eastbound Left-Through-Right	B	0.23	10.80	B	0.21	11.60
Westbound Left-Through-Right	B	0.35	11.70	B	0.45	14.00
Northbound Left-Through-Right	B	0.36	11.60	C	0.54	15.80
Southbound Left-Through-Right	C	0.57	15.40	C	0.67	20.10
Wilson Street at HWY. 7						
Eastbound Left-Through-Right	B	0.61	18.90	C	0.75	32.50
Westbound Left-Through-Right	B	0.44	12.00	C	0.64	22.20
Northbound Left-Through	C	0.61	33.20	D	0.82	42.80
Northbound Right	A	0.24	6.40	A	0.24	4.10
Southbound Left-Through	D	0.29	40.20	D	0.34	36.20
Southbound Right	A	0.08	0.50	A	0.18	8.40
Drummond Street at HWY. 7						
Eastbound Left-Through-Right	B	0.39	12.10	B	0.54	16.60
Westbound Left-Through	A	0.19	8.90	B	0.33	11.40
Westbound Right	A	0.02	2.50	A	0.03	2.60
Northbound Left	C	0.45	23.40	C	0.67	28.40
Northbound Through-Right	A	0.29	8.00	A	0.28	8.30
Southbound Left	B	0.04	16.00	B	0.05	14.40
Southbound Through-Right	A	0.19	9.00	A	0.27	8.40
Sunset Blvd at Wilson Street						
Eastbound Left-Through	C	0.52	22.50	C	0.51	24.60
Eastbound Left	A	0.45	5.60	A	0.42	6.10
Westbound Left-Through-Right	B	0.22	13.00	B	0.25	13.80
Northbound Left	A	0.22	6.80	A	0.27	7.20
Northbound Through-Right	B	0.41	10.30	B	0.57	13.10
Southbound Left	A	0.01	5.80	A	0.03	5.50
Southbound through	B	0.56	15.50	C	0.75	21.70
Southbound Right	A	0.08	0.90	A	0.08	1.40
Isabella Street at Wilson Street						
Eastbound Left-Through-Right	B	0.17	16.20	C	0.56	27.50
Westbound Left-Through-Right	B	0.28	10.30	B	0.32	12.50
Northbound-Left	*	*	*	A	0.01	3.50
Northbound Through-Right	A	0.33	8.30	B	0.54	11.40
Southbound Left	A	0.06	3.60	A	0.08	4.20
Southbound Through-Right	A	0.39	4.90	B	0.71	13.50

"-" Vehicles move freely and no delays are present

"*" No Vehicle was shown using this lane during the peak hour

As seen from the table above all intersections are operating at a LOS of D or better during the AM Peak Hour and the PM Peak Hour, meaning that each intersection is able to handle the volume on the roads. During the site visit conducted by MP it was noticed that large queues were formed on the southbound leg of Wilson street. The queues were observed to dissipate with each cycle of the signalized intersections.

5.3 Future Growth – Background Traffic Only

The following background traffic only scenarios take into account the annual 2.5% growth rate of traffic volumes at each intersection. The scenarios are developed assuming there are no changes to the road network. These scenarios serve as a baseline for comparison at the buildout year and horizon year, representing the case where there is no development built. Synchro outputs can be found in Appendix E.

5.3.1 Buildout Year (2030)

The majority of intersections operated at a LOS of D or better and a v/c below 0.9, with the exemption of the below. Table 5.3.1 summarizes the 2030 Background Buildout Year traffic failing operations within the study area. Detailed Summary Tables can be found in Appendix F.

Table 5.3.1 Background Buildout 2030 Failing Traffic Conditions

Intersection	PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)
North Street at Wilson Street			
Eastbound Left-Through-Right	F	0.39	68.70
North Street at Drummond Street			
Northbound Left-Through-Right	E	0.86	38.10
Southbound Left-Through-Right	F	1.03	78.70
Wilson Street at Highway 7			
Eastbound Left-Through-Right	E	1.02	68.00
Westbound Left-Through-Right	D	1.13	37.40
Northbound Left-Through	E	1.02	76.30
Sunset Blvd at Wilson Street			
Southbound through	D	0.99	50.90
Isabella Street at Wilson Street			
Eastbound Left-Through-Right	E	0.94	74.20

As seen in the table above all intersections are operating at acceptable conditions during the AM Peak Hour during the Background 2030 traffic conditions. During the PM Peak Hour except for the movements above for the background traffic during the buildout year 2030. The intersections shown above are all operating at unsatisfactory conditions with either a v/c above 0.9, a LOS of E or worse, or both.

5.3.2 5 Year Horizon (2035)

The majority of intersections operated at a LOS of D or better and a v/c below 0.9, with the exemption of the below. Table 5.3.2 summarizes the 2035 Background Horizon Year traffic failing operations within the study area. Detailed Summary Tables can be found in Appendix F.

Table 5.3.2 Background Horizon 2035 Failing Traffic Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
North Street at Wilson Street						
Eastbound Left-Through-Right	E	0.27	42.70	F	0.81	204.90
Westbound Left-Through-Right				F	0.82	68.20
North Street at Drummond Street						
Westbound Left-Through-Right				E	0.89	40.40
Northbound Left-Through-Right				F	1.10	16.20
Southbound Left-Through-Right	F	1.01	71.60	F	1.30	171.60
Wilson Street at Highway 7						
Eastbound Left-Through-Right	D	0.91	39.30	F	1.19	129.80
Westbound Left-Through-Right	C	1.00	20.70	D	1.31	55.00
Northbound Left-Through				F	1.20	137.50
Sunset Blvd at Wilson Street						
Southbound through				F	1.15	104.40
Isabella Street at Wilson Street						
Eastbound Left-Through-Right				F	1.18	147.10
Southbound Through-Right				C	0.91	25.70

As seen in the table above all intersections are operating at acceptable conditions during the AM Peak Hour, and during the PM Peak Hour except for the movements above for the background traffic during the horizon year 2035. The intersections shown above are all operating at unsatisfactory conditions with either a v/c above 0.9, a LOS of E or worse, or both.

5.4 Future Conditions – Total Traffic

The following traffic scenarios take into account the 2.5% annual growth rate of the traffic volumes at each of the intersections as well as the trips generated by the proposed development. The scenarios are representative of the planned development at the buildout year and the horizon year. The scenario takes into account the addition of new trips, due to newly built residential units. Synchro outputs are provided in Appendix E.

5.4.1 Buildout Year (2030)

The majority of intersections operated at a LOS of D or better and a v/c below 0.9, with the exemption of the below. Table 5.4.1 summarizes the 2030 Total Buildout Year traffic failing operations within the study area. Detailed Summary Tables can be found in Appendix F.

Table 5.4.1 Total Buildout 2030 Failing Traffic Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
North Street at Wilson Street						
Eastbound Left-Through-Right	F	0.33	53.70	F	0.54	110.10
Westbound Left-Through-Right				F	0.83	65.70
North Street at Drummond Street						
Westbound Left-Through-Right	F	0.94	54.50	F	1.16	85.70
Northbound Left-Through-Right				F	1.30	138.50
Southbound Left-Through-Right	F	1.03	81.80	F	1.37	179.30
Wilson Street at Highway 7						
Eastbound Left-Through-Right				E	1.04	72.10
Westbound Left-Through-Right				D	1.16	37.20
Northbound Left-Through				F	1.06	88.50
Sunset Blvd at Wilson Street						
Southbound through				E	1.04	64.00
Isabella Street at Wilson Street						
Eastbound Left-Through-Right				F	1.00	92.40

As seen in the table above all intersections are operating at acceptable conditions during the AM Peak Hour, and during the PM Peak Hour except for the movements above for the total traffic during the buildout year 2030. The intersections shown above are all operating at unsatisfactory conditions with either a v/c above 0.9, a LOS of E or worse, or both.

When comparing the two Buildout Year 2030 scenarios we see an increase in failures during the Total Traffic scenario over the Background Only Traffic scenario. There are three additional failing movements during the AM Peak Hour and two additional failing movements during the PM Peak Hour during the Total traffic scenario. We also see that the failures are more critical during the Total Traffic scenarios to the Background Traffic Only scenarios. The failing movements are as follows:

- North Street at Wilson Street
  - Eastbound left-through-right – Background (PM) and Total Traffic (AM & PM)
  - Westbound left-through-right – Total Traffic (PM)
- North Street at Drummond Street
  - Westbound left-through-right - Total Traffic (AM & PM)
  - Northbound left-through-right – Background and Total Traffic (PM)
  - Southbound left-through-right – Background (PM) and Total Traffic (AM & PM)
- Wilson Street at Highway 7
  - Eastbound left-through-right – Background (PM) and Total Traffic (PM)

- Westbound left-through-right - Background (PM) and Total Traffic (PM)
- Northbound left-through - Background (PM) and Total Traffic (PM)

- Sunset Boulevard at Wilson Street
  - Southbound through - Background (PM) and Total Traffic (PM)
- Wilson at Isabella Street
  - Eastbound left-through-right - Background (PM) and Total Traffic (PM)

5.4.2 5 Year Horizon (2035)

The majority of intersections operated at a LOS of D or better and a v/c below 0.9, with the exemption of the below. Table 5.4.2 summarizes the 2035 Total Horizon Year traffic failing operations within the study area. Detailed Summary Tables can be found in Appendix F.

Table 5.4.2 Total Horizon 2035 Failing Traffic Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
North Street at Wilson Street						
Eastbound Left-Through-Right	E	0.20	35.00	F	1.20	407.10
Westbound Left-Through-Right				F	1.28	216.50
North Street at Drummond Street						
Westbound Left-Through-Right	F	1.12	89.10	F	1.39	123.90
Northbound Left-Through-Right	E	0.90	43.20	F	1.56	197.50
Southbound Left-Through-Right	F	1.27	152.50	F	1.67	255.70
Wilson Street at Highway 7						
Eastbound Left-Through-Right	D	0.94	44.40	F	1.21	136.30
Westbound Left-Through-Right	C	1.07	22.40	D	1.31	54.00
Northbound Left-Through				F	1.24	152.80
Sunset Blvd at Wilson Street						
Northbound Through-Right				C	0.91	29.80
Southbound through				F	1.20	123.70
Isabella Street at Wilson Street						
Eastbound Left-Through-Right				F	1.20	156.80
Southbound Through-Right				C	0.96	31.60

As seen in the table above all intersections are operating at acceptable conditions during the AM Peak Hour, and during the PM Peak Hour except for the movements above for the total traffic during the horizon year 2035. The intersections shown above are all operating at unsatisfactory conditions with either a v/c above 0.9, a LOS of E or worse, or both.

When comparing the two Horizon Year 2035 scenarios we see an increase in failures during the Total Traffic scenario over the Background Only Traffic scenario. There are two additional failing movements during the AM

Peak Hour and one additional failing movement during the PM Peak Hour during the Total traffic scenario. We also see that the failures are more critical during the Total Traffic scenarios to the Background Traffic Only scenarios. The failing movements are as follows:

- North Street at Wilson Street
  - Eastbound left-through-right - Background (AM & PM) and Total Traffic (AM & PM)
  - Westbound left-through-right - Background (PM) and Total Traffic (PM)
- North Street at Drummond Street
  - Westbound left-through-right - Background (PM) and Total Traffic (AM & PM)
  - Northbound left-through-right - Background (PM) and Total Traffic (AM & PM)
  - Southbound left-through-right - Background (AM & PM) and Total Traffic (AM & PM)
- Wilson Street at Highway 7
  - Eastbound left-through-right - Background (AM & PM) and Total Traffic (AM & PM)
  - Westbound left-through-right - Background (AM & PM) and Total Traffic (AM & PM)
  - Northbound left-through - Background (PM) and Total Traffic (PM)
- Sunset Boulevard at Wilson Street
  - Northbound through-right - Total Traffic (PM)
  - Southbound through - Background (PM) and Total Traffic (PM)
- Wilson at Isabella Street
  - Eastbound left-through-right - Background (PM) and Total Traffic (PM)
  - Southbound through-right - Background (PM) and Total Traffic (PM)

6.0 MITIGATIONS

6.1 Signal Warrants

Traffic signal warrants were performed for the intersections of North Street at Drummond Street and for the intersection of North Street at Wilson Street. The warrant was performed using the 2020 existing conditions for North Street at Drummond Street. In accordance with Ontario Traffic Manual Book 12, the warrant must satisfy Justification 1, as existing volumes are being used at an existing intersection. To satisfy the requirement for a traffic signal, the justification must meet 100% threshold. The warrant is satisfied up to the 100% threshold. Therefore, a traffic signal is warranted at the intersection of North street and Drummond Street.

The warrant was performed using the 2020 existing conditions for North Street at Wilson Street. . In accordance with Ontario Traffic Manual Book 12, the warrant must satisfy Justification 1, as existing volumes are being used at an existing intersection. To satisfy the requirement for a traffic signal, the justification must meet 100%

threshold. The warrant was not satisfied under 2020 existing conditions. . Therefore, further warrants were performed for the buildout (2030) and horizon (2035) traffic scenarios for both background traffic and total traffic. In accordance with Ontario Traffic Manual Book 12, the warrant must satisfy Justification 7, as projected volumes are being used to illustrate future conditions at an existing intersection. To satisfy the requirement for a traffic signal, the justification must meet the 120% threshold. The warrant is satisfied to 120% under the Total Traffic 2035 horizon year scenario. Therefore, a traffic signal at the intersection of North Street and Wilson Street should be installed between the 10-15-year horizons as a result of the total traffic. The warrant calculations are provided in Appendix G.

6.2 Signal Optimization: Total Traffic Horizon 2035

Traffic signal optimization were performed at the intersections of Wilson Street at Highway 7, Wilson Street at Sunset Boulevard and Wilson Street at Isabella Street. The signal optimization was done with the using the built in Synchro 10 optimization function in order to mitigate the amount of failing movements at each intersection. The optimization was done on both the cycle length and the cycle split of the existing signal timings. Signal timing can be found in Appendix G within the Synchro 10 reports.

6.3 Traffic Operations with Mitigation Measures.

The following traffic scenarios take into account the 2.5% annual growth rate of the traffic volumes at each of the intersections as well as the trips generated by the proposed development. The scenarios are representative of the planned development at the horizon year with optimized signal timings as well as the intersection of Drummond Street at North Street and Wilson Street at North Street being signalized intersections in order to reduce the amount of potential failures throughout the network. All timing signals were optimized using Synchro 10 optimization feature. Synchro output reports as well as full summary tables can be found in Appendix G.

Table 6.3.1 illustrates the resulting failing movements.

Table 6.3.1 Total Traffic Horizon 2035 with Mitigation Failing Traffic Conditions

Intersection	Am Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
North Street at Drummond Street						
Westbound Left-Through-Right				E	0.99	61.20
Southbound Left-Through-Right				D	0.98	49.90
Wilson Street at HWY. 7						
Eastbound Left-Through-Right				F	1.08	86.20
Westbound Left-Through-Right	C	1.59	28.10	E	1.79	68.80
Northbound Left-Through				F	1.25	160.30
Sunset Blvd at Wilson Street						
Eastbound Left-Through				F	0.93	80.40
Southbound through				D	0.95	38.20
Leslie Street/Isabella Street at Wilson Street						
Eastbound Left-Through-Right				F	0.95	85.20
Southbound Through-Right				C	0.93	31.50

As seen in the table above all intersections are operating at acceptable conditions during the AM Peak Hour, and during the PM Peak Hour except for the movements above for the total traffic during the horizon year with mitigations 2035. The intersections shown above are all operating at unsatisfactory conditions with either a v/c above 0.9, a LOS of E or worse, or both.

When comparing the failures during the mitigation scenario and the Horizon Year Background Traffic Only 2035 scenario we see that the scenario with mitigations has two less failing movements during the AM Peak Hour and three less failing movements during the PM Peak Hour. When comparing the to Total Traffic 2035 scenario, the mitigation scenario has five less failing movements during the AM Peak Hour and three less failing movements during the PM Peak Hour. It is seen that the failures occur at both the Total Traffic scenarios as well as the Background Traffic scenarios. Therefore, mitigation measures are required regardless of the proposed development.

The above shows that optimization of the signal timings is not sufficient in mitigating all the failing movements. Therefore, intersection improvements such as; roadway widening, changes in lane configuration, and new auxiliary lanes should be considered in the future.

7.0 SUMMARY, RECOMMENDATIONS AND CONCLUSION

The findings and conclusions of this Traffic Impact Study for the proposed Perthmore Subdivision development in the Town of Perth is summarized as follows:

- The existing road network within the study are currently operates well with approaches are all intersections operating at a LOS of D or better, a v/c of 0.82 or less and a delay no more than 42.80 seconds.

- The development is expected to generate 252 new vehicle trips during the AM Peak Hour, and 322 new vehicle trips in the PM Peak Hour at full buildout.
- The future horizon scenario is 2035, which includes the background traffic growth as well as the newly generated trips from the development, is expected to have large impacts to the traffic operations of the adjacent network when compared to the existing network as 3 intersections have unsatisfactory conditions during both the AM and PM Peak Hour, with two intersections having approaches that operate at unsatisfactory conditions during the PM Peak Hour only.
    - When comparing the horizon scenario for the total traffic to the background traffic scenarios, it is expected for the proposed development to have minimal impact on the traffic operations of the adjacent road network. Both the background traffic and total traffic scenario are expected to have 3 intersections have unsatisfactory conditions during both the AM and PM Peak Hour, with two intersections having approaches that operate at unsatisfactory conditions during the PM Peak Hour only.
- Failures occurring are expected to be present in both the background only scenarios and the total traffic scenarios, with the total traffic scenarios being the more critical of the two; having more critical movements and more critical failures.

Based on the expected failures shown MP performed mitigation analysis to the traffic network. The results were as followed:

- Signal warrants were checked for the intersections of North Street at Drummond Street and North Street at Wilson Street. North Street at Drummond Street satisfied the warrant at 100% during the existing conditions. North Street at Wilson Street satisfied the warrant at 120% for the horizon year 2035.
- Existing signal timings were optimized using Sychro 10 software resulting in minimizing the number of failing movements during the background traffic only and the total traffic 2035 Horizon year scenarios.

MP Recommends consideration be given to changing the intersection control at the junction of Drummond Street at North Street to signals from all-way stop control, and to continue to monitor the intersection of Wilson Street at North Street for the potential for signalization.

Consideration should be giving to optimizing the signal timings of the signalized intersections along Wilson Street in order to prioritize the critical movements shown within this report. The existing traffic network operates at satisfactory conditions. As such, the mitigation measures mentioned are not expected to be required until 2030. As the buildout year is 10 years away from the existing conditions, it is recommended that the traffic operations continue to be monitored and appropriate changes made to the network as required.

With the planned widening of Highway 7 between Wilson Street and Drummond Street, it is anticipated that this will reduce the traffic impact on those two intersection and the intersections will operate under better conditions.

The trip generation was calculated using the maximum number of dwelling units based on the rate shown in the Town of Perth Official Plan, April 16, 2019, Section 8.1.3.4. Therefore, the actual number of trips generated may in fact be lower than what was shown in this TIS and mitigation measures should be confirmed when the site plan application for the multi-unit dwellings is considered. As such, monitoring of the situation is recommend.

Prepared by,

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Reviewed and Submitted by,

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Transportation and Traffic Engineer

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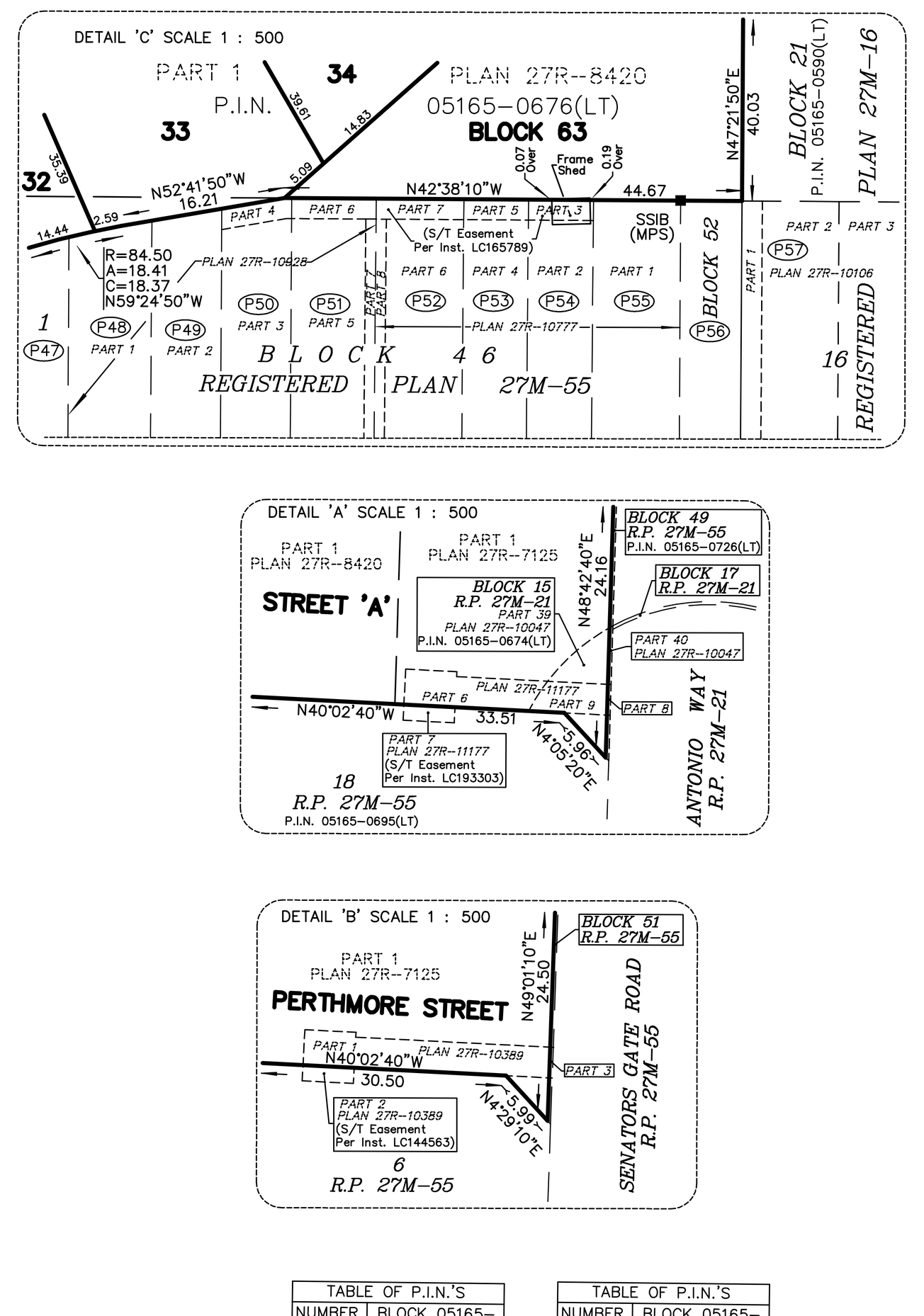
613.903.5772

APPENDIX A – SITE PLAN



DRAFT PLAN OF SUBDIVISION OF PART OF THE
NORTHEAST AND SOUTHWEST
HALVES LOT 3, PART OF THE
SOUTHWEST HALF LOT 4
CONCESSION 2
GEOGRAPHIC TOWNSHIP
OF DRUMMOND NOW IN THE
TOWN OF PERTH AND PART OF
BLOCK 15
REGISTERED PLAN 27M-21
TOWN OF PERTH
COUNTY OF LANARK

McINTOSH PERRY SURVEYING INC.

SCALE 1 : 1000

0 25 50 75 100 Metres

METRIC :

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND AND NOTES

□	DENOTES	MONUMENT PLANTED
■	DENOTES	MONUMENT FOUND
IB	DENOTES	IRON BAR
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
RPL	DENOTES	ROCK PLUG
RIB	DENOTES	ROUND IRON BAR
(613)	DENOTES	R.F. MUCKLESTONE, OLS
(1249)	DENOTES	M.H. KALDEWAY, OLS
(1352)	DENOTES	B.W. KERR, OLS
(MPS)	DENOTES	McINTOSH PERRY SURVEYING INC.
(OH)	DENOTES	HYDRO ONE
(OU)	DENOTES	ORIGIN UNKNOWN
(S/T)	DENOTES	SUBJECT TO
BF	DENOTES	BOARD FENCE
CLF	DENOTES	CHAIN LINK FENCE
RF	DENOTES	RAIL FENCE
LS	DENOTES	LIGHT STANDARD
AN	DENOTES	ANCHOR
WRW	DENOTES	WOOD RETAINING WALL
N,S,E,W	DENOTES	NORTH, SOUTH, EAST, WEST
R.P.	DENOTES	REGISTERED PLAN

TABLE OF P.I.N.'S

NUMBER	BLOCK 05165-
P1	0410(LT)
P2	0411(LT)
P3	0412(LT)
P4	0413(LT)
P5	0414(LT)
P6	0415(LT)
P7	0416(LT)
P8	0449(LT)
P9	0471(LT)
P10	0523(LT)
P11	0524(LT)
P12	0581(LT)
P13	0580(LT)
P14	0579(LT)
P15	0578(LT)
P16	0577(LT)
P17	0576(LT)
P18	0575(LT)
P19	0574(LT)
P20	0634(LT)
P21	0633(LT)
P22	0632(LT)
P23	0631(LT)
P24	0630(LT)
P25	0629(LT)
P26	0628(LT)
P27	0696(LT)
P28	0695(LT)
P29	XXXX(LT)
P30	XXXX(LT)
P31	XXXX(LT)

TABLE OF P.I.N.'S

NUMBER	BLOCK 05165-
P32	0694(LT)
P33	0693(LT)
P34	0692(LT)
P35	0691(LT)
P36	0690(LT)
P37	0689(LT)
P38	0688(LT)
P39	0687(LT)
P40	0685(LT)
P41	0684(LT)
P42	0683(LT)
P43	0682(LT)
P44	0681(LT)
P45	0680(LT)
P46	0679(LT)
P47	0678(LT)
P48	0743(LT)
P49	0744(LT)
P50	0745(LT)
P51	0746(LT)
P52	0741(LT)
P53	0740(LT)
P54	0739(LT)
P55	0738(LT)
P56	0729(LT)
P57	0737(LT)
P58	0589(LT)
P59	0298(LT)
P60	0299(LT)
P61	0300(LT)
P62	0301(LT)

JOB No. 19-4081	DRAWING: 19-4081 Draft Plan
THIS PLAN WAS PREPARED FOR: MPCE	

McINTOSH PERRY
SURVEYING INC.
3240 Drummond Con. 5A, R.R. #7, Perth, ON K7H 3C9
Tel: 613-267-6524 Fax: 613-267-7992
www.mcintoshperry.com

EXAMINED:	CHECK:

C:\USERS\R.FINCH\ONEDRIVE - MCINTOSH PERRY\1) MPSI\2019 JOBS\19-4081 - PERTHMORE SUBDIVISION\DRAFT PLAN\CAD\DRAWINGS\UPDATED (RF)\D19-4081 DRAFT PLAN (RF)_UPDATED.DWG
September 17, 2020 10:02:52 AM

APPENDIX B – TOWN OF PERTH TRANSIT SCHEDULE

CLASSIC ALLIANCE
MOTORCOACH

ROUTE #502/503

Perth, Carleton Place, Almonte / Ottawa, Gatineau

Effective Dec. 2nd, 2019 --- En vigueur le 2 décembre 2019

Please arrive at the bus stop at least 5 minutes in advance. The bus may arrive earlier than scheduled.
Veuillez arriver à votre arrêt au moins 5 minutes avant l'heure prévue. L'autobus peut arriver plus tôt que prévu.

DEPARTURE (A.M.) DÉPART (a.m.)	
Perth - Giant Tiger	5:37
Perth - Hwy 7 / Leach Rd	5:42
Carleton Place - Townline Rd / Bridge St	6:00
Almonte - County Rd 29 / Rae Rd	6:05
Almonte - County Rd 29 / Scott St	6:07
Almonte - Bridge St @ Almonte Curling Rink	6:10
Almonte - Queen St / Clyde St (Co-operators)	6:14
Almonte - Ottawa St / March Rd (Shoppers Drug Mart)	6:15
ARRIVAL/ARRIVÉE	
Carling Ave @ Westgate Mall	6:45
Carling Ave / Holland Ave	6:47
Carling Ave / Parkdale Ave	6:48
Carling Ave @ Civic Hospital (main entrance)	6:49
Carling Ave / Preston St	6:51
Carling Ave / Booth St	6:52
Kent St / Laurier Ave	6:58
Slater St / Bank St	7:00
Slater St / Metcalfe St (Tim Horton's)	7:01
Gatineau, Place du Portage Phase IV (Maisonneuve)	7:10

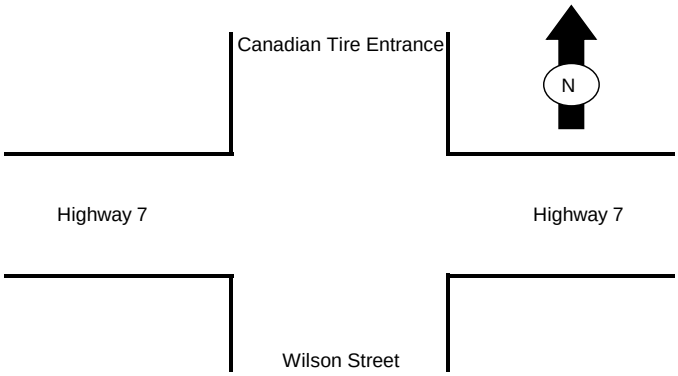
DEPARTURE (P.M.) DÉPART (p.m.)	
Gatineau, Place du Portage Phase IV (Maisonneuve)	15:38
Albert St / Metcalfe St	16:00
Albert St / Bank St	16:02
Lyon St / Laurier Ave	16:04
Carling Ave / Preston St	16:12
Carling Ave @ Civic Hospital (OC Transpo shelter @ Inglewood)	16:17
Carling Ave @ Westgate Mall	16:20
ARRIVAL/ARRIVÉE	
Almonte - Ottawa St / March Rd (Shoppers Drug Mart)	17:00
Almonte - Queen St / Clyde St (Co-operators)	17:02
Almonte - Bridge St @ Almonte Curling Rink	17:04
Almonte - County Rd 29 / Scott St	17:06
Almonte - County Rd 29 / Rae Rd	17:08
Carleton Place - Bridge St / Townline Rd	17:14
Perth - Hwy 7 / Leach Rd	17:32
Perth - Giant Tiger	17:37

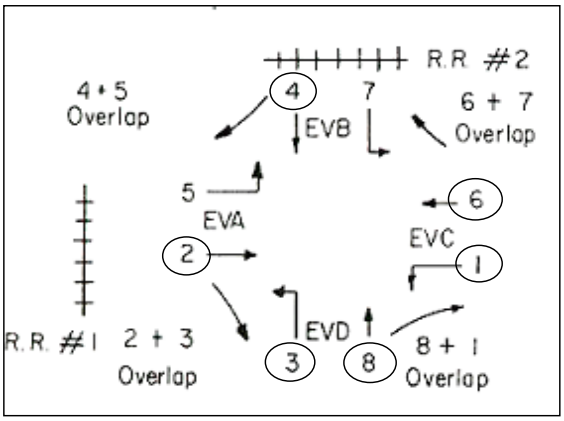
For more information / Plus plus d'information
www.classicalliancemotorcoach.com | 613 253-3443 |
facebook.com/classicalliance

APPENDIX C – TRAFIC DATA

Cover Sheet

Location:	**Highway 7 at Wilson Street**	**Area/District:**	**Ottawa**
Timing Based On T.M. Dated:	**June 06, 2000**	**Traffic Signal #**	**243**
Timing Developed By:	**K. Maki**	**Approved By:**	**Paul Webster**
Installed By:	**Paul Webster**	**Installation Date:**	





Circle Movements and Operations

COMMUNICATIONS ADDRESSING

COMM ADDRESS (C/0 + 0 + 0) =	**1**	**CELL # :**	**416-985-9147**
ZONE ADDRESS (C/0 + 0 + 1) =	**1**	**UDP PORT:**	**8033**
AREA NUMBER (C/0 + 0 + 2) =	**4**	**IP ADDRESS:**	**10.151.192.6**
AREA ADDRESS (C/0 + 0 + 3) =	**243**	**AMPIFIER:**	
		PROGRAM:	**233ON1.C**

DISABLE ALARM REPORTING

Column F

		1	2	3	4	5	6	7	8
0	OMIT ALARMS					X			

< C + 0 + C = 5 >

1 = STOP TIME
2 = FLASH SENSE
3 = KEYBOARD ENTRY
4 = MANUAL PLAN SELECT
5 = ENABLE POLICE CNTRL (Not Used)
6 = EXTERNAL ALARM (Door Alarm)
7 = DETECTOR FAILURE

ACTUATED INTERVAL TIMING AND FAZE FUNCTIONS

		PHASE 1	2	3	4	5	6	7	8
0	WALK		7		7		7		7
1	DON'T WALK		30		24		30		24
2	MIN INITIAL	7	20	7	10		20		10
3	TYPE 3 LIMIT								
4	ADD PER VEH		1.0				1.0		
5	VEH EXT	2.0	4.5	2.0	3.0		4.5		3.0
6	MAX GAP	2.0	4.5	2.0	3.0		4.5		3.0
7	MIN GAP	2.0	4.5	2.0	3.0		4.5		3.0
8	MAX LIMIT	14	30	14	15		30		15
9	MAXIMUM 2								
A	ADV /DLY WALK								
B	SEQUENCE TO	8		6					
C	COND SRV MIN								
D	REDUCE EVERY								
E	YELLOW	2.0	5.0	2.0	4.1		5.0		4.1
F	RED CLEAR		1.9		2.3		1.9		2.3

PHASE BANK # 1 < C + O + F = 1 >

		9	A	B	C	D		E
0							RR1 DLY	
1	PHASE 1						RR1 CLR	
2	PHASE 2	21					EVA DLY	
3	PHASE 3						EVA CLR	
4	PHASE 4						EVB DLY	
5	PHASE 5						EVB CLR	
6	PHASE 6	21					EVC DLY	
7	PHASE 7						EVC CLR	
8	PHASE 8						EVD DLY	
							EVD CLR	
		MAX INT	ALT WALK	ALT FLH D/W	ALT INT	ALT EXT	RR2 DLY	
							RR2 CLR	
	ALL RED START						EV CLR	
	(F/1 + C +O) =			**5.0**			EV DLY	
	RED REVERT						RR CLR	
	(F/1 + O + F) =			**5.0**			RR DLY	

		COLUMN F PHASES 1	2	3	4	5	6	7	8
0	PERMIT	X	X	X	X		X		X
1	RED LOCK								
2	YELLOW LOCK								
3	VEH MIN CALL		X				X		
4	PED RECALL								
5	PEDESTRIANS		X		X		X		X
6	YIELD AT FLSH D/W								
7	RED REST								
8	DOUBLE ENTRY		X		X		X		X
9	VEH MAX CALL								
A	SOFT RECALL								
B	MAXIMUM 2								
C	COND SERVICE								
D	MAN CONT CALL								
E	YELLOW START		X				X		
F	FIRST PHASES				X				X

< C + O + F = 1 >

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260
Traffic Signal Program **233** Ontario
Timing Sheet #2

Date: June 6, 2000

LOCATION

Hwy: 7

At: Wilson Street

		A	B	C
PREEMPT		RR1-2	SP	EMER
MINIMUMS		SPEV1	EV2	VEH
A	WLK (DFLT)			
B	FD WALK			
C	INITAL			

< C + O + F = 1 >

Column E Phases / Bits

		1	2	3	4	5	6	7	8
0	EXCLUSIVE								
1	RR1 CLEAR								
2	RR2 CLEAR								
3	RR2 LTD SRV								
4	PROT/PERM	X		X					
5	FLH TO PREMT								
6	FLASH ENTRY								
7	DISABL MIN YEL	X		X					
8	DISABL OVP YEL								
9	OVP FLH YEL								
A	EM VEH A								
B	EM VEH B								
C	EM VEH C								
D	EM VEH D								
E	EXTRA 1	X		X					
F	IC SELECT		X						

Column F Phases / Bits

		1	2	3	4	5	6	7	8
0									
1	EXT PERMIT 1								
2	EXT PERMIT 2								
3	EXCLU PED								
4									
5	PED 2P OUT		X						
6	PED 6P OUT						X		
7	PED 4P OUT				X				
8	PED 8P OUT								X
9	FLH YELLOW								
A									
B									
C									
D									
E	RESTRICTED								
F	EXTRA 2								

< C + O + E = 125 >

Column F Phases / Bits

		1	2	3	4	5	6	7	8
0	ADV GRN FLH								
1	PHASE FLASH								
2	FLASH WALK								
3	GUAR PASS								
4	SIMUL GAP		X				X		
5	SEQ TIMING								
6	ADV WALK								
7	DELAY WALK								
8	EXT RECALL								
9									
A	MAX EXTEN								
B	INH PED RSRV								
C	SEMI ACTUATED								
D									
E	STRT VEH CALL	X	X	X	X		X		X
F	STRT PED CALL		X		X		X		X

SPECIALS < C + O + F = 2 >

MANUAL PLAN
< C/0 + A + 1 >

MANUAL OFFSET
< C/0 + B + 1 >

MANUAL SELECTION

MANUAL PLAN

0 = Automatic (Master)
9 = Control Plan 1 - 9
14 (E) = Free (Isolated)
15 (F) = Software Flash

MANUAL OFFSET

0 = Automatic (Master)
1 = Offset A
2 = Offset B
3 = Offset C

FLASH TO PREEMPT

1 = EVA
2 = EVB
3 = EVC
4 = EVD
5 = RR1
6 = RR2
7 = SE1
8 = SE2

EXTRA 1

1 = TBC TYPE 1
2 = NEMA EXT. COORD.
3 = DAYLIGHT SAVINGS
4 =
5 = EXPANDED STATUS REPORTING
6 = INTERNATIONAL PED
7 = CLEAR OUTPUTS DURING FLASH
8 = SPLIT RING

EXTRA 2

1 = AWR ON DURING PHASE INITAL
2 = LMU INSTALLED

IC SELECT

2 = 2 WAY MODEM
3 = 7 WIRE SLAVE
4 = FLASH / FREE
5 = SIMPLEX MASTER
7 = 7 WIRE MASTER
8 = OFFSET INTURP

Pretimed

PHASE

	1	2	3	4	5	6	7	8
WALK		7		7		7		7
DON'T WALK		30		24		30		24
MIN INTIAL	10	25	10	10		25		10
TYPE 3 LIMIT								
ADD PER VEH		1.5				2.0		
VEH EXT	2.0	4.5	2.0	3.0		4.5		3.0
MAX GAP	2.0	4.5	2.0	3.0		4.5		3.0
MIN GAP	2.0	4.5	2.0	3.0		4.5		3.0
MAX LIMIT		30		15		30		15
MAXIMUM 2								
ADV / DLY WALK								
SEQUENCE TO	8		6					
COND SRV MIN								
REDUCE EVERY								
YELLOW	2.0	5.0	2.0	4.1		5.0		4.1
RED CLEAR		1.9		2.3		1.9		2.3

PHASE BANK # < C + O + F = 1 >

Column F

PHASES

		1	2	3	4	5	6	7	8
0	PERMIT	X	X	X	X		X		X
1	RED LOCK								
2	YELLOW LOCK								
3	VEH MIN CALL	X	X	X	X		X		X
4	PED RECALL		X		X		X		X
5	PEDESTRIANS								
6	REST IN WALK								
7	RED REST								
8	DOUBLE ENTRY		X		X		X		X
9	VEH MAX CALL								
A	SOFT RECALL								
B	MAXIMUM 2								
C	CORD SERVICE								
D	MAN CONT CALL								
E	YELLOW START		X				X		
F	FIRST PHASES				X				X

< C + O + F = 1 >

LOCATION: Highway 7 at Wilson Street

Issued Date:

Installed Date: June 6, 2000

BI Tran Systems, Inc.
510 Bercut Dr., Sacremento, Calif. 95814
916/441-0260
Traffic Signal Program ***233*** *Ontario*
Timing Sheet #2
Revised (02/95)

Time of Day

Actuated

T.O.D FUNCTIONS

	TIME HH MM	FUN	DAY OF WEEK S 1	M 2	T 3	W 4	T 5	F 6	S 7
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
A									
B									
C									
D									
E									
F									

< C + O + 7 = 1 >

Column 4 PHASE / BITS

1	2	3	4	5	6	7	8

< C + O + E = 27 >

T.O.D FUNCTIONS

A = VEH SOFT RECALL
B = MAXIMUM 2
C = CONDITIONAL SERVICE
D = LAG PHASES
E= BIT 1- LOCAL OVERIDE
BIT 4- DISABLE DET OFF MONITOR
BIT 7- DET COUNT MONITOR
BIT 8- REAL TIME SPLIT MONITOR
F = OUTPUT BITS 1 THRU 4

0 = PERMIT PHASES
1 = RED LOCK
2 = YELLOW LOCK
3 = VEH MIN RECALL
4 = PED RECALL
5 -
6 - REST IN WALK
7 = RED REST
8 = DOUBLE ENTRY
9 = VEH MAX RECALL

LOCATION:

Issued Date:

Installed Date:

Pretimed

T.O.D FUNCTIONS

	TIME HH MM	FUN	DAY OF WEEK S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	15:30	9	X					X	
1	21:00	9	X					X	
2									
3									
4									
5									
6									
7									
8									
9									
A									
B									
C									
D									
E									
F									

< C + O + 7 = 1 >

Column 4 PHASE / BITS

1	2	3	4	5	6	7	8
	X		X		X		X

< C + O + E = 27 >

T.O.D FUNCTIONS

A = VEH SOFT RECALL
B = MAXIMUM 2
C = CONDITIONAL SERVICE
D = LAG PHASES
E = BIT 1- LOCAL OVERIDE
BIT 4- DISABLE DET OFF MONITOR
BIT 7- DET COUNT MONITOR
BIT 8- REAL TIME SPLIT MONITOR
F = OUTPUT BITS 1 THRU 4

0 = PERMIT PHASES
1 = RED LOCK
2 = YELLOW LOCK
3 = VEH MIN RECALL
4 = PED RECALL
5 -
6 - REST IN WALK
7 = RED REST
8 = DOUBLE ENTRY
9 = VEH MAX RECALL

LOCATION: Highway 7 at Wilson Street

Issued Date:

Installed Date: June 6, 2000

BI Tran Systems, Inc.
510 Bercut Dr., Sacremento, Calif. 95814
916/441-0260

Traffic Signal Program ***233*** *Ontario*
Timing Sheet #2
Revised (02/95)

DETECTOR ASSIGNMENTS

STANDARD 332 CABINET LOCATION	column	1 delay	3 carry over	Column 0 C1 Pin #	Column 1 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 2 PHASE(S) 1	2	3	4	5	6	7	8	Column 3 ASSIGNMENTS 1	2	3	4	5	6	7	8
I-2 U	0			0 39				X	X		X			X								X	X	X				X
J-2 U	1			1 40				X	X		X							X				X	X	X				X
I-6 U	2	3.0		2 41				X	X		X					X						X	X	X				X
J-6 U	3	3.0		3 42				X	X		X									X		X	X	X				X
1-2 L	4			4 43				X	X		X			X								X	X	X				X
J-2 L	5			5 44				X	X		X							X				X	X	X				X
1-6 L	6	10.0		6 45				X	X		X					X						X	X	X				X
J-6 L	7	10.0		7 46				X	X		X									X		X	X	X				X
I-4	8			8 47																								
J-4	9			9 48																								
I-8	A			A 49																								
J-8	B			B 50																								
J-1	C			C 55																								
I-1	D	10.0		D 56				X	X		X		X									X	X	X				X
J-5	E			E 57																								
I-5	F			F 58																								
	< C + O + D = 0 >			DETECTOR ASSIGNMENTS < C + O + E = 126>																								

STANDARD 332 CABINET LOCATION	column	2 delay	4 carry over	Column 4 C1 Pin #	Column 5 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 6 PHASE(S) 1	2	3	4	5	6	7	8	Column 7 ASSIGNMENTS 1	2	3	4	5	6	7	8
J-9 U	0			0 59																								
I-9 U	1			1 60																								
I-9 L	2			2 61																								
J-9 L	3			3 62																								
I-3 U	4			4 63																								
J-3 U	5			5 64																								
I-7 U	6			6 65																								
J-7 U	7			7 66																								
I-12 U	8			8 67		X								X								X	X	X				
I-13 U	9			9 68		X												X				X	X	X				
I-12 L	A			A 69		X										X						X	X	X				
I-13 L	B			B 70		X														X		X	X	X				
I-3 L	C			C 76																								
J-3 L	D			D 77																								
I-7 L	E			E 78																								
J-7 L	F			F 79																								
	< C + O + D = 0 >			DETECTOR ASSIGNMENTS < C + O + E = 126 >																								

DETECTOR ASSIGNMENT SHEET
ONTARIO 233 PROGRAM

LOCATION:
Hwy 7
at Wilson Street
Issued Date:
Installed Date: June 6, 2000

DETECTOR ATTRIBUTES
1 = FULL TIME DELAY
2 = PEDESTRIAN CALL
3 =
4 = COUNT
5 = EXTENSION
6 = TYPE 3
7 = CALLING
8 = ALTERNATE

DETECTOR ASSIGNMENTS
1 = DET. SET # 1
2 = DET. SET # 2
3 = DET. SET # 3
4 =
5 =
6 = MIN RECALL ON FAILURE
7 = MAX RECALL ON FAILURE
8 - REPORT ON FAILURE

DETECTOR MONITOR
MAX OFF: D/0+0+1=120
MAX ON: D/0+0+2=60

ADVANCE WARNING BEACONS
SIGN #1 SIGN #2
PHASE NUMBER
(F/1+C+F)= (F/1+D+F)=
TIME BEFORE YELLOW
(F/1+C+E)= (F/1+D+E)=
OUTPUT PIN NUMBER
(E/127+E+8)= (E/127+E+9)=

Input File Layout

Input File Slot No. →	1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I" FILE	**1** Ext, Cnt, Call <C1-56>	**2** Ext, Cnt, Call <C1-39>	**2** Ext, Cnt, Call <C1-63>	**2** Type 3, Call <C1-47>	**3** Ext, Cnt, Call <C1-58>	**4** Ext, Cnt, Call <C1-41>	**4** Ext, Cnt, Call <C1-65>	**4** Type 3, Call <C1-49>	**1** Ext, Cnt, Call <C1-60>	NOT WIRED	Door Alarm <C1-80>	**2** Ped Call <C1-67>	**6** Ped Call <C1-68>	Flash Sense <C1-81>
		2 Ext, Cnt, Call <C1-43>	**2** Ext, Cnt, Call <C1-76>			**4** Ext, Cnt, Call <C1-45>	**4** Ext, Cnt, Call <C1-78>		**3** Ext, Cnt, Call <C1-62>		Not Assigned <C1-53>	**4** Ped Call <C1-69>	**8** Ped Call <C1-70>	Stop Time <C1-82>
"J" FILE	**5** Ext, Cnt, Call <C1-55>	**6** Ext, Cnt, Call <C1-40>	**6** Ext, Cnt, Call <C1-64>	**6** Type 3, Call <C1-48>	**7** Ext, Cnt, Call <C1-57>	**8** Ext, Cnt, Call <C1-42>	**8** Ext, Cnt, Call <C1-66>	**8** Type 3, Call <C1-50>	**5** Ext, Cnt, Call <C1-59>	NOT WIRED	Not Assigned <C1-54>	EV **A** Preempt <C1-71>	EV **B** Preempt <C1-72>	Railroad 1 <C1-51>
		6 Ext, Cnt, Call <C1-44>	**6** Ext, Cnt, Call <C1-77>			**8** Ext, Cnt, Call <C1-46>	**8** Ext, Cnt, Call <C1-79>		**7** Ext, Cnt, Call <C1-61>		Not Assigned <C1-75>	EV **C** Preempt <C1-73>	EV **D** Preempt <C1-74>	Railroad 2 <C1-52>

DETECTOR TYPES

Ext = Extension Detector
Detector is only active during the Phase's GREEN Intervals (ie, will NOT *Call* the Phase)

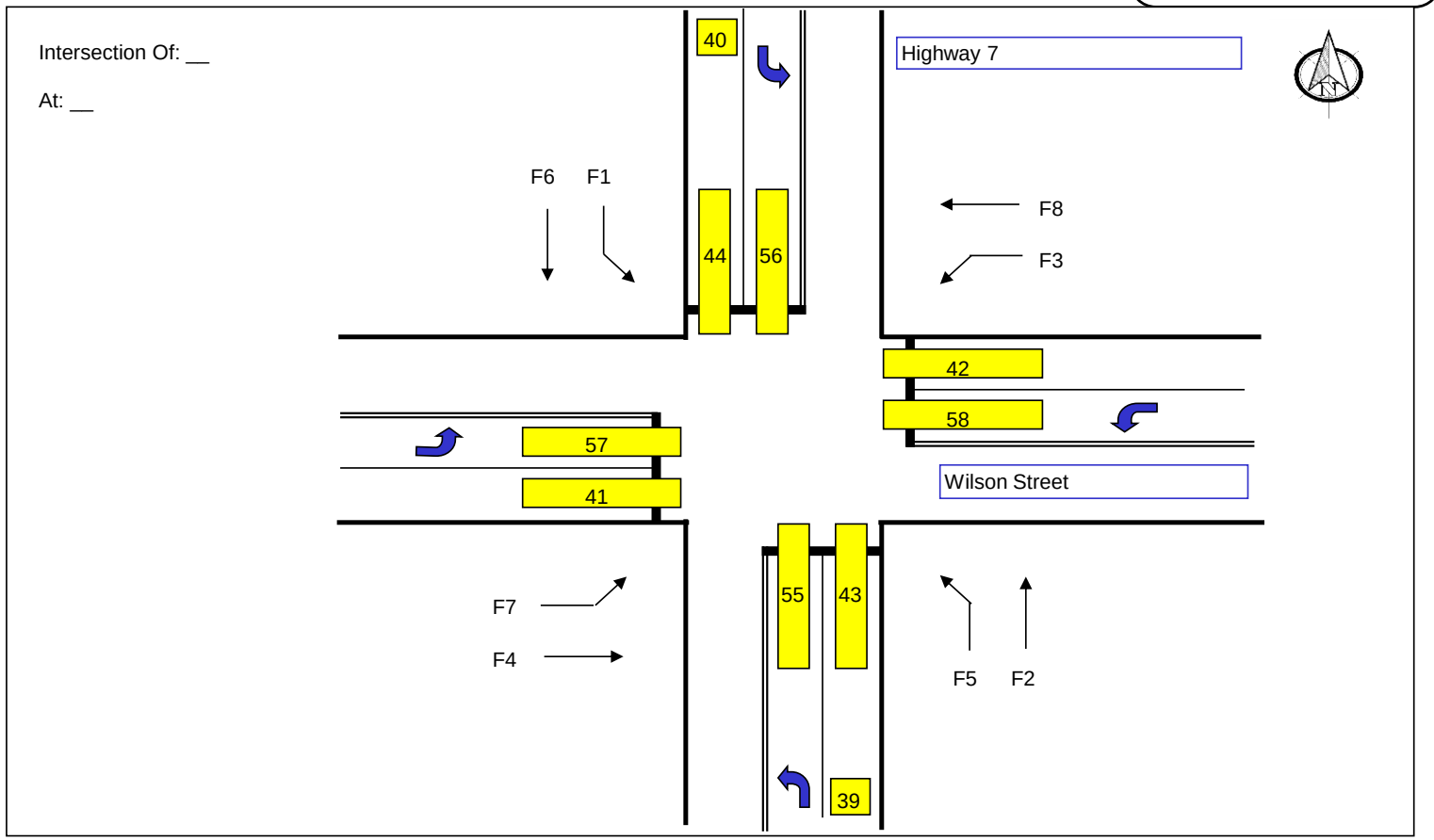
Cnt = Count Detector
Used in computing "Added Initial"

Call = Calling Detector
Detector is only active during the Phase's NON-GREEN Intervals (ie, will NOT *Extend* the Phase)

Type 3 = Type 3 Disconnect
Will allow a Calling Detector to Extend its Phase until the Call first drops or the "Type 3 Limit" is reached

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260

Traffic Signal Program 233
Initialized Detector Assignments
(Revised 8/92) 332 Cabinet



OVERLAPS AND AAWS

		PED/PHASE/OVERLAP							
		1	2	3	4	5	6	7	8
0	WALK								
1	DON'T WALK								
2	PHASE GREEN								
3	PHASE AMBER								
4	PHASE RED								
5	OVERLAP GREEN								
6	OVERLAP AMBER								
7	OVERLAP RED								

		1								2								3								4							
0	LOAD SW #																														
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	VEH SET 1																														
2	VEH SET 2																														
3	VEH SET 3																														
4	NEG VEH																														
5	NEG PED																														
6	GREEN OMIT																														
7	GRN CLR OMIT																														

REDIRECT PHASE OUTPUTS (C + 0 + E = 127)

D	GREEN CLEAR				
E	AMBER CLEAR				
F	RED CLEAR				

Enable/Disable

Phase Redirection

CABINET TYPE :

(E/125 + D + 0) = **0** (For 332 cabinet)

(enable redirection = 30)

OVERLAP ASSIGNMENTS (C + 0 + E = 29)

PROGRAMMING OVERLAP SETS		
ASSIGNABLE INPUTS	OVERLAP SET 1	No Programming Required
	OVERLAP SET 2	E/126 + D + C = _____
	OVERLAP SET 3	E/126 + D + D = _____

DATE: _____

LOCATION: _____

BI Tran Systems, Inc.
510 Bercut Dr., Sacremento, Calif. 95814
916/441-0260

*Traffic Signal Program **233** Ontario*
Timing Sheet #2

ADVANCE WARNING FLASHERS

Time Before Amber	0.0	< F/1+C+E >
Phase Number	0	< F/1+C+F >
Output Pin Number		< E/127+E+8 >

Advance Warning Beacon - Sign #1

Time Before Amber	0.0	< F/1+D+E >
Phase Number	0	< F/1+D+F >
Output Pin Number		< E/127+E+9 >

Advance Warning Beacon - Sign #2

HOLIDAY SCHEDULES

Exclusive Walk	0	< F/1+0+0 >
Exclusive FDW	0	< F/1+0+0 >
All Red Clearance	0.0	< F/1+0+0 >

Exclusive Pedestrian Phase

(Outputs specified in Assignable Outputs at E/127+A+E & F)

DATE:

LOCATION:

at

	D	Row
		0
Output Port 1		1
Output Port 2		2
Output Port 3		3
Output Port 4		4
Output Port 5		5
Output Port 6		6
Output Port 7		7

Dimming < C+0+E = 125 >

	B	Row
DELAY A	0	A
DELAY B	0	B
DELAY C	0	C
DELAY D	0	D
DELAY E	0	E
DELAY F	0	F

Delay Logic Times < C+0+D = 0 > (seconds)

Long Failure	0.7
Short Failure	0.7

< F/1+0+6 >
< F/1+0+7 >

Power Cycle Correction (Default = 0.5)

Time	Function	Day of Week	COLUMN 4 Phases/Bits
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		

Holiday TOD Functions < C+0+7=0.2> <C+0+E=28>

Row	Day	Year	Month	Holiday Type
0	00	00	0	
1	00	00	0	
2	00	00	0	
3	00	00	0	
4	00	00	0	
5	00	00	0	
6	00	00	0	
7	00	00	0	
8	00	00	0	
9	00	00	0	
A	00	00	0	
B	00	00	0	
C	00	00	0	
D	00	00	0	
E	00	00	0	
F	00	00	0	

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	

Holiday Events <C+0+9=1.1>
(Bank 1)

Row	Day	Year	Month	Holiday Type
0	00	00	0	
1	00	00	0	
2	00	00	0	
3	00	00	0	
4	00	00	0	
5	00	00	0	
6	00	00	0	
7	00	00	0	
8	00	00	0	
9	00	00	0	
A	00	00	0	
B	00	00	0	
C	00	00	0	
D	00	00	0	
E	00	00	0	
F	00	00	0	

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	

Holiday Events <C+0+9=1.2>
(Bank 2)

T.O.D. Functions
0 = Permit Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260
Traffic Signal Program **233** Ontario
Timing Sheet #2
Revised (02/95)

COORDINATION

		PLAN								
	Column Numbers ---->	1	2	3	4	5	6	7	8	9
Row	*Plan Name ---->*									
0	Cycle Length	0	0	0	0	0	0	0	0	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0
4	Phase 4 - ForceOff	0	0	0	0	0	0	0	0	0
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0
8	Phase 8 - ForceOff	0	0	0	0	0	0	0	0	0
9	Ring Offset	0	0	0	0	0	0	0	0	0
A	Offset 1	0	0	0	0	0	0	0	0	0
B	Offset 2	0	0	0	0	0	0	0	0	0
C	Offset 3	0	0	0	0	0	0	0	0	0
D	Perm 1 - End	0	0	0	0	0	0	0	0	0
E	Hold Release	255	255	255	255	255	255	255	255	255
F	Zone Offset	0	0	0	0	0	0	0	0	0

Coordination - Bank 1 <C+0+C=1>

Row										
0	Ped Adjustment	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0
2	Perm 2 - End	0	0	0	0	0	0	0	0	0
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0
4	Perm 3 - End	0	0	0	0	0	0	0	0	0
5	Reservice Time	0	0	0	0	0	0	0	0	0
6	Reservice Phases									
7										
8	Pretimed Phases									
9	Max Recall									
A	Perm 1 Veh Phase	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7
B	Perm 1 Ped Phase	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7
C	Perm 2 Veh Phase									
D	Perm 2 Ped Phase									
E	Perm 3 Veh Phase									
F	Perm 3 Ped Phase									

Coordination - Bank 2 <C+0+C=2>

Row		2
0		
1	Phase 1	10
2	Phase 2	10
3	Phase 3	10
4	Phase 4	10
5	Phase 5	10
6	Phase 6	10
7	Phase 7	10
8	Phase 8	10

Coordination Transition Minimums < C+0+C = 5 >

Transition Type 0.3 < C/5+1+9 >
TBC TRANSITION

Lag Hold Phases < C/5+1+A >
Coordinated Lag Hold Phases

Sync Output Time < C/5+1+C >
7 - Wire Master

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = # of cycles when lengthening

DATE: 03-Sep-12

LOCATION: _____

(Coord Extra Bit 1 = Programmed WALK Time for Sync Phases)

	E
Plan 1 - Sync	_2___6__
Plan 2 - Sync	_2___6__
Plan 3 - Sync	_2___6__
Plan 4 - Sync	_2___6__
Plan 5 - Sync	_2___6__
Plan 6 - Sync	_2___6__
Plan 7 - Sync	_2___6__
Plan 8 - Sync	_2___6__
Plan 9 - Sync	_2___6__
NEMA Sync	
NEMA Hold	
Coord Extra	#NAME?

Sync Phases < C+0+C = 1>

Row	Time	Plan	Offset	Day of Week
0	0:00	0	0	
1	0:00	0	0	
2	0:00	0	0	
3	0:00	0	0	
4	0:00	0	0	
5	0:00	0	0	
6	0:00	0	0	
7	0:00	0	0	
8	0:00	0	0	
9	0:00	0	0	
A	0:00	0	0	
B	0:00	0	0	
C	0:00	0	0	
D	0:00	0	0	
E	0:00	0	0	
F	0:00	0	0	

TOD Coodination < C+0+9 = 0.1 >
(Bank 1)

	F
Free Lag	_2_4_6_8
Plan 1 - Lag	_2_4_6_8
Plan 2 - Lag	_2_4_6_8
Plan 3 - Lag	_2_4_6_8
Plan 4 - Lag	_2_4_6_8
Plan 5 - Lag	_2_4_6_8
Plan 6 - Lag	_2_4_6_8
Plan 7 - Lag	_2_4_6_8
Plan 8 - Lag	_2_4_6_8
Plan 9 - Lag	_2_4_6_8
External Lag	

Lag Phases <C+0+C=1>

Row	Time	Plan	Offset	Day of Week
0	0:00	0	0	
1	0:00	0	0	
2	0:00	0	0	
3	0:00	0	0	
4	0:00	0	0	
5	0:00	0	0	
6	0:00	0	0	
7	0:00	0	0	
8	0:00	0	0	
9	0:00	0	0	
A	0:00	0	0	
B	0:00	0	0	
C	0:00	0	0	
D	0:00	0	0	
E	0:00	0	0	
F	0:00	0	0	

TOD Coodination < C+0+9 = 0.2 >
(Bank 2)

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260
Traffic Signal Program **233** Ontario
Timing Sheet #2
Revised (02/95)

	Column A		Column B		Column C		Column D		Column E		Column F		
0	NOT 3	0	MAX 2	0	PRETIME	0	WEEKDAY	0	DIAL 2	0		0	0
1	NOT 4	0	SYSDET 1	0	PLAN 1	0	X PERM 1	0	DIAL 3	0	EVA	71	1
2	OR 4	0	SYSDET 2	0	PLAN 2	0	X PERM 2	0	OFFSET 1	0	EVB	72	2
3	OR 4	0	SYSDET 3	0	PLAN 3	0	DIM	0	OFFSET 2	0	EVC	73	3
4	OR 5	0	SYSDET 4	0	PLAN 4	0	X CLOCK	0	OFFSET 3	0	EVD	74	4
5	OR 5	0	SYSDET 5	0	PLAN 5	0	STOP TIME	82	FREE	0	RR 1	51	5
6	OR 6	0	SYSDET 6	0	PLAN 6	0	FL SENSE	81	FLASH	0	RR 2	52	6
7	OR 6	0	SYSDET 7	0	PLAN 7	0	ENABLE	0	XPED OMIT	0	SP EVNT 1	0	7
8		0	SYSDET 8	0	PLAN 8	0	ADVANCE	0	NOT 1	0	SP EVNT 2	0	8
9		0	MAX INBT	0	PLAN 9	0	ALARM	80	NOT 2	0	EXT LAG	0	9
A	AND 4	0	FORCE A	0	DELAY A	0	PH BNK 2	0	OR 1	0	AND 1	0	A
B	AND 4	0	FORCE B	0	DELAY B	0	PH BNK 3	0	OR 1	0	AND 1	0	B
C	NAND 1	0	C NA	0	DELAY C	0	OLAP SET 2	0	OR 2	0	AND 2	0	C
D	NAND 1	0	HOLD	0	DELAY D	0	OLAP SET 3	0	OR 2	0	AND 2	0	D
E	NAND 2	0	VE CALL	0	DELAY E	0	DET SET 2	0	OR 3	0	AND 3	0	E
F	NAND 2	0	RECALL	0	DELAY F	0	DET SET 3	0	OR 3	0	AND 3	0	F

ASSIGNABLE INPUTS < C + O + E = 126>

	Column A		Column B		Column C		Column D		Column E		Column F		
0		0	FLASHER 0	0	FREE	0	NOT 1	0	TOD 1	0	DIAL 2	0	0
1	SP EV 1	0	FLASHER 1	0	PLAN 1	0	OR 1	0	TOD 2	0	DIAL 3	0	1
2	SP EV 2	0	FAST FLSHR	0	PLAN 2	0	OR 2	0	TOD 3	0	OFFSET 1	0	2
3	SP EV 3	0		0	PLAN 3	0	OR 3	0	TOD 4	0	OFFSET 2	0	3
4	SP EV 4	0		0	PLAN 4	0	AND 1	0	TOD 5	0	OFFSET 3	0	4
5	SP EV 5	0		0	PLAN 5	0	AND 2	0	TOD 6	0	FREE	0	5
6	SP EV 6	0		0	PLAN 6	0	AND 3	0	TOD 7	0	FLASH	0	6
7	SP EV 7	0		0	PLAN 7	0	NOT 2	0	TOD 8	0	PREEMPT	0	7
8	SP EV 8	0	NOT 3	0	PLAN 8	0	EVA	0	WARN 1	0		231	8
9		0	NOT 4	0	PLAN 9	0	EVB	0	WARN 2	0		232	9
A	DET FAIL	0	OR 4	0		0	EVC	0	DEALY A	0		233	A
B		0	OR 5	0		0	EVD	0	DELAY B	0		234	B
C		0	OR 6	0		0	RR1	0	DELAY C	0		235	C
D	CENT. CTRL	0	AND 4	0		0	RR2	0	DELAY D	0		236	D
E	EXCL FDW	0	NAND 1	0		0	SP EVNT 1	0	DELAY E	0		233	E
F	EXCL WALK	0	NAND 2	0		0	SP EVNT 2	0	DELAY F	0		238	F

ASSIGNABLE OUTPUTS < C + O + E = 127>

DEFAULT DETECTOR ASSIGNMENTS

Standard 332 Cabinet Location	Column 0	C1 PIN NUMBER	Column 1 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 2 PHASE(S) 1	2	3	4	5	6	7	8	Column 3 ASSIGNMENTS 1	2	3	4	5	6	7	8
I-2 U	0	***39***				X	X		X			X								X	X	X					X
J-2 U	1	***40***				X	X		X							X				X	X	X					X
I-6 U	2	***41***				X	X		X					X						X	X	X					X
J-6 U	3	***42***				X	X		X									X		X	X	X					X
I-2 L	4	***43***				X	X		X			X								X	X	X					X
J-2 L	5	***44***				X	X		X							X				X	X	X					X
I-6 L	6	***45***				X	X		X					X						X	X	X					X
J-6 L	7	***46***				X	X		X									X		X	X	X					X
I-4	8	***47***						X	X			X								X	X	X					X
J-4	9	***48***						X	X							X				X	X	X					X
I-8	A	***49***						X	X					X						X	X	X					X
J-8	B	***50***						X	X									X		X	X	X					X
J-1	C	***55***				X	X		X						X					X	X	X					X
I-1	D	***56***				X	X		X		X									X	X	X					X
J-5	E	***57***				X	X		X									X		X	X	X					X
I-5	F	***58***				X	X		X				X							X	X	X					X

"INITIALIZED" DETECTOR ASSIGNMENTS
< C + 0 + E = 126 >

Standard 332 Cabinet Location	Column 4	C1 PIN NUMBER	Column 5 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 6 PHASE(S) 1	2	3	4	5	6	7	8	Column 7 ASSIGNMENTS 1	2	3	4	5	6	7	8
J-9 U	0	***59***				X	X		X						X					X	X	X					X
I-9 U	1	***60***				X	X		X		X									X	X	X					X
J-9 L	2	***61***				X	X		X								X			X	X	X					X
I-9 L	3	***62***				X	X		X				X							X	X	X					X
I-3 U	4	***63***				X	X		X			X								X	X	X					X
J-3 U	5	***64***				X	X		X								X			X	X	X					X
I-7 U	6	***65***				X	X		X						x					X	X	X					X
J-7 U	7	***66***				X	X		X										X	X	X	X					X
I-12 U	8	***67***		X								X								X	X	X					X
I-13 U	9	***68***		X													X			X	X	X					X
I-12 L	A	***69***		X												X				X	X	X					X
I-13 L	B	***70***		X															X	X	X	X					X
I-3 L	C	***76***				X	X		X			X								X	X	X					X
J-3 L	D	***77***				X	X		X								X			X	X	X					X
I-7 L	E	***78***				X	X		X							X				X	X	X					X
J-7 L	F	***79***				X	X		X										X	X	X	X					X

"INITIALIZED" DETECTOR ASSIGNMENTS
< C + 0 + E = 126 >

DETECTOR ATTRIBUTES

1= Full time Delay
2 = Pedestrian call
3 =
4 = Count
5 = Extention
6 = Type 3
7 = Calling
8 = Alternate

DETECTOR ASSIGNMENTS

1 = Det. Set #1
2 = Det. Set #2
3 = Det. Set #3
4 =
5 =
6 = MIN Recall On Failure
7 = MAX Recall On Failure
8 = Report On Failure

Input File →

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I" FILE	**1** Ext, Cnt, Call <C1-56>	**2** Ext, Cnt, Call <C1-39>	**2** Ext, Cnt, Call <C1-63>	**2** Type 3, Call <C1-47>	**3** Ext, Cnt, Call <C1-58>	**4** Ext, Cnt, Call <C1-41>	**4** Ext, Cnt, Call <C1-65>	**4** Type 3, Call <C1-49>	**1** Ext, Cnt, Call <C1-60>	NOT WIRED	Not Assigned <C1-80>	**2** Ped Call <C1-67>	**6** Ped Call <C1-68>	Flash Sense <C1-81>
		2 Ext, Cnt, Call <C1-43>	**2** Ext, Cnt, Call <C1-76>			**4** Ext, Cnt, Call <C1-45>	**4** Ext, Cnt, Call <C1-78>		**3** Ext, Cnt,		Not Assigned <C1-53>	**4** Ped Call <C1-69>	**8** Ped Call	Stop Time <C1-82>
"J" FILE	**5** Ext, Cnt, Call <C1-55>	**6** Ext, Cnt, Call <C1-40>	**6** Ext, Cnt, Call <C1-64>	**6** Type 3, Call <C1-48>	**7** Ext, Cnt, Call <C1-57>	**8** Ext, Cnt, Call <C1-42>	**8** Ext, Cnt, Call <C1-66>	**8** Type 3, Call <C1-50>	**5** Ext, Cnt, Call <C1-59>	NOT WIRED	Not Assigned <C1-54>	**EV A** Preempt <C1-71>	**EV B** Preempt <C1-72>	Railroad 1 <C1-51>
		6 Ext, Cnt, Call <C1-44>	**6** Ext, Cnt, Call <C1-77>			**8** Ext, Cnt, Call <C1-46>	**8** Ext, Cnt, Call <C1-79>		**7** Ext, Cnt, Call <C1-61>		Not Assigned <C1-75>	**EV C** Ped Call <C1-73>	**EV D** Preempt <C1-74>	Railroad 2 <C1-52>

DETECTOR TYPES

Ext = Extension Detector
Detector is only active during the Phase's GREEN Intervals (ie, will NOT *Call* the Phase)
Cnt = Count Detector
Used in computing "Added Initial"
Call = Calling Detector
Detector is only active during the Phase's NON-GREEN Intervals (ie, will NOT *Extend* the Phase)
Type 3 = Type 3 Disconnect
Will allow a Calling Detector to Extend its Phase until the Call first drops or the "Type 3 Limit" is reached

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260

Traffic Signal Program 233
Initialized Detector Assignments
(Revised 8/92) 332 Cabinet

REFERENCE SHEET

Controller Intervals

0 = Walk	8 = Red Rest
1 = FDW	9 = Preemption
2 = Min. Green	A = Stop Time
3 =	B = Red Revert
4= Var. Initial	C = Yellow-Gap Termination
5 = Extension	D = Yellow-Max. Termination
6 =	E = Yellow-Forceoff Termination
7 = Reduce Gap	F = Red Clearance

Continuous Memory Error Monitoring

The controller's RAM and EPROM memories are continuously checked for errors. If an erro is found, the intersection will go into FLASH (via Watch Dog Timer), and one of the following will be shown on the controller's display:

bAd A = An error was detected in the CPU's RAM, or a new program has been installed on the memory module. Often caused by a bad controller "gel-cell" battery.

bAd b = An error was detected in the memory module's RAM. Often caused by a bad "lithium" battery on the memory module.

bAd E = An error was detected in the 233 Program EPROM.

bAd F = An error was detected in the Z-RAM (Dallas chip) on the memory module.

412/C Memory Module
Lithium Battery Condition

To check the condition of the 3.6 volt Lithium Battery on the 412/C Memory Module:

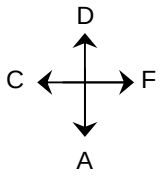
If E/112 + 0 + A = 84 - the battery is BAD
If E/112 + 0 + A = 85 - the battery is O.K.

Monitor "Activate" Flags

(Also Requires T.O.D. Function "E" Flag)
Detector Count Recording:
E/2 + 0 + 9 = Not Zero
Real Time Split Monitor:
E/2 + 0 + E = Not Zero

E Page Enable: F/1 + 9 + E = Not Zero

Display Movement Codes



A = Advance ROW
D = Decrement ROW
C = COLUMN Back
F = Forward COLUMN

Special Event Schedules

Special Event #1: C + 0 + E = 27
Special Event #2: C + 0 + E = 28

Current Interval = E + 5 + 0
Current Interval Timer = E + 5 + B
Current Interval Clearance Phases = E + 5 + C

Time of Day Function (7 Key)

Current T.O.D. "E Function" Control Bits = C/0 + E + E
Current T.O.D. "F Function" Output Bits = C/0 + E + F

Logic DELAY Gate
Delay Timer Display

DELAY A Timer = C/0 + 9 +A
DELAY B Timer = C/0 + 9 + B
thru thru
DELAY F Timer = C/0 + 9 + F

Interval Timer Display

Ring A = F/0 + A + Interval Row
Ring B = F/0 + B + (Interval Row From PHASE BANK data)

Display Locations

	Plan Select	Offset Select
Manual =	C/0 + A + 1	C/0 + B + 1
Master =	C/0 + A + 2	C/0 + B + 2
Current =	C/0 + A + 3	C/0 + B + 3
Next =	C/0 + A + 4	C/0 + B + 4
TOD =	C/0 + A +5	C/0 + B + 5

Master Cycle = C/0 + A + 0
Ring A Cycle = C/0 + B + 0
Ring B Cycle = C/0 + D + 0

MIN Cycle = C/0 + A + E
MAX Cycle = C/0 + B + E

Phase Hold = C/0 + F + D
Phase Next = C/0 + F + E
Force Off = C/0 + F + F (with Ring A Cycle Timer)

Current Calculated Cycle Length = C/0 + B + F
Current Permitted Phases = E/0 + 7 +8
Current Phase Bank = F/0 + C + E

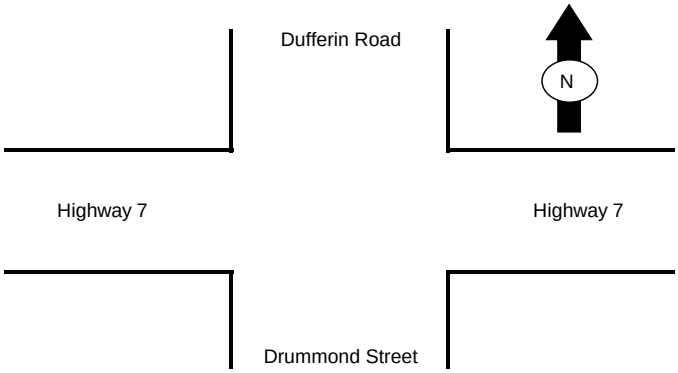
Last Power Failure:
(HR-MIN-DOW) = 8 + 4
(DOW-YR-MONTH) = 8 + 5
Last Cabinet Flash
(HR-MIN-DOW) = 8 + 6
(DOW-YR-MONTH) = 8 + 7
Power Fail Counts:
(Long Failures) = F/1 + 0 + C
(Short Failures) = F/1 + 0 + D
Current Time:
(HR-MIN-DOW) = 8 + 0
(DOW-YR-MONTH) = 8 + 1
(MIN-SEC-1/10SEC) = 8 + F

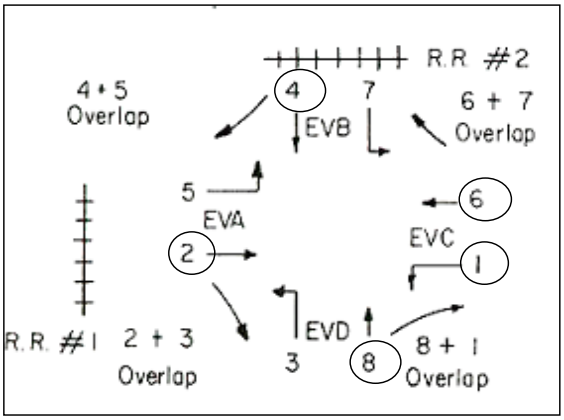
BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260

Traffic Signal Program 233
"View" Locations
(Revised 03/94

Cover Sheet

Location:	**Highway 7 at Drummond Street**	**Area/District:**	**Ottawa**
Timing Based On T.M. Dated:	**August 01, 2000**	**Traffic Signal #**	**241**
Timing Developed By:	**Mona Mekhail**	**Approved By:**	**Paul Webster**
Installed By:	**Paul Webster**	**Installation Date:**	





Circle Movements and Operations

COMMUNICATIONS ADDRESSING

COMM ADDRESS (C/0 + 0 + 0) =	**1**	**CELL # :**	**416-706-1321**
ZONE ADDRESS (C/0 + 0 + 1) =	**1**	**UDP PORT:**	**8033**
AREA NUMBER (C/0 + 0 + 2) =	**4**	**IP ADDRESS:**	**10.151.192.13**
AREA ADDRESS (C/0 + 0 + 3) =	**241**	**AMPIFIER:**	
		PROGRAM:	**233ON1.C**

DISABLE ALARM REPORTING

Column F

		1	2	3	4	5	6	7	8
0	OMIT ALARMS					**X**			

< C + 0 + C = 5 >

1 = STOP TIME
2 = FLASH SENSE
3 = KEYBOARD ENTRY
4 = MANUAL PLAN SELECT
5 = ENABLE POLICE CNTRL (Not Used)
6 = EXTERNAL ALARM (Door Alarm)
7 = DETECTOR FAILURE

ACTUATED INTERVAL TIMING AND FAZE FUNCTIONS

		PHASE 1	2	3	4	5	6	7	8
0	WALK		7		7		7		7
1	DON'T WALK		20		25		20		25
2	MIN INITIAL	7	20		10		20		10
3	TYPE 3 LIMIT								
4	ADD PER VEH								
5	VEH EXT	3.0	4.6		3.0		4.6		3.0
6	MAX GAP	3.0	4.6		3.0		4.6		4.0
7	MIN GAP	3.0	4.6		3.0		4.6		5.0
8	MAX LIMIT	10	40		25		40		55
9	MAXIMUM 2								
A	ADV /DLY WALK								
B	SEQUENCE TO	4							
C	COND SRV MIN								
D	REDUCE EVERY								
E	YELLOW	3.0	5.0		4.1		5.0		4.1
F	RED CLEAR		1.3		2.2		1.3		2.2

PHASE BANK # 1 < C + O + F = 1 >

		9	A	B	C	D		E
0							RR1 DLY	
1	PHASE 1	-					RR1 CLR	
2	PHASE 2	25					EVA DLY	
3	PHASE 3	-					EVA CLR	
4	PHASE 4	-					EVB DLY	
5	PHASE 5	-					EVB CLR	
6	PHASE 6	25					EVC DLY	
7	PHASE 7	-					EVC CLR	
8	PHASE 8	-					EVD DLY	
							EVD CLR	
							RR2 DLY	
							RR2 CLR	
							EV CLR	
							EV DLY	
							RR CLR	
							RR DLY	

MAX INT | ALT WALK | ALT FLH D/W | ALT INT | ALT EXT

ALL RED START
(F/1 + C +O) = **5.0**
RED REVERT
(F/1 + O + F) = **5.0**

		COLUMN F PHASES 1	2	3	4	5	6	7	8
0	PERMIT	X	X		X		X		X
1	RED LOCK								
2	YELLOW LOCK								
3	VEH MIN CALL		X				X		
4	PED RECALL								
5	PEDESTRIANS		X		X		X		X
6	YIELD AT FLSH D/W								
7	RED REST								
8	DOUBLE ENTRY		X		X		X		X
9	VEH MAX CALL								
A	SOFT RECALL								
B	MAXIMUM 2								
C	COND SERVICE								
D	MAN CONT CALL								
E	YELLOW START		X				X		
F	FIRST PHASES				X				X

< C + O + F = 1 >

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260

Traffic Signal Program **233** Ontario
Timing Sheet #2

Date:

LOCATION
Hwy: 7
At: Drummond Street

		A	B	C
PREEMPT		RR1-2	SP	EMER
MINIMUMS		SPEV1	EV2	VEH
A	WLK (DFLT)	4	4	4
B	FD WALK			
C	INITAL			

< C + O + F = 1 >

Column E Phases / Bits

		1	2	3	4	5	6	7	8
0	EXCLUSIVE								
1	RR1 CLEAR								
2	RR2 CLEAR								
3	RR2 LTD SRV								
4	PROT/PERM	X							
5	FLH TO PREMT								
6	FLASH ENTRY								
7	DISABL MIN YEL								
8	DISABL OVP YEL								
9	OVP FLH YEL								
A	EM VEH A								
B	EM VEH B								
C	EM VEH C								
D	EM VEH D								
E	EXTRA 1	X		X		X			
F	IC SELECT		X						

< C + O + E = 125 >

Column F Phases / Bits

		1	2	3	4	5	6	7	8
0									
1	EXT PERMIT 1								
2	EXT PERMIT 2								
3	EXCLU PED								
4									
5	PED 2P OUT		X						
6	PED 6P OUT						X		
7	PED 4P OUT				X				
8	PED 8P OUT								X
9	FLH YELLOW								
A									
B									
C									
D									
E	RESTRICTED								
F	EXTRA 2								

Column F Phases / Bits

		1	2	3	4	5	6	7	8
0	ADV GRN FLH								
1	PHASE FLASH								
2	FLASH WALK								
3	GUAR PASS								
4	SIMUL GAP		X		X		X		X
5	SEQ TIMING								
6	ADV WALK								
7	DELAY WALK								
8	EXT RECALL								
9									
A	MAX EXTEN								
B	INH PED RSRV								
C	SEMI ACTUATED								
D									
E	STRT VEH CALL	X	X		X		X		X
F	STRT PED CALL		X		X		X		X

SPECIALS < C + O + F = 2 >

MANUAL PLAN
< C/0 + A + 1 >
MANUAL OFFSET
< C/0 + B + 1 >
MANUAL SELECTION

MANUAL PLAN
0 = Automatic (Master)
9 = Control Plan 1 - 9
14 (E) = Free (Isolated)
15 (F) = Software Flash

MANUAL OFFSET
0 = Automatic (Master)
1 = Offset A
2 = Offset B
3 = Offset C

FLASH TO PREEMPT
1 = EVA
2 = EVB
3 = EVC
4 = EVD
5 = RR1
6 = RR2
7 = SE1
8 = SE2

EXTRA 1
1 = TBC TYPE 1
2 = NEMA EXT. COORD.
3 = DAYLIGHT SAVINGS
4 =
5 = EXPANDED STATUS REPORTING
6 = INTERNATIONAL PED
7 = CLEAR OUTPUTS DURING FLASH
8 = SPLIT RING

EXTRA 2
1 = AWR ON DURING PHASE INITAL
2 = LMU INSTALLED

IC SELECT
2 = 2 WAY MODEM
3 = 7 WIRE SLAVE
4 = FLASH / FREE
5 = SIMPLEX MASTER
7 = 7 WIRE MASTER
8 = OFFSET INTURP

Pretimed

PHASE

	1	2	3	4	5	6	7	8
WALK		7		7		7		7
DON'T WALK		20		25		20		25
MIN INTIAL	5	20		10		20		10
TYPE 3 LIMIT								
ADD PER VEH								
VEH EXT	3.0	4.6		3.0		4.6		3.0
MAX GAP	3.0	4.6		3.0		4.6		3.0
MIN GAP	3.0	4.6		3.0		4.6		3.0
MAX LIMIT	5	20		18		20		18
MAXIMUM 2								
ADV / DLY WALK								
SEQUENCE TO	4							
COND SRV MIN								
REDUCE EVERY								
YELLOW	3	5.0		4.1		5.0		4.1
RED CLEAR		1.3		2.2		1.3		2.2

PHASE BANK # < C + O + F = 1 >

Column F

PHASES

		1	2	3	4	5	6	7	8
0	PERMIT	X	X		X		X		X
1	RED LOCK								
2	YELLOW LOCK								
3	VEH MIN CALL		X				X		
4	PED RECALL								
5	PEDESTRIANS								
6	REST IN WALK								
7	RED REST								
8	DOUBLE ENTRY		X		X		X		X
9	VEH MAX CALL	X	X		X		X		X
A	SOFT RECALL								
B	MAXIMUM 2								
C	CORD SERVICE								
D	MAN CONT CALL								
E	YELLOW START		X				X		
F	FIRST PHASES				X				X

< C + O + F = 1 >

LOCATION: Highway 7 at Drummond Street

Issued Date:

Installed Date:

BI Tran Systems, Inc.
510 Bercut Dr., Sacremento, Calif. 95814
916/441-0260

Traffic Signal Program ***233*** *Ontario*
Timing Sheet #2
Revised (02/95)

Time of Day

Actuated

T.O.D FUNCTIONS

	TIME HH MM	FUN	DAY OF WEEK S	M	T	W	T	F	S
			1	2	3	4	5	6	7
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
A									
B									
C									
D									
E									
F									

< C + O + 7 = 1 >

Column 4 PHASE / BITS

1	2	3	4	5	6	7	8

< C + O + E = 27 >

T.O.D FUNCTIONS

A = VEH SOFT RECALL
B = MAXIMUM 2
C = CONDITIONAL SERVICE
D = LAG PHASES
E= BIT 1- LOCAL OVERIDE
BIT 4- DISABLE DET OFF MONITOR
BIT 7- DET COUNT MONITOR
BIT 8- REAL TIME SPLIT MONITOR
F = OUTPUT BITS 1 THRU 4

0 = PERMIT PHASES
1 = RED LOCK
2 = YELLOW LOCK
3 = VEH MIN RECALL
4 = PED RECALL
5 -
6 - REST IN WALK
7 = RED REST
8 = DOUBLE ENTRY
9 = VEH MAX RECALL

LOCATION:

Issued Date:

Installed Date:

Pretimed

T.O.D FUNCTIONS

	TIME HH MM	FUN	DAY OF WEEK S	M	T	W	T	F	S
			1	2	3	4	5	6	7
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
A									
B									
C									
D									
E									
F									

< C + O + 7 = 1 >

Column 4 PHASE / BITS

1	2	3	4	5	6	7	8

< C + O + E = 27 >

T.O.D FUNCTIONS

A = VEH SOFT RECALL
B = MAXIMUM 2
C = CONDITIONAL SERVICE
D = LAG PHASES
E = BIT 1- LOCAL OVERIDE
BIT 4- DISABLE DET OFF MONITOR
BIT 7- DET COUNT MONITOR
BIT 8- REAL TIME SPLIT MONITOR
F = OUTPUT BITS 1 THRU 4

0 = PERMIT PHASES
1 = RED LOCK
2 = YELLOW LOCK
3 = VEH MIN RECALL
4 = PED RECALL
5 -
6 - REST IN WALK
7 = RED REST
8 = DOUBLE ENTRY
9 = VEH MAX RECALL

LOCATION:

Issued Date:

Installed Date:

BI Tran Systems, Inc.
510 Bercut Dr., Sacremento, Calif. 95814
916/441-0260

Traffic Signal Program ***233*** *Ontario*
Timing Sheet #2
Revised (02/95)

DETECTOR ASSIGNMENTS

STANDARD 332 CABINET LOCATION	column	1 delay	3 carry over	Column 0 C1 Pin #	Column 1 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 2 PHASE(S) 1	2	3	4	5	6	7	8	Column 3 ASSIGNMENTS 1	2	3	4	5	6	7	8
I-2 U	0			0 39				X	X		X		X								X	X	X					X
J-2 U	1			1 40				X	X		X							X			X	X	X					X
I-6 U	2	5.0		2 41				X	X		X					X					X	X	X					X
J-6 U	3	5.0		3 42				X	X		X									X	X	X	X					X
1-2 L	4			4 43				X	X		X		X								X	X	X					X
J-2 L	5			5 44				X	X		X							X			X	X	X					X
1-6 L	6			6 45																								
J-6 L	7			7 46																								
I-4	8			8 47																								
J-4	9			9 48																								
I-8	A			A 49																								
J-8	B			B 50																								
J-1	C			C 55																								
I-1	D	5.0		D 56				X	X		X		X								X	X	X					X
J-5	E			E 57																								
I-5	F			F 58																								
	< C + O + D = 0 >			DETECTOR ASSIGNMENTS < C + O + E = 126>																								

STANDARD 332 CABINET LOCATION	column	2 delay	4 carry over	Column 4 C1 Pin #	Column 5 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 6 PHASE(S) 1	2	3	4	5	6	7	8	Column 7 ASSIGNMENTS 1	2	3	4	5	6	7	8
J-9 U	0			0 59																								
I-9 U	1			1 60																								
I-9 L	2			2 61																								
J-9 L	3			3 62																								
I-3 U	4			4 63																								
J-3 U	5			5 64																								
I-7 U	6			6 65																								
J-7 U	7			7 66																								
I-12 U	8			8 67	X								X								X	X	X					
I-13 U	9			9 68	X													X			X	X	X					
I-12 L	A			A 69	X											X					X	X	X					
I-13 L	B			B 70	X															X	X	X	X					
I-3 L	C			C 76																								
J-3 L	D			D 77																								
I-7 L	E			E																								
J-7 L	F			F																								
	< C + O + D = 0 >			DETECTOR ASSIGNMENTS < C + O + E = 126 >																								

DETECTOR ASSIGNMENT SHEET
ONTARIO 233 PROGRAM

LOCATION:
Hwy 7
at Drummond Street
Issued Date:
Installed Date:

DETECTOR ATTRIBUTES
1 = FULL TIME DELAY
2 = PEDESTRIAN CALL
3 =
4 = COUNT
5 = EXTENSION
6 = TYPE 3
7 = CALLING
8 = ALTERNATE

DETECTOR ASSIGNMENTS
1 = DET. SET # 1
2 = DET. SET # 2
3 = DET. SET # 3
4 =
5 =
6 = MIN RECALL ON FAILURE
7 = MAX RECALL ON FAILURE
8 - REPORT ON FAILURE

DETECTOR MONITOR
MAX OFF: D/0+0+1=120
MAX ON: D/0+0+2=60

ADVANCE WARNING BEACONS
SIGN #1 SIGN #2
PHASE NUMBER
(F/1+C+F)= (F/1+D+F)=
TIME BEFORE YELLOW
(F/1+C+E)= (F/1+D+E)=
OUTPUT PIN NUMBER
(E/127+E+8)= (E/127+E+9)=

Input File Layout

Input File Slot No. →	1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I" FILE	**1** Ext, Cnt, Call <C1-56>	**2** Ext, Cnt, Call <C1-39>	**2** Ext, Cnt, Call <C1-63>	**2** Type 3, Call <C1-47>	**3** Ext, Cnt, Call <C1-58>	**4** Ext, Cnt, Call <C1-41>	**4** Ext, Cnt, Call <C1-65>	**4** Type 3, Call <C1-49>	**1** Ext, Cnt, Call <C1-60>	NOT WIRED	Door Alarm <C1-80>	**2** Ped Call <C1-67>	**6** Ped Call <C1-68>	Flash Sense <C1-81>
		2 Ext, Cnt, Call <C1-43>	**2** Ext, Cnt, Call <C1-76>			**4** Ext, Cnt, Call <C1-45>	**4** Ext, Cnt, Call <C1-78>		**3** Ext, Cnt, Call <C1-62>		Not Assigned <C1-53>	**4** Ped Call <C1-69>	**8** Ped Call <C1-70>	Stop Time <C1-82>
"J" FILE	**5** Ext, Cnt, Call <C1-55>	**6** Ext, Cnt, Call <C1-40>	**6** Ext, Cnt, Call <C1-64>	**6** Type 3, Call <C1-48>	**7** Ext, Cnt, Call <C1-57>	**8** Ext, Cnt, Call <C1-42>	**8** Ext, Cnt, Call <C1-66>	**8** Type 3, Call <C1-50>	**5** Ext, Cnt, Call <C1-59>	NOT WIRED	Not Assigned <C1-54>	EV **A** Preempt <C1-71>	EV **B** Preempt <C1-72>	Railroad 1 <C1-51>
		6 Ext, Cnt, Call <C1-44>	**6** Ext, Cnt, Call <C1-77>			**8** Ext, Cnt, Call <C1-46>	**8** Ext, Cnt, Call <C1-79>		**7** Ext, Cnt, Call <C1-61>		Not Assigned <C1-75>	EV **C** Preempt <C1-73>	EV **D** Preempt <C1-74>	Railroad 2 <C1-52>

DETECTOR TYPES

Ext = Extension Detector
Detector is only active during the Phase's GREEN Intervals (ie, will NOT *Call* the Phase)

Cnt = Count Detector
Used in computing "Added Initial"

Call = Calling Detector
Detector is only active during the Phase's NON-GREEN Intervals (ie, will NOT *Extend* the Phase)

Type 3 = Type 3 Disconnect
Will allow a Calling Detector to Extend its Phase until the Call first drops or the "Type 3 Limit" is reached

BI Tran Systems, Inc.
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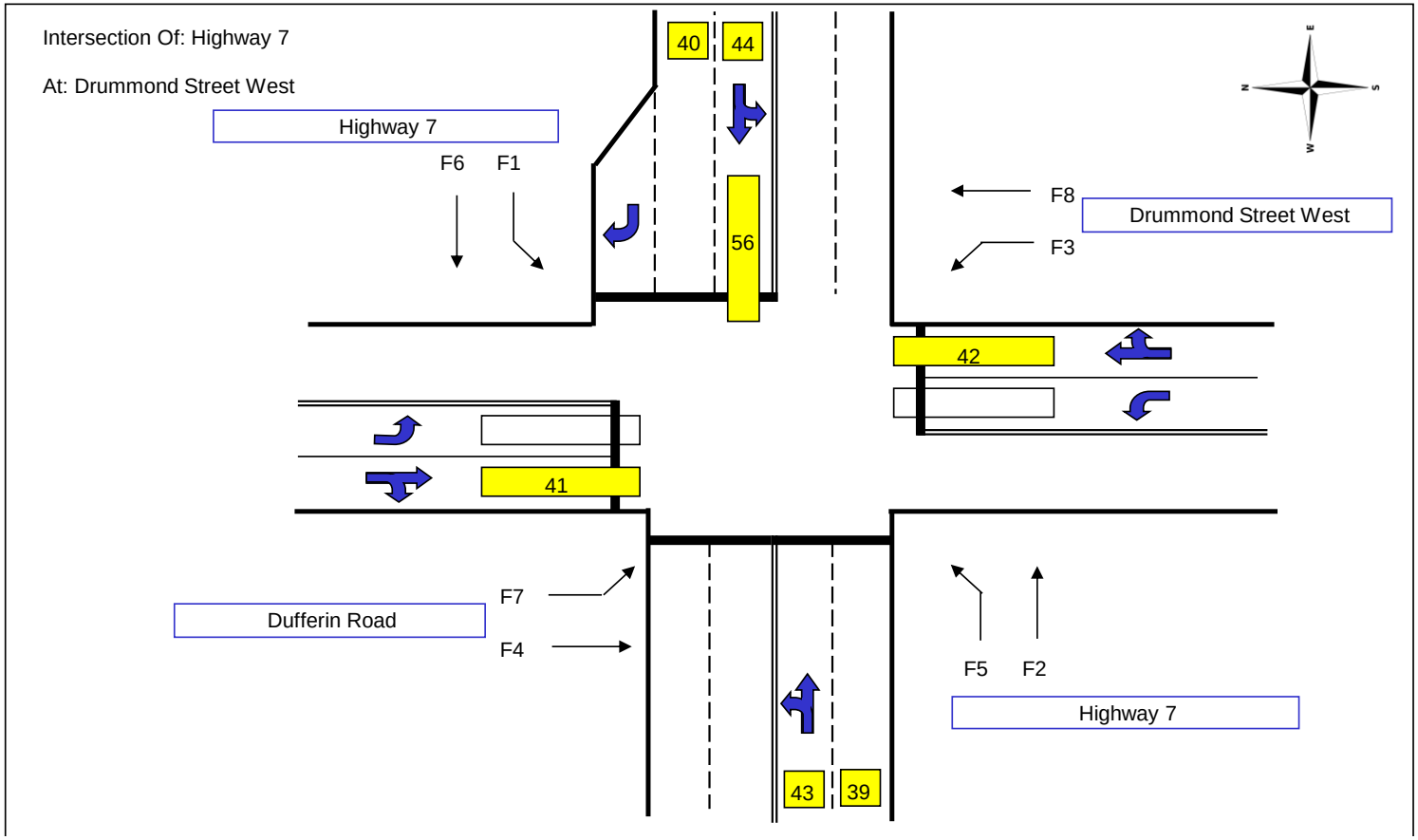
916/441-0260

Traffic Signal Program 233
Initialized Detector Assignments
(Revised 8/92) 332 Cabinet



OVERLAPS AND AAWS

		PED/PHASE/OVERLAP							
		1	2	3	4	5	6	7	8
0	WALK								
1	DON'T WALK								
2	PHASE GREEN								
3	PHASE AMBER								
4	PHASE RED								
5	OVERLAP GREEN								
6	OVERLAP AMBER								
7	OVERLAP RED								

		1								2								3								4							
0	LOAD SW #																														
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	VEH SET 1																														
2	VEH SET 2																														
3	VEH SET 3																														
4	NEG VEH																														
5	NEG PED																														
6	GREEN OMIT																														
7	GRN CLR OMIT																														

REDIRECT PHASE OUTPUTS (C + 0 + E = 127)

D	GREEN CLEAR				
E	AMBER CLEAR				
F	RED CLEAR				

Enable/Disable

Phase Redirection

CABINET TYPE :

(E/125 + D + 0) = **0** (For 332 cabinet)

(enable redirection = 30)

OVERLAP ASSIGNMENTS (C + 0 + E = 29)

PROGRAMMING OVERLAP SETS		
ASSIGNABLE INPUTS	OVERLAP SET 1	No Programming Required
	OVERLAP SET 2	E/126 + D + C = _____
	OVERLAP SET 3	E/126 + D + D = _____

DATE: 03-Sep-12

LOCATION: _____

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260

*Traffic Signal Program **233** Ontario*
Timing Sheet #2

ADVANCE WARNING FLASHERS

Time Before Amber	0.0	< F/1+C+E >
Phase Number	0	< F/1+C+F >
Output Pin Number		< E/127+E+8 >

Advance Warning Beacon - Sign #1

Time Before Amber	0.0	< F/1+D+E >
Phase Number	0	< F/1+D+F >
Output Pin Number		< E/127+E+9 >

Advance Warning Beacon - Sign #2

HOLIDAY SCHEDULES

Exclusive Walk	0	< F/1+0+0 >
Exclusive FDW	0	< F/1+0+0 >
All Red Clearance	0.0	< F/1+0+0 >

Exclusive Pedestrian Phase

(Outputs specified in Assignable Outputs at E/127+A+E & F)

DATE:

LOCATION:

at

	D	Row
		0
Output Port 1		1
Output Port 2		2
Output Port 3		3
Output Port 4		4
Output Port 5		5
Output Port 6		6
Output Port 7		7

Dimming < C+0+E = 125 >

	B	Row
DELAY A	0	A
DELAY B	0	B
DELAY C	0	C
DELAY D	0	D
DELAY E	0	E
DELAY F	0	F

Delay Logic Times < C+0+D = 0 > (seconds)

Long Failure	0.7
Short Failure	0.7

< F/1+0+6 >
< F/1+0+7 >

Power Cycle Correction (Default = 0.5)

Time	Function	Day of Week	COLUMN 4 Phases/Bits
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		
0:00	0		

Holiday TOD Functions < C+0+7=0.2> <C+0+E=28>

Row	Day	Year	Month	Holiday Type
0	00	00	0	
1	00	00	0	
2	00	00	0	
3	00	00	0	
4	00	00	0	
5	00	00	0	
6	00	00	0	
7	00	00	0	
8	00	00	0	
9	00	00	0	
A	00	00	0	
B	00	00	0	
C	00	00	0	
D	00	00	0	
E	00	00	0	
F	00	00	0	

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	

Holiday Events <C+0+9=1.1>
(Bank 1)

Row	Day	Year	Month	Holiday Type
0	00	00	0	
1	00	00	0	
2	00	00	0	
3	00	00	0	
4	00	00	0	
5	00	00	0	
6	00	00	0	
7	00	00	0	
8	00	00	0	
9	00	00	0	
A	00	00	0	
B	00	00	0	
C	00	00	0	
D	00	00	0	
E	00	00	0	
F	00	00	0	

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	
00 : 00	###	###	

Holiday Events <C+0+9=1.2>
(Bank 2)

T.O.D. Functions
0 = Permit Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Month Select
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
A = October
B = November
C = December

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260
Traffic Signal Program **233** Ontario
Timing Sheet #2
Revised (02/95)

COORDINATION

		PLAN								
	Column Numbers ---->	1	2	3	4	5	6	7	8	9
Row	*Plan Name ---->*									
0	Cycle Length	0	0	0	0	0	0	0	0	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0
4	Phase 4 - ForceOff	0	0	0	0	0	0	0	0	0
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0
8	Phase 8 - ForceOff	0	0	0	0	0	0	0	0	0
9	Ring Offset	0	0	0	0	0	0	0	0	0
A	Offset 1	0	0	0	0	0	0	0	0	0
B	Offset 2	0	0	0	0	0	0	0	0	0
C	Offset 3	0	0	0	0	0	0	0	0	0
D	Perm 1 - End	0	0	0	0	0	0	0	0	0
E	Hold Release	255	255	255	255	255	255	255	255	255
F	Zone Offset	0	0	0	0	0	0	0	0	0

Coordination - Bank 1 <C+0+C=1>

Row										
0	Ped Adjustment	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0
2	Perm 2 - End	0	0	0	0	0	0	0	0	0
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0
4	Perm 3 - End	0	0	0	0	0	0	0	0	0
5	Reservice Time	0	0	0	0	0	0	0	0	0
6	Reservice Phases									
7										
8	Pretimed Phases									
9	Max Recall									
A	Perm 1 Veh Phase	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7
B	Perm 1 Ped Phase	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7	1_345_7
C	Perm 2 Veh Phase									
D	Perm 2 Ped Phase									
E	Perm 3 Veh Phase									
F	Perm 3 Ped Phase									

Coordination - Bank 2 <C+0+C=2>

Row		2
0		
1	Phase 1	10
2	Phase 2	10
3	Phase 3	10
4	Phase 4	10
5	Phase 5	10
6	Phase 6	10
7	Phase 7	10
8	Phase 8	10

Coordination Transition Minimums < C+0+C = 5 >

Transition Type 0.3 < C/5+1+9 >
TBC TRANSITION

Lag Hold Phases < C/5+1+A >
Coordinated Lag Hold Phases

Sync Output Time < C/5+1+C >
7 - Wire Master

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = # of cycles when lengthening

DATE: 03-Sep-12

LOCATION: _____

(Coord Extra Bit 1 = Programmed WALK Time for Sync Phases)

	E
Plan 1 - Sync	_2___6__
Plan 2 - Sync	_2___6__
Plan 3 - Sync	_2___6__
Plan 4 - Sync	_2___6__
Plan 5 - Sync	_2___6__
Plan 6 - Sync	_2___6__
Plan 7 - Sync	_2___6__
Plan 8 - Sync	_2___6__
Plan 9 - Sync	_2___6__
NEMA Sync	
NEMA Hold	
Coord Extra	#NAME?

Sync Phases < C+0+C = 1>

Row	Time	Plan	Offset	Day of Week
0	0:00	0	0	
1	0:00	0	0	
2	0:00	0	0	
3	0:00	0	0	
4	0:00	0	0	
5	0:00	0	0	
6	0:00	0	0	
7	0:00	0	0	
8	0:00	0	0	
9	0:00	0	0	
A	0:00	0	0	
B	0:00	0	0	
C	0:00	0	0	
D	0:00	0	0	
E	0:00	0	0	
F	0:00	0	0	

TOD Coodination < C+0+9 = 0.1 >
(Bank 1)

	F
Free Lag	_2_4_6_8
Plan 1 - Lag	_2_4_6_8
Plan 2 - Lag	_2_4_6_8
Plan 3 - Lag	_2_4_6_8
Plan 4 - Lag	_2_4_6_8
Plan 5 - Lag	_2_4_6_8
Plan 6 - Lag	_2_4_6_8
Plan 7 - Lag	_2_4_6_8
Plan 8 - Lag	_2_4_6_8
Plan 9 - Lag	_2_4_6_8
External Lag	

Lag Phases <C+0+C=1>

Row	Time	Plan	Offset	Day of Week
0	0:00	0	0	
1	0:00	0	0	
2	0:00	0	0	
3	0:00	0	0	
4	0:00	0	0	
5	0:00	0	0	
6	0:00	0	0	
7	0:00	0	0	
8	0:00	0	0	
9	0:00	0	0	
A	0:00	0	0	
B	0:00	0	0	
C	0:00	0	0	
D	0:00	0	0	
E	0:00	0	0	
F	0:00	0	0	

TOD Coodination < C+0+9 = 0.2 >
(Bank 2)

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260
Traffic Signal Program **233** Ontario
Timing Sheet #2
Revised (02/95)

	Column A		Column B		Column C		Column D		Column E		Column F		
0	NOT 3	0	MAX 2	0	PRETIME	0	WEEKDAY	0	DIAL 2	0		0	0
1	NOT 4	0	SYSDET 1	0	PLAN 1	0	X PERM 1	0	DIAL 3	0	EVA	71	1
2	OR 4	0	SYSDET 2	0	PLAN 2	0	X PERM 2	0	OFFSET 1	0	EVB	72	2
3	OR 4	0	SYSDET 3	0	PLAN 3	0	DIM	0	OFFSET 2	0	EVC	73	3
4	OR 5	0	SYSDET 4	0	PLAN 4	0	X CLOCK	0	OFFSET 3	0	EVD	74	4
5	OR 5	0	SYSDET 5	0	PLAN 5	0	STOP TIME	82	FREE	0	RR 1	51	5
6	OR 6	0	SYSDET 6	0	PLAN 6	0	FL SENSE	81	FLASH	0	RR 2	52	6
7	OR 6	0	SYSDET 7	0	PLAN 7	0	ENABLE	0	XPED OMIT	0	SP EVNT 1	0	7
8		0	SYSDET 8	0	PLAN 8	0	ADVANCE	0	NOT 1	0	SP EVNT 2	0	8
9		0	MAX INBT	0	PLAN 9	0	ALARM	80	NOT 2	0	EXT LAG	0	9
A	AND 4	0	FORCE A	0	DELAY A	0	PH BNK 2	0	OR 1	0	AND 1	0	A
B	AND 4	0	FORCE B	0	DELAY B	0	PH BNK 3	0	OR 1	0	AND 1	0	B
C	NAND 1	0	C NA	0	DELAY C	0	OLAP SET 2	0	OR 2	0	AND 2	0	C
D	NAND 1	0	HOLD	0	DELAY D	0	OLAP SET 3	0	OR 2	0	AND 2	0	D
E	NAND 2	0	VE CALL	0	DELAY E	0	DET SET 2	0	OR 3	0	AND 3	0	E
F	NAND 2	0	RECALL	0	DELAY F	0	DET SET 3	0	OR 3	0	AND 3	0	F

ASSIGNABLE INPUTS < C + O + E = 126>

	Column A		Column B		Column C		Column D		Column E		Column F		
0		0	FLASHER 0	0	FREE	0	NOT 1	0	TOD 1	0	DIAL 2	0	0
1	SP EV 1	0	FLASHER 1	0	PLAN 1	0	OR 1	0	TOD 2	0	DIAL 3	0	1
2	SP EV 2	0	FAST FLSHR	0	PLAN 2	0	OR 2	0	TOD 3	0	OFFSET 1	0	2
3	SP EV 3	0		0	PLAN 3	0	OR 3	0	TOD 4	0	OFFSET 2	0	3
4	SP EV 4	0		0	PLAN 4	0	AND 1	0	TOD 5	0	OFFSET 3	0	4
5	SP EV 5	0		0	PLAN 5	0	AND 2	0	TOD 6	0	FREE	0	5
6	SP EV 6	0		0	PLAN 6	0	AND 3	0	TOD 7	0	FLASH	0	6
7	SP EV 7	0		0	PLAN 7	0	NOT 2	0	TOD 8	0	PREEMPT	0	7
8	SP EV 8	0	NOT 3	0	PLAN 8	0	EVA	0	WARN 1	0		231	8
9		0	NOT 4	0	PLAN 9	0	EVB	0	WARN 2	0		232	9
A	DET FAIL	0	OR 4	0		0	EVC	0	DEALY A	0		233	A
B		0	OR 5	0		0	EVD	0	DELAY B	0		234	B
C		0	OR 6	0		0	RR1	0	DELAY C	0		235	C
D	CENT. CTRL	0	AND 4	0		0	RR2	0	DELAY D	0		236	D
E	EXCL FDW	0	NAND 1	0		0	SP EVNT 1	0	DELAY E	0		233	E
F	EXCL WALK	0	NAND 2	0		0	SP EVNT 2	0	DELAY F	0		238	F

ASSIGNABLE OUTPUTS < C + O + E = 127>

DEFAULT DETECTOR ASSIGNMENTS

Standard 332 Cabinet Location	Column 0	C1 PIN NUMBER	Column 1 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 2 PHASE(S) 1	2	3	4	5	6	7	8	Column 3 ASSIGNMENTS 1	2	3	4	5	6	7	8
I-2 U	0	***39***				X	X		X			X								X	X	X					X
J-2 U	1	***40***				X	X		X							X				X	X	X					X
I-6 U	2	***41***				X	X		X					X						X	X	X					X
J-6 U	3	***42***				X	X		X									X		X	X	X					X
I-2 L	4	***43***				X	X		X			X								X	X	X					X
J-2 L	5	***44***				X	X		X							X				X	X	X					X
I-6 L	6	***45***				X	X		X					X						X	X	X					X
J-6 L	7	***46***				X	X		X									X		X	X	X					X
I-4	8	***47***						X	X			X								X	X	X					X
J-4	9	***48***						X	X							X				X	X	X					X
I-8	A	***49***						X	X					X						X	X	X					X
J-8	B	***50***						X	X									X		X	X	X					X
J-1	C	***55***				X	X		X						X					X	X	X					X
I-1	D	***56***				X	X		X		X									X	X	X					X
J-5	E	***57***				X	X		X									X		X	X	X					X
I-5	F	***58***				X	X		X				X							X	X	X					X

"INITIALIZED" DETECTOR ASSIGNMENTS
< C + 0 + E = 126 >

Standard 332 Cabinet Location	Column 4	C1 PIN NUMBER	Column 5 ATTRIBUTES 1	2	3	4	5	6	7	8	Column 6 PHASE(S) 1	2	3	4	5	6	7	8	Column 7 ASSIGNMENTS 1	2	3	4	5	6	7	8
J-9 U	0	***59***				X	X		X						X					X	X	X					X
I-9 U	1	***60***				X	X		X		X									X	X	X					X
J-9 L	2	***61***				X	X		X								X			X	X	X					X
I-9 L	3	***62***				X	X		X				X							X	X	X					X
I-3 U	4	***63***				X	X		X			X								X	X	X					X
J-3 U	5	***64***				X	X		X								X			X	X	X					X
I-7 U	6	***65***				X	X		X						x					X	X	X					X
J-7 U	7	***66***				X	X		X										X	X	X	X					X
I-12 U	8	***67***		X								X								X	X	X					X
I-13 U	9	***68***		X													X			X	X	X					X
I-12 L	A	***69***		X												X				X	X	X					X
I-13 L	B	***70***		X															X	X	X	X					X
I-3 L	C	***76***				X	X		X			X								X	X	X					X
J-3 L	D	***77***				X	X		X								X			X	X	X					X
I-7 L	E	***78***				X	X		X							X				X	X	X					X
J-7 L	F	***79***				X	X		X										X	X	X	X					X

"INITIALIZED" DETECTOR ASSIGNMENTS
< C + 0 + E = 126 >

DETECTOR ATTRIBUTES

1= Full time Delay
2 = Pedestrian call
3 =
4 = Count
5 = Extention
6 = Type 3
7 = Calling
8 = Alternate

DETECTOR ASSIGNMENTS

1 = Det. Set #1
2 = Det. Set #2
3 = Det. Set #3
4 =
5 =
6 = MIN Recall On Failure
7 = MAX Recall On Failure
8 = Report On Failure

Input File →

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I" FILE	**1** Ext, Cnt, Call <C1-56>	**2** Ext, Cnt, Call <C1-39>	**2** Ext, Cnt, Call <C1-63>	**2** Type 3, Call <C1-47>	**3** Ext, Cnt, Call <C1-58>	**4** Ext, Cnt, Call <C1-41>	**4** Ext, Cnt, Call <C1-65>	**4** Type 3, Call <C1-49>	**1** Ext, Cnt, Call <C1-60>	NOT WIRED	Not Assigned <C1-80>	**2** Ped Call <C1-67>	**6** Ped Call <C1-68>	Flash Sense <C1-81>
		2 Ext, Cnt, Call <C1-43>	**2** Ext, Cnt, Call <C1-76>			**4** Ext, Cnt, Call <C1-45>	**4** Ext, Cnt, Call <C1-78>		**3** Ext, Cnt,		Not Assigned <C1-53>	**4** Ped Call <C1-69>	**8** Ped Call	Stop Time <C1-82>
"J" FILE	**5** Ext, Cnt, Call <C1-55>	**6** Ext, Cnt, Call <C1-40>	**6** Ext, Cnt, Call <C1-64>	**6** Type 3, Call <C1-48>	**7** Ext, Cnt, Call <C1-57>	**8** Ext, Cnt, Call <C1-42>	**8** Ext, Cnt, Call <C1-66>	**8** Type 3, Call <C1-50>	**5** Ext, Cnt, Call <C1-59>	NOT WIRED	Not Assigned <C1-54>	**EV A** Preempt <C1-71>	**EV B** Preempt <C1-72>	Railroad 1 <C1-51>
		6 Ext, Cnt, Call <C1-44>	**6** Ext, Cnt, Call <C1-77>			**8** Ext, Cnt, Call <C1-46>	**8** Ext, Cnt, Call <C1-79>		**7** Ext, Cnt, Call <C1-61>		Not Assigned <C1-75>	**EV C** Ped Call <C1-73>	**EV D** Preempt <C1-74>	Railroad 2 <C1-52>

DETECTOR TYPES

Ext = Extension Detector
Detector is only active during the Phase's GREEN Intervals (ie, will NOT *Call* the Phase)
Cnt = Count Detector
Used in computing "Added Initial"
Call = Calling Detector
Detector is only active during the Phase's NON-GREEN Intervals (ie, will NOT *Extend* the Phase)
Type 3 = Type 3 Disconnect
Will allow a Calling Detector to Extend its Phase until the Call first drops or the "Type 3 Limit" is reached

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260

Traffic Signal Program 233
Initialized Detector Assignments
(Revised 8/92) 332 Cabinet

REFERENCE SHEET

Controller Intervals

0 = Walk	8 = Red Rest
1 = FDW	9 = Preemption
2 = Min. Green	A = Stop Time
3 =	B = Red Revert
4= Var. Initial	C = Yellow-Gap Termination
5 = Extension	D = Yellow-Max. Termination
6 =	E = Yellow-Forceoff Termination
7 = Reduce Gap	F = Red Clearance

Continuous Memory Error Monitoring

The controller's RAM and EPROM memories are continuously checked for errors. If an erro is found, the intersection will go into FLASH (via Watch Dog Timer), and one of the following will be shown on the controller's display:

bAd A = An error was detected in the CPU's RAM, or a new program has been installed on the memory module. Often caused by a bad controller "gel-cell" battery.

bAd b = An error was detected in the memory module's RAM. Often caused by a bad "lithium" battery on the memory module.

bAd E = An error was detected in the 233 Program EPROM.

bAd F = An error was detected in the Z-RAM (Dallas chip) on the memory module.

412/C Memory Module
Lithium Battery Condition

To check the condition of the 3.6 volt Lithium Battery on the 412/C Memory Module:

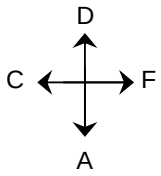
If E/112 + 0 + A = 84 - the battery is BAD
If E/112 + 0 + A = 85 - the battery is O.K.

Monitor "Activate" Flags

(Also Requires T.O.D. Function "E" Flag)
Detector Count Recording:
E/2 + 0 + 9 = Not Zero
Real Time Split Monitor:
E/2 + 0 + E = Not Zero

E Page Enable: F/1 + 9 + E = Not Zero

Display Movement Codes



A = Advance ROW
D = Decrement ROW
C = COLUMN Back
F = Forward COLUMN

Special Event Schedules

Special Event #1: C + 0 + E = 27
Special Event #2: C + 0 + E = 28

Current Interval = E + 5 + 0
Current Interval Timer = E + 5 + B
Current Interval Clearance Phases = E + 5 + C

Time of Day Function (7 Key)

Current T.O.D. "E Function" Control Bits = C/0 + E + E
Current T.O.D. "F Function" Output Bits = C/0 + E + F

Logic DELAY Gate
Delay Timer Display

DELAY A Timer = C/0 + 9 +A
DELAY B Timer = C/0 + 9 + B
thru thru
DELAY F Timer = C/0 + 9 + F

Interval Timer Display

Ring A = F/0 + A + Interval Row
Ring B = F/0 + B + (Interval Row From PHASE BANK data)

Display Locations

	Plan Select	Offset Select
Manual =	C/0 + A + 1	C/0 + B + 1
Master =	C/0 + A + 2	C/0 + B + 2
Current =	C/0 + A + 3	C/0 + B + 3
Next =	C/0 + A + 4	C/0 + B + 4
TOD =	C/0 + A +5	C/0 + B + 5

Master Cycle = C/0 + A + 0
Ring A Cycle = C/0 + B + 0
Ring B Cycle = C/0 + D + 0

MIN Cycle = C/0 + A + E
MAX Cycle = C/0 + B + E

Phase Hold = C/0 + F + D
Phase Next = C/0 + F + E
Force Off = C/0 + F + F (with Ring A Cycle Timer)

Current Calculated Cycle Length = C/0 + B + F
Current Permitted Phases = E/0 + 7 +8
Current Phase Bank = F/0 + C + E

Last Power Failure:
(HR-MIN-DOW) = 8 + 4
(DOW-YR-MONTH) = 8 + 5
Last Cabinet Flash
(HR-MIN-DOW) = 8 + 6
(DOW-YR-MONTH) = 8 + 7
Power Fail Counts:
(Long Failures) = F/1 + 0 + C
(Short Failures) = F/1 + 0 + D
Current Time:
(HR-MIN-DOW) = 8 + 0
(DOW-YR-MONTH) = 8 + 1
(MIN-SEC-1/10SEC) = 8 + F

BI Tran Systems, Inc.
510 Bercut Dr., Sacramento, Calif. 95814
916/441-0260

Traffic Signal Program 233
"View" Locations
(Revised 03/94

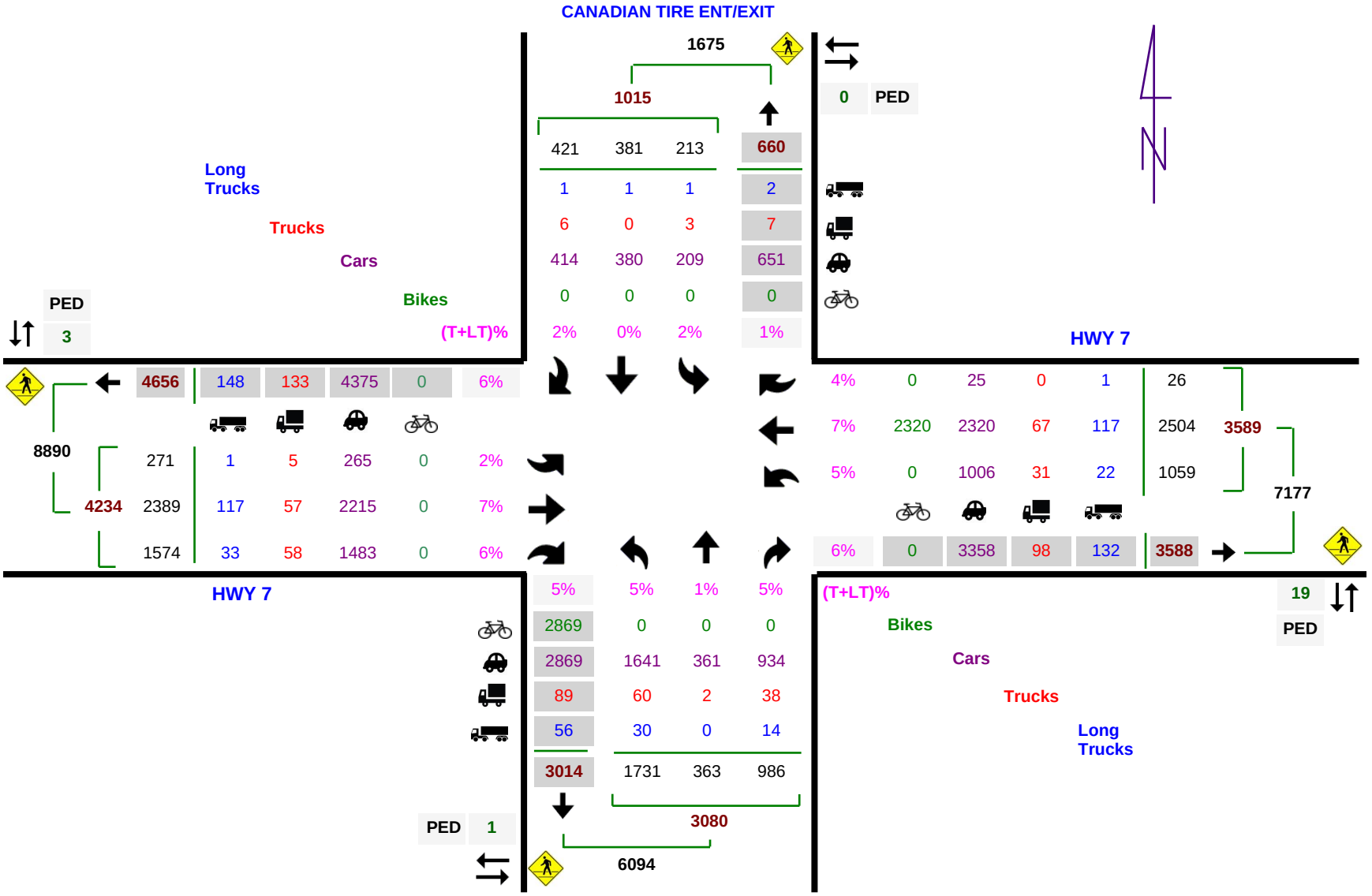
Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Ad Hoc Turning Movement Count Total Report

Description: HWY 7 @ WILSON STREET/CANADIAN TIRE ENT/EXIT
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7
Start Date: 01-Dec-2016 (Thu) | **I/C Side:** | **LHRS:** 14080
End Date: 01-Dec-2016 (Thu) | **Int. Type:** Four Leg | **Offset:** 0
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00



Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 7 @ WILSON STREET/CANADIAN TIRE ENT/EXIT
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7
Start Date: 01-Dec-2016 (Thu) | **I/C Side:** | **LHRS:** 14080
End Date: 01-Dec-2016 (Thu) | **Int. Type:** Four Leg | **Offset:** 0
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

	Major Road Approaches																				Minor Road Approaches																				
	East HWY 7										West HWY 7										North CANADIAN TIRE ENT/EXIT										South WILSON STREET										
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Total Veh.
	f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		
Period 1																																										
07:00	13	34	2	0	3	0	0	1	1	0	3	35	25	0	1	0	0	3	0	0	0	2	5	0	0	0	0	0	0	0	22	5	13	2	0	0	1	0	0	0	171
07:15	19	32	1	0	1	0	0	5	0	0	7	59	51	0	1	2	0	5	0	0	0	2	3	0	0	0	0	0	0	0	29	2	19	3	0	0	2	0	0	0	243
07:30	24	48	1	2	2	0	0	4	0	0	6	67	47	0	4	1	0	7	3	0	0	7	0	0	0	1	0	0	0	0	34	6	20	2	0	3	0	0	0	0	289
07:45	25	75	0	2	6	0	0	5	0	0	6	88	56	1	3	3	0	4	1	0	1	3	0	0	0	1	0	0	0	0	41	4	23	1	0	0	3	0	1	0	353
08:00	31	52	0	1	2	0	0	3	0	1	5	69	45	0	2	3	0	5	0	0	3	4	3	0	0	0	0	0	0	0	35	6	26	1	0	0	0	0	1	0	297
08:15	42	58	0	3	3	0	0	1	0	0	3	67	54	0	0	3	0	4	5	0	5	10	5	0	0	0	0	0	0	0	44	5	20	2	0	1	0	0	0	0	335
08:30	34	48	0	0	6	0	1	5	0	0	8	61	62	0	0	6	0	3	4	0	1	7	3	0	0	0	0	0	0	0	40	9	21	5	0	1	2	0	2	0	329
08:45	37	55	0	2	0	0	0	9	0	0	8	59	45	0	2	4	0	6	1	0	8	6	10	0	0	0	1	0	0	0	51	12	27	5	0	2	2	0	1	0	353
Period 2																																										
11:00	27	63	1	0	2	0	2	3	0	2	14	78	48	0	2	2	0	0	1	0	4	16	14	0	0	0	0	0	0	0	43	10	28	2	0	2	0	0	1	0	363
11:15	36	74	0	2	2	0	0	8	0	1	6	57	56	0	1	1	1	2	0	0	10	14	11	0	0	0	0	0	0	0	46	16	30	2	0	1	1	0	0	0	377
11:30	36	71	0	2	3	0	0	6	0	1	12	55	43	0	1	3	0	3	1	1	9	16	20	0	0	0	0	0	0	0	49	17	34	0	0	3	0	0	1	0	385
11:45	38	69	4	2	1	0	2	5	0	0	11	63	50	1	2	1	0	4	0	0	10	17	16	0	0	0	0	0	0	0	55	12	31	3	0	0	0	0	1	0	398
12:00	28	83	0	0	2	0	0	3	0	1	9	63	59	0	4	3	0	4	1	1	10	14	15	0	0	0	0	0	0	0	60	12	36	3	0	3	0	0	0	1	412
12:15	18	75	2	1	3	0	3	0	0	1	15	71	45	1	3	1	0	1	0	0	6	13	23	0	0	0	0	0	0	0	55	14	45	3	0	0	1	0	1	0	400
12:30	32	81	0	0	2	0	2	6	0	0	11	91	47	0	0	0	0	3	1	0	12	9	19	0	0	0	0	0	0	0	67	15	37	3	0	4	1	0	0	0	443
12:45	31	86	1	1	5	0	0	4	0	0	12	71	51	0	0	1	0	5	0	0	13	17	16	0	0	0	0	0	0	0	66	15	28	0	0	1	0	0	0	0	424
13:00	44	79	0	1	3	0	2	4	0	1	12	92	47	0	2	4	0	2	1	1	7	11	12	0	0	1	0	0	0	0	44	21	41	1	0	2	1	0	0	0	434
13:15	40	57	0	2	1	0	0	4	0	3	8	79	48	0	1	3	0	4	2	0	8	13	19	1	0	0	0	1	0	0	47	10	29	0	0	1	1	0	0	0	379
13:30	30	72	0	0	3	0	1	3	0	4	10	60	61	0	4	2	0	8	3	0	7	19	10	0	0	0	0	0	0	0	47	14	32	1	1	1	1	0	0	0	390
13:45	31	57	0	1	2	0	0	6	0	0	7	72	37	0	2	2	0	7	0	0	5	16	17	0	0	1	0	0	0	0	58	16	24	1	0	2	2	0	0	0	366

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Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 7 @ WILSON STREET/CANADIAN TIRE ENT/EXIT
Region: EAST **Survey Type:** TM – Intersection **Hwy:** 7
Start Date: 01-Dec-2016 (Thu) **I/C Side:** **LHRS:** 14080
End Date: 01-Dec-2016 (Thu) **Int. Type:** Four Leg **Offset:** 0
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

	Major Road Approaches																					Minor Road Approaches																				
	East HWY 7										West HWY 7										North CANADIAN TIRE ENT/EXIT										South WILSON STREET										
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Total Veh.
	f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		
Period 3																																										
15:00	23	91	2	1	3	0	1	3	0	0	10	55	54	0	1	2	0	2	1	0	14	17	19	1	0	0	0	0	0	0	71	14	41	0	0	1	0	0	1	0	428
15:15	32	85	5	0	2	0	1	6	0	1	6	74	56	0	4	0	0	2	2	0	10	9	21	0	0	0	0	0	0	0	71	11	39	2	0	2	3	0	1	0	444
15:30	40	84	0	3	2	0	2	5	0	0	7	66	53	1	1	2	0	2	3	0	6	11	15	0	0	1	0	0	0	0	64	14	29	7	1	3	4	0	0	0	426
15:45	33	81	1	3	1	0	0	4	0	1	15	91	58	0	1	0	0	4	0	0	8	15	15	0	0	0	0	0	0	0	68	15	39	0	0	0	1	0	0	0	453
16:00	28	90	0	0	2	0	1	5	0	1	5	81	47	0	4	0	0	0	2	0	8	20	15	0	0	0	0	0	0	0	71	15	32	1	0	0	1	0	1	0	429
16:15	38	106	0	0	2	0	2	2	0	0	5	91	50	0	2	1	0	9	0	0	5	21	16	0	0	0	0	0	0	0	74	9	40	3	0	1	1	0	0	0	478
16:30	38	67	3	0	0	0	1	1	0	0	9	70	46	1	1	0	0	1	1	0	9	9	16	0	0	0	0	0	1	0	61	12	41	1	0	1	0	0	0	0	390
16:45	24	96	0	0	0	0	0	2	0	0	6	67	23	0	1	1	0	4	0	0	7	14	20	1	0	0	0	0	0	0	55	13	27	3	0	1	0	0	1	0	366
17:00	42	111	1	1	1	0	0	0	0	1	7	68	27	0	1	3	0	7	0	0	7	8	22	0	0	0	0	0	0	0	44	9	27	1	0	0	2	0	1	0	390
17:15	35	101	0	0	1	0	0	1	0	0	10	88	27	0	0	2	0	2	0	0	6	17	12	0	0	0	0	0	0	0	50	13	23	0	0	2	0	0	0	0	390
17:30	27	64	1	1	0	0	1	2	0	0	6	69	33	0	4	0	0	3	0	0	5	6	13	0	0	1	0	0	0	0	37	8	20	1	0	0	0	0	0	0	302
17:45	30	75	0	0	1	0	0	1	0	0	6	38	32	0	2	2	0	1	0	0	5	17	9	0	0	0	0	0	0	0	42	7	12	1	0	0	0	0	0	0	281

Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement Peak Hour Report

Description: HWY 7 @ WILSON STREET/CANADIAN TIRE ENT/EXIT

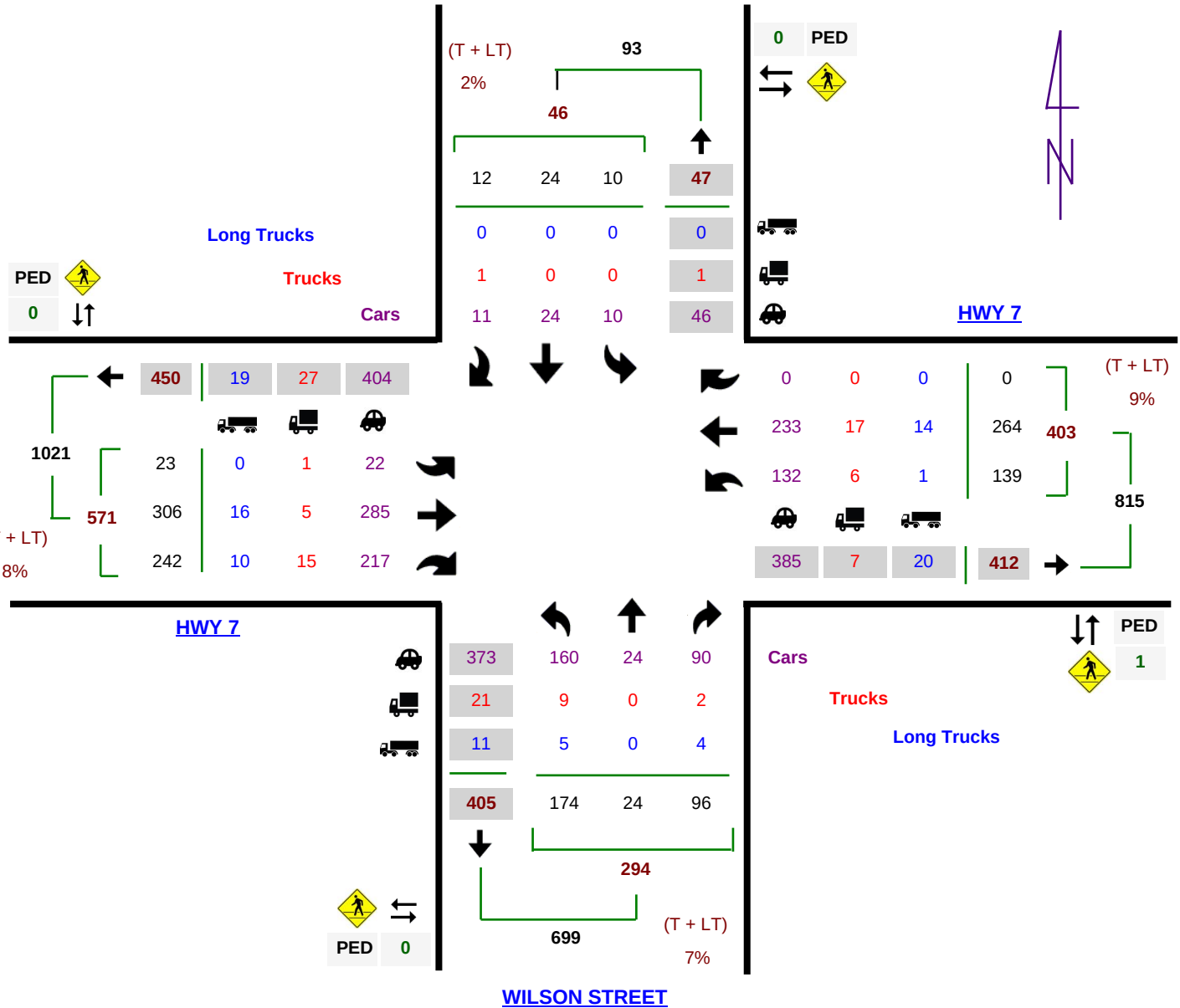
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 01-Dec-2016 (Thu) | **I/C Side:** | **LHRS:** 14080

End Date: 01-Dec-2016 (Thu) | **Int. Type:** Four Leg | **Offset:** 0

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

AM Peak Hour Report - Start Time: 07:45



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Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement Peak Hour Report

Description: HWY 7 @ WILSON STREET/CANADIAN TIRE ENT/EXIT

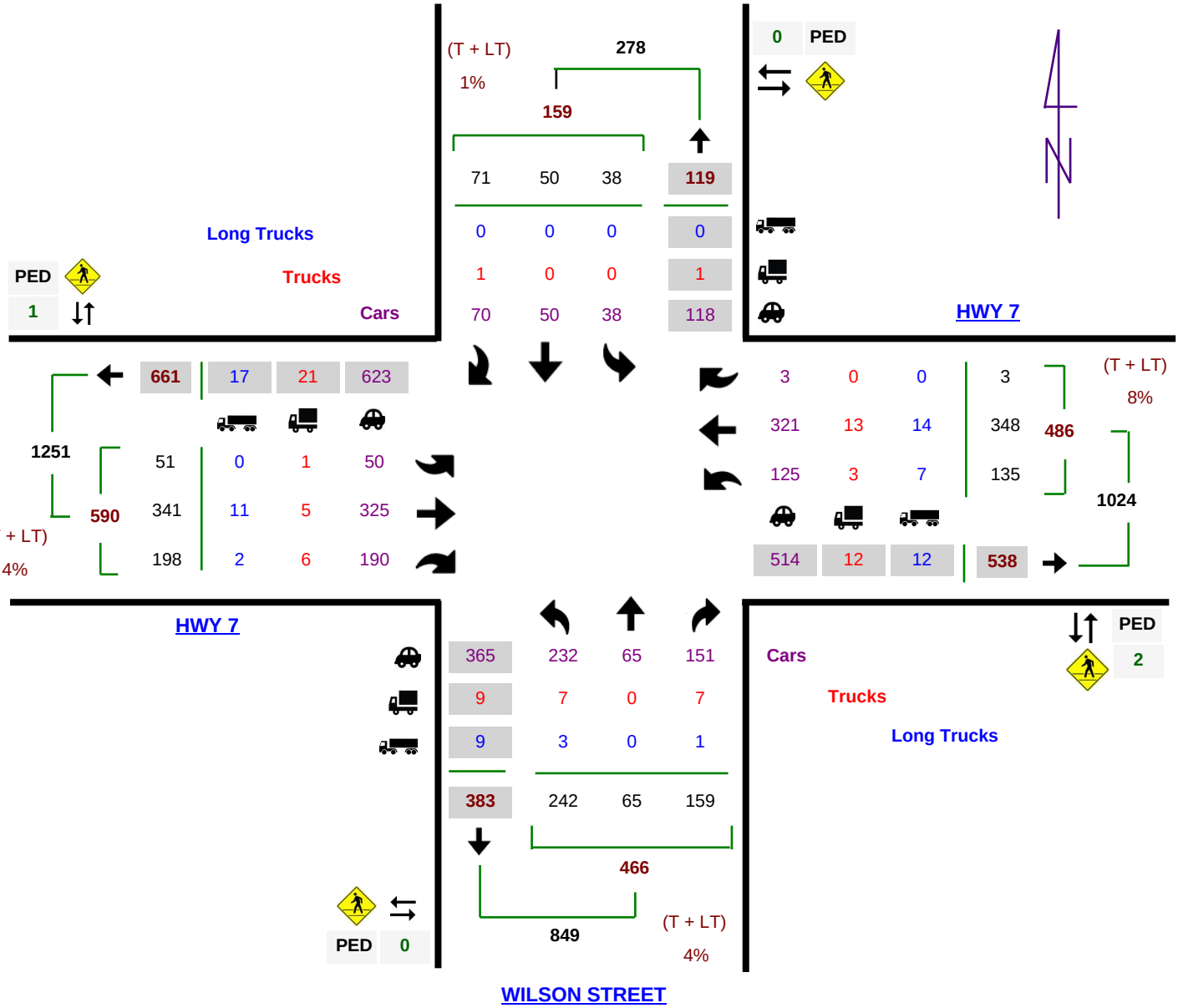
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 01-Dec-2016 (Thu) | **I/C Side:** | **LHRS:** 14080

End Date: 01-Dec-2016 (Thu) | **Int. Type:** Four Leg | **Offset:** 0

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

Midday Peak Hour Report - Start Time: 12:15



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Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement Peak Hour Report

Description: HWY 7 @ WILSON STREET/CANADIAN TIRE ENT/EXIT

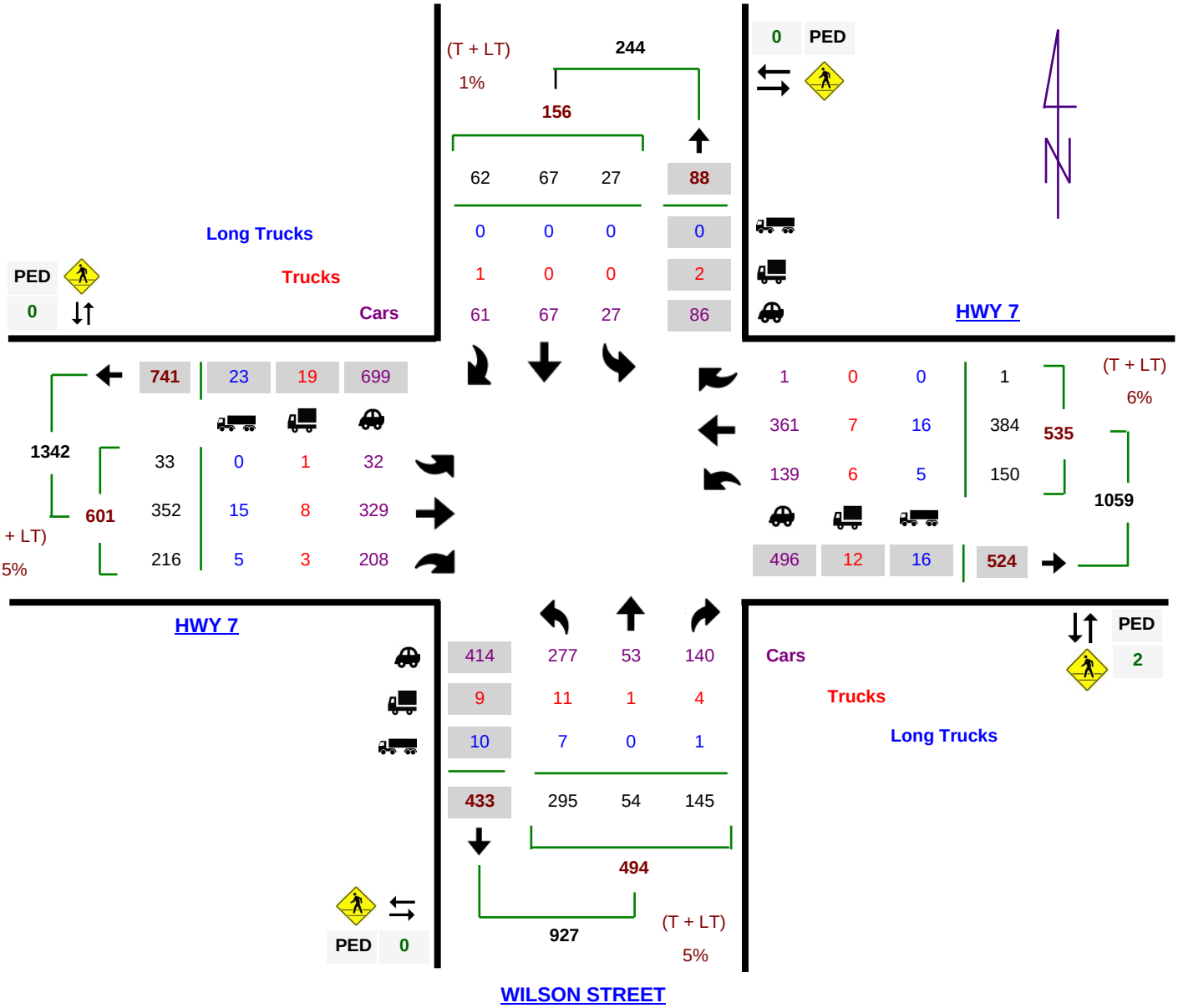
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 01-Dec-2016 (Thu) | **I/C Side:** | **LHRS:** 14080

End Date: 01-Dec-2016 (Thu) | **Int. Type:** Four Leg | **Offset:** 0

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

PM Peak Hour Report - Start Time: 15:30



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Ministry of Transportation

TVIS II - Traffic Volume Information System

AdHoc Turning Movement Total Count and Peak Summary Report

Description: HWY 7 @ WILSON STREET/CANADIAN TIRE ENT/EXIT

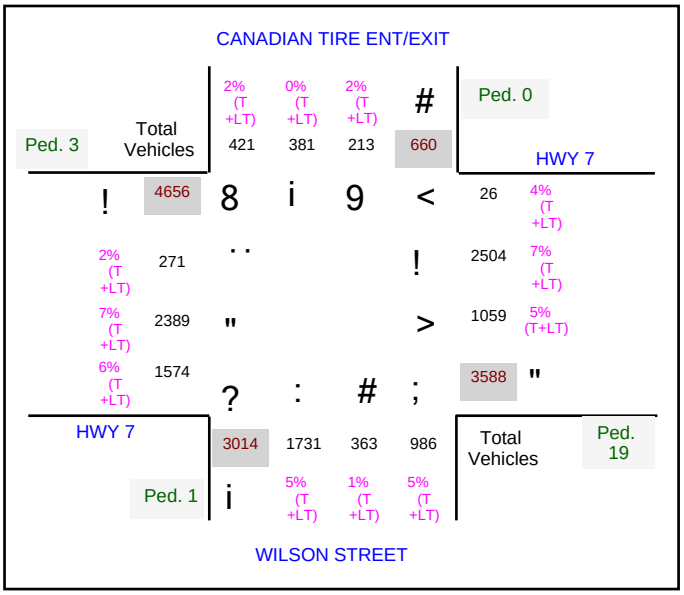
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 01-Dec-2016 (Thu) | **I/C Side:** | **LHRS:** 14080

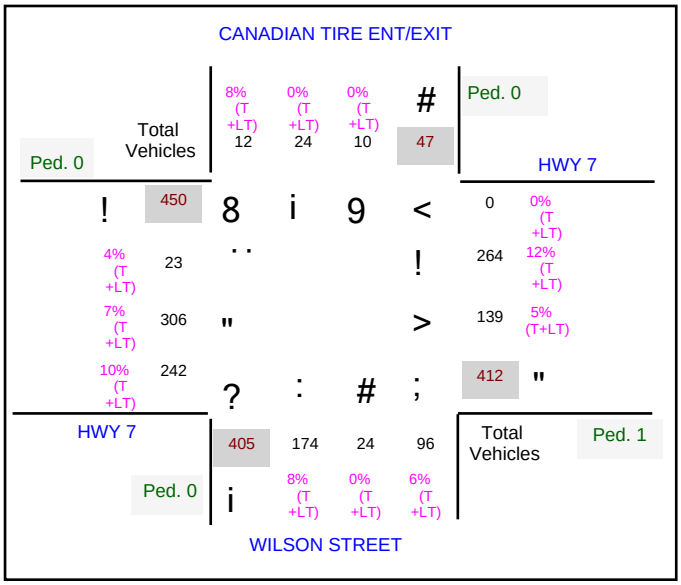
End Date: 01-Dec-2016 (Thu) | **Int. Type:** Four Leg | **Offset:** 0

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

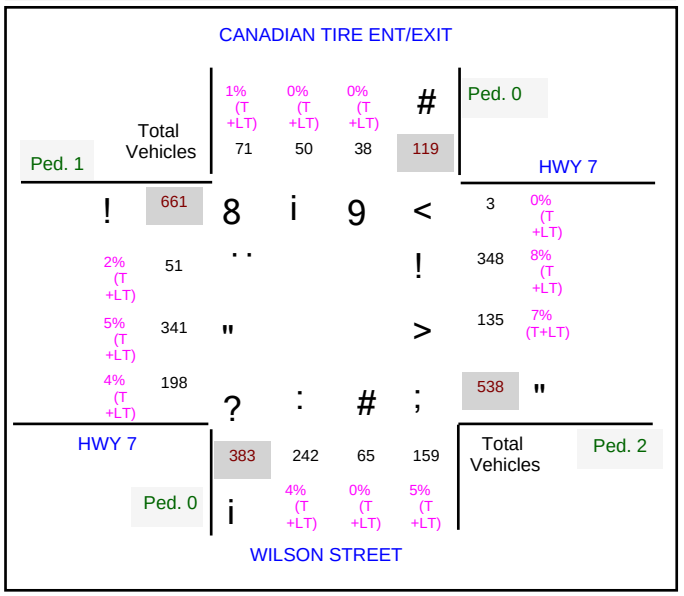
Total Count — Number of hours: 8



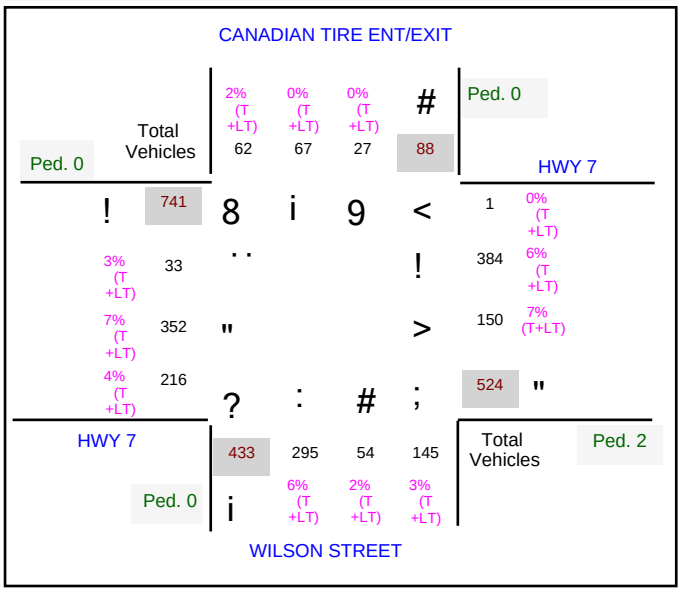
AM Peak Hour Report — Start Time: 07:45



Midday Peak Hour Report — Start Time: 12:15



PM Peak Hour Report — Start Time: 15:30



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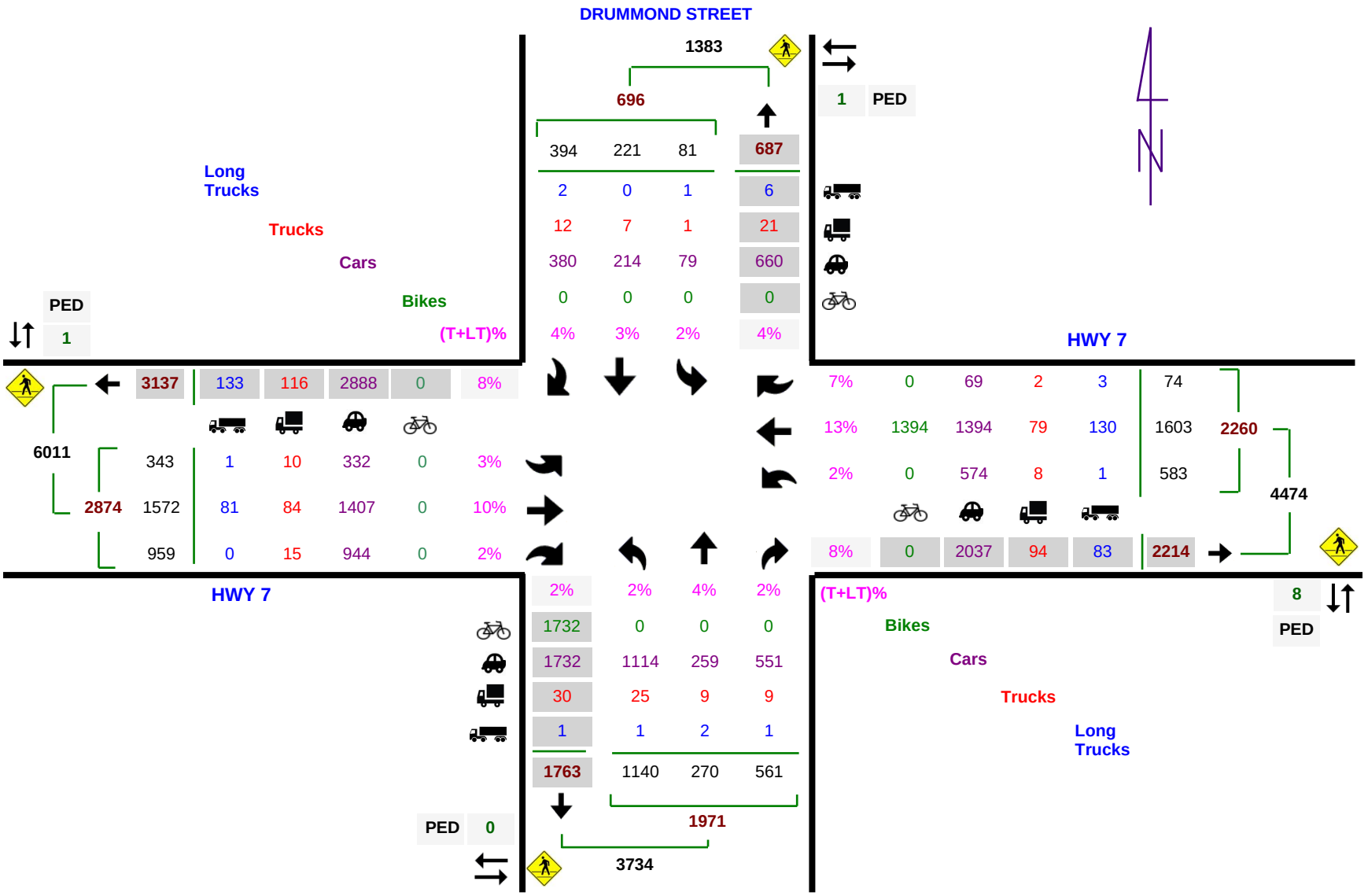
Ministry of Transportation

TVIS II - Traffic Volume Information System

Ad Hoc Turning Movement Count Total Report

Description: HWY 7 @ DRUMMOND STREET/DUFFERIN STREET
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7
Start Date: 29-Nov-2016 (Tue) | **I/C Side:** | **LHRS:** 14070
End Date: 29-Nov-2016 (Tue) | **Int. Type:** Four Leg | **Offset:** 10.070
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00



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Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 7 @ DRUMMOND STREET/DUFFERIN STREET
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7
Start Date: 29-Nov-2016 (Tue) | **I/C Side:** | **LHRS:** 14070
End Date: 29-Nov-2016 (Tue) | **Int. Type:** Four Leg | **Offset:** 10.070
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

	Major Road Approaches																				Minor Road Approaches																				
	East HWY 7										West HWY 7										North DRUMMOND STREET										South DUFFERIN STREET									
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Total Veh.
	f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		
Period 1																																										
07:00	3	16	1	0	3	0	0	0	0	0	4	23	20	1	3	1	0	3	0	1	0	0	2	0	1	1	0	0	0	0	13	2	17	0	0	0	0	0	0	0	114
07:15	20	24	0	0	2	0	0	2	0	0	4	33	17	0	2	0	0	4	0	0	2	3	1	0	0	1	0	0	0	0	19	6	15	1	1	0	0	0	0	0	157
07:30	19	33	2	1	1	0	0	2	0	1	7	33	22	0	1	1	0	4	0	0	0	5	4	0	0	1	0	0	0	0	31	7	21	0	0	0	0	0	0	0	195
07:45	15	38	2	1	2	0	0	0	0	0	10	32	24	1	1	1	0	5	0	0	4	8	9	0	0	1	0	0	0	0	26	5	26	6	0	0	0	0	0	0	217
08:00	13	38	6	0	3	0	0	4	0	0	15	32	28	1	9	0	0	2	0	0	3	5	13	0	0	0	0	0	0	0	29	11	17	0	0	1	0	0	0	0	230
08:15	15	35	2	0	1	0	0	0	0	1	6	30	23	0	2	0	0	3	0	0	2	5	7	0	1	2	0	0	0	0	26	5	15	0	0	1	0	0	0	0	181
08:30	17	45	4	0	2	0	0	2	1	0	6	24	32	1	5	2	0	4	0	0	1	2	6	0	0	0	0	0	0	0	20	9	17	2	0	0	0	0	0	0	202
08:45	19	33	2	0	2	0	0	7	0	0	6	38	21	1	7	0	0	1	0	0	2	7	7	0	0	1	0	0	0	0	29	8	13	1	0	0	0	0	0	0	205
Period 2																																										
11:00	10	39	2	0	6	0	0	5	0	0	19	54	32	1	2	0	0	3	0	0	4	5	12	1	0	0	0	0	0	0	38	9	19	0	2	0	0	0	0	0	263
11:15	13	44	2	2	6	0	0	3	0	1	13	45	28	0	1	0	0	4	0	0	4	13	18	0	0	0	0	0	0	0	38	16	20	1	1	0	0	0	0	0	272
11:30	14	29	2	2	2	0	0	4	0	0	11	40	32	0	5	0	0	0	0	0	2	11	15	0	1	1	0	0	0	0	32	11	18	1	1	0	0	0	0	0	234
11:45	15	42	3	0	4	1	0	8	0	0	10	44	38	0	3	0	0	3	0	0	4	3	13	0	0	1	0	0	0	0	32	7	23	1	0	0	0	0	0	0	255
12:00	15	48	1	0	1	0	0	5	0	0	9	36	21	1	0	0	0	2	0	0	1	8	14	0	0	0	0	0	0	0	36	6	15	0	0	1	0	0	0	0	220
12:15	13	26	2	0	3	0	0	6	0	1	12	45	31	2	4	0	0	3	0	0	1	3	14	0	0	0	0	0	0	0	40	4	15	0	0	0	0	0	0	0	224
12:30	15	44	3	0	3	0	0	6	1	0	8	36	29	0	4	1	0	3	0	0	2	6	13	0	0	2	0	0	0	0	44	10	9	1	1	0	0	0	0	0	241
12:45	20	48	2	0	2	0	0	5	0	0	13	53	41	0	0	2	0	0	0	0	2	3	12	0	0	0	0	0	1	0	20	7	15	0	1	1	0	0	0	0	248
13:00	12	54	2	0	5	1	0	5	0	0	17	39	35	0	2	1	0	7	0	0	6	7	12	0	1	0	0	0	0	0	29	10	16	0	1	0	0	0	0	0	262
13:15	19	40	1	0	2	0	0	7	0	1	10	38	24	0	0	0	0	4	0	0	3	12	14	0	1	0	0	0	0	0	30	9	16	0	0	1	0	0	0	0	231
13:30	14	36	2	0	1	0	0	7	0	0	16	35	35	0	3	0	0	1	0	0	1	3	11	0	0	0	0	0	0	0	37	6	13	4	0	0	0	0	0	0	225
13:45	20	41	2	0	4	0	0	7	0	0	19	33	24	0	3	3	0	1	0	0	3	6	12	0	1	0	0	0	0	0	29	13	10	1	0	0	0	0	0	0	232

Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement 15 Minute Report

Description: HWY 7 @ DRUMMOND STREET/DUFFERIN STREET
Region: EAST **Survey Type:** TM – Intersection **Hwy:** 7
Start Date: 29-Nov-2016 (Tue) **I/C Side:** **LHRS:** 14070
End Date: 29-Nov-2016 (Tue) **Int. Type:** Four Leg **Offset:** 10.070
Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

	Major Road Approaches																				Minor Road Approaches																				
	East HWY 7										West HWY 7										North DRUMMOND STREET										South DUFFERIN STREET									
Start Time	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Total Veh.
	f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		f	h	g	f	h	g	f	h	g		
Period 3																																									
15:00	15	59	6	0	3	0	0	5	0	1	16	60	39	1	5	1	0	1	0	0	5	10	23	0	0	0	0	0	0	0	57	13	18	1	0	0	0	0	0	0	**338**
15:15	16	58	5	1	7	0	0	1	1	1	14	61	40	0	2	0	0	2	0	0	4	10	21	0	0	0	0	0	0	0	49	8	17	1	0	1	1	1	0	0	**321**
15:30	25	53	4	1	3	0	0	11	0	0	9	62	38	0	3	1	0	2	0	0	3	12	12	0	0	1	0	0	1	0	47	15	17	0	0	0	0	1	1	0	**322**
15:45	19	53	1	0	2	0	0	10	0	0	12	51	34	0	2	0	0	3	0	0	2	12	14	0	0	0	0	0	0	0	33	7	23	2	0	0	0	0	0	0	**280**
16:00	20	49	0	0	1	0	0	2	0	0	13	49	33	0	2	0	0	1	0	0	4	11	15	0	0	0	0	0	0	0	59	14	30	1	0	1	0	0	0	0	**305**
16:15	24	56	0	0	1	0	1	2	0	0	8	66	29	0	4	0	0	3	0	0	6	4	19	0	0	0	0	0	0	0	40	9	28	0	0	0	0	0	0	0	**300**
16:30	30	48	5	0	3	0	0	1	0	1	8	59	38	0	2	1	0	0	0	0	1	8	8	0	0	0	0	0	0	1	41	8	28	0	0	1	0	0	0	0	**290**
16:45	32	53	2	0	2	0	0	2	0	0	10	60	21	0	2	0	1	1	0	0	4	11	16	0	0	0	1	0	0	0	48	7	13	1	1	0	0	0	0	0	**288**
17:00	29	57	1	0	0	0	0	2	0	0	10	55	40	0	1	0	0	4	0	0	1	7	10	0	1	0	0	0	0	0	50	3	16	0	0	1	0	0	0	0	**288**
17:15	22	49	1	0	1	0	0	4	0	0	7	53	29	0	2	0	0	4	0	0	2	9	5	0	0	0	0	0	0	0	31	6	17	0	0	0	0	0	0	0	**242**
17:30	16	55	1	0	1	0	0	4	0	0	5	41	25	0	0	0	0	0	0	0	0	3	17	0	0	0	0	0	0	0	33	8	9	0	0	0	0	0	0	0	**218**
17:45	25	51	0	0	0	0	0	1	0	0	5	47	21	0	2	0	0	3	0	0	0	2	11	0	0	0	0	0	0	0	28	0	5	0	0	0	0	0	0	0	**201**

Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement Peak Hour Report

Description: HWY 7 @ DRUMMOND STREET/DUFFERIN STREET

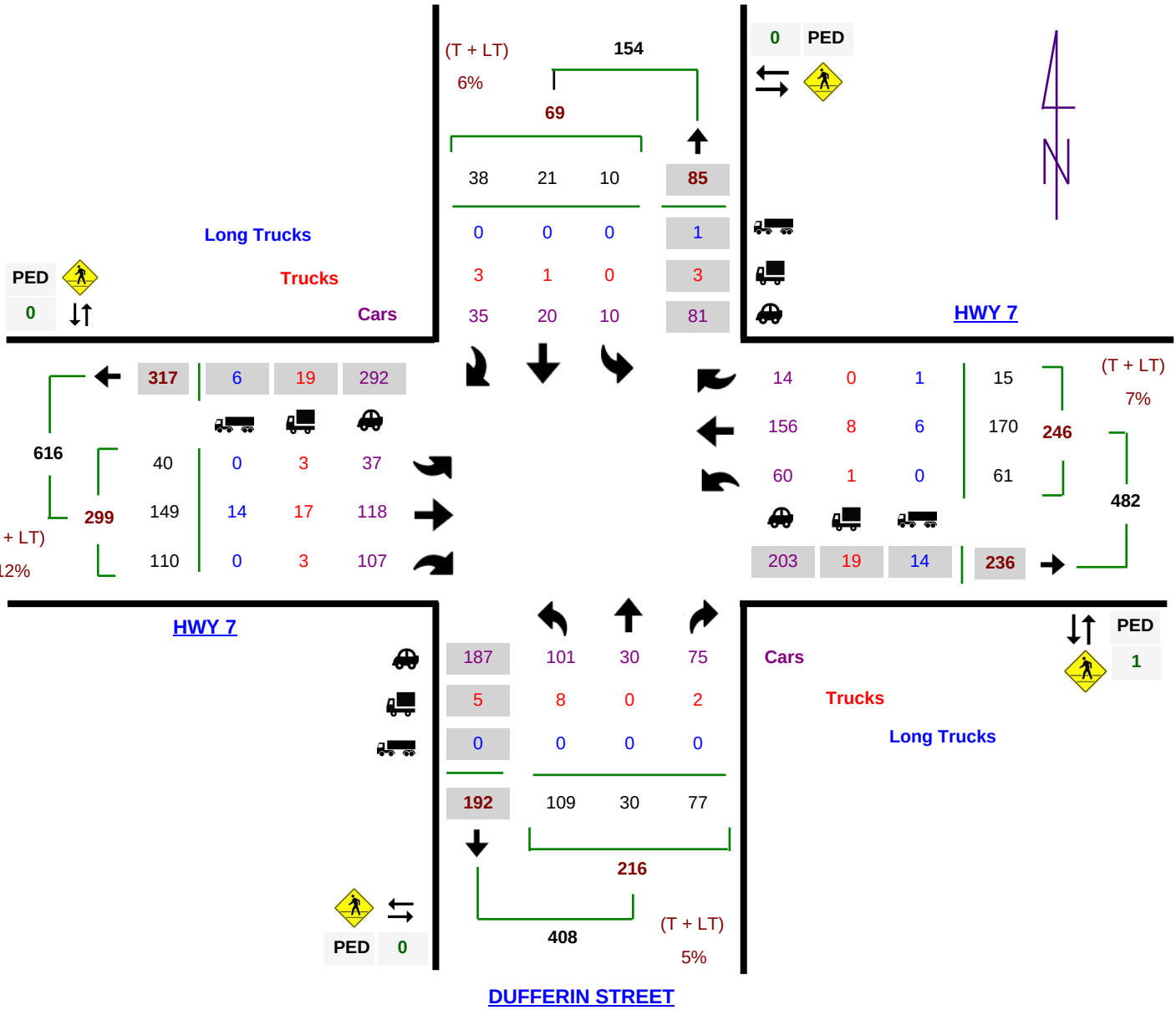
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 29-Nov-2016 (Tue) | **I/C Side:** | **LHRS:** 14070

End Date: 29-Nov-2016 (Tue) | **Int. Type:** Four Leg | **Offset:** 10.070

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

AM Peak Hour Report - Start Time: 07:45



Ontario

Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement Peak Hour Report

Description: HWY 7 @ DRUMMOND STREET/DUFFERIN STREET

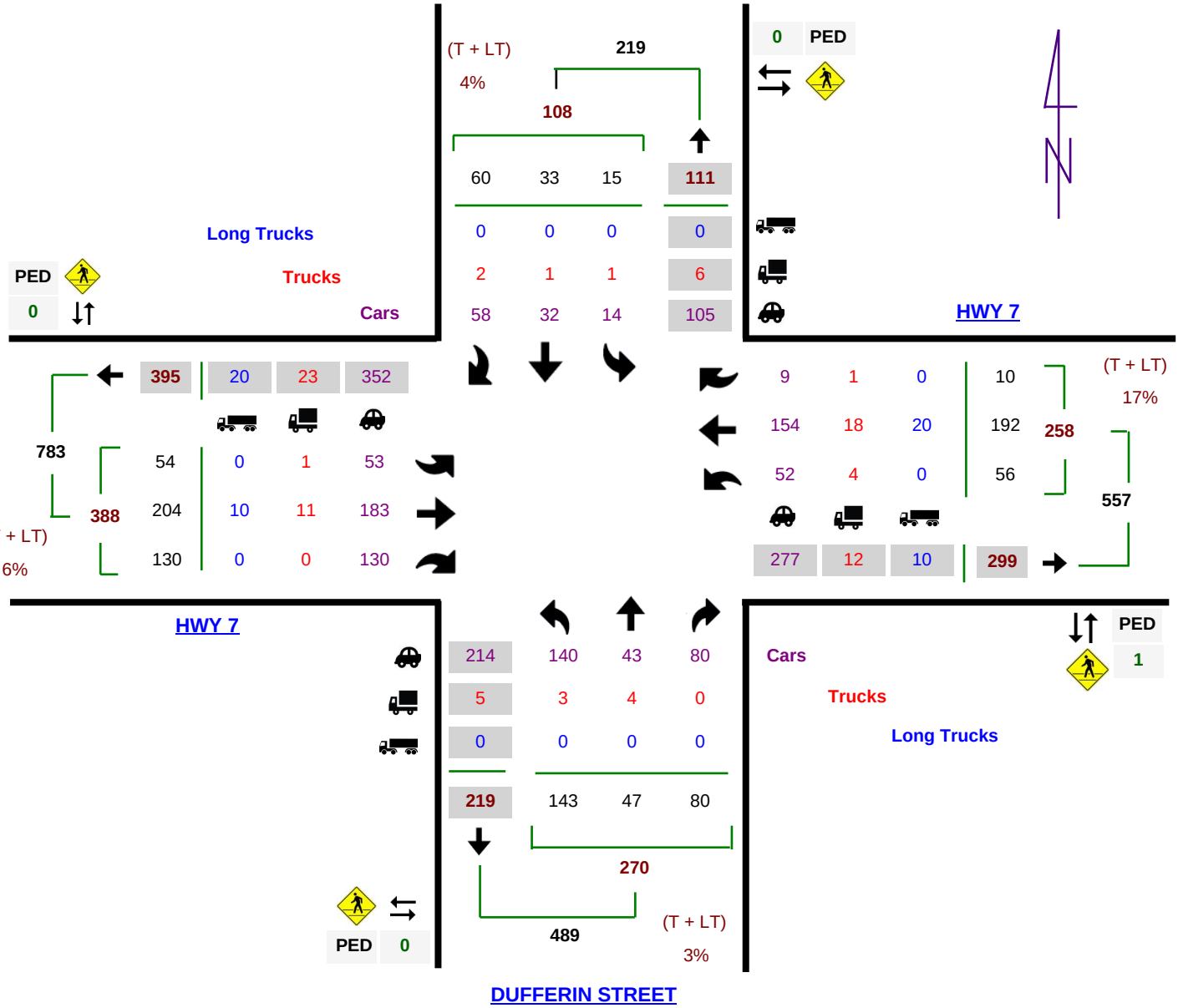
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 29-Nov-2016 (Tue) | **I/C Side:** | **LHRS:** 14070

End Date: 29-Nov-2016 (Tue) | **Int. Type:** Four Leg | **Offset:** 10.070

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

Midday Peak Hour Report - Start Time: 11:00



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Ministry of Transportation

TVIS II - Traffic Volume Information System

Turning Movement Peak Hour Report

Description: HWY 7 @ DRUMMOND STREET/DUFFERIN STREET

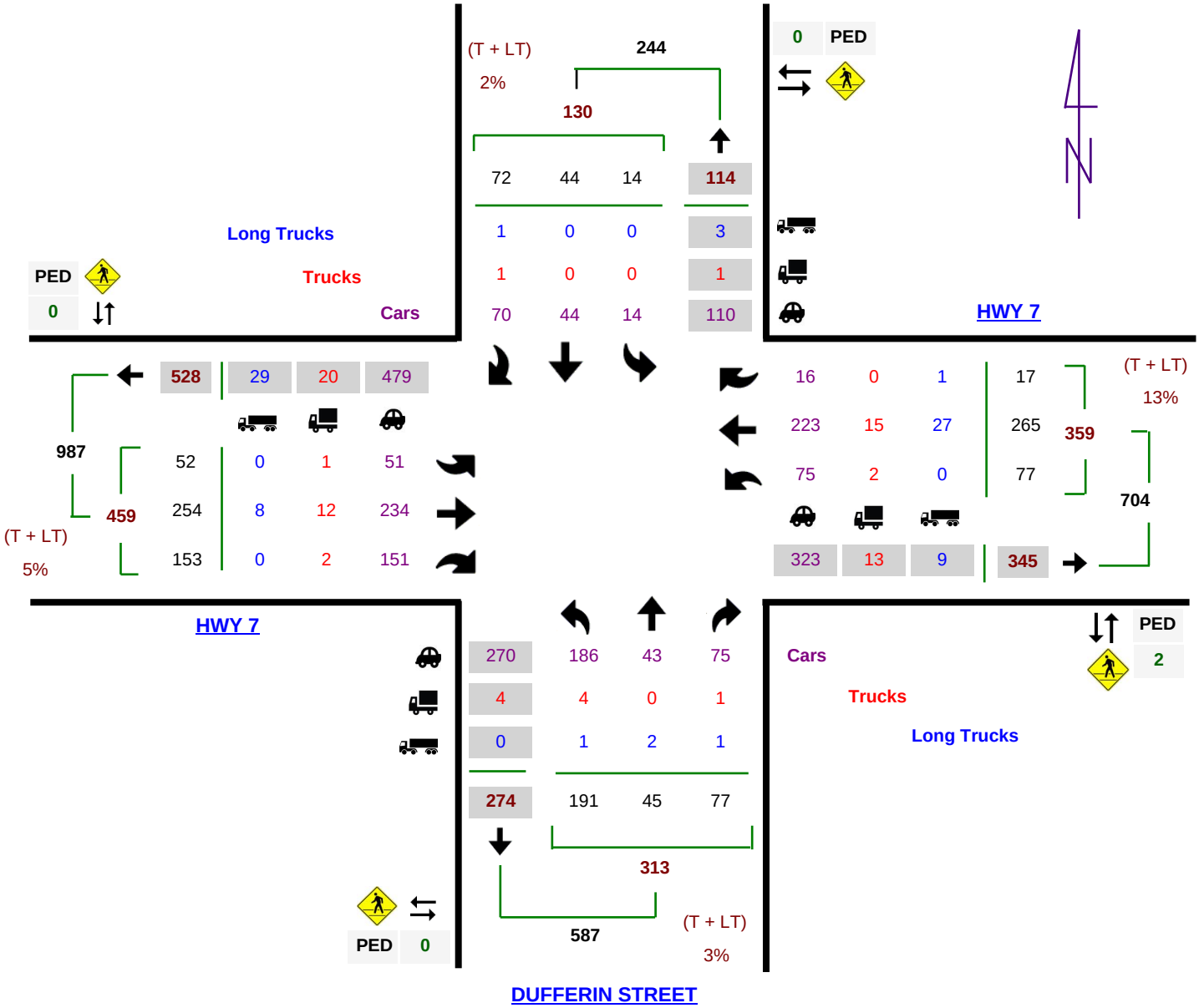
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 29-Nov-2016 (Tue) | **I/C Side:** | **LHRS:** 14070

End Date: 29-Nov-2016 (Tue) | **Int. Type:** Four Leg | **Offset:** 10.070

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

PM Peak Hour Report - Start Time: 15:00



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Ministry of Transportation

TVIS II - Traffic Volume Information System

AdHoc Turning Movement Total Count and Peak Summary Report

Description: HWY 7 @ DRUMMOND STREET/DUFFERIN STREET

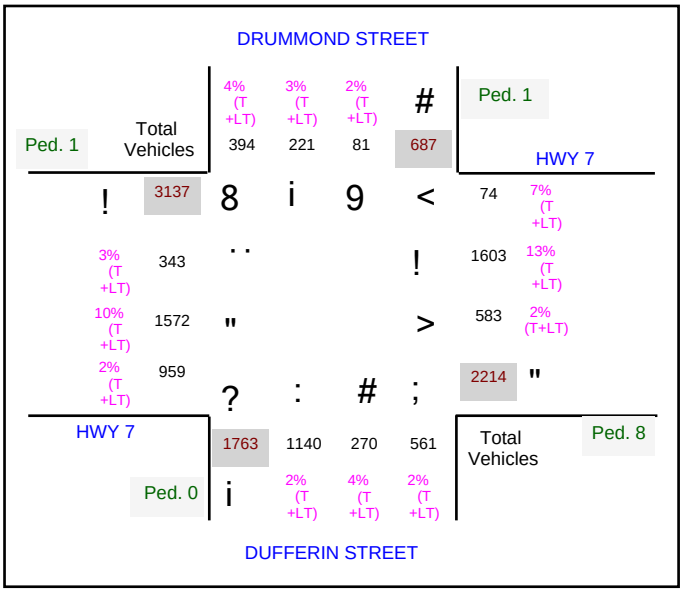
Region: EAST | **Survey Type:** TM – Intersection | **Hwy:** 7

Start Date: 29-Nov-2016 (Tue) | **I/C Side:** | **LHRS:** 14070

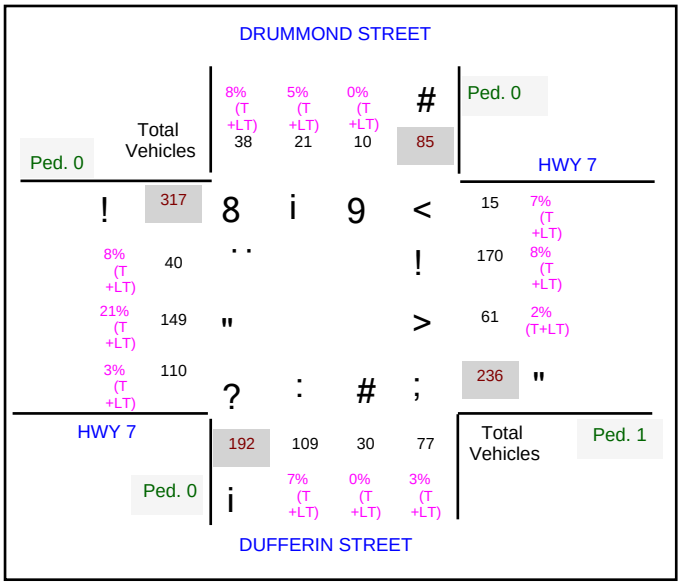
End Date: 29-Nov-2016 (Tue) | **Int. Type:** Four Leg | **Offset:** 10.070

Schedule Summary: TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00

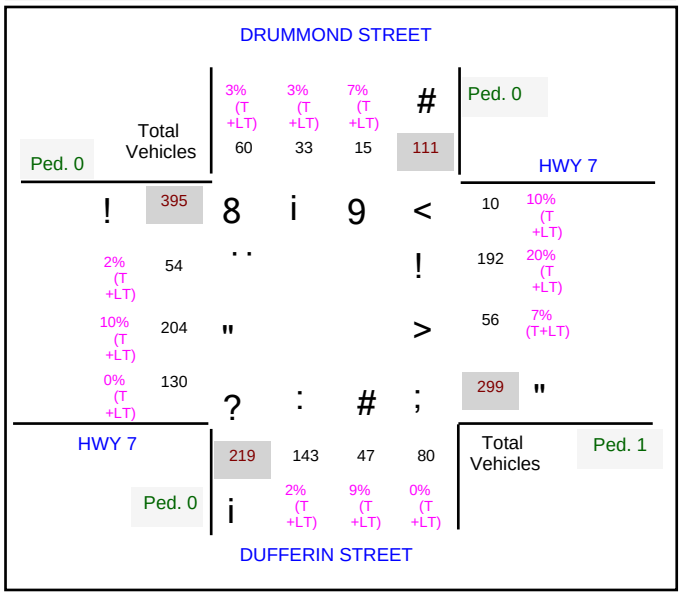
Total Count — Number of hours: 8



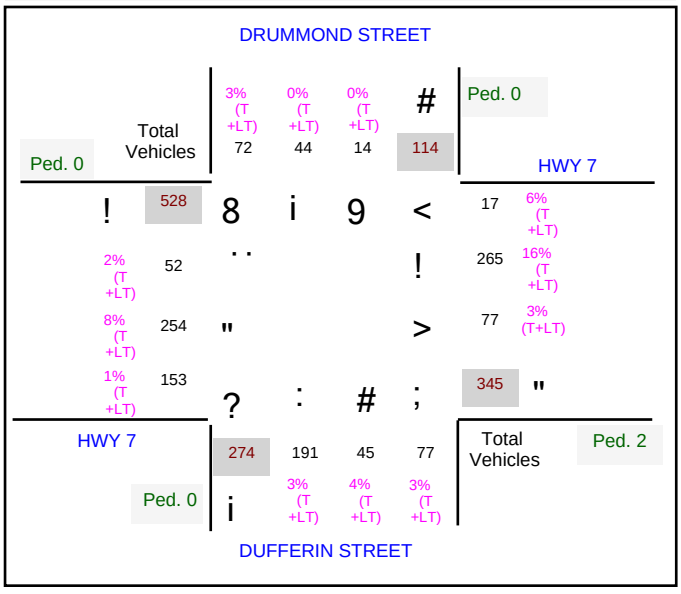
AM Peak Hour Report — Start Time: 07:45



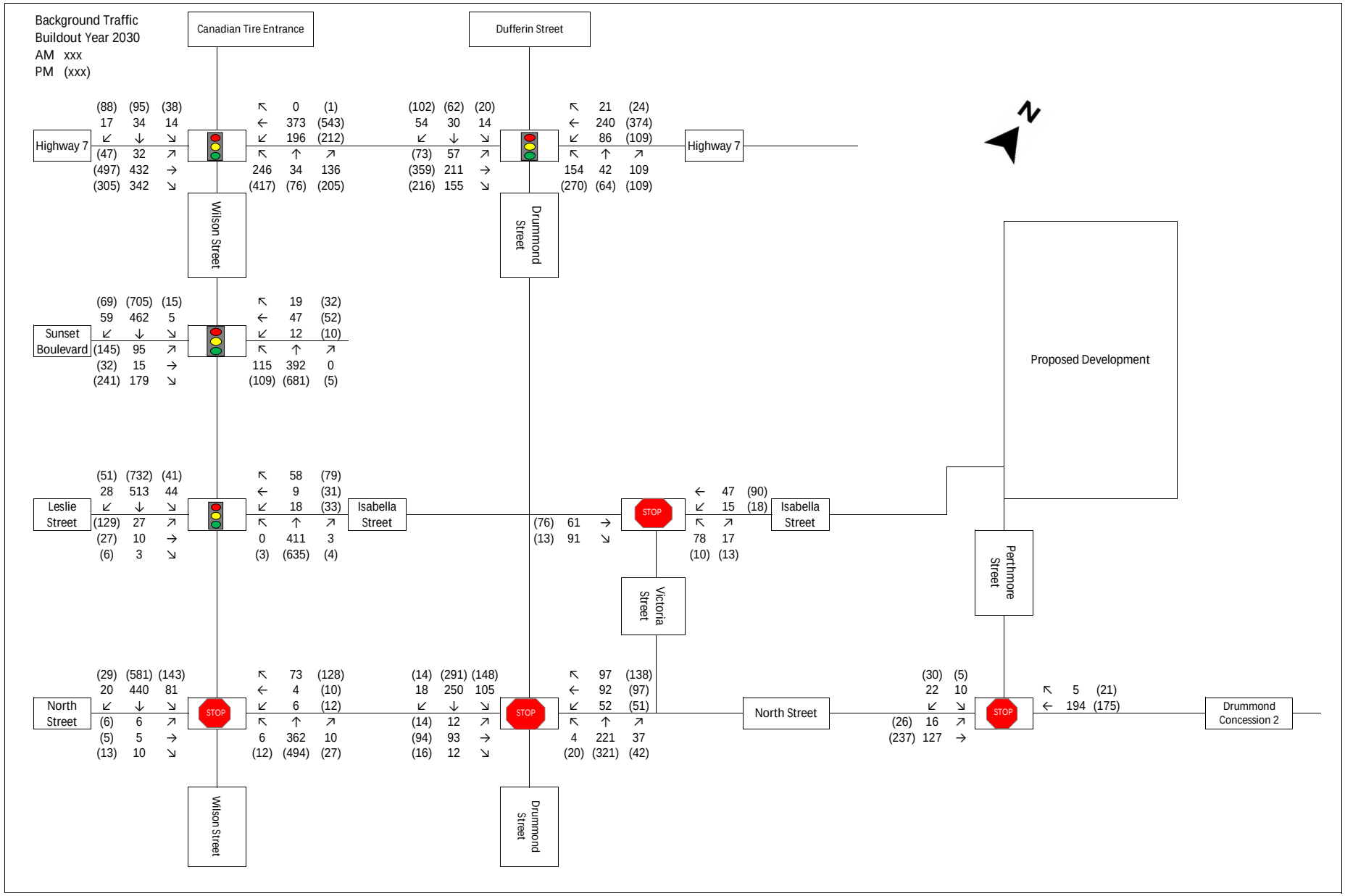
Midday Peak Hour Report — Start Time: 11:00

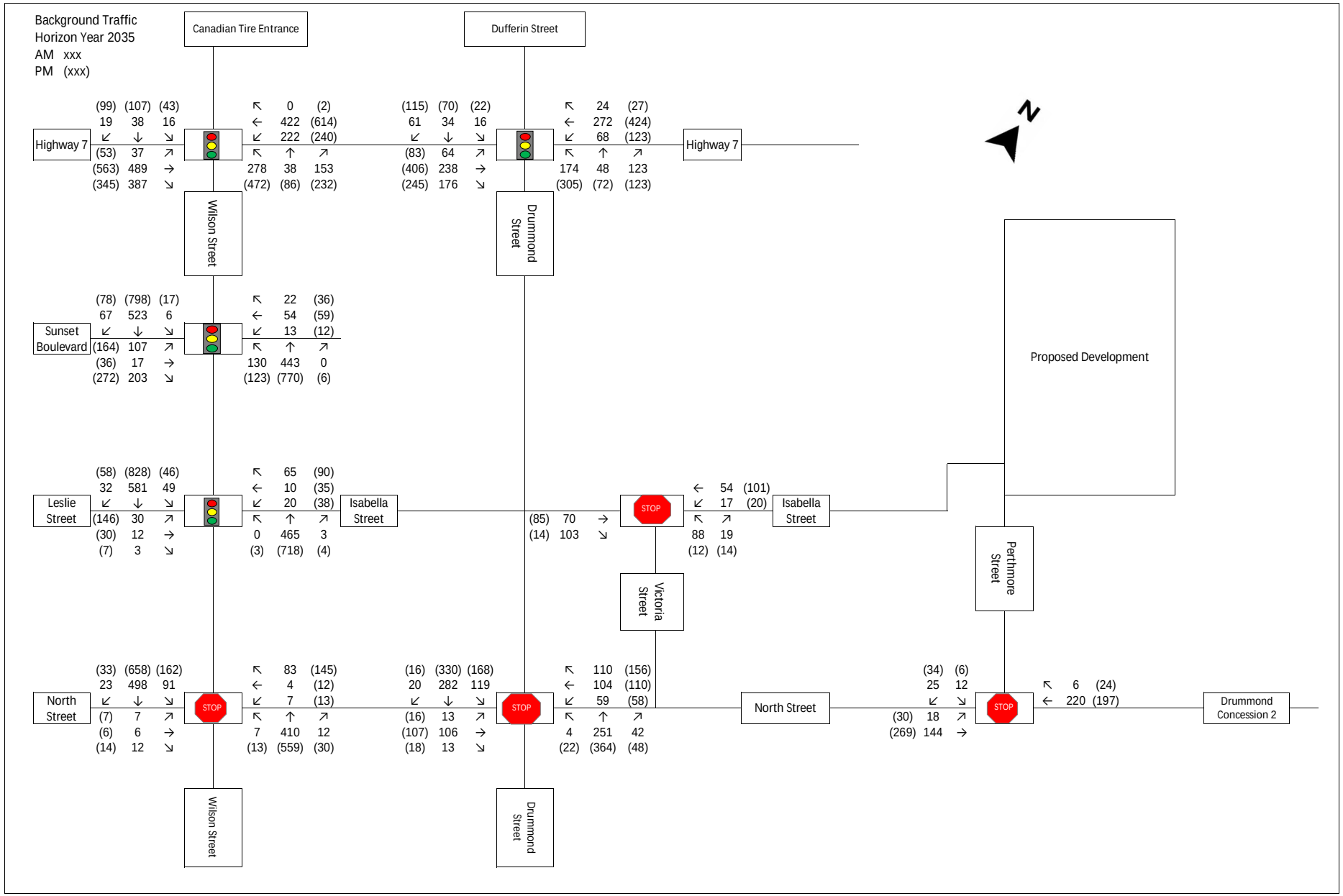


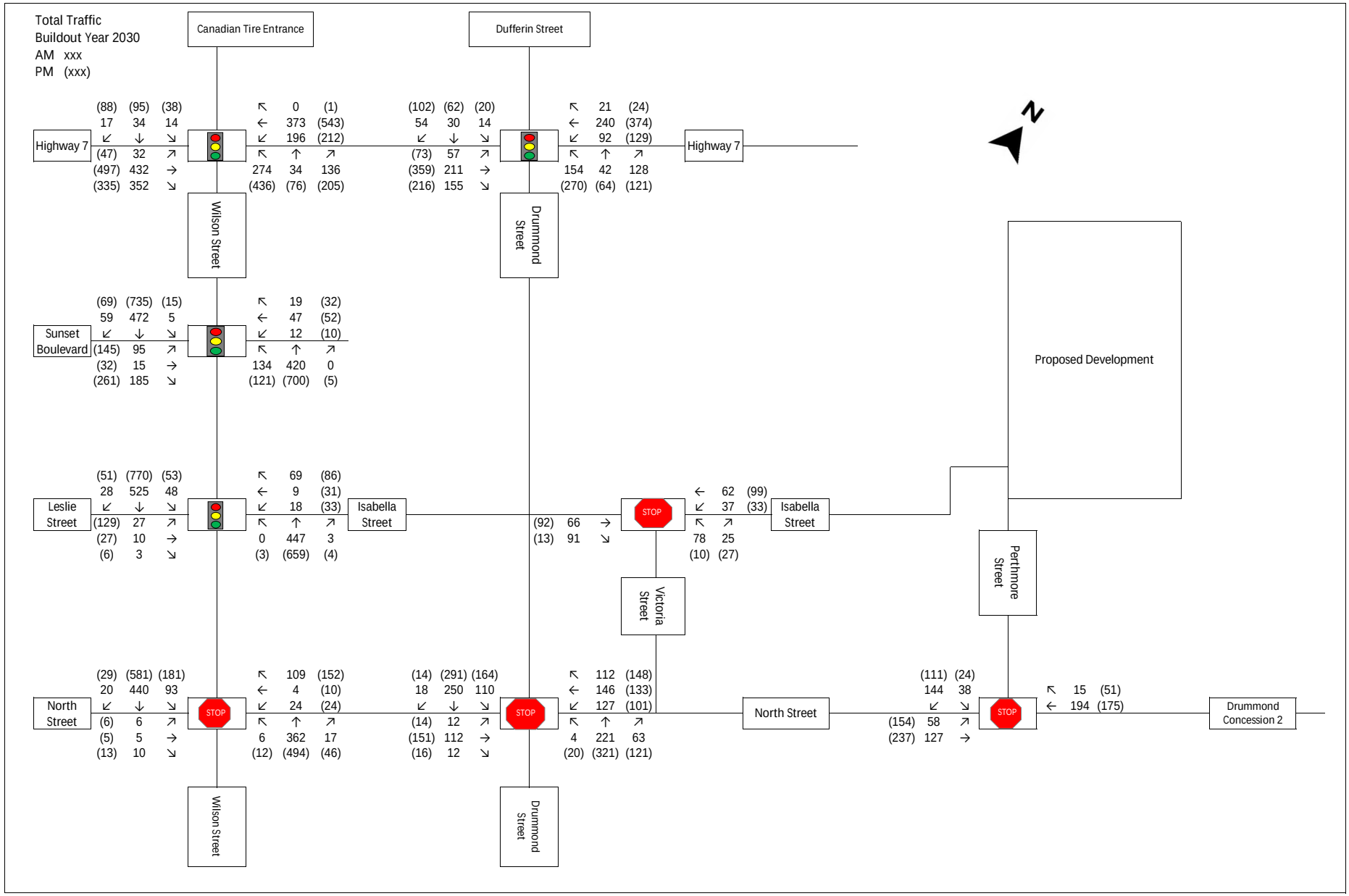
PM Peak Hour Report — Start Time: 15:00

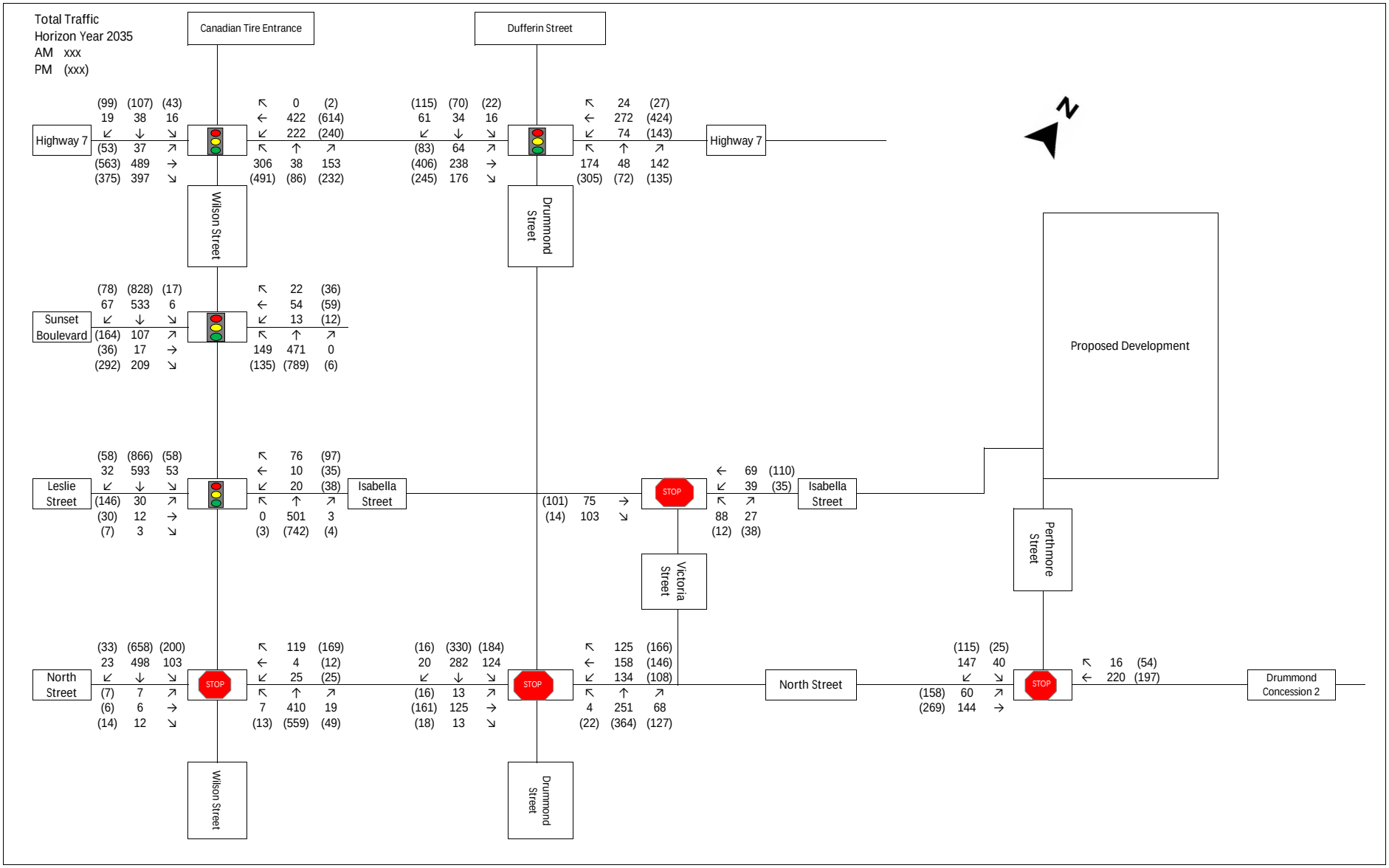


APPENDIX D – TRAFFIC VOLUME FIGURES


Background Traffic
Buildout Year 2030
AM xxx
PM (xxx)
Canadian Tire Entrance
Dufferin Street
Highway 7
Highway 7
Wilson Street
Drummond Street
Sunset Boulevard
Leslie Street
Isabella Street
Isabella Street
Proposed Development
Perthmore Street
Victoria Street
North Street
North Street
Drummond Concession 2
Wilson Street
Drummond Street
STOP
STOP
STOP
STOP
N


Background Traffic
Horizon Year 2035
AM xxx
PM (xxx)
Canadian Tire Entrance
Dufferin Street
Highway 7
Highway 7
Wilson Street
Drummond Street
Sunset Boulevard
Proposed Development
Leslie Street
Isabella Street
Isabella Street
Perthmore Street
Victoria Street
North Street
North Street
Drummond Concession 2
Wilson Street
Drummond Street
STOP
STOP
STOP
STOP


Total Traffic
Buildout Year 2030
AM xxx
PM (xxx)
Canadian Tire Entrance
Dufferin Street
Highway 7
Highway 7
Wilson Street
Drummond Street
Sunset Boulevard
Proposed Development
Leslie Street
Isabella Street
Isabella Street
STOP
Perthmore Street
Victoria Street
North Street
North Street
STOP
STOP
STOP
Drummond Concession 2
Wilson Street
Drummond Street
N

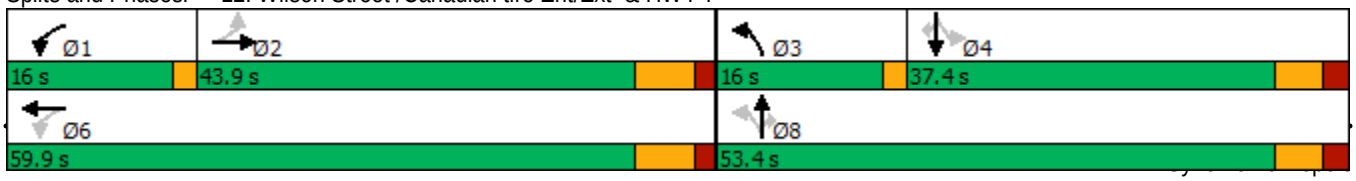

Total Traffic
Horizon Year 2035
AM xxx
PM (xxx)
Canadian Tire Entrance
Dufferin Street
Highway 7
Highway 7
Wilson Street
Drummond Street
Sunset Boulevard
Proposed Development
Leslie Street
Isabella Street
Isabella Street
STOP
Victoria Street
Perthmore Street
North Street
STOP
STOP
STOP
North Street
Drummond Concession 2
Wilson Street
Drummond Street
N

APPENDIX E – SYNCHRO 10 REPORTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	338	267	153	291	0	192	26	106	11	26	13
Future Volume (vph)	25	338	267	153	291	0	192	26	106	11	26	13
Satd. Flow (prot)	0	3118	0	0	3238	0	0	1773	1404	0	1872	1495
Flt Permitted		0.916			0.559			0.574			0.815	
Satd. Flow (perm)	0	2862	0	0	1841	0	0	1062	1386	0	1548	1495
Satd. Flow (RTOR)		174							115			76
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92	0.58	0.58	0.58
Heavy Vehicles (%)	4%	7%	10%	5%	12%	0%	3%	0%	15%	0%	0%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	715	0	0	499	0	0	237	115	0	64	22
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		30.9			45.7			23.7	23.7		11.7	11.7
Actuated g/C Ratio		0.37			0.55			0.28	0.28		0.14	0.14
v/c Ratio		0.61			0.44			0.61	0.24		0.29	0.08
Control Delay		18.9			12.0			33.2	6.4		40.2	0.5
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		18.9			12.0			33.2	6.4		40.2	0.5
LOS		B			B			C	A		D	A
Approach Delay		18.9			12.0			24.4			30.0	
Approach LOS		B			B			C			C	
Queue Length 50th (m)		39.7			22.9			34.6	0.0		10.8	0.0
Queue Length 95th (m)		63.2			37.6			58.5	12.0		14.9	0.0
Internal Link Dist (m)		431.2			299.0			450.1			129.4	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1418			1380			716	862		600	626
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.50			0.36			0.33	0.13		0.11	0.04

Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 83.2			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

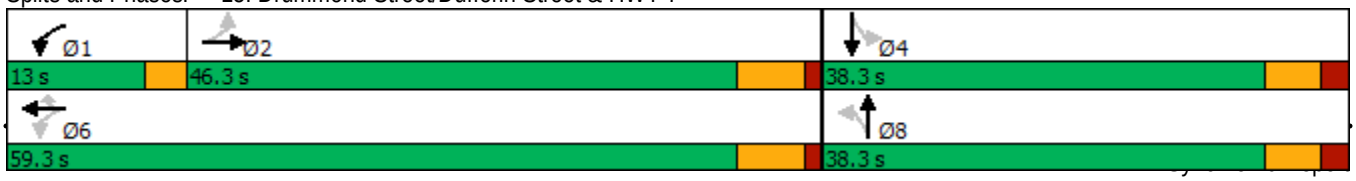
Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	164	121	67	188	17	120	33	85	11	23	42
Future Volume (vph)	44	164	121	67	188	17	120	33	85	11	23	42
Satd. Flow (prot)	0	3007	0	0	3356	1509	1687	1643	0	1805	1602	0
Flt Permitted		0.865			0.798		0.703			0.669		
Satd. Flow (perm)	0	2620	0	0	2714	1509	1248	1643	0	1270	1602	0
Satd. Flow (RTOR)		141				37		99			54	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Heavy Vehicles (%)	8%	21%	3%	1%	8%	7%	7%	0%	3%	0%	5%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	383	0	0	293	20	140	137	0	14	83	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		13.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		20.4			32.0	32.0	14.7	14.7		14.7	14.7	
Actuated g/C Ratio		0.34			0.54	0.54	0.25	0.25		0.25	0.25	
v/c Ratio		0.39			0.19	0.02	0.45	0.29		0.04	0.19	
Control Delay		12.1			8.9	2.5	23.4	8.0		16.0	9.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		12.1			8.9	2.5	23.4	8.0		16.0	9.0	
LOS		B			A	A	C	A		B	A	
Approach Delay		12.1			8.5			15.8			10.0	
Approach LOS		B			A			B			A	
Queue Length 50th (m)		9.2			6.8	0.0	13.2	3.3		1.2	2.5	
Queue Length 95th (m)		27.1			21.8	2.1	25.5	12.5		4.0	8.4	
Internal Link Dist (m)		299.0			85.7			352.3			208.6	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1838			2532	1370	683	945		695	902	
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		0.21			0.12	0.01	0.20	0.14		0.02	0.09	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 59.6			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	12	140	9	37	15	90	306	0	4	361	46
Future Volume (vph)	74	12	140	9	37	15	90	306	0	4	361	46
Satd. Flow (prot)	0	1705	1524	0	1768	0	1787	1792	0	1805	1810	1583
Flt Permitted		0.690			0.944		0.381			0.546		
Satd. Flow (perm)	0	1195	1486	0	1680	0	706	1792	0	1034	1810	1500
Satd. Flow (RTOR)			255		23							109
Confl. Peds. (#/hr)	21		3	3		21	20		4	4		20
Peak Hour Factor	0.55	0.55	0.55	0.64	0.64	0.64	0.85	0.85	0.85	0.86	0.86	0.86
Heavy Vehicles (%)	8%	0%	6%	0%	3%	0%	1%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	157	255	0	95	0	106	360	0	5	420	53
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		10.9	10.9		10.9		22.0	21.3		20.3	17.8	17.8
Actuated g/C Ratio		0.25	0.25		0.25		0.51	0.49		0.47	0.41	0.41
v/c Ratio		0.52	0.45		0.22		0.22	0.41		0.01	0.56	0.08
Control Delay		22.5	5.6		13.0		6.8	10.3		5.8	15.5	0.9
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		22.5	5.6		13.0		6.8	10.3		5.8	15.5	0.9
LOS		C	A		B		A	B		A	B	A
Approach Delay		12.1			13.0			9.5			13.8	
Approach LOS		B			B			A			B	
Queue Length 50th (m)		11.1	0.0		4.6		3.4	13.6		0.2	28.0	0.0
Queue Length 95th (m)		16.3	0.0		10.2		10.5	48.1		1.4	58.4	1.2
Internal Link Dist (m)		123.8			93.2			317.7			164.6	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		534	805		763		493	1089		582	1056	920
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		0.29	0.32		0.12		0.22	0.33		0.01	0.40	0.06

Intersection Summary

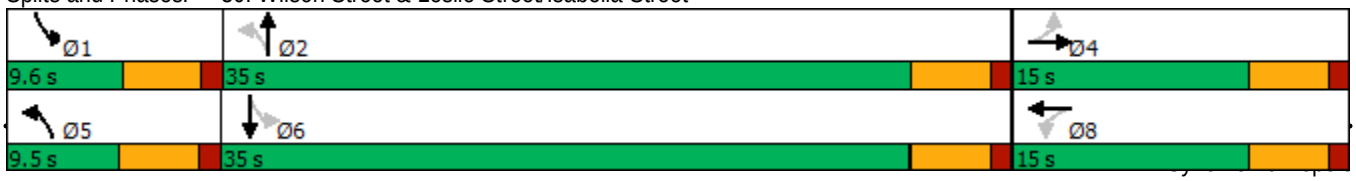
Cycle Length: 60
Actuated Cycle Length: 43.2
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 11.9 — Intersection LOS: B
Intersection Capacity Utilization 49.4% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 26: Wilson Street & Sunset Boulevard

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	8	2	14	7	45	0	321	2	34	401	22
Future Volume (vph)	21	8	2	14	7	45	0	321	2	34	401	22
Satd. Flow (prot)	0	1513	0	0	1566	0	1900	1758	0	1752	1745	0
Flt Permitted		0.817			0.918					0.424		
Satd. Flow (perm)	0	1246	0	0	1450	0	1900	1758	0	775	1745	0
Satd. Flow (RTOR)		3			63			1			7	
Confl. Peds. (#/hr)	16		3	3		16	4		11	11		4
Peak Hour Factor	0.78	0.78	0.78	0.72	0.72	0.72	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	24%	0%	50%	0%	14%	4%	0%	8%	0%	3%	7%	23%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	92	0	0	393	0	41	516	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.5	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		7.1			7.0			24.6		25.3	27.6	
Actuated g/C Ratio		0.19			0.19			0.67		0.69	0.75	
v/c Ratio		0.17			0.28			0.33		0.06	0.39	
Control Delay		16.2			10.3			8.3		3.6	4.9	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		16.2			10.3			8.3		3.6	4.9	
LOS		B			B			A		A	A	
Approach Delay		16.2			10.3			8.3			4.8	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		1.8			1.4			10.8		0.9	15.4	
Queue Length 95th (m)		8.1			8.1			39.5		3.2	31.1	
Internal Link Dist (m)		67.6			391.9			316.1			317.7	
Turn Bay Length (m)										25.0		
Base Capacity (vph)		378			481			1486		679	1481	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.11			0.19			0.26		0.06	0.35	

Intersection Summary			
Cycle Length: 59.6			
Actuated Cycle Length: 36.6			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 42.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	75	9	42	74	78	3	177	30	84	200	14
Future Vol, veh/h	9	75	9	42	74	78	3	177	30	84	200	14
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.90	0.90	0.90	0.78	0.78	0.78
Heavy Vehicles, %	0	16	0	0	14	0	0	2	3	1	3	7
Mvmt Flow	13	112	13	48	84	89	3	197	33	108	256	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.8	11.7	11.6	15.4
HCM LOS	B	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	10%	22%	28%
Vol Thru, %	84%	81%	38%	67%
Vol Right, %	14%	10%	40%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	93	194	298
LT Vol	3	9	42	84
Through Vol	177	75	74	200
RT Vol	30	9	78	14
Lane Flow Rate	233	139	220	382
Geometry Grp	1	1	1	1
Degree of Util (X)	0.356	0.23	0.345	0.571
Departure Headway (Hd)	5.49	5.959	5.639	5.379
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	651	600	635	669
Service Time	3.55	4.031	3.704	3.431
HCM Lane V/C Ratio	0.358	0.232	0.346	0.571
HCM Control Delay	11.6	10.8	11.7	15.4
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	1.6	0.9	1.5	3.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	99	152	4	8	17
Future Vol, veh/h	12	99	152	4	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	50	9	1	25	0	12
Mvmt Flow	14	119	181	5	10	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	186	0	-	0	328	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	147	-
Critical Hdwy	4.6	-	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.65	-	-	-	3.5	3.408
Pot Cap-1 Maneuver	1146	-	-	-	671	837
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	885	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1146	-	-	-	662	837
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	885	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1146	-	-	-	772
HCM Lane V/C Ratio	0.013	-	-	-	0.042
HCM Control Delay (s)	8.2	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	48	71	12	37	61	13
Future Vol, veh/h	48	71	12	37	61	13
Conflicting Peds, #/hr	0	0	0	0	0	19
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	68	68	41	41
Heavy Vehicles, %	2	25	17	8	3	15
Mvmt Flow	76	113	18	54	149	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	189	0	223	152
Stage 1	-	-	-	-	133	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	-	-	4.27	-	6.43	6.35
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.353	-	3.527	3.435
Pot Cap-1 Maneuver	-	-	1300	-	763	861
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1300	-	752	847
Mov Cap-2 Maneuver	-	-	-	-	752	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	918	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	767	-	-	1300	-
HCM Lane V/C Ratio	0.235	-	-	0.014	-
HCM Control Delay (s)	11.1	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0	-

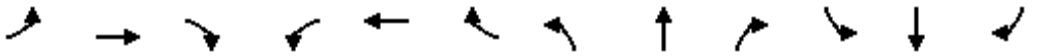
Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	4	8	5	3	57	5	283	8	63	344	16
Future Vol, veh/h	5	4	8	5	3	57	5	283	8	63	344	16
Conflicting Peds, #/hr	2	0	2	2	0	2	9	0	7	7	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	77	77	77	89	89	89	79	79	79
Heavy Vehicles, %	20	0	0	0	0	28	0	6	0	29	2	25
Mvmt Flow	7	6	11	6	4	74	6	318	9	80	435	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	990	960	239	725	966	332	464	0	0	334	0	0
Stage 1	614	614	-	342	342	-	-	-	-	-	-	-
Stage 2	376	346	-	383	624	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.62	4.1	-	-	4.535	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.566	2.2	-	-	2.4755	-	-
Pot Cap-1 Maneuver	192	259	768	330	257	643	1108	-	-	1069	-	-
Stage 1	412	486	-	677	642	-	-	-	-	-	-	-
Stage 2	603	639	-	617	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	152	228	761	291	226	638	1100	-	-	1063	-	-
Mov Cap-2 Maneuver	152	228	-	291	226	-	-	-	-	-	-	-
Stage 1	406	434	-	668	634	-	-	-	-	-	-	-
Stage 2	525	631	-	538	429	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.1	12.8	0.1	1.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1100	-	-	279	543	1063	-	-
HCM Lane V/C Ratio	0.005	-	-	0.086	0.155	0.075	-	-
HCM Control Delay (s)	8.3	0	-	19.1	12.8	8.7	0.3	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.5	0.2	-	-

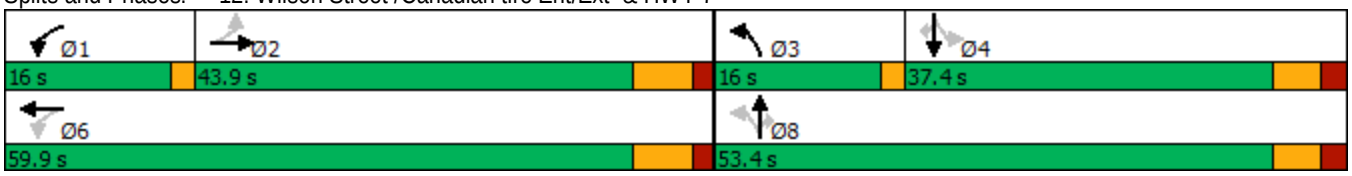


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	389	238	166	424	1	326	60	160	30	74	68
Future Volume (vph)	36	389	238	166	424	1	326	60	160	30	74	68
Satd. Flow (prot)	0	3221	0	0	3349	0	0	1731	1568	0	1873	1583
Flt Permitted		0.870			0.545			0.628			0.799	
Satd. Flow (perm)	0	2811	0	0	1851	0	0	1131	1568	0	1518	1561
Satd. Flow (RTOR)		101							167			76
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	3%	7%	4%	7%	6%	0%	6%	2%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	744	0	0	664	0	0	403	167	0	114	75
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		34.0			50.1			39.4	39.4		23.1	23.1
Actuated g/C Ratio		0.33			0.49			0.38	0.38		0.22	0.22
v/c Ratio		0.75			0.64			0.82	0.24		0.34	0.18
Control Delay		32.5			22.2			42.8	4.1		36.2	8.4
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		32.5			22.2			42.8	4.1		36.2	8.4
LOS		C			C			D	A		D	A
Approach Delay		32.5			22.2			31.4			25.2	
Approach LOS		C			C			C			C	
Queue Length 50th (m)		67.4			49.2			70.4	0.0		20.9	0.0
Queue Length 95th (m)		93.4			67.2			#105.8	13.0		37.3	11.3
Internal Link Dist (m)		431.2			299.0			452.0			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1091			1104			582	817		465	530
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.68			0.60			0.69	0.20		0.25	0.14

Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 103.1			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

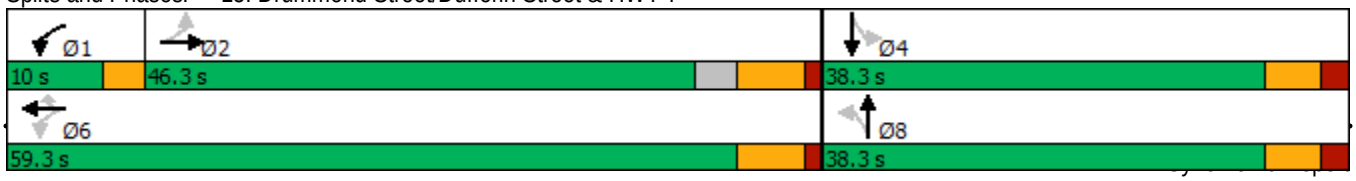
Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7

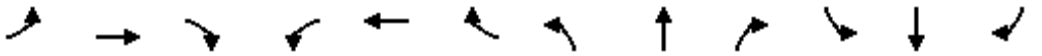


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	280	169	85	293	19	211	50	85	15	49	79
Future Volume (vph)	57	280	169	85	293	19	211	50	85	15	49	79
Satd. Flow (prot)	0	3247	0	0	3157	1524	1752	1651	0	1805	1678	0
Flt Permitted		0.850			0.735		0.662			0.659		
Satd. Flow (perm)	0	2777	0	0	2346	1524	1220	1651	0	1250	1678	0
Satd. Flow (RTOR)		115				37		93			89	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Heavy Vehicles (%)	2%	8%	1%	3%	16%	6%	3%	4%	3%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	544	0	0	406	20	240	154	0	17	149	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		10.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		20.5			30.7	30.7	18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.33			0.50	0.50	0.29	0.29		0.29	0.29	
v/c Ratio		0.54			0.33	0.03	0.67	0.28		0.05	0.27	
Control Delay		16.6			11.4	2.6	28.4	8.3		14.4	8.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		16.6			11.4	2.6	28.4	8.3		14.4	8.4	
LOS		B			B	A	C	A		B	A	
Approach Delay		16.6			11.0			20.6			9.0	
Approach LOS		B			B			C			A	
Queue Length 50th (m)		19.8			12.7	0.0	24.4	5.2		1.4	5.1	
Queue Length 95th (m)		46.1			31.4	2.4	44.0	15.6		4.9	14.7	
Internal Link Dist (m)		299.0			135.9			352.3			198.4	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		2003			2100	1336	643	915		659	927	
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		0.27			0.19	0.01	0.37	0.17		0.03	0.16	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 61.5			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7



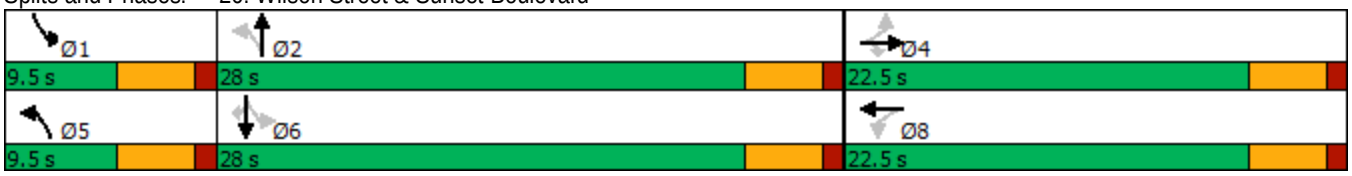


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	25	188	8	41	25	85	532	4	12	551	54
Future Volume (vph)	113	25	188	8	41	25	85	532	4	12	551	54
Satd. Flow (prot)	0	1728	1583	0	1756	0	1770	1843	0	1805	1863	1615
Flt Permitted		0.789			0.961		0.207			0.341		
Satd. Flow (perm)	0	1389	1510	0	1692	0	381	1843	0	644	1863	1501
Satd. Flow (RTOR)			202		32			1				109
Confl. Peds. (#/hr)	18		16	16		18	31		14	14		31
Peak Hour Factor	0.93	0.93	0.93	0.77	0.77	0.77	0.87	0.87	0.87	0.83	0.83	0.83
Heavy Vehicles (%)	6%	4%	2%	0%	2%	0%	2%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	149	202	0	95	0	98	616	0	14	664	65
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		11.1	11.1		11.1		31.3	30.4		28.6	24.7	24.7
Actuated g/C Ratio		0.21	0.21		0.21		0.60	0.58		0.55	0.47	0.47
v/c Ratio		0.51	0.42		0.25		0.27	0.57		0.03	0.75	0.08
Control Delay		24.6	6.1		13.8		7.2	13.1		5.5	21.7	1.4
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		24.6	6.1		13.8		7.2	13.1		5.5	21.7	1.4
LOS		C	A		B		A	B		A	C	A
Approach Delay		14.0			13.8			12.3			19.7	
Approach LOS		B			B			B			B	
Queue Length 50th (m)		13.4	0.0		5.2		3.2	28.8		0.4	53.9	0.0
Queue Length 95th (m)		27.4	12.7		11.9		9.9	#110.0		2.3	#111.7	2.1
Internal Link Dist (m)		214.8			220.8			317.7			162.6	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		484	657		610		362	1072		464	892	775
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		0.31	0.31		0.16		0.27	0.57		0.03	0.74	0.08

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 52.2
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 15.6 Intersection LOS: B
Intersection Capacity Utilization 63.6% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 26: Wilson Street & Sunset Boulevard

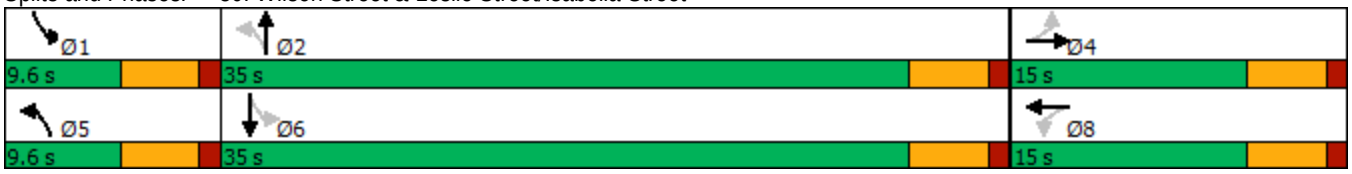


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	21	5	26	24	62	2	496	3	32	572	40
Future Volume (vph)	101	21	5	26	24	62	2	496	3	32	572	40
Satd. Flow (prot)	0	1771	0	0	1711	0	1805	1843	0	1703	1822	0
Flt Permitted		0.771			0.915		0.224			0.352		
Satd. Flow (perm)	0	1412	0	0	1576	0	421	1843	0	628	1822	0
Satd. Flow (RTOR)		3			69			1			9	
Confl. Peds. (#/hr)	3		10	10		3	28		7	7		28
Peak Hour Factor	0.76	0.76	0.76	0.90	0.90	0.90	0.96	0.96	0.96	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	3%	0%	6%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	168	0	0	125	0	2	520	0	38	720	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.6	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		9.8			9.8		25.7	24.0		26.5	25.7	
Actuated g/C Ratio		0.21			0.21		0.56	0.52		0.57	0.56	
v/c Ratio		0.56			0.32		0.01	0.54		0.08	0.71	
Control Delay		27.5			12.5		3.5	11.4		4.2	13.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		27.5			12.5		3.5	11.4		4.2	13.5	
LOS		C			B		A	B		A	B	
Approach Delay		27.5			12.5			11.4			13.1	
Approach LOS		C			B			B			B	
Queue Length 50th (m)		10.1			3.1		0.1	21.8		1.2	35.1	
Queue Length 95th (m)		#29.8			18.5		0.6	62.2		3.2	91.1	
Internal Link Dist (m)		200.9			391.9			316.1			317.7	
Turn Bay Length (m)							60.0			25.0		
Base Capacity (vph)		331			419		390	1246		481	1236	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.51			0.30		0.01	0.42		0.08	0.58	

Intersection Summary			
Cycle Length: 59.6			
Actuated Cycle Length: 46.3			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	16.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	74	12	40	76	108	15	251	33	116	228	11
Future Vol, veh/h	11	74	12	40	76	108	15	251	33	116	228	11
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.89	0.89	0.85	0.85	0.85
Heavy Vehicles, %	0	6	0	0	5	1	0	0	0	0	0	0
Mvmt Flow	13	87	14	47	89	127	17	282	37	136	268	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.6	14	15.8	20.1
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	11%	18%	33%
Vol Thru, %	84%	76%	34%	64%
Vol Right, %	11%	12%	48%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	299	97	224	355
LT Vol	15	11	40	116
Through Vol	251	74	76	228
RT Vol	33	12	108	11
Lane Flow Rate	336	114	264	418
Geometry Grp	1	1	1	1
Degree of Util (X)	0.548	0.212	0.446	0.675
Departure Headway (Hd)	5.869	6.693	6.096	5.821
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	618	534	590	622
Service Time	3.884	4.756	4.147	3.835
HCM Lane V/C Ratio	0.544	0.213	0.447	0.672
HCM Control Delay	15.8	11.6	14	20.1
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	3.3	0.8	2.3	5.2

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	181	133	16	4	23
Future Vol, veh/h	20	181	133	16	4	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	20	2	0	0	25	0
Mvmt Flow	24	213	160	19	6	34

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	179	0	-	0	421	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	4.3	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.38	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	1295	-	-	-	548	890
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1295	-	-	-	536	890
Mov Cap-2 Maneuver	-	-	-	-	536	-
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1295	-	-	-	811
HCM Lane V/C Ratio	0.018	-	-	-	0.049
HCM Control Delay (s)	7.8	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	59	10	14	70	8	10
Future Vol, veh/h	59	10	14	70	8	10
Conflicting Peds, #/hr	0	0	0	0	1	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	72	72	75	75
Heavy Vehicles, %	2	0	0	1	0	10
Mvmt Flow	76	13	19	97	11	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	89	0	219	90
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	136	-
Critical Hdwy	-	-	4.1	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1519	-	774	946
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1519	-	763	940
Mov Cap-2 Maneuver	-	-	-	-	763	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	882	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	852	-	-	1519	-
HCM Lane V/C Ratio	0.028	-	-	0.013	-
HCM Control Delay (s)	9.3	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

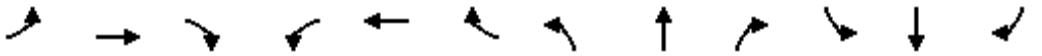
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	4	10	9	8	100	9	386	21	112	454	23
Future Vol, veh/h	5	4	10	9	8	100	9	386	21	112	454	23
Conflicting Peds, #/hr	4	0	7	7	0	4	16	0	15	15	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	94	94	94	89	89	89	96	96	96
Heavy Vehicles, %	20	0	0	0	0	7	0	1	0	12	1	0
Mvmt Flow	7	6	15	10	9	106	10	434	24	117	473	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1263	1228	272	962	1228	465	513	0	0	473	0	0
Stage 1	735	735	-	481	481	-	-	-	-	-	-	-
Stage 2	528	493	-	481	747	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.305	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.3665	2.2	-	-	2.314	-	-
Pot Cap-1 Maneuver	121	180	732	225	180	584	1063	-	-	1028	-	-
Stage 1	346	428	-	570	557	-	-	-	-	-	-	-
Stage 2	494	550	-	540	423	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	81	145	718	182	145	575	1049	-	-	1015	-	-
Mov Cap-2 Maneuver	81	145	-	182	145	-	-	-	-	-	-	-
Stage 1	337	354	-	555	543	-	-	-	-	-	-	-
Stage 2	390	536	-	434	350	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28	17.1	0.2	2.1
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1049	-	-	184	420	1015	-	-
HCM Lane V/C Ratio	0.01	-	-	0.152	0.296	0.115	-	-
HCM Control Delay (s)	8.5	0	-	28	17.1	9	0.5	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	1.2	0.4	-	-

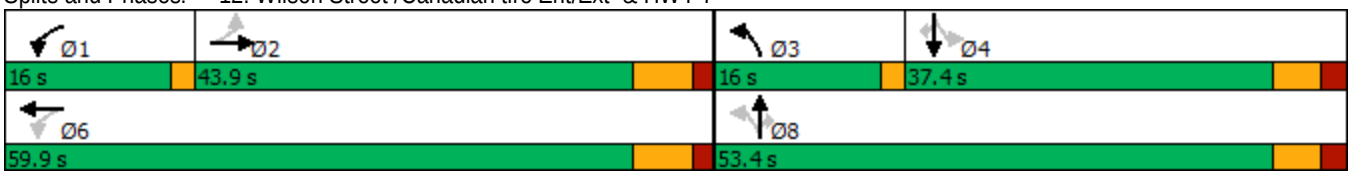


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	432	342	196	373	0	246	34	136	14	34	17
Future Volume (vph)	32	432	342	196	373	0	246	34	136	14	34	17
Satd. Flow (prot)	0	3118	0	0	3238	0	0	1773	1404	0	1873	1495
Flt Permitted		0.898			0.521			0.603			0.803	
Satd. Flow (perm)	0	2805	0	0	1716	0	0	1116	1386	0	1525	1495
Satd. Flow (RTOR)		175							148			76
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92	0.58	0.58	0.58
Heavy Vehicles (%)	4%	7%	10%	5%	12%	0%	3%	0%	15%	0%	0%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	916	0	0	639	0	0	304	148	0	83	29
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		37.9			53.5			29.8	29.8		15.6	15.6
Actuated g/C Ratio		0.39			0.55			0.31	0.31		0.16	0.16
v/c Ratio		0.76			0.59			0.72	0.28		0.34	0.10
Control Delay		27.0			16.8			38.3	5.1		39.5	0.6
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		27.0			16.8			38.3	5.1		39.5	0.6
LOS		C			B			D	A		D	A
Approach Delay		27.0			16.8			27.4			29.4	
Approach LOS		C			B			C			C	
Queue Length 50th (m)		65.3			33.7			49.2	0.0		14.9	0.0
Queue Length 95th (m)		#111.4			62.6			73.8	12.6		17.6	0.0
Internal Link Dist (m)		431.2			299.0			638.7			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1204			1093			625	755		493	534
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.76			0.58			0.49	0.20		0.17	0.05

Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 96.7			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 24.1		Intersection LOS: C	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

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

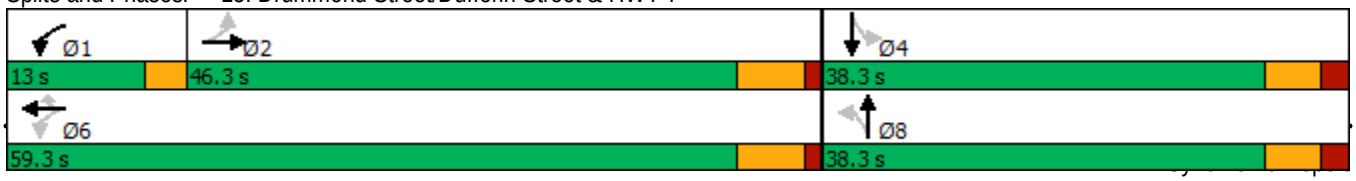
Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7

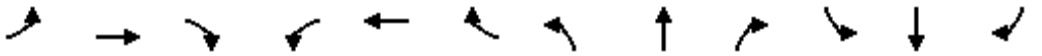


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	211	155	86	240	21	154	42	109	14	30	54
Future Volume (vph)	57	211	155	86	240	21	154	42	109	14	30	54
Satd. Flow (prot)	0	3007	0	0	3357	1509	1687	1643	0	1805	1604	0
Flt Permitted		0.837			0.738		0.688			0.646		
Satd. Flow (perm)	0	2535	0	0	2510	1509	1222	1643	0	1227	1604	0
Satd. Flow (RTOR)		144				37		127			69	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Heavy Vehicles (%)	8%	21%	3%	1%	8%	7%	7%	0%	3%	0%	5%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	491	0	0	375	24	179	176	0	18	107	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		13.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		20.4			32.8	32.8	16.2	16.2		16.2	16.2	
Actuated g/C Ratio		0.33			0.53	0.53	0.26	0.26		0.26	0.26	
v/c Ratio		0.53			0.27	0.03	0.56	0.34		0.06	0.23	
Control Delay		15.6			9.7	3.2	26.3	7.8		16.0	8.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.6			9.7	3.2	26.3	7.8		16.0	8.8	
LOS		B			A	A	C	A		B	A	
Approach Delay		15.6			9.3			17.1			9.8	
Approach LOS		B			A			B			A	
Queue Length 50th (m)		15.7			10.2	0.0	18.5	4.5		1.6	3.4	
Queue Length 95th (m)		38.3			27.5	2.8	32.5	14.9		4.7	9.9	
Internal Link Dist (m)		299.0			116.6			352.3			267.5	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1719			2282	1320	644	925		646	878	
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		0.29			0.16	0.02	0.28	0.19		0.03	0.12	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 61.8			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	15	179	12	47	19	115	392	0	5	462	59
Future Volume (vph)	95	15	179	12	47	19	115	392	0	5	462	59
Satd. Flow (prot)	0	1704	1524	0	1762	0	1787	1792	0	1805	1810	1583
Flt Permitted		0.751			0.935		0.253			0.450		
Satd. Flow (perm)	0	1292	1483	0	1660	0	469	1792	0	852	1810	1484
Satd. Flow (RTOR)			313		28							109
Confl. Peds. (#/hr)	27		4	4		27	26		5	5		26
Peak Hour Factor	0.55	0.55	0.55	0.64	0.64	0.64	0.85	0.85	0.85	0.86	0.86	0.86
Heavy Vehicles (%)	8%	0%	6%	0%	3%	0%	1%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	325	0	122	0	135	461	0	6	537	69
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	23.0	23.0	23.0	23.0	23.0		9.5	27.4		9.6	27.5	27.5
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		12.9	12.9		12.9		25.2	24.3		22.7	19.0	19.0
Actuated g/C Ratio		0.27	0.27		0.27		0.52	0.50		0.47	0.39	0.39
v/c Ratio		0.59	0.52		0.27		0.35	0.51		0.01	0.76	0.11
Control Delay		25.0	6.2		14.3		8.8	12.2		6.2	23.3	1.7
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		25.0	6.2		14.3		8.8	12.2		6.2	23.3	1.7
LOS		C	A		B		A	B		A	C	A
Approach Delay		13.4			14.3			11.4			20.7	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		17.6	0.9		7.4		5.4	22.9		0.3	44.3	0.0
Queue Length 95th (m)		19.7	0.0		12.1		13.3	66.3		1.6	#86.0	3.0
Internal Link Dist (m)		333.7			256.8			317.7			638.7	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		537	799		707		390	1058		507	936	820
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		0.37	0.41		0.17		0.35	0.44		0.01	0.57	0.08

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 48.6
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 15.2 Intersection LOS: B
Intersection Capacity Utilization 58.4% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

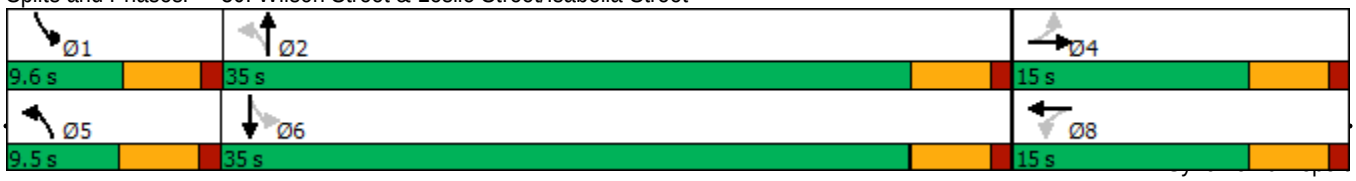
Splits and Phases: 26: Wilson Street & Sunset Boulevard

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	10	3	18	9	58	0	411	3	44	513	28
Future Volume (vph)	27	10	3	18	9	58	0	411	3	44	513	28
Satd. Flow (prot)	0	1512	0	0	1554	0	1900	1758	0	1752	1745	0
Flt Permitted		0.847			0.913					0.343		
Satd. Flow (perm)	0	1286	0	0	1430	0	1900	1758	0	627	1745	0
Satd. Flow (RTOR)		4			81			1			7	
Confl. Peds. (#/hr)	20		4	4		20	5		14	14		5
Peak Hour Factor	0.78	0.78	0.78	0.72	0.72	0.72	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	24%	0%	50%	0%	14%	4%	0%	8%	0%	3%	7%	23%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	119	0	0	505	0	54	660	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.5	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		7.5			7.5			25.9		27.6	29.0	
Actuated g/C Ratio		0.18			0.18			0.62		0.66	0.70	
v/c Ratio		0.22			0.37			0.46		0.10	0.54	
Control Delay		19.0			12.0			9.6		3.8	6.9	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		19.0			12.0			9.6		3.8	6.9	
LOS		B			B			A		A	A	
Approach Delay		19.0			12.0			9.6			6.7	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		2.5			2.0			15.7		1.2	23.3	
Queue Length 95th (m)		10.8			10.5			53.6		4.0	45.7	
Internal Link Dist (m)		203.0			391.9			316.1			317.7	
Turn Bay Length (m)										25.0		
Base Capacity (vph)		347			442			1329		561	1365	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.15			0.27			0.38		0.10	0.48	

Intersection Summary

Cycle Length: 59.6
Actuated Cycle Length: 41.7
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 8.7 — Intersection LOS: A
Intersection Capacity Utilization 51.5% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	21.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	93	12	52	92	97	4	221	37	105	250	18
Future Vol, veh/h	12	93	12	52	92	97	4	221	37	105	250	18
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.90	0.90	0.90	0.78	0.78	0.78
Heavy Vehicles, %	0	16	0	0	14	0	0	2	3	1	3	7
Mvmt Flow	18	139	18	59	105	110	4	246	41	135	321	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.7	16	16.1	30.4
HCM LOS	B	C	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	10%	22%	28%
Vol Thru, %	84%	79%	38%	67%
Vol Right, %	14%	10%	40%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	262	117	241	373
LT Vol	4	12	52	105
Through Vol	221	93	92	250
RT Vol	37	12	97	18
Lane Flow Rate	291	175	274	478
Geometry Grp	1	1	1	1
Degree of Util (X)	0.515	0.339	0.498	0.811
Departure Headway (Hd)	6.364	6.98	6.541	6.102
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	562	512	548	593
Service Time	4.443	5.07	4.621	4.17
HCM Lane V/C Ratio	0.518	0.342	0.5	0.806
HCM Control Delay	16.1	13.7	16	30.4
HCM Lane LOS	C	B	C	D
HCM 95th-tile Q	2.9	1.5	2.8	8.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	127	194	5	10	22
Future Vol, veh/h	16	127	194	5	10	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	50	9	1	25	0	12
Mvmt Flow	19	153	231	6	13	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	237	0	-	0	422	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	191	-
Critical Hdwy	4.6	-	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.65	-	-	-	3.5	3.408
Pot Cap-1 Maneuver	1094	-	-	-	592	784
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1094	-	-	-	581	784
Mov Cap-2 Maneuver	-	-	-	-	581	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	846	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1094	-	-	-	707
HCM Lane V/C Ratio	0.018	-	-	-	0.058
HCM Control Delay (s)	8.3	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	61	91	15	47	78	17
Future Vol, veh/h	61	91	15	47	78	17
Conflicting Peds, #/hr	0	0	0	0	0	24
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	68	68	41	41
Heavy Vehicles, %	2	25	17	8	3	15
Mvmt Flow	97	144	22	69	190	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	241	0	282	193
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	113	-
Critical Hdwy	-	-	4.27	-	6.43	6.35
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.353	-	3.527	3.435
Pot Cap-1 Maneuver	-	-	1242	-	706	816
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1242	-	693	799
Mov Cap-2 Maneuver	-	-	-	-	693	-
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	893	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	710	-	-	1242	-
HCM Lane V/C Ratio	0.326	-	-	0.018	-
HCM Control Delay (s)	12.5	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

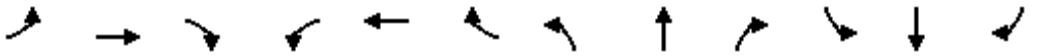
Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	5	10	6	4	73	6	362	10	81	440	20
Future Vol, veh/h	6	5	10	6	4	73	6	362	10	81	440	20
Conflicting Peds, #/hr	3	0	3	3	0	3	12	0	9	9	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	77	77	77	89	89	89	79	79	79
Heavy Vehicles, %	20	0	0	0	0	28	0	6	0	29	2	25
Mvmt Flow	8	7	14	8	5	95	7	407	11	103	557	25

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1268	1229	306	927	1236	425	594	0	0	427	0	0
Stage 1	788	788	-	436	436	-	-	-	-	-	-	-
Stage 2	480	441	-	491	800	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.62	4.1	-	-	4.535	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.566	2.2	-	-	2.4755	-	-
Pot Cap-1 Maneuver	120	179	696	238	178	566	992	-	-	980	-	-
Stage 1	321	405	-	603	583	-	-	-	-	-	-	-
Stage 2	526	580	-	533	400	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	84	147	687	194	146	560	982	-	-	973	-	-
Mov Cap-2 Maneuver	84	147	-	194	146	-	-	-	-	-	-	-
Stage 1	315	338	-	593	573	-	-	-	-	-	-	-
Stage 2	428	570	-	430	334	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.7	15.8	0.1	1.8
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	982	-	-	175	440	973	-	-
HCM Lane V/C Ratio	0.007	-	-	0.169	0.245	0.105	-	-
HCM Control Delay (s)	8.7	0	-	29.7	15.8	9.1	0.5	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	1	0.4	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	497	305	212	543	1	417	76	205	38	95	88
Future Volume (vph)	47	497	305	212	543	1	417	76	205	38	95	88
Satd. Flow (prot)	0	3221	0	0	3349	0	0	1729	1568	0	1873	1583
Flt Permitted		0.824			0.523			0.604			0.766	
Satd. Flow (perm)	0	2662	0	0	1777	0	0	1087	1568	0	1455	1559
Satd. Flow (RTOR)		102							193			97
Confl. Peds. (#/hr)							3					3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	3%	7%	4%	7%	6%	0%	6%	2%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	954	0	0	849	0	0	513	214	0	146	97
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		37.0			53.0			47.0	47.0		31.0	31.0
Actuated g/C Ratio		0.33			0.47			0.41	0.41		0.27	0.27
v/c Ratio		1.02			1.13dl			1.02	0.28		0.37	0.20
Control Delay		68.0			37.4			76.3	5.1		36.5	7.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		68.0			37.4			76.3	5.1		36.5	7.3
LOS		E			D			E	A		D	A
Approach Delay		68.0			37.4			55.3			24.8	
Approach LOS		E			D			E			C	
Queue Length 50th (m)		~111.4			72.2			~100.2	2.9		27.5	0.0
Queue Length 95th (m)		#154.1			#96.5			#193.6	17.8		46.8	12.8
Internal Link Dist (m)		431.2			299.0			453.5			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		938			957			505	763		398	497
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		1.02			0.89			1.02	0.28		0.37	0.20

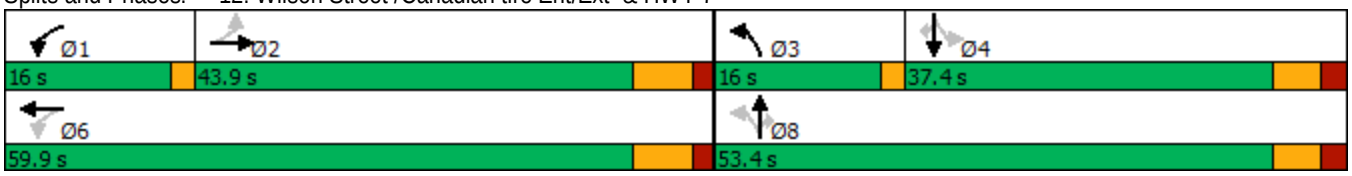
Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 113.3			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 51.5		Intersection LOS: D	
Intersection Capacity Utilization 96.7%		ICU Level of Service F	
Analysis Period (min) 15			

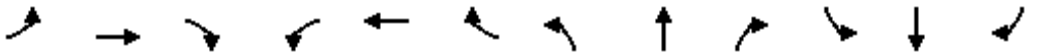
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7



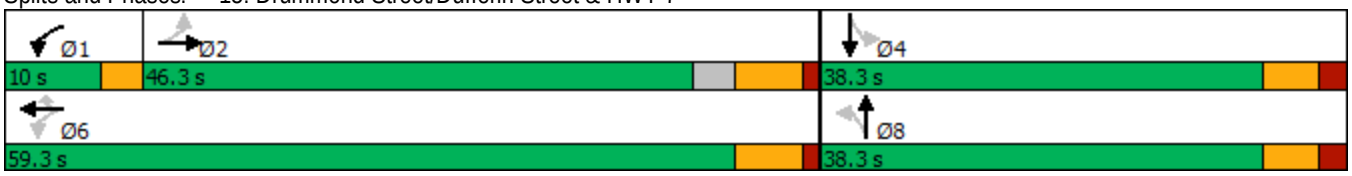


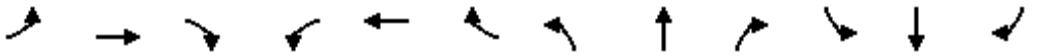
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	359	216	109	374	24	270	64	109	20	62	102
Future Volume (vph)	73	359	216	109	374	24	270	64	109	20	62	102
Satd. Flow (prot)	0	3247	0	0	3158	1524	1752	1650	0	1805	1678	0
Flt Permitted		0.813			0.596		0.637			0.634		
Satd. Flow (perm)	0	2656	0	0	1903	1524	1174	1650	0	1202	1678	0
Satd. Flow (RTOR)		114				37		93			91	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Heavy Vehicles (%)	2%	8%	1%	3%	16%	6%	3%	4%	3%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	696	0	0	519	26	307	197	0	23	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		10.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		23.6			33.8	33.8	25.3	25.3		25.3	25.3	
Actuated g/C Ratio		0.33			0.47	0.47	0.35	0.35		0.35	0.35	
v/c Ratio		0.73			0.54	0.04	0.75	0.31		0.05	0.29	
Control Delay		23.6			16.0	3.2	33.9	10.9		16.8	10.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		23.6			16.0	3.2	33.9	10.9		16.8	10.7	
LOS		C			B	A	C	B		B	B	
Approach Delay		23.6			15.4			24.9			11.4	
Approach LOS		C			B			C			B	
Queue Length 50th (m)		38.3			23.7	0.0	34.1	9.1		1.9	8.7	
Queue Length 95th (m)		63.3			39.3	3.0	#79.5	27.5		7.5	25.5	
Internal Link Dist (m)		299.0			148.1			352.3			198.4	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1665			1497	1155	533	800		546	812	
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		0.42			0.35	0.02	0.58	0.25		0.04	0.24	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 72			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.3		Intersection LOS: C	
Intersection Capacity Utilization 81.7%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





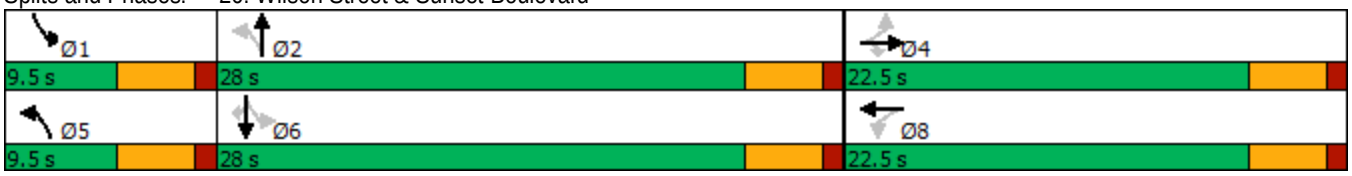
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	32	241	10	52	32	109	681	5	15	705	69
Future Volume (vph)	145	32	241	10	52	32	109	681	5	15	705	69
Satd. Flow (prot)	0	1728	1583	0	1749	0	1770	1843	0	1805	1863	1615
Flt Permitted		0.737			0.958		0.131			0.182		
Satd. Flow (perm)	0	1292	1500	0	1679	0	244	1843	0	346	1863	1477
Satd. Flow (RTOR)			228		42			1				109
Confl. Peds. (#/hr)	23		20	20		23	40		18	18		40
Peak Hour Factor	0.93	0.93	0.93	0.77	0.77	0.77	0.87	0.87	0.87	0.83	0.83	0.83
Heavy Vehicles (%)	6%	4%	2%	0%	2%	0%	2%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	190	259	0	123	0	125	789	0	18	849	83
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		12.9	12.9		12.9		31.4	30.5		28.8	24.9	24.9
Actuated g/C Ratio		0.24	0.24		0.24		0.58	0.56		0.53	0.46	0.46
v/c Ratio		0.62	0.49		0.29		0.44	0.76		0.06	0.99	0.11
Control Delay		27.9	7.4		13.5		12.4	19.7		6.5	50.9	2.4
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		27.9	7.4		13.5		12.4	19.7		6.5	50.9	2.4
LOS		C	A		B		B	B		A	D	A
Approach Delay		16.1			13.5			18.7			45.8	
Approach LOS		B			B			B			D	
Queue Length 50th (m)		17.8	2.5		6.8		4.8	48.8		0.7	~102.0	0.0
Queue Length 95th (m)		35.4	17.4		14.3		14.0	#161.0		2.9	#161.5	4.0
Internal Link Dist (m)		214.8			220.8			317.7			161.2	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		435	656		593		284	1037		319	856	737
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		0.44	0.39		0.21		0.44	0.76		0.06	0.99	0.11

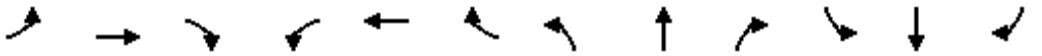
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 28.5	Intersection LOS: C
Intersection Capacity Utilization 76.0%	ICU Level of Service D
Analysis Period (min) 15	

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

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

Splits and Phases: 26: Wilson Street & Sunset Boulevard



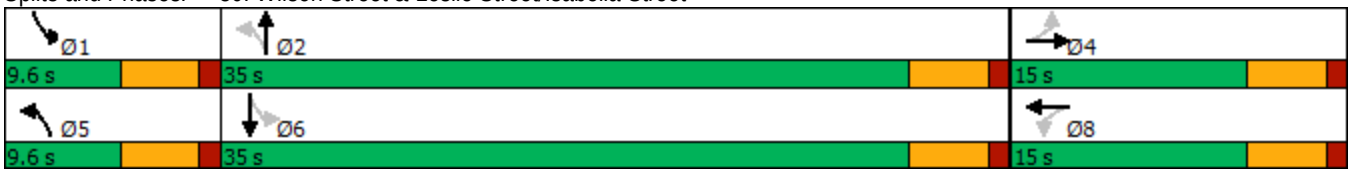


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	27	6	33	31	79	3	635	4	41	732	51
Future Volume (vph)	129	27	6	33	31	79	3	635	4	41	732	51
Satd. Flow (prot)	0	1772	0	0	1706	0	1805	1843	0	1703	1820	0
Flt Permitted		0.654			0.914		0.123			0.274		
Satd. Flow (perm)	0	1198	0	0	1571	0	234	1843	0	489	1820	0
Satd. Flow (RTOR)		3			88			1			9	
Confl. Peds. (#/hr)	4		13	13		4	36		9	9		36
Peak Hour Factor	0.76	0.76	0.76	0.90	0.90	0.90	0.96	0.96	0.96	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	3%	0%	6%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	214	0	0	159	0	3	665	0	48	921	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.6	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		10.6			10.6		34.7	32.8		35.6	34.6	
Actuated g/C Ratio		0.19			0.19		0.62	0.58		0.63	0.62	
v/c Ratio		0.94			0.43		0.01	0.62		0.11	0.82	
Control Delay		74.2			14.5		3.7	12.1		4.2	18.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		74.2			14.5		3.7	12.1		4.2	18.3	
LOS		E			B		A	B		A	B	
Approach Delay		74.2			14.5			12.0			17.6	
Approach LOS		E			B			B			B	
Queue Length 50th (m)		19.1			5.5		0.1	31.2		1.5	55.2	
Queue Length 95th (m)		#49.5			22.1		0.7	89.7		3.8	#160.5	
Internal Link Dist (m)		200.9			391.9			316.1			317.7	
Turn Bay Length (m)							60.0			25.0		
Base Capacity (vph)		228			368		288	1085		421	1126	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.94			0.43		0.01	0.61		0.11	0.82	

Intersection Summary			
Cycle Length: 59.6			
Actuated Cycle Length: 56.1			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	47.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	94	16	51	97	138	20	321	42	148	291	14
Future Vol, veh/h	14	94	16	51	97	138	20	321	42	148	291	14
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.89	0.89	0.85	0.85	0.85
Heavy Vehicles, %	0	6	0	0	5	1	0	0	0	0	0	0
Mvmt Flow	16	111	19	60	114	162	22	361	47	174	342	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16	25.6	38.1	78.7
HCM LOS	C	D	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	11%	18%	33%
Vol Thru, %	84%	76%	34%	64%
Vol Right, %	11%	13%	48%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	383	124	286	453
LT Vol	20	14	51	148
Through Vol	321	94	97	291
RT Vol	42	16	138	14
Lane Flow Rate	430	146	336	533
Geometry Grp	1	1	1	1
Degree of Util (X)	0.842	0.338	0.687	1.045
Departure Headway (Hd)	7.262	8.65	7.573	7.062
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	503	419	481	517
Service Time	5.262	6.65	5.573	5.062
HCM Lane V/C Ratio	0.855	0.348	0.699	1.031
HCM Control Delay	38.1	16	25.6	78.7
HCM Lane LOS	E	C	D	F
HCM 95th-tile Q	8.5	1.5	5.2	15.6

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	237	175	21	5	30
Future Vol, veh/h	26	237	175	21	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	20	2	0	0	25	0
Mvmt Flow	31	279	211	25	7	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	236	0	-	0	552	211
Stage 1	-	-	-	-	211	-
Stage 2	-	-	-	-	341	-
Critical Hdwy	4.3	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.38	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	1232	-	-	-	458	834
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	672	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1232	-	-	-	444	834
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1232	-	-	-	741
HCM Lane V/C Ratio	0.025	-	-	-	0.069
HCM Control Delay (s)	8	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	76	13	18	90	10	13
Future Vol, veh/h	76	13	18	90	10	13
Conflicting Peds, #/hr	0	0	0	0	1	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	72	72	75	75
Heavy Vehicles, %	2	0	0	1	0	10
Mvmt Flow	97	17	25	125	13	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	114	0	282	115
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	176	-
Critical Hdwy	-	-	4.1	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1488	-	712	916
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1488	-	698	909
Mov Cap-2 Maneuver	-	-	-	-	698	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	843	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	803	-	-	1488	-
HCM Lane V/C Ratio	0.038	-	-	0.017	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

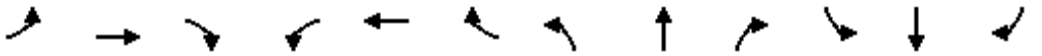
Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	5	13	12	10	128	12	494	27	143	581	29
Future Vol, veh/h	6	5	13	12	10	128	12	494	27	143	581	29
Conflicting Peds, #/hr	5	0	9	9	0	5	20	0	19	19	0	20
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	94	94	94	89	89	89	96	96	96
Heavy Vehicles, %	20	0	0	0	0	7	0	1	0	12	1	0
Mvmt Flow	9	7	19	13	11	136	13	555	30	149	605	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1613	1568	347	1228	1568	594	655	0	0	604	0	0
Stage 1	938	938	-	615	615	-	-	-	-	-	-	-
Stage 2	675	630	-	613	953	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.305	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.3665	2.2	-	-	2.314	-	-
Pot Cap-1 Maneuver	66	112	655	146	112	492	942	-	-	915	-	-
Stage 1	258	346	-	482	485	-	-	-	-	-	-	-
Stage 2	407	478	-	451	340	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	79	639	102	79	482	926	-	-	900	-	-
Mov Cap-2 Maneuver	33	79	-	102	79	-	-	-	-	-	-	-
Stage 1	248	253	-	464	467	-	-	-	-	-	-	-
Stage 2	278	460	-	313	248	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	68.7	30.9	0.2	2.5
HCM LOS	F	D		

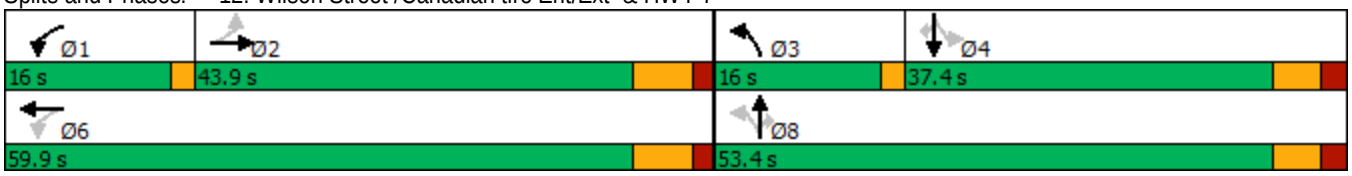
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	90	294	900	-	-
HCM Lane V/C Ratio	0.015	-	-	0.392	0.543	0.166	-	-
HCM Control Delay (s)	8.9	0	-	68.7	30.9	9.8	0.8	-
HCM Lane LOS	A	A	-	F	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.6	3	0.6	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	489	387	222	422	0	278	38	153	16	38	19
Future Volume (vph)	37	489	387	222	422	0	278	38	153	16	38	19
Satd. Flow (prot)	0	3118	0	0	3238	0	0	1773	1404	0	1872	1495
Flt Permitted		0.882			0.531			0.610			0.794	
Satd. Flow (perm)	0	2756	0	0	1749	0	0	1129	1384	0	1508	1495
Satd. Flow (RTOR)		174							166			76
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92	0.58	0.58	0.58
Heavy Vehicles (%)	4%	7%	10%	5%	12%	0%	3%	0%	15%	0%	0%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1038	0	0	723	0	0	343	166	0	94	33
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		37.3			53.5			33.2	33.2		18.3	18.3
Actuated g/C Ratio		0.37			0.53			0.33	0.33		0.18	0.18
v/c Ratio		0.91			1.00dl			0.76	0.29		0.34	0.10
Control Delay		39.3			20.7			39.7	4.7		38.3	0.6
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		39.3			20.7			39.7	4.7		38.3	0.6
LOS		D			C			D	A		D	A
Approach Delay		39.3			20.7			28.3			28.5	
Approach LOS		D			C			C			C	
Queue Length 50th (m)		90.1			44.4			57.0	0.0		17.0	0.0
Queue Length 95th (m)		#156.2			74.9			84.3	13.1		19.6	0.0
Internal Link Dist (m)		431.2			299.0			383.8			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1137			1071			613	743		471	519
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.91			0.68			0.56	0.22		0.20	0.06

Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 100.1			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 30.8		Intersection LOS: C	
Intersection Capacity Utilization 86.1%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			

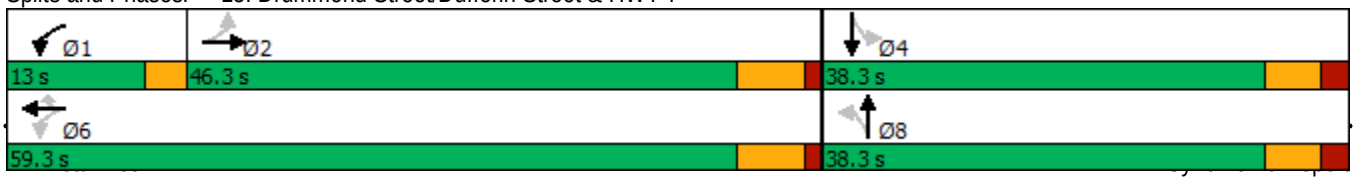
Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7

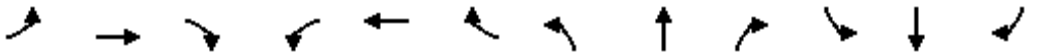


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	238	176	68	272	24	174	48	123	16	34	61
Future Volume (vph)	64	238	176	68	272	24	174	48	123	16	34	61
Satd. Flow (prot)	0	3008	0	0	3353	1509	1687	1643	0	1805	1606	0
Flt Permitted		0.833			0.769		0.679			0.573		
Satd. Flow (perm)	0	2523	0	0	2604	1509	1206	1643	0	1087	1606	0
Satd. Flow (RTOR)		146				37		140			78	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Heavy Vehicles (%)	8%	21%	3%	1%	8%	7%	7%	0%	3%	0%	5%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	556	0	0	391	28	202	199	0	21	122	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		13.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		40.9			53.3	53.3	20.0	20.0		20.0	20.0	
Actuated g/C Ratio		0.48			0.62	0.62	0.23	0.23		0.23	0.23	
v/c Ratio		0.44			0.23	0.03	0.72	0.41		0.08	0.28	
Control Delay		13.2			8.5	2.7	45.0	11.5		25.0	12.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		13.2			8.5	2.7	45.0	11.5		25.0	12.5	
LOS		B			A	A	D	B		C	B	
Approach Delay		13.2			8.1			28.4			14.3	
Approach LOS		B			A			C			B	
Queue Length 50th (m)		22.7			13.5	0.0	32.1	8.1		2.8	6.0	
Queue Length 95th (m)		42.8			27.3	2.9	52.0	22.2		7.2	14.6	
Internal Link Dist (m)		299.0			137.3			352.3			208.6	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1277			1673	950	451	703		407	650	
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		0.44			0.23	0.03	0.45	0.28		0.05	0.19	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 86			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	17	203	13	54	22	130	443	0	6	523	67
Future Volume (vph)	107	17	203	13	54	22	130	443	0	6	523	67
Satd. Flow (prot)	0	1704	1524	0	1761	0	1770	1792	0	1770	1810	1583
Flt Permitted		0.716			0.936		0.200			0.382		
Satd. Flow (perm)	0	1230	1483	0	1659	0	373	1792	0	712	1810	1477
Satd. Flow (RTOR)			286		28							109
Confl. Peds. (#/hr)	30		4	4		30			6			29
Peak Hour Factor	0.55	0.55	0.55	0.64	0.64	0.64	0.92	0.85	0.85	0.92	0.86	0.86
Heavy Vehicles (%)	8%	0%	6%	0%	3%	0%	2%	6%	0%	2%	5%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	369	0	138	0	141	521	0	7	608	78
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		14.1	14.1		14.1		27.0	26.1		24.5	20.9	20.9
Actuated g/C Ratio		0.27	0.27		0.27		0.52	0.51		0.47	0.41	0.41
v/c Ratio		0.67	0.60		0.29		0.41	0.57		0.02	0.83	0.12
Control Delay		29.6	9.5		15.3		10.3	14.0		6.3	27.9	2.2
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		29.6	9.5		15.3		10.3	14.0		6.3	27.9	2.2
LOS		C	A		B		B	B		A	C	A
Approach Delay		17.1			15.3			13.2			24.8	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		22.2	7.0		9.4		6.4	30.4		0.4	57.2	0.0
Queue Length 95th (m)		22.6	4.3		13.8		14.5	76.1		1.8	#109.3	3.9
Internal Link Dist (m)		123.8			93.2			317.7			230.9	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		464	738		644		341	1046		449	892	783
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		0.49	0.50		0.21		0.41	0.50		0.02	0.68	0.10

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 51.6
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 18.3 Intersection LOS: B
Intersection Capacity Utilization 63.6% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

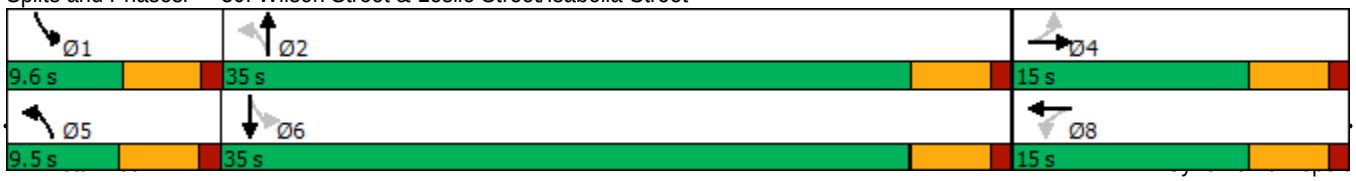
Splits and Phases: 26: Wilson Street & Sunset Boulevard

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	12	3	20	10	65	0	465	3	49	581	32
Future Volume (vph)	30	12	3	20	10	65	0	465	3	49	581	32
Satd. Flow (prot)	0	1522	0	0	1545	0	1900	1758	0	1752	1745	0
Flt Permitted		0.731			0.911					0.329		
Satd. Flow (perm)	0	1113	0	0	1419	0	1900	1758	0	601	1745	0
Satd. Flow (RTOR)		4			90			1			7	
Confl. Peds. (#/hr)	23		4	4		23	6		16	16		6
Peak Hour Factor	0.78	0.78	0.78	0.72	0.72	0.72	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	24%	0%	50%	0%	14%	4%	0%	8%	0%	3%	7%	23%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	132	0	0	571	0	60	748	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.5	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		7.8			7.8			36.3		40.8	41.8	
Actuated g/C Ratio		0.14			0.14			0.66		0.74	0.75	
v/c Ratio		0.36			0.48			0.50		0.11	0.57	
Control Delay		27.4			15.8			10.1		3.4	6.6	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		27.4			15.8			10.1		3.4	6.6	
LOS		C			B			B		A	A	
Approach Delay		27.4			15.8			10.1			6.4	
Approach LOS		C			B			B			A	
Queue Length 50th (m)		5.3			4.2			38.3		1.5	30.9	
Queue Length 95th (m)		12.4			11.5			62.5		4.2	55.4	
Internal Link Dist (m)		67.6			391.9			316.1			317.7	
Turn Bay Length (m)										25.0		
Base Capacity (vph)		214			343			1153		549	1318	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.27			0.38			0.50		0.11	0.57	

Intersection Summary

Cycle Length: 59.6
Actuated Cycle Length: 55.4
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 9.3 — Intersection LOS: A
Intersection Capacity Utilization 55.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	40.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	106	13	59	104	110	4	251	42	119	282	20
Future Vol, veh/h	13	106	13	59	104	110	4	251	42	119	282	20
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.90	0.90	0.90	0.78	0.78	0.78
Heavy Vehicles, %	0	16	0	0	14	0	0	2	3	1	3	7
Mvmt Flow	19	158	19	67	118	125	4	279	47	153	362	26
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.9	22.1	22.7	71.6
HCM LOS	C	C	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	10%	22%	28%
Vol Thru, %	85%	80%	38%	67%
Vol Right, %	14%	10%	40%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	297	132	273	421
LT Vol	4	13	59	119
Through Vol	251	106	104	282
RT Vol	42	13	110	20
Lane Flow Rate	330	197	310	540
Geometry Grp	1	1	1	1
Degree of Util (X)	0.649	0.427	0.625	1.024
Departure Headway (Hd)	7.277	8.054	7.454	6.828
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	498	449	487	534
Service Time	5.277	6.054	5.454	4.828
HCM Lane V/C Ratio	0.663	0.439	0.637	1.011
HCM Control Delay	22.7	16.9	22.1	71.6
HCM Lane LOS	C	C	C	F
HCM 95th-tile Q	4.6	2.1	4.2	15

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	144	220	6	12	25
Future Vol, veh/h	18	144	220	6	12	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	50	9	1	25	0	12
Mvmt Flow	22	173	262	7	15	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	269	0	-	0	479	262
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	4.6	-	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.65	-	-	-	3.5	3.408
Pot Cap-1 Maneuver	1062	-	-	-	549	753
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1062	-	-	-	536	753
Mov Cap-2 Maneuver	-	-	-	-	536	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	824	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1062	-	-	-	666
HCM Lane V/C Ratio	0.02	-	-	-	0.071
HCM Control Delay (s)	8.5	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	70	103	17	54	88	19
Future Vol, veh/h	70	103	17	54	88	19
Conflicting Peds, #/hr	0	0	0	0	0	28
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	68	68	41	41
Heavy Vehicles, %	2	25	17	8	3	15
Mvmt Flow	111	163	25	79	215	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	274	0	322	221
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	129	-
Critical Hdwy	-	-	4.27	-	6.43	6.35
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.353	-	3.527	3.435
Pot Cap-1 Maneuver	-	-	1207	-	670	787
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1207	-	655	768
Mov Cap-2 Maneuver	-	-	-	-	655	-
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	874	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	673	-	-	1207	-
HCM Lane V/C Ratio	0.388	-	-	0.021	-
HCM Control Delay (s)	13.7	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-

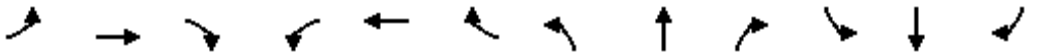
Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↕	
Traffic Vol, veh/h	7	6	12	7	4	83	7	410	12	91	498	23
Future Vol, veh/h	7	6	12	7	4	83	7	410	12	91	498	23
Conflicting Peds, #/hr	3	0	3	3	0	3	13	0	10	10	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	77	77	77	89	89	89	79	79	79
Heavy Vehicles, %	20	0	0	0	0	28	0	6	0	29	2	25
Mvmt Flow	10	8	17	9	5	108	8	461	13	115	630	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1431	1388	346	1046	1396	481	672	0	0	484	0	0
Stage 1	888	888	-	494	494	-	-	-	-	-	-	-
Stage 2	543	500	-	552	902	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.62	4.1	-	-	4.535	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.566	2.2	-	-	2.4755	-	-
Pot Cap-1 Maneuver	91	144	656	196	142	524	928	-	-	929	-	-
Stage 1	278	365	-	561	550	-	-	-	-	-	-	-
Stage 2	485	546	-	491	359	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	58	112	647	150	110	518	918	-	-	921	-	-
Mov Cap-2 Maneuver	58	112	-	150	110	-	-	-	-	-	-	-
Stage 1	272	289	-	550	539	-	-	-	-	-	-	-
Stage 2	375	535	-	371	285	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	42.7	18.6	0.1	2
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	918	-	-	130	386	921	-	-
HCM Lane V/C Ratio	0.009	-	-	0.271	0.316	0.125	-	-
HCM Control Delay (s)	9	0	-	42.7	18.6	9.5	0.7	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1	1.3	0.4	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	563	345	240	614	2	472	86	232	43	107	99
Future Volume (vph)	53	563	345	240	614	2	472	86	232	43	107	99
Satd. Flow (prot)	0	3221	0	0	3350	0	0	1729	1568	0	1873	1583
Flt Permitted		0.795			0.533			0.573			0.618	
Satd. Flow (perm)	0	2569	0	0	1811	0	0	1031	1568	0	1174	1559
Satd. Flow (RTOR)		101							192			109
Confl. Peds. (#/hr)							3					3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	3%	7%	4%	7%	6%	0%	6%	2%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1081	0	0	962	0	0	582	242	0	165	109
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		37.0			53.0			47.0	47.0		31.0	31.0
Actuated g/C Ratio		0.33			0.47			0.41	0.41		0.27	0.27
v/c Ratio		1.19			1.31dl			1.20	0.32		0.51	0.22
Control Delay		129.8			55.0			137.5	6.6		41.5	7.1
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		129.8			55.0			137.5	6.6		41.5	7.1
LOS		F			D			F	A		D	A
Approach Delay		129.8			55.0			99.0			27.8	
Approach LOS		F			D			F			C	
Queue Length 50th (m)		~152.3			85.6			~150.6	6.9		32.6	0.0
Queue Length 95th (m)		#192.1			#131.3			#234.1	23.4		55.5	13.6
Internal Link Dist (m)		431.2			299.0			452.5			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		906			970			486	762		321	505
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		1.19			0.99			1.20	0.32		0.51	0.22

Intersection Summary

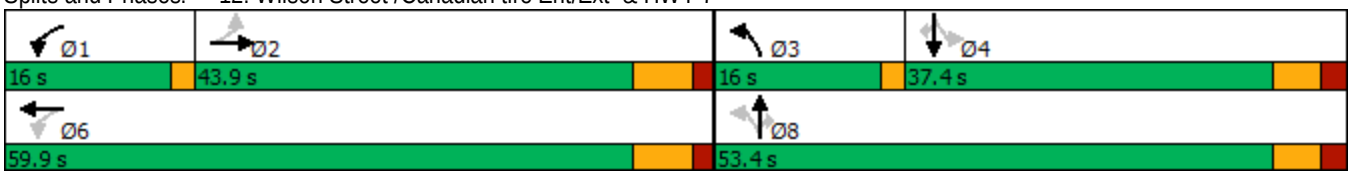
Cycle Length: 113.3
Actuated Cycle Length: 113.3
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 89.9 Intersection LOS: F
Intersection Capacity Utilization 106.3% ICU Level of Service G
Analysis Period (min) 15

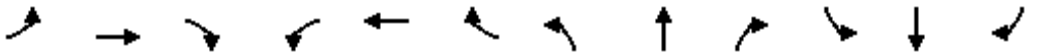
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7



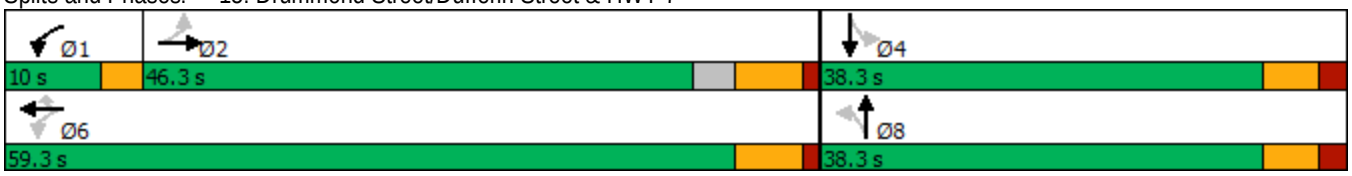


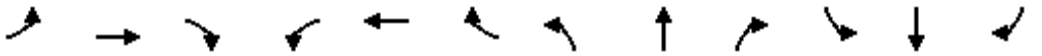
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	406	245	123	424	27	305	72	123	22	70	115
Future Volume (vph)	83	406	245	123	424	27	305	72	123	22	70	115
Satd. Flow (prot)	0	3247	0	0	3157	1524	1752	1648	0	1805	1677	0
Flt Permitted		0.787			0.551		0.611			0.603		
Satd. Flow (perm)	0	2571	0	0	1759	1524	1126	1648	0	1143	1677	0
Satd. Flow (RTOR)		114				37		94			91	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Heavy Vehicles (%)	2%	8%	1%	3%	16%	6%	3%	4%	3%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	789	0	0	588	29	347	222	0	26	215	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		10.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		28.4			38.5	38.5	32.3	32.3		32.3	32.3	
Actuated g/C Ratio		0.34			0.46	0.46	0.39	0.39		0.39	0.39	
v/c Ratio		0.83			0.67	0.04	0.80	0.32		0.06	0.31	
Control Delay		29.5			20.3	3.1	40.9	13.2		20.2	13.1	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		29.5			20.3	3.1	40.9	13.2		20.2	13.1	
LOS		C			C	A	D	B		C	B	
Approach Delay		29.5			19.5			30.1			13.9	
Approach LOS		C			B			C			B	
Queue Length 50th (m)		54.2			32.6	0.0	48.0	13.3		2.6	12.8	
Queue Length 95th (m)		75.8			44.2	3.3	#118.4	36.8		9.3	34.2	
Internal Link Dist (m)		299.0			118.0			352.3			198.4	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1391			1190	990	435	695		442	704	
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		0.57			0.49	0.03	0.80	0.32		0.06	0.31	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 83.5			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 25.2		Intersection LOS: C	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	36	272	12	59	36	123	770	6	17	798	78
Future Volume (vph)	164	36	272	12	59	36	123	770	6	17	798	78
Satd. Flow (prot)	0	1728	1583	0	1747	0	1770	1842	0	1805	1863	1615
Flt Permitted		0.708			0.951		0.135			0.149		
Satd. Flow (perm)	0	1238	1492	0	1666	0	251	1842	0	283	1863	1464
Satd. Flow (RTOR)			215		43			1				109
Confl. Peds. (#/hr)	26		23	23		26	45		20	20		45
Peak Hour Factor	0.93	0.93	0.93	0.77	0.77	0.77	0.87	0.87	0.87	0.83	0.83	0.83
Heavy Vehicles (%)	6%	4%	2%	0%	2%	0%	2%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	292	0	140	0	141	892	0	20	961	94
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		13.6	13.6		13.6		30.6	29.7		28.0	24.3	24.3
Actuated g/C Ratio		0.25	0.25		0.25		0.56	0.55		0.52	0.45	0.45
v/c Ratio		0.70	0.55		0.31		0.50	0.88		0.07	1.15	0.13
Control Delay		31.5	9.8		14.2		14.8	27.2		6.6	104.4	3.0
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		31.5	9.8		14.2		14.8	27.2		6.6	104.4	3.0
LOS		C	A		B		B	C		A	F	A
Approach Delay		19.0			14.2			25.5			93.7	
Approach LOS		B			B			C			F	
Queue Length 50th (m)		20.9	6.5		8.3		6.0	67.2		0.8	~134.0	0.0
Queue Length 95th (m)		40.9	24.2		16.2		#18.3	#189.4		3.1	#189.4	5.1
Internal Link Dist (m)		214.8			220.8			317.7			162.3	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		420	648		593		284	1011		290	834	715
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.51	0.45		0.24		0.50	0.88		0.07	1.15	0.13

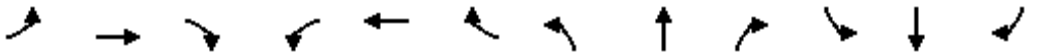
Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 54.2
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 50.3 — Intersection LOS: D
Intersection Capacity Utilization 83.8% — ICU Level of Service E
Analysis Period (min) 15

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

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

Splits and Phases: 26: Wilson Street & Sunset Boulevard



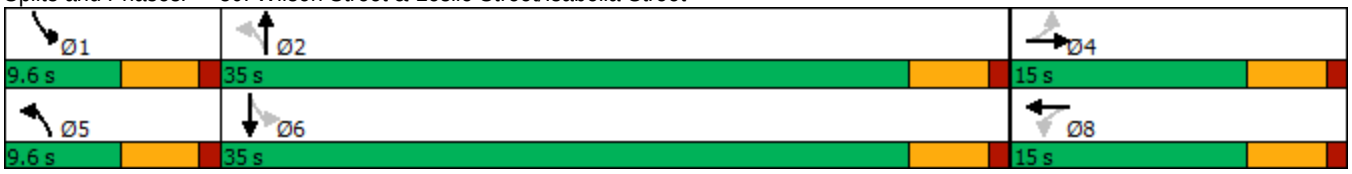
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	30	7	38	35	90	3	718	4	46	828	58
Future Volume (vph)	146	30	7	38	35	90	3	718	4	46	828	58
Satd. Flow (prot)	0	1772	0	0	1708	0	1805	1843	0	1703	1819	0
Flt Permitted		0.598			0.920		0.118			0.201		
Satd. Flow (perm)	0	1095	0	0	1581	0	224	1843	0	359	1819	0
Satd. Flow (RTOR)		3			91			1			9	
Confl. Peds. (#/hr)	4		14	14		4	41		10	10		41
Peak Hour Factor	0.76	0.76	0.76	0.90	0.90	0.90	0.96	0.96	0.96	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	3%	0%	6%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	181	0	3	752	0	54	1042	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.6	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		10.5			10.5		35.0	32.0		36.7	35.8	
Actuated g/C Ratio		0.18			0.18		0.61	0.56		0.64	0.63	
v/c Ratio		1.18			0.50		0.01	0.73		0.15	0.91	
Control Delay		147.1			16.9		3.3	16.5		4.5	25.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		147.1			16.9		3.3	16.5		4.5	25.7	
LOS		F			B		A	B		A	C	
Approach Delay		147.1			16.9			16.5			24.6	
Approach LOS		F			B			B			C	
Queue Length 50th (m)		~34.0			8.9		0.1	65.2		1.7	72.7	
Queue Length 95th (m)		#59.1			25.7		0.7	#129.3		4.1	#192.4	
Internal Link Dist (m)		200.9			391.9			316.1			317.7	
Turn Bay Length (m)							60.0			25.0		
Base Capacity (vph)		204			365		278	1040		351	1140	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		1.18			0.50		0.01	0.72		0.15	0.91	

Intersection Summary	
Cycle Length: 59.6	
Actuated Cycle Length: 57.2	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 34.2	Intersection LOS: C
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

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

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

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	97.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	107	18	58	110	156	22	364	48	168	330	16
Future Vol, veh/h	16	107	18	58	110	156	22	364	48	168	330	16
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.89	0.89	0.85	0.85	0.85
Heavy Vehicles, %	0	6	0	0	5	1	0	0	0	0	0	0
Mvmt Flow	19	126	21	68	129	184	25	409	54	198	388	19
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	19.9	40.4	76.2	171.6
HCM LOS	C	E	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	11%	18%	33%
Vol Thru, %	84%	76%	34%	64%
Vol Right, %	11%	13%	48%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	434	141	324	514
LT Vol	22	16	58	168
Through Vol	364	107	110	330
RT Vol	48	18	156	16
Lane Flow Rate	488	166	381	605
Geometry Grp	1	1	1	1
Degree of Util (X)	1.016	0.414	0.821	1.294
Departure Headway (Hd)	8.224	10.007	8.539	7.859
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	444	362	427	466
Service Time	6.224	8.007	6.539	5.859
HCM Lane V/C Ratio	1.099	0.459	0.892	1.298
HCM Control Delay	76.2	19.9	40.4	171.6
HCM Lane LOS	F	C	E	F
HCM 95th-tile Q	13.4	2	7.6	25.5

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	269	197	24	6	34
Future Vol, veh/h	30	269	197	24	6	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	20	2	0	0	25	0
Mvmt Flow	35	316	237	29	9	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	266	0	-	0	623	237
Stage 1	-	-	-	-	237	-
Stage 2	-	-	-	-	386	-
Critical Hdwy	4.3	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.38	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	1201	-	-	-	415	807
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1201	-	-	-	400	807
Mov Cap-2 Maneuver	-	-	-	-	400	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1201	-	-	-	700
HCM Lane V/C Ratio	0.029	-	-	-	0.084
HCM Control Delay (s)	8.1	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	85	14	20	101	12	14
Future Vol, veh/h	85	14	20	101	12	14
Conflicting Peds, #/hr	0	0	0	0	1	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	72	72	75	75
Heavy Vehicles, %	2	0	0	1	0	10
Mvmt Flow	109	18	28	140	16	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	127	0	315	128
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	197	-
Critical Hdwy	-	-	4.1	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1472	-	682	901
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	841	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1472	-	667	893
Mov Cap-2 Maneuver	-	-	-	-	667	-
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	822	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	772	-	-	1472	-
HCM Lane V/C Ratio	0.045	-	-	0.019	-
HCM Control Delay (s)	9.9	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

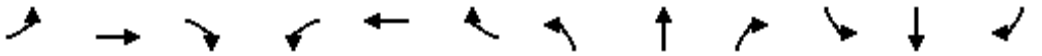
Intersection	
Int Delay, s/veh	12.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↕	
Traffic Vol, veh/h	7	6	14	13	12	145	13	559	30	162	658	33
Future Vol, veh/h	7	6	14	13	12	145	13	559	30	162	658	33
Conflicting Peds, #/hr	6	0	10	10	0	6	23	0	22	22	0	23
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	94	94	94	89	89	89	96	96	96
Heavy Vehicles, %	20	0	0	0	0	7	0	1	0	12	1	0
Mvmt Flow	10	9	21	14	13	154	15	628	34	169	685	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1828	1777	393	1392	1777	673	742	0	0	684	0	0
Stage 1	1063	1063	-	697	697	-	-	-	-	-	-	-
Stage 2	765	714	-	695	1080	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.305	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.3665	2.2	-	-	2.314	-	-
Pot Cap-1 Maneuver	46	83	612	112	83	443	874	-	-	853	-	-
Stage 1	215	302	-	435	446	-	-	-	-	-	-	-
Stage 2	361	438	-	403	297	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	17	51	595	67	51	433	857	-	-	837	-	-
Mov Cap-2 Maneuver	17	51	-	67	51	-	-	-	-	-	-	-
Stage 1	205	196	-	415	425	-	-	-	-	-	-	-
Stage 2	218	418	-	244	192	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	204.9	67.2	0.2	2.9
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	857	-	-	49	222	837	-	-
HCM Lane V/C Ratio	0.017	-	-	0.81	0.815	0.202	-	-
HCM Control Delay (s)	9.3	0	-	204.9	67.2	10.4	1.2	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	3.3	6.1	0.8	-	-

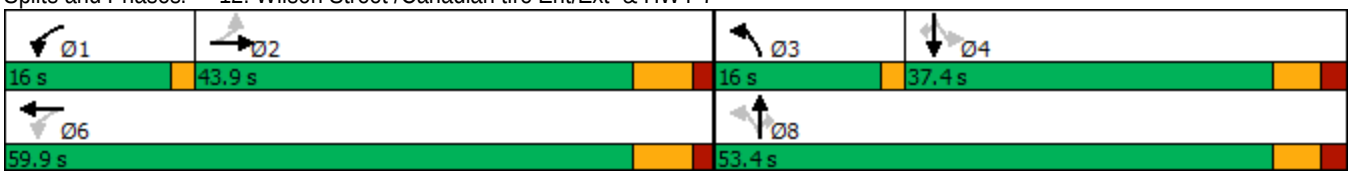


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	432	352	196	373	0	274	34	136	14	34	17
Future Volume (vph)	32	432	352	196	373	0	274	34	136	14	34	17
Satd. Flow (prot)	0	3114	0	0	3238	0	0	1771	1404	0	1873	1495
Flt Permitted		0.898			0.525			0.610			0.804	
Satd. Flow (perm)	0	2802	0	0	1729	0	0	1129	1386	0	1527	1495
Satd. Flow (RTOR)		180							148			76
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92	0.58	0.58	0.58
Heavy Vehicles (%)	4%	7%	10%	5%	12%	0%	3%	0%	15%	0%	0%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	927	0	0	639	0	0	335	148	0	83	29
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		36.5			52.3			32.3	32.3		17.6	17.6
Actuated g/C Ratio		0.37			0.53			0.33	0.33		0.18	0.18
v/c Ratio		0.80			0.61			0.74	0.27		0.30	0.09
Control Delay		29.8			18.4			38.5	4.8		37.6	0.5
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		29.8			18.4			38.5	4.8		37.6	0.5
LOS		C			B			D	A		D	A
Approach Delay		29.8			18.4			28.2			28.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)		70.8			37.0			55.4	0.0		14.9	0.0
Queue Length 95th (m)		#123.6			64.9			82.1	12.5		17.6	0.0
Internal Link Dist (m)		431.2			299.0			454.4			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1183			1089			628	749		489	530
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.78			0.59			0.53	0.20		0.17	0.05

Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 98			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 26.0		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7

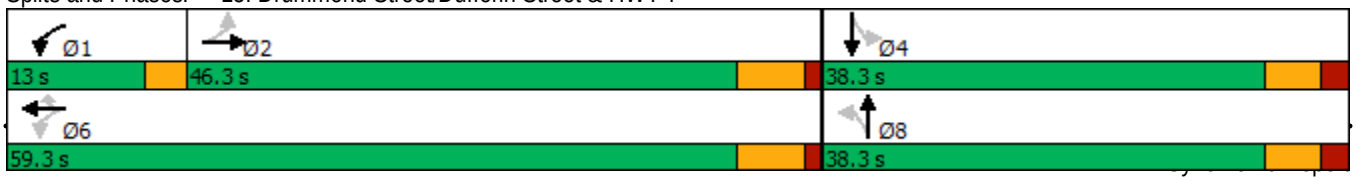


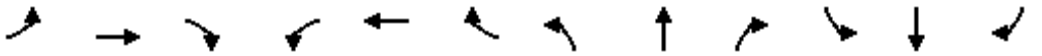
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	211	155	92	240	21	154	42	128	14	30	54
Future Volume (vph)	57	211	155	92	240	21	154	42	128	14	30	54
Satd. Flow (prot)	0	3007	0	0	3356	1509	1687	1632	0	1805	1604	0
Flt Permitted		0.836			0.718		0.688			0.633		
Satd. Flow (perm)	0	2532	0	0	2444	1509	1222	1632	0	1202	1604	0
Satd. Flow (RTOR)		144				37		149			69	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Heavy Vehicles (%)	8%	21%	3%	1%	8%	7%	7%	0%	3%	0%	5%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	491	0	0	382	24	179	198	0	18	107	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		13.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		20.4			32.8	32.8	16.2	16.2		16.2	16.2	
Actuated g/C Ratio		0.33			0.53	0.53	0.26	0.26		0.26	0.26	
v/c Ratio		0.53			0.28	0.03	0.56	0.37		0.06	0.23	
Control Delay		15.6			9.7	3.2	26.4	7.6		16.1	8.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.6			9.7	3.2	26.4	7.6		16.1	8.8	
LOS		B			A	A	C	A		B	A	
Approach Delay		15.6			9.3			16.5			9.8	
Approach LOS		B			A			B			A	
Queue Length 50th (m)		15.7			10.4	0.0	18.5	4.5		1.6	3.4	
Queue Length 95th (m)		38.3			28.0	2.8	32.6	15.3		4.7	9.9	
Internal Link Dist (m)		299.0			135.3			352.3			267.5	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1716			2230	1320	643	930		633	877	
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		0.29			0.17	0.02	0.28	0.21		0.03	0.12	

Intersection Summary

Cycle Length: 97.6
Actuated Cycle Length: 61.8
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 13.5 — Intersection LOS: B
Intersection Capacity Utilization 64.7% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7



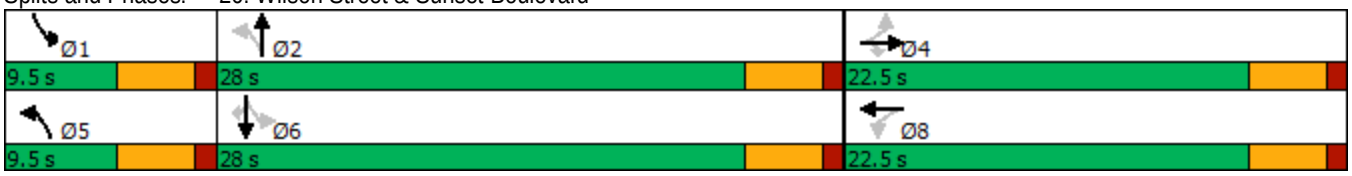


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	15	185	12	47	19	134	420	0	5	472	59
Future Volume (vph)	95	15	185	12	47	19	134	420	0	5	472	59
Satd. Flow (prot)	0	1704	1524	0	1762	0	1787	1792	0	1805	1810	1583
Flt Permitted		0.749			0.935		0.243			0.415		
Satd. Flow (perm)	0	1289	1483	0	1660	0	451	1792	0	786	1810	1484
Satd. Flow (RTOR)			310		28							109
Confl. Peds. (#/hr)	27		4	4		27	26		5	5		26
Peak Hour Factor	0.55	0.55	0.55	0.64	0.64	0.64	0.85	0.85	0.85	0.86	0.86	0.86
Heavy Vehicles (%)	8%	0%	6%	0%	3%	0%	1%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	336	0	122	0	158	494	0	6	549	69
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		13.1	13.1		13.1		25.4	24.6		22.9	19.2	19.2
Actuated g/C Ratio		0.27	0.27		0.27		0.52	0.50		0.47	0.39	0.39
v/c Ratio		0.58	0.54		0.26		0.41	0.55		0.01	0.77	0.11
Control Delay		25.1	6.9		14.5		9.7	12.9		6.2	23.9	1.7
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		25.1	6.9		14.5		9.7	12.9		6.2	23.9	1.7
LOS		C	A		B		A	B		A	C	A
Approach Delay		13.7			14.5			12.1			21.3	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		17.9	2.0		7.6		6.5	25.6		0.3	46.3	0.0
Queue Length 95th (m)		20.0	0.3		12.3		14.9	70.8		1.5	#86.8	3.0
Internal Link Dist (m)		333.7			256.8			317.7			160.3	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		518	781		684		382	1072		479	949	830
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		0.39	0.43		0.18		0.41	0.46		0.01	0.58	0.08

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 49.1
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 15.7 Intersection LOS: B
Intersection Capacity Utilization 59.3% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 26: Wilson Street & Sunset Boulevard

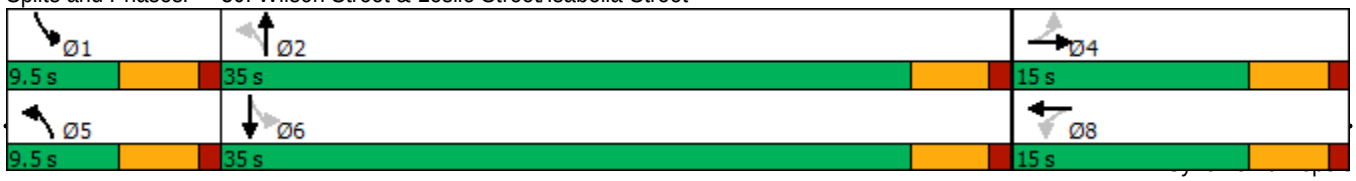


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	10	3	18	9	69	0	447	3	48	525	28
Future Volume (vph)	27	10	3	18	9	69	0	447	3	48	525	28
Satd. Flow (prot)	0	1512	0	0	1543	0	1900	1758	0	1752	1746	0
Flt Permitted		0.816			0.922					0.316		
Satd. Flow (perm)	0	1241	0	0	1433	0	1900	1758	0	578	1746	0
Satd. Flow (RTOR)		4			96			1			7	
Confl. Peds. (#/hr)	20		4	4		20	5		14	14		5
Peak Hour Factor	0.78	0.78	0.78	0.72	0.72	0.72	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	24%	0%	50%	0%	14%	4%	0%	8%	0%	3%	7%	23%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	134	0	0	549	0	59	674	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.5	35.0		9.5	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		7.6			7.6			26.5		28.1	29.4	
Actuated g/C Ratio		0.18			0.18			0.63		0.66	0.70	
v/c Ratio		0.23			0.40			0.50		0.11	0.55	
Control Delay		20.1			12.2			9.8		3.8	6.9	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		20.1			12.2			9.8		3.8	6.9	
LOS		C			B			A		A	A	
Approach Delay		20.1			12.2			9.8			6.7	
Approach LOS		C			B			A			A	
Queue Length 50th (m)		2.6			2.0			18.0		1.4	24.4	
Queue Length 95th (m)		11.3			11.1			58.8		4.2	46.5	
Internal Link Dist (m)		203.0			391.9			316.1			317.7	
Turn Bay Length (m)										25.0		
Base Capacity (vph)		333			451			1325		532	1386	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.16			0.30			0.41		0.11	0.49	

Intersection Summary

Cycle Length: 59.5
Actuated Cycle Length: 42.3
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 8.8 — Intersection LOS: A
Intersection Capacity Utilization 52.6% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	53.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	112	12	127	146	112	4	221	63	110	250	18
Future Vol, veh/h	12	112	12	127	146	112	4	221	63	110	250	18
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.90	0.90	0.90	0.78	0.78	0.78
Heavy Vehicles, %	0	16	0	0	14	0	0	2	3	1	3	7
Mvmt Flow	18	167	18	144	166	127	4	246	70	141	321	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.2	54.5	28.9	81.8
HCM LOS	C	F	D	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	9%	33%	29%
Vol Thru, %	77%	82%	38%	66%
Vol Right, %	22%	9%	29%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	288	136	385	378
LT Vol	4	12	127	110
Through Vol	221	112	146	250
RT Vol	63	12	112	18
Lane Flow Rate	320	203	438	485
Geometry Grp	1	1	1	1
Degree of Util (X)	0.71	0.489	0.93	1.044
Departure Headway (Hd)	8.204	8.935	7.842	7.756
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	445	406	464	470
Service Time	6.204	6.935	5.842	5.756
HCM Lane V/C Ratio	0.719	0.5	0.944	1.032
HCM Control Delay	28.9	20.2	54.5	81.8
HCM Lane LOS	D	C	F	F
HCM 95th-tile Q	5.5	2.6	10.8	14.8

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	58	127	194	15	38	144
Future Vol, veh/h	58	127	194	15	38	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	50	9	1	25	0	12
Mvmt Flow	70	153	231	18	49	185

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	249	0	-	0	524	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	293	-
Critical Hdwy	4.6	-	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.65	-	-	-	3.5	3.408
Pot Cap-1 Maneuver	1082	-	-	-	517	784
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1082	-	-	-	480	784
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	762	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1082	-	-	-	692
HCM Lane V/C Ratio	0.065	-	-	-	0.337
HCM Control Delay (s)	8.6	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.5

Intersection	
Int Delay, s/veh	6.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	66	91	37	62	78	25
Future Vol, veh/h	66	91	37	62	78	25
Conflicting Peds, #/hr	0	0	0	0	0	24
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	68	68	41	41
Heavy Vehicles, %	2	25	17	8	3	15
Mvmt Flow	105	144	54	91	190	61

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	249	0	376	201
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	199	-
Critical Hdwy	-	-	4.27	-	6.43	6.35
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.353	-	3.527	3.435
Pot Cap-1 Maneuver	-	-	1234	-	623	808
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	832	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1234	-	594	792
Mov Cap-2 Maneuver	-	-	-	-	594	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	794	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	632	-	-	1234	-
HCM Lane V/C Ratio	0.397	-	-	0.044	-
HCM Control Delay (s)	14.4	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-

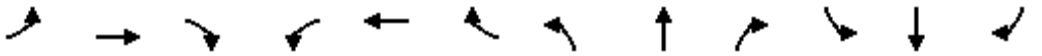
Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↕	
Traffic Vol, veh/h	6	5	10	24	4	109	6	362	17	93	440	20
Future Vol, veh/h	6	5	10	24	4	109	6	362	17	93	440	20
Conflicting Peds, #/hr	3	0	3	3	0	3	12	0	9	9	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	77	77	77	89	89	89	79	79	79
Heavy Vehicles, %	20	0	0	0	0	28	0	6	0	29	2	25
Mvmt Flow	8	7	14	31	5	142	7	407	19	118	557	25

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1325	1267	306	961	1270	429	594	0	0	435	0	0
Stage 1	818	818	-	440	440	-	-	-	-	-	-	-
Stage 2	507	449	-	521	830	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.62	4.1	-	-	4.535	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.566	2.2	-	-	2.4755	-	-
Pot Cap-1 Maneuver	109	170	696	225	170	563	992	-	-	973	-	-
Stage 1	307	393	-	600	581	-	-	-	-	-	-	-
Stage 2	508	576	-	512	388	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	67	135	687	179	135	557	982	-	-	966	-	-
Mov Cap-2 Maneuver	67	135	-	179	135	-	-	-	-	-	-	-
Stage 1	301	319	-	590	571	-	-	-	-	-	-	-
Stage 2	371	566	-	401	315	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35	22.5	0.1	2
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	982	-	-	149	381	966	-	-
HCM Lane V/C Ratio	0.007	-	-	0.199	0.467	0.122	-	-
HCM Control Delay (s)	8.7	0	-	35	22.5	9.2	0.6	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	2.4	0.4	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	497	335	212	543	1	436	76	205	38	95	88
Future Volume (vph)	47	497	335	212	543	1	436	76	205	38	95	88
Satd. Flow (prot)	0	3213	0	0	3349	0	0	1729	1568	0	1873	1583
Flt Permitted		0.827			0.525			0.602			0.742	
Satd. Flow (perm)	0	2665	0	0	1783	0	0	1083	1568	0	1410	1559
Satd. Flow (RTOR)		124							185			97
Confl. Peds. (#/hr)							3					3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	3%	7%	4%	7%	6%	0%	6%	2%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	987	0	0	849	0	0	533	214	0	146	97
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		37.0			53.0			47.0	47.0		31.0	31.0
Actuated g/C Ratio		0.33			0.47			0.41	0.41		0.27	0.27
v/c Ratio		1.04			1.16dl			1.06	0.28		0.38	0.20
Control Delay		72.1			37.2			88.5	5.6		36.9	7.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		72.1			37.2			88.5	5.6		36.9	7.3
LOS		E			D			F	A		D	A
Approach Delay		72.1			37.2			64.7			25.1	
Approach LOS		E			D			E			C	
Queue Length 50th (m)		~119.5			72.2			~112.8	4.0		27.6	0.0
Queue Length 95th (m)		#158.6			#96.1			#204.1	19.0		47.1	12.8
Internal Link Dist (m)		431.2			299.0			454.2			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		953			959			503	758		385	497
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		1.04			0.89			1.06	0.28		0.38	0.20

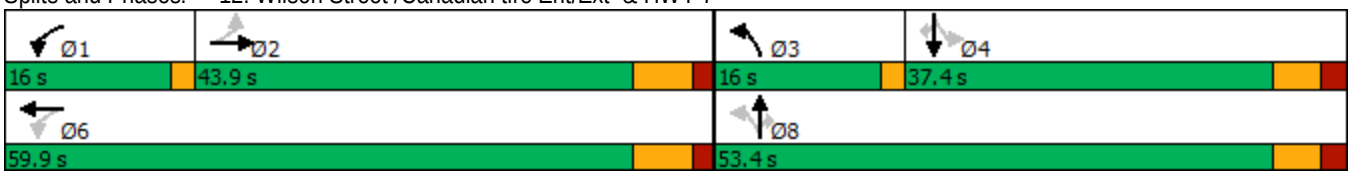
Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 113.3			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 55.6		Intersection LOS: E	
Intersection Capacity Utilization 98.7%		ICU Level of Service F	
Analysis Period (min) 15			

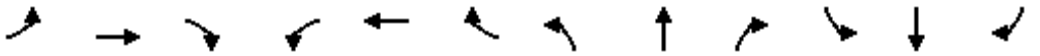
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7



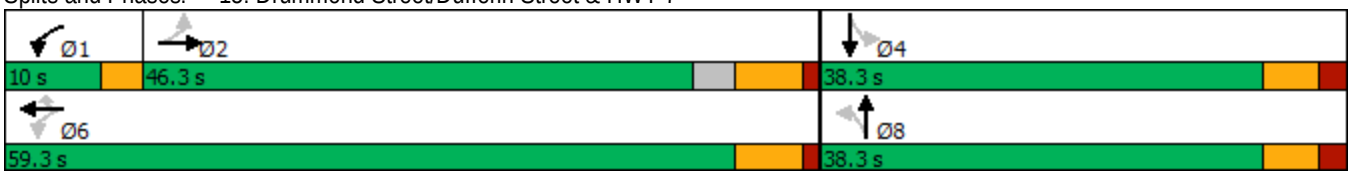


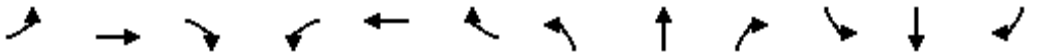
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	359	216	129	374	24	270	64	121	20	62	102
Future Volume (vph)	73	359	216	129	374	24	270	64	121	20	62	102
Satd. Flow (prot)	0	3247	0	0	3163	1524	1752	1642	0	1805	1678	0
Flt Permitted		0.809			0.579		0.637			0.623		
Satd. Flow (perm)	0	2642	0	0	1855	1524	1174	1642	0	1181	1678	0
Satd. Flow (RTOR)		114				37		104			91	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Heavy Vehicles (%)	2%	8%	1%	3%	16%	6%	3%	4%	3%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	696	0	0	541	26	307	211	0	23	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		10.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		25.3			35.6	35.6	25.4	25.4		25.4	25.4	
Actuated g/C Ratio		0.34			0.48	0.48	0.34	0.34		0.34	0.34	
v/c Ratio		0.71			0.56	0.03	0.76	0.33		0.06	0.30	
Control Delay		22.4			16.1	3.0	36.6	11.5		18.2	11.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		22.4			16.1	3.0	36.6	11.5		18.2	11.5	
LOS		C			B	A	D	B		B	B	
Approach Delay		22.4			15.5			26.4			12.3	
Approach LOS		C			B			C			B	
Queue Length 50th (m)		38.6			25.2	0.0	35.6	9.8		2.0	9.1	
Queue Length 95th (m)		62.7			40.6	2.9	#89.5	30.5		8.0	27.2	
Internal Link Dist (m)		299.0			123.4			352.3			198.4	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1626			1435	1133	522	788		525	797	
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		0.43			0.38	0.02	0.59	0.27		0.04	0.24	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 73.9			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 81.7%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	32	261	10	52	32	121	700	5	15	735	69
Future Volume (vph)	145	32	261	10	52	32	121	700	5	15	735	69
Satd. Flow (prot)	0	1728	1583	0	1749	0	1770	1843	0	1805	1863	1615
Flt Permitted		0.738			0.958		0.132			0.162		
Satd. Flow (perm)	0	1293	1500	0	1679	0	246	1843	0	308	1863	1477
Satd. Flow (RTOR)			224		42			1				109
Confl. Peds. (#/hr)	23		20	20		23	40		18	18		40
Peak Hour Factor	0.93	0.93	0.93	0.77	0.77	0.77	0.87	0.87	0.87	0.83	0.83	0.83
Heavy Vehicles (%)	6%	4%	2%	0%	2%	0%	2%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	190	281	0	123	0	139	811	0	18	886	83
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		12.9	12.9		12.9		31.1	30.2		28.5	24.6	24.6
Actuated g/C Ratio		0.24	0.24		0.24		0.58	0.56		0.53	0.46	0.46
v/c Ratio		0.62	0.53		0.28		0.49	0.79		0.06	1.04	0.11
Control Delay		27.8	8.9		13.5		14.4	20.8		6.5	64.0	2.4
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		27.8	8.9		13.5		14.4	20.8		6.5	64.0	2.4
LOS		C	A		B		B	C		A	E	A
Approach Delay		16.5			13.5			19.8			57.8	
Approach LOS		B			B			B			E	
Queue Length 50th (m)		17.8	4.7		6.8		5.3	51.1		0.7	~110.4	0.0
Queue Length 95th (m)		35.4	21.1		14.3		#18.0	#166.9		2.9	#170.7	4.0
Internal Link Dist (m)		214.8			220.8			317.7			160.4	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		439	657		598		285	1032		304	851	734
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		0.43	0.43		0.21		0.49	0.79		0.06	1.04	0.11

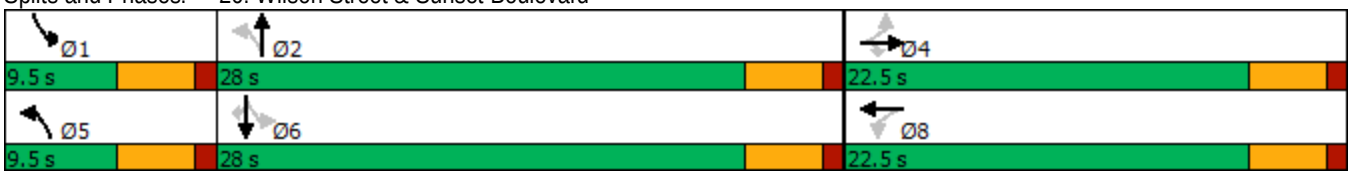
Intersection Summary

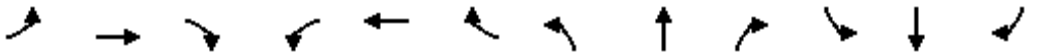
Cycle Length: 60
Actuated Cycle Length: 53.9
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 33.7 — Intersection LOS: C
Intersection Capacity Utilization 78.8% — ICU Level of Service D
Analysis Period (min) 15

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

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

Splits and Phases: 26: Wilson Street & Sunset Boulevard



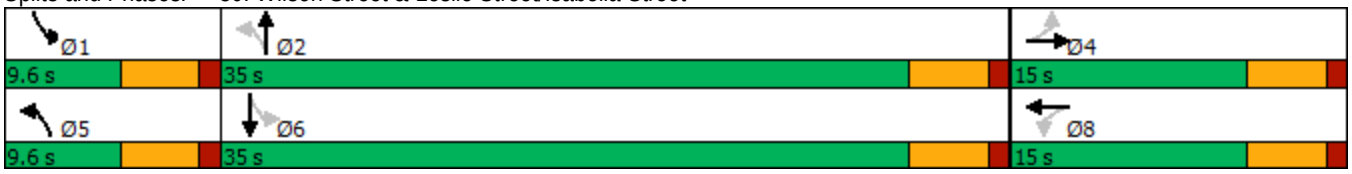


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	27	6	33	31	86	3	659	4	53	770	51
Future Volume (vph)	129	27	6	33	31	86	3	659	4	53	770	51
Satd. Flow (prot)	0	1772	0	0	1701	0	1805	1843	0	1703	1822	0
Flt Permitted		0.627			0.919		0.118			0.242		
Satd. Flow (perm)	0	1148	0	0	1574	0	224	1843	0	432	1822	0
Satd. Flow (RTOR)		3			96			1			8	
Confl. Peds. (#/hr)	4		13	13		4	36		9	9		36
Peak Hour Factor	0.76	0.76	0.76	0.90	0.90	0.90	0.96	0.96	0.96	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	3%	0%	6%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	214	0	0	167	0	3	690	0	62	966	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.6	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		10.6			10.6		35.1	32.0		36.9	35.9	
Actuated g/C Ratio		0.18			0.18		0.61	0.56		0.64	0.63	
v/c Ratio		1.00			0.45		0.01	0.67		0.16	0.85	
Control Delay		92.4			14.7		3.3	14.4		4.5	19.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		92.4			14.7		3.3	14.4		4.5	19.8	
LOS		F			B		A	B		A	B	
Approach Delay		92.4			14.7			14.3			18.9	
Approach LOS		F			B			B			B	
Queue Length 50th (m)		21.8			6.3		0.1	56.6		1.9	61.2	
Queue Length 95th (m)		#50.7			22.5		0.7	94.8		4.6	#172.3	
Internal Link Dist (m)		200.9			391.9			316.1			317.7	
Turn Bay Length (m)							60.0			25.0		
Base Capacity (vph)		213			368		278	1063		391	1142	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		1.00			0.45		0.01	0.65		0.16	0.85	

Intersection Summary			
Cycle Length: 59.6			
Actuated Cycle Length: 57.4			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	124.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	151	16	101	133	148	20	321	121	164	291	14
Future Vol, veh/h	14	151	16	101	133	148	20	321	121	164	291	14
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.89	0.89	0.85	0.85	0.85
Heavy Vehicles, %	0	6	0	0	5	1	0	0	0	0	0	0
Mvmt Flow	16	178	19	119	156	174	22	361	136	193	342	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	27.8	85.7	138.5	179.3
HCM LOS	D	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	8%	26%	35%
Vol Thru, %	69%	83%	35%	62%
Vol Right, %	26%	9%	39%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	462	181	382	469
LT Vol	20	14	101	164
Through Vol	321	151	133	291
RT Vol	121	16	148	14
Lane Flow Rate	519	213	449	552
Geometry Grp	1	1	1	1
Degree of Util (X)	1.194	0.565	1.03	1.3
Departure Headway (Hd)	9.18	11.184	9.452	9.169
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	400	326	386	403
Service Time	7.18	9.184	7.452	7.169
HCM Lane V/C Ratio	1.298	0.653	1.163	1.37
HCM Control Delay	138.5	27.8	85.7	179.3
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	18.8	3.3	12.9	23

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	154	237	175	51	24	111
Future Vol, veh/h	154	237	175	51	24	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	20	2	0	0	25	0
Mvmt Flow	181	279	211	61	35	163

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	272	0	-	0	852	211
Stage 1	-	-	-	-	211	-
Stage 2	-	-	-	-	641	-
Critical Hdwy	4.3	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.38	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	1194	-	-	-	301	834
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	483	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1194	-	-	-	247	834
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	483	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1194	-	-	-	586
HCM Lane V/C Ratio	0.152	-	-	-	0.339
HCM Control Delay (s)	8.6	0	-	-	14.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.5

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	92	13	33	99	10	27
Future Vol, veh/h	92	13	33	99	10	27
Conflicting Peds, #/hr	0	0	0	0	1	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	72	72	75	75
Heavy Vehicles, %	2	0	0	1	0	10
Mvmt Flow	118	17	46	138	13	36

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	135	0	358	136
Stage 1	-	-	-	-	127	-
Stage 2	-	-	-	-	231	-
Critical Hdwy	-	-	4.1	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1462	-	644	892
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1462	-	621	885
Mov Cap-2 Maneuver	-	-	-	-	621	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	784	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	794	-	-	1462	-
HCM Lane V/C Ratio	0.062	-	-	0.031	-
HCM Control Delay (s)	9.8	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

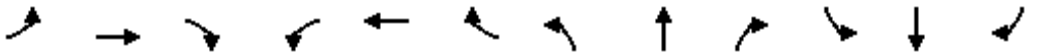
Intersection	
Int Delay, s/veh	11.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	5	13	24	10	152	12	494	46	181	581	29
Future Vol, veh/h	6	5	13	24	10	152	12	494	46	181	581	29
Conflicting Peds, #/hr	5	0	9	9	0	5	20	0	19	19	0	20
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	94	94	94	89	89	89	96	96	96
Heavy Vehicles, %	20	0	0	0	0	7	0	1	0	12	1	0
Mvmt Flow	9	7	19	26	11	162	13	555	52	189	605	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1717	1670	347	1319	1659	605	655	0	0	626	0	0
Stage 1	1018	1018	-	626	626	-	-	-	-	-	-	-
Stage 2	699	652	-	693	1033	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.305	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.3665	2.2	-	-	2.314	-	-
Pot Cap-1 Maneuver	55	97	655	126	99	485	942	-	-	898	-	-
Stage 1	230	317	-	475	480	-	-	-	-	-	-	-
Stage 2	394	467	-	405	312	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	23	61	639	80	63	475	926	-	-	884	-	-
Mov Cap-2 Maneuver	23	61	-	80	63	-	-	-	-	-	-	-
Stage 1	221	208	-	457	462	-	-	-	-	-	-	-
Stage 2	248	450	-	251	205	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	110.1	65.7	0.2	3.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	66	239	884	-	-
HCM Lane V/C Ratio	0.015	-	-	0.535	0.828	0.213	-	-
HCM Control Delay (s)	8.9	0	-	110.1	65.7	10.2	1	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	2.2	6.4	0.8	-	-

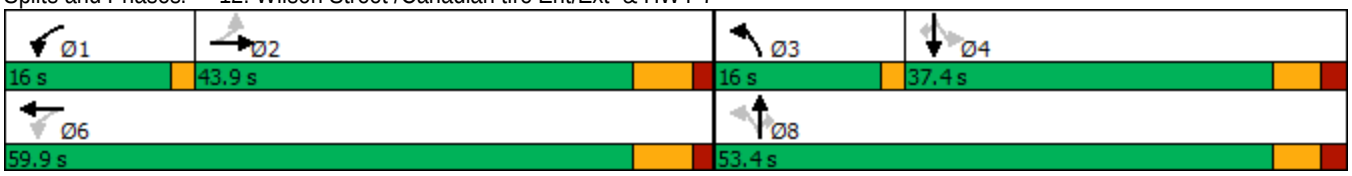


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	489	397	222	422	0	306	38	153	16	38	19
Future Volume (vph)	37	489	397	222	422	0	306	38	153	16	38	19
Satd. Flow (prot)	0	3118	0	0	3238	0	0	1771	1404	0	1872	1495
Flt Permitted		0.882			0.533			0.616			0.794	
Satd. Flow (perm)	0	2755	0	0	1756	0	0	1140	1384	0	1508	1495
Satd. Flow (RTOR)		179							166			76
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92	0.58	0.58	0.58
Heavy Vehicles (%)	4%	7%	10%	5%	12%	0%	3%	0%	15%	0%	0%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1049	0	0	723	0	0	374	166	0	94	33
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		37.3			53.4			36.0	36.0		20.7	20.7
Actuated g/C Ratio		0.36			0.52			0.35	0.35		0.20	0.20
v/c Ratio		0.94			1.07dl			0.79	0.28		0.31	0.09
Control Delay		44.4			22.4			40.9	4.5		36.8	0.5
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		44.4			22.4			40.9	4.5		36.8	0.5
LOS		D			C			D	A		D	A
Approach Delay		44.4			22.4			29.7			27.4	
Approach LOS		D			C			C			C	
Queue Length 50th (m)		97.8			48.6			63.5	0.0		17.0	0.0
Queue Length 95th (m)		#157.9			74.9			92.9	13.1		19.6	0.0
Internal Link Dist (m)		431.2			299.0			450.1			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1113			1044			603	727		458	507
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.94			0.69			0.62	0.23		0.21	0.07

Intersection Summary

Cycle Length: 113.3
Actuated Cycle Length: 102.8
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 33.8 Intersection LOS: C
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

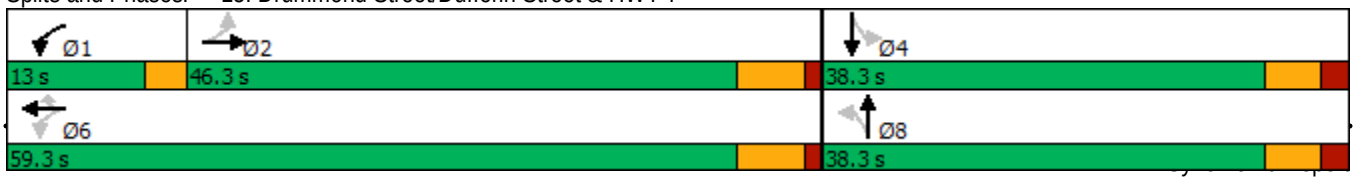
Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7

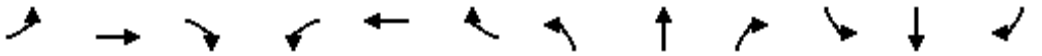


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	238	176	74	272	24	174	48	142	16	34	61
Future Volume (vph)	64	238	176	74	272	24	174	48	142	16	34	61
Satd. Flow (prot)	0	3008	0	0	3352	1509	1687	1633	0	1805	1606	0
Flt Permitted		0.832			0.754		0.679			0.530		
Satd. Flow (perm)	0	2520	0	0	2556	1509	1206	1633	0	1006	1606	0
Satd. Flow (RTOR)		146				37		162			78	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Heavy Vehicles (%)	8%	21%	3%	1%	8%	7%	7%	0%	3%	0%	5%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	556	0	0	398	28	202	221	0	21	122	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		13.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		40.9			53.3	53.3	20.0	20.0		20.0	20.0	
Actuated g/C Ratio		0.48			0.62	0.62	0.23	0.23		0.23	0.23	
v/c Ratio		0.44			0.24	0.03	0.72	0.44		0.09	0.28	
Control Delay		13.2			8.5	2.7	45.0	11.0		25.2	12.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		13.2			8.5	2.7	45.0	11.0		25.2	12.5	
LOS		B			A	A	D	B		C	B	
Approach Delay		13.2			8.2			27.3			14.3	
Approach LOS		B			A			C			B	
Queue Length 50th (m)		22.7			13.7	0.0	32.1	8.1		2.9	6.0	
Queue Length 95th (m)		42.8			27.7	2.9	52.0	23.0		7.3	14.6	
Internal Link Dist (m)		299.0			123.8			352.3			149.7	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1275			1647	950	451	713		376	650	
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		0.44			0.24	0.03	0.45	0.31		0.06	0.19	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 86			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	17	209	13	54	22	149	471	0	6	533	67
Future Volume (vph)	107	17	209	13	54	22	149	471	0	6	533	67
Satd. Flow (prot)	0	1704	1524	0	1761	0	1787	1792	0	1805	1810	1583
Flt Permitted		0.711			0.937		0.193			0.354		
Satd. Flow (perm)	0	1221	1483	0	1661	0	359	1792	0	671	1810	1477
Satd. Flow (RTOR)			281		28							109
Confl. Peds. (#/hr)	30		4	4		30	29		6	6		29
Peak Hour Factor	0.55	0.55	0.55	0.64	0.64	0.64	0.85	0.85	0.85	0.86	0.86	0.86
Heavy Vehicles (%)	8%	0%	6%	0%	3%	0%	1%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	380	0	138	0	175	554	0	7	620	78
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	23.0	23.0	23.0	23.0	23.0		9.5	27.4		9.6	27.5	27.5
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		14.2	14.2		14.2		27.9	27.0		25.4	21.7	21.7
Actuated g/C Ratio		0.27	0.27		0.27		0.53	0.52		0.48	0.41	0.41
v/c Ratio		0.68	0.63		0.29		0.52	0.60		0.02	0.83	0.12
Control Delay		29.7	10.4		15.1		14.1	15.2		6.5	28.4	2.2
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		29.7	10.4		15.1		14.1	15.2		6.5	28.4	2.2
LOS		C	B		B		B	B		A	C	A
Approach Delay		17.6			15.1			15.0			25.3	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		21.9	8.4		9.3		7.9	32.7		0.4	58.4	0.0
Queue Length 95th (m)		22.4	5.3		13.6		#17.1	#95.7		1.7	#114.4	4.0
Internal Link Dist (m)		123.8			93.2			317.7			164.6	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		454	728		635		334	1000		442	836	741
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.50	0.52		0.22		0.52	0.55		0.02	0.74	0.11

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.4			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

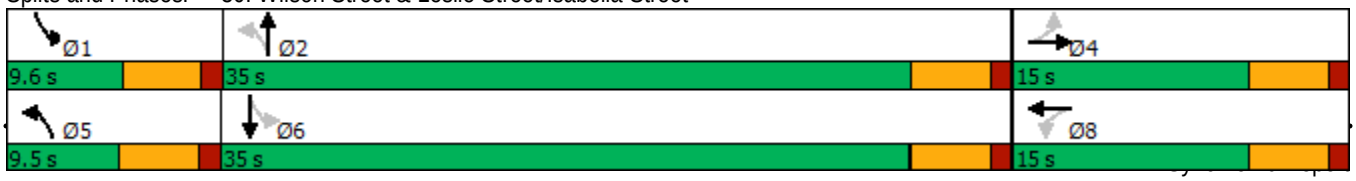
Splits and Phases: 26: Wilson Street & Sunset Boulevard

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	12	3	20	10	76	0	501	3	53	593	32
Future Volume (vph)	30	12	3	20	10	76	0	501	3	53	593	32
Satd. Flow (prot)	0	1522	0	0	1534	0	1900	1758	0	1752	1745	0
Flt Permitted		0.753			0.920					0.274		
Satd. Flow (perm)	0	1149	0	0	1421	0	1900	1758	0	501	1745	0
Satd. Flow (RTOR)		4			106			1			7	
Confl. Peds. (#/hr)	23		4	4		23	6		16	16		6
Peak Hour Factor	0.78	0.78	0.78	0.72	0.72	0.72	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	24%	0%	50%	0%	14%	4%	0%	8%	0%	3%	7%	23%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	148	0	0	615	0	65	762	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.5	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		7.8			7.8			28.4		32.0	33.4	
Actuated g/C Ratio		0.17			0.17			0.61		0.69	0.72	
v/c Ratio		0.29			0.45			0.57		0.13	0.60	
Control Delay		23.2			13.6			11.9		3.8	7.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		23.2			13.6			11.9		3.8	7.5	
LOS		C			B			B		A	A	
Approach Delay		23.3			13.6			11.9			7.2	
Approach LOS		C			B			B			A	
Queue Length 50th (m)		4.2			3.3			42.3		1.6	31.2	
Queue Length 95th (m)		12.4			11.8			69.5		4.5	57.1	
Internal Link Dist (m)		67.6			391.9			316.1			317.7	
Turn Bay Length (m)										25.0		
Base Capacity (vph)		279			422			1221		492	1313	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.20			0.35			0.50		0.13	0.58	

Intersection Summary

Cycle Length: 59.6
Actuated Cycle Length: 46.3
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 10.1 — Intersection LOS: B
Intersection Capacity Utilization 56.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	91.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	125	13	134	158	125	4	251	68	124	282	20
Future Vol, veh/h	13	125	13	134	158	125	4	251	68	124	282	20
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.90	0.90	0.90	0.78	0.78	0.78
Heavy Vehicles, %	0	16	0	0	14	0	0	2	3	1	3	7
Mvmt Flow	19	187	19	152	180	142	4	279	76	159	362	26
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	25.6	89.1	43.2	152.5
HCM LOS	D	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	9%	32%	29%
Vol Thru, %	78%	83%	38%	66%
Vol Right, %	21%	9%	30%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	323	151	417	426
LT Vol	4	13	134	124
Through Vol	251	125	158	282
RT Vol	68	13	125	20
Lane Flow Rate	359	225	474	546
Geometry Grp	1	1	1	1
Degree of Util (X)	0.825	0.57	1.054	1.239
Departure Headway (Hd)	9.161	10.061	8.665	8.463
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	398	361	422	431
Service Time	7.161	8.061	6.665	6.463
HCM Lane V/C Ratio	0.902	0.623	1.123	1.267
HCM Control Delay	43.2	25.6	89.1	152.5
HCM Lane LOS	E	D	F	F
HCM 95th-tile Q	7.5	3.4	14.3	21.8

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	144	220	16	40	147
Future Vol, veh/h	60	144	220	16	40	147
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	50	9	1	25	0	12
Mvmt Flow	72	173	262	19	51	188

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	281	0	-	0	579	262
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	317	-
Critical Hdwy	4.6	-	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.65	-	-	-	3.5	3.408
Pot Cap-1 Maneuver	1050	-	-	-	481	753
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1050	-	-	-	444	753
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	743	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1050	-	-	-	655
HCM Lane V/C Ratio	0.069	-	-	-	0.366
HCM Control Delay (s)	8.7	0	-	-	13.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7

Intersection	
Int Delay, s/veh	6.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	75	103	39	69	88	27
Future Vol, veh/h	75	103	39	69	88	27
Conflicting Peds, #/hr	0	0	0	0	0	28
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	68	68	41	41
Heavy Vehicles, %	2	25	17	8	3	15
Mvmt Flow	119	163	57	101	215	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	282	0	416	229
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	215	-
Critical Hdwy	-	-	4.27	-	6.43	6.35
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.353	-	3.527	3.435
Pot Cap-1 Maneuver	-	-	1199	-	591	779
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	818	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1199	-	561	761
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	777	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	598	-	-	1199	-
HCM Lane V/C Ratio	0.469	-	-	0.048	-
HCM Control Delay (s)	16.2	-	-	8.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.5	-	-	0.2	-

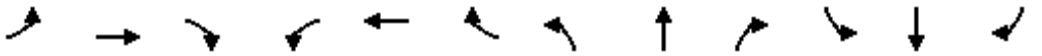
Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↕↔	
Traffic Vol, veh/h	7	6	12	25	4	119	7	410	19	103	498	23
Future Vol, veh/h	7	6	12	25	4	119	7	410	19	103	498	23
Conflicting Peds, #/hr	3	0	3	3	0	3	13	0	10	10	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	77	77	77	89	89	89	79	79	79
Heavy Vehicles, %	20	0	0	0	0	28	0	6	0	29	2	25
Mvmt Flow	10	8	17	32	5	155	8	461	21	130	630	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1489	1426	346	1080	1430	485	672	0	0	492	0	0
Stage 1	918	918	-	498	498	-	-	-	-	-	-	-
Stage 2	571	508	-	582	932	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.62	4.1	-	-	4.535	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.566	2.2	-	-	2.4755	-	-
Pot Cap-1 Maneuver	82	137	656	186	136	521	928	-	-	922	-	-
Stage 1	266	353	-	558	548	-	-	-	-	-	-	-
Stage 2	467	542	-	471	348	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	45	103	647	138	102	515	918	-	-	914	-	-
Mov Cap-2 Maneuver	45	103	-	138	102	-	-	-	-	-	-	-
Stage 1	260	270	-	547	537	-	-	-	-	-	-	-
Stage 2	319	531	-	343	266	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	53.7	30.4	0.1	2.2
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	918	-	-	108	328	914	-	-
HCM Lane V/C Ratio	0.009	-	-	0.326	0.586	0.143	-	-
HCM Control Delay (s)	9	0	-	53.7	30.4	9.6	0.8	-
HCM Lane LOS	A	A	-	F	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.3	3.5	0.5	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	563	375	240	614	2	491	86	232	43	107	99
Future Volume (vph)	53	563	375	240	614	2	491	86	232	43	107	99
Satd. Flow (prot)	0	3212	0	0	3350	0	0	1729	1568	0	1873	1583
Flt Permitted		0.798			0.536			0.572			0.579	
Satd. Flow (perm)	0	2571	0	0	1821	0	0	1029	1568	0	1100	1559
Satd. Flow (RTOR)		120							186			109
Confl. Peds. (#/hr)							3					3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	3%	7%	4%	7%	6%	0%	6%	2%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1114	0	0	962	0	0	601	242	0	165	109
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	43.9	43.9		16.0	59.9		16.0	53.4	53.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		37.0			53.0			47.0	47.0		31.0	31.0
Actuated g/C Ratio		0.33			0.47			0.41	0.41		0.27	0.27
v/c Ratio		1.21			1.31dl			1.24	0.32		0.55	0.22
Control Delay		136.3			54.0			152.8	7.0		43.3	7.1
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		136.3			54.0			152.8	7.0		43.3	7.1
LOS		F			D			F	A		D	A
Approach Delay		136.3			54.0			111.0			28.9	
Approach LOS		F			D			F			C	
Queue Length 50th (m)		~157.4			85.6			~163.8	7.8		33.0	0.0
Queue Length 95th (m)		#197.0			#130.7			#243.9	24.5		56.6	13.6
Internal Link Dist (m)		431.2			299.0			453.1			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		920			974			486	759		300	505
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		1.21			0.99			1.24	0.32		0.55	0.22

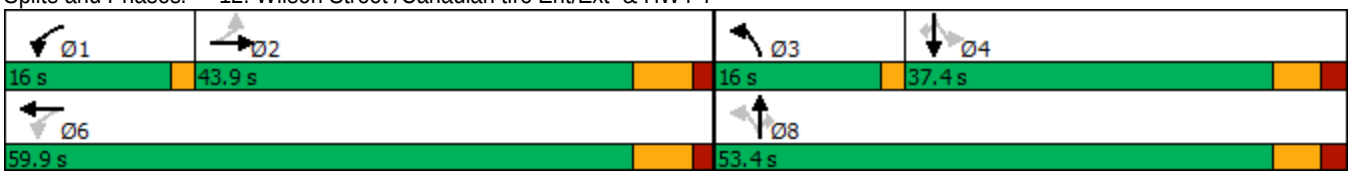
Intersection Summary			
Cycle Length: 113.3			
Actuated Cycle Length: 113.3			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 95.6		Intersection LOS: F	
Intersection Capacity Utilization 108.3%		ICU Level of Service G	
Analysis Period (min) 15			

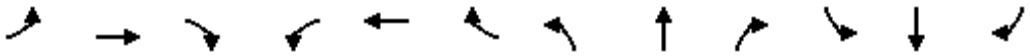
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7



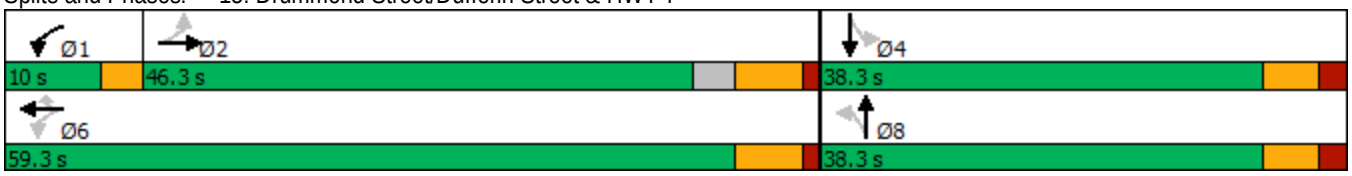


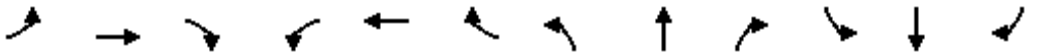
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	406	245	143	424	27	305	72	135	22	70	115
Future Volume (vph)	83	406	245	143	424	27	305	72	135	22	70	115
Satd. Flow (prot)	0	3247	0	0	3164	1524	1752	1642	0	1805	1677	0
Flt Permitted		0.782			0.545		0.609			0.584		
Satd. Flow (perm)	0	2554	0	0	1745	1524	1122	1642	0	1108	1677	0
Satd. Flow (RTOR)		114				37		102			91	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Heavy Vehicles (%)	2%	8%	1%	3%	16%	6%	3%	4%	3%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	789	0	0	610	29	347	235	0	26	215	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	46.3	46.3		10.0	59.3	59.3	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		29.3			39.4	39.4	32.3	32.3		32.3	32.3	
Actuated g/C Ratio		0.35			0.47	0.47	0.38	0.38		0.38	0.38	
v/c Ratio		0.82			0.70	0.04	0.81	0.34		0.06	0.31	
Control Delay		28.8			20.9	3.1	42.7	13.4		20.7	13.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		28.8			20.9	3.1	42.7	13.4		20.7	13.4	
LOS		C			C	A	D	B		C	B	
Approach Delay		28.8			20.0			30.9			14.2	
Approach LOS		C			C			C			B	
Queue Length 50th (m)		54.3			34.1	0.0	50.0	14.4		2.7	13.4	
Queue Length 95th (m)		76.2			46.0	3.3	#118.7	38.3		9.3	34.2	
Internal Link Dist (m)		299.0			119.7			352.3			198.4	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1369			1169	979	429	691		424	698	
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		0.58			0.52	0.03	0.81	0.34		0.06	0.31	

Intersection Summary			
Cycle Length: 97.6			
Actuated Cycle Length: 84.4			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	36	292	12	59	36	135	789	6	17	828	78
Future Volume (vph)	164	36	292	12	59	36	135	789	6	17	828	78
Satd. Flow (prot)	0	1728	1583	0	1747	0	1770	1842	0	1805	1863	1615
Flt Permitted		0.709			0.951		0.136			0.150		
Satd. Flow (perm)	0	1240	1492	0	1666	0	253	1842	0	285	1863	1464
Satd. Flow (RTOR)			212		43			1				109
Confl. Peds. (#/hr)	26		23	23		26	45		20	20		45
Peak Hour Factor	0.93	0.93	0.93	0.77	0.77	0.77	0.87	0.87	0.87	0.83	0.83	0.83
Heavy Vehicles (%)	6%	4%	2%	0%	2%	0%	2%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	314	0	140	0	155	914	0	20	998	94
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		13.5	13.5		13.5		30.5	29.6		27.9	24.1	24.1
Actuated g/C Ratio		0.25	0.25		0.25		0.56	0.55		0.52	0.45	0.45
v/c Ratio		0.69	0.59		0.31		0.54	0.91		0.07	1.20	0.13
Control Delay		31.4	11.5		14.2		17.0	29.8		6.6	123.7	3.0
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		31.4	11.5		14.2		17.0	29.8		6.6	123.7	3.0
LOS		C	B		B		B	C		A	F	A
Approach Delay		19.6			14.2			27.9			111.4	
Approach LOS		B			B			C			F	
Queue Length 50th (m)		20.9	8.8		8.3		6.6	70.5		0.8	~142.6	0.0
Queue Length 95th (m)		40.9	28.3		16.2		#24.3	#195.1		3.1	#198.8	5.1
Internal Link Dist (m)		214.8			220.8			317.7			161.6	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		423	648		596		286	1008		291	831	713
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.51	0.48		0.23		0.54	0.91		0.07	1.20	0.13

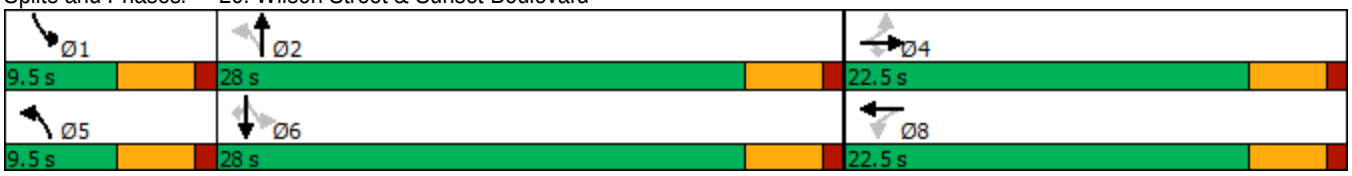
Intersection Summary

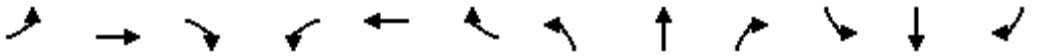
Cycle Length: 60
Actuated Cycle Length: 54
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 58.3 — Intersection LOS: E
Intersection Capacity Utilization 86.6% — ICU Level of Service E
Analysis Period (min) 15

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

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

Splits and Phases: 26: Wilson Street & Sunset Boulevard





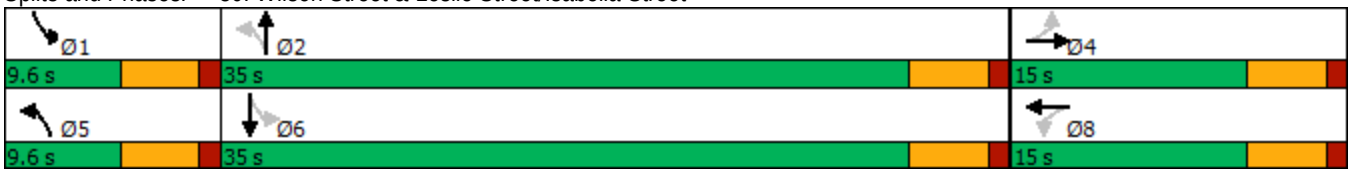
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	30	7	38	35	97	3	742	4	58	866	58
Future Volume (vph)	146	30	7	38	35	97	3	742	4	58	866	58
Satd. Flow (prot)	0	1772	0	0	1703	0	1805	1843	0	1703	1821	0
Flt Permitted		0.582			0.923		0.119			0.185		
Satd. Flow (perm)	0	1066	0	0	1583	0	226	1843	0	331	1821	0
Satd. Flow (RTOR)		3			98			1			8	
Confl. Peds. (#/hr)	4		14	14		4	41		10	10		41
Peak Hour Factor	0.76	0.76	0.76	0.90	0.90	0.90	0.96	0.96	0.96	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	3%	0%	6%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	189	0	3	777	0	68	1087	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.6	35.0		9.6	35.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		10.5			10.5		34.7	31.8		36.5	35.5	
Actuated g/C Ratio		0.18			0.18		0.61	0.56		0.64	0.62	
v/c Ratio		1.20			0.51		0.01	0.75		0.20	0.96	
Control Delay		156.8			16.8		3.3	17.6		4.9	31.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		156.8			16.8		3.3	17.6		4.9	31.6	
LOS		F			B		A	B		A	C	
Approach Delay		156.8			16.8			17.5			30.0	
Approach LOS		F			B			B			C	
Queue Length 50th (m)		~36.0			9.3		0.1	68.9		2.2	80.2	
Queue Length 95th (m)		#59.8			26.3		0.7	#136.2		4.9	#204.1	
Internal Link Dist (m)		200.9			391.9			316.1			317.7	
Turn Bay Length (m)							60.0			25.0		
Base Capacity (vph)		200			373		280	1030		335	1138	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		1.20			0.51		0.01	0.75		0.20	0.96	

Intersection Summary	
Cycle Length: 59.6	
Actuated Cycle Length: 56.9	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.20	
Intersection Signal Delay: 37.7	Intersection LOS: D
Intersection Capacity Utilization 80.8%	ICU Level of Service D
Analysis Period (min) 15	

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

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

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Intersection	
Intersection Delay, s/veh	177.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	161	18	108	146	166	22	364	127	184	330	16
Future Vol, veh/h	16	161	18	108	146	166	22	364	127	184	330	16
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.89	0.89	0.85	0.85	0.85
Heavy Vehicles, %	0	6	0	0	5	1	0	0	0	0	0	0
Mvmt Flow	19	189	21	127	172	195	25	409	143	216	388	19
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	33.2	123.9	197.5	255.7
HCM LOS	D	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	8%	26%	35%
Vol Thru, %	71%	83%	35%	62%
Vol Right, %	25%	9%	40%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	513	195	420	530
LT Vol	22	16	108	184
Through Vol	364	161	146	330
RT Vol	127	18	166	16
Lane Flow Rate	576	229	494	624
Geometry Grp	1	1	1	1
Degree of Util (X)	1.337	0.609	1.14	1.479
Departure Headway (Hd)	10.044	12.517	10.265	9.924
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	369	291	356	374
Service Time	8.044	10.517	8.265	7.924
HCM Lane V/C Ratio	1.561	0.787	1.388	1.668
HCM Control Delay	197.5	33.2	123.9	255.7
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	22.9	3.7	15.7	28.7

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	158	269	197	54	25	115
Future Vol, veh/h	158	269	197	54	25	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	250	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	20	2	0	0	25	0
Mvmt Flow	186	316	237	65	37	169

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	302	0	-	0	925	237
Stage 1	-	-	-	-	237	-
Stage 2	-	-	-	-	688	-
Critical Hdwy	4.3	-	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.38	-	-	-	3.725	3.3
Pot Cap-1 Maneuver	1163	-	-	-	272	807
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1163	-	-	-	219	807
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	459	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1163	-	-	-	545
HCM Lane V/C Ratio	0.16	-	-	-	0.378
HCM Control Delay (s)	8.7	0	-	-	15.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.6	-	-	-	1.7

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	14	35	110	12	38
Future Vol, veh/h	101	14	35	110	12	38
Conflicting Peds, #/hr	0	0	0	0	1	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	72	72	75	75
Heavy Vehicles, %	2	0	0	1	0	10
Mvmt Flow	129	18	49	153	16	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	147	0	390	148
Stage 1	-	-	-	-	138	-
Stage 2	-	-	-	-	252	-
Critical Hdwy	-	-	4.1	-	6.4	6.3
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.39
Pot Cap-1 Maneuver	-	-	1447	-	618	878
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1447	-	595	871
Mov Cap-2 Maneuver	-	-	-	-	595	-
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	765	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	784	-	-	1447	-
HCM Lane V/C Ratio	0.085	-	-	0.034	-
HCM Control Delay (s)	10	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	35.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	6	14	25	12	169	13	559	49	200	658	33
Future Vol, veh/h	7	6	14	25	12	169	13	559	49	200	658	33
Conflicting Peds, #/hr	6	0	10	10	0	6	23	0	22	22	0	23
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	650
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	94	94	94	89	89	89	96	96	96
Heavy Vehicles, %	20	0	0	0	0	7	0	1	0	12	1	0
Mvmt Flow	10	9	21	27	13	180	15	628	55	208	685	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1929	1876	393	1481	1866	684	742	0	0	705	0	0
Stage 1	1141	1141	-	708	708	-	-	-	-	-	-	-
Stage 2	788	735	-	773	1158	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.3	6.5	6.305	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.8	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.69	4	3.3	3.5	4	3.3665	2.2	-	-	2.314	-	-
Pot Cap-1 Maneuver	38	72	612	96	73	437	874	-	-	837	-	-
Stage 1	192	278	-	429	441	-	-	-	-	-	-	-
Stage 2	350	428	-	362	273	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	11	39	595	50	39	427	857	-	-	821	-	-
Mov Cap-2 Maneuver	11	39	-	50	39	-	-	-	-	-	-	-
Stage 1	183	157	-	409	421	-	-	-	-	-	-	-
Stage 2	190	408	-	188	154	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 407.1	216.5	0.2	3.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	857	-	-	33	171	821	-	-
HCM Lane V/C Ratio	0.017	-	-	1.203	1.282	0.254	-	-
HCM Control Delay (s)	9.3	0	-	$ 407.1	216.5	10.9	1.4	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.3	12.6	1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

APPENDIX F – LOS SUMMARY TABLES

Background Traffic Only Buildout Year 2030						
Intersection	Am Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
Drummond Concession 2 at Perthmore Street						
Eastbound Left-Through	A	0.02	8.30	A	0.03	8.00
Westbound Through	-	-	-	-	-	-
Westbound Right	-	-	-	-	-	-
Southbound Left-Right	B	0.06	10.40	B	0.07	10.20
Isabella Street at Victoria Street						
Eastbound Through-Right	-	-	-	-	-	-
Westbound Left-through	A	0.02	8.00	A	0.02	7.50
Northbound Left-Right	B	0.33	12.50	A	0.04	9.70
North Street at Wilson Street						
Eastbound Left-Through-Right	D	0.17	29.70	F	0.39	68.70
Westbound Left-Through-Right	C	0.25	15.80	D	0.54	30.90
Northbound Left-Through-Right	A	0.01	8.70	A	0.02	8.90
Southbound Left-Through	A	0.11	9.10	A	0.17	9.80
Southbound Through-Right	A	-	0.50	A	-	0.80
North Street at Drummond Street						
Eastbound Left-Through-Right	B	0.34	13.70	C	0.35	16.00
Westbound Left-Through-Right	C	0.50	16.00	D	0.70	25.60
Northbound Left-Through-Right	C	0.52	16.10	E	0.86	38.10
Southbound Left-Through-Right	D	0.81	30.40	F	1.03	78.70
Wilson Street at HWY. 7						
Eastbound Left-Through-Right	C	0.76	27.00	E	1.02	68.00
Westbound Left-Through-Right	B	0.59	16.80	D	1.13	37.40
Northbound Left-Through	D	0.72	38.30	E	1.02	76.30
Northbound Right	A	0.28	5.10	A	0.28	5.10
Southbound Left-Through	D	0.34	39.50	D	0.37	36.50
Southbound Right	A	0.10	0.60	A	0.20	7.30
Drummond Street at HWY. 7						
Eastbound Left-Through-Right	B	0.53	15.60	C	0.73	23.60
Westbound Left-Through	A	0.27	9.70	B	0.54	16.00
Westbound Right	A	0.03	3.20	A	0.04	3.20
Northbound Left	C	0.56	26.30	C	0.75	33.90
Northbound Through-Right	A	0.34	7.80	B	0.31	10.90
Southbound Left	B	0.06	16.00	B	0.05	16.80
Southbound Through-Right	A	0.23	8.80	B	0.29	10.70
Sunset Blvd at Wilson Street						
Eastbound Left-Through	C	0.59	25.00	C	0.62	27.90
Eastbound Left	A	0.52	6.20	A	0.49	7.40
Westbound Left-Through-Right	B	0.27	14.30	B	0.29	13.50
Northbound Left	A	0.35	8.80	B	0.44	12.40
Northbound Through-Right	B	0.51	12.20	B	0.76	19.70
Southbound Left	A	0.01	6.20	A	0.06	6.50
Southbound through	C	0.76	23.30	D	0.99	50.90
Southbound Right	A	0.11	1.70	A	0.11	2.40
Leslie Street/Isabella Street at Wilson Street						
Eastbound Left-Through-Right	B	0.22	19.00	E	0.94	74.20
Westbound Left-Through-Right	B	0.37	12.00	B	0.43	14.50
Northbound-Left	*	*	*	A	0.04	3.70
Northbound Through-Right	A	0.46	9.60	B	0.62	12.10
Southbound Left	A	0.10	3.80	A	0.11	4.20
Southbound Through-Right	A	0.54	6.90	B	0.82	18.30

Baclground Traffic Only Horizon Year 2035						
Intersection	Am Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
Drummond Concession 2 at Perthmore Street						
Eastbound Left-Through	A	0.02	8.50	A	0.03	8.10
Westbound Through	-	-	-	-	-	-
Westbound Right	-	-	-	-	-	-
Southbound Left-Right	B	0.07	10.80	B	0.08	10.60
Isabella Street at Victoria Street						
Eastbound Through-Right	-	-	-	-	-	-
Westbound Left-through	A	0.02	8.00	A	0.02	7.50
Northbound Left-Right	B	0.39	13.70	A	0.05	9.90
North Street at Wilson Street						
Eastbound Left-Through-Right	E	0.27	42.70	F	0.81	204.90
Westbound Left-Through-Right	C	0.32	18.60	F	0.82	68.20
Northbound Left-Through-Right	A	0.01	9.00	A	0.02	9.30
Southbound Left-Through	A	0.13	9.50	B	0.20	10.40
Southbound Through-Right	A	-	0.70	A	-	1.20
North Street at Drummond Street						
Eastbound Left-Through-Right	C	0.44	16.90	C	0.46	19.90
Westbound Left-Through-Right	C	0.64	22.10	E	0.89	40.40
Northbound Left-Through-Right	C	0.66	22.70	F	1.10	16.20
Southbound Left-Through-Right	F	1.01	71.60	F	1.30	171.60
Wilson Street at HWY. 7						
Eastbound Left-Through-Right	D	0.91	39.30	F	1.19	129.80
Westbound Left-Through-Right	C	1.00	20.70	D	1.31	55.00
Northbound Left-Through	D	0.76	39.70	F	1.20	137.50
Northbound Right	A	0.29	4.70	A	0.32	6.60
Southbound Left-Through	D	0.34	38.30	D	0.51	41.50
Southbound Right	A	0.10	0.60	A	0.22	7.10
Drummond Street at HWY. 7						
Eastbound Left-Through-Right	B	0.44	13.20	C	0.83	29.50
Westbound Left-Through	A	0.23	8.50	C	0.67	20.30
Westbound Right	A	0.03	2.70	A	0.04	3.10
Northbound Left	D	0.72	45.00	D	0.80	40.90
Northbound Through-Right	B	0.41	11.50	B	0.32	13.20
Southbound Left	C	0.08	25.00	C	0.06	20.20
Southbound Through-Right	B	0.28	12.50	B	0.31	13.10
Sunset Blvd at Wilson Street						
Eastbound Left-Through	C	0.67	29.60	C	0.70	31.50
Eastbound Left	A	0.60	9.50	A	0.55	9.80
Westbound Left-Through-Right	B	0.29	15.30	B	0.31	14.20
Northbound Left	B	0.41	10.30	B	0.50	14.80
Northbound Through-Right	B	0.57	14.00	C	0.88	27.20
Southbound Left	A	0.02	6.30	A	0.07	6.60
Southbound through	C	0.83	27.90	F	1.15	104.40
Southbound Right	A	0.12	2.20	A	0.13	3.00
Leslie Street/Isabella Street at Wilson Street						
Eastbound Left-Through-Right	C	0.36	27.40	F	1.18	147.10
Westbound Left-Through-Right	B	0.48	15.80	B	0.50	16.90
Northbound-Left	*	*	*	A	0.01	3.30
Northbound Through-Right	B	0.50	10.10	B	0.73	16.50
Southbound Left	A	0.11	3.40	A	0.15	4.50
Southbound Through-Right	A	0.57	6.60	C	0.91	25.70

Total Traffic Buildout Year 2030						
Intersection	Am Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
Drummond Concession 2 at Perthmore Street						
Eastbound Tleft-Through	A	0.07	8.70	A	0.15	8.60
Westbound Through	-	-	-	-	-	-
Westbound Right	-	-	-	-	-	-
Southbound Left-Right	B	0.37	13.60	B	0.34	14.30
Isabella Street at Victoria Street						
Eastbound Through-Right	-	-	-	-	-	-
Westbound Left-through	A	0.05	8.20	A	0.03	7.50
Northbound Left-Right	C	0.47	16.20	A	0.06	9.80
North Street at Wilson Street						
Eastbound Left-Through-Right	F	0.33	53.70	F	0.54	110.10
Westbound Left-Through-Right	D	0.59	30.40	F	0.83	65.70
Northbound Left-Through-Right	A	0.01	9.00	A	0.02	10.20
Southbound Left-Through	A	0.14	9.60	B	0.21	8.90
Southbound Through-Right	A	-	0.80	A	-	1.00
North Street at Drummond Street						
Eastbound Left-Through-Right	C	0.50	20.20	D	0.65	27.80
Westbound Left-Through-Right	F	0.94	54.50	F	1.16	85.70
Northbound Left-Through-Right	D	0.72	28.90	F	1.30	138.50
Southbound Left-Through-Right	F	1.03	81.80	F	1.37	179.30
Wilson Street at HWY. 7						
Eastbound Left-Through-Right	C	0.80	29.80	E	1.04	72.10
Westbound Left-Through-Right	B	0.61	18.40	D	1.16	37.20
Northbound Left-Through	D	0.74	38.50	F	1.06	88.50
Northbound Right	A	0.27	4.80	A	0.28	5.60
Southbound Left-Through	D	0.30	37.60	D	0.38	36.90
Southbound Right	A	0.09	0.50	A	0.20	7.30
Drummond Street at HWY. 7						
Eastbound Left-Through-Right	B	0.53	15.60	C	0.71	22.40
Westbound Left-Through	A	0.28	9.70	B	0.56	16.10
Westbound Right	A	0.03	3.20	A	0.03	3.00
Northbound Left	C	0.56	26.40	D	0.76	36.60
Northbound Through-Right	A	0.37	7.60	B	0.33	11.50
Southbound Left	B	0.06	16.10	B	0.06	18.20
Southbound Through-Right	A	0.23	8.80	B	0.30	11.50
Sunset Blvd at Wilson Street						
Eastbound Left-Through	C	0.58	25.10	C	0.62	27.80
Eastbound Left	A	0.54	6.90	A	0.53	8.90
Westbound Left-Through-Right	B	0.26	14.50	B	0.28	13.50
Northbound Left	A	0.41	9.70	B	0.49	14.40
Northbound Through-Right	B	0.55	12.90	C	0.79	20.80
Southbound Left	A	0.01	6.20	A	0.06	6.50
Southbound through	C	0.77	23.90	E	1.04	64.00
Southbound Right	A	0.11	1.70	A	0.11	2.40
Leslie Street/Isabella Street at Wilson Street						
Eastbound Left-Through-Right	C	0.23	20.10	F	1.00	92.40
Westbound Left-Through-Right	B	0.40	12.20	B	0.45	14.70
Northbound-Left	*	*	*	A	0.04	3.30
Northbound Through-Right	A	0.50	9.80	B	0.67	14.40
Southbound Left	A	0.11	3.80	A	0.16	4.50
Southbound Through-Right	A	0.55	6.90	B	0.85	19.80

Total Traffic Horizon Year 2035						
Intersection	Am Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
Drummond Concession 2 at Perthmore Street						
Eastbound Left-Through	A	0.07	8.60	A	0.16	8.70
Westbound Through	-	-	-	-	-	-
Westbound Right	-	-	-	-	-	-
Southbound Left-Right	B	0.34	12.80	C	0.38	15.60
Isabella Street at Victoria Street						
Eastbound Through-Right	-	-	-	-	-	-
Westbound Left-through	A	0.04	8.10	A	0.03	7.60
Northbound Left-Right	B	0.40	14.40	B	0.09	10.00
North Street at Wilson Street						
Eastbound Left-Through-Right	E	0.20	35.00	F	1.20	407.10
Westbound Left-Through-Right	C	0.47	22.50	F	1.28	216.50
Northbound Left-Through-Right	A	0.01	8.70	A	0.02	9.30
Southbound Left-Through	A	0.12	9.20	B	0.25	10.90
Southbound Through-Right	A	-	0.60	A	-	1.40
North Street at Drummond Street						
Eastbound Left-Through-Right	D	0.62	25.60	D	0.79	33.20
Westbound Left-Through-Right	F	1.12	89.10	F	1.39	123.90
Northbound Left-Through-Right	E	0.90	43.20	F	1.56	197.50
Southbound Left-Through-Right	F	1.27	152.50	F	1.67	255.70
Wilson Street at HWY. 7						
Eastbound Left-Through-Right	D	0.94	44.40	F	1.21	136.30
Westbound Left-Through-Right	C	1.07	22.40	D	1.31	54.00
Northbound Left-Through	D	0.79	40.90	F	1.24	152.80
Northbound Right	A	0.28	4.50	A	0.32	7.00
Southbound Left-Through	D	0.31	36.80	D	0.55	43.30
Southbound Right	A	0.09	0.50	A	0.22	7.10
Drummond Street at HWY. 7						
Eastbound Left-Through-Right	B	0.44	13.20	C	0.82	28.80
Westbound Left-Through	A	0.24	8.50	C	0.70	20.90
Westbound Right	A	0.03	2.70	A	0.04	3.10
Northbound Left	D	0.72	45.00	D	0.81	42.70
Northbound Through-Right	B	0.44	11.00	B	0.34	13.40
Southbound Left	C	0.09	25.20	C	0.06	20.70
Southbound Through-Right	B	0.28	12.50	B	0.31	13.40
Sunset Blvd at Wilson Street						
Eastbound Left-Through	C	0.68	29.70	C	0.69	31.40
Eastbound Left	B	0.63	10.40	B	0.59	11.50
Westbound Left-Through-Right	B	0.29	15.10	B	0.31	14.20
Northbound Left	B	0.52	14.10	B	0.54	17.00
Northbound Through-Right	B	0.60	15.20	C	0.91	29.80
Southbound Left	A	0.02	6.50	A	0.07	6.60
Southbound through	C	0.83	28.40	F	1.20	123.70
Southbound Right	A	0.12	2.20	A	0.13	3.00
Leslie Street/Isabella Street at Wilson Street						
Eastbound Left-Through-Right	C	0.29	23.20	F	1.20	156.80
Westbound Left-Through-Right	B	0.45	13.60	B	0.51	16.80
Northbound-Left	*	*	*	A	0.01	3.30
Northbound Through-Right	B	0.57	11.90	B	0.75	17.60
Southbound Left	A	0.13	3.80	A	0.20	4.90
Southbound Through-Right	A	0.60	7.50	C	0.96	31.60

APPENDIX G – MITIGATION MEASURES

McINTOSH PERRY

Signal Warrant Calculation

MAJOR STREET: Drummond Street

MINOR STREET: North Street

COMMENT Base Year 2020 - Existing Conditions

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [x]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ] RESTRICTED FLOW (URBAN) [x]

VOLUME	AM	PM	FACTOR *	
1A - All	795	975	n/a	814
1B - Minor	287	321	92%	280
2A - Major	508	654	92%	535
2B - Crossi	138	139	92%	127

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ]	NO [x]	Warrant for new intersection with forecast traffic
120% SATISFIED:	YES [ ]	NO [x]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	YES [x]	NO [ ]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	YES [ ]	NO [x]	Warrant for existing intersection with existing traffic
80% SATISFIED:	YES [x]	NO [ ]	

* Consider full underground provisions if 100% for forecast traffi

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	814
	% FULFILLED				113%

150% SATISFIED:	YES [ ]	NO [x]
120% SATISFIED:	YES [ ]	NO [x]
100% SATISFIED:	YES [x]	NO [ ]
80% SATISFIED:	YES [x]	NO [ ]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	280
	% FULFILLED				165%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	535
	% FULFILLED				74%

150% SATISFIED:	YES [ ]	NO [x]
120% SATISFIED:	YES [ ]	NO [x]
100% SATISFIED:	YES [ ]	NO [x]
80% SATISFIED:	YES [ ]	NO [x]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	127
	% FULFILLED				170%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation

MAJOR STREET: Wilson Street

MINOR STREET: North Street

COMMENT Base Year 2020 - Existing Conditions

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [X]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ]
RESTRICTED FLOW (URBAN) [x]

VOLUME	AM	PM	FACTOR *	
1A - All	801	1,141	n/a	893
1B - Minor	82	136	92%	100
2A - Major	719	1,005	92%	793
2B - Crossing	30	53	92%	38

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ]	NO [X]	Warrant for new intersection with forecast traffic
120% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic
80% SATISFIED:	YES [ ]	NO [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	893
	% FULFILLED				124%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	100
	% FULFILLED				59%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	793
	% FULFILLED				110%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	38
	% FULFILLED				51%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation

MAJOR STREET: Wilson Street

MINOR STREET: North Street

COMMENT Buildout Year 2030 - Background Traffic Only Conditions

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [X]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ] RESTRICTED FLOW (URBAN) [x]

VOLUME	AM	PM	FACTOR *	
1A - All	1,023	1,460	n/a	1,142
1B - Minor	104	174	92%	128
2A - Major	919	1,286	92%	1,014
2B - Crossing	23	42	92%	30

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ] NO [X]	Warrant for new intersection with forecast traffic	
120% SATISFIED:	YES [ ] NO [X]	Warrant for existing intersection with forecast traffic	
100% SATISFIED:	YES [ ] NO [X]	Warrant for existing intersection with existing traffic *	
COMBO 80% SATISFIED:	YES [ ] NO [X]	Warrant for existing intersection with existing traffic	
80% SATISFIED:	YES [ ] NO [X]		

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	1142
	% FULFILLED				159%

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	128
	% FULFILLED				75%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	1014
	% FULFILLED				141%

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	30
	% FULFILLED				40%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation

MAJOR STREET: Wilson Street

MINOR STREET: North Street

COMMENT Buildout Year 2030 - Total Traffic Conditions

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [X]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ]
RESTRICTED FLOW (URBAN) [x]

VOLUME	AM	PM	FACTOR *	
1A - All	1,069	1,461	n/a	1,219
1B - Minor	158	210	92%	169
2A - Major	938	1,343	92%	1,049
2B - Crossing	41	145	92%	86

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ]	NO [X]	Warrant for new intersection with forecast traffic
120% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	YES [X]	NO [ ]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	YES [X]	NO [ ]	Warrant for existing intersection with existing traffic
80% SATISFIED:	YES [X]	NO [ ]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	1219
	% FULFILLED				169%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [X]	NO [ ]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	169
	% FULFILLED				100%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	1049
	% FULFILLED				146%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [X]	NO [ ]
80% SATISFIED:	YES [X]	NO [ ]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	86
	% FULFILLED				114%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation

MAJOR STREET: Wilson Street

MINOR STREET: North Street

COMMENT Horizon Year 2035 - Background Traffic Only Conditions

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [X]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ] RESTRICTED FLOW (URBAN) [x]

VOLUME	AM	PM	FACTOR *	
1A - All	1,160	1,652	n/a	1,294
1B - Minor	119	197	92%	145
2A - Major	1,041	1,455	92%	1,148
2B - Crossing	26	158	92%	85

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ] NO [X]	Warrant for new intersection with forecast traffic	
120% SATISFIED:	YES [ ] NO [X]	Warrant for existing intersection with forecast traffic	
100% SATISFIED:	YES [X] NO [ ]	Warrant for existing intersection with existing traffic *	
COMBO 80% SATISFIED:	YES [X] NO [ ]	Warrant for existing intersection with existing traffic	
80% SATISFIED:	YES [X] NO [ ]		

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	1294
	% FULFILLED				180%

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	145
	% FULFILLED				86%

150% SATISFIED:	YES [ ]	NO [X]	
120% SATISFIED:	YES [ ]	NO [X]	
100% SATISFIED:	YES [ ]	NO [X]	
80% SATISFIED:	YES [X]	NO [ ]	

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	1148
	% FULFILLED				159%

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	85
	% FULFILLED				113%

150% SATISFIED:	YES [ ]	NO [X]	
120% SATISFIED:	YES [ ]	NO [X]	
100% SATISFIED:	YES [X]	NO [ ]	
80% SATISFIED:	YES [X]	NO [ ]	

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation

MAJOR STREET: Wilson Street

MINOR STREET: North Street

COMMENT Horizon Year 2035 - Total Traffic Conditions

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [X]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ]
RESTRICTED FLOW (URBAN) [x]

VOLUME	AM	PM	FACTOR *
1A - All	1,233	1,745	n/a 1,370
1B - Minor	173	233	92% 187
2A - Major	1,060	1,512	92% 1,183
2B - Crossing	44	160	92% 94

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ]	NO [X]	Warrant for new intersection with forecast traffic
120% SATISFIED:	YES [X]	NO [ ]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	YES [X]	NO [ ]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	YES [X]	NO [ ]	Warrant for existing intersection with existing traffic
80% SATISFIED:	YES [X]	NO [ ]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	1370
	% FULFILLED				190%

150% SATISFIED:	YES [ ]	NO [X]		
120% SATISFIED:	YES [ ]	NO [X]		
100% SATISFIED:	YES [X]	NO [ ]		
80% SATISFIED:	YES [X]	NO [ ]		

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	187
	% FULFILLED				110%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	1183
	% FULFILLED				164%

150% SATISFIED:	YES [ ]	NO [X]		
120% SATISFIED:	YES [X]	NO [ ]		
100% SATISFIED:	YES [X]	NO [ ]		
80% SATISFIED:	YES [X]	NO [ ]		

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	94
	% FULFILLED				125%

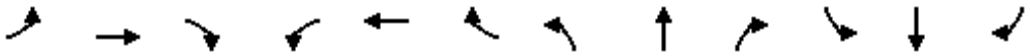
1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Mitigation Horizon Year 2035						
Intersection	Am Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (Sec)	LOS	v/c Ratio	Delay (Sec)
North Street at Wilson Street						
Eastbound Left-Through-Right	A	0.12	10.00	B	0.17	13.30
Westbound Left-Through-Right	B	0.54	10.60	B	0.59	12.40
Northbound Left-Through-Right	A	0.41	6.50	A	0.56	7.30
Southbound Left-Through-Right	A	0.44	6.00	A	0.57	6.80
North Street at Drummond Street						
Eastbound Left-Through-Right	B	0.40	13.60	B	0.42	18.30
Westbound Left-Through-Right	D	0.89	36.10	E	0.99	61.20
Northbound Left-Through-Right	B	0.43	10.30	B	0.60	12.20
Southbound Left-Through-Right	C	0.81	24.30	D	0.98	49.90
Wilson Street at HWY. 7						
Eastbound Left-Through-Right	C	0.84	27.80	F	1.08	86.20
Westbound Left-Through-Right	C	1.59	28.10	E	1.79	68.80
Northbound Left-Through	D	0.83	44.10	F	1.25	160.30
Northbound Right	A	0.28	4.50	A	0.33	8.50
Southbound Left-Through	C	0.25	28.30	D	0.60	49.80
Southbound Right	A	0.08	0.30	A	0.23	7.60
Drummond Street at HWY. 7						
Eastbound Left-Through-Right	B	0.51	15.20	D	0.89	36.80
Westbound Left-Through	A	0.26	9.40	B	0.63	17.80
Westbound Right	A	0.03	2.60	A	0.04	2.90
Northbound Left	C	0.66	34.60	D	0.88	48.50
Northbound Through-Right	A	0.41	8.70	B	0.36	10.50
Southbound Left	B	0.08	19.30	B	0.07	17.60
Southbound Through-Right	B	0.26	10.00	B	0.32	10.60
Sunset Blvd at Wilson Street						
Eastbound Left-Through	C	0.68	30.40	F	0.93	80.40
Eastbound Left	B	0.63	10.50	C	0.69	23.00
Westbound Left-Through-Right	B	0.29	15.40	C	0.37	27.40
Northbound Left	B	0.52	13.60	D	0.81	47.80
Northbound Through-Right	B	0.60	14.80	B	0.78	19.10
Southbound Left	A	0.02	6.30	A	0.07	5.30
Southbound through	C	0.82	27.70	D	0.95	38.20
Southbound Right	A	0.12	2.10	A	0.11	2.30
Leslie Street/Isabella Street at Wilson Street						
Eastbound Left-Through-Right	C	0.29	23.30	F	0.95	85.20
Westbound Left-Through-Right	B	0.45	13.60	C	0.44	26.60
Northbound-Left	B	0.57	11.90	A	0.02	6.00
Northbound Through-Right	*	*	*	C	0.72	20.80
Southbound Left	A	0.13	3.80	A	0.23	7.90
Southbound Through-Right	A	0.60	7.50	C	0.93	31.50

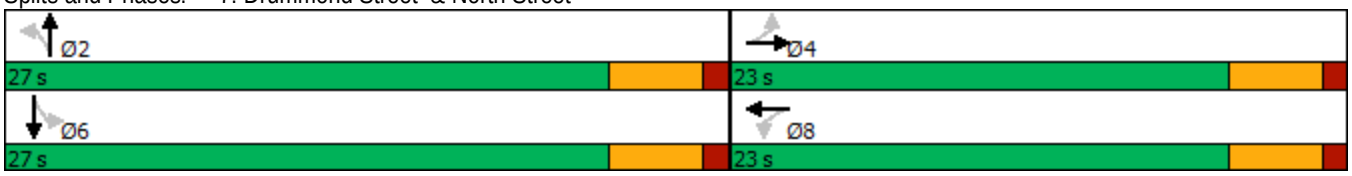


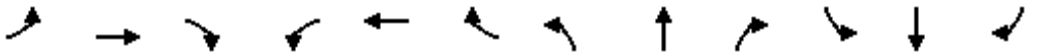
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	125	13	134	158	125	4	251	68	124	282	20
Future Volume (vph)	13	125	13	134	158	125	4	251	68	124	282	20
Satd. Flow (prot)	0	1649	0	0	1691	0	0	1791	0	0	1812	0
Flt Permitted		0.953			0.822			0.995			0.799	
Satd. Flow (perm)	0	1577	0	0	1412	0	0	1783	0	0	1465	0
Satd. Flow (RTOR)		11			49			35			7	
Confl. Peds. (#/hr)	4		1	1		4	7		10	10		7
Peak Hour Factor	0.67	0.67	0.67	0.88	0.88	0.88	0.90	0.90	0.90	0.78	0.78	0.78
Heavy Vehicles (%)	0%	16%	0%	0%	14%	0%	0%	2%	3%	1%	3%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	225	0	0	474	0	0	359	0	0	547	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	23.0	23.0		23.0	23.0		27.0	27.0		27.0	27.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Act Effct Green (s)		17.4			17.4			22.6			22.6	
Actuated g/C Ratio		0.36			0.36			0.46			0.46	
v/c Ratio		0.40			0.89			0.43			0.81	
Control Delay		13.6			36.1			10.3			24.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.6			36.1			10.3			24.3	
LOS		B			D			B			C	
Approach Delay		13.6			36.1			10.3			24.3	
Approach LOS		B			D			B			C	
Queue Length 50th (m)		14.1			35.3			19.0			41.1	
Queue Length 95th (m)		19.3			#81.3			36.1			#63.8	
Internal Link Dist (m)		272.2			722.2			194.2			120.7	
Turn Bay Length (m)												
Base Capacity (vph)		603			565			839			678	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.37			0.84			0.43			0.81	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 49			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 87.5%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 7: Drummond Street & North Street





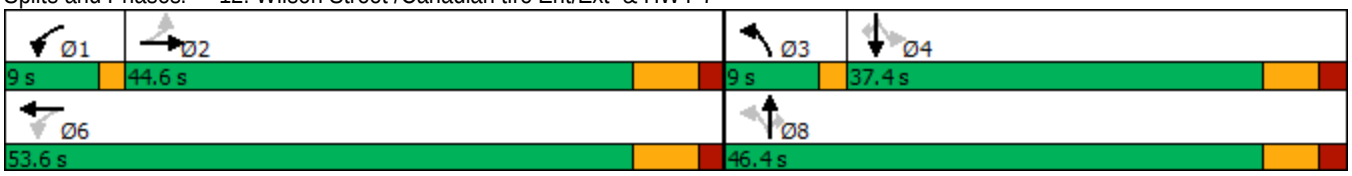
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	489	397	222	422	0	306	38	153	16	38	19
Future Volume (vph)	37	489	397	222	422	0	306	38	153	16	38	19
Satd. Flow (prot)	0	3118	0	0	3238	0	0	1771	1404	0	1872	1495
Flt Permitted		0.885			0.527			0.624			0.809	
Satd. Flow (perm)	0	2765	0	0	1736	0	0	1155	1385	0	1537	1495
Satd. Flow (RTOR)		219							166			86
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.92	0.92	0.92	0.58	0.58	0.58
Heavy Vehicles (%)	4%	7%	10%	5%	12%	0%	3%	0%	15%	0%	0%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1049	0	0	723	0	0	374	166	0	94	33
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	44.6	44.6		9.0	53.6		9.0	46.4	46.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		38.0			47.0			32.8	32.8		23.2	23.2
Actuated g/C Ratio		0.41			0.50			0.35	0.35		0.25	0.25
v/c Ratio		0.84			1.59dl			0.83	0.28		0.25	0.08
Control Delay		27.8			28.1			44.1	4.5		28.3	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		27.8			28.1			44.1	4.5		28.3	0.3
LOS		C			C			D	A		C	A
Approach Delay		27.8			28.1			31.9			21.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)		78.6			46.6			56.9	0.0		14.0	0.0
Queue Length 95th (m)		#122.4			#72.0			#94.5	12.7		16.6	0.0
Internal Link Dist (m)		431.2			299.0			450.1			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1255			909			544	692		514	557
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.84			0.80			0.69	0.24		0.18	0.06

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 93.2	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 28.5	Intersection LOS: C
Intersection Capacity Utilization 87.9%	ICU Level of Service E
Analysis Period (min) 15	

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

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7

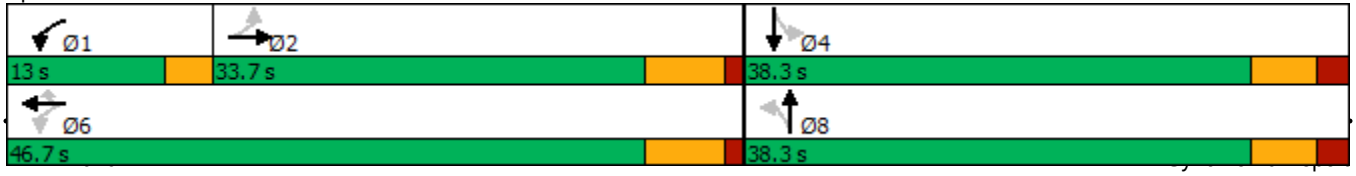


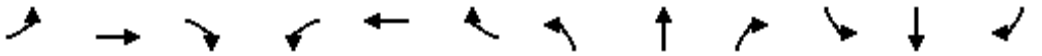
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	238	176	74	272	24	174	48	142	16	34	61
Future Volume (vph)	64	238	176	74	272	24	174	48	142	16	34	61
Satd. Flow (prot)	0	3008	0	0	3352	1509	1687	1634	0	1805	1606	0
Flt Permitted		0.832			0.764		0.679			0.580		
Satd. Flow (perm)	0	2520	0	0	2590	1509	1206	1634	0	1101	1606	0
Satd. Flow (RTOR)		146				42		165			78	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.86	0.86	0.86	0.78	0.78	0.78
Heavy Vehicles (%)	8%	21%	3%	1%	8%	7%	7%	0%	3%	0%	5%	8%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	556	0	0	398	28	202	221	0	21	122	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	33.7	33.7		13.0	46.7	46.7	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		28.4			40.8	40.8	18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.40			0.57	0.57	0.25	0.25		0.25	0.25	
v/c Ratio		0.51			0.26	0.03	0.66	0.41		0.08	0.26	
Control Delay		15.2			9.4	2.6	34.6	8.7		19.3	10.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		15.2			9.4	2.6	34.6	8.7		19.3	10.0	
LOS		B			A	A	C	A		B	B	
Approach Delay		15.2			8.9			21.0			11.4	
Approach LOS		B			A			C			B	
Queue Length 50th (m)		21.1			12.4	0.0	25.3	6.1		2.3	4.7	
Queue Length 95th (m)		44.3			28.5	2.8	42.5	18.8		6.1	12.2	
Internal Link Dist (m)		299.0			123.8			352.3			149.7	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		1089			1548	878	544	828		497	768	
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		0.51			0.26	0.03	0.37	0.27		0.04	0.16	

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 71.6
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 14.7 — Intersection LOS: B
Intersection Capacity Utilization 66.1% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	17	209	13	54	22	149	471	0	6	533	67
Future Volume (vph)	107	17	209	13	54	22	149	471	0	6	533	67
Satd. Flow (prot)	0	1704	1524	0	1761	0	1787	1792	0	1805	1810	1583
Flt Permitted		0.711			0.936		0.195			0.355		
Satd. Flow (perm)	0	1221	1483	0	1659	0	362	1792	0	672	1810	1477
Satd. Flow (RTOR)			282		28							109
Confl. Peds. (#/hr)	30		4	4		30	29		6	6		29
Peak Hour Factor	0.55	0.55	0.55	0.64	0.64	0.64	0.85	0.85	0.85	0.86	0.86	0.86
Heavy Vehicles (%)	8%	0%	6%	0%	3%	0%	1%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	380	0	138	0	175	554	0	7	620	78
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	28.0		9.5	28.0	28.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		14.2	14.2		14.2		28.0	27.1		25.5	21.8	21.8
Actuated g/C Ratio		0.27	0.27		0.27		0.53	0.52		0.49	0.42	0.42
v/c Ratio		0.68	0.63		0.29		0.52	0.60		0.02	0.82	0.12
Control Delay		30.4	10.5		15.4		13.6	14.8		6.3	27.7	2.1
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		30.4	10.5		15.4		13.6	14.8		6.3	27.7	2.1
LOS		C	B		B		B	B		A	C	A
Approach Delay		17.9			15.4			14.5			24.7	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		22.2	8.4		9.4		8.0	33.3		0.4	58.9	0.0
Queue Length 95th (m)		22.7	5.3		13.8		#16.5	#87.6		1.7	#112.5	3.9
Internal Link Dist (m)		123.8			93.2			317.7			164.6	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		442	716		618		336	1013		439	855	755
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.51	0.53		0.22		0.52	0.55		0.02	0.73	0.10

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.5			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

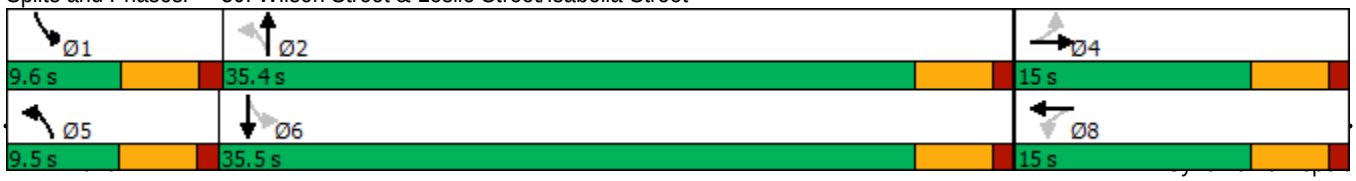
Splits and Phases: 26: Wilson Street & Sunset Boulevard

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	12	3	20	10	76	0	501	3	53	593	32
Future Volume (vph)	30	12	3	20	10	76	0	501	3	53	593	32
Satd. Flow (prot)	0	1522	0	0	1533	0	1900	1758	0	1752	1745	0
Flt Permitted		0.755			0.920					0.274		
Satd. Flow (perm)	0	1152	0	0	1421	0	1900	1758	0	501	1745	0
Satd. Flow (RTOR)		4			106			1			7	
Confl. Peds. (#/hr)	23		4	4		23	6		16	16		6
Peak Hour Factor	0.78	0.78	0.78	0.72	0.72	0.72	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	24%	0%	50%	0%	14%	4%	0%	8%	0%	3%	7%	23%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	148	0	0	615	0	65	762	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	15.0		15.0	15.0		9.5	35.4		9.6	35.5	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		7.8			7.8			28.4		32.0	33.4	
Actuated g/C Ratio		0.17			0.17			0.61		0.69	0.72	
v/c Ratio		0.29			0.45			0.57		0.13	0.60	
Control Delay		23.3			13.6			11.9		3.8	7.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		23.3			13.6			11.9		3.8	7.5	
LOS		C			B			B		A	A	
Approach Delay		23.3			13.6			11.9			7.2	
Approach LOS		C			B			B			A	
Queue Length 50th (m)		4.2			3.3			42.3		1.6	31.2	
Queue Length 95th (m)		12.4			11.8			69.2		4.5	57.0	
Internal Link Dist (m)		67.6			391.9			316.1			317.7	
Turn Bay Length (m)										25.0		
Base Capacity (vph)		281			423			1234		493	1322	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.20			0.35			0.50		0.13	0.58	

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 46.3
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 10.1 — Intersection LOS: B
Intersection Capacity Utilization 56.9% — ICU Level of Service B
Analysis Period (min) 15

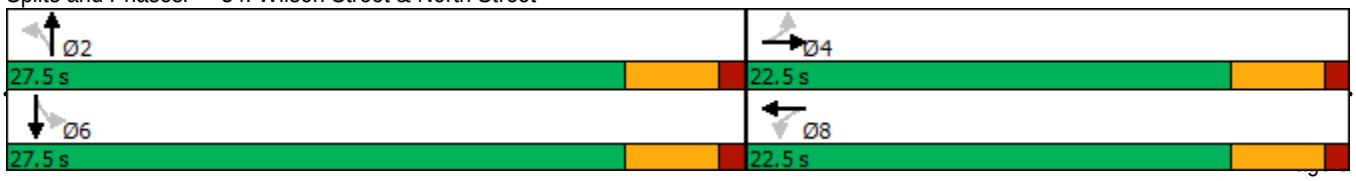
Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street

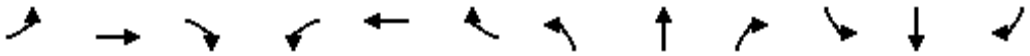


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	6	12	25	4	119	7	410	19	103	498	23
Future Volume (vph)	7	6	12	25	4	119	7	410	19	103	498	23
Satd. Flow (prot)	0	1644	0	0	1343	0	0	1783	0	0	3313	0
Flt Permitted		0.896			0.933			0.988			0.806	
Satd. Flow (perm)	0	1492	0	0	1263	0	0	1764	0	0	2689	0
Satd. Flow (RTOR)		17			155			6			10	
Confl. Peds. (#/hr)	3		3	3		3	13		10	10		13
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.71	0.71	0.71	0.77	0.77	0.77	0.89	0.89	0.89	0.79	0.79	0.79
Heavy Vehicles (%)	20%	0%	0%	0%	0%	28%	0%	6%	0%	29%	2%	25%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	192	0	0	490	0	0	789	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	22.5	22.5		22.5	22.5		27.5	27.5		27.5	27.5	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Act Effct Green (s)		7.7			7.7			28.0			28.0	
Actuated g/C Ratio		0.18			0.18			0.67			0.67	
v/c Ratio		0.12			0.54			0.41			0.44	
Control Delay		10.0			10.6			6.5			6.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.0			10.6			6.5			6.0	
LOS		A			B			A			A	
Approach Delay		10.0			10.6			6.5			6.0	
Approach LOS		A			B			A			A	
Queue Length 50th (m)		1.1			2.2			14.3			12.3	
Queue Length 95th (m)		4.2			9.9			41.7			26.0	
Internal Link Dist (m)		99.5			272.2			142.4			316.1	
Turn Bay Length (m)												
Base Capacity (vph)		653			632			1181			1801	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.05			0.30			0.41			0.44	

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 41.8	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 63.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 34: Wilson Street & North Street



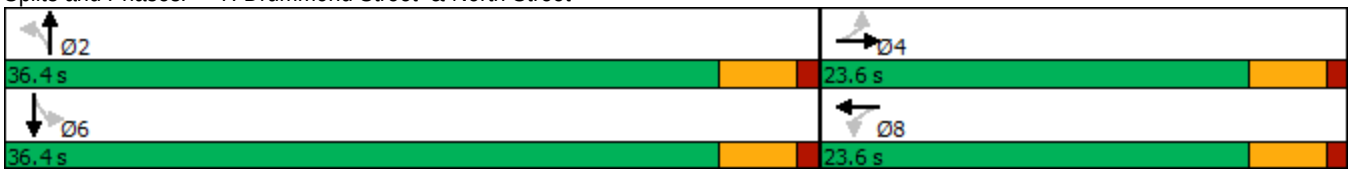


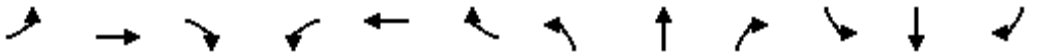
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	161	18	108	146	166	22	364	127	184	330	16
Future Volume (vph)	16	161	18	108	146	166	22	364	127	184	330	16
Satd. Flow (prot)	0	1777	0	0	1719	0	0	1819	0	0	1859	0
Flt Permitted		0.953			0.829			0.966			0.629	
Satd. Flow (perm)	0	1700	0	0	1442	0	0	1761	0	0	1188	0
Satd. Flow (RTOR)		9			57			42			4	
Confl. Peds. (#/hr)	5		5	5		5	5		7	7		5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.89	0.89	0.89	0.85	0.85	0.85
Heavy Vehicles (%)	0%	6%	0%	0%	5%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	229	0	0	494	0	0	577	0	0	623	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	23.6	23.6		23.6	23.6		36.4	36.4		36.4	36.4	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Act Effct Green (s)		19.1			19.1			31.9			31.9	
Actuated g/C Ratio		0.32			0.32			0.53			0.53	
v/c Ratio		0.42			0.99			0.60			0.98	
Control Delay		18.3			61.2			12.2			49.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.3			61.2			12.2			49.9	
LOS		B			E			B			D	
Approach Delay		18.3			61.2			12.2			49.9	
Approach LOS		B			E			B			D	
Queue Length 50th (m)		19.6			50.4			38.2			63.8	
Queue Length 95th (m)		34.2			#98.7			65.1			#121.6	
Internal Link Dist (m)		272.2			724.0			335.5			234.7	
Turn Bay Length (m)												
Base Capacity (vph)		547			497			955			633	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.42			0.99			0.60			0.98	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 37.8	Intersection LOS: D
Intersection Capacity Utilization 107.0%	ICU Level of Service G
Analysis Period (min) 15	

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

Splits and Phases: 7: Drummond Street & North Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	563	375	240	614	2	491	86	232	43	107	99
Future Volume (vph)	53	563	375	240	614	2	491	86	232	43	107	99
Satd. Flow (prot)	0	3212	0	0	3350	0	0	1729	1568	0	1873	1583
Flt Permitted		0.793			0.519			0.558			0.557	
Satd. Flow (perm)	0	2555	0	0	1763	0	0	1004	1568	0	1058	1559
Satd. Flow (RTOR)		122							174			109
Confl. Peds. (#/hr)							3					3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	3%	7%	4%	7%	6%	0%	6%	2%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1114	0	0	962	0	0	601	242	0	165	109
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		4
Total Split (s)	51.6	51.6		13.0	64.6		18.0	55.4	55.4	37.4	37.4	37.4
Total Lost Time (s)		6.9			6.9			6.4	6.4		6.4	6.4
Act Effct Green (s)		44.7			57.7			49.0	49.0		31.0	31.0
Actuated g/C Ratio		0.37			0.48			0.41	0.41		0.26	0.26
v/c Ratio		1.08			1.79dl			1.25	0.33		0.60	0.23
Control Delay		86.2			68.8			160.3	8.5		49.8	7.6
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		86.2			68.8			160.3	8.5		49.8	7.6
LOS		F			E			F	A		D	A
Approach Delay		86.2			68.8			116.7			33.0	
Approach LOS		F			E			F			C	
Queue Length 50th (m)		~152.4			~94.7			~179.1	10.3		36.1	0.0
Queue Length 95th (m)		#192.5			#141.7			#257.9	28.5		61.3	14.3
Internal Link Dist (m)		431.2			299.0			453.1			538.7	
Turn Bay Length (m)									60.0			
Base Capacity (vph)		1028			928			480	743		273	483
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		1.08			1.04			1.25	0.33		0.60	0.23

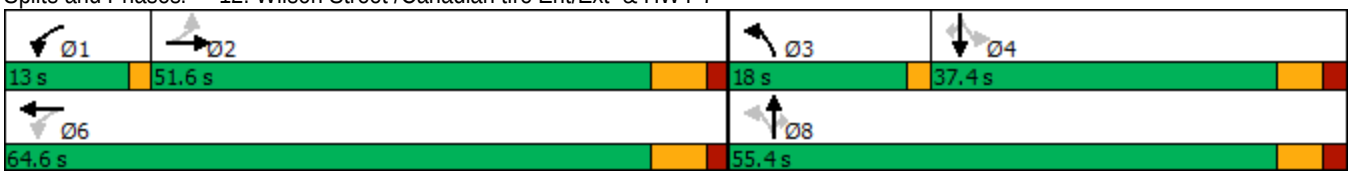
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 84.5	Intersection LOS: F
Intersection Capacity Utilization 108.3%	ICU Level of Service G
Analysis Period (min) 15	

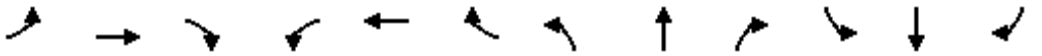
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 12: Wilson Street /Canadian tire Ent/Ext & HWY 7



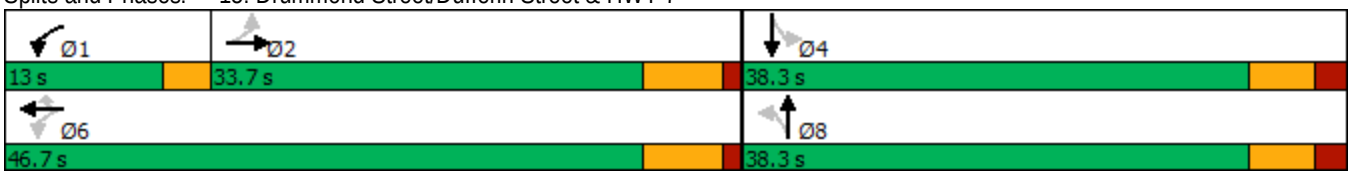


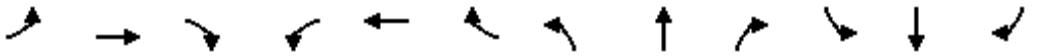
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	406	245	143	424	27	305	72	135	22	70	115
Future Volume (vph)	83	406	245	143	424	27	305	72	135	22	70	115
Satd. Flow (prot)	0	3247	0	0	3164	1524	1752	1643	0	1805	1677	0
Flt Permitted		0.783			0.539		0.611			0.583		
Satd. Flow (perm)	0	2558	0	0	1726	1524	1126	1643	0	1106	1677	0
Satd. Flow (RTOR)		108				42		127			112	
Confl. Peds. (#/hr)							2		3	3		2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.88	0.88	0.88	0.86	0.86	0.86
Heavy Vehicles (%)	2%	8%	1%	3%	16%	6%	3%	4%	3%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	789	0	0	610	29	347	235	0	26	215	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Total Split (s)	33.7	33.7		13.0	46.7	46.7	38.3	38.3		38.3	38.3	
Total Lost Time (s)		6.3			6.3	6.3	6.3	6.3		6.3	6.3	
Act Effct Green (s)		24.9			38.1	38.1	27.7	27.7		27.7	27.7	
Actuated g/C Ratio		0.32			0.49	0.49	0.35	0.35		0.35	0.35	
v/c Ratio		0.89			0.63	0.04	0.88	0.36		0.07	0.32	
Control Delay		36.8			17.8	2.9	48.5	10.5		17.6	10.6	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		36.8			17.8	2.9	48.5	10.5		17.6	10.6	
LOS		D			B	A	D	B		B	B	
Approach Delay		36.8			17.2			33.1			11.3	
Approach LOS		D			B			C			B	
Queue Length 50th (m)		58.3			34.1	0.0	52.4	12.1		2.8	11.5	
Queue Length 95th (m)		#94.0			47.3	3.2	#96.6	27.6		7.8	25.0	
Internal Link Dist (m)		299.0			119.7			352.3			198.4	
Turn Bay Length (m)						15.0	65.0			40.0		
Base Capacity (vph)		974			1024	814	464	752		456	758	
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		0.81			0.60	0.04	0.75	0.31		0.06	0.28	

Intersection Summary			
Cycle Length: 85			
Actuated Cycle Length: 78.5			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 15: Drummond Street/Dufferin Street & HWY 7



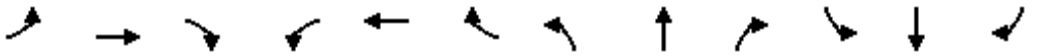


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	36	292	12	59	36	135	789	6	17	828	78
Future Volume (vph)	164	36	292	12	59	36	135	789	6	17	828	78
Satd. Flow (prot)	0	1728	1583	0	1734	0	1770	1842	0	1805	1863	1615
Flt Permitted		0.611			0.953		0.072			0.153		
Satd. Flow (perm)	0	1058	1462	0	1655	0	134	1842	0	291	1863	1405
Satd. Flow (RTOR)			176		26			1				94
Confl. Peds. (#/hr)	26		23	23		26	45		20	20		45
Peak Hour Factor	0.93	0.93	0.93	0.77	0.77	0.77	0.87	0.87	0.87	0.83	0.83	0.83
Heavy Vehicles (%)	6%	4%	2%	0%	2%	0%	2%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	314	0	140	0	155	914	0	20	998	94
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Total Split (s)	24.0	24.0	24.0	24.0	24.0		10.0	56.5		9.5	56.0	56.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Act Effct Green (s)		19.1	19.1		19.1		57.4	55.2		53.9	48.9	48.9
Actuated g/C Ratio		0.22	0.22		0.22		0.66	0.63		0.62	0.56	0.56
v/c Ratio		0.93	0.69		0.37		0.81	0.78		0.07	0.95	0.11
Control Delay		80.4	23.0		27.4		47.8	19.1		5.3	38.2	2.3
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		80.4	23.0		27.4		47.8	19.1		5.3	38.2	2.3
LOS		F	C		C		D	B		A	D	A
Approach Delay		46.3			27.4			23.3			34.6	
Approach LOS		D			C			C			C	
Queue Length 50th (m)		38.7	22.2		17.6		11.4	90.6		1.0	155.4	0.0
Queue Length 95th (m)		#82.8	52.9		28.5		#44.4	#183.4		2.9	#217.2	5.2
Internal Link Dist (m)		214.8			220.8			317.7			161.6	
Turn Bay Length (m)							15.0			25.0		
Base Capacity (vph)		238	465		392		192	1184		267	1108	873
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	0.68		0.36		0.81	0.77		0.07	0.90	0.11

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 87			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 32.2		Intersection LOS: C	
Intersection Capacity Utilization 86.6%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 26: Wilson Street & Sunset Boulevard

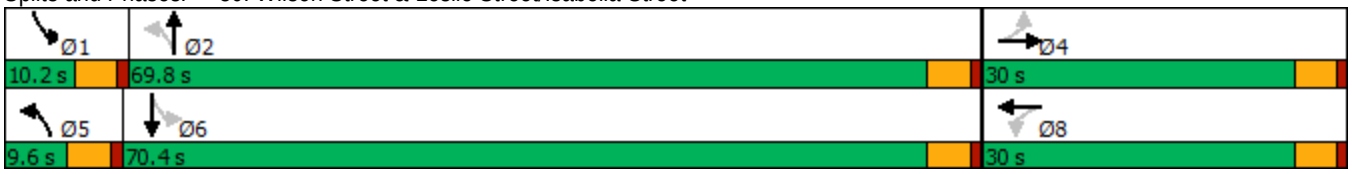


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	30	7	38	35	97	3	742	4	58	866	58
Future Volume (vph)	146	30	7	38	35	97	3	742	4	58	866	58
Satd. Flow (prot)	0	1770	0	0	1693	0	1805	1843	0	1703	1815	0
Flt Permitted		0.551			0.908		0.064			0.190		
Satd. Flow (perm)	0	1007	0	0	1555	0	122	1843	0	341	1815	0
Satd. Flow (RTOR)		2			57						5	
Confl. Peds. (#/hr)	4		14	14		4	41		10	10		41
Peak Hour Factor	0.76	0.76	0.76	0.90	0.90	0.90	0.96	0.96	0.96	0.85	0.85	0.85
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	3%	0%	6%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	189	0	3	777	0	68	1087	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	30.0	30.0		30.0	30.0		9.6	69.8		10.2	70.4	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		25.5			25.5		63.8	59.7		67.1	66.1	
Actuated g/C Ratio		0.25			0.25		0.62	0.58		0.66	0.65	
v/c Ratio		0.95			0.44		0.02	0.72		0.23	0.93	
Control Delay		85.2			26.6		6.0	20.8		7.9	31.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		85.2			26.6		6.0	20.8		7.9	31.5	
LOS		F			C		A	C		A	C	
Approach Delay		85.2			26.6			20.8			30.1	
Approach LOS		F			C			C			C	
Queue Length 50th (m)		47.8			22.2		0.2	115.6		4.5	171.0	
Queue Length 95th (m)		#82.9			48.1		1.1	163.4		8.5	#303.1	
Internal Link Dist (m)		200.9			391.9			316.1			317.7	
Turn Bay Length (m)							60.0			25.0		
Base Capacity (vph)		252			430		160	1180		299	1172	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.95			0.44		0.02	0.66		0.23	0.93	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 102.4			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 32.3		Intersection LOS: C	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 30: Wilson Street & Leslie Street/Isabella Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	6	14	25	12	169	13	559	49	200	658	33
Future Volume (vph)	7	6	14	25	12	169	13	559	49	200	658	33
Satd. Flow (prot)	0	1642	0	0	1551	0	0	1852	0	0	3424	0
Flt Permitted		0.863			0.952			0.978			0.686	
Satd. Flow (perm)	0	1432	0	0	1484	0	0	1813	0	0	2369	0
Satd. Flow (RTOR)		21			180			11			10	
Confl. Peds. (#/hr)	6		10	10		6	23		22	22		23
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.68	0.68	0.68	0.94	0.94	0.94	0.89	0.89	0.89	0.96	0.96	0.96
Heavy Vehicles (%)	20%	0%	0%	0%	0%	7%	0%	1%	0%	12%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	220	0	0	698	0	0	927	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5		37.5	37.5	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Act Effct Green (s)		8.0			8.0			36.2			36.2	
Actuated g/C Ratio		0.15			0.15			0.68			0.68	
v/c Ratio		0.17			0.59			0.56			0.57	
Control Delay		13.3			12.4			7.3			6.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.3			12.4			7.3			6.8	
LOS		B			B			A			A	
Approach Delay		13.3			12.4			7.3			6.8	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		1.6			3.3			24.2			17.2	
Queue Length 95th (m)		5.3			18.1			66.5			44.1	
Internal Link Dist (m)		99.5			272.2			260.9			316.1	
Turn Bay Length (m)												
Base Capacity (vph)		501			623			1236			1614	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.35			0.56			0.57	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.3	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 7.8	Intersection LOS: A
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 34: Wilson Street & North Street