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March 3, 2020

Mr. Pat Schick
Jewell Engineering
71 Millennium Parkway,
Belleville, ON
K8N 4Z5

Reference: Residential Development
Rossmore, Prince Edward County, ON
Traffic Brief
Project N° 2115-19

Dear Mr. Schick,

Asurza Engineers Ltd. was retained by the developer to undertake a traffic review for the proposed Residential Development to be located in Rossmore, Prince Edward County. This analysis is required to meet the Prince Edward County requirement for such in relation to the developer application for the proposed development.

This traffic brief provides an overview of traffic generation and intersection operations to determine if the proposed development will generate impacts to the current traffic.

1. Background

According to the provided information, the site is a vacant land and is proposed a total of five (5) single-detached dwellings. Hennessy Street at the east end will be extended to serve the proposed residential development (see enclosed

map). Hennessy Street currently connects with Highway 62 in a traffic signal-controlled intersection.

Hennessy Street is short one direction local road that becomes a two-direction road at the east end. Hennessy Street serves approximately 20 residential properties. Hennessy Street and The Alley will provide access and exit respectively to the adjacent properties.

Highway 62 is an important north/south arterial road; within the section under study, Highway 62 has a posted speed of 60 km/h.

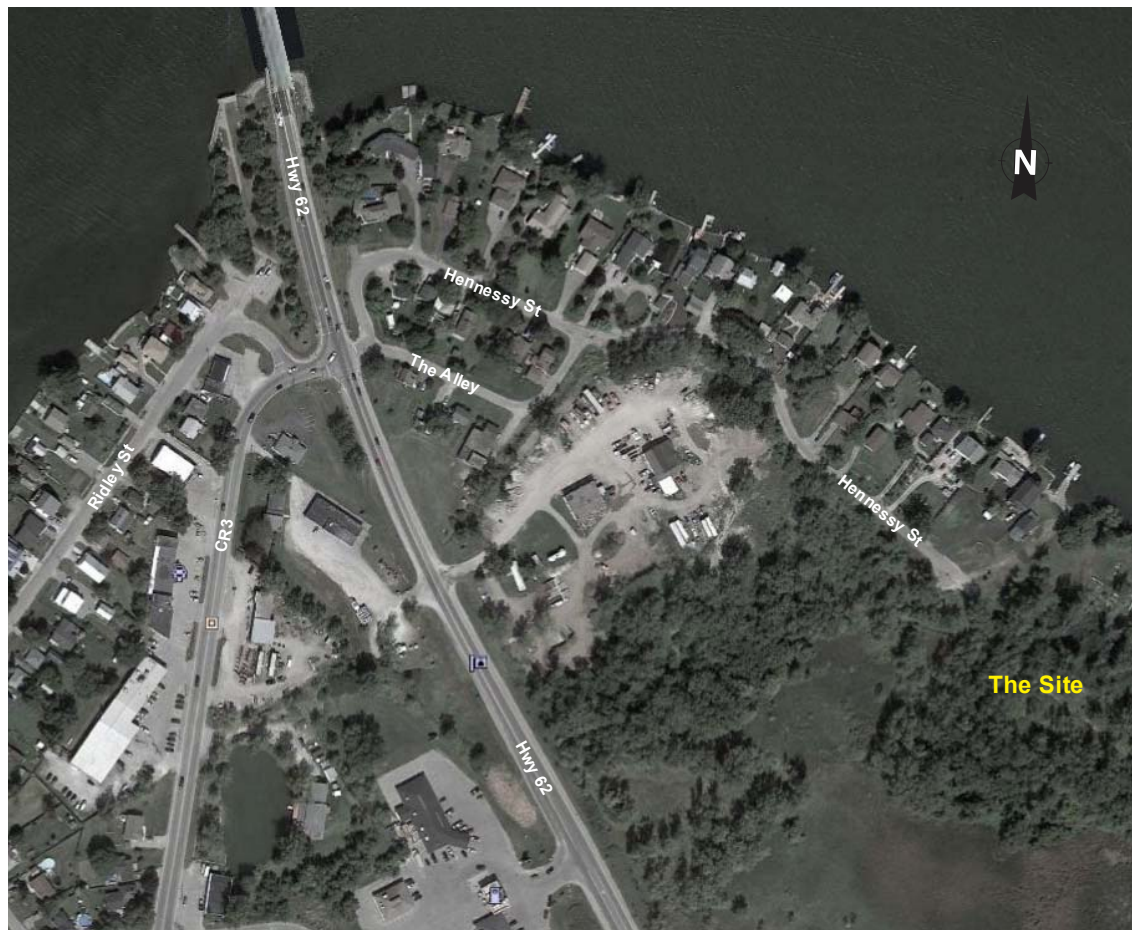


Figure 1: Study Area.

2. Existing Traffic Volumes and Intersection Operations

The Ministry of Transportation Ontario (MTO) provided traffic turning volumes for the Highway 62/CR3/Hennessy St intersection; the provided data is from April 2018. The traffic data was projected to the current year 2020 applying the growth factor of 1.6. The growth factor is the average obtained from the historical Annual Average Daily Traffic (AADT) published by MTO. The existing traffic volumes is shown in the following figure:

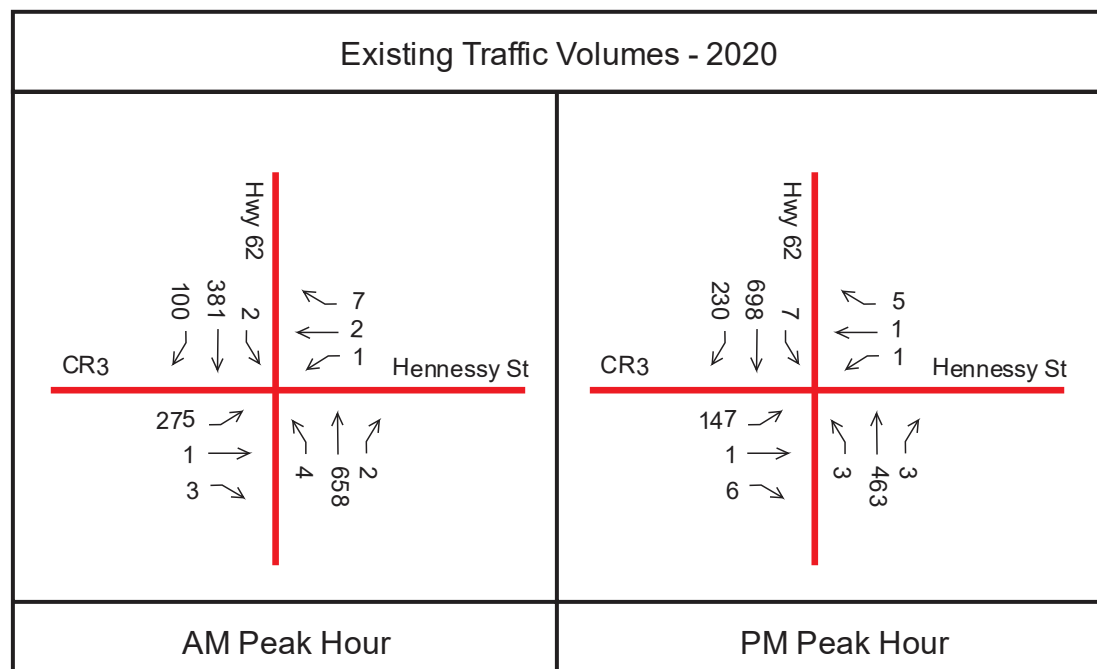


Figure 2: Existing Traffic Volumes - 2020.

Intersection Level of Service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay caused by the control system experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a particular movement, compared to the estimated capacity for that movement.

The level of service ranges from the letter “A” to “F” where “A” represents the ideal condition and “F” represents the extreme congested traffic condition.

The existing operations for the subject intersection was evaluated for the morning and afternoon peak hour and this is summarized in the following table:

		Existing 2020							
		AM Peak Hour				PM Peak Hour			
		V/C	Delay (s)	Q ₉₅ (m)	LOS	V/C	Delay (s)	Q ₉₅ (m)	LOS
Hwy 62/ CR3/Hennessy St	EB	0.86	55.0	91.1	D	0.63	41.1	43.3	D
	WB	0.03	16.1	4.3	B	0.02	17.8	3.5	B
	NB	0.63	14.8	115.2	B	0.41	8.3	63.9	A
	SBTL	0.39	10.7	55.2	B	0.62	11.6	119.8	B
	SBR	0.11	2.0	6.0	A	0.22	1.5	8.2	A
	Overall	0.86	20.6	-	C	0.63	12.1	-	B

Table 1: Existing Intersection Capacity - 2020.

3. Development Trip Generation and Trip Distribution

Estimation of trips generated by the proposed development were derived from the Trip Generation Manual, 10th Edition, published by the Institute of Transportation Engineers (ITE). The land use which most closely describe the proposed development is ‘Single Family Detached Housing - Land Use 210’; the trip rates and the estimated numbers of trips to be generated by the proposed development are shown in *Table 2*.

According to the ITE Trip Generation Manual, single detached units had the highest trip generation rate per dwelling unit of all residential uses because they are the largest units in size and had more residents and more vehicles per unit than other residential land uses; they are generally located farther away from commercial activities areas (i.e. shopping centers, employment) and other attractors than other residential land uses; and they generally had limited

alternative modes of transportation available because they are not as concentrated as other residential land uses.

TRIP GENERATION RATES BY LAND USE								
ITE Code	ITE Land Use	Unit of Measure	Weekday AM Peak Hr.			Weekday PM Peak Hr.		
			Rate	In	Out	Rate	In	Out
210	Single-Family Detached	N° of Occupied Dwelling Units	0.74	25%	75%	0.99	63%	37%

ESTIMATED NUMBER OF TRIPS BY LAND USE								
ITE Code	ITE Land Use	Total Units	Weekday AM Peak Hr.			Weekday PM Peak Hr.		
			Trips	In	Out	Trips	In	Out
210	Single-Family Detached	5	4	1	3	5	3	2

Table 2: Estimation of Trips Generated by the Proposed Development.

According to the ITE trip generation rates, it is estimated that 5 Single-Detached Dwellings will generate 4 additional trips during a typical weekday morning peak hour and 5 additional trips during a typical weekday afternoon peak hour.

4. Trip Distribution/Assignment

The number of vehicles entering and leaving the site is distributed proportionally to the existing directional traffic patterns. Directional traffic patterns were estimated from the traffic data provided by the Ministry of Transportation.

The proportional distribution of trips and the number of trips generated by the proposed development for the morning and afternoon peak hours are shown in the following figures:

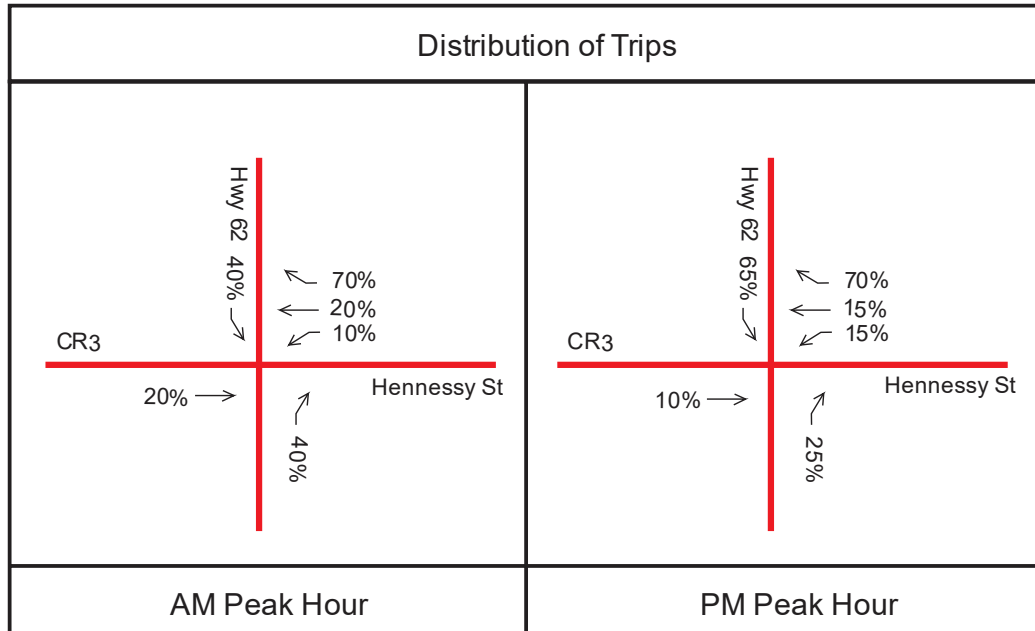


Figure 3: Distribution of Trips.

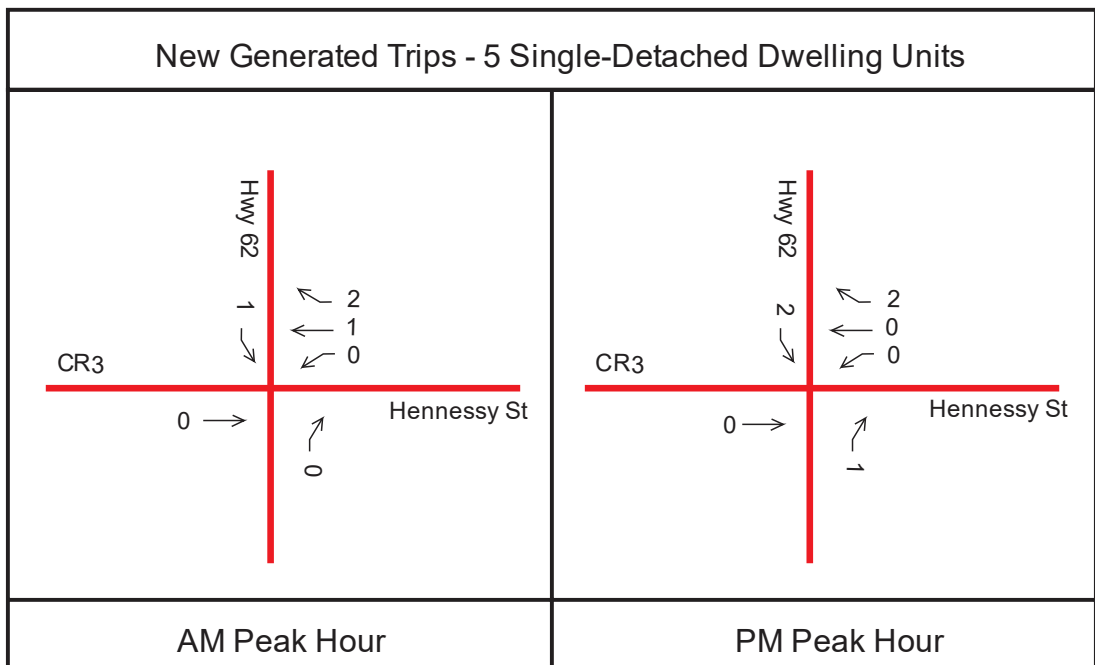


Figure 4: New Trips Generated for 5 Single-Detached Dwellings.

5. Future Traffic Operations

It is assumed the full build-out of development is for the year 2025; however, we understand from MTO that widening of Highway 62 from two-lane to four-lane is planned. At the time of writing this traffic brief, there was not a tentative year for the widening neither a geometric configuration of the affected intersections provided. For purposes of this analysis, two scenarios will be evaluated one with the existing two-lane and the other with the planned four-lane for Highway 62.

Hwy 62/CR3/Hennessy St		Volumes at AM and PM Peak Hours												Volume Type	
		Eastbound			Northbound			Westbound			Southbound				
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2018	AM	266	1	3	4	637	2	1	2	7	2	369	97	Registered Volumes	
2018	PM	142	1	6	3	449	3	1	1	5	7	676	223		
		Annual Growth Rate							1.60%						
2020	AM	275	1	3	4	658	2	1	2	7	2	381	100	Projected Existing Volumes	
2020	PM	147	1	6	3	463	3	1	1	5	7	698	230		
2025	AM	297	1	3	4	712	2	1	2	8	2	412	108	Projected Background Volumes	
2025	PM	159	1	7	3	502	3	1	1	6	8	755	249		

Table 3: Projected Background Traffic Volumes.

The future total traffic volumes for the horizon year 2025 are obtained by adding the background traffic volumes plus the new trips generated by the proposed development. The background volumes and the total traffic volumes will be the base for comparisons to assess any impact for the future year.

The total traffic volumes for the 5 dwelling units are shown in the following figure:

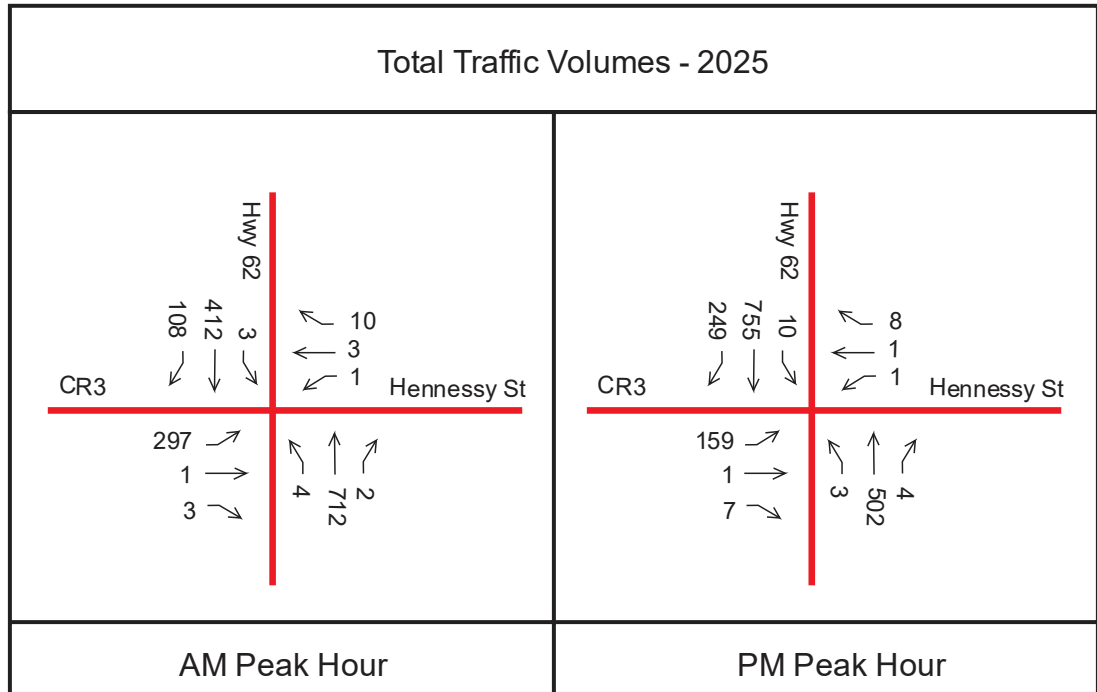


Figure 5: Total Traffic Volumes for 5 Single-Detached Dwellings - 2025.

As noted earlier, MTO is planning the widening of Hwy 62 from two-lane to four-lane. For purposes of this study, it is assumed the Hwy 62/CR3/Hennessy St intersection will not have auxiliary lanes. This assumption is the most restrictive and conservative; therefore, if auxiliary lanes are planned by MTO at this intersection, it will further provide better traffic operations than those identified in this study. The assumed future intersection configuration for this study is drafted below:

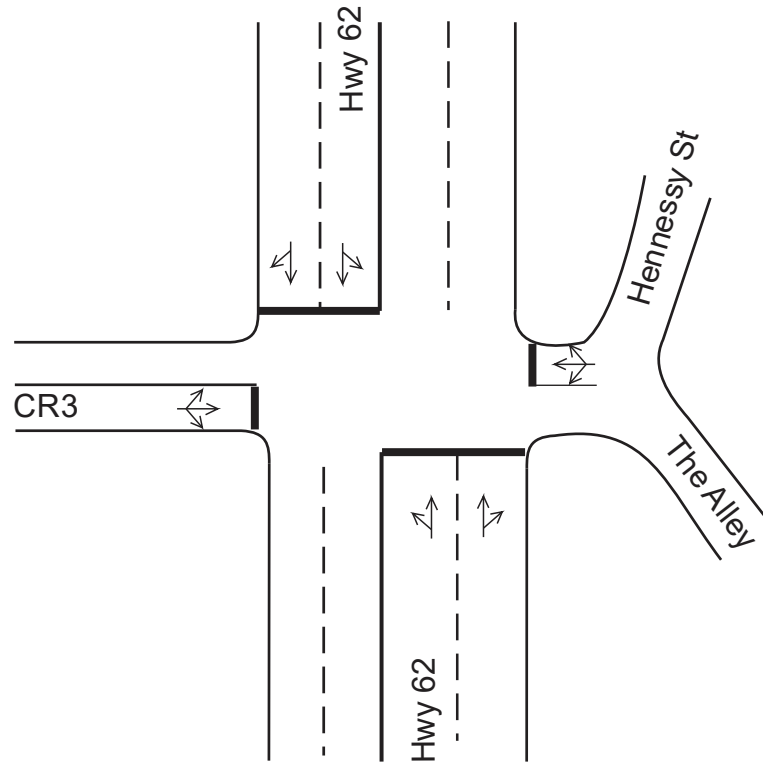


Figure 6: Assumed Future Intersection Configuration

Traffic operations were analyzed for the existing intersection configuration (two-lane highway) and for the assumed future intersection configuration (four-lane highway); traffic operation results are summarized in **Table 4** below.

In general, results show that the generated trips from 5 single-detached dwelling units will basically not impact the existing or future operation conditions for the Hwy 62/CR3/Hennessy St intersection; any variation in the v/c ratio and control delay is very minor and almost negligible. There is a slight improve in traffic operations for the future intersection configuration (assumed four-lane highway with no auxiliary lanes); if auxiliary lanes are added to the intersection, operations will show a further improvement.

		Total Volumes - Year 2025											
		Existing Intersection Configuration						Future Intersection Configuration					
		EB	WB	NB	SBTL	SBR	Overall	EB	WB	NB	SB	Overall	
5 Dwelling Units	AM Peak Hour	V/C	0.84	0.03	0.72	0.45	0.13	0.84	0.84	0.03	0.40	0.31	0.84
		Delay (s)	48.4	13.1	19.4	13.1	2.4	22.1	48.4	13.1	11.5	9.6	18.0
		Q ₉₅ (m)	90.3	4.7	149.5	69.2	7.0	-	90.3	4.7	53.0	34.6	-
		LOS	D	B	B	B	A	C	D	B	B	A	B
	PM Peak Hour	V/C	0.65	0.03	0.46	0.7	0.24	0.70	0.65	0.03	0.25	0.52	0.65
		Delay (s)	38.7	14.6	9.4	14.1	1.6	13.3	38.7	14.6	6.9	8.6	11.1
		Q ₉₅ (m)	43.9	3.9	73.3	143.0	8.8	-	43.9	3.9	30.0	66.9	-
		LOS	D	B	A	B	A	B	D	B	A	A	B

Table 4: Summary of Future Traffic Operations.

A residential type development with 5 single-detached dwelling units will generate very low new trips; therefore, Hennessy St, The Alley and the Hwy 62/CR3/Hennessy St intersection will handle the new trips with no adverse traffic conditions.

Conclusion

Due to the very limited scale of the proposed development, the additional trips will impose virtually no impact on the adjacent streets and Hwy



62/CR3/Hennessy St intersection; any minor traffic impact as a result of the new trips will be negligible to the current traffic operations.

Should you require any further information in consideration of the above, please contact the undersigned.

Sincerely;

A handwritten signature in black ink is written over a circular blue seal. The seal contains the text: 'LICENSED PROFESSIONAL ENGINEER' at the top, 'Mar 3, 2020' in the center, 'M.C. ASURZA AYVAR' below that, and '100128443' at the bottom. The outer ring of the seal says 'PROVINCE OF ONTARIO'.

Martin Asurza, M.Eng, P.Eng
Senior Transportation/Traffic Engineer

Appendix A

Draft Site Plan



**DRAFT PLAN OF SUBDIVISION
CONCEPT PLAN**
 PART OF LOTS 47, 49 AND 64
 OF CONGRESSIONAL PLAN 3 (ROSSMORE)
 PART OF LOT 60
 CONCESSION 1
 ELM ISLAND
 TOWNSHIP OF AMELIASBURGH
 COUNTY OF PRINCE EDWARD
 SCALE 1:1250

LEGEND:
 - 74.9m WATER ELEVATION PROVIDED BY U.S. NAVY (NOVEMBER 2008)
 - 75.0m FLOOD ELEVATION PROVIDED BY U.S. NAVY (NOVEMBER 2008)
 - 30.0m SETBACK FROM LIMIT OF WETLAND ABOVE 75.0m FLOODLINE AND LIMIT OF WETLAND
 - PROPOSED OPEN SPACE = 200,000 sq.m (8.7%)
 - EXISTING WETLAND = 3,548,800 sq.m (62.2%)

METRIC NOTE:
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DATE: 01/20/20
 DRAWN BY: LB | CHECKED BY: RFA
 JANUARY 20, 2020
RFA
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BAY OF QUINTE

Appendix B

Capacity Analysis Reports – Existing 2020

HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Existing Volumes 2020
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	275	1	3	1	2	7	4	658	2	2	381	100
Satd. Flow (prot)	0	1776	0	0	1565	0	0	1861	0	0	1747	1526
Flt Permitted		0.721			0.978			0.998			0.998	
Satd. Flow (perm)	0	1344	0	0	1538	0	0	1857	0	0	1744	1526
Satd. Flow (RTOR)		1			8							109
Lane Group Flow (vph)	0	303	0	0	11	0	0	721	0	0	416	109
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	26.0	26.0		21.0	21.0		28.2	28.2		26.2	26.2	26.2
Total Split (s)	31.2	31.2	0.0	31.2	31.2	0.0	61.2	61.2	0.0	61.2	61.2	61.2
Total Split (%)	33.8%	33.8%	0.0%	33.8%	33.8%	0.0%	66.2%	66.2%	0.0%	66.2%	66.2%	66.2%
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.7	1.7		1.7	1.7		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	6.2	6.2
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)		23.6			23.6			55.1			55.1	55.1
Actuated g/C Ratio		0.26			0.26			0.61			0.61	0.61
v/c Ratio		0.86			0.03			0.63			0.39	0.11
Control Delay		55.0			16.1			14.8			10.7	2.0
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		55.0			16.1			14.8			10.7	2.0
LOS		D			B			B			B	A
Approach Delay		55.0			16.1			14.8			8.9	
Approach LOS		D			B			B			A	
Queue Length 50th (m)		49.6			0.4			78.2			36.2	0.0
Queue Length 95th (m)		#91.1			4.3			115.2			55.2	6.0
Internal Link Dist (m)		284.9			150.2			262.6			269.7	
Turn Bay Length (m)												70.0
Base Capacity (vph)		393			454			1137			1068	977
Starvation Cap Reductn		0			0			0			0	0
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.77			0.02			0.63			0.39	0.11

Intersection Summary	
Cycle Length:	92.4
Actuated Cycle Length:	89.9
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	20.6
Intersection LOS:	C

HCM Signalized Intersection Capacity Analysis
 3: CR3 & Hwy 62

Existing Volumes 2020
 AM Peak Hour

Intersection Capacity Utilization 74.5% ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: CR3 & Hwy 62



HCM Signalized Intersection Capacity Analysis

3: CR3 & Hwy 62

Existing Volumes 2020
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	147	1	6	1	1	5	3	463	3	7	698	230
Satd. Flow (prot)	0	1741	0	0	1725	0	0	1882	0	0	1864	1617
Flt Permitted		0.731			0.968			0.997			0.995	
Satd. Flow (perm)	0	1332	0	0	1681	0	0	1876	0	0	1856	1617
Satd. Flow (RTOR)		2			5			1				250
Lane Group Flow (vph)	0	168	0	0	7	0	0	509	0	0	767	250
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	26.0	26.0		21.0	21.0		28.2	28.2		26.2	26.2	26.2
Total Split (s)	31.2	31.2	0.0	31.2	31.2	0.0	61.2	61.2	0.0	61.2	61.2	61.2
Total Split (%)	33.8%	33.8%	0.0%	33.8%	33.8%	0.0%	66.2%	66.2%	0.0%	66.2%	66.2%	66.2%
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.7	1.7		1.7	1.7		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	6.2	6.2
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)		16.3			16.3			55.2			55.2	55.2
Actuated g/C Ratio		0.20			0.20			0.67			0.67	0.67
v/c Ratio		0.63			0.02			0.41			0.62	0.22
Control Delay		41.1			17.8			8.3			11.6	1.5
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		41.1			17.8			8.3			11.6	1.5
LOS		D			B			A			B	A
Approach Delay		41.1			17.8			8.3			9.1	
Approach LOS		D			B			A			A	
Queue Length 50th (m)		24.1			0.3			31.5			59.0	0.0
Queue Length 95th (m)		43.3			3.5			63.9			119.8	8.2
Internal Link Dist (m)		284.9			150.2			262.6			269.7	
Turn Bay Length (m)												70.0
Base Capacity (vph)		424			537			1251			1238	1161
Starvation Cap Reductn		0			0			0			0	0
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.40			0.01			0.41			0.62	0.22

Intersection Summary

Cycle Length: 92.4

Actuated Cycle Length: 82.8

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 12.1

Intersection LOS: B

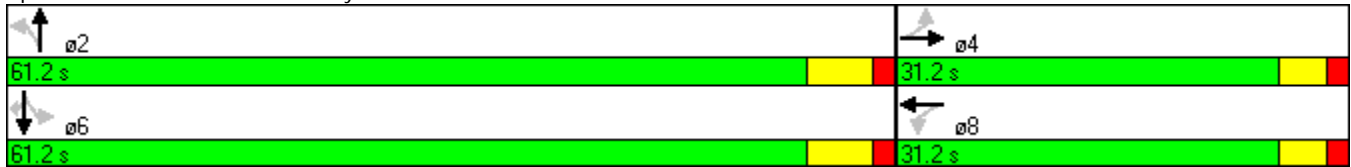
HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Existing Volumes 2020
PM Peak Hour

Intersection Capacity Utilization 66.0%
Analysis Period (min) 15

ICU Level of Service C

Splits and Phases: 3: CR3 & Hwy 62



Appendix C

Capacity Analysis Reports - Future 2025
(Existing Intersection Configuration)

HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
AM Peak Hour - Existing Configuration



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	↔
Volume (vph)	297	1	3	1	3	10	4	712	2	3	412	108
Satd. Flow (prot)	0	1776	0	0	1565	0	0	1861	0	0	1748	1526
Flt Permitted		0.718			0.984			0.998			0.996	
Satd. Flow (perm)	0	1338	0	0	1545	0	0	1857	0	0	1741	1526
Satd. Flow (RTOR)		1			11							117
Lane Group Flow (vph)	0	327	0	0	15	0	0	780	0	0	451	117
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	26.0	26.0		21.0	21.0		28.2	28.2		26.2	26.2	26.2
Total Split (s)	35.4	35.4	0.0	35.4	35.4	0.0	57.0	57.0	0.0	57.0	57.0	57.0
Total Split (%)	38.3%	38.3%	0.0%	38.3%	38.3%	0.0%	61.7%	61.7%	0.0%	61.7%	61.7%	61.7%
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.7	1.7		1.7	1.7		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	6.2	6.2
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)		25.6			25.6			51.0			51.0	51.0
Actuated g/C Ratio		0.29			0.29			0.58			0.58	0.58
v/c Ratio		0.84			0.03			0.72			0.45	0.13
Control Delay		48.4			13.1			19.4			13.1	2.4
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		48.4			13.1			19.4			13.1	2.4
LOS		D			B			B			B	A
Approach Delay		48.4			13.1			19.4			10.9	
Approach LOS		D			B			B			B	
Queue Length 50th (m)		51.0			0.5			94.3			42.7	0.0
Queue Length 95th (m)		#90.3			4.7			149.5			69.2	7.0
Internal Link Dist (m)		284.9			150.2			262.6			269.7	
Turn Bay Length (m)												70.0
Base Capacity (vph)		465			544			1078			1010	935
Starvation Cap Reductn		0			0			0			0	0
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.70			0.03			0.72			0.45	0.13

Intersection Summary

Cycle Length: 92.4
Actuated Cycle Length: 87.8
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 22.1
Intersection LOS: C

HCM Signalized Intersection Capacity Analysis 3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
AM Peak Hour - Existing Configuration

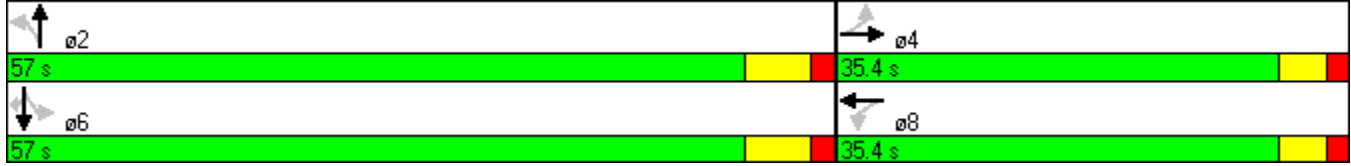
Intersection Capacity Utilization 77.3% ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: CR3 & Hwy 62



HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
PM Peak Hour - Existing Configuration



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	159	1	7	1	1	8	3	502	4	10	755	249
Satd. Flow (prot)	0	1741	0	0	1701	0	0	1882	0	0	1864	1617
Flt Permitted		0.729			0.979			0.997			0.992	
Satd. Flow (perm)	0	1329	0	0	1674	0	0	1876	0	0	1851	1617
Satd. Flow (RTOR)		3			9			1				271
Lane Group Flow (vph)	0	182	0	0	11	0	0	553	0	0	832	271
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	20.0
Minimum Split (s)	26.0	26.0		21.0	21.0		28.2	28.2		26.2	26.2	26.2
Total Split (s)	35.4	35.4	0.0	35.4	35.4	0.0	57.0	57.0	0.0	57.0	57.0	57.0
Total Split (%)	38.3%	38.3%	0.0%	38.3%	38.3%	0.0%	61.7%	61.7%	0.0%	61.7%	61.7%	61.7%
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.7	1.7		1.7	1.7		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	6.2	6.2
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Act Effct Green (s)		16.6			16.6			51.0			51.0	51.0
Actuated g/C Ratio		0.21			0.21			0.65			0.65	0.65
v/c Ratio		0.65			0.03			0.46			0.70	0.24
Control Delay		38.7			14.6			9.4			14.1	1.6
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		38.7			14.6			9.4			14.1	1.6
LOS		D			B			A			B	A
Approach Delay		38.7			14.6			9.4			11.0	
Approach LOS		D			B			A			B	
Queue Length 50th (m)		24.5			0.3			35.8			69.3	0.0
Queue Length 95th (m)		43.9			3.9			73.3			143.0	8.8
Internal Link Dist (m)		284.9			150.2			262.6			269.7	
Turn Bay Length (m)												70.0
Base Capacity (vph)		516			654			1214			1197	1141
Starvation Cap Reductn		0			0			0			0	0
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.35			0.02			0.46			0.70	0.24

Intersection Summary	
Cycle Length:	92.4
Actuated Cycle Length:	78.8
Natural Cycle:	65
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	13.3
Intersection LOS:	B

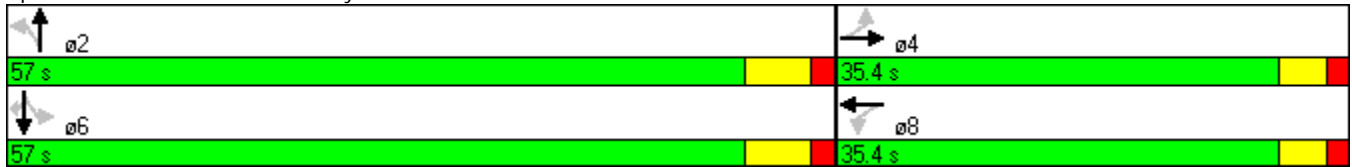
HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
PM Peak Hour - Existing Configuration

Intersection Capacity Utilization 71.8%
Analysis Period (min) 15

ICU Level of Service C

Splits and Phases: 3: CR3 & Hwy 62



Appendix D

Capacity Analysis Reports - Future 2025
(Future Intersection Configuration)

HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
AM Peak Hour - Future Configuration



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	297	1	3	1	3	10	4	712	2	3	412	108
Satd. Flow (prot)	0	1776	0	0	1565	0	0	3536	0	0	3235	0
Flt Permitted		0.718			0.984			0.953			0.952	
Satd. Flow (perm)	0	1338	0	0	1545	0	0	3370	0	0	3080	0
Satd. Flow (RTOR)		1			11						56	
Lane Group Flow (vph)	0	327	0	0	15	0	0	780	0	0	568	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.0	26.0		21.0	21.0		28.2	28.2		26.2	26.2	
Total Split (s)	35.4	35.4	0.0	35.4	35.4	0.0	57.0	57.0	0.0	57.0	57.0	0.0
Total Split (%)	38.3%	38.3%	0.0%	38.3%	38.3%	0.0%	61.7%	61.7%	0.0%	61.7%	61.7%	0.0%
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	1.7	1.7		1.7	1.7		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	6.2	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		25.6			25.6			51.0			51.0	
Actuated g/C Ratio		0.29			0.29			0.58			0.58	
v/c Ratio		0.84			0.03			0.40			0.31	
Control Delay		48.4			13.1			11.5			9.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		48.4			13.1			11.5			9.6	
LOS		D			B			B			A	
Approach Delay		48.4			13.1			11.5			9.6	
Approach LOS		D			B			B			A	
Queue Length 50th (m)		51.0			0.5			37.4			22.7	
Queue Length 95th (m)		#90.3			4.7			53.0			34.6	
Internal Link Dist (m)		284.9			150.2			262.6			269.7	
Turn Bay Length (m)												
Base Capacity (vph)		465			544			1956			1811	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.70			0.03			0.40			0.31	

Intersection Summary

Cycle Length: 92.4
Actuated Cycle Length: 87.8
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 18.0
Intersection LOS: B

HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
AM Peak Hour - Future Configuration

Intersection Capacity Utilization 55.2%

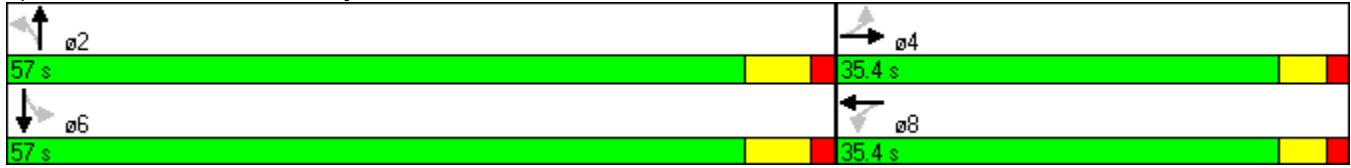
ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: CR3 & Hwy 62



HCM Signalized Intersection Capacity Analysis

3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
PM Peak Hour - Future Configuration



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	159	1	7	1	1	8	3	502	4	10	755	249
Satd. Flow (prot)	0	1741	0	0	1701	0	0	3576	0	0	3430	0
Flt Permitted		0.729			0.979			0.951			0.949	
Satd. Flow (perm)	0	1329	0	0	1674	0	0	3401	0	0	3255	0
Satd. Flow (RTOR)		3			9			1			76	
Lane Group Flow (vph)	0	182	0	0	11	0	0	553	0	0	1103	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.0	26.0		21.0	21.0		28.2	28.2		26.2	26.2	
Total Split (s)	35.4	35.4	0.0	35.4	35.4	0.0	57.0	57.0	0.0	57.0	57.0	0.0
Total Split (%)	38.3%	38.3%	0.0%	38.3%	38.3%	0.0%	61.7%	61.7%	0.0%	61.7%	61.7%	0.0%
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	1.7	1.7		1.7	1.7		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	6.2	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effect Green (s)		16.6			16.6			51.0			51.0	
Actuated g/C Ratio		0.21			0.21			0.65			0.65	
v/c Ratio		0.65			0.03			0.25			0.52	
Control Delay		38.7			14.6			6.9			8.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		38.7			14.6			6.9			8.6	
LOS		D			B			A			A	
Approach Delay		38.7			14.6			6.9			8.6	
Approach LOS		D			B			A			A	
Queue Length 50th (m)		24.5			0.3			15.9			36.8	
Queue Length 95th (m)		43.9			3.9			30.0			66.9	
Internal Link Dist (m)		284.9			150.2			262.6			269.7	
Turn Bay Length (m)												
Base Capacity (vph)		516			654			2200			2132	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.35			0.02			0.25			0.52	

Intersection Summary

Cycle Length: 92.4
Actuated Cycle Length: 78.8
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 11.1
Intersection LOS: B

HCM Signalized Intersection Capacity Analysis
3: CR3 & Hwy 62

Total Volumes 2025 - 5 Dwelling Units
PM Peak Hour - Future Configuration

Intersection Capacity Utilization 61.4%
Analysis Period (min) 15

ICU Level of Service B

Splits and Phases: 3: CR3 & Hwy 62

