Traffic Impact Study

EkoBuilt
125 Wilson Street West, Perth, Ontario

August 21, 2023

Submitted by:
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1.0 INTRODUCTION

The purpose of this traffic impact study (TIS) is to assess the traffic operation impact of a proposed 5-storey building containing 648 m² (6,971 sq. ft.) of retail commercial space and 63 residential units.

2.0 EXISTING CONDITIONS

2.1 Study Area

The proposed development is located at 125 Wilson Street West, between Elliot Street and Welland Street. **Figure 1** shows the location of the project site. A site plan is provided in **Appendix A**.

Figure 1: Project Location

2.2 Roadway Geometry

Near the project site, **Wilson Street West** (County Road 43) is an undivided 3-lane roadway with one northbound lane towards Highway 7 and two southbound lanes towards downtown Perth. It serves as the main access route between Highway 7 and downtown Perth.

The posted speed limit is 50 km/h. Land use is mixed light residential and commercial. The area near Highway 7 is mostly commercial; notable businesses include the Shoppers Drug Mart north of the project site and the Perth Mews west of the project site.

Elliot Street and **Welland Street** are local undivided 2-lane roadways through a residential community with an unposted speed limit of 50 km/h. Elliot Street is Stop-controlled at Wilson Street West; a

median divider on Wilson Street prevents left turns to and from Elliot Street. Welland Street only connects to Wilson Street West via a sidewalk and is otherwise a dead end. However, the Perth Mews commercial plaza connects to Wilson Street West at this location; the intersection is controlled with traffic signals.

Near the project site, **Highway 7** is a 4-lane undivided roadway with a posted speed limit of 60 km/h. The intersection is controlled with traffic signals. The north side of the intersection is a driveway to Canadian Tire. Both the north and the south approaches have a shared through/left-turn lane and an exclusive right-turn lane. Both the eastbound and westbound approaches currently have 2 shared through/turning lanes, but a left-turn lane and a right-turn lane are planned to be added in each direction in the future.

2.3 Public Transportation Services

There is no public transportation service provided in the Town of Perth.

2.4 Active Transportation

There are sidewalks on both sides of Wilson Street West. There are no sidewalks on Elliot Street, Welland Street or Highway 7. The Perth Transportation Master Plan (2017) indicates that both Wilson Street West and Highway 7 are to become “pedestrian priority routes” and “bicycle routes” in the future.

3.0 TRAFFIC ANALYSIS

3.1 Traffic Growth

Based on Table 16 of Perth’s 2017 Transportation Master Plan (TMP), it was estimated that the traffic on Wilson Street West would grow at a rate of 2.4% to 2.8% per year. While this is significantly more than the traffic growth from 2009 to 2019 on Highway 7, which was 0.3% to 0.4% per year, the TMP considers planned real estate developments in the area. Therefore, a growth rate of 2.5% has been assumed for the purpose of the study.

3.2 Existing Traffic

Traffic counts at the Wilson Street West / Elliot Street and Wilson Street West / Welland Street intersections were conducted on August 2, 2023, between 7:00 and 9:00 a.m. and between 3:30 and 5:30 p.m. Traffic count reports are provided in **Appendix B**.

Traffic volumes at the Wilson Street West / Highway 7 intersection were obtained from MTO; they were collected on March 9, 2022, and were adjusted to 2023 to represent existing traffic volumes.

Figure 2 illustrates the existing (2023) traffic volumes for Wilson Street West at the Highway 7, Elliot Street and Welland Street intersections.

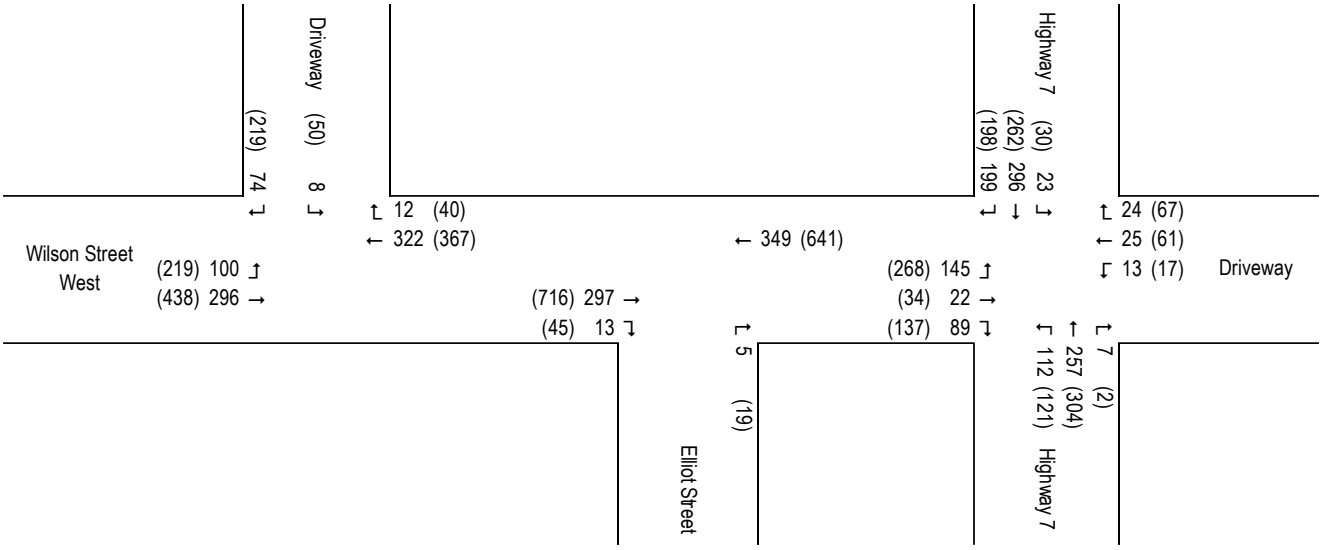


Figure 2: Existing (2023) Traffic Volumes, AM (PM) Peak Hour

3.3 Background Traffic

For the purpose of the study, it was assumed that the proposed development would be completed by 2024. Two horizon years were identified for analysis: 5 years and 10 years after buildout.

The background traffic forecasts for the years 2029 and 2034 are illustrated in **Figure 3** and **Figure 4** respectively.

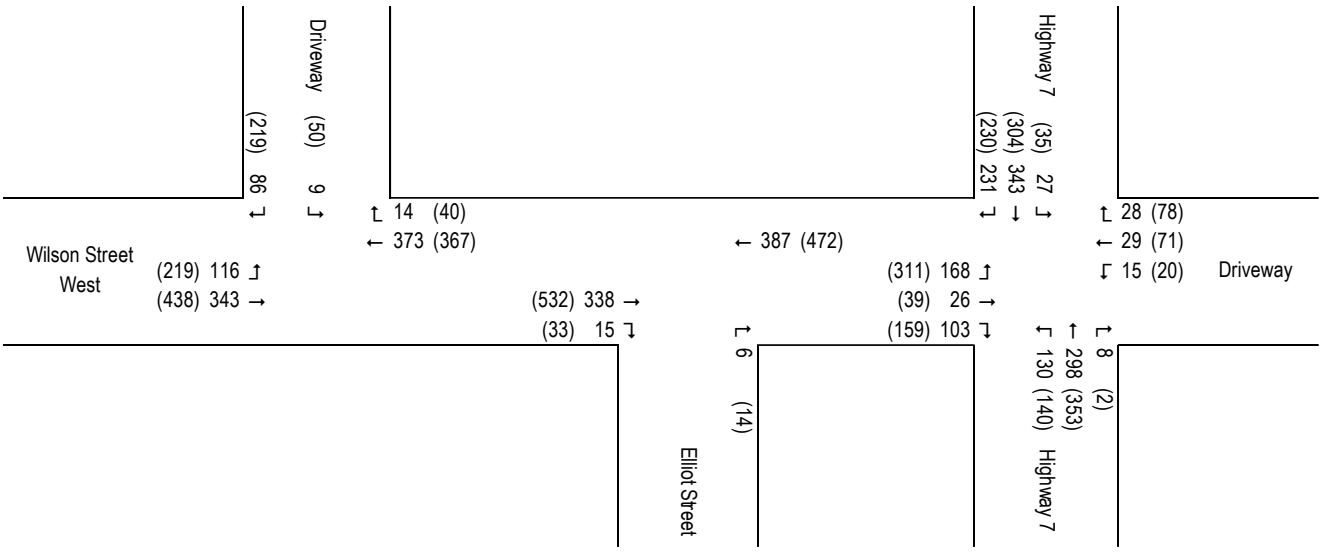


Figure 3: 2029 Background Traffic Forecast, AM (PM) Peak Hour

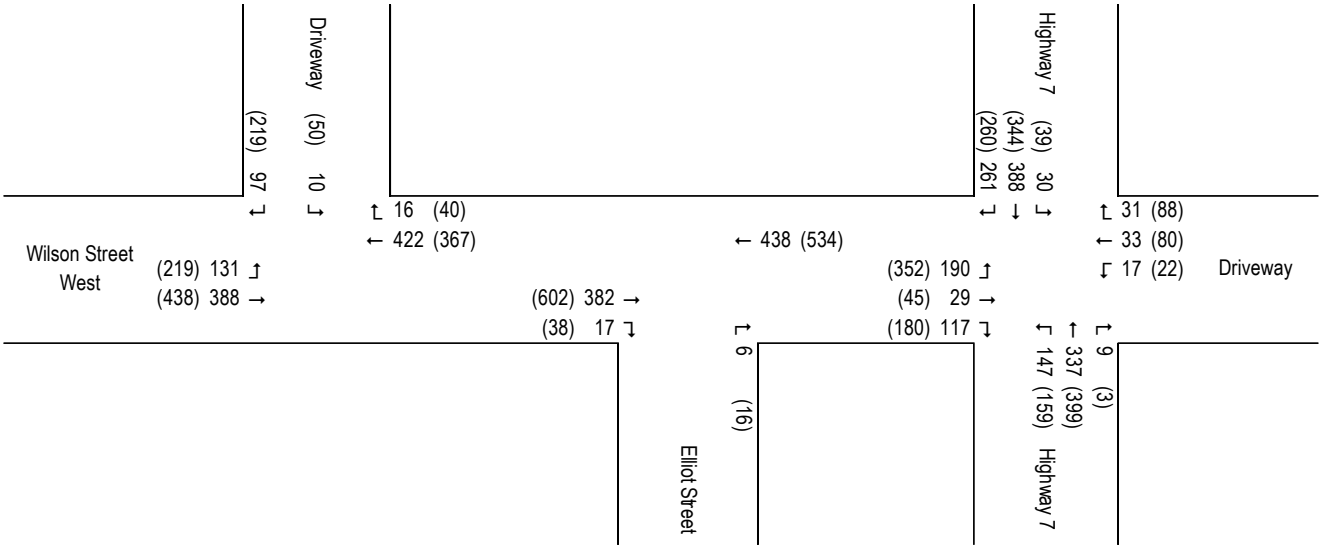


Figure 4: 2034 Background Traffic Forecast, AM (PM) Peak Hour

3.4 Trip Generation

The proposed EkoBuilt development includes 63 residential units and a total of 648 m² (6,971 sq. ft.) of commercial area. The commercial rentable space and 2 residential units are proposed to be on the ground floor and the remaining 61 residential units would occupy floor levels 1 to 5 of the building.

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition was used as a reference to determine the number of trips to be generated by the development. The applicable land use codes for each of the land uses in the development are listed in **Table 1**.

Table 1: Proposed Land Uses

Proposed Land Use	ITE Land Use	ITE Land Use Code
Residential Units	Multifamily Housing (Mid-Rise)	221
Commercial Area	Strip Retail Plaza (<40k)	822

It is estimated that the proposed development would generate 40 trips during the AM peak hour and 71 trips during the PM peak hour. The trip generation calculation is shown in **Table 2**.

Table 2: Trip Generation

ITE Land Use	Qty	Unit	AM Peak Hour					PM Peak Hour				
			Trip Rate	Split		Volume		Trip Rate	Split		Volume	
				In	Out	In	Out		In	Out	In	Out
Multifamily Housing	63	dwelling unit	0.37	23%	77%	5	18	0.39	61%	39%	15	10
Strip Retail Plaza	6.971	1000 sq. ft.	2.36	60%	40%	10	7	6.59	50%	50%	23	23
Net New Trips (Veh)						**15**	**25**				**38**	**33**

3.5 Trip Assignment

It is assumed that all trips generated by the development will travel on Wilson Street West. Two driveways are proposed to access the development, one on Elliot Street and one on Welland Street. The latter requires the connection of Welland Street to Wilson Street West at the intersection with the Perth Mews driveway. However, a barrier will be installed east of the proposed development to prevent through motorized traffic on Welland Street.

A left-turn lane will be added on Wilson Street West in the southbound direction at the intersection with Welland Street to facilitate access to the proposed development, as agreed between the developer and the Town of Perth.

It is assumed that 60% of the traffic generated by the proposed development would travel to and from the south on Wilson Street West while 20% would travel to and from the east and 20% to and from the west on Highway 7 via Wilson Street West. Right-turn movements to and from the development are expected to be distributed equally between Elliot Street and Welland Street.

Trips generated by the proposed development are illustrated in **Figure 5**.

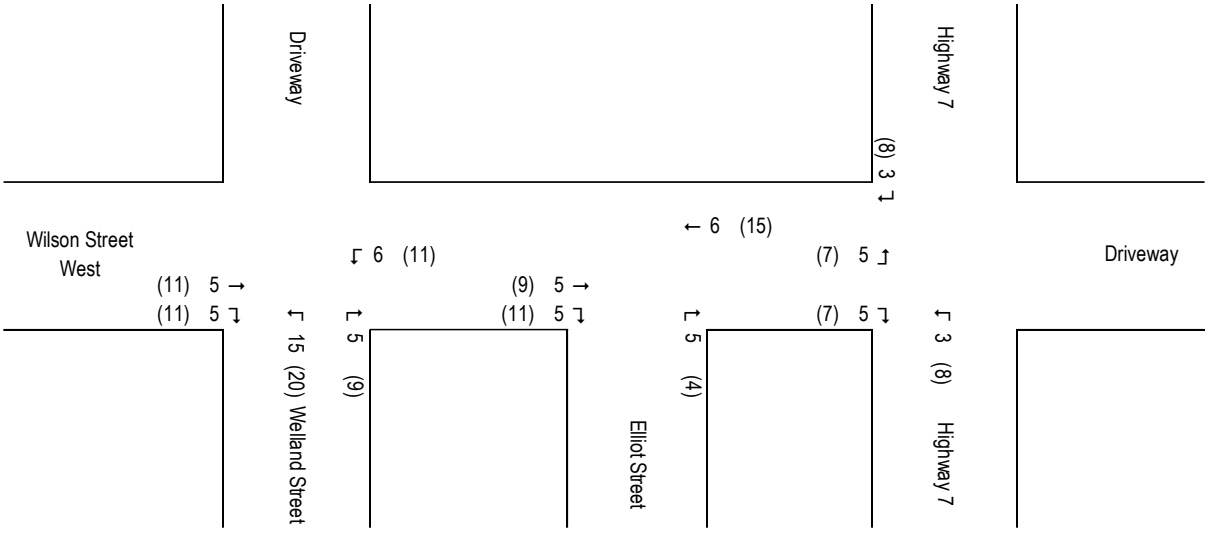


Figure 5: Trips Generated by the Proposed Development, AM (PM) Peak Hour

3.6 Total Future Traffic Forecast

The total future traffic with the proposed development in year 2029 and 2034 is illustrated below in **Figure 6** and **Figure 7** respectively.

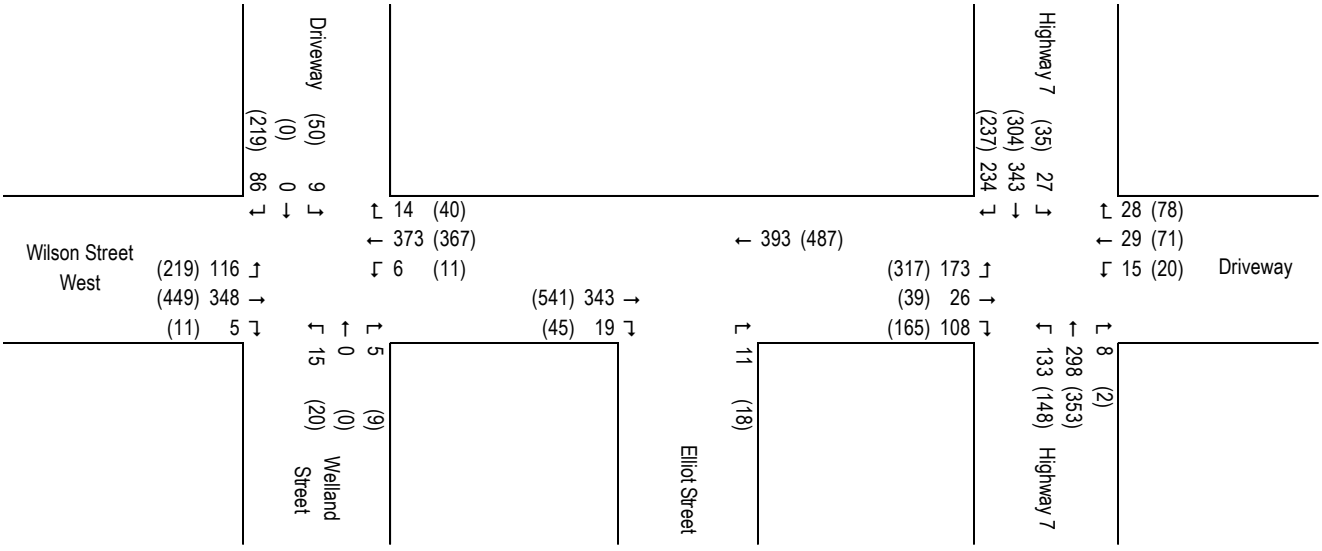


Figure 6: 2029 Total Future Traffic, AM (PM) Peak Hour

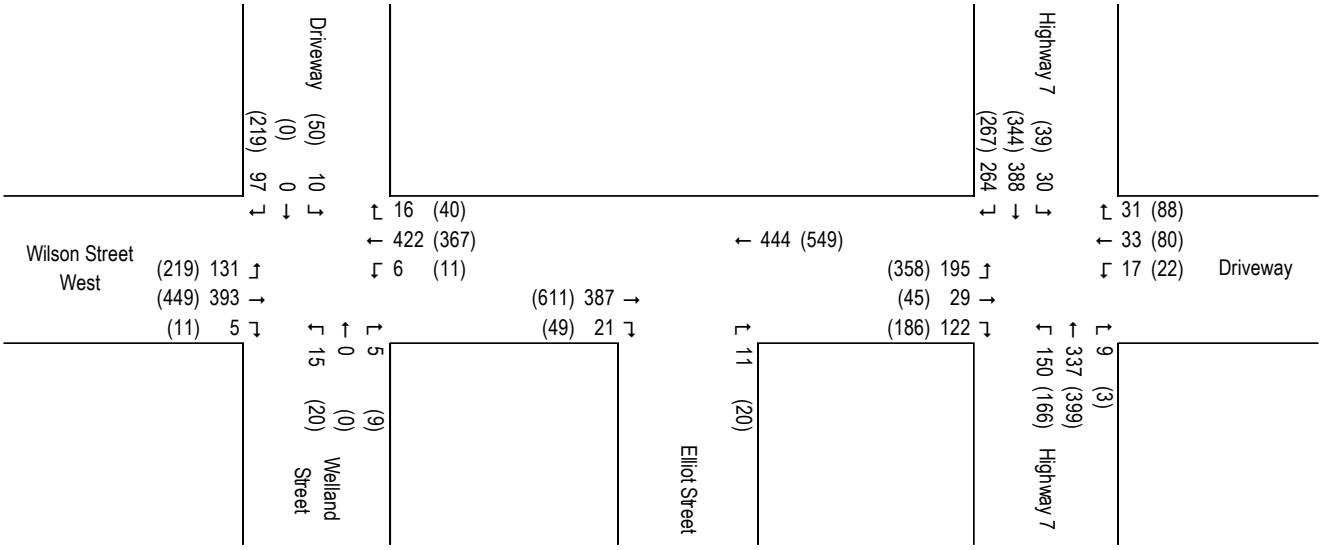


Figure 7: 2034 Total Future Traffic, AM (PM) Peak Hour

3.7 Evaluation of Impacts

The traffic analysis tool PTV Vistro has been used to determine the volume-to-capacity (V/C) ratio, the average delay per vehicle and the 95th percentile queue. The level of service (LOS) presented in the table is based on the average delay. An LOS of D or better (i.e., an average delay of 55 seconds or less for a signalized intersection, 35 seconds for a Stop-controlled intersection) is considered acceptable while an LOS of A means minimal to no delay (10 seconds or less on average). For each analysis period, the traffic signal timing was optimized to ensure the best possible traffic operations. Detailed analysis reports are provided in **Appendix C**.

The capacity analyses of the 2029 background and total traffic are summarized in **Table 3** and **Table 4**.

Table 3: 2029 Background Traffic Analysis

Intersection	Movement	AM | PM Peak Hour			
		Volume/Capacity	Avg. Delay (s)	LOS	95th Queue (m)
Highway 7 (signalized)	NBL/T	0.51 | 0.65	36 | 28	D | C	56 | 77
	NBR	0.32 | 0.26	29 | 18	C | B	26 | 29
	SBL	0.19 | 0.16	46 | 43	D | D	5 | 6
	SBT/R	0.27 | 0.29	36 | 24	D | C	16 | 33
	EBL	0.04 | 0.09	10 | 23	B | C	3 | 8
	EBT	0.18 | 0.24	9 | 18	A | B	19 | 28
	EBR	0.27 | 0.40	10 | 21	B | C	29 | 48
	WBL	0.19 | 0.26	5 | 13	A | B	9 | 20
	WBT	0.14 | 0.22	5 | 13	A | B	11 | 26
	WBR	0.01 | 0.00	5 | 11	A | B	1 | 0
	Overall	**0.51 | 0.65**	**15 | 20**	**B | B**	**–**
Elliot Street (stop-controlled)	EBR	0.01 | 0.02	9 | 10	A | A	0 | 0
Welland Street (signalized)	NBL	0.13 | 0.29	2 | 5	A | A	2 | 14
	NBT	0.27 | 0.39	2 | 6	A | A	10 | 37
	SBTR	0.17 | 0.21	4 | 8	A | A	13 | 23
	EBL	0.07 | 0.17	38 | 31	D | C	3 | 13
	EBR	0.79 | 0.85	53 | 43	D | D	30 | 67
	Overall	**0.79 | 0.85**	**8 | 13**	**A | B**	**–**

NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left turn, T = through movement, R = right turn

Table 4: 2029 Total Future Traffic Analysis

Intersection	Movement	AM | PM Peak Hour			
		Volume/Capacity	Avg. Delay (s)	LOS	95th Queue (m)
Highway 7 (signalized)	NBL/T	0.56 | 0.65	39 | 28	D | C	60 | 78
	NBR	0.37 | 0.27	31 | 17	C | B	28 | 30
	SBL	0.18 | 0.16	46 | 43	D | D	5 | 6
	SBT/R	0.33 | 0.29	38 | 23	D | C	16 | 32
	EBL	0.04 | 0.09	10 | 23	A | C	3 | 8
	EBT	0.17 | 0.24	8 | 19	A | B	17 | 28
	EBR	0.27 | 0.41	9 | 22	A | C	27 | 50
	WBL	0.19 | 0.27	5 | 14	A | B	9 | 23
	WBT	0.13 | 0.22	4 | 13	A | B	9 | 26
	WBR	0.01 | 0.00	4 | 12	A | B	0 | 0
	Overall	**0.56 | 0.65**	**15 | 20**	**B | B**	**–**
Elliot Street (stop-controlled)	EBR	0.01 | 0.02	9 | 10	A | A	0 | 0
Welland Street (signalized)	NBL	0.14 | 0.29	2 | 5	A | A	3 | 14
	NBT/R	0.29 | 0.41	3 | 6	A | A	14 | 40
	SBL	0.01 | 0.02	7 | 13	A | B	1 | 2
	SBT/R	0.18 | 0.21	5 | 8	A | A	14 | 22
	EBL	0.08 | 0.34	37 | 33	D | C	3 | 13
	EBT/R	0.61 | 0.85	43 | 43	D | D	27 | 67
	WBL/T/R	0.17 | 0.25	40 | 37	D | D	6 | 9
	Overall	**0.61 | 0.85**	**8 | 14**	**A | B**	**–**

NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left turn, T = through movement, R = right turn

The results above indicate that traffic is expected to operate within capacity and at satisfactory levels of service up to the 2029 horizon. They also demonstrate that the proposed development will not have a significant impact on traffic.

The capacity analyses of the 2034 background and total traffic are summarized in **Table 5** and **Table 6**.

Table 5: 2034 Background Traffic Analysis

Intersection	Movement	AM | PM Peak Hour			
		Volume/Capacity	Avg. Delay (s)	LOS	95th Queue (m)
Highway 7 (signalized)	NBL/T	0.57 | 0.70	37 | 29	D | C	63 | 87
	NBR	0.34 | 0.25	29 | 16	C | B	29 | 33
	SBL	0.21 | 0.19	46 | 48	D | D	6 | 8
	SBT/R	0.28 | 0.26	35 | 21	D | C	18 | 37
	EBL	0.05 | 0.12	11 | 29	B | C	4 | 10
	EBT	0.21 | 0.30	10 | 24	A | C	23 | 40
	EBR	0.32 | 0.51	11 | 29	B | C	35 | 67
	WBL	0.23 | 0.34	6 | 20	A | B	11 | 33
	WBT	0.16 | 0.28	6 | 18	A | B	13 | 39
	WBR	0.01 | 0.00	5 | 16	A | B	1 | 1
	Overall	**0.57 | 0.70**	**15 | 23**	**B | C**	**–**
Elliot Street (stop-controlled)	EBR	0.01 | 0.02	9 | 10	A | B	0 | 1
Welland Street (signalized)	NBL	0.16 | 0.29	2 | 5	A | A	3 | 14
	NBT	0.31 | 0.39	3 | 6	A | A	14 | 37
	SBTR	0.20 | 0.22	4 | 8	A | A	16 | 23
	EBL	0.07 | 0.17	38 | 31	D | C	3 | 13
	EBR	0.79 | 0.85	51 | 43	D | D	34 | 67
	Overall	**0.79 | 0.85**	**8 | 13**	**A | B**	**–**

NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left turn, T = through movement, R = right turn

Table 6: 2034 Total Future Traffic Analysis

Intersection	Movement	AM | PM Peak Hour			
		Volume/Capacity	Avg. Delay (s)	LOS	95th Queue (m)
Highway 7 (signalized)	NBL/T	0.58 | 0.70	37 | 29	D | C	64 | 88
	NBR	0.36 | 0.26	29 | 15	C | B	30 | 34
	SBL	0.21 | 0.19	46 | 48	D | D	6 | 8
	SBT/R	0.28 | 0.26	35 | 21	D | C	18 | 36
	EBL	0.05 | 0.12	11 | 29	B | C	4 | 10
	EBT	0.21 | 0.31	10 | 25	A | C	23 | 40
	EBR	0.32 | 0.53	11 | 30	B | C	35 | 69
	WBL	0.24 | 0.36	6 | 20	A | C	12 | 34
	WBT	0.16 | 0.28	6 | 19	A | B	13 | 39
	WBR	0.01 | 0.00	5 | 16	A | B	1 | 1
	Overall	**0.58 | 0.70**	**15 | 24**	**B | C**	**–**
Elliot Street (stop-controlled)	EBR	0.01 | 0.03	10 | 10	A | B	0 | 1
Welland Street (signalized)	NBL	0.16 | 0.29	2 | 5	A | A	4 | 14
	NBT/R	0.33 | 0.41	3 | 6	A | A	17 | 40
	SBL	0.01 | 0.02	7 | 13	A | B	1 | 2
	SBT/R	0.20 | 0.21	5 | 8	A | A	17 | 23
	EBL	0.20 | 0.21	5 | 8	A | A	17 | 22
	EBT/R	0.10 | 0.34	37 | 33	D | C	3 | 13
	WBL/T/R	0.67 | 0.85	44 | 43	D | D	31 | 67
	Overall	**0.67 | 0.85**	**8 | 14**	**A | B**	**–**

NB = northbound, SB = southbound, EB = eastbound, WB = westbound
L = left turn, T = through movement, R = right turn

The results above indicate that traffic is still expected to operate within capacity and at satisfactory levels of service up to the 2034 horizon. They also demonstrate that the proposed development will not have a significant impact on traffic.

4.0 CONCLUSIONS

The tables above indicate that the intersections on Wilson Street West at Highway 7, Elliot Street and Welland Street are expected to operate within capacity and at satisfactory levels of service up to the 2034 horizon. This analysis assumes that a left-turn lane and a right-turn lane are provided on Highway 7 in the eastbound and westbound directions.

The traffic analysis also indicates that the proposed EkoBuilt development containing 63 residential units and 648 m² (6,971 sq. ft.) of commercial space will not have a significant impact on traffic operations, as the intersections will continue to operate at similar levels of service up to the 2034 horizon.

Appendix A

Site Plan

SITE DEVELOPMENT PLAN

ekoBUILT™ Evolution of the Home

Perth-Wilson St. Concept
125 Wilson Street, Perth, Ontario
Site Development Plan
SCALE 1" = 30'-0"

A-1

TOTAL PARKING SLOTS: 44

BASEMENT PLAN

ekoBUILT™ Evolution of the Home

Perth-Wilson St. Concept
125 Wilson Street, Perth, Ontario
Basement Plan
SCALE 1/16" = 1'-0"

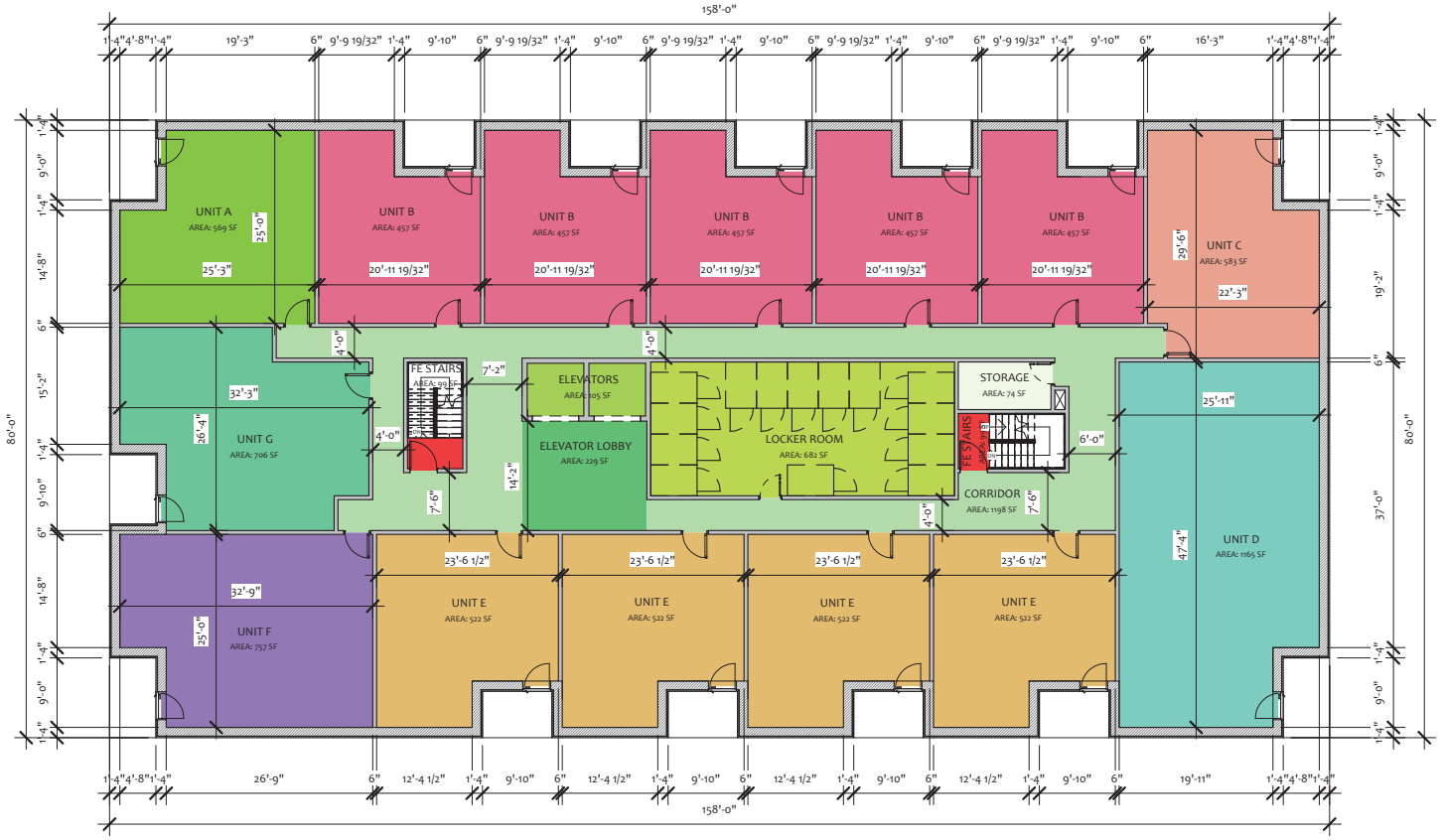
A-2

TOTAL RENTABLE SPACES: 10
TOTAL APARTMENT UNITS: 2

FIRST FLOOR PLAN (GROUND)

Perth-Wilson St. Concept
125 Wilson Street, Perth, Ontario
First Floor Plan
SCALE 1/16" = 1'-0"

A-3



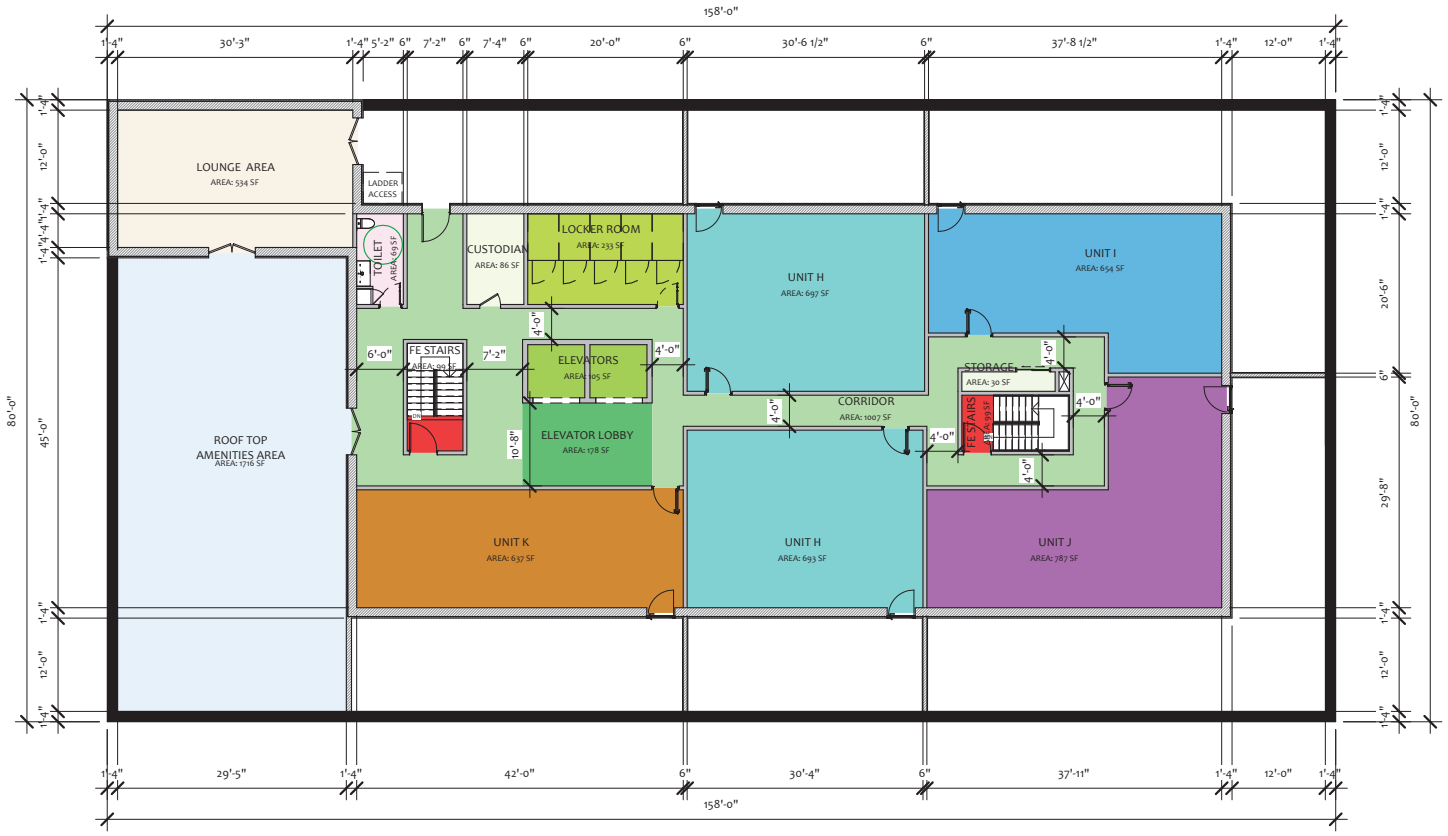
TOTAL APARTMENT UNITS
PER FLOOR (2nd-5th): 14

TYPICAL 2ND-5TH FLOOR PLAN

ekoBUILT Evolution of the Home

Perth-Wilson St. Concept
125 Wilson Street, Perth, Ontario
Typical Floor Plan
SCALE 1/16" = 1'-0"

A-4



TOTAL APARTMENT UNITS
@ 5th FLOOR: 5

SIXTH FLOOR PLAN

ekoBUILT Evolution of the Home

Perth-Wilson St. Concept
125 Wilson Street, Perth, Ontario
Sixth Floor Plan
SCALE 1/16" = 1'-0"

A-5

Appendix B

Traffic Count Reports

BT ENGINEERING

Ontario
Ministry of Transportation

TES - Traffic Engineering System

Turning Movement 15 Minute Report

Description: HWY 7 @ WILSON ST W

Region EAST **Hwy #:** HWY 7

LHRS_Offset: 14080_0001 **Count Period.** 3/9/2022 7:00:00 AM

Count Start Date: 3/9/2022 12:00:00 AM 3/9/2022 6:00:00 PM

Int. Type: Cross

Start Time	North										South										East										West										Total
	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	
	LT	TH	RT	LT	TH	RT	LT	TH	RT		LT	TH	RT	LT	TH	RT	LT	TH	RT		LT	TH	RT	LT	TH	RT	LT	TH	RT		LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	2	1	1	0	0	0	0	0	0	0	22	2	9	0	0	2	2	0	0	0	16	25	3	1	4	0	0	0	1	0	2	45	27	0	0	1	0	3	1	0	170
07:15	0	1	1	0	0	0	0	1	0	0	23	1	23	0	0	0	1	0	0	0	25	29	0	1	0	0	1	4	0	0	7	62	32	0	2	1	0	6	3	0	224
07:30	3	1	4	0	0	0	0	0	0	0	32	3	19	2	0	3	0	0	0	0	26	56	2	0	0	0	1	2	0	0	2	80	42	0	4	6	0	9	0	0	297
07:45	4	10	4	0	1	0	0	0	0	0	37	7	17	4	0	1	3	0	0	0	25	58	3	2	3	0	0	10	0	0	7	70	49	0	3	1	0	5	0	0	324
08:00	4	2	5	0	0	0	0	0	1	1	30	7	23	3	0	1	2	0	3	0	19	61	1	3	3	1	1	3	0	1	6	66	41	0	0	3	0	7	1	0	297
08:15	2	10	10	0	1	0	0	0	0	0	29	5	21	2	0	0	1	0	1	0	32	53	0	1	6	0	2	2	0	0	8	50	54	0	1	0	0	1	2	0	294
08:30	1	7	8	0	0	0	0	0	0	0	34	7	17	1	1	3	1	0	0	0	22	48	0	0	0	0	0	3	0	0	9	58	34	0	1	0	0	3	0	0	258
08:45	4	5	7	0	0	0	0	0	0	0	45	7	16	1	0	3	1	0	0	0	23	52	0	3	1	0	1	2	0	0	5	55	57	0	0	0	0	2	1	0	291
11:00	8	8	9	0	0	1	0	0	0	0	37	11	19	1	0	0	1	0	0	2	24	50	0	0	0	0	1	3	0	1	14	70	49	0	2	0	0	4	0	0	312
11:15	3	15	16	0	0	1	0	0	0	0	40	10	21	0	0	1	0	0	1	0	29	61	0	1	3	0	1	1	0	0	8	50	43	0	2	2	0	3	0	1	312
11:30	4	7	9	0	0	1	0	0	0	0	44	10	20	1	0	0	0	0	3	0	28	68	0	0	1	0	2	2	0	1	8	65	43	0	1	1	0	1	1	0	320
11:45	10	15	13	0	0	0	0	0	0	0	53	17	32	3	0	0	1	0	0	1	33	56	2	2	3	0	0	1	0	2	10	68	43	0	1	0	0	3	0	1	366
12:00	4	15	14	0	0	0	0	0	0	0	41	16	28	1	0	1	0	0	1	0	20	78	0	2	1	0	0	4	0	0	9	55	40	0	5	1	1	4	2	1	343
12:15	6	16	11	0	0	0	0	0	0	0	39	19	28	1	0	0	2	0	1	1	32	70	1	1	2	0	0	6	0	1	7	71	41	0	1	3	1	4	0	0	363
12:30	9	15	14	0	1	0	0	0	0	0	38	7	28	0	0	0	0	0	0	0	28	63	1	0	1	0	1	3	0	0	8	72	46	0	3	1	0	4	0	1	343
12:45	5	11	18	0	0	0	0	2	1	0	44	15	17	2	0	3	0	0	2	0	31	61	1	2	3	0	5	6	0	1	9	58	38	0	0	2	0	3	0	0	339
13:00	5	13	9	0	0	0	0	0	0	0	40	11	25	2	0	1	0	0	0	0	23	58	0	0	2	0	1	4	0	3	7	71	36	0	0	2	1	2	0	1	313
13:15	3	5	8	0	0	0	1	0	0	0	27	7	27	0	0	0	4	2	0	0	25	64	0	1	2	0	0	3	0	1	4	49	47	0	2	0	0	4	0	0	285
13:30	8	7	8	0	0	0	0	1	0	0	37	8	28	1	0	0	0	0	0	0	31	50	0	0	0	0	0	6	0	1	10	62	50	1	3	2	0	8	2	0	323
13:45	5	13	8	0	0	2	0	0	0	1	33	5	24	3	0	1	3	0	0	0	29	53	1	0	4	0	0	2	0	1	10	70	50	0	2	4	0	8	1	2	331
15:00	4	9	10	0	0	0	0	0	0	0	52	5	29	0	0	1	0	0	0	0	16	65	0	3	3	0	1	8	0	0	11	64	43	0	2	0	0	3	3	2	332

Start Time	North										South										East										West										Total
	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	
	LT	TH	RT	LT	TH	RT	LT	TH	RT		LT	TH	RT	LT	TH	RT	LT	TH	RT		LT	TH	RT	LT	TH	RT	LT	TH	RT		LT	TH	RT	LT	TH	RT	LT	TH	RT	
15:15	8	9	19	0	0	0	0	0	0	0	47	9	29	1	0	1	0	0	0	0	27	68	1	1	1	0	0	8	0	2	9	59	54	1	1	1	0	1	3	0	358
15:30	2	13	15	0	0	0	0	0	0	0	67	13	39	1	0	1	1	0	0	0	31	58	1	1	2	0	0	3	0	2	10	67	42	0	2	2	0	0	3	0	374
15:45	3	16	17	0	0	0	0	0	0	0	64	8	30	2	0	1	6	0	1	0	32	66	0	2	0	0	0	4	0	0	10	50	48	1	3	0	0	0	1	0	365
16:00	6	21	13	0	0	1	0	0	0	1	72	5	33	0	0	0	3	0	3	0	29	84	0	1	1	0	0	8	0	2	3	61	46	0	1	2	0	1	0	1	394
16:15	6	11	21	0	0	0	0	0	0	0	51	8	29	0	0	0	1	0	0	0	22	73	1	2	0	0	1	5	0	2	6	70	51	0	2	2	0	5	1	3	368
16:30	6	7	11	0	0	0	0	0	0	0	42	11	36	1	0	2	0	0	1	0	44	78	1	0	0	0	0	5	0	1	10	64	35	0	1	0	0	5	0	3	360
16:45	7	15	15	0	0	0	0	0	0	0	53	9	22	1	0	0	1	0	0	0	34	66	1	0	1	0	0	6	0	2	8	53	52	0	0	1	0	3	2	0	350
17:00	6	16	12	0	0	0	0	0	0	0	54	5	39	0	0	0	0	0	1	0	31	83	0	1	1	0	0	1	0	0	7	60	42	0	0	2	0	3	2	0	366
17:15	4	9	14	0	0	0	0	0	0	0	55	4	19	0	0	0	0	0	0	0	21	71	0	0	0	0	0	3	0	0	10	61	37	1	1	0	0	3	1	0	314
17:30	10	4	5	0	0	0	0	0	0	0	47	7	21	1	0	0	0	0	0	0	29	69	0	0	0	0	0	2	0	0	6	51	32	0	1	0	0	4	0	0	289
17:45	4	8	10	1	0	0	0	0	0	0	25	2	15	0	0	0	1	0	0	0	22	42	0	0	1	0	0	0	0	0	7	38	20	0	4	1	0	2	1	0	204

BT ENGINEERING

Vehicular Turning Movements (15 Min. Volumes) – All Vehicles

WILSON STREET WEST at ELLIOT STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

Grey = Peak Hour

	Wilson Street West				Wilson Street West				–				Elliot Street				
	Northbound				Southbound				Eastbound				Westbound				
Time Period	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	TOTAL
7:00 – 7:15	0	65	0	**65**	0	61	0	**61**	0	0	0	**0**	0	0	0	**0**	**126**
7:15 – 7:30	0	60	2	**62**	0	51	0	**51**	0	0	0	**0**	0	0	0	**0**	**113**
7:30 – 7:45	0	64	1	**65**	0	83	0	**83**	0	0	0	**0**	0	0	0	**0**	**148**
7:45 – 8:00	0	64	3	**67**	0	83	0	**83**	0	0	0	**0**	0	0	0	**0**	**150**
8:00 – 8:15	0	74	1	**75**	0	80	0	**80**	0	0	0	**0**	0	0	0	**0**	**155**
8:15 – 8:30	0	71	4	**75**	0	83	0	**83**	0	0	0	**0**	0	0	1	**1**	**159**
8:30 – 8:45	0	66	2	**68**	0	98	0	**98**	0	0	0	**0**	0	0	2	**2**	**167**
8:45 – 9:00	0	77	6	**83**	0	76	0	**76**	0	0	0	**0**	0	0	2	**2**	**162**
15:30 – 15:45	0	72	4	**76**	0	91	0	**91**	0	0	0	**0**	0	0	4	**4**	**170**
15:45 – 16:00	0	78	5	**84**	0	71	0	**71**	0	0	0	**0**	0	0	4	**4**	**158**
16:00 – 16:15	0	86	4	**91**	0	70	0	**70**	0	0	0	**0**	0	0	4	**4**	**164**
16:15 – 16:30	0	103	9	**112**	0	78	0	**78**	0	0	0	**0**	0	0	3	**3**	**194**
16:30 – 16:45	0	131	10	**141**	0	111	0	**111**	0	0	0	**0**	0	0	4	**4**	**256**
16:45 – 17:00	0	98	4	**102**	0	92	0	**92**	0	0	0	**0**	0	0	1	**1**	**195**
17:00 – 17:15	0	125	5	**130**	0	128	0	**128**	0	0	0	**0**	0	0	3	**3**	**261**
17:15 – 17:30	0	66	3	**69**	0	82	0	**82**	0	0	0	**0**	0	0	3	**3**	**154**
TOTAL	0	1300	63	**1363**	0	1339	0	**1339**	0	0	0	**0**	0	0	31	**31**	**2733**

Note:
Volumes above include **cars**, **heavy vehicles** and **vehicular cyclists**.
Cars include motorcycles, passenger cars, pick-up trucks (including "heavy-duty"), full-size vans (i.e. Econoline), and any of these with a trailer.

BT ENGINEERING

Vehicular Turning Movements (15 Min. Volumes) – Heavy Vehicles

WILSON STREET WEST at ELLIOT STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

	Wilson Street West				Wilson Street West				–				Elliot Street				
	Northbound				Southbound				Eastbound				Westbound				
Time Period	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	TOTAL
7:00 – 7:15	0	2	0	**2**	0	8	0	**8**	0	0	0	**0**	0	0	0	**0**	**10**
7:15 – 7:30	0	4	0	**4**	0	4	0	**4**	0	0	0	**0**	0	0	0	**0**	**8**
7:30 – 7:45	0	5	0	**5**	0	8	0	**8**	0	0	0	**0**	0	0	0	**0**	**13**
7:45 – 8:00	0	2	0	**2**	0	5	0	**5**	0	0	0	**0**	0	0	0	**0**	**7**
8:00 – 8:15	0	4	0	**4**	0	5	0	**5**	0	0	0	**0**	0	0	0	**0**	**9**
8:15 – 8:30	0	7	0	**7**	0	8	0	**8**	0	0	0	**0**	0	0	0	**0**	**15**
8:30 – 8:45	0	4	0	**4**	0	6	0	**6**	0	0	0	**0**	0	0	0	**0**	**10**
8:45 – 9:00	0	7	0	**7**	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	**8**
15:30 – 15:45	0	2	0	**2**	0	3	0	**3**	0	0	0	**0**	0	0	0	**0**	**4**
15:45 – 16:00	0	4	0	**4**	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	**5**
16:00 – 16:15	0	3	0	**3**	0	3	0	**3**	0	0	0	**0**	0	0	0	**0**	**6**
16:15 – 16:30	0	1	0	**1**	0	3	0	**3**	0	0	0	**0**	0	0	0	**0**	**4**
16:30 – 16:45	0	3	0	**3**	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	**4**
16:45 – 17:00	0	3	0	**3**	0	3	0	**3**	0	0	0	**0**	0	0	0	**0**	**6**
17:00 – 17:15	0	4	0	**4**	0	3	0	**3**	0	0	0	**0**	0	0	0	**0**	**6**
17:15 – 17:30	0	1	0	**1**	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	**2**
TOTAL	0	56	0	**56**	0	60	0	**60**	0	0	0	**0**	0	0	0	**0**	**116**

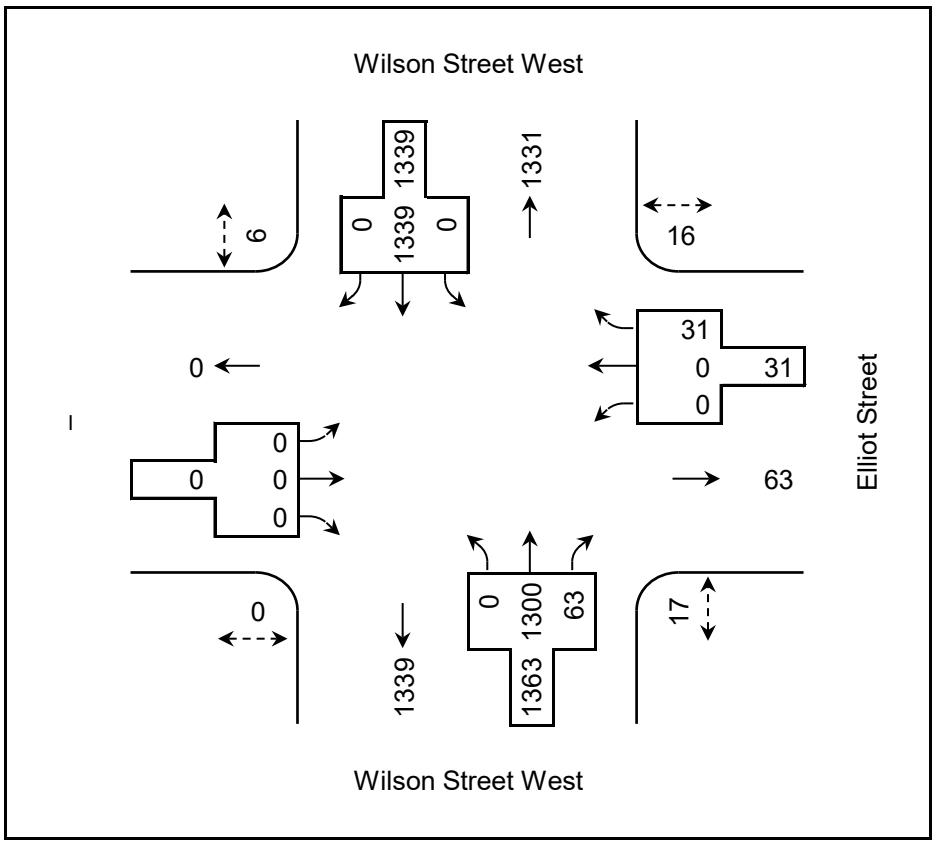
Note:
Heavy vehicles include box trucks, vehicles with more than 2 axles (with the exception of cars with trailers) and buses.

Vehicular Turning Movements – All Vehicles and Pedestrians

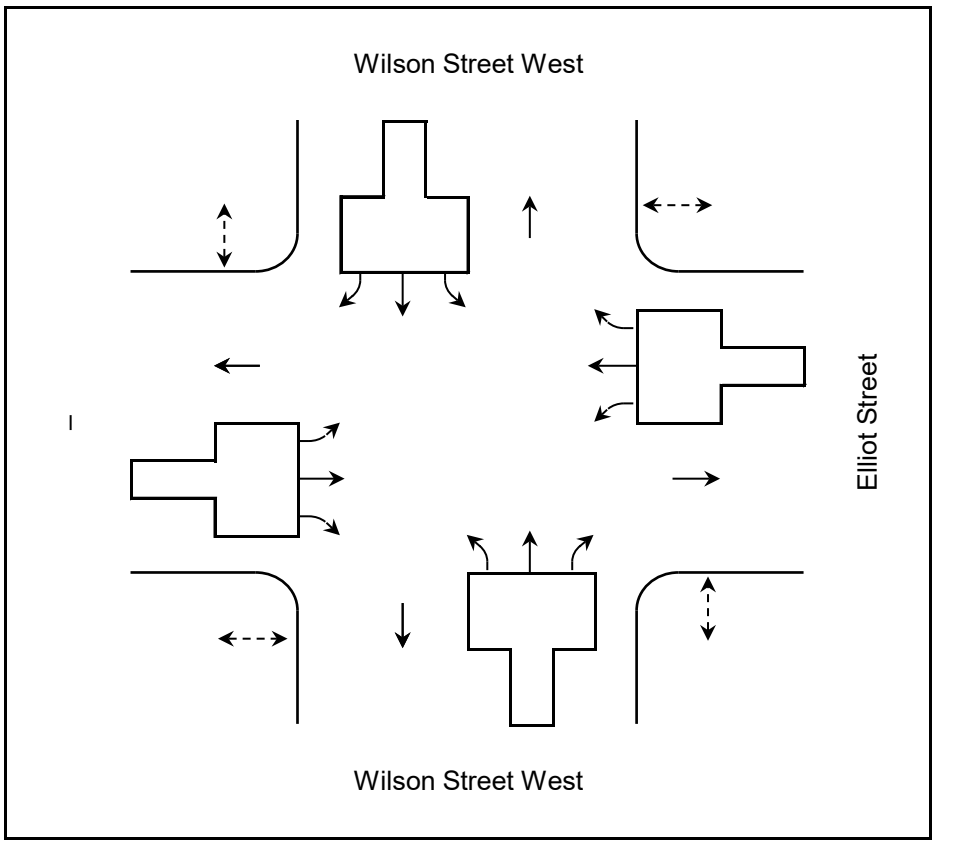
WILSON STREET WEST at ELLIOT STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

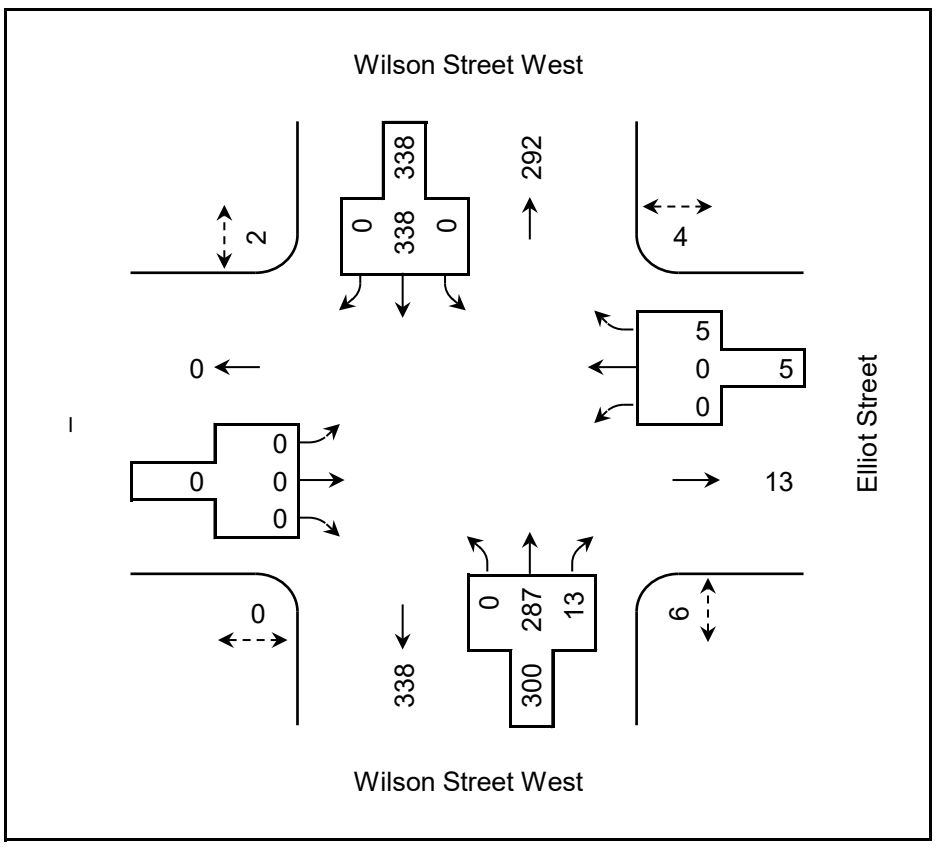
Full Period (4 hours)



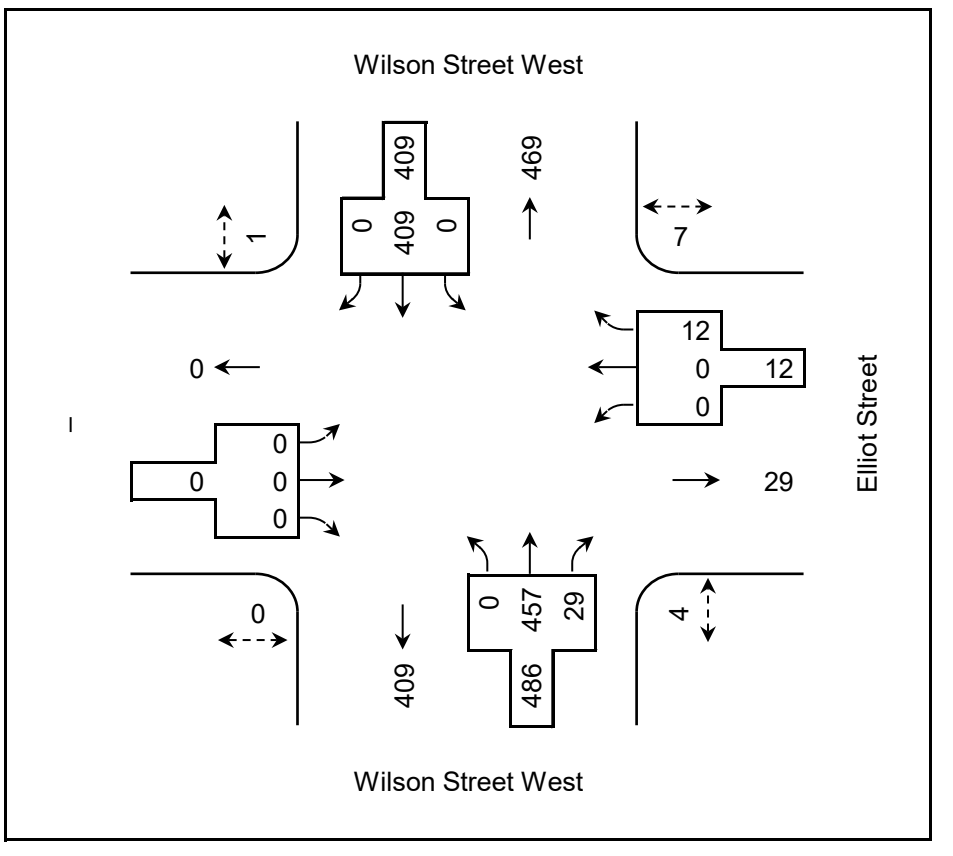
Midday Peak



Morning Peak (8:00–9:00)



Afternoon Peak (16:15–17:15)



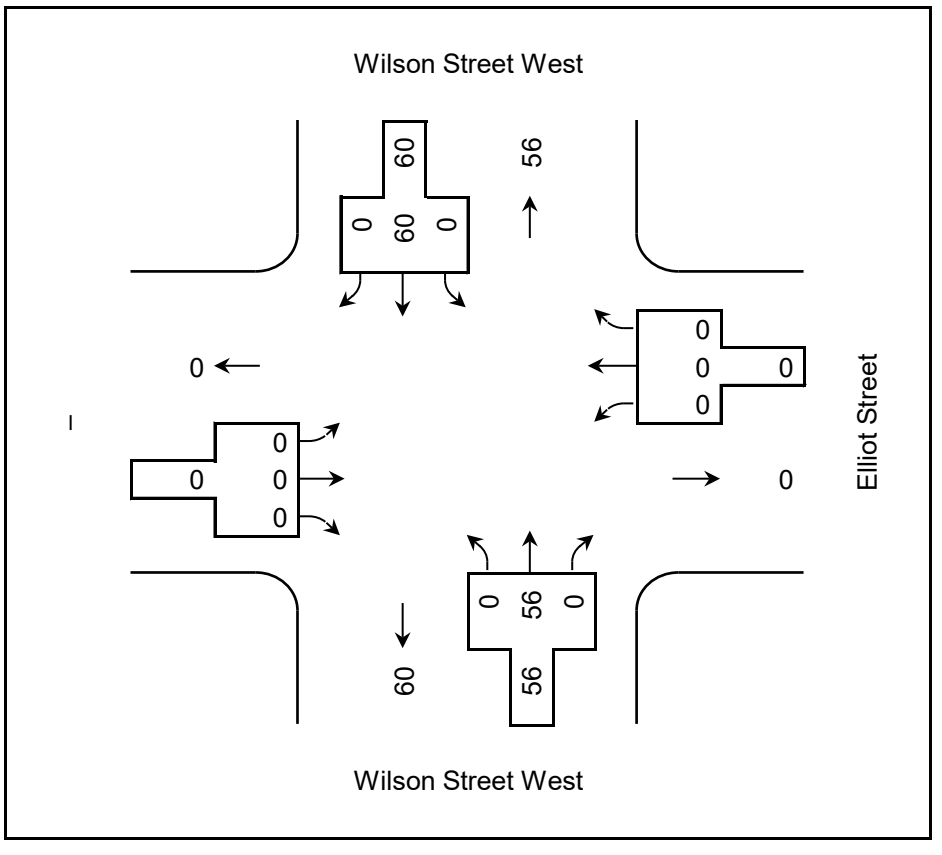
Note:
Volumes above include cars, heavy vehicles and vehicular cyclists.
Cars include motorcycles, passenger cars, pick-up trucks (including "heavy-duty"), full-size vans (i.e. Econoline), and any of these with a trailer.

Vehicular Turning Movements – All Trucks and Pedestrians

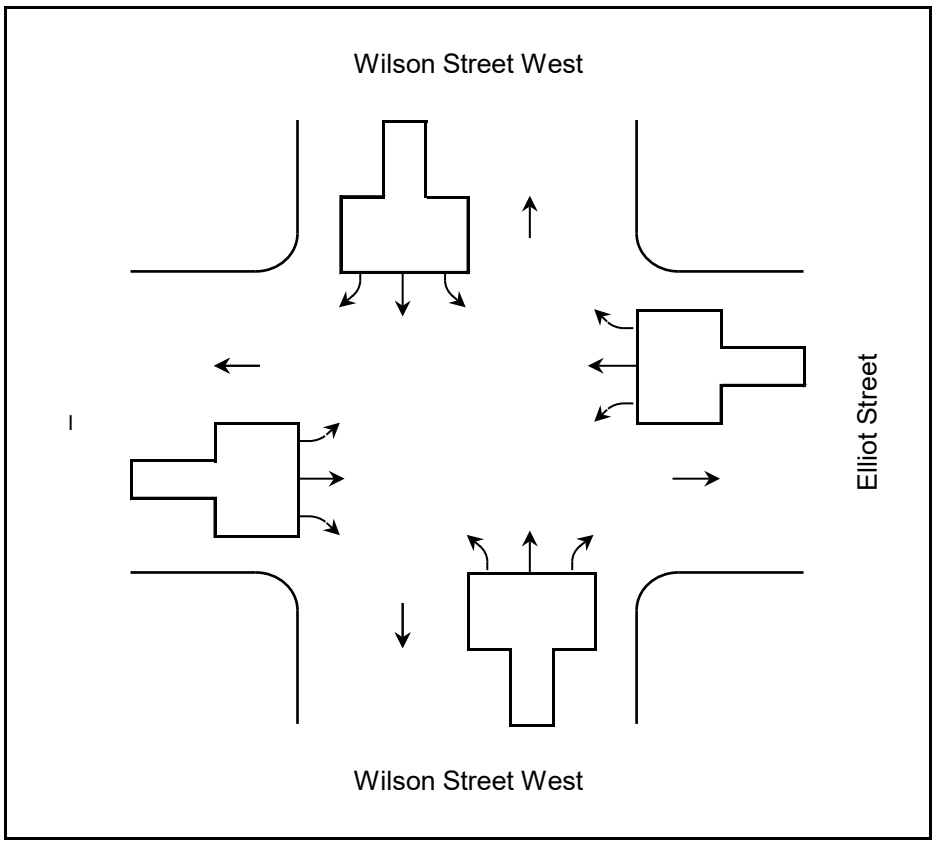
WILSON STREET WEST at ELLIOT STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

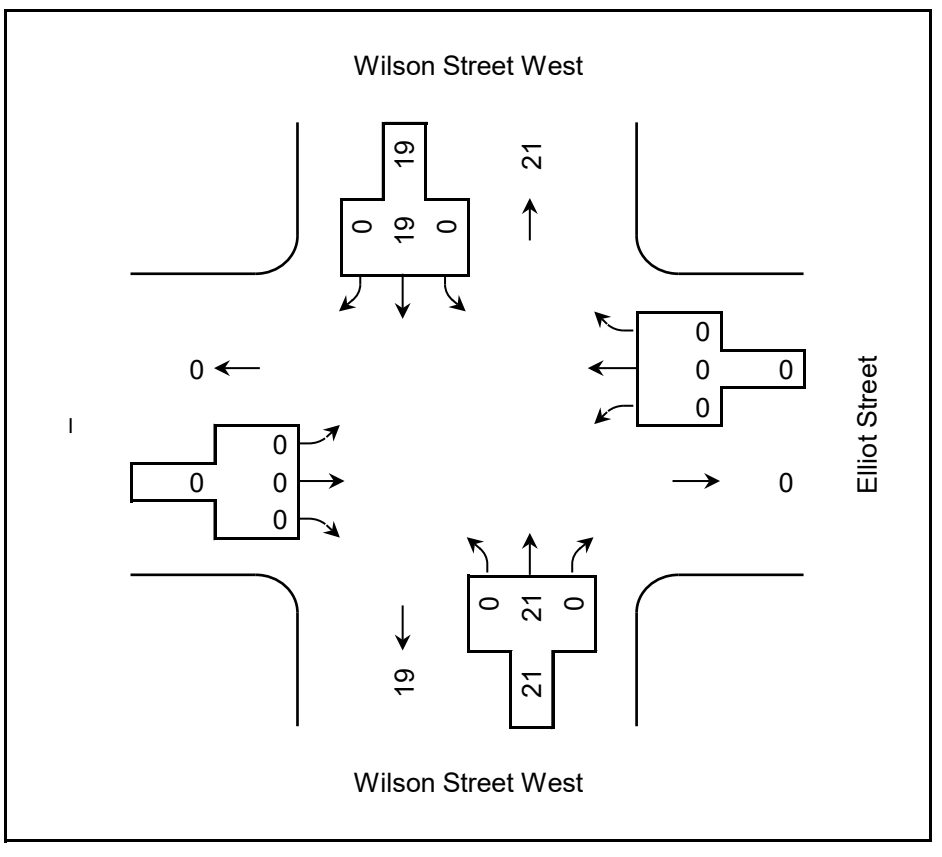
Full Period (4 hours)



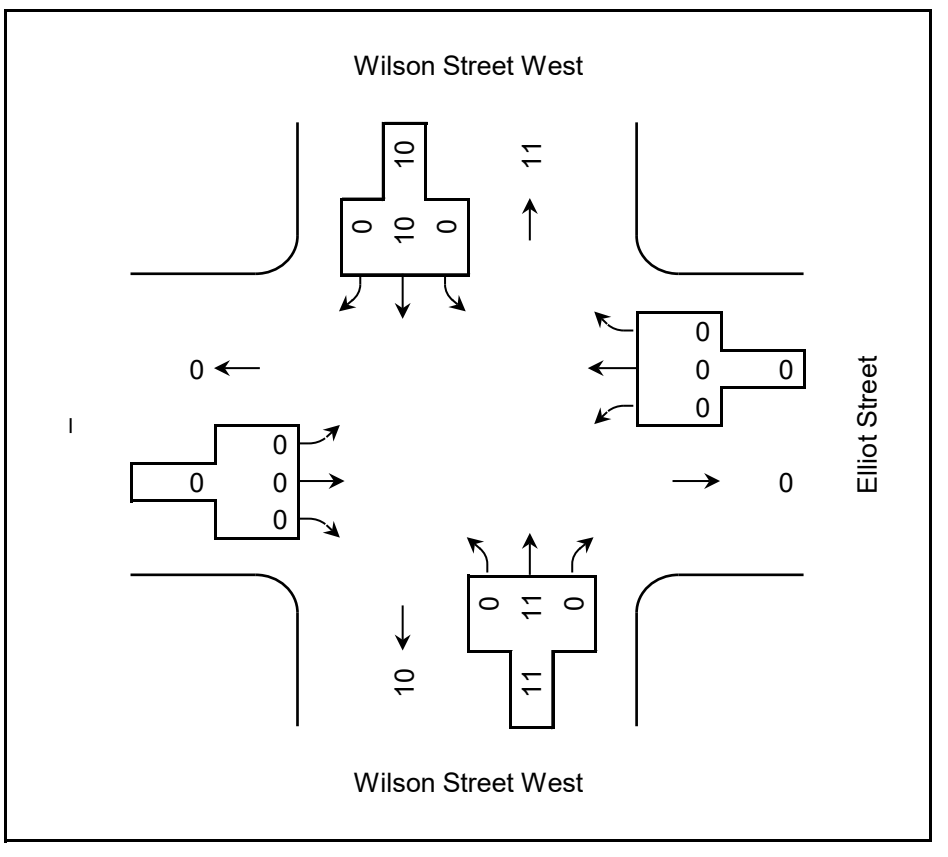
Midday Peak



Morning Peak (8:00–9:00)



Afternoon Peak (16:15–17:15)



Note:
Heavy vehicles include box trucks, vehicles with more than 2 axles (with the exception of cars with trailers) and buses.

BT ENGINEERING

Vehicular Turning Movements (15 Min. Volumes) – All Vehicles

WILSON STREET WEST at WELLAND STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

Grey = Peak Hour

	Wilson Street West				Wilson Street West				Driveway				Welland Street				
	Northbound				Southbound				Eastbound				Westbound				
Time Period	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	TOTAL
7:00 – 7:15	11	65	0	**76**	0	60	4	**64**	2	0	4	**6**	0	0	0	**0**	**146**
7:15 – 7:30	7	61	0	**68**	0	54	2	**56**	1	0	9	**10**	0	0	0	**0**	**134**
7:30 – 7:45	18	65	0	**83**	0	86	1	**87**	2	0	13	**15**	0	0	0	**0**	**185**
7:45 – 8:00	21	72	0	**93**	0	81	4	**85**	2	0	21	**23**	0	0	0	**0**	**201**
8:00 – 8:15	26	75	0	**101**	0	80	2	**82**	1	0	15	**16**	0	0	0	**0**	**199**
8:15 – 8:30	18	73	0	**91**	0	69	1	**70**	3	0	14	**17**	0	0	0	**0**	**178**
8:30 – 8:45	22	67	0	**89**	0	92	6	**98**	2	0	25	**27**	0	0	0	**0**	**214**
8:45 – 9:00	34	81	0	**115**	0	81	3	**84**	2	0	20	**22**	0	0	0	**0**	**221**
15:30 – 15:45	47	99	0	**146**	0	87	6	**93**	11	0	54	**65**	0	0	0	**0**	**304**
15:45 – 16:00	57	95	0	**152**	0	64	10	**74**	12	0	70	**82**	0	0	0	**0**	**308**
16:00 – 16:15	52	107	0	**159**	0	88	8	**96**	9	0	47	**56**	0	0	0	**0**	**311**
16:15 – 16:30	55	121	0	**176**	0	78	6	**84**	16	0	56	**72**	0	0	0	**0**	**332**
16:30 – 16:45	56	115	0	**171**	0	106	6	**112**	12	0	58	**70**	0	0	0	**0**	**353**
16:45 – 17:00	51	96	0	**147**	0	81	13	**94**	11	0	53	**64**	0	0	0	**0**	**305**
17:00 – 17:15	57	106	0	**163**	0	102	15	**117**	11	0	52	**63**	0	0	0	**0**	**343**
17:15 – 17:30	57	75	0	**132**	0	55	16	**71**	4	0	53	**57**	0	0	0	**0**	**260**
TOTAL	589	1373	0	**1962**	0	1264	103	**1367**	101	0	564	**665**	0	0	0	**0**	**3994**

Note:
Volumes above include **cars**, **heavy vehicles** and **vehicular cyclists**.
Cars include motorcycles, passenger cars, pick-up trucks (including "heavy-duty"), full-size vans (i.e. Econoline), and any of these with a trailer.

BT ENGINEERING

Vehicular Turning Movements (15 Min. Volumes) – Heavy Vehicles

WILSON STREET WEST at WELLAND STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

	Wilson Street West				Wilson Street West				Driveway				Welland Street				
	Northbound				Southbound				Eastbound				Westbound				
Time Period	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	TOTAL
7:00 – 7:15	0	5	0	**5**	0	11	0	**11**	0	0	0	**0**	0	0	0	**0**	**16**
7:15 – 7:30	0	3	0	**3**	0	4	1	**5**	0	0	0	**0**	0	0	0	**0**	**8**
7:30 – 7:45	0	7	0	**7**	0	10	0	**10**	0	0	0	**0**	0	0	0	**0**	**17**
7:45 – 8:00	2	3	0	**5**	0	10	0	**10**	0	0	1	**1**	0	0	0	**0**	**16**
8:00 – 8:15	1	6	0	**7**	0	9	0	**9**	0	0	1	**1**	0	0	0	**0**	**17**
8:15 – 8:30	0	8	0	**8**	0	8	0	**8**	0	0	0	**0**	0	0	0	**0**	**16**
8:30 – 8:45	0	5	0	**5**	0	6	0	**6**	0	0	0	**0**	0	0	0	**0**	**11**
8:45 – 9:00	0	8	0	**8**	0	1	0	**1**	0	0	1	**1**	0	0	0	**0**	**10**
15:30 – 15:45	0	6	0	**6**	0	1	0	**1**	1	0	1	**2**	0	0	0	**0**	**9**
15:45 – 16:00	0	6	0	**6**	0	2	1	**3**	0	0	0	**0**	0	0	0	**0**	**9**
16:00 – 16:15	0	3	0	**3**	0	4	0	**4**	0	0	0	**0**	0	0	0	**0**	**7**
16:15 – 16:30	0	2	0	**2**	0	6	0	**6**	0	0	0	**0**	0	0	0	**0**	**8**
16:30 – 16:45	0	3	0	**3**	0	3	0	**3**	0	0	0	**0**	0	0	0	**0**	**6**
16:45 – 17:00	0	7	0	**7**	0	2	0	**2**	0	0	0	**0**	0	0	0	**0**	**9**
17:00 – 17:15	0	4	0	**4**	0	3	0	**3**	0	0	0	**0**	0	0	0	**0**	**7**
17:15 – 17:30	0	4	0	**4**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**4**
TOTAL	3	80	0	**83**	0	80	2	**82**	1	0	4	**5**	0	0	0	**0**	**170**

Note:
Heavy vehicles include box trucks, vehicles with more than 2 axles (with the exception of cars with trailers) and buses.

BT ENGINEERING

Vehicular Turning Movements – All Vehicles and Pedestrians

WILSON STREET WEST at WELLAND STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

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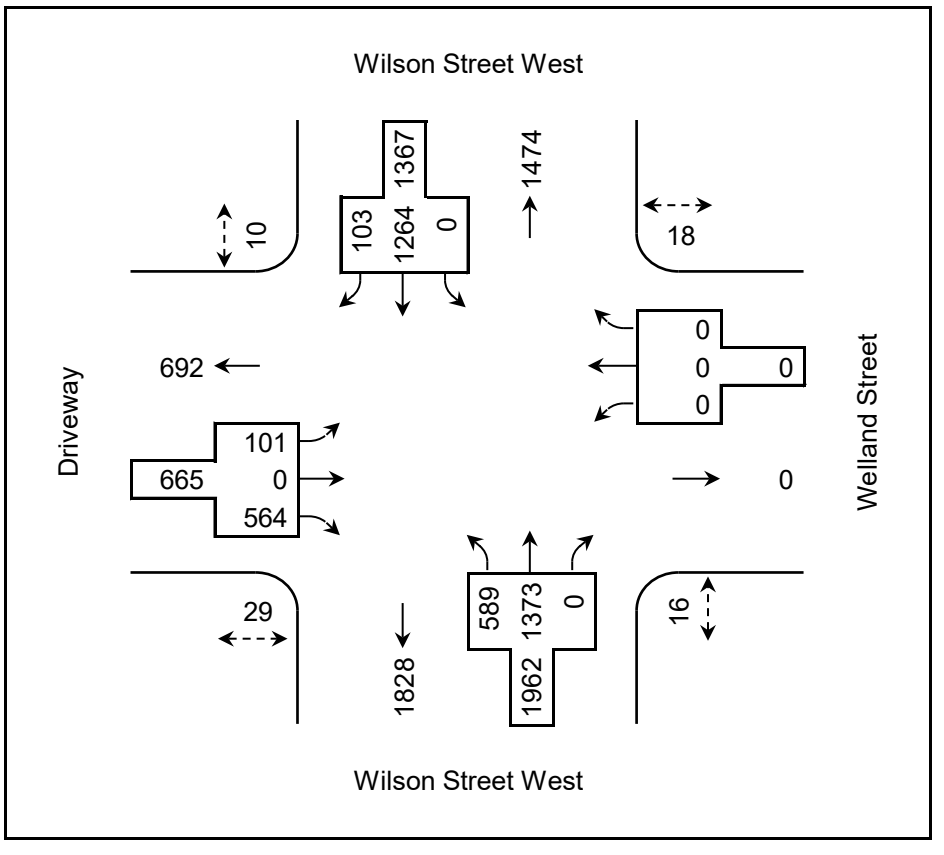
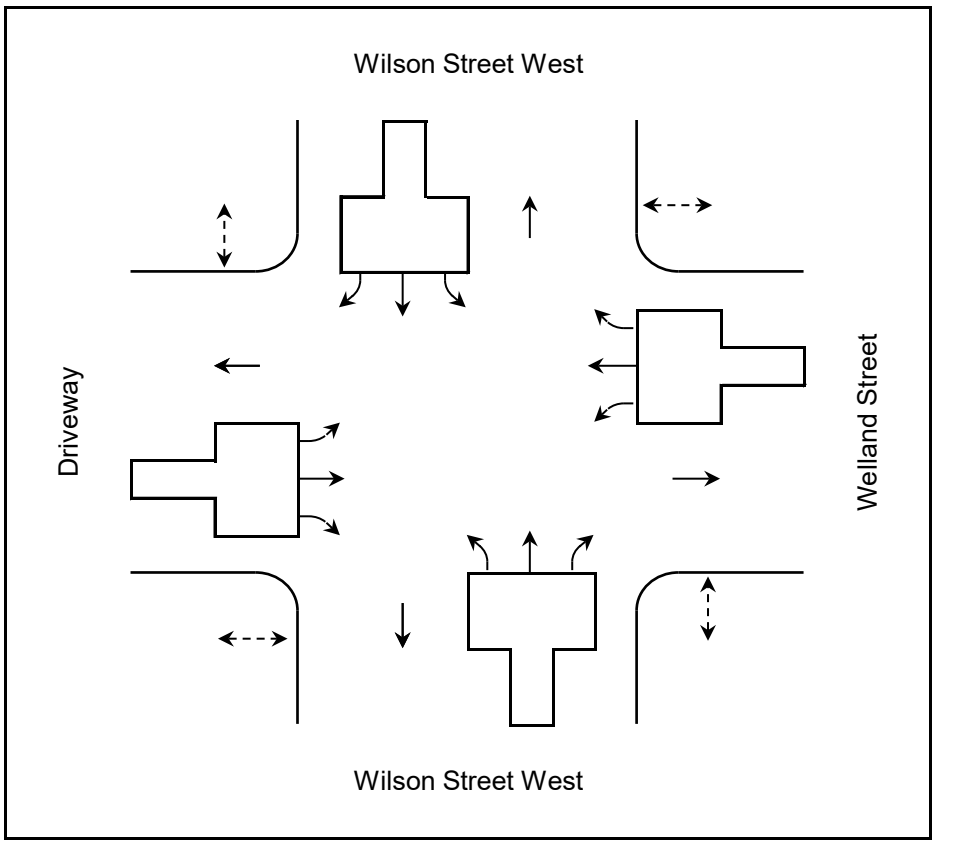
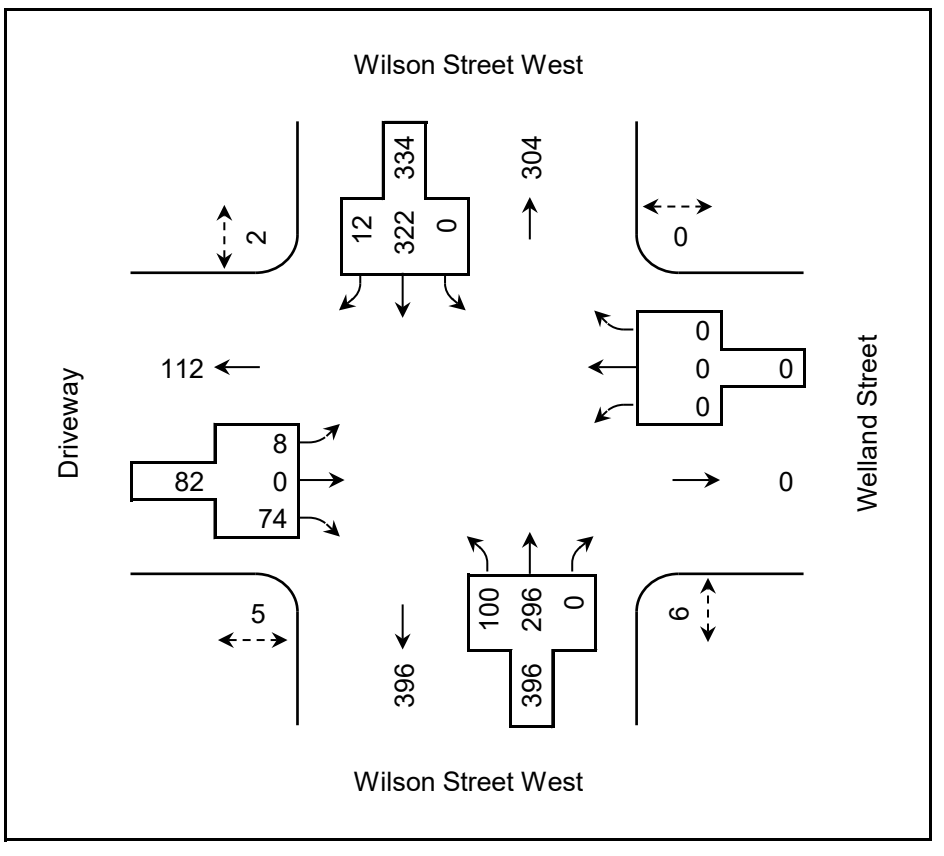
Full Period (4 hours)



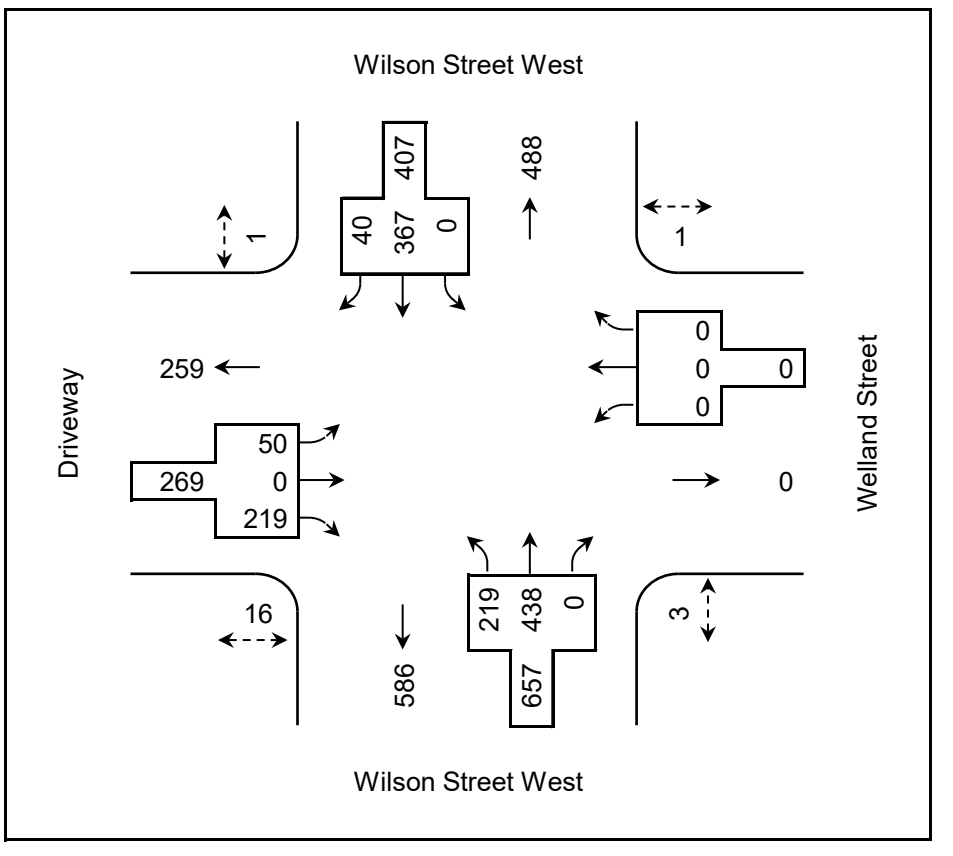
Midday Peak



Morning Peak (8:00–9:00)



Afternoon Peak (16:15–17:15)



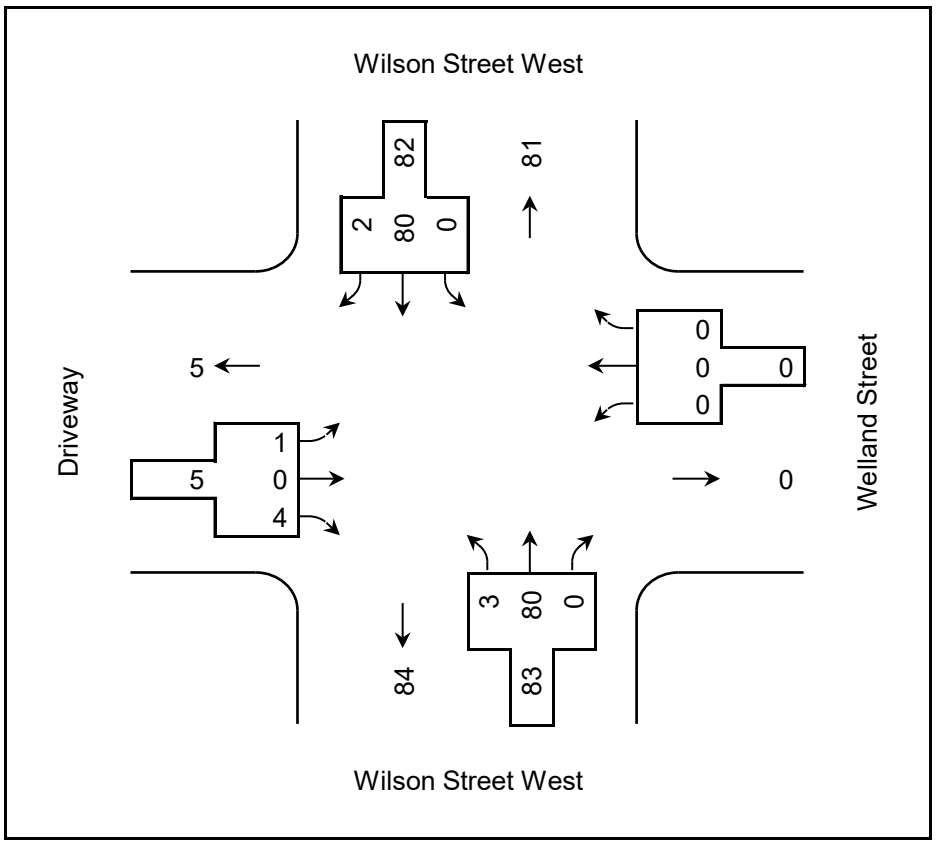
Note:
Volumes above include cars, heavy vehicles and vehicular cyclists.
Cars include motorcycles, passenger cars, pick-up trucks (including "heavy-duty"), full-size vans (i.e. Econoline), and any of these with a trailer.

Vehicular Turning Movements – All Trucks and Pedestrians

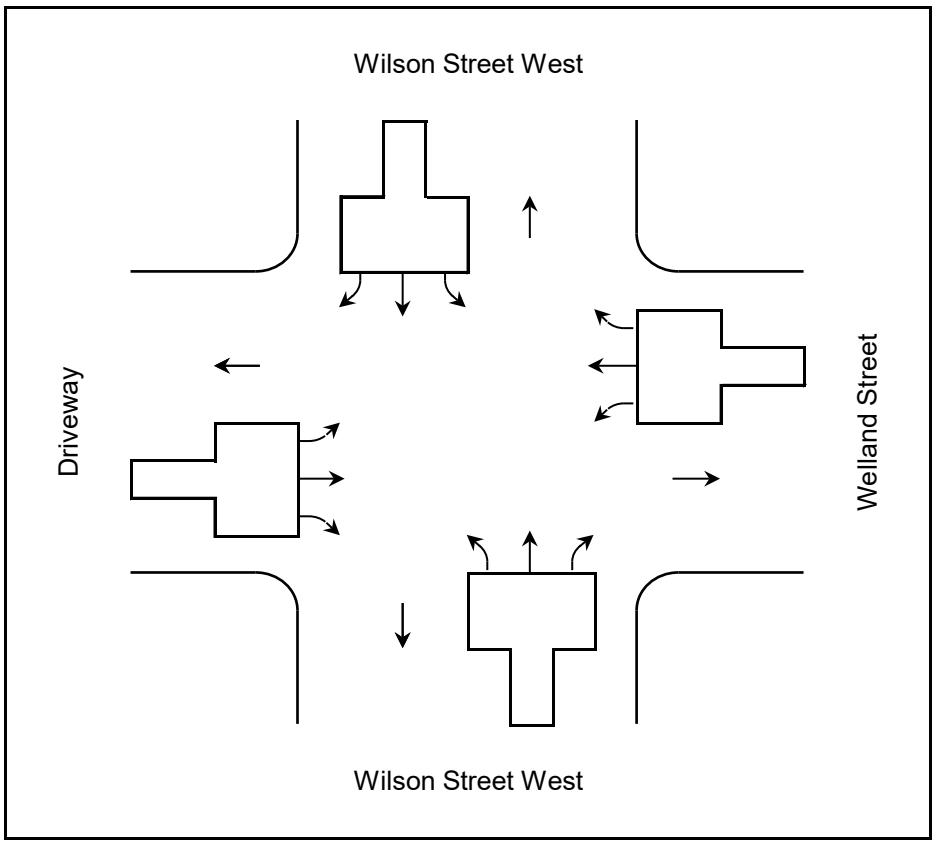
WILSON STREET WEST at WELLAND STREET in Perth, ON

Survey Date: Wednesday, 2 August 2023
Performed By: BTE

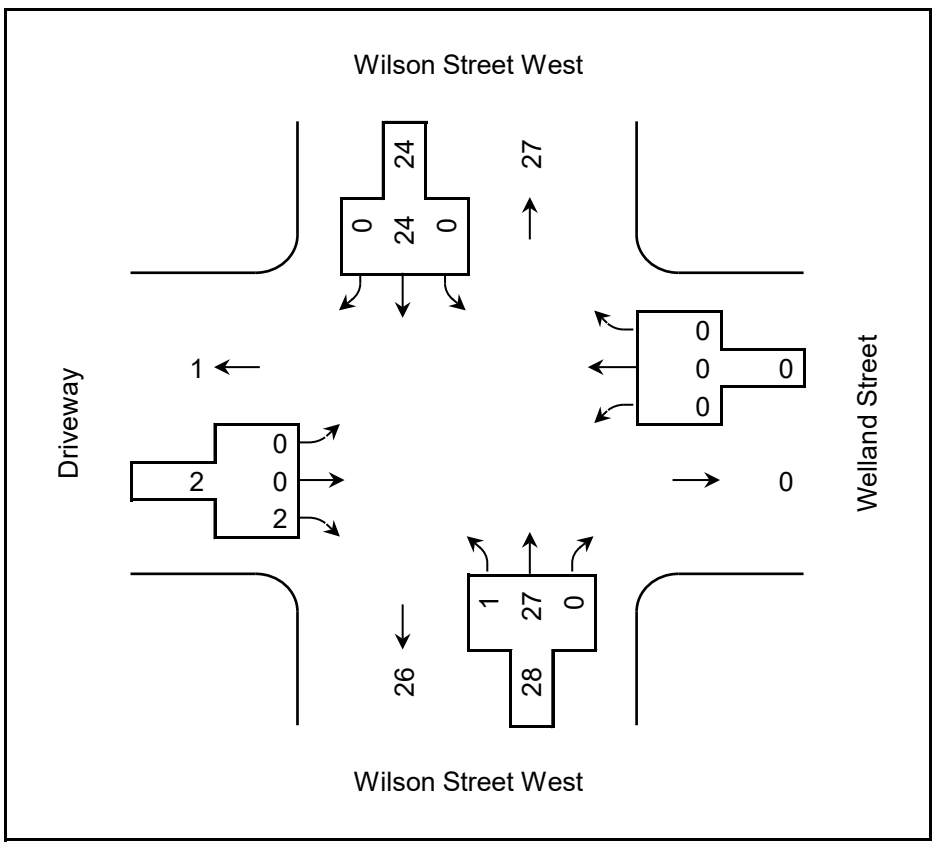
Full Period (4 hours)



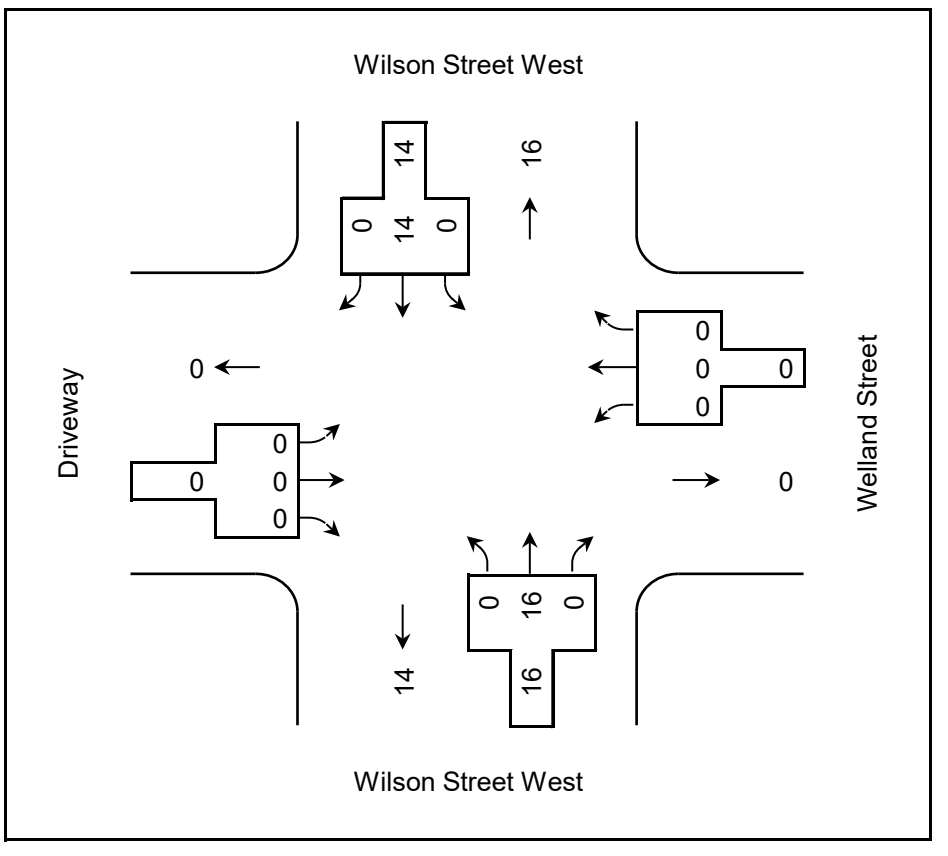
Midday Peak



Morning Peak (8:00–9:00)



Afternoon Peak (16:15–17:15)



Note:
Heavy vehicles include box trucks, vehicles with more than 2 axles (with the exception of cars with trailers) and buses.

Appendix C

Traffic Analysis Reports

BT ENGINEERING

Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.324

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Version 2023 (SP 0-6)
Scenario 1: 1 AM Peak - Background 2029

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	168	26	103	15	29	28	27	343	231	130	298	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	2.00	9.00	0.00	2.00	2.00	2.00	7.00	7.00	9.00	10.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	26	103	15	29	28	27	343	231	130	298	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	26	4	7	7	7	86	58	33	75	2
Total Analysis Volume [veh/h]	168	26	103	15	29	28	27	343	231	130	298	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			1			4		
v_di, Inbound Pedestrian Volume crossing m	4			1			1			3		
v_co, Outbound Pedestrian Volume crossing	0			1			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	42	0	0	20	0	0	28	0	8	31	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	0	29	0	0	29	0	22	51	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		No	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Scenario 1: 1 AM Peak - Background 2029

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	12	12	53	53	53	61	61	61
g / C, Green / Cycle	0.23	0.23	0.13	0.13	0.58	0.58	0.58	0.68	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.15	0.07	0.01	0.04	0.03	0.11	0.16	0.15	0.09	0.01
s, saturation flow rate [veh/h]	1321	1408	1276	1626	1072	3238	1445	880	3156	1528
c, Capacity [veh/h]	380	321	80	208	650	1895	846	679	2156	1044
d1, Uniform Delay [s]	30.78	28.91	45.00	35.45	10.14	8.66	9.22	5.05	4.99	4.55
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.24	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.82	0.57	1.12	0.70	0.12	0.21	0.80	0.30	0.13	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.32	0.19	0.27	0.04	0.18	0.27	0.19	0.14	0.01
d, Delay for Lane Group [s/veh]	35.60	29.48	46.12	36.16	10.26	8.87	10.01	5.34	5.13	4.56
Lane Group LOS	D	C	D	D	B	A	B	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.09	1.87	0.36	1.15	0.25	1.38	2.08	0.69	0.77	0.04
50th-Percentile Queue Length [m/ln]	31.15	14.21	2.71	8.79	1.91	10.51	15.88	5.23	5.89	0.30
95th-Percentile Queue Length [veh/ln]	7.36	3.36	0.64	2.08	0.45	2.48	3.75	1.24	1.39	0.07
95th-Percentile Queue Length [m/ln]	56.07	25.59	4.88	15.82	3.43	18.91	28.59	9.42	10.60	0.54

Movement, Approach, & Intersection Results

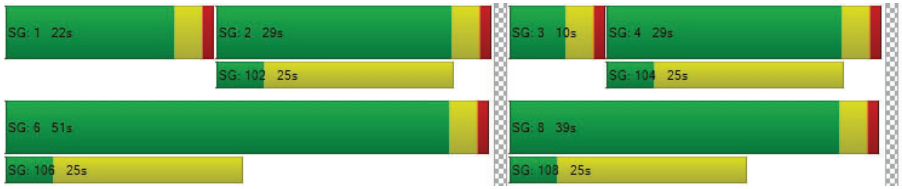
d_M, Delay for Movement [s/veh]	35.60	35.60	29.48	46.12	36.16	36.16	10.26	8.87	10.01	5.34	5.13	4.56
Movement LOS	D	D	C	D	D	D	B	A	B	A	A	A
d_A, Approach Delay [s/veh]	33.48			38.23			9.37			5.18		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	14.64											
Intersection LOS	B											
Intersection V/C	0.324											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	366.21	347.50	84.71
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.418	2.025	2.754	2.687
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	778	556	556	1044
d_b, Bicycle Delay [s]	16.81	23.47	23.47	10.27
I_b,int, Bicycle LOS Score for Intersection	2.050	1.678	2.055	1.919
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Scenario 1: 1 AM Peak - Background 2029

Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.50	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	338	15	0	387	0	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	2.00	6.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	15	0	387	0	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	4	0	97	0	2
Total Analysis Volume [veh/h]	338	15	0	387	0	6
Pedestrian Volume [ped/h]	0		0		7	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	9.33
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.16
d_A, Approach Delay [s/veh]	0.00		0.00		9.33	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	A					

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Version 2023 (SP 0-6)
BT ENGINEERING BTE
Scenario 1: 1 AM Peak - Background 2029

Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	7.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.292

Intersection Setup

Name	Wilson Street		Wilson Street		Welland Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [m]	30.50	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilson Street		Wilson Street		Welland Street	
Base Volume Input [veh/h]	116	343	373	14	9	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	9.00	7.00	0.00	0.00	3.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	343	373	14	9	86
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	86	93	4	2	22
Total Analysis Volume [veh/h]	116	343	373	14	9	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	6		0		2	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	1	6	2	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	0	5	0
Maximum Green [s]	63	179	112	0	53	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	33	24	0	57	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	15	15	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	75	75	66	66	7	7
g / C, Green / Cycle	0.83	0.83	0.73	0.73	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.12	0.23	0.13	0.13	0.01	0.06
s, saturation flow rate [veh/h]	960	1505	1530	1511	1543	1344
c, Capacity [veh/h]	868	1249	1122	1108	125	109
d1, Uniform Delay [s]	1.52	1.68	3.66	3.67	38.24	40.62
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.54	0.33	0.34	0.24	12.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.27	0.17	0.17	0.07	0.79
d, Delay for Lane Group [s/veh]	1.59	2.22	4.00	4.01	38.48	52.65
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.18	0.76	0.93	0.93	0.19	2.21
50th-Percentile Queue Length [m/ln]	1.37	5.82	7.07	7.09	1.45	16.81
95th-Percentile Queue Length [veh/ln]	0.32	1.38	1.67	1.68	0.34	3.97
95th-Percentile Queue Length [m/ln]	2.46	10.48	12.72	12.77	2.61	30.27

Movement, Approach, & Intersection Results

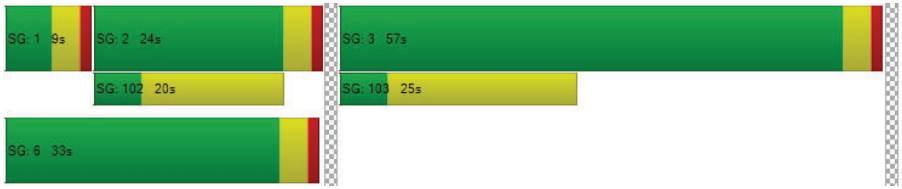
d_M, Delay for Movement [s/veh]	1.59	2.22	4.01	4.01	38.48	52.65
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	2.06		4.01		51.31	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	7.83					
Intersection LOS	A					
Intersection V/C	0.292					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.364	2.190	2.142
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	444	1178
d_b, Bicycle Delay [s]	20.67	27.22	7.61
I_b,int, Bicycle LOS Score for Intersection	2.428	1.990	1.670
Bicycle LOS	B	A	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.397

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Scenario 2: 2 PM Peak - Background 2029

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	311	39	159	20	71	78	35	304	230	140	353	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	4.00	2.00	0.00	1.00	9.00	7.00	6.00	4.00	8.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	39	159	20	71	78	35	304	230	140	353	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	10	40	5	18	20	9	76	58	35	88	1
Total Analysis Volume [veh/h]	311	39	159	20	71	78	35	304	230	140	353	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	3			1			0			23		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	32	0	0	24	0	0	28	0	18	41	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	51	0	0	29	0	0	30	0	9	39	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		No	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Scenario 2: 2 PM Peak - Background 2029

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	28	28	36	36	36	45	45	45
g / C, Green / Cycle	0.41	0.41	0.31	0.31	0.40	0.40	0.40	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.29	0.11	0.02	0.09	0.04	0.09	0.16	0.14	0.11	0.00
s, saturation flow rate [veh/h]	1195	1482	1184	1648	968	3238	1457	982	3211	1530
c, Capacity [veh/h]	543	611	125	515	379	1290	581	548	1601	763
d1, Uniform Delay [s]	22.07	17.39	42.38	23.38	22.32	17.97	19.33	12.61	12.72	11.33
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.22	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.82	0.22	0.59	0.31	0.48	0.43	2.02	0.49	0.32	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.26	0.16	0.29	0.09	0.24	0.40	0.26	0.22	0.00
d, Delay for Lane Group [s/veh]	27.89	17.62	42.98	23.68	22.80	18.40	21.35	13.10	13.03	11.34
Lane Group LOS	C	B	D	C	C	B	C	B	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.04	2.13	0.45	2.38	0.55	2.01	3.47	1.46	1.86	0.02
50th-Percentile Queue Length [m/ln]	46.04	16.25	3.43	18.14	4.20	15.33	26.48	11.09	14.19	0.15
95th-Percentile Queue Length [veh/ln]	10.07	3.84	0.81	4.28	0.99	3.62	6.25	2.62	3.35	0.03
95th-Percentile Queue Length [m/ln]	76.76	29.26	6.18	32.65	7.56	27.59	47.66	19.97	25.53	0.27

Movement, Approach, & Intersection Results

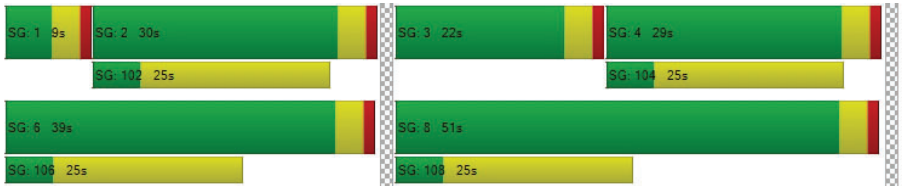
d_M, Delay for Movement [s/veh]	27.89	27.89	17.62	42.98	23.68	23.68	22.80	18.40	21.35	13.10	13.03	11.34
Movement LOS	C	C	B	D	C	C	C	B	C	B	B	B
d_A, Approach Delay [s/veh]	24.68			25.97			19.86			13.05		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	19.93											
Intersection LOS	B											
Intersection V/C	0.397											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersectio	2.456	2.074	3.016	2.713
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1044	556	578	778
d_b, Bicycle Delay [s]	10.27	23.47	22.76	16.81
l_b,int, Bicycle LOS Score for Intersection	2.399	1.838	2.029	1.968
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Scenario 2: 2 PM Peak - Background 2029

Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	532	33	0	472	0	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	2.00	3.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	532	33	0	472	0	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	133	8	0	118	0	4
Total Analysis Volume [veh/h]	532	33	0	472	0	14
Pedestrian Volume [ped/h]	0		0		5	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.03
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.06
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.45
d_A, Approach Delay [s/veh]	0.00		0.00		10.03	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.13					
Intersection LOS	B					

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Scenario 2: 2 PM Peak - Background 2029

Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name	Wilson Street		Wilson Street		Welland Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilson Street		Wilson Street		Welland Street	
Base Volume Input [veh/h]	219	438	367	40	50	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	4.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	438	367	40	50	219
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	110	92	10	13	55
Total Analysis Volume [veh/h]	219	438	367	40	50	219
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	19		1		1	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	1	6	2	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	0	5	0
Maximum Green [s]	71	146	71	0	86	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	33	24	0	57	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	15	15	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	56	56	17	17
g / C, Green / Cycle	0.73	0.73	0.63	0.63	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.23	0.28	0.13	0.13	0.03	0.16
s, saturation flow rate [veh/h]	964	1569	1569	1516	1543	1377
c, Capacity [veh/h]	745	1138	981	948	287	256
d1, Uniform Delay [s]	4.31	4.72	7.27	7.31	30.81	35.45
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.99	0.48	0.52	0.29	7.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.39	0.21	0.21	0.17	0.85
d, Delay for Lane Group [s/veh]	4.53	5.71	7.75	7.82	31.10	43.42
Lane Group LOS	A	A	A	A	C	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.04	2.69	1.63	1.64	0.92	5.11
50th-Percentile Queue Length [m/ln]	7.95	20.50	12.42	12.53	7.04	38.94
95th-Percentile Queue Length [veh/ln]	1.88	4.84	2.93	2.96	1.66	8.82
95th-Percentile Queue Length [m/ln]	14.32	36.90	22.36	22.55	12.68	67.18

Movement, Approach, & Intersection Results

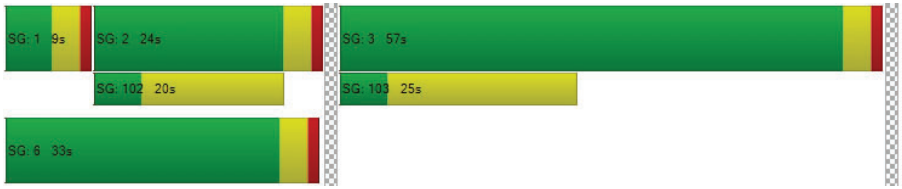
d_M, Delay for Movement [s/veh]	4.53	5.71	7.78	7.82	31.10	43.42
Movement LOS	A	A	A	A	C	D
d_A, Approach Delay [s/veh]	5.31		7.79		41.13	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	13.30					
Intersection LOS	B					
Intersection V/C	0.438					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.446	2.243	2.321
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	444	1178
d_b, Bicycle Delay [s]	20.67	27.22	7.61
I_b,int, Bicycle LOS Score for Intersection	2.755	2.006	1.670
Bicycle LOS	C	B	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.328

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Version 2023 (SP 0-6)
Scenario 3: 3 AM Peak - Total 2029

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	173	26	108	15	29	28	27	343	234	133	298	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	2.00	9.00	0.00	2.00	2.00	2.00	7.00	7.00	9.00	10.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	26	108	15	29	28	27	343	234	133	298	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	7	27	4	7	7	7	86	59	33	75	2
Total Analysis Volume [veh/h]	173	26	108	15	29	28	27	343	234	133	298	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			2			2			7		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	42	0	0	20	0	0	28	0	8	31	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	0	29	0	0	29	0	22	51	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		No	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	10	10	54	54	54	63	63	63
g / C, Green / Cycle	0.21	0.21	0.11	0.11	0.61	0.61	0.61	0.70	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.15	0.08	0.01	0.03	0.03	0.11	0.16	0.15	0.09	0.01
s, saturation flow rate [veh/h]	1331	1421	1275	1630	1073	3238	1445	877	3156	1530
c, Capacity [veh/h]	357	293	83	173	665	1961	875	690	2225	1078
d1, Uniform Delay [s]	32.71	30.68	44.98	37.25	9.57	7.83	8.35	4.45	4.33	3.94
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.25	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.15	0.77	1.02	1.10	0.11	0.19	0.75	0.31	0.13	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.37	0.18	0.33	0.04	0.17	0.27	0.19	0.13	0.01
d, Delay for Lane Group [s/veh]	38.86	31.45	46.00	38.35	9.68	8.03	9.10	4.76	4.45	3.95
Lane Group LOS	D	C	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.42	2.04	0.36	1.20	0.24	1.28	1.96	0.63	0.68	0.04
50th-Percentile Queue Length [m/ln]	33.66	15.52	2.72	9.13	1.83	9.72	14.94	4.78	5.19	0.27
95th-Percentile Queue Length [veh/ln]	7.86	3.67	0.64	2.16	0.43	2.30	3.53	1.13	1.23	0.06
95th-Percentile Queue Length [m/ln]	59.92	27.94	4.90	16.43	3.29	17.49	26.90	8.60	9.34	0.48

Movement, Approach, & Intersection Results

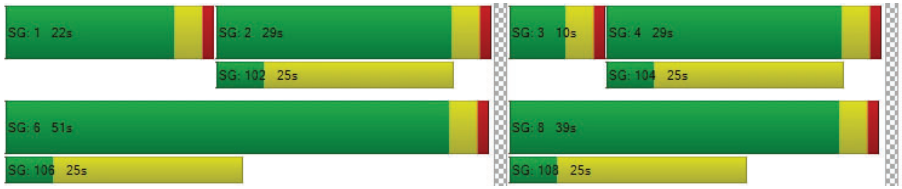
d_M, Delay for Movement [s/veh]	38.86	38.86	31.45	46.00	38.35	38.35	9.68	8.03	9.10	4.76	4.45	3.95
Movement LOS	D	D	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.25			39.95			8.52			4.54		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	14.87											
Intersection LOS	B											
Intersection V/C	0.328											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersectio	2.429	2.025	2.756	2.689
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	778	556	556	1044
d_b, Bicycle Delay [s]	16.81	23.47	23.47	10.27
l_b,int, Bicycle LOS Score for Intersection	2.066	1.678	2.058	1.922
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Version 2023 (SP 0-6)
Scenario 3: 3 AM Peak - Total 2029

Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.013

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	343	19	0	393	0	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	2.00	6.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	343	19	0	393	0	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	5	0	98	0	3
Total Analysis Volume [veh/h]	343	19	0	393	0	11
Pedestrian Volume [ped/h]	0		0		7	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	9.37
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.04
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.31
d_A, Approach Delay [s/veh]	0.00		0.00		9.37	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.13					
Intersection LOS	A					

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Version 2023 (SP 0-6)
Scenario 3: 3 AM Peak - Total 2029

Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	8.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.298

Intersection Setup

Name	Wilson Street			Wilson Street			Welland Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Wilson Street			Wilson Street			Welland Street					
Base Volume Input [veh/h]	116	348	5	6	373	14	9	0	86	15	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	9.00	0.00	0.00	7.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	348	5	6	373	14	9	0	86	15	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	87	1	2	93	4	2	0	22	4	0	1
Total Analysis Volume [veh/h]	116	348	5	6	373	14	9	0	86	15	0	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	6			0			2			7		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Version 2023 (SP 0-6)
BT ENGINEERING BTE
Scenario 3: 3 AM Peak - Total 2029

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	62	178	0	0	112	0	0	54	0	0	54	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	33	0	0	24	0	0	57	0	0	57	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	No			No			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	64	64	64	9	9	9
g / C, Green / Cycle	0.81	0.81	0.71	0.71	0.71	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.12	0.24	0.01	0.13	0.13	0.01	0.06	0.04
s, saturation flow rate [veh/h]	962	1501	940	1530	1511	1290	1377	454
c, Capacity [veh/h]	844	1214	661	1089	1075	110	141	117
d1, Uniform Delay [s]	1.93	2.16	6.61	4.29	4.29	36.55	38.65	38.96
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.61	0.02	0.36	0.37	0.32	4.17	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.29	0.01	0.18	0.18	0.08	0.61	0.17
d, Delay for Lane Group [s/veh]	2.00	2.77	6.64	4.65	4.66	36.87	42.82	39.65
Lane Group LOS	A	A	A	A	A	D	D	D
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.25	1.05	0.04	1.06	1.05	0.19	1.95	0.45
50th-Percentile Queue Length [m/ln]	1.88	8.01	0.34	8.05	8.00	1.42	14.90	3.45
95th-Percentile Queue Length [veh/ln]	0.45	1.89	0.08	1.90	1.89	0.34	3.52	0.81
95th-Percentile Queue Length [m/ln]	3.39	14.41	0.61	14.48	14.39	2.56	26.81	6.20

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Scenario 3: 3 AM Peak - Total 2029

Movement, Approach, & Intersection Results

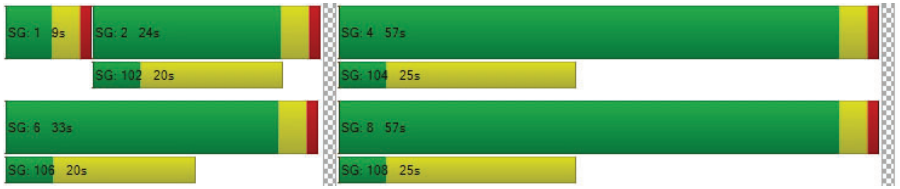
d_M, Delay for Movement [s/veh]	2.00	2.77	2.77	6.64	4.66	4.66	36.87	42.82	42.82	39.65	39.65	39.65
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.58			4.69			42.25			39.65		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.04											
Intersection LOS	A											
Intersection V/C	0.298											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.392	2.336	2.139	1.741
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	444	1178	1178
d_b, Bicycle Delay [s]	20.67	27.22	7.61	7.61
I_b,int, Bicycle LOS Score for Intersection	2.444	1.995	1.827	1.703
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Generated with PTV VISTRO
Version 2023 (SP 0-6)
Scenario 4: 4 PM Peak - Total 2029

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	317	39	165	20	71	78	35	304	237	148	353	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	4.00	2.00	0.00	1.00	3.00	7.00	6.00	4.00	8.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	317	39	165	20	71	78	35	304	237	148	353	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	10	41	5	18	20	9	76	59	37	88	1
Total Analysis Volume [veh/h]	317	39	165	20	71	78	35	304	237	148	353	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	3			1			0			23		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	47	0	0	23	0	0	26	0	5	26	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	51	0	0	29	0	0	30	0	9	39	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		No	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	28	28	36	36	36	45	45	45
g / C, Green / Cycle	0.42	0.42	0.32	0.32	0.40	0.40	0.40	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.30	0.11	0.02	0.09	0.03	0.09	0.16	0.15	0.11	0.00
s, saturation flow rate [veh/h]	1197	1482	1178	1648	1018	3238	1457	978	3211	1530
c, Capacity [veh/h]	548	617	125	521	390	1278	575	543	1588	757
d1, Uniform Delay [s]	21.95	17.25	42.37	23.12	22.56	18.19	19.69	12.87	12.91	11.50
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.87	0.23	0.59	0.30	0.46	0.44	2.17	1.24	0.32	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.27	0.16	0.29	0.09	0.24	0.41	0.27	0.22	0.00
d, Delay for Lane Group [s/veh]	27.82	17.48	42.96	23.42	23.01	18.63	21.86	14.11	13.23	11.51
Lane Group LOS	C	B	D	C	C	B	C	B	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.13	2.21	0.45	2.36	0.55	2.03	3.64	1.67	1.88	0.02
50th-Percentile Queue Length [m/ln]	46.71	16.81	3.43	18.02	4.21	15.45	27.71	12.72	14.33	0.15
95th-Percentile Queue Length [veh/ln]	10.19	3.97	0.81	4.26	0.99	3.65	6.55	3.00	3.38	0.04
95th-Percentile Queue Length [m/ln]	77.65	30.26	6.18	32.43	7.58	27.81	49.88	22.89	25.79	0.27

Movement, Approach, & Intersection Results

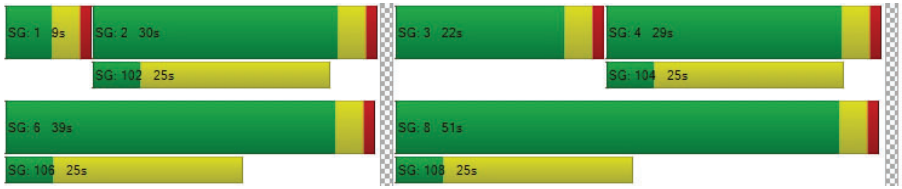
d_M, Delay for Movement [s/veh]	27.82	27.82	17.48	42.96	23.42	23.42	23.01	18.63	21.86	14.11	13.23	11.51
Movement LOS	C	C	B	D	C	C	C	B	C	B	B	B
d_A, Approach Delay [s/veh]	24.55			25.73			20.23			13.48		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	20.11											
Intersection LOS	C											
Intersection V/C	0.405											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersectio	2.467	2.074	3.028	2.717
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1044	556	578	778
d_b, Bicycle Delay [s]	10.27	23.47	22.76	16.81
l_b,int, Bicycle LOS Score for Intersection	2.419	1.838	2.035	1.975
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	541	45	0	487	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	2.00	3.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	541	45	0	487	0	18
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	135	11	0	122	0	5
Total Analysis Volume [veh/h]	541	45	0	487	0	18
Pedestrian Volume [ped/h]	0		0		5	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.10
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.08
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.58
d_A, Approach Delay [s/veh]	0.00		0.00		10.10	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	B					

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Version 2023 (SP 0-6)
Scenario 4: 4 PM Peak - Total 2029

Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.453

Intersection Setup

Name	Wilson Street			Wilson Street			Welland Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Wilson Street			Wilson Street			Welland Street					
Base Volume Input [veh/h]	219	449	11	11	367	40	50	0	219	20	0	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	449	11	11	367	40	50	0	219	20	0	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	112	3	3	92	10	13	0	55	5	0	2
Total Analysis Volume [veh/h]	219	449	11	11	367	40	50	0	219	20	0	9
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	19			1			1			3		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	74	146	0	0	68	0	0	86	0	0	86	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	33	0	0	24	0	0	57	0	0	57	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	No			No			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	56	56	56	17	17	17
g / C, Green / Cycle	0.73	0.73	0.63	0.63	0.63	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.23	0.29	0.01	0.13	0.13	0.04	0.16	0.11
s, saturation flow rate [veh/h]	964	1562	852	1569	1516	1286	1377	262
c, Capacity [veh/h]	745	1132	474	980	947	149	256	116
d1, Uniform Delay [s]	4.31	4.83	13.15	7.29	7.30	31.54	35.44	35.39
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	1.08	0.09	0.49	0.51	1.32	7.92	1.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.41	0.02	0.21	0.21	0.34	0.85	0.25
d, Delay for Lane Group [s/veh]	4.53	5.91	13.24	7.78	7.81	32.86	43.36	36.50
Lane Group LOS	A	A	B	A	A	C	D	D
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.04	2.90	0.13	1.65	1.62	0.98	5.11	0.66
50th-Percentile Queue Length [m/ln]	7.96	22.06	0.98	12.60	12.37	7.45	38.91	5.04
95th-Percentile Queue Length [veh/ln]	1.88	5.21	0.23	2.98	2.92	1.76	8.81	1.19
95th-Percentile Queue Length [m/ln]	14.33	39.71	1.76	22.68	22.26	13.41	67.14	9.07

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Scenario 4: 4 PM Peak - Total 2029

Movement, Approach, & Intersection Results

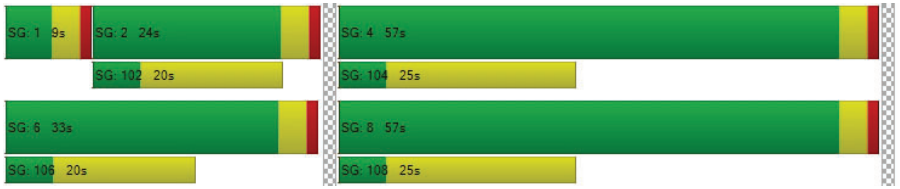
d_M, Delay for Movement [s/veh]	4.53	5.91	5.91	13.24	7.79	7.81	32.86	43.36	43.36	36.50	36.50	36.50
Movement LOS	A	A	A	B	A	A	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	5.46			7.94			41.41			36.50		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.78											
Intersection LOS	B											
Intersection V/C	0.453											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersectio	2.485	2.437	2.321	1.758
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	444	1178	1178
d_b, Bicycle Delay [s]	20.67	27.22	7.61	7.61
l_b,int, Bicycle LOS Score for Intersection	2.791	2.015	2.114	1.718
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.357

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Version 2023 (SP 0-6)
Scenario 5: 5 AM Peak - Background 2034

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	190	29	117	17	33	31	30	388	261	147	337	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	2.00	9.00	0.00	2.00	2.00	2.00	7.00	7.00	9.00	10.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	29	117	17	33	31	30	388	261	147	337	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	7	29	4	8	8	8	97	65	37	84	2
Total Analysis Volume [veh/h]	190	29	117	17	33	31	30	388	261	147	337	9
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			2			2			8		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	29	0	0	24	0	0	39	0	23	39	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	38	0	0	29	0	0	34	0	18	52	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		No	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO
Version 2023 (SP 0-6)
BTE
Scenario 5: 5 AM Peak - Background 2034

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	13	13	51	51	51	60	60	60
g / C, Green / Cycle	0.24	0.24	0.14	0.14	0.57	0.57	0.57	0.67	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.17	0.08	0.01	0.04	0.03	0.12	0.18	0.18	0.11	0.01
s, saturation flow rate [veh/h]	1300	1421	1262	1632	1035	3238	1445	838	3156	1530
c, Capacity [veh/h]	386	339	80	227	610	1852	827	637	2122	1029
d1, Uniform Delay [s]	30.82	28.41	45.00	34.74	11.04	9.37	10.06	5.51	5.41	4.86
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.21	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	0.60	1.31	0.67	0.15	0.26	1.00	0.36	0.16	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.34	0.21	0.28	0.05	0.21	0.32	0.23	0.16	0.01
d, Delay for Lane Group [s/veh]	36.73	29.01	46.31	35.41	11.19	9.63	11.07	5.86	5.57	4.88
Lane Group LOS	D	C	D	D	B	A	B	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.68	2.11	0.40	1.28	0.30	1.66	2.53	0.83	0.94	0.05
50th-Percentile Queue Length [m/ln]	35.63	16.05	3.08	9.75	2.25	12.65	19.30	6.31	7.14	0.36
95th-Percentile Queue Length [veh/ln]	8.22	3.79	0.73	2.30	0.53	2.99	4.56	1.49	1.69	0.08
95th-Percentile Queue Length [m/ln]	62.65	28.89	5.54	17.55	4.05	22.77	34.75	11.35	12.86	0.65

Movement, Approach, & Intersection Results

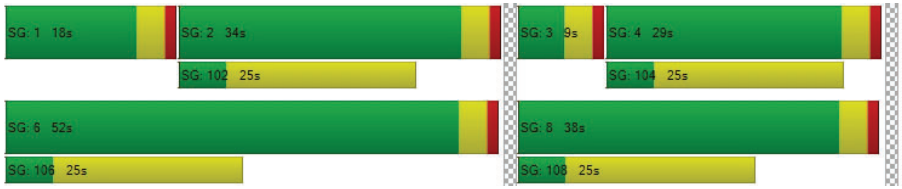
d_M, Delay for Movement [s/veh]	36.73	36.73	29.01	46.31	35.41	35.41	11.19	9.63	11.07	5.86	5.57	4.88
Movement LOS	D	D	C	D	D	D	B	A	B	A	A	A
d_A, Approach Delay [s/veh]	34.04			37.70			10.25			5.65		
Approach LOS	C			D			B			A		
d_I, Intersection Delay [s/veh]	15.25											
Intersection LOS	B											
Intersection V/C	0.357											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.453	2.035	2.816	2.718
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	556	667	1067
d_b, Bicycle Delay [s]	17.42	23.47	20.00	9.80
I_b,int, Bicycle LOS Score for Intersection	2.114	1.693	2.120	1.966
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.50	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	382	17	0	438	0	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	2.00	6.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	382	17	0	438	0	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	4	0	110	0	2
Total Analysis Volume [veh/h]	382	17	0	438	0	6
Pedestrian Volume [ped/h]	0		0		8	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	9.48
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.17
d_A, Approach Delay [s/veh]	0.00		0.00		9.48	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.07					
Intersection LOS	A					

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Scenario 5: 5 AM Peak - Background 2034

Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	8.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.330

Intersection Setup

Name	Wilson Street		Wilson Street		Welland Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [m]	30.50	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilson Street		Wilson Street		Welland Street	
Base Volume Input [veh/h]	131	388	422	16	10	97
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	9.00	7.00	0.00	0.00	3.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	388	422	16	10	97
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	97	106	4	3	24
Total Analysis Volume [veh/h]	131	388	422	16	10	97
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	7		0		3	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	1	6	2	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	0	5	0
Maximum Green [s]	63	179	112	0	53	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	48	39	0	42	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	15	15	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	65	65	8	8
g / C, Green / Cycle	0.82	0.82	0.72	0.72	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.14	0.26	0.14	0.14	0.01	0.07
s, saturation flow rate [veh/h]	924	1505	1530	1511	1543	1344
c, Capacity [veh/h]	822	1234	1106	1091	140	122
d1, Uniform Delay [s]	1.77	1.96	4.05	4.06	37.44	40.09
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	0.67	0.40	0.41	0.21	11.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.31	0.20	0.20	0.07	0.79
d, Delay for Lane Group [s/veh]	1.85	2.62	4.45	4.47	37.66	51.12
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.24	1.03	1.14	1.15	0.21	2.45
50th-Percentile Queue Length [m/ln]	1.84	7.87	8.70	8.74	1.58	18.64
95th-Percentile Queue Length [veh/ln]	0.43	1.86	2.06	2.06	0.37	4.40
95th-Percentile Queue Length [m/ln]	3.30	14.17	15.67	15.72	2.85	33.54

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Scenario 5: 5 AM Peak - Background 2034

Movement, Approach, & Intersection Results

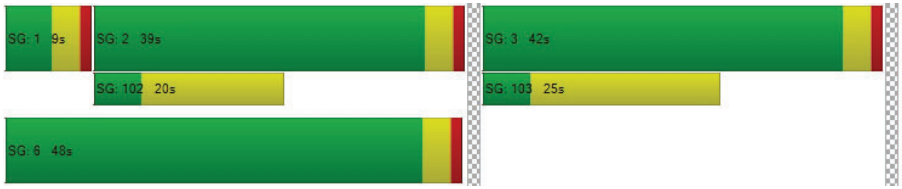
d_M, Delay for Movement [s/veh]	1.85	2.62	4.46	4.47	37.66	51.12
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	2.43		4.46		49.86	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	8.04					
Intersection LOS	A					
Intersection V/C	0.330					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.395	2.223	2.166
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	978	778	844
d_b, Bicycle Delay [s]	11.76	16.81	15.02
I_b,int, Bicycle LOS Score for Intersection	2.527	2.032	1.670
Bicycle LOS	B	B	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	23.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.431

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Scenario 6: 6 PM Peak - Background 2034

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	352	45	180	22	80	88	39	344	260	159	399	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	4.00	2.00	0.00	1.00	3.00	7.00	6.00	4.00	8.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	352	45	180	22	80	88	39	344	260	159	399	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	11	45	6	20	22	10	86	65	40	100	1
Total Analysis Volume [veh/h]	352	45	180	22	80	88	39	344	260	159	399	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	3			1			0			26		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	56	0	0	47	0	0	27	0	5	36	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	59	0	0	29	0	0	32	0	9	41	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		No	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Scenario 6: 6 PM Peak - Background 2034

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	39	39	35	35	35	44	44	44
g / C, Green / Cycle	0.48	0.48	0.39	0.39	0.35	0.35	0.35	0.44	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.35	0.12	0.02	0.10	0.04	0.11	0.18	0.17	0.12	0.00
s, saturation flow rate [veh/h]	1144	1482	1156	1648	975	3238	1457	939	3211	1530
c, Capacity [veh/h]	570	710	119	641	327	1136	511	465	1415	674
d1, Uniform Delay [s]	21.71	15.44	46.94	20.77	28.38	23.58	25.65	17.57	17.85	15.66
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.88	0.19	0.74	0.22	0.74	0.69	3.58	2.00	0.50	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.25	0.19	0.26	0.12	0.30	0.51	0.34	0.28	0.00
d, Delay for Lane Group [s/veh]	28.58	15.62	47.68	20.99	29.12	24.26	29.23	19.57	18.35	15.68
Lane Group LOS	C	B	D	C	C	C	C	B	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.05	2.40	0.56	2.67	0.76	2.90	5.10	2.37	2.84	0.04
50th-Percentile Queue Length [m/ln]	53.71	18.32	4.24	20.32	5.77	22.12	38.89	18.07	21.61	0.29
95th-Percentile Queue Length [veh/ln]	11.40	4.33	1.00	4.80	1.36	5.22	8.81	4.27	5.10	0.07
95th-Percentile Queue Length [m/ln]	86.89	32.97	7.64	36.58	10.39	39.81	67.12	32.53	38.90	0.53

Movement, Approach, & Intersection Results

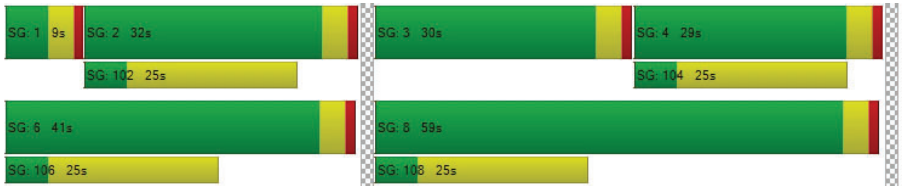
d_M, Delay for Movement [s/veh]	28.58	28.58	15.62	47.68	20.99	20.99	29.12	24.26	29.23	19.57	18.35	15.68
Movement LOS	C	C	B	D	C	C	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	24.54			24.08			26.57			18.68		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	23.49											
Intersection LOS	C											
Intersection V/C	0.431											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
l_p,int, Pedestrian LOS Score for Intersectio	2.493	2.096	3.153	2.752
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	500	560	740
d_b, Bicycle Delay [s]	10.13	28.13	25.92	19.85
l_b,int, Bicycle LOS Score for Intersection	2.512	1.873	2.090	2.022
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Scenario 6: 6 PM Peak - Background 2034

Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	602	38	0	534	0	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	2.00	3.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	602	38	0	534	0	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	10	0	134	0	4
Total Analysis Volume [veh/h]	602	38	0	534	0	16
Pedestrian Volume [ped/h]	0		0		5	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.32
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.07
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.54
d_A, Approach Delay [s/veh]	0.00		0.00		10.32	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.14					
Intersection LOS	B					

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Scenario 6: 6 PM Peak - Background 2034

Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.441

Intersection Setup

Name	Wilson Street		Wilson Street		Welland Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilson Street		Wilson Street		Welland Street	
Base Volume Input [veh/h]	219	438	367	40	50	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	5.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	438	367	40	50	219
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	110	92	10	13	55
Total Analysis Volume [veh/h]	219	438	367	40	50	219
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	21		1		1	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	1	6	2	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	0	5	0
Maximum Green [s]	71	146	71	0	86	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	33	24	0	57	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	15	15	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	56	56	17	17
g / C, Green / Cycle	0.73	0.73	0.63	0.63	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.23	0.28	0.13	0.14	0.03	0.16
s, saturation flow rate [veh/h]	964	1556	1556	1504	1543	1377
c, Capacity [veh/h]	744	1128	973	940	287	256
d1, Uniform Delay [s]	4.32	4.73	7.28	7.32	30.81	35.45
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	1.01	0.49	0.53	0.29	7.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.39	0.21	0.22	0.17	0.85
d, Delay for Lane Group [s/veh]	4.54	5.74	7.77	7.84	31.10	43.42
Lane Group LOS	A	A	A	A	C	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.04	2.70	1.63	1.65	0.92	5.11
50th-Percentile Queue Length [m/ln]	7.95	20.59	12.45	12.55	7.04	38.94
95th-Percentile Queue Length [veh/ln]	1.88	4.86	2.94	2.97	1.66	8.82
95th-Percentile Queue Length [m/ln]	14.32	37.06	22.41	22.60	12.68	67.18

Movement, Approach, & Intersection Results

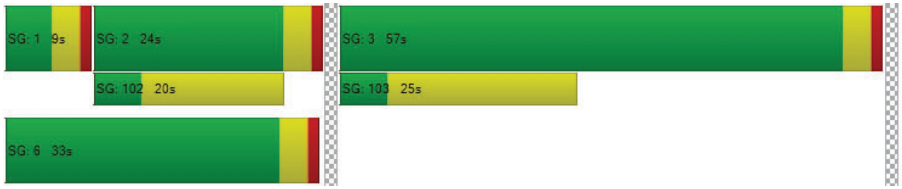
d_M, Delay for Movement [s/veh]	4.54	5.74	7.80	7.84	31.10	43.42
Movement LOS	A	A	A	A	C	D
d_A, Approach Delay [s/veh]	5.34		7.81		41.13	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	13.32					
Intersection LOS	B					
Intersection V/C	0.441					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.446	2.243	2.321
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	444	1178
d_b, Bicycle Delay [s]	20.67	27.22	7.61
I_b,int, Bicycle LOS Score for Intersection	2.755	2.006	1.670
Bicycle LOS	C	B	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.360

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Version 2023 (SP 0-6)
Scenario 7: 7 AM Peak - Total 2034

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	195	29	122	17	33	31	30	388	264	150	337	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	2.00	9.00	0.00	2.00	2.00	2.00	7.00	7.00	9.00	10.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	29	122	17	33	31	30	388	264	150	337	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	7	31	4	8	8	8	97	66	38	84	2
Total Analysis Volume [veh/h]	195	29	122	17	33	31	30	388	264	150	337	9
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			2			2			8		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	30	0	0	24	0	0	43	0	23	43	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	38	0	0	29	0	0	34	0	18	52	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		No	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	13	13	51	51	51	60	60	60
g / C, Green / Cycle	0.24	0.24	0.14	0.14	0.57	0.57	0.57	0.67	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.17	0.09	0.01	0.04	0.03	0.12	0.18	0.18	0.11	0.01
s, saturation flow rate [veh/h]	1299	1421	1256	1632	1035	3238	1445	837	3156	1530
c, Capacity [veh/h]	386	339	80	226	609	1850	826	636	2123	1029
d1, Uniform Delay [s]	31.02	28.55	45.00	34.76	11.07	9.39	10.12	5.51	5.40	4.85
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.22	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.25	0.64	1.31	0.68	0.15	0.26	1.02	0.39	0.16	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.36	0.21	0.28	0.05	0.21	0.32	0.24	0.16	0.01
d, Delay for Lane Group [s/veh]	37.27	29.19	46.31	35.44	11.22	9.65	11.14	5.90	5.56	4.87
Lane Group LOS	D	C	D	D	B	A	B	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.82	2.21	0.40	1.28	0.30	1.66	2.57	0.85	0.94	0.05
50th-Percentile Queue Length [m/ln]	36.73	16.82	3.08	9.76	2.26	12.67	19.62	6.47	7.13	0.36
95th-Percentile Queue Length [veh/ln]	8.42	3.97	0.73	2.30	0.53	2.99	4.63	1.53	1.68	0.08
95th-Percentile Queue Length [m/ln]	64.16	30.27	5.54	17.56	4.06	22.81	35.31	11.64	12.84	0.65

Movement, Approach, & Intersection Results

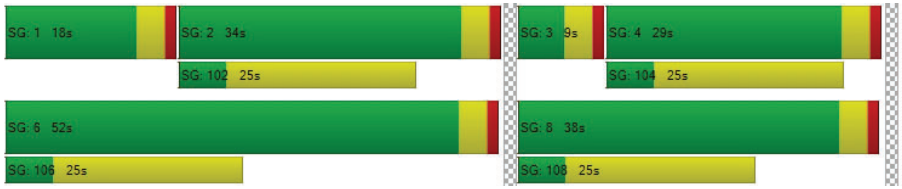
d_M, Delay for Movement [s/veh]	37.27	37.27	29.19	46.31	35.44	35.44	11.22	9.65	11.14	5.90	5.56	4.87
Movement LOS	D	D	C	D	D	D	B	A	B	A	A	A
d_A, Approach Delay [s/veh]	34.42			37.72			10.29			5.65		
Approach LOS	C			D			B			A		
d_I, Intersection Delay [s/veh]	15.44											
Intersection LOS	B											
Intersection V/C	0.360											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersectio	2.459	2.035	2.825	2.720
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	556	667	1067
d_b, Bicycle Delay [s]	17.42	23.47	20.00	9.80
l_b,int, Bicycle LOS Score for Intersection	2.131	1.693	2.122	1.969
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	387	21	0	444	0	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	2.00	6.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	387	21	0	444	0	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	5	0	111	0	3
Total Analysis Volume [veh/h]	387	21	0	444	0	11
Pedestrian Volume [ped/h]	0		0		8	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	9.53
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.04
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.32
d_A, Approach Delay [s/veh]	0.00		0.00		9.53	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.12					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	8.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.336

Intersection Setup

Name	Wilson Street			Wilson Street			Welland Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Wilson Street			Wilson Street			Welland Street					
Base Volume Input [veh/h]	131	393	5	6	422	16	10	0	97	15	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	9.00	0.00	0.00	7.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	393	5	6	422	16	10	0	97	15	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	98	1	2	106	4	3	0	24	4	0	1
Total Analysis Volume [veh/h]	131	393	5	6	422	16	10	0	97	15	0	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	7			0			3			8		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	62	178	0	0	112	0	0	54	0	0	54	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	33	0	0	24	0	0	57	0	0	57	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	No			No			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	64	64	64	9	9	9
g / C, Green / Cycle	0.81	0.81	0.71	0.71	0.71	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.14	0.27	0.01	0.14	0.14	0.01	0.07	0.05
s, saturation flow rate [veh/h]	925	1501	902	1530	1511	1290	1377	379
c, Capacity [veh/h]	808	1210	623	1083	1069	104	145	110
d1, Uniform Delay [s]	2.04	2.31	7.16	4.49	4.49	36.38	38.75	39.01
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	0.73	0.03	0.42	0.43	0.40	5.23	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.33	0.01	0.20	0.20	0.10	0.67	0.18
d, Delay for Lane Group [s/veh]	2.14	3.04	7.18	4.91	4.92	36.77	43.97	39.79
Lane Group LOS	A	A	A	A	A	D	D	D
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.29	1.27	0.05	1.24	1.24	0.21	2.24	0.46
50th-Percentile Queue Length [m/ln]	2.23	9.70	0.36	9.48	9.41	1.58	17.08	3.48
95th-Percentile Queue Length [veh/ln]	0.53	2.29	0.08	2.24	2.22	0.37	4.03	0.82
95th-Percentile Queue Length [m/ln]	4.02	17.46	0.64	17.07	16.95	2.85	30.74	6.26

Movement, Approach, & Intersection Results

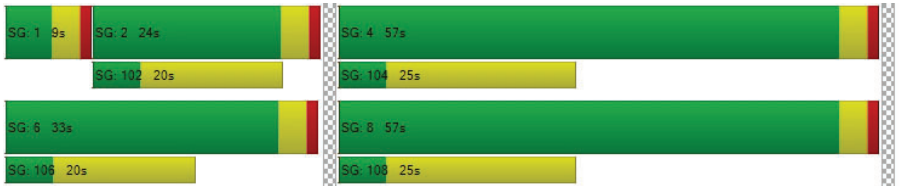
d_M, Delay for Movement [s/veh]	2.14	3.04	3.04	7.18	4.91	4.92	36.77	43.97	43.97	39.79	39.79	39.79
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.81			4.95			43.30			39.79		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.29											
Intersection LOS	A											
Intersection V/C	0.336											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.422	2.362	2.163	1.741
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	444	1178	1178
d_b, Bicycle Delay [s]	20.67	27.22	7.61	7.61
I_b,int, Bicycle LOS Score for Intersection	2.543	2.037	1.847	1.703
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Wilson Street - Highway 7 Intersection

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.50	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			70.00			70.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Generated with PTV VISTRO
Version 2023 (SP 0-6)
Scenario 8: 8 PM Peak - Total 2034

Volumes

Name	Wilson Street			Wilson Street			Highway 7			Highway 7		
Base Volume Input [veh/h]	358	45	186	22	80	88	39	344	267	166	399	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	4.00	2.00	0.00	1.00	3.00	7.00	6.00	4.00	8.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	358	45	186	22	80	88	39	344	267	166	399	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	11	47	6	20	22	10	86	67	42	100	1
Total Analysis Volume [veh/h]	358	45	186	22	80	88	39	344	267	166	399	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	3			1			0			26		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	10	32	0	0	24	0	0	22	0	16	27	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	59	0	0	29	0	0	32	0	9	41	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	Yes	No			No			No		Yes	No	
Maximum Recall	No	No			No			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	39	39	35	35	35	44	44	44
g / C, Green / Cycle	0.48	0.48	0.39	0.39	0.35	0.35	0.35	0.44	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.35	0.13	0.02	0.10	0.04	0.11	0.18	0.18	0.12	0.00
s, saturation flow rate [veh/h]	1145	1482	1149	1648	975	3238	1457	935	3211	1530
c, Capacity [veh/h]	575	715	118	647	323	1124	506	460	1404	669
d1, Uniform Delay [s]	21.59	15.30	46.98	20.53	28.68	23.84	26.08	17.88	18.08	15.87
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50	0.50	0.49	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.96	0.19	0.75	0.21	0.76	0.70	3.90	2.14	0.51	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.26	0.19	0.26	0.12	0.31	0.53	0.36	0.28	0.00
d, Delay for Lane Group [s/veh]	28.56	15.49	47.73	20.74	29.45	24.54	29.98	20.02	18.59	15.88
Lane Group LOS	C	B	D	C	C	C	C	C	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.13	2.47	0.56	2.65	0.76	2.92	5.33	2.51	2.86	0.04
50th-Percentile Queue Length [m/ln]	54.36	18.84	4.25	20.17	5.82	22.28	40.60	19.12	21.80	0.29
95th-Percentile Queue Length [veh/ln]	11.51	4.45	1.00	4.76	1.37	5.26	9.11	4.52	5.15	0.07
95th-Percentile Queue Length [m/ln]	87.74	33.92	7.64	36.31	10.47	40.11	69.45	34.42	39.24	0.53

Movement, Approach, & Intersection Results

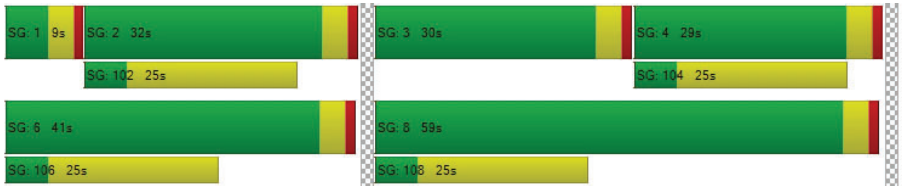
d_M, Delay for Movement [s/veh]	28.56	28.56	15.49	47.73	20.74	20.74	29.45	24.54	29.98	20.02	18.59	15.88
Movement LOS	C	C	B	D	C	C	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	24.43			23.87			27.07			18.99		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	23.69											
Intersection LOS	C											
Intersection V/C	0.438											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
l_p,int, Pedestrian LOS Score for Intersectio	2.503	2.096	3.164	2.755
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	500	560	740
d_b, Bicycle Delay [s]	10.13	28.13	25.92	19.85
l_b,int, Bicycle LOS Score for Intersection	2.531	1.873	2.096	2.028
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Wilson Street - Elliot Street

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.029

Intersection Setup

Name	Wilson Street		Wilson Street		Elliot Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilson Street		Wilson Street		Elliot Street	
Base Volume Input [veh/h]	611	49	0	549	0	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	2.00	3.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	611	49	0	549	0	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	153	12	0	137	0	5
Total Analysis Volume [veh/h]	611	49	0	549	0	20
Pedestrian Volume [ped/h]	0		0		5	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.39
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.09
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.00	0.00	0.68
d_A, Approach Delay [s/veh]	0.00		0.00		10.39	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	B					

Generated with PTV VISTRO
Version 2023 (SP 0-6)
Scenario 8: 8 PM Peak - Total 2034

Intersection Level Of Service Report
Intersection 3: Wilson Street - Welland Street

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.456

Intersection Setup

Name	Wilson Street			Wilson Street			Welland Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Wilson Street			Wilson Street			Welland Street					
Base Volume Input [veh/h]	219	449	11	11	367	40	50	0	219	20	0	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	449	11	11	367	40	50	0	219	20	0	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	112	3	3	92	10	13	0	55	5	0	2
Total Analysis Volume [veh/h]	219	449	11	11	367	40	50	0	219	20	0	9
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	21			1			1			4		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	74	146	0	0	68	0	0	86	0	0	86	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	33	0	0	24	0	0	57	0	0	57	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	No			No			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	56	56	56	17	17	17
g / C, Green / Cycle	0.73	0.73	0.63	0.63	0.63	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.23	0.30	0.01	0.13	0.13	0.04	0.16	0.11
s, saturation flow rate [veh/h]	964	1549	852	1556	1503	1286	1377	262
c, Capacity [veh/h]	745	1123	473	972	939	149	256	116
d1, Uniform Delay [s]	4.32	4.84	13.22	7.30	7.31	31.54	35.44	35.39
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	1.11	0.09	0.50	0.52	1.32	7.92	1.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.41	0.02	0.21	0.21	0.34	0.85	0.25
d, Delay for Lane Group [s/veh]	4.54	5.95	13.31	7.79	7.83	32.86	43.36	36.50
Lane Group LOS	A	A	B	A	A	C	D	D
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.04	2.91	0.13	1.66	1.63	0.98	5.11	0.66
50th-Percentile Queue Length [m/ln]	7.96	22.16	0.98	12.63	12.39	7.45	38.91	5.04
95th-Percentile Queue Length [veh/ln]	1.88	5.24	0.23	2.98	2.93	1.76	8.81	1.19
95th-Percentile Queue Length [m/ln]	14.33	39.89	1.77	22.73	22.30	13.41	67.14	9.07

Generated with PTV VISTRO
Version 2023 (SP 0-6)
BT ENGINEERING BTE
Scenario 8: 8 PM Peak - Total 2034

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.54	5.95	5.95	13.31	7.81	7.83	32.86	43.36	43.36	36.50	36.50	36.50
Movement LOS	A	A	A	B	A	A	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	5.49			7.96			41.41			36.50		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.80											
Intersection LOS	B											
Intersection V/C	0.456											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersectio	2.485	2.437	2.321	1.758
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	444	1178	1178
d_b, Bicycle Delay [s]	20.67	27.22	7.61	7.61
I_b,int, Bicycle LOS Score for Intersection	2.791	2.015	2.114	1.718
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-