

46 King Street West Transportation Impact Study

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1 Introduction

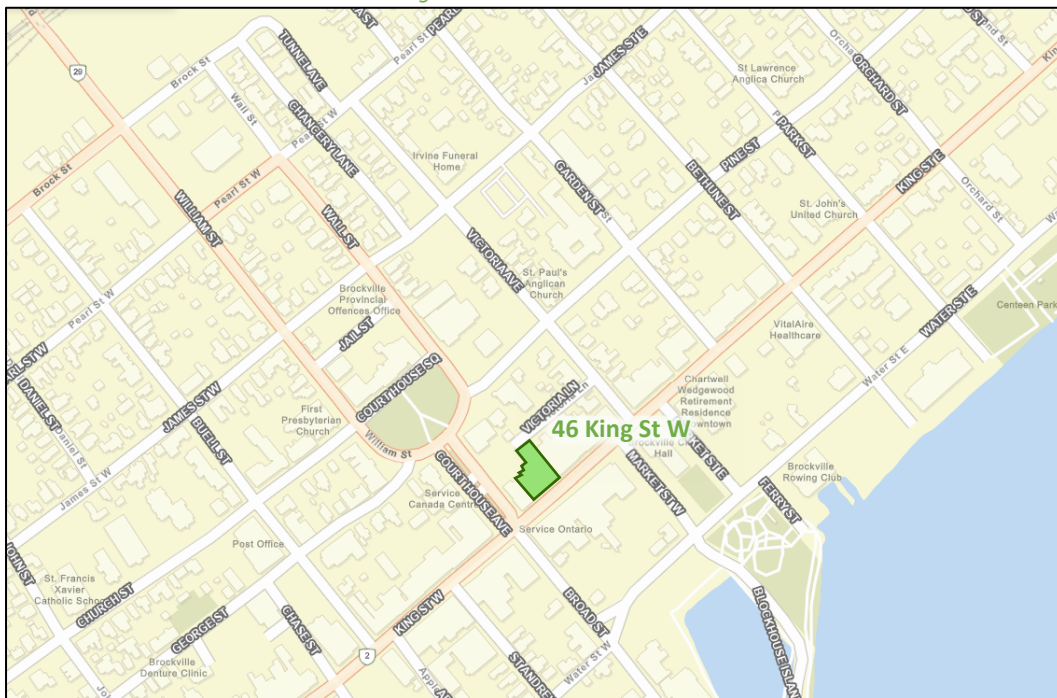
This Transportation Impact Study has been prepared for the site plan for the proposed development site of 46 King Street West in the City of Brockville, Ontario. The existing site will be adapted to a nine-storey mixed-use building with ground floor commercial space, second floor office space, and 64 residential units.

Underground parking will be accessed via the existing rear public laneway of Victoria Lane.

The proposed development is anticipated to have a full build-out and occupancy horizon of 2026. The analysis will therefore include the 2023 existing conditions, 2026 and 2031 future background conditions, and 2026 and 2031 future total conditions.

Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan

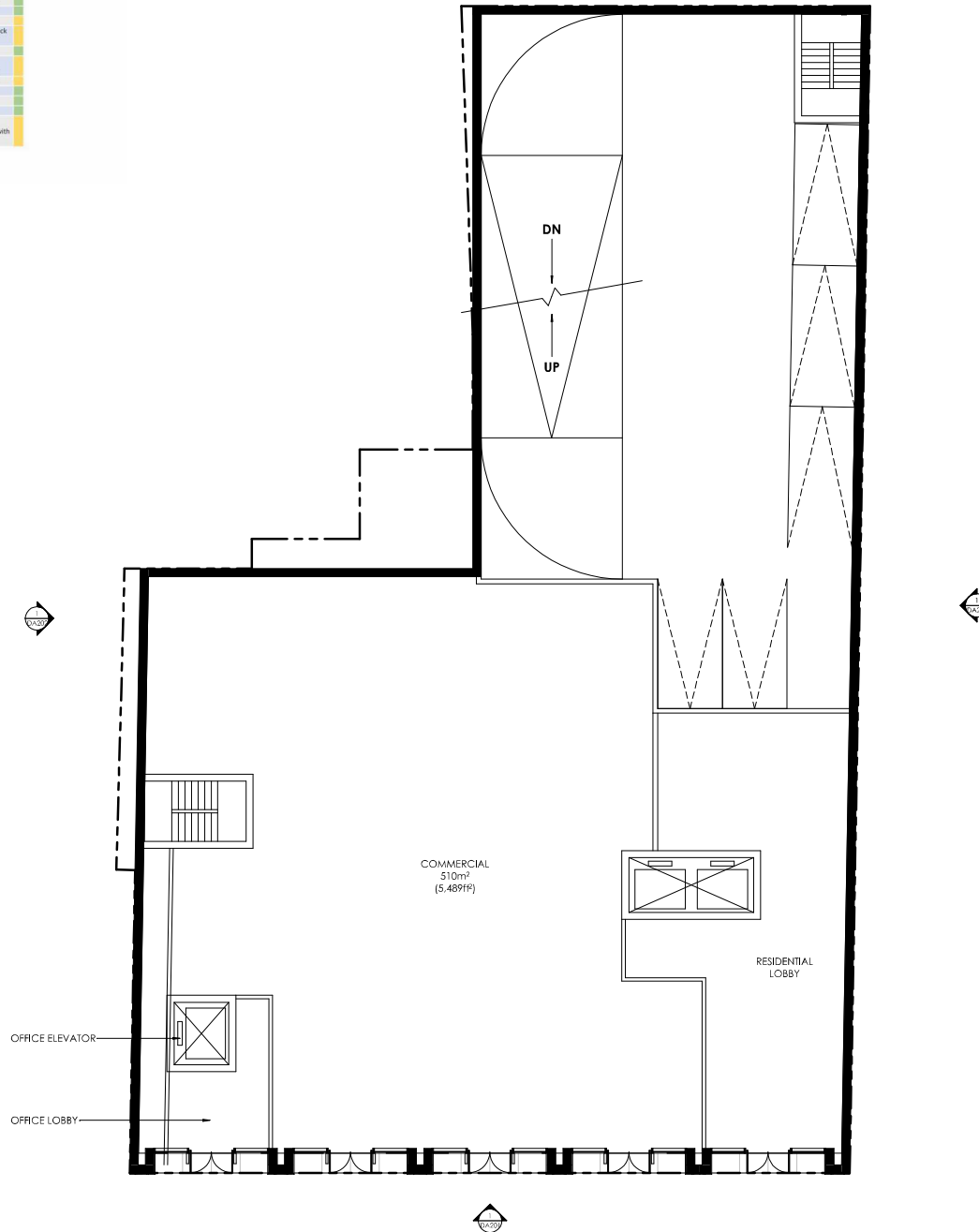


Source: : <https://brockville.com/things-to-do/maps/> Accessed: September 15, 2023

**Brockville - 46 King St. West Mixed Use
Zoning By-Law / Compliance Review
2023-02-01 - Preconsultation**

Provision	Required	Proposed
1 Type	Mixed-Use Building	Mixed-Use Building
2 Minimum Frontage	12.0m	No Change, Approximately 32m
3 Minimum Lot Area	500.0 m ²	Approximately 1265m ²
4 Maximum Building Height	21.0m & 6 Storeys	~33.0m & 9 Storeys
5 Angular Plane Application	Applies - 45 degrees from opposite street	Seek variance for modified setback at level 3 to 9
6 Front/Exterior/Interior Setbacks	0.0m	0.0m
7 Rear Yard Setback	Greater of 6.0m or 50% of the building height	No Change, Approximately 0.0m
8 Maximum Lot Coverage	90%	No Change, Approximately 95%
9 Minimum Landscaped Open Space	0%	0%
10 Minimum Ground Floor Height	4.5m	4.5m
11 Minimum Building Height	7.0m	32.6m
12 Parking	1 Space per residential unit (77) + commercial based on type (say 30 spaces for 758m ²) = ~107 Required	39 + use of adjacent public lots with long term permits

Figure 2: Concept Plan



1.1 Existing Conditions

1.1.1 Area Road Network

King Street West/East: King Street West/East is an arterial road based on the definitions in the City of Brockville Official Plan. It has a two-lane urban cross-section with sidewalks and on-street parking provided on both sides of the road. The unposted speed limit is 50 km/h, and the typical right-of-way is 20.0 metres, but varies between 16.0 metres to 21.5 metres within the study area.

Court House Avenue: Court House Avenue is an arterial road based on the definitions in the City of Brockville Official Plan. It has a divided two-lane cross-section. Sidewalks and on-street parking is provided on both sides of the road. The unposted speed limit is 50 km/h, and the right-of-way is 35.5 metres.

William Street: William Street is an arterial road based on the definitions in the City of Brockville Official Plan. North of Pearl Street West, it has a four-lane urban cross-section. South of Pearl Street West, it has a one-lane one-way (southbound) urban cross-section, and on-street parking are provided on the west side of the road. Sidewalks are provided on both sides of the road. The unposted speed limit is 50 km/h, and the right-of-way is 18.25 metres.

Wall Street: based on the definitions in the City of Brockville Official Plan, Wall Street is an arterial road south of Pearl Street West and a local road to the north. South of Pearl Street West, it has a one-lane one-way (northbound) urban cross-section, and it has a two-lane two-way cross-section to the north. On-street parking is provided on the east side of the road to the south of Pearl Street West, and on both sides of the road to the north. Sidewalks are provided on both sides of the road. The unposted speed limit is 50 km/h, and the right-of-way is 18.25 metres.

Pearl Street East/West: based on the definitions in the City of Brockville Official Plan, Pearl Street East/West is an arterial road within the study area. It has a two-lane cross-section with sidewalks provided on both sides of the road. The speed limit is 50 km/h, and the right-of-way is 20.0 metres.

Victoria Avenue: Victoria Avenue is a local road based on the definitions in the City of Brockville Official Plan. It has a two-lane urban cross-section with sidewalks provided on both sides of the road, and on-street parking is provided on the west side of the road. The unposted speed limit is 50 km/h, and the right-of-way is 18.25 metres.

Broad Street: Broad Street is a local road based on the definitions in the City of Brockville Official Plan. It has a two-lane urban cross-section. Sidewalks are provided on both sides of the road, and on-street parking is provided on the west side of the road. The unposted speed limit is 50 km/h, and the right-of-way is 18.25 metres.

Pine Street: Pine Street is a local road based on the definitions in the City of Brockville Official Plan. It has a two-lane urban cross-section. Sidewalks are provided on both sides of the road, and on-street parking is provided on the south side of the road. The speed limit is 50 km/h, and the right-of-way is 20.0 metres.

1.1.2 Existing Intersections

The existing key study area intersections of the site have been summarized below:

King St W at Court House Ave/Broad St The intersection of King Street West at Court House Avenue/Broad Street is a signalized intersection. The northbound and southbound approaches each consists of a shared all-movement lane, where the southbound approach operates as a shared left-turn/through lane with a short auxiliary right-turn lane. The eastbound approach consists of a left-turn lane and an auxiliary shared through/right-turn lane, and the westbound approach consists of a shared left-

turn/through lane and an auxiliary right-turn lane. Eastbound right-turns on red are restricted.

Victoria Ave at Pine St

The intersection of Victoria Avenue at Pine Street is a stop-controlled intersection on the minor approach of Pine Street. Each approach consists of a shared all-movement lane. No turn restrictions were noted.

Victoria Ave at King St W/King St E

The intersection of Victoria Avenue at King Street W/King Street East is a stop-controlled T-intersection on the minor approach of Victoria Avenue. Each approach consists of a shared all-movement lane. No turn restrictions were noted.

William St at Pearl St W

The intersection of William Street at Pearl Street West is a signalized intersection. The south leg is inbound only, and the southbound approach consists of a shared left-turn/through lane and a right-turn lane. The eastbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane, and the westbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane. No turn restrictions were noted.

Site Access (Victoria Ln at Victoria Ave)

The intersection of Victoria Lane at Victoria Avenue is a T-intersection, stop-controlled on the minor approach of Victoria Lane. Each approach consists of a shared all-movement lane. No turn restrictions were noted.

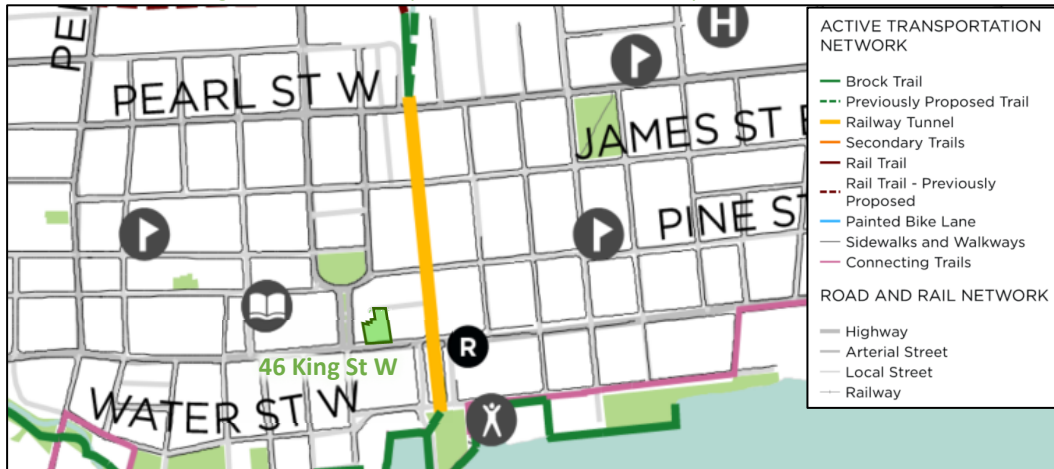
1.1.3 Existing Driveways

In the vicinity of the access intersection at Victoria Lane, driveways to residential dwellings, and two driveways to parking lots are present on Victoria Avenue. The driveways are not considered to be significant traffic generators.

1.1.4 Cycling and Pedestrian Facilities

Sidewalks are provided on both sides along all study area roadways. The Brockville Railway Tunnel is provided between Armagh Sifton Piece Park and Pearl Street West. The Brock Trail is provided along the St. Lawrence River. From the Official Plan, William Street, Pearl Street West, and King Street East/West are potential spine cycling routes within the study area. Figure 3 and Figure 4 illustrate the Active Transportation Network from the Active Transportation Plan and Official Plan, respectively.

Figure 3: Active Transportation Plan – Active Transportation Network



Source: City of Brockville Active Transportation Plan (September 2019)

Figure 4: Official Plan – Active Transportation Network



Source: City of Brockville Official Plan (February, 2012)

1.1.5 Existing Transit

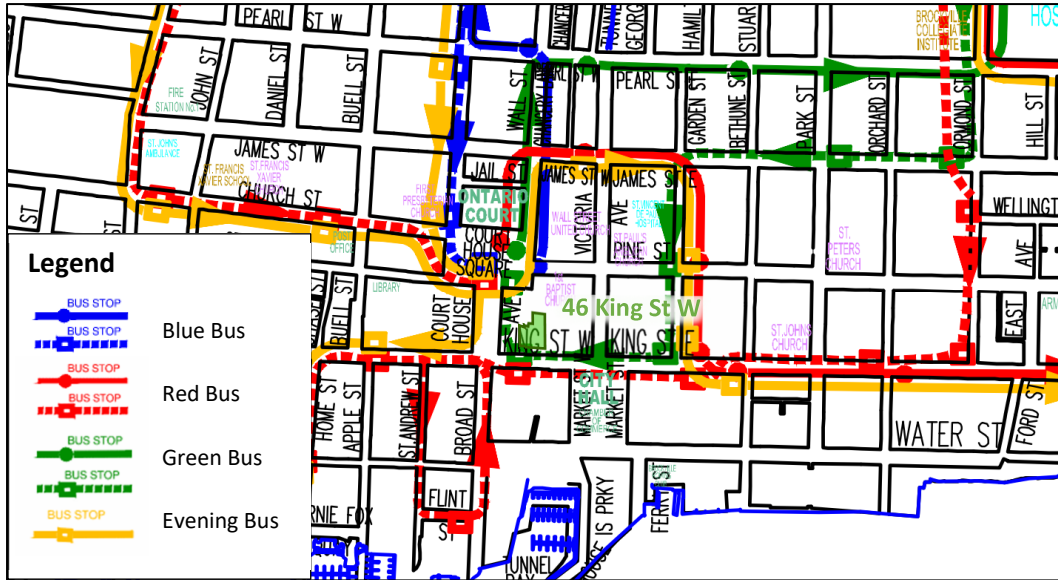
Figure 5 illustrates the transit system map in the study area and Figure 6 illustrates nearby transit stops. All transit information is from September 15, 2023 and is included for general information purposes and context to the surrounding area.

Within the study area, the Green Bus travel along King Street East/West, Court House Avenue, and Pearl Street East/West. Red Bus and Evening Bus travel along King Street East/West and Court House Avenue. Buses run on an hourly schedule Monday to Friday 7 am to 6 pm and Saturday 9 am to 6 pm. The frequency of these routes within proximity of the proposed site based on September 15, 2023 service levels are:

- Green Bus – 15-minute from 6:45 AM to 7:00 AM on weekday and 8:45 AM to 9:00 AM on Saturday; otherwise, 1-hour service all day before 6 pm

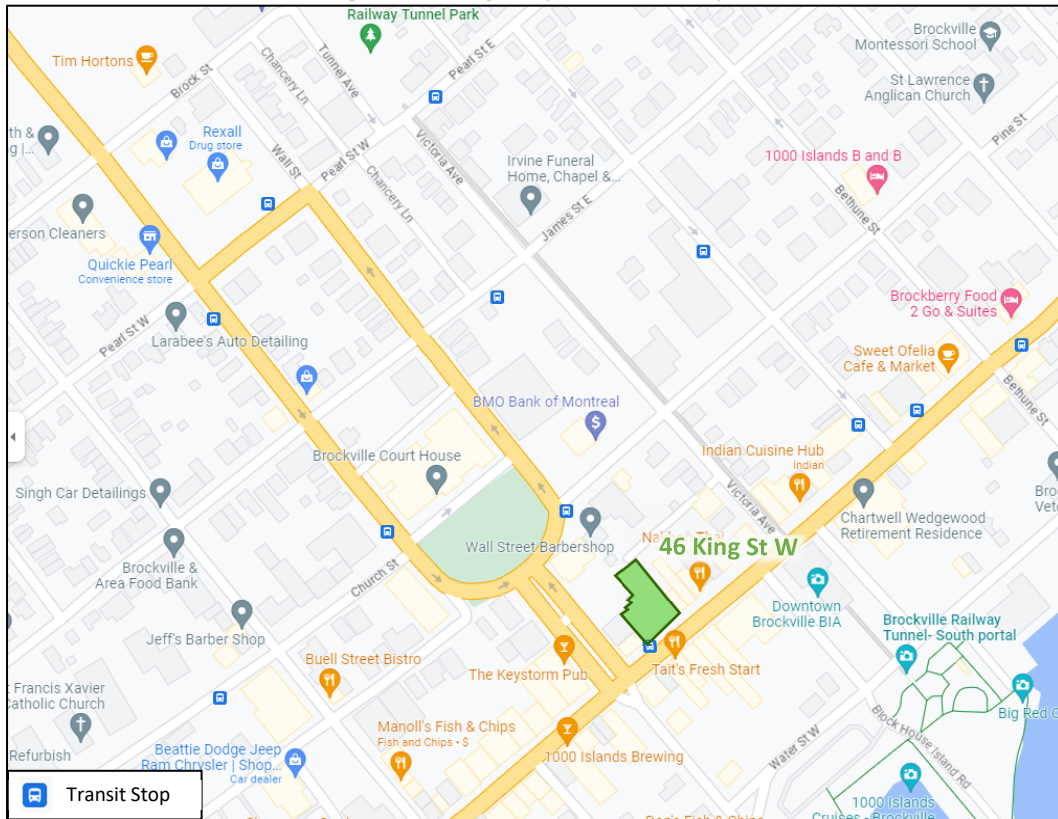
- Red Bus – 15-minute routes from 6:45 AM to 7:00 AM on weekday and 8:45 AM to 9:00 AM on Saturday; otherwise, 1-hour service all day before 6 pm
- Evening Bus – 15-minute routes from 6:45 AM to 7:00 AM on weekday and 8:45 AM to 9:00 AM on Saturday; otherwise, 1-hour service all day starting at 6 pm

Figure 5: Existing Study Area Transit Service



Source: <https://brockville.com/things-to-do/maps/> Accessed: September 15, 2023

Figure 6: Existing Study Area Transit Stops



Source: <https://www.google.com/maps> Accessed: September 15, 2023

1.1.6 Collision Analysis

No collision data were provided to date based on the August 31, 2023 request through the scoping memo for this study. Accordingly, no collisions will be analyzed as part of the subject study.

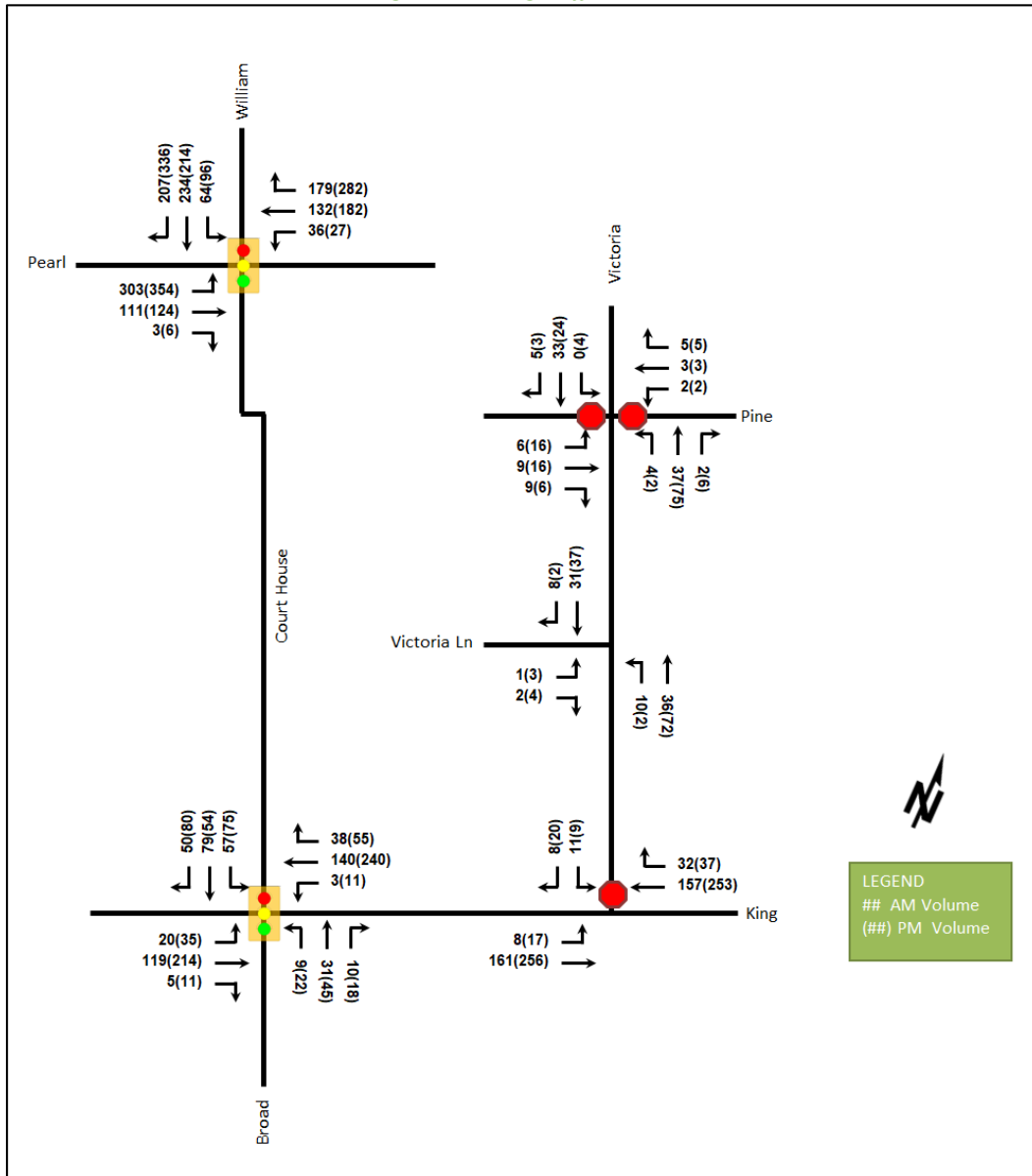
1.1.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the Traffic Specialist for the existing study area intersection. Table 1 summarizes the intersection count dates. Detailed turning movement count data is included in Appendix A.

Table 1: Intersection Count Date

Intersection	Count Date
King St W at Court House Ave/Broad St	Thursday, September 21, 2023
Victoria Ave at Pine St	Thursday, September 21, 2023
Victoria Ave at King St W/King St E	Thursday, September 21, 2023
William St at Pearl St W	Thursday, September 21, 2023
Site Access (Victoria Ln at Victoria Ave)	Thursday, September 21, 2023

Figure 7: Existing Traffic Counts



Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 8 and Figure 9, respectively.

Figure 8: Existing Pedestrian Volumes

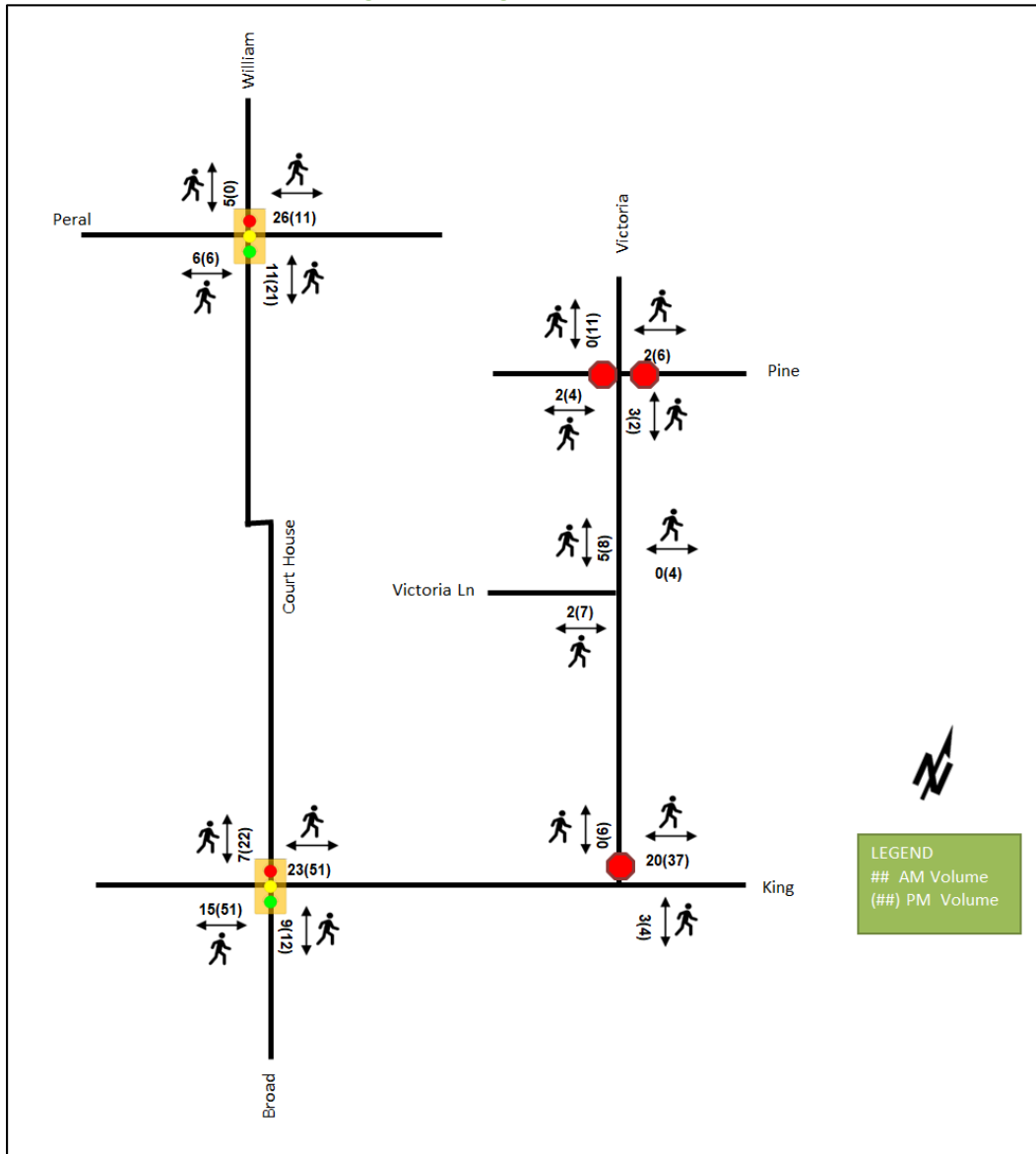
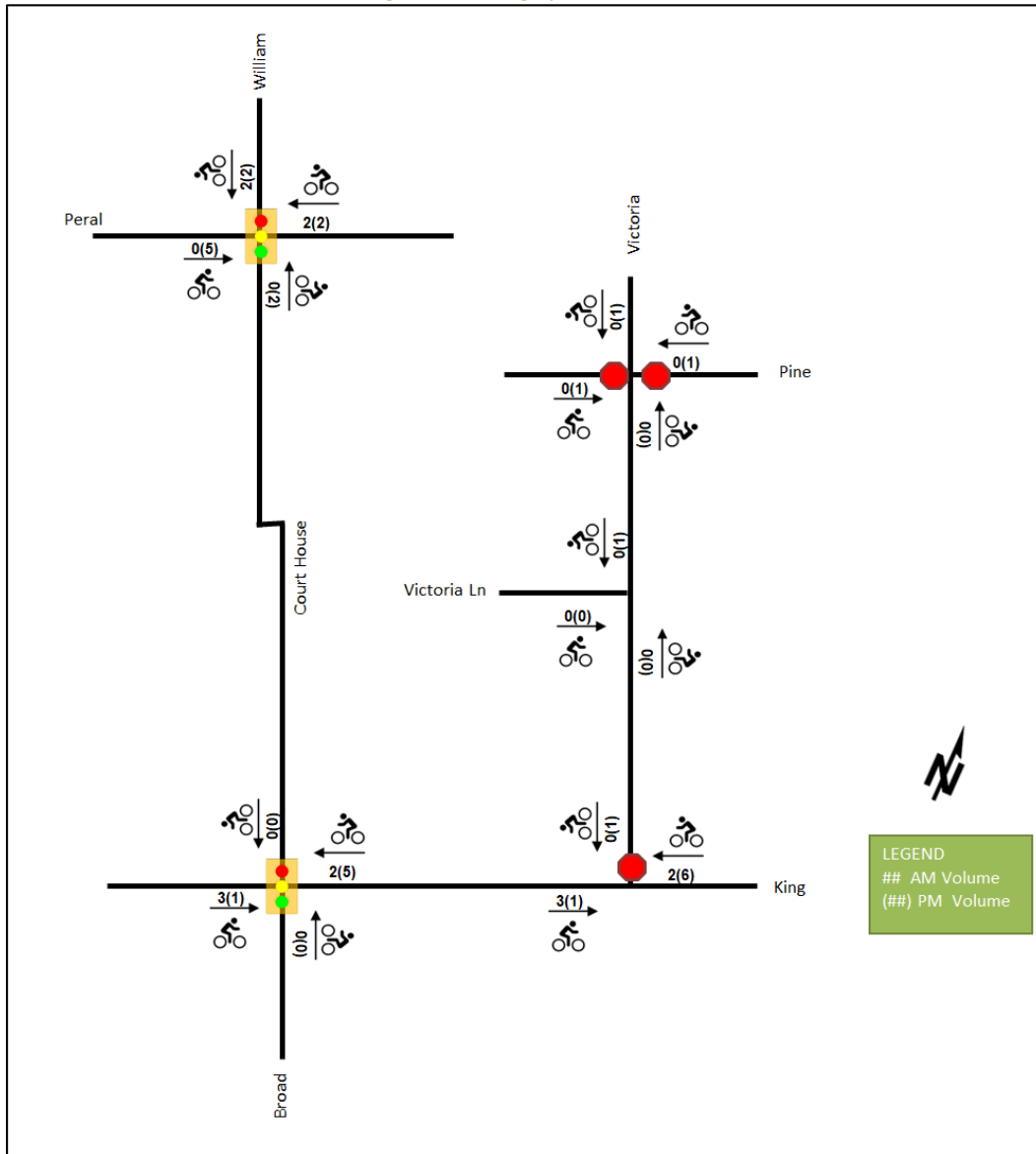


Figure 9: Existing Cyclist Volumes



2 Future Background Conditions

2.1 Planned Conditions

2.1.1 Changes to the Area Transportation Network

The City of Brockville’s Active Transportation Plan notes a short-term cycling network priority for Pine Street, Pearl Street, William Street, and Court House Avenue, and pedestrian improvements on King Street. Since these projects have not been confirmed, it is assumed that no impacts to the existing pedestrian or cycling traffic is anticipated within the study horizons.

2.1.2 Other Study Area Developments

No other development applications were provided to date based on the August 31, 2023 request through the scoping memo for this study. Accordingly, no other development will be analyzed as part of the subject study.

2.1.3 Background Growth

To generate 2026 and 2031 future background traffic volumes, a 1.5% compound annual growth rate was assumed to be applied to the existing 2023 traffic counts. This growth rate has been applied to King Street West/East, Court House Avenue, William Street, and Pearl Street East/West mainline volumes and to the major turning movements at intersections.

2.1.4 Future Background Traffic Volumes

Applying the background growth rate discussed in Section 2.1.3 above to the 2023 existing traffic volumes, the future background traffic volumes were projected.

Figure 10 and Figure 11 illustrate the 2026 and 2031 future background traffic volumes, respectively. All intersection lane configurations have been carried forward from the 2023 existing conditions as there are no anticipated changes for the 2026 and 2031 future horizons.

Figure 10: 2026 Future Background Traffic Volumes

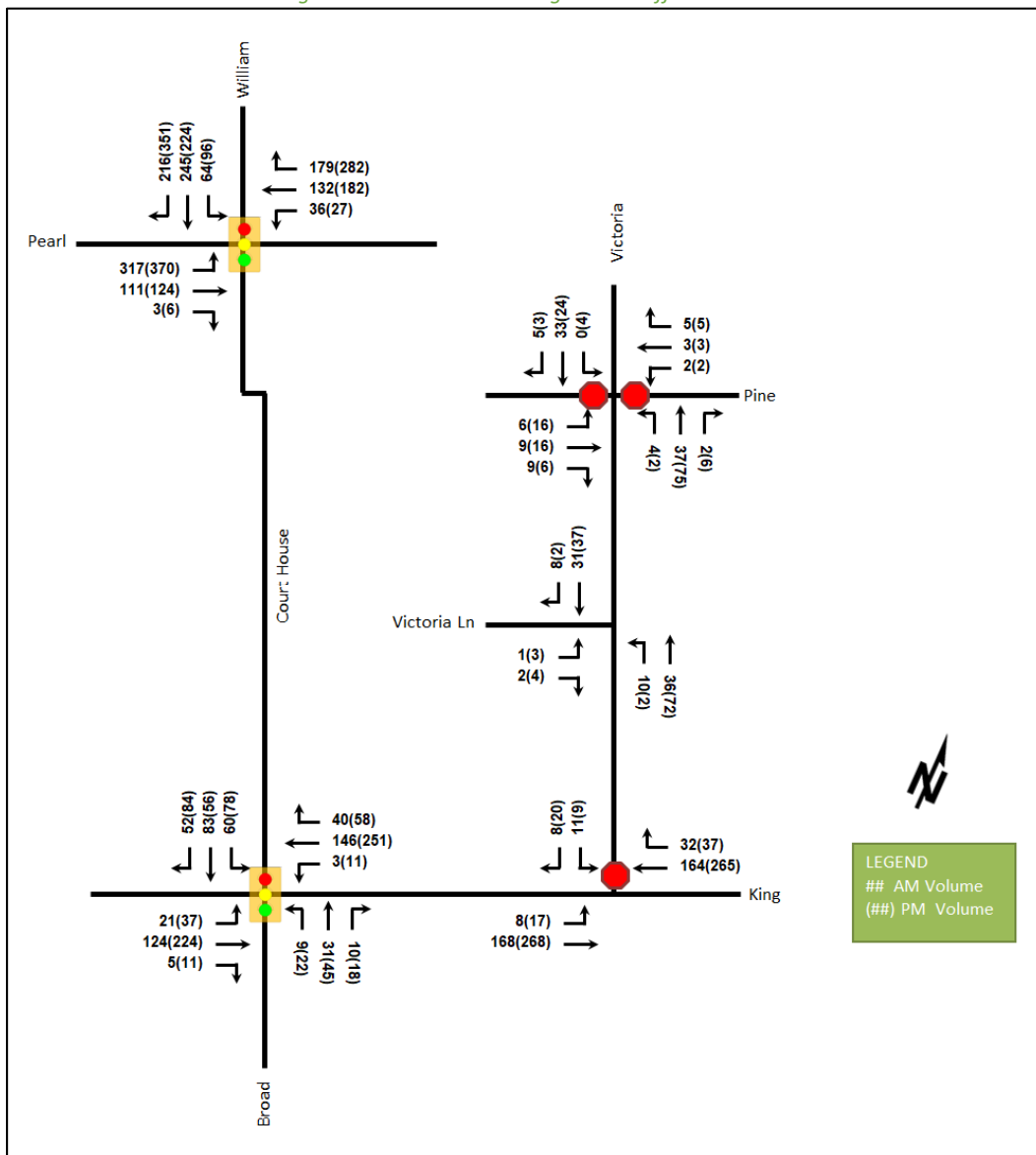
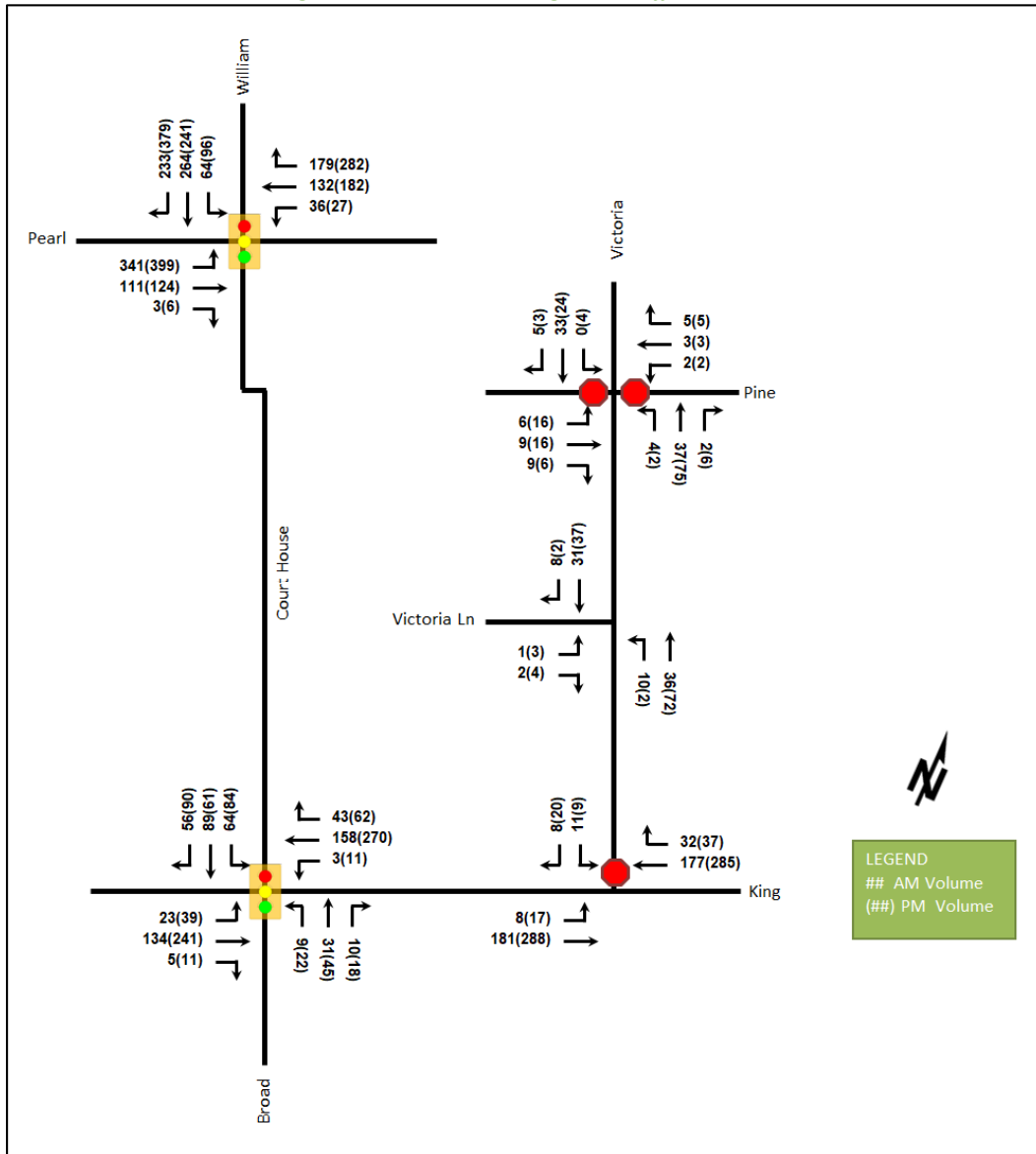


Figure 11: 2031 Future Background Traffic Volumes



3 Demand Forecasting

3.1 Site Trip Generation

The proposed development will include 64 mid-rise multifamily housing units, 5,489 square feet of commercial space, and 2,669 square feet of commercial office. The *ITE Trip Generation Manual 11th Edition* has been reviewed to determine the appropriate auto trip generation rate equations for the proposed land uses and these rates are summarized in Table 2. It is noted that given the downtown context of the site, these auto trip generation rates are considered to be conservative.

Table 2: ITE Trip Generation Rate

Land Use	Data Source	Fitted Curve Rates		Average Rate	
		AM Peak	PM Peak	AM Peak	PM Peak
Multifamily Housing (Mid-Rise)	LUC 221	$T = 0.44(X) - 11.61$	$T = 0.39(X) + 0.34$	0.37	0.39

Land Use	Data Source	Fitted Curve Rates		Average Rate	
		AM Peak	PM Peak	AM Peak	PM Peak
Strip Retail Plaza (<40k)	LUC 822	$\ln(T) = 0.66 \ln(X) + 1.84$	$\ln(T) = 0.71 \ln(X) + 2.72$	2.36	2.94
Small Office Building	LUC 712	-	-	1.67	2.16

Notes: T = Average Vehicle Trip Ends, X = Number of Dwelling Units

Using the above vehicle trip rates, the total vehicle trip generation has been estimated. Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development for the retail components for mixed-use developments. The rates summarized in Table 3 represent the percentage of trips to/from the retail uses based on the residential component.

Table 3: Internal Capture Rates

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

The pass-by rate of 40% has been selected using ITE Trip Generation Manual 11th Edition. As land use 822 (Strip Retail Plaza) does not have a pass-by trip percentage provided, pass-by trip rates from land use e 821 (Shopping Plaza) was utilized.

Based on the trip generation rates, the internal capture and pass-by rates, and the development statistics, the overall vehicle trip generation has been forecast. Table 4 below illustrates the total vehicle trip generation.

Table 4: Vehicle Site Trip Generation

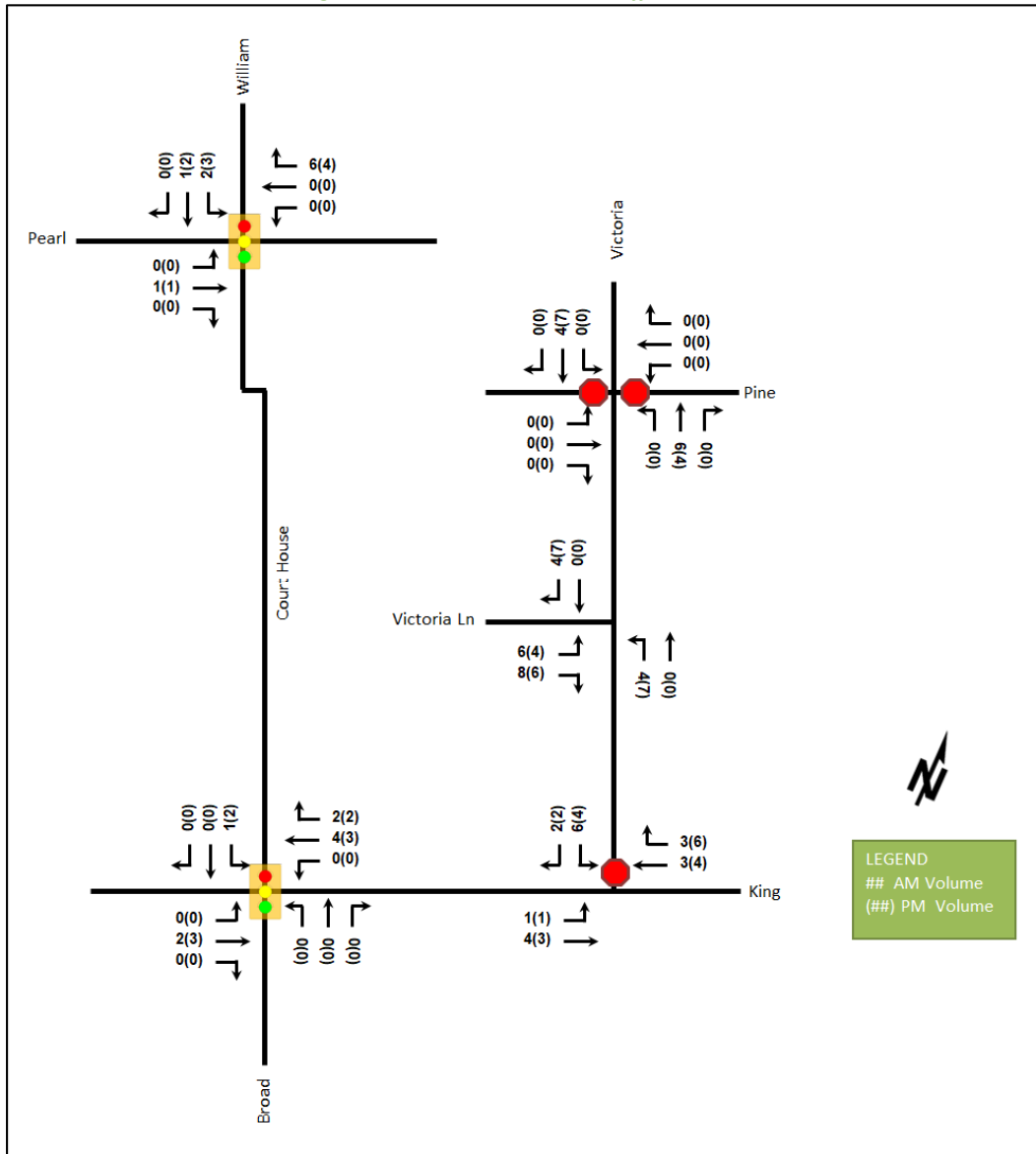
Land Use	Units/GFA	AM Peak (veh/hr)			PM Peak (veh/hr)		
		In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)	64	6	18	24	16	9	25
Strip Retail Plaza (<40k)	5489 sq.ft	8	5	13	8	8	16
Small Office Building	2669 sq.ft	3	1	4	2	4	6
Internal Capture		-1	0	-1	-1	-1	-2
Pass-By		-3	-2	-5	-3	-3	-6
Total		13	22	35	22	17	39

As shown above, a total of 35 AM and 39 PM new peak hour two-way vehicle trips are projected as a result of proposed development.

3.2 Vehicle Traffic Distribution and Assignment

Traffic distribution was based on the existing volume splits at Study Area intersections and a knowledge of the area travel. Based on these factors, new site-generated trips were assigned to Study Area intersections, which is illustrated in Figure 12. Retail primary and pass-by auto volumes are assumed to access street parking along King Street West. Section 5.2 provides further information regarding proposed access configurations.

Figure 12: New Site-Generated Traffic Volumes



3.3 Future Total Travel Demands

The 2026 and 2031 site-generated traffic has been added to the 2026 and 2031 future background traffic volumes to estimate the 2026 and 2031 future total traffic volumes. Figure 13 and Figure 14 illustrate the 2026 and 2031 future total traffic volumes, respectively. Access configuration details are presented in Section 5.2.

Figure 13: 2026 Future Total Traffic

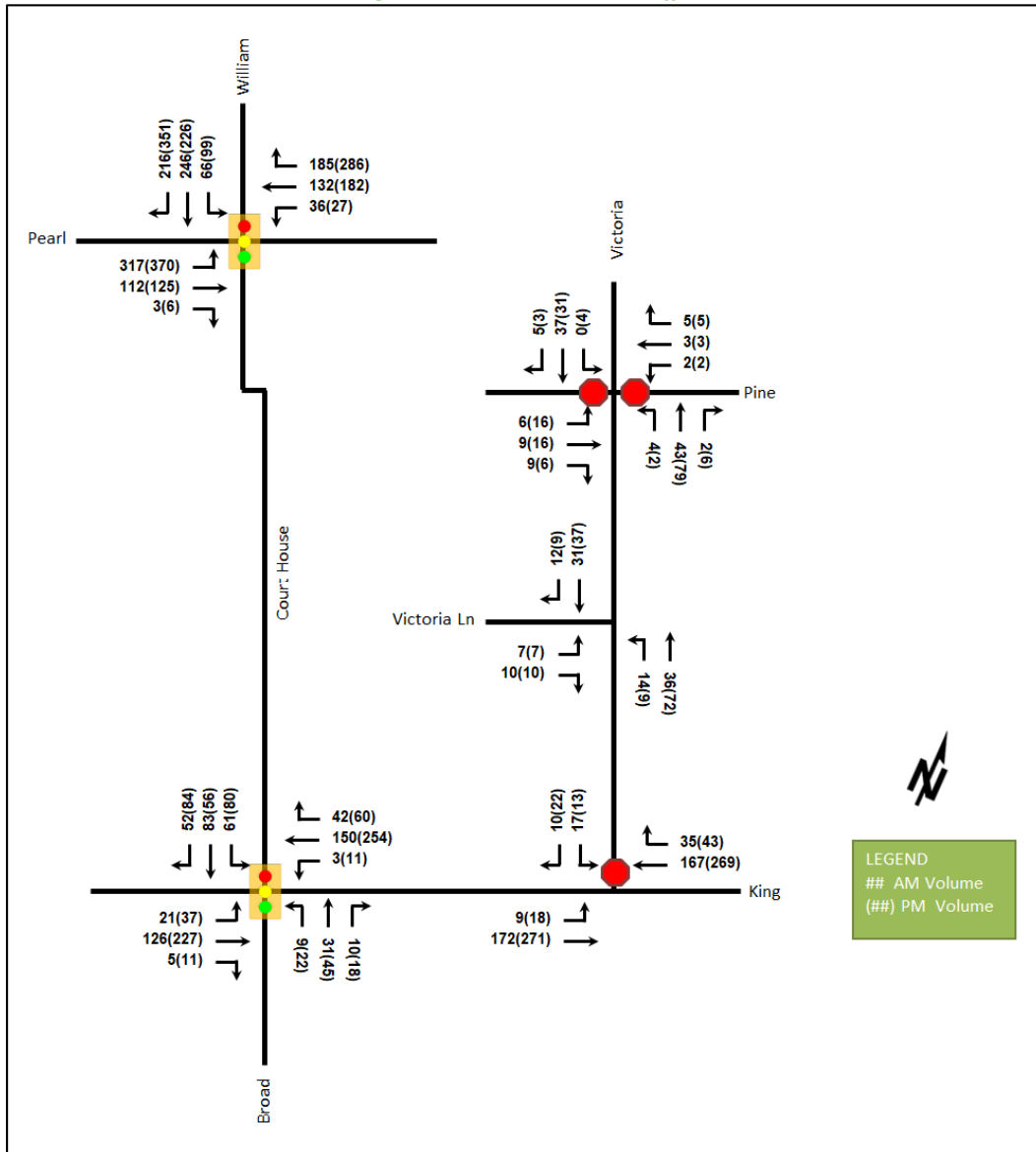
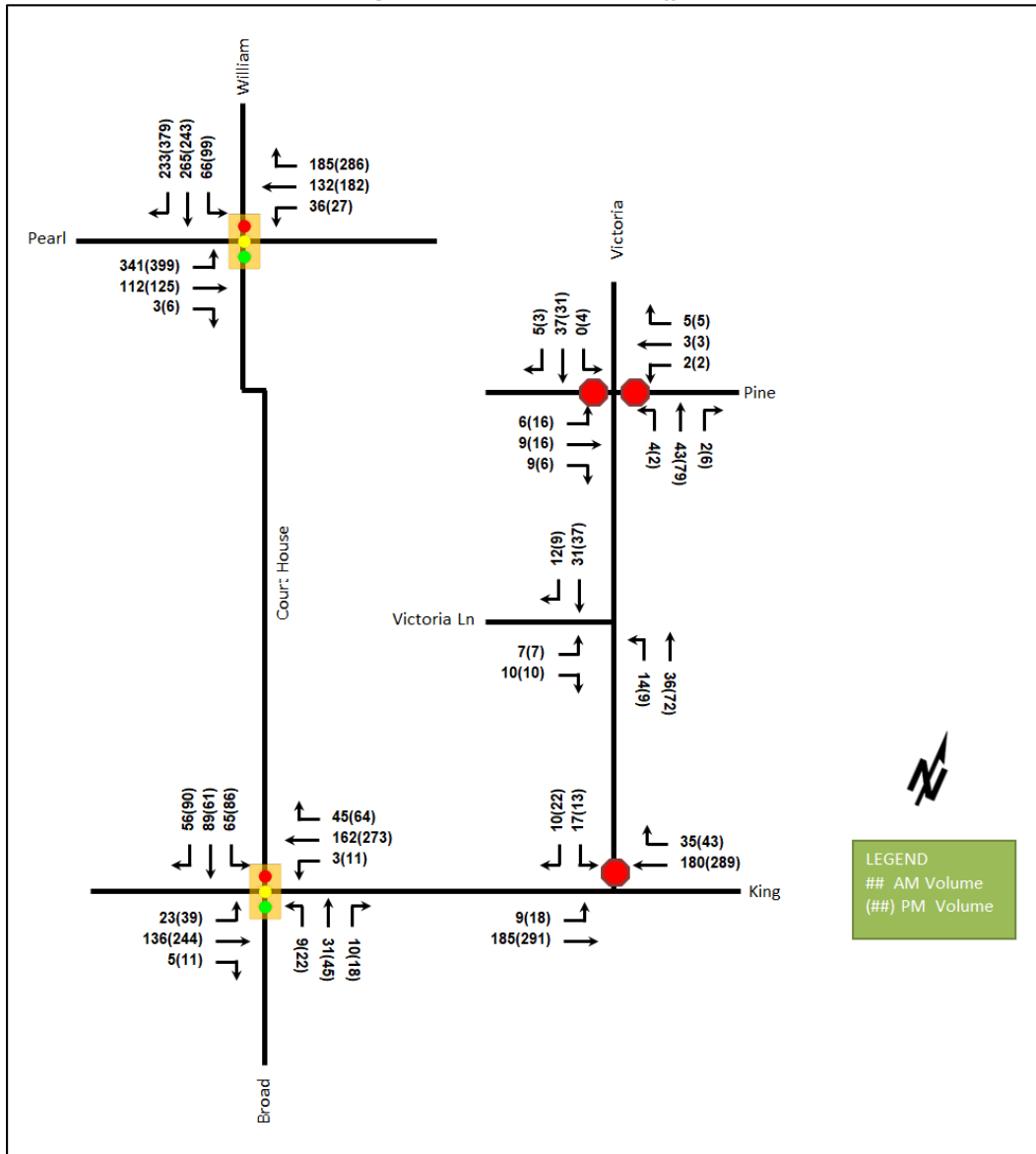


Figure 14: 2031 Future Total Traffic



4 Operational Analysis

4.1 Analytical Methods

To understand the operational characteristics of the Study Area intersections, a Synchro model has been created using Synchro Version 11. The level of service is based on HCM 6th Edition delay calculations for individual lane movements and the overall intersection, for both signalized and unsignalized intersections. Ninety-fifth percentile queue lengths were calculated using Synchro’s proprietary methods.

4.1.1 Signal Timing

Signal timing has been inferred based upon intersection geometry, and a cycle length of 60 seconds has been assumed for both AM and PM peak hours at all horizons with optimization of phase splits.

4.1.2 Heavy Vehicles

Heavy vehicle percentages (HV%) have been calculated for each movement based on the existing turning movement counts for the Study Area intersections and have been applied to both the existing and future analysis horizons. A minimum HV% of 2% was used in Synchro to ensure a conservative analysis.

4.1.3 Active Transportation Volumes

Cyclist and pedestrian volumes were provided for all intersections from the turning movement count information collected in 2023 and these volumes and calls have been applied to the existing and future conditions analysis.

4.1.4 Peak Hour Factor

Peak hour factors (PHF) have been entered for each intersection based on the turning movement counts provided. The peak hour factors used for each intersection are shown below in Table 5.

Table 5: Peak Hour Factors

Intersection	Peak Hour Factor	
	AM	PM
King St W at Court House Ave/Broad St	0.84	0.93
Victoria Ave at Pine St	0.82	0.92
Victoria Ave at King St W/King St E	0.88	0.92
William St at Pearl St W	0.91	0.89
Site Access (Victoria Ln at Victoria Ave)	0.80	0.84

4.1.5 Other Parameters

All other parameters have been coded using accepted best practices and default parameters, where applicable.

4.1.6 Performance Measures

LOS has been determined using the HCM definitions for LOS at signalized and unsignalized intersections, which are summarized in Table 6 below.

Table 6: Level of Service Criteria for Signalized/Unsignalized Intersections

LOS	Signalized Intersection Delay (s)	Unsignalized Intersection Delay (s)
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Critical movements and critical intersections have been defined as individual movements with LOS F or a V/C ratio of 1.00 or greater, and intersections with an overall LOS F. Critical movements and critical intersections will be indicated in red within operational result tables below and may require mitigation measures.

4.2 2023 Existing Operational Analysis

Table 7 summarizes the operational analysis for the 2023 existing conditions during both the AM and PM peak hours. If present, critical movements, as defined above, have been identified in red. Synchro worksheets for the 2023 existing traffic conditions are included in Appendix B.

Table 7: 2023 Existing Intersections Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
King St W at Court House Ave/Broad St <i>Signalized</i>	EBL	A	0.04	8.2	3.9	A	0.07	9.1	6.0
	EBT/R	A	0.21	7.3	15.2	A	0.30	7.5	26.1
	WBL/T	A	0.21	7.4	17.2	A	0.30	7.6	29.3
	WBR	A	0.08	6.8	3.4	A	0.09	6.6	4.4
	NB	A	0.10	9.5	10.0	B	0.17	11.9	14.7
	SB	B	0.38	10.9	30.4	B	0.43	13.5	32.3
	Overall	A	0.38	8.7	-	A	0.45	9.4	-
Victoria Ave at Pine St <i>Unsignalized</i>	NB	A	0.00	7.3	0.0	A	0.00	7.30	0.0
	EB	A	0.03	9.2	0.8	A	0.05	9.80	1.5
	WB	A	0.01	9.1	0.0	A	0.01	9.30	0.0
	SB	A	-	0.0	0.0	A	0.00	7.40	0.0
	Overall	A	-	3.0	-	A	-	3.20	-
Victoria Ave at King St W/King St E <i>Unsignalized</i>	EB	A	0.01	7.8	0.0	A	0.02	8.1	0.0
	WB	-	-	-	-	-	-	-	-
	SB	B	0.03	10.7	0.8	B	0.06	11.8	1.5
	Overall	A	-	0.7	-	A	-	0.8	-
William St at Pearl St W <i>Signalized</i>	EBL	B	0.59	13.2	#64.0	C	0.85	33.0	#82.5
	EBT/R	A	0.16	7.2	16.2	A	0.18	8.8	18.1
	WBL/T	A	0.21	7.5	23.7	A	0.27	9.3	29.1
	WBR	A	0.30	7.9	9.2	B	0.47	10.7	11.1
	SBL/T	B	0.65	15.4	47.2	B	0.61	16.8	50.3
	SBR	B	0.54	14.5	11.2	C	0.79	23.0	13.6
	Overall	B	0.66	11.9	-	B	0.75	19.0	-
Site Access (Victoria Ln at Victoria Ave) <i>Unsignalized</i>	NB	A	0.01	7.3	0.0	A	0.00	7.30	0.0
	EB	A	0.00	8.8	0.0	A	0.01	9.00	0.0
	SB	-	-	-	0.0	-	-	-	0.0
	Overall	A	-	1.1	-	A	-	0.60	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

Generally, the Study Area intersections are shown to operate with good overall LOS and low delays and no additional operational constraints (V/C ratio greater than 0.90 or LOS E or worse) are noted.

The eastbound left-turn movement at the intersection of William Street at Pearl Street West may experience cycles where the queue does not fully clear during both peak hours. A minimum cycle length of 70 seconds in the AM peak hour and 80 seconds in the PM peak hour would be required to mitigate this effect.

4.3 Future Background Conditions

4.3.1 Future Background Traffic Control Warrants

Using Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the unsignalized Study Area intersections have been analyzed. In the forecasted future background horizons, signalization will not be warranted at any currently unsignalized Study Area intersections. Traffic control warrant sheets have been included in Appendix C.

4.3.2 2026 Future Background Conditions

The forecasted 2026 future background intersection volumes have been analyzed to allow for a comparison of the future volumes with and without the proposed development.

Table 8 summarizes the operational analysis for the 2026 future background conditions in both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 4.3.1. Synchro worksheets for the 2026 future background traffic conditions are included in Appendix D.

Table 8: 2026 Future Background Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
King St W at Court House Ave/Broad St <i>Signalized</i>	EBL	A	0.04	8.3	4.1	A	0.08	9.30	6.2
	EBT/R	A	0.22	7.3	15.7	A	0.32	7.50	27.3
	WBL/T	A	0.22	7.4	17.9	A	0.32	7.60	30.6
	WBR	A	0.09	6.8	3.5	A	0.10	6.60	4.5
	NB	A	0.10	9.5	10.0	B	0.17	11.90	14.7
	SB	B	0.40	11.0	31.9	B	0.45	13.70	33.9
	Overall	A	0.40	8.8	-	A	0.43	9.50	-
Victoria Ave at Pine St <i>Unsignalized</i>	NB	A	0.00	7.3	0.0	A	0.00	7.3	0.0
	EB	A	0.03	9.2	0.8	A	0.05	9.8	1.5
	WB	A	0.01	9.1	0.0	A	0.01	9.3	0.0
	SB	A	-	0.0	0.0	A	-	0.0	0.0
	Overall	A	-	3.0	-	A	-	3.0	-
Victoria Ave at King St W/King St E <i>Unsignalized</i>	EB	A	0.01	7.8	0.0	A	0.02	8.2	0.0
	WB	-	-	-	-	-	-	-	-
	SB	B	0.03	10.8	0.8	B	0.06	12.0	1.5
	Overall	A	-	0.7	-	A	-	0.8	-
William St at Pearl St W <i>Signalized</i>	EBL	B	0.62	13.9	#68.3	D	0.90	40.5	#87.7
	EBT/R	A	0.15	7.3	16.2	A	0.18	9.0	18.1
	WBL/T	A	0.21	7.6	23.6	A	0.27	9.6	29.1
	WBR	A	0.30	8.0	9.2	B	0.47	11.0	11.1
	SBL/T	B	0.66	15.8	49.3	B	0.61	16.9	52.2
	SBR	B	0.56	14.9	11.4	C	0.81	24.3	13.9
	Overall	B	0.68	12.3	-	C	0.77	21.2	-
Site Access (Victoria Ln at Victoria Ave) <i>Unsignalized</i>	NB	A	0.01	7.3	0.0	A	0.00	7.3	0.0
	EB	A	0.00	8.8	0.0	A	0.01	9.0	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	1.1	-	A	-	0.6	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2026 future background horizon in the study area generally operate similarly to the existing conditions. No additional operational constraints (V/C ratio greater than 0.90 or LOS E or worse) are noted.

Similar to the existing conditions, the eastbound left-turn movement at the intersection of William Street at Pearl Street West may experience cycles where the queue does not fully clear during both peak hours. A minimum cycle length of 70 seconds in the AM peak hour and 80 seconds in the PM peak hour would be required to mitigate this effect.

4.3.3 2031 Future Background Conditions

The 2031 future background intersection volumes have been analyzed to allow for a comparison of the future volumes with and without the proposed development.

Table 9 summarizes the operational analysis for the 2031 future background conditions in both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 4.3.1. Synchro worksheets for the 2031 future background traffic conditions are included in Appendix E.

Table 9: 2031 Future Background Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
King St W at Court House Ave/Broad St <i>Signalized</i>	EBL	A	0.05	8.5	4.3	A	0.08	9.6	6.5
	EBT/R	A	0.24	7.4	16.8	A	0.34	7.7	29.3
	WBL/T	A	0.24	7.5	19.2	A	0.34	7.8	33.0
	WBR	A	0.09	6.9	3.6	A	0.11	6.7	4.7
	NB	A	0.10	9.5	10.0	B	0.17	11.9	14.7
	SB	B	0.43	11.2	34.5	B	0.48	14.0	37.2
	Overall	A	0.43	8.9	-	A	0.47	9.60	-
Victoria Ave at Pine St <i>Unsignalized</i>	NB	A	0.00	7.3	0.0	A	0.00	7.3	0.0
	EB	A	0.03	9.2	0.8	A	0.05	9.8	1.5
	WB	A	0.01	9.1	0.0	A	0.01	9.3	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	3.0	-	A	-	3.0	-
Victoria Ave at King St W/King St E <i>Unsignalized</i>	EB	A	0.01	7.8	0.0	A	0.02	8.2	0.8
	WB	-	-	-	-	-	-	-	-
	SB	B	0.04	11.0	0.8	B	0.06	12.3	1.5
	Overall	A	-	0.6	-	A	-	0.8	-
William St at Pearl St W <i>Signalized</i>	EBL	B	0.66	15.8	#76.1	E	1.00	62.3	#96.5
	EBT/R	A	0.15	7.5	16.2	A	0.18	9.5	18.1
	WBL/T	A	0.21	7.8	23.6	B	0.28	10.1	29.1
	WBR	A	0.29	8.2	9.2	B	0.48	11.5	11.1
	SBL/T	B	0.69	16.9	52.8	B	0.62	17.1	55.3
	SBR	B	0.59	16.0	11.8	C	0.84	27.4	14.3
	Overall	B	0.72	13.4	-	C	0.82	27.4	-
Site Access (Victoria Ln at Victoria Ave) <i>Unsignalized</i>	NB	A	0.01	7.3	0.0	A	0.00	7.3	0.0
	EB	A	0.00	8.8	0.0	A	0.01	9.0	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	1.1	-	A	-	0.6	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2032 future background horizon in the study area generally operate similarly to the existing and 2027 future background conditions.

In addition to the continuation of cycles that may not clear during both peak hours, the eastbound left-turn movement at the intersection of William Street at Pearl Street West is anticipated to be at its theoretical capacity during the PM peak hour. This capacity increase is due to ten years of the 1.5% sustained growth assumed on the movement, and as such, capacity on the movement can be validated through future traffic studies. A minimum cycle length of 70 seconds in the AM peak hour and 100 seconds in the PM peak hour would be required to mitigate these effects.

4.4 Future Total Conditions

4.4.1 Future Total Traffic Control Warrants

Using Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the unsignalized Study Area intersections have been analyzed. In the forecasted future total horizons, signalization will not be warranted at any of the currently unsignalized or future Study Area intersections. Traffic control warrant sheets have been included in Appendix C.

4.4.2 2026 Future Total Conditions

The proposed development’s trip generation has been added to the 2026 future background traffic volumes to project the impact of the new traffic on the future road network.

Table 10 summarizes the operational analysis for the 2026 future total conditions in both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 4.4.1. Synchro and Sidra worksheets for the 2026 future total traffic conditions are included in Appendix F.

Table 10: 2026 Future Total Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
King St W at Court House Ave/Broad St <i>Signalized</i>	EBL	A	0.04	8.4	4.1	A	0.08	9.30	6.2
	EBT/R	A	0.23	7.4	15.9	A	0.32	7.60	27.7
	WBL/T	A	0.23	7.5	18.3	A	0.32	7.70	31.0
	WBR	A	0.09	6.9	3.6	A	0.10	6.60	4.7
	NB	A	0.10	9.5	10.0	B	0.17	11.90	14.7
	SB	B	0.40	11.1	32.3	B	0.45	13.70	34.4
	Overall	A	-	8.8	-	A	-	9.50	-
Victoria Ave at Pine St <i>Unsignalized</i>	NB	A	0.00	7.3	0.0	A	0.00	7.3	0.0
	EB	A	0.03	9.3	0.8	A	0.05	9.8	1.5
	WB	A	0.01	9.1	0.0	A	0.01	9.3	0.0
	SB	A	0.01	9.1	0.0	A	0.00	7.4	0.0
	Overall	A	-	2.7	-	A	-	3.0	-
Victoria Ave at King St W/King St E <i>Unsignalized</i>	EB	A	0.01	7.8	0.0	A	0.02	8.2	0.8
	WB	-	-	-	-	-	-	-	-
	SB	B	0.05	11.1	1.5	B	0.07	12.5	1.5
	Overall	A	-	0.9	-	A	-	0.9	-
William St at Pearl St W <i>Signalized</i>	EBL	B	0.62	14.1	#68.3	D	0.91	41.0	#87.7
	EBT/R	A	0.15	7.3	16.3	A	0.18	9.0	18.2
	WBL/T	A	0.21	7.6	23.7	A	0.27	9.6	29.1
	WBR	A	0.31	8.1	9.4	B	0.48	11.0	11.2
	SBL/T	B	0.67	15.9	49.9	B	0.62	17.1	53.0
	SBR	B	0.55	15.0	11.4	C	0.81	24.3	13.9
	Overall	B	-	12.4	-	C	-	21.3	-
Site Access (Victoria Ln at Victoria Ave) <i>Unsignalized</i>	NB	A	0.01	7.4	0.0	A	0.01	7.4	0.0
	EB	A	0.02	8.9	0.8	A	0.02	9.1	0.8
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	2.3	-	A	-	1.5	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2026 future total horizon in the study area generally operate similarly to the 2026 future background conditions, and the site access intersection is forecast to operate well. Negligible impacts are forecast from site-generated traffic, and no resultant mitigation is required.

As in the background conditions, a minimum cycle length of 70 seconds in the AM peak hour and 80 seconds in the PM peak hour would be required to address background issues on the eastbound left-turn movement at the intersection of William Street at Pearl Street West.

4.4.3 2031 Future Total Conditions

The proposed development’s trip generation has been added to the 2031 future background traffic volumes to project the impact of the new traffic on the future road network.

Table 11 summarizes the operational analysis for the 2031 future total conditions in both the AM and PM peak hours. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 4.4.1. Synchro worksheets for the 2031 future total traffic conditions are included in Appendix G.

Table 11: 2031 Future Total Conditions Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
King St W at Court House Ave/Broad St <i>Signalized</i>	EBL	A	0.05	8.6	4.3	A	0.08	9.6	6.5
	EBT/R	A	0.24	7.5	16.9	A	0.34	7.7	29.7
	WBL/T	A	0.25	7.6	19.6	A	0.34	7.8	33.4
	WBR	A	0.10	6.9	3.7	A	0.11	6.7	4.8
	NB	A	0.10	9.5	10.0	B	0.17	12.0	14.7
	SB	B	0.43	11.3	34.7	B	0.49	14.1	37.7
	Overall	A	0.43	8.9	-	A	0.47	9.7	-
Victoria Ave at Pine St <i>Unsignalized</i>	NB	A	0.00	7.3	0.0	A	0.00	7.3	0.0
	EB	A	0.03	9.3	0.8	A	0.05	9.8	1.5
	WB	A	0.01	9.1	0.0	A	0.01	9.3	0.0
	SB	A	-	0.0	0.0	A	0.00	7.4	0.0
	Overall	A	-	2.7	-	A	-	3.0	-
Victoria Ave at King St W/King St E <i>Unsignalized</i>	EB	A	0.01	7.8	0.0	A	0.02	8.2	0.8
	WB	-	-	-	-	-	-	-	-
	SB	B	0.05	11.4	1.5	B	0.08	12.9	1.5
	Overall	A	-	0.9	-	A	-	0.9	-
William St at Pearl St W <i>Signalized</i>	EBL	B	0.67	16.0	#76.1	E	1.00	63.2	#96.5
	EBT/R	A	0.15	7.5	16.3	A	0.18	9.5	18.2
	WBL/T	A	0.21	7.8	23.6	B	0.28	10.1	29.1
	WBR	A	0.30	8.3	9.4	B	0.49	11.6	11.2
	SBL/T	A	0.30	17.1	53.3	B	0.63	17.3	56.3
	SBR	B	0.59	16.0	11.8	C	0.84	27.4	14.3
	Overall	B	0.72	13.5	-	C	0.82	28.1	-
Site Access (Victoria Ln at Victoria Ave) <i>Unsignalized</i>	NB	A	0.01	7.4	0.0	A	0.01	7.4	0.0
	EB	A	0.02	8.9	0.8	A	0.02	9.1	0.8
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	2.3	-	A	-	1.5	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres

Delay = average vehicle delay in seconds
= volume for the 95th %ile cycle exceeds capacity

The intersection operations for the 2031 future total horizon in the study area generally operate similarly to the 2031 future background conditions, and the site access intersection is forecast to operate well. Negligible impacts are forecast from site generated traffic, and no resultant mitigation is required.

As in the background conditions, a minimum cycle length of 70 seconds in the AM peak hour and 100 seconds in the PM peak hour would be required to address background issues on the eastbound left-turn movement at the intersection of William Street at Pearl Street West.

5 Development Review

5.1 Design for Sustainable Modes

A site visit to 46 King Street West was conducted on September 29, 2023. Photos taken during the site visit, of the pedestrian realm on the site frontage on King Street West, are provided in Appendix H. Pedestrian facilities on King Street West include a 2.0-metre-wide sidewalk and a 0.5-metre-wide boulevard both sides of the road. Sidewalks are provided on each side of Victoria Avenue, each approximately 1.8 metres wide.

Based on the existing pedestrian counts, 23 AM and 51 PM pedestrian are anticipated to be utilizing King Street West during the peak hours. Resultantly, increases in pedestrian activity associated with the site can be accommodated, and will better utilize the investment in the facilities.

Negligible pedestrian volumes were captured on Victoria Avenue during the peak hours, and thus pedestrian capacity is anticipated to remain high at the study area horizons.

Cyclists are anticipated to access the underground parking, and use Victoria Lane to access the road network. No issues are anticipated for cycling safety as a result of the access conditions.

5.2 Access Intersection Design Elements

Underground parking will be accessed via the existing rear public laneway of Victoria Lane, which intersects Victoria Avenue. A site visit to 46 King Street West was conducted on September 29, 2023. Photos taken during the site visit, of the existing rear public laneway of Victoria Lane, are provided in Appendix I.

It is noted that the intersection of Victoria Lane at Victoria Avenue has limited sight distance between the access and the north leg. This visibility is limited by the vertical geometry of Victoria Avenue, and the presence of on-street parking. While this is an existing condition for the intersection of these public roadways, the present volumes on both Victoria Lane and Victoria Avenue are low. The site is anticipated to contribute 14 AM and 10 PM outbound vehicles to the intersection, which is also considered low.

The development is proposed as having reduced parking on-site, thus limiting the impacts to this condition. Further to this measure, it is also recommended that the first parking stall north of the lane be removed, and a hidden intersection sign (OTM Wa-13A with Wa-18t tab) be added for the southbound approach. While recommended to support the proposed development, it is noted that these mitigation measures are appropriate for the existing condition.

Turn lane warrants from the Transportation Association of Canada's Geometric Design Guides for Canadian Roads Section 9.17 were examined for the access intersection, and the access intersection does not meet the warrant. The results of the turn lane warrants are provided in Appendix J.

No turn lanes are proposed for the access intersection of Victoria Lane at Victoria Avenue, and the intersection control is recommended to remain minor stop-controlled. The access intersection is forecast to operate well

during peak hours in all horizons. No mitigation measures are considered to be required and none are proposed for the site access.

5.3 Parking Supply

The vehicle and bicycle parking for the development is subject to City of Brockville Zoning By-Law #050, 2014, which states for the Mixed Commercial/Residential Building, the minimum resident vehicle parking requirement is 1.0 space per unit, which equates to 64 spaces, 4.0 spaces per 100.0 square metres gross leasable area of commercial space assuming a land use of Commercial Use in Mixed Commercial Residential Development, which equates to 20 spaces, and 2.0 spaces per 100.0 square metres for the office space, which equates to five spaces. The total parking requirement for the site is 89 vehicle spaces. The development is proposed 39 parking spaces plus the use of adjacent public lots with long term permits.

The minimum bicycle parking requirement for the Mixed Commercial/Residential Building is 0.25 spaces per unit for the residential units, which equates to 16 spaces, and 1.0 space per 250.0 square metres of gross floor area for the commercial space, which equates to three spaces. The development is assumed to provide 16 bicycle parking spaces for the residential units and three bicycle parking spaces for the commercial space to meet the minimum bicycle parking requirement.

6 Findings and Recommendations

- a) The existing site will be adapted to a nine-storey mixed-use building with ground floor commercial space, second floor office space, and 64 residential units.
- b) Underground parking will be accessed via the existing rear public laneway of Victoria Lane, which intersects Victoria Avenue.
- c) The proposed development is anticipated to have a full build-out and occupancy horizon of 2026.
- d) A total of 35 AM and 39 PM new peak hour two-way vehicle trips are projected as a result of proposed development.
- e) A 1.5% compound annual growth rate was assumed to be applied to the existing 2023 traffic counts to generate 2026 and 2031 future background traffic volumes.
- f) The study area intersections and the site access operation well in all horizons except for eastbound left-turn movement at the intersection of William Street at Pearl Street West may experience cycles where the queue does not fully clear on the eastbound left-turn movement during both peak hours in all horizons, and may be at its theoretical capacity during the PM peak hour at the 2031 horizons, each assuming a 60-second cycle length.
- g) A minimum cycle length of 70 seconds in the AM peak hour and 80 seconds in the PM peak hour would be required to address background issues on the eastbound left-turn movement at the intersection of William Street at Pearl Street West for 2026 horizon, and a minimum cycle length of 70 seconds in the AM peak hour and 100 seconds in the PM peak hour would be required at the for 2031 horizon.
- h) No turn lanes are proposed for the access intersection of Victoria Lane at Victoria Avenue, and the intersection control is recommended to remain minor stop-controlled.
- i) The access intersection of Victoria Lane at Victoria Avenue is forecast to operate well during peak hours in all horizons, and no mitigation measures are required.
- j) The intersection of Victoria Lane at Victoria Avenue has limited sight distance between the access and the north leg because of the vertical geometry of Victoria Avenue, and the presence of on-street parking
- k) The site is anticipated to contribute 14 AM and 10 PM outbound vehicles to the intersection of Victoria Lane at Victoria Avenue and is considered low.

- l) It is recommended that the first parking stall north of the lane be removed, and a hidden intersection sign (OTM Wa-13A with Wa-18t tab) be added for the southbound approach at the intersection of Victoria Lane at Victoria Avenue to improve existing sightlines
- m) The development proposes 39 parking spaces, which is nominally below the required 89 spaces, but proposes the use of adjacent public lots with long term permits for tenants and patrons.
- n) A total of 16 bicycle parking spaces for the residential units and three bicycle parking spaces for the commercial space are assumed to be provided to meet the bicycle parking requirements.

No significant planned changes to the area transportation network and no surrounding background developments are anticipated. The development will have a minor impact on the study area road network. The proposed access will operate with reasonable LOS and delay on the turning movements into and out of the site. Additionally, through the provision of on-site facilities, this development will be supportive of active mode transportation. It is recommended that, from a transportation perspective, the proposed development application proceed.

Prepared By:

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Appendix A

Turning Movement Count Data



Turning Movement Count Summary Report Including AM and PM Peak Hours All Vehicles Except Bicycles



Broad Street/Court House Avenue & King Street West Brockville, ON

Survey Date: Thursday, September 21, 2023 Start Time: 0700 AADT Factor: 1.0
 Weather AM: Clear/Sunny 8° C Survey Duration: 4 Hrs. Survey Hours: 0700-0900 & 1500-1700
 Weather PM: Clear/Sunny 20° C Surveyor(s): T. Carmody

Time Period	King St. (W) Eastbound				King St. (W) Westbound				Broad St. Northbound				Court House Ave. Southbound				Street Total	Grand Total					
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT							
	E/B Tot				W/B Tot				S/B Tot				Street Total										
0700-0900	15	134	7	0	156	3	84	30	0	117	273	4	15	6	0	25	46	41	28	0	115	140	413
0800-0900	20	119	5	0	144	3	140	38	0	181	325	9	31	10	0	50	56	79	50	1	186	236	561
1500-1600	35	214	11	0	260	11	240	55	0	306	566	22	45	18	0	85	74	54	80	1	209	294	860
1600-1700	44	236	8	0	288	13	223	42	0	278	566	19	56	13	0	88	64	56	77	0	197	285	851
Totals	114	703	31	0	848	30	687	165	0	882	1730	54	147	47	0	248	240	230	235	2	707	955	2685

**Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor
Applicable to the Day and Month of the Turning Movement Count**

**Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts
conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h**

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 → 12 expansion factor of 1.39																
Equi. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0																
AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 → 24 expansion factor of 1.31																
AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor → 0.84										Highest Hourly Vehicle Volume Between 0700h & 1000h													
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot	Gr. Tot	
0800-0900	20	119	5	0	144	3	140	38	0	181	325	9	31	10	0	50	56	79	50	1	186	236	561

PM Peak Hour Factor → 0.93										Highest Hourly Vehicle Volume Between 1500h & 1800h													
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot	Gr. Tot	
1500-1600	35	214	11	0	260	11	240	55	0	306	566	22	45	18	0	85	74	54	80	1	209	294	860

Comments:
Local transit buses and school buses comprise 27.50% of the heavy vehicle traffic.

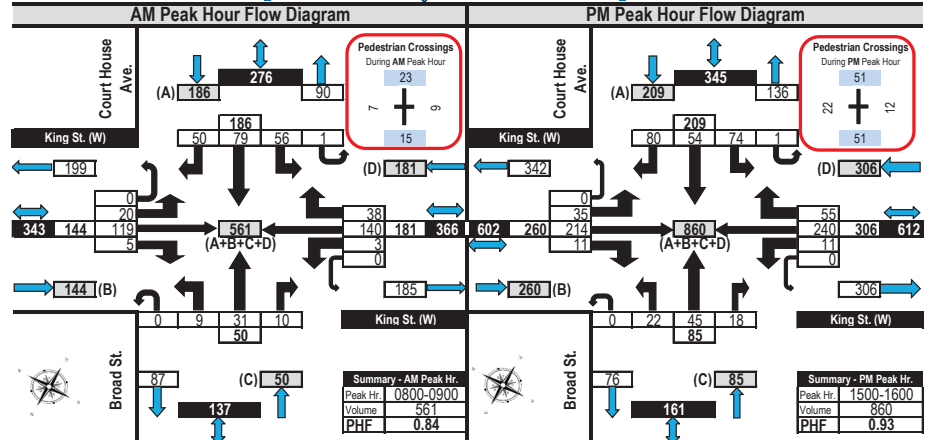
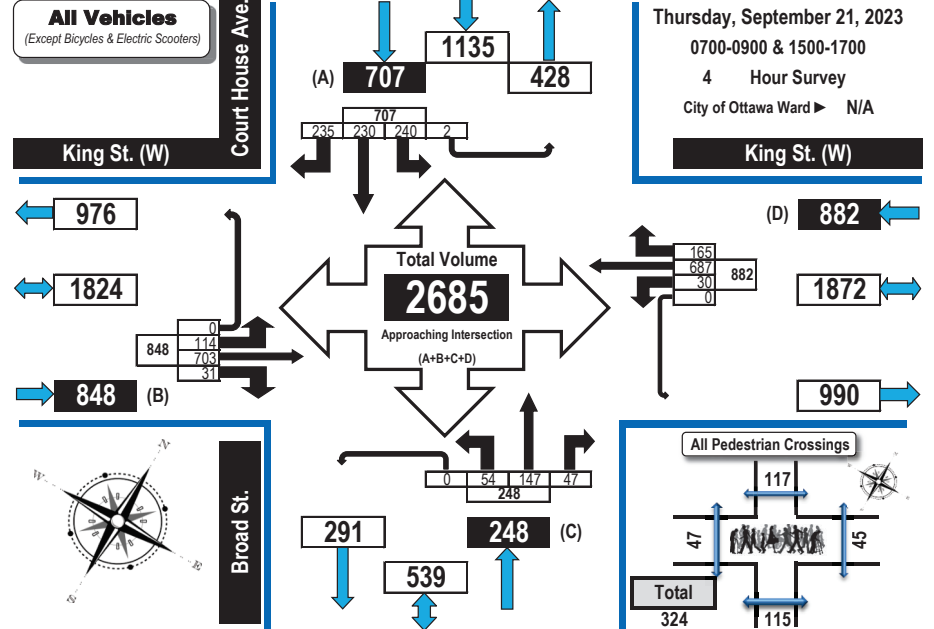
- Notes:**
- Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
 - When expansion and AADT factors are applied, the results will differ slightly due to rounding.



Turning Movement Count Summary, AM and PM Peak Hour Flow Diagrams All Vehicles Except Bicycles



Broad Street/Court House Avenue & King Street West Brockville, ON

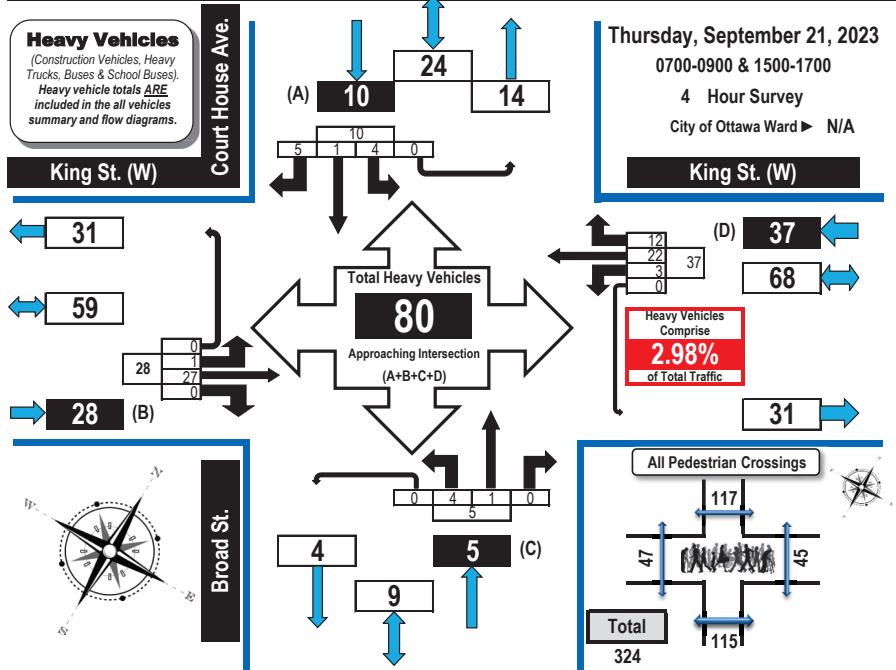




Turning Movement Count Heavy Vehicle Summary (FHWA Class 4-13) Flow Diagram



Broad Street/Court House Avenue & King Street West Brockville, ON



Time Period	King St. (W) Eastbound				King St. (W) Westbound				Broad St. Northbound				Court House Ave. Southbound				GR Tot				
	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT		ST	RT	UT	SB Tot
0700-0800	1	6	0	0	7	0	9	2	0	11	1	0	0	0	1	1	0	2	0	3	22
0800-0900	0	3	0	0	3	1	6	6	0	13	1	1	0	0	2	1	0	2	0	3	21
1500-1600	0	9	0	0	9	0	6	2	0	8	1	0	0	0	1	1	1	1	0	3	21
1600-1700	0	9	0	0	9	2	1	2	0	5	1	0	0	0	1	1	0	0	0	1	16
Totals	1	27	0	0	28	3	22	12	0	37	4	1	0	0	5	4	1	5	0	10	80

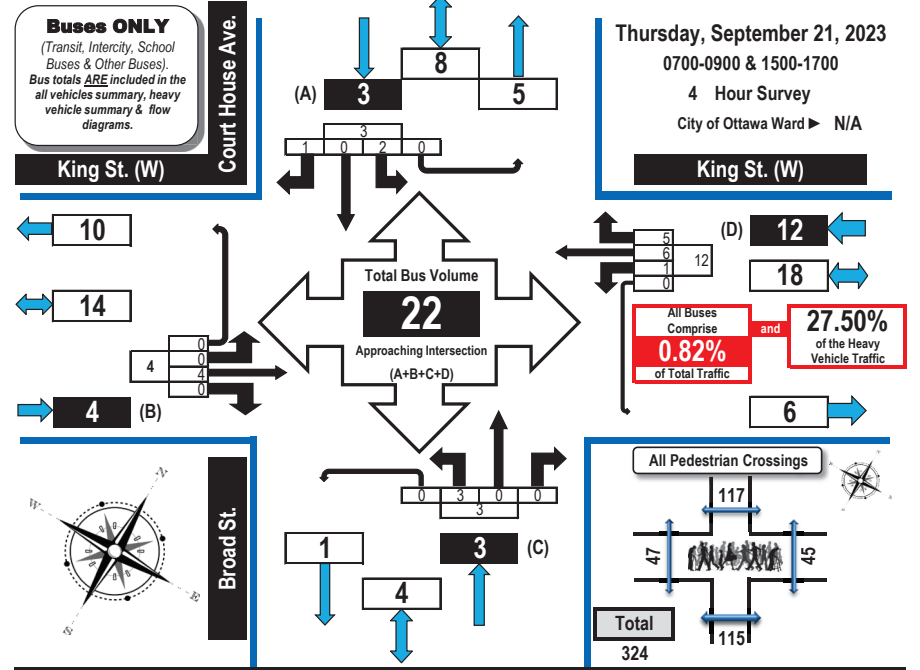
Comments:
Local transit buses and school buses comprise 27.50% of the heavy vehicle traffic.



Turning Movement Count All Buses Summary (FHWA Class 4 ONLY) Flow Diagram



Broad Street/Court House Avenue & King Street West Brockville, ON



Time Period	King St. (W) Eastbound				King St. (W) Westbound				Broad St. Northbound				Court House Ave. Southbound				GR Tot				
	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT		ST	RT	UT	SB Tot
0700-0800	0	1	0	0	1	0	1	1	0	2	1	0	0	0	1	1	0	1	0	2	6
0800-0900	0	1	0	0	1	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	4
1500-1600	0	1	0	0	1	0	3	2	0	5	1	0	0	0	1	0	0	0	0	0	7
1600-1700	0	1	0	0	1	1	0	1	0	2	1	0	0	0	1	1	0	0	0	1	5
Totals	0	4	0	0	4	1	6	5	0	12	3	0	0	0	3	2	0	1	0	3	22

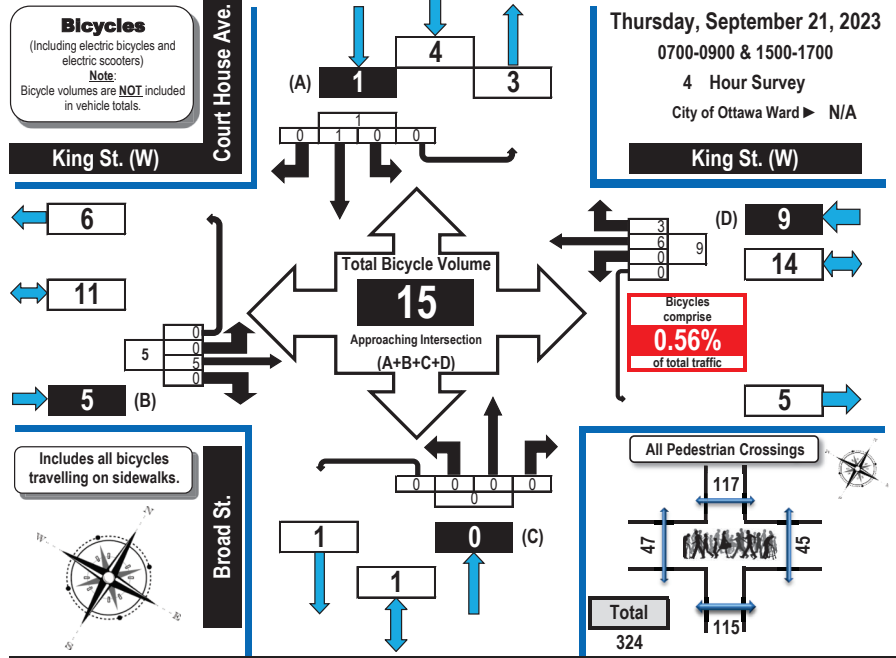
Comments:
Local transit buses and school buses comprise 27.50% of the heavy vehicle traffic.



Turning Movement Count Bicycle Summary Flow Diagram



Broad Street/Court House Avenue & King Street West Brockville, ON



Time Period	King St. (W) Eastbound				King St. (W) Westbound				Broad St. Northbound				Court House Ave. Southbound				GR Tot				
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT					
	EB Tot	WB Tot	NB Tot	SB Tot	EB Tot	WB Tot	NB Tot	SB Tot													
0700-0800	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2
0800-0900	0	3	0	0	3	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	5
1500-1600	0	1	0	0	1	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	6
1600-1700	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Totals	0	5	0	0	5	0	6	3	9	0	0	0	0	0	0	1	0	0	0	1	15

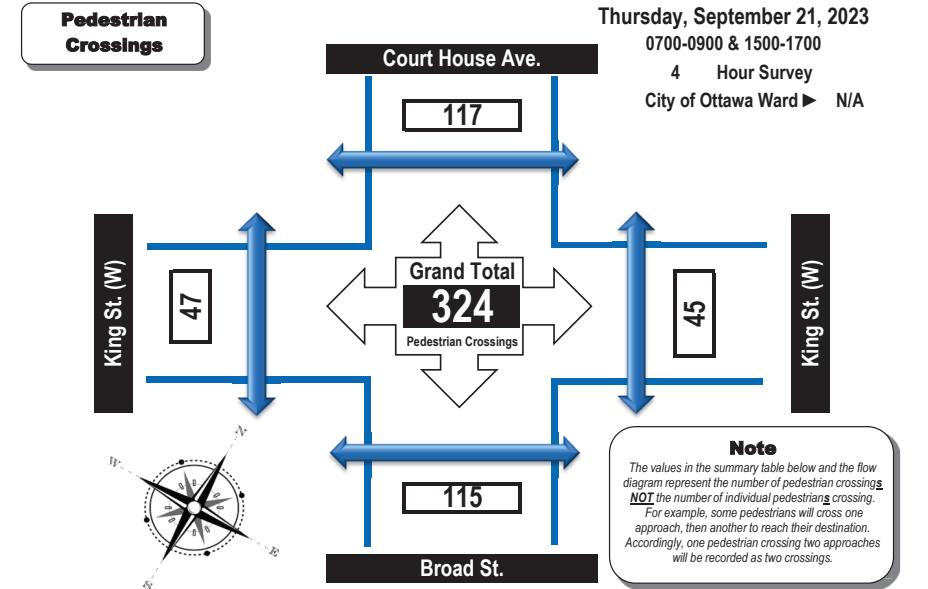
Comments:
Local transit buses and school buses comprise 27.50% of the heavy vehicle traffic.



Turning Movement Count Pedestrian Crossings Summary and Flow Diagram



Broad Street/Court House Avenue & King Street West Brockville, ON



Time Period	West Side Crossing King St. (W)	East Side Crossing King St. (W)	Street Total	South Side Crossing Broad St.	North Side Crossing Court House Ave.	Street Total	Grand Total
0700-0800	2	6	8	3	8	11	19
0800-0900	7	9	16	15	23	38	54
1500-1600	22	12	34	51	51	102	136
1600-1700	16	18	34	46	35	81	115
Totals	47	45	92	115	117	232	324

Comments:
Local transit buses and school buses comprise 27.50% of the heavy vehicle traffic.



Turning Movement Count Summary Report Including AM and PM Peak Hours All Vehicles Except Bicycles



Pine Street & Victoria Avenue Brockville, ON

Survey Date: Thursday, September 21, 2023 Start Time: 0700 AADT Factor: 1.0
 Weather AM: Clear/Sunny 8° C Survey Duration: 4 Hrs. Survey Hours: 0700-0900 & 1500-1700
 Weather PM: Clear/Sunny 20° C Surveyor(s): T. Carmody

Time Period	Pine St. Eastbound				Pine St. Westbound				Victoria Ave. Northbound				Victoria Ave. Southbound				S/B Tot	Street Total	Grand Total				
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT							
0700-0800	3	5	5	0	13	0	0	3	0	3	16	0	40	2	0	42	2	24	4	0	30	72	88
0800-0900	7	7	11	0	25	2	4	8	0	14	39	4	32	2	0	38	2	30	3	0	35	73	112
1500-1600	12	15	11	0	38	0	4	5	0	9	47	0	65	12	0	77	4	30	3	0	37	114	161
1600-1700	7	17	5	0	29	4	5	5	0	14	43	4	66	2	0	72	4	27	4	0	35	107	150
Totals	29	44	32	0	105	6	13	21	0	40	145	8	203	18	0	229	12	111	14	0	137	366	511

**Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor
Applicable to the Day and Month of the Turning Movement Count**

**Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts
conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h**

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 → 12 expansion factor of 1.39																		
Equi. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0																		
AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 → 24 expansion factor of 1.31																		
AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor → 0.82										Highest Hourly Vehicle Volume Between 0700h & 1000h													
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot	Gr. Tot	
0745-0845	6	9	9	0	24	2	3	5	0	10	34	4	37	2	0	43	0	33	5	0	38	81	115

PM Peak Hour Factor → 0.92										Highest Hourly Vehicle Volume Between 1500h & 1800h													
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot	Gr. Tot	
1530-1630	16	16	6	0	38	2	3	5	0	10	48	2	75	6	0	83	4	24	3	0	31	114	162

Comments:
Local transit buses comprise 90.00% of the heavy vehicle traffic.

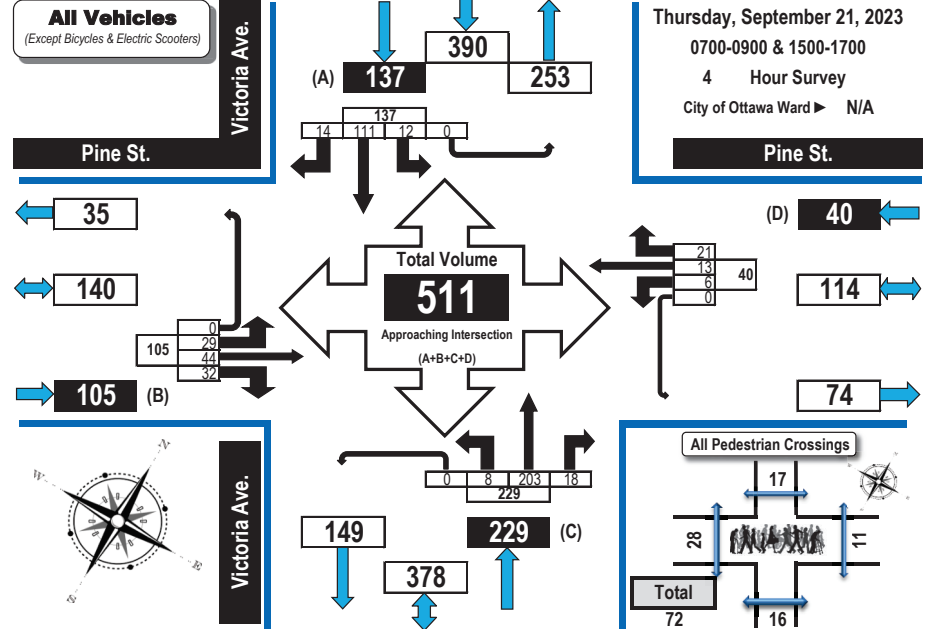
- Notes:**
- Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
 - When expansion and AADT factors are applied, the results will differ slightly due to rounding.



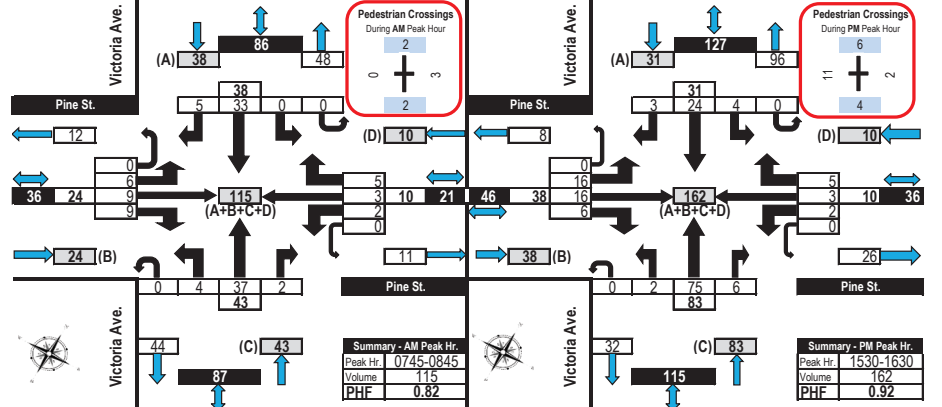
Turning Movement Count Summary, AM and PM Peak Hour Flow Diagrams All Vehicles Except Bicycles



Pine Street & Victoria Avenue Brockville, ON

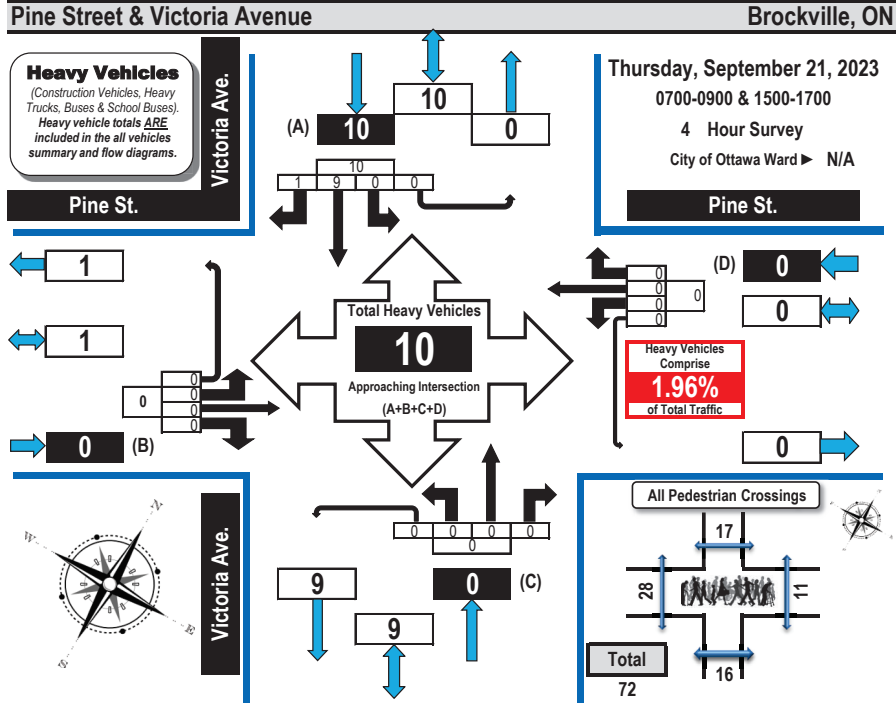


AM Peak Hour Flow Diagram PM Peak Hour Flow Diagram





Turning Movement Count Heavy Vehicle Summary (FHWA Class 4-13) Flow Diagram

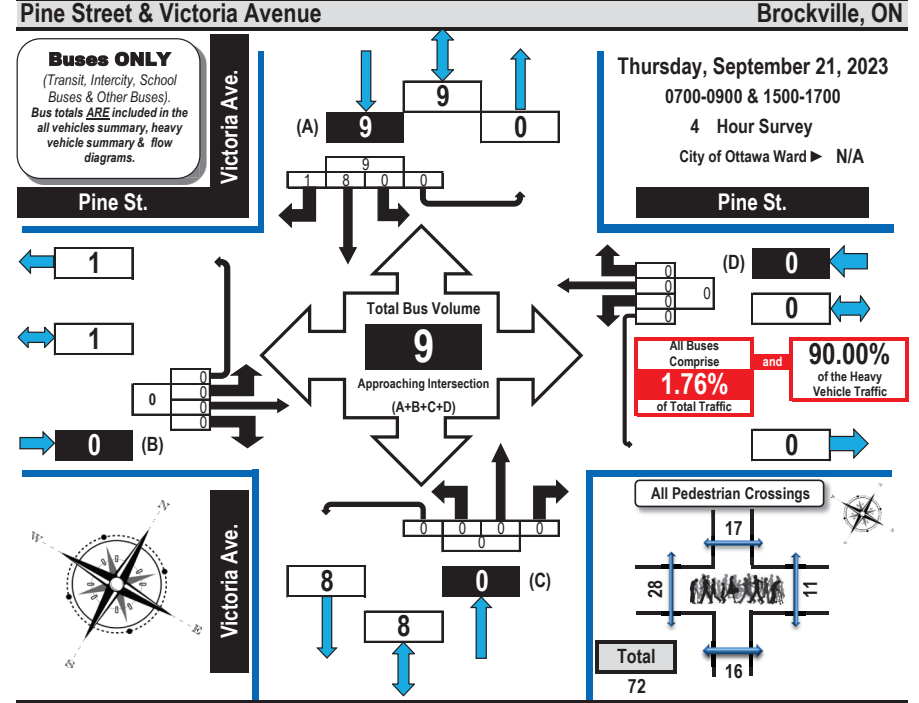


Time Period	Pine St. Eastbound				Pine St. Westbound				Victoria Ave. Northbound				Victoria Ave. Southbound				GR Tot	
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT		
0700-0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
0800-0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
1500-1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	3
1600-1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	10	10

Comments:
Local transit buses comprise 90.00% of the heavy vehicle traffic.



Turning Movement Count All Buses Summary (FHWA Class 4 ONLY) Flow Diagram



Time Period	Pine St. Eastbound				Pine St. Westbound				Victoria Ave. Northbound				Victoria Ave. Southbound				GR Tot	
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT		
0700-0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
0800-0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
1500-1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	3
1600-1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	9	9

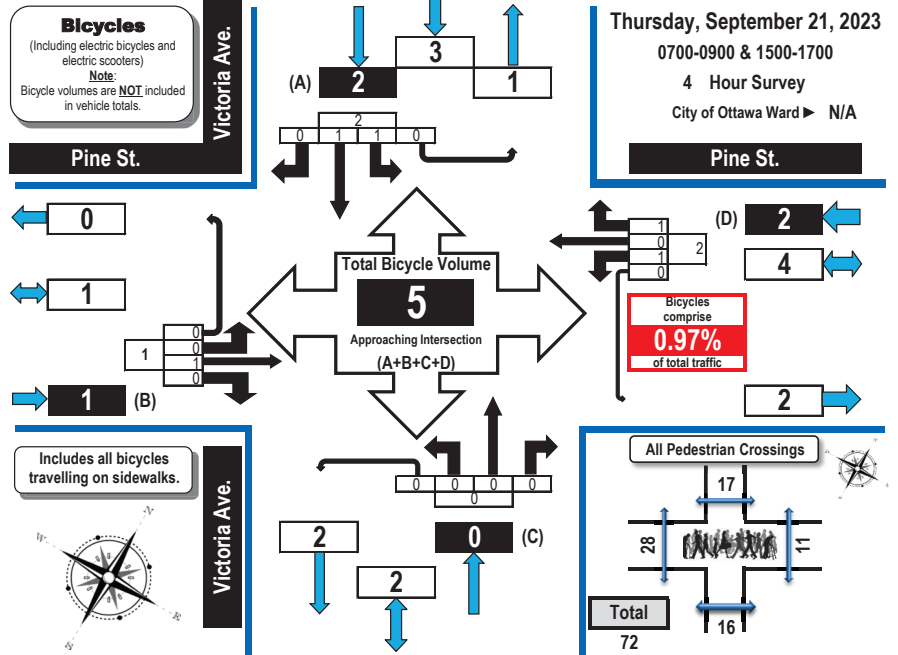
Comments:
Local transit buses comprise 90.00% of the heavy vehicle traffic.



Turning Movement Count Bicycle Summary Flow Diagram



Pine Street & Victoria Avenue Brockville, ON



Time Period	Pine St. Eastbound				Pine St. Westbound				Victoria Ave. Northbound				Victoria Ave. Southbound				GR Tot	
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT		
0700-0800	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	2
0800-0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1500-1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
1600-1700	0	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	2
Totals	0	1	0	0	1	1	0	1	0	0	0	0	0	1	1	0	2	5

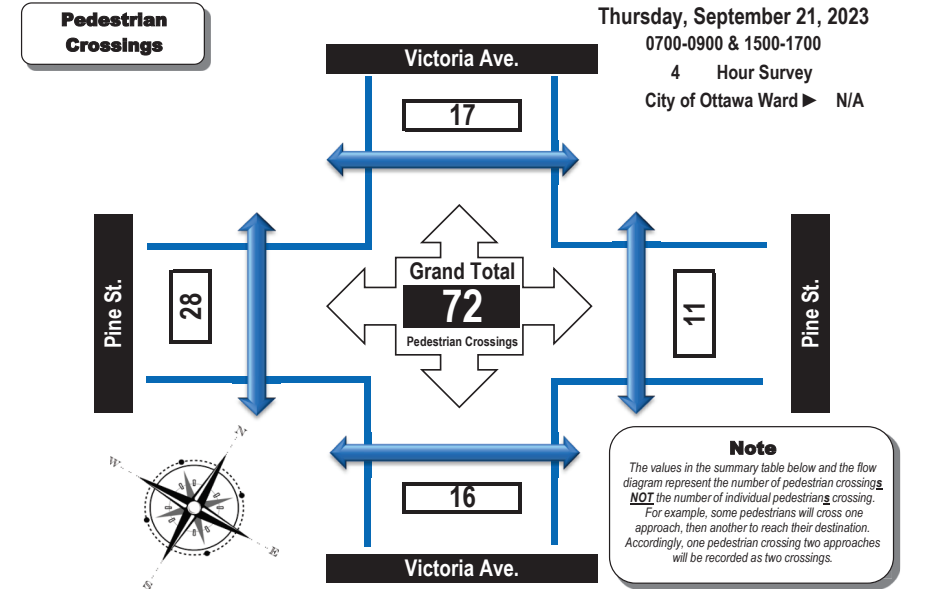
Comments:
Local transit buses comprise 90.00% of the heavy vehicle traffic.



Turning Movement Count Pedestrian Crossings Summary and Flow Diagram



Pine Street & Victoria Avenue Brockville, ON



Time Period	West Side Crossing Pine St.	East Side Crossing Pine St.	Street Total	South Side Crossing Victoria Ave.	North Side Crossing Victoria Ave.	Street Total	Grand Total
0700-0800	4	6	10	4	2	6	16
0800-0900	3	1	4	1	3	4	8
1500-1600	13	1	14	4	10	14	28
1600-1700	8	3	11	7	2	9	20
Totals	28	11	39	16	17	33	72

Comments:
Local transit buses comprise 90.00% of the heavy vehicle traffic.



Diagrams, Maps and Photographs



King Street (East & West)/Market St. (W) & Victoria Avenue

Thursday, September 21, 2023



Pedestrian crossings counted.



Turning Movement Count Summary Report Including AM and PM Peak Hours All Vehicles Except Bicycles



King Street (East & West)/Market St. (W) & Victoria Avenue Brockville, ON

Survey Date: Thursday, September 21, 2023 Start Time: 0700 AADT Factor: 1.0
Weather AM: Clear/Sunny 8° C Survey Duration: 4 Hrs. Survey Hours: 0700-0900 & 1500-1700
Weather PM: Clear/Sunny 20° C Surveyor(s): T. Carmody

Time Period	King St. (W)					King St. (E)					Market St. (W)					Victoria Ave.							
	Eastbound					Westbound					Northbound					Southbound							
	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot			
0700-0800	5	166	12	0	183	34	106	22	0	162	345	9	8	25	0	42	12	6	3	0	21	63	408
0800-0900	9	152	21	0	182	35	158	28	0	221	403	17	11	11	0	39	11	13	10	0	34	73	476
1500-1600	17	256	39	0	312	43	253	37	1	334	646	33	23	64	0	120	9	14	20	0	43	163	809
1600-1700	13	274	23	0	310	27	239	25	0	291	601	24	24	53	0	101	8	12	20	0	40	141	742
Totals	44	848	95	0	987	139	756	112	1	1008	1995	83	66	153	0	302	40	45	53	0	138	440	2435

Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor Applicable to the Day and Month of the Turning Movement Count

Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 → 12 expansion factor of 1.39																							
Equi. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0																							
AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 → 24 expansion factor of 1.31																							
AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor → 0.88											Highest Hourly Vehicle Volume Between 0700h & 1000h												
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0745-0845	8	161	21	0	190	41	157	32	0	230	420	15	10	18	0	43	11	12	8	0	31	74	494

PM Peak Hour Factor → 0.92											Highest Hourly Vehicle Volume Between 1500h & 1800h												
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1500-1600	17	256	39	0	312	43	253	37	1	334	646	33	23	64	0	120	9	14	20	0	43	163	809

Comments:

Local transit buses and school buses comprise 31.94% of the heavy vehicle traffic. Market Street West is offset approximately 9 m west of Victoria Avenue. The pedestrian crossings totals include 6 with mobility issues using either a cane, walker or wheel chair.

Notes:

- Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
- When expansion and AADT factors are applied, the results will differ slightly due to rounding.

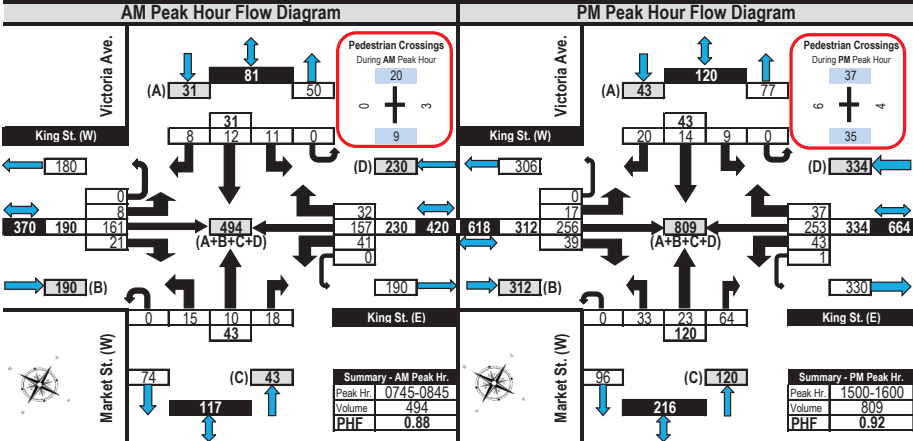
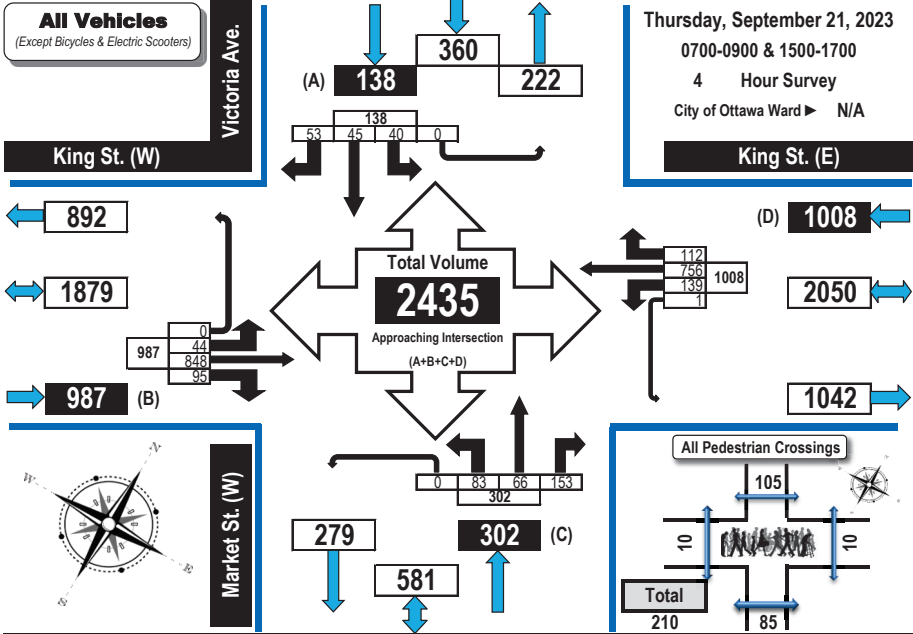
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count Summary, AM and PM Peak Hour Flow Diagrams

All Vehicles Except Bicycles



King Street (East & West)/Market St. (W) & Victoria Avenue Brockville, ON

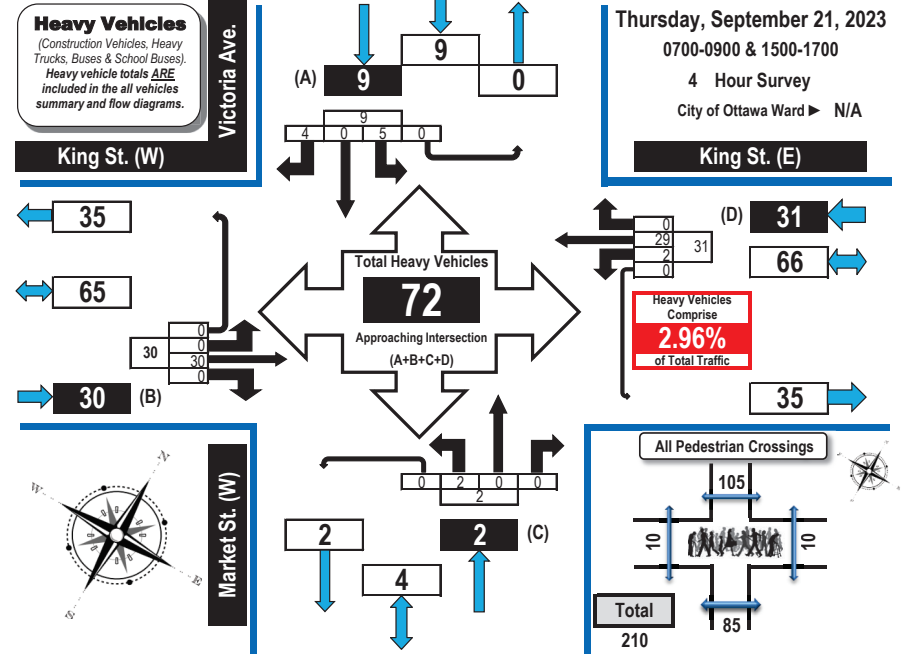


ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count Heavy Vehicle Summary (FHWA Class 4-13) Flow Diagram



King Street (East & West)/Market St. (W) & Victoria Avenue Brockville, ON



Time Period	King St. (W) Eastbound				King St. (E) Westbound				Market St. (W) Northbound				Victoria Ave. Southbound				SB Tot	GR Tot			
	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT			ST	RT	UT
0700-0800	0	6	0	0	6	0	11	0	0	11	0	0	0	0	0	2	0	1	0	3	20
0800-0900	0	4	0	0	4	1	6	0	0	7	2	0	0	0	2	1	0	1	0	2	15
1500-1600	0	10	0	0	10	1	8	0	0	9	0	0	0	0	0	1	0	1	0	2	21
1600-1700	0	10	0	0	10	0	4	0	0	4	0	0	0	0	0	1	0	1	0	2	16
Totals	0	30	0	0	30	2	29	0	0	31	2	0	0	0	2	5	0	4	0	9	72

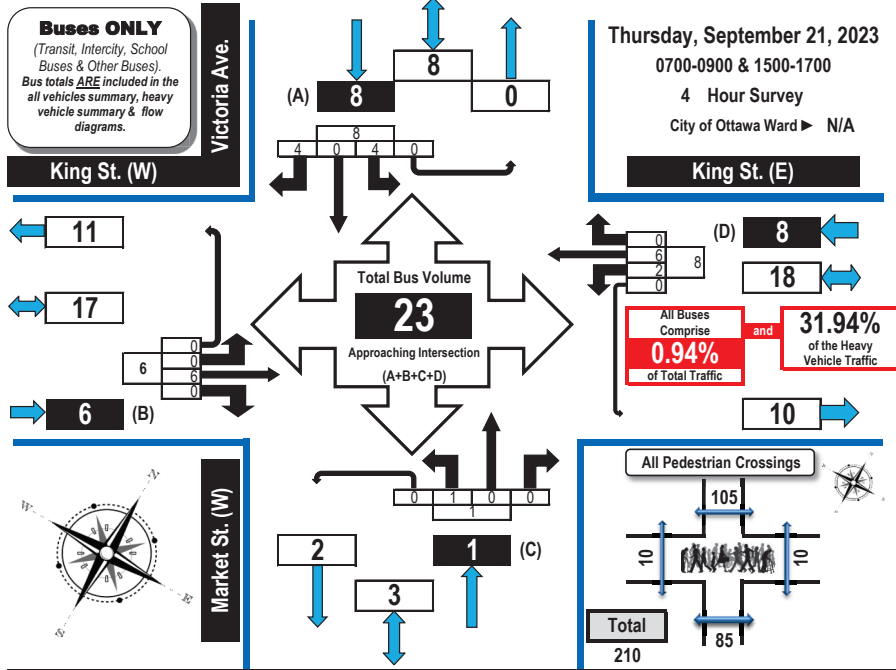
Comments:
Local transit buses and school buses comprise 31.94% of the heavy vehicle traffic. Market Street West is off-set approximately 9 m west of Victoria Avenue. The pedestrian crossings totals include 6 with mobility issues using either a cane, walker or wheel chair.



Turning Movement Count All Buses Summary (FHWA Class 4 ONLY) Flow Diagram



King Street (East & West)/Market St. (W) & Victoria Avenue Brockville, ON



Time Period	King St. (W) Eastbound				King St. (E) Westbound				Market St. (W) Northbound				Victoria Ave. Southbound				SB Tot	GR Tot		
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT				
0700-0800	0	2	0	0	2	0	1	0	0	1	0	0	0	0	1	0	1	0	2	5
0800-0900	0	1	0	0	1	1	1	0	0	2	1	0	0	1	1	0	1	0	2	6
1500-1600	0	1	0	0	1	1	3	0	0	4	0	0	0	0	1	0	1	0	2	7
1600-1700	0	2	0	0	2	0	1	0	0	1	0	0	0	0	1	0	1	0	2	5
Totals	0	6	0	0	6	2	6	0	0	8	1	0	0	1	4	0	4	0	8	23

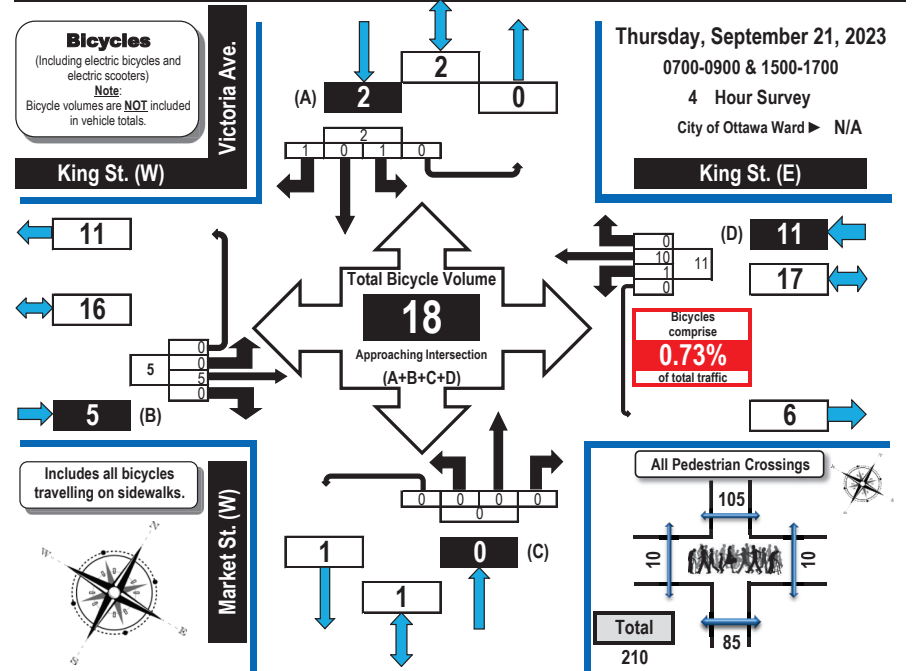
Comments:
Local transit buses and school buses comprise 31.94% of the heavy vehicle traffic. Market Street West is offset approximately 9 m west of Victoria Avenue. The pedestrian crossings totals include 6 with mobility issues using either a cane, walker or wheel chair.



Turning Movement Count Bicycle Summary Flow Diagram



King Street (East & West)/Market St. (W) & Victoria Avenue Brockville, ON



Time Period	King St. (W) Eastbound				King St. (E) Westbound				Market St. (W) Northbound				Victoria Ave. Southbound				SB Tot	GR Tot	
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT			
0700-0800	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
0800-0900	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	5
1500-1600	0	1	0	0	1	0	6	0	0	6	0	0	0	0	1	0	0	0	8
1600-1700	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	0	1	0	4
Totals	0	5	0	0	5	1	10	0	0	11	0	0	0	0	1	0	1	0	18

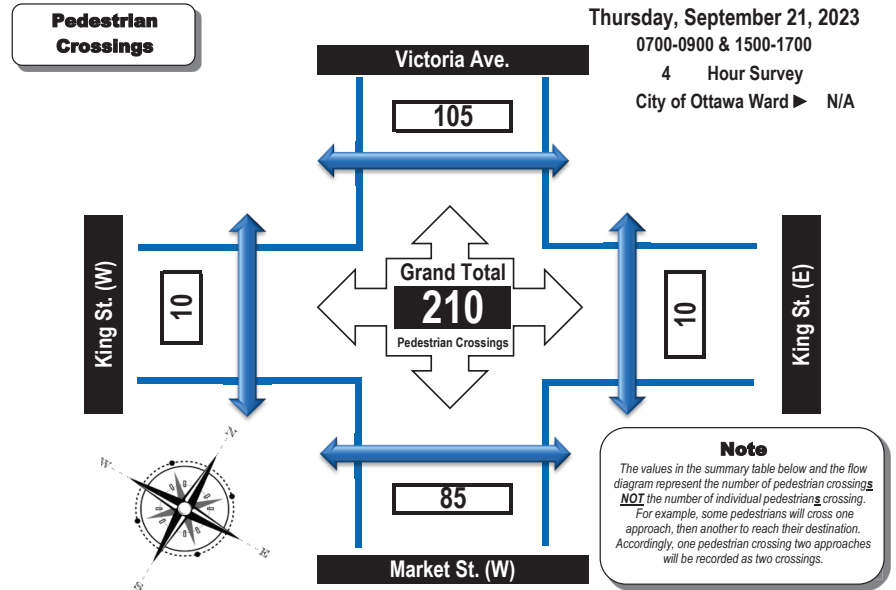
Comments:
Local transit buses and school buses comprise 31.94% of the heavy vehicle traffic. Market Street West is offset approximately 9 m west of Victoria Avenue. The pedestrian crossings totals include 6 with mobility issues using either a cane, walker or wheel chair.



Turning Movement Count Pedestrian Crossings Summary and Flow Diagram



King Street (East & West)/Market St. (W) & Victoria Avenue Brockville, ON



Time Period	West Side Crossing King St. (W)	East Side Crossing King St. (E)	Street Total	South Side Crossing Market St. (W)	North Side Crossing Victoria Ave.	Street Total	Grand Total
0700-0800	2	0	2	6	9	15	17
0800-0900	0	3	3	17	23	40	43
1500-1600	6	4	10	35	35	70	80
1600-1700	2	3	5	27	38	65	70
Totals	10	10	20	85	105	190	210

Comments:
Local transit buses and school buses comprise 31.94% of the heavy vehicle traffic. Market Street West is offset approximately 9 m west of Victoria Avenue. The pedestrian crossings totals include 6 with mobility issues using either a cane, walker or wheel chair.



Turning Movement Count Summary Report Including AM and PM Peak Hours All Vehicles Except Bicycles



Pearl Street West & William Street Brockville, ON

Survey Date: Thursday, September 21, 2023 Start Time: 0700 AADT Factor: 1.0
 Weather AM: Clear/Sunny 8° C Survey Duration: 6 Hrs. Survey Hours: 0700-1000 & 1500-1800
 Weather PM: Clear/Sunny 20° C Surveyor(s): T. Carmody

Time Period	Pearl St. (W) Eastbound					Pearl St. (W) Westbound					William St. Northbound					William St. Southbound						
	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot		
	Street Total		Street Total		Street Total		Street Total		Street Total													
0700-0800	241	101	12	0	354	15	94	146	0	255	609	0	0	0	0	105	135	114	0	354	354	963
0800-0900	247	107	10	0	364	23	89	128	0	240	604	0	0	0	0	74	254	174	0	502	502	1106
0900-1000	303	111	3	0	417	36	132	179	0	347	764	0	0	0	0	64	234	207	0	505	505	1269
1500-1600	304	117	7	0	428	31	183	276	0	490	918	0	0	0	0	69	237	261	0	567	567	1485
1600-1700	354	124	6	0	484	27	182	282	0	491	975	0	0	0	0	96	214	336	0	646	646	1621
1700-1800	282	92	4	0	378	24	128	233	0	385	763	0	0	0	0	80	195	295	0	570	570	1333
Totals	1731	652	42	0	2425	156	808	1244	0	2208	4633	0	0	0	0	488	1269	1387	0	3144	3144	7777

**Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor
Applicable to the Day and Month of the Turning Movement Count**

Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h

	Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 → 12 expansion factor of 1.39																			
Equ. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0																			
AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 → 24 expansion factor of 1.31																			
AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor → 0.91											Highest Hourly Vehicle Volume Between 0700h & 1000h											
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total		
0900-1000	303	111	3	0	417	36	132	179	0	347	764	0	0	0	0	64	234	207	0	505	505	1269

PM Peak Hour Factor → 0.89											Highest Hourly Vehicle Volume Between 1500h & 1800h											
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total		
1600-1700	354	124	6	0	484	27	182	282	0	491	975	0	0	0	0	96	214	336	0	646	646	1621

Comments:

Local transit buses and school buses comprise 43.26% of the heavy vehicle traffic. William Street is one-way southbound south of Pearl Street West. There was a school crossing guard assisting pedestrians crossing in the north and east side crossings between approximately 08h50 - 09h20 & 15h25 - 16h22. The pedestrian crossings totals include 11 with mobility issues using either a cane, walker or wheelchair.

Notes:

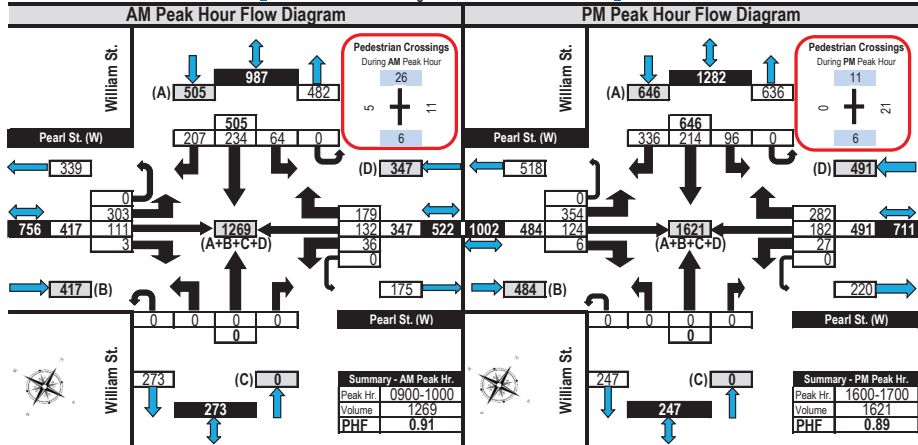
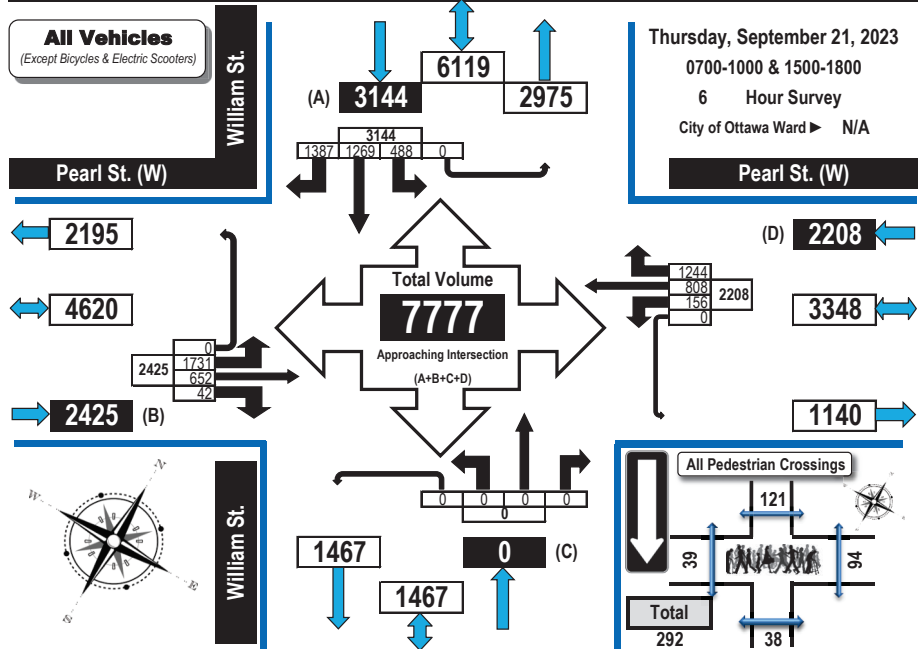
- Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
- When expansion and AADT factors are applied, the results will differ slightly due to rounding.



Turning Movement Count Summary, AM and PM Peak Hour Flow Diagrams All Vehicles Except Bicycles



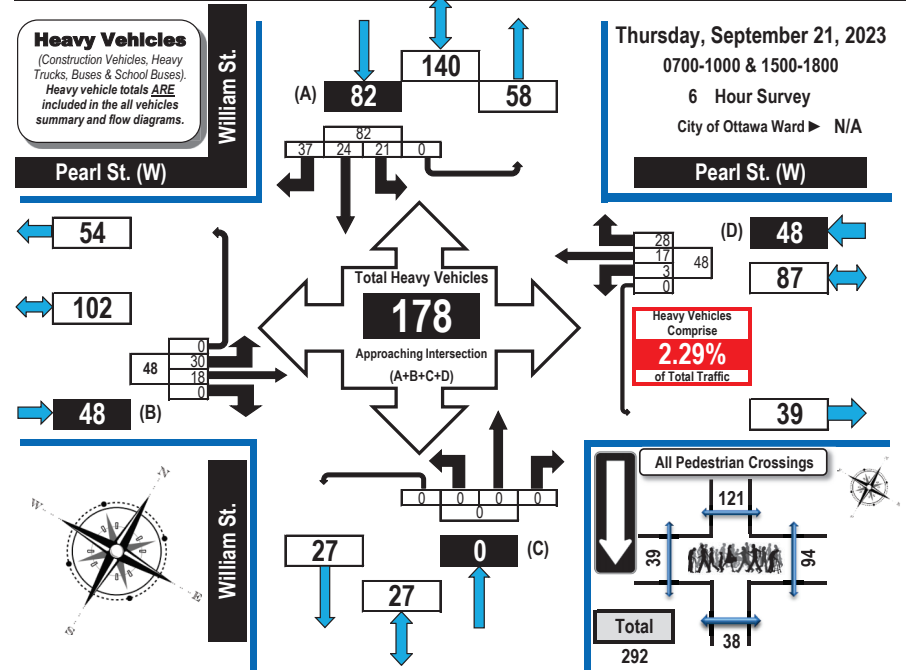
Pearl Street West & William Street Brockville, ON



Turning Movement Count Heavy Vehicle Summary (FHWA Class 4-13) Flow Diagram



Pearl Street West & William Street Brockville, ON



Time Period	Pearl St. (W) Eastbound				Pearl St. (W) Westbound				William St. Northbound				William St. Southbound				SB Tot	GR Tot					
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT							
0700-0800	8	4	0	0	12	0	2	6	0	8	0	0	0	0	0	0	0	11	4	5	0	20	40
0800-0900	5	5	0	0	10	0	2	2	0	4	0	0	0	0	0	0	0	1	3	11	0	15	29
0900-1000	6	5	0	0	11	3	5	10	0	18	0	0	0	0	0	0	0	0	7	8	0	15	44
1500-1600	4	1	0	0	5	0	3	4	0	7	0	0	0	0	0	0	0	4	5	4	0	13	25
1600-1700	5	0	0	0	5	0	3	5	0	8	0	0	0	0	0	0	0	5	3	4	0	12	25
1700-1800	2	3	0	0	5	0	2	1	0	3	0	0	0	0	0	0	0	2	5	0	7	15	
Totals	30	18	0	0	48	3	17	28	0	48	0	0	0	0	0	0	0	21	24	37	0	82	178

Comments:

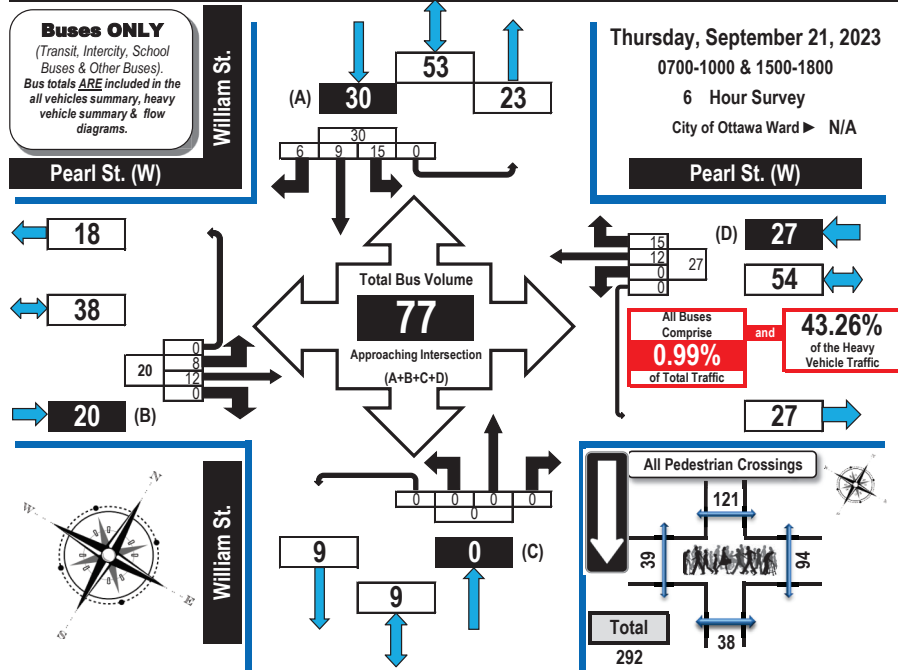
Local transit buses and school buses comprise 43.26% of the heavy vehicle traffic. William Street is one-way southbound south of Pearl Street West. There was a school crossing guard assisting pedestrians crossing in the north and east side crossings between approximately 08h50 - 09h20 & 15h25 - 16h22. The pedestrian crossings totals include 11 with mobility issues using either a cane, walker or wheelchair.



Turning Movement Count All Buses Summary (FHWA Class 4 ONLY) Flow Diagram



Pearl Street West & William Street Brockville, ON



Time Period	Pearl St. (W) Eastbound				Pearl St. (W) Westbound				William St. Northbound				William St. Southbound				SB Tot	GR Tot		
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT				
0700-0800	4	4	0	0	8	0	2	4	0	6	0	0	0	0	11	3	1	0	15	29
0800-0900	0	2	0	0	2	0	1	2	0	3	0	0	0	0	0	0	3	0	3	8
0900-1000	1	4	0	0	5	0	2	5	0	7	0	0	0	0	0	2	0	0	2	14
1500-1600	1	1	0	0	2	0	3	1	0	4	0	0	0	0	2	1	1	0	4	10
1600-1700	2	0	0	0	2	0	3	2	0	5	0	0	0	0	2	2	1	0	5	12
1700-1800	0	1	0	0	1	0	1	1	0	2	0	0	0	0	0	1	0	0	1	4
Totals	8	12	0	0	20	0	12	15	0	27	0	0	0	0	15	9	6	0	30	77

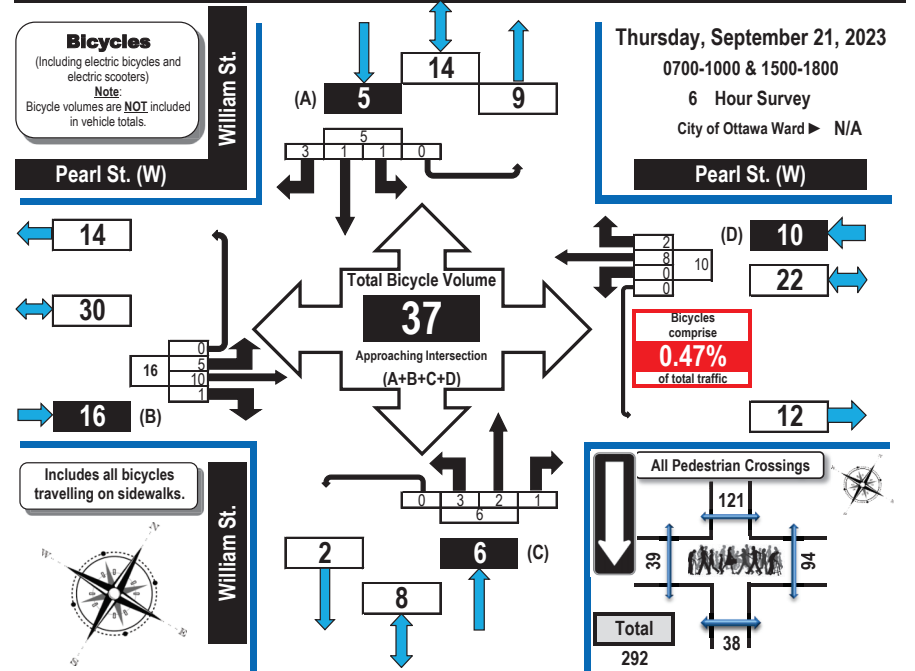
Comments:
Local transit buses and school buses comprise 43.26% of the heavy vehicle traffic. William Street is one-way southbound south of Pearl Street West. There was a school crossing guard assisting pedestrians crossing in the north and east side crossings between approximately 08h50 - 09h20 & 15h25 - 16h22. The pedestrian crossings totals include 11 with mobility issues using either a cane, walker or wheelchair.



Turning Movement Count Bicycle Summary Flow Diagram



Pearl Street West & William Street Brockville, ON



Time Period	Pearl St. (W) Eastbound				Pearl St. (W) Westbound				William St. Northbound				William St. Southbound				SB Tot	GR Tot		
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT				
0700-0800	0	3	0	0	3	0	1	0	0	1	1	2	0	0	3	0	0	0	0	7
0800-0900	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
0900-1000	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	2
1500-1600	1	1	0	0	2	0	3	1	0	4	0	0	0	0	0	1	0	1	0	8
1600-1700	1	4	0	0	5	0	1	1	0	2	0	0	1	0	1	0	0	1	0	9
1700-1800	1	1	1	0	3	0	1	0	0	1	2	0	0	0	2	0	1	1	0	8
Totals	5	10	1	0	16	0	8	2	0	10	3	2	1	0	6	1	1	3	0	37

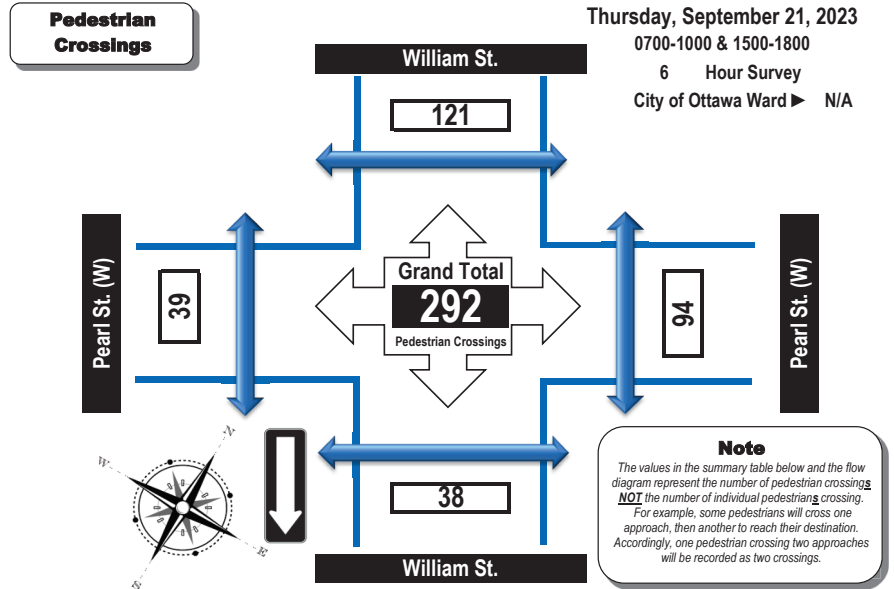
Comments:
Local transit buses and school buses comprise 43.26% of the heavy vehicle traffic. William Street is one-way southbound south of Pearl Street West. There was a school crossing guard assisting pedestrians crossing in the north and east side crossings between approximately 08h50 - 09h20 & 15h25 - 16h22. The pedestrian crossings totals include 11 with mobility issues using either a cane, walker or wheelchair.



Turning Movement Count Pedestrian Crossings Summary and Flow Diagram



Pearl Street West & William Street Brockville, ON



Time Period	West Side Crossing Pearl St. (W)	East Side Crossing Pearl St. (W)	Street Total	South Side Crossing William St.	North Side Crossing William St.	Street Total	Grand Total
0700-0800	4	7	11	8	20	28	39
0800-0900	2	16	18	9	21	30	48
0900-1000	5	11	16	6	26	32	48
1500-1600	18	23	41	6	30	36	77
1600-1700	0	21	21	6	11	17	38
1700-1800	10	16	26	3	13	16	42
Totals	39	94	133	38	121	159	292

Comments:
Local transit buses and school buses comprise 43.26% of the heavy vehicle traffic. William Street is one-way southbound south of Pearl Street West. There was a school crossing guard assisting pedestrians crossing in the north and east side crossings between approximately 08h50 - 09h20 & 15h25 - 16h22. The pedestrian crossings totals include 11 with mobility issues using either a cane, walker or wheelchair.



Diagrams, Maps and Photographs



Victoria Avenue & Victoria Lane

Thursday, September 21, 2023





Turning Movement Count Summary Report Including AM and PM Peak Hours All Vehicles Except Bicycles



Victoria Avenue & Victoria Lane Brockville, ON

Survey Date: Thursday, September 21, 2023 Start Time: 0700 AADT Factor: 1.0
 Weather AM: Clear/Sunny 8° C Survey Duration: 4 Hrs. Survey Hours: 0700-0900 & 1500-1700
 Weather PM: Clear/Sunny 20° C Surveyor(s): T. Carmody

Time Period	Victoria Ln.					Pkg Lot Access					Victoria Ave.					Victoria Ave.					Grand Total		
	Eastbound		Westbound			Westbound		Northbound			Northbound		Southbound			Southbound							
	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot		Street Total	Gr. Total
0700-0900	3	0	2	0	5	0	0	2	0	2	7	1	34	1	0	36	2	18	5	0	25	61	68
0800-0900	1	0	2	0	3	1	0	1	0	2	5	10	36	2	0	48	4	31	8	0	43	91	96
1500-1600	3	0	4	0	7	0	0	2	0	2	9	2	72	0	0	74	3	37	2	0	42	116	125
1600-1700	5	0	4	0	9	3	0	3	0	6	15	1	61	2	0	64	3	30	1	0	34	98	113
Totals	12	0	12	0	24	4	0	8	0	12	36	14	203	5	0	222	12	116	16	0	144	366	402

**Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor
Applicable to the Day and Month of the Turning Movement Count**

**Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts
conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h**

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 → 12 expansion factor of 1.39																										
Equi. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0																										
AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 → 24 expansion factor of 1.31																										
AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor → 0.80					Highest Hourly Vehicle Volume Between 0700h & 1000h																		
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Total	
0800-0900	1	0	2	0	3	1	0	1	0	2	5	10	36	2	0	48	4	31	8	0	43	91	96

PM Peak Hour Factor → 0.84					Highest Hourly Vehicle Volume Between 1500h & 1800h																		
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Total	
1500-1600	3	0	4	0	7	0	0	2	0	2	9	2	72	0	0	74	3	37	2	0	42	116	125

Comments:
 Local transit buses comprise 88.89% of the heavy vehicle traffic. This location was counted as an offset 4-way intersection together with a parking lot access on the east side of Victoria Avenue between houses #11 & #13. The offset is approximately 5 meters.

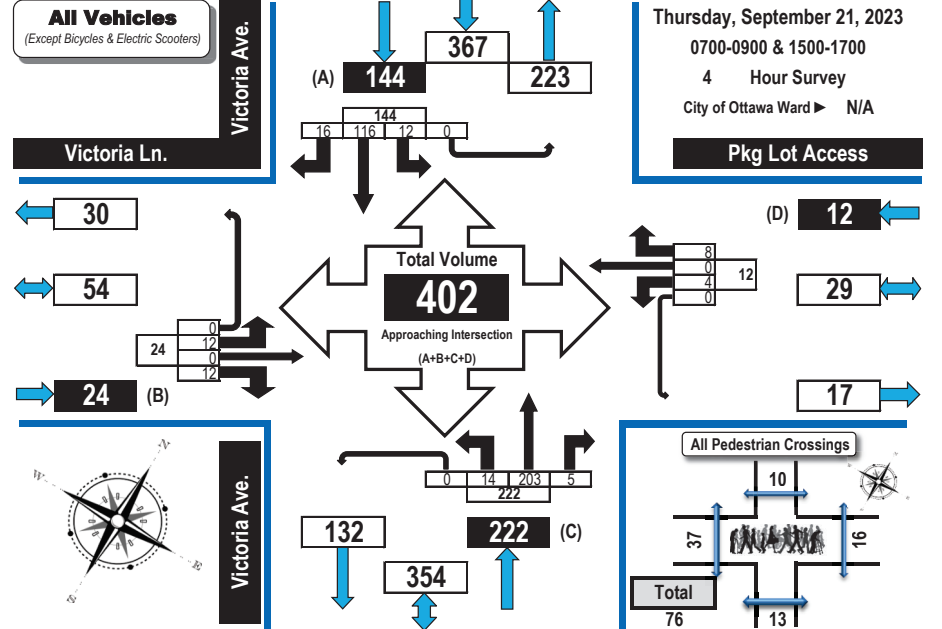
- Notes:**
- Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
 - When expansion and AADT factors are applied, the results will differ slightly due to rounding.



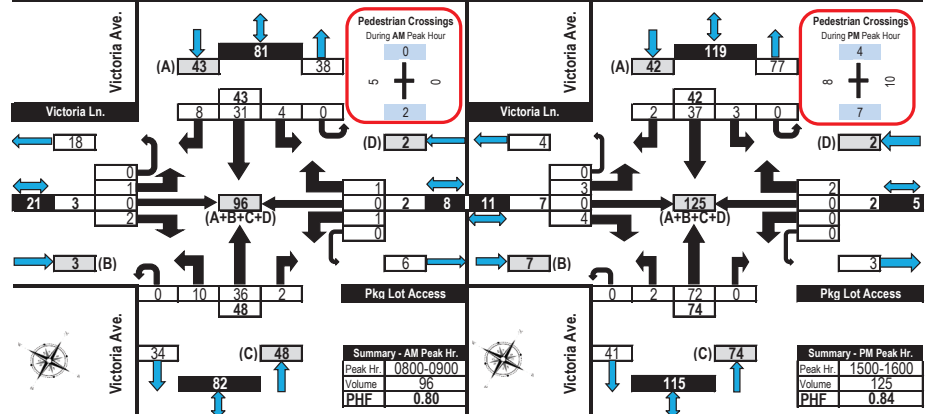
Turning Movement Count Summary, AM and PM Peak Hour Flow Diagrams All Vehicles Except Bicycles



Victoria Avenue & Victoria Lane Brockville, ON

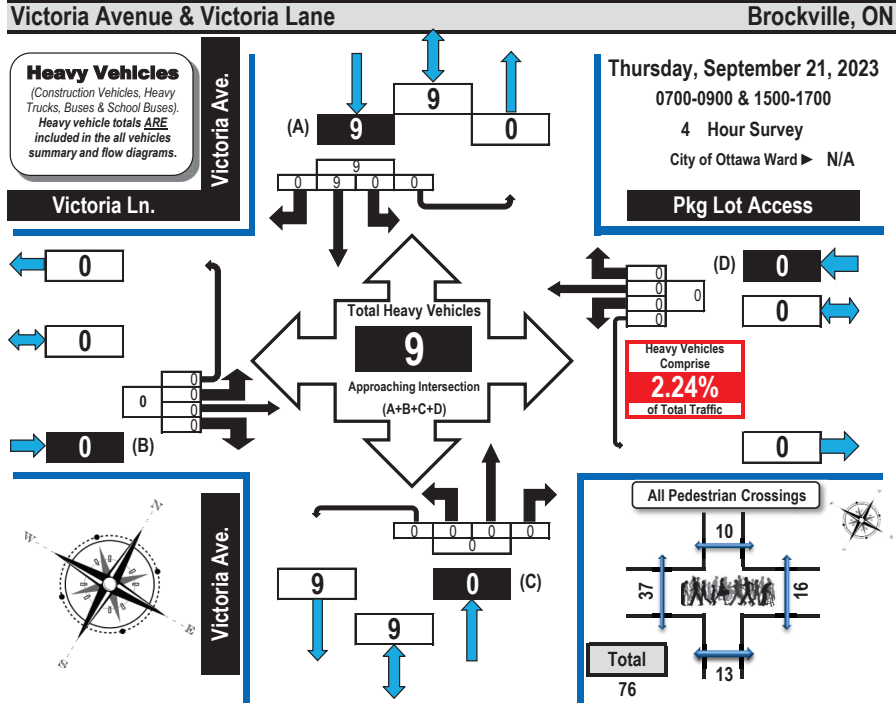


AM Peak Hour Flow Diagram PM Peak Hour Flow Diagram





Turning Movement Count Heavy Vehicle Summary (FHWA Class 4-13) Flow Diagram

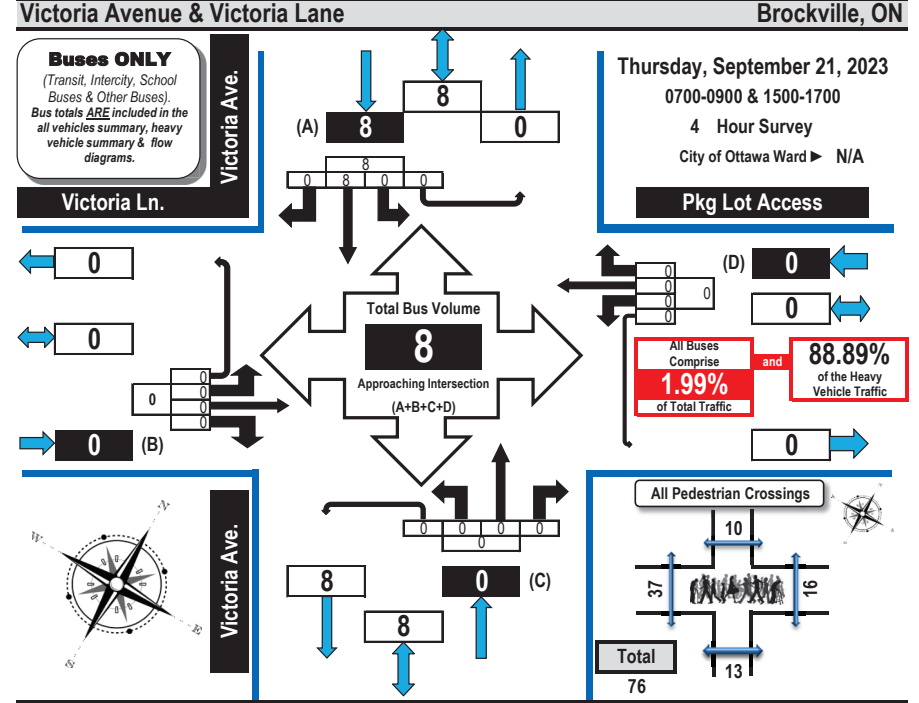


Time Period	Victoria Ln. Eastbound				Pkg Lot Access Westbound				Victoria Ave. Northbound				Victoria Ave. Southbound				GR Tot			
	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT		ST	RT	UT
0700-0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
0800-0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
1500-1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
1600-1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9

Comments:
Local transit buses comprise 88.89% of the heavy vehicle traffic. This location was counted as an offset 4-way intersection together with a parking lot access on the east side of Victoria Avenue between houses #11 & #13. The offset is approximately 5 meters.



Turning Movement Count All Buses Summary (FHWA Class 4 ONLY) Flow Diagram



Time Period	Victoria Ln. Eastbound				Pkg Lot Access Westbound				Victoria Ave. Northbound				Victoria Ave. Southbound				GR Tot			
	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT		ST	RT	UT
0700-0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
0800-0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
1500-1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
1600-1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8

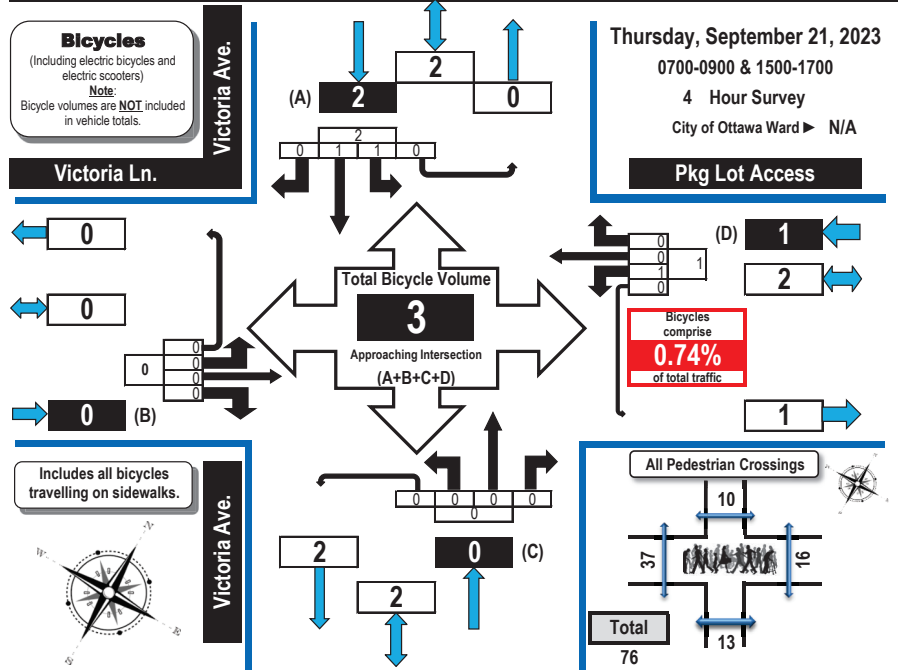
Comments:
Local transit buses comprise 88.89% of the heavy vehicle traffic. This location was counted as an offset 4-way intersection together with a parking lot access on the east side of Victoria Avenue between houses #11 & #13. The offset is approximately 5 meters.



Turning Movement Count Bicycle Summary Flow Diagram



Victoria Avenue & Victoria Lane Brockville, ON



Time Period	Victoria Ln. Eastbound				Pkg Lot Access Westbound				Victoria Ave. Northbound				Victoria Ave. Southbound				GR Tot					
	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT	LT	ST	RT	UT						
	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot		LT	ST	RT	UT	
0700-0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800-0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1500-1600	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	2
1600-1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1
Totals	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1	0	0	0	0	2	3

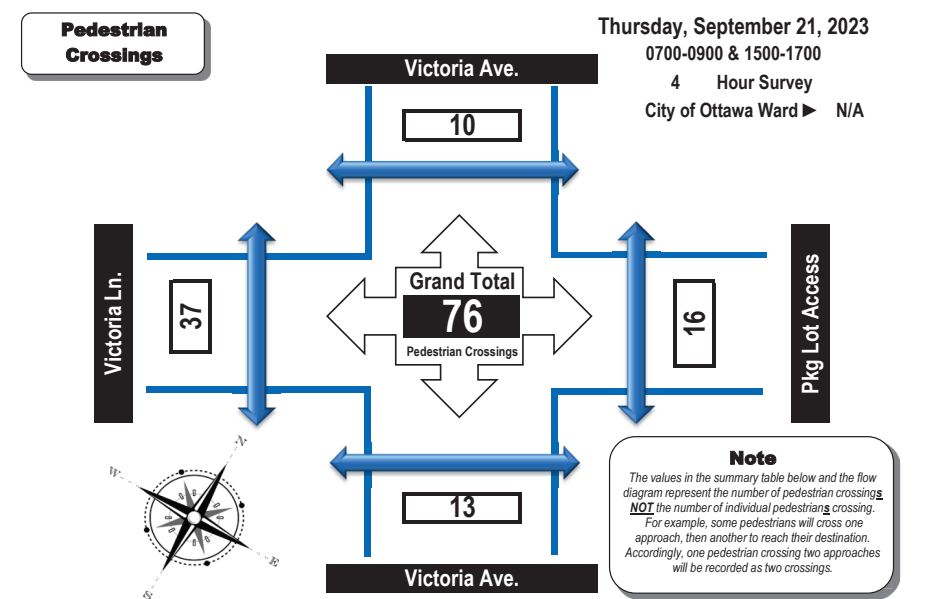
Comments:
Local transit buses comprise 88.89% of the heavy vehicle traffic. This location was counted as an offset 4-way intersection together with a parking lot access on the east side of Victoria Avenue between houses #11 & #13. The offset is approximately 5 meters.



Turning Movement Count Pedestrian Crossings Summary and Flow Diagram



Victoria Avenue & Victoria Lane Brockville, ON



Time Period	West Side Crossing		Street Total	East Side Crossing		Street Total	Grand Total
	Victoria Ln.	Pkg Lot Access		Victoria Ave.	Victoria Ave.		
0700-0800	4	4	8	1	3	4	12
0800-0900	5	0	5	2	0	2	7
1500-1600	8	10	18	7	4	11	29
1600-1700	20	2	22	3	3	6	28
Totals	37	16	53	13	10	23	76

Comments:
Local transit buses comprise 88.89% of the heavy vehicle traffic. This location was counted as an offset 4-way intersection together with a parking lot access on the east side of Victoria Avenue between houses #11 & #13. The offset is approximately 5 meters.

Appendix B

Synchro Intersection Worksheets – 2023 Existing Conditions

HCM 6th Signalized Intersection Summary
1: William & Pearl

Existing
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	303	111	3	36	132	179	0	0	0	64	234	207
Future Volume (veh/h)	303	111	3	36	132	179	0	0	0	64	234	207
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.95				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	333	122	3	40	145	197				70	257	227
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	564	787	19	206	655	653				108	396	421
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46				0.29	0.29	0.29
Sat Flow, veh/h	1021	1721	42	236	1433	1427				375	1378	1464
Grp Volume(v), veh/h	333	0	125	185	0	197				327	0	227
Grp Sat Flow(s),veh/h/ln	1021	0	1763	1670	0	1427				1753	0	1464
Q Serve(g_s), s	13.1	0.0	1.8	0.0	0.0	3.9				7.3	0.0	5.8
Cycle Q Clear(g_c), s	15.9	0.0	1.8	2.8	0.0	3.9				7.3	0.0	5.8
Prop In Lane	1.00		0.02	0.22		1.00				0.21		1.00
Lane Grp Cap(c), veh/h	564	0	806	862	0	653				504	0	421
V/C Ratio(X)	0.59	0.00	0.16	0.21	0.00	0.30				0.65	0.00	0.54
Avail Cap(c_a), veh/h	696	0	1034	1071	0	837				879	0	735
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	7.1	7.3	0.0	7.6				13.9	0.0	13.4
Incr Delay (d2), s/veh	1.0	0.0	0.1	0.1	0.0	0.3				1.4	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.8	1.2	0.0	1.3				3.3	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.0	7.2	7.5	0.0	7.9				15.4	0.0	14.5
LnGrp LOS	B	A	A	A	A	A				B	A	B
Approach Vol, veh/h	458			382						554		
Approach Delay, s/veh	11.5			7.7						15.0		
Approach LOS	B			A						B		
Timer - Assigned Phs	4			6			8					
Phs Duration (G+Y+Rc), s	26.2			18.4			26.2					
Change Period (Y+Rc), s	* 5.8			5.6			* 5.8					
Max Green Setting (Gmax), s	* 26			22.4			* 26					
Max Q Clear Time (g_c+I1), s	17.9			9.3			5.9					
Green Ext Time (p_c), s	1.9			2.9			2.2					
Intersection Summary												
HCM 6th Ctrl Delay	11.9											
HCM 6th LOS	B											
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

Existing
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	20	119	5	3	140	38	9	31	10	57	79	50
Future Volume (veh/h)	20	119	5	3	140	38	9	31	10	57	79	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.98		0.95	0.99			0.98	0.99	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	24	142	6	4	167	45	11	37	12	68	94	60
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	579	662	28	107	691	561	156	338	93	224	235	121
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1146	1683	71	9	1758	1426	125	1194	330	323	831	427
Grp Volume(v), veh/h	24	0	148	171	0	45	60	0	0	222	0	0
Grp Sat Flow(s),veh/h/ln	1146	0	1755	1768	0	1426	1650	0	0	1582	0	0
Q Serve(g_s), s	0.5	0.0	2.0	0.0	0.0	0.7	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	2.8	0.0	2.0	2.3	0.0	0.7	0.9	0.0	0.0	4.0	0.0	0.0
Prop In Lane	1.00		0.04	0.02		1.00	0.18		0.20	0.31		0.27
Lane Grp Cap(c), veh/h	579	0	690	799	0	561	587	0	0	580	0	0
V/C Ratio(X)	0.04	0.00	0.21	0.21	0.00	0.08	0.10	0.00	0.00	0.38	0.00	0.00
Avail Cap(c_a), veh/h	1097	0	1483	1591	0	1205	963	0	0	946	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	0.0	7.1	7.2	0.0	6.7	9.5	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.8	0.9	0.0	0.2	0.4	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	0.0	7.3	7.4	0.0	6.8	9.5	0.0	0.0	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h	172			216			60			222		
Approach Delay, s/veh	7.4			7.2			9.5			10.9		
Approach LOS	A			A			A			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	15.3			20.2			15.3			20.2		
Change Period (Y+Rc), s	* 5.3			* 6.2			* 5.3			* 6.2		
Max Green Setting (Gmax), s	* 19			* 30			* 19			* 30		
Max Q Clear Time (g_c+I1), s	2.9			4.8			6.0			4.3		
Green Ext Time (p_c), s	0.2			1.1			1.1			1.4		
Intersection Summary												
HCM 6th Ctrl Delay	8.7											
HCM 6th LOS	A											
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

Existing
AM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	6	9	9	2	3	5	4	37	2	0	33	5
Future Vol, veh/h	6	9	9	2	3	5	4	37	2	0	33	5
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	11	11	2	4	6	5	45	2	0	40	6

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	106	103	45	115
Stage 1	43	43	-	59
Stage 2	63	60	-	56
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	873	787	1025	862
Stage 1	971	859	-	953
Stage 2	948	845	-	956
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	862	783	1023	839
Mov Cap-2 Maneuver	862	783	-	839
Stage 1	968	859	-	948
Stage 2	934	841	-	932

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	9.1	0.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	881	896	1553	-	-
HCM Lane V/C Ratio	0.003	-	-	0.033	0.014	-	-	-
HCM Control Delay (s)	7.3	0	-	9.2	9.1	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

Existing
AM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	1	2	10	36	31	8
Future Vol, veh/h	1	2	10	36	31	8
Conflicting Peds, #/hr	0	2	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	3	13	45	39	10

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	120	51	54
Stage 1	49	-	-
Stage 2	71	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	876	1017	1551
Stage 1	973	-	-
Stage 2	952	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	861	1011	1545
Mov Cap-2 Maneuver	861	-	-
Stage 1	960	-	-
Stage 2	948	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1545	-	956	-	-
HCM Lane V/C Ratio	0.008	-	0.004	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
5: King & Victoria

Existing
AM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↖		↗	↗
Traffic Vol, veh/h	8	161	157	32	11	8
Future Vol, veh/h	8	161	157	32	11	8
Conflicting Peds, #/hr	20	0	0	20	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	183	178	36	13	9
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	234	0	0	420	216	
Stage 1	-	-	-	216	-	
Stage 2	-	-	-	204	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1333	-	-	590	824	
Stage 1	-	-	-	820	-	
Stage 2	-	-	-	830	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1312	-	-	567	811	
Mov Cap-2 Maneuver	-	-	-	567	-	
Stage 1	-	-	-	800	-	
Stage 2	-	-	-	817	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0.4	0	10.7			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1312	-	-	-	649	
HCM Lane V/C Ratio	0.007	-	-	-	0.033	
HCM Control Delay (s)	7.8	0	-	-	10.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th Signalized Intersection Summary
1: William & Pearl

Existing
PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖	↖					↖	↖
Traffic Volume (veh/h)	354	124	6	27	182	282	0	0	0	96	214	336
Future Volume (veh/h)	354	124	6	27	182	282	0	0	0	96	214	336
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.97				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	398	139	7	30	204	317				108	240	378
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	467	780	39	129	746	678				178	397	479
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47				0.33	0.33	0.33
Sat Flow, veh/h	876	1669	84	122	1596	1452				542	1203	1454
Grp Volume(v), veh/h	398	0	146	234	0	317				348	0	378
Grp Sat Flow(s),veh/h/ln	876	0	1753	1718	0	1452				1745	0	1454
Q Serve(g_s), s	21.7	0.0	2.7	0.0	0.0	8.3				9.4	0.0	13.2
Cycle Q Clear(g_c), s	26.2	0.0	2.7	4.5	0.0	8.3				9.4	0.0	13.2
Prop In Lane	1.00		0.05	0.13		1.00				0.31		1.00
Lane Grp Cap(c), veh/h	467	0	819	875	0	678				575	0	479
V/C Ratio(X)	0.85	0.00	0.18	0.27	0.00	0.47				0.61	0.00	0.79
Avail Cap(c_a), veh/h	467	0	819	875	0	678				697	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	18.8	0.0	8.7	9.2	0.0	10.2				15.7	0.0	17.0
Incr Delay (d2), s/veh	14.2	0.0	0.1	0.2	0.0	0.5				1.0	0.0	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	0.0	1.2	2.0	0.0	3.0				4.2	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.0	0.0	8.8	9.3	0.0	10.7				16.8	0.0	23.0
LnGrp LOS	C	A	A	A	A	B				B	A	C
Approach Vol, veh/h	544			551						726		
Approach Delay, s/veh	26.5			10.1						20.0		
Approach LOS	C			B						C		
Timer - Assigned Phs	4			6			8					
Phs Duration (G+Y+Rc), s	32.0			24.1			32.0					
Change Period (Y+Rc), s	* 5.8			5.6			* 5.8					
Max Green Setting (Gmax), s	* 26			22.4			* 26					
Max Q Clear Time (g_c+I1), s	28.2			15.2			10.3					
Green Ext Time (p_c), s	0.0			2.6			3.0					
Intersection Summary												
HCM 6th Ctrl Delay	19.0											
HCM 6th LOS	B											
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

Existing
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (veh/h)	35	214	11	11	240	55	22	45	18	75	54	80
Future Volume (veh/h)	35	214	11	11	240	55	22	45	18	75	54	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.92	0.96		0.92	0.97		0.96	0.97		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	38	230	12	12	258	59	24	48	19	81	58	86
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	538	755	39	100	789	629	174	278	91	221	146	155
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1028	1661	87	23	1735	1383	241	1022	333	386	539	572
Grp Volume(v), veh/h	38	0	242	270	0	59	91	0	0	225	0	0
Grp Sat Flow(s), veh/h/ln	1028	0	1748	1758	0	1383	1597	0	0	1496	0	0
Q Serve(g_s), s	1.0	0.0	3.7	0.0	0.0	1.0	0.0	0.0	0.0	2.2	0.0	0.0
Cycle Q Clear(g_c), s	5.2	0.0	3.7	4.1	0.0	1.0	1.7	0.0	0.0	5.2	0.0	0.0
Prop In Lane	1.00		0.05	0.04		1.00	0.26		0.21	0.36		0.38
Lane Grp Cap(c), veh/h	538	0	794	888	0	629	542	0	0	523	0	0
V/C Ratio(X)	0.07	0.00	0.30	0.30	0.00	0.09	0.17	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	805	0	1248	1336	0	988	798	0	0	767	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.0	0.0	7.3	7.4	0.0	6.5	11.8	0.0	0.0	13.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.3	0.0	1.5	1.7	0.0	0.3	0.7	0.0	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.1	0.0	7.5	7.6	0.0	6.6	11.9	0.0	0.0	13.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h	280			329			91			225		
Approach Delay, s/veh	7.7			7.4			11.9			13.5		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	16.7		25.3		16.7		25.3					
Change Period (Y+Rc), s	* 5.3		* 6.2		* 5.3		* 6.2					
Max Green Setting (Gmax), s	* 19		* 30		* 19		* 30					
Max Q Clear Time (g_c+I1), s	3.7		7.2		7.2		6.1					
Green Ext Time (p_c), s	0.4		1.9		1.1		2.2					

Intersection Summary

HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

Existing
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Vol, veh/h	16	16	6	2	3	5	2	75	6	4	24	3
Future Vol, veh/h	16	16	6	2	3	5	2	75	6	4	24	3
Conflicting Peds, #/hr	6	0	4	4	0	6	11	0	2	2	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	17	7	2	3	5	2	82	7	4	26	3

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	147	142	43	144
Stage 1	47	47	-	92
Stage 2	100	95	-	52
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	821	749	1027	825
Stage 1	967	856	-	915
Stage 2	906	816	-	961
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	800	738	1015	799
Mov Cap-2 Maneuver	800	738	-	799
Stage 1	957	846	-	912
Stage 2	892	814	-	929

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.3	0.2	1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1557	-	-	798	849	1502	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.013	0.003	-	-
HCM Control Delay (s)	7.3	0	-	9.8	9.3	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

Existing
PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	3	4	2	72	37	2
Future Vol, veh/h	3	4	2	72	37	2
Conflicting Peds, #/hr	4	7	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	5	2	86	44	2
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	147	60	54	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	845	1005	1551	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	834	993	1541	-	-	-
Mov Cap-2 Maneuver	834	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	9	0.2	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1541	-	918	-	-	
HCM Lane V/C Ratio	0.002	-	0.009	-	-	
HCM Control Delay (s)	7.3	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

HCM 6th TWSC
5: King & Victoria

Existing
PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		W	W		W	
Traffic Vol, veh/h	17	256	253	37	9	20
Future Vol, veh/h	17	256	253	37	9	20
Conflicting Peds, #/hr	37	0	0	37	4	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	278	275	40	10	22
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	352	0	0	650	338	
Stage 1	-	-	-	332	-	
Stage 2	-	-	-	318	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1207	-	-	434	704	
Stage 1	-	-	-	727	-	
Stage 2	-	-	-	738	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1172	-	-	402	681	
Mov Cap-2 Maneuver	-	-	-	402	-	
Stage 1	-	-	-	694	-	
Stage 2	-	-	-	717	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0.5	0	11.8			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1172	-	-	-	560	
HCM Lane V/C Ratio	0.016	-	-	-	0.056	
HCM Control Delay (s)	8.1	0	-	-	11.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

Appendix C

Traffic Control Warrant Sheets

Victoria @ King
Existing

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	242	34%	11%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	18	11%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	230	32%	7%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	5	7%		

- Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
 2. Lowest section percentage governs justification
 3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
 4. T-intersection factor corrected, applies only to 1B

Victoria @ King
2026 Future Background

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	252	35%	11%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	18	11%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	240	33%	7%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	5	7%		

- Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
 2. Lowest section percentage governs justification
 3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
 4. T-intersection factor corrected, applies only to 1B

Victoria @ King
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	268	37%	11%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	18	11%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	256	36%	7%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	5	7%		

- Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
 2. Lowest section percentage governs justification
 3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
 4. T-intersection factor corrected, applies only to 1B

Victoria @ King
2026 Future Total

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	262	36%	14%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	23	14%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	246	34%	10%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	8	10%		

- Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
 2. Lowest section percentage governs justification
 3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
 4. T-intersection factor corrected, applies only to 1B

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	278	39%	14%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	23	14%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	263	36%	10%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	8	10%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2 \text{ or } (AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Appendix D

Synchro Intersection Worksheets – 2026 Future Background Conditions

HCM 6th Signalized Intersection Summary
1: William & Pearl

2026 Future Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	317	111	3	36	132	179	0	0	0	64	245	216
Future Volume (veh/h)	317	111	3	36	132	179	0	0	0	64	245	216
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.95				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	348	122	3	40	145	197				70	269	237
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	563	794	20	206	659	659				105	405	426
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46				0.29	0.29	0.29
Sat Flow, veh/h	1022	1721	42	240	1428	1428				362	1392	1465
Grp Volume(v), veh/h	348	0	125	185	0	197				339	0	237
Grp Sat Flow(s),veh/h/ln	1022	0	1763	1668	0	1428				1754	0	1465
Q Serve(g_s), s	14.3	0.0	1.9	0.0	0.0	4.0				7.8	0.0	6.3
Cycle Q Clear(g_c), s	17.2	0.0	1.9	2.9	0.0	4.0				7.8	0.0	6.3
Prop In Lane	1.00		0.02	0.22		1.00				0.21		1.00
Lane Grp Cap(c), veh/h	563	0	813	865	0	659				511	0	426
V/C Ratio(X)	0.62	0.00	0.15	0.21	0.00	0.30				0.66	0.00	0.56
Avail Cap(c_a), veh/h	673	0	1003	1039	0	812				853	0	712
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	7.2	7.5	0.0	7.8				14.3	0.0	13.8
Incr Delay (d2), s/veh	1.2	0.0	0.1	0.1	0.0	0.3				1.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.8	1.2	0.0	1.4				3.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	0.0	7.3	7.6	0.0	8.0				15.8	0.0	14.9
LnGrp LOS	B	A	A	A	A	A				B	A	B
Approach Vol, veh/h		473			382						576	
Approach Delay, s/veh		12.1			7.8						15.5	
Approach LOS		B			A						B	
Timer - Assigned Phs				4		6			8			
Phs Duration (G+Y+Rc), s				27.1		19.0			27.1			
Change Period (Y+Rc), s				* 5.8		5.6			* 5.8			
Max Green Setting (Gmax), s				* 26		22.4			* 26			
Max Q Clear Time (g_c+I1), s				19.2		9.8			6.0			
Green Ext Time (p_c), s				1.7		3.0			2.2			
Intersection Summary												
HCM 6th Ctrl Delay				12.3								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2026 Future Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	21	124	5	3	146	40	9	31	10	60	83	52
Future Volume (veh/h)	21	124	5	3	146	40	9	31	10	60	83	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.98		0.95	0.99			0.98	0.99	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	25	148	6	4	174	48	11	37	12	71	99	62
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	572	663	27	107	692	561	155	338	94	225	236	120
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1136	1687	68	9	1759	1426	126	1193	330	327	831	423
Grp Volume(v), veh/h	25	0	154	178	0	48	60	0	0	232	0	0
Grp Sat Flow(s),veh/h/ln	1136	0	1755	1768	0	1426	1648	0	0	1581	0	0
Q Serve(g_s), s	0.5	0.0	2.1	0.0	0.0	0.8	0.0	0.0	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	2.1	2.4	0.0	0.8	0.9	0.0	0.0	4.2	0.0	0.0
Prop In Lane	1.00		0.04	0.02		1.00	0.18		0.20	0.31		0.27
Lane Grp Cap(c), veh/h	572	0	690	798	0	561	587	0	0	581	0	0
V/C Ratio(X)	0.04	0.00	0.22	0.22	0.00	0.09	0.10	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	1083	0	1479	1587	0	1202	959	0	0	944	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.3	0.0	7.2	7.3	0.0	6.8	9.5	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.8	1.0	0.0	0.3	0.4	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	0.0	7.3	7.4	0.0	6.8	9.5	0.0	0.0	11.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		179			226		60			232		
Approach Delay, s/veh		7.5			7.3		9.5			11.0		
Approach LOS		A			A		A			B		
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.4		20.2		15.4	20.2			15.4		20.2
Change Period (Y+Rc), s		* 5.3		* 6.2		* 5.3	* 6.2			* 5.3		* 6.2
Max Green Setting (Gmax), s		* 19		* 30		* 19	* 30			* 19		* 30
Max Q Clear Time (g_c+I1), s		2.9		5.0		6.2	4.4			4.4		2.9
Green Ext Time (p_c), s		0.2		1.1		1.2	1.4			1.4		0.2
Intersection Summary												
HCM 6th Ctrl Delay							8.8					
HCM 6th LOS							A					
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC
3: Victoria & Pine

2026 Future Background
AM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	9	9	2	3	5	4	37	2	0	33	5
Future Vol, veh/h	6	9	9	2	3	5	4	37	2	0	33	5
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	11	11	2	4	6	5	45	2	0	40	6

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	106	103	45	115
Stage 1	43	43	-	59
Stage 2	63	60	-	56
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	873	787	1025	862
Stage 1	971	859	-	953
Stage 2	948	845	-	956
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	862	783	1023	839
Mov Cap-2 Maneuver	862	783	-	839
Stage 1	968	859	-	948
Stage 2	934	841	-	932

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	9.1	0.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	881	896	1553	-	-
HCM Lane V/C Ratio	0.003	-	-	0.033	0.014	-	-	-
HCM Control Delay (s)	7.3	0	-	9.2	9.1	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2026 Future Background
AM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕		↕		↕	
Traffic Vol, veh/h	1	2	10	36	31	8
Future Vol, veh/h	1	2	10	36	31	8
Conflicting Peds, #/hr	0	2	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	3	13	45	39	10

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	120	51	54
Stage 1	49	-	-
Stage 2	71	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	876	1017	1551
Stage 1	973	-	-
Stage 2	952	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	861	1011	1545
Mov Cap-2 Maneuver	861	-	-
Stage 1	960	-	-
Stage 2	948	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1545	-	956	-	-
HCM Lane V/C Ratio	0.008	-	0.004	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
5: King & Victoria

2026 Future Background
AM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↖		↗	↗
Traffic Vol, veh/h	8	168	164	32	11	8
Future Vol, veh/h	8	168	164	32	11	8
Conflicting Peds, #/hr	20	0	0	20	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	191	186	36	13	9
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	242	0	0	436	224	
Stage 1	-	-	-	224	-	
Stage 2	-	-	-	212	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1324	-	-	578	815	
Stage 1	-	-	-	813	-	
Stage 2	-	-	-	823	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1303	-	-	555	802	
Mov Cap-2 Maneuver	-	-	-	555	-	
Stage 1	-	-	-	793	-	
Stage 2	-	-	-	810	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0.4	0	10.8			
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1303	-	-	-	638	
HCM Lane V/C Ratio	0.007	-	-	-	0.034	
HCM Control Delay (s)	7.8	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th Signalized Intersection Summary
1: William & Pearl

2026 Future Background
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖	↖					↗	↗
Traffic Volume (veh/h)	370	124	6	27	182	282	0	0	0	96	224	351
Future Volume (veh/h)	370	124	6	27	182	282	0	0	0	96	224	351
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.97				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	416	139	7	30	204	317				108	252	394
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	461	772	39	128	738	671				176	411	489
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46				0.34	0.34	0.34
Sat Flow, veh/h	876	1669	84	122	1596	1452				524	1222	1454
Grp Volume(v), veh/h	416	0	146	234	0	317				360	0	394
Grp Sat Flow(s),veh/h/ln	876	0	1753	1718	0	1452				1746	0	1454
Q Serve(g_s), s	21.6	0.0	2.8	0.0	0.0	8.5				9.8	0.0	14.0
Cycle Q Clear(g_c), s	26.2	0.0	2.8	4.6	0.0	8.5				9.8	0.0	14.0
Prop In Lane	1.00		0.05	0.13		1.00				0.30		1.00
Lane Grp Cap(c), veh/h	461	0	811	867	0	671				587	0	489
V/C Ratio(X)	0.90	0.00	0.18	0.27	0.00	0.47				0.61	0.00	0.81
Avail Cap(c_a), veh/h	461	0	811	867	0	671				690	0	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	8.9	9.4	0.0	10.5				15.7	0.0	17.1
Incr Delay (d2), s/veh	20.8	0.0	0.1	0.2	0.0	0.5				1.2	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	1.2	2.0	0.0	3.1				4.4	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.5	0.0	9.0	9.6	0.0	11.0				16.9	0.0	24.3
LnGrp LOS	D	A	A	A	A	B				B	A	C
Approach Vol, veh/h	562			551			754					
Approach Delay, s/veh	32.3			10.4			20.8					
Approach LOS	C			B			C					
Timer - Assigned Phs	4			6			8					
Phs Duration (G+Y+Rc), s	32.0			24.6			32.0					
Change Period (Y+Rc), s	* 5.8			5.6			* 5.8					
Max Green Setting (Gmax), s	* 26			22.4			* 26					
Max Q Clear Time (g_c+I1), s	28.2			16.0			10.5					
Green Ext Time (p_c), s	0.0			2.5			3.0					
Intersection Summary												
HCM 6th Ctrl Delay				21.2								
HCM 6th LOS				C								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2026 Future Background
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (veh/h)	37	224	11	11	251	58	22	45	18	78	56	84
Future Volume (veh/h)	37	224	11	11	251	58	22	45	18	78	56	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.92	0.96		0.92	0.98		0.96	0.97		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	40	241	12	12	270	62	24	48	19	84	60	90
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	528	757	38	99	789	628	174	279	91	222	144	156
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1015	1666	83	22	1736	1383	242	1024	334	389	531	575
Grp Volume(v), veh/h	40	0	253	282	0	62	91	0	0	234	0	0
Grp Sat Flow(s), veh/h/ln	1015	0	1749	1758	0	1383	1601	0	0	1494	0	0
Q Serve(g_s), s	1.1	0.0	3.9	0.0	0.0	1.1	0.0	0.0	0.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	5.5	0.0	3.9	4.3	0.0	1.1	1.7	0.0	0.0	5.5	0.0	0.0
Prop In Lane	1.00		0.05	0.04		1.00	0.26		0.21	0.36		0.38
Lane Grp Cap(c), veh/h	528	0	795	888	0	628	544	0	0	523	0	0
V/C Ratio(X)	0.08	0.00	0.32	0.32	0.00	0.10	0.17	0.00	0.00	0.45	0.00	0.00
Avail Cap(c_a), veh/h	791	0	1248	1335	0	987	798	0	0	766	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.2	0.0	7.3	7.4	0.0	6.6	11.8	0.0	0.0	13.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.6	1.8	0.0	0.3	0.7	0.0	0.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.3	0.0	7.5	7.6	0.0	6.6	11.9	0.0	0.0	13.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h	293			344				91			234	
Approach Delay, s/veh	7.8			7.5				11.9			13.7	
Approach LOS	A			A				B			B	
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	16.7		25.3		16.7		25.3					
Change Period (Y+Rc), s	* 5.3		* 6.2		* 5.3		* 6.2					
Max Green Setting (Gmax), s	* 19		* 30		* 19		* 30					
Max Q Clear Time (g_c+1), s	3.7		7.5		7.5		6.3					
Green Ext Time (p_c), s	0.4		2.0		1.2		2.3					

Intersection Summary

HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

2026 Future Background
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Vol, veh/h	16	16	6	2	3	5	2	75	6	4	24	3
Future Vol, veh/h	16	16	6	2	3	5	2	75	6	4	24	3
Conflicting Peds, #/hr	6	0	4	4	0	6	11	0	2	2	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	17	7	2	3	5	2	82	7	4	26	3

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	147	142	43	144
Stage 1	47	47	-	92
Stage 2	100	95	-	52
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	821	749	1027	825
Stage 1	967	856	-	915
Stage 2	906	816	-	961
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	800	738	1015	799
Mov Cap-2 Maneuver	800	738	-	799
Stage 1	957	846	-	912
Stage 2	892	814	-	929

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.3	0.2	1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1557	-	-	798	849	1502	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.013	0.003	-	-
HCM Control Delay (s)	7.3	0	-	9.8	9.3	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2026 Future Background
PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Vol, veh/h	3	4	2	72	37	2
Future Vol, veh/h	3	4	2	72	37	2
Conflicting Peds, #/hr	4	7	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	5	2	86	44	2
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	147	60	54	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	845	1005	1551	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	834	993	1541	-	-	-
Mov Cap-2 Maneuver	834	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	9	0.2	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1541	-	918	-	-	
HCM Lane V/C Ratio	0.002	-	0.009	-	-	
HCM Control Delay (s)	7.3	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

HCM 6th TWSC
5: King & Victoria

2026 Future Background
PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	17	268	265	37	9	20
Future Vol, veh/h	17	268	265	37	9	20
Conflicting Peds, #/hr	37	0	0	37	4	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	291	288	40	10	22
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	365	0	0	676	351	
Stage 1	-	-	-	345	-	
Stage 2	-	-	-	331	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1194	-	-	419	692	
Stage 1	-	-	-	717	-	
Stage 2	-	-	-	728	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1160	-	-	388	669	
Mov Cap-2 Maneuver	-	-	-	388	-	
Stage 1	-	-	-	683	-	
Stage 2	-	-	-	707	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0.5	0	12			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1160	-	-	-	546	
HCM Lane V/C Ratio	0.016	-	-	-	0.058	
HCM Control Delay (s)	8.2	0	-	-	12	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

Appendix E

Synchro Intersection Worksheets – 2031 Future Background Conditions

HCM 6th Signalized Intersection Summary
1: William & Pearl

2031 Future Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	341	111	3	36	132	179	0	0	0	64	264	233
Future Volume (veh/h)	341	111	3	36	132	179	0	0	0	64	264	233
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.95				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	375	122	3	40	145	197				70	290	256
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	565	811	20	206	668	673				101	419	434
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47				0.30	0.30	0.30
Sat Flow, veh/h	1022	1721	42	247	1418	1429				341	1414	1465
Grp Volume(v), veh/h	375	0	125	185	0	197				360	0	256
Grp Sat Flow(s),veh/h/ln	1022	0	1763	1665	0	1429				1755	0	1465
Q Serve(g_s), s	16.8	0.0	2.0	0.0	0.0	4.1				8.9	0.0	7.3
Cycle Q Clear(g_c), s	19.8	0.0	2.0	3.0	0.0	4.1				8.9	0.0	7.3
Prop In Lane	1.00		0.02	0.22		1.00				0.19		1.00
Lane Grp Cap(c), veh/h	565	0	831	874	0	673				520	0	434
V/C Ratio(X)	0.66	0.00	0.15	0.21	0.00	0.29				0.69	0.00	0.59
Avail Cap(c_a), veh/h	630	0	942	976	0	763				801	0	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	0.0	7.4	7.7	0.0	8.0				15.3	0.0	14.7
Incr Delay (d2), s/veh	2.3	0.0	0.1	0.1	0.0	0.2				1.7	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.8	1.3	0.0	1.4				4.1	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	7.5	7.8	0.0	8.2				16.9	0.0	16.0
LnGrp LOS	B	A	A	A	A	A				B	A	B
Approach Vol, veh/h		500			382						616	
Approach Delay, s/veh		13.7			8.0						16.5	
Approach LOS		B			A						B	
Timer - Assigned Phs				4		6			8			
Phs Duration (G+Y+Rc), s				28.9		20.1			28.9			
Change Period (Y+Rc), s				* 5.8		5.6			* 5.8			
Max Green Setting (Gmax), s				* 26		22.4			* 26			
Max Q Clear Time (g_c+I1), s				21.8		10.9			6.1			
Green Ext Time (p_c), s				1.3		3.0			2.2			
Intersection Summary												
HCM 6th Ctrl Delay				13.4							8.9	
HCM 6th LOS				B							A	
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2031 Future Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	23	134	5	3	158	43	9	31	10	64	89	56
Future Volume (veh/h)	23	134	5	3	158	43	9	31	10	64	89	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.98		0.95	0.99			0.98	0.99	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	27	160	6	4	188	51	11	37	12	76	106	67
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	559	666	25	106	692	561	155	339	94	226	234	121
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1119	1693	63	8	1760	1426	126	1191	329	333	821	425
Grp Volume(v), veh/h	27	0	166	192	0	51	60	0	0	249	0	0
Grp Sat Flow(s),veh/h/ln	1119	0	1756	1768	0	1426	1646	0	0	1579	0	0
Q Serve(g_s), s	0.6	0.0	2.3	0.0	0.0	0.8	0.0	0.0	0.0	1.7	0.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	2.3	2.6	0.0	0.8	0.9	0.0	0.0	4.6	0.0	0.0
Prop In Lane	1.00		0.04	0.02		1.00	0.18		0.20	0.31		0.27
Lane Grp Cap(c), veh/h	559	0	691	798	0	561	588	0	0	582	0	0
V/C Ratio(X)	0.05	0.00	0.24	0.24	0.00	0.09	0.10	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1059	0	1475	1581	0	1197	954	0	0	939	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.5	0.0	7.3	7.4	0.0	6.8	9.5	0.0	0.0	10.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.9	1.1	0.0	0.3	0.4	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	0.0	7.4	7.5	0.0	6.9	9.5	0.0	0.0	11.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		193			243		60			249		
Approach Delay, s/veh		7.6			7.4		9.5			11.2		
Approach LOS		A			A		A			B		
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.5		20.3		15.5	20.3			15.5		20.3
Change Period (Y+Rc), s		* 5.3		* 6.2		* 5.3	* 6.2			* 5.3		* 6.2
Max Green Setting (Gmax), s		* 19		* 30		* 19	* 30			* 19		* 30
Max Q Clear Time (g_c+I1), s		2.9		5.2		6.6	4.6			4.6		6.6
Green Ext Time (p_c), s		0.2		1.2		1.3	1.5			1.5		1.5
Intersection Summary												
HCM 6th Ctrl Delay							8.9					
HCM 6th LOS							A					
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

2031 Future Background
AM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	6	9	9	2	3	5	4	37	2	0	33	5
Future Vol, veh/h	6	9	9	2	3	5	4	37	2	0	33	5
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	11	11	2	4	6	5	45	2	0	40	6

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	106	103	45	115
Stage 1	43	43	-	59
Stage 2	63	60	-	56
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	873	787	1025	862
Stage 1	971	859	-	953
Stage 2	948	845	-	956
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	862	783	1023	839
Mov Cap-2 Maneuver	862	783	-	839
Stage 1	968	859	-	948
Stage 2	934	841	-	932

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	9.1	0.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	881	896	1553	-	-
HCM Lane V/C Ratio	0.003	-	-	0.033	0.014	-	-	-
HCM Control Delay (s)	7.3	0	-	9.2	9.1	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2031 Future Background
AM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕		↕		↕	
Traffic Vol, veh/h	1	2	10	36	31	8
Future Vol, veh/h	1	2	10	36	31	8
Conflicting Peds, #/hr	0	2	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	3	13	45	39	10

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	120	51	54
Stage 1	49	-	-
Stage 2	71	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	876	1017	1551
Stage 1	973	-	-
Stage 2	952	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	861	1011	1545
Mov Cap-2 Maneuver	861	-	-
Stage 1	960	-	-
Stage 2	948	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1545	-	956	-	-
HCM Lane V/C Ratio	0.008	-	0.004	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
5: King & Victoria

2031 Future Background
AM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↖		↗	↗
Traffic Vol, veh/h	8	181	177	32	11	8
Future Vol, veh/h	8	181	177	32	11	8
Conflicting Peds, #/hr	20	0	0	20	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	206	201	36	13	9
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	257	0	0	466	239	
Stage 1	-	-	-	239	-	
Stage 2	-	-	-	227	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1308	-	-	555	800	
Stage 1	-	-	-	801	-	
Stage 2	-	-	-	811	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1288	-	-	533	788	
Mov Cap-2 Maneuver	-	-	-	533	-	
Stage 1	-	-	-	782	-	
Stage 2	-	-	-	798	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0.3	0	11			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1288	-	-	-	617	
HCM Lane V/C Ratio	0.007	-	-	-	0.035	
HCM Control Delay (s)	7.8	0	-	-	11	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th Signalized Intersection Summary
1: William & Pearl

2031 Future Background
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖	↖					↗	↗
Traffic Volume (veh/h)	399	124	6	27	182	282	0	0	0	96	241	379
Future Volume (veh/h)	399	124	6	27	182	282	0	0	0	96	241	379
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.97				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No		No		No					No		No
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	448	139	7	30	204	317				108	271	426
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	450	758	38	126	725	659				173	435	507
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45				0.35	0.35	0.35
Sat Flow, veh/h	876	1669	84	122	1596	1451				498	1249	1455
Grp Volume(v), veh/h	448	0	146	234	0	317				379	0	426
Grp Sat Flow(s),veh/h/ln	876	0	1753	1718	0	1451				1747	0	1455
Q Serve(g_s), s	21.4	0.0	2.9	0.0	0.0	8.8				10.4	0.0	15.6
Cycle Q Clear(g_c), s	26.2	0.0	2.9	4.8	0.0	8.8				10.4	0.0	15.6
Prop In Lane	1.00		0.05	0.13		1.00				0.28		1.00
Lane Grp Cap(c), veh/h	450	0	796	851	0	659				608	0	507
V/C Ratio(X)	1.00	0.00	0.18	0.28	0.00	0.48				0.62	0.00	0.84
Avail Cap(c_a), veh/h	450	0	796	851	0	659				678	0	565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	9.4	9.9	0.0	11.0				15.6	0.0	17.3
Incr Delay (d2), s/veh	41.2	0.0	0.1	0.2	0.0	0.5				1.5	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	0.0	1.2	2.1	0.0	3.2				4.7	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.3	0.0	9.5	10.1	0.0	11.5				17.1	0.0	27.4
LnGrp LOS	E	A	A	B	A	B				B	A	C
Approach Vol, veh/h	594			551						805		
Approach Delay, s/veh	49.3			10.9						22.6		
Approach LOS	D			B						C		
Timer - Assigned Phs	4			6			8					
Phs Duration (G+Y+Rc), s	32.0			25.7			32.0					
Change Period (Y+Rc), s	* 5.8			5.6			* 5.8					
Max Green Setting (Gmax), s	* 26			22.4			* 26					
Max Q Clear Time (g_c+1), s	28.2			17.6			10.8					
Green Ext Time (p_c), s	0.0			2.2			3.0					
Intersection Summary												
HCM 6th Ctrl Delay				27.4								
HCM 6th LOS				C								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2031 Future Background
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	39	241	11	11	270	62	22	45	18	84	61	90
Future Volume (veh/h)	39	241	11	11	270	62	22	45	18	84	61	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.92	0.97		0.92	0.98		0.96	0.97		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	42	259	12	12	290	67	24	48	19	90	66	97
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	511	761	35	98	790	629	175	280	92	223	144	156
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	994	1673	78	20	1738	1383	245	1029	336	394	527	572
Grp Volume(v), veh/h	42	0	271	302	0	67	91	0	0	253	0	0
Grp Sat Flow(s), veh/h/ln	994	0	1750	1758	0	1383	1610	0	0	1493	0	0
Q Serve(g_s), s	1.2	0.0	4.2	0.0	0.0	1.2	0.0	0.0	0.0	3.3	0.0	0.0
Cycle Q Clear(g_c), s	5.9	0.0	4.2	4.7	0.0	1.2	1.7	0.0	0.0	6.1	0.0	0.0
Prop In Lane	1.00		0.04	0.04		1.00	0.26		0.21	0.36		0.38
Lane Grp Cap(c), veh/h	511	0	796	888	0	629	547	0	0	523	0	0
V/C Ratio(X)	0.08	0.00	0.34	0.34	0.00	0.11	0.17	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	767	0	1246	1333	0	985	798	0	0	764	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.5	0.0	7.4	7.6	0.0	6.6	11.8	0.0	0.0	13.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.2	0.0	0.1	0.1	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln/0.3	0.0	1.7	2.0	0.0	0.4	0.7	0.0	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	0.0	7.7	7.8	0.0	6.7	11.9	0.0	0.0	14.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		313			369			91			253	
Approach Delay, s/veh		7.9			7.6			11.9			14.0	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.8		25.4		16.8		25.4				
Change Period (Y+Rc), s		* 5.3		* 6.2		* 5.3		* 6.2				
Max Green Setting (Gmax), s		* 19		* 30		* 19		* 30				
Max Q Clear Time (g_c+1), s		3.7		7.9		8.1		6.7				
Green Ext Time (p_c), s		0.4		2.1		1.2		2.5				

Intersection Summary

HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

2031 Future Background
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	16	16	6	2	3	5	2	75	6	4	24	3
Future Vol, veh/h	16	16	6	2	3	5	2	75	6	4	24	3
Conflicting Peds, #/hr	6	0	4	4	0	6	11	0	2	2	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	17	7	2	3	5	2	82	7	4	26	3

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	147	142	43	144
Stage 1	47	47	-	92
Stage 2	100	95	-	52
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	821	749	1027	825
Stage 1	967	856	-	915
Stage 2	906	816	-	961
Platoon blocked, %				
Mov Cap-1 Maneuver	800	738	1015	799
Mov Cap-2 Maneuver	800	738	-	799
Stage 1	957	846	-	912
Stage 2	892	814	-	929

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.3	0.2	1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1557	-	-	798	849	1502	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.013	0.003	-	-
HCM Control Delay (s)	7.3	0	-	9.8	9.3	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2031 Future Background
PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	3	4	2	72	37	2
Future Vol, veh/h	3	4	2	72	37	2
Conflicting Peds, #/hr	4	7	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	5	2	86	44	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	147	60	54
Stage 1	53	-	-
Stage 2	94	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	845	1005	1551
Stage 1	970	-	-
Stage 2	930	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	834	993	1541
Mov Cap-2 Maneuver	834	-	-
Stage 1	963	-	-
Stage 2	924	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1541	-	918	-	-
HCM Lane V/C Ratio	0.002	-	0.009	-	-
HCM Control Delay (s)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
5: King & Victoria

2031 Future Background
PM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		W	W		W	
Traffic Vol, veh/h	17	288	285	37	9	20
Future Vol, veh/h	17	288	285	37	9	20
Conflicting Peds, #/hr	37	0	0	37	4	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	313	310	40	10	22

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	387	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1171	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1137	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1137	-	-	-	524
HCM Lane V/C Ratio	0.016	-	-	-	0.06
HCM Control Delay (s)	8.2	0	-	-	12.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Appendix F

Synchro Intersection Worksheets – 2026 Future Total Conditions

HCM 6th Signalized Intersection Summary
1: William & Pearl

2026 Future Total
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	317	112	3	36	132	185	0	0	0	66	246	216
Future Volume (veh/h)	317	112	3	36	132	185	0	0	0	66	246	216
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.95				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	348	123	3	40	145	203				73	270	237
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	560	794	19	205	659	659				109	404	429
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46				0.29	0.29	0.29
Sat Flow, veh/h	1016	1721	42	240	1427	1428				373	1380	1465
Grp Volume(v), veh/h	348	0	126	185	0	203				343	0	237
Grp Sat Flow(s),veh/h/ln	1016	0	1763	1668	0	1428				1753	0	1465
Q Serve(g_s), s	14.5	0.0	1.9	0.0	0.0	4.1				8.0	0.0	6.3
Cycle Q Clear(g_c), s	17.4	0.0	1.9	2.9	0.0	4.1				8.0	0.0	6.3
Prop In Lane	1.00		0.02	0.22		1.00				0.21		1.00
Lane Grp Cap(c), veh/h	560	0	814	864	0	659				513	0	429
V/C Ratio(X)	0.62	0.00	0.15	0.21	0.00	0.31				0.67	0.00	0.55
Avail Cap(c_a), veh/h	666	0	996	1032	0	807				847	0	708
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	7.2	7.5	0.0	7.8				14.4	0.0	13.8
Incr Delay (d2), s/veh	1.3	0.0	0.1	0.1	0.0	0.3				1.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.8	1.2	0.0	1.4				3.6	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	7.3	7.6	0.0	8.1				15.9	0.0	15.0
LnGrp LOS	B	A	A	A	A	A				B	A	B
Approach Vol, veh/h		474			388						580	
Approach Delay, s/veh		12.3			7.9						15.5	
Approach LOS		B			A						B	
Timer - Assigned Phs				4		6			8			
Phs Duration (G+Y+Rc), s				27.2		19.2			27.2			
Change Period (Y+Rc), s				* 5.8		5.6			* 5.8			
Max Green Setting (Gmax), s				* 26		22.4			* 26			
Max Q Clear Time (g_c+I1), s				19.4		10.0			6.1			
Green Ext Time (p_c), s				1.7		3.0			2.2			
Intersection Summary												
HCM 6th Ctrl Delay				12.4								
HCM 6th LOS				B								
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2026 Future Total
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	21	126	5	3	150	42	9	31	10	61	83	52
Future Volume (veh/h)	21	126	5	3	150	42	9	31	10	61	83	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.98		0.95	0.99			0.98	0.99	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	25	150	6	4	179	50	11	37	12	73	99	62
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	567	664	27	107	692	561	155	339	94	228	234	119
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1129	1688	68	9	1759	1426	126	1193	330	336	825	418
Grp Volume(v), veh/h	25	0	156	183	0	50	60	0	0	234	0	0
Grp Sat Flow(s),veh/h/ln	1129	0	1755	1768	0	1426	1648	0	0	1579	0	0
Q Serve(g_s), s	0.5	0.0	2.1	0.0	0.0	0.8	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	2.1	2.5	0.0	0.8	0.9	0.0	0.0	4.2	0.0	0.0
Prop In Lane	1.00		0.04	0.02		1.00	0.18		0.20	0.31		0.26
Lane Grp Cap(c), veh/h	567	0	690	799	0	561	587	0	0	581	0	0
V/C Ratio(X)	0.04	0.00	0.23	0.23	0.00	0.09	0.10	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	1074	0	1478	1586	0	1201	959	0	0	942	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.3	0.0	7.2	7.3	0.0	6.8	9.5	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.9	1.0	0.0	0.3	0.4	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.4	0.0	7.4	7.5	0.0	6.9	9.5	0.0	0.0	11.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		181			233		60			234		
Approach Delay, s/veh		7.5			7.3		9.5			11.1		
Approach LOS		A			A		A			B		
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.4		20.2		15.4	20.2			15.4		
Change Period (Y+Rc), s		* 5.3		* 6.2		* 5.3	* 6.2			* 5.3		* 6.2
Max Green Setting (Gmax), s		* 19		* 30		* 19	* 30			* 19		* 30
Max Q Clear Time (g_c+I1), s		2.9		5.0		6.2	4.5			4.5		
Green Ext Time (p_c), s		0.2		1.1		1.2	1.5			1.5		
Intersection Summary												
HCM 6th Ctrl Delay							8.8					
HCM 6th LOS							A					
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

2026 Future Total
AM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	6	9	9	2	3	5	4	43	2	0	37	5
Future Vol, veh/h	6	9	9	2	3	5	4	43	2	0	37	5
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	11	11	2	4	6	5	52	2	0	45	6

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	118	115	50	127
Stage 1	48	48	-	66
Stage 2	70	67	-	61
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	858	775	1018	846
Stage 1	965	855	-	945
Stage 2	940	839	-	950
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	847	771	1016	822
Mov Cap-2 Maneuver	847	771	-	822
Stage 1	962	855	-	940
Stage 2	926	835	-	926

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.1	0.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	869	884	1543	-	-
HCM Lane V/C Ratio	0.003	-	-	0.034	0.014	-	-	-
HCM Control Delay (s)	7.3	0	-	9.3	9.1	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2026 Future Total
AM Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	7	10	14	36	31	12
Future Vol, veh/h	7	10	14	36	31	12
Conflicting Peds, #/hr	0	2	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	13	18	45	39	15

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	133	54	59
Stage 1	52	-	-
Stage 2	81	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	861	1013	1545
Stage 1	970	-	-
Stage 2	942	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	844	1008	1539
Mov Cap-2 Maneuver	844	-	-
Stage 1	954	-	-
Stage 2	938	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	2.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1539	-	933	-	-
HCM Lane V/C Ratio	0.011	-	0.023	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
5: King & Victoria

2026 Future Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↖		↗	↗
Traffic Vol, veh/h	9	172	167	35	17	10
Future Vol, veh/h	9	172	167	35	17	10
Conflicting Peds, #/hr	20	0	0	20	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	195	190	40	19	11
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	250	0	0	448	230	
Stage 1	-	-	-	230	-	
Stage 2	-	-	-	218	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1316	-	-	568	809	
Stage 1	-	-	-	808	-	
Stage 2	-	-	-	818	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1296	-	-	545	796	
Mov Cap-2 Maneuver	-	-	-	545	-	
Stage 1	-	-	-	788	-	
Stage 2	-	-	-	805	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0.4	0	11.1			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1296	-	-	-	617	
HCM Lane V/C Ratio	0.008	-	-	-	0.05	
HCM Control Delay (s)	7.8	0	-	-	11.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

HCM 6th Signalized Intersection Summary
1: William & Pearl

2026 Future Total
PM Peak Hour

	↖	→	↗	↖	←	↗	↖	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖			↖	↖					↖	↖	
Traffic Volume (veh/h)	370	125	6	27	182	286	0	0	0	99	226	351	
Future Volume (veh/h)	370	125	6	27	182	286	0	0	0	99	226	351	
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0	
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.97				1.00		0.97	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00	
Work Zone On Approach	No		No		No					No		No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772	
Adj Flow Rate, veh/h	416	140	7	30	204	321				111	254	394	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89	
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2	
Cap, veh/h	459	772	39	128	738	671				179	409	489	
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46				0.34	0.34	0.34	
Sat Flow, veh/h	873	1670	83	122	1596	1452				531	1215	1454	
Grp Volume(v), veh/h	416	0	147	234	0	321				365	0	394	
Grp Sat Flow(s),veh/h/ln	873	0	1753	1718	0	1452				1745	0	1454	
Q Serve(g_s), s	21.6	0.0	2.8	0.0	0.0	8.6				9.9	0.0	14.0	
Cycle Q Clear(g_c), s	26.2	0.0	2.8	4.6	0.0	8.6				9.9	0.0	14.0	
Prop In Lane	1.00		0.05	0.13		1.00				0.30		1.00	
Lane Grp Cap(c), veh/h	459	0	811	866	0	671				587	0	489	
V/C Ratio(X)	0.91	0.00	0.18	0.27	0.00	0.48				0.62	0.00	0.81	
Avail Cap(c_a), veh/h	459	0	811	866	0	671				690	0	575	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00	
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00	
Uniform Delay (d), s/veh	19.7	0.0	8.9	9.4	0.0	10.5				15.8	0.0	17.1	
Incr Delay (d2), s/veh	21.3	0.0	0.1	0.2	0.0	0.5				1.3	0.0	7.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	8.8	0.0	1.2	2.0	0.0	3.1				4.5	0.0	6.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	41.0	0.0	9.0	9.6	0.0	11.0				17.1	0.0	24.3	
LnGrp LOS	D	A	A	A	A	B				B	A	C	
Approach Vol, veh/h	563			555						759			
Approach Delay, s/veh	32.7			10.4						20.8			
Approach LOS	C			B						C			
Timer - Assigned Phs	4			6			8						
Phs Duration (G+Y+Rc), s	32.0			24.7			32.0						
Change Period (Y+Rc), s	* 5.8			5.6			* 5.8						
Max Green Setting (Gmax), s	* 26			22.4			* 26						
Max Q Clear Time (g_c+I1), s	28.2			16.0			10.6						
Green Ext Time (p_c), s	0.0			2.5			3.0						
Intersection Summary													
HCM 6th Ctrl Delay	21.3												
HCM 6th LOS	C												
Notes													
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.													

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2026 Future Total
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (veh/h)	37	227	11	11	254	60	22	45	18	80	56	84
Future Volume (veh/h)	37	227	11	11	254	60	22	45	18	80	56	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.92	0.96		0.92	0.98		0.96	0.97		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No		No	No		No	No		No	No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	40	244	12	12	273	65	24	48	19	86	60	90
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	524	757	37	99	789	628	174	279	91	225	143	155
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1010	1667	82	22	1736	1383	243	1025	335	397	526	569
Grp Volume(v), veh/h	40	0	256	285	0	65	91	0	0	236	0	0
Grp Sat Flow(s), veh/h/ln	1010	0	1749	1758	0	1383	1602	0	0	1492	0	0
Q Serve(g_s), s	1.1	0.0	3.9	0.0	0.0	1.1	0.0	0.0	0.0	2.7	0.0	0.0
Cycle Q Clear(g_c), s	5.5	0.0	3.9	4.4	0.0	1.1	1.7	0.0	0.0	5.5	0.0	0.0
Prop In Lane	1.00		0.05	0.04		1.00	0.26		0.21	0.36		0.38
Lane Grp Cap(c), veh/h	524	0	795	888	0	628	544	0	0	523	0	0
V/C Ratio(X)	0.08	0.00	0.32	0.32	0.00	0.10	0.17	0.00	0.00	0.45	0.00	0.00
Avail Cap(c_a), veh/h	786	0	1248	1335	0	987	798	0	0	766	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.3	0.0	7.3	7.5	0.0	6.6	11.8	0.0	0.0	13.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.6	1.8	0.0	0.4	0.7	0.0	0.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.3	0.0	7.6	7.7	0.0	6.6	11.9	0.0	0.0	13.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h	296			350			91			236		
Approach Delay, s/veh	7.8			7.5			11.9			13.7		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	16.7		25.3		16.7		25.3					
Change Period (Y+Rc), s	* 5.3		* 6.2		* 5.3		* 6.2					
Max Green Setting (Gmax), s	* 19		* 30		* 19		* 30					
Max Q Clear Time (g_c+I1), s	3.7		7.5		7.5		6.4					
Green Ext Time (p_c), s	0.4		2.0		1.2		2.4					

Intersection Summary

HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

2026 Future Total
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Vol, veh/h	16	16	6	2	3	5	2	79	6	4	31	3
Future Vol, veh/h	16	16	6	2	3	5	2	79	6	4	31	3
Conflicting Peds, #/hr	6	0	4	4	0	6	11	0	2	2	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	17	7	2	3	5	2	86	7	4	34	3

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	159	154	51	156
Stage 1	55	55	-	96
Stage 2	104	99	-	60
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	807	738	1017	810
Stage 1	957	849	-	911
Stage 2	902	813	-	951
Platoon blocked, %				
Mov Cap-1 Maneuver	787	727	1005	784
Mov Cap-2 Maneuver	787	727	-	784
Stage 1	947	839	-	908
Stage 2	888	811	-	920

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.3	0.2	0.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	787	839	1497	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.013	0.003	-	-
HCM Control Delay (s)	7.3	0	-	9.8	9.3	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2026 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Vol, veh/h	7	10	9	72	37	9
Future Vol, veh/h	7	10	9	72	37	9
Conflicting Peds, #/hr	4	7	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	12	11	86	44	11

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	170	65	63
Stage 1	58	-	-
Stage 2	112	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	820	999	1540
Stage 1	965	-	-
Stage 2	913	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	804	987	1530
Mov Cap-2 Maneuver	804	-	-
Stage 1	951	-	-
Stage 2	908	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1530	-	902	-	-
HCM Lane V/C Ratio	0.007	-	0.022	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
5: King & Victoria

2026 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	18	271	269	43	13	22
Future Vol, veh/h	18	271	269	43	13	22
Conflicting Peds, #/hr	37	0	0	37	4	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	295	292	47	14	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	376	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1182	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1148	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1148	-	-	-	518
HCM Lane V/C Ratio	0.017	-	-	-	0.073
HCM Control Delay (s)	8.2	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Appendix G

Synchro Intersection Worksheets – 2031 Future Total Conditions

HCM 6th Signalized Intersection Summary
1: William & Pearl

2031 Future Total
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	341	112	3	36	132	185	0	0	0	66	265	233
Future Volume (veh/h)	341	112	3	36	132	185	0	0	0	66	265	233
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.95				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	375	123	3	40	145	203				73	291	256
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	563	812	20	206	669	674				105	417	436
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47				0.30	0.30	0.30
Sat Flow, veh/h	1016	1721	42	248	1417	1429				352	1402	1465
Grp Volume(v), veh/h	375	0	126	185	0	203				364	0	256
Grp Sat Flow(s),veh/h/ln	1016	0	1763	1665	0	1429				1754	0	1465
Q Serve(g_s), s	17.0	0.0	2.0	0.0	0.0	4.3				9.1	0.0	7.4
Cycle Q Clear(g_c), s	20.1	0.0	2.0	3.0	0.0	4.3				9.1	0.0	7.4
Prop In Lane	1.00		0.02	0.22		1.00				0.20		1.00
Lane Grp Cap(c), veh/h	563	0	832	874	0	674				522	0	436
V/C Ratio(X)	0.67	0.00	0.15	0.21	0.00	0.30				0.70	0.00	0.59
Avail Cap(c_a), veh/h	622	0	934	968	0	757				795	0	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	7.4	7.7	0.0	8.0				15.4	0.0	14.8
Incr Delay (d2), s/veh	2.4	0.0	0.1	0.1	0.0	0.2				1.7	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.8	1.3	0.0	1.5				4.1	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	0.0	7.5	7.8	0.0	8.3				17.1	0.0	16.0
LnGrp LOS	B	A	A	A	A	A				B	A	B
Approach Vol, veh/h		501			388						620	
Approach Delay, s/veh		13.9			8.1						16.7	
Approach LOS		B			A						B	
Timer - Assigned Phs				4		6			8			
Phs Duration (G+Y+Rc), s				29.1		20.3			29.1			
Change Period (Y+Rc), s				* 5.8		5.6			* 5.8			
Max Green Setting (Gmax), s				* 26		22.4			* 26			
Max Q Clear Time (g_c+I1), s				22.1		11.1			6.3			
Green Ext Time (p_c), s				1.2		3.0			2.2			
Intersection Summary												
HCM 6th Ctrl Delay				13.5							8.9	
HCM 6th LOS				B							A	
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2031 Future Total
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔				↔	↔	↔
Traffic Volume (veh/h)	23	136	5	3	162	45	9	31	10	65	89	56
Future Volume (veh/h)	23	136	5	3	162	45	9	31	10	65	89	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.98		0.95	0.99			0.98	0.99	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No					No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	27	162	6	4	193	54	11	37	12	77	106	67
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	554	666	25	106	692	561	155	339	94	228	233	121
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1112	1694	63	8	1760	1426	126	1191	329	337	818	423
Grp Volume(v), veh/h	27	0	168	197	0	54	60	0	0	250	0	0
Grp Sat Flow(s),veh/h/ln	1112	0	1757	1768	0	1426	1646	0	0	1578	0	0
Q Serve(g_s), s	0.6	0.0	2.3	0.0	0.0	0.9	0.0	0.0	0.0	1.7	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	2.3	2.7	0.0	0.9	0.9	0.0	0.0	4.6	0.0	0.0
Prop In Lane	1.00		0.04	0.02		1.00	0.18		0.20	0.31		0.27
Lane Grp Cap(c), veh/h	554	0	691	798	0	561	588	0	0	581	0	0
V/C Ratio(X)	0.05	0.00	0.24	0.25	0.00	0.10	0.10	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1050	0	1474	1580	0	1196	954	0	0	939	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.5	0.0	7.3	7.4	0.0	6.8	9.5	0.0	0.0	10.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.9	1.1	0.0	0.3	0.4	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.6	0.0	7.5	7.6	0.0	6.9	9.5	0.0	0.0	11.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		195			251		60			250		
Approach Delay, s/veh		7.6			7.4		9.5			11.3		
Approach LOS		A			A		A			B		
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.5		20.3		15.5	20.3			15.5		
Change Period (Y+Rc), s		* 5.3		* 6.2		* 5.3	* 6.2			* 5.3		
Max Green Setting (Gmax), s		* 19		* 30		* 19	* 30			* 19		
Max Q Clear Time (g_c+I1), s		2.9		5.3		6.6	4.7			4.7		
Green Ext Time (p_c), s		0.2		1.2		1.3	1.6			1.6		
Intersection Summary												
HCM 6th Ctrl Delay							8.9					
HCM 6th LOS							A					
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

2031 Future Total
AM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	6	9	9	2	3	5	4	43	2	0	37	5
Future Vol, veh/h	6	9	9	2	3	5	4	43	2	0	37	5
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	11	11	2	4	6	5	52	2	0	45	6

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	118	115	50	127
Stage 1	48	48	-	66
Stage 2	70	67	-	61
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	858	775	1018	846
Stage 1	965	855	-	945
Stage 2	940	839	-	950
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	847	771	1016	822
Mov Cap-2 Maneuver	847	771	-	822
Stage 1	962	855	-	940
Stage 2	926	835	-	926

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.1	0.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	869	884	1543	-	-
HCM Lane V/C Ratio	0.003	-	-	0.034	0.014	-	-	-
HCM Control Delay (s)	7.3	0	-	9.3	9.1	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2031 Future Total
AM Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	7	10	14	36	31	12
Future Vol, veh/h	7	10	14	36	31	12
Conflicting Peds, #/hr	0	2	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	13	18	45	39	15

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	133	54	59
Stage 1	52	-	-
Stage 2	81	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	861	1013	1545
Stage 1	970	-	-
Stage 2	942	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	844	1008	1539
Mov Cap-2 Maneuver	844	-	-
Stage 1	954	-	-
Stage 2	938	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	2.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1539	-	933	-	-
HCM Lane V/C Ratio	0.011	-	0.023	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
5: King & Victoria

2031 Future Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↖		↗	↗
Traffic Vol, veh/h	9	185	180	35	17	10
Future Vol, veh/h	9	185	180	35	17	10
Conflicting Peds, #/hr	20	0	0	20	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	210	205	40	19	11
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	265	0	0	478	245	
Stage 1	-	-	-	245	-	
Stage 2	-	-	-	233	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1299	-	-	546	794	
Stage 1	-	-	-	796	-	
Stage 2	-	-	-	806	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1279	-	-	524	782	
Mov Cap-2 Maneuver	-	-	-	524	-	
Stage 1	-	-	-	776	-	
Stage 2	-	-	-	793	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0.4	0	11.4			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1279	-	-	-	597	
HCM Lane V/C Ratio	0.008	-	-	-	0.051	
HCM Control Delay (s)	7.8	0	-	-	11.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

HCM 6th Signalized Intersection Summary
1: William & Pearl

2031 Future Total
PM Peak Hour

	↖	→	↘	↙	←	↖	↙	↑	↘	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖			↖	↖					↗	↗
Traffic Volume (veh/h)	399	125	6	27	182	286	0	0	0	99	243	379
Future Volume (veh/h)	399	125	6	27	182	286	0	0	0	99	243	379
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.97				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No		No		No					No		No
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772				1772	1772	1772
Adj Flow Rate, veh/h	448	140	7	30	204	321				111	273	426
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	449	758	38	126	725	659				176	433	507
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45				0.35	0.35	0.35
Sat Flow, veh/h	873	1670	83	122	1596	1451				505	1242	1455
Grp Volume(v), veh/h	448	0	147	234	0	321				384	0	426
Grp Sat Flow(s),veh/h/ln	873	0	1753	1718	0	1451				1747	0	1455
Q Serve(g_s), s	21.4	0.0	2.9	0.0	0.0	8.9				10.6	0.0	15.6
Cycle Q Clear(g_c), s	26.2	0.0	2.9	4.8	0.0	8.9				10.6	0.0	15.6
Prop In Lane	1.00		0.05	0.13		1.00				0.29		1.00
Lane Grp Cap(c), veh/h	449	0	796	851	0	659				608	0	507
V/C Ratio(X)	1.00	0.00	0.18	0.28	0.00	0.49				0.63	0.00	0.84
Avail Cap(c_a), veh/h	449	0	796	851	0	659				678	0	565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	9.4	9.9	0.0	11.0				15.7	0.0	17.3
Incr Delay (d2), s/veh	42.1	0.0	0.1	0.2	0.0	0.6				1.6	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	1.2	2.1	0.0	3.2				4.8	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.2	0.0	9.5	10.1	0.0	11.6				17.3	0.0	27.4
LnGrp LOS	E	A	A	B	A	B				B	A	C
Approach Vol, veh/h	595			555						810		
Approach Delay, s/veh	49.9			11.0						22.6		
Approach LOS	D			B						C		
Timer - Assigned Phs				4			6			8		
Phs Duration (G+Y+Rc), s				32.0			25.7			32.0		
Change Period (Y+Rc), s				* 5.8			5.6			* 5.8		
Max Green Setting (Gmax), s				* 26			22.4			* 26		
Max Q Clear Time (g_c+I1), s				28.2			17.6			10.9		
Green Ext Time (p_c), s				0.0			2.2			3.0		
Intersection Summary												
HCM 6th Ctrl Delay				27.6								
HCM 6th LOS				C								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary
2: Broad/Court House & King

2031 Future Total
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	39	244	11	11	273	64	22	45	18	86	61	90
Future Volume (veh/h)	39	244	11	11	273	64	22	45	18	86	61	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97	1.00	0.92	0.97	0.92	0.98		0.96	0.97		0.96	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	42	262	12	12	294	69	24	48	19	92	66	97
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	508	762	35	98	792	630	175	280	92	225	142	154
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	989	1674	77	20	1738	1383	246	1030	337	402	522	567
Grp Volume(v), veh/h	42	0	274	306	0	69	91	0	0	255	0	0
Grp Sat Flow(s), veh/h/ln	989	0	1751	1759	0	1383	1612	0	0	1491	0	0
Q Serve(g_s), s	1.2	0.0	4.3	0.0	0.0	1.2	0.0	0.0	0.0	3.5	0.0	0.0
Cycle Q Clear(g_c), s	6.0	0.0	4.3	4.8	0.0	1.2	1.7	0.0	0.0	6.2	0.0	0.0
Prop In Lane	1.00		0.04	0.04		1.00	0.26		0.21	0.36		0.38
Lane Grp Cap(c), veh/h	508	0	797	890	0	630	546	0	0	522	0	0
V/C Ratio(X)	0.08	0.00	0.34	0.34	0.00	0.11	0.17	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	761	0	1244	1330	0	983	797	0	0	763	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.5	0.0	7.4	7.6	0.0	6.6	11.8	0.0	0.0	13.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.2	0.0	0.1	0.1	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln/0.3	0.0	1.7	2.0	0.0	0.4	0.7	0.0	0.0	0.0	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	0.0	7.7	7.8	0.0	6.7	12.0	0.0	0.0	14.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		316			375			91			255	
Approach Delay, s/veh		7.9			7.6			12.0			14.1	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.8		25.4		16.8		25.4				
Change Period (Y+Rc), s		* 5.3		* 6.2		* 5.3		* 6.2				
Max Green Setting (Gmax), s		* 19		* 30		* 19		* 30				
Max Q Clear Time (g_c+11), s		3.7		8.0		8.2		6.8				
Green Ext Time (p_c), s		0.4		2.1		1.3		2.6				

Intersection Summary		
HCM 6th Ctrl Delay		9.7
HCM 6th LOS		A

Notes
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
3: Victoria & Pine

2031 Future Total
PM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↖			↖			↖	
Traffic Vol, veh/h	16	16	6	2	3	5	2	79	6	4	31	3
Future Vol, veh/h	16	16	6	2	3	5	2	79	6	4	31	3
Conflicting Peds, #/hr	6	0	4	4	0	6	11	0	2	2	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	17	7	2	3	5	2	86	7	4	34	3

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	159	154	51	156
Stage 1	55	55	-	96
Stage 2	104	99	-	60
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	807	738	1017	810
Stage 1	957	849	-	911
Stage 2	902	813	-	951
Platoon blocked, %				
Mov Cap-1 Maneuver	787	727	1005	784
Mov Cap-2 Maneuver	787	727	-	784
Stage 1	947	839	-	908
Stage 2	888	811	-	920

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8		9.3	0.2
HCM LOS	A		A	0.8

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	787	839	1497	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.013	0.003	-	-
HCM Control Delay (s)	7.3	0	-	9.8	9.3	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

HCM 6th TWSC
4: Victoria & Victoria Ln

2031 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Vol, veh/h	7	10	9	72	37	9
Future Vol, veh/h	7	10	9	72	37	9
Conflicting Peds, #/hr	4	7	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	12	11	86	44	11

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	170	65	63
Stage 1	58	-	-
Stage 2	112	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	820	999	1540
Stage 1	965	-	-
Stage 2	913	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	804	987	1530
Mov Cap-2 Maneuver	804	-	-
Stage 1	951	-	-
Stage 2	908	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1530	-	902	-	-
HCM Lane V/C Ratio	0.007	-	0.022	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
5: King & Victoria

2031 Future Total
PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	18	291	289	43	13	22
Future Vol, veh/h	18	291	289	43	13	22
Conflicting Peds, #/hr	37	0	0	37	4	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	316	314	47	14	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	398	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1161	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1128	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1128	-	-	-	496
HCM Lane V/C Ratio	0.017	-	-	-	0.077
HCM Control Delay (s)	8.2	0	-	-	12.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Appendix H

Site Photos - Site Frontage on King Street West







Appendix I

Site Photos - Victoria Lane









Appendix J

Turn Lane Warrant Sheets

Existing																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	Yes NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	1	0	2	0	0	0	0	10	36	0	0	31	8	21.7%	46	39
PM	3	0	4	0	0	0	0	2	72	0	0	37	2	2.7%	74	39

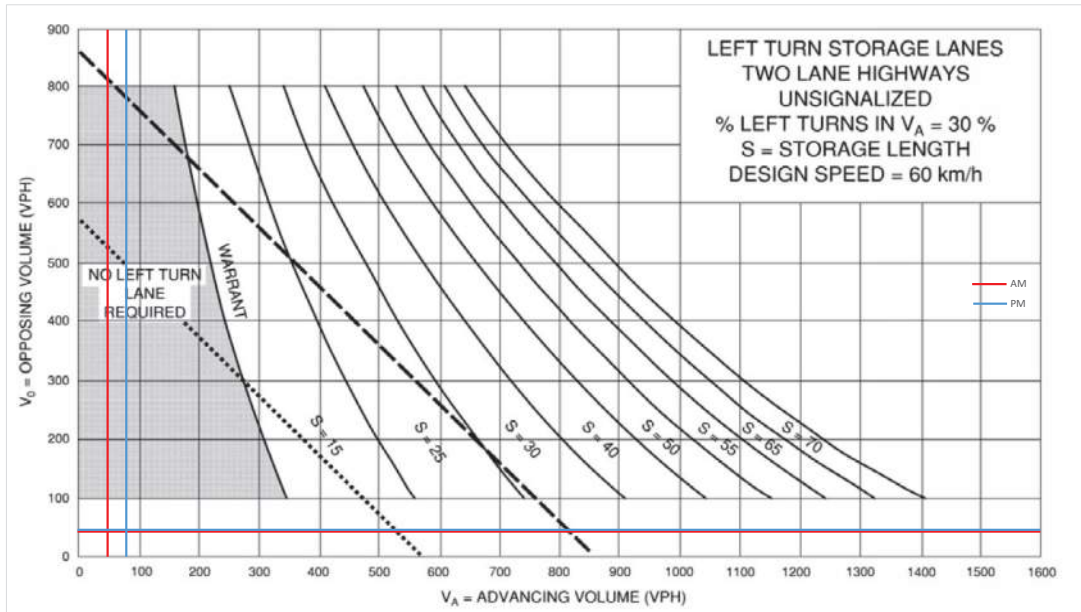
Future Background 2026																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	Yes NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	1	0	2	0	0	0	0	10	36	0	0	31	8	21.7%	46	39
PM	3	0	4	0	0	0	0	2	72	0	0	37	2	2.7%	74	39

Future Background 2031																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	Yes NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	1	0	2	0	0	0	0	10	36	0	0	31	8	21.7%	46	39
PM	3	0	4	0	0	0	0	2	72	0	0	37	2	2.7%	74	39

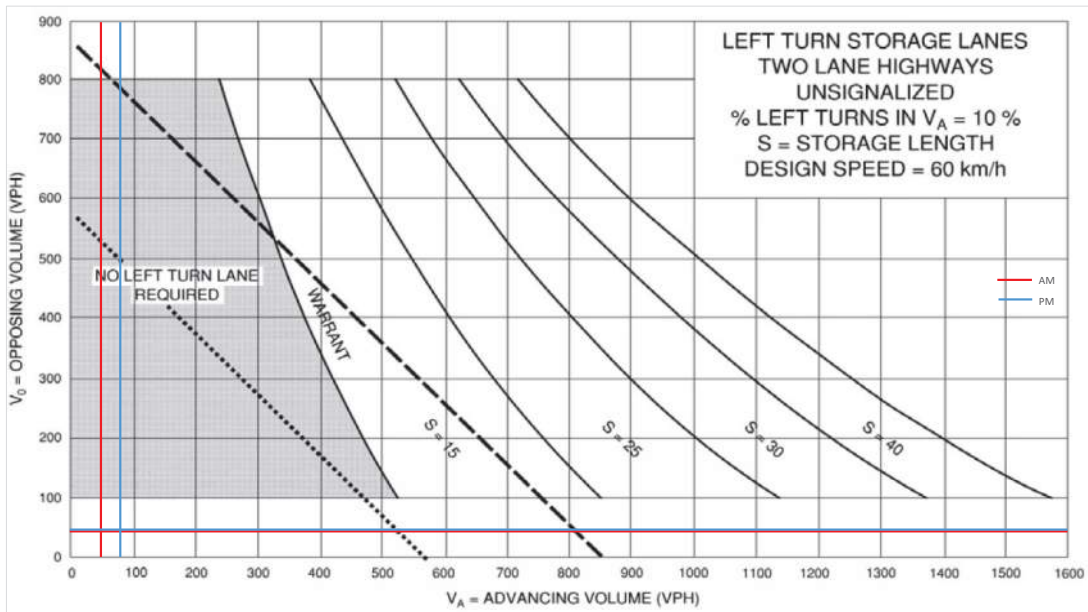
Future Total 2026																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	Yes NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	7	0	10	0	0	0	0	14	36	0	0	31	12	28.0%	50	43
PM	7	0	10	0	0	0	0	9	72	0	0	37	9	11.1%	81	46

Future Total 2031																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	Yes NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	7	0	10	0	0	0	0	14	36	0	0	31	12	28.0%	50	43
PM	7	0	10	0	0	0	0	9	72	0	0	37	9	11.1%	81	46

Northbound Left

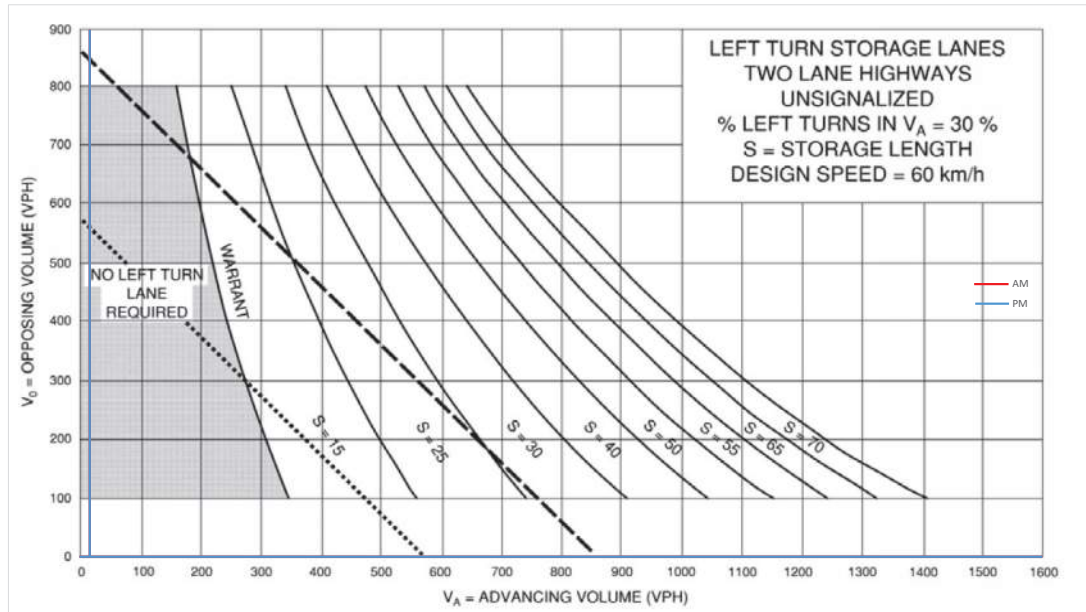


Northbound Left

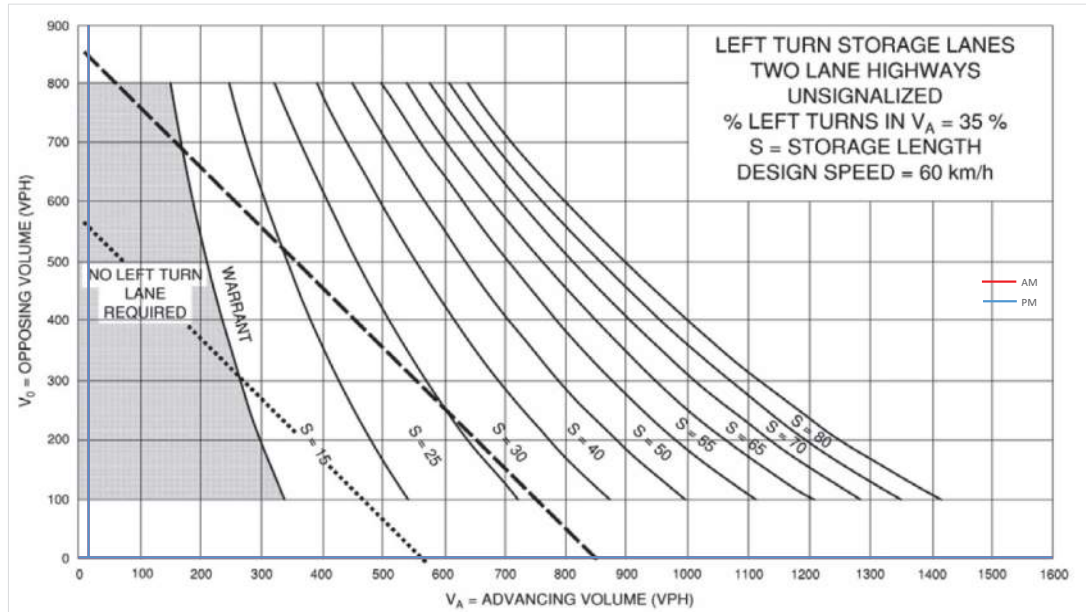


Existing																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	1	0	2	0	0	0	10	36	0	0	31	8	33.3%	3	0	
PM	3	0	4	0	0	0	2	72	0	0	37	2	42.9%	7	0	
Future Background 2026																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	1	0	2	0	0	0	10	36	0	0	31	8	33.3%	3	0	
PM	3	0	4	0	0	0	2	72	0	0	37	2	42.9%	7	0	
Future Background 2031																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	1	0	2	0	0	0	10	36	0	0	31	8	33.3%	3	0	
PM	3	0	4	0	0	0	2	72	0	0	37	2	42.9%	7	0	
Future Total 2026																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	7	0	10	0	0	0	14	36	0	0	31	12	41.2%	17	0	
PM	7	0	10	0	0	0	9	72	0	0	37	9	41.2%	17	0	
Future Total 2031																
Design Speed																
60 km/h																
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	7	0	10	0	0	0	14	36	0	0	31	12	41.2%	17	0	
PM	7	0	10	0	0	0	9	72	0	0	37	9	41.2%	17	0	

Eastbound Left



Eastbound Left



Eastbound Left

