Ainley GROUP CONSULTING ENGINEERS PLANNERS

MEMORANDUM

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To: **Nancy Dionne** Copies to:

From: **Lilly Chen**

Date: **September 23, 2021**

Ref: **County of Prince Edward – West Meadow Subdivision and Future 12 AC Subdivision Developments Traffic Impact Study Addendum**

File: **221047 Kingston 21507-1**

The original Traffic Impact Study was completed in January 2018 by Paradigm Transportation Solutions Limited. Subsequently the Subdivision has been revised (i.e. the number of units has increased); timing of the development has changed to a later date; and the County has issued conditions of Draft Plan Approval with items related to traffic and transportation. To reflect the latest subdivision, timing and to address the County's conditions of Draft Plan Approval, an addendum to the TIS is required. The future 12 Acres on Talbot subdivision to the northwest of the site should also be included as well as several developments to the northeast of Talbot Street.

1. Development Land Use & Phasing

As per the updated plan of subdivision in Figure 1, the proposed West Meadow Subdivision is to consist of 132 single family detached units, 6 semi-detached units, 83 free hold townhouse units, 16 apartment units in a two-story building, 48 apartment units in a four-story building, and 52 apartment units in two three-story buildings. It is estimated that Phase 1, Phase 2 and full build out of the development will occur in 2022, 2023 and 2025 respectively.

Future 12 AC Subdivision is included in Section 4 Background Traffic Projections.

2. Site Trip Generation

Trip generation rates have been determined from the Institute of Transportation Engineer's *Trip Generation Manual 10^{h} Edition*. Based on the proposed land use and applicable ITE land use categories, the following have been employed:

- Single family and semi-detached units – trip rates correspond to "single family detached housing" (ITE land use code 210);
- Free hold townhouse units, apartment units in a two-story building – trip rates correspond to "multifamily housing (low-rise)" (ITE land use code 220);
- Apartment units in a 3 or 4 story building – trip rates correspond to "multifamily housing (mid-rise)" (ITE land use code 221).

The applicable trip rates and corresponding trip estimates for the peak hours of the adjacent road are provided in Table 1.

Table 1: SITE TRIP GENERATION ESTIMATES

Land Use	Rate/ Estimate	Unit/ Size	AM PEAK HOUR			PM PEAK HOUR		
			In	Out	Total	In	Out	Total
Single family & semi-detached units	rate	unit	0.19	0.56	0.74	0.62	0.37	0.99
	estimate	138	25	77	102	86	51	137
Free hold Townhouse units	rate	unit	0.11	0.35	0.46	0.35	0.21	0.56
	estimate	83	9	29	38	29	17	46
Apartment units in a 2 story building	rate	unit	0.11	0.35	0.46	0.35	0.21	0.56
	estimate	16	2	5	7	6	3	9
Apartment units in a 3 or 4 story building	rate	unit	0.09	0.27	0.36	0.27	0.17	0.44
	estimate	100	9	27	36	27	17	44
Total		337	45	138	183	148	88	236
Trips between commercial and residential via Street A		5%	2	7	9	8	4	11
External			43	131	174	140	84	224

The development is expected to generate 183 trips in the AM peak hour and 236 trips in the PM peak hour (both inbound and out bound trips). It is assumed that 5% of the site traffic would travel to/from the commercial plaza to the southwest side of the site via Street A (an internal road) during the peak hours. The resulting site generated traffic volumes are illustrated in Figure 2.

3. Existing Traffic Volumes

As per the County's comment #67, a seasonal variation factor is required to reflect the summer peak period. Given that traffic count data was collected in October, it represents average condition. Based on MTO's 2016 traffic data for the section of Highway 33 west of Picton, peak summer volume is approximately 1.22 times of the average volume. To reflect the peak summer conditions, the October volumes were increased by 22%.

The resulting 2018 summer peak hour traffic volumes were compared with the 2020 peak summer volumes in our previous report *Traffic Impact Study Talbot on the Trail Subdivision County of Prince Edward*. In consideration of a growth rate, the traffic volumes in the Talbot on the Trail report are higher and therefore were used for this addendum expect for the intersection of Loyalist Parkway at the No Frill entrance where the 2018 traffic volumes were increased by 2%. The resulting 2020 summer peak hour traffic volumes are presented in Figure 3.

4. Background Traffic Projections

Given that full build-out of the proposed development is to occur in 2025, a 5 and 10-year horizon (2030, 2035) was addressed to consider the longer-term (5 and 10 years after full build-out of the

proposed development) transportation needs.

Background traffic volumes expected for the 2025, 2030 and 2035 horizon years have been determined from the 2020 volumes and future growth projections.
Given that specific developments will be considered, a background growth rate of 0.76% is assumed on Talbot Street, Loyalist Parkway/Picton Main Street from 2020 to 2035 based on the traffic data on County Road and the population projections in the County's *Picton Urban Centre Secondary Plan* as per our previous report *Traffic Impact Study Talbot on the Trail Subdivision County of Prince Edward*.

A number of specific developments within and adjacent to the study area have been considered. They are illustrated in Figure 4 and are listed below:

1) Picton Properties located on the north side of Loyalist Parkway to the southwest of the site – traffic volumes were derived from the report *13300 Loyalist Parkway Traffic Impact Study* prepared by Dillon Consulting Limited dated February 2019 and illustrated in Appendix A Figure A1. The development is completed;

2) 12 Acres on Talbot Subdivision located on southwest side of Talbot Street to the northwest of the site – 54 single family units and 6 townhouse units; detail trip generation and timing information are provided later in this section.

3) Talbot on the Trail Subdivision located on the northeast side of Talbot Street opposite of the site – traffic volumes were derived from our previous report *Traffic Impact Study Talbot on the Trail Subdivision County of Prince Edward* and illustrated in Appendix A Figures A3. The development is expected to be completed in 2025 (updated from 2027 in the Talbot on the Trail report). For the purpose of this report, it is assumed the Talbot on the Trail will be completed after the West Meadow is completed (i.e. by 2026).

4) Talbot Ridge Subdivision located on the northeast side of Talbot Street to the southeast of Talbot on the Trail Subdivision – traffic volumes were derived from our previous report *Traffic Impact Study Talbot on the Trail Subdivision County of Prince Edward* and illustrated in Appendix A Figure A4. Phase 1 is completed. It is assumed that traffic volumes generated by Phase 1 of the subdivision are included the general growth. Phase 2 is expected to be completed by 2024 as per the Talbot on the Trail report which has been accepted by the County;

5) Frank Street Subdivision located on the northeast side of Talbot Street to the southeast of Talbot Ridge Subdivision – traffic volumes were derived from our previous report *Traffic Impact Study Talbot on the Trail Subdivision County of Prince Edward* and illustrated in Appendix A Figure A5. It is assumed that 50% of the traffic volumes generated by the subdivision are on the existing road network. The subdivision has been fully occupied since the end of 2020.

6) Welbank West Subdivision located on the northeast side of Downes Avenue to the northeast of Talbot on the Trail Subdivision – traffic volumes were derived from our previous report *Traffic Impact Study Talbot on the Trail Subdivision County of Prince Edward* and illustrated in Appendix A Figure A6. The development is completed except for Blocks 43 and 44 which will be completed by 2022, as Ainley Group is the owner's Engineer.

Trips generated by the 12 Acres on Talbot Subdivision have been specifically estimated as per the *ITE Trip Generation Manual 10th Edition*. The following have been employed:

- single family units – trip rates correspond to "single family detached housing" (ITE land use code 210); and
- townhouse/condo units, condo units, townhouse units – trip rates based on the average rates from "multifamily housing (low-rise)" (ITE land use code 220).

The applicable trip rates and corresponding trip estimates for the peak hours of the adjacent road are provided in Table 2.

Table 2: 12 ACRES ON TALBOT TRIP GENERATION ESTIMATES

Land Use	Rate/ Estimate	Unit/ Size	AM PEAK HOUR			PM PEAK HOUR		
			In	Out	Total	In	Out	Total
Single family	rate	unit	0.19	0.56	0.74	0.62	0.37	0.99
	estimate	54	10	30	40	34	20	54
Townhouse units	rate	unit	0.11	0.35	0.46	0.35	0.21	0.56
	estimate	6	1	2	3	2	1	3
total		60	11	32	43	36	21	57

Same trip distribution and assignment as the site was assumed. It is also assumed that 5% of the 12 Acres on Talbot Subdivision traffic would travel to/from the commercial plaza to the southwest side of the Picton Properties via Street A (an internal road) during the peak hours. Traffic volumes generated by the 12 Acres on Talbot Subdivision are presented in Appendix A Figure A2. It is expected that the development will be completed by 2026.

Other developments not specified above, given that development details are unknown at this time, we have assumed that they are included in the back ground growth rate. The resulting 2025, 2030 and 2035 background peak hour traffic volumes are illustrated in Figures 5 to 7 respectively.

5. Total Traffic Projections

Future total traffic was calculated as the site generated traffic plus the future background traffic volumes for the 2025, 2030 and 2035 horizon years. The resulting future total volumes are illustrated in Figures 8 to 10 respectively.

6. Existing Intersection Operations

The methodology applied was consistent with the *Highway Capacity Manual 2010* method for signalized and unsignalized intersections as employed in the software program Synchro 10. The analysis is based on the 2020 traffic volumes, the existing intersection configuration and control.

Given that the intersection of Talbot Street / Lake Street / Wellington Main Street has been included in our report *Traffic Impact Study Talbot on the Trail Subdivision County of Prince Edward*. This report has focused on the intersection of Loyalist Parkway / Picton Properties Commercial Entrance. As per the County's comments, this intersection is the major concern regarding signalization requirements and timing.

Table 3 summarizes the results of the analysis. The corresponding detailed worksheets are included in Appendix B.

Table 3: INTERSECTION OPERATIONS – EXISTING 2020 TRAFFIC VOLUMES

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Loyalist Pkwy & Picton Properties Commercial Entrance	NBL	stop	13.4	B	0.03	22.0	C	0.23
	NBR		9.4	A	0.06	10.2	B	0.18
	WBL	free	8.1	A	0.04	8.6	A	0.13

As per the analyses, an acceptable level of service B or C occurs at the intersection under the existing conditions and thus no improvements related to intersection operations are required at this time on the basis of the intersection operational analysis.

7. Future Background Conditions

The operational analyses at the intersection of Loyalist Parkway / Picton Properties Commercial Entrance were repeated given the future background traffic volumes. As per the Tender Plans for the commercial plaza on the north side of the intersection, an eastbound left turn lane is added. Street A – the southbound approach includes a left turn lane, a through lane and a right turn lane. A summary of the assessment is provided in Table 4. The corresponding worksheets are provided in Appendix B.

Table 4: INTERSECTION OPERATIONS - FUTURE BACKGROUND TRAFFIC VOLUMES

INTERSECTION			CONTROL	AM PEAK HOUR			PM PEAK HOUR		
				Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
2025	Loyalist Pkwy & Picton Properties Commercial Entrance	NBL	stop	17.7	C	0.04	43.3	E	0.40
		NBR		9.4	A	0.06	10.1	B	0.18
		EBL	free	8.4	A	0.06	8.8	A	0.10
		WBL		8.0	A	0.04	8.5	A	0.12
		SBL	stop	26.3	D	0.38	**340.9**	**F**	**1.54**
		SBT		0	A	-	0	A	-
		SBR		9.8	A	0.06	10.6	B	0.14
2030	Loyalist Pkwy & Picton Properties Commercial Entrance	all	signal	12.8	B		14.2	B	
		EBL		16.2	B	0.19	19.2	B	0.34
		EBT		12.3	B	0.24	12.5	B	0.28
		EBR		11.4	B	0.05	11.7	B	0.11
		WBL		14.2	B	0.11	17.0	B	0.38
		WBT		13.1	B	0.35	13.8	B	0.45
		WBT-R		13.2	B	0.36	14.0	B	0.46
		NBL		10.3	B	0.02	11.1	B	0.11
		NBT-R		10.8	B	0.08	12.4	B	0.26
		SBL		12.5	B	0.17	17.4	B	0.39
		SBT		0	-	0	0	-	0
		SBR		10.9	B	0.09	11.6	B	0.17
2035	Loyalist Pkwy & Picton Properties Commercial Entrance	all	signal	12.9	B		14.3	B	
		EBL		16.4	B	0.19	19.5	B	0.35
		EBT		12.4	B	0.25	12.6	B	0.29
		EBR		11.4	B	0.05	11.7	B	0.11
		WBL		14.4	B	0.12	17.4	B	0.40

INTERSECTION			CONTROL	AM PEAK HOUR			PM PEAK HOUR		
				Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
		WBT		13.2	B	0.36	13.9	B	0.47
		WBT-R		13.2	B	0.37	14.1	B	0.48
		NBL		10.3	B	0.02	11.1	B	0.11
		NBT-R		10.8	B	0.09	12.5	B	0.27
		SBL		12.5	B	0.18	17.6	B	0.39
		SBT		0	-	0	0	-	0
		SBR		10.9	B	0.09	11.6	B	0.17

Given the increase in background volumes, a poor level of service F occurs at the intersection during the PM peak hour in the 2025 background conditions. Therefore, improvements should be considered.

The need for a traffic signal was reviewed. Based on the 2025 background traffic volumes, MTO signal warrant criteria for a rural condition, a traffic signal is warranted. The corresponding worksheet is provided in Appendix C.

It is assumed that a traffic signal is installed at the intersection in the 2025 horizon and beyond. Under signal control, the intersection operates at a good level of service B in the 2030 and 2035 background conditions. Therefore, no further improvements are required on the basis of the intersection operational analysis.

8. Future Background Conditions plus Site Traffic

The operations of the intersection of Loyalist Parkway at the Picton Properties Commercial Entrance have been investigated based on the 2025 and 2030 future total volumes; whereas, the operations of the area key intersections were reviewed based on the 2035 future total volumes. A traffic signal along with the noted above turn lanes was assumed at the Picton Properties Commercial Entrance with Loyalist Parkway. The results of the operational assessment are provided in Tables 5 - 7 whereas detailed worksheets are provided in Appendix B.

Table 5: INTERSECTION OPERATIONS – 2025 FUTURE TOTAL TRAFFIC VOLUMES

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Loyalist Pkwy & Picton Properties Commercial Entrance	all	signal	12.8	B		14.4	B	
	EBL		16.3	B	0.21	20.5	C	0.43
	EBT		12.2	B	0.23	12.4	B	0.25
	EBR		11.4	B	0.05	11.7	B	0.11
	WBL		14.0	B	0.11	16.4	B	0.35
	WBT		13.0	B	0.34	14.0	B	0.47
	WBT-R		13.1	B	0.35	14.1	B	0.48
	NBL		10.3	B	0.02	11.1	B	0.10
	NBT-R		10.8	B	0.08	12.3	B	0.25
	SBL		13.0	B	0.23	17.9	B	0.43
	SBT		0	-	0	0	-	0
	SBR		11.2	B	0.14	11.8	B	0.20

Table 6: INTERSECTION OPERATIONS – 2030 FUTURE TOTAL TRAFFIC VOLUMES

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Loyalist Pkwy & Picton Properties Commercial Entrance	all	signal	13.0	B		14.7	B	
	EBL		16.8	B	0.23	21.6	C	0.47
	EBT		12.3	B	0.24	12.5	B	0.28
	EBR		11.4	B	0.05	11.7	B	0.11
	WBL		14.2	B	0.12	17.1	B	0.38
	WBT		13.2	B	0.37	14.3	B	0.50
	WBT-R		13.3	B	0.38	14.4	B	0.51
	NBL		10.4	B	0.02	11.1	B	0.11
	NBT-R		10.8	B	0.08	12.4	B	0.26
	SBL		13.2	B	0.24	18.4	B	0.45
	SBT		0	-	0	0	-	0
	SBR		11.3	B	0.15	11.8	B	0.20

It is assumed the intersection of the site access on Talbot Street will be stop controlled on the site access and the entrance of Talbot on the Trail with a left turn lane on each approach and a right turn lane on the southbound approach of Talbot Street.

Table 7: INTERSECTION OPERATIONS – 2035 FUTURE TOTAL TRAFFIC VOLUMES

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Loyalist Pkwy & Picton Properties Commercial Entrance	all	signal	13.0	B		14.9	B	
	EBL		17.0	B	0.23	21.9	C	0.48
	EBT		12.4	B	0.25	12.6	B	0.29
	EBR		11.4	B	0.05	11.7	B	0.11
	WBL		14.4	B	0.12	17.5	B	0.40
	WBT		13.3	B	0.38	14.4	B	0.51
	WBT-R		13.4	B	0.39	14.6	B	0.52
	NBL		10.4	B	0.02	11.2	B	0.11
	NBT-R		10.8	B	0.09	12.5	B	0.27
	SBL		13.3	B	0.24	18.7	B	0.45
	SBT		0	-	0	0	-	0
	SBR		11.3	B	0.15	11.8	B	0.20
Talbot St & site access/Talbot on the Trail entrance	NBL	free	7.7	A	0.02	7.8	A	0.05
	EBL	stop	12.3	B	0.03	14.5	B	0.03
	EBT-R		9.7	A	0.08	9.5	A	0.05
	WBL		13.8	B	0.11	16.0	C	0.09
	WBT-R		9.3	A	0.02	9.5	A	0.01
	SBL	free	7.6	A	0.00	7.8	A	0.01
Picton Main St & Talbot St/Lake St	all	signal	20.0	B		23.2	C	
	EBL		16.9	B	0.11	21.4	C	0.27
	EBT		25.8	C	0.85	34.5	C	0.91
	EBR		0	-	0	0	-	0
	WBL		13.6	B	0.45	21.3	C	0.75
	WBT		11.9	B	0.63	13.9	B	0.73

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
	WBR		0	-	0	0	-	0
	NBL-T		18.6	B	0.29	21.0	C	0.35
	NBR		21.4	C	0.52	24.0	C	0.53
	SBL		32.7	C	0.60	30.9	C	0.48
	SBT-R		18.5	B	0.36	19.2	B	0.27

As per the analyses, an acceptable level of service C occurs at the intersections under the future total conditions and thus no improvements related to intersection operations are required on the basis of the intersection operational analysis.

9. Queue Length Analysis

The 95th percentile queue lengths were reviewed for the ultimate 2035 total conditions. The 95th percentile queues averaged from five SimTraffic runs are presented in Table 8. Each SimTraffic run was for duration of 60 minute with 15 minutes of seeding time.

Table 8: 2035 95th PERCENTILE QUEUE LENGTHS & STORAGE LENGTHS

INTERSECTION		95th PERCENTILE QUEUE (m)		STORAGE LANE LENGTH (m)	
		AM	PM	EX./PROP.	RECOMMENDED
Loyalist Pkwy & Picton Properties Commercial Entrance	EBL	22.5	45.8	110	As proposed
	EBR	7.1	10.1	60	As proposed
	WBL	18.8	42.9	110	As proposed
	NBL	7.6	14.6	20	As existing
	SBL	28.0	36.3	40	As proposed
	SBR	15.1	17.7	25	As proposed
Talbot St & site access/Talbot on the Trail entrance	EBL	7.2	7.4	15	15
	WBL	15.0	15.0	15	As proposed
	NBL	4.2	9.3	40	15
	SBL	2.2	4.2	15	As proposed
	SBR	-	-	15	As proposed
Picton Main St & Talbot St/Lake St	EBL	30.6	50.9	45 (ex. 25)	As proposed
	WBL	31.1	71.2	50	As existing
	NBR	37.7	37.7	35	As existing
	SBL	43.0	36.3	20	As existing

As indicated in Table 8, most of the existing/proposed turn lane storage lengths can accommodate future 2035 queue lengths 95 percent of the time except for the eastbound left turn lane, westbound left turn lane and southbound left turn lane at the intersection of Picton Main Street with Talbot Street/Lake Street. It was recommended in our previous report for the Talbot on the Trail Subdivision that the eastbound left turn lane on Picton Main Street at Talbot Street be extended to 45 m from the existing 25 m by reducing the existing parking lane through pavement marking. Although the southbound left turn lane and the westbound left turn lane are shorter than the desirable 40 m and 70 m respectively (existing 20 m and 50 m), no changes are expected based on the County's latest reconstruction plan for the intersection.

10. Sensitivity Analysis

To address the County's comment #70, a sensitivity analysis was carried out assuming the development would proceed prior to the commercial development. The 2025 total traffic volumes without the Picton Properties were presented in Figure 11.

The operations of the intersection of Loyalist Parkway at the Picton Properties Commercial Entrance were repeated based on the 2025 total volumes without Picton Properties. Stop controls were assumed on Street A and the Picton Properties Commercial Entrance. The results of the operational assessment are provided in Table 9 whereas detailed worksheets are provided in Appendix B.

Table 9: INTERSECTION OPERATIONS – 2025 FUTURE TOTAL TRAFFIC VOLUMES WITHOUT PICTON PROPERTIES

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Loyalist Pkwy & Picton Properties Commercial Entrance	NBL	stop	15.8	C	0.03	31.1	D	0.31
	NBR		9.5	A	0.06	10.4	B	0.18
	EBL	free	8.0	A	0.01	8.2	A	0.03
	WBL		8.2	A	0.04	8.7	A	0.13
	SBL	stop	17.3	C	0.13	32.3	D	0.18
	SBT		0	A	-	0	A	-
	SBR		9.5	A	0.04	9.6	A	0.02

Without the commercial development, the intersection would operate acceptably at a level of service D in the 2025 horizon under stop control with turn lanes. Therefore, the traffic signal is triggered by the commercial development.

11. Conclusions

Despite the increase in existing traffic (i.e. a 22% seasonal variation factor was included) and development traffic (i.e. site traffic and 12 Acres on Talbot traffic), the current design of the proposed improvements for the intersections of Loyalist Parkway with Street A/Picton Properties Commercial Entrance, Talbot Street/Lake Street with Picton Main Street, and Talbot Street with Street A/Talbot on the Trail entrance are sufficient.

Improvements from the Tender Plans for the commercial plaza by Jewell Engineering, 2021 Engineering Drawing by Ainley Group approved by the County for Pre-Servicing for the West Meadow Phase 1, and County Road improvements recently completed on Talbot Street and Loyalist Parkway include:

Intersection of Loyalist Parkway with Street A/Picton Properties Commercial Entrance (turn lane lengths are based on the Tender Plans for the commercial site)

- A traffic signal
- An 110 m east bound left turn lane and a 60 m eastbound right turn lane
- An 110 m westbound left turn lane
- A 20 m northbound left turn lane
- A 40 m southbound left turn lane and a 25 m southbound right turn lane

Intersection of Talbot Street with Street A/Talbot on the Trail entrance (turn lane lengths are based on the

2021 Engineering Drawing by Ainley Group approved by the County for Pre-Servicing for the Talbot on the Trail Subdivision)

- Stop controlled on Street A and Talbot on the Trail entrance
- A 15 m east bound left turn lane
- A 15 m westbound left turn lane
- A 40 m northbound left turn lane
- A 15 m southbound left turn lane and a 15 m southbound right turn lane

Intersection of Talbot Street/Lake Street with Picton Main Street

- Added a westbound left turn phase as part of the County Road improvements recently completed for the intersection
- Extend the existing 20 m eastbound left turn lane to 45 m by reducing the existing parking lane through pavement marking (recommended in our 2020 Traffic Study for the Talbot on the Trail Subdivision)

These improvements can accommodate the 2035 ultimate horizon traffic volumes. No further improvements are required.

The traffic signal at the intersection of Loyalist Parkway with Street A/Picton Properties Commercial Entrance is triggered by the commercial development – Piction Properties. Therefore the traffic signal should be installed before the commercial development is completed.

We trust that the above meets with your purpose. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Reported by:

Lilly Chen, P. Eng.
Senior Transportation Engineer

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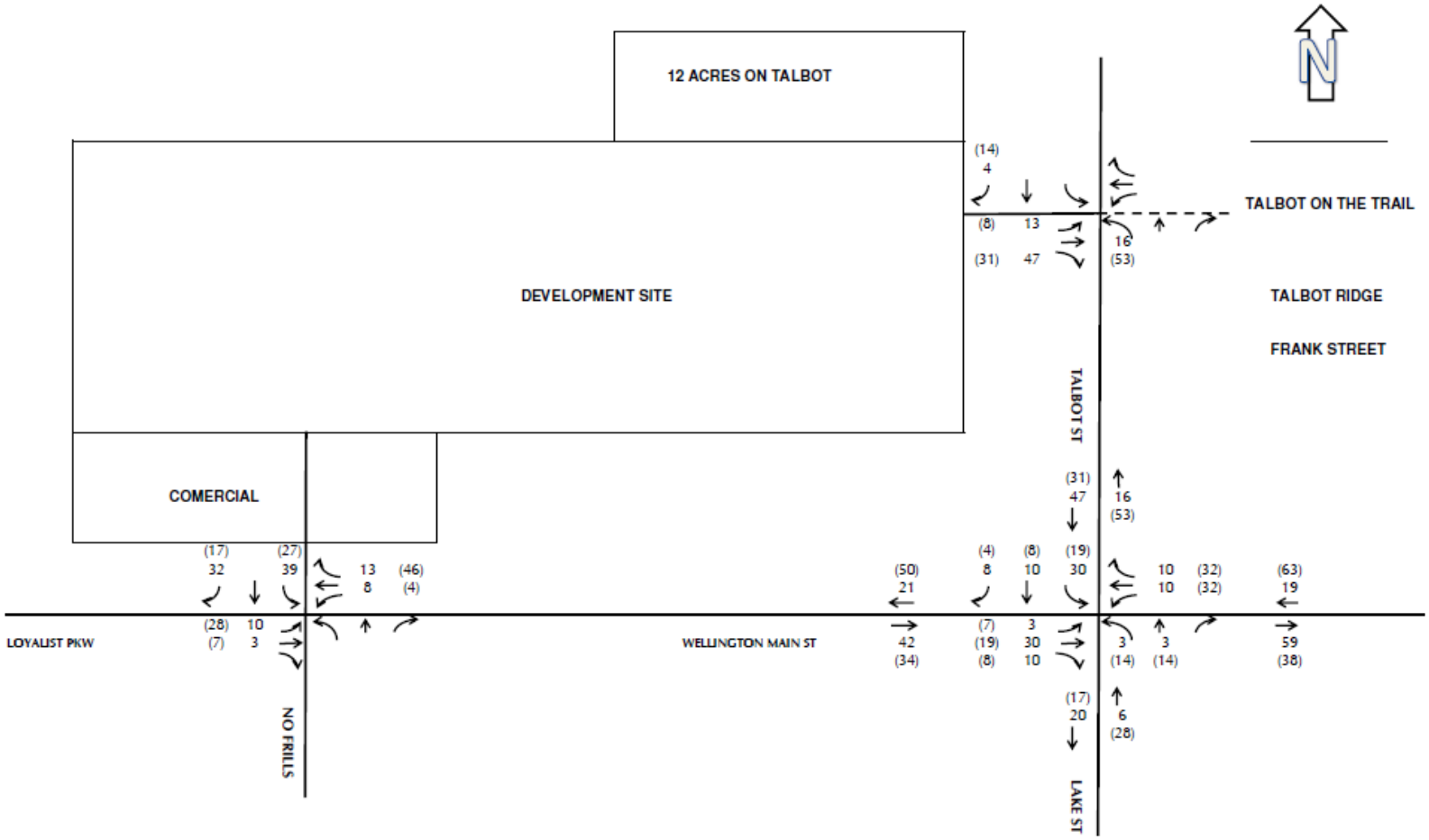
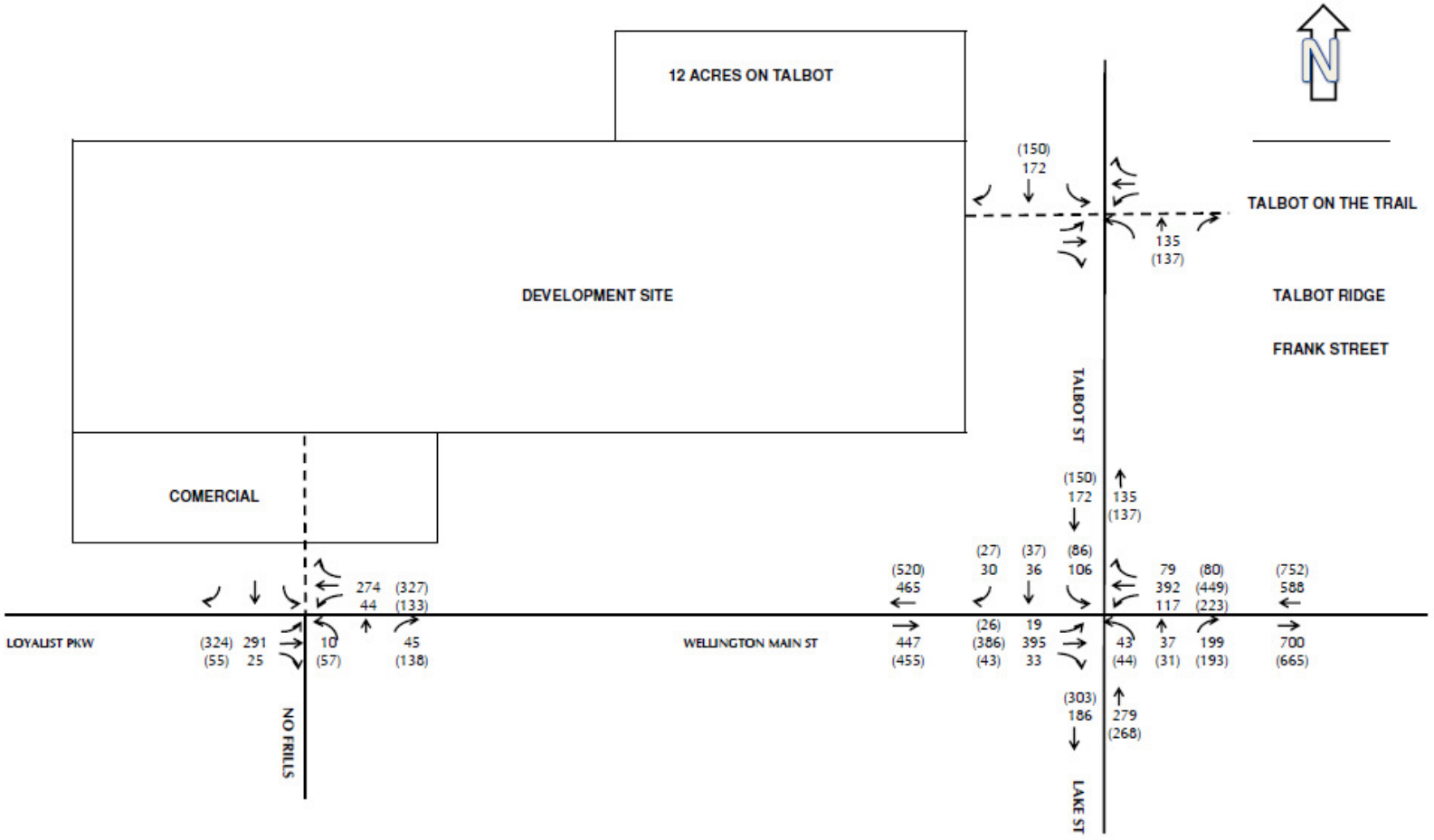
TALBOT STREET
STREET A (GEORGE WRIGHT BLVD)
STREET B (ALLEN STREET)
ARGYLE CRES.
12 ACRES ON TALBOT SUBDIVISION
STREET C (GRIFFIN STREET)
WEST MEADOW SUBDIVISION
CRESCENT D (BEASLEY CRESCENT)
STREET E (RUSEN STREET)
STREET F (FRENCH STREET)
STREET A (GEORGE WRIGHT BOULEVARD)
STREET G (WEAVER STREET)
CRESCENT D (BEASLEY CRESCENT)
PICTON MAIN STREET (HWY. 33)
Royalist Pkwy



100 (100) AM (PM) Peak Hour

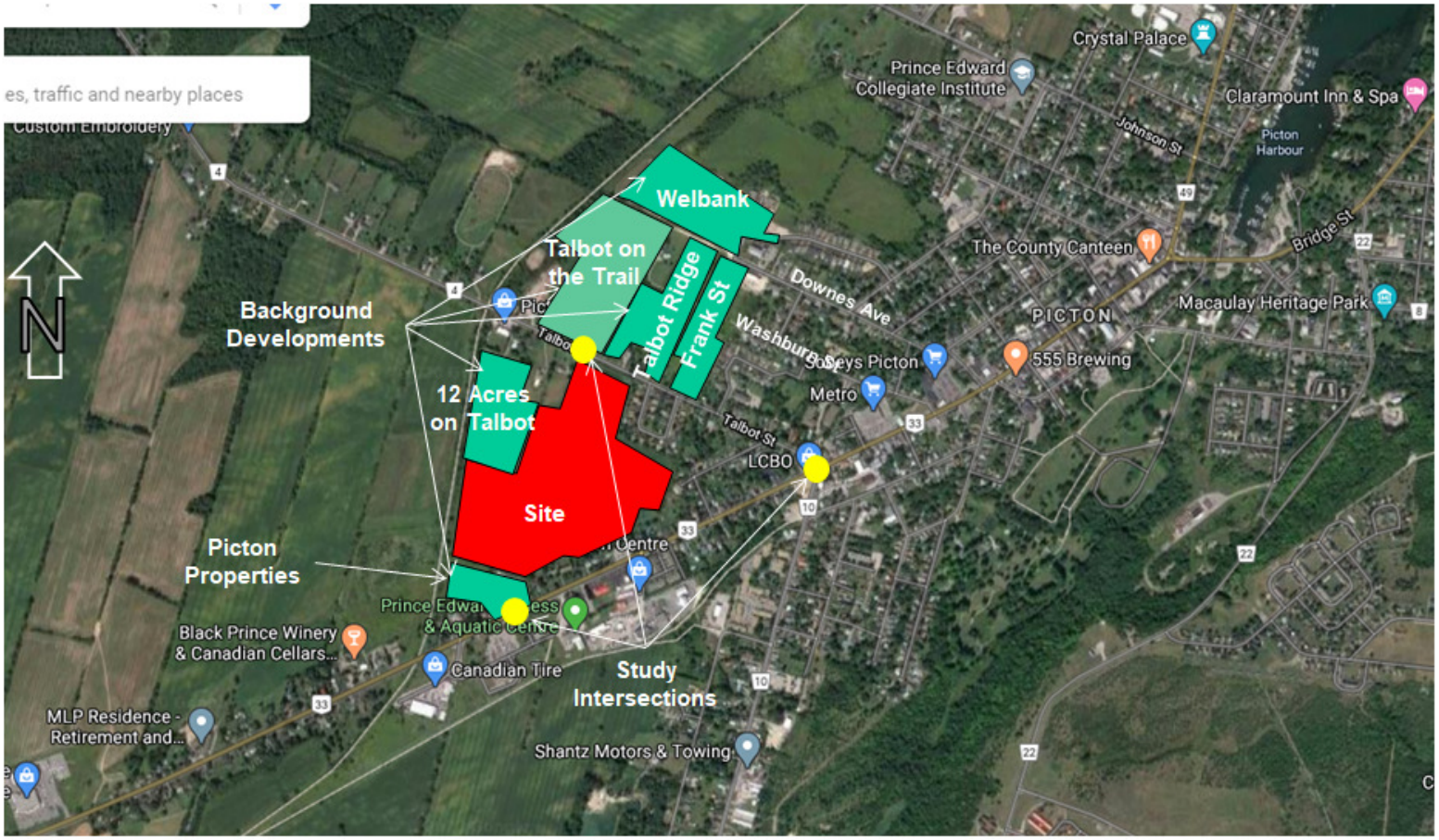
Figure 2

Site Generated Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



100 (100) AM (PM) Peak Hour

Figure 3
Existing 2020 Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward

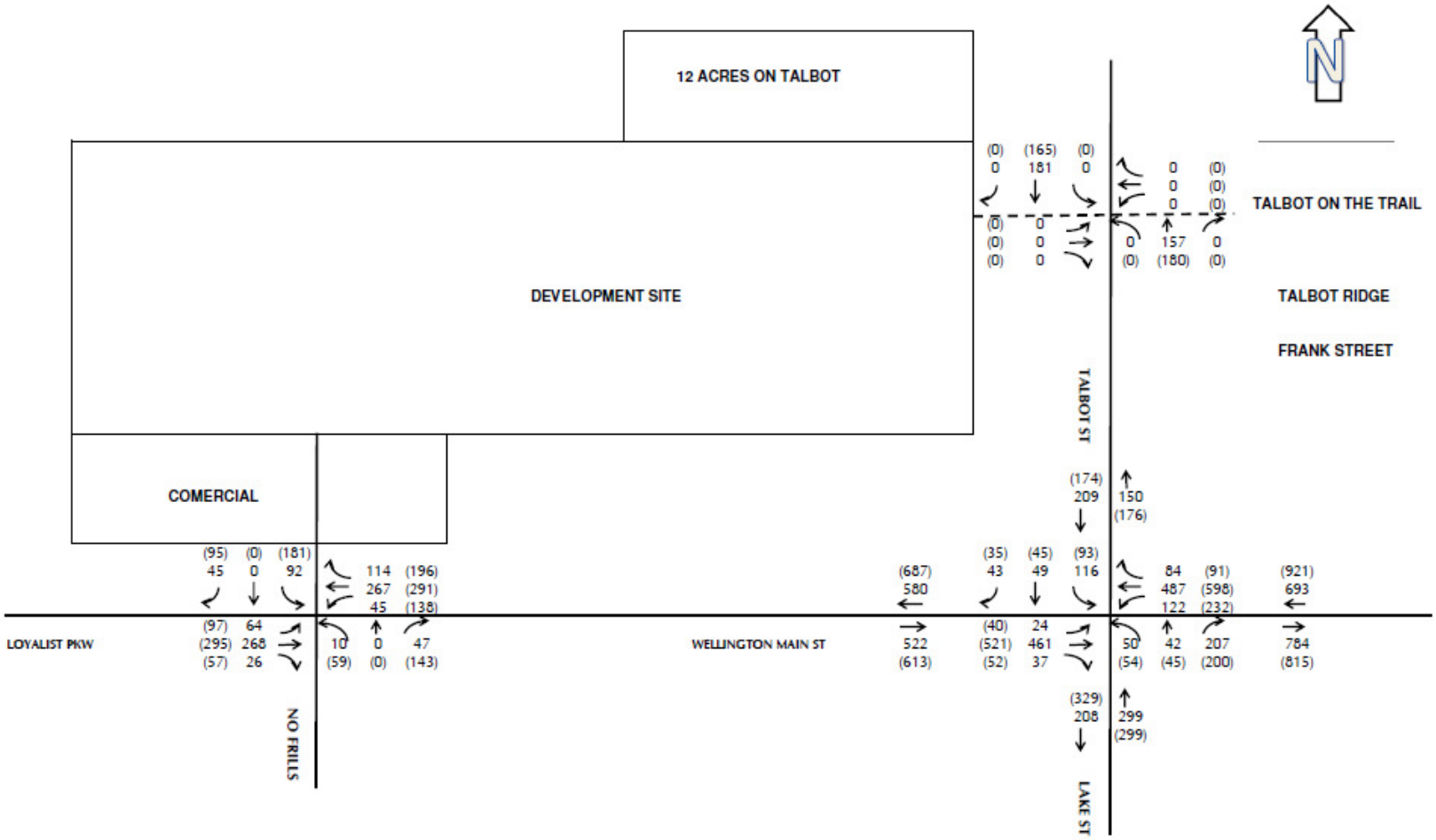


Source: Google Maps

COUNTY OF PRINCE EDWARD

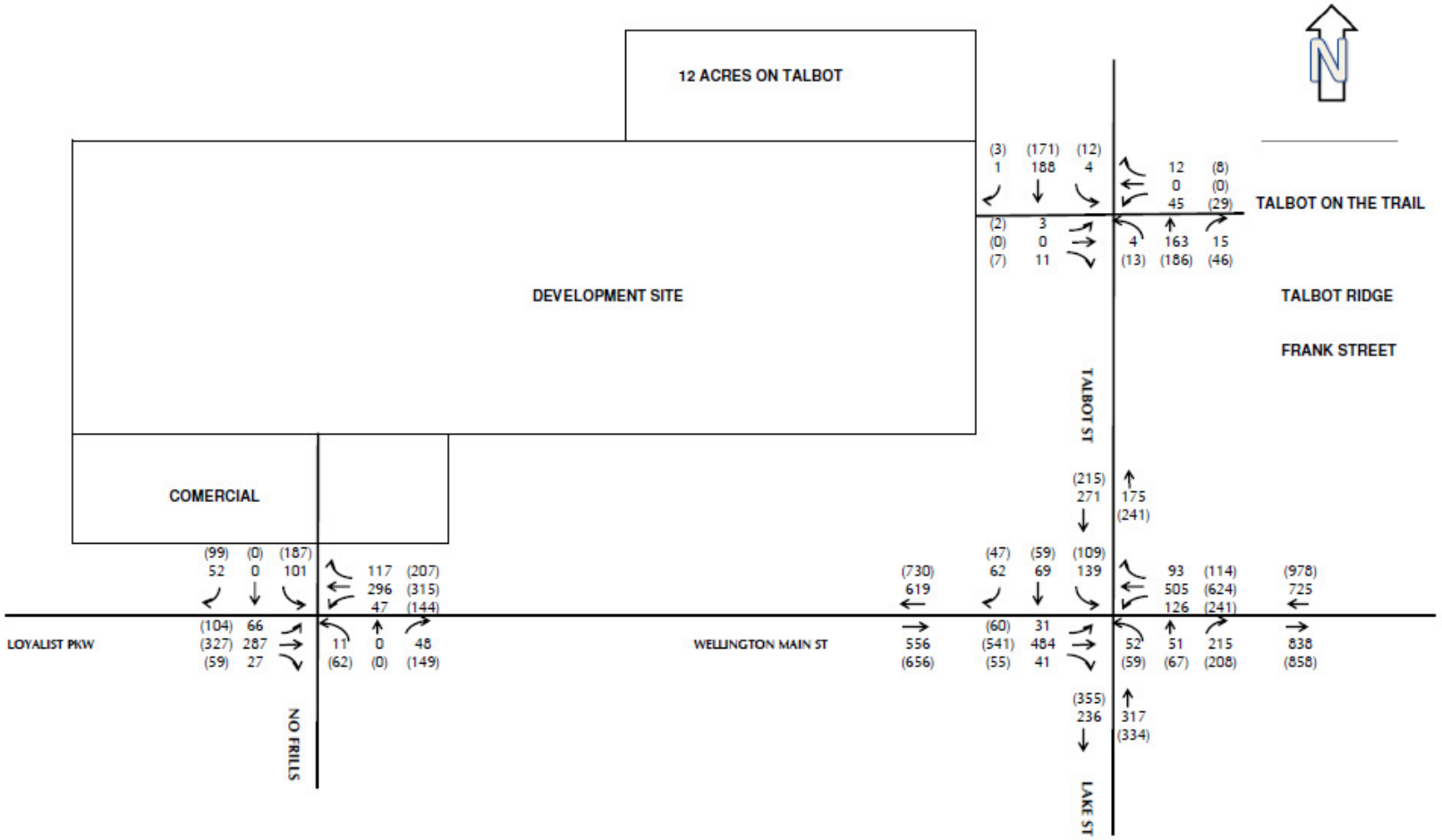
WEST MEADOW SUBDIVISION TRAFFIC IMPACT STUDY ADDENDUM

FIGURE 4 – SPECIFIC DEVELOPMENTS



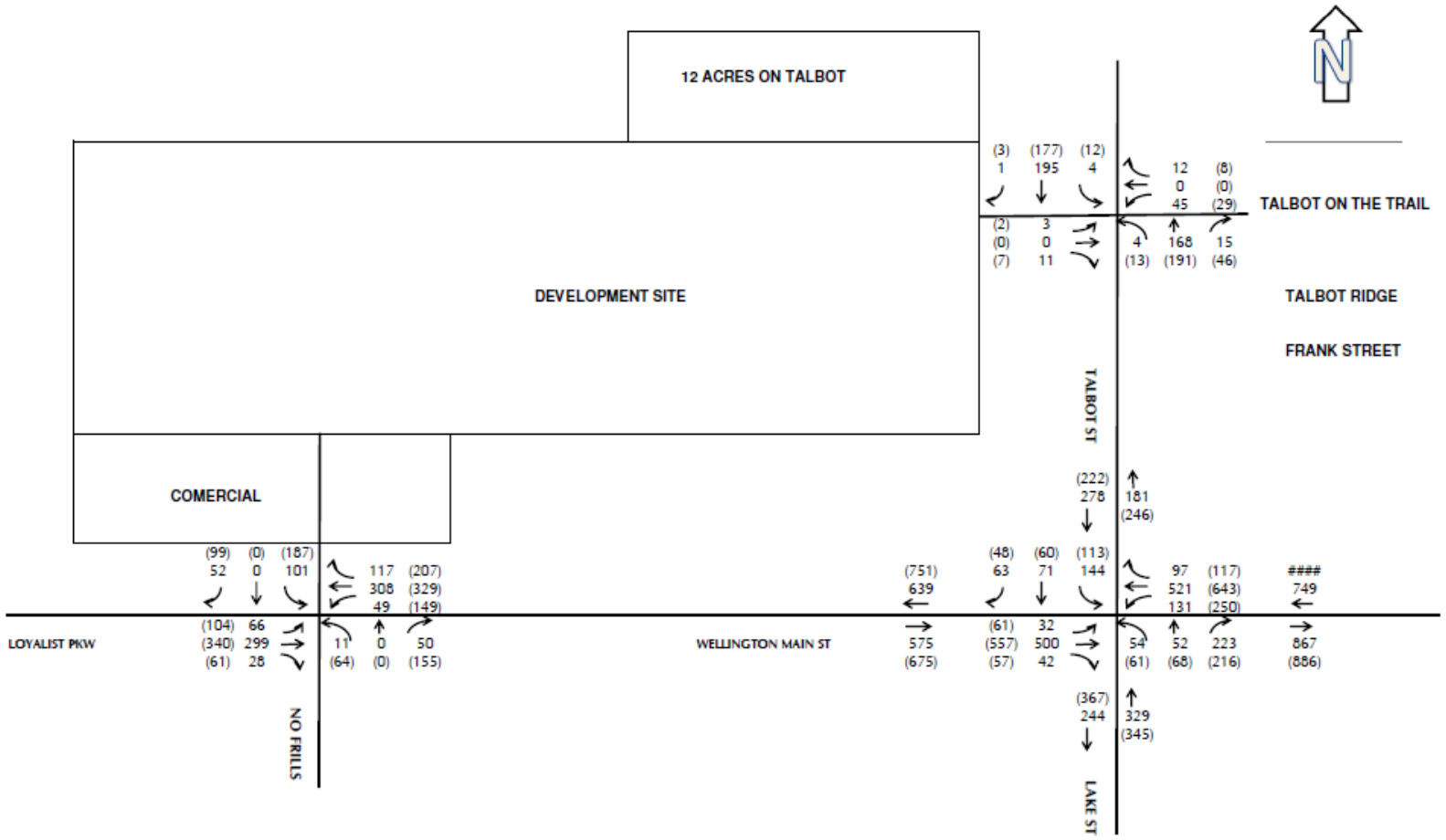
100 (100) AM (PM) Peak Hour

Figure 5
2025 Background Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



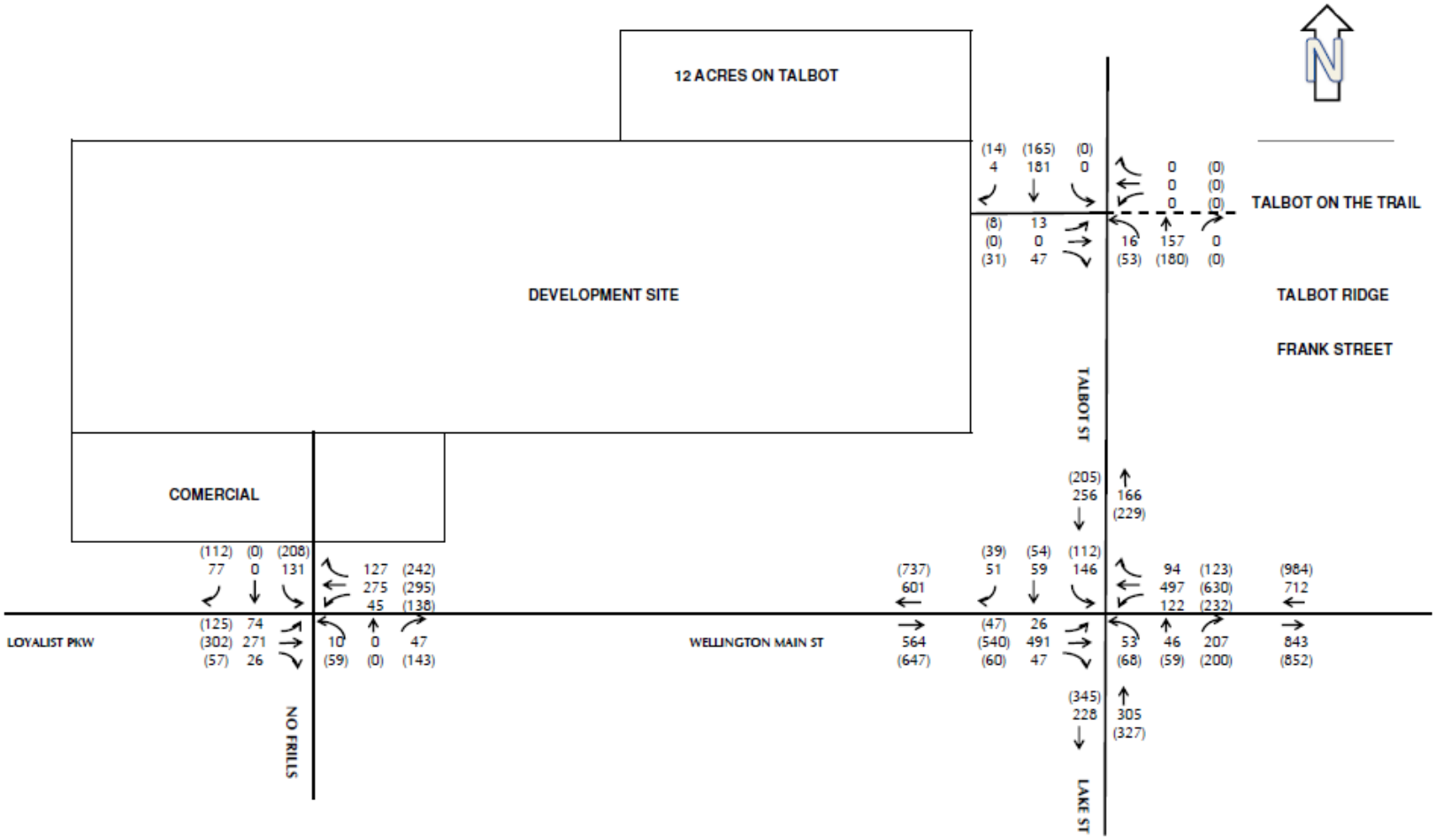
100 (100) AM (PM) Peak Hour

Figure 6
2030 Background Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



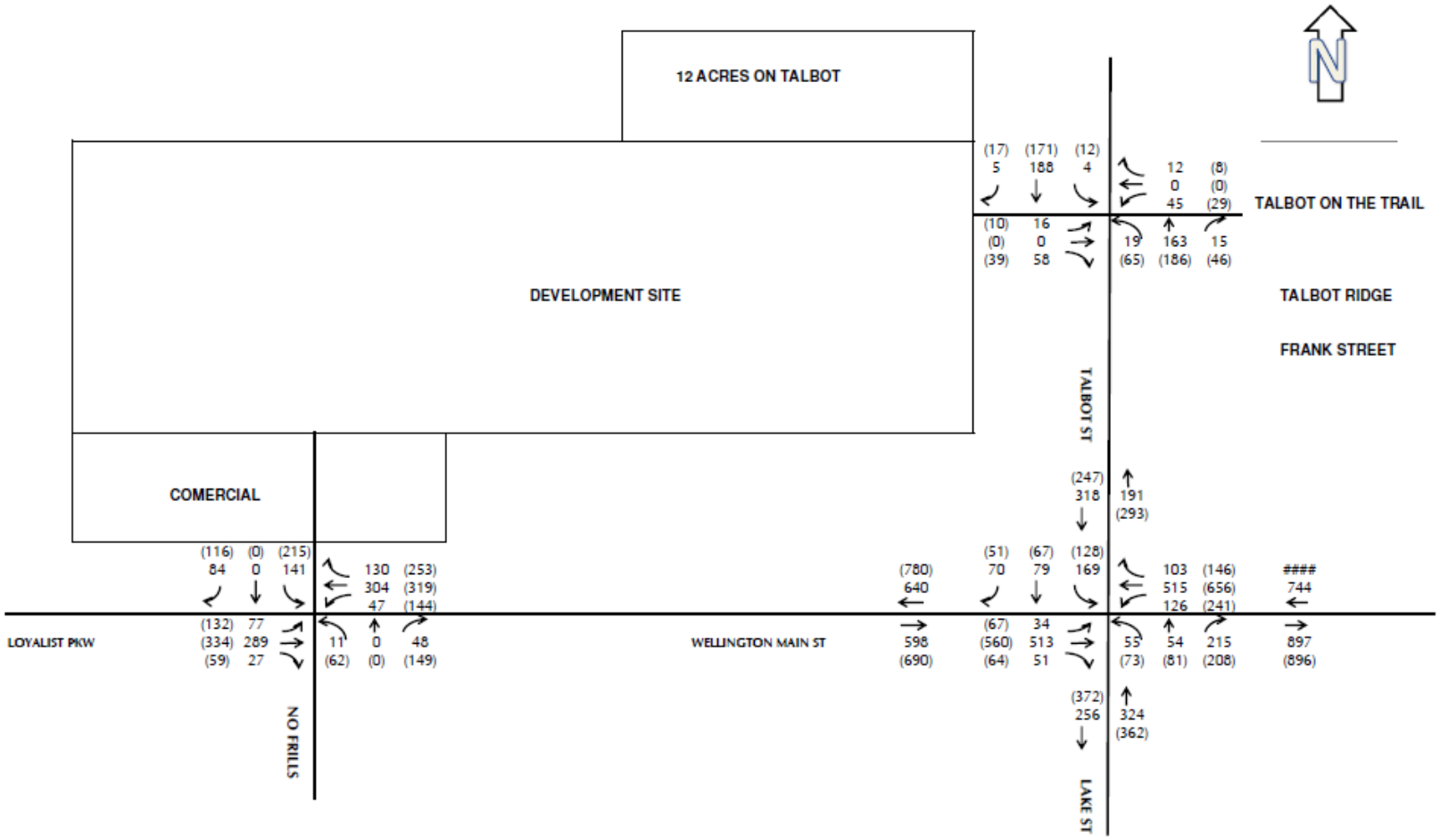
100 (100) AM (PM) Peak Hour

Figure 7
2035 Background Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



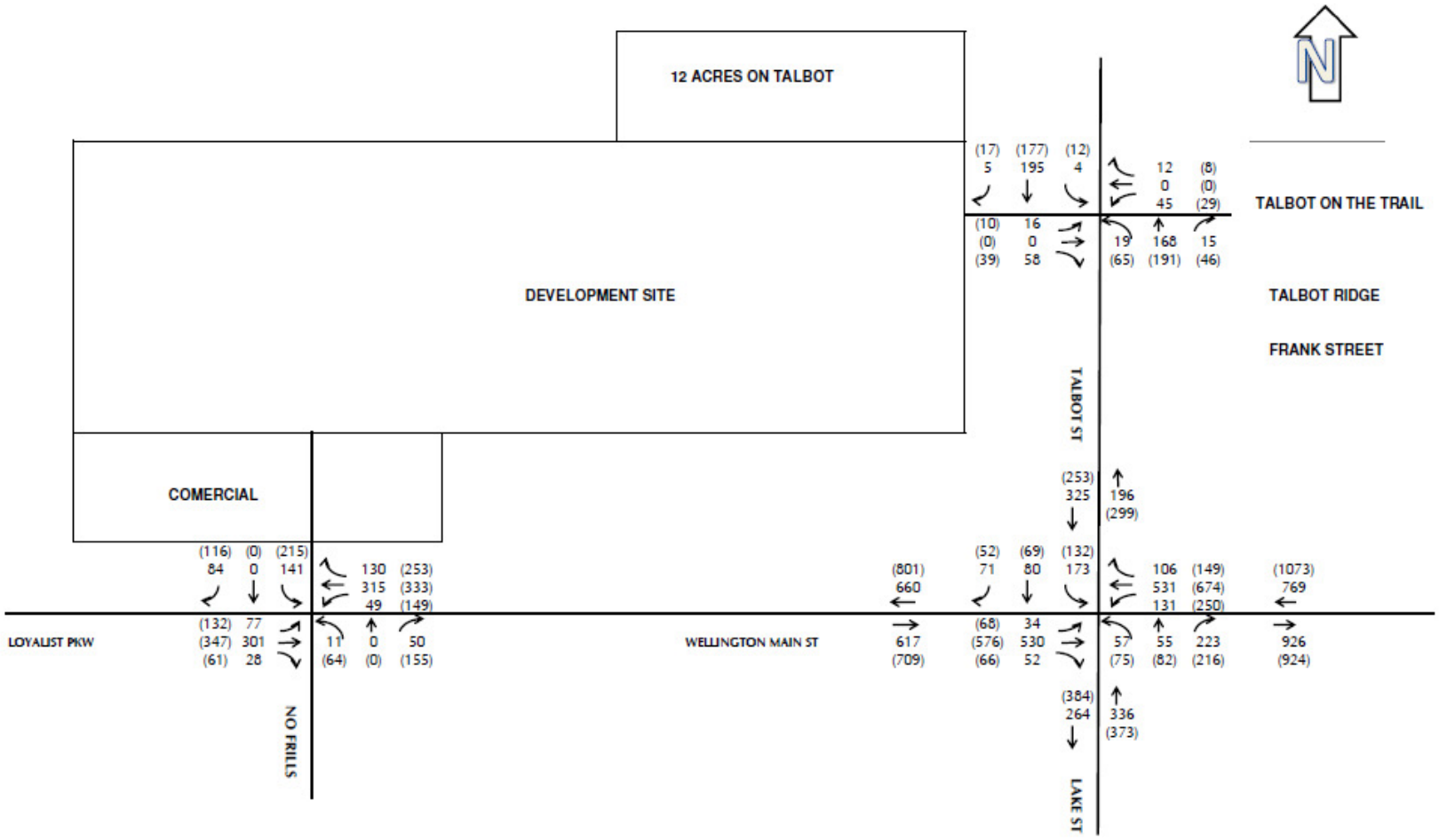
100 (100) AM (PM) Peak Hour

Figure 8
2025 Total Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



100 (100) AM (PM) Peak Hour

Figure 9
2030 Total Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



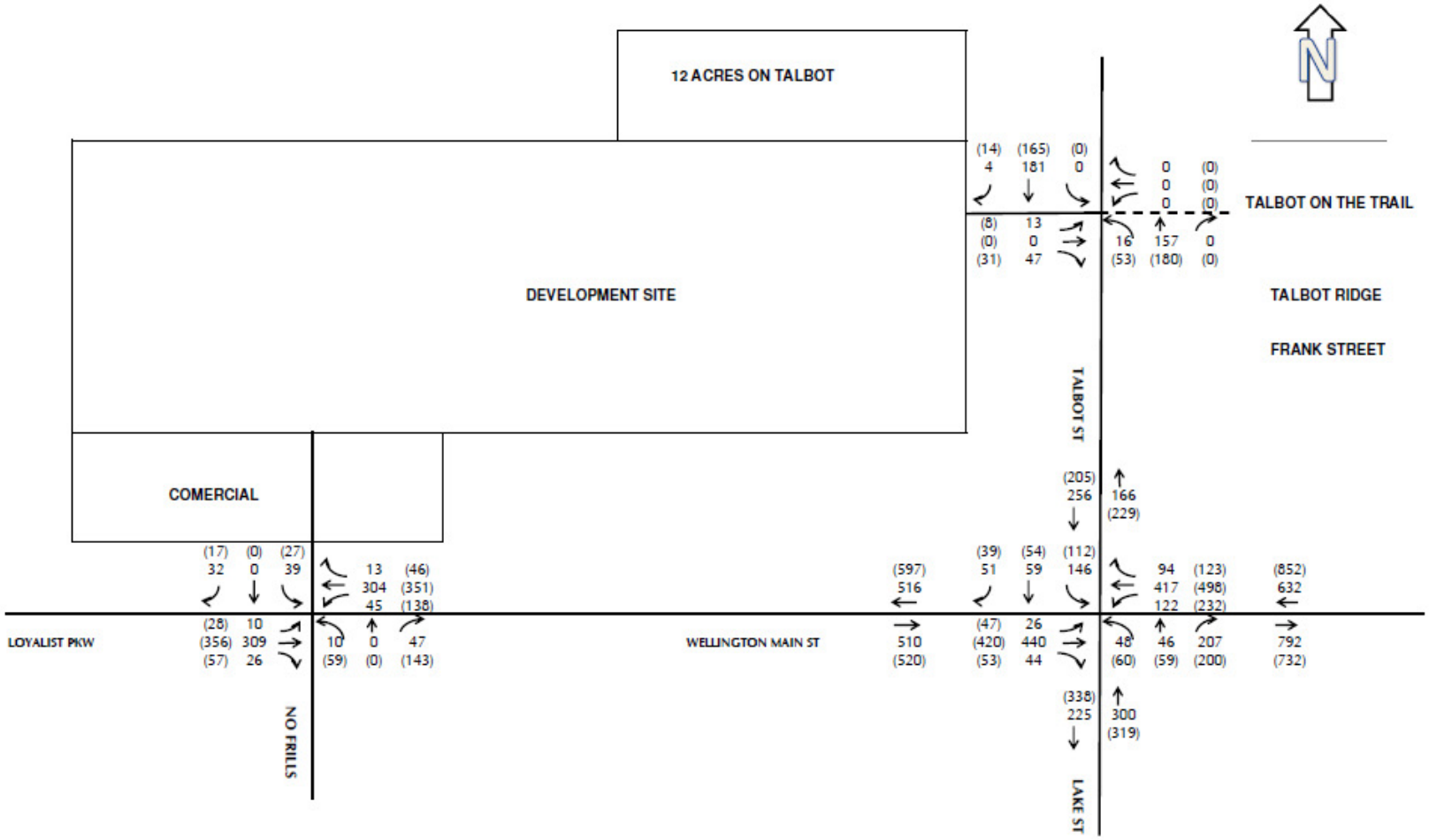
100 (100) AM (PM) Peak Hour

Figure 10

2035 Total Traffic Volumes

West Meadow Subdivision Traffic Impact Study Addendum

County of Prince Edward



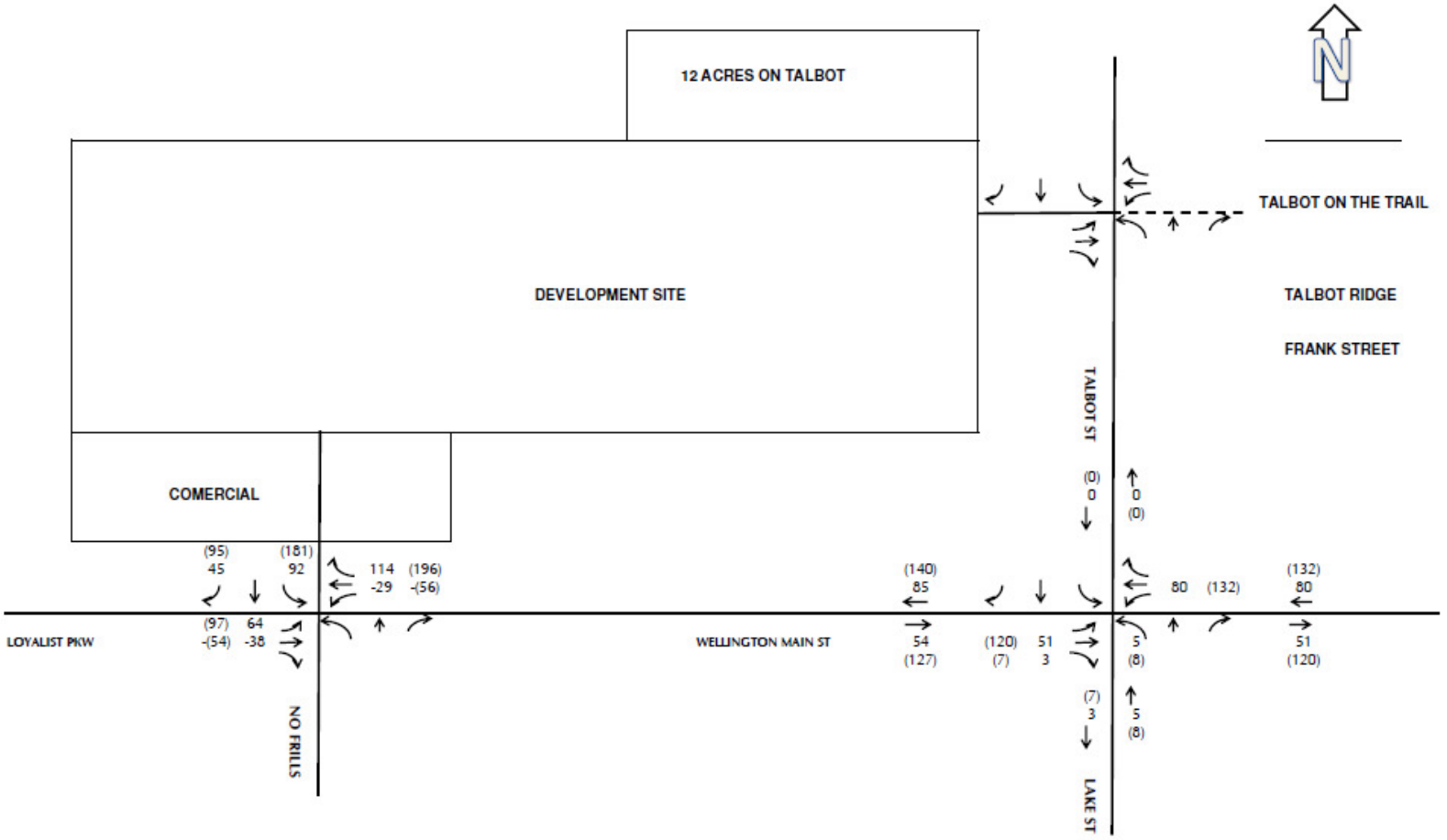
100 (100) AM (PM) Peak Hour

Figure 11

2025 Total Traffic Volumes Without Picton Properties
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward

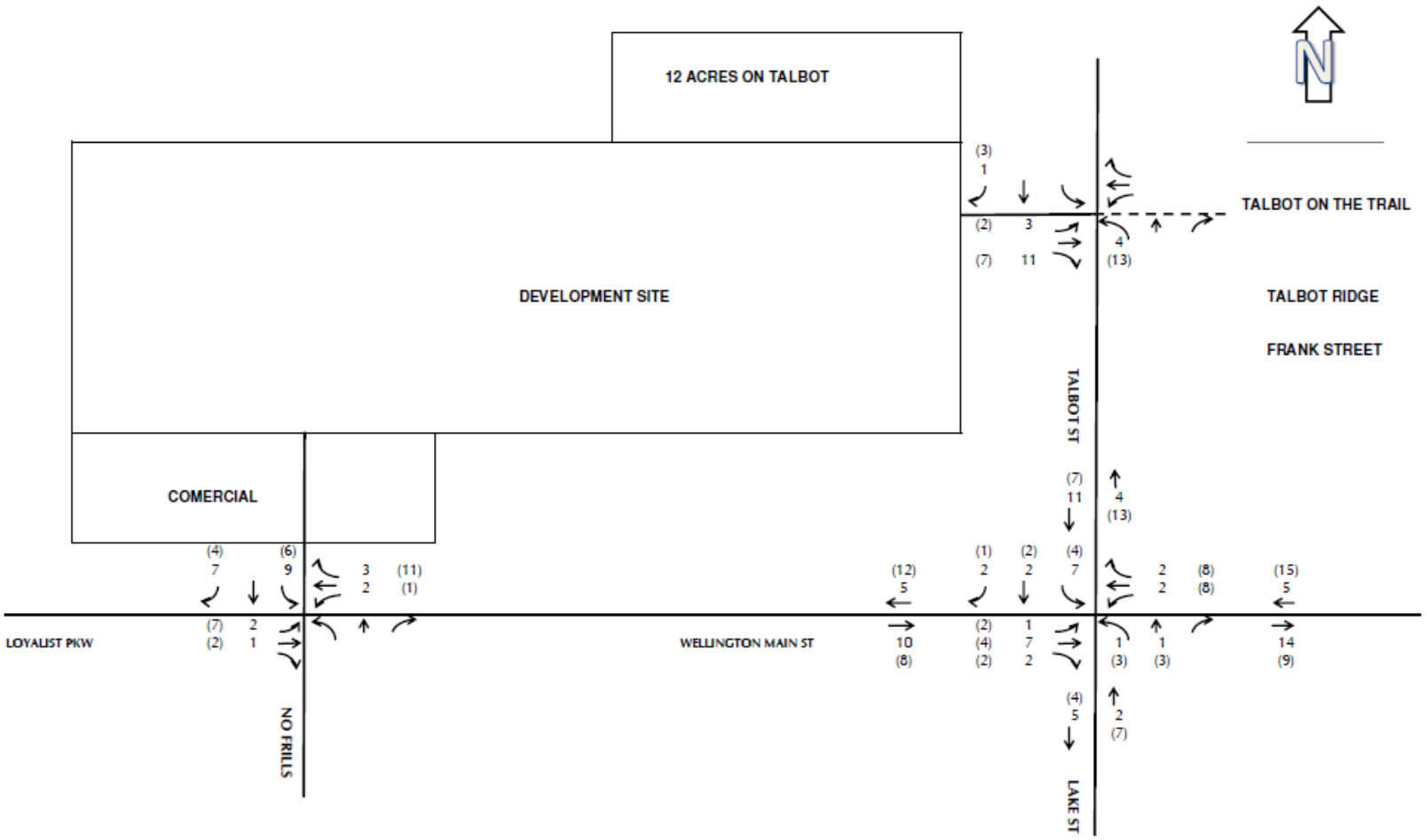
APPENDIX A

Development Traffic Volumes



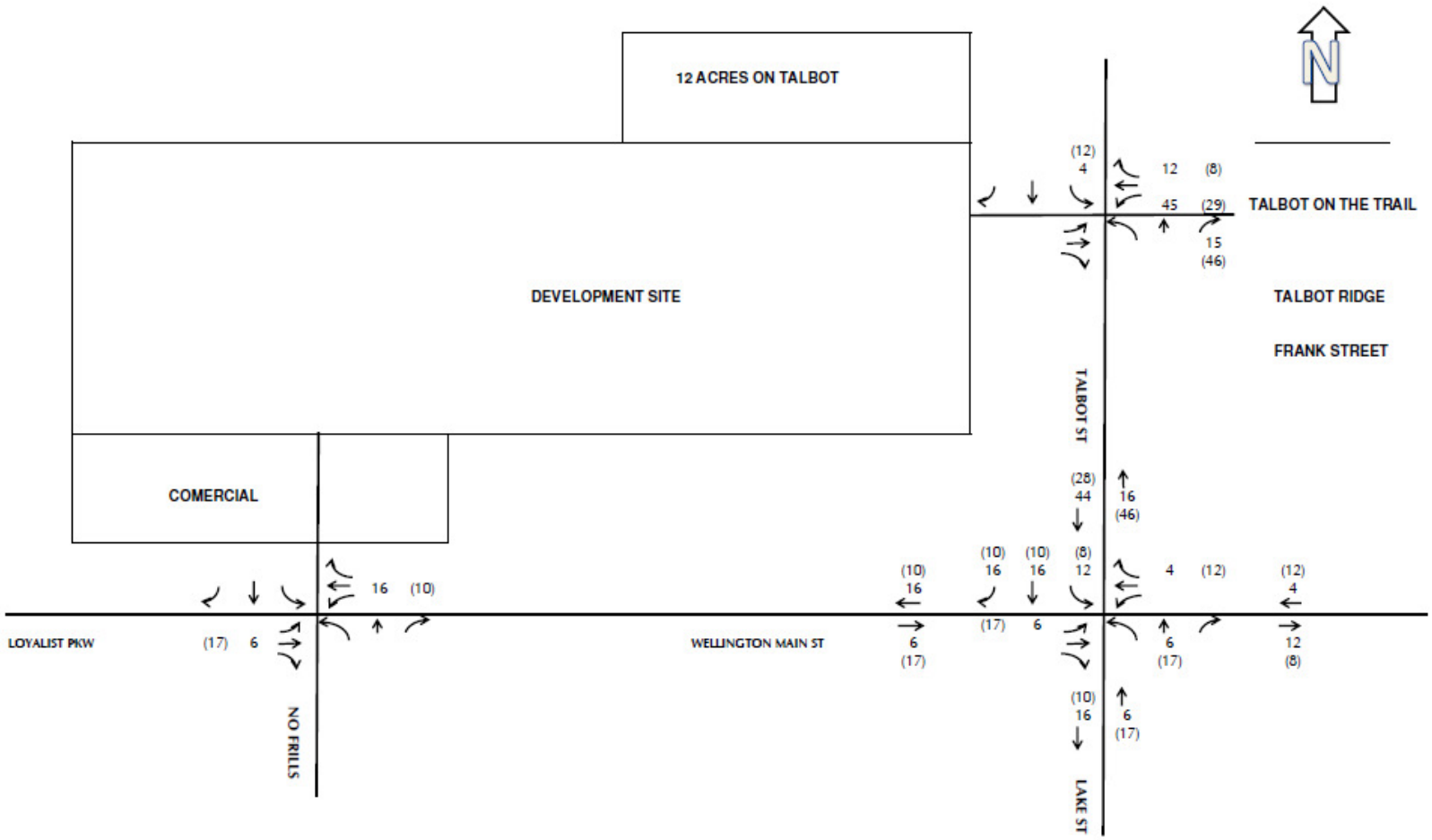
100 (100) AM (PM) Peak Hour

Figure A1
Picton Properties Generated Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



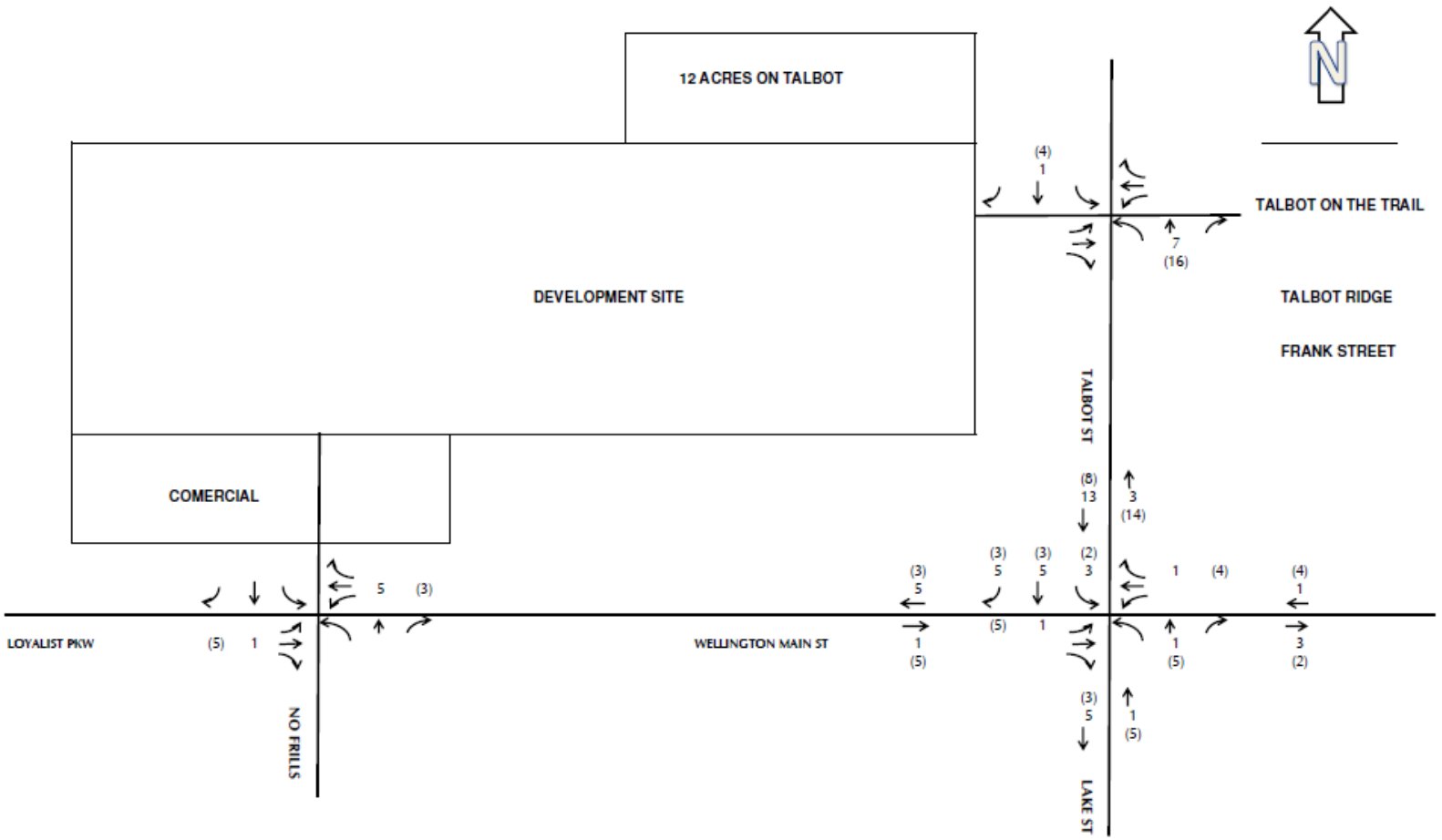
100 (100) AM (PM) Peak Hour

Figure A2
12 Acres on Talbot Subdivision Generated Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



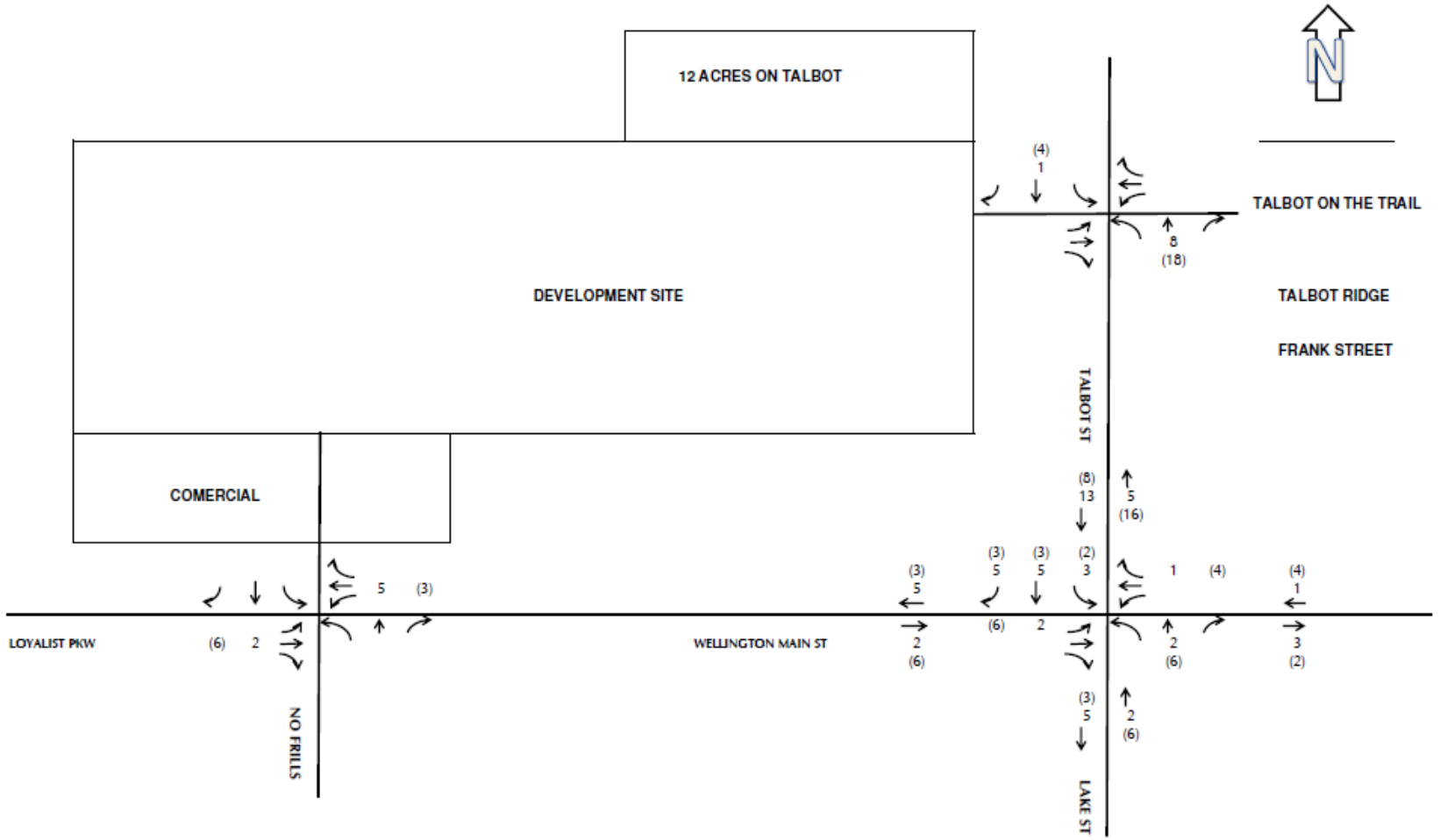
100 (100) AM (PM) Peak Hour

Figure A3
Talbot on the Trail Generated Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



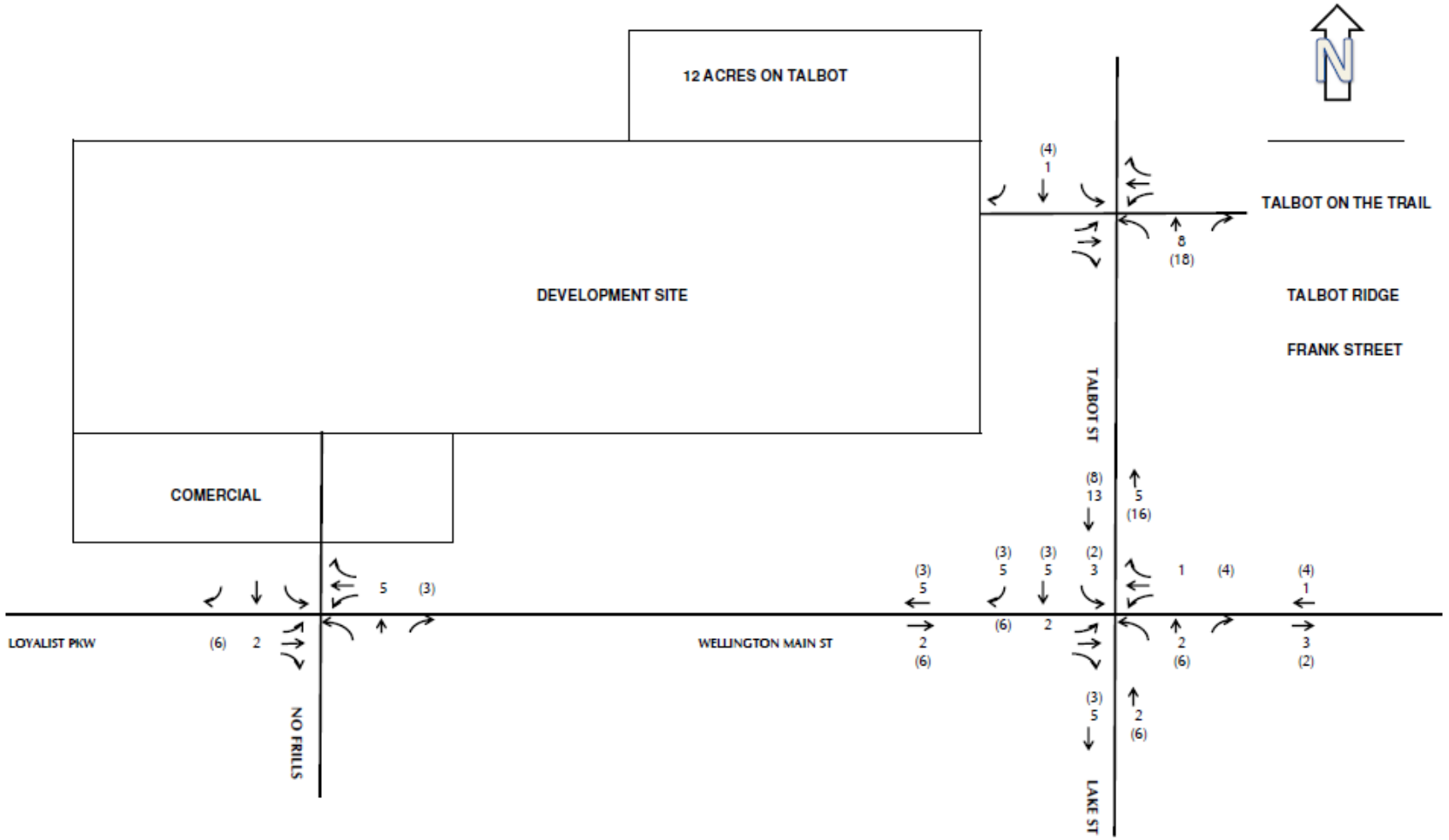
100 (100) AM (PM) Peak Hour

Figure A4
Tailbot Ridge Phase 2 Generated Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



100 (100) AM (PM) Peak Hour

Figure A5
Frank Street Subdivision Generated Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward



100 (100) AM (PM) Peak Hour

Figure A5
Frank Street Subdivision Generated Traffic Volumes
West Meadow Subdivision Traffic Impact Study Addendum
County of Prince Edward

APPENDIX B

Operational Analyses

2020 Traffic Volumes

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	291	25	44	274	10	45
Future Vol, veh/h	291	25	44	274	10	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	600	700	-	200	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	316	27	48	298	11	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	343	0	561	158
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1213	-	458	859
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	773	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1213	-	440	859
Mov Cap-2 Maneuver	-	-	-	-	440	-
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	742	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	440	859	-	-	1213	-
HCM Lane V/C Ratio	0.025	0.057	-	-	0.039	-
HCM Control Delay (s)	13.4	9.4	-	-	8.1	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	324	55	133	327	57	138
Future Vol, veh/h	324	55	133	327	57	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	600	700	-	200	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	352	60	145	355	62	150

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	412	0	820	176
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	468	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1143	-	313	837
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1143	-	273	837
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	273	837	-	-	1143	-
HCM Lane V/C Ratio	0.227	0.179	-	-	0.126	-
HCM Control Delay (s)	22	10.2	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.7	-	-	0.4	-

2025 Background Traffic Volumes

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	268	26	45	267	114	10	0	47	92	0	45
Future Vol, veh/h	64	268	26	45	267	114	10	0	47	92	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	900	-	600	700	-	-	200	-	-	400	-	250
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	70	291	28	49	290	124	11	0	51	100	0	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	414	0	0	319	0	0	674	943	146	736	909	207
Stage 1	-	-	-	-	-	-	431	431	-	450	450	-
Stage 2	-	-	-	-	-	-	243	512	-	286	459	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1141	-	-	1238	-	-	340	261	875	307	273	799
Stage 1	-	-	-	-	-	-	573	581	-	558	570	-
Stage 2	-	-	-	-	-	-	739	535	-	697	565	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1141	-	-	1238	-	-	295	235	875	267	246	799
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	235	-	267	246	-
Stage 1	-	-	-	-	-	-	538	546	-	524	547	-
Stage 2	-	-	-	-	-	-	666	514	-	616	531	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.8	10.9	20.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	295	875	1141	-	-	1238	-	-	267	-	799
HCM Lane V/C Ratio	0.037	0.058	0.061	-	-	0.04	-	-	0.375	-	0.061
HCM Control Delay (s)	17.7	9.4	8.4	-	-	8	-	-	26.3	0	9.8
HCM Lane LOS	C	A	A	-	-	A	-	-	D	A	A
HCM 95th %tile Q(veh)	0.1	0.2	0.2	-	-	0.1	-	-	1.7	-	0.2

Intersection	
Int Delay, s/veh	44.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	295	57	138	291	196	59	0	143	181	0	95
Future Vol, veh/h	97	295	57	138	291	196	59	0	143	181	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	900	-	600	700	-	-	-	-	-	-	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	102	311	60	145	306	206	62	0	151	191	0	100

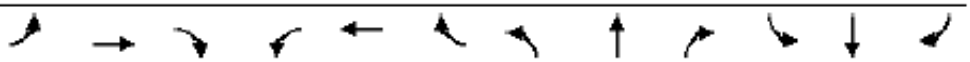
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	512	0	0	371	0	0	958	1317	156	1059	1274	256
Stage 1	-	-	-	-	-	-	515	515	-	699	699	-
Stage 2	-	-	-	-	-	-	443	802	-	360	575	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1050	-	-	1184	-	-	212	156	862	~ 179	166	743
Stage 1	-	-	-	-	-	-	511	533	-	397	440	-
Stage 2	-	-	-	-	-	-	564	395	-	631	501	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1050	-	-	1184	-	-	154	124	862	~ 124	132	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	124	-	~ 124	132	-
Stage 1	-	-	-	-	-	-	461	481	-	358	386	-
Stage 2	-	-	-	-	-	-	428	347	-	470	452	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	1.9	19.8	227.2
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	154	862	1050	-	-	1184	-	-	124	-	743
HCM Lane V/C Ratio	0.403	0.175	0.097	-	-	0.123	-	-	1.537	-	0.135
HCM Control Delay (s)	43.3	10.1	8.8	-	-	8.5	-	-	$ 340.9	0	10.6
HCM Lane LOS	E	B	A	-	-	A	-	-	F	A	B
HCM 95th %tile Q(veh)	1.8	0.6	0.3	-	-	0.4	-	-	13.6	-	0.5

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

2030 Background Traffic Volumes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	287	27	47	296	117	11	0	48	101	0	52
Future Volume (veh/h)	66	287	27	47	296	117	11	0	48	101	0	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	72	312	29	51	322	127	12	0	52	110	0	57
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	381	1287	576	444	908	351	655	0	619	630	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	937	3539	1583	1035	2496	966	1341	0	1583	1347	1863	1583
Grp Volume(v), veh/h	72	312	29	51	226	223	12	0	52	110	0	57
Grp Sat Flow(s),veh/h/ln	937	1770	1583	1035	1770	1692	1341	0	1583	1347	1863	1583
Q Serve(g_s), s	3.4	3.4	0.7	2.0	5.1	5.3	0.3	0.0	1.1	3.1	0.0	1.3
Cycle Q Clear(g_c), s	8.7	3.4	0.7	5.4	5.1	5.3	0.3	0.0	1.1	4.2	0.0	1.3
Prop In Lane	1.00		1.00	1.00		0.57	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	381	1287	576	444	643	615	655	0	619	630	728	619
V/C Ratio(X)	0.19	0.24	0.05	0.11	0.35	0.36	0.02	0.00	0.08	0.17	0.00	0.09
Avail Cap(c_a), veh/h	399	1351	605	463	676	646	655	0	619	630	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.0	12.2	11.3	14.1	12.8	12.8	10.3	0.0	10.5	11.9	0.0	10.6
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.1	0.3	0.4	0.1	0.0	0.3	0.6	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.7	0.3	0.6	2.6	2.5	0.1	0.0	0.5	1.2	0.0	0.6
LnGrp Delay(d),s/veh	16.2	12.3	11.4	14.2	13.1	13.2	10.3	0.0	10.8	12.5	0.0	10.9
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		413			500			64			167	
Approach Delay, s/veh		12.9			13.2			10.7			11.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		20.5		21.0		20.5		21.0
Max Q Clear Time (g_c+I1), s		3.1		10.7		6.2		7.4
Green Ext Time (p_c), s		0.5		3.5		0.7		5.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	327	59	144	315	207	62	0	149	187	0	99
Future Volume (veh/h)	104	327	59	144	315	207	62	0	149	187	0	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	113	355	64	157	342	225	67	0	162	203	0	108
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1287	576	413	751	485	631	0	619	523	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	841	3539	1583	964	2065	1333	1280	0	1583	1219	1863	1583
Grp Volume(v), veh/h	113	355	64	157	292	275	67	0	162	203	0	108
Grp Sat Flow(s),veh/h/ln	841	1770	1583	964	1770	1628	1280	0	1583	1219	1863	1583
Q Serve(g_s), s	6.5	3.9	1.5	7.6	6.9	7.1	1.8	0.0	3.8	7.5	0.0	2.5
Cycle Q Clear(g_c), s	13.6	3.9	1.5	11.5	6.9	7.1	1.8	0.0	3.8	11.3	0.0	2.5
Prop In Lane	1.00		1.00	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	1287	576	413	643	592	631	0	619	523	728	619
V/C Ratio(X)	0.34	0.28	0.11	0.38	0.45	0.46	0.11	0.00	0.26	0.39	0.00	0.17
Avail Cap(c_a), veh/h	343	1351	605	431	676	621	631	0	619	523	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	12.4	11.6	16.4	13.3	13.4	10.8	0.0	11.4	15.2	0.0	10.9
Incr Delay (d2), s/veh	0.6	0.1	0.1	0.6	0.5	0.6	0.3	0.0	1.0	2.2	0.0	0.6
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	1.6	1.9	0.7	2.1	3.4	3.2	0.7	0.0	1.8	2.8	0.0	1.2
LnGrp Delay(d),s/veh	19.2	12.5	11.7	17.0	13.8	14.0	11.1	0.0	12.4	17.4	0.0	11.6
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		532			724			229			311	
Approach Delay, s/veh		13.8			14.6			12.0			15.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		20.5		21.0		20.5		21.0
Max Q Clear Time (g_c+I1), s		5.8		15.6		13.3		13.5
Green Ext Time (p_c), s		2.2		2.5		1.1		4.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

2035 Background Traffic Volumes

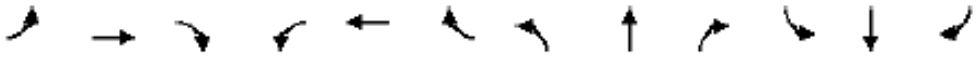
HCM 2010 Signalized Intersection Summary
6: No Frills entrance/Street A & Royalist Pkwy

09/23/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	299	28	49	308	117	11	0	50	101	0	52
Future Volume (veh/h)	66	299	28	49	308	117	11	0	50	101	0	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	72	325	30	53	335	127	12	0	54	110	0	57
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	1287	576	437	918	342	655	0	619	628	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	926	3539	1583	1022	2525	941	1341	0	1583	1345	1863	1583
Grp Volume(v), veh/h	72	325	30	53	233	229	12	0	54	110	0	57
Grp Sat Flow(s),veh/h/ln	926	1770	1583	1022	1770	1697	1341	0	1583	1345	1863	1583
Q Serve(g_s), s	3.4	3.5	0.7	2.1	5.3	5.5	0.3	0.0	1.2	3.1	0.0	1.3
Cycle Q Clear(g_c), s	8.9	3.5	0.7	5.6	5.3	5.5	0.3	0.0	1.2	4.3	0.0	1.3
Prop In Lane	1.00		1.00	1.00		0.55	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	1287	576	437	643	617	655	0	619	628	728	619
V/C Ratio(X)	0.19	0.25	0.05	0.12	0.36	0.37	0.02	0.00	0.09	0.18	0.00	0.09
Avail Cap(c_a), veh/h	393	1351	605	455	676	648	655	0	619	628	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.1	12.3	11.4	14.2	12.8	12.9	10.3	0.0	10.6	11.9	0.0	10.6
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.1	0.3	0.4	0.1	0.0	0.3	0.6	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.7	0.3	0.6	2.6	2.6	0.1	0.0	0.6	1.2	0.0	0.6
LnGrp Delay(d),s/veh	16.4	12.4	11.4	14.4	13.2	13.2	10.3	0.0	10.8	12.5	0.0	10.9
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		427			515			66			167	
Approach Delay, s/veh		13.0			13.3			10.8			12.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		20.5		21.0		20.5		21.0
Max Q Clear Time (g_c+I1), s		3.2		10.9		6.3		7.6
Green Ext Time (p_c), s		0.5		3.5		0.7		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	340	61	149	329	207	64	0	155	187	0	99
Future Volume (veh/h)	104	340	61	149	329	207	64	0	155	187	0	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	113	370	66	162	358	225	70	0	168	203	0	108
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	1287	576	405	765	473	631	0	619	517	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	828	3539	1583	949	2103	1300	1280	0	1583	1212	1863	1583
Grp Volume(v), veh/h	113	370	66	162	300	283	70	0	168	203	0	108
Grp Sat Flow(s),veh/h/ln	828	1770	1583	949	1770	1633	1280	0	1583	1212	1863	1583
Q Serve(g_s), s	6.7	4.1	1.5	8.0	7.2	7.3	1.9	0.0	4.0	7.5	0.0	2.5
Cycle Q Clear(g_c), s	14.0	4.1	1.5	12.1	7.2	7.3	1.9	0.0	4.0	11.5	0.0	2.5
Prop In Lane	1.00		1.00	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	322	1287	576	405	643	594	631	0	619	517	728	619
V/C Ratio(X)	0.35	0.29	0.11	0.40	0.47	0.48	0.11	0.00	0.27	0.39	0.00	0.17
Avail Cap(c_a), veh/h	337	1351	605	423	676	624	631	0	619	517	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.9	12.4	11.6	16.7	13.4	13.5	10.8	0.0	11.4	15.3	0.0	10.9
Incr Delay (d2), s/veh	0.7	0.1	0.1	0.6	0.5	0.6	0.4	0.0	1.1	2.2	0.0	0.6
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	1.6	2.0	0.7	2.1	3.5	3.4	0.7	0.0	1.9	2.8	0.0	1.2
LnGrp Delay(d),s/veh	19.5	12.6	11.7	17.4	13.9	14.1	11.1	0.0	12.5	17.6	0.0	11.6
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		549			745			238			311	
Approach Delay, s/veh		13.9			14.7			12.1			15.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		20.5		21.0		20.5		21.0
Max Q Clear Time (g_c+I1), s		6.0		16.0		13.5		14.1
Green Ext Time (p_c), s		2.3		2.5		1.0		4.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

2025 Total Traffic Volumes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	271	26	45	275	127	10	0	47	131	0	77
Future Volume (veh/h)	74	271	26	45	275	127	10	0	47	131	0	77
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	80	295	28	49	299	138	11	0	51	142	0	84
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	1287	576	453	863	389	642	0	619	631	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	948	3539	1583	1052	2373	1070	1308	0	1583	1348	1863	1583
Grp Volume(v), veh/h	80	295	28	49	221	216	11	0	51	142	0	84
Grp Sat Flow(s),veh/h/ln	948	1770	1583	1052	1770	1674	1308	0	1583	1348	1863	1583
Q Serve(g_s), s	3.7	3.2	0.6	1.9	5.0	5.2	0.3	0.0	1.1	4.1	0.0	1.9
Cycle Q Clear(g_c), s	8.9	3.2	0.6	5.0	5.0	5.2	0.3	0.0	1.1	5.2	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.64	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	386	1287	576	453	643	609	642	0	619	631	728	619
V/C Ratio(X)	0.21	0.23	0.05	0.11	0.34	0.35	0.02	0.00	0.08	0.23	0.00	0.14
Avail Cap(c_a), veh/h	404	1351	605	472	676	639	642	0	619	631	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.0	12.1	11.3	13.9	12.7	12.8	10.3	0.0	10.5	12.2	0.0	10.8
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.1	0.3	0.4	0.0	0.0	0.3	0.8	0.0	0.5
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	1.0	1.6	0.3	0.6	2.5	2.5	0.1	0.0	0.5	1.6	0.0	0.9
LnGrp Delay(d),s/veh	16.3	12.2	11.4	14.0	13.0	13.1	10.3	0.0	10.8	13.0	0.0	11.2
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		403			486			62			226	
Approach Delay, s/veh		13.0			13.2			10.7			12.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		20.5		21.0		20.5		21.0
Max Q Clear Time (g_c+I1), s		3.1		10.9		7.2		7.2
Green Ext Time (p_c), s		0.5		3.3		1.0		5.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	302	59	138	295	242	59	0	143	208	0	112
Future Volume (veh/h)	125	302	59	138	295	242	59	0	143	208	0	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	136	328	64	150	321	263	64	0	155	226	0	122
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	1287	576	426	680	545	625	0	619	529	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	828	3539	1583	988	1869	1499	1264	0	1583	1227	1863	1583
Grp Volume(v), veh/h	136	328	64	150	304	280	64	0	155	226	0	122
Grp Sat Flow(s),veh/h/ln	828	1770	1583	988	1770	1598	1264	0	1583	1227	1863	1583
Q Serve(g_s), s	8.3	3.6	1.5	6.9	7.2	7.4	1.8	0.0	3.6	8.4	0.0	2.8
Cycle Q Clear(g_c), s	15.8	3.6	1.5	10.5	7.2	7.4	1.8	0.0	3.6	12.0	0.0	2.8
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	1287	576	426	643	581	625	0	619	529	728	619
V/C Ratio(X)	0.43	0.25	0.11	0.35	0.47	0.48	0.10	0.00	0.25	0.43	0.00	0.20
Avail Cap(c_a), veh/h	320	1287	576	426	643	581	625	0	619	529	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.6	12.3	11.6	15.9	13.4	13.5	10.7	0.0	11.3	15.4	0.0	11.1
Incr Delay (d2), s/veh	0.9	0.1	0.1	0.5	0.5	0.6	0.3	0.0	1.0	2.5	0.0	0.7
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	2.0	1.7	0.7	1.9	3.6	3.4	0.7	0.0	1.8	3.2	0.0	1.3
LnGrp Delay(d),s/veh	20.5	12.4	11.7	16.4	14.0	14.1	11.1	0.0	12.3	17.9	0.0	11.8
LnGrp LOS	C	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		528			734			219			348	
Approach Delay, s/veh		14.4			14.5			11.9			15.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		21.5		20.0		21.5		20.0
Max Q Clear Time (g_c+I1), s		5.6		17.8		14.0		12.5
Green Ext Time (p_c), s		2.2		1.1		1.2		4.6

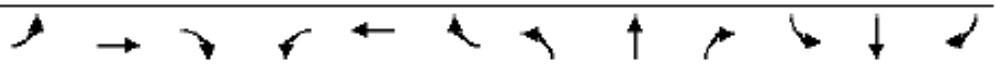
Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

2030 Total Traffic Volumes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	289	27	47	304	130	11	0	48	141	0	84
Future Volume (veh/h)	77	289	27	47	304	130	11	0	48	141	0	84
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	84	314	29	51	330	141	12	0	52	153	0	91
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	371	1287	576	443	885	371	639	0	619	630	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	919	3539	1583	1033	2432	1020	1300	0	1583	1347	1863	1583
Grp Volume(v), veh/h	84	314	29	51	238	233	12	0	52	153	0	91
Grp Sat Flow(s),veh/h/ln	919	1770	1583	1033	1770	1683	1300	0	1583	1347	1863	1583
Q Serve(g_s), s	4.1	3.4	0.7	2.0	5.4	5.6	0.3	0.0	1.1	4.4	0.0	2.0
Cycle Q Clear(g_c), s	9.7	3.4	0.7	5.4	5.4	5.6	0.3	0.0	1.1	5.6	0.0	2.0
Prop In Lane	1.00		1.00	1.00		0.61	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	371	1287	576	443	643	612	639	0	619	630	728	619
V/C Ratio(X)	0.23	0.24	0.05	0.12	0.37	0.38	0.02	0.00	0.08	0.24	0.00	0.15
Avail Cap(c_a), veh/h	388	1351	605	461	676	643	639	0	619	630	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	12.2	11.3	14.1	12.9	12.9	10.3	0.0	10.5	12.3	0.0	10.8
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.1	0.4	0.4	0.1	0.0	0.3	0.9	0.0	0.5
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	1.1	1.7	0.3	0.6	2.7	2.7	0.1	0.0	0.5	1.8	0.0	1.0
LnGrp Delay(d),s/veh	16.8	12.3	11.4	14.2	13.2	13.3	10.4	0.0	10.8	13.2	0.0	11.3
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		427			522			64			244	
Approach Delay, s/veh		13.1			13.4			10.7			12.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		20.5		21.0		20.5		21.0
Max Q Clear Time (g_c+I1), s		3.1		11.7		7.6		7.6
Green Ext Time (p_c), s		0.5		3.3		1.1		5.5

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	334	59	144	319	253	62	0	149	215	0	116
Future Volume (veh/h)	132	334	59	144	319	253	62	0	149	215	0	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	143	363	64	157	347	275	67	0	162	234	0	126
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	1287	576	409	689	537	623	0	619	523	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	799	3539	1583	957	1895	1477	1260	0	1583	1219	1863	1583
Grp Volume(v), veh/h	143	363	64	157	324	298	67	0	162	234	0	126
Grp Sat Flow(s),veh/h/ln	799	1770	1583	957	1770	1602	1260	0	1583	1219	1863	1583
Q Serve(g_s), s	9.4	4.0	1.5	7.7	7.8	8.0	1.9	0.0	3.8	8.9	0.0	2.9
Cycle Q Clear(g_c), s	17.4	4.0	1.5	11.7	7.8	8.0	1.9	0.0	3.8	12.7	0.0	2.9
Prop In Lane	1.00		1.00	1.00		0.92	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	1287	576	409	643	583	623	0	619	523	728	619
V/C Ratio(X)	0.47	0.28	0.11	0.38	0.50	0.51	0.11	0.00	0.26	0.45	0.00	0.20
Avail Cap(c_a), veh/h	305	1287	576	409	643	583	623	0	619	523	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.5	12.4	11.6	16.5	13.6	13.7	10.8	0.0	11.4	15.7	0.0	11.1
Incr Delay (d2), s/veh	1.1	0.1	0.1	0.6	0.6	0.8	0.3	0.0	1.0	2.8	0.0	0.7
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	2.2	1.9	0.7	2.1	3.9	3.6	0.7	0.0	1.8	3.4	0.0	1.4
LnGrp Delay(d),s/veh	21.6	12.5	11.7	17.1	14.3	14.4	11.1	0.0	12.4	18.4	0.0	11.8
LnGrp LOS	C	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		570			779			229			360	
Approach Delay, s/veh		14.7			14.9			12.0			16.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		21.5		20.0		21.5		20.0
Max Q Clear Time (g_c+I1), s		5.8		19.4		14.7		13.7
Green Ext Time (p_c), s		2.3		0.4		1.2		4.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

2035 Total Traffic Volumes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	530	52	131	531	106	57	55	223	173	80	71
Future Volume (veh/h)	34	530	52	131	531	106	57	55	223	173	80	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1900	1827	1681	1776	1827	1827	1900	1653	1827	1845	1654	1900
Adj Flow Rate, veh/h	37	576	0	142	577	0	62	60	242	188	87	77
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	4	13	7	4	4	10	20	4	3	28	0
Cap, veh/h	347	680	532	315	911	774	234	192	466	312	244	216
Arrive On Green	0.37	0.37	0.00	0.08	0.50	0.00	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	848	1827	1429	1691	1827	1553	476	638	1550	1062	810	717
Grp Volume(v), veh/h	37	576	0	142	577	0	122	0	242	188	0	164
Grp Sat Flow(s),veh/h/ln	848	1827	1429	1691	1827	1553	1115	0	1550	1062	0	1526
Q Serve(g_s), s	2.0	17.3	0.0	2.8	13.8	0.0	2.1	0.0	7.7	10.5	0.0	5.0
Cycle Q Clear(g_c), s	8.3	17.3	0.0	2.8	13.8	0.0	7.2	0.0	7.7	17.7	0.0	5.0
Prop In Lane	1.00		1.00	1.00		1.00	0.51		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	347	680	532	315	911	774	426	0	466	312	0	459
V/C Ratio(X)	0.11	0.85	0.00	0.45	0.63	0.00	0.29	0.00	0.52	0.60	0.00	0.36
Avail Cap(c_a), veh/h	371	733	573	413	1069	908	426	0	466	312	0	459
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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.8	17.2	0.0	12.6	11.0	0.0	16.9	0.0	17.3	24.4	0.0	16.4
Incr Delay (d2), s/veh	0.1	8.6	0.0	1.0	0.9	0.0	1.7	0.0	4.1	8.3	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	10.3	0.0	1.4	7.1	0.0	1.8	0.0	3.8	3.8	0.0	2.4
LnGrp Delay(d),s/veh	16.9	25.8	0.0	13.6	11.9	0.0	18.6	0.0	21.4	32.7	0.0	18.5
LnGrp LOS	B	C		B	B		B		C	C		B
Approach Vol, veh/h		613			719			364			352	
Approach Delay, s/veh		25.3			12.3			20.5			26.1	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	7.5	28.3		24.0		35.8
Change Period (Y+Rc), s		6.0	3.0	6.0		6.0		6.0
Max Green Setting (Gmax), s		18.0	8.0	24.0		18.0		35.0
Max Q Clear Time (g_c+I1), s		9.7	4.8	19.3		19.7		15.8
Green Ext Time (p_c), s		1.9	0.2	3.0		0.0		9.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	301	28	49	315	130	11	0	50	141	0	84
Future Volume (veh/h)	77	301	28	49	315	130	11	0	50	141	0	84
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	84	327	30	53	342	141	12	0	54	153	0	91
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	1287	576	436	894	362	639	0	619	628	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	909	3539	1583	1020	2460	997	1300	0	1583	1345	1863	1583
Grp Volume(v), veh/h	84	327	30	53	244	239	12	0	54	153	0	91
Grp Sat Flow(s),veh/h/ln	909	1770	1583	1020	1770	1687	1300	0	1583	1345	1863	1583
Q Serve(g_s), s	4.2	3.6	0.7	2.1	5.6	5.8	0.3	0.0	1.2	4.5	0.0	2.0
Cycle Q Clear(g_c), s	9.9	3.6	0.7	5.7	5.6	5.8	0.3	0.0	1.2	5.6	0.0	2.0
Prop In Lane	1.00		1.00	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	1287	576	436	643	613	639	0	619	628	728	619
V/C Ratio(X)	0.23	0.25	0.05	0.12	0.38	0.39	0.02	0.00	0.09	0.24	0.00	0.15
Avail Cap(c_a), veh/h	383	1351	605	454	676	644	639	0	619	628	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.6	12.3	11.4	14.3	12.9	13.0	10.3	0.0	10.6	12.3	0.0	10.8
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.1	0.4	0.4	0.1	0.0	0.3	0.9	0.0	0.5
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	1.1	1.7	0.3	0.6	2.8	2.7	0.1	0.0	0.6	1.8	0.0	1.0
LnGrp Delay(d),s/veh	17.0	12.4	11.4	14.4	13.3	13.4	10.4	0.0	10.8	13.3	0.0	11.3
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		441			536			66			244	
Approach Delay, s/veh		13.2			13.4			10.8			12.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		20.5		21.0		20.5		21.0
Max Q Clear Time (g_c+I1), s		3.2		11.9		7.6		7.8
Green Ext Time (p_c), s		0.5		3.3		1.1		5.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Intersection												
Int Delay, s/veh	3.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	0	58	45	0	12	19	163	15	4	188	5
Future Vol, veh/h	16	0	58	45	0	12	19	163	15	4	188	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	400	-	-	150	-	150
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	0	63	49	0	13	21	177	16	4	204	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	446	447	204	473	444	185	209	0	0	193	0	0
Stage 1	212	212	-	227	227	-	-	-	-	-	-	-
Stage 2	234	235	-	246	217	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	523	506	837	501	508	857	1362	-	-	1380	-	-
Stage 1	790	727	-	776	716	-	-	-	-	-	-	-
Stage 2	769	710	-	758	723	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	508	497	837	457	499	857	1362	-	-	1380	-	-
Mov Cap-2 Maneuver	508	497	-	457	499	-	-	-	-	-	-	-
Stage 1	778	725	-	764	705	-	-	-	-	-	-	-
Stage 2	746	699	-	699	721	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	12.9	0.7	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1362	-	-	508	837	457	857	1380	-	-
HCM Lane V/C Ratio	0.015	-	-	0.034	0.075	0.107	0.015	0.003	-	-
HCM Control Delay (s)	7.7	-	-	12.3	9.7	13.8	9.3	7.6	-	-
HCM Lane LOS	A	-	-	B	A	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.4	0	0	-	-

HCM 2010 Signalized Intersection Summary
2: Lake St/Talbot St & Royalist Pkwy/Picton Main St

09/23/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	576	66	250	674	149	75	82	216	132	69	52
Future Volume (veh/h)	68	576	66	250	674	149	75	82	216	132	69	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1792	1881	1845	1881	1900	1827	1900	1900	1863	1900	1900	1900
Adj Flow Rate, veh/h	74	626	0	272	733	0	82	89	235	143	75	57
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	1	3	1	0	4	0	0	2	0	0	0
Cap, veh/h	277	691	576	365	1011	826	247	242	442	297	281	214
Arrive On Green	0.37	0.37	0.00	0.12	0.53	0.00	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	690	1881	1568	1792	1900	1553	584	862	1575	1070	1001	760
Grp Volume(v), veh/h	74	626	0	272	733	0	171	0	235	143	0	132
Grp Sat Flow(s),veh/h/ln	690	1881	1568	1792	1900	1553	1446	0	1575	1070	0	1761
Q Serve(g_s), s	5.9	20.2	0.0	5.5	18.8	0.0	3.2	0.0	8.1	8.2	0.0	3.7
Cycle Q Clear(g_c), s	14.1	20.2	0.0	5.5	18.8	0.0	7.0	0.0	8.1	15.1	0.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	0.48		1.00	1.00		0.43
Lane Grp Cap(c), veh/h	277	691	576	365	1011	826	489	0	442	297	0	495
V/C Ratio(X)	0.27	0.91	0.00	0.75	0.73	0.00	0.35	0.00	0.53	0.48	0.00	0.27
Avail Cap(c_a), veh/h	282	704	587	377	1038	848	489	0	442	297	0	495
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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.8	19.2	0.0	13.7	11.4	0.0	19.0	0.0	19.5	25.3	0.0	17.9
Incr Delay (d2), s/veh	0.5	15.3	0.0	7.6	2.5	0.0	2.0	0.0	4.5	5.5	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	13.4	0.0	3.4	10.5	0.0	2.7	0.0	4.0	2.9	0.0	2.0
LnGrp Delay(d),s/veh	21.4	34.5	0.0	21.3	13.9	0.0	21.0	0.0	24.0	30.9	0.0	19.2
LnGrp LOS	C	C		C	B		C		C	C		B
Approach Vol, veh/h		700			1005			406			275	
Approach Delay, s/veh		33.1			15.9			22.7			25.3	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	10.6	29.5		24.0		40.1
Change Period (Y+Rc), s		6.0	3.0	6.0		6.0		6.0
Max Green Setting (Gmax), s		18.0	8.0	24.0		18.0		35.0
Max Q Clear Time (g_c+I1), s		10.1	7.5	22.2		17.1		20.8
Green Ext Time (p_c), s		2.2	0.1	1.3		0.2		9.2

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	347	61	149	333	253	64	0	155	215	0	116
Future Volume (veh/h)	132	347	61	149	333	253	64	0	155	215	0	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	143	377	66	162	362	275	70	0	168	234	0	126
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	1287	576	402	702	526	623	0	619	517	728	619
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	788	3539	1583	943	1932	1446	1260	0	1583	1212	1863	1583
Grp Volume(v), veh/h	143	377	66	162	331	306	70	0	168	234	0	126
Grp Sat Flow(s),veh/h/ln	788	1770	1583	943	1770	1608	1260	0	1583	1212	1863	1583
Q Serve(g_s), s	9.6	4.2	1.5	8.1	8.1	8.2	2.0	0.0	4.0	9.0	0.0	2.9
Cycle Q Clear(g_c), s	17.8	4.2	1.5	12.3	8.1	8.2	2.0	0.0	4.0	12.9	0.0	2.9
Prop In Lane	1.00		1.00	1.00		0.90	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	300	1287	576	402	643	585	623	0	619	517	728	619
V/C Ratio(X)	0.48	0.29	0.11	0.40	0.51	0.52	0.11	0.00	0.27	0.45	0.00	0.20
Avail Cap(c_a), veh/h	300	1287	576	402	643	585	623	0	619	517	728	619
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	12.5	11.6	16.8	13.7	13.8	10.8	0.0	11.4	15.8	0.0	11.1
Incr Delay (d2), s/veh	1.2	0.1	0.1	0.7	0.7	0.8	0.4	0.0	1.1	2.8	0.0	0.7
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	2.2	2.1	0.7	2.2	4.0	3.7	0.7	0.0	1.9	3.4	0.0	1.4
LnGrp Delay(d),s/veh	21.9	12.6	11.7	17.5	14.4	14.6	11.2	0.0	12.5	18.7	0.0	11.8
LnGrp LOS	C	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		586			799			238			360	
Approach Delay, s/veh		14.8			15.1			12.1			16.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		27.0		28.0		27.0
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s		21.5		20.0		21.5		20.0
Max Q Clear Time (g_c+I1), s		6.0		19.8		14.9		14.3
Green Ext Time (p_c), s		2.4		0.1		1.2		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Intersection												
Int Delay, s/veh	2.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	39	29	0	8	65	191	46	12	177	17
Future Vol, veh/h	10	0	39	29	0	8	65	191	46	12	177	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	400	-	-	150	-	150
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	11	0	42	32	0	9	71	208	50	13	192	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	598	618	192	623	611	233	210	0	0	258	0	0
Stage 1	218	218	-	375	375	-	-	-	-	-	-	-
Stage 2	380	400	-	248	236	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	414	405	850	398	409	806	1361	-	-	1307	-	-
Stage 1	784	723	-	646	617	-	-	-	-	-	-	-
Stage 2	642	602	-	756	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	390	380	850	360	384	806	1361	-	-	1307	-	-
Mov Cap-2 Maneuver	390	380	-	360	384	-	-	-	-	-	-	-
Stage 1	743	716	-	612	585	-	-	-	-	-	-	-
Stage 2	602	571	-	711	703	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	14.6	1.7	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1361	-	-	390	850	360	806	1307	-	-
HCM Lane V/C Ratio	0.052	-	-	0.028	0.05	0.088	0.011	0.01	-	-
HCM Control Delay (s)	7.8	-	-	14.5	9.5	16	9.5	7.8	-	-
HCM Lane LOS	A	-	-	B	A	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0.2	0.3	0	0	-	-

Intersection: 2: Lake St/Talbot St & Royalist Pkwy/Picton Main St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	L	TR
Maximum Queue (m)	54.5	133.0	40.0	42.4	102.4	39.9	46.1	43.4	47.6	78.4
Average Queue (m)	9.2	60.4	9.3	15.3	39.5	6.1	18.1	21.6	25.1	24.8
95th Queue (m)	30.6	108.0	36.1	31.1	74.5	29.2	36.4	37.7	43.0	54.8
Link Distance (m)		544.1			157.4		151.9			529.4
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					0					
Storage Bay Dist (m)	25.0		10.0	50.0		10.0		35.0	20.0	
Storage Blk Time (%)	0	41	0	0	25	0	2	2	28	7
Queuing Penalty (veh)	2	35	1	0	60	0	4	2	42	13

Intersection: 6: No Frills entrance/Street A & Royalist Pkwy

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	R
Maximum Queue (m)	28.0	42.9	16.4	10.2	22.0	30.6	46.5	10.7	13.8	33.4	17.2
Average Queue (m)	11.5	21.5	1.5	2.1	8.1	14.9	21.3	1.8	4.4	15.7	8.1
95th Queue (m)	22.5	37.3	8.1	7.1	18.8	26.5	37.5	7.6	10.6	28.0	15.1
Link Distance (m)		167.0	167.0			212.2	212.2		124.1		
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)	90.0			60.0	70.0			20.0		40.0	25.0
Storage Blk Time (%)									0	0	0
Queuing Penalty (veh)									0	0	0

Intersection: 10: Talbot St & Site Access/Talbot on the Trail Ent.

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	L
Maximum Queue (m)	9.8	13.5	18.0	9.2	9.1	112.7	1.6
Average Queue (m)	2.7	5.3	7.5	3.2	0.5	3.8	0.1
95th Queue (m)	8.8	10.6	14.9	10.0	3.8	79.4	1.2
Link Distance (m)		123.9	116.2	116.2		529.4	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	15.0				40.0		15.0
Storage Blk Time (%)	0	0					
Queuing Penalty (veh)	0	0					

Network Summary

Network wide Queuing Penalty: 159

Intersection: 2: Lake St/Talbot St & Royalist Pkwy/Picton Main St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	L	TR
Maximum Queue (m)	54.8	133.6	40.0	79.8	147.8	40.0	44.0	45.4	42.3	41.8
Average Queue (m)	21.6	73.9	13.7	35.3	59.0	13.5	22.1	22.9	20.2	15.9
95th Queue (m)	50.9	121.4	44.6	71.2	115.1	43.0	37.0	37.7	36.3	31.4
Link Distance (m)		511.7			157.4		151.8			527.0
Upstream Blk Time (%)					1					
Queuing Penalty (veh)					0					
Storage Bay Dist (m)	25.0		10.0	50.0		10.0		35.0	20.0	
Storage Blk Time (%)	3	51	0	1	30	0	1	2	19	3
Queuing Penalty (veh)	16	68	0	10	120	3	3	2	23	5

Intersection: 6: No Frills entance/Street A & Royalist Pkwy

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	R
Maximum Queue (m)	57.2	57.6	31.8	13.8	50.1	37.0	55.6	17.4	21.4	44.6	19.5
Average Queue (m)	22.0	24.1	4.1	4.3	25.1	17.9	29.7	6.4	8.5	21.5	9.5
95th Queue (m)	45.8	42.0	16.1	10.1	42.9	31.1	48.3	14.6	17.3	36.3	17.7
Link Distance (m)		222.9	222.9			230.8	230.8	109.4	109.4	120.1	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)	90.0			60.0	70.0						25.0
Storage Blk Time (%)	0	0									0
Queuing Penalty (veh)	0	0									0

Intersection: 10: Talbot St & Site access/Talbot on the Trail Ent

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	L	L
Maximum Queue (m)	7.4	10.2	18.2	9.2	13.2	7.2
Average Queue (m)	2.1	4.1	6.1	2.1	2.3	0.6
95th Queue (m)	7.4	9.1	15.0	8.2	9.3	4.2
Link Distance (m)		117.4		111.1		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)	15.0		15.0		40.0	15.0
Storage Blk Time (%)		0	0	0		0
Queuing Penalty (veh)		0	0	0		0

Network Summary

Network wide Queuing Penalty: 250

APPENDIX C

Signal Warrants

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? Royalist Pkwy / Street A

What is the direction of the Main Road street? East-West

When was the data collected? 2025 BG

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Rural Population < 10,000 AND Speed >= 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	40	141	21	17	0	48	46	140	78	68	0	35	5
8:00	40	141	21	17	0	48	46	140	78	68	0	35	5
9:00	40	141	21	17	0	48	46	140	78	68	0	35	5
12:00	40	141	21	17	0	48	46	140	78	68	0	35	5
13:00	40	141	21	17	0	48	46	140	78	68	0	35	5
16:00	40	141	21	17	0	48	46	140	78	68	0	35	5
17:00	40	141	21	17	0	48	46	140	78	68	0	35	5
18:00	40	141	21	17	0	48	46	140	78	68	0	35	5
Total	**320**	**1,128**	**168**	**136**	**0**	**384**	**368**	**1,120**	**624**	**544**	**0**	**280**	**40**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	40	0		0	0	0	0	
Factored 8 hour pedestrian volume	40		0		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									9
Net 8 Hour Vehicular Volume on Street Being Crossed									40

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	40	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	0	10					0	0	
Factored volume of total pedestrians	40		0		0		0		
Factored volume of delayed pedestrians	10		0		0		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									9
Net 8 Hour Volume of Delayed Pedestrians									2

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

Intersection: Royalist Pkwy / Street A Count Date: 2025 BG

Summary Results

Justification			Compliance		Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	100	%	☑	☐
	B	Crossing Volume	100	%		
2. Delay to Cross Traffic	A	Main Road	78	%	☐	☑
	B	Crossing Road	100	%		
3. Combination	A	Justificaton 1	100	%	☐	☑
	B	Justification 2	78	%		
4. 4-Hr Volume			22	%	☐	☑
5. Collision Experience			0	%	☐	☑
6. Pedestrians	A	Volume	Justification not met		☐	☑
	B	Delay	Justification not met			