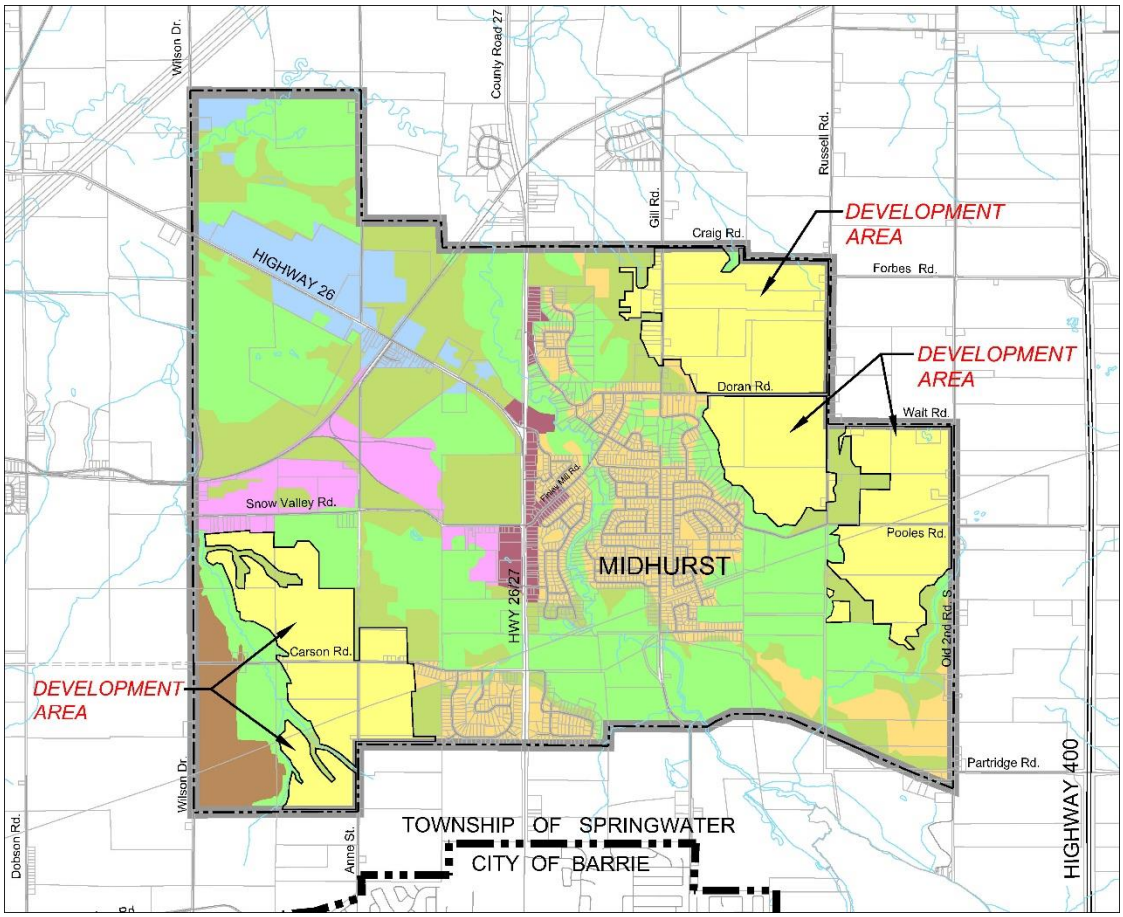
Township of Springwater

Midhurst Water, Wastewater & Transportation (Phase 3 and 4)

Environmental Study Report



Volume 6 of 6
Appendix T1 to T10

Ainley Group
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File: 113027
March 2020

APPENDIX 'T1'

Traffic Counts, BA Group, November 12, 2013

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Memorandum

To:
Midhurst Landowners Group
c/o
Vimal Patel
Geranium Corporation

From:
Mark D. Jamieson
Associate

Date:
November 12, 2013

Project:
6860-10
Midhurst Phase 3&4 EA Process
P:\68\60\10 Midhurst\Memos\EA Analysis Update_Nov2013\BA EA Update Memo - Final Draft.docx

DRAFT

Privileged and Confidential

Subject: **Midhurst EA Transportation Work Update *(Draft Privileged and Confidential)***

This memorandum provides a brief summary of the work completed to date with respect to the Phase 3 & 4 EA process for the Midhurst Development Area in the Township of Springwater.

Background

BA Group was originally retained by Carson Road Development Inc. (CRDI) and Midhurst Development Doran Road Inc. (MDDRI) to undertake transportation studies with respect to their proposed development applications. In this regard BA Group submitted two reports in September 2009: one in conjunction with an application for CRDI's application for their lands in the Carson Road area, and another report for MDDRI for their lands in the Doran Road area.

At approximately the same time in 2009, Ainley & Associates completed a Phase 1-2 Class Environmental Assessment (EA) Study on behalf of the Township of Springwater. That study identified a recommended future road network for the Midhurst Secondary Plan . Based on the Phase 1-2 EA study, the following transportation improvements required further study as part of a Phase 3-4 EA process:

- construction of a new interchange at Pooles Road with Highway 400
- Construction of a 2-lane Craig Road from Russell Road to County Road 27; and
- a widening of Wilson Drive to 4 lanes from Snow Valley Road to Barrie City Limits.

Ainley & Associates commenced work on a Phase3&4 Class EA for the Water, Wastewater, and Transportation works in April 2013. BA Group was asked by the Midhurst Landowners Group (MLG) to assist with the preparation of background transportation analysis in connection with the three transportation projects that will be evaluated by the Phase 3-4 Class EA.

Work Completed To Date

In preparation for undertaking the analysis for the EA, BA Group undertook a series of traffic counts within, and adjacent to, the Midhurst Secondary Plan Area in June 2013 to update our baseline information that will be used in our analysis for the Phase 3-4 Class EA. Our previous traffic count information was collected in 2008 as part of our work in connection with their applications at the time draft plans. We have subsequently updated our traffic model for the Midhurst Secondary Plan area in preparation for our work on the Phase 3-4 Class EA.

Findings Related to Pre-Approved Schedule A+, A, B Projects

The updated counts suggest that there has been a general increase in traffic volumes between 2013 and 2008, most notably in the PM peak hour. Notwithstanding the increases in traffic volumes, our analysis indicates that the conclusions from the Phase 1-2 Class EA related to the Schedule A+, A, and B projects are still appropriate. No additional Class EA projects were identified through our updated analysis.

Several intersections in the study area were identified as candidates for intersection improvements (i.e. additional turn lanes) and/or improved intersection control (e.g. traffic signals) in the Phase 1-2 Class EA. These projects were classified as Schedule A or B projects and are therefore not included in the Phase 3-4 Class EA process.

While no further EA consideration is required, our analysis has reconfirmed our earlier conclusions with respect to two key intersections in the study area; namely that some intersection improvements will be required at the intersections of Carson Road / Highway 26, and at Highway 26 / Finlay Mill Road in order to accommodate 20 year build-out traffic projections. The design of any potential intersection improvements (including, but not limited to those listed above) will be reviewed and addressed as part of the ongoing draft plan review process.

A table summarizing our updated capacity analysis at key intersections in the study area is attached to this memo for your review. In addition, we have also attached several figures (done in Microsoft Excel format) that illustrate the updated 2013 traffic count information collected for the AM and PM peak hours.

Findings Related to Schedule C Projects

The following are our findings, based on our updated analysis, related to the Schedule C projects identified in the Phase 1&2 EA, being reviewed as part of the Phase 3-4 Class EA Process.

- A widening of Wilson Road to 4 lanes will be required from Snow Valley Road to the Barrie City limits.

- A large proportion of the traffic volumes generated by the Midhurst Secondary Plan areas will utilize the proposed interchange on Highway 400 at Pooles Road. The need for the interchange on Highway 400 will be triggered at full build out as the development areas east of Highway 26 (i.e. Neighbourhoods 2 and 3) develop and as such the interchange is therefore considered a requirement of a future phase of development.

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- Traffic volumes generated within Midhurst will primarily be oriented to/from the south (hence resulting in the need to construct an interchange on Highway 400). Given the location of Craig Road at northern limit of the Midhurst Secondary Plan area there will be minimal demand to utilize the Craig Road extension by traffic generated within the Midhurst Secondary Plan area. Rather, our review suggests that the primary benefit of the Craig Road extension will be to off-load existing & future regional commuter traffic volumes (i.e. non-Midhurst vehicles) travelling between the Forbes Road interchange on Highway 400 and County Road 27 that would otherwise use Finlay Mill Road and Doran Road. In this regard, the need for a Craig Road extension is not generated by development within Midhurst itself, but rather is an improvement that is intended to provide a greater network benefit for all area traffic by constructing a new connection between Highway 400 and County Road 27.

Next Steps

We suggest that we have a meeting with you and the staff at Ainley responsible for the Phase 3&4 Class EA to discuss and confirm the scope of our analysis going forward. Specifically we would like to clarify a process for evaluating the three Schedule C transportation projects which are the subject of additional analysis through the Phase 3-4 Class EA process.

I look forward to being able to meet to discuss these things with you. In the meantime, if you have any questions, please feel free to contact me directly.

DRAFT

Intersection Analysis

Intersection	AM Peak Hour		PM Peak Hour		Intersection	AM Peak Hour		PM Peak Hour		Intersection	AM Peak Hour		PM Peak Hour	
	2008	2013	2008	2013		2008	2013	2008	2013		2008	2013	2008	2013
Highway 26/27 & Carson Rd.	LOS		LOS		Highway 26/27 & Finlay Mill Rd.	LOS		LOS		Wilson Dr. & Carson Rd.	LOS		LOS	
	D	D	D	D		D	D	D	E		B	B	B	B
	V/C		V/C			V/C		V/C			V/C		V/C	
	0.97	0.97	0.97	1.02		0.67	0.74	0.85	0.90		0.71	0.70	0.54	0.57
	Delay		Delay			Delay		Delay			Delay		Delay	
	42.6	41.7	42.0	42.9		38.0	39.0	47.5	59.5		18.7	18.4	14.2	14.7

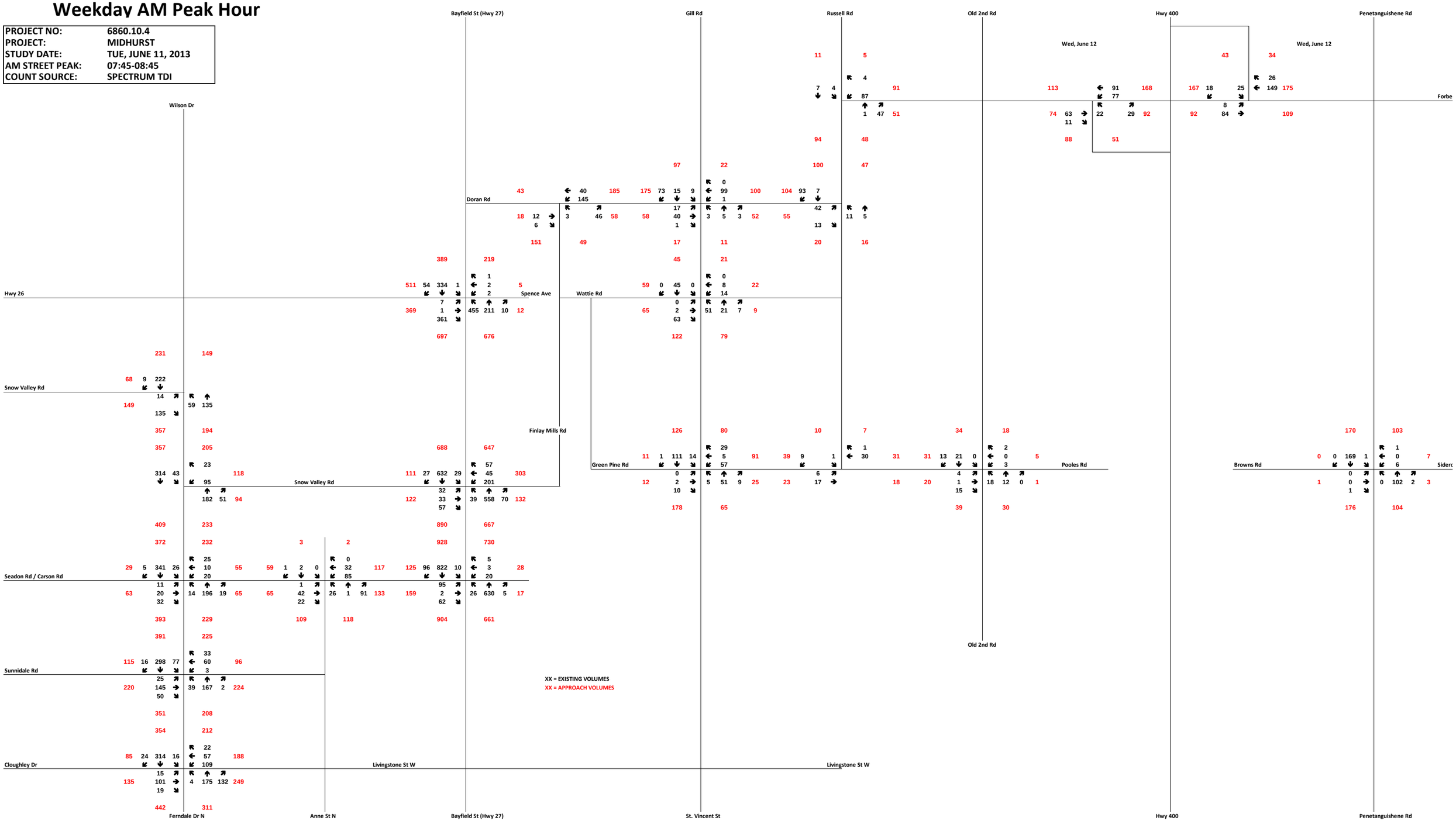
Better LOS
Worse LOS

Movement Analysis

Intersection	AM PEAK HOUR							PM PEAK HOUR						
	2008 Base Volumes				2013 Base Volumes			2008 Base Volumes				2013 Base Volumes		
	Movement	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS	Movement	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Highway 26/27 & Carson Rd.	EBL	0.98	86.3	F	0.89	68.0	E	EBL	1.02	108.2	F	1.01	94.3	F
	EBTR	0.98	84.8	F	0.98	83.2	F	EBTR	0.17	41.7	D	0.21	42.3	D
	WBL	0.34	50.4	D	0.34	49.7	D	WBL	0.19	44.6	D	0.36	51.0	E
	WBTR	0.01	33.2	C	0.01	32.4	C	WBTR	0.00	39.2	D	0.02	39.4	D
	NBL	0.89	82.5	F	0.91	83.4	F	NBL	1.05	99.9	F	1.06	131.0	F
	NBT	0.41	9.2	A	0.46	10.2	B	NBT	0.67	9.3	A	0.76	11.6	B
	NBR	0.01	6.4	A	0.00	6.7	A	NBR	0.01	4.1	A	0.01	4.1	A
	SBL	0.02	10.6	B	0.04	11.8	B	SBL	0.04	14.9	B	0.14	19.1	B
	SBTR	0.97	38.1	D	0.98	40.5	D	SBTR	1.02	55.8	E	1.02	50.4	E
Highway 26/27 & Finlay Mill Rd.	EBL	0.34	46.9	E	0.52	73.1	E	EBL	0.42	64.4	E	0.68	94.4	F
	EBTR	0.19	42.8	D	0.28	46.1	D	EBTR	0.51	51.8	D	0.69	62.0	E
	WBL	0.70	44.9	D	0.71	43.8	D	WBL	0.67	53.3	D	0.76	59.5	E
	WBTR	0.77	53.8	D	0.78	52.3	D	WBTR	0.42	49.7	D	0.86	80.2	F
	NBL	0.61	58.8	E	0.48	48.4	D	NBL	0.34	34.3	C	0.55	44.1	D
	NBT	0.73	36.4	D	0.80	40.8	D	NBT	0.99	60.5	E	0.99	60.1	E
	NBR	0.16	26.2	C	0.18	27.8	C	NBR	0.81	46.2	D	0.99	72.9	E
	SBL	0.72	49.9	D	0.7	46.5	D	SBL	1.03	93.1	F	1.04	93.1	F
	SBTR	0.74	29.8	C	0.74	29.8	C	SBTR	0.63	19.0	B	0.63	16.9	B
Carson Rd. & Wilson Dr.	WBL	0.74	22.8	C	0.74	23.1	C	WBL	0.49	16.3	B	0.47	15.9	B
	WBR	0.04	8.4	A	0.05	8.4	A	WBR	0.06	8.6	A	0.06	8.5	A
	NBT	0.34	14.2	B	0.36	14.4	B	NBT	0.57	16.0	B	0.64	17.4	B
	NBR	0.12	12.0	B	0.12	12.0	B	NBR	0.32	12.4	B	0.31	12.3	B
	SBL	0.10	12.1	B	0.1	12	B	SBL	0.18	11.7	B	0.21	12.5	B
	SBT	0.69	20.8	C	0.65	19.8	B	SBT	0.45	13.8	B	0.48	14.3	B

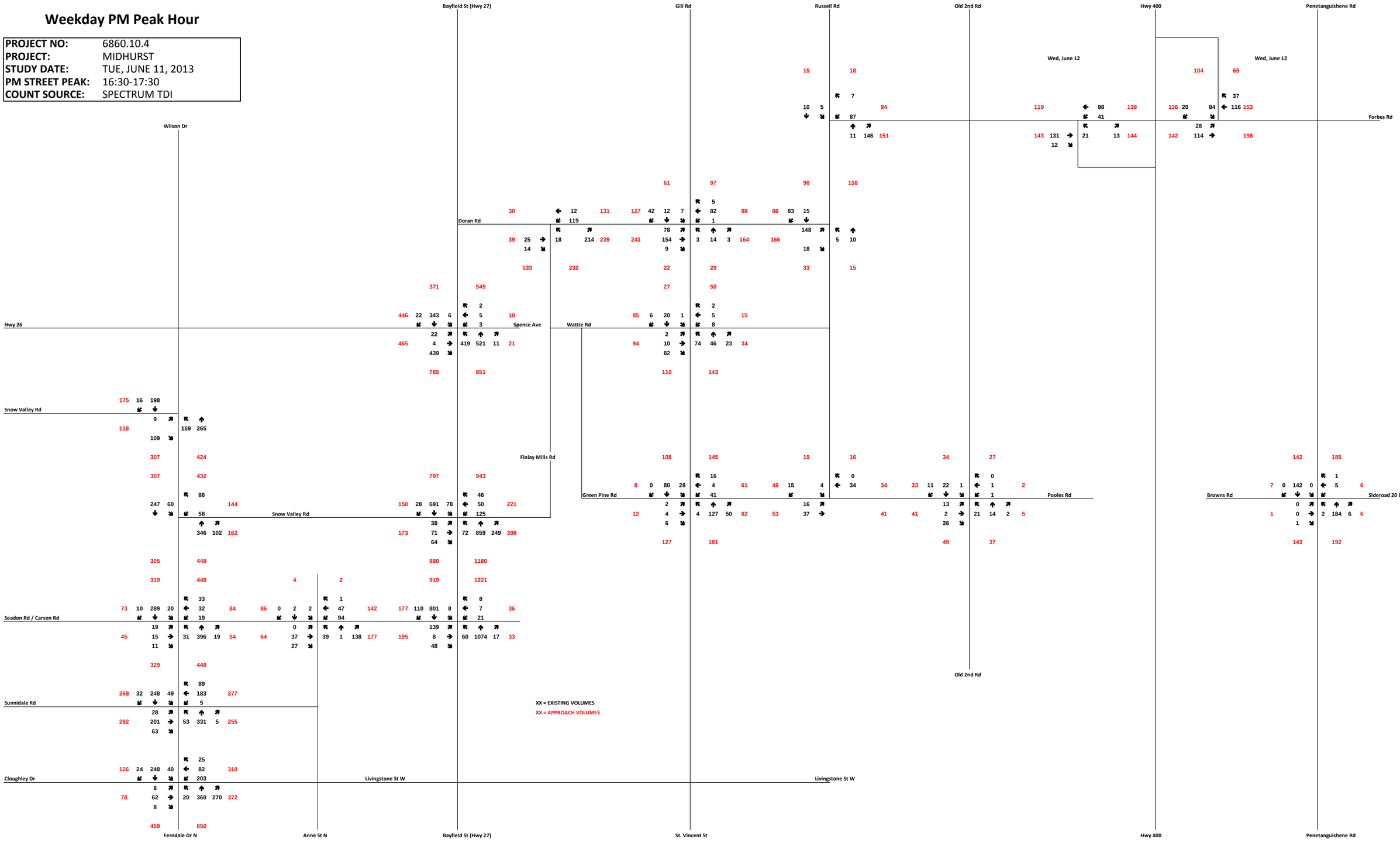
Weekday AM Peak Hour

PROJECT NO:	6860.10.4
PROJECT:	MIDHURST
STUDY DATE:	TUE, JUNE 11, 2013
AM STREET PEAK:	07:45-08:45
COUNT SOURCE:	SPECTRUM TDI



Weekday PM Peak Hour

PROJECT NO:	6860.10.4
PROJECT:	MIDHURST
STUDY DATE:	TUE, JUNE 11, 2013
PM STREET PEAK:	16:30-17:30
COUNT SOURCE:	SPECTRUM TDI



APPENDIX 'T2'

Synchro Report, Ainley Group, June 2015

Existing 2015 Traffic Volumes

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	89	4	1	48	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	94	4	1	51	4	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	42	26	0	0	52	0
Stage 1	26	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	969	1050	-	-	1554	-
Stage 1	997	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	966	1050	-	-	1554	-
Mov Cap-2 Maneuver	966	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	969	1554	-
HCM Lane V/C Ratio	-	-	0.101	0.003	-
HCM Control Delay (s)	-	-	9.1	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	17	31	1	1	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	18	33	1	1	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	34	0	-	0	64	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	31	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1578	-	-	-	942	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	992	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1578	-	-	-	938	1041
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	988	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1578	-	-	-	1030
HCM Lane V/C Ratio	0.004	-	-	-	0.01
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	43	13	11	5	7	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	14	12	5	7	100

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	85	57	107	0	-	0
Stage 1	57	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	916	1009	1484	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	909	1009	1484	-	-	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	987	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	5.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1484	-	930	-	-
HCM Lane V/C Ratio	0.008	-	0.063	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	64	11	79	93	22	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	12	83	98	23	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	79	0	337	-
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	264	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1519	-	658	0
Stage 1	-	-	-	-	950	0
Stage 2	-	-	-	-	780	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1519	-	620	-
Mov Cap-2 Maneuver	-	-	-	-	620	-
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	620	-	-	-	1519	-
HCM Lane V/C Ratio	0.037	-	-	-	0.055	-
HCM Control Delay (s)	11	0	-	-	7.5	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	14	138	60	138	227	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	145	63	145	239	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	208	0	-	0	311	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	175	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1363	-	-	-	681	913
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1363	-	-	-	673	913
Mov Cap-2 Maneuver	-	-	-	-	673	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	845	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1363	-	-	-	680
HCM Lane V/C Ratio	0.011	-	-	-	0.365
HCM Control Delay (s)	7.7	0	-	-	13.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.7

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	8	86	152	27	26	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	91	160	28	27	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	188	0	-	0	281	-
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1386	-	-	-	709	0
Stage 1	-	-	-	-	856	0
Stage 2	-	-	-	-	917	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	705	-
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	911	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1386	-	-	-	705	-
HCM Lane V/C Ratio	0.006	-	-	-	0.039	-
HCM Control Delay (s)	7.6	0	-	-	10.3	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	2	10	58	5	30	5	52	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	11	61	5	32	5	55	9

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	237	224	119	225	219	59	120	0	0
Stage 1	149	149	-	70	70	-	-	-	-
Stage 2	88	75	-	155	149	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	717	675	933	730	679	1007	1468	-	-
Stage 1	854	774	-	940	837	-	-	-	-
Stage 2	920	833	-	847	774	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	683	666	933	712	670	1007	1468	-	-
Mov Cap-2 Maneuver	683	666	-	712	670	-	-	-	-
Stage 1	851	766	-	936	834	-	-	-	-
Stage 2	882	830	-	827	766	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	9.2	10.3	0.6
HCM LOS	A	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1468	-	-	875	783	1538	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.125	0.01	-	-
HCM Control Delay (s)	7.5	0	-	9.2	10.3	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	14	113	1
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	15	119	1

Major/Minor	Major2		
Conflicting Flow All	64	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1538	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1538	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.8
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	60	12	80	37	42	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	13	84	39	44	232

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	424	104	0	0	123	0
Stage 1	104	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	587	951	-	-	1464	-
Stage 1	920	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	567	951	-	-	1464	-
Mov Cap-2 Maneuver	567	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	608	1464	-
HCM Lane V/C Ratio	-	-	0.125	0.03	-
HCM Control Delay (s)	-	-	11.8	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	17	41	1	1	101	0	3	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	43	1	1	106	0	3	5	3

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	106	0	0	44	0	0	235	187	44
Stage 1	-	-	-	-	-	-	79	79	-
Stage 2	-	-	-	-	-	-	156	108	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1485	-	-	1564	-	-	720	708	1026
Stage 1	-	-	-	-	-	-	930	829	-
Stage 2	-	-	-	-	-	-	846	806	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1485	-	-	1564	-	-	642	699	1026
Mov Cap-2 Maneuver	-	-	-	-	-	-	642	699	-
Stage 1	-	-	-	-	-	-	919	819	-
Stage 2	-	-	-	-	-	-	760	805	-

Approach	EB	WB	NB
HCM Control Delay, s	2.1	0.1	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	746	1485	-	-	1564	-	-	880
HCM Lane V/C Ratio	0.016	0.012	-	-	0.001	-	-	0.118
HCM Control Delay (s)	9.9	7.5	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.4

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	9	15	75
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	16	79

Major/Minor	Minor2		
Conflicting Flow All	192	188	106
Stage 1	108	108	-
Stage 2	84	80	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	768	707	948
Stage 1	897	806	-
Stage 2	924	828	-
Platoon blocked, %			
Mov Cap-1 Maneuver	754	698	948
Mov Cap-2 Maneuver	754	698	-
Stage 1	886	805	-
Stage 2	904	818	-

Approach	SB
HCM Control Delay, s	9.6
HCM LOS	A

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	1	369	2	2	1	465	216	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	1500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	388	2	2	1	489	227	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1484	1607	-	1394	1631	119	417	0	0
Stage 1	390	390	-	1212	1212	-	-	-	-
Stage 2	1094	1217	-	182	419	-	-	-	-
Critical Hdwy	7.54	6.54	-	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	-	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	87	104	0	101	101	910	1138	-	-
Stage 1	606	606	0	193	253	-	-	-	-
Stage 2	228	252	0	802	588	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	57	59	-	67	58	910	1138	-	-
Mov Cap-2 Maneuver	103	120	-	95	78	-	-	-	-
Stage 1	346	605	-	110	144	-	-	-	-
Stage 2	128	144	-	800	587	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	42.3	41.1	7.1
HCM LOS	E	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1138	-	-	105	-	105	1326	-	-
HCM Lane V/C Ratio	0.43	-	-	0.08	-	0.05	0.001	-	-
HCM Control Delay (s)	10.5	-	-	42.3	0	41.1	7.7	0	-
HCM Lane LOS	B	-	-	E	A	E	A	A	-
HCM 95th %tile Q(veh)	2.2	-	-	0.3	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	1	341	55
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	1	359	58

Major/Minor	Major2		
Conflicting Flow All	238	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1326	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1326	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	97	24	186	52	44	321
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	102	25	196	55	46	338

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	654	223	0	0	251	0
Stage 1	223	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	431	817	-	-	1314	-
Stage 1	814	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	412	817	-	-	1314	-
Mov Cap-2 Maneuver	412	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	627	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	457	1314	-
HCM Lane V/C Ratio	-	-	0.279	0.035	-
HCM Control Delay (s)	-	-	15.9	7.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	11	20	33	20	10	26	14	200	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	21	35	21	11	27	15	211	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	696	687	370	705	679	221	373	0	0
Stage 1	427	427	-	250	250	-	-	-	-
Stage 2	269	260	-	455	429	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	356	370	676	351	374	819	1185	-	-
Stage 1	606	585	-	754	700	-	-	-	-
Stage 2	737	693	-	585	584	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	326	355	676	308	359	819	1185	-	-
Mov Cap-2 Maneuver	326	355	-	308	359	-	-	-	-
Stage 1	597	570	-	743	690	-	-	-	-
Stage 2	691	683	-	521	569	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.1	14.2	0.5
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	461	450	1337	-	-
HCM Lane V/C Ratio	0.012	-	-	0.146	0.131	0.021	-	-
HCM Control Delay (s)	8.1	0	-	14.1	14.2	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0.1	-	-

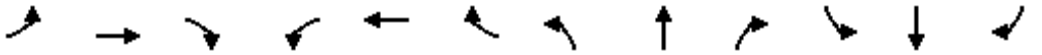
Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	27	349	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	28	367	5

Major/Minor	Major2		
Conflicting Flow All	231	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1337	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1337	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt



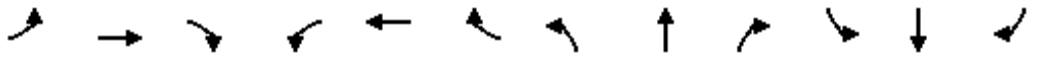
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	2	63	20	3	5	27	644	5	10	840	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	102	2	66	21	3	5	28	678	5	11	884	103
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	7	240	336	98	163	369	1834	820	484	1655	193
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1402	47	1544	1328	629	1049	568	3539	1583	755	3194	372
Grp Volume(v), veh/h	102	0	68	21	0	8	28	678	5	11	490	497
Grp Sat Flow(s),veh/h/ln	1402	0	1590	1328	0	1678	568	1770	1583	755	1770	1797
Q Serve(g_s), s	2.7	0.0	1.5	0.6	0.0	0.2	1.4	4.6	0.1	0.4	7.4	7.4
Cycle Q Clear(g_c), s	2.8	0.0	1.5	2.1	0.0	0.2	8.8	4.6	0.1	4.9	7.4	7.4
Prop In Lane	1.00		0.97	1.00		0.63	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	392	0	247	336	0	261	369	1834	820	484	917	931
V/C Ratio(X)	0.26	0.00	0.28	0.06	0.00	0.03	0.08	0.37	0.01	0.02	0.53	0.53
Avail Cap(c_a), veh/h	736	0	638	662	0	673	369	1834	820	484	917	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	15.0	15.9	0.0	14.4	9.4	5.8	4.7	7.2	6.4	6.4
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.1	0.0	0.0	0.4	0.6	0.0	0.1	2.2	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	1.1	0.0	0.7	0.2	0.0	0.1	0.3	2.3	0.0	0.1	4.1	4.2
LnGrp Delay(d),s/veh	15.9	0.0	15.6	16.0	0.0	14.4	9.8	6.3	4.7	7.3	8.7	8.6
LnGrp LOS	B		B	B		B	A	A	A	A	A	A
Approach Vol, veh/h		170			29			711			998	
Approach Delay, s/veh		15.8			15.5			6.5			8.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		12.5		37.5		12.5
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 21		* 16		* 21		* 16
Max Q Clear Time (g_c+I1), s		10.8		4.8		9.4		4.1
Green Ext Time (p_c), s		9.4		1.1		10.7		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	34	58	205	46	58	40	570	72	30	637	28
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	35	36	0	216	48	61	42	600	76	32	671	29
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	396	249	0	573	179	228	403	1364	610	418	1306	56
Arrive On Green	0.06	0.13	0.00	0.16	0.24	0.24	0.06	0.39	0.39	0.05	0.38	0.36
Sat Flow, veh/h	1774	1863	0	1774	747	949	1774	3539	1583	1774	3457	149
Grp Volume(v), veh/h	35	36	0	216	0	109	42	600	76	32	343	357
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1695	1774	1770	1583	1774	1770	1836
Q Serve(g_s), s	0.9	1.0	0.0	5.3	0.0	3.0	0.8	7.1	1.8	0.6	8.5	8.5
Cycle Q Clear(g_c), s	0.9	1.0	0.0	5.3	0.0	3.0	0.8	7.1	1.8	0.6	8.5	8.5
Prop In Lane	1.00		0.00	1.00		0.56	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	396	249	0	573	0	407	403	1364	610	418	668	694
V/C Ratio(X)	0.09	0.14	0.00	0.38	0.00	0.27	0.10	0.44	0.12	0.08	0.51	0.51
Avail Cap(c_a), veh/h	549	612	0	973	0	973	547	1364	610	575	668	694
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	21.7	0.0	14.5	0.0	17.5	9.7	12.9	11.2	9.8	13.6	13.6
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.4	0.0	0.3	0.1	1.0	0.4	0.1	2.8	2.7
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	0.5	0.5	0.0	2.6	0.0	1.4	0.4	3.6	0.8	0.3	4.6	4.8
LnGrp Delay(d),s/veh	19.1	21.9	0.0	15.0	0.0	17.8	9.8	13.9	11.7	9.8	16.4	16.4
LnGrp LOS	B	C		B		B	A	B	B	A	B	B
Approach Vol, veh/h		71			325			718			732	
Approach Delay, s/veh		20.5			15.9			13.4			16.1	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	56.0	11.1	12.9	5.4	55.5	5.1	18.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	2.6	9.1	7.3	3.0	2.8	10.5	2.9	5.0
Green Ext Time (p_c), s	0.0	9.7	0.9	1.5	0.0	8.6	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	89	7	11	149	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	94	7	12	157	5	11

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	111	90	0	0	168	0
Stage 1	90	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	886	968	-	-	1410	-
Stage 1	934	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	882	968	-	-	1410	-
Mov Cap-2 Maneuver	882	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	2.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	888	1410	-
HCM Lane V/C Ratio	-	-	0.114	0.004	-
HCM Control Delay (s)	-	-	9.6	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	16	38	35	0	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	40	37	0	4	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	37	0	-	0	111	37
Stage 1	-	-	-	-	37	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1574	-	-	-	886	1035
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	949	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1574	-	-	-	876	1035
Mov Cap-2 Maneuver	-	-	-	-	876	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	939	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1574	-	-	-	997
HCM Lane V/C Ratio	0.011	-	-	-	0.02
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	151	18	5	10	15	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	19	5	11	16	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	82	61	105	0	-	0
Stage 1	61	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	920	1004	1486	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	917	1004	1486	-	-	-
Mov Cap-2 Maneuver	917	-	-	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	2.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1486	-	926	-	-
HCM Lane V/C Ratio	0.004	-	0.192	-	-
HCM Control Delay (s)	7.4	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	134	12	42	100	21	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	13	44	105	22	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	154	0	341	-
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	194	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1426	-	655	0
Stage 1	-	-	-	-	880	0
Stage 2	-	-	-	-	839	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1426	-	633	-
Mov Cap-2 Maneuver	-	-	-	-	633	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	811	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	633	-	-	-	1426	-
HCM Lane V/C Ratio	0.035	-	-	-	0.031	-
HCM Control Delay (s)	10.9	0	-	-	7.6	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	9	111	163	271	202	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	117	172	285	213	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	457	0	-	0	450	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	136	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1104	-	-	-	567	726
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1104	-	-	-	562	726
Mov Cap-2 Maneuver	-	-	-	-	562	-
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	882	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1104	-	-	-	571
HCM Lane V/C Ratio	0.009	-	-	-	0.402
HCM Control Delay (s)	8.3	0	-	-	15.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.9

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	29	117	119	38	86	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	123	125	40	91	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	165	0	-	0	329	-
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1413	-	-	-	665	0
Stage 1	-	-	-	-	882	0
Stage 2	-	-	-	-	848	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1413	-	-	-	649	-
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	828	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1413	-	-	-	649	-
HCM Lane V/C Ratio	0.022	-	-	-	0.139	-
HCM Control Delay (s)	7.6	0	-	-	11.4	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	2	4	6	42	4	16	4	130	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	4	6	44	4	17	4	137	54

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	330	346	86	325	319	164	86	0	0
Stage 1	147	147	-	172	172	-	-	-	-
Stage 2	183	199	-	153	147	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	623	577	973	628	598	881	1510	-	-
Stage 1	856	775	-	830	756	-	-	-	-
Stage 2	819	736	-	849	775	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	595	561	973	608	582	881	1510	-	-
Mov Cap-2 Maneuver	595	561	-	608	582	-	-	-	-
Stage 1	853	756	-	828	754	-	-	-	-
Stage 2	796	734	-	819	756	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10.1	11.1	0.2
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1510	-	-	720	659	1383	-	-
HCM Lane V/C Ratio	0.003	-	-	0.018	0.099	0.022	-	-
HCM Control Delay (s)	7.4	0	-	10.1	11.1	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	29	82	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	31	86	0

Major/Minor	Major2		
Conflicting Flow All	191	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1383	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1383	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	46	49	285	81	27	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	52	300	85	28	164

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	564	343	0	0	385	0
Stage 1	343	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	487	700	-	-	1173	-
Stage 1	719	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	474	700	-	-	1173	-
Mov Cap-2 Maneuver	474	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	795	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	569	1173	-
HCM Lane V/C Ratio	-	-	0.176	0.024	-
HCM Control Delay (s)	-	-	12.7	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	80	157	9	1	84	5	3	14	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	165	9	1	88	5	3	15	3

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	94	0	0	175	0	0	460	434	170
Stage 1	-	-	-	-	-	-	338	338	-
Stage 2	-	-	-	-	-	-	122	96	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1500	-	-	1401	-	-	512	515	874
Stage 1	-	-	-	-	-	-	676	641	-
Stage 2	-	-	-	-	-	-	882	815	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1500	-	-	1401	-	-	455	483	874
Mov Cap-2 Maneuver	-	-	-	-	-	-	455	483	-
Stage 1	-	-	-	-	-	-	634	601	-
Stage 2	-	-	-	-	-	-	827	814	-

Approach	EB	WB	NB
HCM Control Delay, s	2.5	0.1	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	513	1500	-	-	1401	-	-	741
HCM Lane V/C Ratio	0.041	0.056	-	-	0.001	-	-	0.088
HCM Control Delay (s)	12.3	7.5	0	-	7.6	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	7	12	43
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	7	13	45

Major/Minor	Minor2		
Conflicting Flow All	440	436	91
Stage 1	93	93	-
Stage 2	347	343	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	527	514	967
Stage 1	914	818	-
Stage 2	669	637	-
Platoon blocked, %			
Mov Cap-1 Maneuver	488	482	967
Mov Cap-2 Maneuver	488	482	-
Stage 1	857	817	-
Stage 2	610	598	-

Approach	SB
HCM Control Delay, s	10.3
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	22	4	449	3	5	2	428	533	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	1500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	4	473	3	5	2	451	561	12

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1578	1868	-	1667	1873	286	393	0	0
Stage 1	394	394	-	1468	1468	-	-	-	-
Stage 2	1184	1474	-	199	405	-	-	-	-
Critical Hdwy	7.54	6.54	-	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	-	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	74	72	0	63	71	711	1162	-	-
Stage 1	602	604	0	134	190	-	-	-	-
Stage 2	201	189	0	784	597	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	49	44	-	42	43	711	1162	-	-
Mov Cap-2 Maneuver	92	94	-	70	77	-	-	-	-
Stage 1	368	599	-	82	116	-	-	-	-
Stage 2	117	116	-	772	592	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	59.9	50.2	4.4
HCM LOS	F	F	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	92	-	90	996	-	-
HCM Lane V/C Ratio	0.388	-	-	0.297	-	0.117	0.006	-	-
HCM Control Delay (s)	10	-	-	59.9	0	50.2	8.6	0	-
HCM Lane LOS	B	-	-	F	A	F	A	A	-
HCM 95th %tile Q(veh)	1.9	-	-	1.1	-	0.4	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	6	351	22
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	6	369	23

Major/Minor	Major2		
Conflicting Flow All	573	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	996	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	996	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.1
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	59	88	354	104	61	252
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	93	373	109	64	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	821	427	0	0	482	0
Stage 1	427	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	344	628	-	-	1081	-
Stage 1	658	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	320	628	-	-	1081	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	634	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	1.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	453	1081	-
HCM Lane V/C Ratio	-	-	0.342	0.059	-
HCM Control Delay (s)	-	-	17	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	19	15	11	19	33	34	32	405	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	16	12	20	35	36	34	426	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	897	872	316	876	867	436	321	0	0
Stage 1	358	358	-	504	504	-	-	-	-
Stage 2	539	514	-	372	363	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	261	289	724	269	291	620	1239	-	-
Stage 1	660	628	-	550	541	-	-	-	-
Stage 2	527	535	-	648	625	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	212	272	724	242	274	620	1239	-	-
Mov Cap-2 Maneuver	212	272	-	242	274	-	-	-	-
Stage 1	636	614	-	530	521	-	-	-	-
Stage 2	446	515	-	607	611	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20.4	19.4	0.6
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1239	-	-	281	339	1114	-	-
HCM Lane V/C Ratio	0.027	-	-	0.169	0.267	0.019	-	-
HCM Control Delay (s)	8	0	-	20.4	19.4	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	1.1	0.1	-	-

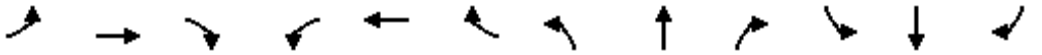
Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	20	295	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	21	311	11

Major/Minor	Major2		
Conflicting Flow All	446	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1114	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1114	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	8	49	21	7	8	61	1098	17	8	819	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	149	8	52	22	7	8	64	1156	18	8	862	118
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	38	244	365	139	158	358	1796	804	303	1588	217
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	1393	215	1400	1337	795	908	572	3539	1583	476	3129	428
Grp Volume(v), veh/h	149	0	60	22	0	15	64	1156	18	8	488	492
Grp Sat Flow(s),veh/h/ln	1393	0	1616	1337	0	1703	572	1770	1583	476	1770	1787
Q Serve(g_s), s	4.1	0.0	1.3	0.6	0.0	0.3	3.5	9.8	0.2	0.5	7.7	7.7
Cycle Q Clear(g_c), s	4.4	0.0	1.3	1.9	0.0	0.3	11.2	9.8	0.2	10.4	7.7	7.7
Prop In Lane	1.00		0.87	1.00		0.53	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	407	0	282	365	0	297	358	1796	804	303	898	907
V/C Ratio(X)	0.37	0.00	0.21	0.06	0.00	0.05	0.18	0.64	0.02	0.03	0.54	0.54
Avail Cap(c_a), veh/h	706	0	628	652	0	662	358	1796	804	303	898	907
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	0.0	14.6	15.4	0.0	14.2	10.7	7.4	5.1	11.2	6.9	6.9
Incr Delay (d2), s/veh	0.5	0.0	0.4	0.1	0.0	0.1	1.1	1.8	0.1	0.2	2.4	2.3
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	1.6	0.0	0.6	0.2	0.0	0.1	0.7	5.1	0.1	0.1	4.2	4.3
LnGrp Delay(d),s/veh	16.5	0.0	15.0	15.5	0.0	14.2	11.8	9.2	5.1	11.4	9.2	9.2
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		209			37			1238			988	
Approach Delay, s/veh		16.1			15.0			9.3			9.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.5		13.5		36.5		13.5
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 21		* 16		* 21		* 16
Max Q Clear Time (g_c+I1), s		13.2		6.4		12.4		3.9
Green Ext Time (p_c), s		7.5		1.2		8.4		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	73	65	128	51	47	74	878	255	80	706	29
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	41	77	0	135	54	49	78	924	268	84	743	31
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	260	0	478	180	163	426	1363	610	356	1341	56
Arrive On Green	0.06	0.14	0.00	0.12	0.20	0.20	0.08	0.38	0.38	0.08	0.39	0.37
Sat Flow, veh/h	1774	1863	0	1774	901	818	1774	3539	1583	1774	3462	144
Grp Volume(v), veh/h	41	77	0	135	0	103	78	924	268	84	380	394
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1718	1774	1770	1583	1774	1770	1837
Q Serve(g_s), s	1.1	2.1	0.0	3.2	0.0	2.8	1.4	12.1	7.0	1.5	9.3	9.3
Cycle Q Clear(g_c), s	1.1	2.1	0.0	3.2	0.0	2.8	1.4	12.1	7.0	1.5	9.3	9.3
Prop In Lane	1.00		0.00	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	416	260	0	478	0	343	426	1363	610	356	686	712
V/C Ratio(X)	0.10	0.30	0.00	0.28	0.00	0.30	0.18	0.68	0.44	0.24	0.55	0.55
Avail Cap(c_a), veh/h	565	623	0	964	0	1005	537	1363	610	463	686	712
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	21.5	0.0	15.1	0.0	18.9	9.1	14.2	12.7	9.8	13.3	13.3
Incr Delay (d2), s/veh	0.1	0.6	0.0	0.3	0.0	0.5	0.2	2.7	2.3	0.3	3.2	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.1	0.0	1.6	0.0	1.4	0.7	6.3	3.4	0.7	5.1	5.3
LnGrp Delay(d),s/veh	18.3	22.1	0.0	15.4	0.0	19.4	9.4	17.0	14.9	10.1	16.5	16.4
LnGrp LOS	B	C		B		B	A	B	B	B	B	B
Approach Vol, veh/h		118			238			1270			858	
Approach Delay, s/veh		20.8			17.1			16.1			15.8	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	56.6	8.7	13.1	6.5	56.7	5.3	16.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	3.5	14.1	5.2	4.1	3.4	11.3	3.1	4.8
Green Ext Time (p_c), s	0.1	6.1	0.5	1.9	0.1	8.7	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2031 Background Traffic Volumes

Intersection	
Int Delay, s/veh	5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	104	4	1	56	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	4	1	59	4	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	47	31	0	0	60	0
Stage 1	31	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	963	1043	-	-	1544	-
Stage 1	992	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	960	1043	-	-	1544	-
Mov Cap-2 Maneuver	960	-	-	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	963	1544	-
HCM Lane V/C Ratio	-	-	0.118	0.003	-
HCM Control Delay (s)	-	-	9.2	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	17	31	1	1	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	18	33	1	1	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	34	0	-	0	64	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	31	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1578	-	-	-	942	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	992	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1578	-	-	-	938	1041
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	988	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1578	-	-	-	1030
HCM Lane V/C Ratio	0.004	-	-	-	0.01
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	50	13	11	5	7	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	14	12	5	7	117

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	94	66	124	0	-	0
Stage 1	66	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	906	998	1463	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	899	998	1463	-	-	-
Mov Cap-2 Maneuver	899	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	987	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	5.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1463	-	918	-	-
HCM Lane V/C Ratio	0.008	-	0.072	-	-
HCM Control Delay (s)	7.5	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	76	13	92	109	26	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	14	97	115	27	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	94	0	395	-
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1500	-	610	0
Stage 1	-	-	-	-	936	0
Stage 2	-	-	-	-	745	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1500	-	568	-
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	568	-	-	-	1500	-
HCM Lane V/C Ratio	0.048	-	-	-	0.065	-
HCM Control Delay (s)	11.7	0	-	-	7.6	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	17	162	71	162	266	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	171	75	171	280	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	245	0	-	0	281	123
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	121	-
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	1318	-	-	-	686	905
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	891	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1318	-	-	-	676	905
Mov Cap-2 Maneuver	-	-	-	-	676	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	878	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1318	-	-	-	676	905
HCM Lane V/C Ratio	0.014	-	-	-	0.414	0.013
HCM Control Delay (s)	7.8	0	-	-	14	9
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	2	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	101	179	31	30	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	106	188	33	32	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	221	0	-	0	332	-
Stage 1	-	-	-	-	205	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1348	-	-	-	663	0
Stage 1	-	-	-	-	829	0
Stage 2	-	-	-	-	899	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1348	-	-	-	657	-
Mov Cap-2 Maneuver	-	-	-	-	657	-
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	891	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1348	-	-	-	657	-
HCM Lane V/C Ratio	0.008	-	-	-	0.048	-
HCM Control Delay (s)	7.7	0	-	-	10.8	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	2	12	68	6	35	6	61	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	13	72	6	37	6	64	12

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	280	264	141	267	260	70	141	0	0
Stage 1	176	176	-	83	83	-	-	-	-
Stage 2	104	88	-	184	177	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	672	641	907	686	645	993	1442	-	-
Stage 1	826	753	-	925	826	-	-	-	-
Stage 2	902	822	-	818	753	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	634	630	907	666	634	993	1442	-	-
Mov Cap-2 Maneuver	634	630	-	666	634	-	-	-	-
Stage 1	823	743	-	921	823	-	-	-	-
Stage 2	858	819	-	794	743	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	9.3	10.7	0.6
HCM LOS	A	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1442	-	-	853	742	1523	-	-
HCM Lane V/C Ratio	0.004	-	-	0.017	0.155	0.012	-	-
HCM Control Delay (s)	7.5	0	-	9.3	10.7	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	17	133	1
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	18	140	1

Major/Minor	Major2		
Conflicting Flow All	76	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1523	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1523	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.8
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	60	12	94	37	42	258
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	13	99	39	44	272

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	478	118	0	0	138	0
Stage 1	118	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	546	934	-	-	1446	-
Stage 1	907	-	-	-	-	-
Stage 2	706	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	526	934	-	-	1446	-
Mov Cap-2 Maneuver	526	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	681	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	567	1446	-
HCM Lane V/C Ratio	-	-	0.134	0.031	-
HCM Control Delay (s)	-	-	12.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	17	48	1	1	119	0	3	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	51	1	1	125	0	3	5	3

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	125	0	0	52	0	0	262	214	51
Stage 1	-	-	-	-	-	-	87	87	-
Stage 2	-	-	-	-	-	-	175	127	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1462	-	-	1554	-	-	691	684	1017
Stage 1	-	-	-	-	-	-	921	823	-
Stage 2	-	-	-	-	-	-	827	791	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1462	-	-	1554	-	-	614	674	1017
Mov Cap-2 Maneuver	-	-	-	-	-	-	614	674	-
Stage 1	-	-	-	-	-	-	909	812	-
Stage 2	-	-	-	-	-	-	741	790	-

Approach	EB	WB	NB
HCM Control Delay, s	1.9	0.1	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	721	1462	-	-	1554	-	-	856
HCM Lane V/C Ratio	0.016	0.012	-	-	0.001	-	-	0.122
HCM Control Delay (s)	10.1	7.5	0	-	7.3	0	-	9.8
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	9	15	75
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	16	79

Major/Minor	Minor2		
Conflicting Flow All	218	214	125
Stage 1	127	127	-
Stage 2	91	87	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	738	684	926
Stage 1	877	791	-
Stage 2	916	823	-
Platoon blocked, %			
Mov Cap-1 Maneuver	724	674	926
Mov Cap-2 Maneuver	724	674	-
Stage 1	866	790	-
Stage 2	895	812	-

Approach	SB
HCM Control Delay, s	9.8
HCM LOS	A

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	114	28	218	61	52	376
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	29	229	64	55	396

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	569	147	0	0	294	0
Stage 1	262	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	452	873	-	-	1264	-
Stage 1	758	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	427	873	-	-	1264	-
Mov Cap-2 Maneuver	427	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	679	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	427	873	1264	-
HCM Lane V/C Ratio	-	-	0.281	0.034	0.043	-
HCM Control Delay (s)	-	-	16.7	9.3	8	0.2
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	11	20	33	20	10	26	14	235	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	21	35	21	11	27	15	247	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	648	787	218	570	780	134	436	0	0
Stage 1	490	490	-	287	287	-	-	-	-
Stage 2	158	297	-	283	493	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	355	322	786	404	325	890	1120	-	-
Stage 1	529	547	-	696	673	-	-	-	-
Stage 2	828	666	-	700	545	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	324	308	786	354	311	890	1120	-	-
Mov Cap-2 Maneuver	324	308	-	354	311	-	-	-	-
Stage 1	521	531	-	685	662	-	-	-	-
Stage 2	777	655	-	624	529	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.3	13.7	0.5
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1120	-	-	454	475	1294	-	-
HCM Lane V/C Ratio	0.013	-	-	0.148	0.124	0.022	-	-
HCM Control Delay (s)	8.3	0.1	-	14.3	13.7	7.8	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0.1	-	-

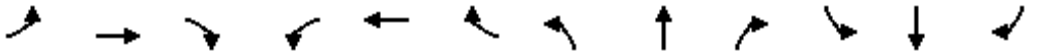
Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	27	409	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	28	431	5

Major/Minor	Major2		
Conflicting Flow All	267	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1294	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1294	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.6
HCM LOS	

Minor Lane/Major Mvmt



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	2	63	20	3	5	27	755	5	10	985	113
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	102	2	66	21	3	5	28	795	5	11	1037	119
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	7	240	336	98	163	318	1834	820	436	1659	190
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1402	47	1544	1328	629	1049	484	3539	1583	677	3201	367
Grp Volume(v), veh/h	102	0	68	21	0	8	28	795	5	11	573	583
Grp Sat Flow(s),veh/h/ln	1402	0	1590	1328	0	1678	484	1770	1583	677	1770	1798
Q Serve(g_s), s	2.7	0.0	1.5	0.6	0.0	0.2	1.8	5.6	0.1	0.4	9.3	9.3
Cycle Q Clear(g_c), s	2.8	0.0	1.5	2.1	0.0	0.2	11.0	5.6	0.1	6.0	9.3	9.3
Prop In Lane	1.00		0.97	1.00		0.63	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	392	0	247	336	0	261	318	1834	820	436	917	932
V/C Ratio(X)	0.26	0.00	0.28	0.06	0.00	0.03	0.09	0.43	0.01	0.03	0.62	0.63
Avail Cap(c_a), veh/h	736	0	638	662	0	673	318	1834	820	436	917	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	15.0	15.9	0.0	14.4	10.8	6.0	4.7	7.9	6.9	6.9
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.1	0.0	0.0	0.5	0.7	0.0	0.1	3.2	3.2
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	1.1	0.0	0.7	0.2	0.0	0.1	0.3	2.8	0.0	0.1	5.3	5.4
LnGrp Delay(d),s/veh	15.9	0.0	15.6	16.0	0.0	14.4	11.4	6.8	4.7	8.0	10.1	10.1
LnGrp LOS	B		B	B		B	B	A	A	A	B	B
Approach Vol, veh/h		170			29			828			1167	
Approach Delay, s/veh		15.8			15.5			6.9			10.1	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		12.5		37.5		12.5
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 21		* 16		* 21		* 16
Max Q Clear Time (g_c+I1), s		13.0		4.8		11.3		4.1
Green Ext Time (p_c), s		7.6		1.1		9.2		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

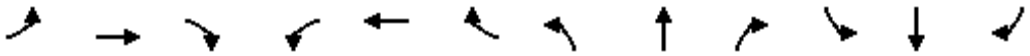
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	40	68	241	54	68	47	669	84	35	747	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	40	42	0	254	57	72	49	704	88	37	786	34
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	248	0	594	190	240	356	1325	593	371	1265	55
Arrive On Green	0.06	0.13	0.00	0.18	0.25	0.25	0.06	0.37	0.37	0.06	0.37	0.35
Sat Flow, veh/h	1774	1863	0	1774	749	946	1774	3539	1583	1774	3456	149
Grp Volume(v), veh/h	40	42	0	254	0	129	49	704	88	37	402	418
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1696	1774	1770	1583	1774	1770	1836
Q Serve(g_s), s	1.1	1.2	0.0	6.4	0.0	3.6	0.9	9.1	2.2	0.7	10.9	10.9
Cycle Q Clear(g_c), s	1.1	1.2	0.0	6.4	0.0	3.6	0.9	9.1	2.2	0.7	10.9	10.9
Prop In Lane	1.00		0.00	1.00		0.56	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	393	248	0	594	0	430	356	1325	593	371	648	672
V/C Ratio(X)	0.10	0.17	0.00	0.43	0.00	0.30	0.14	0.53	0.15	0.10	0.62	0.62
Avail Cap(c_a), veh/h	533	593	0	941	0	942	485	1325	593	515	648	672
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	22.5	0.0	14.7	0.0	17.6	10.7	14.3	12.1	10.7	15.2	15.2
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.5	0.0	0.4	0.2	1.5	0.5	0.1	4.4	4.3
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	0.5	0.6	0.0	3.2	0.0	1.7	0.5	4.7	1.0	0.4	6.1	6.3
LnGrp Delay(d),s/veh	19.7	22.8	0.0	15.2	0.0	18.0	10.9	15.8	12.6	10.8	19.7	19.5
LnGrp LOS	B	C		B		B	B	B	B	B	B	B
Approach Vol, veh/h		82			383			841			857	
Approach Delay, s/veh		21.3			16.1			15.2			19.2	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	54.2	12.5	13.1	5.7	53.7	5.4	20.1
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	2.7	11.1	8.4	3.2	2.9	12.9	3.1	5.6
Green Ext Time (p_c), s	0.0	8.6	1.1	1.9	0.0	6.9	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	1	433	2	2	1	545	253	10	1	400	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1770		1770	3518		1770	3465	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.43	1.00		0.58	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1770		805	3518		1083	3465	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	1	456	2	2	1	574	266	11	1	421	68
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	14	0
Lane Group Flow (vph)	8	1	456	2	2	0	574	275	0	1	475	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	1.4	1.4	60.0	1.4	1.4		45.8	45.8		31.3	31.3	
Effective Green, g (s)	1.4	1.4	60.0	1.4	1.4		45.8	45.8		31.3	31.3	
Actuated g/C Ratio	0.02	0.02	1.00	0.02	0.02		0.76	0.76		0.52	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	43	43	1583	43	41		799	2685		564	1807	
v/s Ratio Prot		0.00					c0.14	0.08			0.14	
v/s Ratio Perm	0.00		c0.29	0.00	0.00		c0.41			0.00		
v/c Ratio	0.19	0.02	0.29	0.05	0.05		0.72	0.10		0.00	0.26	
Uniform Delay, d1	28.7	28.6	0.0	28.6	28.6		2.7	1.8		6.9	8.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.2	0.5	0.4	0.5		3.1	0.1		0.0	0.4	
Delay (s)	30.8	28.9	0.5	29.1	29.2		5.8	1.9		6.9	8.3	
Level of Service	C	C	A	C	C		A	A		A	A	
Approach Delay (s)		1.0			29.1			4.5			8.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	104	7	11	175	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	7	12	184	5	11

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	125	104	0	0	196	0
Stage 1	104	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	870	951	-	-	1377	-
Stage 1	920	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	867	951	-	-	1377	-
Mov Cap-2 Maneuver	867	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	2.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	872	1377	-
HCM Lane V/C Ratio	-	-	0.134	0.004	-
HCM Control Delay (s)	-	-	9.8	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	16	38	35	0	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	40	37	0	4	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	37	0	-	0	111	37
Stage 1	-	-	-	-	37	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1574	-	-	-	886	1035
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	949	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1574	-	-	-	876	1035
Mov Cap-2 Maneuver	-	-	-	-	876	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	939	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1574	-	-	-	997
HCM Lane V/C Ratio	0.011	-	-	-	0.02
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	177	18	5	10	15	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	186	19	5	11	16	104

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	89	68	120	0	-	0
Stage 1	68	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	912	995	1468	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	909	995	1468	-	-	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1468	-	916	-	-
HCM Lane V/C Ratio	0.004	-	0.224	-	-
HCM Control Delay (s)	7.5	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	157	14	49	117	25	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	165	15	52	123	26	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	180	0	399	-
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	226	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1396	-	607	0
Stage 1	-	-	-	-	857	0
Stage 2	-	-	-	-	812	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1396	-	583	-
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	583	-	-	-	1396	-
HCM Lane V/C Ratio	0.045	-	-	-	0.037	-
HCM Control Delay (s)	11.5	0	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	11	131	191	318	237	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	138	201	335	249	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	536	0	-	0	460	268
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	92	-
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	1028	-	-	-	530	730
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	921	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1028	-	-	-	523	730
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1028	-	-	-	523	730
HCM Lane V/C Ratio	0.011	-	-	-	0.477	0.027
HCM Control Delay (s)	8.5	0	-	-	18	10.1
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	2.5	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	34	137	139	44	101	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	144	146	46	106	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	193	0	-	0	385	-
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1380	-	-	-	618	0
Stage 1	-	-	-	-	861	0
Stage 2	-	-	-	-	820	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1380	-	-	-	601	-
Mov Cap-2 Maneuver	-	-	-	-	601	-
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	797	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1380	-	-	-	601	-
HCM Lane V/C Ratio	0.026	-	-	-	0.177	-
HCM Control Delay (s)	7.7	0	-	-	12.3	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	2	5	7	49	5	19	5	152	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	5	7	52	5	20	5	160	63

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	388	407	101	381	375	192	101	0	0
Stage 1	173	173	-	202	202	-	-	-	-
Stage 2	215	234	-	179	173	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	571	533	954	577	556	850	1491	-	-
Stage 1	829	756	-	800	734	-	-	-	-
Stage 2	787	711	-	823	756	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	540	516	954	554	538	850	1491	-	-
Mov Cap-2 Maneuver	540	516	-	554	538	-	-	-	-
Stage 1	826	735	-	797	731	-	-	-	-
Stage 2	760	708	-	788	735	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10.5	11.8	0.2
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1491	-	-	675	608	1346	-	-
HCM Lane V/C Ratio	0.004	-	-	0.022	0.126	0.027	-	-
HCM Control Delay (s)	7.4	0	-	10.5	11.8	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	34	96	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	36	101	0

Major/Minor	Major2		
Conflicting Flow All	223	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1346	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1346	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	46	49	334	81	27	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	52	352	85	28	193

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	643	394	0	0	437	0
Stage 1	394	-	-	-	-	-
Stage 2	249	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	438	655	-	-	1123	-
Stage 1	681	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	426	655	-	-	1123	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	770	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	520	1123	-
HCM Lane V/C Ratio	-	-	0.192	0.025	-
HCM Control Delay (s)	-	-	13.6	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	80	185	9	1	98	5	3	14	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	195	9	1	103	5	3	15	3

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	108	0	0	204	0	0	505	479	199
Stage 1	-	-	-	-	-	-	368	368	-
Stage 2	-	-	-	-	-	-	137	111	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1483	-	-	1368	-	-	478	486	842
Stage 1	-	-	-	-	-	-	652	621	-
Stage 2	-	-	-	-	-	-	866	804	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1483	-	-	1368	-	-	423	454	842
Mov Cap-2 Maneuver	-	-	-	-	-	-	423	454	-
Stage 1	-	-	-	-	-	-	610	581	-
Stage 2	-	-	-	-	-	-	811	803	-

Approach	EB	WB	NB
HCM Control Delay, s	2.2	0.1	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	482	1483	-	-	1368	-	-	711
HCM Lane V/C Ratio	0.044	0.057	-	-	0.001	-	-	0.092
HCM Control Delay (s)	12.8	7.6	0	-	7.6	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	7	12	43
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	7	13	45

Major/Minor	Minor2		
Conflicting Flow All	485	481	106
Stage 1	108	108	-
Stage 2	377	373	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	492	485	948
Stage 1	897	806	-
Stage 2	644	618	-
Platoon blocked, %			
Mov Cap-1 Maneuver	454	454	948
Mov Cap-2 Maneuver	454	454	-
Stage 1	840	805	-
Stage 2	585	578	-

Approach	SB
HCM Control Delay, s	10.6
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	68	101	415	122	72	296
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	106	437	128	76	312

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	808	283	0	0	565	0
Stage 1	501	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	319	714	-	-	1003	-
Stage 1	574	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	290	714	-	-	1003	-
Mov Cap-2 Maneuver	290	-	-	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	290	714	1003	-
HCM Lane V/C Ratio	-	-	0.247	0.149	0.076	-
HCM Control Delay (s)	-	-	21.4	10.9	8.9	0.3
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.5	0.2	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	19	15	11	19	33	34	32	475	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	16	12	20	35	36	34	500	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	747	999	187	809	994	260	375	0	0
Stage 1	412	412	-	577	577	-	-	-	-
Stage 2	335	587	-	232	417	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	301	242	823	272	244	739	1180	-	-
Stage 1	588	593	-	469	500	-	-	-	-
Stage 2	653	495	-	750	590	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	241	226	823	241	228	739	1180	-	-
Mov Cap-2 Maneuver	241	226	-	241	228	-	-	-	-
Stage 1	564	578	-	450	480	-	-	-	-
Stage 2	553	475	-	701	575	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20.2	20.7	0.6
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1180	-	-	284	319	1042	-	-
HCM Lane V/C Ratio	0.029	-	-	0.167	0.284	0.02	-	-
HCM Control Delay (s)	8.1	0.1	-	20.2	20.7	8.5	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	20	346	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	21	364	11

Major/Minor	Major2		
Conflicting Flow All	520	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1042	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1042	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt

HCM 2010 Signalized Intersection Summary
35: Hwy 26/27 & Carson Rd

17/08/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	8	49	21	7	8	61	1287	17	8	960	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	149	8	52	22	7	8	64	1355	18	8	1011	118
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	354	35	228	312	130	148	334	2080	931	268	1877	219
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	1393	215	1400	1337	795	908	497	3539	1583	394	3194	373
Grp Volume(v), veh/h	149	0	60	22	0	15	64	1355	18	8	560	569
Grp Sat Flow(s),veh/h/ln	1393	0	1616	1337	0	1703	497	1770	1583	394	1770	1797
Q Serve(g_s), s	5.3	0.0	1.7	0.8	0.0	0.4	4.7	13.4	0.2	0.7	10.0	10.0
Cycle Q Clear(g_c), s	5.7	0.0	1.7	2.5	0.0	0.4	14.7	13.4	0.2	14.2	10.0	10.0
Prop In Lane	1.00		0.87	1.00		0.53	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	354	0	263	312	0	278	334	2080	931	268	1040	1056
V/C Ratio(X)	0.42	0.00	0.23	0.07	0.00	0.05	0.19	0.65	0.02	0.03	0.54	0.54
Avail Cap(c_a), veh/h	550	0	492	501	0	518	334	2080	931	268	1040	1056
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	19.1	20.2	0.0	18.6	11.0	7.2	4.5	12.0	6.5	6.5
Incr Delay (d2), s/veh	0.8	0.0	0.4	0.1	0.0	0.1	1.3	1.6	0.0	0.2	2.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.8	0.3	0.0	0.2	0.8	6.9	0.1	0.1	5.4	5.5
LnGrp Delay(d),s/veh	21.8	0.0	19.6	20.3	0.0	18.7	12.3	8.8	4.6	12.2	8.5	8.5
LnGrp LOS	C		B	C		B	B	A	A	B	A	A
Approach Vol, veh/h		209			37			1437			1137	
Approach Delay, s/veh		21.1			19.6			8.9			8.5	
Approach LOS		C			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		45.1		14.9		45.1		14.9
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 31		* 16		* 31		* 16
Max Q Clear Time (g_c+I1), s		16.7		7.7		16.2		4.5
Green Ext Time (p_c), s		14.0		1.1		14.6		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

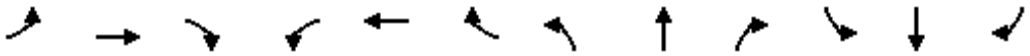
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	85	77	150	60	55	86	1030	298	93	828	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	48	89	0	158	63	58	91	1084	314	98	872	36
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	259	0	485	184	169	381	1334	597	320	1313	54
Arrive On Green	0.06	0.14	0.00	0.13	0.21	0.21	0.08	0.38	0.38	0.09	0.38	0.36
Sat Flow, veh/h	1774	1863	0	1774	894	823	1774	3539	1583	1774	3464	143
Grp Volume(v), veh/h	48	89	0	158	0	121	91	1084	314	98	445	463
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1717	1774	1770	1583	1774	1770	1838
Q Serve(g_s), s	1.3	2.5	0.0	3.9	0.0	3.4	1.7	15.6	8.8	1.8	11.9	11.9
Cycle Q Clear(g_c), s	1.3	2.5	0.0	3.9	0.0	3.4	1.7	15.6	8.8	1.8	11.9	11.9
Prop In Lane	1.00		0.00	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	417	259	0	485	0	354	381	1334	597	320	671	697
V/C Ratio(X)	0.12	0.34	0.00	0.33	0.00	0.34	0.24	0.81	0.53	0.31	0.66	0.66
Avail Cap(c_a), veh/h	552	610	0	936	0	983	481	1334	597	416	671	697
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	22.1	0.0	15.2	0.0	19.3	10.1	15.9	13.7	11.5	14.6	14.7
Incr Delay (d2), s/veh	0.1	0.8	0.0	0.4	0.0	0.6	0.3	5.5	3.3	0.5	5.1	4.9
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	0.6	1.3	0.0	1.9	0.0	1.7	0.8	8.5	4.3	0.9	6.6	6.9
LnGrp Delay(d),s/veh	18.6	22.9	0.0	15.6	0.0	19.8	10.4	21.4	17.0	12.0	19.8	19.6
LnGrp LOS	B	C		B		B	B	C	B	B	B	B
Approach Vol, veh/h		137			279			1489			1006	
Approach Delay, s/veh		21.4			17.4			19.8			18.9	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	55.4	9.5	13.2	6.8	55.5	5.7	17.0
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	3.8	17.6	5.9	4.5	3.7	13.9	3.3	5.4
Green Ext Time (p_c), s	0.1	2.7	0.6	2.2	0.1	6.4	0.0	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	4	526	3	5	2	502	624	11	6	411	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1783		1770	3530		1770	3508	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.44	1.00		0.40	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1783		825	3530		740	3508	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	27	4	554	3	5	2	528	657	12	6	433	27
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	6	0
Lane Group Flow (vph)	27	4	554	3	5	0	528	668	0	6	454	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	3.2	3.2	60.0	3.2	3.2		44.0	44.0		29.9	29.9	
Effective Green, g (s)	3.2	3.2	60.0	3.2	3.2		44.0	44.0		29.9	29.9	
Actuated g/C Ratio	0.05	0.05	1.00	0.05	0.05		0.73	0.73		0.50	0.50	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	99	99	1583	99	95		779	2588		368	1748	
v/s Ratio Prot		0.00					c0.13	0.19			0.13	
v/s Ratio Perm	0.01		c0.35	0.00	0.00		c0.37			0.01		
v/c Ratio	0.27	0.04	0.35	0.03	0.05		0.68	0.26		0.02	0.26	
Uniform Delay, d1	27.3	26.9	0.0	26.9	27.0		3.2	2.6		7.6	8.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.2	0.6	0.1	0.2		2.4	0.2		0.1	0.4	
Delay (s)	28.8	27.1	0.6	27.1	27.2		5.6	2.9		7.7	9.0	
Level of Service	C	C	A	C	C		A	A		A	A	
Approach Delay (s)		2.1			27.2			4.1			9.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

2041 Background Traffic Volumes

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	115	4	1	62	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	121	4	1	65	4	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	50	34	0	0	66	0
Stage 1	34	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	959	1039	-	-	1536	-
Stage 1	988	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	956	1039	-	-	1536	-
Mov Cap-2 Maneuver	956	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	959	1536	-
HCM Lane V/C Ratio	-	-	0.131	0.003	-
HCM Control Delay (s)	-	-	9.3	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	17	31	1	1	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	18	33	1	1	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	34	0	-	0	64	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	31	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1578	-	-	-	942	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	992	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1578	-	-	-	938	1041
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	988	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1578	-	-	-	1030
HCM Lane V/C Ratio	0.004	-	-	-	0.01
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	56	13	11	5	7	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	14	12	5	7	129

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	100	72	137	0	-	0
Stage 1	72	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	899	990	1447	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	892	990	1447	-	-	-
Mov Cap-2 Maneuver	892	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	987	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	5.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1447	-	909	-	-
HCM Lane V/C Ratio	0.008	-	0.08	-	-
HCM Control Delay (s)	7.5	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	83	15	102	120	29	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	16	107	126	31	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	103	0	436	-
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	341	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1489	-	578	0
Stage 1	-	-	-	-	929	0
Stage 2	-	-	-	-	720	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1489	-	533	-
Mov Cap-2 Maneuver	-	-	-	-	533	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	665	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	533	-	-	-	1489	-
HCM Lane V/C Ratio	0.057	-	-	-	0.072	-
HCM Control Delay (s)	12.2	0	-	-	7.6	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	19	179	78	179	294	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	188	82	188	309	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	271	0	-	0	310	135
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	134	-
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	1289	-	-	-	658	889
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1289	-	-	-	647	889
Mov Cap-2 Maneuver	-	-	-	-	647	-
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	863	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1289	-	-	-	647	889
HCM Lane V/C Ratio	0.016	-	-	-	0.478	0.014
HCM Control Delay (s)	7.8	0.1	-	-	15.6	9.1
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0	-	-	-	2.6	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	11	111	197	34	33	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	117	207	36	35	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	365	-
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1323	-	-	-	635	0
Stage 1	-	-	-	-	812	0
Stage 2	-	-	-	-	887	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	629	-
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	878	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1323	-	-	-	629	-
HCM Lane V/C Ratio	0.009	-	-	-	0.055	-
HCM Control Delay (s)	7.7	0	-	-	11.1	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	2	13	75	7	38	7	68	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	14	79	7	40	7	72	13

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	311	294	155	296	289	78	156	0	0
Stage 1	195	195	-	93	93	-	-	-	-
Stage 2	116	99	-	203	196	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	642	617	891	656	621	983	1424	-	-
Stage 1	807	739	-	914	818	-	-	-	-
Stage 2	889	813	-	799	739	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	601	605	891	635	609	983	1424	-	-
Mov Cap-2 Maneuver	601	605	-	635	609	-	-	-	-
Stage 1	803	729	-	909	814	-	-	-	-
Stage 2	841	809	-	773	729	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	9.4	11.1	0.6
HCM LOS	A	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1424	-	-	838	713	1513	-	-
HCM Lane V/C Ratio	0.005	-	-	0.019	0.177	0.013	-	-
HCM Control Delay (s)	7.5	0	-	9.4	11.1	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	19	147	1
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	20	155	1

Major/Minor	Major2		
Conflicting Flow All	84	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1513	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1513	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.8
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	60	12	103	37	42	285
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	13	108	39	44	300

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	516	128	0	0	147	0
Stage 1	128	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	519	922	-	-	1435	-
Stage 1	898	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	922	-	-	1435	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	661	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	541	1435	-
HCM Lane V/C Ratio	-	-	0.14	0.031	-
HCM Control Delay (s)	-	-	12.7	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	17	53	1	1	131	0	3	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	56	1	1	138	0	3	5	3

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	138	0	0	57	0	0	279	232	56
Stage 1	-	-	-	-	-	-	92	92	-
Stage 2	-	-	-	-	-	-	187	140	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1446	-	-	1547	-	-	673	668	1011
Stage 1	-	-	-	-	-	-	915	819	-
Stage 2	-	-	-	-	-	-	815	781	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1446	-	-	1547	-	-	597	659	1011
Mov Cap-2 Maneuver	-	-	-	-	-	-	597	659	-
Stage 1	-	-	-	-	-	-	903	808	-
Stage 2	-	-	-	-	-	-	728	780	-

Approach	EB	WB	NB
HCM Control Delay, s	1.8	0.1	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	706	1446	-	-	1547	-	-	839
HCM Lane V/C Ratio	0.016	0.012	-	-	0.001	-	-	0.124
HCM Control Delay (s)	10.2	7.5	0	-	7.3	0	-	9.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	9	15	75
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	16	79

Major/Minor	Minor2		
Conflicting Flow All	236	233	138
Stage 1	140	140	-
Stage 2	96	93	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	718	667	910
Stage 1	863	781	-
Stage 2	911	818	-
Platoon blocked, %			
Mov Cap-1 Maneuver	704	658	910
Mov Cap-2 Maneuver	704	658	-
Stage 1	852	780	-
Stage 2	891	807	-

Approach	SB
HCM Control Delay, s	9.9
HCM LOS	A

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	126	30	241	68	57	416
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	32	254	72	60	438

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	628	163	0	0	325	0
Stage 1	289	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	415	853	-	-	1231	-
Stage 1	735	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	388	853	-	-	1231	-
Mov Cap-2 Maneuver	388	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.2	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	388	853	1231	-
HCM Lane V/C Ratio	-	-	0.342	0.037	0.049	-
HCM Control Delay (s)	-	-	19	9.4	8.1	0.2
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.1	0.2	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	11	20	33	20	10	26	14	259	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	21	35	21	11	27	15	273	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	705	856	240	617	849	146	480	0	0
Stage 1	534	534	-	312	312	-	-	-	-
Stage 2	171	322	-	305	537	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	323	294	761	374	296	875	1079	-	-
Stage 1	498	523	-	673	656	-	-	-	-
Stage 2	814	650	-	680	521	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	293	280	761	325	282	875	1079	-	-
Mov Cap-2 Maneuver	293	280	-	325	282	-	-	-	-
Stage 1	490	507	-	662	645	-	-	-	-
Stage 2	762	639	-	603	505	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15.2	14.4	0.5
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1079	-	-	420	442	1265	-	-
HCM Lane V/C Ratio	0.014	-	-	0.16	0.133	0.022	-	-
HCM Control Delay (s)	8.4	0.1	-	15.2	14.4	7.9	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.5	0.1	-	-

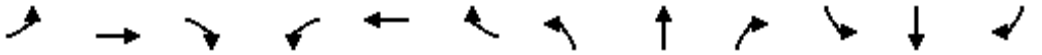
Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	27	451	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	28	475	5

Major/Minor	Major2		
Conflicting Flow All	293	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1265	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1265	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	2	63	20	3	5	27	834	5	10	1088	124
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	102	2	66	21	3	5	28	878	5	11	1145	131
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	7	240	336	98	163	287	1834	820	404	1659	189
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1402	47	1544	1328	629	1049	432	3539	1583	626	3202	366
Grp Volume(v), veh/h	102	0	68	21	0	8	28	878	5	11	632	644
Grp Sat Flow(s),veh/h/ln	1402	0	1590	1328	0	1678	432	1770	1583	626	1770	1798
Q Serve(g_s), s	2.7	0.0	1.5	0.6	0.0	0.2	2.1	6.4	0.1	0.5	10.7	10.8
Cycle Q Clear(g_c), s	2.8	0.0	1.5	2.1	0.0	0.2	12.9	6.4	0.1	6.8	10.7	10.8
Prop In Lane	1.00		0.97	1.00		0.63	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	392	0	247	336	0	261	287	1834	820	404	917	932
V/C Ratio(X)	0.26	0.00	0.28	0.06	0.00	0.03	0.10	0.48	0.01	0.03	0.69	0.69
Avail Cap(c_a), veh/h	736	0	638	662	0	673	287	1834	820	404	917	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	15.0	15.9	0.0	14.4	12.1	6.2	4.7	8.4	7.2	7.3
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.1	0.0	0.0	0.7	0.9	0.0	0.1	4.2	4.2
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	1.1	0.0	0.7	0.2	0.0	0.1	0.3	3.3	0.0	0.1	6.2	6.3
LnGrp Delay(d),s/veh	15.9	0.0	15.6	16.0	0.0	14.4	12.8	7.1	4.7	8.5	11.5	11.5
LnGrp LOS	B		B	B		B	B	A	A	A	B	B
Approach Vol, veh/h		170			29			911			1287	
Approach Delay, s/veh		15.8			15.5			7.3			11.4	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		12.5		37.5		12.5
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 21		* 16		* 21		* 16
Max Q Clear Time (g_c+I1), s		14.9		4.8		12.8		4.1
Green Ext Time (p_c), s		5.8		1.1		7.9		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

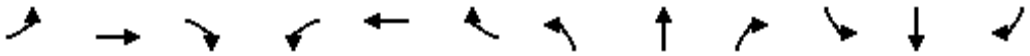
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	44	75	266	60	75	52	739	93	38	825	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	44	46	0	280	63	79	55	778	98	40	868	38
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	245	0	607	197	247	327	1302	582	342	1238	54
Arrive On Green	0.06	0.13	0.00	0.19	0.26	0.26	0.07	0.37	0.37	0.06	0.36	0.34
Sat Flow, veh/h	1774	1863	0	1774	753	944	1774	3539	1583	1774	3454	151
Grp Volume(v), veh/h	44	46	0	280	0	142	55	778	98	40	445	461
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1696	1774	1770	1583	1774	1770	1836
Q Serve(g_s), s	1.2	1.3	0.0	7.2	0.0	4.0	1.1	10.6	2.5	0.8	12.9	12.9
Cycle Q Clear(g_c), s	1.2	1.3	0.0	7.2	0.0	4.0	1.1	10.6	2.5	0.8	12.9	12.9
Prop In Lane	1.00		0.00	1.00		0.56	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	390	245	0	607	0	444	327	1302	582	342	634	658
V/C Ratio(X)	0.11	0.19	0.00	0.46	0.00	0.32	0.17	0.60	0.17	0.12	0.70	0.70
Avail Cap(c_a), veh/h	521	580	0	919	0	923	446	1302	582	478	634	658
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	23.1	0.0	14.8	0.0	17.8	11.5	15.3	12.7	11.3	16.4	16.5
Incr Delay (d2), s/veh	0.1	0.4	0.0	0.5	0.0	0.4	0.2	2.0	0.6	0.2	6.4	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.0	3.6	0.0	1.9	0.5	5.6	1.2	0.4	7.3	7.5
LnGrp Delay(d),s/veh	20.1	23.5	0.0	15.4	0.0	18.2	11.8	17.3	13.3	11.5	22.8	22.6
LnGrp LOS	C	C		B		B	B	B	B	B	C	C
Approach Vol, veh/h		90			422			931			946	
Approach Delay, s/veh		21.8			16.3			16.6			22.2	
Approach LOS		C			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	53.0	13.4	13.2	6.0	52.5	5.6	20.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	2.8	12.6	9.2	3.3	3.1	14.9	3.2	6.0
Green Ext Time (p_c), s	0.0	7.4	1.2	2.1	0.0	5.3	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1	478	2	2	1	602	279	10	1	442	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1770		1770	3520		1770	3465	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.41	1.00		0.57	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1770		770	3520		1054	3465	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1	503	2	2	1	634	294	11	1	465	75
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	13	0
Lane Group Flow (vph)	9	1	503	2	2	0	634	303	0	1	527	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	1.4	1.4	65.0	1.4	1.4		50.8	50.8		33.3	33.3	
Effective Green, g (s)	1.4	1.4	65.0	1.4	1.4		50.8	50.8		33.3	33.3	
Actuated g/C Ratio	0.02	0.02	1.00	0.02	0.02		0.78	0.78		0.51	0.51	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	40	1583	40	38		824	2751		539	1775	
v/s Ratio Prot		0.00					c0.17	0.09			0.15	
v/s Ratio Perm	0.00		c0.32	0.00	0.00		c0.43			0.00		
v/c Ratio	0.23	0.03	0.32	0.05	0.05		0.77	0.11		0.00	0.30	
Uniform Delay, d1	31.3	31.1	0.0	31.1	31.2		2.7	1.7		7.7	9.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.3	0.5	0.5	0.6		4.4	0.1		0.0	0.4	
Delay (s)	34.1	31.4	0.5	31.7	31.7		7.1	1.8		7.7	9.5	
Level of Service	C	C	A	C	C		A	A		A	A	
Approach Delay (s)		1.2			31.7			5.3			9.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	115	7	11	193	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	121	7	12	203	5	11

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	134	113	0	0	215	0
Stage 1	113	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	860	940	-	-	1355	-
Stage 1	912	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	857	940	-	-	1355	-
Mov Cap-2 Maneuver	857	-	-	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	2.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	861	1355	-
HCM Lane V/C Ratio	-	-	0.149	0.004	-
HCM Control Delay (s)	-	-	9.9	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	16	38	35	0	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	40	37	0	4	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	37	0	-	0	111	37
Stage 1	-	-	-	-	37	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1574	-	-	-	886	1035
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	949	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1574	-	-	-	876	1035
Mov Cap-2 Maneuver	-	-	-	-	876	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	939	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1574	-	-	-	997
HCM Lane V/C Ratio	0.011	-	-	-	0.02
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	196	18	5	10	15	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	206	19	5	11	16	116

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	95	74	132	0	-	0
Stage 1	74	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	905	988	1453	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	902	988	1453	-	-	-
Mov Cap-2 Maneuver	902	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1453	-	909	-	-
HCM Lane V/C Ratio	0.004	-	0.248	-	-
HCM Control Delay (s)	7.5	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	173	16	54	130	28	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	182	17	57	137	29	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	199	0	442	-
Stage 1	-	-	-	-	191	-
Stage 2	-	-	-	-	251	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1373	-	573	0
Stage 1	-	-	-	-	841	0
Stage 2	-	-	-	-	791	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1373	-	547	-
Mov Cap-2 Maneuver	-	-	-	-	547	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	755	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	547	-	-	-	1373	-
HCM Lane V/C Ratio	0.054	-	-	-	0.041	-
HCM Control Delay (s)	12	0	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	12	144	211	351	262	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	152	222	369	276	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	592	0	-	0	508	296
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	101	-
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	980	-	-	-	494	700
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	912	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	980	-	-	-	487	700
Mov Cap-2 Maneuver	-	-	-	-	487	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	899	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	980	-	-	-	487	700
HCM Lane V/C Ratio	0.013	-	-	-	0.566	0.032
HCM Control Delay (s)	8.7	0.1	-	-	21.6	10.3
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	3.5	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	37	151	154	49	111	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	159	162	52	117	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	214	0	-	0	425	-
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	237	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1356	-	-	-	586	0
Stage 1	-	-	-	-	844	0
Stage 2	-	-	-	-	802	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1356	-	-	-	567	-
Mov Cap-2 Maneuver	-	-	-	-	567	-
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	776	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1356	-	-	-	567	-
HCM Lane V/C Ratio	0.029	-	-	-	0.206	-
HCM Control Delay (s)	7.7	0	-	-	13	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	5	8	54	5	21	5	168	66	37	106	0
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	-	-	-	-	-	-	-	-	-	-	-	-
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	3	5	8	57	5	22	5	177	69	39	112	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	425	446	112	418	411	212	112	0	0	246	0	0
Stage 1	189	189	-	222	222	-	-	-	-	-	-	-
Stage 2	236	257	-	196	189	-	-	-	-	-	-	-
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	540	507	941	545	531	828	1478	-	-	1320	-	-
Stage 1	813	744	-	780	720	-	-	-	-	-	-	-
Stage 2	767	695	-	806	744	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	508	489	941	521	512	828	1478	-	-	1320	-	-
Mov Cap-2 Maneuver	508	489	-	521	512	-	-	-	-	-	-	-
Stage 1	810	721	-	777	717	-	-	-	-	-	-	-
Stage 2	738	692	-	768	721	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	12.3	0.2	2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1478	-	-	650	576	1320	-	-
HCM Lane V/C Ratio	0.004	-	-	0.026	0.146	0.03	-	-
HCM Control Delay (s)	7.4	0	-	10.7	12.3	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	46	49	369	81	27	202
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	52	388	85	28	213

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	700	431	0	0	474	0
Stage 1	431	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	405	624	-	-	1088	-
Stage 1	655	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	393	624	-	-	1088	-
Mov Cap-2 Maneuver	393	-	-	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	486	1088	-
HCM Lane V/C Ratio	-	-	0.206	0.026	-
HCM Control Delay (s)	-	-	14.3	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	80	204	9	1	109	5	3	14	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	215	9	1	115	5	3	15	3

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	120	0	0	224	0	0	536	510	219
Stage 1	-	-	-	-	-	-	388	388	-
Stage 2	-	-	-	-	-	-	148	122	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1468	-	-	1345	-	-	455	467	821
Stage 1	-	-	-	-	-	-	636	609	-
Stage 2	-	-	-	-	-	-	855	795	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1468	-	-	1345	-	-	402	436	821
Mov Cap-2 Maneuver	-	-	-	-	-	-	402	436	-
Stage 1	-	-	-	-	-	-	595	569	-
Stage 2	-	-	-	-	-	-	800	794	-

Approach	EB	WB	NB
HCM Control Delay, s	2.1	0.1	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	463	1468	-	-	1345	-	-	690
HCM Lane V/C Ratio	0.045	0.057	-	-	0.001	-	-	0.095
HCM Control Delay (s)	13.1	7.6	0	-	7.7	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	7	12	43
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	7	13	45

Major/Minor	Minor2		
Conflicting Flow All	516	512	117
Stage 1	119	119	-
Stage 2	397	393	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	470	465	935
Stage 1	885	797	-
Stage 2	629	606	-
Platoon blocked, %			
Mov Cap-1 Maneuver	433	434	935
Mov Cap-2 Maneuver	433	434	-
Stage 1	827	796	-
Stage 2	571	567	-

Approach	SB
HCM Control Delay, s	10.8
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	75	111	458	135	79	327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	117	482	142	83	344

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	891	312	0	0	624	0
Stage 1	553	-	-	-	-	-
Stage 2	338	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	282	684	-	-	953	-
Stage 1	540	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	252	684	-	-	953	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.1	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	252	684	953	-
HCM Lane V/C Ratio	-	-	0.313	0.171	0.087	-
HCM Control Delay (s)	-	-	25.7	11.3	9.1	0.3
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.6	0.3	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	19	15	11	19	33	34	32	524	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	16	12	20	35	36	34	552	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	812	1090	207	881	1085	286	414	0	0
Stage 1	451	451	-	629	629	-	-	-	-
Stage 2	361	639	-	252	456	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	271	214	799	241	215	711	1141	-	-
Stage 1	557	569	-	437	474	-	-	-	-
Stage 2	630	469	-	730	567	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	211	199	799	211	200	711	1141	-	-
Mov Cap-2 Maneuver	211	199	-	211	200	-	-	-	-
Stage 1	532	554	-	418	453	-	-	-	-
Stage 2	528	448	-	680	552	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.6	23.5	0.6
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1141	-	-	251	284	997	-	-
HCM Lane V/C Ratio	0.03	-	-	0.189	0.319	0.021	-	-
HCM Control Delay (s)	8.3	0.2	-	22.6	23.5	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.3	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	20	383	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	21	403	11

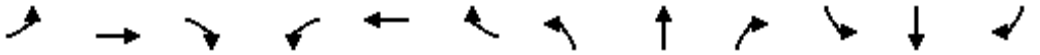
Major/Minor	Major2		
Conflicting Flow All	572	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	997	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	997	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt

HCM 2010 Signalized Intersection Summary
35: Hwy 26/27 & Carson Rd

17/08/2016



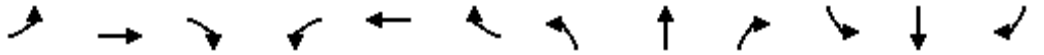
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	8	49	21	7	8	61	1422	17	8	1060	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	149	8	52	22	7	8	64	1497	18	8	1116	118
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	354	35	228	312	130	148	303	2080	931	235	1899	201
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	1393	215	1400	1337	795	908	450	3539	1583	343	3231	341
Grp Volume(v), veh/h	149	0	60	22	0	15	64	1497	18	8	611	623
Grp Sat Flow(s),veh/h/ln	1393	0	1616	1337	0	1703	450	1770	1583	343	1770	1803
Q Serve(g_s), s	5.3	0.0	1.7	0.8	0.0	0.4	5.5	15.9	0.2	0.9	11.4	11.5
Cycle Q Clear(g_c), s	5.7	0.0	1.7	2.5	0.0	0.4	17.0	15.9	0.2	16.8	11.4	11.5
Prop In Lane	1.00		0.87	1.00		0.53	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	354	0	263	312	0	278	303	2080	931	235	1040	1059
V/C Ratio(X)	0.42	0.00	0.23	0.07	0.00	0.05	0.21	0.72	0.02	0.03	0.59	0.59
Avail Cap(c_a), veh/h	550	0	492	501	0	518	303	2080	931	235	1040	1059
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	19.1	20.2	0.0	18.6	12.2	7.7	4.5	13.7	6.8	6.8
Incr Delay (d2), s/veh	0.8	0.0	0.4	0.1	0.0	0.1	1.6	2.2	0.0	0.3	2.4	2.4
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	2.1	0.0	0.8	0.3	0.0	0.2	0.8	8.1	0.1	0.1	6.1	6.2
LnGrp Delay(d),s/veh	21.8	0.0	19.6	20.3	0.0	18.7	13.8	9.9	4.6	14.0	9.2	9.2
LnGrp LOS	C		B	C		B	B	A	A	B	A	A
Approach Vol, veh/h		209			37			1579			1242	
Approach Delay, s/veh		21.1			19.6			10.0			9.3	
Approach LOS		C			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		45.1		14.9		45.1		14.9
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 31		* 16		* 31		* 16
Max Q Clear Time (g_c+I1), s		19.0		7.7		18.8		4.5
Green Ext Time (p_c), s		11.9		1.1		12.1		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



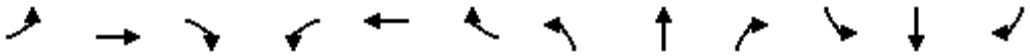
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	94	85	165	66	61	95	1137	330	103	915	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	53	99	0	174	69	64	100	1197	347	108	963	39
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	233	0	433	174	162	372	1594	713	297	1567	63
Arrive On Green	0.06	0.13	0.00	0.13	0.20	0.20	0.08	0.45	0.45	0.08	0.45	0.44
Sat Flow, veh/h	1774	1863	0	1774	891	826	1774	3539	1583	1774	3467	140
Grp Volume(v), veh/h	53	99	0	174	0	133	100	1197	347	108	492	510
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1717	1774	1770	1583	1774	1770	1838
Q Serve(g_s), s	1.7	3.4	0.0	5.4	0.0	4.7	2.0	19.6	10.8	2.1	14.7	14.7
Cycle Q Clear(g_c), s	1.7	3.4	0.0	5.4	0.0	4.7	2.0	19.6	10.8	2.1	14.7	14.7
Prop In Lane	1.00		0.00	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	367	233	0	433	0	336	372	1594	713	297	800	830
V/C Ratio(X)	0.14	0.42	0.00	0.40	0.00	0.40	0.27	0.75	0.49	0.36	0.61	0.61
Avail Cap(c_a), veh/h	464	497	0	759	0	800	442	1594	713	363	800	830
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	28.2	0.0	20.0	0.0	24.5	10.2	15.9	13.5	12.3	14.5	14.5
Incr Delay (d2), s/veh	0.2	1.2	0.0	0.6	0.0	0.8	0.4	3.3	2.4	0.7	3.5	3.4
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	1.8	0.0	2.7	0.0	2.3	1.0	10.2	5.1	1.1	7.9	8.2
LnGrp Delay(d),s/veh	24.0	29.4	0.0	20.6	0.0	25.2	10.5	19.2	15.9	13.1	18.0	17.9
LnGrp LOS	C	C		C		C	B	B	B	B	B	B
Approach Vol, veh/h		152			307			1644			1110	
Approach Delay, s/veh		27.5			22.6			18.0			17.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	62.5	11.1	14.0	7.3	62.6	6.2	18.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	7.0	* 32
Max Q Clear Time (g_c+I1), s	4.1	21.6	7.4	5.4	4.0	16.7	3.7	6.7
Green Ext Time (p_c), s	0.1	8.7	0.7	2.3	0.1	13.5	0.0	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	4	581	3	5	2	555	690	11	6	454	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1783		1770	3531		1770	3507	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.42	1.00		0.37	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1783		778	3531		692	3507	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	4	612	3	5	2	584	726	12	6	478	31
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	6	0
Lane Group Flow (vph)	31	4	612	3	5	0	584	737	0	6	503	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	3.3	3.3	60.0	3.3	3.3		43.9	43.9		26.8	26.8	
Effective Green, g (s)	3.3	3.3	60.0	3.3	3.3		43.9	43.9		26.8	26.8	
Actuated g/C Ratio	0.05	0.05	1.00	0.05	0.05		0.73	0.73		0.45	0.45	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	102	102	1583	102	98		802	2583		309	1566	
v/s Ratio Prot		0.00					c0.17	0.21			0.14	
v/s Ratio Perm	0.02		c0.39	0.00	0.00		c0.36			0.01		
v/c Ratio	0.30	0.04	0.39	0.03	0.05		0.73	0.29		0.02	0.32	
Uniform Delay, d1	27.2	26.8	0.0	26.8	26.9		3.5	2.7		9.3	10.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2	0.7	0.1	0.2		3.3	0.3		0.1	0.5	
Delay (s)	28.9	27.0	0.7	27.0	27.1		6.8	3.0		9.4	11.3	
Level of Service	C	C	A	C	C		A	A		A	B	
Approach Delay (s)		2.2			27.0			4.7			11.2	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

2031 Total Traffic Volumes

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	36	80	113	36	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	38	84	119	38	97

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	203	0	-	0	241	144
Stage 1	-	-	-	-	144	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1369	-	-	-	747	903
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1369	-	-	-	731	903
Mov Cap-2 Maneuver	-	-	-	-	731	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	907	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1369	-	-	-	847
HCM Lane V/C Ratio	0.022	-	-	-	0.159
HCM Control Delay (s)	7.7	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	362	537	92	347	44	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	381	565	97	365	46	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	946	0	1223	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	725	-	198	0
Stage 1	-	-	-	-	512	0
Stage 2	-	-	-	-	572	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	725	-	165	-
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	19.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	-	-	-	725	-
HCM Lane V/C Ratio	0.154	-	-	-	0.134	-
HCM Control Delay (s)	19.2	0	-	-	10.7	0
HCM Lane LOS	C	A	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	-	0.5	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	17	216	191	255	403	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	227	201	268	424	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	201	0	-	0	464	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	263	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1371	-	-	-	556	840
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	781	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1371	-	-	-	549	840
Mov Cap-2 Maneuver	-	-	-	-	615	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	22.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1371	-	-	-	615	840
HCM Lane V/C Ratio	0.013	-	-	-	0.69	0.014
HCM Control Delay (s)	7.7	-	-	-	22.8	9.3
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0	-	-	-	5.4	0

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	125	272	233	31	30	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	286	245	33	32	216

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	278	0	-	0	811	-
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	549	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1285	-	-	-	349	0
Stage 1	-	-	-	-	782	0
Stage 2	-	-	-	-	579	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1285	-	-	-	306	-
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1285	-	-	-	306	-
HCM Lane V/C Ratio	0.102	-	-	-	0.103	-
HCM Control Delay (s)	8.1	0	-	-	18.1	0
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.3	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	16	12	154	53	68	6	90	38	32	184	1
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	-	-	-	-	-	-	-	-	-	-	-	-
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	0	17	13	162	56	72	6	95	40	34	194	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	453	409	194	403	389	115	195	0	0	135	0	0
Stage 1	262	262	-	127	127	-	-	-	-	-	-	-
Stage 2	191	147	-	276	262	-	-	-	-	-	-	-
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	517	532	847	558	546	937	1378	-	-	1449	-	-
Stage 1	743	691	-	877	791	-	-	-	-	-	-	-
Stage 2	811	775	-	730	691	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	429	516	847	523	529	937	1378	-	-	1449	-	-
Mov Cap-2 Maneuver	429	516	-	523	529	-	-	-	-	-	-	-
Stage 1	739	673	-	873	787	-	-	-	-	-	-	-
Stage 2	692	771	-	683	673	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	16.9	0.3	1.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1378	-	-	620	589	1449	-	-
HCM Lane V/C Ratio	0.005	-	-	0.048	0.491	0.023	-	-
HCM Control Delay (s)	7.6	0	-	11.1	16.9	7.5	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.7	0.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	107	12	149	50	42	422
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	13	157	53	44	444

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	716	183	0	0	209	0
Stage 1	183	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	397	859	-	-	1362	-
Stage 1	848	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	380	859	-	-	1362	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	563	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.9	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	403	1362	-
HCM Lane V/C Ratio	-	-	0.311	0.032	-
HCM Control Delay (s)	-	-	17.9	7.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.1	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	34	79	7	41	253	114	16	10	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	83	7	43	266	120	17	11	14

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	386	0	0	91	0	0	638	631	87
Stage 1	-	-	-	-	-	-	158	158	-
Stage 2	-	-	-	-	-	-	480	473	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1172	-	-	1504	-	-	389	398	971
Stage 1	-	-	-	-	-	-	844	767	-
Stage 2	-	-	-	-	-	-	567	558	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1172	-	-	1504	-	-	300	371	971
Mov Cap-2 Maneuver	-	-	-	-	-	-	354	427	-
Stage 1	-	-	-	-	-	-	817	742	-
Stage 2	-	-	-	-	-	-	442	537	-

Approach	EB	WB	NB
HCM Control Delay, s	2.3	0.8	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	476	1172	-	-	1504	-	-	590
HCM Lane V/C Ratio	0.086	0.031	-	-	0.029	-	-	0.314
HCM Control Delay (s)	13.3	8.2	0	-	7.5	0	-	13.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	1.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	48	24	104
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	1	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	51	25	109

Major/Minor	Minor2		
Conflicting Flow All	584	575	326
Stage 1	413	413	-
Stage 2	171	162	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	423	429	715
Stage 1	616	594	-
Stage 2	831	764	-
Platoon blocked, %			
Mov Cap-1 Maneuver	388	400	715
Mov Cap-2 Maneuver	473	465	-
Stage 1	596	572	-
Stage 2	782	740	-

Approach	SB
HCM Control Delay, s	13.9
HCM LOS	B

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	222	14	290	70	4	36	1	645	4	7	0
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	234	15	305	74	4	38	1	679	4	7	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	465	30	509	777	42	574	696	805	322	553	0
Arrive On Green	0.00	0.27	0.27	0.13	0.44	0.44	0.04	0.37	0.37	0.30	0.30	0.00
Sat Flow, veh/h	1316	1732	111	1774	1751	95	1774	1863	1583	757	1863	0
Grp Volume(v), veh/h	0	0	249	305	0	78	38	1	679	4	7	0
Grp Sat Flow(s),veh/h/ln	1316	0	1843	1774	0	1846	1774	1863	1583	757	1863	0
Q Serve(g_s), s	0.0	0.0	8.5	8.8	0.0	1.8	1.0	0.0	27.5	0.3	0.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.5	8.8	0.0	1.8	1.0	0.0	27.5	0.3	0.2	0.0
Prop In Lane	1.00		0.06	1.00		0.05	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	97	0	495	509	0	818	574	696	805	322	553	0
V/C Ratio(X)	0.00	0.00	0.50	0.60	0.00	0.10	0.07	0.00	0.84	0.01	0.01	0.00
Avail Cap(c_a), veh/h	108	0	510	509	0	834	700	696	805	322	553	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	23.0	15.6	0.0	12.0	15.6	14.6	15.7	18.5	18.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.8	1.9	0.0	0.1	0.0	0.0	10.5	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.4	4.4	0.0	0.9	0.5	0.0	14.2	0.1	0.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	23.8	17.6	0.0	12.1	15.6	14.6	26.3	18.6	18.5	0.0
LnGrp LOS			C	B		B	B	B	C	B	B	
Approach Vol, veh/h		249			383			718			11	
Approach Delay, s/veh		23.8			16.4			25.7			18.5	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6		8
Phs Duration (G+Y+Rc), s		35.2	13.0	26.8	5.7	29.5		39.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8	3.0	* 6.8		* 6.8
Max Green Setting (Gmax), s		* 28	10.0	* 21	8.0	* 17		* 34
Max Q Clear Time (g_c+I1), s		29.5	10.8	10.5	3.0	2.3		3.8
Green Ext Time (p_c), s		0.0	0.0	3.0	0.0	3.5		5.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	414	64	62	259	90	226
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	436	67	65	273	95	238
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	517	462	646	976	787	669
Arrive On Green	0.29	0.29	0.07	0.52	0.42	0.42
Sat Flow, veh/h	1774	1583	1774	1863	1863	1583
Grp Volume(v), veh/h	436	67	65	273	95	238
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	1863	1583
Q Serve(g_s), s	14.5	2.0	1.1	5.1	2.0	6.4
Cycle Q Clear(g_c), s	14.5	2.0	1.1	5.1	2.0	6.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	517	462	646	976	787	669
V/C Ratio(X)	0.84	0.15	0.10	0.28	0.12	0.36
Avail Cap(c_a), veh/h	575	513	776	976	787	669
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.9	16.5	7.5	8.4	11.1	12.4
Incr Delay (d2), s/veh	10.1	0.1	0.1	0.7	0.3	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	2.0	0.6	2.8	1.1	3.1
LnGrp Delay(d),s/veh	31.1	16.6	7.6	9.1	11.4	13.8
LnGrp LOS	C	B	A	A	B	B
Approach Vol, veh/h	503			338	333	
Approach Delay, s/veh	29.1			8.8	13.1	
Approach LOS	C			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		40.8		24.2	6.4	34.4		
Change Period (Y+Rc), s		* 6.8		* 6.8	3.0	* 6.8		
Max Green Setting (Gmax), s		* 32		* 19	8.0	* 21		
Max Q Clear Time (g_c+I1), s		7.1		16.5	3.1	8.4		
Green Ext Time (p_c), s		9.8		0.8	0.1	6.3		

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	264	2	350	20	3	14	117	1027	5	13	1246	165
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	278	2	368	21	3	15	123	1081	5	14	1312	174
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	438	2	438	140	45	223	217	2074	10	284	1530	202
Arrive On Green	0.08	0.28	0.28	0.16	0.16	0.16	0.05	0.57	0.57	0.49	0.49	0.49
Sat Flow, veh/h	1774	9	1576	1008	271	1353	1774	3613	17	517	3145	414
Grp Volume(v), veh/h	278	0	370	21	0	18	123	530	556	14	735	751
Grp Sat Flow(s),veh/h/ln	1774	0	1585	1008	0	1624	1774	1770	1860	517	1770	1790
Q Serve(g_s), s	7.0	0.0	19.5	1.8	0.0	0.8	2.9	16.1	16.1	1.5	32.3	32.9
Cycle Q Clear(g_c), s	7.0	0.0	19.5	11.2	0.0	0.8	2.9	16.1	16.1	9.8	32.3	32.9
Prop In Lane	1.00		0.99	1.00		0.83	1.00		0.01	1.00		0.23
Lane Grp Cap(c), veh/h	438	0	440	140	0	268	217	1016	1068	284	861	871
V/C Ratio(X)	0.64	0.00	0.84	0.15	0.00	0.07	0.57	0.52	0.52	0.05	0.85	0.86
Avail Cap(c_a), veh/h	438	0	467	157	0	295	262	1016	1068	284	861	871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.6	0.0	30.1	40.1	0.0	31.2	18.9	11.5	11.5	16.8	20.0	20.1
Incr Delay (d2), s/veh	3.0	0.0	12.4	0.5	0.0	0.1	2.3	1.9	1.8	0.3	10.5	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	10.0	0.5	0.0	0.4	1.7	8.3	8.7	0.2	18.2	18.7
LnGrp Delay(d),s/veh	32.6	0.0	42.5	40.6	0.0	31.3	21.2	13.4	13.3	17.1	30.5	31.2
LnGrp LOS	C		D	D		C	C	B	B	B	C	C
Approach Vol, veh/h		648			39			1209			1500	
Approach Delay, s/veh		38.3			36.3			14.1			30.7	
Approach LOS		D			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		59.1		30.9	7.8	51.4	10.0	20.9
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 51		* 26	7.0	* 41	7.0	* 16
Max Q Clear Time (g_c+I1), s		18.1		21.5	4.9	34.9	9.0	13.2
Green Ext Time (p_c), s		32.1		2.1	0.1	5.9	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

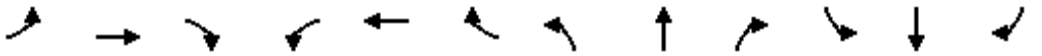
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	82	167	315	210	68	201	871	110	35	897	216
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	159	86	176	332	221	72	212	917	116	37	944	227
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	109	224	462	379	124	258	1420	635	266	1008	242
Arrive On Green	0.10	0.20	0.20	0.18	0.28	0.28	0.09	0.40	0.40	0.05	0.36	0.34
Sat Flow, veh/h	1774	547	1119	1774	1347	439	1774	3539	1583	1774	2832	680
Grp Volume(v), veh/h	159	0	262	332	0	293	212	917	116	37	589	582
Grp Sat Flow(s),veh/h/ln	1774	0	1665	1774	0	1785	1774	1770	1583	1774	1770	1743
Q Serve(g_s), s	6.1	0.0	13.2	12.1	0.0	12.5	6.4	18.5	4.2	1.1	28.4	28.5
Cycle Q Clear(g_c), s	6.1	0.0	13.2	12.1	0.0	12.5	6.4	18.5	4.2	1.1	28.4	28.5
Prop In Lane	1.00		0.67	1.00		0.25	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	413	0	333	462	0	503	258	1420	635	266	630	620
V/C Ratio(X)	0.39	0.00	0.79	0.72	0.00	0.58	0.82	0.65	0.18	0.14	0.94	0.94
Avail Cap(c_a), veh/h	414	0	351	578	0	637	258	1420	635	347	630	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	33.5	21.0	0.0	27.3	20.3	21.4	17.1	17.4	27.5	27.7
Incr Delay (d2), s/veh	0.6	0.0	10.8	3.2	0.0	1.1	18.8	2.3	0.6	0.2	23.2	23.8
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	3.0	0.0	7.0	6.3	0.0	6.3	4.4	9.5	1.9	0.6	17.8	17.7
LnGrp Delay(d),s/veh	24.5	0.0	44.4	24.3	0.0	28.3	39.1	23.6	17.7	17.7	50.6	51.5
LnGrp LOS	C		D	C		C	D	C	B	B	D	D
Approach Vol, veh/h		421			625			1245			1208	
Approach Delay, s/veh		36.8			26.2			25.7			50.0	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	41.2	18.1	22.9	10.0	37.2	10.9	30.2
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.1	20.5	14.1	15.2	8.4	30.5	8.1	14.5
Green Ext Time (p_c), s	0.0	9.7	1.0	1.5	0.0	0.0	0.0	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	8	452	2	24	1	605	508	10	1	716	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1852		1770	3529		1770	3475	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.18	1.00		0.45	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1852		328	3529		835	3475	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	8	476	2	25	1	637	535	11	1	754	104
RTOR Reduction (vph)	0	0	0	0	1	0	0	1	0	0	12	0
Lane Group Flow (vph)	20	8	476	2	25	0	637	545	0	1	846	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	2.5	2.5	67.7	2.5	2.5		52.4	52.4		21.8	21.8	
Effective Green, g (s)	2.5	2.5	67.7	2.5	2.5		52.4	52.4		21.8	21.8	
Actuated g/C Ratio	0.04	0.04	1.00	0.04	0.04		0.77	0.77		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	68	68	1583	68	68		841	2731		268	1118	
v/s Ratio Prot		0.00					c0.31	0.15			0.24	
v/s Ratio Perm	0.01		c0.30	0.00	0.01		c0.28			0.00		
v/c Ratio	0.29	0.12	0.30	0.03	0.37		0.76	0.20		0.00	0.76	
Uniform Delay, d1	31.7	31.5	0.0	31.4	31.8		10.8	2.0		15.6	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.8	0.5	0.2	3.4		3.9	0.0		0.0	3.0	
Delay (s)	34.1	32.3	0.5	31.6	35.2		14.8	2.1		15.6	23.6	
Level of Service	C	C	A	C	D		B	A		B	C	
Approach Delay (s)		2.3			34.9			8.9			23.5	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	15.8
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	186	56	361	165	18	621
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	196	59	380	174	19	654
Adj No. of Lanes	1	1	1	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	392	350	864	734	445	1641
Arrive On Green	0.22	0.22	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1774	1583	1863	1583	851	3632
Grp Volume(v), veh/h	196	59	380	174	19	654
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	851	1770
Q Serve(g_s), s	4.2	1.3	5.9	2.9	0.7	5.2
Cycle Q Clear(g_c), s	4.2	1.3	5.9	2.9	6.6	5.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	392	350	864	734	445	1641
V/C Ratio(X)	0.50	0.17	0.44	0.24	0.04	0.40
Avail Cap(c_a), veh/h	749	668	1002	852	508	1904
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	14.7	13.6	7.8	7.0	10.0	7.6
Incr Delay (d2), s/veh	1.0	0.2	0.4	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.6	3.0	1.2	0.2	2.6
LnGrp Delay(d),s/veh	15.7	13.8	8.1	7.1	10.1	7.8
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	255		554			673
Approach Delay, s/veh	15.3		7.8			7.8
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		26.8				26.8		16.3
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 23				* 23		18.2
Max Q Clear Time (g_c+I1), s		7.9				8.6		6.2
Green Ext Time (p_c), s		11.6				11.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	224	141	302	237	217	403
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	236	148	318	249	228	424
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	343	306	623	529	536	968
Arrive On Green	0.19	0.19	0.33	0.33	0.12	0.52
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	236	148	318	249	228	424
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	5.7	3.8	6.3	5.7	3.4	6.5
Cycle Q Clear(g_c), s	5.7	3.8	6.3	5.7	3.4	6.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	343	306	623	529	536	968
V/C Ratio(X)	0.69	0.48	0.51	0.47	0.43	0.44
Avail Cap(c_a), veh/h	621	555	754	641	688	1260
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.1	16.4	12.2	12.0	7.6	6.8
Incr Delay (d2), s/veh	2.5	1.2	0.7	0.7	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	1.7	3.3	2.6	1.7	3.4
LnGrp Delay(d),s/veh	19.6	17.6	12.9	12.7	8.2	7.1
LnGrp LOS	B	B	B	B	A	A
Approach Vol, veh/h	384		567			652
Approach Delay, s/veh	18.8		12.8			7.5
Approach LOS	B		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.5	22.1				30.5		15.1
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	9.4	* 19				* 31		16.0
Max Q Clear Time (g_c+I1), s	5.4	8.3				8.5		7.7
Green Ext Time (p_c), s	0.4	7.0				12.6		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	20	33	188	10	109	14	411	72	53	519	5
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	21	35	198	11	115	15	433	76	56	546	5
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	157	262	483	35	366	437	1221	213	453	1455	13
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1260	629	1049	1342	140	1464	853	3014	526	887	3594	33
Grp Volume(v), veh/h	12	0	56	198	0	126	15	253	256	56	269	282
Grp Sat Flow(s),veh/h/ln	1260	0	1678	1342	0	1604	853	1770	1770	887	1770	1857
Q Serve(g_s), s	0.3	0.0	1.0	5.3	0.0	2.5	0.5	3.9	4.0	1.8	4.2	4.2
Cycle Q Clear(g_c), s	2.8	0.0	1.0	6.3	0.0	2.5	4.7	3.9	4.0	5.8	4.2	4.2
Prop In Lane	1.00		0.63	1.00		0.91	1.00		0.30	1.00		0.02
Lane Grp Cap(c), veh/h	417	0	419	483	0	401	437	717	717	453	717	752
V/C Ratio(X)	0.03	0.00	0.13	0.41	0.00	0.31	0.03	0.35	0.36	0.12	0.38	0.38
Avail Cap(c_a), veh/h	684	0	775	768	0	741	486	818	818	503	818	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	11.5	13.9	0.0	12.0	9.9	8.1	8.2	10.2	8.2	8.2
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.6	0.0	0.4	0.0	0.3	0.3	0.1	0.3	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	0.1	0.0	0.5	2.0	0.0	1.2	0.1	2.0	2.0	0.5	2.1	2.2
LnGrp Delay(d),s/veh	13.2	0.0	11.6	14.5	0.0	12.5	9.9	8.4	8.5	10.3	8.5	8.5
LnGrp LOS	B		B	B		B	A	A	A	B	A	A
Approach Vol, veh/h		68			324			524			607	
Approach Delay, s/veh		11.9			13.7			8.5			8.7	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.8		16.6		22.8		16.6
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 18		* 18		* 18		* 18
Max Q Clear Time (g_c+I1), s		6.7		4.8		7.8		8.3
Green Ext Time (p_c), s		8.9		2.0		8.1		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	88	109	61	60	109	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	115	64	63	115	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	127	0	-	0	396	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	300	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1459	-	-	-	609	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1459	-	-	-	568	960
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	701	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1459	-	-	-	664
HCM Lane V/C Ratio	0.063	-	-	-	0.268
HCM Control Delay (s)	7.6	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	299	295	49	822	77	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	315	311	52	865	81	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	625	0	1438	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	968	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	956	-	147	0
Stage 1	-	-	-	-	629	0
Stage 2	-	-	-	-	368	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	956	-	132	-
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	329	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	26.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	-	956	-
HCM Lane V/C Ratio	0.326	-	-	-	0.054	-
HCM Control Delay (s)	26.3	0	-	-	9	0
HCM Lane LOS	D	A	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	11	255	280	530	401	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	268	295	558	422	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	295	0	-	0	587	295
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1266	-	-	-	472	744
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1266	-	-	-	468	744
Mov Cap-2 Maneuver	-	-	-	-	557	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	751	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	28
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1266	-	-	-	557	744
HCM Lane V/C Ratio	0.009	-	-	-	0.758	0.027
HCM Control Delay (s)	7.9	-	-	-	28.9	10
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	6.7	0.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	95	228	299	44	101	569
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	100	240	315	46	106	599

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	778	-
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	440	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1198	-	-	-	365	0
Stage 1	-	-	-	-	722	0
Stage 2	-	-	-	-	649	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1198	-	-	-	330	-
Mov Cap-2 Maneuver	-	-	-	-	330	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1198	-	-	-	330	-
HCM Lane V/C Ratio	0.083	-	-	-	0.322	-
HCM Control Delay (s)	8.3	0	-	-	21	0
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	-	-	-	1.4	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	77	7	95	31	37	5	209	140	101	143	0
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	-	-	-	-	-	-	-	-	-	-	-	-
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	2	81	7	100	33	39	5	220	147	106	151	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	703	741	151	711	667	294	151	0	0	367	0	0
Stage 1	363	363	-	304	304	-	-	-	-	-	-	-
Stage 2	340	378	-	407	363	-	-	-	-	-	-	-
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	352	344	895	348	380	745	1430	-	-	1192	-	-
Stage 1	656	625	-	705	663	-	-	-	-	-	-	-
Stage 2	675	615	-	621	625	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	286	309	895	255	342	745	1430	-	-	1192	-	-
Mov Cap-2 Maneuver	286	309	-	255	342	-	-	-	-	-	-	-
Stage 1	653	564	-	702	660	-	-	-	-	-	-	-
Stage 2	606	613	-	476	564	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	28.8	0.1	3.4
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1430	-	-	326	318	1192	-	-
HCM Lane V/C Ratio	0.004	-	-	0.278	0.54	0.089	-	-
HCM Control Delay (s)	7.5	0	-	20.2	28.8	8.3	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.1	3	0.3	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	72	49	547	154	27	325
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	52	576	162	28	342

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1056	657	0	0	738	0
Stage 1	657	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	250	465	-	-	868	-
Stage 1	516	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	240	465	-	-	868	-
Mov Cap-2 Maneuver	240	-	-	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.8	0	0.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	298	868	-
HCM Lane V/C Ratio	-	-	0.427	0.033	-
HCM Control Delay (s)	-	-	25.8	9.3	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	2	0.1	-

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	144	321	21	23	208	66	10	30	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	152	338	22	24	219	69	11	32	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	288	0	0	360	0	0	1005	989	349
Stage 1	-	-	-	-	-	-	652	652	-
Stage 2	-	-	-	-	-	-	353	337	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1274	-	-	1199	-	-	220	247	694
Stage 1	-	-	-	-	-	-	457	464	-
Stage 2	-	-	-	-	-	-	664	641	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1274	-	-	1199	-	-	162	205	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	256	288	-
Stage 1	-	-	-	-	-	-	388	394	-
Stage 2	-	-	-	-	-	-	563	626	-

Approach	EB	WB	NB
HCM Control Delay, s	2.4	0.6	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	378	1274	-	-	1199	-	-	329
HCM Lane V/C Ratio	0.198	0.119	-	-	0.02	-	-	0.717
HCM Control Delay (s)	16.9	8.2	0	-	8.1	0	-	39.3
HCM Lane LOS	C	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.7	0.4	-	-	0.1	-	-	5.2

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	128	21	75
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	1	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	135	22	79

Major/Minor	Minor2		
Conflicting Flow All	986	965	254
Stage 1	302	302	-
Stage 2	684	663	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	227	255	785
Stage 1	707	664	-
Stage 2	439	459	-
Platoon blocked, %			
Mov Cap-1 Maneuver	173	212	785
Mov Cap-2 Maneuver	249	297	-
Stage 1	601	648	-
Stage 2	327	390	-

Approach	SB
HCM Control Delay, s	39.3
HCM LOS	E

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	119	35	654	207	7	38	11	478	5	10	0
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	125	37	688	218	7	40	12	503	5	11	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	429	127	710	947	30	470	486	684	338	486	0
Arrive On Green	0.00	0.31	0.31	0.17	0.53	0.53	0.26	0.26	0.26	0.26	0.26	0.00
Sat Flow, veh/h	1151	1382	409	1774	1795	58	1398	1863	1583	882	1863	0
Grp Volume(v), veh/h	0	0	162	688	0	225	40	12	503	5	11	0
Grp Sat Flow(s),veh/h/ln	1151	0	1791	1774	0	1853	1398	1863	1583	882	1863	0
Q Serve(g_s), s	0.0	0.0	4.4	11.0	0.0	4.2	1.4	0.3	16.8	0.3	0.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	4.4	11.0	0.0	4.2	1.7	0.3	16.8	0.6	0.3	0.0
Prop In Lane	1.00		0.23	1.00		0.03	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	112	0	556	710	0	978	470	486	684	338	486	0
V/C Ratio(X)	0.00	0.00	0.29	0.97	0.00	0.23	0.09	0.02	0.74	0.01	0.02	0.00
Avail Cap(c_a), veh/h	123	0	573	710	0	996	470	486	684	338	486	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	16.8	16.7	0.0	8.2	18.3	17.7	15.2	17.9	17.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.3	26.3	0.0	0.1	0.4	0.1	6.9	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	2.2	12.1	0.0	2.2	0.6	0.2	8.7	0.1	0.2	0.0
LnGrp Delay(d),s/veh	0.0	0.0	17.1	43.1	0.0	8.3	18.7	17.8	22.2	18.0	17.8	0.0
LnGrp LOS			B	D		A	B	B	C	B	B	
Approach Vol, veh/h		162			913			555			16	
Approach Delay, s/veh		17.1			34.5			21.8			17.8	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.2	14.0	26.8		24.2		40.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 17	11.0	* 21		* 17		* 35
Max Q Clear Time (g_c+I1), s		18.8	13.0	6.4		2.6		6.2
Green Ext Time (p_c), s		0.0	0.0	4.4		2.6		6.4

Intersection Summary	
HCM 2010 Ctrl Delay	28.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	370	66	71	162	249	439
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	389	69	75	171	262	462
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	481	430	497	1006	806	685
Arrive On Green	0.27	0.27	0.07	0.54	0.43	0.43
Sat Flow, veh/h	1774	1583	1774	1863	1863	1583
Grp Volume(v), veh/h	389	69	75	171	262	462
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	1863	1583
Q Serve(g_s), s	12.6	2.0	1.2	2.9	5.7	14.4
Cycle Q Clear(g_c), s	12.6	2.0	1.2	2.9	5.7	14.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	481	430	497	1006	806	685
V/C Ratio(X)	0.81	0.16	0.15	0.17	0.33	0.67
Avail Cap(c_a), veh/h	583	520	624	1006	806	685
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.9	17.1	7.3	7.2	11.5	14.0
Incr Delay (d2), s/veh	7.0	0.2	0.1	0.4	1.1	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	2.0	0.6	1.6	3.2	7.2
LnGrp Delay(d),s/veh	27.9	17.2	7.5	7.5	12.6	19.2
LnGrp LOS	C	B	A	A	B	B
Approach Vol, veh/h	458			246	724	
Approach Delay, s/veh	26.3			7.5	16.8	
Approach LOS	C			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		42.5		22.5	6.6	35.9		
Change Period (Y+Rc), s		* 6.8		* 6.8	3.0	* 6.8		
Max Green Setting (Gmax), s		* 32		* 19	8.0	* 21		
Max Q Clear Time (g_c+I1), s		4.9		14.6	3.2	16.4		
Green Ext Time (p_c), s		13.2		1.1	0.1	3.5		

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	232	8	203	21	7	16	329	1703	17	22	1420	269
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	244	8	214	22	7	17	346	1793	18	23	1495	283
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	10	277	112	45	109	361	2568	26	168	1563	290
Arrive On Green	0.06	0.18	0.18	0.09	0.09	0.09	0.17	0.72	0.72	0.52	0.52	0.52
Sat Flow, veh/h	1774	57	1535	1154	483	1173	1774	3590	36	258	2982	553
Grp Volume(v), veh/h	244	0	222	22	0	24	346	883	928	23	874	904
Grp Sat Flow(s),veh/h/ln	1774	0	1592	1154	0	1656	1774	1770	1856	258	1770	1765
Q Serve(g_s), s	8.0	0.0	16.7	2.3	0.0	1.7	19.7	35.6	35.7	7.0	58.3	62.7
Cycle Q Clear(g_c), s	8.0	0.0	16.7	8.0	0.0	1.7	19.7	35.6	35.7	18.7	58.3	62.7
Prop In Lane	1.00		0.96	1.00		0.71	1.00		0.02	1.00		0.31
Lane Grp Cap(c), veh/h	280	0	287	112	0	153	361	1266	1328	168	928	925
V/C Ratio(X)	0.87	0.00	0.77	0.20	0.00	0.16	0.96	0.70	0.70	0.14	0.94	0.98
Avail Cap(c_a), veh/h	280	0	344	153	0	212	361	1266	1328	168	928	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	0.0	49.0	58.1	0.0	52.4	43.1	10.1	10.2	22.3	28.1	29.1
Incr Delay (d2), s/veh	24.5	0.0	8.8	0.8	0.0	0.5	36.7	3.2	3.1	1.7	18.5	24.5
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	6.4	0.0	8.0	0.8	0.0	0.8	15.6	18.3	19.2	0.6	33.2	36.7
LnGrp Delay(d),s/veh	76.9	0.0	57.8	58.9	0.0	52.9	79.7	13.3	13.2	24.0	46.5	53.7
LnGrp LOS	E		E	E		D	E	B	B	C	D	D
Approach Vol, veh/h		466			46			2157			1801	
Approach Delay, s/veh		67.8			55.8			24.0			49.8	
Approach LOS		E			E			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		101.1		28.9	24.0	77.1	11.0	17.9
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 90		* 27	21.0	* 66	8.0	* 16
Max Q Clear Time (g_c+I1), s		37.7		18.7	21.7	64.7	10.0	10.0
Green Ext Time (p_c), s		51.9		2.1	0.0	1.1	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	39.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

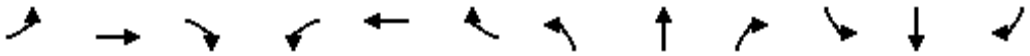
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	295	268	245	223	154	55	188	1264	401	93	1091	205
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	311	282	258	235	162	58	198	1331	422	98	1148	216
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	500	259	237	273	355	127	198	1507	674	166	1191	223
Arrive On Green	0.14	0.29	0.29	0.13	0.27	0.27	0.08	0.43	0.43	0.05	0.40	0.39
Sat Flow, veh/h	1774	897	821	1774	1311	469	1774	3539	1583	1774	2977	557
Grp Volume(v), veh/h	311	0	540	235	0	220	198	1331	422	98	680	684
Grp Sat Flow(s),veh/h/ln	1774	0	1718	1774	0	1780	1774	1770	1583	1774	1770	1764
Q Serve(g_s), s	17.1	0.0	40.7	14.1	0.0	14.5	11.0	48.7	29.4	4.5	52.7	53.4
Cycle Q Clear(g_c), s	17.1	0.0	40.7	14.1	0.0	14.5	11.0	48.7	29.4	4.5	52.7	53.4
Prop In Lane	1.00		0.48	1.00		0.26	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	500	0	497	273	0	481	198	1507	674	166	708	706
V/C Ratio(X)	0.62	0.00	1.09	0.86	0.00	0.46	1.00	0.88	0.63	0.59	0.96	0.97
Avail Cap(c_a), veh/h	510	0	497	327	0	526	198	1507	674	174	708	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	50.0	40.0	0.0	42.7	41.8	37.2	31.6	32.3	41.1	41.5
Incr Delay (d2), s/veh	2.3	0.0	65.9	17.6	0.0	0.7	64.1	7.9	4.4	4.8	25.4	27.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	28.3	10.3	0.0	7.2	11.2	25.3	13.6	2.4	30.7	31.3
LnGrp Delay(d),s/veh	31.4	0.0	115.9	57.6	0.0	43.4	105.9	45.0	36.0	37.2	66.6	68.6
LnGrp LOS	C		F	E		D	F	D	D	D	E	E
Approach Vol, veh/h		851			455			1951			1462	
Approach Delay, s/veh		85.1			50.7			49.2			65.5	
Approach LOS		F			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	65.7	19.6	46.0	13.0	62.1	22.3	43.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 58	20.9	* 40	10.0	* 55	20.0	* 41
Max Q Clear Time (g_c+I1), s	6.5	50.7	16.1	42.7	13.0	55.4	19.1	16.5
Green Ext Time (p_c), s	0.0	7.6	0.5	0.0	0.0	0.0	0.2	13.1

Intersection Summary	
HCM 2010 Ctrl Delay	60.9
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	24	582	3	17	2	514	1076	11	6	789	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1835		1770	3534		1770	3511	
Flt Permitted	0.77	1.00	1.00	0.77	1.00		0.18	1.00		0.25	1.00	
Satd. Flow (perm)	1433	1863	1583	1433	1835		333	3534		462	3511	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	61	25	613	3	18	2	541	1133	12	6	831	47
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	5	0
Lane Group Flow (vph)	61	25	613	3	18	0	541	1144	0	6	873	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	5.2	5.2	65.2	5.2	5.2		47.2	47.2		21.9	21.9	
Effective Green, g (s)	5.2	5.2	65.2	5.2	5.2		47.2	47.2		21.9	21.9	
Actuated g/C Ratio	0.08	0.08	1.00	0.08	0.08		0.72	0.72		0.34	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	114	148	1583	114	146		732	2558		155	1179	
v/s Ratio Prot		0.01					c0.25	0.32			0.25	
v/s Ratio Perm	0.04		c0.39	0.00	0.01		c0.28			0.01		
v/c Ratio	0.54	0.17	0.39	0.03	0.12		0.74	0.45		0.04	0.74	
Uniform Delay, d1	28.8	28.0	0.0	27.7	27.9		10.8	3.7		14.6	19.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	0.5	0.7	0.1	0.4		3.9	0.1		0.1	2.5	
Delay (s)	33.6	28.5	0.7	27.8	28.3		14.8	3.8		14.7	21.7	
Level of Service	C	C	A	C	C		B	A		B	C	
Approach Delay (s)		4.6			28.2			7.3			21.6	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	15.8
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	208	30	893	229	52	624
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	219	32	940	241	55	657
Adj No. of Lanes	1	1	1	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	282	252	1166	991	230	2215
Arrive On Green	0.16	0.16	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1774	1583	1863	1583	473	3632
Grp Volume(v), veh/h	219	32	940	241	55	657
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	473	1770
Q Serve(g_s), s	7.5	1.1	24.1	4.2	6.3	5.4
Cycle Q Clear(g_c), s	7.5	1.1	24.1	4.2	30.4	5.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	282	252	1166	991	230	2215
V/C Ratio(X)	0.78	0.13	0.81	0.24	0.24	0.30
Avail Cap(c_a), veh/h	466	416	1173	997	231	2228
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	25.5	22.8	8.9	5.2	20.4	5.4
Incr Delay (d2), s/veh	4.6	0.2	4.2	0.1	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.5	13.4	1.8	0.8	2.6
LnGrp Delay(d),s/veh	30.1	23.0	13.2	5.3	20.9	5.5
LnGrp LOS	C	C	B	A	C	A
Approach Vol, veh/h	251		1181			712
Approach Delay, s/veh	29.2		11.6			6.7
Approach LOS	C		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.4				46.4		16.9
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 40				* 40		16.6
Max Q Clear Time (g_c+I1), s		26.1				32.4		9.5
Green Ext Time (p_c), s		13.1				7.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	307	359	459	289	282	374
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	323	378	483	304	297	394
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	477	426	582	495	423	940
Arrive On Green	0.27	0.27	0.31	0.31	0.14	0.50
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	323	378	483	304	297	394
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	9.4	13.3	13.9	9.5	6.0	7.7
Cycle Q Clear(g_c), s	9.4	13.3	13.9	9.5	6.0	7.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	477	426	582	495	423	940
V/C Ratio(X)	0.68	0.89	0.83	0.61	0.70	0.42
Avail Cap(c_a), veh/h	490	437	595	506	461	993
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.9	20.3	18.5	16.9	12.3	9.0
Incr Delay (d2), s/veh	3.6	19.1	9.4	2.1	4.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	8.0	8.6	4.4	3.3	4.0
LnGrp Delay(d),s/veh	22.5	39.4	27.9	19.1	16.6	9.3
LnGrp LOS	C	D	C	B	B	A
Approach Vol, veh/h	701		787			691
Approach Delay, s/veh	31.6		24.5			12.4
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.1	24.9				36.1		21.9
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	9.4	* 19				* 31		16.0
Max Q Clear Time (g_c+I1), s	8.0	15.9				9.7		15.3
Green Ext Time (p_c), s	0.2	2.2				14.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	15	11	109	33	78	32	641	176	99	586	10
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	16	12	115	35	82	34	675	185	104	617	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	156	117	359	78	183	511	1476	404	409	1911	34
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1270	990	742	1377	496	1162	795	2747	752	640	3558	63
Grp Volume(v), veh/h	20	0	28	115	0	117	34	435	425	104	307	321
Grp Sat Flow(s),veh/h/ln	1270	0	1732	1377	0	1658	795	1770	1730	640	1770	1852
Q Serve(g_s), s	0.6	0.0	0.6	3.5	0.0	2.8	1.1	6.7	6.7	5.3	4.3	4.3
Cycle Q Clear(g_c), s	3.5	0.0	0.6	4.1	0.0	2.8	5.4	6.7	6.7	12.0	4.3	4.3
Prop In Lane	1.00		0.43	1.00		0.70	1.00		0.43	1.00		0.03
Lane Grp Cap(c), veh/h	280	0	273	359	0	261	511	950	929	409	950	994
V/C Ratio(X)	0.07	0.00	0.10	0.32	0.00	0.45	0.07	0.46	0.46	0.25	0.32	0.32
Avail Cap(c_a), veh/h	554	0	646	656	0	618	527	986	964	422	986	1031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	16.1	17.8	0.0	17.0	7.3	6.3	6.3	10.0	5.8	5.8
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.5	0.0	1.2	0.1	0.3	0.4	0.3	0.2	0.2
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	0.2	0.0	0.3	1.4	0.0	1.4	0.3	3.4	3.3	1.0	2.1	2.2
LnGrp Delay(d),s/veh	18.7	0.0	16.2	18.3	0.0	18.2	7.3	6.7	6.7	10.3	6.0	6.0
LnGrp LOS	B		B	B		B	A	A	A	B	A	A
Approach Vol, veh/h		48			232			894			732	
Approach Delay, s/veh		17.3			18.3			6.7			6.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		30.7		13.8		30.7		13.8
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 25		* 17		* 25		* 17
Max Q Clear Time (g_c+I1), s		8.7		5.5		14.0		6.1
Green Ext Time (p_c), s		14.4		1.2		9.9		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2031 Total Traffic Volumes with Improvements

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	82	167	315	210	68	201	871	110	35	897	216
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	1863	1863	1863	1900
Adj Flow Rate, veh/h	159	86	176	332	221	72	212	917	116	37	944	227
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	329	280	570	352	115	272	1463	655	278	1037	249
Arrive On Green	0.10	0.18	0.18	0.19	0.26	0.26	0.09	0.41	0.41	0.05	0.37	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1347	439	1774	3539	1583	1774	2832	680
Grp Volume(v), veh/h	159	86	176	332	0	293	212	917	116	37	589	582
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1785	1774	1770	1583	1774	1770	1743
Q Serve(g_s), s	6.1	3.4	8.8	12.1	0.0	12.4	6.0	17.6	4.0	1.1	27.2	27.3
Cycle Q Clear(g_c), s	6.1	3.4	8.8	12.1	0.0	12.4	6.0	17.6	4.0	1.1	27.2	27.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	393	329	280	570	0	466	272	1463	655	278	648	638
V/C Ratio(X)	0.40	0.26	0.63	0.58	0.00	0.63	0.78	0.63	0.18	0.13	0.91	0.91
Avail Cap(c_a), veh/h	396	404	343	689	0	655	272	1463	655	363	648	638
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	30.5	32.7	20.0	0.0	28.0	19.3	19.9	15.9	16.3	25.9	26.1
Incr Delay (d2), s/veh	0.7	0.4	2.5	0.9	0.0	1.4	13.4	2.0	0.6	0.2	19.1	19.6
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	3.0	1.8	4.0	6.0	0.0	6.3	3.9	8.9	1.8	0.5	16.7	16.6
LnGrp Delay(d),s/veh	25.2	30.9	35.2	21.0	0.0	29.4	32.7	22.0	16.5	16.5	44.9	45.7
LnGrp LOS	C	C	D	C		C	C	C	B	B	D	D
Approach Vol, veh/h		421			625			1245			1208	
Approach Delay, s/veh		30.6			24.9			23.3			44.4	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	41.3	18.1	20.5	10.0	37.2	10.9	27.7
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.1	19.6	14.1	10.8	8.0	29.3	8.1	14.4
Green Ext Time (p_c), s	0.0	10.6	1.0	3.3	0.0	1.1	0.0	6.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	295	268	245	223	154	55	188	1264	401	93	1091	205
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	1863	1863	1863	1900
Adj Flow Rate, veh/h	311	282	258	235	162	58	198	1331	422	98	1148	216
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	440	375	319	377	231	83	239	1573	704	206	1253	235
Arrive On Green	0.17	0.20	0.20	0.14	0.18	0.18	0.08	0.44	0.44	0.06	0.42	0.41
Sat Flow, veh/h	1774	1863	1583	1774	1311	469	1774	3539	1583	1774	2977	557
Grp Volume(v), veh/h	311	282	258	235	0	220	198	1331	422	98	680	684
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1780	1774	1770	1583	1774	1770	1764
Q Serve(g_s), s	13.3	14.0	15.3	10.2	0.0	11.4	5.9	32.9	19.8	3.0	35.5	36.0
Cycle Q Clear(g_c), s	13.3	14.0	15.3	10.2	0.0	11.4	5.9	32.9	19.8	3.0	35.5	36.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	440	375	319	377	0	314	239	1573	704	206	745	743
V/C Ratio(X)	0.71	0.75	0.81	0.62	0.00	0.70	0.83	0.85	0.60	0.47	0.91	0.92
Avail Cap(c_a), veh/h	451	375	319	520	0	428	239	1573	704	248	745	743
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	36.9	37.4	27.2	0.0	38.0	21.8	24.3	20.7	21.2	26.7	27.0
Incr Delay (d2), s/veh	4.9	8.3	14.5	1.7	0.0	3.1	20.7	5.8	3.8	1.7	17.5	18.6
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	7.0	8.1	8.0	5.1	0.0	5.9	4.2	17.2	9.4	1.5	20.8	21.3
LnGrp Delay(d),s/veh	30.2	45.2	51.9	28.9	0.0	41.1	42.5	30.1	24.4	22.8	44.3	45.6
LnGrp LOS	C	D	D	C		D	D	C	C	C	D	D
Approach Vol, veh/h		851			455			1951			1462	
Approach Delay, s/veh		41.7			34.8			30.1			43.4	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	49.4	16.0	25.0	10.0	47.1	18.4	22.6
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 40	20.9	* 18	7.0	* 40	16.0	* 23
Max Q Clear Time (g_c+I1), s	5.0	34.9	12.2	17.3	7.9	38.0	15.3	13.4
Green Ext Time (p_c), s	0.1	5.4	0.8	0.3	0.0	2.3	0.1	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2041 Total Traffic Volumes

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	202	428	297	34	33	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	213	451	313	36	35	453

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1207	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1211	-	-	-	203	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	407	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	155	-
Mov Cap-2 Maneuver	-	-	-	-	155	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	311	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	34.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1211	-	-	-	155	-
HCM Lane V/C Ratio	0.176	-	-	-	0.224	-
HCM Control Delay (s)	8.6	0	-	-	34.8	0
HCM Lane LOS	A	A	-	-	D	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.8	-

Intersection	
Int Delay, s/veh	45.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	16	13	329	54	71	7	110	92	53	240	1
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	-	-	-	-	-	-	-	-	-	-	-	-
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	0	17	14	346	57	75	7	116	97	56	253	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	610	592	253	559	544	164	254	0	0	213	0	0
Stage 1	365	365	-	179	179	-	-	-	-	-	-	-
Stage 2	245	227	-	380	365	-	-	-	-	-	-	-
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	407	419	786	440	446	881	1311	-	-	1357	-	-
Stage 1	654	623	-	823	751	-	-	-	-	-	-	-
Stage 2	759	716	-	642	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	321	396	786	401	422	881	1311	-	-	1357	-	-
Mov Cap-2 Maneuver	321	396	-	401	422	-	-	-	-	-	-	-
Stage 1	650	593	-	818	746	-	-	-	-	-	-	-
Stage 2	638	712	-	583	593	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	97.8	0.3	1.4
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1311	-	-	509	441	1357	-	-
HCM Lane V/C Ratio	0.006	-	-	0.06	1.084	0.041	-	-
HCM Control Delay (s)	7.8	0	-	12.5	97.8	7.8	0	-
HCM Lane LOS	A	A	-	B	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	15.9	0.1	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	107	12	203	50	42	589
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	13	214	53	44	620

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	948	240	0	0	266	0
Stage 1	240	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	289	799	-	-	1298	-
Stage 1	800	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	274	799	-	-	1298	-
Mov Cap-2 Maneuver	274	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	463	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.2	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	293	1298	-
HCM Lane V/C Ratio	-	-	0.428	0.034	-
HCM Control Delay (s)	-	-	26.2	7.9	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	2	0.1	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	34	104	27	83	406	128	58	10	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	109	28	87	427	135	61	11	27

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	562	0	0	138	0	0	934	932	124
Stage 1	-	-	-	-	-	-	195	195	-
Stage 2	-	-	-	-	-	-	739	737	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1009	-	-	1446	-	-	246	266	927
Stage 1	-	-	-	-	-	-	807	739	-
Stage 2	-	-	-	-	-	-	409	425	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1009	-	-	1446	-	-	168	233	927
Mov Cap-2 Maneuver	-	-	-	-	-	-	214	299	-
Stage 1	-	-	-	-	-	-	776	710	-
Stage 2	-	-	-	-	-	-	279	387	-

Approach	EB	WB	NB
HCM Control Delay, s	1.8	1	24.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	283	1009	-	-	1446	-	-	434
HCM Lane V/C Ratio	0.35	0.035	-	-	0.06	-	-	0.451
HCM Control Delay (s)	24.4	8.7	0	-	7.7	0	-	19.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.5	0.1	-	-	0.2	-	-	2.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	53	29	104
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	1	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	56	31	109

Major/Minor	Minor2		
Conflicting Flow All	883	878	495
Stage 1	669	669	-
Stage 2	214	209	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	266	287	575
Stage 1	447	456	-
Stage 2	788	729	-
Platoon blocked, %			
Mov Cap-1 Maneuver	227	251	575
Mov Cap-2 Maneuver	331	332	-
Stage 1	430	415	-
Stage 2	724	701	-

Approach	SB
HCM Control Delay, s	19.9
HCM LOS	C

Minor Lane/Major Mvmt

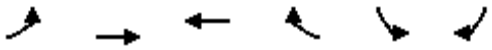
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	234	25	588	74	4	92	1	1561	4	7	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	246	26	619	78	4	97	1	0	4	7	0
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	91	417	44	650	841	43	546	652	554	451	476	0
Arrive On Green	0.00	0.25	0.25	0.19	0.48	0.48	0.06	0.35	0.00	0.26	0.26	0.00
Sat Flow, veh/h	1311	1657	175	3442	1757	90	1774	1863	1583	1410	1863	0
Grp Volume(v), veh/h	0	0	272	619	0	82	97	1	0	4	7	0
Grp Sat Flow(s),veh/h/ln	1311	0	1832	1721	0	1847	1774	1863	1583	1410	1863	0
Q Serve(g_s), s	0.0	0.0	10.4	14.1	0.0	1.9	3.0	0.0	0.0	0.2	0.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.4	14.1	0.0	1.9	3.0	0.0	0.0	0.2	0.2	0.0
Prop In Lane	1.00		0.10	1.00		0.05	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	91	0	461	650	0	884	546	652	554	451	476	0
V/C Ratio(X)	0.00	0.00	0.59	0.95	0.00	0.09	0.18	0.00	0.00	0.01	0.01	0.00
Avail Cap(c_a), veh/h	101	0	475	650	0	898	624	652	554	451	476	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	26.1	31.8	0.0	11.3	18.5	16.8	0.0	22.1	22.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	1.8	24.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.4	8.9	0.0	1.0	1.5	0.0	0.0	0.1	0.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	27.9	55.9	0.0	11.3	18.6	16.8	0.0	22.1	22.1	0.0
LnGrp LOS			C	E		B	B	B		C	C	
Approach Vol, veh/h		272			701			98			11	
Approach Delay, s/veh		27.9			50.7			18.6			22.1	
Approach LOS		C			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6		8
Phs Duration (G+Y+Rc), s		35.2	18.0	26.8	7.5	27.7		44.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8	3.0	* 6.8		* 6.8
Max Green Setting (Gmax), s		* 28	15.0	* 21	8.0	* 17		* 39
Max Q Clear Time (g_c+I1), s		2.0	16.1	12.4	5.0	2.2		3.9
Green Ext Time (p_c), s		0.0	0.0	2.8	0.1	0.0		6.5

Intersection Summary	
HCM 2010 Ctrl Delay	41.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	54	75	164	477	151	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.65	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1207	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	79	173	502	159	229
RTOR Reduction (vph)	0	0	0	319	0	140
Lane Group Flow (vph)	57	79	173	183	159	89
Turn Type	Perm	NA	NA	Perm	Perm	Perm
Protected Phases		4	8			
Permitted Phases	4			8	6	6
Actuated Green, G (s)	20.1	20.1	20.1	20.1	21.3	21.3
Effective Green, g (s)	20.1	20.1	20.1	20.1	21.3	21.3
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.39	0.39
Clearance Time (s)	6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	441	680	680	578	685	613
v/s Ratio Prot		0.04	0.09			
v/s Ratio Perm	0.05			c0.12	c0.09	0.06
v/c Ratio	0.13	0.12	0.25	0.32	0.23	0.14
Uniform Delay, d1	11.6	11.6	12.2	12.5	11.3	10.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.2	0.3	0.8	0.5
Delay (s)	11.8	11.6	12.4	12.8	12.1	11.4
Level of Service	B	B	B	B	B	B
Approach Delay (s)		11.7	12.7		11.7	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	601	127	174	1043	331	295
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	633	134	183	1098	348	311
Adj No. of Lanes	1	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	697	622	470	1593	1131	1128
Arrive On Green	0.39	0.39	0.10	0.45	0.32	0.32
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583
Grp Volume(v), veh/h	633	134	183	1098	348	311
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583
Q Serve(g_s), s	24.9	4.1	4.7	18.2	5.5	5.2
Cycle Q Clear(g_c), s	24.9	4.1	4.7	18.2	5.5	5.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	697	622	470	1593	1131	1128
V/C Ratio(X)	0.91	0.22	0.39	0.69	0.31	0.28
Avail Cap(c_a), veh/h	726	648	504	1593	1131	1128
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	21.2	14.9	12.9	16.2	18.9	3.8
Incr Delay (d2), s/veh	15.0	0.2	0.5	2.5	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.0	4.4	2.3	9.4	2.8	5.5
LnGrp Delay(d),s/veh	36.2	15.0	13.5	18.6	19.6	4.4
LnGrp LOS	D	B	B	B	B	A
Approach Vol, veh/h	767			1281	659	
Approach Delay, s/veh	32.5			17.9	12.4	
Approach LOS	C			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		40.2		34.8	9.6	30.6		
Change Period (Y+Rc), s		* 6.8		* 6.8	3.0	* 6.8		
Max Green Setting (Gmax), s		* 32		* 29	8.0	* 21		
Max Q Clear Time (g_c+I1), s		20.2		26.9	6.7	7.5		
Green Ext Time (p_c), s		11.7		1.1	0.1	13.4		

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

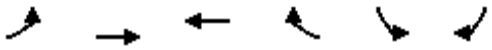
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	592	1238	102	627	69	38
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	623	0	107	660	73	0
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1433	641	367	1433	596	532
Arrive On Green	0.40	0.00	0.40	0.40	0.34	0.00
Sat Flow, veh/h	3632	1583	798	3632	1774	1583
Grp Volume(v), veh/h	623	0	107	660	73	0
Grp Sat Flow(s),veh/h/ln	1770	1583	798	1770	1774	1583
Q Serve(g_s), s	6.3	0.0	5.5	6.7	1.4	0.0
Cycle Q Clear(g_c), s	6.3	0.0	11.8	6.7	1.4	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1433	641	367	1433	596	532
V/C Ratio(X)	0.43	0.00	0.29	0.46	0.12	0.00
Avail Cap(c_a), veh/h	1476	660	377	1476	596	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.6	0.0	14.9	10.8	11.4	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	1.3	3.3	0.8	0.0
LnGrp Delay(d),s/veh	10.8	0.0	15.3	11.0	11.8	0.0
LnGrp LOS	B		B	B	B	
Approach Vol, veh/h	623			767	73	
Approach Delay, s/veh	10.8			11.6	11.8	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		23.2		26.8				26.8
Change Period (Y+Rc), s		6.0		* 6.8				* 6.8
Max Green Setting (Gmax), s		16.6		* 21				* 21
Max Q Clear Time (g_c+I1), s		3.4		8.3				13.8
Green Ext Time (p_c), s		0.2		10.7				6.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	19	257	224	278	433	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.61	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1140	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	271	236	293	456	13
RTOR Reduction (vph)	0	0	0	176	0	8
Lane Group Flow (vph)	20	271	236	117	456	5
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	20.0	20.0	20.0	20.0	18.0	18.0
Effective Green, g (s)	20.0	20.0	20.0	20.0	18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.36	0.36
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	456	745	745	633	637	569
v/s Ratio Prot		c0.15	0.13		c0.26	
v/s Ratio Perm	0.02			0.07		0.00
v/c Ratio	0.04	0.36	0.32	0.19	0.72	0.01
Uniform Delay, d1	9.2	10.5	10.3	9.7	13.8	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.3	0.2	0.1	6.8	0.0
Delay (s)	9.2	10.8	10.6	9.9	20.6	10.3
Level of Service	A	B	B	A	C	B
Approach Delay (s)		10.7	10.2		20.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	281	2	378	20	3	14	126	1130	5	13	1426	182
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	296	2	398	21	3	15	133	1189	5	14	1501	192
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	450	2	452	126	48	238	182	2050	9	246	1507	191
Arrive On Green	0.08	0.29	0.29	0.18	0.18	0.18	0.06	0.57	0.57	0.48	0.48	0.48
Sat Flow, veh/h	1774	8	1577	981	271	1353	1774	3614	15	467	3162	400
Grp Volume(v), veh/h	296	0	400	21	0	18	133	582	612	14	832	861
Grp Sat Flow(s),veh/h/ln	1774	0	1585	981	0	1624	1774	1770	1860	467	1770	1792
Q Serve(g_s), s	7.0	0.0	21.6	1.9	0.0	0.8	3.2	19.0	19.1	1.8	41.7	42.8
Cycle Q Clear(g_c), s	7.0	0.0	21.6	13.5	0.0	0.8	3.2	19.0	19.1	12.7	41.7	42.8
Prop In Lane	1.00		1.00	1.00		0.83	1.00		0.01	1.00		0.22
Lane Grp Cap(c), veh/h	450	0	455	126	0	285	182	1003	1055	246	843	854
V/C Ratio(X)	0.66	0.00	0.88	0.17	0.00	0.06	0.73	0.58	0.58	0.06	0.99	1.01
Avail Cap(c_a), veh/h	450	0	459	128	0	289	219	1003	1055	246	843	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	30.5	41.7	0.0	30.8	20.7	12.5	12.5	19.3	23.2	23.5
Incr Delay (d2), s/veh	3.5	0.0	17.5	0.6	0.0	0.1	9.7	2.4	2.3	0.4	28.0	32.7
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	6.3	0.0	11.7	0.5	0.0	0.4	2.1	9.9	10.4	0.3	26.7	28.6
LnGrp Delay(d),s/veh	33.4	0.0	48.0	42.3	0.0	30.9	30.4	15.0	14.9	19.7	51.2	56.2
LnGrp LOS	C		D	D		C	C	B	B	B	D	F
Approach Vol, veh/h		696			39			1327			1707	
Approach Delay, s/veh		41.8			37.1			16.5			53.5	
Approach LOS		D			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		57.9		32.1	8.1	49.8	10.0	22.1
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 51		* 26	7.0	* 41	7.0	* 16
Max Q Clear Time (g_c+I1), s		21.1		23.6	5.2	44.8	9.0	15.5
Green Ext Time (p_c), s		29.7		1.2	0.1	0.0	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	38.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

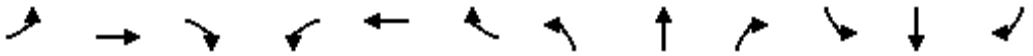
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	109	181	410	285	75	208	958	141	38	981	222
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1863	1863	1863	1900
Adj Flow Rate, veh/h	171	115	191	432	300	79	219	1008	148	40	1033	234
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	337	287	611	435	115	234	1362	609	228	985	222
Arrive On Green	0.10	0.18	0.18	0.22	0.31	0.31	0.09	0.38	0.38	0.05	0.34	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1422	375	1774	3539	1583	1774	2870	648
Grp Volume(v), veh/h	171	115	191	432	0	379	219	1008	148	40	636	631
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1797	1774	1770	1583	1774	1770	1748
Q Serve(g_s), s	7.0	4.9	10.3	16.9	0.0	17.0	7.1	22.4	5.8	1.3	31.4	31.4
Cycle Q Clear(g_c), s	7.0	4.9	10.3	16.9	0.0	17.0	7.1	22.4	5.8	1.3	31.4	31.4
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	374	337	287	611	0	550	234	1362	609	228	607	600
V/C Ratio(X)	0.46	0.34	0.67	0.71	0.00	0.69	0.94	0.74	0.24	0.18	1.05	1.05
Avail Cap(c_a), veh/h	374	379	322	639	0	619	234	1362	609	302	607	600
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	32.7	34.9	20.4	0.0	27.9	22.1	24.2	19.1	19.5	30.0	30.2
Incr Delay (d2), s/veh	0.9	0.6	4.4	3.4	0.0	2.8	41.6	3.6	0.9	0.4	49.2	51.3
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	3.5	2.6	4.9	8.7	0.0	8.8	8.2	11.6	2.7	0.6	23.5	23.5
LnGrp Delay(d),s/veh	27.4	33.3	39.3	23.8	0.0	30.7	63.7	27.9	20.0	19.9	79.3	81.5
LnGrp LOS	C	C	D	C		C	E	C	C	B	F	F
Approach Vol, veh/h		477			811			1375			1307	
Approach Delay, s/veh		33.6			27.0			32.7			78.5	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	41.0	22.4	21.9	10.0	37.2	11.0	33.3
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.3	24.4	18.9	12.3	9.1	33.4	9.0	19.0
Green Ext Time (p_c), s	0.0	5.9	0.5	3.3	0.0	0.0	0.0	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	46.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	30	499	2	94	1	668	552	10	1	764	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1860		1770	3529		1770	3474	
Flt Permitted	0.69	1.00	1.00	0.74	1.00		0.15	1.00		0.43	1.00	
Satd. Flow (perm)	1290	1863	1583	1372	1860		275	3529		798	3474	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	32	525	2	99	1	703	581	11	1	804	112
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	12	0
Lane Group Flow (vph)	21	32	525	2	100	0	703	591	0	1	904	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	8.0	8.0	79.9	8.0	8.0		59.1	59.1		24.1	24.1	
Effective Green, g (s)	8.0	8.0	79.9	8.0	8.0		59.1	59.1		24.1	24.1	
Actuated g/C Ratio	0.10	0.10	1.00	0.10	0.10		0.74	0.74		0.30	0.30	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	129	186	1583	137	186		802	2610		240	1047	
v/s Ratio Prot		0.02					c0.35	0.17			0.26	
v/s Ratio Perm	0.02		c0.33	0.00	0.05		c0.30			0.00		
v/c Ratio	0.16	0.17	0.33	0.01	0.54		0.88	0.23		0.00	0.86	
Uniform Delay, d1	32.9	32.9	0.0	32.4	34.2		16.6	3.3		19.5	26.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.4	0.6	0.0	3.0		10.6	0.0		0.0	7.5	
Delay (s)	33.5	33.4	0.6	32.4	37.2		27.2	3.3		19.5	33.9	
Level of Service	C	C	A	C	D		C	A		B	C	
Approach Delay (s)		3.6			37.1			16.3			33.9	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	15.8
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



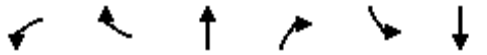
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	189	126	394	177	40	672
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	199	133	415	186	42	707
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	394	351	1125	499	455	1668
Arrive On Green	0.22	0.22	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1774	1583	2480	1058	815	3632
Grp Volume(v), veh/h	199	133	306	295	42	707
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1676	815	1770
Q Serve(g_s), s	4.4	3.2	4.9	5.0	1.5	5.8
Cycle Q Clear(g_c), s	4.4	3.2	4.9	5.0	6.5	5.8
Prop In Lane	1.00	1.00		0.63	1.00	
Lane Grp Cap(c), veh/h	394	351	834	790	455	1668
V/C Ratio(X)	0.51	0.38	0.37	0.37	0.09	0.42
Avail Cap(c_a), veh/h	729	650	926	877	497	1853
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.1	14.6	7.5	7.5	9.6	7.7
Incr Delay (d2), s/veh	1.0	0.7	0.3	0.3	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.4	2.4	2.4	0.3	2.9
LnGrp Delay(d),s/veh	16.1	15.3	7.8	7.8	9.7	7.9
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	332		601			749
Approach Delay, s/veh	15.8		7.8			8.0
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		27.7				27.7		16.6
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 23				* 23		18.2
Max Q Clear Time (g_c+I1), s		7.0				8.5		6.4
Green Ext Time (p_c), s		13.5				12.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	243	216	333	246	245	445
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	256	227	351	259	258	468
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	365	532	621	527	523	977
Arrive On Green	0.21	0.21	0.33	0.33	0.13	0.52
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	256	227	351	259	258	468
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	6.5	5.4	7.5	6.3	4.1	7.8
Cycle Q Clear(g_c), s	6.5	5.4	7.5	6.3	4.1	7.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	365	532	621	527	523	977
V/C Ratio(X)	0.70	0.43	0.57	0.49	0.49	0.48
Avail Cap(c_a), veh/h	584	727	709	602	635	1183
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.9	12.5	13.3	12.9	8.4	7.3
Incr Delay (d2), s/veh	2.4	0.5	0.8	0.7	0.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	2.4	3.9	2.8	2.0	4.0
LnGrp Delay(d),s/veh	20.4	13.1	14.1	13.6	9.1	7.7
LnGrp LOS	C	B	B	B	A	A
Approach Vol, veh/h	483		610			726
Approach Delay, s/veh	16.9		13.9			8.2
Approach LOS	B		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.3	23.0				32.3		16.3
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	9.4	* 19				* 31		16.0
Max Q Clear Time (g_c+I1), s	6.1	9.5				9.8		8.5
Green Ext Time (p_c), s	0.4	6.7				13.2		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	20	33	204	10	117	14	438	77	56	569	5
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	21	35	215	11	123	15	461	81	59	599	5
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	164	273	492	34	383	410	1221	213	433	1458	12
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1250	629	1049	1342	132	1471	812	3013	526	860	3597	30
Grp Volume(v), veh/h	12	0	56	215	0	134	15	270	272	59	295	309
Grp Sat Flow(s),veh/h/ln	1250	0	1678	1342	0	1603	812	1770	1770	860	1770	1857
Q Serve(g_s), s	0.3	0.0	1.0	5.9	0.0	2.7	0.5	4.3	4.4	2.1	4.8	4.8
Cycle Q Clear(g_c), s	3.1	0.0	1.0	7.0	0.0	2.7	5.4	4.3	4.4	6.5	4.8	4.8
Prop In Lane	1.00		0.63	1.00		0.92	1.00		0.30	1.00		0.02
Lane Grp Cap(c), veh/h	418	0	437	492	0	417	410	717	717	433	717	753
V/C Ratio(X)	0.03	0.00	0.13	0.44	0.00	0.32	0.04	0.38	0.38	0.14	0.41	0.41
Avail Cap(c_a), veh/h	652	0	751	743	0	717	444	792	792	469	792	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.4	0.0	11.5	14.2	0.0	12.1	10.6	8.5	8.5	10.8	8.6	8.6
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.6	0.0	0.4	0.0	0.3	0.3	0.1	0.4	0.4
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	0.1	0.0	0.5	2.2	0.0	1.2	0.1	2.2	2.2	0.5	2.4	2.5
LnGrp Delay(d),s/veh	13.4	0.0	11.6	14.8	0.0	12.6	10.6	8.8	8.8	10.9	9.0	9.0
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		68			349			557			663	
Approach Delay, s/veh		11.9			13.9			8.9			9.2	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.3		17.4		23.3		17.4
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 18		* 18		* 18		* 18
Max Q Clear Time (g_c+I1), s		7.4		5.1		8.5		9.0
Green Ext Time (p_c), s		8.8		2.1		8.0		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	139	321	450	49	111	1230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	338	474	52	117	1295

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	525	0	-	0	1130	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1042	-	-	-	225	0
Stage 1	-	-	-	-	610	0
Stage 2	-	-	-	-	530	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	186	-
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	52.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1042	-	-	-	186	-
HCM Lane V/C Ratio	0.14	-	-	-	0.628	-
HCM Control Delay (s)	9	0	-	-	52.4	0
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.5	-	-	-	3.6	-

Intersection	
Int Delay, s/veh	114.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	78	8	190	31	39	5	259	303	160	175	1
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	-	-	-	-	-	-	-	-	-	-	-	-
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	3	82	8	200	33	41	5	273	319	168	184	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1001	1124	185	1010	965	432	185	0	0	592	0	0
Stage 1	522	522	-	443	443	-	-	-	-	-	-	-
Stage 2	479	602	-	567	522	-	-	-	-	-	-	-
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	222	205	857	218	255	624	1390	-	-	984	-	-
Stage 1	538	531	-	594	576	-	-	-	-	-	-	-
Stage 2	568	489	-	508	531	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	155	165	857	~ 113	205	624	1390	-	-	984	-	-
Mov Cap-2 Maneuver	155	165	-	~ 113	205	-	-	-	-	-	-	-
Stage 1	535	430	-	590	573	-	-	-	-	-	-	-
Stage 2	497	486	-	330	430	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46.2	$ 527.8	0.1	4.5
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1390	-	-	177	137	984	-	-
HCM Lane V/C Ratio	0.004	-	-	0.529	1.998	0.171	-	-
HCM Control Delay (s)	7.6	0	-	46.2	$ 527.8	9.4	0	-
HCM Lane LOS	A	A	-	E	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2.7	21.8	0.6	-	-

Notes

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

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	72	49	712	154	27	419
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	52	749	162	28	441

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1329	831	0	0	912	0
Stage 1	831	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	171	370	-	-	747	-
Stage 1	428	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	162	370	-	-	747	-
Mov Cap-2 Maneuver	162	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	45.5	0	0.6
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	210	747	-
HCM Lane V/C Ratio	-	-	0.607	0.038	-
HCM Control Delay (s)	-	-	45.5	10	0
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	3.5	0.1	-

Intersection	
Int Delay, s/veh	41.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	144	431	61	45	293	73	32	30	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	152	454	64	47	308	77	34	32	74

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	385	0	0	518	0	0	1290	1269	486
Stage 1	-	-	-	-	-	-	789	789	-
Stage 2	-	-	-	-	-	-	501	480	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1173	-	-	1048	-	-	140	168	581
Stage 1	-	-	-	-	-	-	384	402	-
Stage 2	-	-	-	-	-	-	552	554	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1173	-	-	1048	-	-	88	129	581
Mov Cap-2 Maneuver	-	-	-	-	-	-	174	217	-
Stage 1	-	-	-	-	-	-	313	328	-
Stage 2	-	-	-	-	-	-	428	522	-

Approach	EB	WB	NB
HCM Control Delay, s	1.9	0.9	27.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	298	1173	-	-	1048	-	-	208
HCM Lane V/C Ratio	0.466	0.129	-	-	0.045	-	-	1.301
HCM Control Delay (s)	27.2	8.5	0	-	8.6	0	-	211.2
HCM Lane LOS	D	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	2.3	0.4	-	-	0.1	-	-	14.7

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

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	145	37	75
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	1	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	153	39	79

Major/Minor	Minor2		
Conflicting Flow All	1284	1263	347
Stage 1	442	442	-
Stage 2	842	821	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	~ 142	170	696
Stage 1	594	576	-
Stage 2	359	389	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 91	131	696
Mov Cap-2 Maneuver	~ 152	214	-
Stage 1	485	543	-
Stage 2	231	317	-

Approach	SB
HCM Control Delay, s	211.2
HCM LOS	F

Minor Lane/Major Mvmt

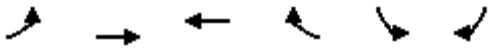
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	125	67	1514	218	7	68	11	946	5	10	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	132	71	1594	229	7	72	12	0	5	11	0
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	227	122	1611	1254	38	299	312	265	298	312	0
Arrive On Green	0.00	0.20	0.20	0.47	0.70	0.70	0.17	0.17	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1140	1141	614	3442	1798	55	1398	1863	1583	1397	1863	0
Grp Volume(v), veh/h	0	0	203	1594	0	236	72	12	0	5	11	0
Grp Sat Flow(s),veh/h/ln	1140	0	1754	1721	0	1853	1398	1863	1583	1397	1863	0
Q Serve(g_s), s	0.0	0.0	10.5	46.1	0.0	4.4	4.6	0.5	0.0	0.3	0.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.5	46.1	0.0	4.4	5.1	0.5	0.0	0.8	0.5	0.0
Prop In Lane	1.00		0.35	1.00		0.03	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	72	0	349	1611	0	1292	299	312	265	298	312	0
V/C Ratio(X)	0.00	0.00	0.58	0.99	0.00	0.18	0.24	0.04	0.00	0.02	0.04	0.00
Avail Cap(c_a), veh/h	79	0	360	1611	0	1303	299	312	265	298	312	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	36.4	26.5	0.0	5.3	37.1	35.0	0.0	35.4	35.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.2	19.9	0.0	0.1	1.9	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.3	26.1	0.0	2.3	1.9	0.3	0.0	0.1	0.3	0.0
LnGrp Delay(d),s/veh	0.0	0.0	38.6	46.3	0.0	5.3	39.0	35.3	0.0	35.5	35.2	0.0
LnGrp LOS			D	D		A	D	D		D	D	
Approach Vol, veh/h		203			1830			84			16	
Approach Delay, s/veh		38.6			41.0			38.5			35.3	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.2	50.0	26.8		24.2		76.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 17	47.0	* 21		* 17		* 71
Max Q Clear Time (g_c+I1), s		7.1	48.1	12.5		2.8		6.4
Green Ext Time (p_c), s		0.2	0.0	3.4		0.3		9.2

Intersection Summary	
HCM 2010 Ctrl Delay	40.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	166	223	106	255	449	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.8	6.8	6.8	6.8	6.8	6.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.68	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1276	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	175	235	112	268	473	134
RTOR Reduction (vph)	0	0	0	178	0	75
Lane Group Flow (vph)	175	235	112	90	473	59
Turn Type	Perm	NA	NA	Perm	Perm	Perm
Protected Phases		4	8			
Permitted Phases	4			8	6	6
Actuated Green, G (s)	20.1	20.1	20.1	20.1	26.3	26.3
Effective Green, g (s)	20.1	20.1	20.1	20.1	26.3	26.3
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.44	0.44
Clearance Time (s)	6.8	6.8	6.8	6.8	6.8	6.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	427	624	624	530	775	693
v/s Ratio Prot		0.13	0.06			
v/s Ratio Perm	c0.14			0.06	c0.27	0.04
v/c Ratio	0.41	0.38	0.18	0.17	0.61	0.08
Uniform Delay, d1	15.4	15.2	14.1	14.1	12.9	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4	0.1	0.2	3.6	0.2
Delay (s)	16.0	15.6	14.3	14.2	16.5	10.1
Level of Service	B	B	B	B	B	B
Approach Delay (s)		15.8	14.2		15.1	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	478	100	176	581	962	619
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	503	105	185	612	1013	652
Adj No. of Lanes	1	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	570	509	322	1807	1348	1112
Arrive On Green	0.32	0.32	0.10	0.51	0.38	0.38
Sat Flow, veh/h	1774	1583	1774	3632	3632	1583
Grp Volume(v), veh/h	503	105	185	612	1013	652
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1583
Q Serve(g_s), s	18.5	3.3	3.9	7.1	17.1	14.4
Cycle Q Clear(g_c), s	18.5	3.3	3.9	7.1	17.1	14.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	570	509	322	1807	1348	1112
V/C Ratio(X)	0.88	0.21	0.57	0.34	0.75	0.59
Avail Cap(c_a), veh/h	597	533	375	1807	1348	1112
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	22.2	17.0	14.0	10.0	18.5	5.2
Incr Delay (d2), s/veh	14.1	0.2	1.6	0.5	3.9	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	3.4	2.0	3.5	9.0	13.0
LnGrp Delay(d),s/veh	36.3	17.2	15.7	10.5	22.4	7.5
LnGrp LOS	D	B	B	B	C	A
Approach Vol, veh/h	608			797	1665	
Approach Delay, s/veh	33.0			11.7	16.6	
Approach LOS	C			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		42.0		28.0	8.9	33.1		
Change Period (Y+Rc), s		* 6.8		* 6.8	3.0	* 6.8		
Max Green Setting (Gmax), s		* 34		* 22	8.0	* 23		
Max Q Clear Time (g_c+I1), s		9.1		20.5	5.9	19.1		
Green Ext Time (p_c), s		24.7		0.6	0.2	4.1		

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

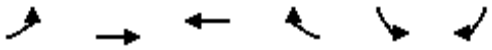
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	397	671	54	1629	145	17
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	418	0	57	1715	153	0
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1840	823	559	1840	473	422
Arrive On Green	0.52	0.00	0.52	0.52	0.27	0.00
Sat Flow, veh/h	3632	1583	965	3632	1774	1583
Grp Volume(v), veh/h	418	0	57	1715	153	0
Grp Sat Flow(s),veh/h/ln	1770	1583	965	1770	1774	1583
Q Serve(g_s), s	3.9	0.0	2.1	27.1	4.2	0.0
Cycle Q Clear(g_c), s	3.9	0.0	5.9	27.1	4.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1840	823	559	1840	473	422
V/C Ratio(X)	0.23	0.00	0.10	0.93	0.32	0.00
Avail Cap(c_a), veh/h	1841	824	560	1841	473	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.8	0.0	9.4	13.4	17.6	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	9.2	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.6	15.2	2.3	0.0
LnGrp Delay(d),s/veh	7.9	0.0	9.5	22.6	19.5	0.0
LnGrp LOS	A		A	C	B	
Approach Vol, veh/h	418			1772	153	
Approach Delay, s/veh	7.9			22.2	19.5	
Approach LOS	A			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		22.0		38.0				38.0
Change Period (Y+Rc), s		6.0		* 6.8				* 6.8
Max Green Setting (Gmax), s		16.0		* 31				* 31
Max Q Clear Time (g_c+I1), s		6.2		5.9				29.1
Green Ext Time (p_c), s		0.5		24.6				2.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	12	340	314	567	431	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.54	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1005	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	358	331	597	454	22
RTOR Reduction (vph)	0	0	0	358	0	14
Lane Group Flow (vph)	13	358	331	239	454	8
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	20.0	20.0	20.0	20.0	18.0	18.0
Effective Green, g (s)	20.0	20.0	20.0	20.0	18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.36	0.36
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	402	745	745	633	637	569
v/s Ratio Prot		c0.19	0.18		c0.26	
v/s Ratio Perm	0.01			0.15		0.01
v/c Ratio	0.03	0.48	0.44	0.38	0.71	0.01
Uniform Delay, d1	9.1	11.1	10.9	10.6	13.8	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.5	0.4	0.4	6.7	0.0
Delay (s)	9.2	11.6	11.4	11.0	20.4	10.3
Level of Service	A	B	B	B	C	B
Approach Delay (s)		11.5	11.1		20.0	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	240	8	218	21	7	16	355	1909	17	22	1562	284
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	253	8	229	22	7	17	374	2009	18	23	1644	299
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	10	284	100	47	114	350	2587	23	128	1595	282
Arrive On Green	0.07	0.18	0.18	0.10	0.10	0.10	0.17	0.72	0.72	0.53	0.53	0.53
Sat Flow, veh/h	1774	54	1538	1139	483	1173	1774	3595	32	209	3008	531
Grp Volume(v), veh/h	253	0	237	22	0	24	374	988	1039	23	947	996
Grp Sat Flow(s),veh/h/ln	1774	0	1591	1139	0	1656	1774	1770	1857	209	1770	1769
Q Serve(g_s), s	9.0	0.0	19.6	2.6	0.0	1.8	23.0	48.6	48.9	10.8	72.8	72.8
Cycle Q Clear(g_c), s	9.0	0.0	19.6	10.2	0.0	1.8	23.0	48.6	48.9	33.7	72.8	72.8
Prop In Lane	1.00		0.97	1.00		0.71	1.00		0.02	1.00		0.30
Lane Grp Cap(c), veh/h	285	0	294	100	0	161	350	1274	1337	128	939	938
V/C Ratio(X)	0.89	0.00	0.81	0.22	0.00	0.15	1.07	0.78	0.78	0.18	1.01	1.06
Avail Cap(c_a), veh/h	285	0	326	123	0	194	350	1274	1337	128	939	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	0.0	53.6	64.2	0.0	56.7	49.5	12.2	12.2	31.2	32.2	32.2
Incr Delay (d2), s/veh	26.9	0.0	12.7	1.1	0.0	0.4	67.8	4.7	4.5	3.0	31.5	47.2
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	10.6	0.0	9.7	0.8	0.0	0.9	19.8	25.0	26.5	0.7	43.7	47.8
LnGrp Delay(d),s/veh	83.8	0.0	66.3	65.3	0.0	57.2	117.3	16.9	16.7	34.3	63.8	79.4
LnGrp LOS	F		E	E		E	F	B	B	C	F	F
Approach Vol, veh/h		490			46			2401			1966	
Approach Delay, s/veh		75.3			61.1			32.4			71.4	
Approach LOS		E			E			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		108.3		31.7	26.0	82.3	12.0	19.7
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 99		* 28	23.0	* 73	9.0	* 16
Max Q Clear Time (g_c+I1), s		50.9		21.6	25.0	74.8	11.0	12.2
Green Ext Time (p_c), s		47.8		1.8	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	52.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

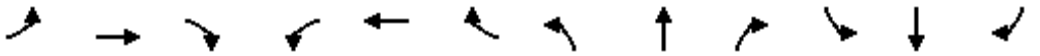
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	303	342	257	276	198	61	203	1381	497	103	1193	215
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1863	1863	1863	1900
Adj Flow Rate, veh/h	319	360	271	291	208	64	214	1454	523	108	1256	226
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	370	314	338	281	87	226	1653	739	180	1302	232
Arrive On Green	0.15	0.20	0.20	0.15	0.21	0.21	0.09	0.47	0.47	0.06	0.43	0.43
Sat Flow, veh/h	1774	1863	1583	1774	1368	421	1774	3539	1583	1774	3002	536
Grp Volume(v), veh/h	319	360	271	291	0	272	214	1454	523	108	736	746
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1788	1774	1770	1583	1774	1770	1768
Q Serve(g_s), s	17.5	23.5	20.2	15.3	0.0	17.4	10.1	45.4	32.1	4.0	49.3	50.5
Cycle Q Clear(g_c), s	17.5	23.5	20.2	15.3	0.0	17.4	10.1	45.4	32.1	4.0	49.3	50.5
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	390	370	314	338	0	368	226	1653	739	180	767	767
V/C Ratio(X)	0.82	0.97	0.86	0.86	0.00	0.74	0.95	0.88	0.71	0.60	0.96	0.97
Avail Cap(c_a), veh/h	390	370	314	382	0	408	226	1653	739	196	767	767
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	48.7	47.4	32.5	0.0	45.5	36.2	29.5	25.9	27.3	33.6	34.1
Incr Delay (d2), s/veh	12.9	39.7	21.0	16.4	0.0	6.3	45.4	7.0	5.6	4.3	24.0	26.5
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	9.9	16.2	10.7	9.0	0.0	9.3	10.0	23.6	15.1	2.2	29.0	30.3
LnGrp Delay(d),s/veh	46.3	88.4	68.4	48.9	0.0	51.8	81.6	36.5	31.6	31.6	57.5	60.6
LnGrp LOS	D	F	E	D		D	F	D	C	C	E	E
Approach Vol, veh/h		950			563			2191			1590	
Approach Delay, s/veh		68.6			50.3			39.7			57.2	
Approach LOS		E			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	62.9	20.9	29.6	13.0	58.8	20.0	30.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 55	20.9	* 23	10.0	* 52	17.0	* 27
Max Q Clear Time (g_c+I1), s	6.0	47.4	17.3	25.5	12.1	52.5	19.5	19.4
Green Ext Time (p_c), s	0.0	7.6	0.5	0.0	0.0	0.0	0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	51.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	90	642	3	54	2	590	1151	11	6	849	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1853		1770	3534		1770	3512	
Flt Permitted	0.72	1.00	1.00	0.70	1.00		0.14	1.00		0.23	1.00	
Satd. Flow (perm)	1338	1863	1583	1295	1853		267	3534		427	3512	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	95	676	3	57	2	621	1212	12	6	894	49
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	4	0
Lane Group Flow (vph)	64	95	676	3	57	0	621	1223	0	6	939	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	7.6	7.6	77.4	7.6	7.6		57.0	57.0		24.9	24.9	
Effective Green, g (s)	7.6	7.6	77.4	7.6	7.6		57.0	57.0		24.9	24.9	
Actuated g/C Ratio	0.10	0.10	1.00	0.10	0.10		0.74	0.74		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	131	182	1583	127	181		761	2602		137	1129	
v/s Ratio Prot		0.05					c0.31	0.35			0.27	
v/s Ratio Perm	0.05		c0.43	0.00	0.03		c0.29			0.01		
v/c Ratio	0.49	0.52	0.43	0.02	0.32		0.82	0.47		0.04	0.83	
Uniform Delay, d1	33.1	33.2	0.0	31.5	32.5		15.6	4.1		18.1	24.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	2.7	0.8	0.1	1.0		6.8	0.1		0.1	5.4	
Delay (s)	35.9	35.9	0.8	31.6	33.5		22.4	4.2		18.2	29.7	
Level of Service	D	D	A	C	C		C	A		B	C	
Approach Delay (s)		7.5			33.4			10.3			29.6	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	15.8
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	219	67	965	235	117	675
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	231	71	1016	247	123	711
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	298	266	1751	424	290	2192
Arrive On Green	0.17	0.17	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1774	1583	2920	685	437	3632
Grp Volume(v), veh/h	231	71	635	628	123	711
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1742	437	1770
Q Serve(g_s), s	8.0	2.5	13.6	13.7	14.9	6.1
Cycle Q Clear(g_c), s	8.0	2.5	13.6	13.7	28.6	6.1
Prop In Lane	1.00	1.00		0.39	1.00	
Lane Grp Cap(c), veh/h	298	266	1096	1079	290	2192
V/C Ratio(X)	0.78	0.27	0.58	0.58	0.42	0.32
Avail Cap(c_a), veh/h	461	411	1101	1084	291	2203
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	25.5	23.2	7.2	7.2	15.8	5.8
Incr Delay (d2), s/veh	4.4	0.5	0.8	0.8	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	1.1	6.8	6.7	1.9	3.0
LnGrp Delay(d),s/veh	29.8	23.7	8.0	8.0	16.8	5.9
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	302		1263			834
Approach Delay, s/veh	28.4		8.0			7.5
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.4				46.4		17.5
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 40				* 40		16.6
Max Q Clear Time (g_c+I1), s		15.7				30.6		10.0
Green Ext Time (p_c), s		23.1				9.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	318	408	507	308	358	413
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	335	429	534	324	377	435
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	437	639	669	568	450	1044
Arrive On Green	0.25	0.25	0.36	0.36	0.16	0.56
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	335	429	534	324	377	435
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	11.9	15.0	17.5	11.2	8.3	9.1
Cycle Q Clear(g_c), s	11.9	15.0	17.5	11.2	8.3	9.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	437	639	669	568	450	1044
V/C Ratio(X)	0.77	0.67	0.80	0.57	0.84	0.42
Avail Cap(c_a), veh/h	437	639	692	588	485	1104
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	23.8	16.5	19.5	17.5	13.4	8.5
Incr Delay (d2), s/veh	8.0	2.7	6.4	1.2	11.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	7.0	10.1	5.1	5.4	4.7
LnGrp Delay(d),s/veh	31.8	19.3	25.9	18.8	24.9	8.8
LnGrp LOS	C	B	C	B	C	A
Approach Vol, veh/h	764		858			812
Approach Delay, s/veh	24.7		23.2			16.3
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.7	31.1				44.8		23.0
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	12.0	* 25				* 40		16.7
Max Q Clear Time (g_c+I1), s	10.3	19.5				11.1		17.0
Green Ext Time (p_c), s	0.4	4.9				19.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	15	11	118	33	83	32	697	191	106	626	10
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	16	12	124	35	87	34	734	201	112	659	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	258	157	118	342	75	187	506	1572	430	391	2038	34
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1264	990	742	1377	475	1180	764	2747	752	596	3562	59
Grp Volume(v), veh/h	20	0	28	124	0	122	34	473	462	112	327	343
Grp Sat Flow(s),veh/h/ln	1264	0	1732	1377	0	1655	764	1770	1730	596	1770	1852
Q Serve(g_s), s	0.7	0.0	0.7	4.3	0.0	3.4	1.2	7.9	7.9	6.8	4.9	4.9
Cycle Q Clear(g_c), s	4.1	0.0	0.7	5.0	0.0	3.4	6.1	7.9	7.9	14.7	4.9	4.9
Prop In Lane	1.00		0.43	1.00		0.71	1.00		0.43	1.00		0.03
Lane Grp Cap(c), veh/h	258	0	274	342	0	262	506	1013	990	391	1013	1060
V/C Ratio(X)	0.08	0.00	0.10	0.36	0.00	0.47	0.07	0.47	0.47	0.29	0.32	0.32
Avail Cap(c_a), veh/h	474	0	570	576	0	544	520	1045	1021	402	1045	1094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	18.2	20.3	0.0	19.3	7.3	6.3	6.3	10.6	5.7	5.7
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.6	0.0	1.3	0.1	0.3	0.3	0.4	0.2	0.2
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	0.3	0.0	0.3	1.7	0.0	1.6	0.3	3.9	3.8	1.2	2.4	2.5
LnGrp Delay(d),s/veh	21.3	0.0	18.3	20.9	0.0	20.6	7.3	6.6	6.6	11.0	5.8	5.8
LnGrp LOS	C		B	C		C	A	A	A	B	A	A
Approach Vol, veh/h		48			246			969			782	
Approach Delay, s/veh		19.6			20.8			6.7			6.6	
Approach LOS		B			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		35.7		14.8		35.7		14.8
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 30		* 17		* 30		* 17
Max Q Clear Time (g_c+I1), s		9.9		6.1		16.7		7.0
Green Ext Time (p_c), s		18.1		1.2		12.2		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2041 Total Traffic Volumes with Improvements

Intersection	
Int Delay, s/veh	13

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	78	8	190	31	39	5	259	303	160	175	0
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	-	-	-	-	-	-	-	-	500	500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	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	3	82	8	200	33	41	5	273	319	168	184	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	841	804	184	849	804	273	184	0	0	273	0	0
Stage 1	521	521	-	283	283	-	-	-	-	-	-	-
Stage 2	320	283	-	566	521	-	-	-	-	-	-	-
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	284	316	858	281	316	766	1391	-	-	1290	-	-
Stage 1	539	532	-	724	677	-	-	-	-	-	-	-
Stage 2	692	677	-	509	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	225	273	858	205	273	766	1391	-	-	1290	-	-
Mov Cap-2 Maneuver	325	345	-	294	365	-	-	-	-	-	-	-
Stage 1	536	463	-	720	673	-	-	-	-	-	-	-
Stage 2	619	673	-	361	463	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.3	51.1	0.1	3.9
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1391	-	-	364	332	1290	-	-
HCM Lane V/C Ratio	0.004	-	-	0.257	0.824	0.131	-	-
HCM Control Delay (s)	7.6	0	-	18.3	51.1	8.2	-	-
HCM Lane LOS	A	A	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1	7.1	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	303	342	257	276	198	61	203	1381	497	103	1193	215
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	1863	1863	1863	1863
Adj Flow Rate, veh/h	319	360	271	291	208	64	214	1454	523	108	1256	226
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	376	462	350	316	97	259	1578	953	184	1469	829
Arrive On Green	0.13	0.20	0.20	0.16	0.23	0.23	0.09	0.45	0.45	0.06	0.42	0.41
Sat Flow, veh/h	1774	1863	1583	1774	1368	421	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	319	360	271	291	0	272	214	1454	523	108	1256	226
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1788	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	14.0	21.1	16.2	13.5	0.0	15.2	7.2	42.7	21.7	3.8	35.6	8.8
Cycle Q Clear(g_c), s	14.0	21.1	16.2	13.5	0.0	15.2	7.2	42.7	21.7	3.8	35.6	8.8
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	376	462	350	0	413	259	1578	953	184	1469	829
V/C Ratio(X)	0.81	0.96	0.59	0.83	0.00	0.66	0.83	0.92	0.55	0.59	0.85	0.27
Avail Cap(c_a), veh/h	393	376	462	425	0	485	259	1578	953	207	1469	829
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	43.7	33.4	28.4	0.0	38.5	23.8	28.8	13.1	25.4	29.3	14.6
Incr Delay (d2), s/veh	12.2	35.6	1.9	11.1	0.0	2.6	19.4	10.3	2.3	3.4	6.6	0.8
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	4.0	14.6	7.3	7.6	0.0	7.8	4.9	23.1	10.0	2.0	18.6	4.0
LnGrp Delay(d),s/veh	45.3	79.3	35.3	39.5	0.0	41.1	43.3	39.1	15.3	28.8	35.9	15.4
LnGrp LOS	D	E	D	D		D	D	D	B	C	D	B
Approach Vol, veh/h		950			563			2191			1590	
Approach Delay, s/veh		55.3			40.3			33.9			32.5	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	55.1	19.3	27.6	12.0	51.7	16.0	30.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 47	20.9	* 21	9.0	* 45	13.0	* 29
Max Q Clear Time (g_c+I1), s	5.8	44.7	15.5	23.1	9.2	37.6	16.0	17.2
Green Ext Time (p_c), s	0.0	2.2	0.7	0.0	0.0	7.3	0.0	7.3

Intersection Summary	
HCM 2010 Ctrl Delay	38.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	240	8	218	21	7	16	355	1909	17	22	1562	284
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	1900
Adj Flow Rate, veh/h	253	8	229	22	7	17	374	2009	18	23	1644	299
Adj No. of Lanes	1	1	1	1	1	0	2	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	329	403	149	33	80	435	2499	22	135	1767	312
Arrive On Green	0.08	0.18	0.18	0.07	0.07	0.07	0.08	0.70	0.70	0.59	0.59	0.59
Sat Flow, veh/h	1774	1863	1583	1139	483	1173	3442	3595	32	209	3008	531
Grp Volume(v), veh/h	253	8	229	22	0	24	374	988	1039	23	947	996
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1139	0	1656	1721	1770	1857	209	1770	1769
Q Serve(g_s), s	8.0	0.4	12.9	1.9	0.0	1.4	6.0	39.3	39.5	8.7	48.4	54.2
Cycle Q Clear(g_c), s	8.0	0.4	12.9	1.9	0.0	1.4	6.0	39.3	39.5	37.3	48.4	54.2
Prop In Lane	1.00		1.00	1.00		0.71	1.00		0.02	1.00		0.30
Lane Grp Cap(c), veh/h	286	329	403	149	0	114	435	1230	1291	135	1040	1040
V/C Ratio(X)	0.89	0.02	0.57	0.15	0.00	0.21	0.86	0.80	0.81	0.17	0.91	0.96
Avail Cap(c_a), veh/h	286	493	543	249	0	260	436	1230	1291	135	1040	1040
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	34.7	33.1	45.1	0.0	44.9	30.4	10.7	10.8	27.5	18.6	19.9
Incr Delay (d2), s/veh	26.5	0.0	1.3	0.5	0.0	0.9	15.9	5.6	5.4	2.7	13.2	19.5
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	8.5	0.2	5.7	0.6	0.0	0.7	6.1	20.8	21.9	0.6	27.2	31.9
LnGrp Delay(d),s/veh	69.5	34.8	34.4	45.6	0.0	45.8	46.2	16.3	16.2	30.2	31.9	39.4
LnGrp LOS	E	C	C	D		D	D	B	B	C	C	D
Approach Vol, veh/h		490			46			2401			1966	
Approach Delay, s/veh		52.5			45.7			20.9			35.7	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		86.7		24.3	11.0	75.7	11.0	13.3
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 71		* 27	8.0	* 60	8.0	* 16
Max Q Clear Time (g_c+I1), s		41.5		14.9	8.0	56.2	10.0	3.9
Green Ext Time (p_c), s		29.3		1.2	0.0	3.7	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	139	321	450	49	111	1230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	500	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	338	474	52	117	1295

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	525	0	-	0	1130	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1042	-	-	-	225	0
Stage 1	-	-	-	-	610	0
Stage 2	-	-	-	-	530	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	193	-
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	456	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	22.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1042	-	-	-	323	-
HCM Lane V/C Ratio	0.14	-	-	-	0.362	-
HCM Control Delay (s)	9	-	-	-	22.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	-	1.6	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	144	431	61	45	293	73	32	30	70	145	37	75
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	152	454	64	47	308	77	34	32	74	153	39	79
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	420	689	97	326	620	155	522	183	423	533	201	408
Arrive On Green	0.43	0.43	0.41	0.43	0.43	0.41	0.35	0.37	0.35	0.35	0.37	0.35
Sat Flow, veh/h	994	1598	225	880	1439	360	1269	501	1158	1283	551	1115
Grp Volume(v), veh/h	152	0	518	47	0	385	34	0	106	153	0	118
Grp Sat Flow(s),veh/h/ln	994	0	1823	880	0	1799	1269	0	1658	1283	0	1666
Q Serve(g_s), s	6.4	0.0	11.1	2.2	0.0	7.7	1.0	0.0	2.2	4.7	0.0	2.4
Cycle Q Clear(g_c), s	14.1	0.0	11.1	13.3	0.0	7.7	3.4	0.0	2.2	6.8	0.0	2.4
Prop In Lane	1.00		0.12	1.00		0.20	1.00		0.70	1.00		0.67
Lane Grp Cap(c), veh/h	420	0	786	326	0	776	522	0	607	533	0	609
V/C Ratio(X)	0.36	0.00	0.66	0.14	0.00	0.50	0.07	0.00	0.17	0.29	0.00	0.19
Avail Cap(c_a), veh/h	436	0	815	340	0	804	522	0	607	533	0	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	11.2	16.4	0.0	10.2	12.5	0.0	10.8	13.6	0.0	10.9
Incr Delay (d2), s/veh	0.5	0.0	1.9	0.2	0.0	0.5	0.2	0.0	0.6	1.4	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	1.8	0.0	5.9	0.6	0.0	3.9	0.4	0.0	1.1	1.8	0.0	1.2
LnGrp Delay(d),s/veh	15.8	0.0	13.1	16.6	0.0	10.7	12.8	0.0	11.5	15.0	0.0	11.6
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		670			432			140			271	
Approach Delay, s/veh		13.7			11.4			11.8			13.5	
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		23.8		26.2		23.8		26.2
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		17.0		21.0		17.0		21.0
Max Q Clear Time (g_c+I1), s		5.4		16.1		8.8		15.3
Green Ext Time (p_c), s		1.9		4.1		1.5		4.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	19.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	6	13	329	54	71	7	110	92	53	240	1
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	-	-	-	-	-	-	-	-	500	500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	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	0	6	14	346	57	75	7	116	97	56	253	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	561	496	253	506	496	116	254	0	0	116	0	0
Stage 1	365	365	-	131	131	-	-	-	-	-	-	-
Stage 2	196	131	-	375	365	-	-	-	-	-	-	-
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	438	475	786	477	475	936	1311	-	-	1473	-	-
Stage 1	654	623	-	873	788	-	-	-	-	-	-	-
Stage 2	806	788	-	646	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	356	454	786	449	454	936	1311	-	-	1473	-	-
Mov Cap-2 Maneuver	454	501	-	510	503	-	-	-	-	-	-	-
Stage 1	650	599	-	868	783	-	-	-	-	-	-	-
Stage 2	684	783	-	604	599	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	41.2	0.3	1.4
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1311	-	-	666	548	1473	-	-
HCM Lane V/C Ratio	0.006	-	-	0.03	0.872	0.038	-	-
HCM Control Delay (s)	7.8	0	-	10.6	41.2	7.5	-	-
HCM Lane LOS	A	A	-	B	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	9.7	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	109	181	410	285	75	208	958	141	38	981	222
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	1863	1863	1863	1863
Adj Flow Rate, veh/h	171	115	191	432	300	79	219	1008	148	40	1033	234
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	406	353	455	639	439	116	267	1233	913	218	1058	608
Arrive On Green	0.11	0.19	0.19	0.23	0.31	0.31	0.10	0.35	0.35	0.05	0.30	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1422	375	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	171	115	191	432	0	379	219	1008	148	40	1033	234
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1797	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.1	4.4	8.0	14.6	0.0	15.1	6.6	21.2	3.6	1.2	23.6	8.7
Cycle Q Clear(g_c), s	6.1	4.4	8.0	14.6	0.0	15.1	6.6	21.2	3.6	1.2	23.6	8.7
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	406	353	455	639	0	554	267	1233	913	218	1058	608
V/C Ratio(X)	0.42	0.33	0.42	0.68	0.00	0.68	0.82	0.82	0.16	0.18	0.98	0.38
Avail Cap(c_a), veh/h	407	425	516	710	0	693	267	1233	913	305	1058	608
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	28.6	23.6	17.2	0.0	24.7	19.8	24.2	8.1	19.7	28.3	18.2
Incr Delay (d2), s/veh	0.7	0.5	0.6	2.2	0.0	2.0	18.3	6.1	0.4	0.4	22.5	1.8
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	3.0	2.3	3.5	7.5	0.0	7.8	4.6	11.3	1.6	0.6	14.8	4.1
LnGrp Delay(d),s/veh	23.1	29.1	24.2	19.4	0.0	26.7	38.1	30.3	8.4	20.1	50.8	20.0
LnGrp LOS	C	C	C	B		C	D	C	A	C	D	C
Approach Vol, veh/h		477			811			1375			1307	
Approach Delay, s/veh		25.0			22.8			29.2			44.4	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	34.2	20.7	20.8	10.0	30.2	10.9	30.5
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 23	20.9	* 18	7.0	* 23	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.2	23.2	16.6	10.0	8.6	25.6	8.1	17.1
Green Ext Time (p_c), s	0.0	0.2	1.0	4.5	0.0	0.0	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	202	428	297	34	33	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	500	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	213	451	313	36	35	453

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1207	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1211	-	-	-	203	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	407	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	167	-
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	20.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1211	-	-	-	270	-
HCM Lane V/C Ratio	0.176	-	-	-	0.129	-
HCM Control Delay (s)	8.6	-	-	-	20.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	34	104	27	83	406	128	58	10	26	53	29	104
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	36	109	28	87	427	135	61	11	27	56	31	109
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	632	162	642	600	190	483	168	413	579	127	448
Arrive On Green	0.44	0.44	0.42	0.44	0.44	0.42	0.33	0.35	0.33	0.33	0.35	0.33
Sat Flow, veh/h	845	1430	367	1247	1358	429	1244	479	1176	1364	363	1275
Grp Volume(v), veh/h	36	0	137	87	0	562	61	0	38	56	0	140
Grp Sat Flow(s),veh/h/ln	845	0	1798	1247	0	1787	1244	0	1655	1364	0	1638
Q Serve(g_s), s	1.8	0.0	2.2	2.2	0.0	12.4	1.8	0.0	0.8	1.4	0.0	3.0
Cycle Q Clear(g_c), s	14.2	0.0	2.2	4.4	0.0	12.4	4.8	0.0	0.8	2.2	0.0	3.0
Prop In Lane	1.00		0.20	1.00		0.24	1.00		0.71	1.00		0.78
Lane Grp Cap(c), veh/h	305	0	794	642	0	790	483	0	582	579	0	576
V/C Ratio(X)	0.12	0.00	0.17	0.14	0.00	0.71	0.13	0.00	0.07	0.10	0.00	0.24
Avail Cap(c_a), veh/h	333	0	855	684	0	850	483	0	582	579	0	576
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.8	0.0	8.2	9.5	0.0	11.1	13.6	0.0	10.7	11.8	0.0	11.4
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.1	0.0	2.6	0.5	0.0	0.2	0.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.1	0.8	0.0	6.5	0.7	0.0	0.4	0.6	0.0	1.5
LnGrp Delay(d),s/veh	17.0	0.0	8.3	9.6	0.0	13.7	14.1	0.0	10.9	12.2	0.0	12.4
LnGrp LOS	B		A	A		B	B		B	B		B
Approach Vol, veh/h		173			649			99			196	
Approach Delay, s/veh		10.1			13.1			12.9			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		23.6		26.4		23.6		26.4
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		16.0		22.0		16.0		22.0
Max Q Clear Time (g_c+I1), s		6.8		16.2		5.0		14.4
Green Ext Time (p_c), s		1.1		4.2		1.2		5.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

APPENDIX 'T3'

Traffic Signal Warrant, Ainley Group, August 2016

APPENDIX 'T3'

Traffic Signal Warrant, Ainley Group, August 2016

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	Jurisdiction/Date	Springwater	24 Jan 2018
Agency or Company	Ainley Group	East-West Street	Highway 26/Spence Ave	
Analysis Period	2017	North-South Street	Highway 26/CR 27	

Flow Conditions	Free flow (rural)	Major Street	North-South
T Intersection	No	Approach Lanes per Direction	2
		Hours of Traffic Volume Data	8 hours

Other Notes: existing road configuration

Hour Ending		Hour 1 7:00	Hour 2 8:00	Hour 3 9:00	Hour 4 10:00	Hour 5 16:00	Hour 6 17:00	Hour 7 18:00	Hour 8 19:00	AM + PM 4
MAJOR STREET										
Northbounc	right	1	4	12	4	11	8	13	6	
	thru	83	220	223	216	415	598	499	299	
	left	90	218	372	188	277	329	257	175	
Southbounc	right	12	30	71	19	9	9	7	10	
	thru	277	493	446	415	292	303	292	196	
	left	1	1	2	4	2	1	3	1	
MINOR STREET										
Eastbound	right	0	0	0	0	0	0	0	0	
	thru	0	1	0	0	0	0	0	0	
	left	1	5	11	9	19	37	7	5	
Westbound	right	0	1	1	4	1	4	3	4	
	thru	0	1	2	2	2	4	2	1	
	left	0	1	0	2	5	3	2	3	
PEDESTRIANS										

crossing MAJOR street	0	0	0	0	0	0	0	0	
delayed pedestrians	0	0	0	0	0	0	0	0	
crossing MINOR street	0	0	0	0	0	0	0	0	
APPROACH VOLUMES									
major	464	966	1126	846	1006	1248	1071	687	
minor	1	9	14	17	27	48	14	13	
TOTAL	465	975	1140	863	1033	1296	1085	700	
CROSSING VOLUMES									
TOTAL	1	7	199	13	26	44	11	9	
note 1	1	6	11	11	24	40	9	8	
note 2	0	1	2	2	2	4	2	1	
note 3	0	0	186	0	0	0	0	0	
3a	no	yes	yes	yes	yes	yes	yes	yes	
3b	no	no	yes	no	no	no	no	no	
note 4	0	0	0	0	0	0	0	0	
note 5	0	0	0	0	0	0	0	0	

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY	
Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8			
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	863	975	1140	863	1033	1296	1085	1033	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 480 OR VOL x 100 / 600 (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET	17	9	14	17	27	48	14	27	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	14%	8%	12%	14%	23%	40%	12%	23%	0	0	18%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8			
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1006	966	1126	846	1006	1248	1071	1006	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 480 OR VOL x 100 / 600 (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	13	7	199	13	26	44	11	26	100%	80% +	Average Compliance

2B	COMPLIANCE % VOL x 100 50	26%	14%	100%	26%	52%	88%	22%	52%	1	2	48%

(FREE FLOW)	**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**	**NO**
SIGNAL JUSTIFICATION 2:	**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**	**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE		**Two Justifications Satisfied 80% or more**
Justification - Minimum Vehicle Volume	NO	**NO**
Justification - Delay to Cross Traffic	NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%

SIGNAL JUSTIFICATION 5:	BOTH OF 3A, 3B FULFILLED TO 100%?	☐ ☐ **NO**
	BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSIN	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEI	8288		
6A PED VOLUME	**8 Hr Veh. Vol.**	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				

	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0
6B PED DELAY	**Net Total 8 Hour Vol. of**	**Net Total 8 Hour Volume of Delayed Pedestrians**		
		< 75	**75 - 130**	**> 130**
	< 200	Not Justified		
	200 - 300			
	> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATI	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen		**Jurisdiction/Date**	MTO	10 August 2016
Agency or Company	Ainley Group		**East-West Street**	Craig Road	
Analysis Period	2031		**North-South Street**	CR 27	
Flow Conditions	Free flow (rural)		**Major Street**	North-South	
T Intersection	Yes		**Approach Lanes per Direction**	1	
			Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration				

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Northbound	right	165							229	99
	thru	361							893	314
	left									0
Southbound	right									0
	thru	621							624	311
	left	18							52	18
MINOR STREET										
Eastbound	right									0
	thru									0
	left									0
Westbound	right	56							30	22
	thru									0
	left	186							208	99
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		1165							1798	741
minor		242							238	120
TOTAL		1407							2036	861
CROSSING VOLUMES										
TOTAL		186							208	99
note 1		186							208	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		no							yes	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	861	861	861	861	861	861	861	861	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	120	120	120	120	120	120	120	120	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	67%	67%	67%	67%	67%	67%	67%	67%	0	0	67%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	741	741	741	741	741	741	741	741	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	99	99	99	99	99	99	99	99	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	NO	**NO**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME

NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING: 0 — NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED: 6886

8 Hour Vehicular Volume V_8	Net 8 Hour Pedestrian Volume: < 200	200 - 275	276 - 475	476 - 1000	> 1000
< 1440					
1440 - 2600					
2601 - 7000	Not Justified				
> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY

NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS: 0 — NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS: 0

Net Total 8 Hour Vol. of Total Pedestrians	Net Total 8 Hour Volume of Delayed Pedestrians: < 75	75 - 130	> 130
< 200	Not Justified		
200 - 300			
> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	MTO	11 August 2016
Agency or Company	Ainley Group	**East-West Street**	Forbes Road	
Analysis Period	2031	**North-South Street**	Russell Road	
Flow Conditions	Free flow (rural)	**Major Street**	East-West	
T Intersection	No	**Approach Lanes per Direction**	1	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right	14							35	12
	thru	222							119	85
	left	0							0	0
Westbound	right	4							7	3
	thru	70							207	69
	left	290							654	236
MINOR STREET										
Northbound	right	645							478	281
	thru	1							11	3
	left	36							38	19
Southbound	right	0							0	0
	thru	7							10	4
	left	4							5	2
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		600							1022	406
minor		693							542	309
TOTAL		1293							1564	714
CROSSING VOLUMES										
TOTAL		47							381	107
note 1		40							43	
note 2		7							11	
note 3		0							327	
3a		yes							yes	
3b		no							yes	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	714	714	714	714	714	714	714	714	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	309	309	309	309	309	309	309	309	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	406	406	406	406	406	406	406	406	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	84%	84%	84%	84%	84%	84%	84%	84%	0	8	84%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	107	107	107	107	107	107	107	107	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	YES	**YES**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME

NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING: 0 — NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED: 5714

8 Hour Vehicular Volume V_8	Net 8 Hour Pedestrian Volume: < 200	200 - 275	276 - 475	476 - 1000	> 1000
< 1440					
1440 - 2600					
2601 - 7000	Not Justified				
> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY

NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS: 0 — NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS: 0

Net Total 8 Hour Vol. of Total Pedestrians	Net Total 8 Hour Volume of Delayed Pedestrians: < 75	75 - 130	> 130
< 200	Not Justified		
200 - 300			
> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen		**Jurisdiction/Date**	MTO	11 August 2016
Agency or Company	Ainley Group		**East-West Street**	Doran Rd	
Analysis Period	2031		**North-South Street**	Russell Rd	
Flow Conditions	Free flow (rural)		**Major Street**	North-South	
T Intersection	Yes		**Approach Lanes per Direction**	1	
			Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration				

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Northbound	right									0
	thru	259							162	105
	left	62							71	33
Southbound	right	226							439	166
	thru	90							249	85
	left	0								0
MINOR STREET										
Eastbound	right	64							66	33
	thru									0
	left	414							370	196
Westbound	right									0
	thru									0
	left									0
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		637							921	390
minor		478							436	229
TOTAL		1115							1357	618
CROSSING VOLUMES										
TOTAL		414							370	196
note 1		414							370	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	618	618	618	618	618	618	618	618	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	229	229	229	229	229	229	229	229	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	390	390	390	390	390	390	390	390	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	81%	81%	81%	81%	81%	81%	81%	81%	0	8	81%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	196	196	196	196	196	196	196	196	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	YES	**YES**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME

NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING: 0 — NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED: 4944

8 Hour Vehicular Volume V_8	Net 8 Hour Pedestrian Volume: < 200	200 - 275	276 - 475	476 - 1000	> 1000
< 1440					
1440 - 2600					
2601 - 7000	Not Justified				
> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY

NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS: 0 — NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS: 0

Net Total 8 Hour Vol. of Total Pedestrians	Net Total 8 Hour Volume of Delayed Pedestrians: < 75	75 - 130	> 130
< 200	Not Justified		
200 - 300			
> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen		**Jurisdiction/Date**	MTO	10 August 2016
Agency or Company	Ainley Group		**East-West Street**	Carson Road	
Analysis Period	2031		**North-South Street**	Wilson Drive	
Flow Conditions	Free flow (rural)		**Major Street**	North-South	
T Intersection	No		**Approach Lanes per Direction**	2	
			Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration				

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Northbound	right	72							176	62
	thru	411							641	263
	left	14							32	12
Southbound	right	5							10	4
	thru	519							586	276
	left	53							99	38
MINOR STREET										
Eastbound	right	109							78	47
	thru	10							33	11
	left	188							109	74
Westbound	right	33							11	11
	thru	20							15	9
	left	11							19	8
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		1074							1544	655
minor		371							265	159
TOTAL		1445							1809	814
CROSSING VOLUMES										
TOTAL		219							161	95
note 1		199							128	
note 2		20							33	
note 3		0							0	
3a		no							no	
3b		no							yes	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	814	814	814	814	814	814	814	814	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	159	159	159	159	159	159	159	159	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	655	655	655	655	655	655	655	655	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	95	95	95	95	95	95	95	95	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	YES	**YES**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	6508		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000	Not Justified				
	> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0	
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**			
		< 75	**75 - 130**	**> 130**	
	< 200	Not Justified			
	200 - 300				
	> 300				

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	MTO	10 August 2016
Agency or Company	Ainley Group	**East-West Street**	Snow Valley Rd	
Analysis Period	2031	**North-South Street**	Wilson Drive	

Flow Conditions	Free flow (rural)	**Major Street**	North-South
T Intersection	Yes	**Approach Lanes per Direction**	2
		Hours of Traffic Volume Data	AM & PM peaks only

Additional Comments existing road configuration

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending	Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET									
Northbound right	237							289	132
thru	302							459	190
left									0
Southbound right									0
thru	403							374	194
left	217							282	125
MINOR STREET									
Eastbound right									0
thru									0
left									0
Westbound right	141							339	120
thru									0
left	224							307	133
PEDESTRIANS									
crossing MAJOR street									0
delayed pedestrians									0
crossing MINOR street									0
APPROACH VOLUMES									
major	1159							1404	641
minor	365							646	253
TOTAL	1524							2050	894
CROSSING VOLUMES									
TOTAL	224							448	168
note 1	224							307	
note 2	0							0	
note 3	0							141	
3a	yes							yes	
3b	no							yes	
note 4	0							0	0
note 5	0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	894	894	894	894	894	894	894	894	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	253	253	253	253	253	253	253	253	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	641	641	641	641	641	641	641	641	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	168	168	168	168	168	168	168	168	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	YES	**YES**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	7148		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**		
		< 75	**75 - 130**	**> 130**
	< 200	Not Justified		
	200 - 300			
	> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	Jurisdiction/Date	MTO	30 May 2018
Agency or Company	Ainley Group	East-West Street	Highway 26/Spence Ave	
Analysis Period	2031	North-South Street	Highway 26/CR27	

Flow Conditions	Free flow (rural)	Major Street	North-South
T Intersection	No	Approach Lanes per Direction	2
		Hours of Traffic Volume Data	AM & PM peaks only

Other Notes: existing road configuration

Hour Ending	Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET									
Northbound right	10							11	5
thru	508							1076	396
left	605							534	285
Southbound right	99							45	36
thru	716							789	376
left	1							6	2
MINOR STREET									
Eastbound right									0
thru	8							24	8
left	19							58	19
Westbound right	1							2	1
thru	24							17	10
left	2							3	1
PEDESTRIANS									

crossing MAJOR street	153							203	89
delayed pedestrians	77							102	45
crossing MINOR street	160							432	148
APPROACH VOLUMES									
major	1939							2461	1100
minor	54							104	40
TOTAL	1993							2565	1140
CROSSING VOLUMES									
TOTAL	501							555	264
note 1	21							61	
note 2	24							24	
note 3	303							267	
3a	yes							yes	
3b	yes							yes	
note 4	153							203	89
note 5	77							102	45

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak			
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1140	1140	1140	1140	1140	1140	1140	1140	100%	80% +	Average Compliance
	COMPLIANCE % $\frac{\text{VOL x 100}}{480}$ OR $\frac{\text{VOL x 100}}{600}$ (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET	40	40	40	40	40	40	40	40	100%	80% +	Average Compliance
	COMPLIANCE % $\frac{\text{VOL x 100}}{120}$ (full intersection) OR $\frac{\text{VOL x 100}}{180}$ (tee intersection)	33%	33%	33%	33%	33%	33%	33%	33%	0	0	33%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8			
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1100	1100	1100	1100	1100	1100	1100	1100	100%	80% +	Average Compliance
	COMPLIANCE % $\frac{\text{VOL x 100}}{480}$ OR $\frac{\text{VOL x 100}}{600}$ (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	264	264	264	264	264	264	264	264	100%	80% +	Average Compliance

2B	COMPLIANCE % VOL x 100 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE		**Two Justifications Satisfied 80% or more**
Justification - Minimum Vehicle Volume	NO	**NO**
Justification - Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%

SIGNAL JUSTIFICATION 5:		
	BOTH OF 3A, 3B FULFILLED TO 100%?	☐ ☐ **NO**
	BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSIN	356	NET 8 HOUR VEHICULAR VOLUME ON STREET BEI	9116		
6A PED VOLUME	**8 Hr Veh. Vol.**	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000			Justified		
	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	356	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	178		
6B PED DELAY	**Net Total 8 Hour Vol. of**	**Net Total 8 Hour Volume of Delayed Pedestrians**				
		< 75	**75 - 130**	**> 130**		
	< 200					
	200 - 300					
	> 300			Justified		

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATI	**YES**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen		**Jurisdiction/Date**	MTO	12 August 2016
Agency or Company	Ainley Group		**East-West Street**	Forbes Road	
Analysis Period	2041		**North-South Street**	Hwy 400 NB off-ramp	
Flow Conditions	Free flow (rural)		**Major Street**	East-West	
T Intersection	Yes		**Approach Lanes per Direction**	1	
			Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration				

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right									0
	thru	428							321	187
	left	202							139	85
Westbound	right	34							49	21
	thru	297							450	187
	left									0
MINOR STREET										
Northbound	right									0
	thru									0
	left									0
Southbound	right									0
	thru									0
	left	33							111	36
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		961							959	480
minor		33							111	36
TOTAL		994							1070	516
CROSSING VOLUMES										
TOTAL		33							111	36
note 1		33							111	
note 2		0							0	
note 3		0							0	
3a		yes							yes	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	516	516	516	516	516	516	516	516	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	36	36	36	36	36	36	36	36	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	20%	20%	20%	20%	20%	20%	20%	20%	0	0	20%
(FREE FLOW)	**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**											**NO**
SIGNAL JUSTIFICATION 1:	**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**											**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	480	480	480	480	480	480	480	480	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	36	36	36	36	36	36	36	36	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	72%	72%	72%	72%	72%	72%	72%	72%	0	0	72%
(FREE FLOW)	**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**											**NO**
SIGNAL JUSTIFICATION 2:	**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**											**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE			**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume: NO	**NO**
Justification 2	-	Delay to Cross Traffic: NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	4128		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000	Not Justified				
	> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0	
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**			
		< 75	**75 - 130**	**> 130**	
	< 200	Not Justified			
	200 - 300				
	> 300				

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	MTO	12 August 2016
Agency or Company	Ainley Group	**East-West Street**	Forbes Road	
Analysis Period	2041	**North-South Street**	Hwy 400 SB off-ramp	
Flow Conditions	Free flow (rural)	**Major Street**	East-West	
T Intersection	Yes	**Approach Lanes per Direction**	2	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right	1238							671	477
	thru	592							397	247
	left									0
Westbound	right									0
	thru	627							1629	564
	left	102							54	39
MINOR STREET										
Northbound	right	38							17	14
	thru									0
	left	69							145	54
Southbound	right									0
	thru									0
	left									0
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		2559							2751	1328
minor		107							162	67
TOTAL		2666							2913	1395
CROSSING VOLUMES										
TOTAL		69							145	54
note 1		69							145	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1395	1395	1395	1395	1395	1395	1395	1395	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	67	67	67	67	67	67	67	67	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	37%	37%	37%	37%	37%	37%	37%	37%	0	0	37%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1328	1328	1328	1328	1328	1328	1328	1328	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	54	54	54	54	54	54	54	54	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	NO	**NO**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	11158		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**		
		< 75	**75 - 130**	**> 130**
	< 200	Not Justified		
	200 - 300			
	> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen		**Jurisdiction/Date**	MTO	12 August 2016
Agency or Company	Ainley Group		**East-West Street**	Pooles Road	
Analysis Period	2041		**North-South Street**	Russell Road	
Flow Conditions	Free flow (rural)		**Major Street**	East-West	
T Intersection	Yes		**Approach Lanes per Direction**	1	
			Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration				

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right									0
	thru	75							223	75
	left	54							166	55
Westbound	right	477							255	183
	thru	164							106	68
	left									0
MINOR STREET										
Northbound	right									0
	thru									0
	left									0
Southbound	right	218							127	86
	thru									0
	left	151							449	150
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		770							750	380
minor		369							576	236
TOTAL		1139							1326	616
CROSSING VOLUMES										
TOTAL		151							449	150
note 1		151							449	
note 2		0							0	
note 3		0							0	
3a		no							yes	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	616	616	616	616	616	616	616	616	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	236	236	236	236	236	236	236	236	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	380	380	380	380	380	380	380	380	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	79%	79%	79%	79%	79%	79%	79%	79%	0	0	79%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	150	150	150	150	150	150	150	150	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE			**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	YES
Justification 2	-	Delay to Cross Traffic	NO
			NO

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING: 0 — NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED: 4930

JUSTIFICATION 5A PEDESTRIAN VOLUME

8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume** < 200	200 - 275	276 - 475	476 - 1000	> 1000
< 1440					
1440 - 2600					
2601 - 7000	Not Justified				
> 7000					

NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS: 0 — NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS: 0

JUSTIFICATION 5B PEDESTRIAN DELAY

Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians** < 75	75 - 130	> 130
< 200	Not Justified		
200 - 300			
> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	MTO	12 August 2016
Agency or Company	Ainley Group	**East-West Street**	Doran Rd	
Analysis Period	2041	**North-South Street**	Gill Rd	
Flow Conditions	Restricted flow (urban)	**Major Street**	East-West	
T Intersection	No	**Approach Lanes per Direction**	1	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right	27							61	22
	thru	104							431	134
	left	34							144	45
Westbound	right	128							73	50
	thru	406							293	175
	left	83							45	32
MINOR STREET										
Northbound	right	26							70	24
	thru	10							30	10
	left	58							32	23
Southbound	right	104							75	45
	thru	29							37	17
	left	53							145	50
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		782							1047	457
minor		280							389	167
TOTAL		1062							1436	625
CROSSING VOLUMES										
TOTAL		140							214	89
note 1		111							177	
note 2		29							37	
note 3		0							0	
3a		no							yes	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	625	625	625	625	625	625	625	625	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	87%	87%	87%	87%	87%	87%	87%	87%	0	8	87%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	167	167	167	167	167	167	167	167	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 170 (full intersection) OR VOL x 100 / 255 (tee intersection)	98%	98%	98%	98%	98%	98%	98%	98%	0	8	98%
(RESTRICTED FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	457	457	457	457	457	457	457	457	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	64%	64%	64%	64%	64%	64%	64%	64%	0	0	64%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	89	89	89	89	89	89	89	89	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 75	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(RESTRICTED FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE			**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume: YES	**NO**
Justification 2	-	Delay to Cross Traffic: NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	4996		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000	Not Justified				
	> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**		
		< 75	**75 - 130**	**> 130**
	< 200	Not Justified		
	200 - 300			
	> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	MTO	15 August 2016
Agency or Company	Ainley Group	**East-West Street**	Pooles Rd	
Analysis Period	2041	**North-South Street**	St Vincent St	

Flow Conditions	Restricted flow (urban)	**Major Street**	North-South
T Intersection	No	**Approach Lanes per Direction**	1
		Hours of Traffic Volume Data	AM & PM peaks only

Additional Comments existing road configuration

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Northbound	right	89							288	94
	thru	94							221	79
	left	5							4	2
Southbound	right	1							0	0
	thru	207							151	90
	left	48							152	50
MINOR STREET										
Eastbound	right	10							6	4
	thru	2							4	2
	left	0							2	1
Westbound	right	63							34	24
	thru	5							4	2
	left	312							178	123
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		444							816	315
minor		392							228	155
TOTAL		836							1044	470
CROSSING VOLUMES										
TOTAL		317							184	125
note 1		312							180	
note 2		5							4	
note 3		0							0	
3a		no							yes	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	470	470	470	470	470	470	470	470	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	65%	65%	65%	65%	65%	65%	65%	65%	0	0	65%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	155	155	155	155	155	155	155	155	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 170 (full intersection) OR VOL x 100 / 255 (tee intersection)	91%	91%	91%	91%	91%	91%	91%	91%	0	8	91%
(RESTRICTED FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	315	315	315	315	315	315	315	315	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	44%	44%	44%	44%	44%	44%	44%	44%	0	0	44%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	125	125	125	125	125	125	125	125	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 75	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(RESTRICTED FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	NO	**NO**
Justification 2	-	Delay to Cross Traffic	NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	3760		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000	Not Justified				
	> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0	
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**			
		< 75	**75 - 130**	**> 130**	
	< 200	Not Justified			
	200 - 300				
	> 300				

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen		**Jurisdiction/Date**	MTO	12 August 2016
Agency or Company	Ainley Group		**East-West Street**	Snow Valley Rd	
Analysis Period	2031		**North-South Street**	Wilson Drive	
Flow Conditions	Free flow (rural)		**Major Street**	East-West	
T Intersection	Yes		**Approach Lanes per Direction**	2	
			Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration				

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right									0
	thru	257							340	149
	left	19							12	8
Westbound	right	278							567	211
	thru	224							314	135
	left									0
MINOR STREET										
Northbound	right									0
	thru									0
	left									0
Southbound	right	12							21	8
	thru									0
	left	433							431	216
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		778							1233	503
minor		445							452	224
TOTAL		1223							1685	727
CROSSING VOLUMES										
TOTAL		433							431	216
note 1		433							431	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	727	727	727	727	727	727	727	727	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	224	224	224	224	224	224	224	224	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	503	503	503	503	503	503	503	503	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	84%	84%	84%	84%	84%	84%	84%	84%	0	8	84%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	216	216	216	216	216	216	216	216	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	YES	**YES**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	5816		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000	Not Justified				
	> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0	
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**			
		< 75	**75 - 130**	**> 130**	
	< 200	Not Justified			
	200 - 300				
	> 300				

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

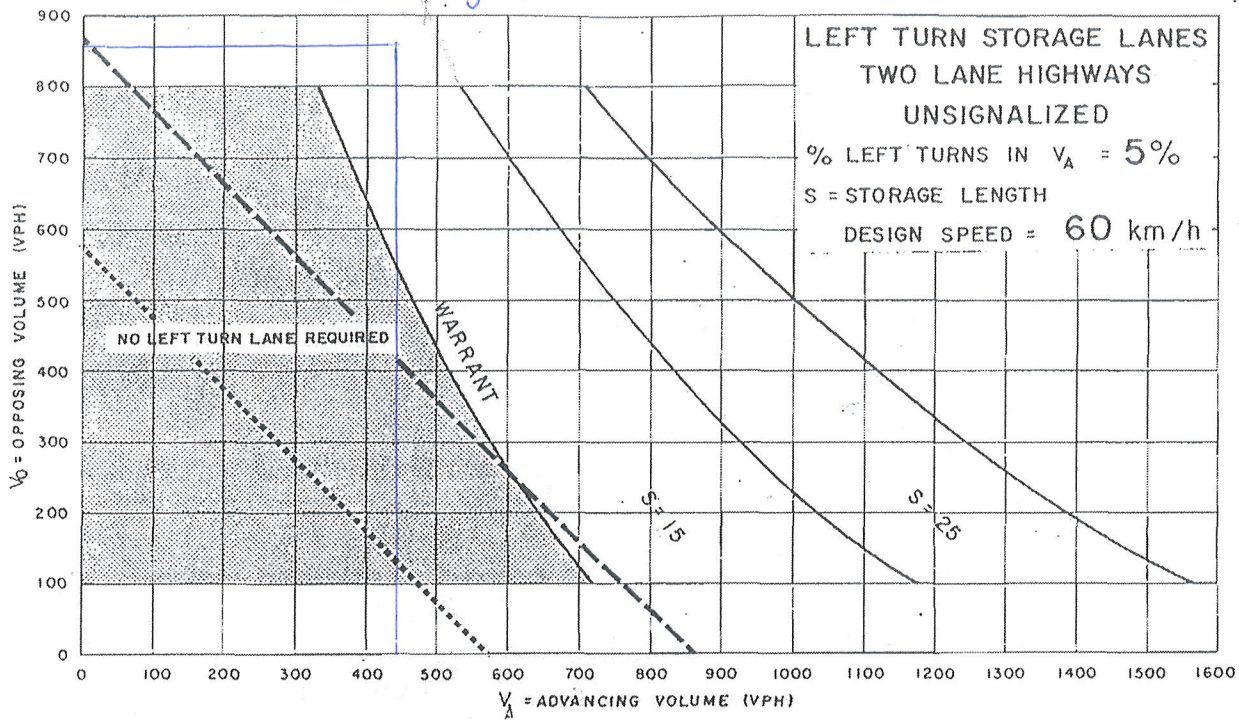
JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

APPENDIX 'T4'

Left Turn Lane Warrant Analysis, Ainley Group

2041 PM Finlay Mill Rd & Wattle Rd.



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

2031 PM Finlay Mill Rd & Wattle Rd

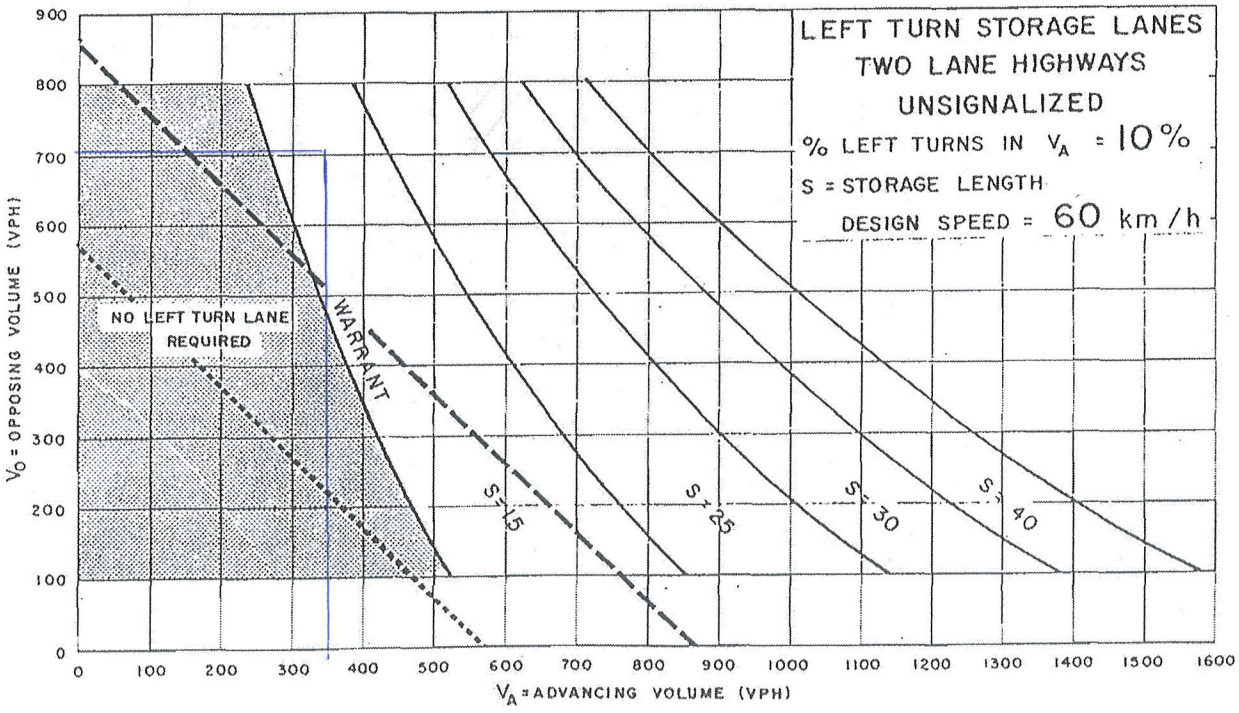


Figure EA-6

Highway 400 NB On-ramp & Forbes Rd 2041 Total AM Peak Hour Volumes

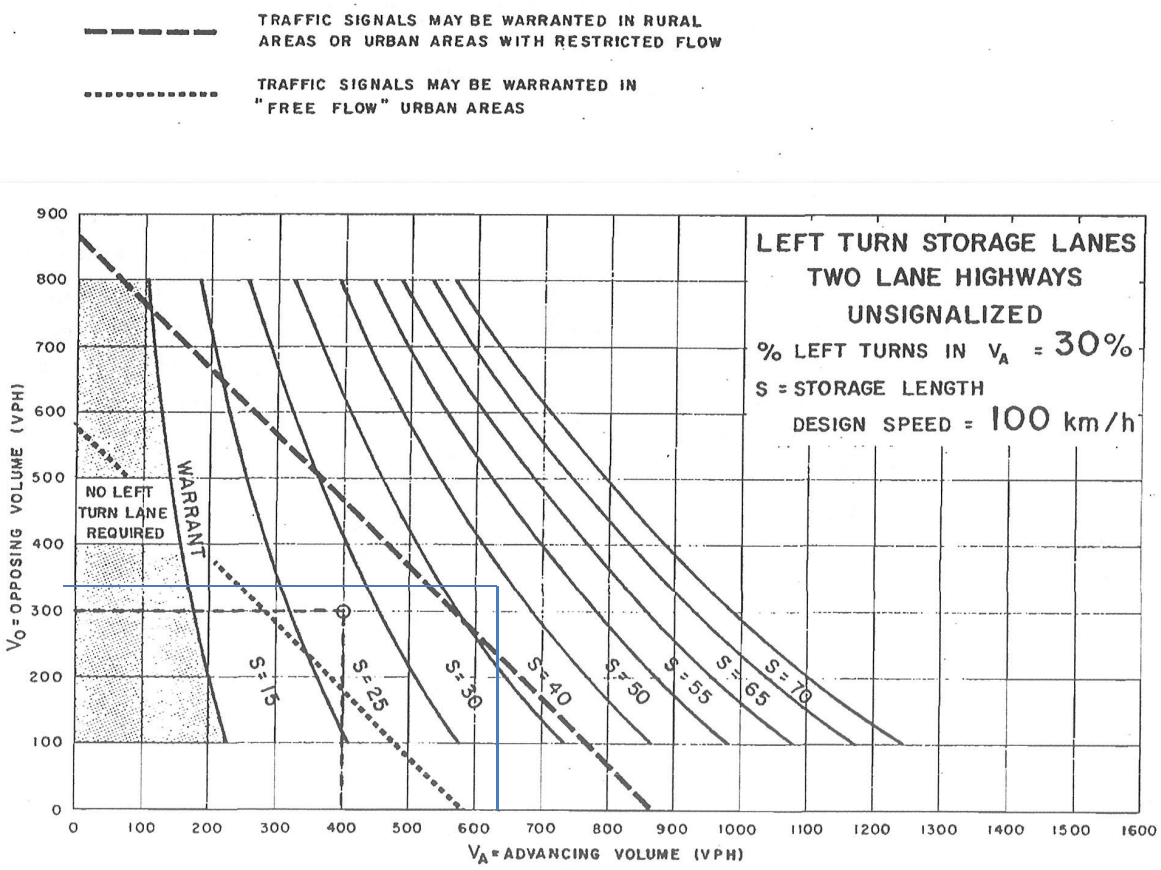
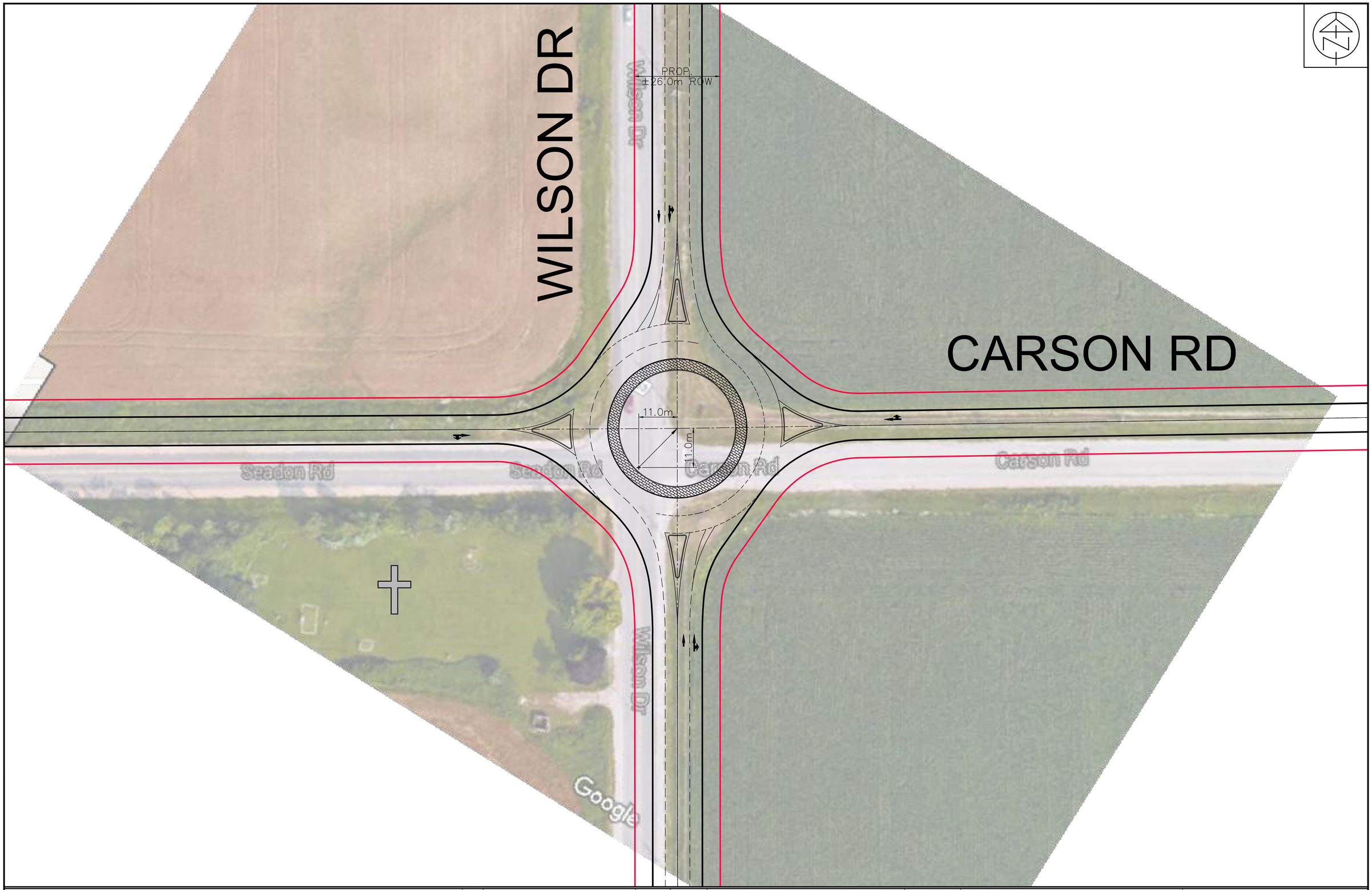


Figure EA-24

APPENDIX 'T5'

Proposed Intersections

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NOTES

CONTRACT DRAWINGS
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NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE: H= 1:500 V= N/A
DESIGN:
DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

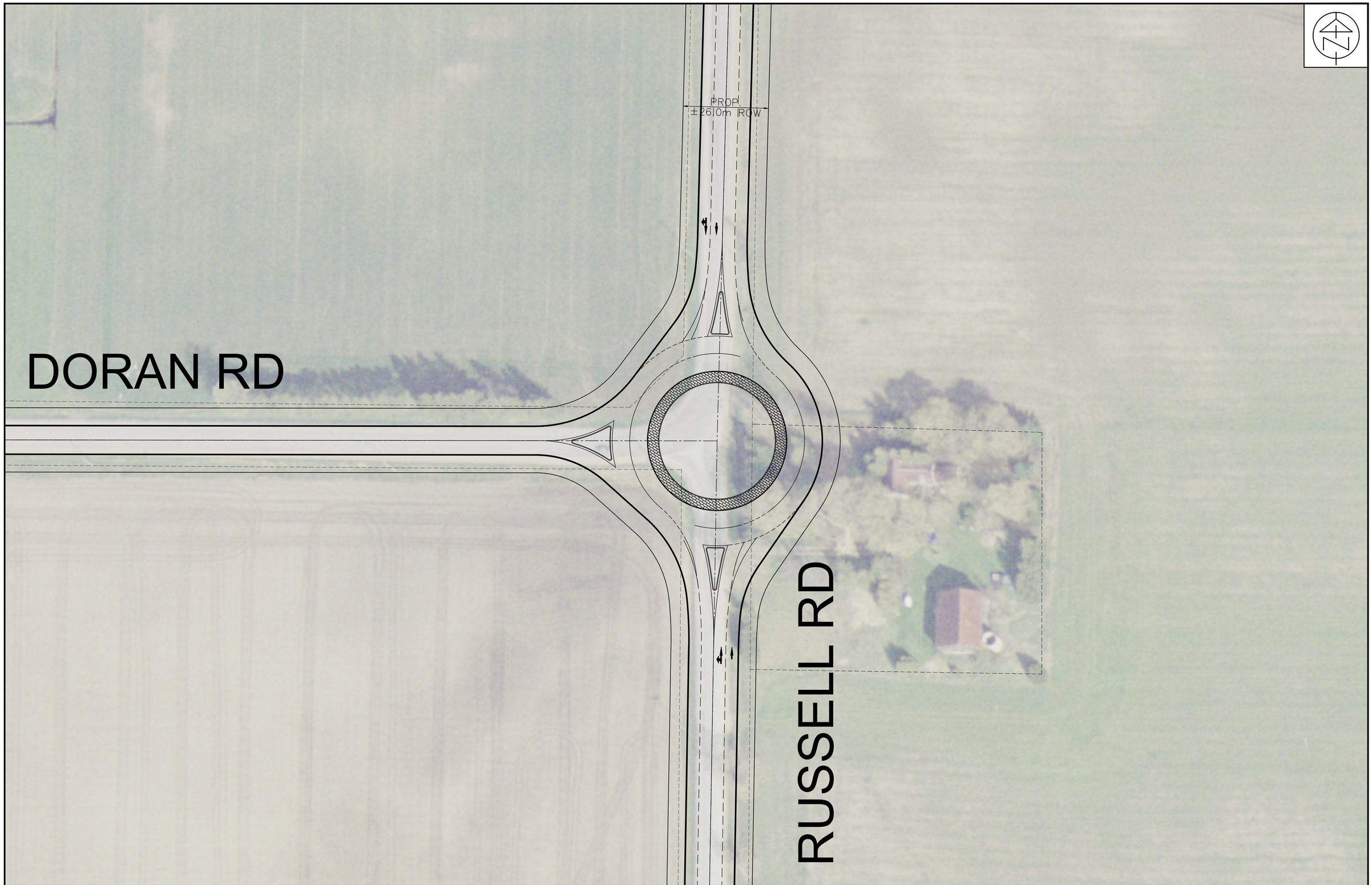
CARSON RD – WILSON DR INTERSECTION

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

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PRELIMINARY

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DESIGN:
DRAWN:
CHECKED:
DATE: MAY/16

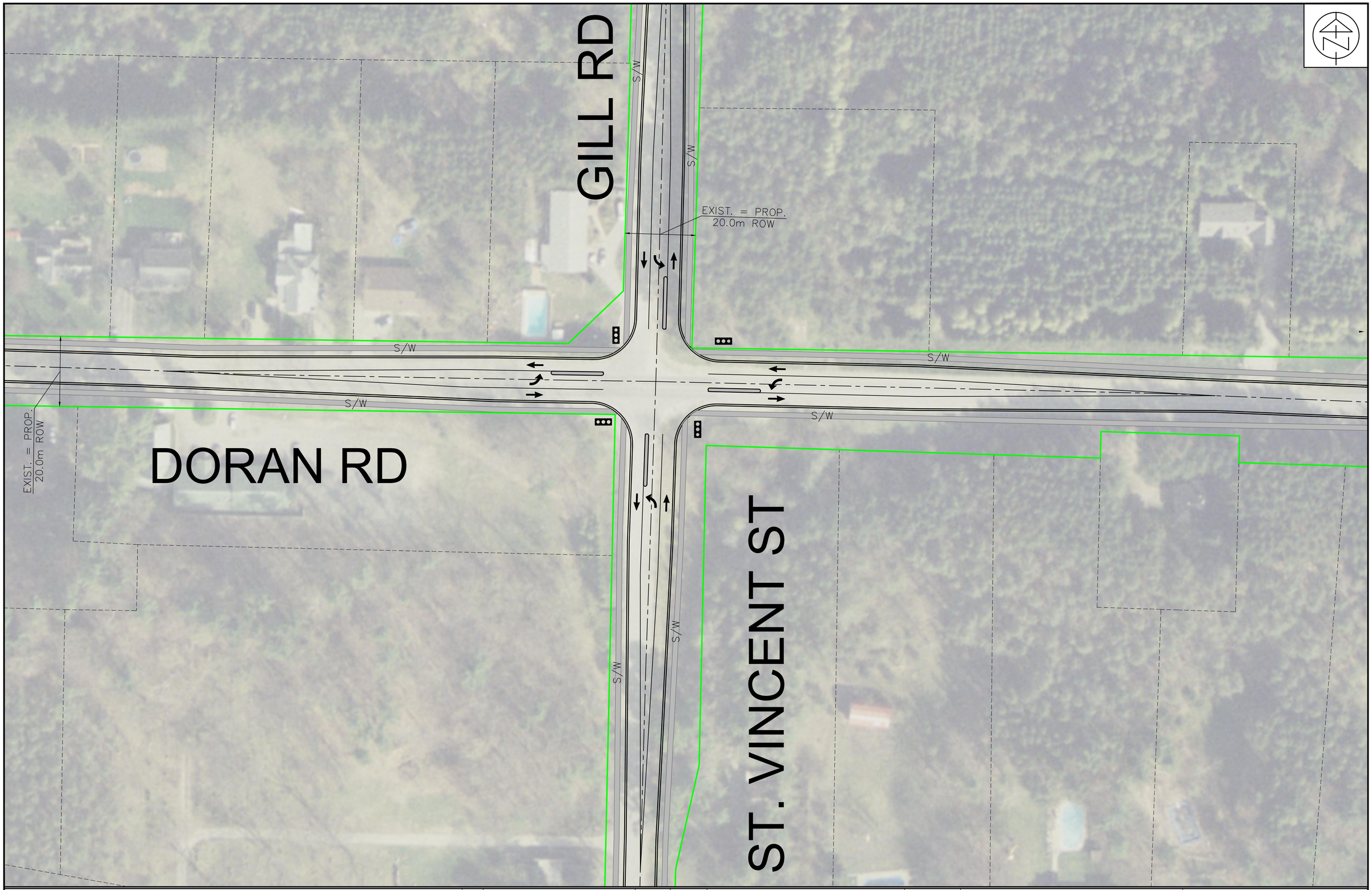
TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

DORAN RD – RUSSELL RD

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



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PRELIMINARY

SCALE: H= 1:500 V= N/A
DESIGN:
DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

DORAN RD – ST. VINCENT ST/GILL RD

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2



NOTES

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PRELIMINARY

SCALE:	H= 1:500 V= N/A
DESIGN:	
DRAWN:	
CHECKED:	
DATE:	MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS

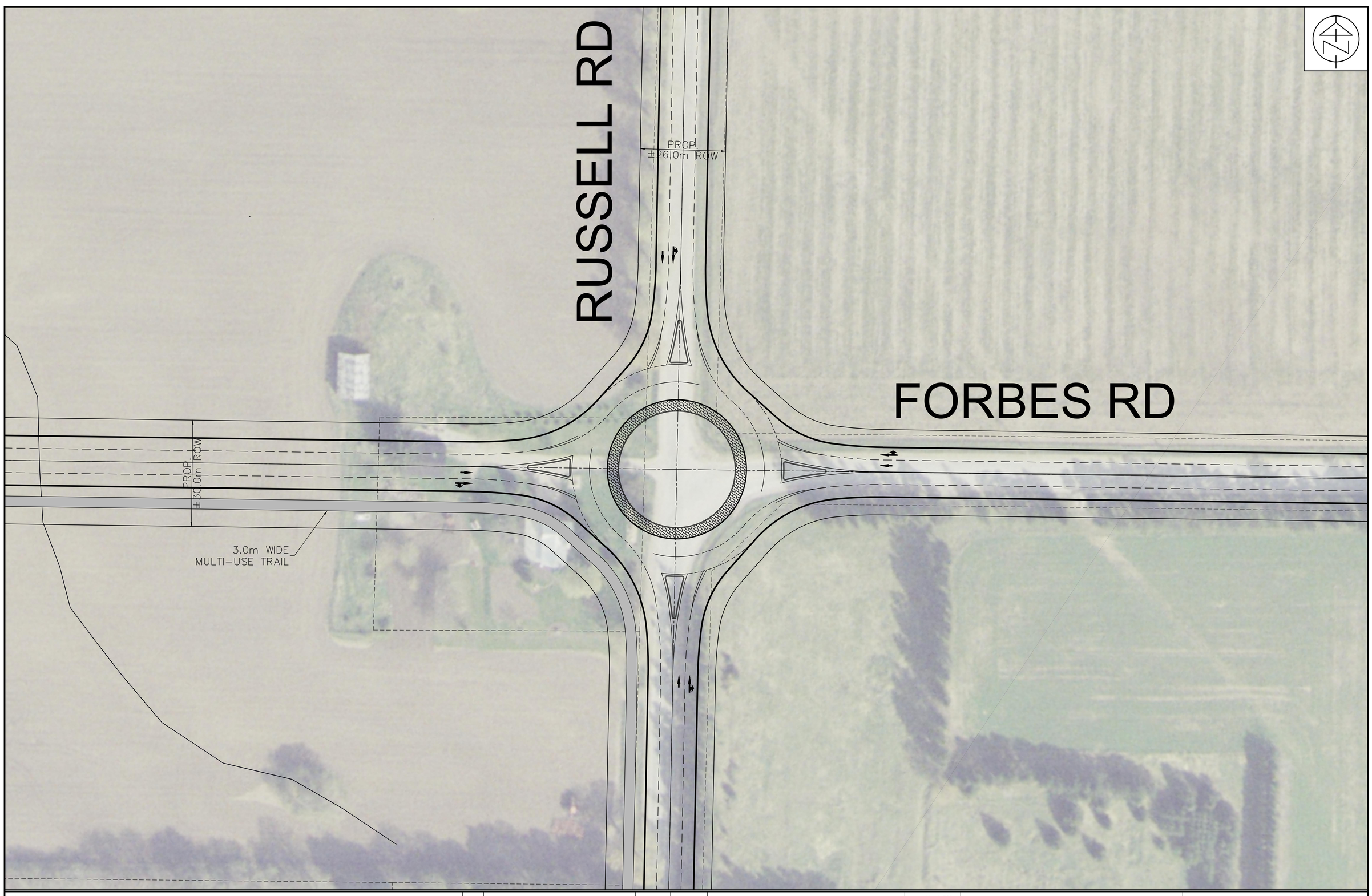
MIDHURST, ON

WATTIE RD – FINLAY MILL RD

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

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NOTES

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PRELIMINARY

SCALE: H= 1:500 V= N/A
DESIGN:
DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

FORBES RD – RUSSELL RD

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



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PRELIMINARY

SCALE: H= 1:500 V= N/A

DESIGN:

DRAWN:

CHECKED:

DATE: MAY/16

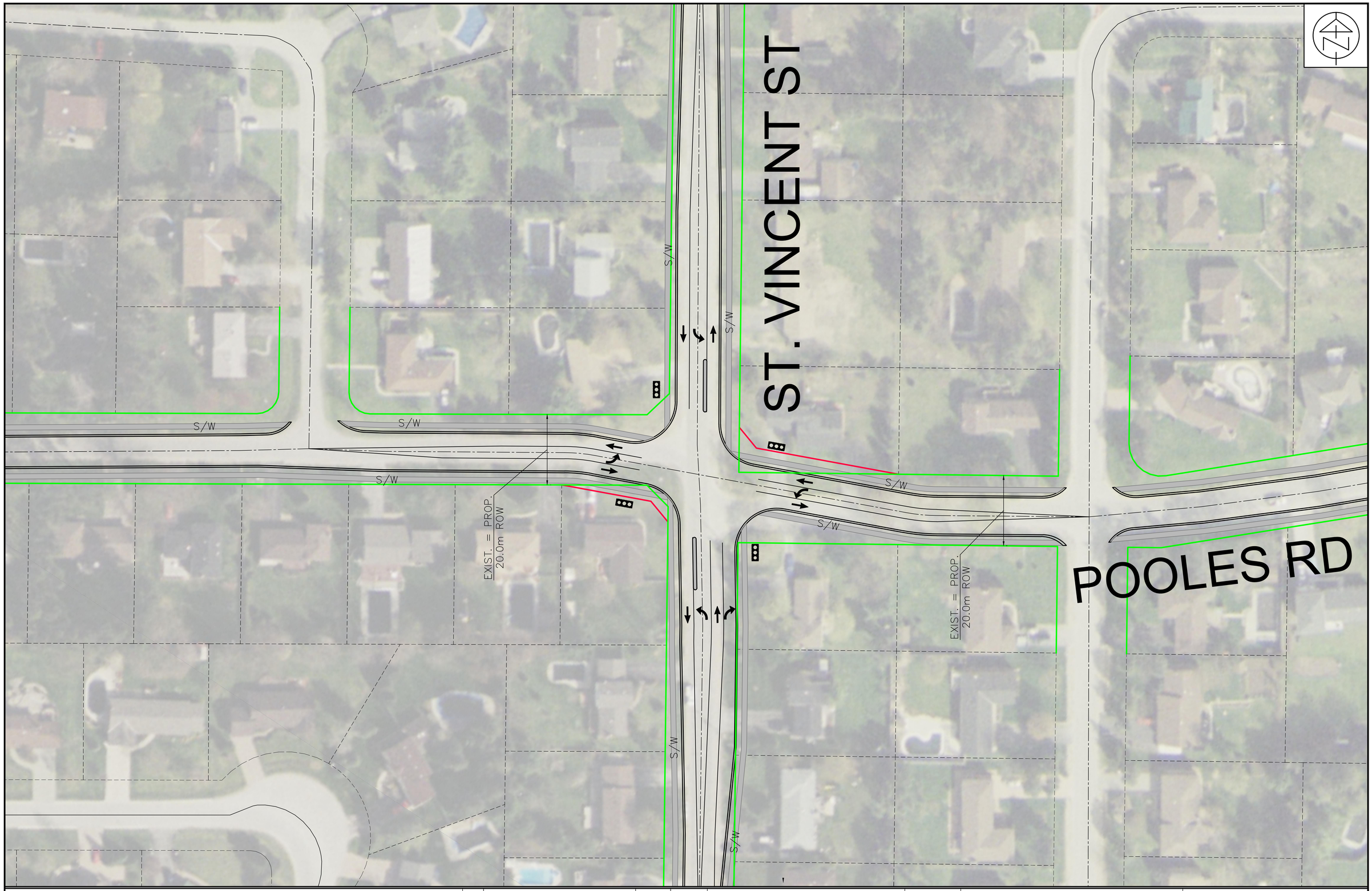
TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS

MIDHURST, ON

POOLES RD – RUSSELL RD

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2



NOTES

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PRELIMINARY

SCALE: H= 1:500 V= N/A
DESIGN:
DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

POOLES RD – ST. VINCENT ST

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

	CARSON ROAD	HWY 26/27
POSTED SPEED	50	80
DESIGN SPEED	70	100
LANE WIDTH	3.5	3.75
RIGHT TURN LANES	3.25	3.5
LEFT TURN LANES INCLUDING MEDIAN CURB	5m Barrier	5.0m Semi Mountable
SIDEWALK WIDTH	1.5m	1.5

EXIST. = PROP. 46.0m ROW

S/W

160.0m TAPER

30.0m PARALLEL

70.0m TAPER

105.0m PARALLEL

25.0m PARALLEL

75.0m TAPER

60.0m TAPER

70.0m PARALLEL

CARSON RD

HWY 26/27

LT 160.0m PARALLEL

LT 160.0m TAPER

EXIST. = PROP. 26.0m ROW

NOTES

Plotted by: AMILLER on May 31, 2018 at 2:19pm
File: V:\113027\Drawings\General Intersection Design\113027-Opion-Carson-Bayfield-Intersection.dwg Layout: ALT 1

CONTRACT DRAWINGS
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Not Valid Unless Signed And Dated

PRELIMINARY

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DATE: MAY/18

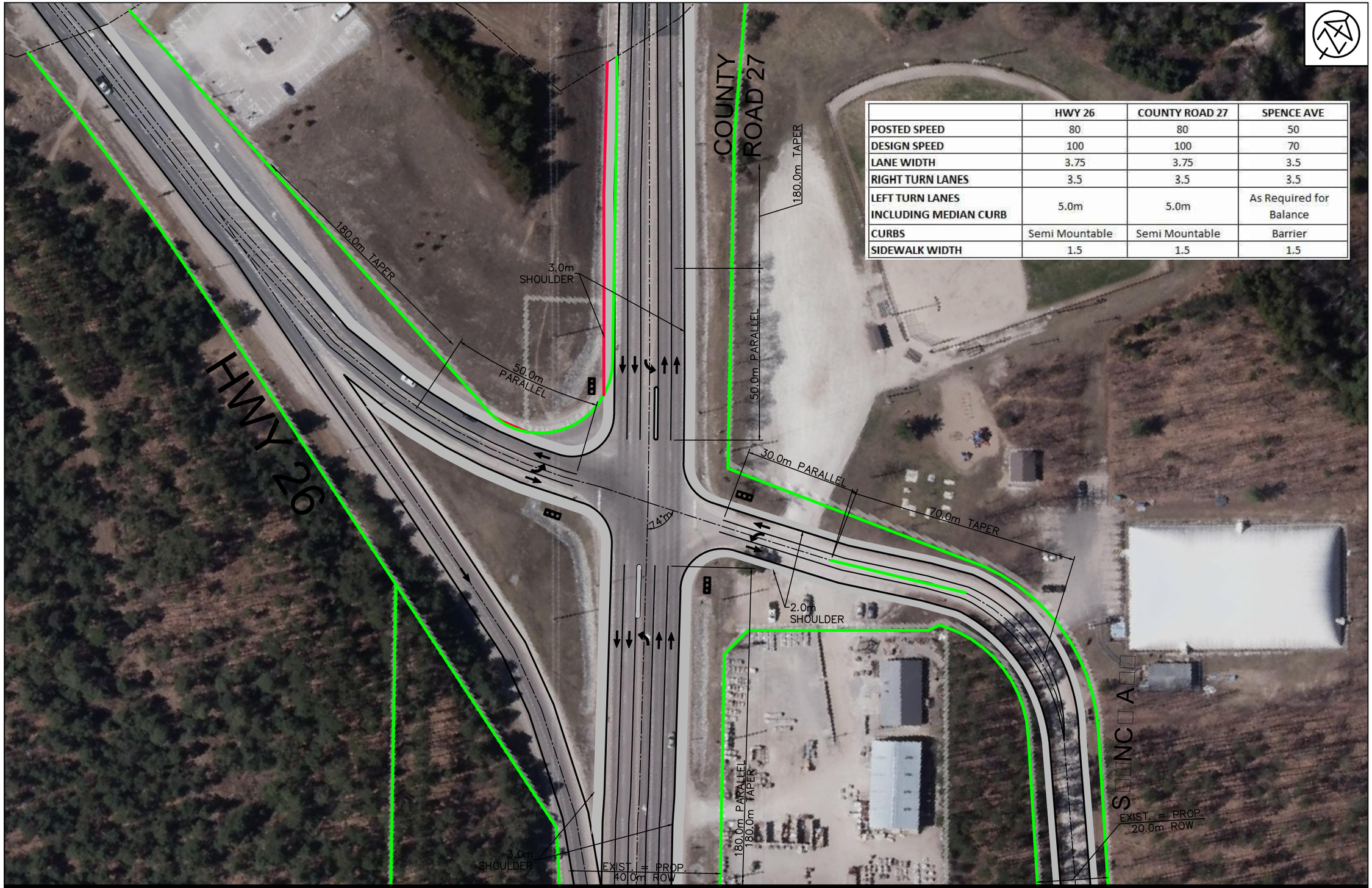
TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

CARSON ROAD – HIGHWAY 26/27

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

	HWY 26	COUNTY ROAD 27	SPENCE AVE
POSTED SPEED	80	80	50
DESIGN SPEED	100	100	70
LANE WIDTH	3.75	3.75	3.5
RIGHT TURN LANES	3.5	3.5	3.5
LEFT TURN LANES INCLUDING MEDIAN CURB	5.0m	5.0m	As Required for Balance
CURBS	Semi Mountable	Semi Mountable	Barrier
SIDEWALK WIDTH	1.5	1.5	1.5



NOTES

Plotted by: AMILLER on May 30, 2016 at 10:27am
File: V:\113027\Drawings\General Intersection Design\113027-Opion-County Road 27-Hwy 26-Intersection.dwg Layout: ALT 1

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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

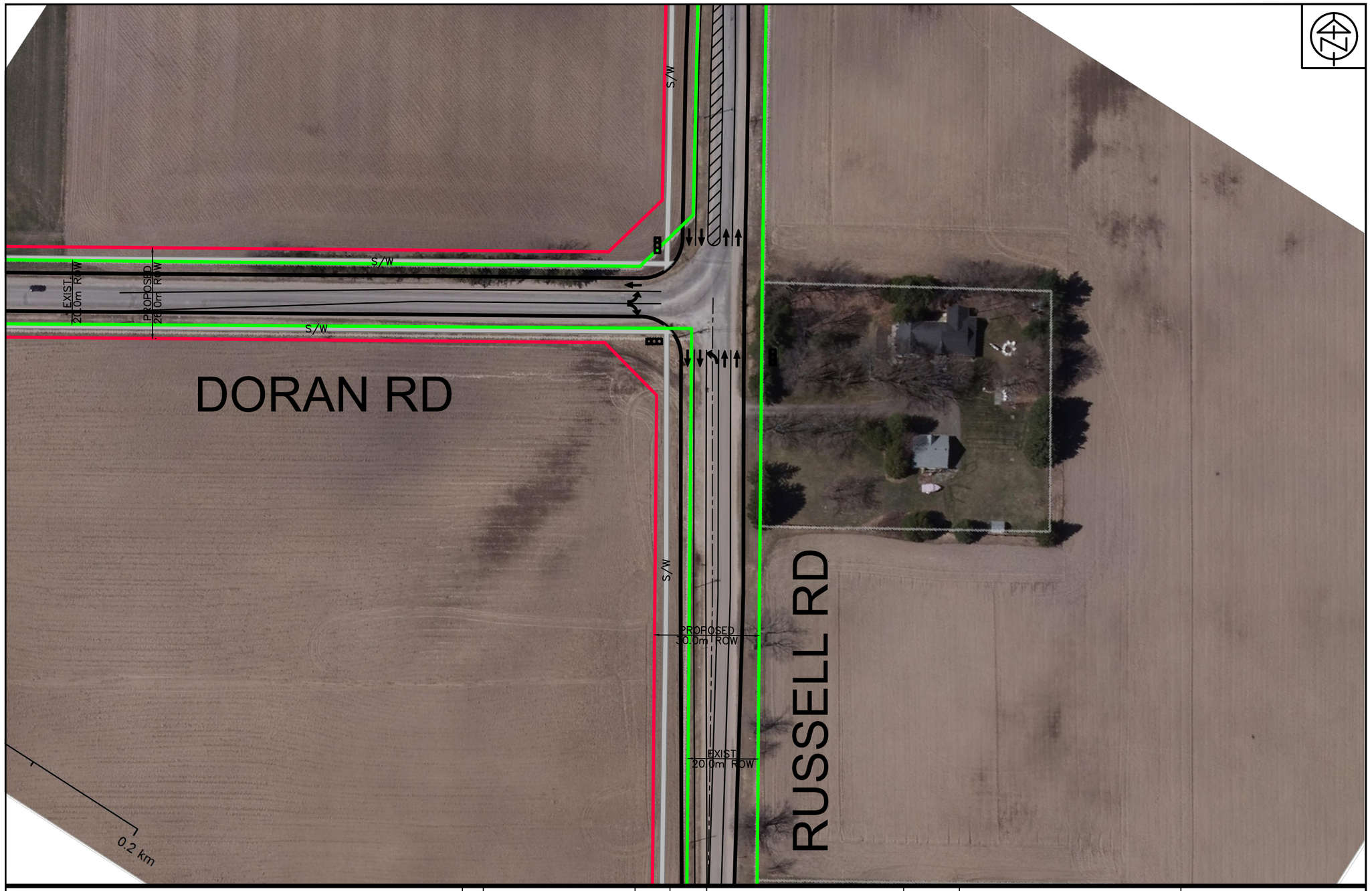
SCALE: H= 1:500 V= N/A
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DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

COUNTY RD 27 – HIGHWAY 26

Ainley CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2



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PRELIMINARY

SCALE: H= 1:1000 V= N/A	
DESIGN:	
DRAWN:	
CHECKED:	
DATE: MAY/16	

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

DORAN RD – RUSSELL RD

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on May 31, 2016 at 9:02pm
File: V:\113027\Drawings\General Intersection Design\MAA Edits\Signalized\113027-Opin-Doran-Russell-Intersection MAA.dwg Layout: ALT 1



NOTES

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PRELIMINARY

SCALE: H= 1:500 V= N/A
DESIGN:
DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

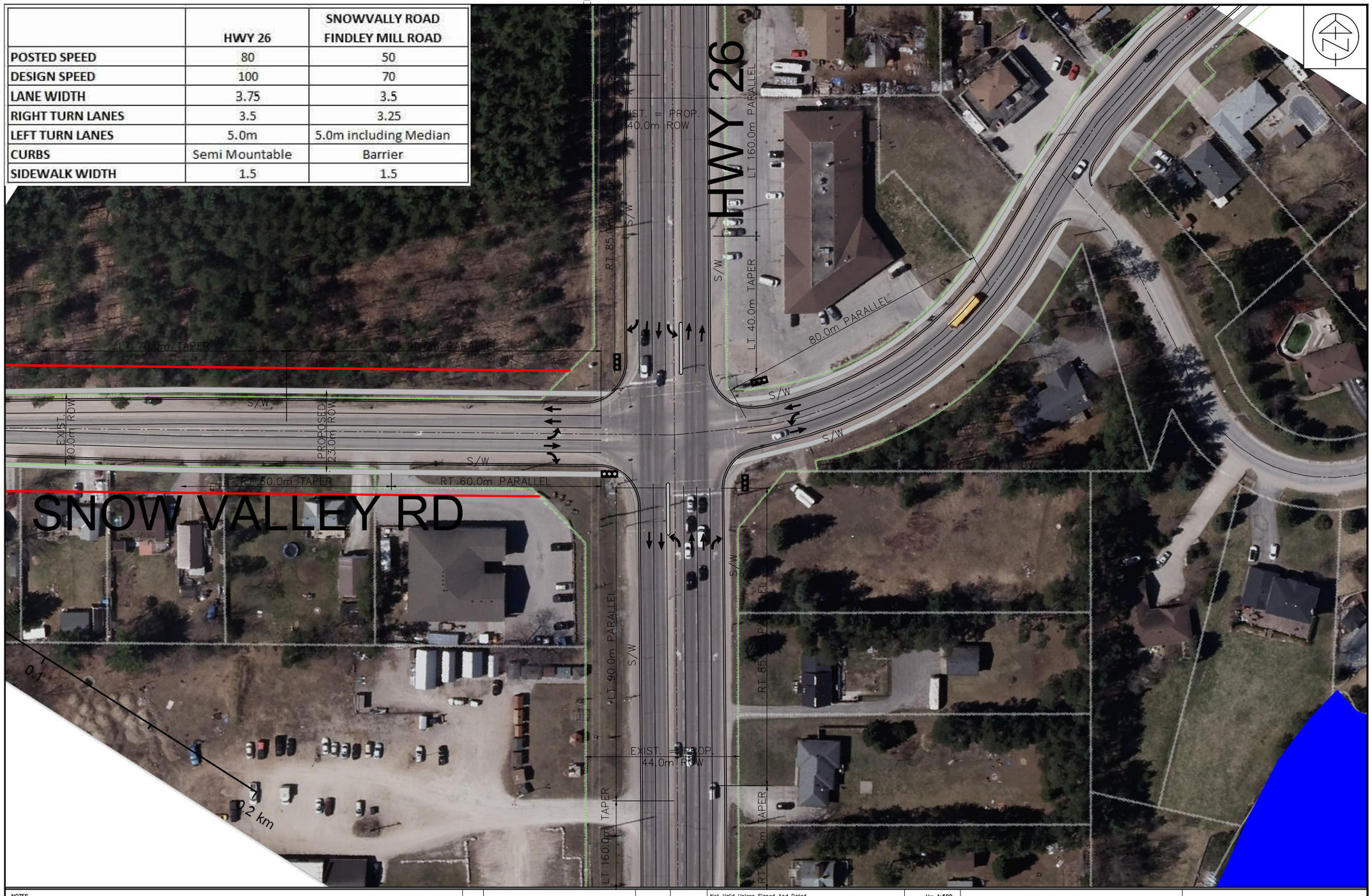
FORBES RD – RUSSELL RD

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on June 1, 2018 at 4:05pm
File: V:\113027\Drawings\General Intersection Design\MAA Edits\Signalized\113027-Oplan-Forbes-400-Interchange SIC.dwg Layout: ALT 1

	HWY 26	SNOWVALLY ROAD FINDLEY MILL ROAD
POSTED SPEED	80	50
DESIGN SPEED	100	70
LANE WIDTH	3.75	3.5
RIGHT TURN LANES	3.5	3.25
LEFT TURN LANES	5.0m	5.0m including Median
CURBS	Semi Mountable	Barrier
SIDEWALK WIDTH	1.5	1.5



NOTES

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PRELIMINARY

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DESIGN:
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CHECKED:
DATE: MAY/16

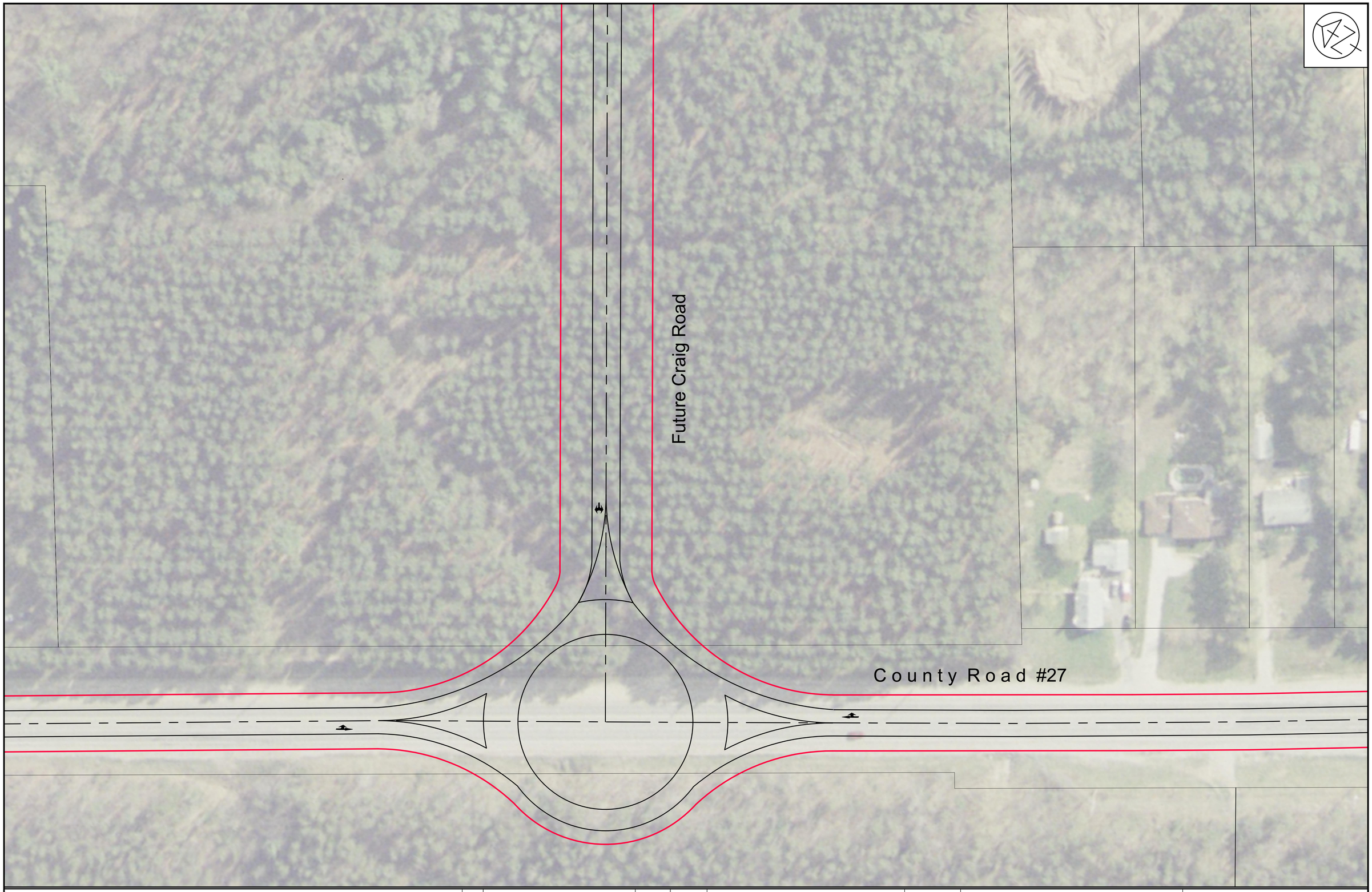
TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

SNOW VALLEY ROAD – HIGHWAY 26/27

Ainley CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on June 1, 2016 at 9:52am
File: V:\113027\Drawings\General Intersection Design\113027-Oplan-Snow Valley-Hwy 26-Intersection.dwg Layout: ALT 1



NOTES

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PRELIMINARY

SCALE: H= 1:500 V= N/A

DESIGN:

DRAWN:

CHECKED:

DATE: AUG./16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

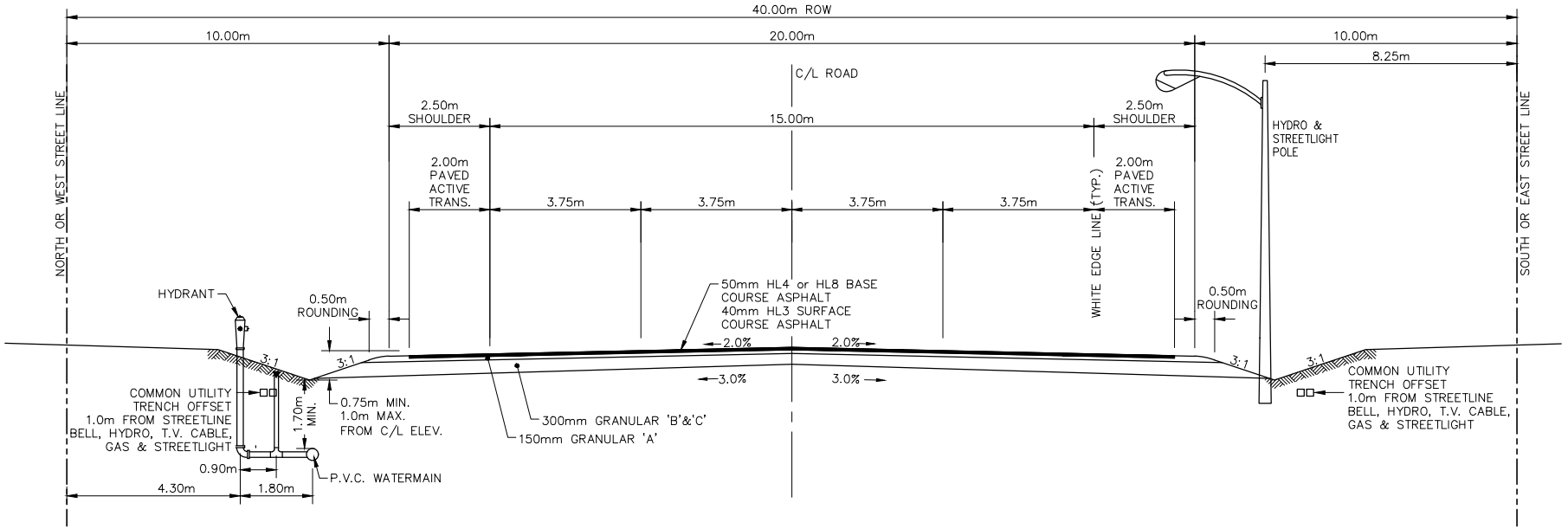
C.R. 27 & CRAIG ROAD INTERSECTION
ROUNDABOUT

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – RND

APPENDIX 'T6'

Typical Cross-Sections



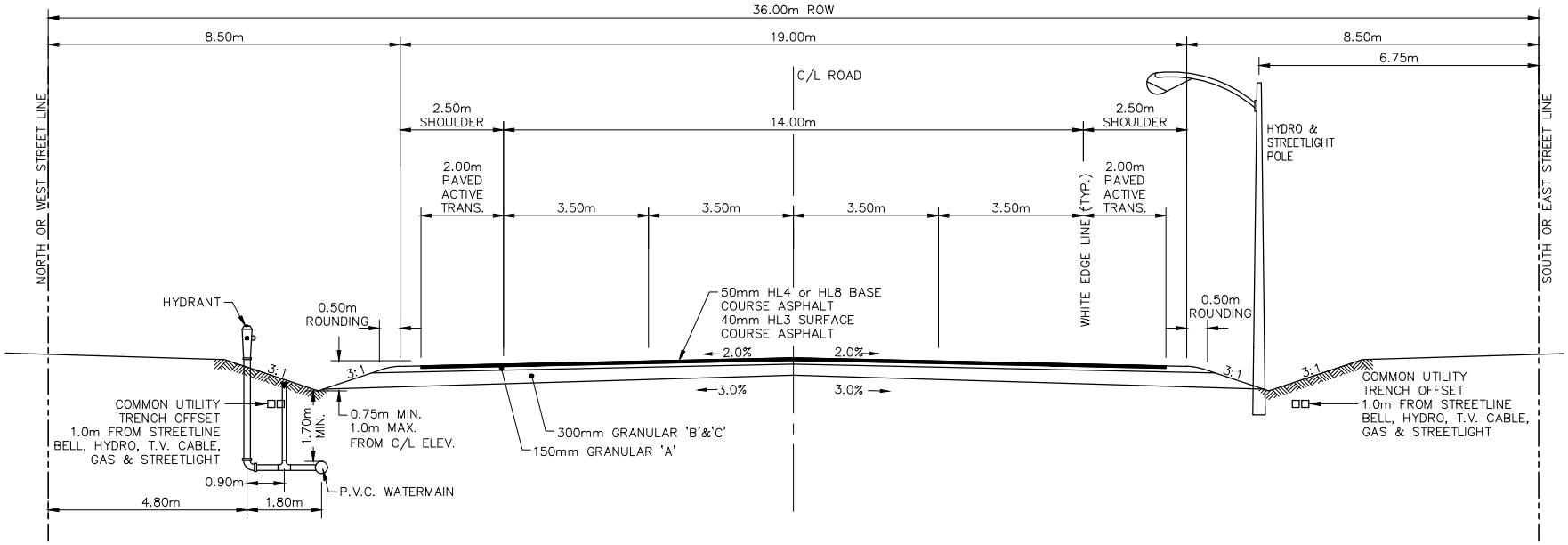
Wilson Road – from City of Barrie Limit to Snow Valley Road

		REVISIONS

TOWNSHIP OF SPRINGWATER

36m R.O.W. RURAL ROAD WITH SERVICE LOCATIONS & ACTIVE TRANSPORTATION LANES

DESIGN:	C.J.M.	DATE: JAN. 2017	DWG. No.
DRAWN:	R.A.W.	SCALE: 1:100	A
CHECKED:	S.L.F.		



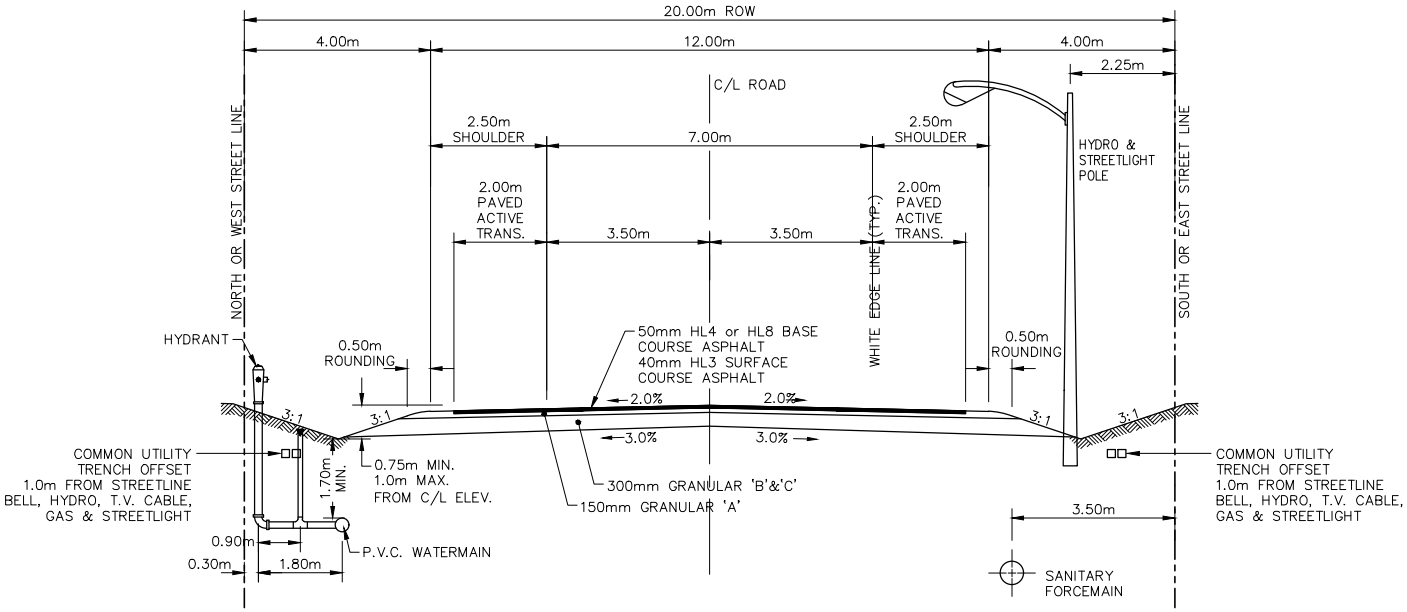
Forbes Road – from Russell Road to Old Second Road North

		REVISIONS

TOWNSHIP OF SPRINGWATER

36m R.O.W. RURAL ROAD WITH 3.5m LANES & ACTIVE TRANSPORTATION LANES

DESIGN:	C.J.M.	DATE: JAN. 2017	DWG. No.
DRAWN:	R.A.W.	SCALE: 1:100	B
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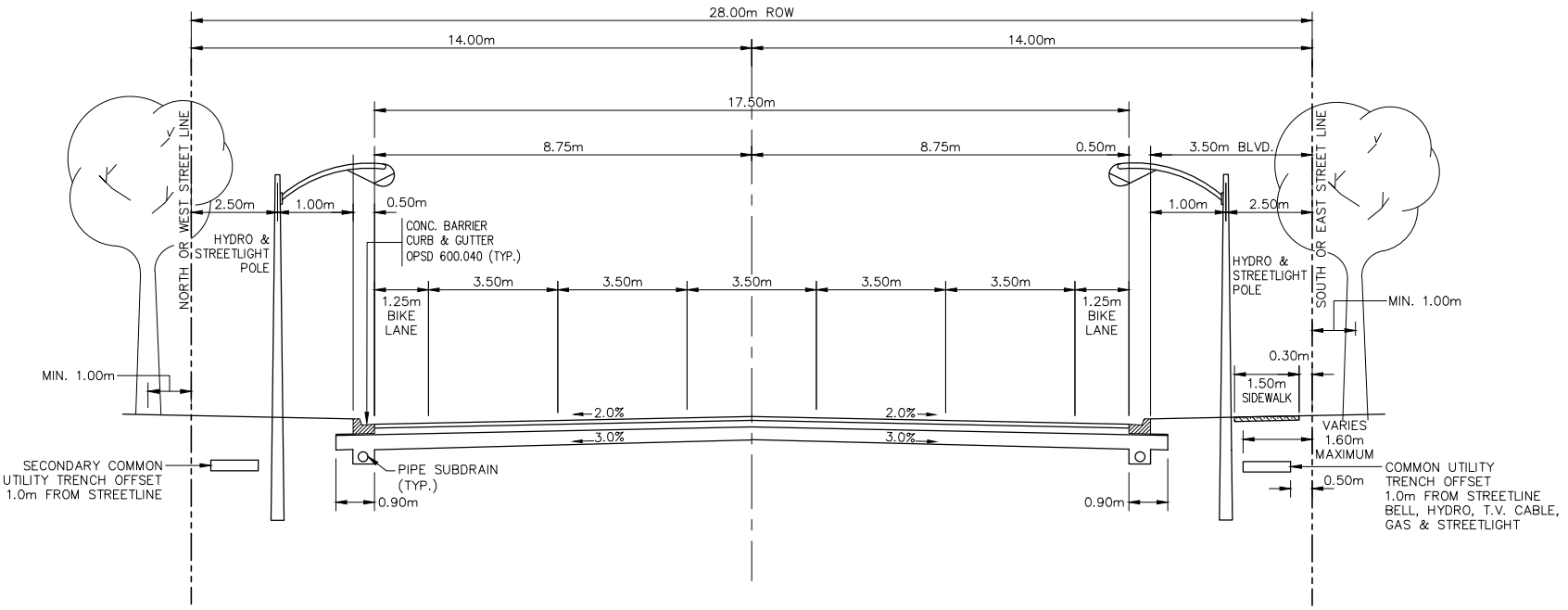
Carson Road – from Wilson Drive to Black Creek
St. Vincent Street – from Willow Creek to City of Barrie Limit
Anne Street – South Limit of Draft Plan to City of Barrie Limit
Old Second Road – Walt Road to Pooles Road (with 23.00m ROW)

		REVISIONS

TOWNSHIP OF SPRINGWATER

20m R.O.W. RURAL ROAD WITH 3.5m LANES & ACTIVE TRANSPORTATION LANES

DESIGN:	C.J.M.	DATE: JAN. 2017	DWG. No.
DRAWN:	R.A.W.	SCALE: 1:100	C
CHECKED:	S.L.F.		



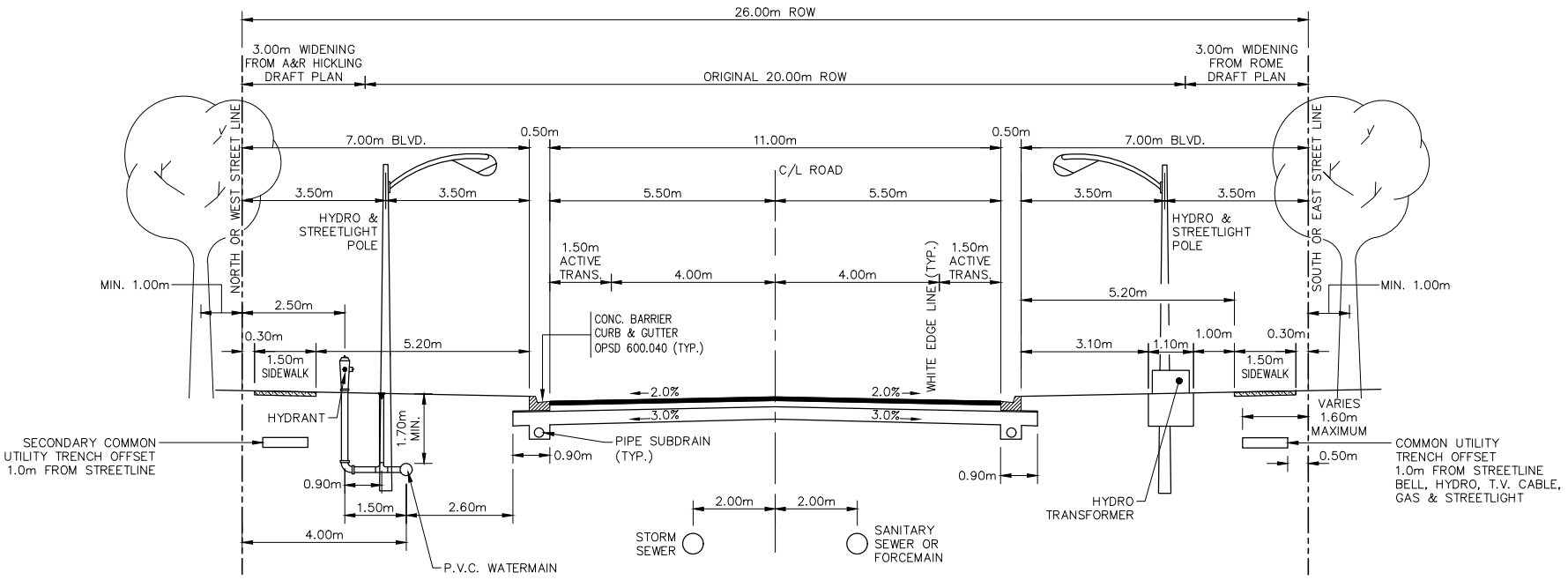
Carson Road – from Wendat Trail to Highway 26

		REVISIONS

TOWNSHIP OF SPRINGWATER

28m R.O.W. WITH 5 LANES & SIDEWALK SOUTH SIDE ONLY

DESIGN:	C.J.M.	DATE:	JAN. 2017	DWG. No.	D
DRAWN:	R.A.W.	SCALE:	1:100		
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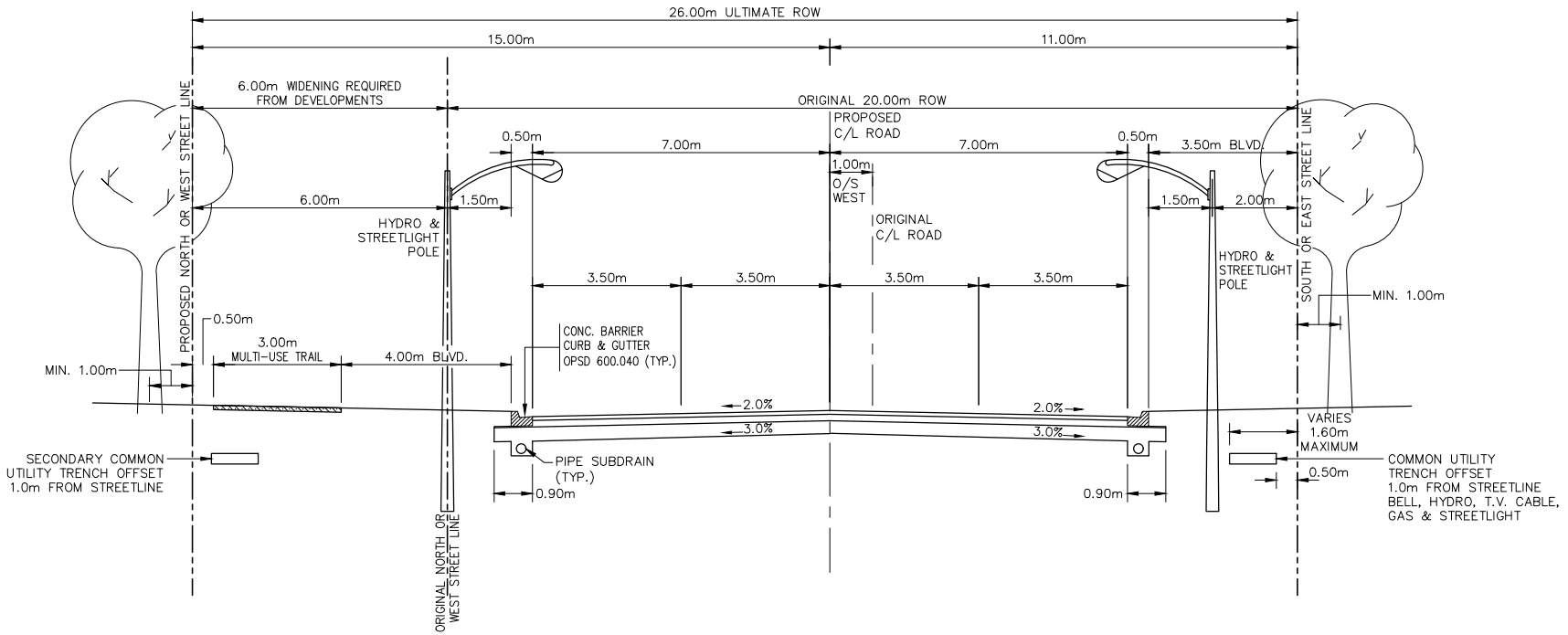
Anne Street – from Carson Road to south end of draft plans
Carlson Road – From East of Anne St. to East of Wendat Trail
(Sidewalk on South side only)
Russell Road – From Pooles Road to Walt Road
(Sidewalk on West side only)

		REVISIONS

TOWNSHIP OF SPRINGWATER

26m R.O.W. WITH ACTIVE TRANSPORTATION LANES & SIDEWALK BOTH SIDES

DESIGN:	C.J.M.	DATE: JAN. 2017	DWG. No.
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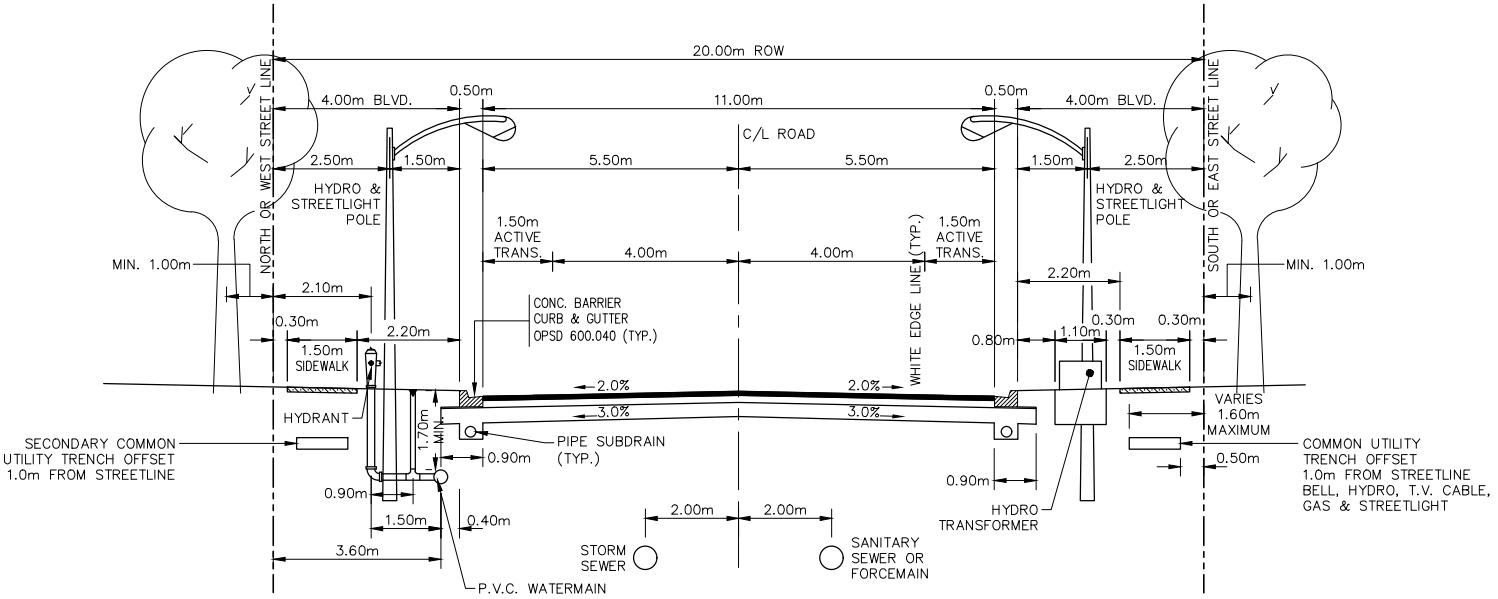
Russell Road – from Walt Road to Forbes Road

		REVISIONS

TOWNSHIP OF SPRINGWATER

26m R.O.W. WITH 4 LANES & 3.0m MULTI-USE TRAIL

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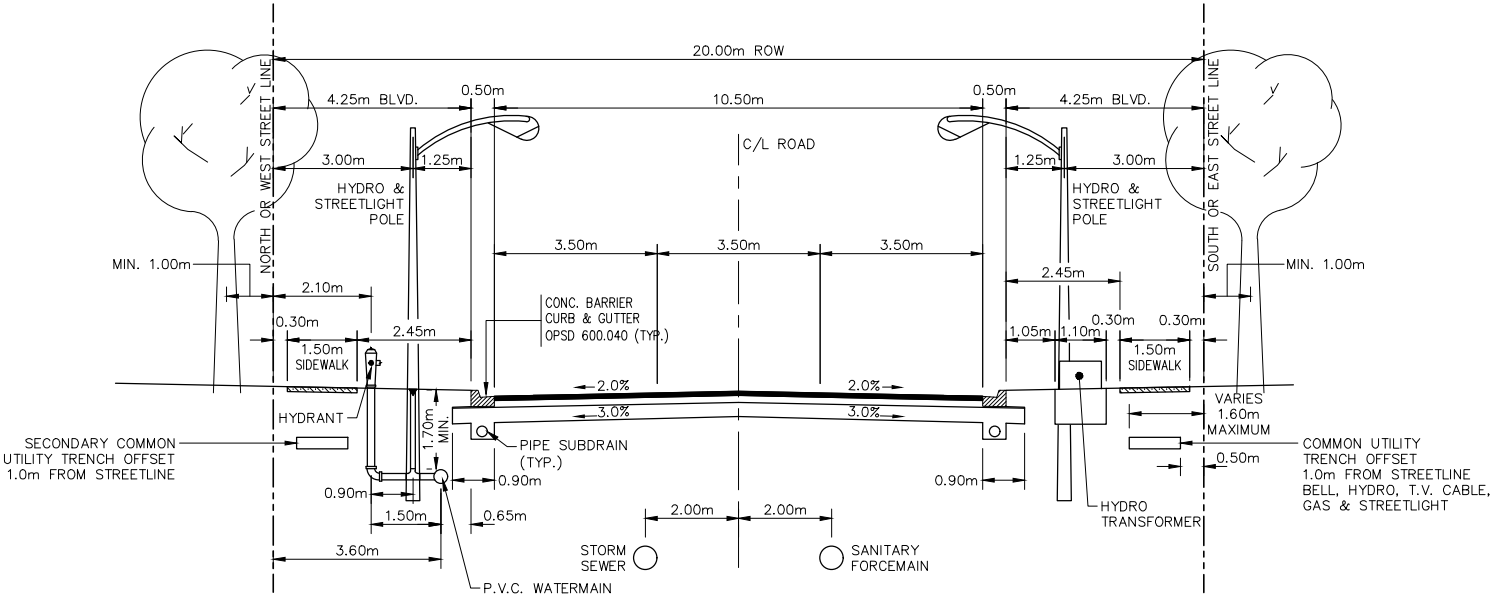
Doran Road – from Finlay Mill Road to west end of Geranium plan
Finlay Mill Road – from Wattie Road to Doran Road
Gill Road – from Doran Road to north end of Alliance plan
Pooles Road – from St. Vincent Street to Silverwood Crescent
St. Vincent Street – from Doran Road to Willow Creek bridge

		REVISIONS

TOWNSHIP OF SPRINGWATER

20m R.O.W. WITH ACTIVE TRANSPORTATION LANES & SIDEWALK BOTH SIDES

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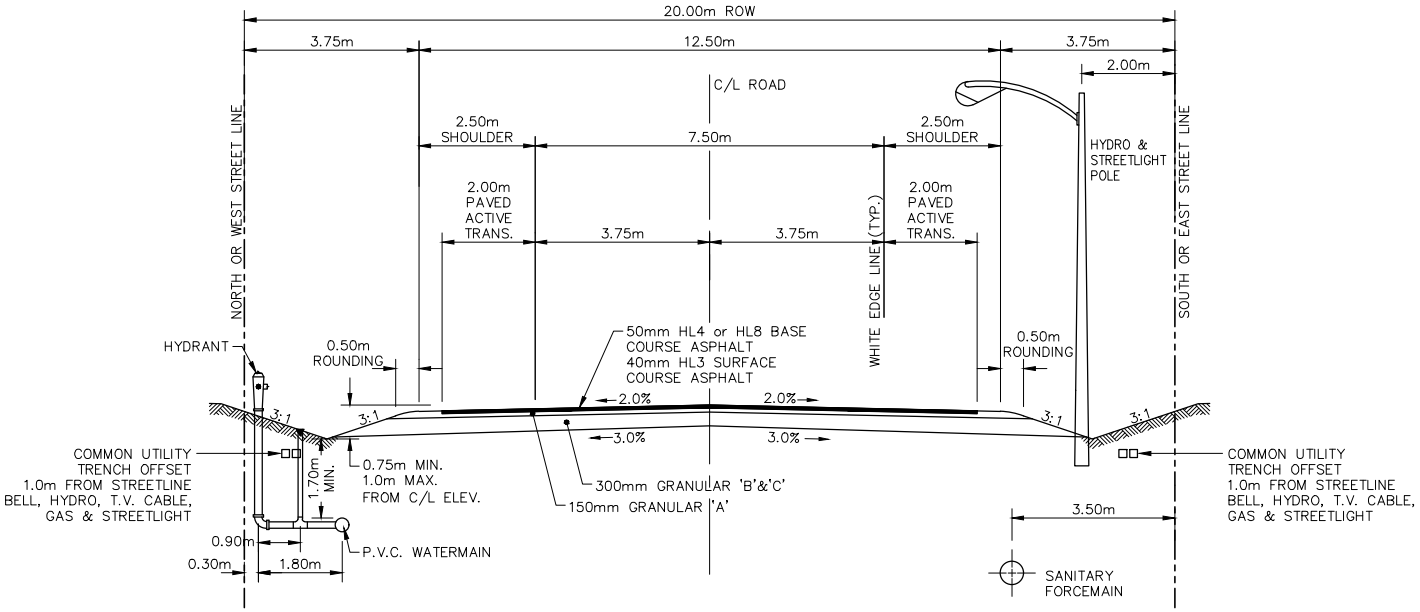
Finlay Mill Road – from Wattie Road to Hwy 26

		REVISIONS

TOWNSHIP OF SPRINGWATER

20m R.O.W. WITH 3 LANES & SIDEWALK BOTH SIDES

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CHECKED:	S.L.F.				



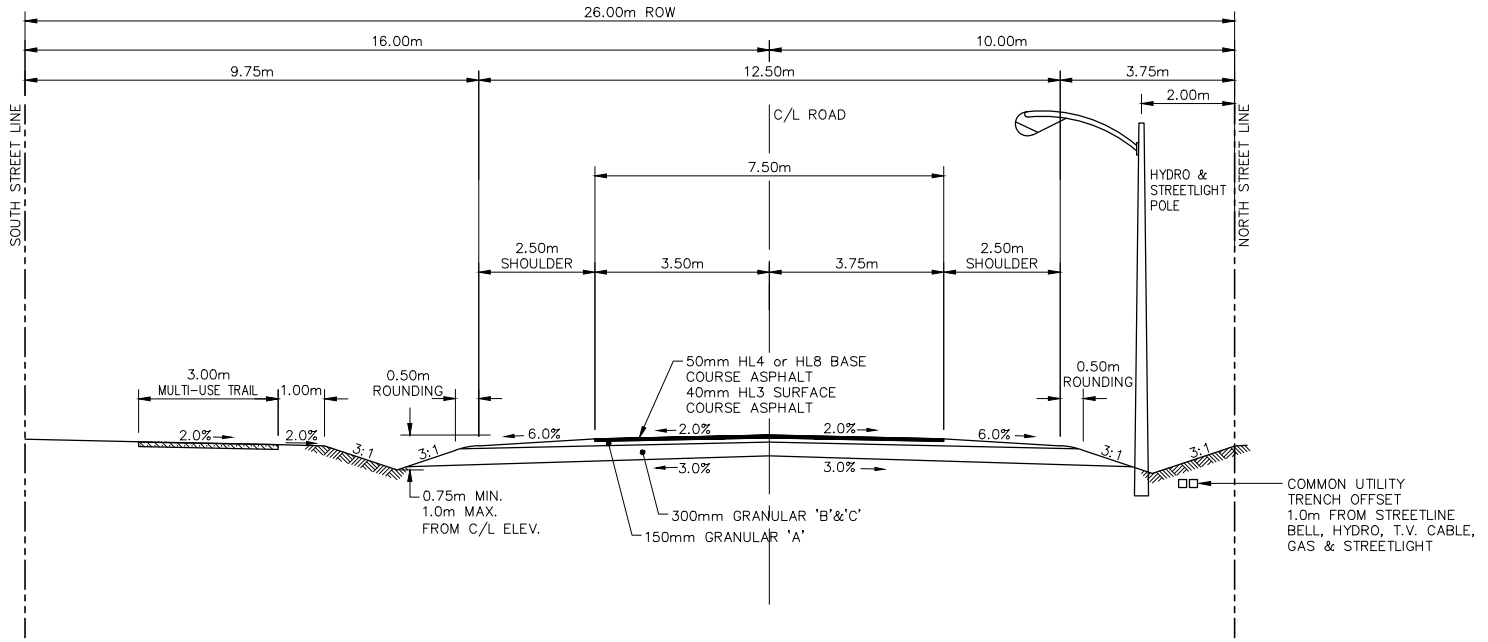
Snow Valley Road

		REVISIONS

TOWNSHIP OF SPRINGWATER

20m R.O.W. RURAL ROAD WITH SERVICE LOCATIONS & ACTIVE TRANSPORTATION LANES

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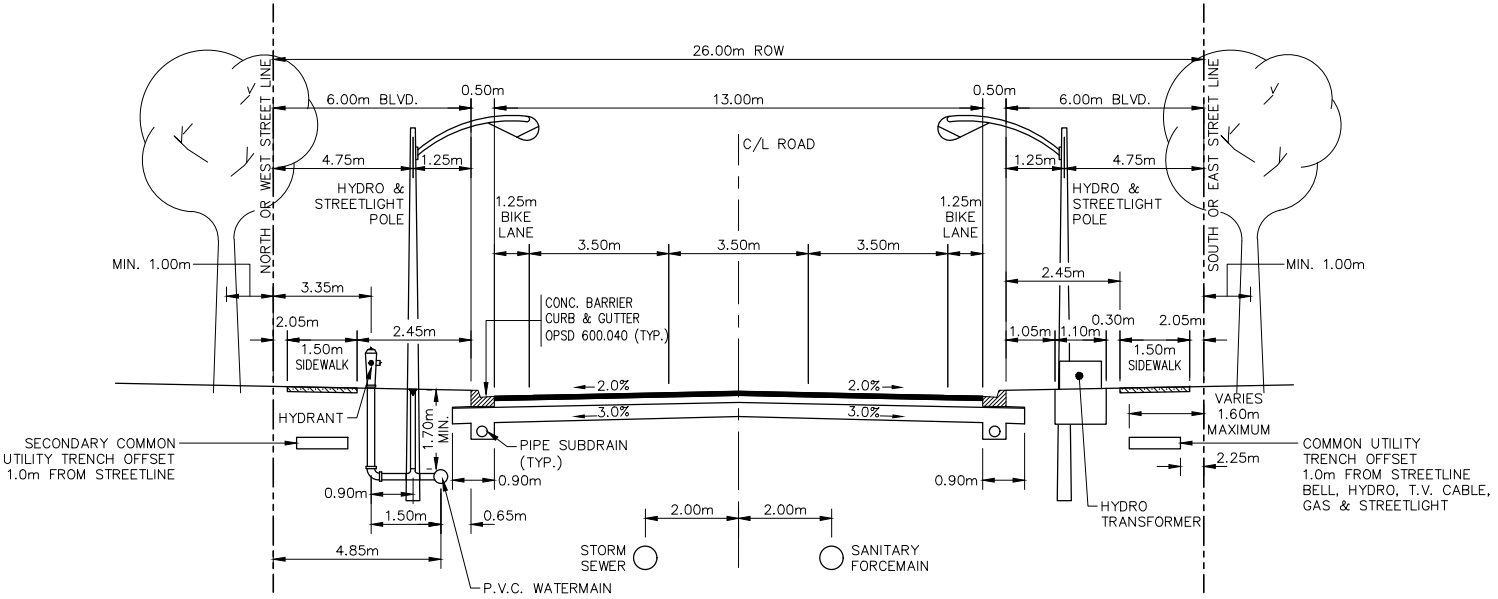
Craig Road – from County Road 27 to Russell Road

		REVISIONS

TOWNSHIP OF SPRINGWATER

26m R.O.W. RURAL ROAD WITH SERVICE LOCATIONS & 3m MULTI-USE TRAIL

DESIGN:	C.J.M.	DATE: JAN. 2017	DWG. No. J
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CHECKED:	S.L.F.		



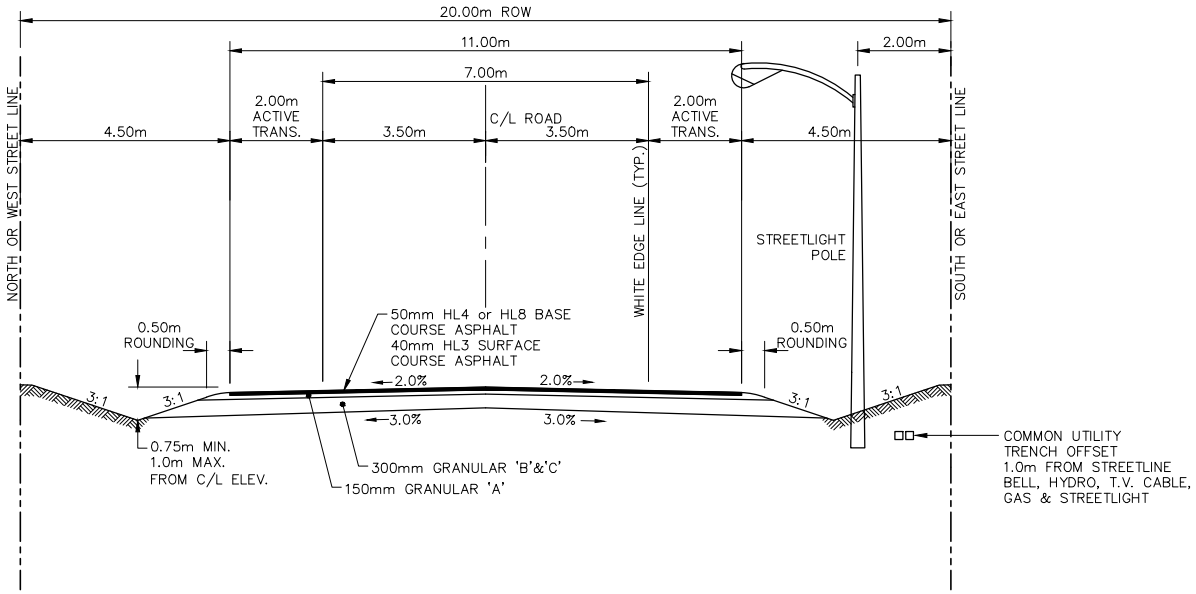
Carson Road – from Black Creek to Anne Street

		REVISIONS

TOWNSHIP OF SPRINGWATER

26m R.O.W. WITH 3 LANES & SIDEWALK BOTH SIDES

DESIGN:	C.J.M.	DATE:	JAN. 2017	DWG. No.	K
DRAWN:	R.A.W.	SCALE:	1:100		
CHECKED:	S.L.F.				



Anne Street – from Barrie to south limit of Geranium draft plan
Gill Road – from north limit of Alliance draft plan to Craig Road
Russell Road – Interim condition from Pooles Road to Forbes road
St. Vincent Street – from Barrie to Willow Creek bridge
Pooles Road – Old Second Road to Russell Road

		REVISIONS

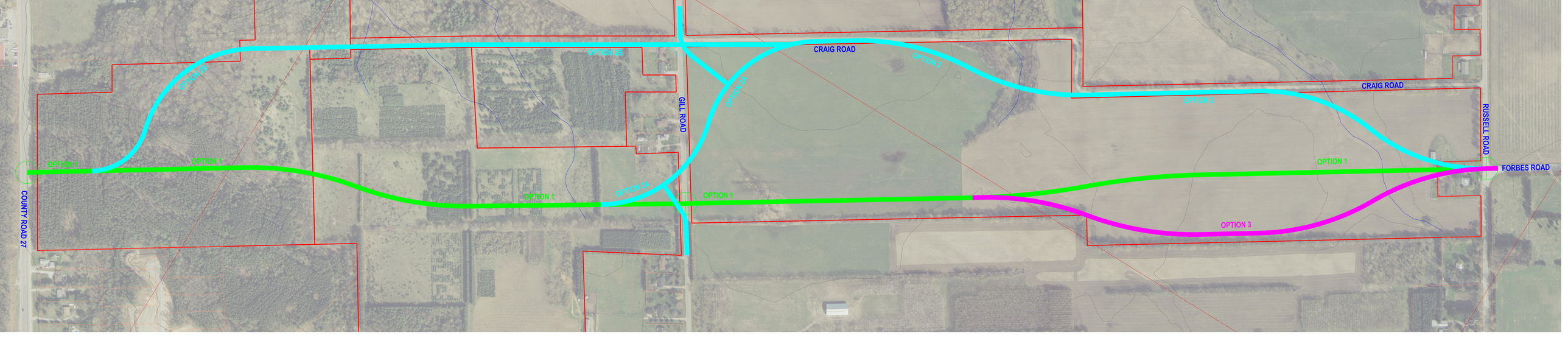
TOWNSHIP OF SPRINGWATER

20m R.O.W. RURAL ROAD WITH SERVICE LOCATIONS & ACTIVE TRANSPORTATION LANES

DESIGN:	C.J.M.	DATE: JAN. 2017	DWG. No.
DRAWN:	R.A.W.	SCALE: 1:100	L
CHECKED:	S.L.F.		

APPENDIX 'T7'

Craig Road Alternatives


CRAIG ROAD
CRAIG ROAD
GILL ROAD
RUSSELL ROAD
COUNTY ROAD 27
FORBES ROAD
OPTION 1
OPTION 1
OPTION 1
OPTION 1
OPTION 1
OPTION 2
OPTION 2
OPTION 2
OPTION 2
OPTION 3
OPTION 3

EXISTING
FORESTED
AREA

Future Craig Road

Dwyer Road

50+900
50+800
50+700
50+600
50+500
51+000
51+087
100.00m STORAGE
160.00m TAPER
30.00m STORAGE
160.00m TAPER

County Road 27

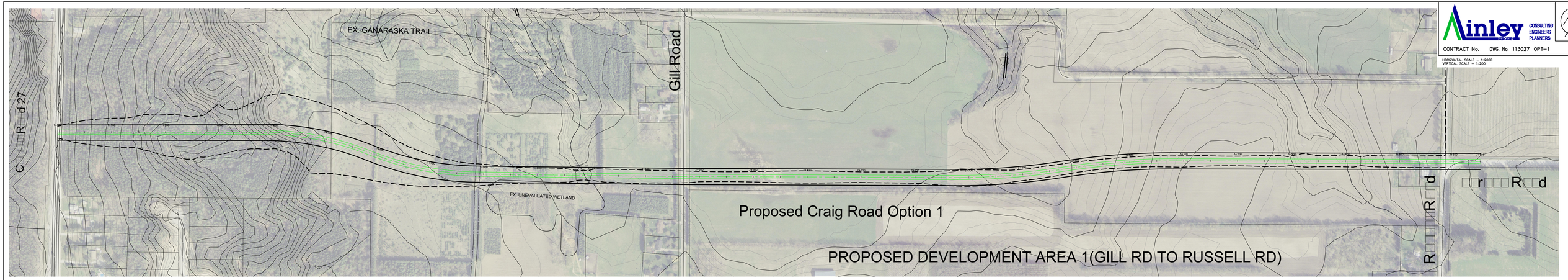
Train Tracks

EXISTING
FORESTED
AREA

Future Craig Road

50+800
50+700
50+600
50+400
50+300
50+200
51+000
50+900
160.00m TAPER
100.00m STORAGE
30.00m PARALLEL
160.00m TAPER

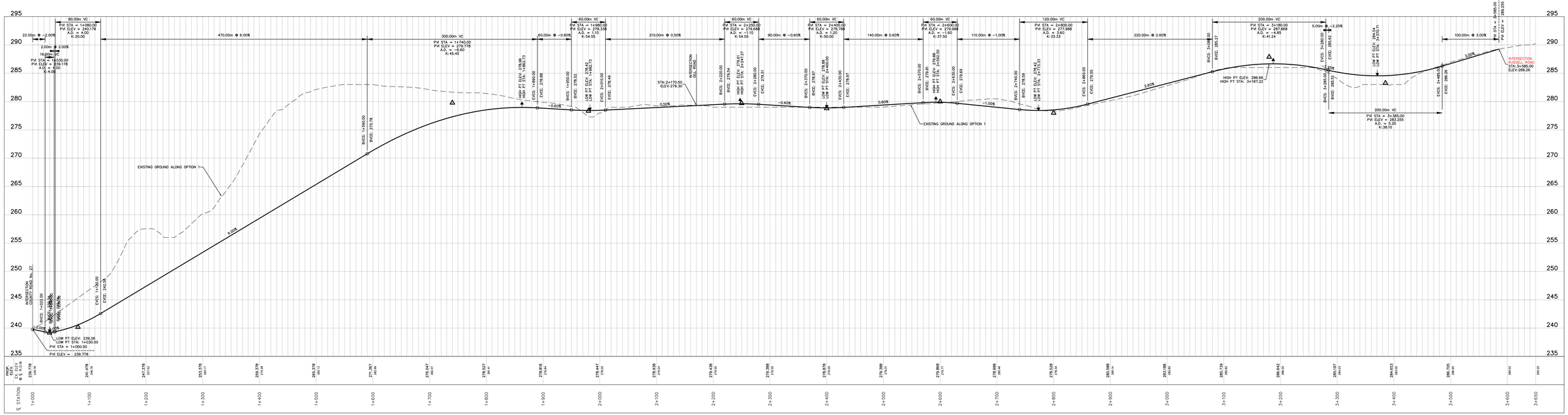
County Road 27

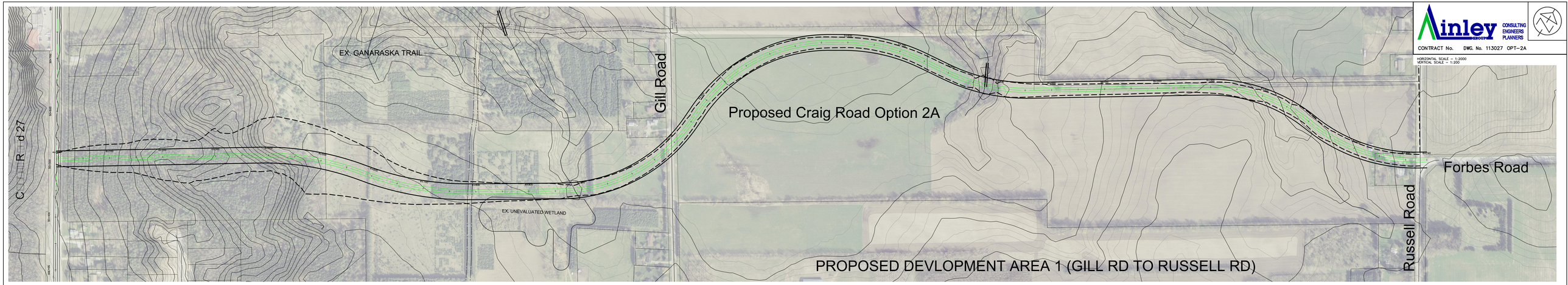


Ainley GROUP CONSULTING ENGINEERS PLANNERS

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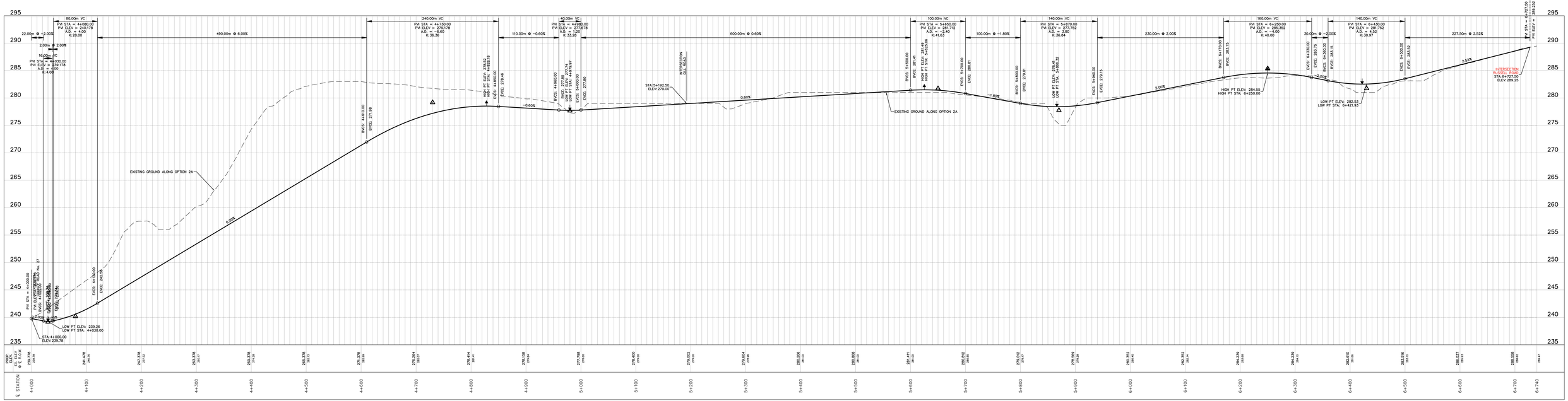


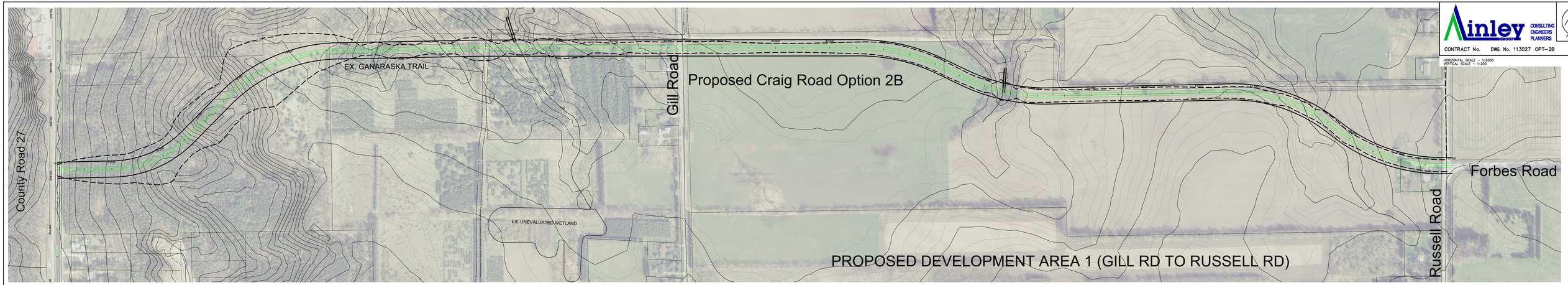


Mainley CONSULTING ENGINEERS PLANNERS

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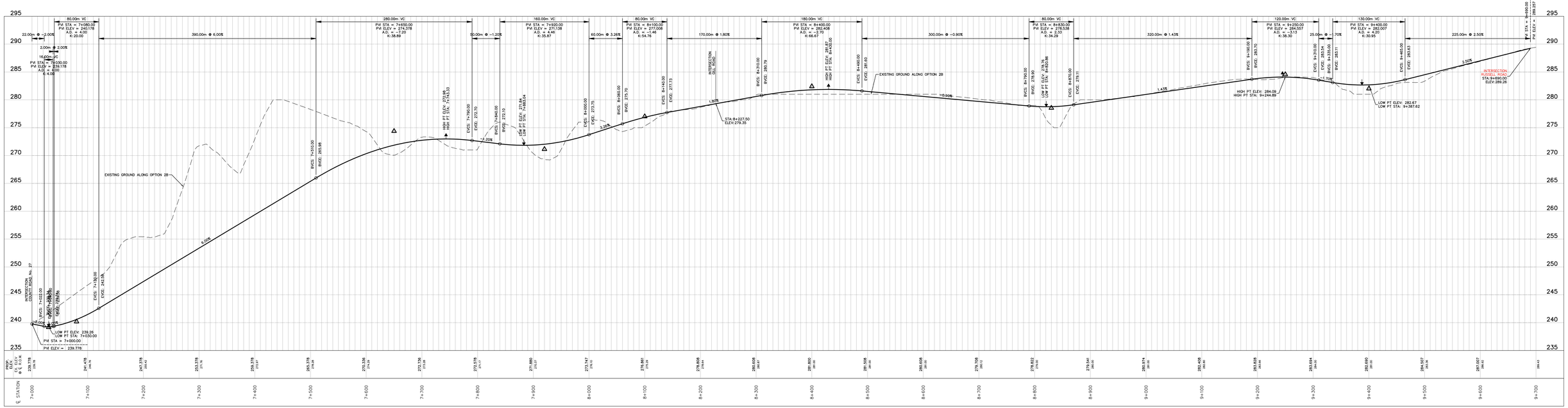


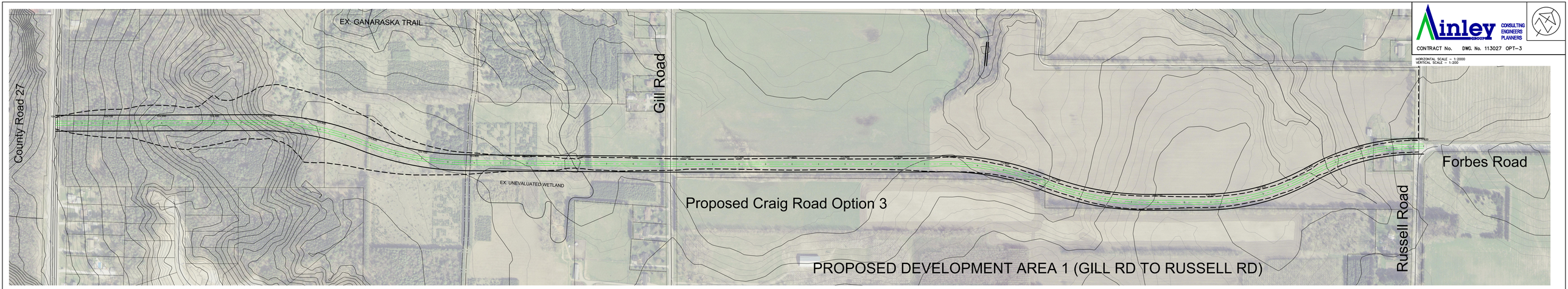


Ainley CONSULTING ENGINEERS PLANNERS

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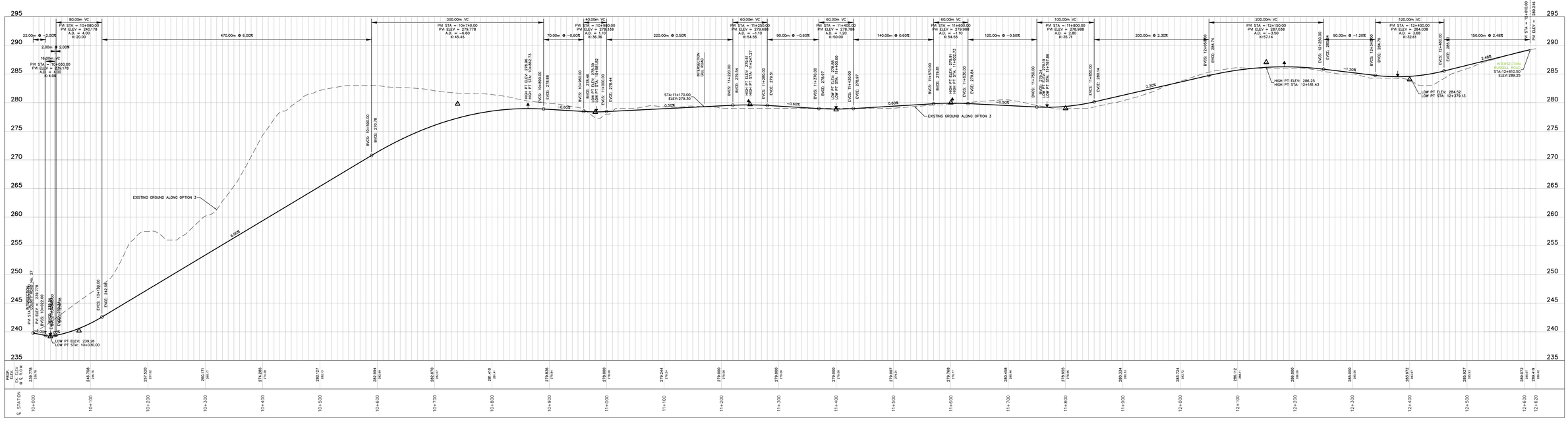




Ainley Group — CONSULTING ENGINEERS PLANNERS

CONTRACT No. DWG. No. 113027 OPT-3

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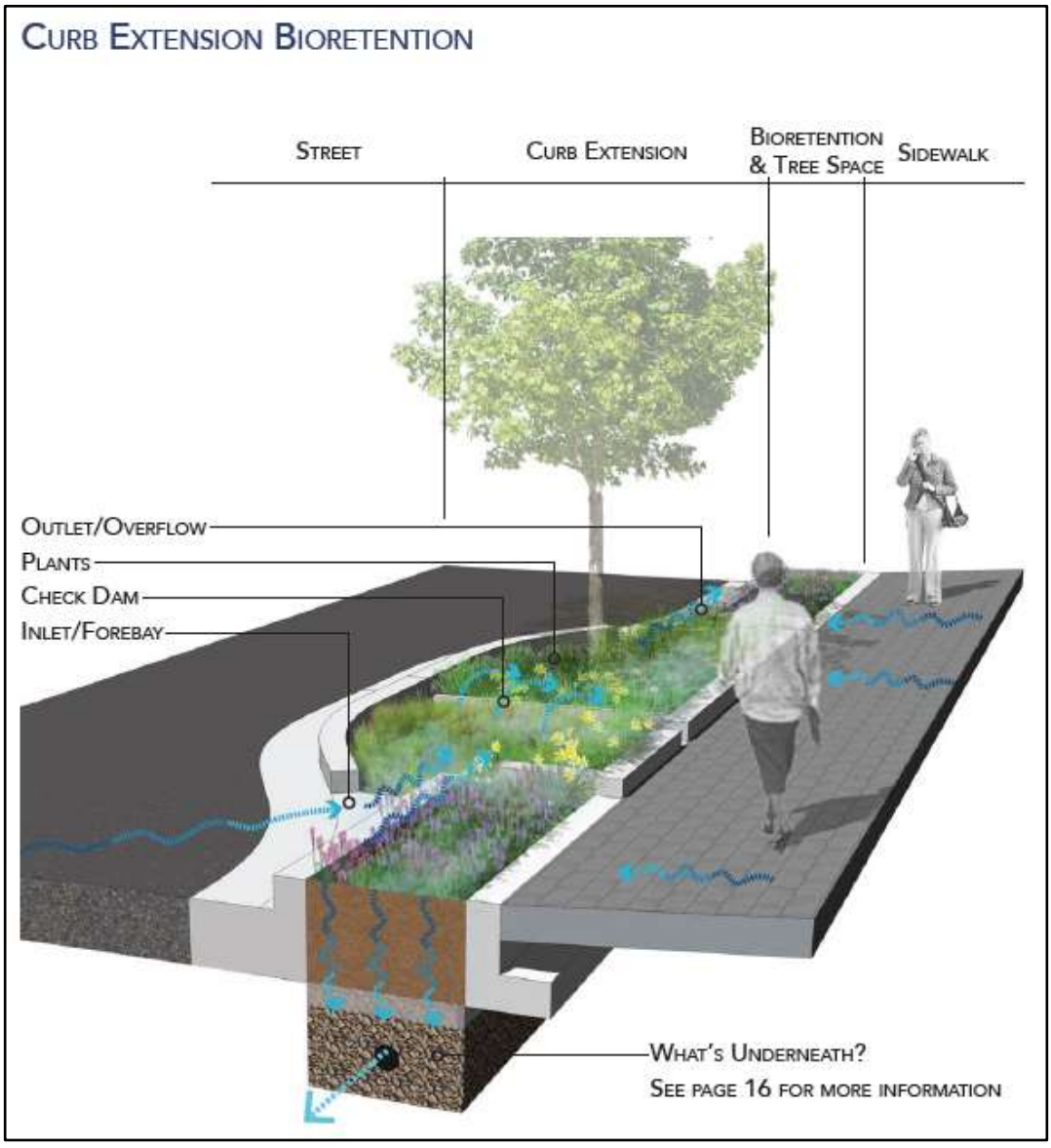
APPENDIX 'T8'

Transportation Mitigation Measures

I.D. #	Issue/Concern Potential Effects	Mitigation/Protection/Monitoring
	Roadway Improvements	
1.	**Vegetation/Vegetation Communities** • The vegetation assessment confirmed that there is no vegetation within the limits of the project or in proximity which would be characterized as unique or rare. • While there will be some loss of vegetation as a result of construction, the impacts are not expected to be significant.	• Tree Protection Barriers should be utilized, as necessary, to prevent accidental intrusion into areas not marked for construction and to protect existing trees. • All areas disturbed during construction should be restored as soon as possible following the completion of earthworks. It will be up to the contractor to complete the task in accordance with approved guidelines through re-vegetation of all excavated and erodible soils using a layer of topsoil and type of soil guard (i.e. geotextile) to minimize the potential for erosion and sediment to enter adjacent waterbodies.
2.	**Wildlife/Wildlife Habitat** • Work proposed will generally not result in a negative impact to area wildlife provided the mitigation measures as identified are implemented during construction.	• The Contractor shall avoid destroying nests of migratory birds. • To avoid impacts to migratory birds (including potential SAR breeding birds), clearing and grubbing of vegetation (if necessary) during the culvert replacements shall be avoided between April 15 and August 31st. If works are required within this timing window, then the area shall be cleared of nests by a qualified avian biologist prior to the activity being undertaken.
3.	**Surface Water** The culvert work associated with road improvement projects will result in an overall improvement to existing drainage; however, there is the potential for negative impact during construction as noted below: • Construction may result in the release of sediment into watercourses. • Accidental spillage from machinery (fuel, lubricants etc.) may occur.	• <u>Surface Water Diversions:</u> Should the contractor opt for an active in-stream diversion of water using a pumped system, the contractor will be required to make certain that the conditions identified in Section 4.2 (3) of O. Reg. 387/04 of the OWRA are met in order for the works to be exempt from the Act. • <u>Consumptive Use:</u> It is understood that water taking for consumptive use will not exceed 50, 000 L/day and therefore an EASR registration is not required (see S. 2 (3) of Ont. Reg. 63/16 of the EPA)). Should it be determined that consumptive use amounts will exceed 50,000 L/day then the Contractor will be required to complete an EASR registration. The following Ontario Provincial Standard Specifications (OPSS), Special Provisions and Operational Constraint will apply to this project: • Temporary Flow Passage System (Item No. 16) • OPSS 518 – Control of Water from Dewatering Operations • OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures

I.D. #	Issue/Concern Potential Effects	Mitigation/Protection/Monitoring
		• OPSS 804 – Construction Specification for Seed and Cover • OPSS 180 – General Specification for the Management of Excess Materials • OPSS 100 General Conditions of Contract, Section GC 7.13.02 Environmental Incident Management.
4.	**Groundwater** • It is not expected that the construction activities associated with this project will significantly impact groundwater.	The following Ontario Provincial Standard Specifications (OPSS), Special Provisions and Operational Constraint will apply to this project: • OPSS 518 – Control of Water from Dewatering Operations • OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures • OPSS 804 – Construction Specification for Seed and Cover • OPSS 180 – General Specification for the Management of Excess Materials • OPSS 100 General Conditions of Contract, Section GC 7.13.02 Environmental Incident Management.
5.	**Air Quality** • Construction activities have the potential to generate dust and fumes which can negatively impact air quality. • All impacts will be temporary and limited to the period of construction.	The Contractor to utilize best management practices during construction to maintain air quality as follows: • No unnecessary idling of vehicles. • Covering stockpiles of soil, sand and aggregate. • Regular cleaning of construction sites and access roads to remove debris and dust caused by construction. • Application of dust suppressants to control dust generated by constriction activities (as required).
6.	**Noise** • Noise impacts are not expected to be significant provided that standard noise mitigation measures as identified are implemented during construction.	In accordance with *SP199F33*: • The contractor is restricted from working during the weekends and required to implement standard noise mitigation measures at this location. • Equipment shall be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffler systems, properly secured components, and the lubrication of moving parts. • Idling of equipment shall be restricted to the minimum necessary to perform the specified work.

I.D. #	Issue/Concern Potential Effects	Mitigation/Protection/Monitoring
7.	**Servicing/Utilities** .	• Several of the road improvement projects require repositioning of utilities. This will be coordinated with the various utility providers during detailed design and prior to construction. During construction the protection of utilities will be required.
8.	**Archaeology**	• The contractor will be required to follow the direction as outlined in OPSS 100 General Conditions of Contract, Section GC 3.07.05: o In the event that previously unknown or unassessed deeply buried archaeological resources are uncovered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing, according to subsection GC 7.11, Suspension of Work. The CA will contact the MOECC representative who will confirm the need to engage a licensed consultant archaeologist to carry out any archaeological fieldwork, in compliance with Section 48 (1) of the Ontario Heritage Act. o In the event that human remains are encountered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing, according to subsection GC 7.11, Suspension of Work. The CA will contact the MOECC representative who will notify the police, coroner and the Registrar of the Bereavement Authority of Ontario. •



Typical Cross Section of Permeable Paving

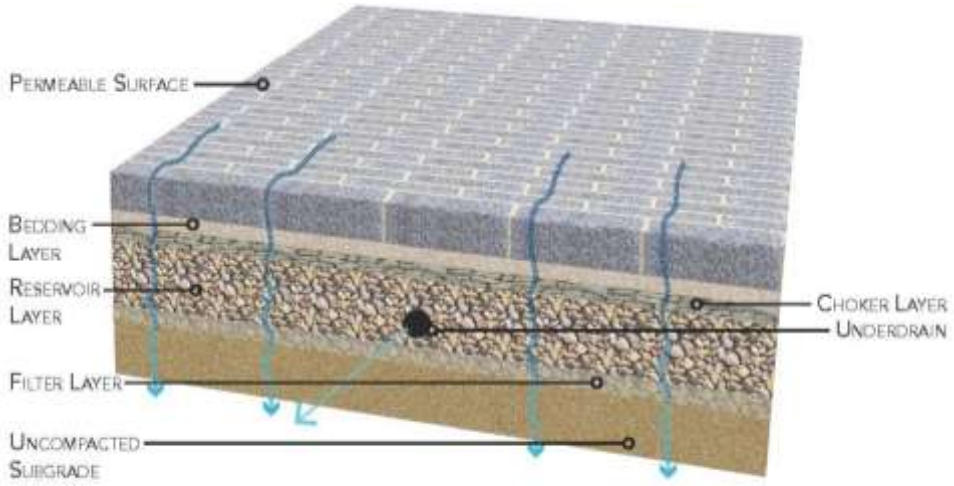


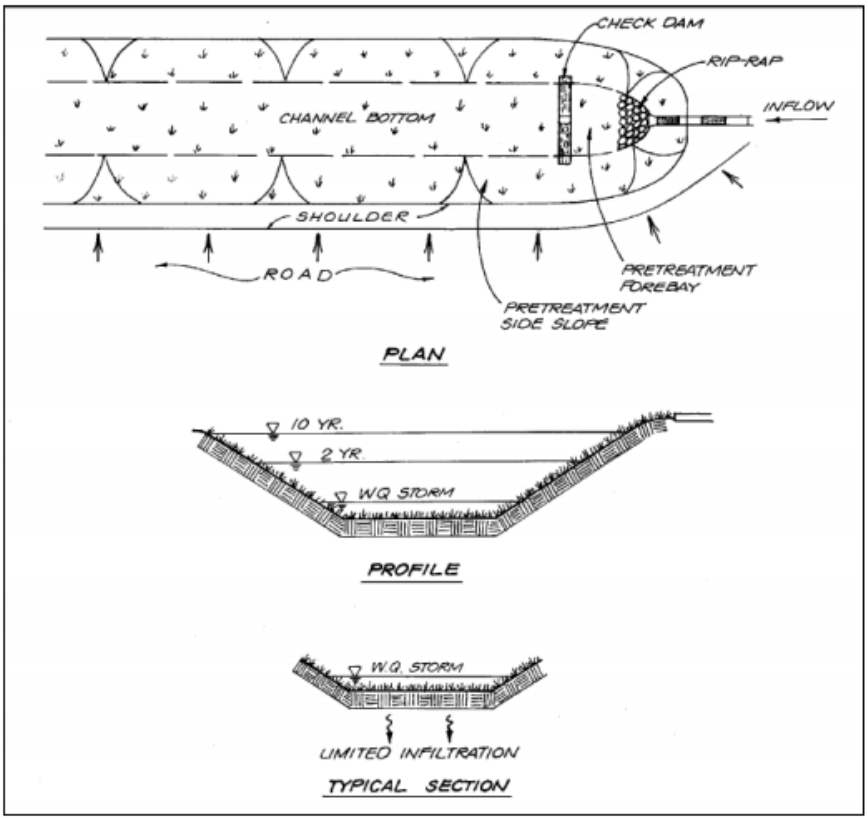
Figure 4.8.2 Enhanced grass swales feature check dams that temporarily pond runoff to increase pollutant retention and infiltration and decrease flow velocity



Source: Delaware Department of Transportation (left); Center for Watershed Protection (right)

Typical Details

Figure 4.8.3 Plan, profile, and section views of a grass swale



Source: ARC, 2001

3.4 ENHANCED GRASS SWALES

Enhanced grass swales are effective for pollutant removal, particularly when designed with a shallow and wide configuration. Enhanced grass swales also incorporate design features such as modified bottom and side geometry and check dams that improve the contaminant removal and runoff reduction. The function of this practice is to slow the water to allow sedimentation, filtration through the root zone and soil matrix, evapotranspiration, and infiltration into the underlying native soil.



Figure 28 – Manicured shallow grass swale combined with areas of herbaceous plantings and trees between the curb and sidewalk in Seattle, WA (Source: SVR Design Company)



Figure 29 – A no mow grass swale in Brisbane, CA (Source: CVC)

Reference: CVC, Appendix B, Landscape Design Guide for Low Impact Development, Version 1.0, June 2010.

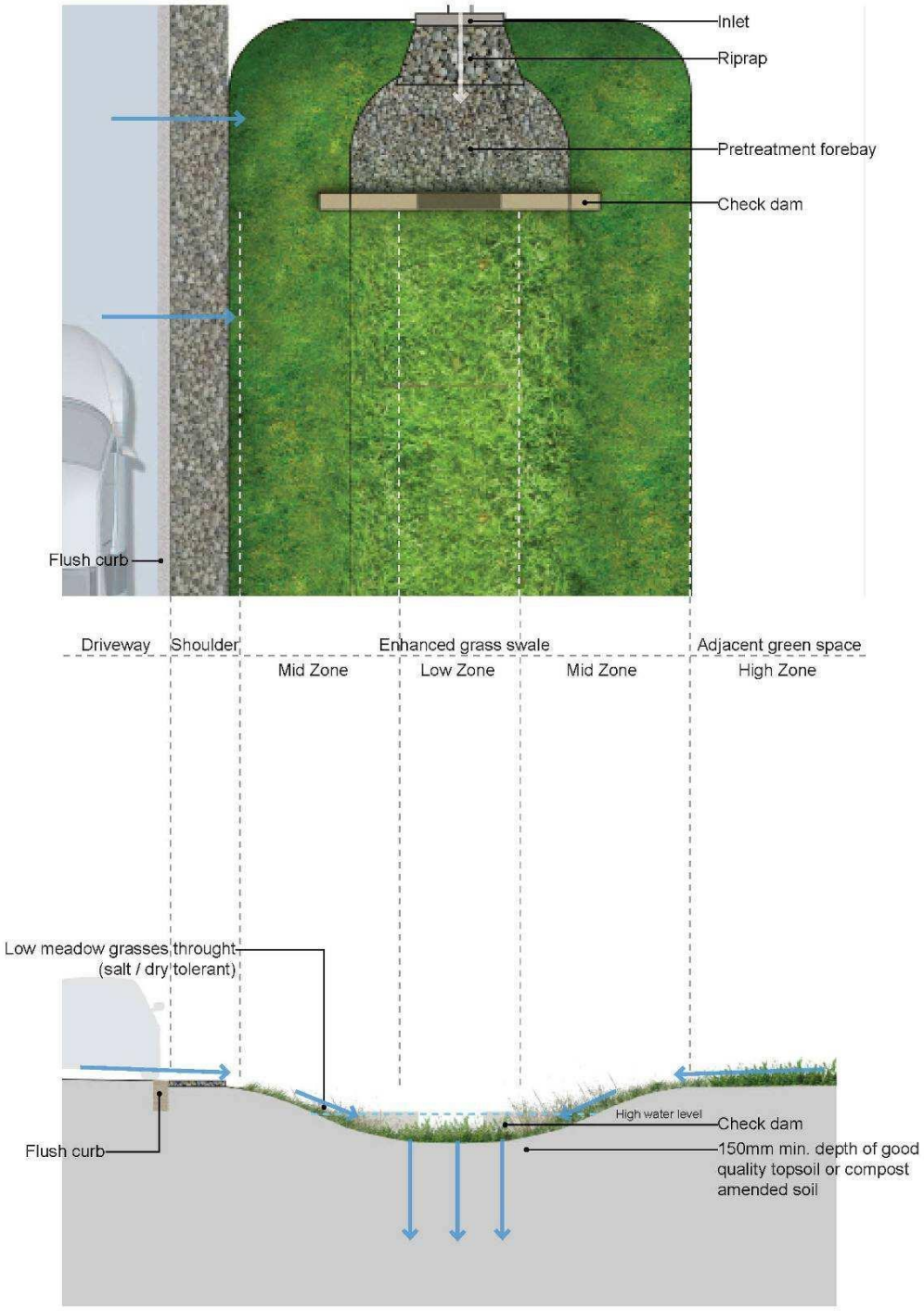
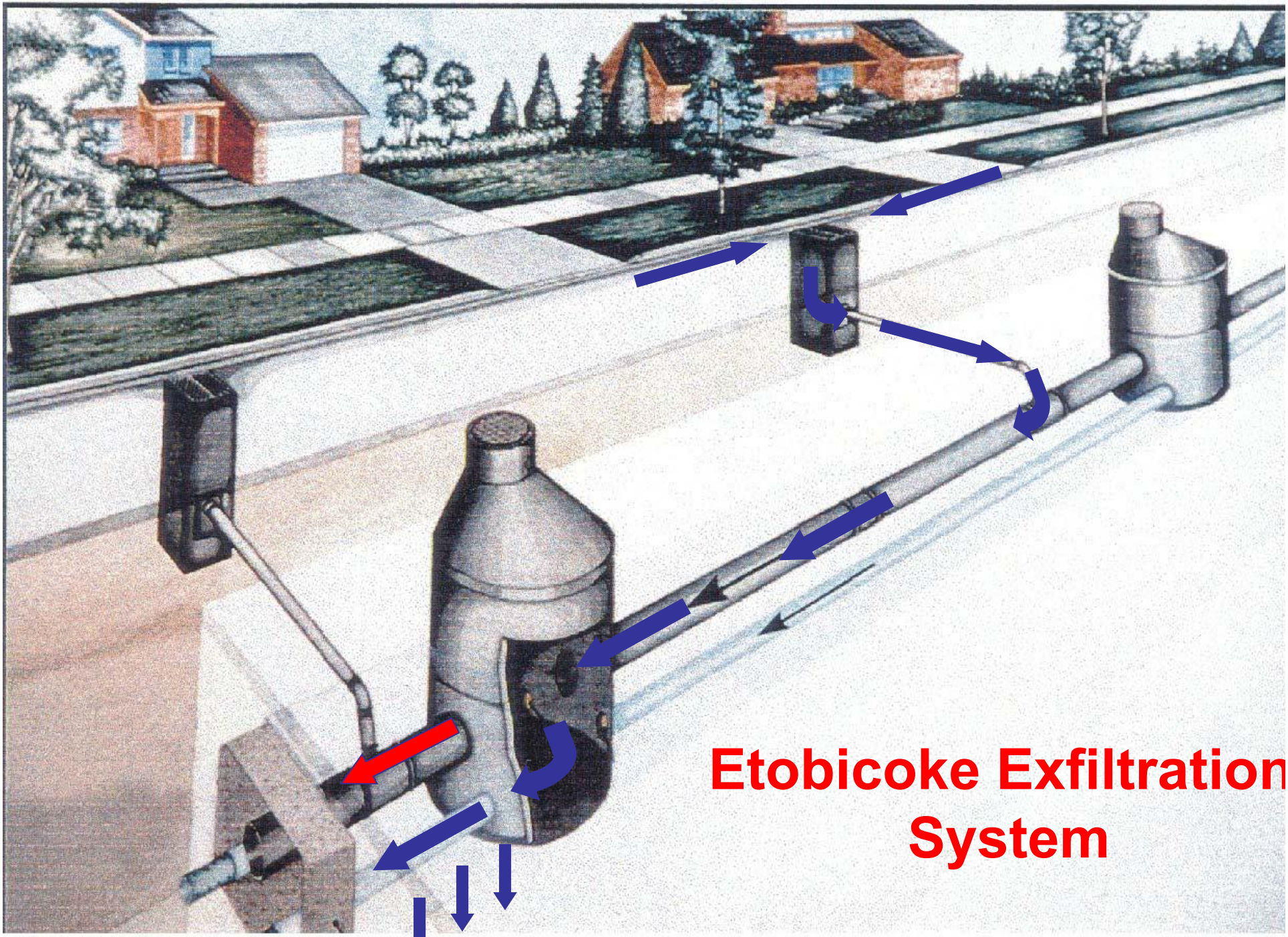
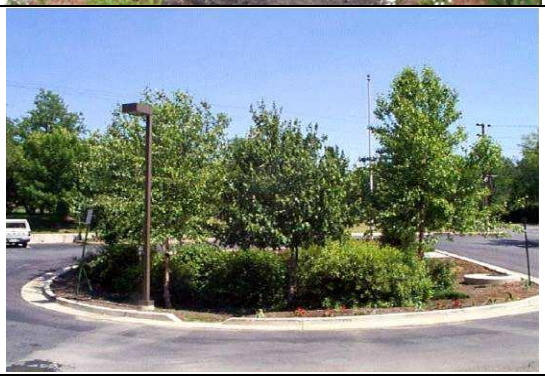


Figure 30 – An enhanced grass swale plan view and cross-section; sizing and layout guidance is provided in the LID Stormwater Management Planning and Design Guide.



Reference, TRCA, Etobicoke Exfiltration System: Monitoring and Evaluation, Ryerson University, July 24, 2015

Figure 4.5.2 Example applications of bioretention

Bioretention Cells	
Landscaped islands in parking lots: Parking islands can be used to both improve parking lot aesthetics and treat lot runoff. The parking lot grading is designed for sheet flow towards linear landscaping areas between rows of spaces. A curb-less edge or curb cuts are used to convey water into the depressed landscaped area. (Source: CWP)	
Parking lot edges: Small parking lots can be graded so that flows reach a curb-less edge or curb cut before reaching catchbasins or inlets. The turf at the edge of the parking lot is used as filter strip pretreatment and the depression for bioretention is located in the pervious area adjacent to the parking lot. (Source: CWP).	
Rights-of-way, traffic islands, and medians: Landscaped or unused space within the right-of-way can be turned into bioretention for treating road runoff. The road cross section can be designed to slope towards the center median or traffic islands rather than the outer edge. A linear configuration can be used to receive sheet flow from the roadway or a grass channel or pipe may convey flows to the bioretention. (Source: Seattle Public Utilities)	
Roundabouts, cul-de-sacs, and entrance loops: The road cross section is designed to slope towards the center island. A curb-less edge or curb cuts are used. (Source: CWP)	

Reference, CVC, Low Impact Development Stormwater Management Planning and Design Guide, Version 1.0.

Pervious areas between buildings and sidewalks: Landscaping around buildings and between buildings and sidewalks can be turned into multi-functional spaces with bioretention. Roof leaders, sidewalks and other impervious areas around the building can be directed to these practices. Densely vegetated practices can also provide some urban heat island cooling to the site. (Source: CWP)



Courtyards: Runoff collected in a storm drain system or roof leaders can be directed to bioretention in courtyards. (Source: City of Portland, BES)



Rain Garden

Rain gardens capture roof, lawn, and driveway runoff from lots in a shallow depression. These can be simple gardens constructed as a retrofit, or professionally designed and may have an underdrain. They are designed to capture runoff from small drainage areas, typically less than 1000 square metres.





Left – Single family home rain garden (Source: City of Maplewood, MN); Right – commercial development rain garden (Source: City of Burnsville, MN).

Stormwater Planters

Stormwater planters generally receive runoff from adjacent rooftop downspouts. They can also be used to establish a pervious area within the hardscape of a plaza, courtyard, pedestrian zone, or streetscape. While they treat a very small drainage area, a significant portion of rooftop and plaza runoff may be captured and treated this way.




Source: Left – City of Portland, BES; Right – CWP

Extended Tree Pits

These facilities are installed in the sidewalk area where tree pits are typically found. Instead of using only the small square pit area, a row of pits is utilized as an enlarged planting area. Stormwater from the roadway is diverted into the expanded tree pit using curb cuts or trench drains. If large mature canopy trees are desired, then additional soil volume should be provided in the tree pit.




Sources: Left - City of Portland, BES; Right - Tavella Design Group, Bridgeport, CT.

Stormwater Curb Extensions

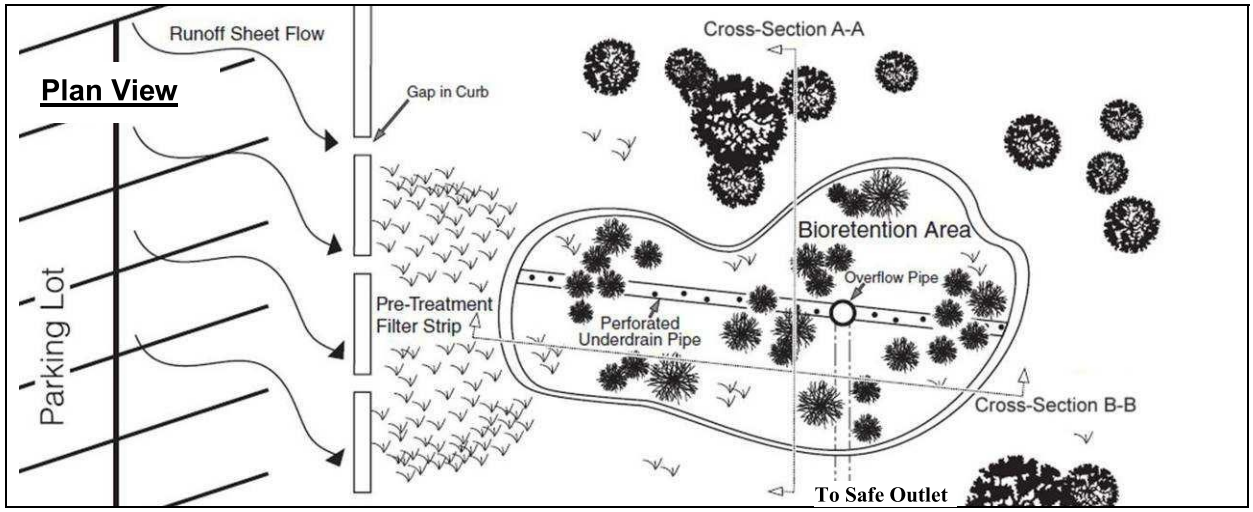
Similar to extended tree pits, these practices are also installed in the public right-of-way. However, curb extensions are typically traffic calming and street parking control device. In its adaptation to a stormwater BMP, the otherwise raised concrete is constructed as a depressed vegetation area and used for stormwater treatment. These practices work well as retrofits to residential neighborhoods.

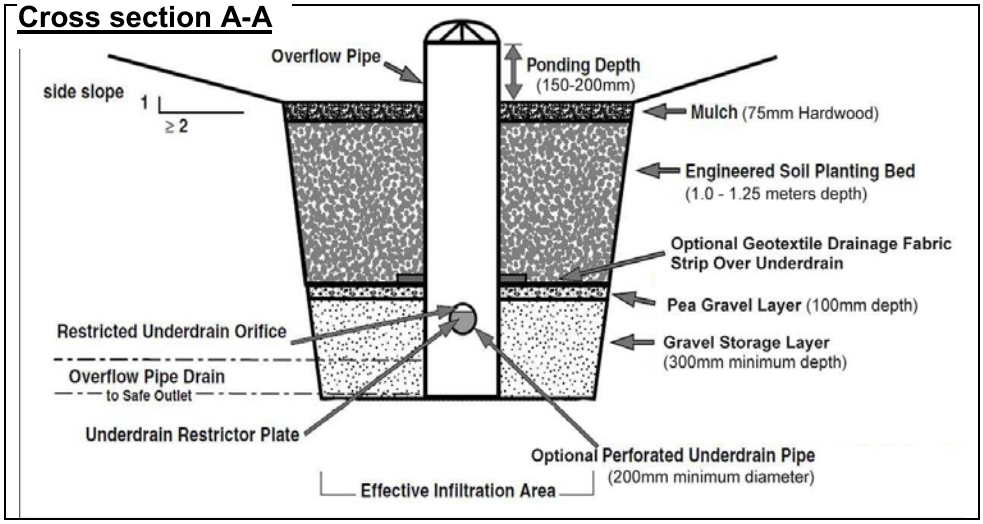


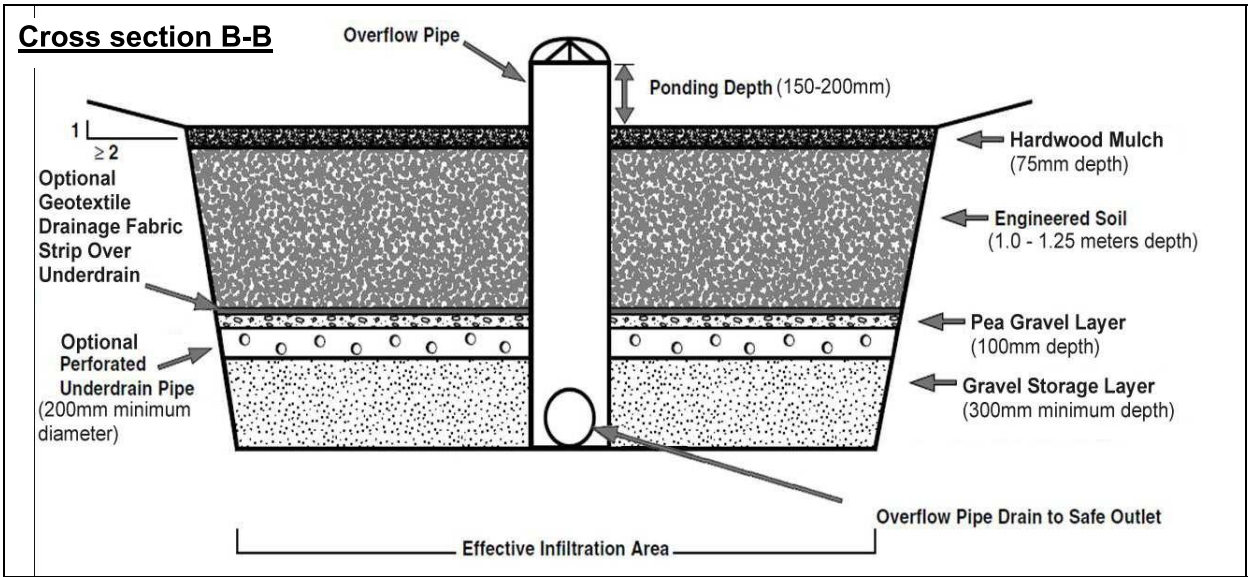
Source: Left – City of Portland, BES; Middle and Right – CWP

Typical Details

Figure 4.5.3 Plan view and cross sections of a typical bioretention cell

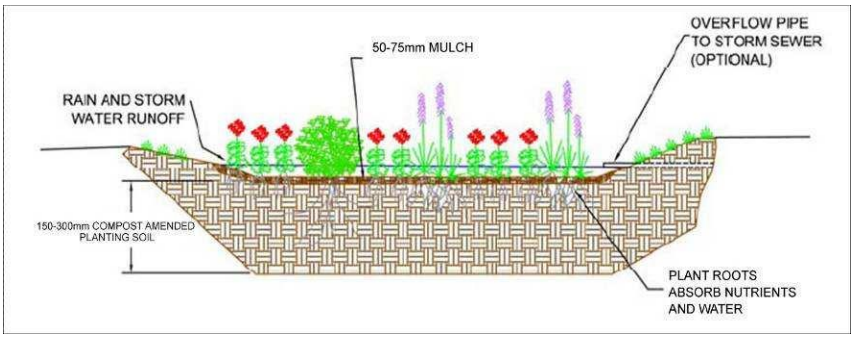






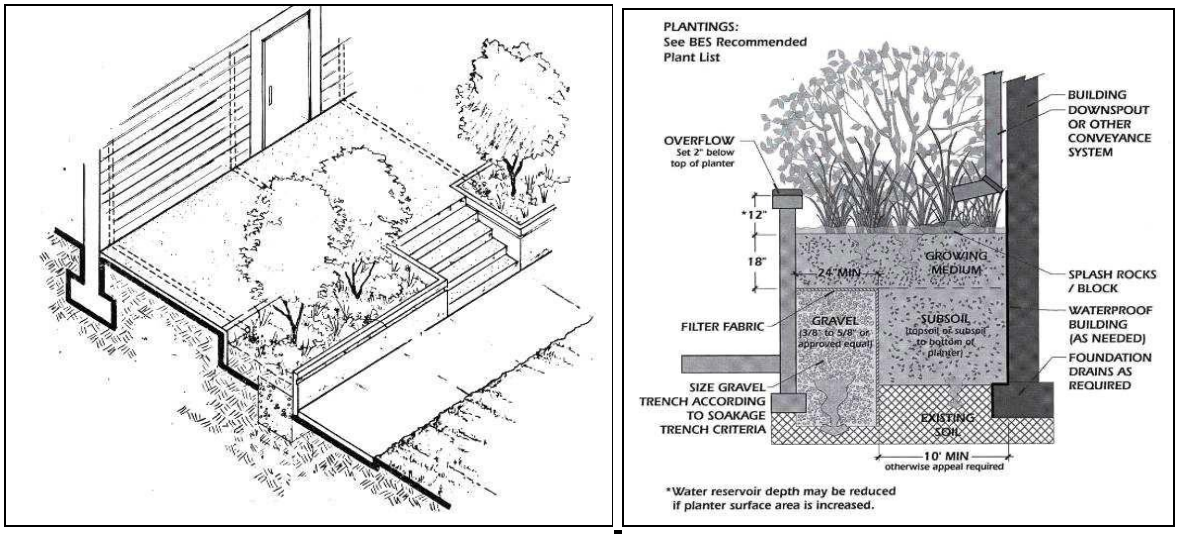
Source: adapted from Wisconsin Department of Natural Resources bioretention details

Figure 4.5.4 Rain garden cross section



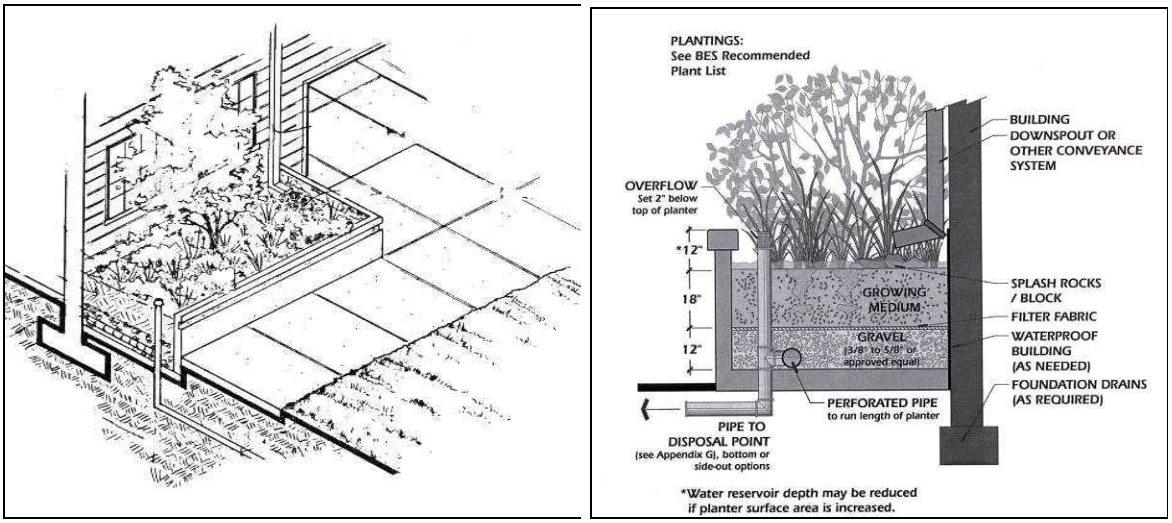
Source: MDE, 2000

Figure 4.5.5 Infiltrating stormwater planter box



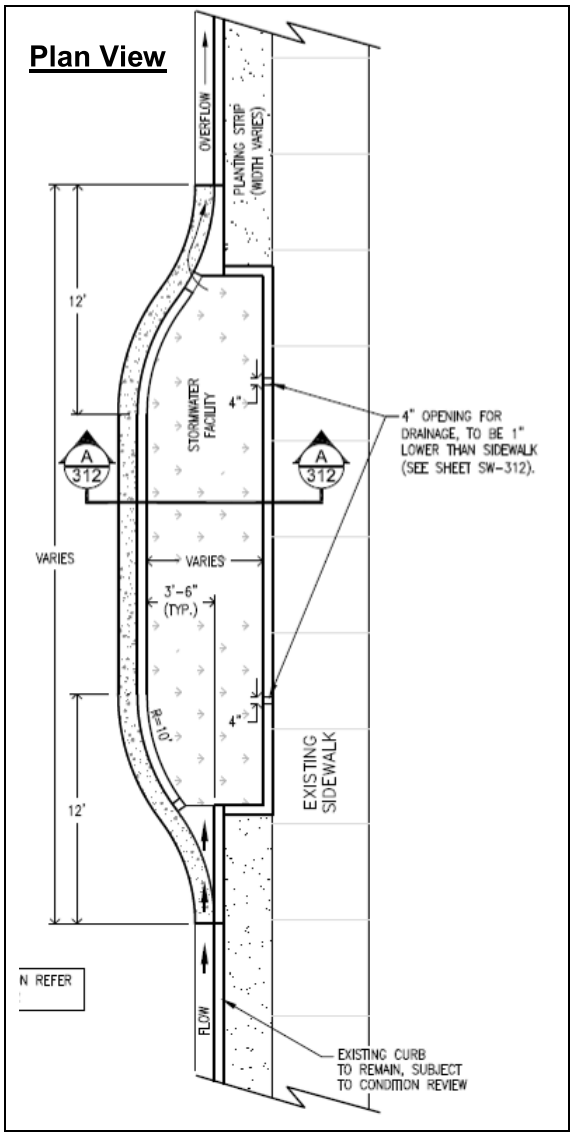
Source: City of Portland, 2004

Figure 4.5.6 Stormwater planter box biofilter (filtration only)



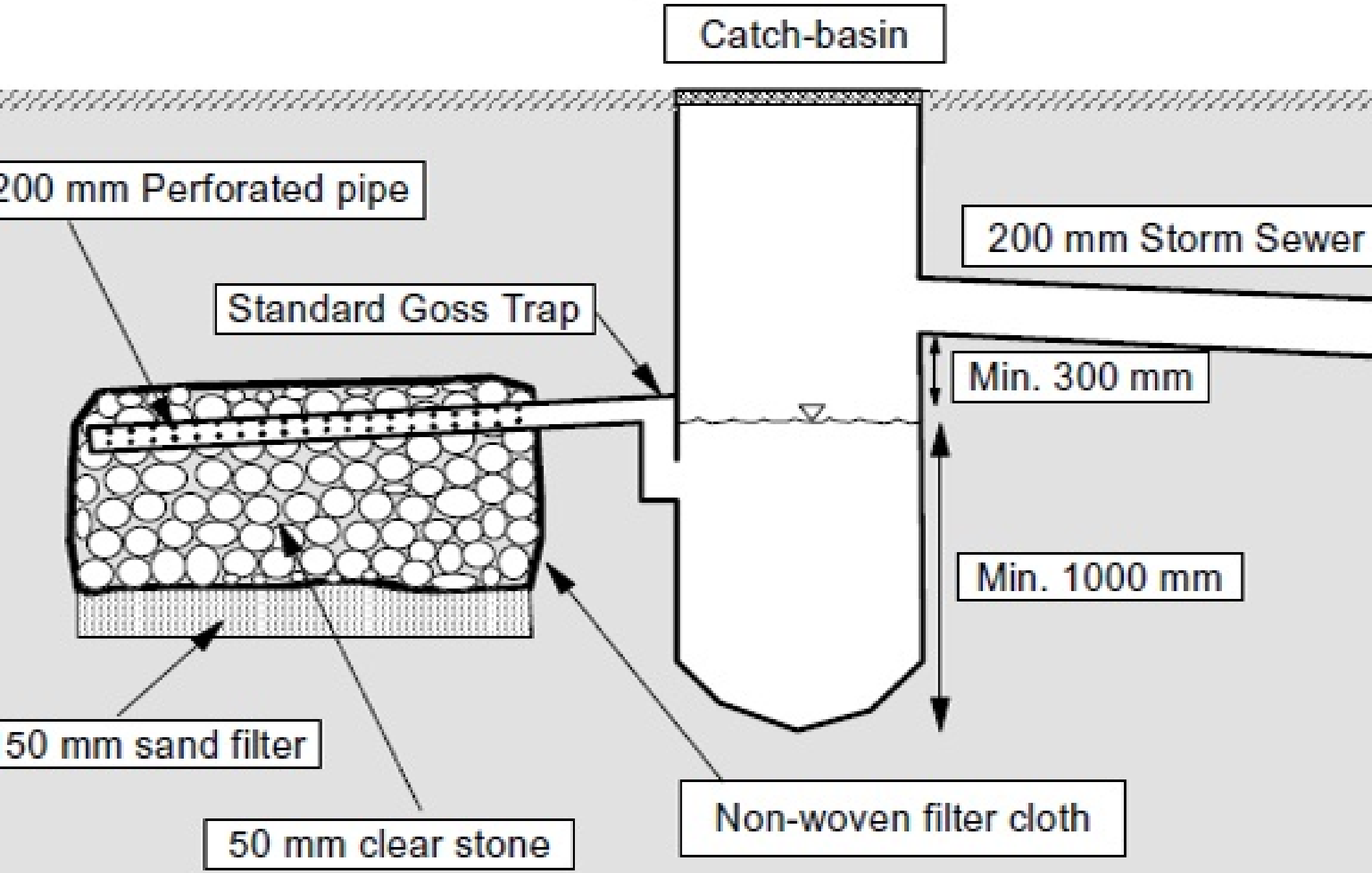
Source: City of Portland, 2004

Figure 4.5.7 Plan view and cross section of a stormwater curb extension



Source: City of Portland, 2004

Pervious Catch- Basin



Reference, Ontario.ca, Stormwater Management Plan and SWMP Design, 4.0.

TEMPEST™ INLET CONTROL DEVICES



LMF ICD

Square Catch Basin Adapter Round Catch Basin Adapter	• Low to medium flow • Restricts flow to 31 GPM – 270 GPM • 14 preset flow rates • Floatable and odor control • Supplied with neoprene gasket

HF ICD & Odor Traps

HF Square Catch Basin Adapter HF Round Catch Basin Adapter Odour Trap Square Catch Basin Adapter Odour Trap Round Catch Basin Adapter	• High flow • Restricts flow to 240 GPM and greater • 5 preset flow rates • Floatable and odor control • Supplied with neoprene gasket • Option for odor trap only, no flow restriction

HF Sump ICD

Square Catch Basin Adapter Round Catch Basin Adapter	• High flow • Creates a sump • Restricts flow to 15 Lps and greater • 5 preset flow rates • Floatable and odour control

MHF Plate or Plug ICD

Square Catch Basin Adapter Round Catch Basin Adapter	• Medium to high flow • Restricts flow to 9 Lps and greater • 5 preset flow rates

Please contact your local sales representative for sizing of a TEMPEST ICD and a quotation.

NOTES: In order to assist in choosing the proper TEMPEST ICD and for proper sizing and a quotation, the following information will be required when contacting IPEX for a TEMPEST ICD:

1. Feature(s) requirement: Flow, Floatable Control, Odor Control
2. Flow Requirement (GPM)
3. Maximum Water Height (Head / ft)
4. Depth of Sump / Height of Outlet Pipe
5. Host Pipe Material
6. Inside Diameter of Host Pipe
7. Catch Basin Configuration
8. Catch Basin Structure Dimensions

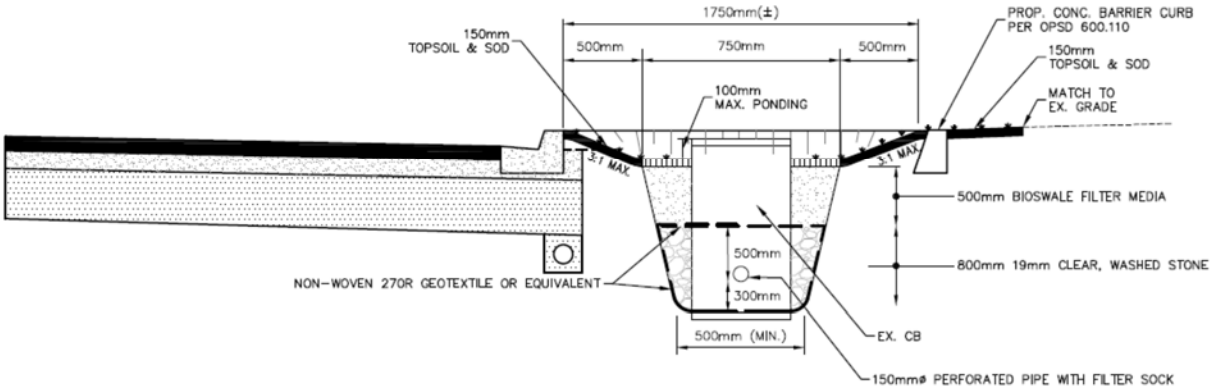
For more information, please visit our Tempest web page on our website at **www.ipexamerica.com**.

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TYPICAL BOULEVARD BIOSWALE
CROSS-SECTION VIEW
NTS

NOTES:
1. PLACE A NON-WOVEN GEOTEXTILE BETWEEN GRAVEL LAYERS AND BETWEEN GRAVEL LAYER & NATIVE SOIL.
2. FILTER MEDIA TO BE AS PER CONTRACT DOCUMENTS.
3. SURFACE OF BIORETENTION/RAINWATER GARDEN TO BE 150mm TOPSOIL & SOD.

APPENDIX 'T9'

Traffic Analysis Summary Provided to MTO

Ainley GROUP CONSULTING ENGINEERS PLANNERS

MEMORANDUM

Ainley & Associates Limited
550 Welham Road, Barrie, ON, L4N 8Z7
Tel: (705) 726-3371 P Fax: (705) 726-4391
Email: Barrie@ainleygroup.com

To: **MTO**

Copies to: **Joe Mullan – Ainley Group**
Steve Fournier – Ainley Group

From: **Lilly Chen**

Date: **May 30, 2018**

Ref: **Township of Springwater – Midhurst Phase 3 & 4 Operational Analysis**

File: **113027-311**

The analysis and results presented in this Memo has been derived from our overall Operational Analysis dated March 2017 which was prepared in conjunction with a Municipal Class Environmental Assessment for the Midhurst area road network improvements.

A Transportation Report had been prepared in 2008 to identify the major transportation needs in the area. However, significant changes have been made to the development plans, such as the numbers of units, land uses, timing and phasing of the developments etc. To fulfill the requirements of the EA, updated road and intersection improvement needs and timing of the improvements to the area road network are to be identified. In addition, traffic count data and traffic volume projections need to be updated given the 2008 traffic counts in the Transportation Report are out-of-date.

The overall purpose of this memo is to assess the transportation needs of the section of Highway 26 from Carson Road to Spence Ave/County Road 27, and the intersections of Hwy 400 ramps at Forbes Road under existing conditions and future traffic projections for the horizon years of 2031 (full build-out of Phase 1) and 2041 (ultimate horizon).

1. Existing Traffic Volumes

Weekday AM and PM peak hour Traffic Counts conducted on Tuesday June 11, 2013 from 7:45 to 8:45 and from 16:30 to 17:30 are available from BA Group's Midhurst Transportation Work Update Memo dated November 12, 2013.

A review of the traffic volumes along the boundary roads and key area intersections from March 2008 weekday and June 2013 weekday indicated the following:

- In most cases, 2013 traffic volumes are higher than the 2008 traffic volumes;
- 2013 traffic volumes are in the order of 77 % to 154% of the 2008 volumes at the locations where traffic volumes are higher (more than 100 vehicles per hour per lane for both AM and PM peak hours);
- Should a seasonal variation factor is considered, based on MTO Seasonal Variation Graphs for Commuter Recreation road character for Highway 26, June counts are approximately 30% higher than March counts;
- Higher growth is on the east-west oriented roads, such as Snow Valley Road (18% to 42%), Finlay Mill Road (27%) and Highway 26 west of County Road 27 (6 % to 54%); and
- Lower growth is on the north-south oriented roads, such as Bayfield Street (-23% to 15%), Wilson Drive (-3% to 22%).

Historic AADT data on the section of Highway 26 from Barrie northerly limits to County Road 27 obtained from

MTO indicates a 1.1% annual growth rate from 2006 to 2010. To reflect the current 2015 traffic volumes, the 2013 traffic counts were increased by 2.2%. The corresponding 2015 weekday peak hour traffic volumes are shown in Figure 2, Appendix A.

2. Speed Limit & Existing 2015 Lane Configuration

An 80 km/hr speed limit is posted on the following roads in the study area:

- Highway 26/27
- County Road 27
- Snow Valley Road west of Highway 26 to the west
- Forbes Road

A 60 km/hr speed limit is posted on the following roads in the study area:

- Snow Valley Road near Highway 26

A 50 km/hr speed limit is posted on the following roads in the study area:

- Carson Road from Anne Street to Highway 26/27
- Finlay Mill Road

The existing configurations of the key intersections are illustrated in Figure 1 Appendix A.

3. Existing Intersection Operations

Based on the existing intersection lane configurations and control, analyses of the Highway 26 intersections and Hwy 400 ramps/Forbes Road intersections were conducted for the existing peak hour traffic volumes. The methodology applied was consistent with the 2010 *Highway Capacity Manual* method for unsignalized and signalized intersections and the Synchro Delay method for signalized intersections as employed in the software program Synchro 8.

Table 1 summarizes the results of the analysis with level of service (LOS), estimated delays (measured in seconds) and volume to capacity (v/c) ratio provided. Level of service A, corresponding to minimal delays, is the best whereas level of service F, corresponding to high delays, is generally considered poor conditions. When volume is less than capacity, v/c ratio is less than 1. Otherwise, v/c ratio equals to 1 or more than 1, which means volume reaches capacity or is more than capacity.

For unsignalized intersections, the level of service corresponds to the minor street lane groups given that the major street movements proceed relatively unimpeded. For signalized intersections, the results pertain to the average intersection delay, lane group delay and assume optimal signal timing and phasing to achieve the most efficient overall network operations through signal coordination. If the actual situations are under expectations, adjustments to the signal timing and/or phasing can be readily implemented. Level of service definitions and the corresponding detailed worksheets are included in Appendix C.

Table 1 – 2015 Intersection Operations

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Highway 26 & Carson Rd	all	signal	8.6	A		9.9	A	
	EBL		15.9	B	0.26	16.5	B	0.37
	EBT-R		15.6	B	0.28	15.0	B	0.21
	WBL		16.0	A	0.06	15.5	B	0.06
	WBT-R		14.4	B	0.03	14.2	B	0.05

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
	NBL		9.8	A	0.08	11.8	B	0.18
	NBT		6.3	A	0.37	9.2	A	0.64
	NBR		4.7	A	0.01	5.1	A	0.02
	SBL		7.3	A	0.02	11.4	B	0.03
	SBT		8.7	A	0.53	9.2	A	0.54
	SBT-R		8.6	B	0.53	9.2	A	0.54
Highway 26 & Snow Valley Rd/Finlay Mill Rd	all	signal	15.2	B		16.3	B	
	EBL		19.1	B	0.09	18.3	B	0.10
	EBT-R		21.9	C	0.14	22.1	C	0.30
	WBL		15.0	B	0.38	15.4	B	0.28
	WBT-R		17.8	B	0.27	19.4	B	0.30
	NBL		9.8	A	0.10	9.4	A	0.18
	NBT		13.9	B	0.44	17.0	B	0.68
	NBR		11.7	B	0.12	14.9	B	0.44
	SBL		9.8	A	0.06	10.1	B	0.24
	SBT		16.4	B	0.51	16.5	B	0.55
	SBT-R		16.4	B	0.51	16.4	B	0.55
Hwy 26/CR 27 & Spence Ave	EB	stop	42.3	E	0.08	**59.9**	**F**	0.30
	WB		41.1	E	0.05	**50.2**	**F**	0.12
HWY 400 SB Off Ramp & Forbes Rd.	NBL	stop	11	B	0.05	10.9	B	0.04
HWY 400 NB Off Ramp & Forbes Road	SBL	stop	10.3	B	0.04	11.4	B	0.14

As per the analyses, good levels of service (C or better) occur at the intersections of Highway 26/Snow Valley Road/Finley Mill Road, Hwy 26/Carson Rd, and Hwy 400 ramps on Forbes Road under the existing weekday conditions. However, at the intersection of Highway 26 at CR 27 and Spence Avenue, a poor level of service "F" is provided during the PM peak hour and thus improvements to the intersection should be considered.

The need for a traffic signal at the intersection of Highway 26 with CR27/Spence Avenue was reviewed. A signal warrant analysis was carried out based on recent 2017 traffic data provided by MTO. Traffic signal warrants for current traffic are not met. A traffic signal warrants were completed for 2031 traffic projections with Phase 1 development in place and the signal warrants are met for those conditions. As development proceeds the intersection operation is to be monitored and signals implemented when development traffic warrants the improvement.

4. Historic Traffic Growth

Historic traffic data for the area provincial highways and County Roads is available from MTO and the County of Simcoe. Growth rates were calculated based on the historic data as specified in Table 2.

Table 2 - AADT Growth on the Area Major Roads

Section of Roads	Year	AADT	Year	AADT	Annual Growth Rate

Section of Roads	Year	AADT	Year	AADT	Annual Growth Rate
Hwy 26 from Barrie N Limits to CR 27	2006	20,300	2010	21,200	1.09%
CR 27 from Hwy 26 to CR 22	2003	10,700	2012	11,200	0.51%
Snow Valley Rd from Hwy 26 to Wilson Dr	2009	2,600	2012	2,700	1.27%
Forbes Road from CR 93 to Hwy 400	2008	3,000	2014	3,700	3.56%

5. Projected Growth

In developing future traffic projections, consideration has been given to population and employment forecasts in addition to the Midhurst developments.

Population & Employment Trends

Traffic growth will depend largely on the population and employment growth of an area. The population and employment forecasts for the Township of Springwater are documented in the following reports:

- *Simcoe County Land Budget Data Collection and Analysis Phase 1: Population Growth* prepared by Simcoe County Planning Department dated February 2015
- *Proposed Amendment 1 to the Growth Plan for the Greater Golden Horseshoe, 2006* by the Ministry of Infrastructure dated October 2010
- *Simcoe Area Growth Plan* prepared by Hemson Consulting Ltd. Dated May 2008.

Future population and employment projections are provided in Table 3.

Table 3 - Population and Employment Forecasts

Community	Population			Employment		
	2011	2031	Annual Growth	2006	2031	Annual Growth
Township of Springwater	18,749	24,000	1.2%	5,000	5,600	0.5%

It is assumed that projected growth includes partially Midhurst developments, but not all Phase 1 of the Midhurst developments.

Growth from Midhurst Developments

The Midhurst developments located within the Midhurst Settlement Area are illustrated in Figure 3 of Appendix A and are listed below:

1) Neighbourhood #1 Carson Road Development – 2559 residential units plus employment land equivalent to 350 residential units;
2) Neighbourhood #2 Doran Road North Development – 1815 residential units;
3) Neighbourhood #3 Doran Road South Development – 3484 residential units;
4) Employment land #1 located on the north side of Snow Valley Road and east side of Wilson Drive – 2655 jobs; and
5) Employment land #2 located on the south side of Snow Valley Road and west side of Highway 26 – 475 jobs and 495,000 sq. ft. GFA commercial.

Trips generated by the above Midhurst developments have been specifically estimated, as per the *ITE Trip Generation Manual*. For the residential developments, trip rates were calculated by using the trip estimate equations and a combination of 77% single family detached units (land use code 210) and 23% residential condo/townhouse units (land use code 230) given that the percentage of townhouse units in Phase 1 is 23%. For

the employment lands, trip rates were estimated by using the equations for general light industrial (land use code 110) and shopping centre land use (land use code 820).

Trips can be made between Carson Road development and the Employment Lands via an internal road between Snow Valley Road and Carson Road without using the boundary roads. These trips are considered internal trips and should be deduced from the total trips. An internal capture rate of 5% was assumed.

There are also trips to the commercial land use when people are on the way home or on the way to work etc. These are by-pass trips. These trips are already on the road network and should be deducted from the total trips. 25% by-pass trips for the commercial land use were assumed.

Trip estimates for the peak hours of the road network are provided in Table 4. In total, the Midhurst developments are expected to generate 6204 primary trips in the AM peak hour and 7842 trips in the PM peak hour (both inbound and outbound trips).

Table 4 – Midhurst Developments Trip Generation Estimates

Development	Rate/ Estimate	Unit/ Size	Weekday AM Peak			Weekday PM Peak		
			In	Out	Total	In	Out	Total
Carson Road	rate	unit	0.15	0.47	0.62	0.443	0.254	0.697
	estimate	2909	435	1381	1816	1289	739	2028
	5% Internal Capture		-22	-69	-91	-64	-37	-101
	Sub-total		413	1312	1725	1225	702	1927
Doran Road North	rate	unit	0.15	0.47	0.62	0.443	0.254	0.697
	estimate	1440	216	684	900	638	366	1004
Doran Road South	rate	unit	0.15	0.47	0.62	0.443	0.254	0.697
	estimate	3859	578	1832	2410	1710	980	2690
Sub-total		8208	1207	3828	5035	3573	2048	5621
Employment Land #1	rate	employee	0.25	0.05	0.3	0.07	0.24	0.31
	estimate	2655	661	136	797	173	650	823
	5% Internal Capture		-33	-7	-40	-9	-32	-41
	Sub-total		628	129	757	164	618	782
Employment Land #2	rate	employee	0.25	0.05	0.3	0.07	0.24	0.31
	estimate	475	118	25	143	31	116	147
	rate	1000 sq ft GFA	0.49	0.31	0.8	1.84	1.91	3.75
	estimate	495	242	154	396	909	947	1856
	5% Internal Capture		-18	-9	-27	-47	-53	-100
	25% By-pass Trips		-60	-39	-99	-227	-237	-464
	Sub-total		282	131	413	666	773	1439
Total			2117	4087	6204	4403	3439	7842

For the three residential developments, development phasing is shown in Figure 3 and Table 5. For the employment lands, it is anticipated that they will be completed during Phase 1 by 2031. By 2027, all approved units (3850 units) would be built. By 2031 Phase 1 of the Midhurst developments are expected to generated 4209 trips in the AM peak hour and 5615 trips in the PM peak hour (both inbound and outbound trips).

Table 5 – Development Phasing

Build Out Timing/Phasing	Carson Rd Development			Doran Road North Dev.		Doran Road South Dev.		Cumulative Total Units
	Residential Units	Emp. Units	% Build Out	Units	% Build Out	Units	% Build Out	
Stage 1 - 2018	748	100	29	232	16			1080
Stage 2 -2022	819	100	61	297	37			2296
Stage 3 - 2025	487	100	81	291	57			3174
Stage 4 - 2027	219	50	90	407	85			3850
Stage 5- 2031	27		91	213	100	910	24	5000
Ph1 Subtotal 2031	2300	350	91	1440	100	910	24	5000
Stage 6 - 2034	259		100	375		375	43	6009
Stage 7 - 2036						750	62	6759
Stage 8 - 2039						725	81	7484
Stage 9 - 2041						724	100	8208
Total 2041	2909		100	1815	100	3484	100	8208

The Transportation Master Plan prepared by the County of Simcoe and the analysis of the area traffic during the assessment of a potential partial interchange on Highway 400 at Pooles Road (AECOM June 2015) describe the prime origin / destination for the Midhurst area as 70% to and from the south. No other guidance is provided on the other directions and we have assigned 10% to each of the other cardinal directions. There are several north south options available to existing and future residents of Midhurst and the route selection will be dependent on where they are situated within Midhurst. We have assumed that if you are in the Carson Road area development the traffic to and from the south would typically use Highway 26/Bayfield or Anne Street or Wilson Road and unlikely to use St. Vincent Street or Highway 400. For those in the Russell Road/Doran Road area developments the route selection to and from the south would be on Highway 400 or St. Vincent Street or Highway 26/Bayfield Street.

Rudimentary time trials were carried out on the north south routes from Doran Road between Russell Road and St. Vincent Street to the intersection of Highway 400 and Bayfield Street by taking Russell to Forbes to Highway 400 and by taking Findley Mill Road/Highway 26/Bayfield and by taking Pooles to St. Vincent Street to Cundles Road to Bayfield to Highway 400. The data collected shows that the Forbes to Highway 400 route is the quickest during the PM Peak at approximately 10 minutes followed by the Highway 26 route at 11.5 minutes and then the St. Vincent Route at 13.5 minutes.

For the western development area of Carson Road between Highway 26 and Wilson Road we have assigned the 70% of traffic to and from the south as 30% along Highway 26, 20% along Anne Street and 20% along Wilson Road. For the eastern development area in the vicinity north of Doran Road between Russell and St Vincent we have assigned the 70% of traffic to and from the south as 45% to Forbes and Hwy 400, 5% to Findley Mill Road / Highway 26 and 10% to Craig Road to CR 27 / Hwy 26 and 5% to Pooles Road and St. Vincent. For the eastern development area in the vicinity south of Doran Road between Russell and St Vincent we have assigned the 70% of traffic to and from the south as 50% to Forbes and Hwy 400, 5% to Findley Mill Road and Highway 26 and 15% to Pooles Road and St. Vincent.

Based on the above, the following distributions were developed:

Carson Road Development

- 20% to/from the south via Wilson Drive

- 20% to/from the south via Anne Street
- 30% to/from the south via Highway 26
- 10% to/from the north via County Road 27
- 5% to/from the west via Highway 26
- 5% to/from the northwest via Wilson Drive/Snow Valley Rd.
- 5% to/from the west via Snow Valley Road / Hwy 26
- 5% to/from the east via Forbes Road

Doran Road North Development

- 45% to/from the south via Highway 400 and Forbes Road
- 5% to/from the south via St Vincent
- 5% to/from the south via Highway 26 and Finlay Mill Road
- 10% to/from the south via Highway 26 and Craig Road
- 5% to/from the north via County Road 27 and Craig Road
- 5% to/from the north via Highway 400 and Forbes Road
- 5% to/from the west via Doran, Spence and Highway 26
- 5% to/from the west via Snow Valley Road
- 10% to/from the east via Forbes Road
- 5% to/from the south via Russell and Pooles Road

Doran Road South Development

- 50% to/from the south via Highway 400 and Forbes Road
- 15% to/from the south via St Vincent
- 5% to/from the south via Highway 26 and Finlay Mill Road
- 0% to/from the south via Highway 26 and Craig Road
- 5% to/from the north via Russell – Craig Rd - County Road 27
- 5% to/from the north via Highway 400
- 5% to/from the west via Doran, Spence and Highway 26
- 5% to/from the west via Snow Valley Road
- 10% to/from the east via Forbes Road

Employment Land #1

- 20% to/from the south via Wilson Drive
- 10% to/from the south via Anne Street
- 20% to/from the south via Highway 26
- 13% to/from the east via Finlay Mill Road
- 5% to/from the east via Craig Road
- 1% to/from the east via Doran Road
- 1% to/from the east via Carson Road east
- 15 % to/from north via CR 27
- 2% to/from the west via Snow Valley Road
- 13% to/from the northwest via Wilson Drive

Employment Land #2

- 10% to/from the south via Wilson Drive
- 10% to/from the south via Anne Street
- 30% to/from the south via Highway 26
- 13% to/from the east via Finlay Mill Road
- 5% to/from the east via Craig Road
- 1% to/from the east via Doran Road
- 1% to/from the east via Carson Road east

- 15 % to/from north via CR 27
- 2% to/from the west via Snow Valley Road
- 13% to/from the northwest via Wilson Drive

The development specific trip estimates were assigned to the area road network. The resulting traffic volumes attributed to the above noted developments are presented in Appendix B figures B1 thru B5.

6. Future Traffic Volumes

Given that development growth has been considered specifically and that the average growth rate for the section of Highway 26 is 1.09% for the past five years, an annual general background growth rate of 1.0% was applied for traffic volumes on Highway 26, CR 27, Wilson Drive, Snow Valley Road and Finlay Mill Road – Doran Road – Forbes Road corridor.

Estimates of future traffic volumes for the years 2031 and 2041 have been determined based on the following:
- 2015 traffic volumes;
- development specific trip generation volumes; and
- consideration for the 2031and 2041 horizon year growth rates.

The resulting future traffic projections are provided in Appendices E and F Figures 4 and 5 for the 2031 and 2041 horizon respectively. The AM and PM peak hour volumes are provided, reflective of weekday conditions. Initial assumption when this study was started was that Phase 1 development would commence in 2018. Obviously this will not be the case and the year 2018, as referred to here, represents the beginning of lot development.

7. Future Road Network

The County of Simcoe has recently completed an updated Transportation Master Plan. The final draft report dated September 2014 has identified the following improvements in the study area:
- Snow Valley Road from CR 28 to Highway 26 widening to 4 lanes by 2021
- Wilson Drive from Barrie limit to Highway 26 widening to 4 lanes by 2031
- Widening of CR 93 from CR 11 (Forbes Road) to City of Barrie limit shall be coordinated with MTO's widening of Highway 11
- CR 27 from Highway 26 to CR 22 widening to 4 lanes by 2041

It is assumed that the following road connections will be in place by 2025:
- Craig Road is opened from Russell Road to County Road 27 2018
- St Vincent Street is connected between Belmont Crescent and Park Trail

The timing for the above improvements should be sooner than later. The 10 year horizon is considered the worst case scenario and is to allow time for design and construction.

Route selection for the Craig Road link between Russell Road and County Road 27 along the north limits of the study area is still in the preliminary stages which will be refined as the overall design of the transportation improvements proceeds. Completion of this link during the first stage of Phase 1 development is necessary as it provides alternate routing for some development traffic to access the County Road 27/Hwy 26/ Bayfield corridor and to some extent Hwy 400 without using existing Midhurst community roads. This Craig Road link is proposed as a two lane rural roadway.

8. Future 2031 Operations

The following improvements have been assumed:
- Add a traffic signal and an exclusive left turn lane on the SB, EB and WB approaches at the intersection of Highway 26 / CR 27 / Spence Ave

- Add a NB advance green phase at the intersection of Highway 26 / Carson Road.

The operations of the key study area intersections were investigated based upon the existing configurations, the above improvements and the 2031 traffic projections. The results of the 2031 analyses are presented in Table 6 whereas the corresponding worksheets are provided in Appendix C.

Table 6 – 2031 Intersection Operations

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Highway 26 & Carson Rd	all	signal	26.3	C		39.3	D	
	EBL		32.6	C	0.64	76.9	E	0.87
	EBT-R		42.5	D	0.84	57.8	E	0.77
	WBL		40.6	D	0.15	58.9	E	0.20
	WBT-R		31.3	C	0.07	52.9	D	0.16
	NBL		21.2	C	0.57	79.7	E	0.96
	NBT		13.4	B	0.52	13.3	B	0.70
	NBR		13.3	B	0.52	13.2	B	0.70
	SBL		17.1	B	0.05	24.0	C	0.14
	SBT		30.5	C	0.85	46.5	D	0.94
	SBT-R		31.2	C	0.86	53.7	D	0.98
Highway 26 & Snow Valley Rd/Finlay Mill Rd	all	signal	35.5	D		60.9	E	
	EBL		24.5	C	0.39	31.4	C	0.62
	EBT-R		44.4	D	0.79	**115.9**	**F**	**1.09**
	WBL		24.3	C	0.72	57.6	E	0.86
	WBT-R		28.3	C	0.58	43.4	D	0.46
	NBL		39.1	D	0.82	**105.9**	**F**	**1.00**
	NBT		23.6	C	0.65	45.0	D	0.88
	NBR		17.7	B	0.18	36.0	D	0.63
	SBL		17.7	B	0.14	37.2	D	0.59
	SBT		50.6	D	0.94	66.6	E	0.96
	SBT-R		51.5	D	0.94	68.6	E	0.97
Hwy 26/CR 27 & Spence Ave	all	signal	12.8	B		10.7	B	
	EBL		34.1	C	0.29	33.6	C	0.54
	EBT		32.3	C	0.12	28.5	C	0.17
	EBR		0.5	A	0.30	0.7	A	0.39
	WBL		31.6	C	0.03	27.8	C	0.03
	WBT-R		35.2	D	0.37	28.3	C	0.12
	NBL		14.8	B	0.76	14.8	B	0.74
	NBT-R		2.1	A	0.20	3.8	A	0.45
	SBL		15.6	B	0.00	14.7	B	0.04
	SBT-R		23.6	C	0.76	21.7	C	0.74

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
HWY 400 SB Off Ramp & Forbes Rd.	NBL	stop	19.2	C	0.15	26.3	D	0.33
	WB L	free	10.7	B	0.13	9	A	0.54
HWY 400 NB Off Ramp & Forbes Road	SBL	stop	18.1	C	0.10	21.0	C	0.32
	EBL	free	8.1	A	0.10	8.3	A	0.08

Given the assumed improvements, all intersections and their lane groups will operate acceptably at a level of service "E" or better in the 2031 horizon except for the intersection of Highway 26 at Snow Valley Road where a poor level of service "F" occurs on the eastbound through-right shared lane and the northbound left turn lane, volumes are at or over capacity during the PM peak hour. Thus, improvements at the intersection are required.

With an eastbound right turn lane added at the intersection of Highway 26 at Snow Valley Road/Finlay Mill Road, the intersection would operate acceptably. The results of the analysis are summarized in Table 7.

Table 7 – 2031 Intersection Operations with Improvements

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Highway 26 & Snow Valley Rd/Finlay Mill Rd	all	signal	31.7	C		36.8	D	
	EBL		25.2	C	0.40	30.2	C	0.71
	EBT		30.9	C	0.26	45.2	D	0.75
	EBR		35.2	D	0.63	51.9	D	0.81
	WBL		21.0	C	0.58	28.9	C	0.62
	WBT-R		29.4	C	0.63	41.1	D	0.70
	NBL		32.7	C	0.78	42.5	D	0.83
	NBT		22.0	C	0.63	30.1	C	0.85
	NBR		16.5	B	0.18	24.4	C	0.60
	SBL		16.5	B	0.13	22.8	C	047
	SBT		44.9	D	0.91	44.3	D	0.91
	SBT-R		45.7	D	0.91	45.6	D	0.92

9. Future 2041 Operations

Given the future 2041 total traffic volumes, an additional through lane in each direction for a total of 4 lanes are required on Forbes Road from Russell Road to Highway 400.

A traffic signal warrant analysis was carried out at Forbes Road / Highway 400 SB off-ramp intersection. A traffic signal is warranted at the SB Off Ramp intersection for the 2041 horizon. The SB off-ramp intersection also warrants a west bound to southbound left turn lane. The intersection of the Highway 400 NB Off Ramp does not warrant traffic signal in 2041 but does warrant a left turn lane. As Phase 2 develops the Highway 400 / Forbes Road intersection needs to be monitored to identify the required timing of the off ramp intersection improvements. Once the improvements are provided the LOS for the 2041 build out traffic is very good but there are constraints on the length of the left turn lanes to be provided with the ramps at their current offset from Highway 400. Prior to commencing development of Phase 2 the Municipality is committed to undertaking a Municipal Class Environmental Assessment with inclusion of MTO requirements. This may identify increasing the ramp offset or

considerable alteration of the interchange as a whole. Starting the process towards the latter half of Phase 1 provides an opportunity to test and refine the assumptions on traffic growth and distribution for the proposed development.

The operations of the key study area intersections were investigated based upon the existing configurations, the 2031 improvements, the above noted improvements, and the 2041 traffic projections. It is assumed that significant improvements would be provided in the area of the Highway 400/Forbes Road interchange, Forbes Road and Russell Road. The results of the 2041 analyses are presented in Table 8 whereas the corresponding worksheets are provided in Appendix C.

Table 8 – 2041 Intersection Operations

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Highway 26 & Carson Rd	all	signal	38.1	D		52.6	D	
	EBL		32.6	C	0.64	83.8	F	0.89
	EBT-R		42.5	D	0.84	75.3	E	0.81
	WBL		40.6	D	0.15	65.3	E	0.22
	WBT-R		31.3	C	0.07	57.2	E	0.15
	NBL		21.2	C	0.57	117.3	F	1.07
	NBT-R		13.3	B	0.52	16.9	B	0.78
	SBL		17.1	B	0.05	34.3	C	0.18
	SBT-R		51.2	D	0.99	63.8	F	1.01
Highway 26 & Snow Valley Rd/Finlay Mill Rd	all	signal	46.7	D		51.3	D	
	EBL		27.4	C	0.46	46.3	D	0.82
	EBT		33.3	C	0.34	88.4	F	0.97
	EBR		39.3	D	0.67	68.4	E	0.86
	WBL		23.8	C	0.71	48.9	D	0.86
	WBT-R		30.7	C	0.69	51.8	D	0.74
	NBL		63.7	E	0.94	**81.6**	**F**	0.95
	NBT		27.9	C	0.74	36.5	D	0.88
	NBR		20.0	C	0.24	31.6	C	0.71
	SBL		19.9	B	0.18	31.6	C	0.60
	SBT		79.3	**F**	**1.05**	57.5	E	0.96
	SBT-R		**81.5**	**F**	**1.05**	60.6	E	0.97
Hwy 26/CR 27 & Spence Ave	all	signal	20.1	C		15.0	B	
	EBL		33.5	C	0.16	35.9	D	0.49
	EBT		33.4	C	0.17	35.9	D	0.52
	EBR		0.6	A	0.33	0.8	A	0.43
	WBL		32.4	C	0.01	31.6	C	0.02
	WBT-R		37.2	D	0.54	33.5	C	0.32
	NBL		27.2	C	0.88	22.4	C	0.82
	NBT-R		3.3	A	0.23	4.2	A	0.47

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
	SBL		19.5	B	0.0	18.2	B	0.04
	SBT-R		33.9	C	0.86	29.7	C	0.83
HWY 400 SB Off Ramp & Forbes Rd.	all	signals	11.3	B		19.5	B	
	NBL		11.8	B	0.12	19.5	B	0.32
	WB L		15.3	B	0.29	9.5	A	0.10
	WBT		11.0	B	0.46	22.6	C	0.93
	EBT		10.8	B	0.43	7.9	A	0.23
HWY 400 NB Off Ramp & Forbes Road	SBL	stop	34.8	D	0.22	52.4	**F**	0.63
	EBL	free	8.6	A	0.18	9	A	0.14

Given the increase in traffic volumes, despite the assumed improvements, a poor level of service "F" occurs at the following intersections:

- Highway 26 at Carson Road
- Highway 26 at Snow Valley Road
- Forbes Road at Highway 400 NB off-ramp

Thus improvements at these intersections should be considered. The following improvements are recommended:

Intersection of Highway 26 at Carson Road

- Add an eastbound right turn lane; and
- Add a northbound left turn lane to a double left turn lane

Intersection of Highway 26 at Snow Valley Road

- Add a southbound right turn lane. Add an eastbound right turn lane

Intersection of Highway 400 NB Off Ramp with Forbes Rd.

- Add an eastbound to northbound left turn lane

Based on the above improvements, the above intersections would operate acceptably. The results of the analysis are summarized in Table 9.

Table 9 – 2041 Intersection Operations with Improvements

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Highway 26 & Carson Rd	all	signal	30.9	C		30.2	C	
	EBL		36.3	D	0.71	69.5	E	0.89
	EBT		23.6	C	0.00	34.8	C	0.02
	EBR		33.8	C	0.79	34.4	C	0.57
	WBL		32.4	C	0.09	45.6	D	0.15
	WBT-R		32.0	C	0.08	45.8	D	0.21
	NBL		20.3	C	0.36	46.2	D	0.86
	NBT		13.3	B	0.56	16.3	B	0.80
	NBT-R		13.2	B	0.56	16.2	B	0.81
	SBL		17.4	B	0.05	30.2	C	0.17

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
	SBT		40.8	D	0.95	31.9	C	0.91
	SBR		44.4	D	0.97	39.4	D	0.96
Highway 26 & Snow Valley Rd/Finlay Mill Rd	all	signal	32.4	C		38.0	D	
	EBL		23.1	C	0.42	45.3	D	0.81
	EBT		29.1	C	0.33	79.3	E	0.96
	EBR		24.2	C	0.42	35.3	D	0.59
	WBL		19.4	B	0.68	39.5	D	0.83
	WBT-R		26.7	C	0.68	41.1	D	0.66
	NBL		38.1	D	0.82	43.3	D	0.83
	NBT		30.3	C	0.82	39.1	D	0.92
	NBR		8.4	A	0.16	15.3	B	0.55
	SBL		20.1	C	0.18	28.8	C	0.59
	SBT		50.8	D	0.98	35.9	D	0.85
	SBR		20.0	C	0.38	15.4	B	0.27
HWY 400 NB Off Ramp & Forbes Road wt EB Lt	SBL	stop	20.3	C	0.13	22.3	C	0.36
	EBL	free	8.6	A	0.18	9	A	0.14

10. Roundabout Alternative Considerations

A roundabout alternative was considered at each of the future signalized intersections. Because of geometric and other constrains (i.e. train track, slope, sightline, property, natural environment etc.), only the following Highway intersections were considered further:

- Highway 26 and Carson Road
- Highway 26 and County Road 27

Roundabout operational analysis was carried out for the above two intersections based on the 2041 traffic volumes and 2041 area road lane configurations. The results of the 2041 roundabout analyses are presented in Table 10 whereas the corresponding worksheets are provided in Appendix C.

Table 10 – 2041 Intersection Operations - Roundabout

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Highway 26 & Carson Rd	all	2 lane round-about	**98.9**	**F**		**160.9**	**F**	
	EB		**430.7**	**F**	**1.88**	**260.1**	**F**	**1.48**
	WB		11.9	B	0.11	29.8	D	0.27
	NBL-T		17.3	C	0.71	**145.2**	**F**	**1.27**
	NBT-R		21.7	C	0.79	**204.2**	**F**	**1.41**
	SBL-T		21.7	C	0.82	**95.7**	**F**	**1.13**
	SBT-R		32.0	D	0.91	**141.8**	**F**	**1.25**
Hwy 26/CR 27 & Spence Ave	all	2 lane round-	13.8	B		25.4	D	
	EBL-T		6.7	A	0.09	9.9	A	0.27

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
	EBR	about with an EB right turn bypass	0	A	0.28	0	A	0.36
	WB		11.9	B	0.23	17.1	C	0.22
	NBL-T		13.0	B	0.66	28.8	D	0.89
	NBT-R		10.3	B	0.56	47.4	E	0.99
	SBL-T		23.4	C	0.72	19.6	C	0.68
	SBT-R		27.0	D	0.78	22.3	C	0.74

As indicated in Table 10, volumes are over capacity on several lane groups/approaches at the intersection of Highway 26 with Carson Road. A roundabout is not a viable option for the intersection. With regards to the Hwy 26/ County Road 27 intersection, even with an eastbound right turn bypass has been added to the roundabout, the northbound through-right shared lane reaches its capacity. Thus a roundabout is not recommended at that intersection either.

11. Conclusion

Based on the above analyses, it is concluded that the following timing and improvements are recommended at intersections involving Hwy 26 or Hwy 400.

2018 horizon

- With the start of development construct Craig Road from Russell Road to County Road 27.

2031 horizon

- Monitor traffic growth and prior to 2031 add a traffic signal at the intersection of Highway 26/Spence Avenue with Highway 26/County Road 27 including an exclusive left turn lane on the north, east and west approaches
- Add an eastbound right turn lane at the intersection of Highway 26 with Snow Valley Road
- Add a northbound protected left phase at the intersection of Highway 26 and Carson Road

2041 horizon

- Add an eastbound right turn lane on Carson Road at Highway 26, and add a northbound left turn lane (double northbound left turn lane) on Highway 26 at Carson Road
- Add a southbound right turn lane on Highway 26 at Snow Valley Road.
- Add an additional through lane in each direction for a total of 4 lanes on Forbes Road from Russell Road to Highway 400
- Add a traffic signal at the intersection of Forbes Road/Highway 400 SB on/off ramp along with a westbound left turn lane and an eastbound channelized right turn lane.
- Add an eastbound left turn lane on Forbes Road at Highway 400 NB on/off ramp.

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APPENDIX A

2013 Traffic Counts

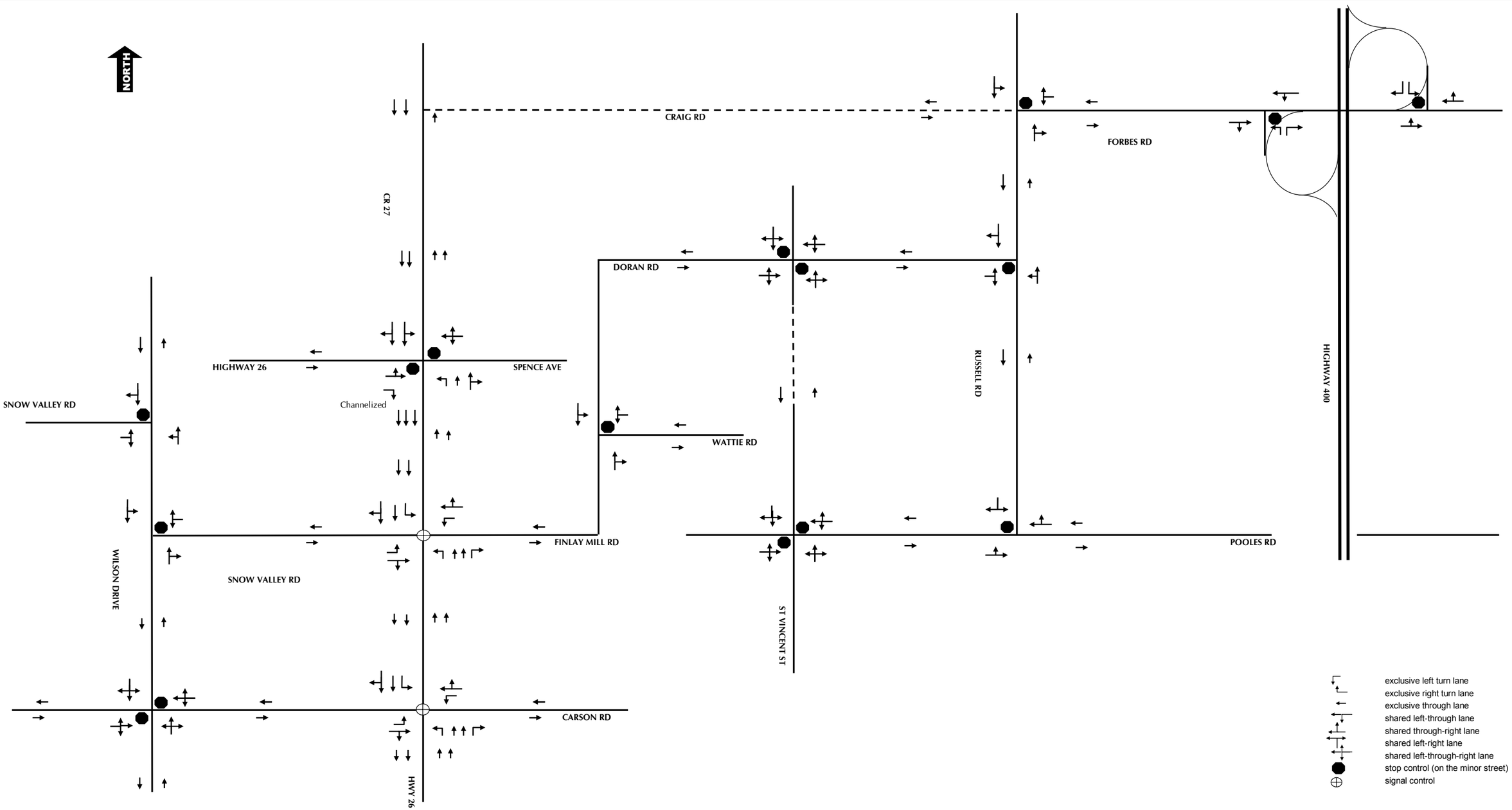


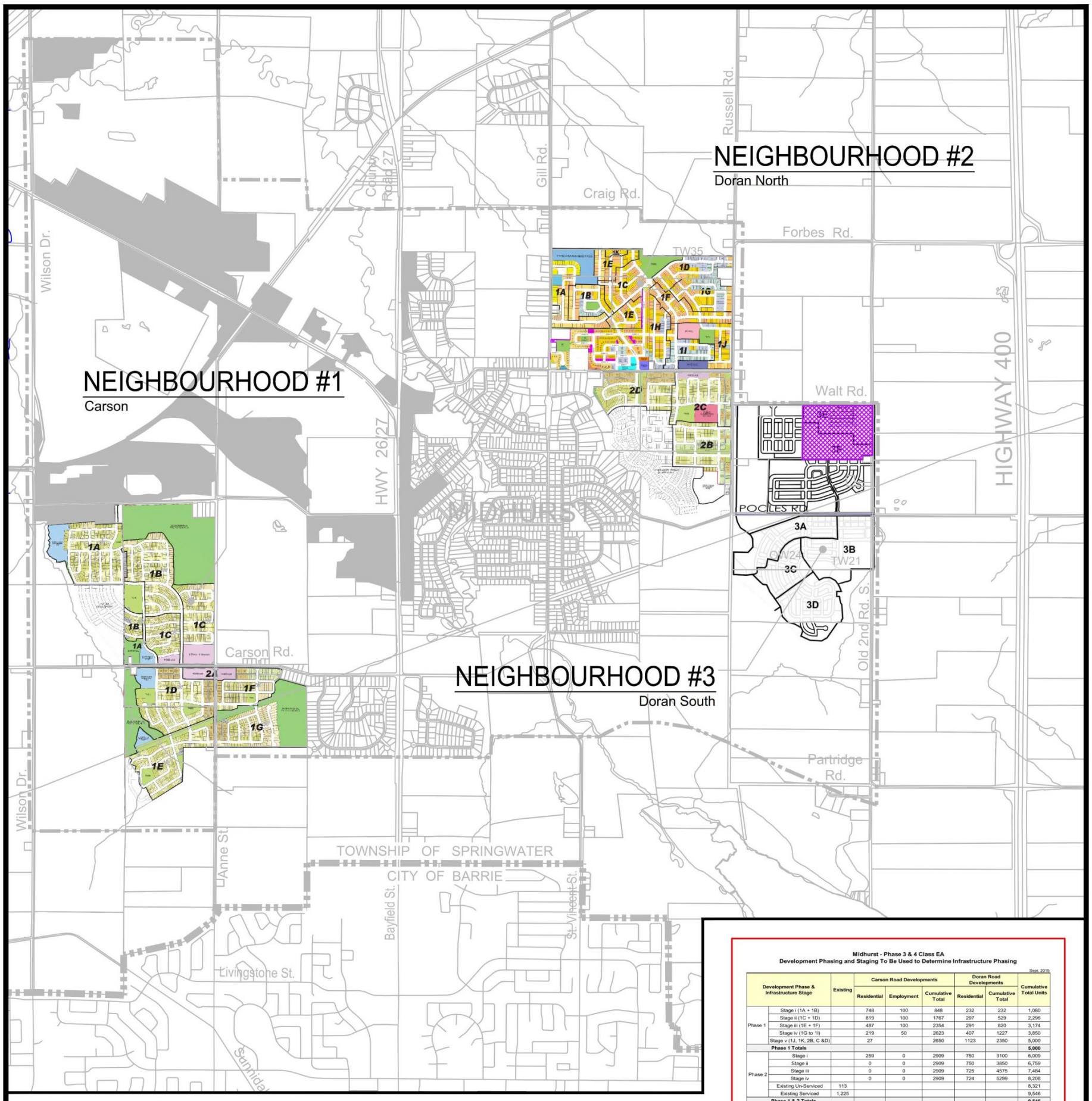
Figure 2
Existing Intersection Configuration & Control
Midhurst EA Phases 3 & 4
Township of Springwater

Mainley GROUP CONSULTING ENGINEERS PLANNERS

MIDHURST SECONDARY PLAN

TRANSPORTATION ROAD IMPROVEMENT PHASING PLAN

FIGURE 7.4.1.
MIDHURST - CONCEPTUAL PHASING PLAN



Midhurst - Phase 3 & 4 Class EA
Development Phasing and Staging To Be Used to Determine Infrastructure Phasing

Sept. 2015

Development Phase & Infrastructure Stage		Existing	Carson Road Developments			Doran Road Developments		Cumulative Total Units
			Residential	Employment	Cumulative Total	Residential	Cumulative Total	
Phase 1	Stage i (1A + 1B)		748	100	848	232	232	1,080
	Stage ii (1C + 1D)		819	100	1767	297	529	2,296
	Stage iii (1E + 1F)		487	100	2354	291	820	3,174
	Stage iv (1G to 1I)		219	50	2623	407	1227	3,850
	Stage v (1J, 1K, 2B, C &D)		27		2650	1123	2350	5,000
	Phase 1 Totals							**5,000**
Phase 2	Stage i		259	0	2909	750	3100	6,009
	Stage ii		0	0	2909	750	3850	6,759
	Stage iii		0	0	2909	725	4575	7,484
	Stage iv		0	0	2909	724	5299	8,208
	Existing Un-Serviced	113						8,321
	Existing Serviced	1,225						9,546
	Phase 1 & 2 Totals							**9,546**

PROPOSED DEVELOPMENT PHASING (WITHIN THE 300 Ha) AS SUBMITTED TO OMB IN 2014

DEVELOPMENT PHASE & INFRASTRUCTURE STAGE																									TOTAL
UNIT TYPE	Stage i (1A + 1B)				Stage ii (1C + 1D)				Stage iii (1E + 1F)				Stage iv (1G to 1I)				Stage v (1I, 1K, 2B, C &D)								
	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	Doran Rd	Carson Rd	
	1A	1A*	1B	1B*	1C	1C*	1D	1D*	1E	1E*	1F	1F*	1G	1G*	1H	1I	1J	1K	2A	2B	2C	2D			
EXISTING RESIDENTIAL	1																								1
21.3 m SINGLES	3																								3
18.2 m SINGLES	26			1		1						2		23											53
15.2 m SINGLES	66	12	27	33	3	12	2		28		4	24		68											279
12.2 m SINGLES	21	127	24	85	67	85	32	83	59	76	80	29	27	55	35	6	15	4		65	36	84			1095
11.0-11.6 m SINGLES		79		69		59		63		49										43	44	22			428
11.0 m SINGLES (RATH)												36								73	26				135
10.5-10.7 m SINGLES	2		28		65		46		73		41		61		61	22	54	9							462
9.75 m SINGLES		121		202		244		110		125		55		23							45	68	63		1056
12.2 m BUNGALOW TOWNS			12				54						16		31	28	8								149
7.6 m TOWNHOMES			22				18						63		13	90	5								211
4.5-5.0 m TOWNHOMES (RATH)								162		24		64		50							38	98	205		641
4/6PLEX							10						38				34								82
Unit Sub Total	119	339	113	390	135	401	162	418	160	274	125	210	205	219	140	62	200	13		264	272	374			4595
Future Residential Full Lots		13		6					6	3															28
Unit Total With Future Residential Full Lots	119	352	113	396	135	401	162	418	166	277	125	210	205	219	140	62	200	13		264	272	374			**4623**

NOTE: * Denotes identical Phase numbered areas west of Bayfield Street
NOTE: 84 Units have been moved from Phase 1L to 1J to accommodate Planning trigger of 3,850 Units

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Base mapping information received from County of Simcoe, July 2008.
Land use information based upon Township of Springwater, Midhurst Secondary Plan, July 2008.

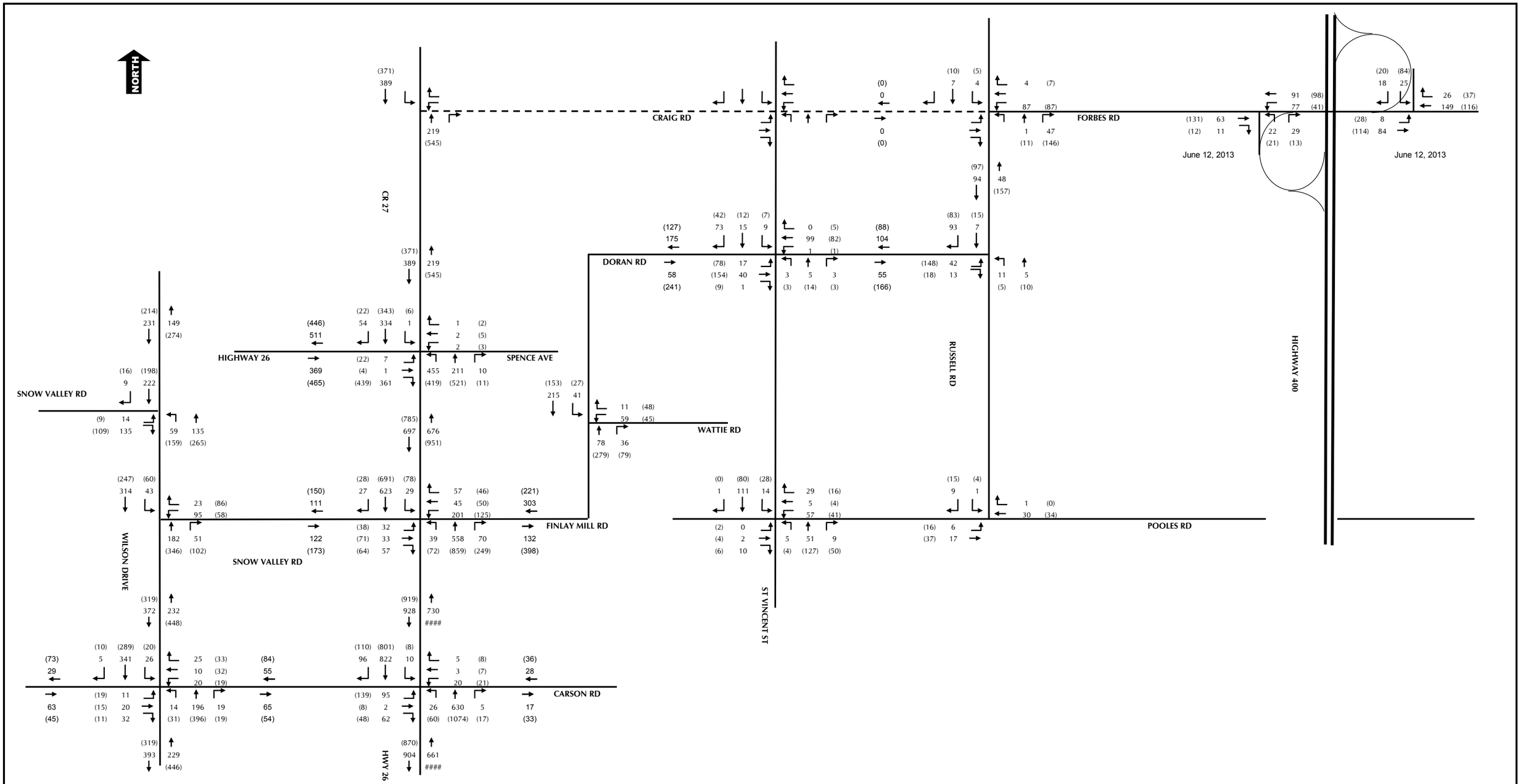


Figure 1A
Traffic Counts 2013
Midhurst EA Phases 3 & 4
Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS

PEAK HOUR OF ADJACENT STREET

TRIP RATES			AM Peak Hour (7-9 AM)			PM Peak Hour (4-6 PM)		
ITE Land Use Category	ITE Code	Variable	in	out	total	in	out	total
general light industrial	110	employees	0.25	0.05	0.3	0.07	0.24	0.31
industrial park	130	acres	7.10	1.45	8.55	1.86	6.98	8.84
single family detached	210	dwellinu units	0.18	0.53	0.70	0.49	0.28	0.77
apartment	220	dwelling units	0.10	0.41	0.51	0.40	0.22	0.62
residential condo/townhouse	230	dwelling units	0.06	0.29	0.35	0.29	0.14	0.43
combined single and townhouse	225	dwelling units	0.15	0.47	0.62	0.443	0.254	0.70
low-rise condo/townhouse	231	dwelling units	0.17	0.50	0.67	0.45	0.33	0.78
high-rise residential condo/towns (3+ floors)	232	dwelling units	0.06	0.28	0.34	0.24	0.14	0.38
mobile home park	240	dwelling units	0.09	0.35	0.44	0.37	0.22	0.59
recreational homes	260	dwelling units	0.11	0.05	0.16	0.11	0.15	0.26
hotel	310	rooms	0.34	0.22	0.56	0.31	0.28	0.59
resort hotel	330	rooms	0.22	0.09	0.31	0.18	0.24	0.42
water slide park	414	parking spaces	0.20	0.08	0.28	0.06	0.22	0.28
multipurpose recreational facility	435	1000 sq.ft. GFA				0.06	0.11	0.17
casino/video lottery establishment	473	1000 sq.ft. GFA	3.76	2.95	6.72	7.52	5.91	13.43
recreational community centre	495	1000 sq.ft. GFA	0.99	0.63	1.62	0.54	0.91	1.45
general office building	710	1000 sq.ft. GFA	1.36	0.19	1.55	0.25	1.24	1.49
business park	770	acres	16.03	2.83	18.86	3.37	13.47	16.84
specialty retail centre	814	1000 sq.ft. GFA	0.55	0.35	0.90	1.19	1.52	2.71
shopping Centre	820	1000 sq.ft. GFA	0.49	0.31	0.8	1.84	1.91	3.75
discount supermarket	854	1000 sq.ft. GFA	1.59	1.15	2.74	4.45	4.45	8.9
home improvement superstore	862	1000 sq.ft. GFA	0.72	0.54	1.26	1.14	1.23	2.37
drive-in bank	912	1000 sq.ft. GFA	6.92	5.43	12.35	12.91	12.91	25.82
high turnover (sit-down) restaurant	932	1000 sq.ft. GFA	5.99	5.53	11.52	6.58	4.57	11.15
gasoline/service station	944	Fueling Positions	6.20	5.96	12.16	6.94	6.94	13.87
gasoline/service station with convenience market	945	1000 sq.ft. GFA	40.44	38.86	79.3	48.54	48.54	97.08

PEAK HOUR OF ADJACENT STREET

	TRIP GENERATION	ITE Code	Proposed		AM Peak Hour (7-9 AM)			PM Peak Hour (4-6 PM)		
	Proposed Land Use	Employed	Size	Variable	in	out	total	in	out	total
Carson	combined single and townhouse	225	2909	dwelling units	435	1381	1816	1289	739	2028
			5%		-22	-69	-91	-64	-37	-101
					414	1312	1726	1225	702	1927
Doran North	combined single and townhouse	225	1440	dwelling units	216	684	899	638	366	1004
Doran South	combined single and townhouse	225	3859	dwelling units	578	1832	2410	1710	980	2690
			8208		1207	3828	5034	3573	2048	5621
Employment #1	general light industrial	110	2655	employees	661	135	797	173	650	823
			5%		-33	-7	-40	-9	-33	-41
					628	129	757	164	618	782
Employment #2	general light industrial	110	475	employees	118	24	143	31	116	147
	shopping Centre	820	495	1000 sq.ft. GFA	242	154	396	910	947	1856
				subtotal	360	179	539	940	1063	2004
			5%		-18	-9	-27	-47	-53	-100
		by-pass	25%		-60	-39	-99	-227	-237	-464
					281	131	413	666	773	1439
				total	2116	4087	6204	4403	3439	7842
2018										
Carson		225	848		127	403	529	376	215	591
			5%		-6	-20	-26	-19	-11	-30
					121	382	503	357	205	562
Doran North		225	232		35	110	145	103	59	162
2022										
Carson		225	1767		264	839	1103	783	449	1232
			5%		-13	-42	-55	-39	-22	-62
					251	797	1048	744	426	1170
Doran North		225	529		79	251	330	234	134	369
2025										
Carson		225	2354		352	1118	1470	1043	598	1641
			5%		-18	-56	-73	-52	-30	-82
					335	1062	1396	991	568	1559
Doran North		225	820		123	389	512	363	208	572
2027										
Carson		225	2623		393	1245	1638	1162	666	1829
			5%		-20	-62	-82	-58	-33	-91
					373	1183	1556	1104	633	1737
Doran North		225	1227		184	583	766	544	312	855
2031										
Carson		225	2650		397	1258	1655	1174	673	1848
			5%		-20	-63	-83	-59	-34	-92
					377	1195	1572	1116	639	1755
Doran North		225	1440		216	684	899	638	366	1004
Doran South		225	910		136	432	568	403	231	634
					1638	2571	4209	2987	2627	5615
2034										
Carson		225	2909		435	1381	1816	1289	739	2028
			5%		-22	-69	-91	-64	-37	-101
					414	1312	1726	1225	702	1927
Doran North		225	1440		216	684	899	638	366	1004
Doran South		225	1660		248	788	1037	736	422	1157
2036										
Carson		225	2909		435	1381	1816	1289	739	2028
			5%		-22	-69	-91	-64	-37	-101
					414	1312	1726	1225	702	1927
Doran North		225	1440		216	684	899	638	366	1004
Doran South		225	2410		361	1144	1505	1068	612	1680
2039										
Carson		225	2909		435	1381	1816	1289	739	2028
			5%		-22	-69	-91	-64	-37	-101
					414	1312	1726	1225	702	1927
Doran North		225	1440		216	684	899	638	366	1004
Doran South		225	3135		469	1488	1957	1389	796	2186
Jodies Lane		210	62		11	33	43	30	18	48

APPENDIX B

Development Generated Traffic

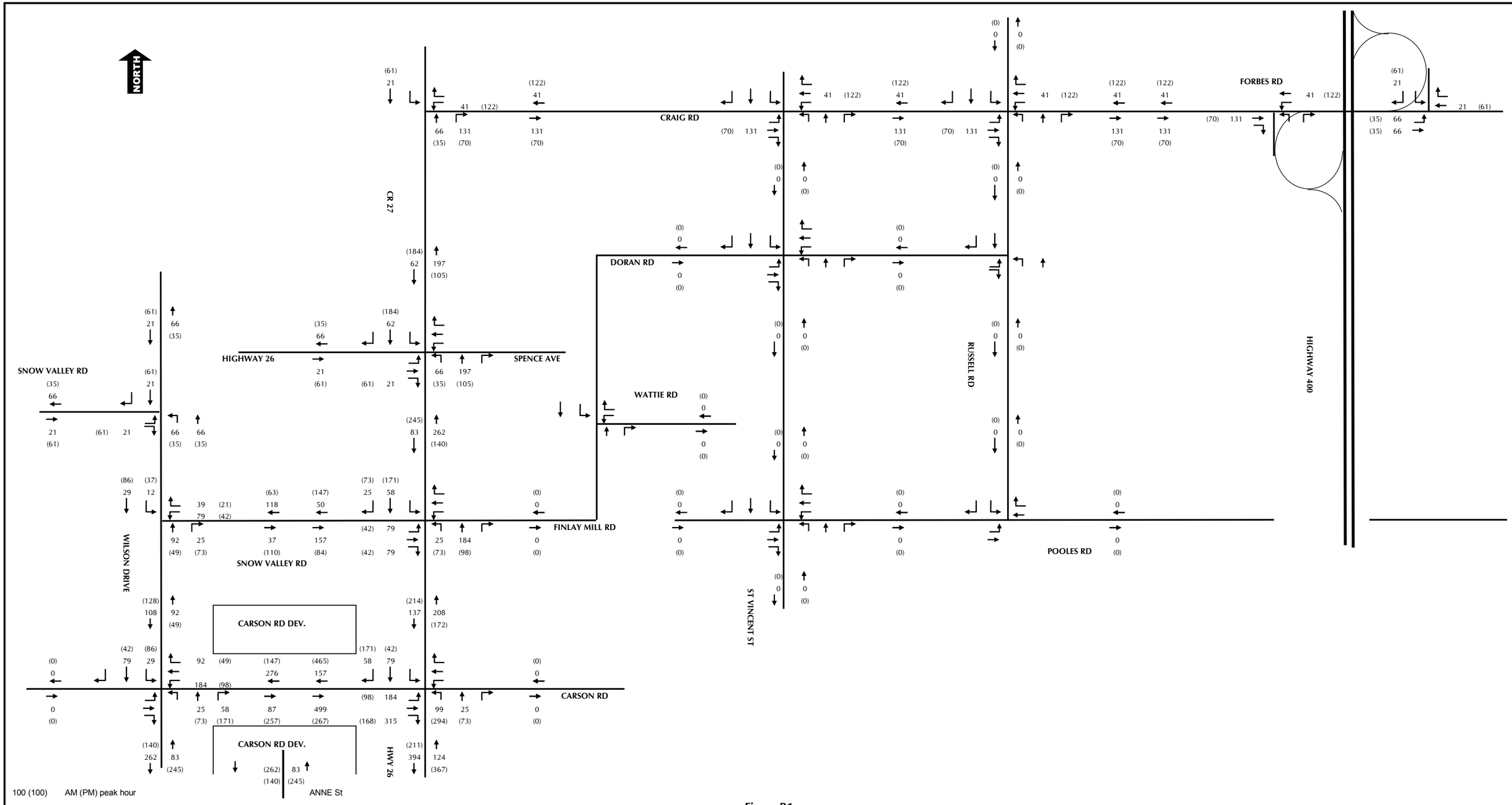


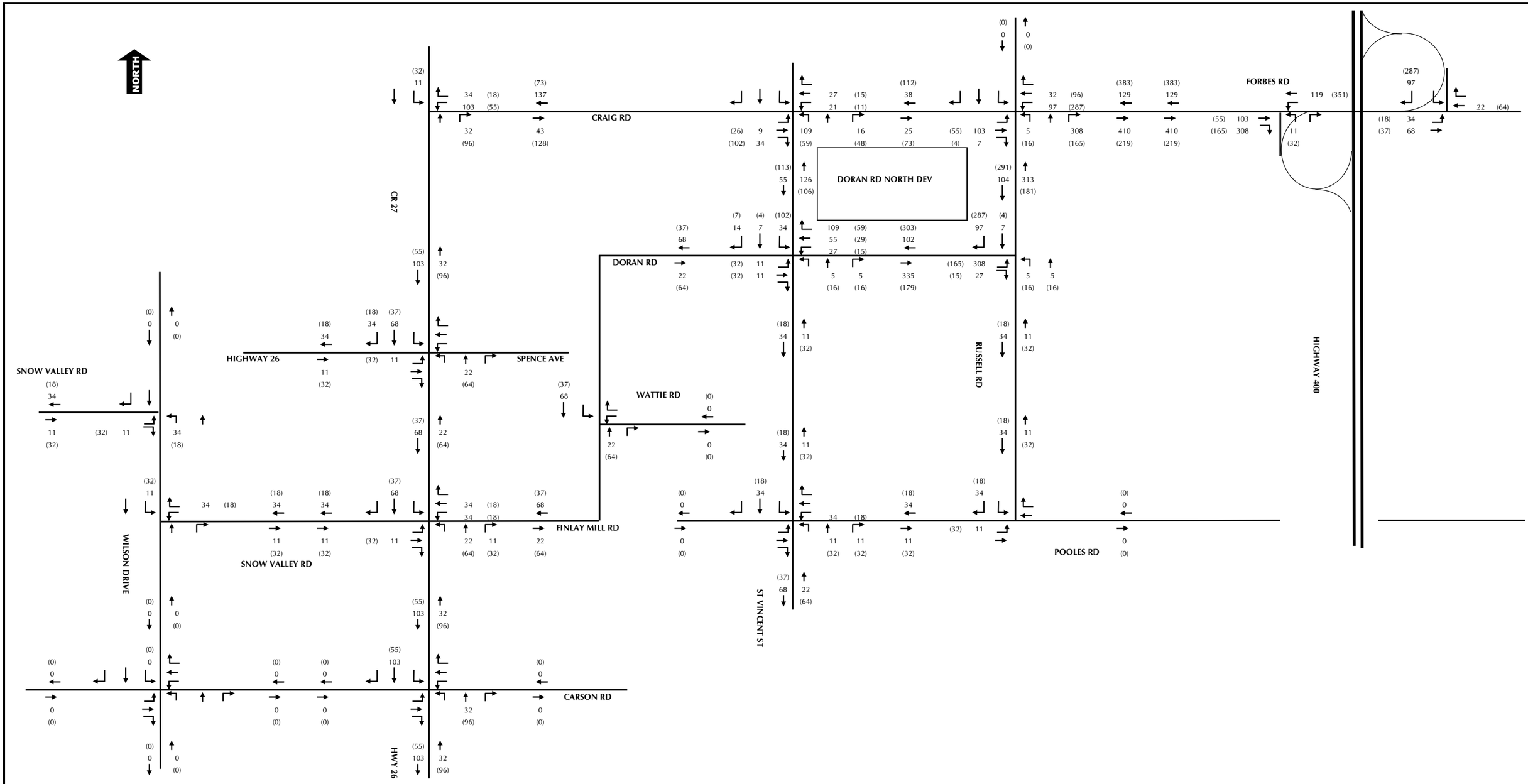
Figure B1

Carson Road Development Generated Traffic Volumes - Without Anne Street Connection

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS



100 (100) AM (PM) peak hour

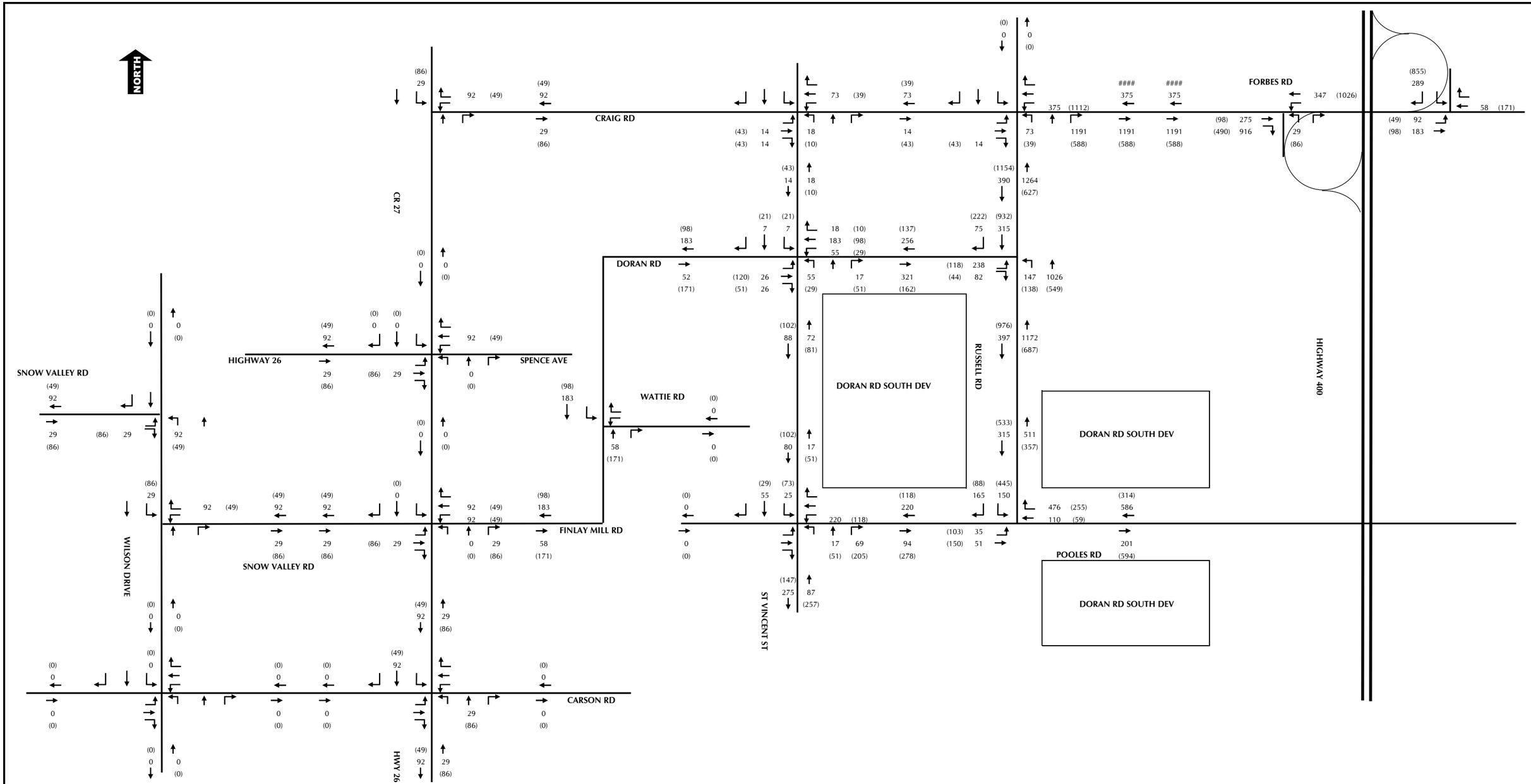
Figure B2

Doran Road North Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS



100 (100) AM (PM) peak hour

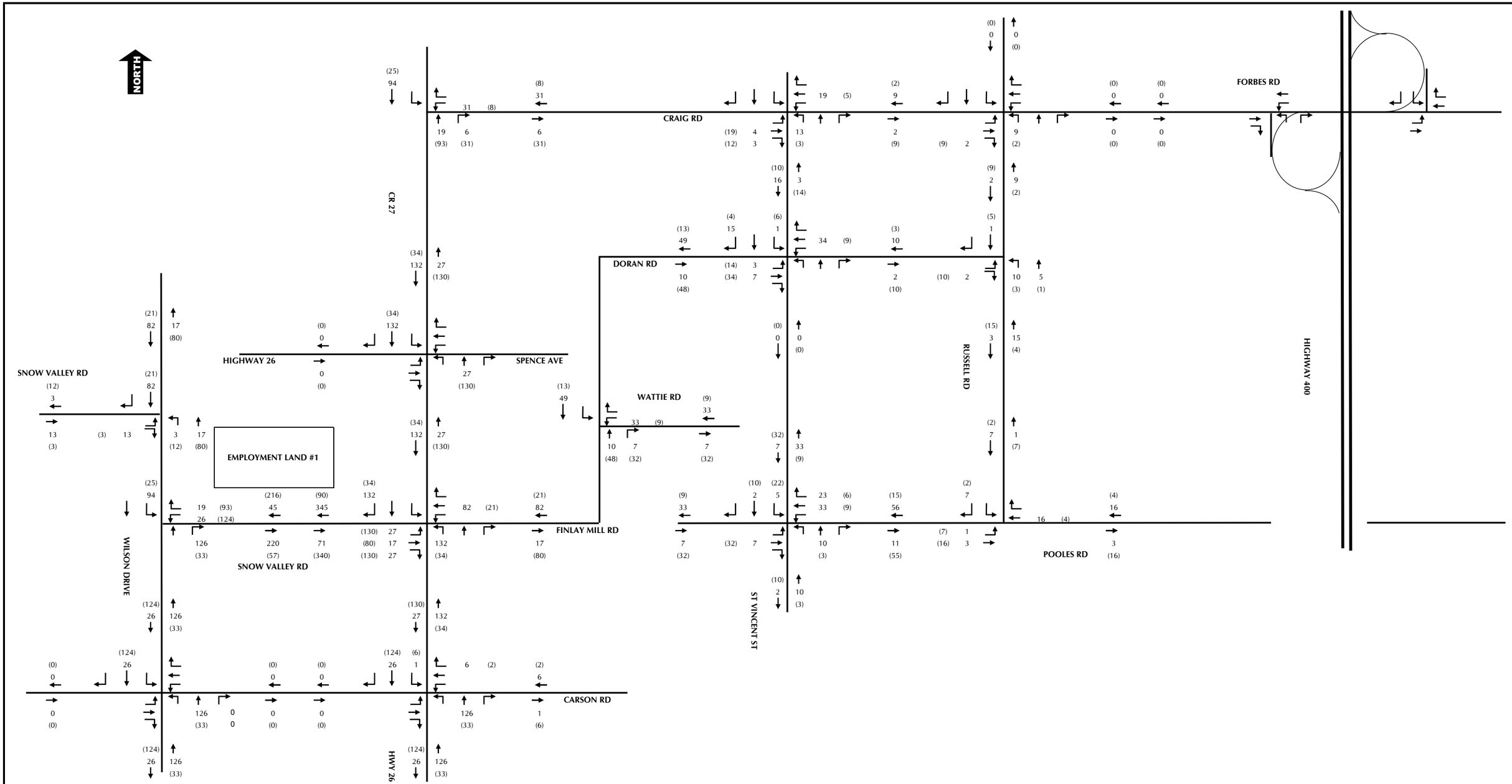
Figure B3

Doran Road South Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS



100 (100) AM (PM) peak hour

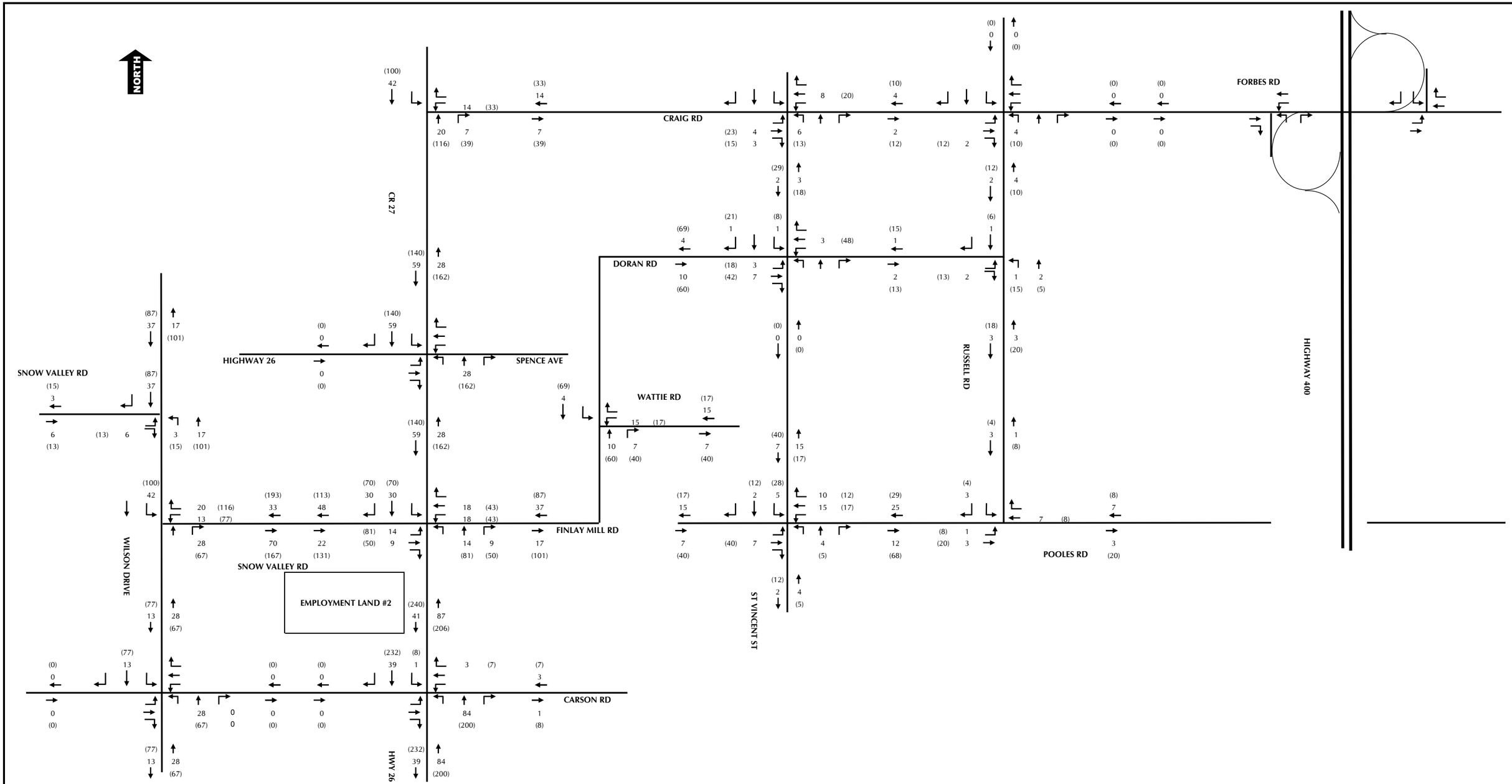
Figure B4

Employment Land #1 Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group — Consulting Engineers Planners



100 (100) AM (PM) peak hour

Figure B5

Employment Land #2 Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS

APPENDIX C

Operational Analysis

Intersection	
Intersection Delay, s/veh	13.8
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	578	102	1295	917
Demand Flow Rate, veh/h	590	104	1321	935
Vehicles Circulating, veh/h	823	1331	55	820
Vehicles Exiting, veh/h	932	45	822	615
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.6	11.9	11.8	25.3
Approach LOS	A	B	B	D

Lane	Left	Bypass	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	L	TR	LT	TR
RT Channelized		Free					
Lane Util	1.000		1.000	0.543	0.457	0.470	0.530
Critical Headway, s	4.113		4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	54	535	104	717	604	439	496
Cap Entry Lane, veh/h	635	1938	445	1084	1087	611	636
Entry HV Adj Factor	0.988	0.980	0.981	0.980	0.981	0.982	0.980
Flow Entry, veh/h	53	525	102	703	592	431	486
Cap Entry, veh/h	628	1900	437	1063	1066	600	624
V/C Ratio	0.085	0.276	0.234	0.661	0.556	0.719	0.779
Control Delay, s/veh	6.7	0.0	11.9	13.0	10.3	23.4	27.0
LOS	A	A	B	B	B	C	D
95th %tile Queue, veh	0	1	1	5	4	6	7

Intersection	
Intersection Delay, s/veh	160.9
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	490	46	2401	1966
Demand Flow Rate, veh/h	500	46	2448	2005
Vehicles Circulating, veh/h	1722	2688	289	410
Vehicles Exiting, veh/h	693	49	1933	2324
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	260.1	29.8	176.5	120.2
Approach LOS	F	D	F	F

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	500	46	1151	1297	942	1063
Cap Entry Lane, veh/h	338	172	910	923	831	848
Entry HV Adj Factor	0.980	0.997	0.980	0.981	0.981	0.980
Flow Entry, veh/h	490	46	1128	1272	924	1042
Cap Entry, veh/h	332	172	892	906	815	831
V/C Ratio	1.477	0.267	1.265	1.405	1.134	1.253
Control Delay, s/veh	260.1	29.8	145.2	204.2	95.7	141.8
LOS	F	D	F	F	F	F
95th %tile Queue, veh	27	1	40	55	27	37

Intersection	
Intersection Delay, s/veh	25.4
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	835	62	1845	949
Demand Flow Rate, veh/h	852	63	1881	968
Vehicles Circulating, veh/h	921	1934	168	694
Vehicles Exiting, veh/h	741	115	915	1303
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	1.9	17.1	38.6	21.0
Approach LOS	A	C	E	C

Lane	Left	Bypass	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	LT	TR	LT	TR
RT Channelized		Free					
Lane Util	1.000		1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113		4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	162	690	63	884	997	455	513
Cap Entry Lane, veh/h	593	1938	292	996	1005	671	695
Entry HV Adj Factor	0.982	0.980	0.982	0.981	0.981	0.980	0.981
Flow Entry, veh/h	159	676	62	867	978	446	503
Cap Entry, veh/h	582	1900	287	977	985	658	682
V/C Ratio	0.273	0.356	0.216	0.887	0.992	0.678	0.738
Control Delay, s/veh	9.9	0.0	17.1	28.8	47.4	19.6	22.3
LOS	A	A	C	D	E	C	C
95th %tile Queue, veh	1	2	1	12	19	5	7

Existing 2015 Traffic Volumes

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	64	11	79	93	22	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	12	83	98	23	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	79	0	337	-
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	264	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1519	-	658	0
Stage 1	-	-	-	-	950	0
Stage 2	-	-	-	-	780	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1519	-	620	-
Mov Cap-2 Maneuver	-	-	-	-	620	-
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	620	-	-	-	1519	-
HCM Lane V/C Ratio	0.037	-	-	-	0.055	-
HCM Control Delay (s)	11	0	-	-	7.5	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	8	86	152	27	26	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	91	160	28	27	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	188	0	-	0	281	-
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1386	-	-	-	709	0
Stage 1	-	-	-	-	856	0
Stage 2	-	-	-	-	917	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	705	-
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	911	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1386	-	-	-	705	-
HCM Lane V/C Ratio	0.006	-	-	-	0.039	-
HCM Control Delay (s)	7.6	0	-	-	10.3	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	1	369	2	2	1	465	216	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	1500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	388	2	2	1	489	227	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1484	1607	-	1394	1631	119	417	0	0
Stage 1	390	390	-	1212	1212	-	-	-	-
Stage 2	1094	1217	-	182	419	-	-	-	-
Critical Hdwy	7.54	6.54	-	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	-	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	87	104	0	101	101	910	1138	-	-
Stage 1	606	606	0	193	253	-	-	-	-
Stage 2	228	252	0	802	588	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	57	59	-	67	58	910	1138	-	-
Mov Cap-2 Maneuver	103	120	-	95	78	-	-	-	-
Stage 1	346	605	-	110	144	-	-	-	-
Stage 2	128	144	-	800	587	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	42.3	41.1	7.1
HCM LOS	E	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1138	-	-	105	-	105	1326	-	-
HCM Lane V/C Ratio	0.43	-	-	0.08	-	0.05	0.001	-	-
HCM Control Delay (s)	10.5	-	-	42.3	0	41.1	7.7	0	-
HCM Lane LOS	B	-	-	E	A	E	A	A	-
HCM 95th %tile Q(veh)	2.2	-	-	0.3	-	0.2	0	-	-

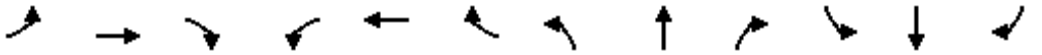
Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	1	341	55
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	1	359	58

Major/Minor	Major2		
Conflicting Flow All	238	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1326	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1326	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt



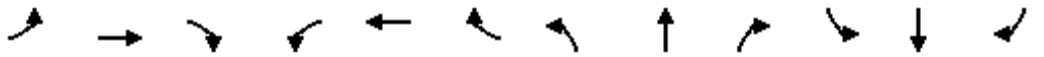
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	2	63	20	3	5	27	644	5	10	840	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	102	2	66	21	3	5	28	678	5	11	884	103
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	7	240	336	98	163	369	1834	820	484	1655	193
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1402	47	1544	1328	629	1049	568	3539	1583	755	3194	372
Grp Volume(v), veh/h	102	0	68	21	0	8	28	678	5	11	490	497
Grp Sat Flow(s),veh/h/ln	1402	0	1590	1328	0	1678	568	1770	1583	755	1770	1797
Q Serve(g_s), s	2.7	0.0	1.5	0.6	0.0	0.2	1.4	4.6	0.1	0.4	7.4	7.4
Cycle Q Clear(g_c), s	2.8	0.0	1.5	2.1	0.0	0.2	8.8	4.6	0.1	4.9	7.4	7.4
Prop In Lane	1.00		0.97	1.00		0.63	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	392	0	247	336	0	261	369	1834	820	484	917	931
V/C Ratio(X)	0.26	0.00	0.28	0.06	0.00	0.03	0.08	0.37	0.01	0.02	0.53	0.53
Avail Cap(c_a), veh/h	736	0	638	662	0	673	369	1834	820	484	917	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	15.0	15.9	0.0	14.4	9.4	5.8	4.7	7.2	6.4	6.4
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.1	0.0	0.0	0.4	0.6	0.0	0.1	2.2	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	1.1	0.0	0.7	0.2	0.0	0.1	0.3	2.3	0.0	0.1	4.1	4.2
LnGrp Delay(d),s/veh	15.9	0.0	15.6	16.0	0.0	14.4	9.8	6.3	4.7	7.3	8.7	8.6
LnGrp LOS	B		B	B		B	A	A	A	A	A	A
Approach Vol, veh/h		170			29			711			998	
Approach Delay, s/veh		15.8			15.5			6.5			8.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		12.5		37.5		12.5
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 21		* 16		* 21		* 16
Max Q Clear Time (g_c+I1), s		10.8		4.8		9.4		4.1
Green Ext Time (p_c), s		9.4		1.1		10.7		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	34	58	205	46	58	40	570	72	30	637	28
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	35	36	0	216	48	61	42	600	76	32	671	29
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	396	249	0	573	179	228	403	1364	610	418	1306	56
Arrive On Green	0.06	0.13	0.00	0.16	0.24	0.24	0.06	0.39	0.39	0.05	0.38	0.36
Sat Flow, veh/h	1774	1863	0	1774	747	949	1774	3539	1583	1774	3457	149
Grp Volume(v), veh/h	35	36	0	216	0	109	42	600	76	32	343	357
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1695	1774	1770	1583	1774	1770	1836
Q Serve(g_s), s	0.9	1.0	0.0	5.3	0.0	3.0	0.8	7.1	1.8	0.6	8.5	8.5
Cycle Q Clear(g_c), s	0.9	1.0	0.0	5.3	0.0	3.0	0.8	7.1	1.8	0.6	8.5	8.5
Prop In Lane	1.00		0.00	1.00		0.56	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	396	249	0	573	0	407	403	1364	610	418	668	694
V/C Ratio(X)	0.09	0.14	0.00	0.38	0.00	0.27	0.10	0.44	0.12	0.08	0.51	0.51
Avail Cap(c_a), veh/h	549	612	0	973	0	973	547	1364	610	575	668	694
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	21.7	0.0	14.5	0.0	17.5	9.7	12.9	11.2	9.8	13.6	13.6
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.4	0.0	0.3	0.1	1.0	0.4	0.1	2.8	2.7
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	0.5	0.5	0.0	2.6	0.0	1.4	0.4	3.6	0.8	0.3	4.6	4.8
LnGrp Delay(d),s/veh	19.1	21.9	0.0	15.0	0.0	17.8	9.8	13.9	11.7	9.8	16.4	16.4
LnGrp LOS	B	C		B		B	A	B	B	A	B	B
Approach Vol, veh/h		71			325			718			732	
Approach Delay, s/veh		20.5			15.9			13.4			16.1	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	56.0	11.1	12.9	5.4	55.5	5.1	18.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	2.6	9.1	7.3	3.0	2.8	10.5	2.9	5.0
Green Ext Time (p_c), s	0.0	9.7	0.9	1.5	0.0	8.6	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	134	12	42	100	21	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	13	44	105	22	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	154	0	341	-
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	194	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1426	-	655	0
Stage 1	-	-	-	-	880	0
Stage 2	-	-	-	-	839	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1426	-	633	-
Mov Cap-2 Maneuver	-	-	-	-	633	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	811	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	633	-	-	-	1426	-
HCM Lane V/C Ratio	0.035	-	-	-	0.031	-
HCM Control Delay (s)	10.9	0	-	-	7.6	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	29	117	119	38	86	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	123	125	40	91	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	165	0	-	0	329	-
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1413	-	-	-	665	0
Stage 1	-	-	-	-	882	0
Stage 2	-	-	-	-	848	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1413	-	-	-	649	-
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	828	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1413	-	-	-	649	-
HCM Lane V/C Ratio	0.022	-	-	-	0.139	-
HCM Control Delay (s)	7.6	0	-	-	11.4	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	22	4	449	3	5	2	428	533	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	1500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	4	473	3	5	2	451	561	12

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1578	1868	-	1667	1873	286	393	0	0
Stage 1	394	394	-	1468	1468	-	-	-	-
Stage 2	1184	1474	-	199	405	-	-	-	-
Critical Hdwy	7.54	6.54	-	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	-	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	74	72	0	63	71	711	1162	-	-
Stage 1	602	604	0	134	190	-	-	-	-
Stage 2	201	189	0	784	597	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	49	44	-	42	43	711	1162	-	-
Mov Cap-2 Maneuver	92	94	-	70	77	-	-	-	-
Stage 1	368	599	-	82	116	-	-	-	-
Stage 2	117	116	-	772	592	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	59.9	50.2	4.4
HCM LOS	F	F	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	92	-	90	996	-	-
HCM Lane V/C Ratio	0.388	-	-	0.297	-	0.117	0.006	-	-
HCM Control Delay (s)	10	-	-	59.9	0	50.2	8.6	0	-
HCM Lane LOS	B	-	-	F	A	F	A	A	-
HCM 95th %tile Q(veh)	1.9	-	-	1.1	-	0.4	0	-	-

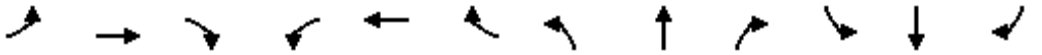
Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	6	351	22
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	6	369	23

Major/Minor	Major2		
Conflicting Flow All	573	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	996	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	996	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.1
HCM LOS	

Minor Lane/Major Mvmt



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	8	49	21	7	8	61	1098	17	8	819	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	149	8	52	22	7	8	64	1156	18	8	862	118
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	38	244	365	139	158	358	1796	804	303	1588	217
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	1393	215	1400	1337	795	908	572	3539	1583	476	3129	428
Grp Volume(v), veh/h	149	0	60	22	0	15	64	1156	18	8	488	492
Grp Sat Flow(s),veh/h/ln	1393	0	1616	1337	0	1703	572	1770	1583	476	1770	1787
Q Serve(g_s), s	4.1	0.0	1.3	0.6	0.0	0.3	3.5	9.8	0.2	0.5	7.7	7.7
Cycle Q Clear(g_c), s	4.4	0.0	1.3	1.9	0.0	0.3	11.2	9.8	0.2	10.4	7.7	7.7
Prop In Lane	1.00		0.87	1.00		0.53	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	407	0	282	365	0	297	358	1796	804	303	898	907
V/C Ratio(X)	0.37	0.00	0.21	0.06	0.00	0.05	0.18	0.64	0.02	0.03	0.54	0.54
Avail Cap(c_a), veh/h	706	0	628	652	0	662	358	1796	804	303	898	907
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	0.0	14.6	15.4	0.0	14.2	10.7	7.4	5.1	11.2	6.9	6.9
Incr Delay (d2), s/veh	0.5	0.0	0.4	0.1	0.0	0.1	1.1	1.8	0.1	0.2	2.4	2.3
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	1.6	0.0	0.6	0.2	0.0	0.1	0.7	5.1	0.1	0.1	4.2	4.3
LnGrp Delay(d),s/veh	16.5	0.0	15.0	15.5	0.0	14.2	11.8	9.2	5.1	11.4	9.2	9.2
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		209			37			1238			988	
Approach Delay, s/veh		16.1			15.0			9.3			9.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.5		13.5		36.5		13.5
Change Period (Y+Rc), s		* 6.8		* 6.3		* 6.8		* 6.3
Max Green Setting (Gmax), s		* 21		* 16		* 21		* 16
Max Q Clear Time (g_c+I1), s		13.2		6.4		12.4		3.9
Green Ext Time (p_c), s		7.5		1.2		8.4		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	73	65	128	51	47	74	878	255	80	706	29
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	41	77	0	135	54	49	78	924	268	84	743	31
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	260	0	478	180	163	426	1363	610	356	1341	56
Arrive On Green	0.06	0.14	0.00	0.12	0.20	0.20	0.08	0.38	0.38	0.08	0.39	0.37
Sat Flow, veh/h	1774	1863	0	1774	901	818	1774	3539	1583	1774	3462	144
Grp Volume(v), veh/h	41	77	0	135	0	103	78	924	268	84	380	394
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1718	1774	1770	1583	1774	1770	1837
Q Serve(g_s), s	1.1	2.1	0.0	3.2	0.0	2.8	1.4	12.1	7.0	1.5	9.3	9.3
Cycle Q Clear(g_c), s	1.1	2.1	0.0	3.2	0.0	2.8	1.4	12.1	7.0	1.5	9.3	9.3
Prop In Lane	1.00		0.00	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	416	260	0	478	0	343	426	1363	610	356	686	712
V/C Ratio(X)	0.10	0.30	0.00	0.28	0.00	0.30	0.18	0.68	0.44	0.24	0.55	0.55
Avail Cap(c_a), veh/h	565	623	0	964	0	1005	537	1363	610	463	686	712
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	21.5	0.0	15.1	0.0	18.9	9.1	14.2	12.7	9.8	13.3	13.3
Incr Delay (d2), s/veh	0.1	0.6	0.0	0.3	0.0	0.5	0.2	2.7	2.3	0.3	3.2	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.1	0.0	1.6	0.0	1.4	0.7	6.3	3.4	0.7	5.1	5.3
LnGrp Delay(d),s/veh	18.3	22.1	0.0	15.4	0.0	19.4	9.4	17.0	14.9	10.1	16.5	16.4
LnGrp LOS	B	C		B		B	A	B	B	B	B	B
Approach Vol, veh/h		118			238			1270			858	
Approach Delay, s/veh		20.8			17.1			16.1			15.8	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	56.6	8.7	13.1	6.5	56.7	5.3	16.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	3.5	14.1	5.2	4.1	3.4	11.3	3.1	4.8
Green Ext Time (p_c), s	0.1	6.1	0.5	1.9	0.1	8.7	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2031 Total Traffic Volumes

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	362	537	92	347	44	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	381	565	97	365	46	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	946	0	1223	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	725	-	198	0
Stage 1	-	-	-	-	512	0
Stage 2	-	-	-	-	572	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	725	-	165	-
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	19.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	-	-	-	725	-
HCM Lane V/C Ratio	0.154	-	-	-	0.134	-
HCM Control Delay (s)	19.2	0	-	-	10.7	0
HCM Lane LOS	C	A	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	-	0.5	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	125	272	233	31	30	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	286	245	33	32	216

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	278	0	-	0	811	-
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	549	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1285	-	-	-	349	0
Stage 1	-	-	-	-	782	0
Stage 2	-	-	-	-	579	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1285	-	-	-	306	-
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1285	-	-	-	306	-
HCM Lane V/C Ratio	0.102	-	-	-	0.103	-
HCM Control Delay (s)	8.1	0	-	-	18.1	0
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	264	2	350	20	3	14	117	1027	5	13	1246	165
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	278	2	368	21	3	15	123	1081	5	14	1312	174
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	438	2	438	140	45	223	217	2074	10	284	1530	202
Arrive On Green	0.08	0.28	0.28	0.16	0.16	0.16	0.05	0.57	0.57	0.49	0.49	0.49
Sat Flow, veh/h	1774	9	1576	1008	271	1353	1774	3613	17	517	3145	414
Grp Volume(v), veh/h	278	0	370	21	0	18	123	530	556	14	735	751
Grp Sat Flow(s),veh/h/ln	1774	0	1585	1008	0	1624	1774	1770	1860	517	1770	1790
Q Serve(g_s), s	7.0	0.0	19.5	1.8	0.0	0.8	2.9	16.1	16.1	1.5	32.3	32.9
Cycle Q Clear(g_c), s	7.0	0.0	19.5	11.2	0.0	0.8	2.9	16.1	16.1	9.8	32.3	32.9
Prop In Lane	1.00		0.99	1.00		0.83	1.00		0.01	1.00		0.23
Lane Grp Cap(c), veh/h	438	0	440	140	0	268	217	1016	1068	284	861	871
V/C Ratio(X)	0.64	0.00	0.84	0.15	0.00	0.07	0.57	0.52	0.52	0.05	0.85	0.86
Avail Cap(c_a), veh/h	438	0	467	157	0	295	262	1016	1068	284	861	871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.6	0.0	30.1	40.1	0.0	31.2	18.9	11.5	11.5	16.8	20.0	20.1
Incr Delay (d2), s/veh	3.0	0.0	12.4	0.5	0.0	0.1	2.3	1.9	1.8	0.3	10.5	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	10.0	0.5	0.0	0.4	1.7	8.3	8.7	0.2	18.2	18.7
LnGrp Delay(d),s/veh	32.6	0.0	42.5	40.6	0.0	31.3	21.2	13.4	13.3	17.1	30.5	31.2
LnGrp LOS	C		D	D		C	C	B	B	B	C	C
Approach Vol, veh/h		648			39			1209			1500	
Approach Delay, s/veh		38.3			36.3			14.1			30.7	
Approach LOS		D			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		59.1		30.9	7.8	51.4	10.0	20.9
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 51		* 26	7.0	* 41	7.0	* 16
Max Q Clear Time (g_c+I1), s		18.1		21.5	4.9	34.9	9.0	13.2
Green Ext Time (p_c), s		32.1		2.1	0.1	5.9	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

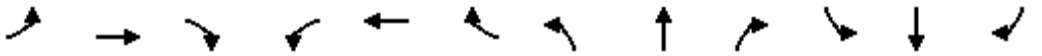
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	82	167	315	210	68	201	871	110	35	897	216
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	159	86	176	332	221	72	212	917	116	37	944	227
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	109	224	462	379	124	258	1420	635	266	1008	242
Arrive On Green	0.10	0.20	0.20	0.18	0.28	0.28	0.09	0.40	0.40	0.05	0.36	0.34
Sat Flow, veh/h	1774	547	1119	1774	1347	439	1774	3539	1583	1774	2832	680
Grp Volume(v), veh/h	159	0	262	332	0	293	212	917	116	37	589	582
Grp Sat Flow(s),veh/h/ln	1774	0	1665	1774	0	1785	1774	1770	1583	1774	1770	1743
Q Serve(g_s), s	6.1	0.0	13.2	12.1	0.0	12.5	6.4	18.5	4.2	1.1	28.4	28.5
Cycle Q Clear(g_c), s	6.1	0.0	13.2	12.1	0.0	12.5	6.4	18.5	4.2	1.1	28.4	28.5
Prop In Lane	1.00		0.67	1.00		0.25	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	413	0	333	462	0	503	258	1420	635	266	630	620
V/C Ratio(X)	0.39	0.00	0.79	0.72	0.00	0.58	0.82	0.65	0.18	0.14	0.94	0.94
Avail Cap(c_a), veh/h	414	0	351	578	0	637	258	1420	635	347	630	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	33.5	21.0	0.0	27.3	20.3	21.4	17.1	17.4	27.5	27.7
Incr Delay (d2), s/veh	0.6	0.0	10.8	3.2	0.0	1.1	18.8	2.3	0.6	0.2	23.2	23.8
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	3.0	0.0	7.0	6.3	0.0	6.3	4.4	9.5	1.9	0.6	17.8	17.7
LnGrp Delay(d),s/veh	24.5	0.0	44.4	24.3	0.0	28.3	39.1	23.6	17.7	17.7	50.6	51.5
LnGrp LOS	C		D	C		C	D	C	B	B	D	D
Approach Vol, veh/h		421			625			1245			1208	
Approach Delay, s/veh		36.8			26.2			25.7			50.0	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	41.2	18.1	22.9	10.0	37.2	10.9	30.2
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.1	20.5	14.1	15.2	8.4	30.5	8.1	14.5
Green Ext Time (p_c), s	0.0	9.7	1.0	1.5	0.0	0.0	0.0	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	8	452	2	24	1	605	508	10	1	716	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1852		1770	3529		1770	3475	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.18	1.00		0.45	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1852		328	3529		835	3475	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	8	476	2	25	1	637	535	11	1	754	104
RTOR Reduction (vph)	0	0	0	0	1	0	0	1	0	0	12	0
Lane Group Flow (vph)	20	8	476	2	25	0	637	545	0	1	846	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	2.5	2.5	67.7	2.5	2.5		52.4	52.4		21.8	21.8	
Effective Green, g (s)	2.5	2.5	67.7	2.5	2.5		52.4	52.4		21.8	21.8	
Actuated g/C Ratio	0.04	0.04	1.00	0.04	0.04		0.77	0.77		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	68	68	1583	68	68		841	2731		268	1118	
v/s Ratio Prot		0.00					c0.31	0.15			0.24	
v/s Ratio Perm	0.01		c0.30	0.00	0.01		c0.28			0.00		
v/c Ratio	0.29	0.12	0.30	0.03	0.37		0.76	0.20		0.00	0.76	
Uniform Delay, d1	31.7	31.5	0.0	31.4	31.8		10.8	2.0		15.6	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.8	0.5	0.2	3.4		3.9	0.0		0.0	3.0	
Delay (s)	34.1	32.3	0.5	31.6	35.2		14.8	2.1		15.6	23.6	
Level of Service	C	C	A	C	D		B	A		B	C	
Approach Delay (s)		2.3			34.9			8.9			23.5	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	15.8
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	299	295	49	822	77	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	315	311	52	865	81	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	625	0	1438	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	968	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	956	-	147	0
Stage 1	-	-	-	-	629	0
Stage 2	-	-	-	-	368	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	956	-	132	-
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	329	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	26.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	-	956	-
HCM Lane V/C Ratio	0.326	-	-	-	0.054	-
HCM Control Delay (s)	26.3	0	-	-	9	0
HCM Lane LOS	D	A	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	95	228	299	44	101	569
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	100	240	315	46	106	599

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	778	-
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	440	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1198	-	-	-	365	0
Stage 1	-	-	-	-	722	0
Stage 2	-	-	-	-	649	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1198	-	-	-	330	-
Mov Cap-2 Maneuver	-	-	-	-	330	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1198	-	-	-	330	-
HCM Lane V/C Ratio	0.083	-	-	-	0.322	-
HCM Control Delay (s)	8.3	0	-	-	21	0
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	-	-	-	1.4	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	232	8	203	21	7	16	329	1703	17	22	1420	269
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	244	8	214	22	7	17	346	1793	18	23	1495	283
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	10	277	112	45	109	361	2568	26	168	1563	290
Arrive On Green	0.06	0.18	0.18	0.09	0.09	0.09	0.17	0.72	0.72	0.52	0.52	0.52
Sat Flow, veh/h	1774	57	1535	1154	483	1173	1774	3590	36	258	2982	553
Grp Volume(v), veh/h	244	0	222	22	0	24	346	883	928	23	874	904
Grp Sat Flow(s),veh/h/ln	1774	0	1592	1154	0	1656	1774	1770	1856	258	1770	1765
Q Serve(g_s), s	8.0	0.0	16.7	2.3	0.0	1.7	19.7	35.6	35.7	7.0	58.3	62.7
Cycle Q Clear(g_c), s	8.0	0.0	16.7	8.0	0.0	1.7	19.7	35.6	35.7	18.7	58.3	62.7
Prop In Lane	1.00		0.96	1.00		0.71	1.00		0.02	1.00		0.31
Lane Grp Cap(c), veh/h	280	0	287	112	0	153	361	1266	1328	168	928	925
V/C Ratio(X)	0.87	0.00	0.77	0.20	0.00	0.16	0.96	0.70	0.70	0.14	0.94	0.98
Avail Cap(c_a), veh/h	280	0	344	153	0	212	361	1266	1328	168	928	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	0.0	49.0	58.1	0.0	52.4	43.1	10.1	10.2	22.3	28.1	29.1
Incr Delay (d2), s/veh	24.5	0.0	8.8	0.8	0.0	0.5	36.7	3.2	3.1	1.7	18.5	24.5
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	6.4	0.0	8.0	0.8	0.0	0.8	15.6	18.3	19.2	0.6	33.2	36.7
LnGrp Delay(d),s/veh	76.9	0.0	57.8	58.9	0.0	52.9	79.7	13.3	13.2	24.0	46.5	53.7
LnGrp LOS	E		E	E		D	E	B	B	C	D	D
Approach Vol, veh/h		466			46			2157			1801	
Approach Delay, s/veh		67.8			55.8			24.0			49.8	
Approach LOS		E			E			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		101.1		28.9	24.0	77.1	11.0	17.9
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 90		* 27	21.0	* 66	8.0	* 16
Max Q Clear Time (g_c+I1), s		37.7		18.7	21.7	64.7	10.0	10.0
Green Ext Time (p_c), s		51.9		2.1	0.0	1.1	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	39.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

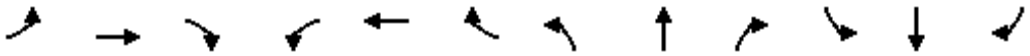
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	295	268	245	223	154	55	188	1264	401	93	1091	205
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	311	282	258	235	162	58	198	1331	422	98	1148	216
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	500	259	237	273	355	127	198	1507	674	166	1191	223
Arrive On Green	0.14	0.29	0.29	0.13	0.27	0.27	0.08	0.43	0.43	0.05	0.40	0.39
Sat Flow, veh/h	1774	897	821	1774	1311	469	1774	3539	1583	1774	2977	557
Grp Volume(v), veh/h	311	0	540	235	0	220	198	1331	422	98	680	684
Grp Sat Flow(s),veh/h/ln	1774	0	1718	1774	0	1780	1774	1770	1583	1774	1770	1764
Q Serve(g_s), s	17.1	0.0	40.7	14.1	0.0	14.5	11.0	48.7	29.4	4.5	52.7	53.4
Cycle Q Clear(g_c), s	17.1	0.0	40.7	14.1	0.0	14.5	11.0	48.7	29.4	4.5	52.7	53.4
Prop In Lane	1.00		0.48	1.00		0.26	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	500	0	497	273	0	481	198	1507	674	166	708	706
V/C Ratio(X)	0.62	0.00	1.09	0.86	0.00	0.46	1.00	0.88	0.63	0.59	0.96	0.97
Avail Cap(c_a), veh/h	510	0	497	327	0	526	198	1507	674	174	708	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	50.0	40.0	0.0	42.7	41.8	37.2	31.6	32.3	41.1	41.5
Incr Delay (d2), s/veh	2.3	0.0	65.9	17.6	0.0	0.7	64.1	7.9	4.4	4.8	25.4	27.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	28.3	10.3	0.0	7.2	11.2	25.3	13.6	2.4	30.7	31.3
LnGrp Delay(d),s/veh	31.4	0.0	115.9	57.6	0.0	43.4	105.9	45.0	36.0	37.2	66.6	68.6
LnGrp LOS	C		F	E		D	F	D	D	D	E	E
Approach Vol, veh/h		851			455			1951			1462	
Approach Delay, s/veh		85.1			50.7			49.2			65.5	
Approach LOS		F			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	65.7	19.6	46.0	13.0	62.1	22.3	43.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 58	20.9	* 40	10.0	* 55	20.0	* 41
Max Q Clear Time (g_c+I1), s	6.5	50.7	16.1	42.7	13.0	55.4	19.1	16.5
Green Ext Time (p_c), s	0.0	7.6	0.5	0.0	0.0	0.0	0.2	13.1

Intersection Summary	
HCM 2010 Ctrl Delay	60.9
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	24	582	3	17	2	514	1076	11	6	789	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1835		1770	3534		1770	3511	
Flt Permitted	0.77	1.00	1.00	0.77	1.00		0.18	1.00		0.25	1.00	
Satd. Flow (perm)	1433	1863	1583	1433	1835		333	3534		462	3511	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	61	25	613	3	18	2	541	1133	12	6	831	47
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	5	0
Lane Group Flow (vph)	61	25	613	3	18	0	541	1144	0	6	873	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	5.2	5.2	65.2	5.2	5.2		47.2	47.2		21.9	21.9	
Effective Green, g (s)	5.2	5.2	65.2	5.2	5.2		47.2	47.2		21.9	21.9	
Actuated g/C Ratio	0.08	0.08	1.00	0.08	0.08		0.72	0.72		0.34	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	114	148	1583	114	146		732	2558		155	1179	
v/s Ratio Prot		0.01					c0.25	0.32			0.25	
v/s Ratio Perm	0.04		c0.39	0.00	0.01		c0.28			0.01		
v/c Ratio	0.54	0.17	0.39	0.03	0.12		0.74	0.45		0.04	0.74	
Uniform Delay, d1	28.8	28.0	0.0	27.7	27.9		10.8	3.7		14.6	19.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	0.5	0.7	0.1	0.4		3.9	0.1		0.1	2.5	
Delay (s)	33.6	28.5	0.7	27.8	28.3		14.8	3.8		14.7	21.7	
Level of Service	C	C	A	C	C		B	A		B	C	
Approach Delay (s)		4.6			28.2			7.3			21.6	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	15.8
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

2031 Total Traffic Volumes with Improvements

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	82	167	315	210	68	201	871	110	35	897	216
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	1863	1863	1863	1900
Adj Flow Rate, veh/h	159	86	176	332	221	72	212	917	116	37	944	227
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	329	280	570	352	115	272	1463	655	278	1037	249
Arrive On Green	0.10	0.18	0.18	0.19	0.26	0.26	0.09	0.41	0.41	0.05	0.37	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1347	439	1774	3539	1583	1774	2832	680
Grp Volume(v), veh/h	159	86	176	332	0	293	212	917	116	37	589	582
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1785	1774	1770	1583	1774	1770	1743
Q Serve(g_s), s	6.1	3.4	8.8	12.1	0.0	12.4	6.0	17.6	4.0	1.1	27.2	27.3
Cycle Q Clear(g_c), s	6.1	3.4	8.8	12.1	0.0	12.4	6.0	17.6	4.0	1.1	27.2	27.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	393	329	280	570	0	466	272	1463	655	278	648	638
V/C Ratio(X)	0.40	0.26	0.63	0.58	0.00	0.63	0.78	0.63	0.18	0.13	0.91	0.91
Avail Cap(c_a), veh/h	396	404	343	689	0	655	272	1463	655	363	648	638
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	30.5	32.7	20.0	0.0	28.0	19.3	19.9	15.9	16.3	25.9	26.1
Incr Delay (d2), s/veh	0.7	0.4	2.5	0.9	0.0	1.4	13.4	2.0	0.6	0.2	19.1	19.6
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	3.0	1.8	4.0	6.0	0.0	6.3	3.9	8.9	1.8	0.5	16.7	16.6
LnGrp Delay(d),s/veh	25.2	30.9	35.2	21.0	0.0	29.4	32.7	22.0	16.5	16.5	44.9	45.7
LnGrp LOS	C	C	D	C		C	C	C	B	B	D	D
Approach Vol, veh/h		421			625			1245			1208	
Approach Delay, s/veh		30.6			24.9			23.3			44.4	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	41.3	18.1	20.5	10.0	37.2	10.9	27.7
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.1	19.6	14.1	10.8	8.0	29.3	8.1	14.4
Green Ext Time (p_c), s	0.0	10.6	1.0	3.3	0.0	1.1	0.0	6.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	295	268	245	223	154	55	188	1264	401	93	1091	205
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	1863	1863	1863	1900
Adj Flow Rate, veh/h	311	282	258	235	162	58	198	1331	422	98	1148	216
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	440	375	319	377	231	83	239	1573	704	206	1253	235
Arrive On Green	0.17	0.20	0.20	0.14	0.18	0.18	0.08	0.44	0.44	0.06	0.42	0.41
Sat Flow, veh/h	1774	1863	1583	1774	1311	469	1774	3539	1583	1774	2977	557
Grp Volume(v), veh/h	311	282	258	235	0	220	198	1331	422	98	680	684
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1780	1774	1770	1583	1774	1770	1764
Q Serve(g_s), s	13.3	14.0	15.3	10.2	0.0	11.4	5.9	32.9	19.8	3.0	35.5	36.0
Cycle Q Clear(g_c), s	13.3	14.0	15.3	10.2	0.0	11.4	5.9	32.9	19.8	3.0	35.5	36.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	440	375	319	377	0	314	239	1573	704	206	745	743
V/C Ratio(X)	0.71	0.75	0.81	0.62	0.00	0.70	0.83	0.85	0.60	0.47	0.91	0.92
Avail Cap(c_a), veh/h	451	375	319	520	0	428	239	1573	704	248	745	743
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	36.9	37.4	27.2	0.0	38.0	21.8	24.3	20.7	21.2	26.7	27.0
Incr Delay (d2), s/veh	4.9	8.3	14.5	1.7	0.0	3.1	20.7	5.8	3.8	1.7	17.5	18.6
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	7.0	8.1	8.0	5.1	0.0	5.9	4.2	17.2	9.4	1.5	20.8	21.3
LnGrp Delay(d),s/veh	30.2	45.2	51.9	28.9	0.0	41.1	42.5	30.1	24.4	22.8	44.3	45.6
LnGrp LOS	C	D	D	C		D	D	C	C	C	D	D
Approach Vol, veh/h		851			455			1951			1462	
Approach Delay, s/veh		41.7			34.8			30.1			43.4	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	49.4	16.0	25.0	10.0	47.1	18.4	22.6
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 40	20.9	* 18	7.0	* 40	16.0	* 23
Max Q Clear Time (g_c+I1), s	5.0	34.9	12.2	17.3	7.9	38.0	15.3	13.4
Green Ext Time (p_c), s	0.1	5.4	0.8	0.3	0.0	2.3	0.1	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2041 Total Traffic Volumes

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	202	428	297	34	33	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	213	451	313	36	35	453

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1207	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1211	-	-	-	203	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	407	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	155	-
Mov Cap-2 Maneuver	-	-	-	-	155	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	311	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	34.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1211	-	-	-	155	-
HCM Lane V/C Ratio	0.176	-	-	-	0.224	-
HCM Control Delay (s)	8.6	0	-	-	34.8	0
HCM Lane LOS	A	A	-	-	D	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.8	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	592	1238	102	627	69	38
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	623	0	107	660	73	0
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1433	641	367	1433	596	532
Arrive On Green	0.40	0.00	0.40	0.40	0.34	0.00
Sat Flow, veh/h	3632	1583	798	3632	1774	1583
Grp Volume(v), veh/h	623	0	107	660	73	0
Grp Sat Flow(s),veh/h/ln	1770	1583	798	1770	1774	1583
Q Serve(g_s), s	6.3	0.0	5.5	6.7	1.4	0.0
Cycle Q Clear(g_c), s	6.3	0.0	11.8	6.7	1.4	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1433	641	367	1433	596	532
V/C Ratio(X)	0.43	0.00	0.29	0.46	0.12	0.00
Avail Cap(c_a), veh/h	1476	660	377	1476	596	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.6	0.0	14.9	10.8	11.4	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	1.3	3.3	0.8	0.0
LnGrp Delay(d),s/veh	10.8	0.0	15.3	11.0	11.8	0.0
LnGrp LOS	B		B	B	B	
Approach Vol, veh/h	623			767	73	
Approach Delay, s/veh	10.8			11.6	11.8	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		23.2		26.8				26.8
Change Period (Y+Rc), s		6.0		* 6.8				* 6.8
Max Green Setting (Gmax), s		16.6		* 21				* 21
Max Q Clear Time (g_c+I1), s		3.4		8.3				13.8
Green Ext Time (p_c), s		0.2		10.7				6.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	281	2	378	20	3	14	126	1130	5	13	1426	182
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	296	2	398	21	3	15	133	1189	5	14	1501	192
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	450	2	452	126	48	238	182	2050	9	246	1507	191
Arrive On Green	0.08	0.29	0.29	0.18	0.18	0.18	0.06	0.57	0.57	0.48	0.48	0.48
Sat Flow, veh/h	1774	8	1577	981	271	1353	1774	3614	15	467	3162	400
Grp Volume(v), veh/h	296	0	400	21	0	18	133	582	612	14	832	861
Grp Sat Flow(s),veh/h/ln	1774	0	1585	981	0	1624	1774	1770	1860	467	1770	1792
Q Serve(g_s), s	7.0	0.0	21.6	1.9	0.0	0.8	3.2	19.0	19.1	1.8	41.7	42.8
Cycle Q Clear(g_c), s	7.0	0.0	21.6	13.5	0.0	0.8	3.2	19.0	19.1	12.7	41.7	42.8
Prop In Lane	1.00		1.00	1.00		0.83	1.00		0.01	1.00		0.22
Lane Grp Cap(c), veh/h	450	0	455	126	0	285	182	1003	1055	246	843	854
V/C Ratio(X)	0.66	0.00	0.88	0.17	0.00	0.06	0.73	0.58	0.58	0.06	0.99	1.01
Avail Cap(c_a), veh/h	450	0	459	128	0	289	219	1003	1055	246	843	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	30.5	41.7	0.0	30.8	20.7	12.5	12.5	19.3	23.2	23.5
Incr Delay (d2), s/veh	3.5	0.0	17.5	0.6	0.0	0.1	9.7	2.4	2.3	0.4	28.0	32.7
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	6.3	0.0	11.7	0.5	0.0	0.4	2.1	9.9	10.4	0.3	26.7	28.6
LnGrp Delay(d),s/veh	33.4	0.0	48.0	42.3	0.0	30.9	30.4	15.0	14.9	19.7	51.2	56.2
LnGrp LOS	C		D	D		C	C	B	B	B	D	F
Approach Vol, veh/h		696			39			1327			1707	
Approach Delay, s/veh		41.8			37.1			16.5			53.5	
Approach LOS		D			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		57.9		32.1	8.1	49.8	10.0	22.1
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 51		* 26	7.0	* 41	7.0	* 16
Max Q Clear Time (g_c+I1), s		21.1		23.6	5.2	44.8	9.0	15.5
Green Ext Time (p_c), s		29.7		1.2	0.1	0.0	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	38.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

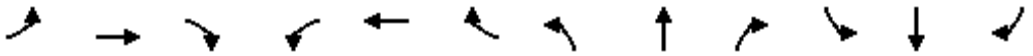
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	109	181	410	285	75	208	958	141	38	981	222
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1863	1863	1863	1900
Adj Flow Rate, veh/h	171	115	191	432	300	79	219	1008	148	40	1033	234
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	337	287	611	435	115	234	1362	609	228	985	222
Arrive On Green	0.10	0.18	0.18	0.22	0.31	0.31	0.09	0.38	0.38	0.05	0.34	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1422	375	1774	3539	1583	1774	2870	648
Grp Volume(v), veh/h	171	115	191	432	0	379	219	1008	148	40	636	631
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1797	1774	1770	1583	1774	1770	1748
Q Serve(g_s), s	7.0	4.9	10.3	16.9	0.0	17.0	7.1	22.4	5.8	1.3	31.4	31.4
Cycle Q Clear(g_c), s	7.0	4.9	10.3	16.9	0.0	17.0	7.1	22.4	5.8	1.3	31.4	31.4
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	374	337	287	611	0	550	234	1362	609	228	607	600
V/C Ratio(X)	0.46	0.34	0.67	0.71	0.00	0.69	0.94	0.74	0.24	0.18	1.05	1.05
Avail Cap(c_a), veh/h	374	379	322	639	0	619	234	1362	609	302	607	600
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	32.7	34.9	20.4	0.0	27.9	22.1	24.2	19.1	19.5	30.0	30.2
Incr Delay (d2), s/veh	0.9	0.6	4.4	3.4	0.0	2.8	41.6	3.6	0.9	0.4	49.2	51.3
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	3.5	2.6	4.9	8.7	0.0	8.8	8.2	11.6	2.7	0.6	23.5	23.5
LnGrp Delay(d),s/veh	27.4	33.3	39.3	23.8	0.0	30.7	63.7	27.9	20.0	19.9	79.3	81.5
LnGrp LOS	C	C	D	C		C	E	C	C	B	F	F
Approach Vol, veh/h		477			811			1375			1307	
Approach Delay, s/veh		33.6			27.0			32.7			78.5	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	41.0	22.4	21.9	10.0	37.2	11.0	33.3
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.3	24.4	18.9	12.3	9.1	33.4	9.0	19.0
Green Ext Time (p_c), s	0.0	5.9	0.5	3.3	0.0	0.0	0.0	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	46.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	30	499	2	94	1	668	552	10	1	764	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1860		1770	3529		1770	3474	
Flt Permitted	0.69	1.00	1.00	0.74	1.00		0.15	1.00		0.43	1.00	
Satd. Flow (perm)	1290	1863	1583	1372	1860		275	3529		798	3474	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	32	525	2	99	1	703	581	11	1	804	112
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	12	0
Lane Group Flow (vph)	21	32	525	2	100	0	703	591	0	1	904	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	8.0	8.0	79.9	8.0	8.0		59.1	59.1		24.1	24.1	
Effective Green, g (s)	8.0	8.0	79.9	8.0	8.0		59.1	59.1		24.1	24.1	
Actuated g/C Ratio	0.10	0.10	1.00	0.10	0.10		0.74	0.74		0.30	0.30	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	129	186	1583	137	186		802	2610		240	1047	
v/s Ratio Prot		0.02					c0.35	0.17			0.26	
v/s Ratio Perm	0.02		c0.33	0.00	0.05		c0.30			0.00		
v/c Ratio	0.16	0.17	0.33	0.01	0.54		0.88	0.23		0.00	0.86	
Uniform Delay, d1	32.9	32.9	0.0	32.4	34.2		16.6	3.3		19.5	26.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.4	0.6	0.0	3.0		10.6	0.0		0.0	7.5	
Delay (s)	33.5	33.4	0.6	32.4	37.2		27.2	3.3		19.5	33.9	
Level of Service	C	C	A	C	D		C	A		B	C	
Approach Delay (s)		3.6			37.1			16.3			33.9	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	15.8
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	189	126	394	177	40	672
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	199	133	415	186	42	707
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	394	351	1125	499	455	1668
Arrive On Green	0.22	0.22	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1774	1583	2480	1058	815	3632
Grp Volume(v), veh/h	199	133	306	295	42	707
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1676	815	1770
Q Serve(g_s), s	4.4	3.2	4.9	5.0	1.5	5.8
Cycle Q Clear(g_c), s	4.4	3.2	4.9	5.0	6.5	5.8
Prop In Lane	1.00	1.00		0.63	1.00	
Lane Grp Cap(c), veh/h	394	351	834	790	455	1668
V/C Ratio(X)	0.51	0.38	0.37	0.37	0.09	0.42
Avail Cap(c_a), veh/h	729	650	926	877	497	1853
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.1	14.6	7.5	7.5	9.6	7.7
Incr Delay (d2), s/veh	1.0	0.7	0.3	0.3	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.4	2.4	2.4	0.3	2.9
LnGrp Delay(d),s/veh	16.1	15.3	7.8	7.8	9.7	7.9
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	332		601			749
Approach Delay, s/veh	15.8		7.8			8.0
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		27.7				27.7		16.6
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 23				* 23		18.2
Max Q Clear Time (g_c+I1), s		7.0				8.5		6.4
Green Ext Time (p_c), s		13.5				12.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	139	321	450	49	111	1230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	338	474	52	117	1295

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	525	0	-	0	1130	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1042	-	-	-	225	0
Stage 1	-	-	-	-	610	0
Stage 2	-	-	-	-	530	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	186	-
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	52.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1042	-	-	-	186	-
HCM Lane V/C Ratio	0.14	-	-	-	0.628	-
HCM Control Delay (s)	9	0	-	-	52.4	0
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.5	-	-	-	3.6	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	397	671	54	1629	145	17
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	418	0	57	1715	153	0
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1840	823	559	1840	473	422
Arrive On Green	0.52	0.00	0.52	0.52	0.27	0.00
Sat Flow, veh/h	3632	1583	965	3632	1774	1583
Grp Volume(v), veh/h	418	0	57	1715	153	0
Grp Sat Flow(s),veh/h/ln	1770	1583	965	1770	1774	1583
Q Serve(g_s), s	3.9	0.0	2.1	27.1	4.2	0.0
Cycle Q Clear(g_c), s	3.9	0.0	5.9	27.1	4.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1840	823	559	1840	473	422
V/C Ratio(X)	0.23	0.00	0.10	0.93	0.32	0.00
Avail Cap(c_a), veh/h	1841	824	560	1841	473	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.8	0.0	9.4	13.4	17.6	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	9.2	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.6	15.2	2.3	0.0
LnGrp Delay(d),s/veh	7.9	0.0	9.5	22.6	19.5	0.0
LnGrp LOS	A		A	C	B	
Approach Vol, veh/h	418			1772	153	
Approach Delay, s/veh	7.9			22.2	19.5	
Approach LOS	A			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		22.0		38.0				38.0
Change Period (Y+Rc), s		6.0		* 6.8				* 6.8
Max Green Setting (Gmax), s		16.0		* 31				* 31
Max Q Clear Time (g_c+I1), s		6.2		5.9				29.1
Green Ext Time (p_c), s		0.5		24.6				2.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	240	8	218	21	7	16	355	1909	17	22	1562	284
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	253	8	229	22	7	17	374	2009	18	23	1644	299
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	10	284	100	47	114	350	2587	23	128	1595	282
Arrive On Green	0.07	0.18	0.18	0.10	0.10	0.10	0.17	0.72	0.72	0.53	0.53	0.53
Sat Flow, veh/h	1774	54	1538	1139	483	1173	1774	3595	32	209	3008	531
Grp Volume(v), veh/h	253	0	237	22	0	24	374	988	1039	23	947	996
Grp Sat Flow(s),veh/h/ln	1774	0	1591	1139	0	1656	1774	1770	1857	209	1770	1769
Q Serve(g_s), s	9.0	0.0	19.6	2.6	0.0	1.8	23.0	48.6	48.9	10.8	72.8	72.8
Cycle Q Clear(g_c), s	9.0	0.0	19.6	10.2	0.0	1.8	23.0	48.6	48.9	33.7	72.8	72.8
Prop In Lane	1.00		0.97	1.00		0.71	1.00		0.02	1.00		0.30
Lane Grp Cap(c), veh/h	285	0	294	100	0	161	350	1274	1337	128	939	938
V/C Ratio(X)	0.89	0.00	0.81	0.22	0.00	0.15	1.07	0.78	0.78	0.18	1.01	1.06
Avail Cap(c_a), veh/h	285	0	326	123	0	194	350	1274	1337	128	939	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	0.0	53.6	64.2	0.0	56.7	49.5	12.2	12.2	31.2	32.2	32.2
Incr Delay (d2), s/veh	26.9	0.0	12.7	1.1	0.0	0.4	67.8	4.7	4.5	3.0	31.5	47.2
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	10.6	0.0	9.7	0.8	0.0	0.9	19.8	25.0	26.5	0.7	43.7	47.8
LnGrp Delay(d),s/veh	83.8	0.0	66.3	65.3	0.0	57.2	117.3	16.9	16.7	34.3	63.8	79.4
LnGrp LOS	F		E	E		E	F	B	B	C	F	F
Approach Vol, veh/h		490			46			2401			1966	
Approach Delay, s/veh		75.3			61.1			32.4			71.4	
Approach LOS		E			E			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		108.3		31.7	26.0	82.3	12.0	19.7
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 99		* 28	23.0	* 73	9.0	* 16
Max Q Clear Time (g_c+I1), s		50.9		21.6	25.0	74.8	11.0	12.2
Green Ext Time (p_c), s		47.8		1.8	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	52.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

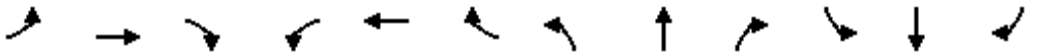
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	303	342	257	276	198	61	203	1381	497	103	1193	215
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1863	1863	1863	1900
Adj Flow Rate, veh/h	319	360	271	291	208	64	214	1454	523	108	1256	226
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	370	314	338	281	87	226	1653	739	180	1302	232
Arrive On Green	0.15	0.20	0.20	0.15	0.21	0.21	0.09	0.47	0.47	0.06	0.43	0.43
Sat Flow, veh/h	1774	1863	1583	1774	1368	421	1774	3539	1583	1774	3002	536
Grp Volume(v), veh/h	319	360	271	291	0	272	214	1454	523	108	736	746
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1788	1774	1770	1583	1774	1770	1768
Q Serve(g_s), s	17.5	23.5	20.2	15.3	0.0	17.4	10.1	45.4	32.1	4.0	49.3	50.5
Cycle Q Clear(g_c), s	17.5	23.5	20.2	15.3	0.0	17.4	10.1	45.4	32.1	4.0	49.3	50.5
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	390	370	314	338	0	368	226	1653	739	180	767	767
V/C Ratio(X)	0.82	0.97	0.86	0.86	0.00	0.74	0.95	0.88	0.71	0.60	0.96	0.97
Avail Cap(c_a), veh/h	390	370	314	382	0	408	226	1653	739	196	767	767
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	48.7	47.4	32.5	0.0	45.5	36.2	29.5	25.9	27.3	33.6	34.1
Incr Delay (d2), s/veh	12.9	39.7	21.0	16.4	0.0	6.3	45.4	7.0	5.6	4.3	24.0	26.5
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	9.9	16.2	10.7	9.0	0.0	9.3	10.0	23.6	15.1	2.2	29.0	30.3
LnGrp Delay(d),s/veh	46.3	88.4	68.4	48.9	0.0	51.8	81.6	36.5	31.6	31.6	57.5	60.6
LnGrp LOS	D	F	E	D		D	F	D	C	C	E	E
Approach Vol, veh/h		950			563			2191			1590	
Approach Delay, s/veh		68.6			50.3			39.7			57.2	
Approach LOS		E			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	62.9	20.9	29.6	13.0	58.8	20.0	30.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 55	20.9	* 23	10.0	* 52	17.0	* 27
Max Q Clear Time (g_c+I1), s	6.0	47.4	17.3	25.5	12.1	52.5	19.5	19.4
Green Ext Time (p_c), s	0.0	7.6	0.5	0.0	0.0	0.0	0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	51.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	90	642	3	54	2	590	1151	11	6	849	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1853		1770	3534		1770	3512	
Flt Permitted	0.72	1.00	1.00	0.70	1.00		0.14	1.00		0.23	1.00	
Satd. Flow (perm)	1338	1863	1583	1295	1853		267	3534		427	3512	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	95	676	3	57	2	621	1212	12	6	894	49
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	4	0
Lane Group Flow (vph)	64	95	676	3	57	0	621	1223	0	6	939	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	7.6	7.6	77.4	7.6	7.6		57.0	57.0		24.9	24.9	
Effective Green, g (s)	7.6	7.6	77.4	7.6	7.6		57.0	57.0		24.9	24.9	
Actuated g/C Ratio	0.10	0.10	1.00	0.10	0.10		0.74	0.74		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	131	182	1583	127	181		761	2602		137	1129	
v/s Ratio Prot		0.05					c0.31	0.35			0.27	
v/s Ratio Perm	0.05		c0.43	0.00	0.03		c0.29			0.01		
v/c Ratio	0.49	0.52	0.43	0.02	0.32		0.82	0.47		0.04	0.83	
Uniform Delay, d1	33.1	33.2	0.0	31.5	32.5		15.6	4.1		18.1	24.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	2.7	0.8	0.1	1.0		6.8	0.1		0.1	5.4	
Delay (s)	35.9	35.9	0.8	31.6	33.5		22.4	4.2		18.2	29.7	
Level of Service	D	D	A	C	C		C	A		B	C	
Approach Delay (s)		7.5			33.4			10.3			29.6	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	15.8
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

2041 Total Traffic Volumes with Improvements

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	303	342	257	276	198	61	203	1381	497	103	1193	215
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	1863	1863	1863	1863
Adj Flow Rate, veh/h	319	360	271	291	208	64	214	1454	523	108	1256	226
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	376	462	350	316	97	259	1578	953	184	1469	829
Arrive On Green	0.13	0.20	0.20	0.16	0.23	0.23	0.09	0.45	0.45	0.06	0.42	0.41
Sat Flow, veh/h	1774	1863	1583	1774	1368	421	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	319	360	271	291	0	272	214	1454	523	108	1256	226
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1788	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	14.0	21.1	16.2	13.5	0.0	15.2	7.2	42.7	21.7	3.8	35.6	8.8
Cycle Q Clear(g_c), s	14.0	21.1	16.2	13.5	0.0	15.2	7.2	42.7	21.7	3.8	35.6	8.8
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	376	462	350	0	413	259	1578	953	184	1469	829
V/C Ratio(X)	0.81	0.96	0.59	0.83	0.00	0.66	0.83	0.92	0.55	0.59	0.85	0.27
Avail Cap(c_a), veh/h	393	376	462	425	0	485	259	1578	953	207	1469	829
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	43.7	33.4	28.4	0.0	38.5	23.8	28.8	13.1	25.4	29.3	14.6
Incr Delay (d2), s/veh	12.2	35.6	1.9	11.1	0.0	2.6	19.4	10.3	2.3	3.4	6.6	0.8
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	4.0	14.6	7.3	7.6	0.0	7.8	4.9	23.1	10.0	2.0	18.6	4.0
LnGrp Delay(d),s/veh	45.3	79.3	35.3	39.5	0.0	41.1	43.3	39.1	15.3	28.8	35.9	15.4
LnGrp LOS	D	E	D	D		D	D	D	B	C	D	B
Approach Vol, veh/h		950			563			2191			1590	
Approach Delay, s/veh		55.3			40.3			33.9			32.5	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	55.1	19.3	27.6	12.0	51.7	16.0	30.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 47	20.9	* 21	9.0	* 45	13.0	* 29
Max Q Clear Time (g_c+I1), s	5.8	44.7	15.5	23.1	9.2	37.6	16.0	17.2
Green Ext Time (p_c), s	0.0	2.2	0.7	0.0	0.0	7.3	0.0	7.3

Intersection Summary	
HCM 2010 Ctrl Delay	38.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	240	8	218	21	7	16	355	1909	17	22	1562	284
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	1900
Adj Flow Rate, veh/h	253	8	229	22	7	17	374	2009	18	23	1644	299
Adj No. of Lanes	1	1	1	1	1	0	2	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	329	403	149	33	80	435	2499	22	135	1767	312
Arrive On Green	0.08	0.18	0.18	0.07	0.07	0.07	0.08	0.70	0.70	0.59	0.59	0.59
Sat Flow, veh/h	1774	1863	1583	1139	483	1173	3442	3595	32	209	3008	531
Grp Volume(v), veh/h	253	8	229	22	0	24	374	988	1039	23	947	996
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1139	0	1656	1721	1770	1857	209	1770	1769
Q Serve(g_s), s	8.0	0.4	12.9	1.9	0.0	1.4	6.0	39.3	39.5	8.7	48.4	54.2
Cycle Q Clear(g_c), s	8.0	0.4	12.9	1.9	0.0	1.4	6.0	39.3	39.5	37.3	48.4	54.2
Prop In Lane	1.00		1.00	1.00		0.71	1.00		0.02	1.00		0.30
Lane Grp Cap(c), veh/h	286	329	403	149	0	114	435	1230	1291	135	1040	1040
V/C Ratio(X)	0.89	0.02	0.57	0.15	0.00	0.21	0.86	0.80	0.81	0.17	0.91	0.96
Avail Cap(c_a), veh/h	286	493	543	249	0	260	436	1230	1291	135	1040	1040
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	34.7	33.1	45.1	0.0	44.9	30.4	10.7	10.8	27.5	18.6	19.9
Incr Delay (d2), s/veh	26.5	0.0	1.3	0.5	0.0	0.9	15.9	5.6	5.4	2.7	13.2	19.5
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	8.5	0.2	5.7	0.6	0.0	0.7	6.1	20.8	21.9	0.6	27.2	31.9
LnGrp Delay(d),s/veh	69.5	34.8	34.4	45.6	0.0	45.8	46.2	16.3	16.2	30.2	31.9	39.4
LnGrp LOS	E	C	C	D		D	D	B	B	C	C	D
Approach Vol, veh/h		490			46			2401			1966	
Approach Delay, s/veh		52.5			45.7			20.9			35.7	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		86.7		24.3	11.0	75.7	11.0	13.3
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 71		* 27	8.0	* 60	8.0	* 16
Max Q Clear Time (g_c+I1), s		41.5		14.9	8.0	56.2	10.0	3.9
Green Ext Time (p_c), s		29.3		1.2	0.0	3.7	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	139	321	450	49	111	1230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	500	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	338	474	52	117	1295

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	525	0	-	0	1130	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1042	-	-	-	225	0
Stage 1	-	-	-	-	610	0
Stage 2	-	-	-	-	530	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	193	-
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	456	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	22.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1042	-	-	-	323	-
HCM Lane V/C Ratio	0.14	-	-	-	0.362	-
HCM Control Delay (s)	9	-	-	-	22.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	-	1.6	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	109	181	410	285	75	208	958	141	38	981	222
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	1863	1863	1863	1863
Adj Flow Rate, veh/h	171	115	191	432	300	79	219	1008	148	40	1033	234
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	406	353	455	639	439	116	267	1233	913	218	1058	608
Arrive On Green	0.11	0.19	0.19	0.23	0.31	0.31	0.10	0.35	0.35	0.05	0.30	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1422	375	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	171	115	191	432	0	379	219	1008	148	40	1033	234
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1797	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.1	4.4	8.0	14.6	0.0	15.1	6.6	21.2	3.6	1.2	23.6	8.7
Cycle Q Clear(g_c), s	6.1	4.4	8.0	14.6	0.0	15.1	6.6	21.2	3.6	1.2	23.6	8.7
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	406	353	455	639	0	554	267	1233	913	218	1058	608
V/C Ratio(X)	0.42	0.33	0.42	0.68	0.00	0.68	0.82	0.82	0.16	0.18	0.98	0.38
Avail Cap(c_a), veh/h	407	425	516	710	0	693	267	1233	913	305	1058	608
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	28.6	23.6	17.2	0.0	24.7	19.8	24.2	8.1	19.7	28.3	18.2
Incr Delay (d2), s/veh	0.7	0.5	0.6	2.2	0.0	2.0	18.3	6.1	0.4	0.4	22.5	1.8
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	3.0	2.3	3.5	7.5	0.0	7.8	4.6	11.3	1.6	0.6	14.8	4.1
LnGrp Delay(d),s/veh	23.1	29.1	24.2	19.4	0.0	26.7	38.1	30.3	8.4	20.1	50.8	20.0
LnGrp LOS	C	C	C	B		C	D	C	A	C	D	C
Approach Vol, veh/h		477			811			1375			1307	
Approach Delay, s/veh		25.0			22.8			29.2			44.4	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	34.2	20.7	20.8	10.0	30.2	10.9	30.5
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 23	20.9	* 18	7.0	* 23	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.2	23.2	16.6	10.0	8.6	25.6	8.1	17.1
Green Ext Time (p_c), s	0.0	0.2	1.0	4.5	0.0	0.0	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	281	2	378	20	3	14	126	1130	5	13	1426	182
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	1900
Adj Flow Rate, veh/h	296	2	398	21	3	15	133	1189	5	14	1501	192
Adj No. of Lanes	1	1	1	1	1	0	2	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	490	504	228	40	200	374	2119	9	262	1570	198
Arrive On Green	0.08	0.26	0.26	0.15	0.15	0.15	0.06	0.59	0.59	0.50	0.50	0.50
Sat Flow, veh/h	1774	1863	1583	981	271	1353	3442	3614	15	467	3162	400
Grp Volume(v), veh/h	296	2	398	21	0	18	133	582	612	14	832	861
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	981	0	1624	1721	1770	1860	467	1770	1792
Q Serve(g_s), s	7.0	0.1	19.9	1.6	0.0	0.8	1.5	17.6	17.6	1.7	38.8	40.4
Cycle Q Clear(g_c), s	7.0	0.1	19.9	1.6	0.0	0.8	1.5	17.6	17.6	11.5	38.8	40.4
Prop In Lane	1.00		1.00	1.00		0.83	1.00		0.01	1.00		0.22
Lane Grp Cap(c), veh/h	418	490	504	228	0	240	374	1037	1090	262	879	890
V/C Ratio(X)	0.71	0.00	0.79	0.09	0.00	0.08	0.36	0.56	0.56	0.05	0.95	0.97
Avail Cap(c_a), veh/h	418	558	562	264	0	299	461	1037	1090	262	879	890
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	23.6	27.0	32.2	0.0	31.9	19.7	11.1	11.1	17.0	20.8	21.2
Incr Delay (d2), s/veh	5.5	0.0	6.8	0.2	0.0	0.1	0.6	2.2	2.1	0.4	20.0	23.2
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	6.5	0.0	9.6	0.4	0.0	0.4	0.9	9.2	9.6	0.2	23.6	25.6
LnGrp Delay(d),s/veh	36.3	23.6	33.8	32.4	0.0	32.0	20.3	13.3	13.2	17.4	40.8	44.4
LnGrp LOS	D	C	C	C		C	C	B	B	B	D	D
Approach Vol, veh/h		696			39			1327			1707	
Approach Delay, s/veh		34.8			32.2			13.9			42.4	
Approach LOS		C			C			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6	7	8
Phs Duration (G+Y+Rc), s		60.9		29.1	7.8	53.1	10.0	19.1
Change Period (Y+Rc), s		* 6.8		* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s		* 51		* 26	7.0	* 41	7.0	* 16
Max Q Clear Time (g_c+I1), s		19.6		21.9	3.5	42.4	9.0	3.6
Green Ext Time (p_c), s		31.1		0.9	0.2	0.0	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	202	428	297	34	33	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	500	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	213	451	313	36	35	453

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1207	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1211	-	-	-	203	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	407	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	167	-
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	20.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1211	-	-	-	270	-
HCM Lane V/C Ratio	0.176	-	-	-	0.129	-
HCM Control Delay (s)	8.6	-	-	-	20.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	191	235	468	11
Demand Flow Rate, veh/h	195	240	478	11
Vehicles Circulating, veh/h	204	191	140	426
Vehicles Exiting, veh/h	233	427	259	5
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.1	6.6	9.7	5.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	195	240	478	11
Cap Entry Lane, veh/h	921	933	982	738
Entry HV Adj Factor	0.981	0.980	0.979	0.988
Flow Entry, veh/h	191	235	468	11
Cap Entry, veh/h	904	915	962	729
V/C Ratio	0.212	0.257	0.487	0.015
Control Delay, s/veh	6.1	6.6	9.7	5.1
LOS	A	A	A	A
95th %tile Queue, veh	1	1	3	0

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	247	485	314
Demand Flow Rate, veh/h	252	494	320
Vehicles Circulating, veh/h	154	107	224
Vehicles Exiting, veh/h	390	299	377
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.4	9.4	8.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	252	494	320
Cap Entry Lane, veh/h	969	1015	903
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	247	485	314
Cap Entry, veh/h	949	996	886
V/C Ratio	0.260	0.487	0.354
Control Delay, s/veh	6.4	9.4	8.0
LOS	A	A	A
95th %tile Queue, veh	1	3	2

Intersection	
Intersection Delay, s/veh	98.9
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	696	39	1327	1707
Demand Flow Rate, veh/h	710	39	1354	1741
Vehicles Circulating, veh/h	1566	1651	318	160
Vehicles Exiting, veh/h	335	21	1958	1530
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	430.7	11.9	19.6	27.2
Approach LOS	F	B	C	D

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	710	39	636	718	818	923
Cap Entry Lane, veh/h	378	356	890	904	1002	1010
Entry HV Adj Factor	0.980	0.998	0.981	0.980	0.981	0.980
Flow Entry, veh/h	696	39	624	703	802	905
Cap Entry, veh/h	370	355	873	886	983	990
V/C Ratio	1.881	0.110	0.714	0.794	0.816	0.914
Control Delay, s/veh	430.7	11.9	17.3	21.7	21.7	32.0
LOS	F	B	C	C	C	D
95th %tile Queue, veh	46	0	6	8	9	14

Intersection	
Intersection Delay, s/veh	13.8
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	578	102	1295	917
Demand Flow Rate, veh/h	590	104	1321	935
Vehicles Circulating, veh/h	823	1331	55	820
Vehicles Exiting, veh/h	932	45	822	615
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.6	11.9	11.8	25.3
Approach LOS	A	B	B	D

Lane	Left	Bypass	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	L	TR	LT	TR
RT Channelized		Free					
Lane Util	1.000		1.000	0.543	0.457	0.470	0.530
Critical Headway, s	4.113		4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	54	535	104	717	604	439	496
Cap Entry Lane, veh/h	635	1938	445	1084	1087	611	636
Entry HV Adj Factor	0.988	0.980	0.981	0.980	0.981	0.982	0.980
Flow Entry, veh/h	53	525	102	703	592	431	486
Cap Entry, veh/h	628	1900	437	1063	1066	600	624
V/C Ratio	0.085	0.276	0.234	0.661	0.556	0.719	0.779
Control Delay, s/veh	6.7	0.0	11.9	13.0	10.3	23.4	27.0
LOS	A	A	B	B	B	C	D
95th %tile Queue, veh	0	1	1	5	4	6	7

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	332	601	749
Demand Flow Rate, veh/h	339	613	764
Vehicles Circulating, veh/h	423	43	203
Vehicles Exiting, veh/h	233	924	559
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	9.3	6.1	8.1
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	339	288	325	359	405
Cap Entry Lane, veh/h	840	1094	1096	970	980
Entry HV Adj Factor	0.979	0.980	0.980	0.980	0.980
Flow Entry, veh/h	332	282	318	352	397
Cap Entry, veh/h	823	1073	1074	951	961
V/C Ratio	0.403	0.263	0.296	0.370	0.413
Control Delay, s/veh	9.3	5.9	6.2	7.8	8.4
LOS	A	A	A	A	A
95th %tile Queue, veh	2	1	1	2	2

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	68	349	557	663
Demand Flow Rate, veh/h	69	355	568	676
Vehicles Circulating, veh/h	890	497	93	245
Vehicles Exiting, veh/h	31	164	866	607
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.4	10.4	6.1	7.8
Approach LOS	A	B	A	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	69	355	267	301	318	358
Cap Entry Lane, veh/h	606	798	1054	1059	940	952
Entry HV Adj Factor	0.980	0.982	0.980	0.980	0.980	0.982
Flow Entry, veh/h	68	349	262	295	312	351
Cap Entry, veh/h	594	784	1033	1038	921	934
V/C Ratio	0.114	0.445	0.253	0.284	0.338	0.376
Control Delay, s/veh	7.4	10.4	5.9	6.3	7.6	8.0
LOS	A	B	A	A	A	A
95th %tile Queue, veh	0	2	1	1	2	2

APPENDIX D

2015

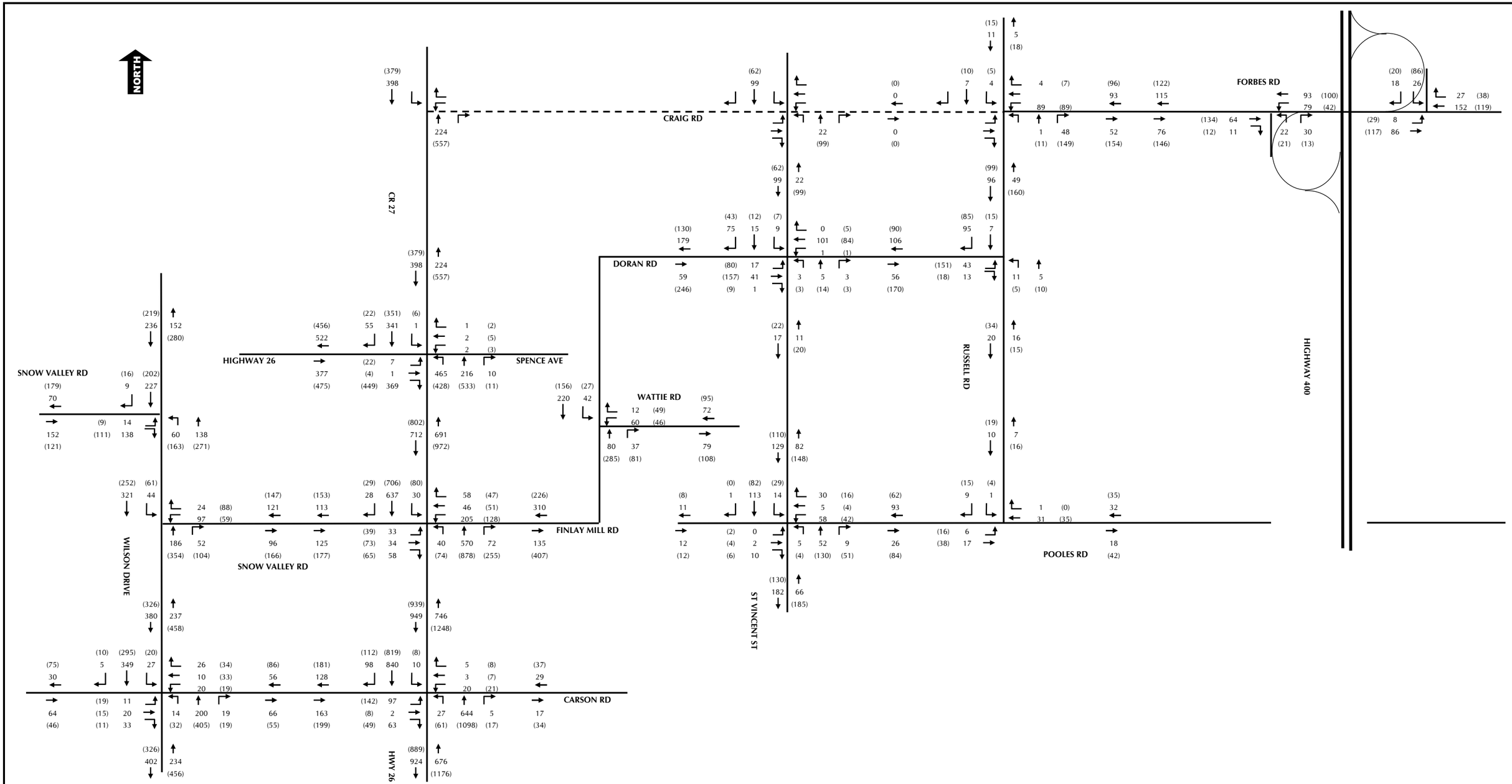
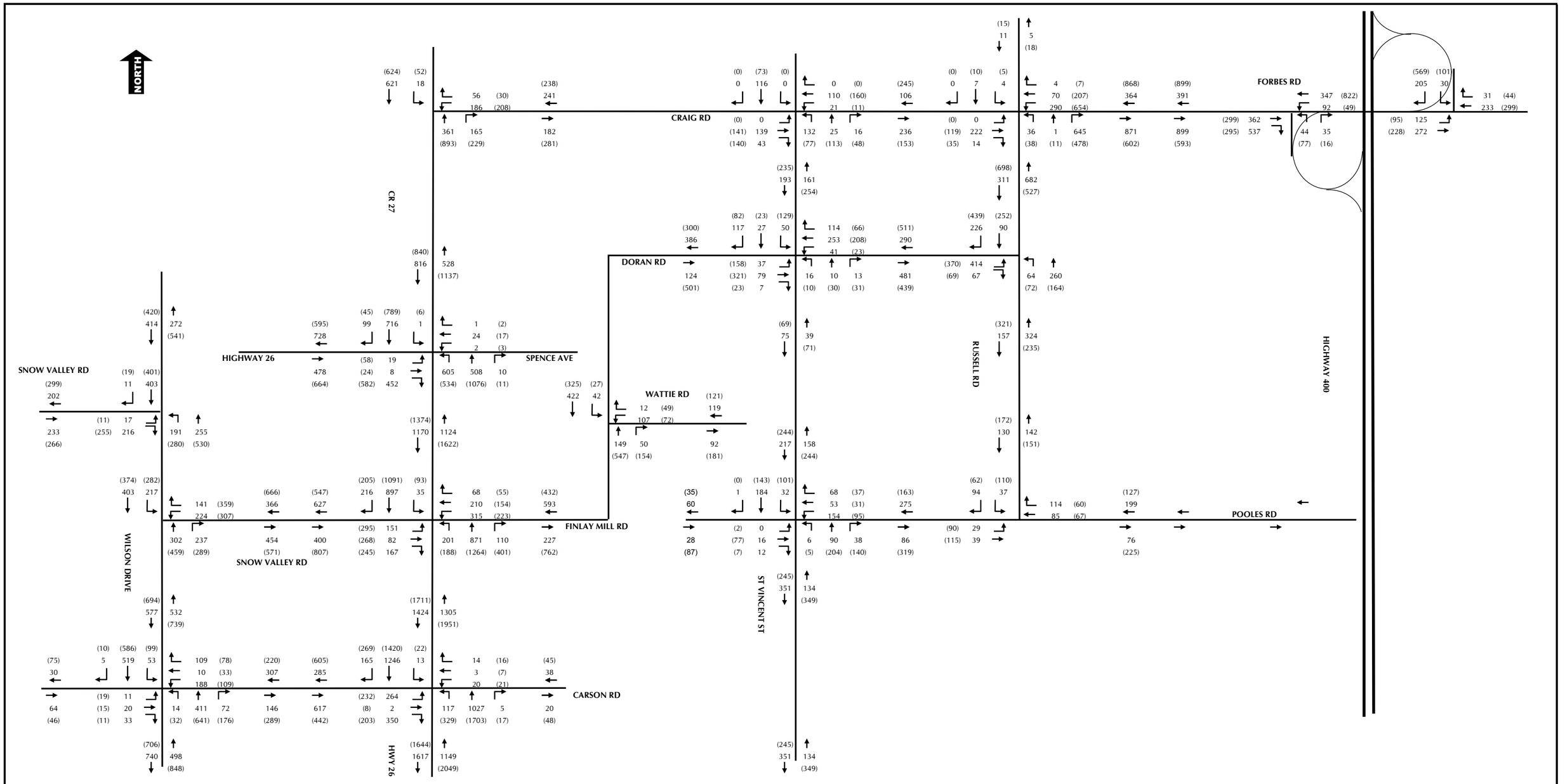


Figure 2
Existing 2015 Traffic Volumes
Midhurst EA Phases 3 & 4
Township of Springwater

Ainley Group — Consulting Engineers Planners

APPENDIX E

2031 Total Traffic Volumes



100 (100) AM (PM) peak hour

Figure 4
2031 Total Traffic Volumes
Midhurst EA Phases 3 & 4
Township of Springwater

Mainley GROUP CONSULTING ENGINEERS PLANNERS

APPENDIX F

2041 Total Traffic Volumes

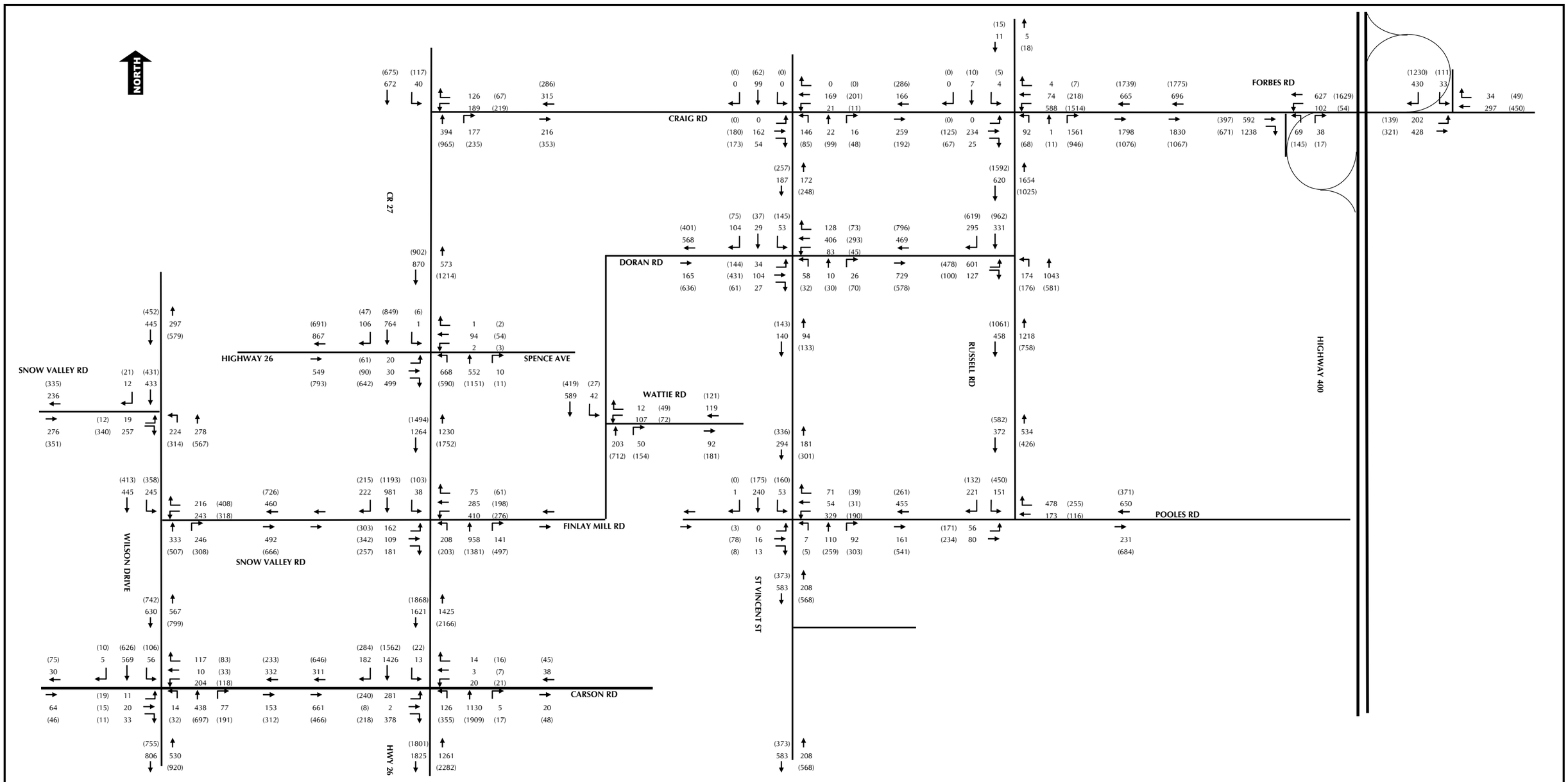


Figure 5
2041 Total Traffic Volumes
Midhurst EA Phases 3 & 4
Township of Springwater

Tatham Engineering Limited
Barrie, Ontario

APPENDIX G

Left Turn Warrants

Highway 400 NB On-ramp & Forbes Rd 2041 Total AM Peak Hour Volumes

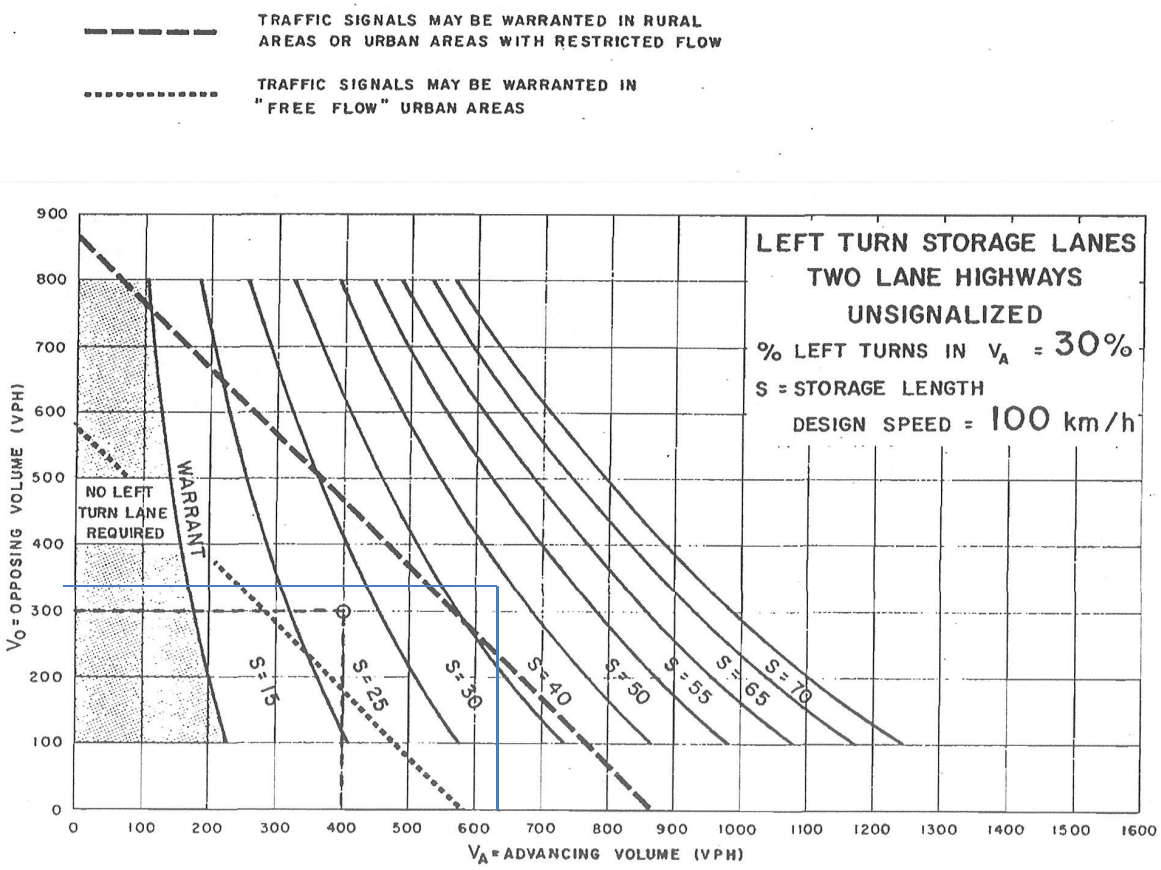
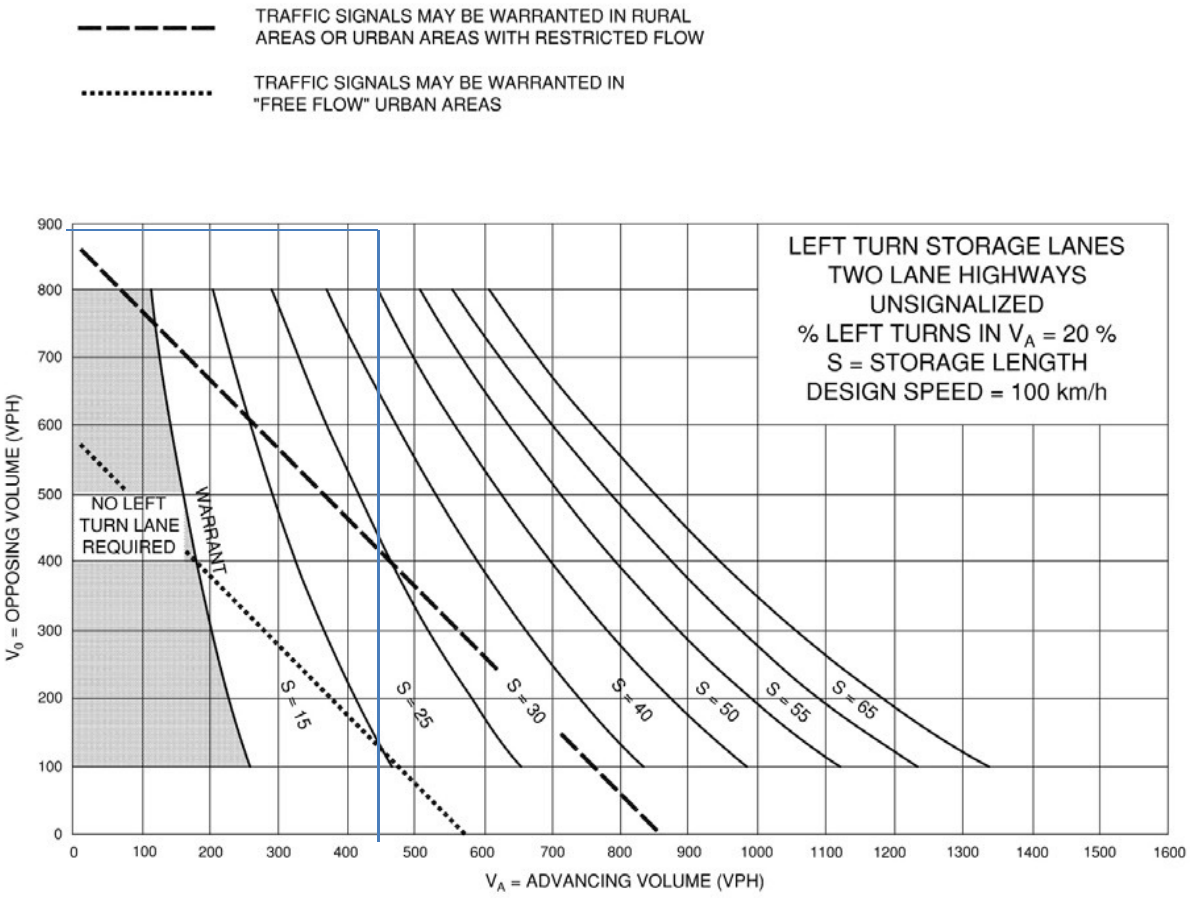
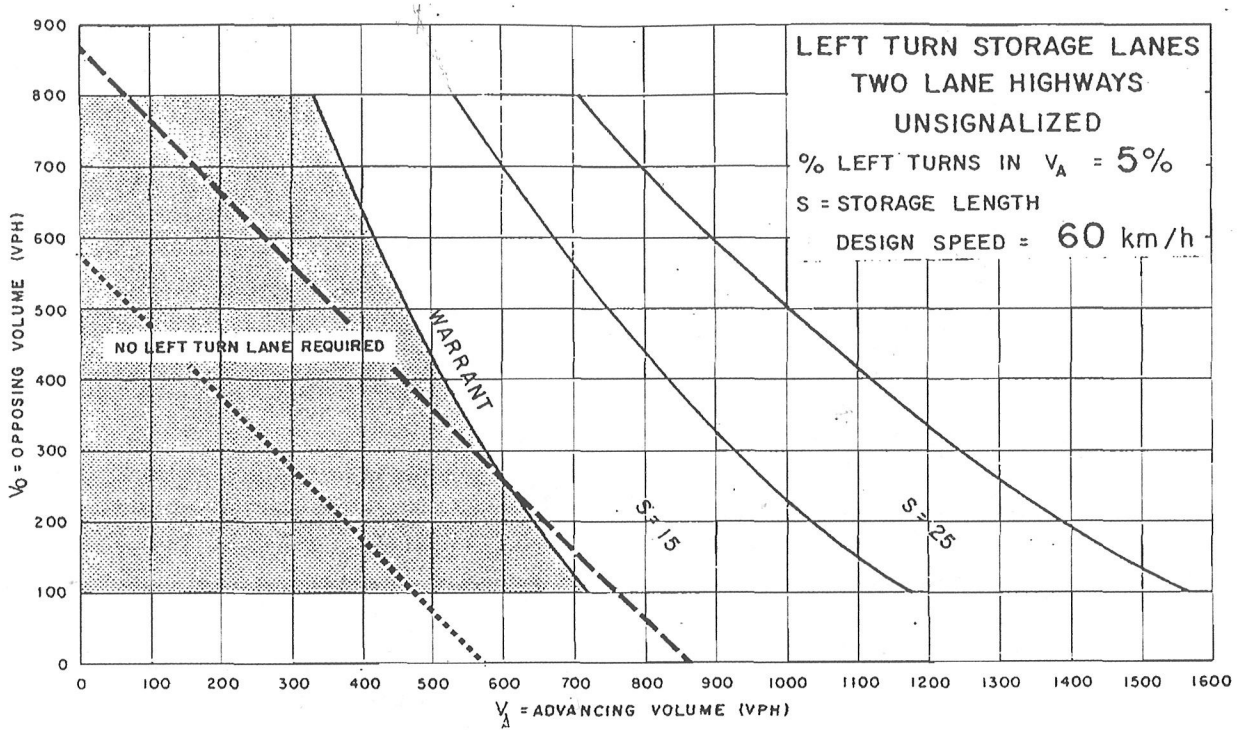


Figure EA-24

Highway 400 SB On-ramp & Forbes Rd 2031 Total AM Peak Hour Volumes





TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

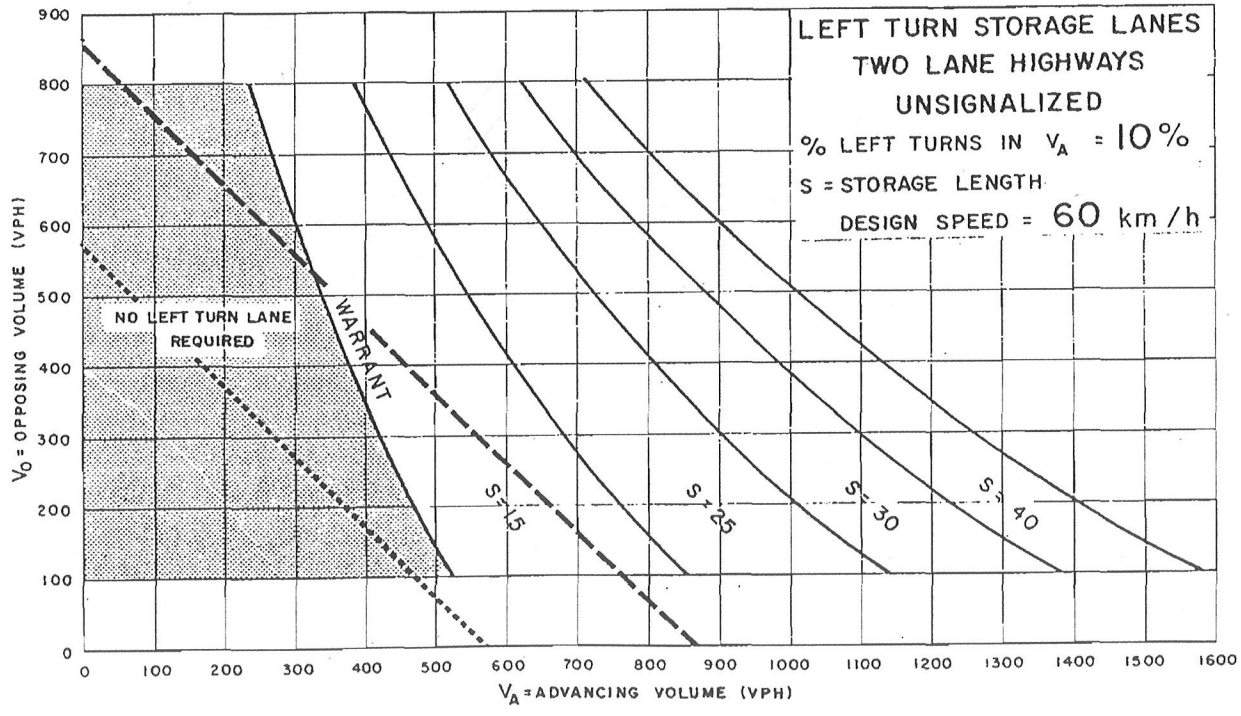
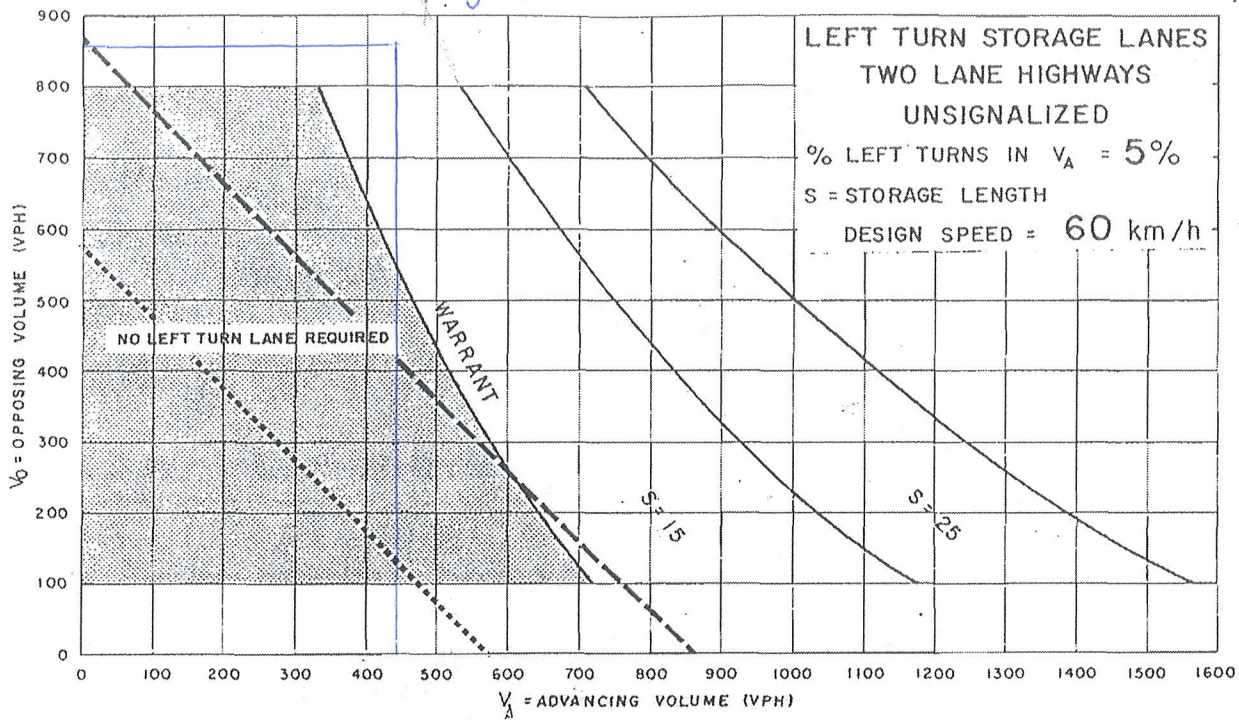


Figure EA-6

2041 PM Finlay Mill Rd & Wattle Rd.



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

2031 PM Finlay Mill Rd & Wattle Rd

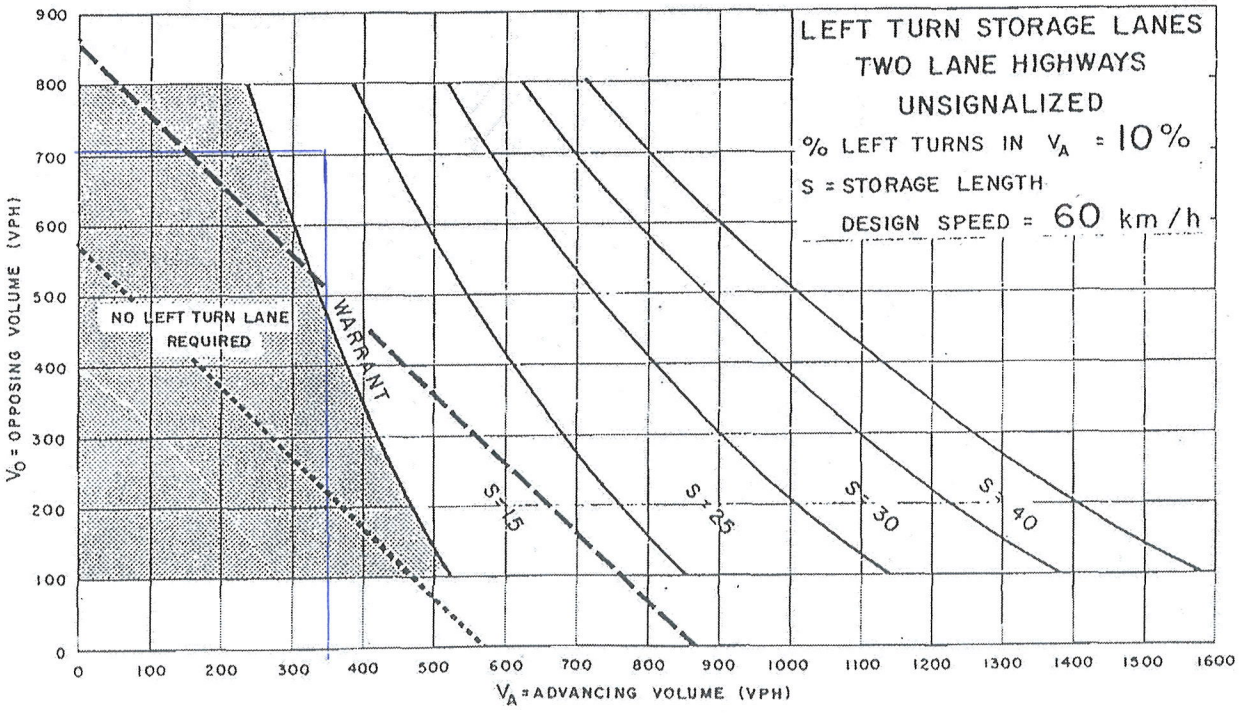


Figure EA-6

APPENDIX H

Traffic Signal Warrants

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	Jurisdiction/Date	MTO	30 May 2018
Agency or Company	Ainley Group	East-West Street	Highway 26/Spence Ave	
Analysis Period	2031	North-South Street	Highway 26/CR27	

Flow Conditions	Free flow (rural)	Major Street	North-South
T Intersection	No	Approach Lanes per Direction	2
		Hours of Traffic Volume Data	AM & PM peaks only

Other Notes: existing road configuration

Hour Ending	Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET									
Northbound right	10							11	5
thru	508							1076	396
left	605							534	285
Southbound right	99							45	36
thru	716							789	376
left	1							6	2
MINOR STREET									
Eastbound right									0
thru	8							24	8
left	19							58	19
Westbound right	1							2	1
thru	24							17	10
left	2							3	1
PEDESTRIANS									

crossing MAJOR street	153							203	89
delayed pedestrians	77							102	45
crossing MINOR street	160							432	148
APPROACH VOLUMES									
major	1939							2461	1100
minor	54							104	40
TOTAL	1993							2565	1140
CROSSING VOLUMES									
TOTAL	501							555	264
note 1	21							61	
note 2	24							24	
note 3	303							267	
3a	yes							yes	
3b	yes							yes	
note 4	153							203	89
note 5	77							102	45

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak			
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1140	1140	1140	1140	1140	1140	1140	1140	100%	80% +	Average Compliance
	COMPLIANCE % $\frac{\text{VOL x 100}}{480}$ OR $\frac{\text{VOL x 100}}{600}$ (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET	40	40	40	40	40	40	40	40	100%	80% +	Average Compliance
	COMPLIANCE % $\frac{\text{VOL x 100}}{120}$ (full intersection) OR $\frac{\text{VOL x 100}}{180}$ (tee intersection)	33%	33%	33%	33%	33%	33%	33%	33%	0	0	33%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8			
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1100	1100	1100	1100	1100	1100	1100	1100	100%	80% +	Average Compliance
	COMPLIANCE % $\frac{\text{VOL x 100}}{480}$ OR $\frac{\text{VOL x 100}}{600}$ (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	264	264	264	264	264	264	264	264	100%	80% +	Average Compliance

2B	COMPLIANCE % VOL x 100 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE		**Two Justifications Satisfied 80% or more**
Justification - Minimum Vehicle Volume	NO	**NO**
Justification - Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%

SIGNAL JUSTIFICATION 5:		
	BOTH OF 3A, 3B FULFILLED TO 100%?	☐ ☐ **NO**
	BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSIN	356	NET 8 HOUR VEHICULAR VOLUME ON STREET BEI	9116		
6A PED VOLUME	**8 Hr Veh. Vol.**	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000			Justified		
	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	356	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	178		
6B PED DELAY	**Net Total 8 Hour Vol. of**	**Net Total 8 Hour Volume of Delayed Pedestrians**				
		< 75	**75 - 130**	**> 130**		
	< 200					
	200 - 300					
	> 300			Justified		

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATI	**YES**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen		**Jurisdiction/Date**	MTO	12 August 2016
Agency or Company	Ainley Group		**East-West Street**	Forbes Road	
Analysis Period	2041		**North-South Street**	Hwy 400 NB off-ramp	
Flow Conditions	Free flow (rural)		**Major Street**	East-West	
T Intersection	Yes		**Approach Lanes per Direction**	1	
			Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration				

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right									0
	thru	428							321	187
	left	202							139	85
Westbound	right	34							49	21
	thru	297							450	187
	left									0
MINOR STREET										
Northbound	right									0
	thru									0
	left									0
Southbound	right									0
	thru									0
	left	33							111	36
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		961							959	480
minor		33							111	36
TOTAL		994							1070	516
CROSSING VOLUMES										
TOTAL		33							111	36
note 1		33							111	
note 2		0							0	
note 3		0							0	
3a		yes							yes	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	516	516	516	516	516	516	516	516	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	36	36	36	36	36	36	36	36	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	20%	20%	20%	20%	20%	20%	20%	20%	0	0	20%
(FREE FLOW)	**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**											**NO**
SIGNAL JUSTIFICATION 1:	**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**											**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	480	480	480	480	480	480	480	480	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	36	36	36	36	36	36	36	36	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	72%	72%	72%	72%	72%	72%	72%	72%	0	0	72%
(FREE FLOW)	**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**											**NO**
SIGNAL JUSTIFICATION 2:	**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**											**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE			**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume: NO	**NO**
Justification 2	-	Delay to Cross Traffic: NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED	4128		
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000	Not Justified				
	> 7000					

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0	
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**			
		< 75	**75 - 130**	**> 130**	
	< 200	Not Justified			
	200 - 300				
	> 300				

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	MTO	12 August 2016
Agency or Company	Ainley Group	**East-West Street**	Forbes Road	
Analysis Period	2041	**North-South Street**	Hwy 400 SB off-ramp	
Flow Conditions	Free flow (rural)	**Major Street**	East-West	
T Intersection	Yes	**Approach Lanes per Direction**	2	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM Peak	AM + PM 4
MAJOR STREET										
Eastbound	right	1238							671	477
	thru	592							397	247
	left									0
Westbound	right									0
	thru	627							1629	564
	left	102							54	39
MINOR STREET										
Northbound	right	38							17	14
	thru									0
	left	69							145	54
Southbound	right									0
	thru									0
	left									0
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		2559							2751	1328
minor		107							162	67
TOTAL		2666							2913	1395
CROSSING VOLUMES										
TOTAL		69							145	54
note 1		69							145	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance: 100%	80%+	
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1395	1395	1395	1395	1395	1395	1395	1395	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	67	67	67	67	67	67	67	67	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	37%	37%	37%	37%	37%	37%	37%	37%	0	0	37%
(FREE FLOW)	**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**											**NO**
SIGNAL JUSTIFICATION 1:	**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**											**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance: 100%	80%+	
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1328	1328	1328	1328	1328	1328	1328	1328	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 480 (1 lane approach on main road) OR VOL x 100 / 600 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	54	54	54	54	54	54	54	54	100%	80%+	Average Compliance
	COMPLIANCE % VOL x 100 / 50	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(FREE FLOW)	**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**											**YES**
SIGNAL JUSTIFICATION 2:	**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**											**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE			**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume: NO	**NO**
Justification 2	-	Delay to Cross Traffic: YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING: 0 — NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED: 11158

JUSTIFICATION 5A PEDESTRIAN VOLUME

8 Hour Vehicular Volume V_8	Net 8 Hour Pedestrian Volume: < 200	200 - 275	276 - 475	476 - 1000	> 1000
< 1440					
1440 - 2600					
2601 - 7000					
> 7000	Not Justified				

NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS: 0 — NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS: 0

JUSTIFICATION 5B PEDESTRIAN DELAY

Net Total 8 Hour Vol. of Total Pedestrians	Net Total 8 Hour Volume of Delayed Pedestrians: < 75	75 - 130	> 130
< 200	Not Justified		
200 - 300			
> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

Ainley GROUP CONSULTING ENGINEERS PLANNERS

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	Jurisdiction/Date	Springwater	24 Jan 2018
Agency or Company	Ainley Group	East-West Street	Highway 26/Spence Ave	
Analysis Period	2017	North-South Street	Highway 26/CR 27	

Flow Conditions	Free flow (rural)	Major Street	North-South
T Intersection	No	Approach Lanes per Direction	2
		Hours of Traffic Volume Data	8 hours

Other Notes: existing road configuration

Hour Ending		Hour 1 7:00	Hour 2 8:00	Hour 3 9:00	Hour 4 10:00	Hour 5 16:00	Hour 6 17:00	Hour 7 18:00	Hour 8 19:00	AM + PM 4
MAJOR STREET										
Northbounc	right	1	4	12	4	11	8	13	6	
	thru	83	220	223	216	415	598	499	299	
	left	90	218	372	188	277	329	257	175	
Southbounc	right	12	30	71	19	9	9	7	10	
	thru	277	493	446	415	292	303	292	196	
	left	1	1	2	4	2	1	3	1	
MINOR STREET										
Eastbound	right	0	0	0	0	0	0	0	0	
	thru	0	1	0	0	0	0	0	0	
	left	1	5	11	9	19	37	7	5	
Westbound	right	0	1	1	4	1	4	3	4	
	thru	0	1	2	2	2	4	2	1	
	left	0	1	0	2	5	3	2	3	
PEDESTRIANS										

crossing MAJOR street	0	0	0	0	0	0	0	0	
delayed pedestrians	0	0	0	0	0	0	0	0	
crossing MINOR street	0	0	0	0	0	0	0	0	
APPROACH VOLUMES									
major	464	966	1126	846	1006	1248	1071	687	
minor	1	9	14	17	27	48	14	13	
TOTAL	465	975	1140	863	1033	1296	1085	700	
CROSSING VOLUMES									
TOTAL	1	7	199	13	26	44	11	9	
note 1	1	6	11	11	24	40	9	8	
note 2	0	1	2	2	2	4	2	1	
note 3	0	0	186	0	0	0	0	0	
3a	no	yes	yes	yes	yes	yes	yes	yes	
3b	no	no	yes	no	no	no	no	no	
note 4	0	0	0	0	0	0	0	0	
note 5	0	0	0	0	0	0	0	0	

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches

note 2: The heaviest through volume from the minor street

note 3: 50% of the heavier left turn movement from the major street when both of the following are met:

3a: the left turn volume > 120

3b: the left turn volume + opposing volume > 720

note 4: Pedestrians crossing the major street

note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY	
Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8			
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	863	975	1140	863	1033	1296	1085	1033	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 480 OR VOL x 100 / 600 (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET	17	9	14	17	27	48	14	27	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 120 (full intersection) OR VOL x 100 / 180 (tee intersection)	14%	8%	12%	14%	23%	40%	12%	23%	0	0	18%
(FREE FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING								No. of hours with compliance		
		Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8			
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1006	966	1126	846	1006	1248	1071	1006	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 480 OR VOL x 100 / 600 (1 lane approach on main road) (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	13	7	199	13	26	44	11	26	100%	80% +	Average Compliance

2B	COMPLIANCE % VOL x 100 50	26%	14%	100%	26%	52%	88%	22%	52%	1	2	48%

(FREE FLOW)	**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**	**NO**
SIGNAL JUSTIFICATION 2:	**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**	**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE		**Two Justifications Satisfied 80% or more**
Justification - Minimum Vehicle Volume	NO	**NO**
Justification - Delay to Cross Traffic	NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%

SIGNAL JUSTIFICATION 5:	BOTH OF 3A, 3B FULFILLED TO 100%?	☐ ☐ **NO**
	BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSIN	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEI	8288		
6A PED VOLUME	**8 Hr Veh. Vol.**	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				

	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS	0
6B PED DELAY	**Net Total 8 Hour Vol. of**	**Net Total 8 Hour Volume of Delayed Pedestrians**		
		< 75	**75 - 130**	**> 130**
	< 200	Not Justified		
	200 - 300			
	> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATI	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

APPENDIX I

SYNCRO Files

APPENDIX J

Intersection Schematics



NOTES

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

CAUTION: *The information contained in this drawing is solely for the intended recipient. Any copying, distribution or use by others without the express written consent of Ainley & Associates Limited is prohibited. The recipient is responsible for confirming the accuracy and completeness of the information with the originator. The recipient assumes all risks and liabilities associated with the use of the drawings. The recipient will save and hold harmless Ainley & Associates Limited from any claims whatsoever associated with or related to the use of the drawings. The recipient will not reuse any portion of the drawings for any future project without the express written permission of Ainley & Associates Limited.*

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:500 V= N/A
DESIGN:	
DRAWN:	
CHECKED:	
DATE:	MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

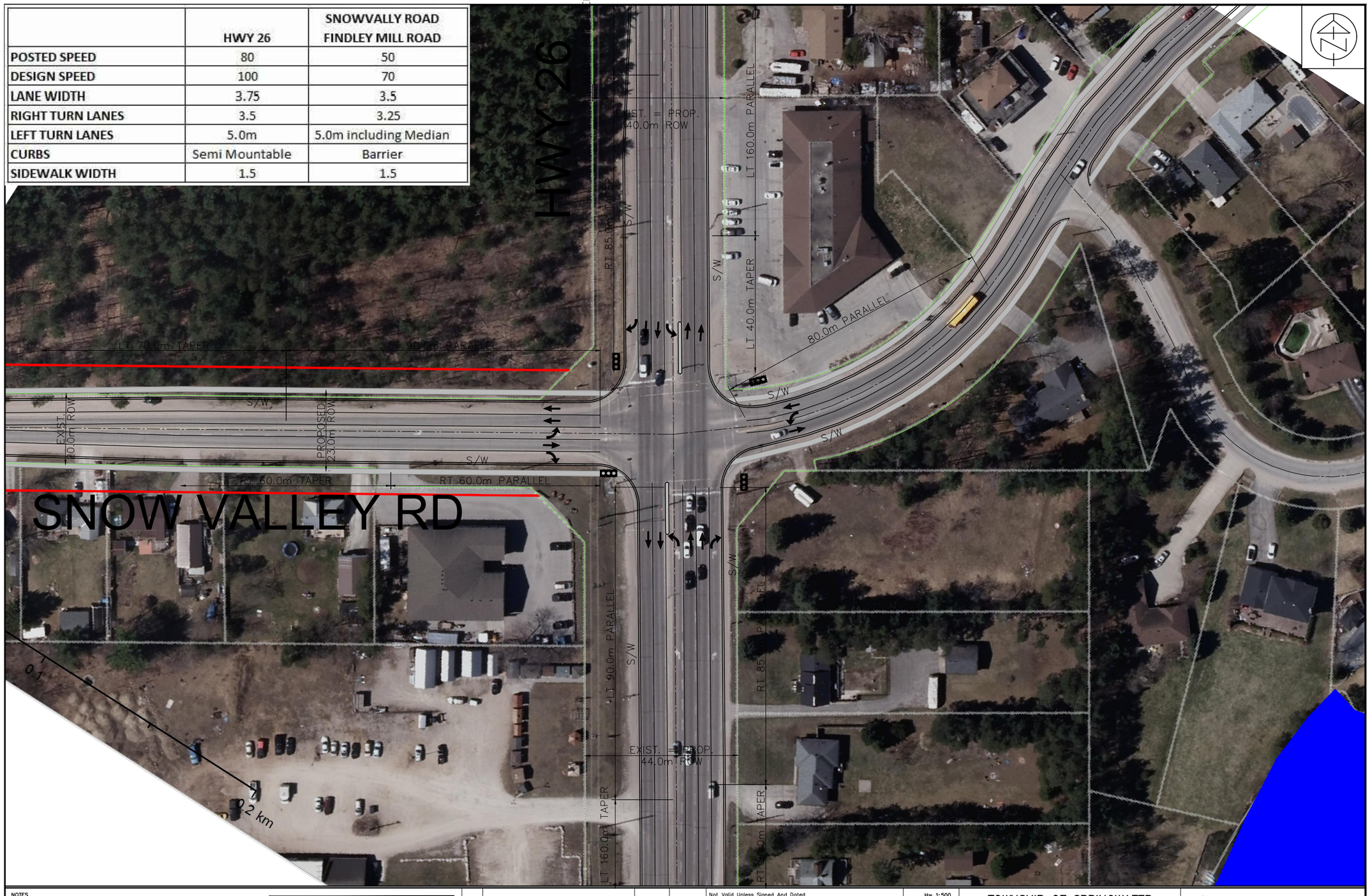
FORBES RD – RUSSELL RD

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on June 1, 2018 at 4:05pm
File: V:\113027\Drawings\General Intersection Design\MAA Edits\Signalized\113027-Oplan-Forbes-400-Interchange SIC.dwg Layout: ALT 1

	HWY 26	SNOWVALLY ROAD FINDLEY MILL ROAD
POSTED SPEED	80	50
DESIGN SPEED	100	70
LANE WIDTH	3.75	3.5
RIGHT TURN LANES	3.5	3.25
LEFT TURN LANES	5.0m	5.0m including Median
CURBS	Semi Mountable	Barrier
SIDEWALK WIDTH	1.5	1.5



NOTES

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

CAUTION: *The information contained in this drawing is solely for the intended recipient. Any copying, distribution or use by others without the express written consent of Ainley & Associates Limited is prohibited. The recipient is responsible for confirming the accuracy and completeness of the information with the originator. The recipient assumes all risks and liabilities associated with the use of the drawings. The recipient will save and hold harmless Ainley & Associates Limited from any claims whatsoever associated with or related to the use of the drawings. The recipient will not reuse any portion of the drawings for any future project without the express written permission of Ainley & Associates Limited.*

NO.	REVISIONS	DATE	INITIAL

Not Valid Unless Signed And Dated

PRELIMINARY

SCALE: H= 1:500 V= N/A
DESIGN:
DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

SNOW VALLEY ROAD – HIGHWAY 26/27

Ainley CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on June 1, 2016 at 9:52am
File: V:\113027\Drawings\General Intersection Design\113027-Oplan-Snow Valley-Hwy 26-Intersection.dwg Layout: ALT 1

	CARSON ROAD	HWY 26/27
POSTED SPEED	50	80
DESIGN SPEED	70	100
LANE WIDTH	3.5	3.75
RIGHT TURN LANES	3.25	3.5
LEFT TURN LANES INCLUDING MEDIAN CURB	5m Barrier	5.0m Semi Mountable
SIDEWALK WIDTH	1.5m	1.5

EXIST. = PROP. 46.0m ROW

S/W

160.0m TAPER

30.0m PARALLEL

70.0m TAPER

105.0m PARALLEL

25.0m PARALLEL

75.0m TAPER

60.0m TAPER

70.0m PARALLEL

CARSON RD

HWY 26/27

LT 160.0m PARALLEL

LT 160.0m TAPER

EXIST. = PROP. 26.0m ROW

NOTES

Plotted by: AMILLER on May 31, 2018 at 2:19pm
File: V:\113027\Drawings\General Intersection Design\113027-Opion-Carson-Bayfield-Intersection.dwg Layout: ALT 1

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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PRELIMINARY

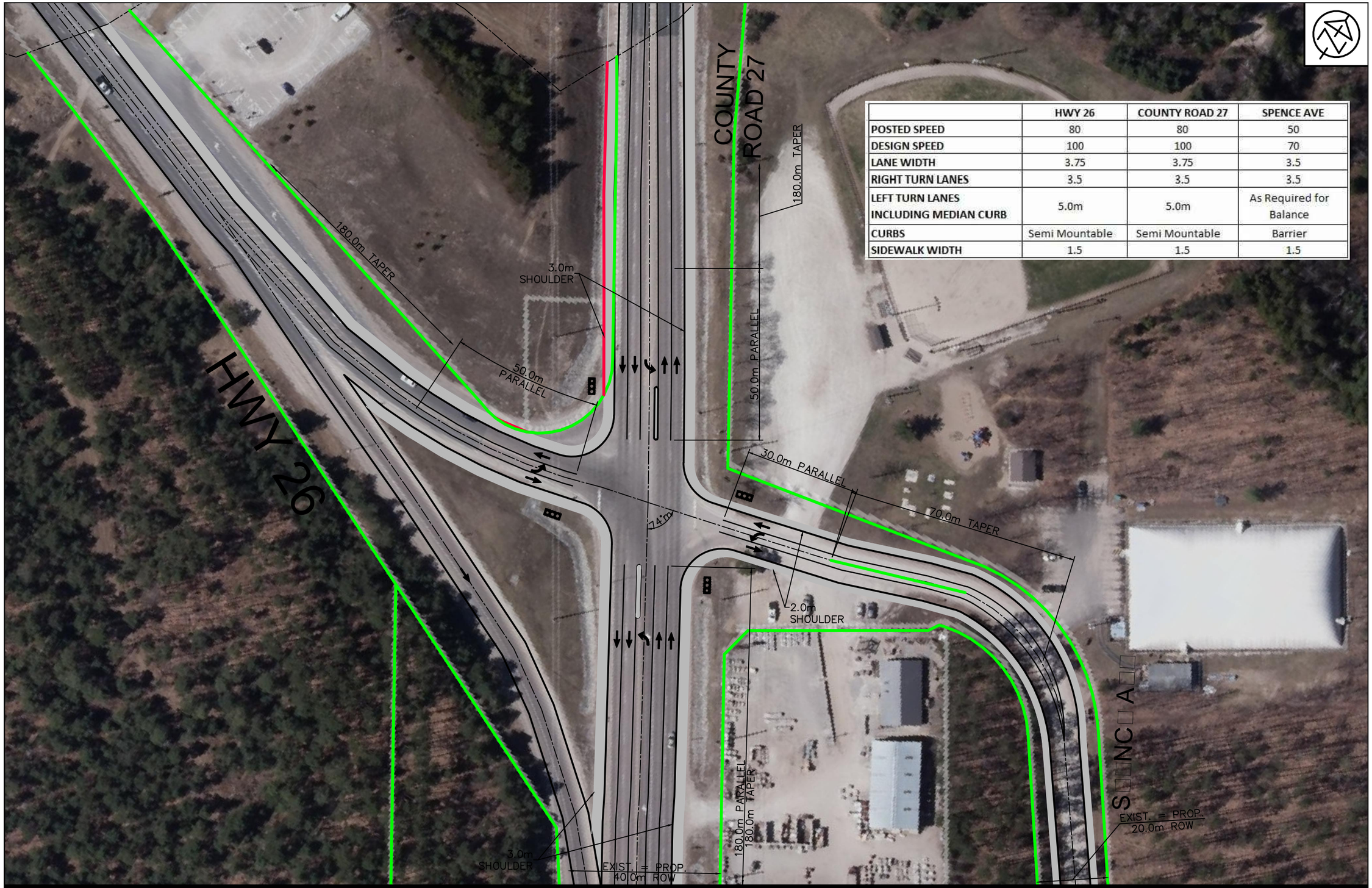
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DATE: MAY/18

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

CARSON ROAD – HIGHWAY 26/27

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2



	HWY 26	COUNTY ROAD 27	SPENCE AVE
POSTED SPEED	80	80	50
DESIGN SPEED	100	100	70
LANE WIDTH	3.75	3.75	3.5
RIGHT TURN LANES	3.5	3.5	3.5
LEFT TURN LANES INCLUDING MEDIAN CURB	5.0m	5.0m	As Required for Balance
CURBS	Semi Mountable	Semi Mountable	Barrier
SIDEWALK WIDTH	1.5	1.5	1.5

NOTES

CONTRACT DRAWINGS
Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.

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NO.	REVISIONS	DATE	INITIAL

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PRELIMINARY

SCALE: H= 1:500 V= N/A
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DRAWN:
CHECKED:
DATE: MAY/16

TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

COUNTRY RD 27 – HIGHWAY 26

Ainley CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on May 30, 2018 at 10:27am
File: V:\113027\Drawings\General Intersection Design\113027–Opion–County Road 27–Hwy 26–Intersection.dwg Layout: ALT 1

APPENDIX 'T10'

Traffic Analysis Summary Provided to County of Simcoe

CONSULTING
ENGINEERS
PLANNERS

MEMORANDUM

Ainley & Associates Limited
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Email: Barrie@ainleygroup.com

To: **County of Simcoe**

Copies to: **Joe Mullan – Ainley Group**
Steve Fournier – Ainley Group

From: **Lilly Chen**

Date: **May 30, 2018**

Ref: **Township of Springwater – Midhurst Phase 3 & 4 Operational Analysis**

File: **113027-311**

The analysis and results presented in this Memo has been derived from our overall Operational Analysis dated March 2017 which was prepared in conjunction with a Municipal Class Environmental Assessment for the Midhurst area road network improvements.

A Transportation Report had been prepared in 2008 to identify the major transportation needs in the area. However, significant changes have been made to the development plans, such as the numbers of units, land uses, timing and phasing of the developments etc. To fulfill the requirements of the EA, updated road and intersection improvement needs and timing of the improvements to the area road network are to be identified. In addition, traffic count data and traffic volume projections need to be updated given the 2008 traffic counts in the Transportation Report are out-of-date.

The overall purpose of this memo is to assess the transportation needs of the various County roads and intersections within the study area. Summaries of intersection analysis and required improvements are provided for existing conditions and future traffic projections for the horizon years of 2031 (full build-out of Phase 1) and 2041 (ultimate horizon).

1. Existing Traffic Volumes

Weekday AM and PM peak hour Traffic Counts conducted on Tuesday June 11, 2013 from 7:45 to 8:45 and from 16:30 to 17:30 are available from BA Group's Midhurst Transportation Work Update Memo dated November 12, 2013.

A review of the traffic volumes along the boundary roads and key area intersections from March 2008 weekday and June 2013 weekday indicated the following:

- In most cases, 2013 traffic volumes are higher than the 2008 traffic volumes;
- 2013 traffic volumes are in the order of 77 % to 154% of the 2008 volumes at the locations where traffic volumes are higher (more than 100 vehicles per hour per lane for both AM and PM peak hours);
- Should a seasonal variation factor is considered, based on MTO Seasonal Variation Graphs for Commuter Recreation road character for Highway 26, June counts are approximately 30% higher than March counts;
- Higher growth is on the east-west oriented roads, such as Snow Valley Road (18% to 42%), Finlay Mill Road (27%) and Highway 26 west of County Road 27 (6 % to 54%); and
- Lower growth is on the north-south oriented roads, such as Bayfield Street (-23% to 15%), Wilson Drive (-3% to 22%).

Historic AADT data on the section of Highway 26 from Barrie northerly limits to County Road 27 obtained from

MTO indicates a 1.1% annual growth rate from 2006 to 2010. To reflect the current 2015 traffic volumes, the 2013 traffic counts were increased by 2.2%. The corresponding 2015 weekday peak hour traffic volumes are shown in Figure 2, Appendix A.

2. Speed Limit on Area County Roads

An 80 km/hr speed limit is posted on the following roads in the study area:

- County Road 27
- Wilson Drive
- Forbes Road
- Snow Valley Road west of Highway 26 to the west

A 60 km/hr speed limit is posted on the following roads in the study area:

- Snow Valley Road near Highway 26
- Snow Valley Road west of Wilson Drive to the west

A 40 km/hr speed limit is posted on the following roads in the study area:

- Wilson Drive NB near Snow Valley Road northerly intersection
- Snow Valley Road near Wilson Drive northerly intersection

3. Existing Intersection Operations

Based on the existing intersection lane configurations and control, analyses of the County Road intersections for the existing peak hour traffic volumes. The methodology applied was consistent with the 2010 *Highway Capacity Manual* method for unsignalized and signalized intersections and the Synchro Delay method for signalized intersections as employed in the software program Synchro 8.

Table 1 summarizes the results of the analysis with level of service (LOS), estimated delays (measured in seconds) and volume to capacity (v/c) ratio provided. Level of service A, corresponding to minimal delays, is the best whereas level of service F, corresponding to high delays, is generally considered poor conditions. When volume is less than capacity, v/c ratio is less than 1. Otherwise, v/c ratio equals to 1 or more than 1, which means volume reaches capacity or is more than capacity.

For un-signalized intersections, the level of service corresponds to the minor street lane groups given that the major street movements proceed relatively unimpeded. For signalized intersections, the results pertain to the average intersection delay, lane group delay and assume optimal signal timing and phasing to achieve the most efficient overall network operations through signal coordination. If the actual situations are under expectations, adjustments to the signal timing and/or phasing can be readily implemented. Level of service definitions and the corresponding detailed worksheets are included in Appendix C.

Table 1 – 2015 Intersection Operations

Intersection		**Control**	**AM Peak Hour**			**PM Peak Hour**		
			Delays(s)	**LOS**	**v/c**	**Delays(s)**	**LOS**	**v/c**
Hwy 26/CR 27 & Spence Ave	EB	stop	42.3	E	0.08	**59.9**	**F**	0.30
	WB		41.1	E	0.05	**50.2**	**F**	0.12
Snow Valley Rd & Wilson Dr. northerly intersection	SB	stop	13.3	B	0.37	15.5	C	0.40
Highway 26 & Snow Valley Road and Finlay Mill Rd	all	signal	15.2	B		16.3	B	
	EBL		19.1	B	0.09	18.3	B	0.10
	EBT-R		21.9	C	0.14	22.1	C	0.30

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
	WBL		15.0	B	0.38	15.4	B	0.28
	WBT-R		17.8	B	0.27	19.4	B	0.30
	NBL		9.8	A	0.10	9.4	A	0.18
	NBT		13.9	B	0.44	17.0	B	0.68
	NBR		11.7	B	0.12	14.9	B	0.44
	SBL		9.8	A	0.06	10.1	B	0.24
	SBT		16.4	B	0.51	16.5	B	0.55
	SBT-R		16.4	B	0.51	16.4	B	0.55
Wilson Dr & Snow Valley Rd	WB	stop	15.9	C	0.28	17	C	0.34
Wilson Dr & Seadon Rd/Carson Rd	EB	stop	14.1	B	0.15	20.4	C	0.17
	WB		14.2	B	0.13	19.4	C	0.27

As per the analyses, good levels of service (C or better) occur at the intersections involving County Roads other than the intersection of Hwy 26 / County Road 27 / Spence Avenue which has a poor LOS for the minor side street movements.

The need for a traffic signal at the intersection of Highway 26 with CR27/Spence Avenue was reviewed. A signal warrant analysis was carried out based on recent 2017 traffic data provided by MTO. Traffic signal warrants for current traffic are not met. A traffic signal warrants were completed for 2031 traffic projections with Phase 1 development in place and the signal warrants are met for those conditions. As development proceeds the intersection operation is to be monitored and signals implemented when development traffic warrants the improvement

4. Historic Traffic Growth

Historic traffic data for the area provincial highways and County Roads is available from MTO and the County of Simcoe. Growth rates were calculated based on the historic data as specified in Table 2.

Table 2 - AADT Growth on the Area Major Roads

Section of Roads	Year	AADT	Year	AADT	Annual Growth Rate
Hwy 26 from Barrie N Limits to CR 27	2006	20,300	2010	21,200	1.09%
CR 27 from Hwy 26 to CR 22	2003	10,700	2012	11,200	0.51%
Snow Valley Rd from Hwy 26 to Wilson Dr	2009	2,600	2012	2,700	1.27%
Forbes Road from CR 93 to Hwy 400	2008	3,000	2014	3,700	3.56%

5. Projected Growth

In developing future traffic projections, consideration has been given to population and employment forecasts in addition to the Midhurst developments.

Population & Employment Trends

Traffic growth will depend largely on the population and employment growth of an area. The population and

employment forecasts for the Township of Springwater are documented in the following reports:

- *Simcoe County Land Budget Data Collection and Analysis Phase 1: Population Growth* prepared by Simcoe County Planning Department dated February 2015
- *Proposed Amendment 1 to the Growth Plan for the Greater Golden Horseshoe, 2006* by the Ministry of Infrastructure dated October 2010
- *Simcoe Area Growth Plan* prepared by Hemson Consulting Ltd. Dated May 2008.

Future population and employment projections are provided in Table 3.

Table 3 - Population and Employment Forecasts

Community	Population			Employment		
	2011	2031	Annual Growth	2006	2031	Annual Growth
Township of Springwater	18,749	24,000	1.2%	5,000	5,600	0.5%

It is assumed that projected growth includes partially Midhurst developments, but not all Phase 1 of the Midhurst developments.

Growth from Midhurst Developments

The Midhurst developments located within the Midhurst Settlement Area are illustrated in Figure 3 of Appendix A and are listed below:

1) Neighbourhood #1 Carson Road Development – 2559 residential units plus employment land equivalent to 350 residential units;
2) Neighbourhood #2 Doran Road North Development – 1815 residential units;
3) Neighbourhood #3 Doran Road South Development – 3484 residential units;
4) Employment land #1 located on the north side of Snow Valley Road and east side of Wilson Drive – 2655 jobs; and
5) Employment land #2 located on the south side of Snow Valley Road and west side of Highway 26 – 475 jobs and 495,000 sq. ft. GFA commercial.

Trips generated by the above Midhurst developments have been specifically estimated, as per the *ITE Trip Generation Manual*. For the residential developments, trip rates were calculated by using the trip estimate equations and a combination of 77% single family detached units (land use code 210) and 23% residential condo/townhouse units (land use code 230) given that the percentage of townhouse units in Phase 1 is 23%. For the employment lands, trip rates were estimated by using the equations for general light industrial (land use code 110) and shopping centre land use (land use code 820).

Trips can be made between Carson Road development and the Employment Lands via an internal road between Snow Valley Road and Carson Road without using the boundary roads. These trips are considered internal trips and should be deduced from the total trips. An internal capture rate of 5% was assumed.

There are also trips to the commercial land use when people are on the way home or on the way to work etc. These are by-pass trips. These trips are already on the road network and should be deducted from the total trips. 25% by-pass trips for the commercial land use were assumed.

Trip estimates for the peak hours of the road network are provided in Table 4. In total, the Midhurst developments are expected to generate 6204 primary trips in the AM peak hour and 7842 trips in the PM peak hour (both inbound and outbound trips).

Table 4 – Midhurst Developments Trip Generation Estimates

Development	Rate/ Estimate	Unit/ Size	Weekday AM Peak			Weekday PM Peak		
			In	Out	Total	In	Out	Total
Carson Road	rate	unit	0.15	0.47	0.62	0.443	0.254	0.697
	estimate	2909	435	1381	1816	1289	739	2028
	5% Internal Capture		-22	-69	-91	-64	-37	-101
	Sub-total		413	1312	1725	1225	702	1927
Doran Road North	rate	unit	0.15	0.47	0.62	0.443	0.254	0.697
	estimate	1440	216	684	900	638	366	1004
Doran Road South	rate	unit	0.15	0.47	0.62	0.443	0.254	0.697
	estimate	3859	578	1832	2410	1710	980	2690
Sub-total		8208	1207	3828	5035	3573	2048	5621
Employment Land #1	rate	employee	0.25	0.05	0.3	0.07	0.24	0.31
	estimate	2655	661	136	797	173	650	823
	5% Internal Capture		-33	-7	-40	-9	-32	-41
	Sub-total		628	129	757	164	618	782
Employment Land #2	rate	employee	0.25	0.05	0.3	0.07	0.24	0.31
	estimate	475	118	25	143	31	116	147
	rate	1000 sq ft GFA	0.49	0.31	0.8	1.84	1.91	3.75
	estimate	495	242	154	396	909	947	1856
	5% Internal Capture		-18	-9	-27	-47	-53	-100
	25% By-pass Trips		-60	-39	-99	-227	-237	-464
	Sub-total		282	131	413	666	773	1439
Total			2117	4087	6204	4403	3439	7842

For the three residential developments, development phasing is shown in Figure 3 and Table 5. For the employment lands, it is anticipated that they will be completed during Phase 1 by 2031. By 2027, all approved units (3850 units) would be built. By 2031 Phase 1 of the Midhurst developments are expected to generated 4209 trips in the AM peak hour and 5615 trips in the PM peak hour (both inbound and outbound trips).

Table 5 – Development Phasing

Build Out Timing/Phasing	Carson Rd Development			Doran Road North Dev.		Doran Road South Dev.		Cumulative Total Units
	Residential Units	Emp. Units	% Build Out	Units	% Build Out	Units	% Build Out	
Stage 1 - 2018	748	100	29	232	16			1080
Stage 2 -2022	819	100	61	297	37			2296
Stage 3 - 2025	487	100	81	291	57			3174
Stage 4 - 2027	219	50	90	407	85			3850
Stage 5- 2031	27		91	213	100	910	24	5000
Ph1 Subtotal 2031	2300	350	91	1440	100	910	24	5000

Build Out Timing/Phasing	Carson Rd Development			Doran Road North Dev.		Doran Road South Dev.		Cumulative Total Units
	Residential Units	Emp. Units	% Build Out	Units	% Build Out	Units	% Build Out	
Stage 6 - 2034	259		100	375		375	43	6009
Stage 7 - 2036						750	62	6759
Stage 8 - 2039						725	81	7484
Stage 9 - 2041						724	100	8208
Total 2041	2909		100	1815	100	3484	100	8208

The Transportation Master Plan prepared by the County of Simcoe and the analysis of the area traffic during the assessment of a potential partial interchange on Highway 400 at Pooles Road (AECOM June 2015) describe the prime origin / destination for the Midhurst area as 70% to and from the south. No other guidance is provided on the other directions and we have assigned 10% to each of the other cardinal directions. There are several north south options available to existing and future residents of Midhurst and the route selection will be dependent on where they are situated within Midhurst. We have assumed that if you are in the Carson Road area development the traffic to and from the south would typically use Highway 26/Bayfield or Anne Street or Wilson Road and unlikely to use St. Vincent Street or Highway 400. For those in the Russell Road/Doran Road area developments the route selection to and from the south would be on Highway 400 or St. Vincent Street or Highway 26/Bayfield Street.

Rudimentary time trials were carried out on the north south routes from Doran Road between Russell Road and St. Vincent Street to the intersection of Highway 400 and Bayfield Street by taking Russell to Forbes to Highway 400 and by taking Findley Mill Road/Highway 26/Bayfield and by taking Pooles to St. Vincent Street to Cundles Road to Bayfield to Highway 400. The data collected shows that the Forbes to Highway 400 route is the quickest during the PM Peak at approximately 10 minutes followed by the Highway 26 route at 11.5 minutes and then the St. Vincent Route at 13.5 minutes.

For the western development area of Carson Road between Highway 26 and Wilson Road we have assigned the 70% of traffic to and from the south as 30% along Highway 26, 20% along Anne Street and 20% along Wilson Road. For the eastern development area in the vicinity north of Doran Road between Russell and St Vincent we have assigned the 70% of traffic to and from the south as 45% to Forbes and Hwy 400, 5% to Findley Mill Road / Highway 26 and 10% to Craig Road to CR 27 / Hwy 26 and 5% to Pooles Road and St. Vincent. For the eastern development area in the vicinity south of Doran Road between Russell and St Vincent we have assigned the 70% of traffic to and from the south as 50% to Forbes and Hwy 400, 5% to Findley Mill Road and Highway 26 and 15% to Pooles Road and St. Vincent.

Based on the above, the following distributions were developed:

Carson Road Development

- 20% to/from the south via Wilson Drive
- 20% to/from the south via Anne Street
- 30% to/from the south via Highway 26
- 10% to/from the north via County Road 27
- 5% to/from the west via Highway 26
- 5% to/from the northwest via Wilson Drive/Snow Valley Rd.
- 5% to/from the west via Snow Valley Road / Hwy 26
- 5% to/from the east via Forbes Road

Doran Road North Development

- 45% to/from the south via Highway 400 and Forbes Road

- 5% to/from the south via St Vincent
- 5% to/from the south via Highway 26 and Finlay Mill Road
- 10% to/from the south via Highway 26 and Craig Road
- 5% to/from the north via County Road 27 and Craig Road
- 5% to/from the north via Highway 400 and Forbes Road
- 5% to/from the west via Doran, Spence and Highway 26
- 5% to/from the west via Snow Valley Road
- 10% to/from the east via Forbes Road
- 5% to/from the south via Russell and Pooles Road

Doran Road South Development

- 50% to/from the south via Highway 400 and Forbes Road
- 15% to/from the south via St Vincent
- 5% to/from the south via Highway 26 and Finlay Mill Road
- 0% to/from the south via Highway 26 and Craig Road
- 5% to/from the north via Russell – Craig Rd - County Road 27
- 5% to/from the north via Highway 400
- 5% to/from the west via Doran, Spence and Highway 26
- 5% to/from the west via Snow Valley Road
- 10% to/from the east via Forbes Road

Employment Land #1

- 20% to/from the south via Wilson Drive
- 10% to/from the south via Anne Street
- 20% to/from the south via Highway 26
- 13% to/from the east via Finlay Mill Road
- 5% to/from the east via Craig Road
- 1% to/from the east via Doran Road
- 1% to/from the east via Carson Road east
- 15 % to/from north via CR 27
- 2% to/from the west via Snow Valley Road
- 13% to/from the northwest via Wilson Drive

Employment Land #2

- 10% to/from the south via Wilson Drive
- 10% to/from the south via Anne Street
- 30% to/from the south via Highway 26
- 13% to/from the east via Finlay Mill Road
- 5% to/from the east via Craig Road
- 1% to/from the east via Doran Road
- 1% to/from the east via Carson Road east
- 15 % to/from north via CR 27
- 2% to/from the west via Snow Valley Road
- 13% to/from the northwest via Wilson Drive

The development specific trip estimates were assigned to the area road network. The resulting traffic volumes attributed to the above noted developments are presented in Appendix B figures B1 thru B5.

6. Future Traffic Volumes

Given that development growth has been considered specifically and that the average growth rate for the section

of Highway 26 is 1.09% for the past five years, an annual general background growth rate of 1.0% was applied for traffic volumes on Highway 26, CR 27, Wilson Drive, Snow Valley Road and Finlay Mill Road – Doran Road – Forbes Road corridor.

Estimates of future traffic volumes for the years 2031 and 2041 have been determined based on the following:
- 2015 traffic volumes;
- development specific trip generation volumes; and
- consideration for the 2031and 2041 horizon year growth rates.

The resulting future traffic projections are provided in Appendices E and F Figures 4 and 5 for the 2031 and 2041 horizon respectively. The AM and PM peak hour volumes are provided, reflective of weekday conditions. Initial assumption when this study was started was that Phase 1 development would commence in 2018. Obviously this will not be the case and the year 2018, as referred to here, represents the beginning of lot development.

7. Future Road Network

The County of Simcoe has recently completed an updated Transportation Master Plan. The final draft report dated September 2014 has identified the following improvements in the study area:
- Snow Valley Road from CR 28 to Highway 26 widening to 4 lanes by 2021
- Wilson Drive from Barrie limit to Highway 26 widening to 4 lanes by 2031
- Widening of CR 93 from CR 11 (Forbes Road) to City of Barrie limit shall be coordinated with MTO's widening of Highway 11
- CR 27 from Highway 26 to CR 22 widening to 4 lanes by 2041

It is assumed that the following road connections will be in place by 2025:
- Craig Road is opened from Russell Road to County Road 27 2018
- St Vincent Street is connected between Belmont Crescent and Park Trail

The timing for the above improvements should be sooner than later. The 10 year horizon is considered the worst case scenario and is to allow time for design and construction.

Route selection for the Craig Road link between Russell Road and County Road 27 along the north limits of the study area is still in the preliminary stages which will be refined as the overall design of the transportation improvements proceeds. Completion of this link during the first stage of Phase 1 development is necessary as it provides alternate routing for some development traffic to access the County Road 27/Hwy 26/ Bayfield corridor and to some extent Hwy 400 without using existing Midhurst community roads. This Craig Road link is proposed as a two lane rural roadway. Schematic routing considered for Craig Road is provided in Appendix H.

8. Future 2031 Operations

The following improvements have been assumed:
- Add a traffic signal and an exclusive left turn lane on the SB, EB and WB approaches at the intersection of Highway 26 / CR 27 / Spence Ave
- Add a NB advance green phase at the intersection of Highway 26 / Carson Road.
- Increase Wilson Road to 4 lanes from City limit to Hwy 26.
- Craig Road is opened from Russell Road to County Road 27 2018
- St Vincent Street is connected between Belmont Crescent and Park Trail

The operations of the key study area intersections were investigated based upon the existing configurations, the above improvements and the 2031 traffic projections. The results of the 2031 analyses are presented in Table 6 whereas the corresponding worksheets are provided in Appendix C.

Table 6 – 2031 Intersection Operations

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Russell Rd & Doran Rd	all	signal	18.7	B		18.3	B	
	EBL		31.1	C	0.84	27.9	C	0.81
	EBR		16.6	B	0.15	17.2	B	0.16
	NBL		7.6	A	0.10	7.5	A	0.15
	NBT		9.1	A	0.28	7.5	A	0.17
	SBT		11.4	B	0.12	12.6	B	0.33
	SBR		13.8	B	0.36	19.2	B	0.67
Snow Valley Rd & Wilson Dr. northerly intersection	SBL	stop	22.8	C	0.69	28.9	D	0.76
Highway 26 & Snow Valley Road	all	signal	35.5	D		60.9	E	
	EBL		24.5	C	0.39	31.4	C	0.62
	EBT-R		44.4	D	0.79	115.9	F	1.09
	WBL		24.3	C	0.72	57.6	E	0.86
	WBT-R		28.3	C	0.58	43.4	D	0.46
	NBL		39.1	D	0.82	105.9	F	1.00
	NBT		23.6	C	0.65	45.0	D	0.88
	NBR		17.7	B	0.18	36.0	D	0.63
	SBL		17.7	B	0.14	37.2	D	0.59
	SBT		50.6	D	0.94	66.6	E	0.96
	SBT-R		51.5	D	0.94	68.6	E	0.97
Hwy 26/CR 27 & Spence Ave	all	signal	12.8	B		10.7	B	
	EBL		34.1	C	0.29	33.6	C	0.54
	EBT		32.3	C	0.12	28.5	C	0.17
	EBR		0.5	A	0.30	0.7	A	0.39
	WBL		31.6	C	0.03	27.8	C	0.03
	WBT-R		35.2	D	0.37	28.3	C	0.12
	NBL		14.8	B	0.76	14.8	B	0.74
	NBT-R		2.1	A	0.20	3.8	A	0.45

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
	SBL		15.6	B	0.00	14.7	B	0.04
	SBT-R		23.6	C	0.76	21.7	C	0.74
CR 27 & Craig Road	all	Signal or Roundabout	9.1	A		12.0	B	
	WBL		15.7	B	0.50	30.1	C	0.78
	WBR		13.8	B	0.17	23.0	C	0.13
	NBT		8.1	A	0.44	13.2	B	0.81
	NBR		7.1	A	0.24	5.3	A	0.24
	SBL		10.1	B	0.04	20.9	C	0.24
	SBT		7.8	A	0.40	5.5	A	0.30
Wilson Dr & Snow Valley Rd	all	signal	12.1	B		23.0	C	
	WBL		19.6	B	0.69	22.5	C	0.68
	WBR		17.6	B	0.48	39.4	D	0.89
	NBT		12.9	B	0.51	27.9	C	0.83
	NBR		12.7	B	0.47	19.1	B	0.61
	SBL		8.2	A	0.43	16.6	B	0.70
	SBT		7.1	A	0.44	9.3	A	0.42
Wilson Dr & Seadon Rd/Carson Rd	all	Signal or roundabout	9.8	A		8.3	A	
	EBL		13.2	B	0.03	18.7	B	0.07
	EBT-R		11.6	B	0.13	16.2	B	0.10
	WBL		14.5	B	0.41	18.3	B	0.32
	WBT-R		12.5	B	0.31	18.2	B	0.45
	NBL		9.9	A	0.03	7.3	A	0.07
	NBT		8.4	A	0.35	6.7	A	0.46
	NBT-R		8.5	A	0.36	6.7	A	0.46
	SBL		10.3	B	0.12	10.3	B	0.25

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
	SBT		8.5	A	0.38	6.0	A	0.32
	SBT-R		8.5	A	0.38	6.0	A	0.32

Given the assumed improvements, all intersections and their lane groups will operate acceptably at a level of service "E" or better in the 2031 horizon except for the intersection of Highway 26 at Snow Valley Road where a poor level of service "F" occurs on the eastbound through-right shared lane and the northbound left turn lane, volumes are at or over capacity during the PM peak hour. Thus, improvements at the intersection are required.

With an eastbound right turn lane added at the intersection of Highway 26 at Snow Valley Road/Finlay Mill Road, the intersection would operate acceptably. The results of the analysis are summarized in Table 7.

Table 7 – 2031 Intersection Operations with Improvements

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Highway 26 & Snow Valley Rd/Finlay Mill Rd	all	signal	31.7	C		36.8	D	
	EBL		25.2	C	0.40	30.2	C	0.71
	EBT		30.9	C	0.26	45.2	D	0.75
	EBR		35.2	D	0.63	51.9	D	0.81
	WBL		21.0	C	0.58	28.9	C	0.62
	WBT-R		29.4	C	0.63	41.1	D	0.70
	NBL		32.7	C	0.78	42.5	D	0.83
	NBT		22.0	C	0.63	30.1	C	0.85
	NBR		16.5	B	0.18	24.4	C	0.60
	SBL		16.5	B	0.13	22.8	C	047
	SBT		44.9	D	0.91	44.3	D	0.91
	SBT-R		45.7	D	0.91	45.6	D	0.92

9. Future 2041 Operations

Given the future 2041 total traffic volumes, an additional through lane in each direction to a total of 4 lanes are required on the following sections of roads:

- Forbes Road from Russell Road to Highway 400
- Russell Road from south of Doran Road to Forbes Road

Given the northbound right turn and westbound left turn volumes at the intersection of Russell Road at Forbes Road, the northbound right turn lane should be changed to a channelized right turn lane and the westbound inside through lane becomes a left turn lane to a double left turn lane.
A traffic signal warrant analysis was carried out at various intersections. A traffic signal is warranted at the following intersections for the 2041 horizon:

- Wilson Drive at Snow Valley Road northerly intersection

- Pooles Road at Russell Road
- Forbes Road at Highway 400 SB off-ramp

A traffic signal with an exclusive left turn lane on each approach was assumed at the above noted intersections. A westbound right turn lane on Pooles Road at Russell Road and an eastbound channelized right turn lane on Forbes Road at Highway 400 SB off-ramp were also assumed.
Based on the above improvements, the results of the operational assessment are provided in Table 8 for the 2041 horizon, whereas detailed worksheets are provided in Appendix C.

Table 8 – 2041 Intersection Operations

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Russell Rd & Forbes Rd	all	signal	41.7	D		40.7	D	
	EBL		0	-	0	0	-	0
	EBT-R		27.9	C	0.59	38.6	D	0.58
	WBL		55.9	E	0.95	46.3	D	0.99
	WBT-R		11.3	B	0.09	5.3	A	0.18
	NBL		18.6	B	0.18	39.0	D	0.24
	NBT		16.8	B	0.00	35.3	D	0.04
	NBR		0	-	0	0	-	0
	SBL		22.1	C	0.01	35.5	D	0.02
	SBT-R		22.1	C	0.01	35.2	D	0.04
Hwy 400 SB off-ramp & Forbes Rd	all	signal	11.3	B		19.5	B	
	EBT		10.8	B	0.43	7.9	A	0.23
	WBL		15.3	B	0.29	9.5	A	0.10
	WBT		11.0	B	0.46	22.6	C	0.93
	NBL		11.8	B	0.12	19.5	B	0.32
Snow Valley Rd & Wilson Dr. northerly intersection	all	signal	14.0	B		13.6	B	
	EBL		9.2	A	0.04	9.2	A	0.03
	EBT		10.8	B	0.36	11.6	B	0.48
	WBT		10.6	B	0.32	11.4	B	0.44
	WBR		9.9	A	0.19	11.0	B	0.38
	SBL		20.6	C	0.72	20.4	C	0.71
	SBR		10.3	B	0.01	10.3	B	0.01
Forbes Rd &Hwy400 NB off-ramp	SBL	stop	34.8	D	0.22	52.4	F	0.63
Highway 26 & Snow Valley Road	all	signal	46.7	D		51.3	D	
	EBL		27.4	C	0.46	46.3	D	0.82

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
	EBT		33.3	C	0.34	88.4	F	0.97
	EBR		39.3	D	0.67	68.4	E	0.86
	WBL		23.8	C	0.71	48.9	D	0.86
	WBT-R		30.7	C	0.69	51.8	D	0.74
	NBL		63.7	E	0.94	81.6	F	0.95
	NBT		27.9	C	0.74	36.5	D	0.88
	NBR		20.0	C	0.24	31.6	C	0.71
	SBL		19.9	B	0.18	31.6	C	0.60
	SBT		79.3	F	1.05	57.5	E	0.96
	SBT-R		81.5	F	1.05	60.6	F	0.97
Hwy 26/CR 27 & Spence Ave	all	signal	20.1	C		15.0	B	
	EBL		33.5	C	0.16	35.9	D	0.49
	EBT		33.4	C	0.17	35.9	D	0.52
	EBR		0.6	A	0.33	0.8	A	0.43
	WBL		32.4	C	0.01	31.6	C	0.02
	WBT-R		37.2	D	0.54	33.5	C	0.32
	NBL		27.2	C	0.88	22.4	C	0.82
	NBT-R		3.3	A	0.23	4.2	A	0.47
	SBL		19.5	B	0.0	18.2	B	0.04
	SBT-R		33.9	C	0.86	29.7	C	0.83
CR 27 & Craig Road	all	signal	9.5	A		10.4	B	
	WBL		16.1	B	0.51	29.8	C	0.78
	WBR		15.3	B	0.38	23.7	C	0.27
	NBT		7.8	A	0.37	8.0	A	0.58
	NBR		7.8	A	0.37	8.0	A	0.58
	SBL		9.7	A	0.09	16.8	B	0.42
	SBT		7.9	A	0.42	5.9	A	0.32

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Wilson Dr & Snow Valley Rd	all	signal	12.4	B		21.4	C	
	WBL		20.4	C	0.70	31.8	C	0.77
	WBR		13.1	B	0.43	19.3	B	0.67
	NBT		14.1	B	0.57	25.6	C	0.80
	NBR		13.6	B	0.49	18.8	B	0.57
	SBL		9.1	A	0.49	24.9	C	0.84
	SBT		7.7	A	0.48	8.8	A	0.42
Wilson Dr & Seadon Rd/Carson Rd	all	signal	10.2	B		8.6	A	
	EBL		13.4	B	0.03	21.3	C	0.08
	EBT-R		11.6	B	0.13	18.3	B	0.10
	WBL		14.8	B	0.44	20.9	C	0.36
	WBT-R		12.6	B	0.32	20.6	C	0.47
	NBL		10.6	B	0.04	7.3	A	0.07
	NBT		8.8	A	0.38	6.6	A	0.47
	NBT-R		8.8	A	0.38	6.6	A	0.47
	SBL		10.9	B	0.14	11.0	B	0.29
	SBT		9.0	A	0.41	5.8	A	0.32
	SBT-R		9.0	A	0.41	5.8	A	0.32

Given the increase in traffic volumes, despite the assumed improvements, a poor level of service "F" occurs at the following County intersections. We have included intersections along Forbes Road in the summary as a possible future County Road:

- Highway 26 at Snow Valley Road
- Forbes Road at Highway 400 NB off-ramp

Thus improvements at these intersections should be considered. The following improvements are recommended:

Intersection of Highway 26 at Snow Valley Road

- Add a southbound right turn lane. Add an eastbound right turn lane

Intersection of Highway 400 NB Off Ramp with Forbes Rd.

- Add an eastbound to northbound left turn lane

Based on the above improvements, the above intersections would operate acceptably. The results of the analysis are summarized in Table 9.

Table 9 – 2041 Intersection Operations with Improvements

INTERSECTION		CONTROL	AM PEAK HOUR			PM PEAK HOUR		
			Delay(s)	LOS	v/c	Delay(s)	LOS	v/c
Highway 26 & Snow Valley Road	all	signal	32.4	C		38.0	D	
	EBL		23.1	C	0.42	45.3	D	0.81
	EBT		29.1	C	0.33	79.3	E	0.96
	EBR		24.2	C	0.42	35.3	D	0.59
	WBL		19.4	B	0.68	39.5	D	0.83
	WBT-R		26.7	C	0.68	41.1	D	0.66
	NBL		38.1	D	0.82	43.3	D	0.83
	NBT		30.3	C	0.82	39.1	D	0.92
	NBR		8.4	A	0.16	15.3	B	0.55
	SBL		20.1	C	0.18	28.8	C	0.59
	SBT		50.8	D	0.98	35.9	D	0.85
	SBR		20.0	C	0.38	15.4	B	0.27
Highway 26 & Snow Valley Rd/Finlay Mill Rd	all	signal	32.4	C		38.0	D	
	EBL		23.1	C	0.42	45.3	D	0.81
	EBT		29.1	C	0.33	79.3	E	0.96
	EBR		24.2	C	0.42	35.3	D	0.59
	WBL		19.4	B	0.68	39.5	D	0.83
	WBT-R		26.7	C	0.68	41.1	D	0.66
	NBL		38.1	D	0.82	43.3	D	0.83
	NBT		30.3	C	0.82	39.1	D	0.92
	NBR		8.4	A	0.16	15.3	B	0.55
	SBL		20.1	C	0.18	28.8	C	0.59
	SBT		50.8	D	0.98	35.9	D	0.85
	SBR		20.0	C	0.38	15.4	B	0.27
HWY 400 NB Off Ramp & Forbes Road wt EB Lt	SBL	stop	20.3	C	0.13	22.3	C	0.36
	EBL	free	8.6	A	0.18	9	A	0.14

10. Roundabout Alternative Considerations

Although much of the above analysis is specific to signalized intersections roundabouts have been considered for many of the intersections. An initial list of 11 intersections was considered as candidates for this type of intersection treatment. These intersections included:

1. Wilson Road at Carson Road
2. Bayfield Road at Carson Road
3. Russell Road and Doran Road
4. County Road 27 at (future) Craig Road
5. Highway 26 at County Road 27
6. Russell Road at (future) Craig Road/Forbes Road
7. St. Vincent Street at Doran Road
8. St. Vincent Street at Pooles Road
9. Finlay Mill Road at Wattie Road
10. Russell Road at Pooles Road
11. Bayfield Road at Findley Mill / Snow Valley Road

A preliminary review of property impacts, compatibility with adjacent terrain resulted in the elimination of intersections 3, 8 and 9. The remaining eight were subjected to additional analysis including a review of terrain and traffic operations. This led to the elimination of all but 1, 4, and 6. These three will be carried forward for further consideration as the design stage evolves. Schematic layouts of these three intersections, Wilson Road at Carson Road, County Road 27 at Craig Road and Russell Road at Forbes Road/Craig Road are provided in Appendix G.

Table 10 – 2041 Intersection Operations - Roundabout

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Hwy 26/CR 27 & Spence Ave	all	2 lane round-about with an EB right turn bypass	13.8	B		25.4	D	
	EBL-T		6.7	A	0.09	9.9	A	0.27
	EBR		0	A	0.28	0	A	0.36
	WB		11.9	B	0.23	17.1	C	0.22
	NBL-T		13.0	B	0.66	28.8	D	0.89
	NBT-R		10.3	B	0.56	47.4	E	0.99
	SBL-T		23.4	C	0.72	19.6	C	0.68
	SBT-R		27.0	D	0.78	22.3	C	0.74

As indicated in Table 10, volumes are nearing capacity for the northbound through-right movement for the Hwy 26/ County Road 27 intersection, even with an eastbound right turn bypass added to the roundabout. Thus a roundabout is not recommended at that intersection.

11. Conclusion

Based on the above analyses, it is concluded that the following timing and improvements are recommended at intersections involving County roads, Craig Road and Forbes Road.

2018 horizon

- With the start of development construct Craig Road from Russell Road to County Road 27.

2031 horizon

- Monitor traffic growth and prior to 2031 add a traffic signal at the intersection of Highway 26/Spence Avenue with Highway 26/County Road 27 including an exclusive left turn lane on the north, east and west approaches
- Add an eastbound right turn lane at the intersection of Highway 26 with Snow Valley Road

2041 horizon

- Add a southbound right turn lane on Highway 26 at Snow Valley Road.
- Add an additional through lane in each direction for a total of 4 lanes on Forbes Road from Russell Road to Highway 400
- Add a traffic signal at the intersection of Forbes Road/Highway 400 SB on/off ramp along with a westbound left turn lane and an eastbound channelized right turn lane.
- Add an eastbound left turn lane on Forbes Road at Highway 400 NB on/off ramp.

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APPENDIX A

2013 Traffic Counts

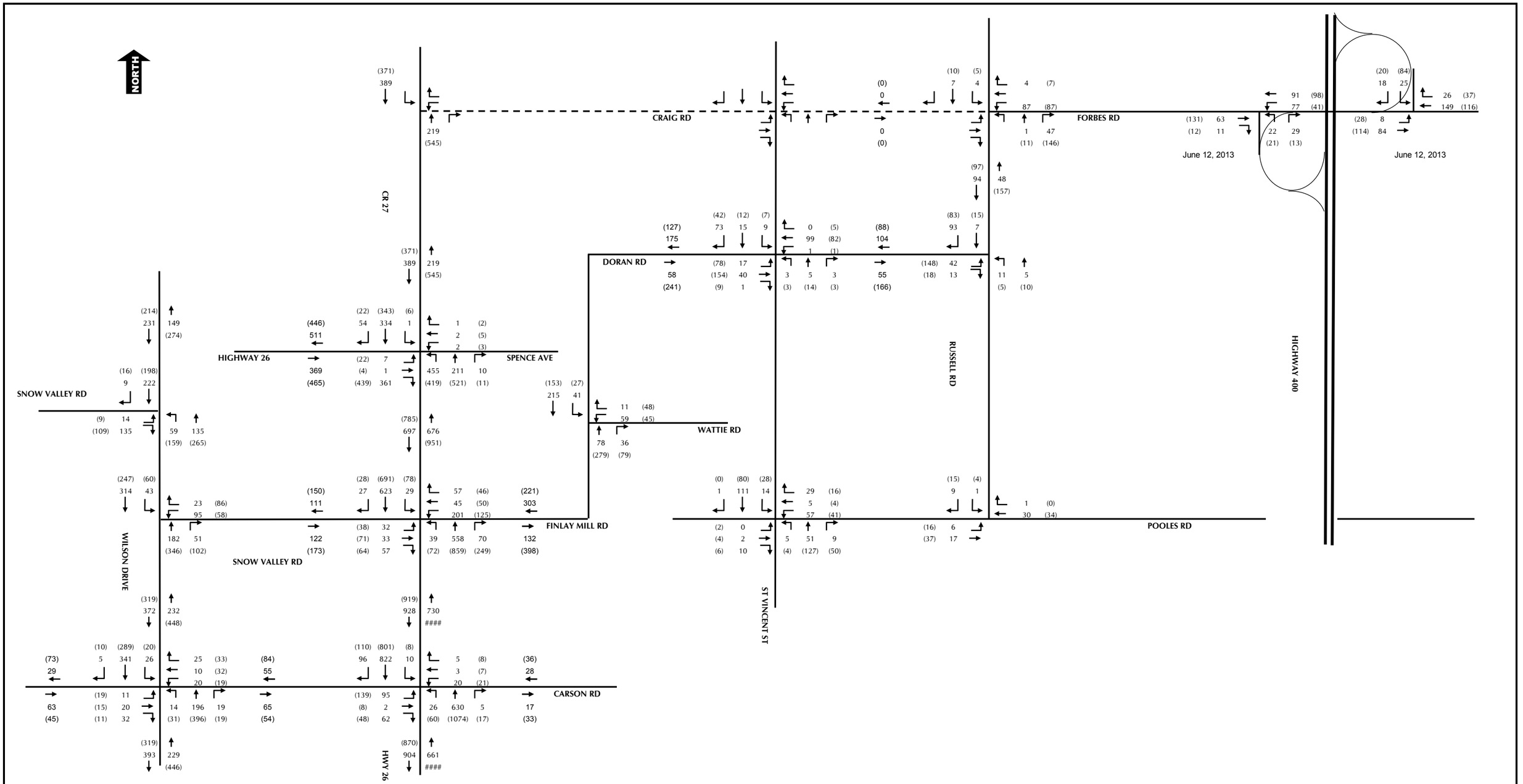


Figure 1A
Traffic Counts 2013
Midhurst EA Phases 3 & 4
Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS

APPENDIX B

Specific Development Trip Generation

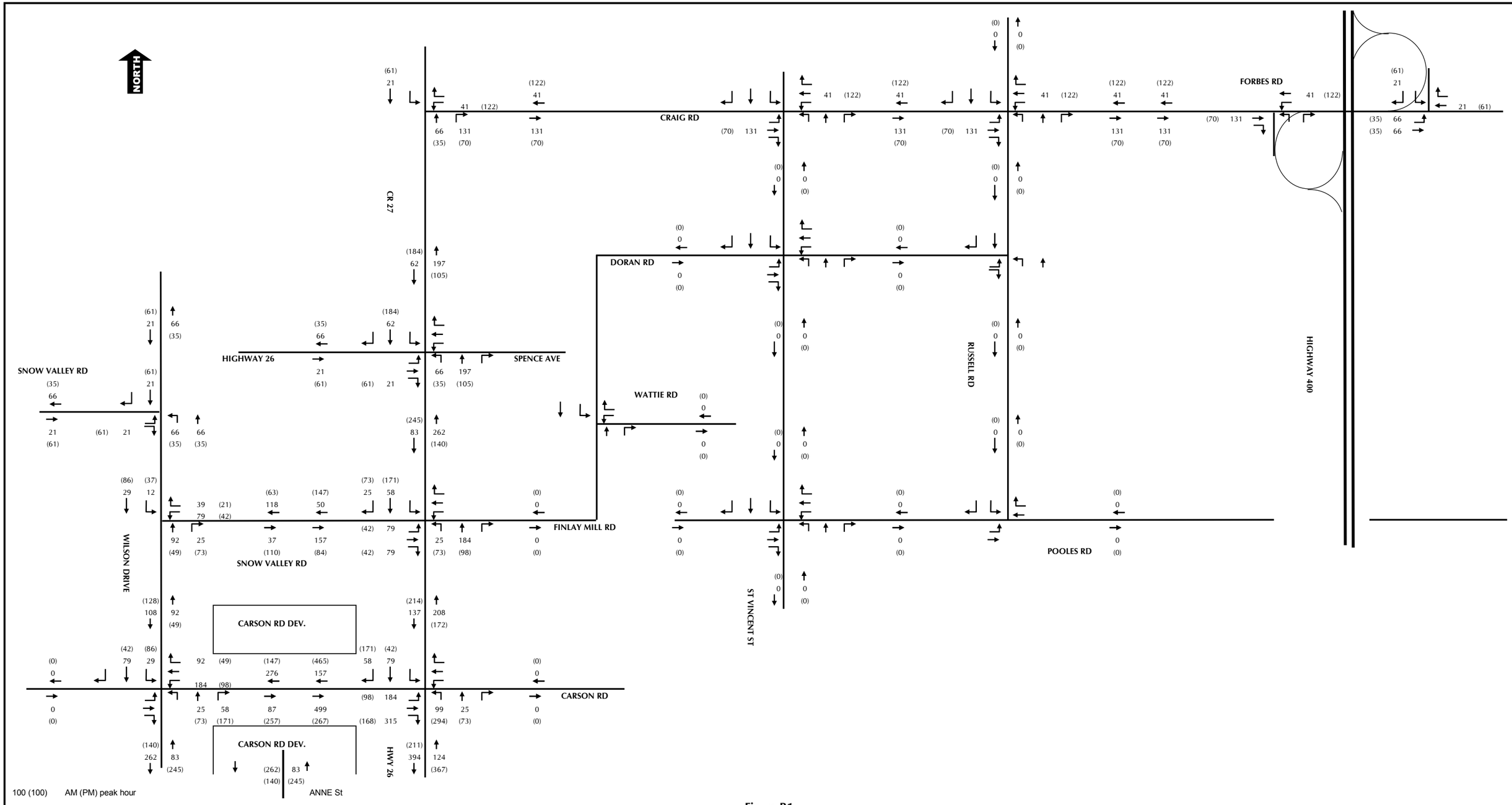


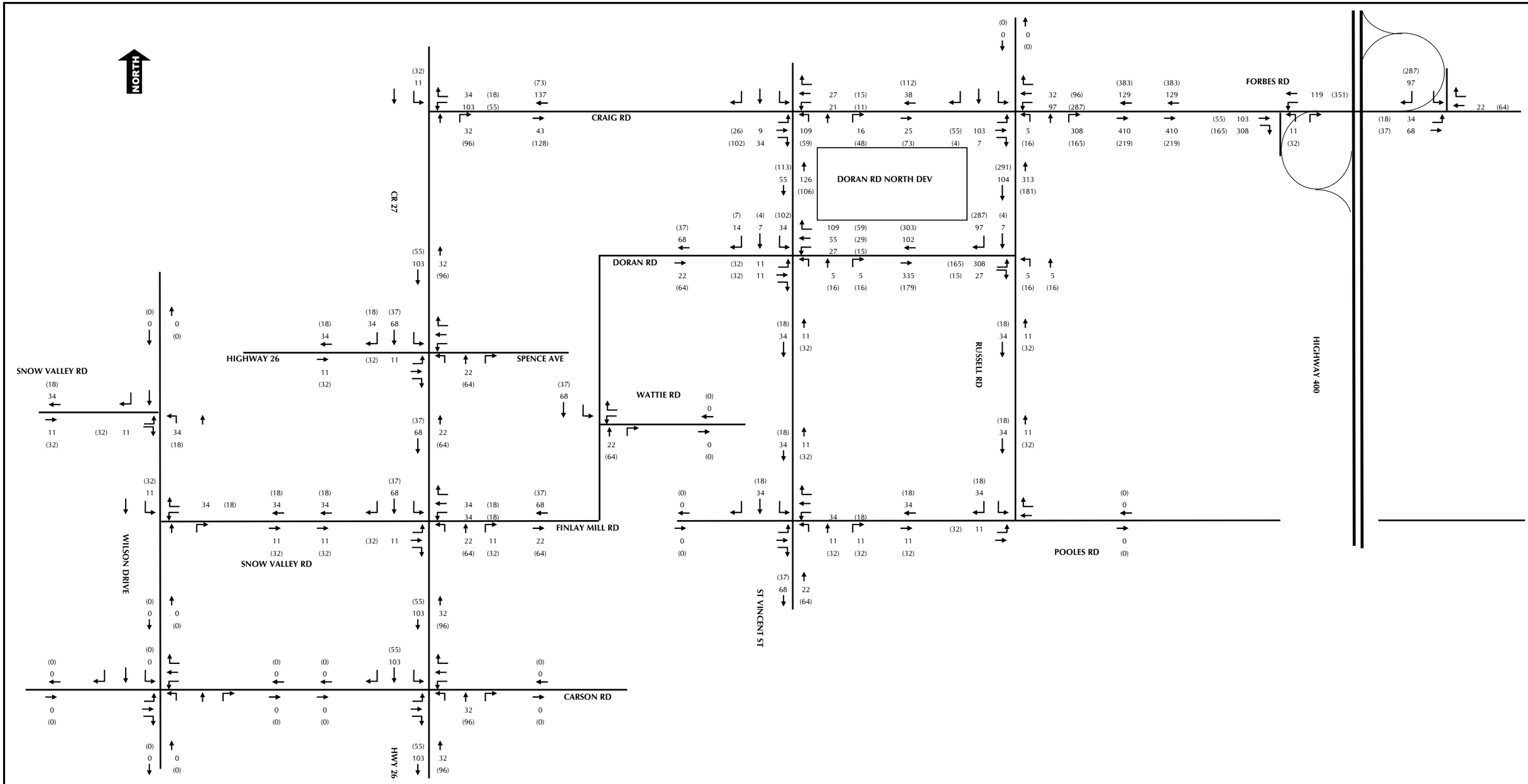
Figure B1

Carson Road Development Generated Traffic Volumes - Without Anne Street Connection

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS



100 (100) AM (PM) peak hour

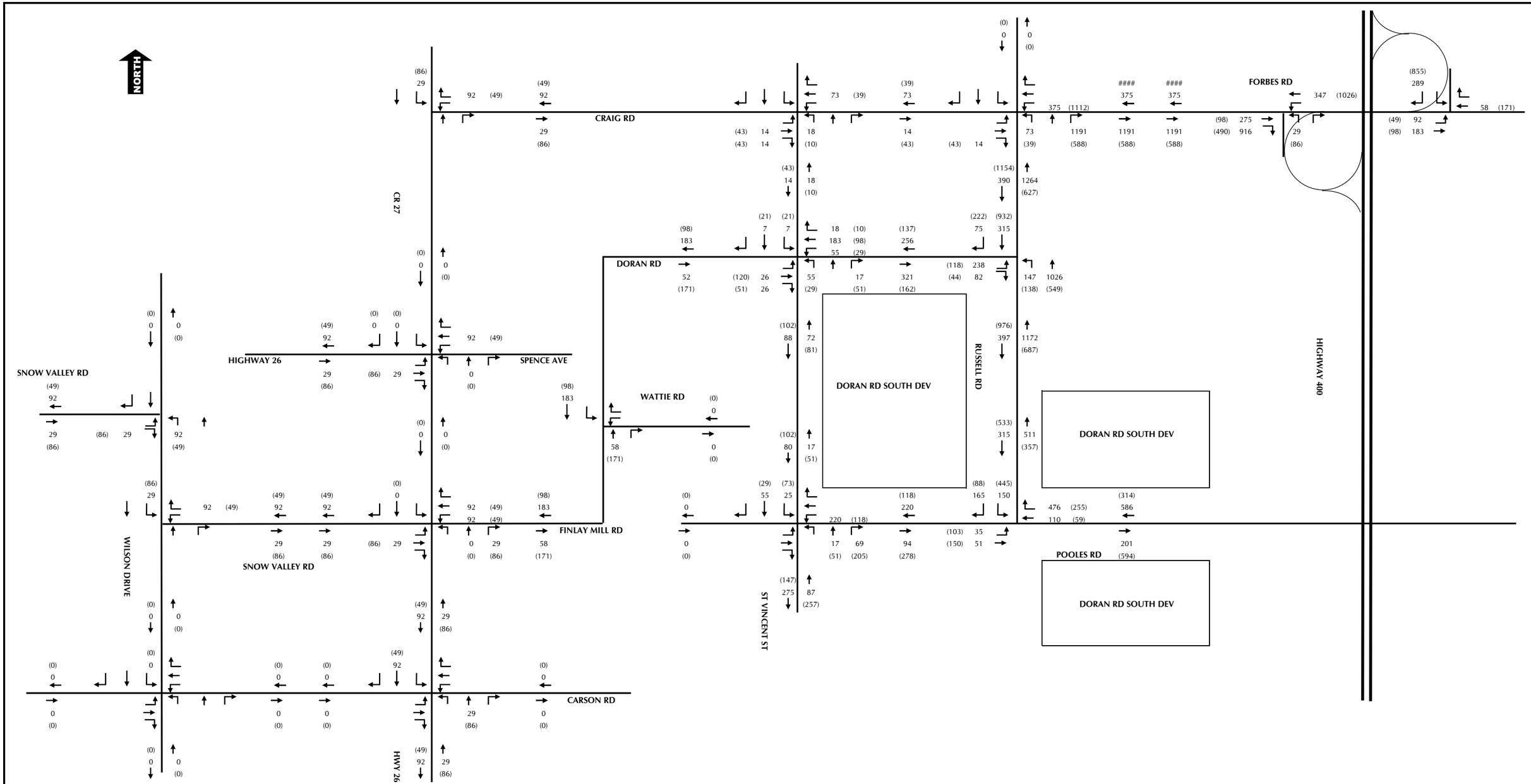
Figure B2

Doran Road North Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS



100 (100) AM (PM) peak hour

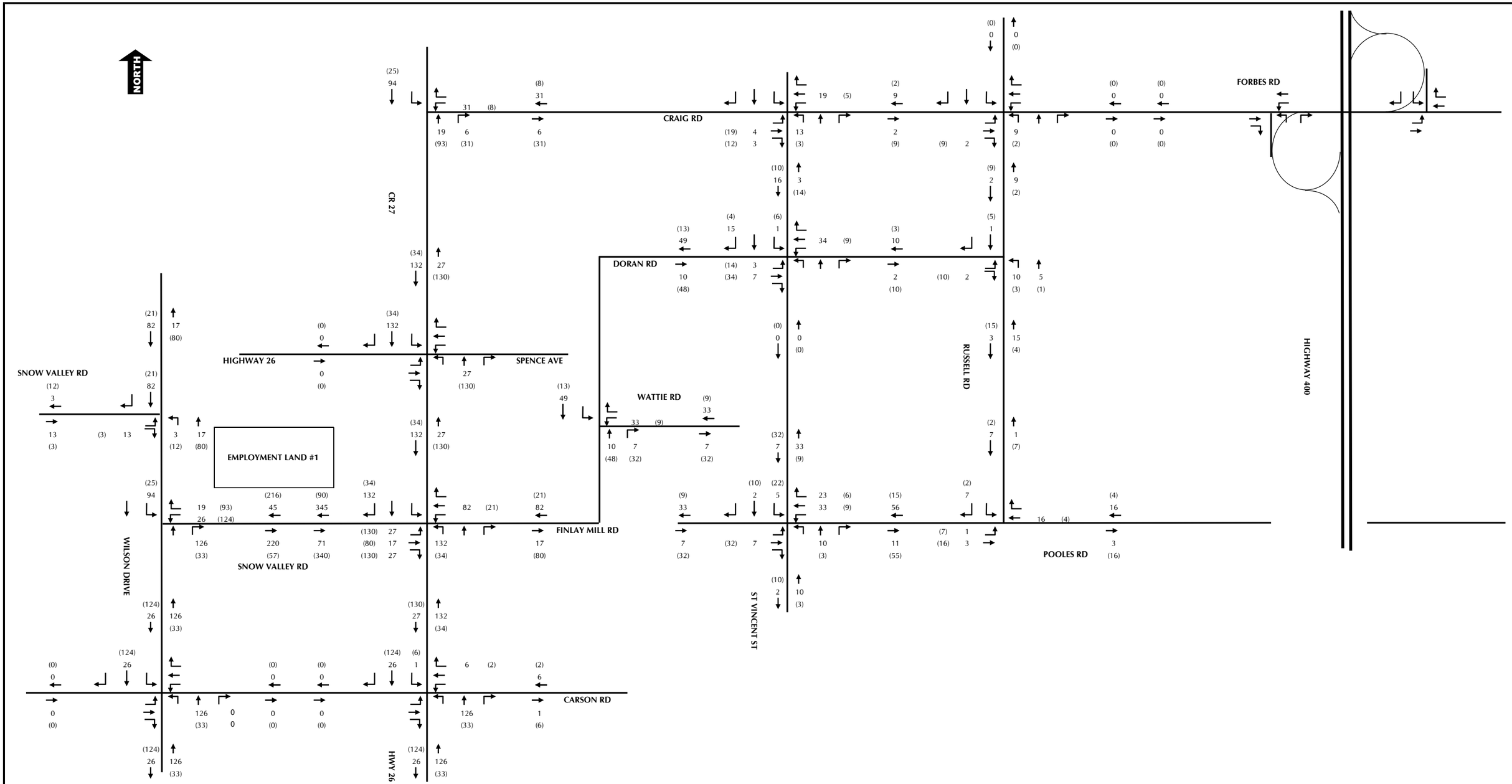
Figure B3

Doran Road South Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS



100 (100) AM (PM) peak hour

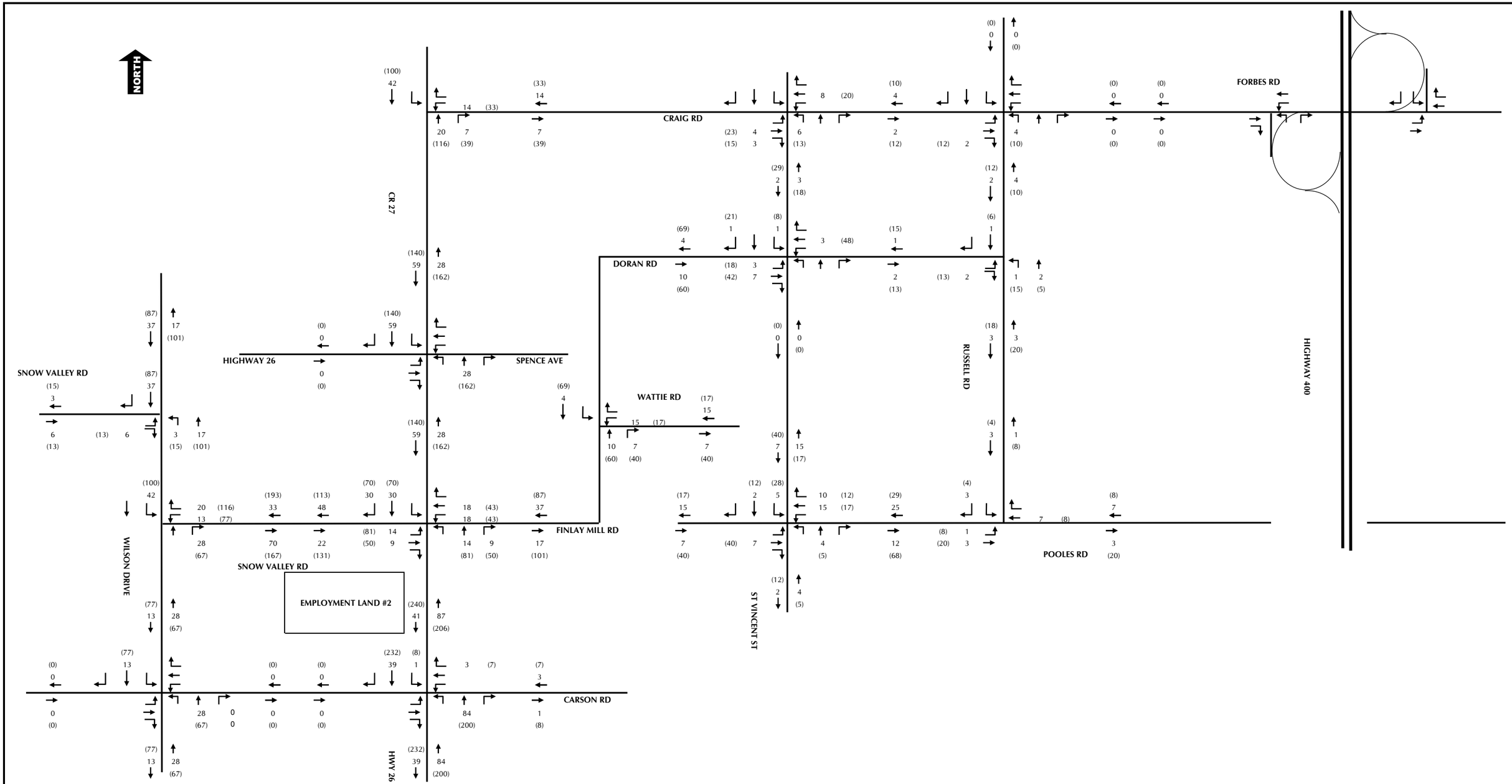
Figure B4

Employment Land #1 Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group — Consulting Engineers Planners



100 (100) AM (PM) peak hour

Figure B5

Employment Land #2 Development Generated Traffic Volumes

Midhurst EA Phases 3 & 4

Township of Springwater

Ainley Group CONSULTING ENGINEERS PLANNERS

APPENDIX C

Operational Analysis

APPENDIX 'C'

Synchro Report, Ainley Group, June 2015

Existing 2015 Traffic Volumes

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	64	11	79	93	22	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	12	83	98	23	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	79	0	337	-
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	264	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1519	-	658	0
Stage 1	-	-	-	-	950	0
Stage 2	-	-	-	-	780	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1519	-	620	-
Mov Cap-2 Maneuver	-	-	-	-	620	-
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	620	-	-	-	1519	-
HCM Lane V/C Ratio	0.037	-	-	-	0.055	-
HCM Control Delay (s)	11	0	-	-	7.5	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	14	138	60	138	227	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	145	63	145	239	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	208	0	-	0	311	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	175	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1363	-	-	-	681	913
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1363	-	-	-	673	913
Mov Cap-2 Maneuver	-	-	-	-	673	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	845	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1363	-	-	-	680
HCM Lane V/C Ratio	0.011	-	-	-	0.365
HCM Control Delay (s)	7.7	0	-	-	13.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.7

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	8	86	152	27	26	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	91	160	28	27	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	188	0	-	0	281	-
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1386	-	-	-	709	0
Stage 1	-	-	-	-	856	0
Stage 2	-	-	-	-	917	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	705	-
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	911	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1386	-	-	-	705	-
HCM Lane V/C Ratio	0.006	-	-	-	0.039	-
HCM Control Delay (s)	7.6	0	-	-	10.3	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	7	1	369	2	2	1	465	216	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	1500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	388	2	2	1	489	227	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1484	1607	-	1394	1631	119	417	0	0
Stage 1	390	390	-	1212	1212	-	-	-	-
Stage 2	1094	1217	-	182	419	-	-	-	-
Critical Hdwy	7.54	6.54	-	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	-	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	87	104	0	101	101	910	1138	-	-
Stage 1	606	606	0	193	253	-	-	-	-
Stage 2	228	252	0	802	588	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	57	59	-	67	58	910	1138	-	-
Mov Cap-2 Maneuver	103	120	-	95	78	-	-	-	-
Stage 1	346	605	-	110	144	-	-	-	-
Stage 2	128	144	-	800	587	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	42.3	41.1	7.1
HCM LOS	E	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1138	-	-	105	-	105	1326	-	-
HCM Lane V/C Ratio	0.43	-	-	0.08	-	0.05	0.001	-	-
HCM Control Delay (s)	10.5	-	-	42.3	0	41.1	7.7	0	-
HCM Lane LOS	B	-	-	E	A	E	A	A	-
HCM 95th %tile Q(veh)	2.2	-	-	0.3	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	1	341	55
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	1	359	58

Major/Minor	Major2		
Conflicting Flow All	238	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1326	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1326	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	97	24	186	52	44	321
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	102	25	196	55	46	338

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	654	223	0	0	251	0
Stage 1	223	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	431	817	-	-	1314	-
Stage 1	814	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	412	817	-	-	1314	-
Mov Cap-2 Maneuver	412	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	627	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	457	1314	-
HCM Lane V/C Ratio	-	-	0.279	0.035	-
HCM Control Delay (s)	-	-	15.9	7.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	11	20	33	20	10	26	14	200	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	21	35	21	11	27	15	211	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	696	687	370	705	679	221	373	0	0
Stage 1	427	427	-	250	250	-	-	-	-
Stage 2	269	260	-	455	429	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	356	370	676	351	374	819	1185	-	-
Stage 1	606	585	-	754	700	-	-	-	-
Stage 2	737	693	-	585	584	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	326	355	676	308	359	819	1185	-	-
Mov Cap-2 Maneuver	326	355	-	308	359	-	-	-	-
Stage 1	597	570	-	743	690	-	-	-	-
Stage 2	691	683	-	521	569	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.1	14.2	0.5
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	461	450	1337	-	-
HCM Lane V/C Ratio	0.012	-	-	0.146	0.131	0.021	-	-
HCM Control Delay (s)	8.1	0	-	14.1	14.2	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0.1	-	-

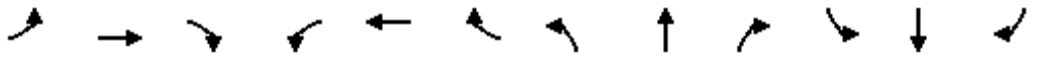
Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	27	349	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	28	367	5

Major/Minor	Major2		
Conflicting Flow All	231	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1337	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1337	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	34	58	205	46	58	40	570	72	30	637	28
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	35	36	0	216	48	61	42	600	76	32	671	29
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	396	249	0	573	179	228	403	1364	610	418	1306	56
Arrive On Green	0.06	0.13	0.00	0.16	0.24	0.24	0.06	0.39	0.39	0.05	0.38	0.36
Sat Flow, veh/h	1774	1863	0	1774	747	949	1774	3539	1583	1774	3457	149
Grp Volume(v), veh/h	35	36	0	216	0	109	42	600	76	32	343	357
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1695	1774	1770	1583	1774	1770	1836
Q Serve(g_s), s	0.9	1.0	0.0	5.3	0.0	3.0	0.8	7.1	1.8	0.6	8.5	8.5
Cycle Q Clear(g_c), s	0.9	1.0	0.0	5.3	0.0	3.0	0.8	7.1	1.8	0.6	8.5	8.5
Prop In Lane	1.00		0.00	1.00		0.56	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	396	249	0	573	0	407	403	1364	610	418	668	694
V/C Ratio(X)	0.09	0.14	0.00	0.38	0.00	0.27	0.10	0.44	0.12	0.08	0.51	0.51
Avail Cap(c_a), veh/h	549	612	0	973	0	973	547	1364	610	575	668	694
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	21.7	0.0	14.5	0.0	17.5	9.7	12.9	11.2	9.8	13.6	13.6
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.4	0.0	0.3	0.1	1.0	0.4	0.1	2.8	2.7
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	0.5	0.5	0.0	2.6	0.0	1.4	0.4	3.6	0.8	0.3	4.6	4.8
LnGrp Delay(d),s/veh	19.1	21.9	0.0	15.0	0.0	17.8	9.8	13.9	11.7	9.8	16.4	16.4
LnGrp LOS	B	C		B		B	A	B	B	A	B	B
Approach Vol, veh/h		71			325			718			732	
Approach Delay, s/veh		20.5			15.9			13.4			16.1	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	56.0	11.1	12.9	5.4	55.5	5.1	18.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	2.6	9.1	7.3	3.0	2.8	10.5	2.9	5.0
Green Ext Time (p_c), s	0.0	9.7	0.9	1.5	0.0	8.6	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	89	7	11	149	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	94	7	12	157	5	11

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	111	90	0	0	168	0
Stage 1	90	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	886	968	-	-	1410	-
Stage 1	934	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	882	968	-	-	1410	-
Mov Cap-2 Maneuver	882	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	2.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	888	1410	-
HCM Lane V/C Ratio	-	-	0.114	0.004	-
HCM Control Delay (s)	-	-	9.6	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	134	12	42	100	21	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	13	44	105	22	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	154	0	341	-
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	194	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1426	-	655	0
Stage 1	-	-	-	-	880	0
Stage 2	-	-	-	-	839	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1426	-	633	-
Mov Cap-2 Maneuver	-	-	-	-	633	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	811	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	633	-	-	-	1426	-
HCM Lane V/C Ratio	0.035	-	-	-	0.031	-
HCM Control Delay (s)	10.9	0	-	-	7.6	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	9	111	163	271	202	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	117	172	285	213	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	457	0	-	0	450	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	136	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1104	-	-	-	567	726
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1104	-	-	-	562	726
Mov Cap-2 Maneuver	-	-	-	-	562	-
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	882	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1104	-	-	-	571
HCM Lane V/C Ratio	0.009	-	-	-	0.402
HCM Control Delay (s)	8.3	0	-	-	15.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.9

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	29	117	119	38	86	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	123	125	40	91	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	165	0	-	0	329	-
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1413	-	-	-	665	0
Stage 1	-	-	-	-	882	0
Stage 2	-	-	-	-	848	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1413	-	-	-	649	-
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	828	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1413	-	-	-	649	-
HCM Lane V/C Ratio	0.022	-	-	-	0.139	-
HCM Control Delay (s)	7.6	0	-	-	11.4	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	22	4	449	3	5	2	428	533	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	1500	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	4	473	3	5	2	451	561	12

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1578	1868	-	1667	1873	286	393	0	0
Stage 1	394	394	-	1468	1468	-	-	-	-
Stage 2	1184	1474	-	199	405	-	-	-	-
Critical Hdwy	7.54	6.54	-	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	-	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	74	72	0	63	71	711	1162	-	-
Stage 1	602	604	0	134	190	-	-	-	-
Stage 2	201	189	0	784	597	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	49	44	-	42	43	711	1162	-	-
Mov Cap-2 Maneuver	92	94	-	70	77	-	-	-	-
Stage 1	368	599	-	82	116	-	-	-	-
Stage 2	117	116	-	772	592	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	59.9	50.2	4.4
HCM LOS	F	F	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	92	-	90	996	-	-
HCM Lane V/C Ratio	0.388	-	-	0.297	-	0.117	0.006	-	-
HCM Control Delay (s)	10	-	-	59.9	0	50.2	8.6	0	-
HCM Lane LOS	B	-	-	F	A	F	A	A	-
HCM 95th %tile Q(veh)	1.9	-	-	1.1	-	0.4	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	6	351	22
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	6	369	23

Major/Minor	Major2		
Conflicting Flow All	573	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	996	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	996	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.1
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	59	88	354	104	61	252
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	93	373	109	64	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	821	427	0	0	482	0
Stage 1	427	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	344	628	-	-	1081	-
Stage 1	658	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	320	628	-	-	1081	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	634	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	1.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	453	1081	-
HCM Lane V/C Ratio	-	-	0.342	0.059	-
HCM Control Delay (s)	-	-	17	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	19	15	11	19	33	34	32	405	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	16	12	20	35	36	34	426	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	897	872	316	876	867	436	321	0	0
Stage 1	358	358	-	504	504	-	-	-	-
Stage 2	539	514	-	372	363	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	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	-	-
Pot Cap-1 Maneuver	261	289	724	269	291	620	1239	-	-
Stage 1	660	628	-	550	541	-	-	-	-
Stage 2	527	535	-	648	625	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	212	272	724	242	274	620	1239	-	-
Mov Cap-2 Maneuver	212	272	-	242	274	-	-	-	-
Stage 1	636	614	-	530	521	-	-	-	-
Stage 2	446	515	-	607	611	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20.4	19.4	0.6
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1239	-	-	281	339	1114	-	-
HCM Lane V/C Ratio	0.027	-	-	0.169	0.267	0.019	-	-
HCM Control Delay (s)	8	0	-	20.4	19.4	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	20	295	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	21	311	11

Major/Minor	Major2		
Conflicting Flow All	446	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1114	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1114	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	73	65	128	51	47	74	878	255	80	706	29
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	41	77	0	135	54	49	78	924	268	84	743	31
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	260	0	478	180	163	426	1363	610	356	1341	56
Arrive On Green	0.06	0.14	0.00	0.12	0.20	0.20	0.08	0.38	0.38	0.08	0.39	0.37
Sat Flow, veh/h	1774	1863	0	1774	901	818	1774	3539	1583	1774	3462	144
Grp Volume(v), veh/h	41	77	0	135	0	103	78	924	268	84	380	394
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1718	1774	1770	1583	1774	1770	1837
Q Serve(g_s), s	1.1	2.1	0.0	3.2	0.0	2.8	1.4	12.1	7.0	1.5	9.3	9.3
Cycle Q Clear(g_c), s	1.1	2.1	0.0	3.2	0.0	2.8	1.4	12.1	7.0	1.5	9.3	9.3
Prop In Lane	1.00		0.00	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	416	260	0	478	0	343	426	1363	610	356	686	712
V/C Ratio(X)	0.10	0.30	0.00	0.28	0.00	0.30	0.18	0.68	0.44	0.24	0.55	0.55
Avail Cap(c_a), veh/h	565	623	0	964	0	1005	537	1363	610	463	686	712
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	21.5	0.0	15.1	0.0	18.9	9.1	14.2	12.7	9.8	13.3	13.3
Incr Delay (d2), s/veh	0.1	0.6	0.0	0.3	0.0	0.5	0.2	2.7	2.3	0.3	3.2	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.1	0.0	1.6	0.0	1.4	0.7	6.3	3.4	0.7	5.1	5.3
LnGrp Delay(d),s/veh	18.3	22.1	0.0	15.4	0.0	19.4	9.4	17.0	14.9	10.1	16.5	16.4
LnGrp LOS	B	C		B		B	A	B	B	B	B	B
Approach Vol, veh/h		118			238			1270			858	
Approach Delay, s/veh		20.8			17.1			16.1			15.8	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	56.6	8.7	13.1	6.5	56.7	5.3	16.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	3.5	14.1	5.2	4.1	3.4	11.3	3.1	4.8
Green Ext Time (p_c), s	0.1	6.1	0.5	1.9	0.1	8.7	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2031 Background Traffic Volumes

Intersection	
Int Delay, s/veh	5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	104	4	1	56	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	4	1	59	4	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	47	31	0	0	60	0
Stage 1	31	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	963	1043	-	-	1544	-
Stage 1	992	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	960	1043	-	-	1544	-
Mov Cap-2 Maneuver	960	-	-	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	963	1544	-
HCM Lane V/C Ratio	-	-	0.118	0.003	-
HCM Control Delay (s)	-	-	9.2	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	76	13	92	109	26	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	14	97	115	27	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	94	0	395	-
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1500	-	610	0
Stage 1	-	-	-	-	936	0
Stage 2	-	-	-	-	745	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1500	-	568	-
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	568	-	-	-	1500	-
HCM Lane V/C Ratio	0.048	-	-	-	0.065	-
HCM Control Delay (s)	11.7	0	-	-	7.6	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	17	162	71	162	266	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	171	75	171	280	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	245	0	-	0	281	123
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	121	-
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	1318	-	-	-	686	905
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	891	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1318	-	-	-	676	905
Mov Cap-2 Maneuver	-	-	-	-	676	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	878	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1318	-	-	-	676	905
HCM Lane V/C Ratio	0.014	-	-	-	0.414	0.013
HCM Control Delay (s)	7.8	0	-	-	14	9
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	2	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	101	179	31	30	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	106	188	33	32	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	221	0	-	0	332	-
Stage 1	-	-	-	-	205	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1348	-	-	-	663	0
Stage 1	-	-	-	-	829	0
Stage 2	-	-	-	-	899	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1348	-	-	-	657	-
Mov Cap-2 Maneuver	-	-	-	-	657	-
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	891	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1348	-	-	-	657	-
HCM Lane V/C Ratio	0.008	-	-	-	0.048	-
HCM Control Delay (s)	7.7	0	-	-	10.8	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	114	28	218	61	52	376
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	29	229	64	55	396

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	569	147	0	0	294	0
Stage 1	262	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	452	873	-	-	1264	-
Stage 1	758	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	427	873	-	-	1264	-
Mov Cap-2 Maneuver	427	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	679	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	427	873	1264	-
HCM Lane V/C Ratio	-	-	0.281	0.034	0.043	-
HCM Control Delay (s)	-	-	16.7	9.3	8	0.2
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	11	20	33	20	10	26	14	235	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	21	35	21	11	27	15	247	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	648	787	218	570	780	134	436	0	0
Stage 1	490	490	-	287	287	-	-	-	-
Stage 2	158	297	-	283	493	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	355	322	786	404	325	890	1120	-	-
Stage 1	529	547	-	696	673	-	-	-	-
Stage 2	828	666	-	700	545	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	324	308	786	354	311	890	1120	-	-
Mov Cap-2 Maneuver	324	308	-	354	311	-	-	-	-
Stage 1	521	531	-	685	662	-	-	-	-
Stage 2	777	655	-	624	529	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.3	13.7	0.5
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1120	-	-	454	475	1294	-	-
HCM Lane V/C Ratio	0.013	-	-	0.148	0.124	0.022	-	-
HCM Control Delay (s)	8.3	0.1	-	14.3	13.7	7.8	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	27	409	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	28	431	5

Major/Minor	Major2		
Conflicting Flow All	267	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1294	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1294	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.6
HCM LOS	

Minor Lane/Major Mvmt

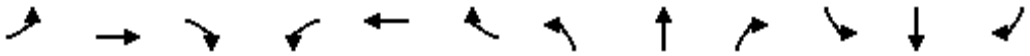
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	40	68	241	54	68	47	669	84	35	747	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	40	42	0	254	57	72	49	704	88	37	786	34
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	248	0	594	190	240	356	1325	593	371	1265	55
Arrive On Green	0.06	0.13	0.00	0.18	0.25	0.25	0.06	0.37	0.37	0.06	0.37	0.35
Sat Flow, veh/h	1774	1863	0	1774	749	946	1774	3539	1583	1774	3456	149
Grp Volume(v), veh/h	40	42	0	254	0	129	49	704	88	37	402	418
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1696	1774	1770	1583	1774	1770	1836
Q Serve(g_s), s	1.1	1.2	0.0	6.4	0.0	3.6	0.9	9.1	2.2	0.7	10.9	10.9
Cycle Q Clear(g_c), s	1.1	1.2	0.0	6.4	0.0	3.6	0.9	9.1	2.2	0.7	10.9	10.9
Prop In Lane	1.00		0.00	1.00		0.56	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	393	248	0	594	0	430	356	1325	593	371	648	672
V/C Ratio(X)	0.10	0.17	0.00	0.43	0.00	0.30	0.14	0.53	0.15	0.10	0.62	0.62
Avail Cap(c_a), veh/h	533	593	0	941	0	942	485	1325	593	515	648	672
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	22.5	0.0	14.7	0.0	17.6	10.7	14.3	12.1	10.7	15.2	15.2
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.5	0.0	0.4	0.2	1.5	0.5	0.1	4.4	4.3
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	0.5	0.6	0.0	3.2	0.0	1.7	0.5	4.7	1.0	0.4	6.1	6.3
LnGrp Delay(d),s/veh	19.7	22.8	0.0	15.2	0.0	18.0	10.9	15.8	12.6	10.8	19.7	19.5
LnGrp LOS	B	C		B		B	B	B	B	B	B	B
Approach Vol, veh/h		82			383			841			857	
Approach Delay, s/veh		21.3			16.1			15.2			19.2	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	54.2	12.5	13.1	5.7	53.7	5.4	20.1
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	2.7	11.1	8.4	3.2	2.9	12.9	3.1	5.6
Green Ext Time (p_c), s	0.0	8.6	1.1	1.9	0.0	6.9	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	1	433	2	2	1	545	253	10	1	400	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1770		1770	3518		1770	3465	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.43	1.00		0.58	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1770		805	3518		1083	3465	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	1	456	2	2	1	574	266	11	1	421	68
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	14	0
Lane Group Flow (vph)	8	1	456	2	2	0	574	275	0	1	475	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	1.4	1.4	60.0	1.4	1.4		45.8	45.8		31.3	31.3	
Effective Green, g (s)	1.4	1.4	60.0	1.4	1.4		45.8	45.8		31.3	31.3	
Actuated g/C Ratio	0.02	0.02	1.00	0.02	0.02		0.76	0.76		0.52	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	43	43	1583	43	41		799	2685		564	1807	
v/s Ratio Prot		0.00					c0.14	0.08			0.14	
v/s Ratio Perm	0.00		c0.29	0.00	0.00		c0.41			0.00		
v/c Ratio	0.19	0.02	0.29	0.05	0.05		0.72	0.10		0.00	0.26	
Uniform Delay, d1	28.7	28.6	0.0	28.6	28.6		2.7	1.8		6.9	8.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.2	0.5	0.4	0.5		3.1	0.1		0.0	0.4	
Delay (s)	30.8	28.9	0.5	29.1	29.2		5.8	1.9		6.9	8.3	
Level of Service	C	C	A	C	C		A	A		A	A	
Approach Delay (s)		1.0			29.1			4.5			8.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	104	7	11	175	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	7	12	184	5	11

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	125	104	0	0	196	0
Stage 1	104	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	870	951	-	-	1377	-
Stage 1	920	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	867	951	-	-	1377	-
Mov Cap-2 Maneuver	867	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	2.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	872	1377	-
HCM Lane V/C Ratio	-	-	0.134	0.004	-
HCM Control Delay (s)	-	-	9.8	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	157	14	49	117	25	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	165	15	52	123	26	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	180	0	399	-
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	226	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1396	-	607	0
Stage 1	-	-	-	-	857	0
Stage 2	-	-	-	-	812	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1396	-	583	-
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	583	-	-	-	1396	-
HCM Lane V/C Ratio	0.045	-	-	-	0.037	-
HCM Control Delay (s)	11.5	0	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	11	131	191	318	237	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	138	201	335	249	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	536	0	-	0	460	268
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	92	-
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	1028	-	-	-	530	730
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	921	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1028	-	-	-	523	730
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1028	-	-	-	523	730
HCM Lane V/C Ratio	0.011	-	-	-	0.477	0.027
HCM Control Delay (s)	8.5	0	-	-	18	10.1
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	2.5	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	34	137	139	44	101	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	144	146	46	106	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	193	0	-	0	385	-
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1380	-	-	-	618	0
Stage 1	-	-	-	-	861	0
Stage 2	-	-	-	-	820	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1380	-	-	-	601	-
Mov Cap-2 Maneuver	-	-	-	-	601	-
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	797	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1380	-	-	-	601	-
HCM Lane V/C Ratio	0.026	-	-	-	0.177	-
HCM Control Delay (s)	7.7	0	-	-	12.3	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	68	101	415	122	72	296
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	106	437	128	76	312

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	808	283	0	0	565	0
Stage 1	501	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	319	714	-	-	1003	-
Stage 1	574	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	290	714	-	-	1003	-
Mov Cap-2 Maneuver	290	-	-	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	290	714	1003	-
HCM Lane V/C Ratio	-	-	0.247	0.149	0.076	-
HCM Control Delay (s)	-	-	21.4	10.9	8.9	0.3
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.5	0.2	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	19	15	11	19	33	34	32	475	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	16	12	20	35	36	34	500	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	747	999	187	809	994	260	375	0	0
Stage 1	412	412	-	577	577	-	-	-	-
Stage 2	335	587	-	232	417	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	301	242	823	272	244	739	1180	-	-
Stage 1	588	593	-	469	500	-	-	-	-
Stage 2	653	495	-	750	590	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	241	226	823	241	228	739	1180	-	-
Mov Cap-2 Maneuver	241	226	-	241	228	-	-	-	-
Stage 1	564	578	-	450	480	-	-	-	-
Stage 2	553	475	-	701	575	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	20.2	20.7	0.6
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1180	-	-	284	319	1042	-	-
HCM Lane V/C Ratio	0.029	-	-	0.167	0.284	0.02	-	-
HCM Control Delay (s)	8.1	0.1	-	20.2	20.7	8.5	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	20	346	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	21	364	11

Major/Minor	Major2		
Conflicting Flow All	520	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1042	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1042	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt

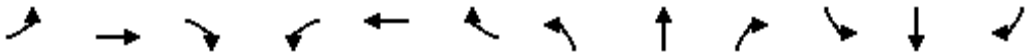
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	85	77	150	60	55	86	1030	298	93	828	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	48	89	0	158	63	58	91	1084	314	98	872	36
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	259	0	485	184	169	381	1334	597	320	1313	54
Arrive On Green	0.06	0.14	0.00	0.13	0.21	0.21	0.08	0.38	0.38	0.09	0.38	0.36
Sat Flow, veh/h	1774	1863	0	1774	894	823	1774	3539	1583	1774	3464	143
Grp Volume(v), veh/h	48	89	0	158	0	121	91	1084	314	98	445	463
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1717	1774	1770	1583	1774	1770	1838
Q Serve(g_s), s	1.3	2.5	0.0	3.9	0.0	3.4	1.7	15.6	8.8	1.8	11.9	11.9
Cycle Q Clear(g_c), s	1.3	2.5	0.0	3.9	0.0	3.4	1.7	15.6	8.8	1.8	11.9	11.9
Prop In Lane	1.00		0.00	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	417	259	0	485	0	354	381	1334	597	320	671	697
V/C Ratio(X)	0.12	0.34	0.00	0.33	0.00	0.34	0.24	0.81	0.53	0.31	0.66	0.66
Avail Cap(c_a), veh/h	552	610	0	936	0	983	481	1334	597	416	671	697
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	22.1	0.0	15.2	0.0	19.3	10.1	15.9	13.7	11.5	14.6	14.7
Incr Delay (d2), s/veh	0.1	0.8	0.0	0.4	0.0	0.6	0.3	5.5	3.3	0.5	5.1	4.9
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	0.6	1.3	0.0	1.9	0.0	1.7	0.8	8.5	4.3	0.9	6.6	6.9
LnGrp Delay(d),s/veh	18.6	22.9	0.0	15.6	0.0	19.8	10.4	21.4	17.0	12.0	19.8	19.6
LnGrp LOS	B	C		B		B	B	C	B	B	B	B
Approach Vol, veh/h		137			279			1489			1006	
Approach Delay, s/veh		21.4			17.4			19.8			18.9	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	55.4	9.5	13.2	6.8	55.5	5.7	17.0
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	3.8	17.6	5.9	4.5	3.7	13.9	3.3	5.4
Green Ext Time (p_c), s	0.1	2.7	0.6	2.2	0.1	6.4	0.0	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	4	526	3	5	2	502	624	11	6	411	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1783		1770	3530		1770	3508	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.44	1.00		0.40	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1783		825	3530		740	3508	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	27	4	554	3	5	2	528	657	12	6	433	27
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	6	0
Lane Group Flow (vph)	27	4	554	3	5	0	528	668	0	6	454	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	3.2	3.2	60.0	3.2	3.2		44.0	44.0		29.9	29.9	
Effective Green, g (s)	3.2	3.2	60.0	3.2	3.2		44.0	44.0		29.9	29.9	
Actuated g/C Ratio	0.05	0.05	1.00	0.05	0.05		0.73	0.73		0.50	0.50	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	99	99	1583	99	95		779	2588		368	1748	
v/s Ratio Prot		0.00					c0.13	0.19			0.13	
v/s Ratio Perm	0.01		c0.35	0.00	0.00		c0.37			0.01		
v/c Ratio	0.27	0.04	0.35	0.03	0.05		0.68	0.26		0.02	0.26	
Uniform Delay, d1	27.3	26.9	0.0	26.9	27.0		3.2	2.6		7.6	8.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.2	0.6	0.1	0.2		2.4	0.2		0.1	0.4	
Delay (s)	28.8	27.1	0.6	27.1	27.2		5.6	2.9		7.7	9.0	
Level of Service	C	C	A	C	C		A	A		A	A	
Approach Delay (s)		2.1			27.2			4.1			9.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

2041 Background Traffic Volumes

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	115	4	1	62	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	121	4	1	65	4	7

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	50	34	0	0	66	0
Stage 1	34	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	959	1039	-	-	1536	-
Stage 1	988	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	956	1039	-	-	1536	-
Mov Cap-2 Maneuver	956	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	959	1536	-
HCM Lane V/C Ratio	-	-	0.131	0.003	-
HCM Control Delay (s)	-	-	9.3	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	83	15	102	120	29	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	16	107	126	31	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	103	0	436	-
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	341	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1489	-	578	0
Stage 1	-	-	-	-	929	0
Stage 2	-	-	-	-	720	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1489	-	533	-
Mov Cap-2 Maneuver	-	-	-	-	533	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	665	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	533	-	-	-	1489	-
HCM Lane V/C Ratio	0.057	-	-	-	0.072	-
HCM Control Delay (s)	12.2	0	-	-	7.6	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	19	179	78	179	294	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	188	82	188	309	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	271	0	-	0	310	135
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	134	-
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	1289	-	-	-	658	889
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1289	-	-	-	647	889
Mov Cap-2 Maneuver	-	-	-	-	647	-
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	863	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1289	-	-	-	647	889
HCM Lane V/C Ratio	0.016	-	-	-	0.478	0.014
HCM Control Delay (s)	7.8	0.1	-	-	15.6	9.1
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0	-	-	-	2.6	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	11	111	197	34	33	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	117	207	36	35	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	365	-
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1323	-	-	-	635	0
Stage 1	-	-	-	-	812	0
Stage 2	-	-	-	-	887	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	629	-
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	878	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1323	-	-	-	629	-
HCM Lane V/C Ratio	0.009	-	-	-	0.055	-
HCM Control Delay (s)	7.7	0	-	-	11.1	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	126	30	241	68	57	416
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	32	254	72	60	438

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	628	163	0	0	325	0
Stage 1	289	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	415	853	-	-	1231	-
Stage 1	735	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	388	853	-	-	1231	-
Mov Cap-2 Maneuver	388	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.2	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	388	853	1231	-
HCM Lane V/C Ratio	-	-	0.342	0.037	0.049	-
HCM Control Delay (s)	-	-	19	9.4	8.1	0.2
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.1	0.2	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	11	20	33	20	10	26	14	259	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	21	35	21	11	27	15	273	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	705	856	240	617	849	146	480	0	0
Stage 1	534	534	-	312	312	-	-	-	-
Stage 2	171	322	-	305	537	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	323	294	761	374	296	875	1079	-	-
Stage 1	498	523	-	673	656	-	-	-	-
Stage 2	814	650	-	680	521	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	293	280	761	325	282	875	1079	-	-
Mov Cap-2 Maneuver	293	280	-	325	282	-	-	-	-
Stage 1	490	507	-	662	645	-	-	-	-
Stage 2	762	639	-	603	505	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	15.2	14.4	0.5
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1079	-	-	420	442	1265	-	-
HCM Lane V/C Ratio	0.014	-	-	0.16	0.133	0.022	-	-
HCM Control Delay (s)	8.4	0.1	-	15.2	14.4	7.9	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	27	451	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	28	475	5

Major/Minor	Major2		
Conflicting Flow All	293	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1265	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1265	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt

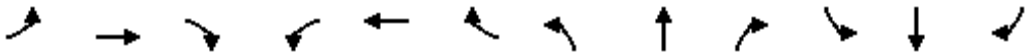
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	44	75	266	60	75	52	739	93	38	825	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	44	46	0	280	63	79	55	778	98	40	868	38
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	245	0	607	197	247	327	1302	582	342	1238	54
Arrive On Green	0.06	0.13	0.00	0.19	0.26	0.26	0.07	0.37	0.37	0.06	0.36	0.34
Sat Flow, veh/h	1774	1863	0	1774	753	944	1774	3539	1583	1774	3454	151
Grp Volume(v), veh/h	44	46	0	280	0	142	55	778	98	40	445	461
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1696	1774	1770	1583	1774	1770	1836
Q Serve(g_s), s	1.2	1.3	0.0	7.2	0.0	4.0	1.1	10.6	2.5	0.8	12.9	12.9
Cycle Q Clear(g_c), s	1.2	1.3	0.0	7.2	0.0	4.0	1.1	10.6	2.5	0.8	12.9	12.9
Prop In Lane	1.00		0.00	1.00		0.56	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	390	245	0	607	0	444	327	1302	582	342	634	658
V/C Ratio(X)	0.11	0.19	0.00	0.46	0.00	0.32	0.17	0.60	0.17	0.12	0.70	0.70
Avail Cap(c_a), veh/h	521	580	0	919	0	923	446	1302	582	478	634	658
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	23.1	0.0	14.8	0.0	17.8	11.5	15.3	12.7	11.3	16.4	16.5
Incr Delay (d2), s/veh	0.1	0.4	0.0	0.5	0.0	0.4	0.2	2.0	0.6	0.2	6.4	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.0	3.6	0.0	1.9	0.5	5.6	1.2	0.4	7.3	7.5
LnGrp Delay(d),s/veh	20.1	23.5	0.0	15.4	0.0	18.2	11.8	17.3	13.3	11.5	22.8	22.6
LnGrp LOS	C	C		B		B	B	B	B	B	C	C
Approach Vol, veh/h		90			422			931			946	
Approach Delay, s/veh		21.8			16.3			16.6			22.2	
Approach LOS		C			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	53.0	13.4	13.2	6.0	52.5	5.6	20.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 20	20.9	* 18	7.0	* 20	7.0	* 32
Max Q Clear Time (g_c+I1), s	2.8	12.6	9.2	3.3	3.1	14.9	3.2	6.0
Green Ext Time (p_c), s	0.0	7.4	1.2	2.1	0.0	5.3	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	1	478	2	2	1	602	279	10	1	442	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1770		1770	3520		1770	3465	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.41	1.00		0.57	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1770		770	3520		1054	3465	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1	503	2	2	1	634	294	11	1	465	75
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	13	0
Lane Group Flow (vph)	9	1	503	2	2	0	634	303	0	1	527	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	1.4	1.4	65.0	1.4	1.4		50.8	50.8		33.3	33.3	
Effective Green, g (s)	1.4	1.4	65.0	1.4	1.4		50.8	50.8		33.3	33.3	
Actuated g/C Ratio	0.02	0.02	1.00	0.02	0.02		0.78	0.78		0.51	0.51	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	40	1583	40	38		824	2751		539	1775	
v/s Ratio Prot		0.00					c0.17	0.09			0.15	
v/s Ratio Perm	0.00		c0.32	0.00	0.00		c0.43			0.00		
v/c Ratio	0.23	0.03	0.32	0.05	0.05		0.77	0.11		0.00	0.30	
Uniform Delay, d1	31.3	31.1	0.0	31.1	31.2		2.7	1.7		7.7	9.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.3	0.5	0.5	0.6		4.4	0.1		0.0	0.4	
Delay (s)	34.1	31.4	0.5	31.7	31.7		7.1	1.8		7.7	9.5	
Level of Service	C	C	A	C	C		A	A		A	A	
Approach Delay (s)		1.2			31.7			5.3			9.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	115	7	11	193	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	121	7	12	203	5	11

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	134	113	0	0	215	0
Stage 1	113	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	860	940	-	-	1355	-
Stage 1	912	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	857	940	-	-	1355	-
Mov Cap-2 Maneuver	857	-	-	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	2.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	861	1355	-
HCM Lane V/C Ratio	-	-	0.149	0.004	-
HCM Control Delay (s)	-	-	9.9	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	173	16	54	130	28	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	182	17	57	137	29	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	199	0	442	-
Stage 1	-	-	-	-	191	-
Stage 2	-	-	-	-	251	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	1373	-	573	0
Stage 1	-	-	-	-	841	0
Stage 2	-	-	-	-	791	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1373	-	547	-
Mov Cap-2 Maneuver	-	-	-	-	547	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	755	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	547	-	-	-	1373	-
HCM Lane V/C Ratio	0.054	-	-	-	0.041	-
HCM Control Delay (s)	12	0	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	12	144	211	351	262	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	152	222	369	276	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	592	0	-	0	508	296
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	101	-
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	980	-	-	-	494	700
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	912	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	980	-	-	-	487	700
Mov Cap-2 Maneuver	-	-	-	-	487	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	899	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	980	-	-	-	487	700
HCM Lane V/C Ratio	0.013	-	-	-	0.566	0.032
HCM Control Delay (s)	8.7	0.1	-	-	21.6	10.3
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	3.5	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	37	151	154	49	111	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	159	162	52	117	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	214	0	-	0	425	-
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	237	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1356	-	-	-	586	0
Stage 1	-	-	-	-	844	0
Stage 2	-	-	-	-	802	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1356	-	-	-	567	-
Mov Cap-2 Maneuver	-	-	-	-	567	-
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	776	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1356	-	-	-	567	-
HCM Lane V/C Ratio	0.029	-	-	-	0.206	-
HCM Control Delay (s)	7.7	0	-	-	13	0
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	75	111	458	135	79	327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	117	482	142	83	344

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	891	312	0	0	624	0
Stage 1	553	-	-	-	-	-
Stage 2	338	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	282	684	-	-	953	-
Stage 1	540	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	252	684	-	-	953	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.1	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	252	684	953	-
HCM Lane V/C Ratio	-	-	0.313	0.171	0.087	-
HCM Control Delay (s)	-	-	25.7	11.3	9.1	0.3
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.6	0.3	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	19	15	11	19	33	34	32	524	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	16	12	20	35	36	34	552	20

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	812	1090	207	881	1085	286	414	0	0
Stage 1	451	451	-	629	629	-	-	-	-
Stage 2	361	639	-	252	456	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	271	214	799	241	215	711	1141	-	-
Stage 1	557	569	-	437	474	-	-	-	-
Stage 2	630	469	-	730	567	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	211	199	799	211	200	711	1141	-	-
Mov Cap-2 Maneuver	211	199	-	211	200	-	-	-	-
Stage 1	532	554	-	418	453	-	-	-	-
Stage 2	528	448	-	680	552	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	22.6	23.5	0.6
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1141	-	-	251	284	997	-	-
HCM Lane V/C Ratio	0.03	-	-	0.189	0.319	0.021	-	-
HCM Control Delay (s)	8.3	0.2	-	22.6	23.5	8.7	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.3	0.1	-	-

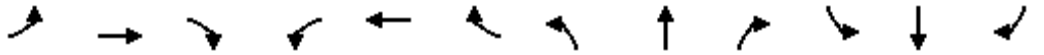
Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	20	383	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	21	403	11

Major/Minor	Major2		
Conflicting Flow All	572	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	997	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	997	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt



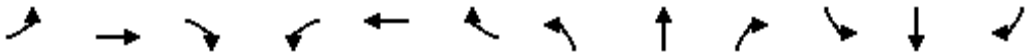
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	94	85	165	66	61	95	1137	330	103	915	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	53	99	0	174	69	64	100	1197	347	108	963	39
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	233	0	433	174	162	372	1594	713	297	1567	63
Arrive On Green	0.06	0.13	0.00	0.13	0.20	0.20	0.08	0.45	0.45	0.08	0.45	0.44
Sat Flow, veh/h	1774	1863	0	1774	891	826	1774	3539	1583	1774	3467	140
Grp Volume(v), veh/h	53	99	0	174	0	133	100	1197	347	108	492	510
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1774	0	1717	1774	1770	1583	1774	1770	1838
Q Serve(g_s), s	1.7	3.4	0.0	5.4	0.0	4.7	2.0	19.6	10.8	2.1	14.7	14.7
Cycle Q Clear(g_c), s	1.7	3.4	0.0	5.4	0.0	4.7	2.0	19.6	10.8	2.1	14.7	14.7
Prop In Lane	1.00		0.00	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	367	233	0	433	0	336	372	1594	713	297	800	830
V/C Ratio(X)	0.14	0.42	0.00	0.40	0.00	0.40	0.27	0.75	0.49	0.36	0.61	0.61
Avail Cap(c_a), veh/h	464	497	0	759	0	800	442	1594	713	363	800	830
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	28.2	0.0	20.0	0.0	24.5	10.2	15.9	13.5	12.3	14.5	14.5
Incr Delay (d2), s/veh	0.2	1.2	0.0	0.6	0.0	0.8	0.4	3.3	2.4	0.7	3.5	3.4
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	1.8	0.0	2.7	0.0	2.3	1.0	10.2	5.1	1.1	7.9	8.2
LnGrp Delay(d),s/veh	24.0	29.4	0.0	20.6	0.0	25.2	10.5	19.2	15.9	13.1	18.0	17.9
LnGrp LOS	C	C		C		C	B	B	B	B	B	B
Approach Vol, veh/h		152			307			1644			1110	
Approach Delay, s/veh		27.5			22.6			18.0			17.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	62.5	11.1	14.0	7.3	62.6	6.2	18.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	7.0	* 32
Max Q Clear Time (g_c+I1), s	4.1	21.6	7.4	5.4	4.0	16.7	3.7	6.7
Green Ext Time (p_c), s	0.1	8.7	0.7	2.3	0.1	13.5	0.0	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	4	581	3	5	2	555	690	11	6	454	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1783		1770	3531		1770	3507	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.42	1.00		0.37	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1783		778	3531		692	3507	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	4	612	3	5	2	584	726	12	6	478	31
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	6	0
Lane Group Flow (vph)	31	4	612	3	5	0	584	737	0	6	503	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	3.3	3.3	60.0	3.3	3.3		43.9	43.9		26.8	26.8	
Effective Green, g (s)	3.3	3.3	60.0	3.3	3.3		43.9	43.9		26.8	26.8	
Actuated g/C Ratio	0.05	0.05	1.00	0.05	0.05		0.73	0.73		0.45	0.45	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	102	102	1583	102	98		802	2583		309	1566	
v/s Ratio Prot		0.00					c0.17	0.21			0.14	
v/s Ratio Perm	0.02		c0.39	0.00	0.00		c0.36			0.01		
v/c Ratio	0.30	0.04	0.39	0.03	0.05		0.73	0.29		0.02	0.32	
Uniform Delay, d1	27.2	26.8	0.0	26.8	26.9		3.5	2.7		9.3	10.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2	0.7	0.1	0.2		3.3	0.3		0.1	0.5	
Delay (s)	28.9	27.0	0.7	27.0	27.1		6.8	3.0		9.4	11.3	
Level of Service	C	C	A	C	C		A	A		A	B	
Approach Delay (s)		2.2			27.0			4.7			11.2	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

2031 Total Traffic Volumes

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	362	537	92	347	44	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	381	565	97	365	46	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	946	0	1223	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	725	-	198	0
Stage 1	-	-	-	-	512	0
Stage 2	-	-	-	-	572	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	725	-	165	-
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	19.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	-	-	-	725	-
HCM Lane V/C Ratio	0.154	-	-	-	0.134	-
HCM Control Delay (s)	19.2	0	-	-	10.7	0
HCM Lane LOS	C	A	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	-	0.5	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	17	216	191	255	403	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	227	201	268	424	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	201	0	-	0	464	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	263	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1371	-	-	-	556	840
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	781	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1371	-	-	-	549	840
Mov Cap-2 Maneuver	-	-	-	-	615	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	22.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1371	-	-	-	615	840
HCM Lane V/C Ratio	0.013	-	-	-	0.69	0.014
HCM Control Delay (s)	7.7	-	-	-	22.8	9.3
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0	-	-	-	5.4	0

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	125	272	233	31	30	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	286	245	33	32	216

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	278	0	-	0	811	-
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	549	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1285	-	-	-	349	0
Stage 1	-	-	-	-	782	0
Stage 2	-	-	-	-	579	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1285	-	-	-	306	-
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1285	-	-	-	306	-
HCM Lane V/C Ratio	0.102	-	-	-	0.103	-
HCM Control Delay (s)	8.1	0	-	-	18.1	0
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	222	14	290	70	4	36	1	645	4	7	0
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	234	15	305	74	4	38	1	679	4	7	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	465	30	509	777	42	574	696	805	322	553	0
Arrive On Green	0.00	0.27	0.27	0.13	0.44	0.44	0.04	0.37	0.37	0.30	0.30	0.00
Sat Flow, veh/h	1316	1732	111	1774	1751	95	1774	1863	1583	757	1863	0
Grp Volume(v), veh/h	0	0	249	305	0	78	38	1	679	4	7	0
Grp Sat Flow(s),veh/h/ln	1316	0	1843	1774	0	1846	1774	1863	1583	757	1863	0
Q Serve(g_s), s	0.0	0.0	8.5	8.8	0.0	1.8	1.0	0.0	27.5	0.3	0.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.5	8.8	0.0	1.8	1.0	0.0	27.5	0.3	0.2	0.0
Prop In Lane	1.00		0.06	1.00		0.05	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	97	0	495	509	0	818	574	696	805	322	553	0
V/C Ratio(X)	0.00	0.00	0.50	0.60	0.00	0.10	0.07	0.00	0.84	0.01	0.01	0.00
Avail Cap(c_a), veh/h	108	0	510	509	0	834	700	696	805	322	553	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	23.0	15.6	0.0	12.0	15.6	14.6	15.7	18.5	18.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.8	1.9	0.0	0.1	0.0	0.0	10.5	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.4	4.4	0.0	0.9	0.5	0.0	14.2	0.1	0.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	23.8	17.6	0.0	12.1	15.6	14.6	26.3	18.6	18.5	0.0
LnGrp LOS			C	B		B	B	B	C	B	B	
Approach Vol, veh/h		249			383			718			11	
Approach Delay, s/veh		23.8			16.4			25.7			18.5	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6		8
Phs Duration (G+Y+Rc), s		35.2	13.0	26.8	5.7	29.5		39.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8	3.0	* 6.8		* 6.8
Max Green Setting (Gmax), s		* 28	10.0	* 21	8.0	* 17		* 34
Max Q Clear Time (g_c+I1), s		29.5	10.8	10.5	3.0	2.3		3.8
Green Ext Time (p_c), s		0.0	0.0	3.0	0.0	3.5		5.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

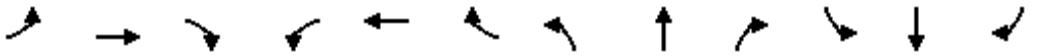
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	82	167	315	210	68	201	871	110	35	897	216
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	159	86	176	332	221	72	212	917	116	37	944	227
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	109	224	462	379	124	258	1420	635	266	1008	242
Arrive On Green	0.10	0.20	0.20	0.18	0.28	0.28	0.09	0.40	0.40	0.05	0.36	0.34
Sat Flow, veh/h	1774	547	1119	1774	1347	439	1774	3539	1583	1774	2832	680
Grp Volume(v), veh/h	159	0	262	332	0	293	212	917	116	37	589	582
Grp Sat Flow(s),veh/h/ln	1774	0	1665	1774	0	1785	1774	1770	1583	1774	1770	1743
Q Serve(g_s), s	6.1	0.0	13.2	12.1	0.0	12.5	6.4	18.5	4.2	1.1	28.4	28.5
Cycle Q Clear(g_c), s	6.1	0.0	13.2	12.1	0.0	12.5	6.4	18.5	4.2	1.1	28.4	28.5
Prop In Lane	1.00		0.67	1.00		0.25	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	413	0	333	462	0	503	258	1420	635	266	630	620
V/C Ratio(X)	0.39	0.00	0.79	0.72	0.00	0.58	0.82	0.65	0.18	0.14	0.94	0.94
Avail Cap(c_a), veh/h	414	0	351	578	0	637	258	1420	635	347	630	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	33.5	21.0	0.0	27.3	20.3	21.4	17.1	17.4	27.5	27.7
Incr Delay (d2), s/veh	0.6	0.0	10.8	3.2	0.0	1.1	18.8	2.3	0.6	0.2	23.2	23.8
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	3.0	0.0	7.0	6.3	0.0	6.3	4.4	9.5	1.9	0.6	17.8	17.7
LnGrp Delay(d),s/veh	24.5	0.0	44.4	24.3	0.0	28.3	39.1	23.6	17.7	17.7	50.6	51.5
LnGrp LOS	C		D	C		C	D	C	B	B	D	D
Approach Vol, veh/h		421			625			1245			1208	
Approach Delay, s/veh		36.8			26.2			25.7			50.0	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	41.2	18.1	22.9	10.0	37.2	10.9	30.2
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.1	20.5	14.1	15.2	8.4	30.5	8.1	14.5
Green Ext Time (p_c), s	0.0	9.7	1.0	1.5	0.0	0.0	0.0	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	8	452	2	24	1	605	508	10	1	716	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1852		1770	3529		1770	3475	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.18	1.00		0.45	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1852		328	3529		835	3475	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	8	476	2	25	1	637	535	11	1	754	104
RTOR Reduction (vph)	0	0	0	0	1	0	0	1	0	0	12	0
Lane Group Flow (vph)	20	8	476	2	25	0	637	545	0	1	846	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	2.5	2.5	67.7	2.5	2.5		52.4	52.4		21.8	21.8	
Effective Green, g (s)	2.5	2.5	67.7	2.5	2.5		52.4	52.4		21.8	21.8	
Actuated g/C Ratio	0.04	0.04	1.00	0.04	0.04		0.77	0.77		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	68	68	1583	68	68		841	2731		268	1118	
v/s Ratio Prot		0.00					c0.31	0.15			0.24	
v/s Ratio Perm	0.01		c0.30	0.00	0.01		c0.28			0.00		
v/c Ratio	0.29	0.12	0.30	0.03	0.37		0.76	0.20		0.00	0.76	
Uniform Delay, d1	31.7	31.5	0.0	31.4	31.8		10.8	2.0		15.6	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.8	0.5	0.2	3.4		3.9	0.0		0.0	3.0	
Delay (s)	34.1	32.3	0.5	31.6	35.2		14.8	2.1		15.6	23.6	
Level of Service	C	C	A	C	D		B	A		B	C	
Approach Delay (s)		2.3			34.9			8.9			23.5	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	15.8
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	186	56	361	165	18	621
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	196	59	380	174	19	654
Adj No. of Lanes	1	1	1	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	392	350	864	734	445	1641
Arrive On Green	0.22	0.22	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1774	1583	1863	1583	851	3632
Grp Volume(v), veh/h	196	59	380	174	19	654
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	851	1770
Q Serve(g_s), s	4.2	1.3	5.9	2.9	0.7	5.2
Cycle Q Clear(g_c), s	4.2	1.3	5.9	2.9	6.6	5.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	392	350	864	734	445	1641
V/C Ratio(X)	0.50	0.17	0.44	0.24	0.04	0.40
Avail Cap(c_a), veh/h	749	668	1002	852	508	1904
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	14.7	13.6	7.8	7.0	10.0	7.6
Incr Delay (d2), s/veh	1.0	0.2	0.4	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.6	3.0	1.2	0.2	2.6
LnGrp Delay(d),s/veh	15.7	13.8	8.1	7.1	10.1	7.8
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	255		554			673
Approach Delay, s/veh	15.3		7.8			7.8
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		26.8				26.8		16.3
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 23				* 23		18.2
Max Q Clear Time (g_c+I1), s		7.9				8.6		6.2
Green Ext Time (p_c), s		11.6				11.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	224	141	302	237	217	403
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	236	148	318	249	228	424
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	343	306	623	529	536	968
Arrive On Green	0.19	0.19	0.33	0.33	0.12	0.52
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	236	148	318	249	228	424
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	5.7	3.8	6.3	5.7	3.4	6.5
Cycle Q Clear(g_c), s	5.7	3.8	6.3	5.7	3.4	6.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	343	306	623	529	536	968
V/C Ratio(X)	0.69	0.48	0.51	0.47	0.43	0.44
Avail Cap(c_a), veh/h	621	555	754	641	688	1260
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.1	16.4	12.2	12.0	7.6	6.8
Incr Delay (d2), s/veh	2.5	1.2	0.7	0.7	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	1.7	3.3	2.6	1.7	3.4
LnGrp Delay(d),s/veh	19.6	17.6	12.9	12.7	8.2	7.1
LnGrp LOS	B	B	B	B	A	A
Approach Vol, veh/h	384		567			652
Approach Delay, s/veh	18.8		12.8			7.5
Approach LOS	B		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.5	22.1				30.5		15.1
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	9.4	* 19				* 31		16.0
Max Q Clear Time (g_c+I1), s	5.4	8.3				8.5		7.7
Green Ext Time (p_c), s	0.4	7.0				12.6		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	20	33	188	10	109	14	411	72	53	519	5
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	21	35	198	11	115	15	433	76	56	546	5
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	157	262	483	35	366	437	1221	213	453	1455	13
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1260	629	1049	1342	140	1464	853	3014	526	887	3594	33
Grp Volume(v), veh/h	12	0	56	198	0	126	15	253	256	56	269	282
Grp Sat Flow(s),veh/h/ln	1260	0	1678	1342	0	1604	853	1770	1770	887	1770	1857
Q Serve(g_s), s	0.3	0.0	1.0	5.3	0.0	2.5	0.5	3.9	4.0	1.8	4.2	4.2
Cycle Q Clear(g_c), s	2.8	0.0	1.0	6.3	0.0	2.5	4.7	3.9	4.0	5.8	4.2	4.2
Prop In Lane	1.00		0.63	1.00		0.91	1.00		0.30	1.00		0.02
Lane Grp Cap(c), veh/h	417	0	419	483	0	401	437	717	717	453	717	752
V/C Ratio(X)	0.03	0.00	0.13	0.41	0.00	0.31	0.03	0.35	0.36	0.12	0.38	0.38
Avail Cap(c_a), veh/h	684	0	775	768	0	741	486	818	818	503	818	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	11.5	13.9	0.0	12.0	9.9	8.1	8.2	10.2	8.2	8.2
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.6	0.0	0.4	0.0	0.3	0.3	0.1	0.3	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	0.1	0.0	0.5	2.0	0.0	1.2	0.1	2.0	2.0	0.5	2.1	2.2
LnGrp Delay(d),s/veh	13.2	0.0	11.6	14.5	0.0	12.5	9.9	8.4	8.5	10.3	8.5	8.5
LnGrp LOS	B		B	B		B	A	A	A	B	A	A
Approach Vol, veh/h		68			324			524			607	
Approach Delay, s/veh		11.9			13.7			8.5			8.7	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.8		16.6		22.8		16.6
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 18		* 18		* 18		* 18
Max Q Clear Time (g_c+I1), s		6.7		4.8		7.8		8.3
Green Ext Time (p_c), s		8.9		2.0		8.1		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	299	295	49	822	77	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	315	311	52	865	81	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	625	0	1438	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	968	-
Critical Hdwy	-	-	4.12	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	-
Pot Cap-1 Maneuver	-	-	956	-	147	0
Stage 1	-	-	-	-	629	0
Stage 2	-	-	-	-	368	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	956	-	132	-
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	329	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	26.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	-	956	-
HCM Lane V/C Ratio	0.326	-	-	-	0.054	-
HCM Control Delay (s)	26.3	0	-	-	9	0
HCM Lane LOS	D	A	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	-	0.2	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	11	255	280	530	401	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	268	295	558	422	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	295	0	-	0	587	295
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1266	-	-	-	472	744
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1266	-	-	-	468	744
Mov Cap-2 Maneuver	-	-	-	-	557	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	751	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	28
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1266	-	-	-	557	744
HCM Lane V/C Ratio	0.009	-	-	-	0.758	0.027
HCM Control Delay (s)	7.9	-	-	-	28.9	10
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	6.7	0.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	95	228	299	44	101	569
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	100	240	315	46	106	599

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	778	-
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	440	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1198	-	-	-	365	0
Stage 1	-	-	-	-	722	0
Stage 2	-	-	-	-	649	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1198	-	-	-	330	-
Mov Cap-2 Maneuver	-	-	-	-	330	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1198	-	-	-	330	-
HCM Lane V/C Ratio	0.083	-	-	-	0.322	-
HCM Control Delay (s)	8.3	0	-	-	21	0
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	-	-	-	1.4	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	119	35	654	207	7	38	11	478	5	10	0
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	125	37	688	218	7	40	12	503	5	11	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	429	127	710	947	30	470	486	684	338	486	0
Arrive On Green	0.00	0.31	0.31	0.17	0.53	0.53	0.26	0.26	0.26	0.26	0.26	0.00
Sat Flow, veh/h	1151	1382	409	1774	1795	58	1398	1863	1583	882	1863	0
Grp Volume(v), veh/h	0	0	162	688	0	225	40	12	503	5	11	0
Grp Sat Flow(s),veh/h/ln	1151	0	1791	1774	0	1853	1398	1863	1583	882	1863	0
Q Serve(g_s), s	0.0	0.0	4.4	11.0	0.0	4.2	1.4	0.3	16.8	0.3	0.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	4.4	11.0	0.0	4.2	1.7	0.3	16.8	0.6	0.3	0.0
Prop In Lane	1.00		0.23	1.00		0.03	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	112	0	556	710	0	978	470	486	684	338	486	0
V/C Ratio(X)	0.00	0.00	0.29	0.97	0.00	0.23	0.09	0.02	0.74	0.01	0.02	0.00
Avail Cap(c_a), veh/h	123	0	573	710	0	996	470	486	684	338	486	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	16.8	16.7	0.0	8.2	18.3	17.7	15.2	17.9	17.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.3	26.3	0.0	0.1	0.4	0.1	6.9	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	2.2	12.1	0.0	2.2	0.6	0.2	8.7	0.1	0.2	0.0
LnGrp Delay(d),s/veh	0.0	0.0	17.1	43.1	0.0	8.3	18.7	17.8	22.2	18.0	17.8	0.0
LnGrp LOS			B	D		A	B	B	C	B	B	
Approach Vol, veh/h		162			913			555			16	
Approach Delay, s/veh		17.1			34.5			21.8			17.8	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.2	14.0	26.8		24.2		40.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 17	11.0	* 21		* 17		* 35
Max Q Clear Time (g_c+I1), s		18.8	13.0	6.4		2.6		6.2
Green Ext Time (p_c), s		0.0	0.0	4.4		2.6		6.4

Intersection Summary	
HCM 2010 Ctrl Delay	28.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

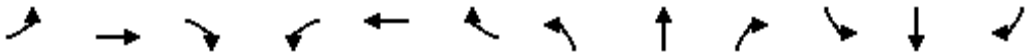
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	295	268	245	223	154	55	188	1264	401	93	1091	205
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	311	282	258	235	162	58	198	1331	422	98	1148	216
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	500	259	237	273	355	127	198	1507	674	166	1191	223
Arrive On Green	0.14	0.29	0.29	0.13	0.27	0.27	0.08	0.43	0.43	0.05	0.40	0.39
Sat Flow, veh/h	1774	897	821	1774	1311	469	1774	3539	1583	1774	2977	557
Grp Volume(v), veh/h	311	0	540	235	0	220	198	1331	422	98	680	684
Grp Sat Flow(s),veh/h/ln	1774	0	1718	1774	0	1780	1774	1770	1583	1774	1770	1764
Q Serve(g_s), s	17.1	0.0	40.7	14.1	0.0	14.5	11.0	48.7	29.4	4.5	52.7	53.4
Cycle Q Clear(g_c), s	17.1	0.0	40.7	14.1	0.0	14.5	11.0	48.7	29.4	4.5	52.7	53.4
Prop In Lane	1.00		0.48	1.00		0.26	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	500	0	497	273	0	481	198	1507	674	166	708	706
V/C Ratio(X)	0.62	0.00	1.09	0.86	0.00	0.46	1.00	0.88	0.63	0.59	0.96	0.97
Avail Cap(c_a), veh/h	510	0	497	327	0	526	198	1507	674	174	708	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	50.0	40.0	0.0	42.7	41.8	37.2	31.6	32.3	41.1	41.5
Incr Delay (d2), s/veh	2.3	0.0	65.9	17.6	0.0	0.7	64.1	7.9	4.4	4.8	25.4	27.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	28.3	10.3	0.0	7.2	11.2	25.3	13.6	2.4	30.7	31.3
LnGrp Delay(d),s/veh	31.4	0.0	115.9	57.6	0.0	43.4	105.9	45.0	36.0	37.2	66.6	68.6
LnGrp LOS	C		F	E		D	F	D	D	D	E	E
Approach Vol, veh/h		851			455			1951			1462	
Approach Delay, s/veh		85.1			50.7			49.2			65.5	
Approach LOS		F			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	65.7	19.6	46.0	13.0	62.1	22.3	43.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 58	20.9	* 40	10.0	* 55	20.0	* 41
Max Q Clear Time (g_c+I1), s	6.5	50.7	16.1	42.7	13.0	55.4	19.1	16.5
Green Ext Time (p_c), s	0.0	7.6	0.5	0.0	0.0	0.0	0.2	13.1

Intersection Summary	
HCM 2010 Ctrl Delay	60.9
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	24	582	3	17	2	514	1076	11	6	789	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1835		1770	3534		1770	3511	
Flt Permitted	0.77	1.00	1.00	0.77	1.00		0.18	1.00		0.25	1.00	
Satd. Flow (perm)	1433	1863	1583	1433	1835		333	3534		462	3511	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	61	25	613	3	18	2	541	1133	12	6	831	47
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	5	0
Lane Group Flow (vph)	61	25	613	3	18	0	541	1144	0	6	873	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	5.2	5.2	65.2	5.2	5.2		47.2	47.2		21.9	21.9	
Effective Green, g (s)	5.2	5.2	65.2	5.2	5.2		47.2	47.2		21.9	21.9	
Actuated g/C Ratio	0.08	0.08	1.00	0.08	0.08		0.72	0.72		0.34	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	114	148	1583	114	146		732	2558		155	1179	
v/s Ratio Prot		0.01					c0.25	0.32			0.25	
v/s Ratio Perm	0.04		c0.39	0.00	0.01		c0.28			0.01		
v/c Ratio	0.54	0.17	0.39	0.03	0.12		0.74	0.45		0.04	0.74	
Uniform Delay, d1	28.8	28.0	0.0	27.7	27.9		10.8	3.7		14.6	19.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	0.5	0.7	0.1	0.4		3.9	0.1		0.1	2.5	
Delay (s)	33.6	28.5	0.7	27.8	28.3		14.8	3.8		14.7	21.7	
Level of Service	C	C	A	C	C		B	A		B	C	
Approach Delay (s)		4.6			28.2			7.3			21.6	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	15.8
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	208	30	893	229	52	624
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	219	32	940	241	55	657
Adj No. of Lanes	1	1	1	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	282	252	1166	991	230	2215
Arrive On Green	0.16	0.16	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1774	1583	1863	1583	473	3632
Grp Volume(v), veh/h	219	32	940	241	55	657
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	473	1770
Q Serve(g_s), s	7.5	1.1	24.1	4.2	6.3	5.4
Cycle Q Clear(g_c), s	7.5	1.1	24.1	4.2	30.4	5.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	282	252	1166	991	230	2215
V/C Ratio(X)	0.78	0.13	0.81	0.24	0.24	0.30
Avail Cap(c_a), veh/h	466	416	1173	997	231	2228
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	25.5	22.8	8.9	5.2	20.4	5.4
Incr Delay (d2), s/veh	4.6	0.2	4.2	0.1	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.5	13.4	1.8	0.8	2.6
LnGrp Delay(d),s/veh	30.1	23.0	13.2	5.3	20.9	5.5
LnGrp LOS	C	C	B	A	C	A
Approach Vol, veh/h	251		1181			712
Approach Delay, s/veh	29.2		11.6			6.7
Approach LOS	C		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.4				46.4		16.9
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 40				* 40		16.6
Max Q Clear Time (g_c+I1), s		26.1				32.4		9.5
Green Ext Time (p_c), s		13.1				7.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	307	359	459	289	282	374
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	323	378	483	304	297	394
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	477	426	582	495	423	940
Arrive On Green	0.27	0.27	0.31	0.31	0.14	0.50
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	323	378	483	304	297	394
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	9.4	13.3	13.9	9.5	6.0	7.7
Cycle Q Clear(g_c), s	9.4	13.3	13.9	9.5	6.0	7.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	477	426	582	495	423	940
V/C Ratio(X)	0.68	0.89	0.83	0.61	0.70	0.42
Avail Cap(c_a), veh/h	490	437	595	506	461	993
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.9	20.3	18.5	16.9	12.3	9.0
Incr Delay (d2), s/veh	3.6	19.1	9.4	2.1	4.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	8.0	8.6	4.4	3.3	4.0
LnGrp Delay(d),s/veh	22.5	39.4	27.9	19.1	16.6	9.3
LnGrp LOS	C	D	C	B	B	A
Approach Vol, veh/h	701		787			691
Approach Delay, s/veh	31.6		24.5			12.4
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.1	24.9				36.1		21.9
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	9.4	* 19				* 31		16.0
Max Q Clear Time (g_c+I1), s	8.0	15.9				9.7		15.3
Green Ext Time (p_c), s	0.2	2.2				14.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	15	11	109	33	78	32	641	176	99	586	10
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	16	12	115	35	82	34	675	185	104	617	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	156	117	359	78	183	511	1476	404	409	1911	34
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1270	990	742	1377	496	1162	795	2747	752	640	3558	63
Grp Volume(v), veh/h	20	0	28	115	0	117	34	435	425	104	307	321
Grp Sat Flow(s),veh/h/ln	1270	0	1732	1377	0	1658	795	1770	1730	640	1770	1852
Q Serve(g_s), s	0.6	0.0	0.6	3.5	0.0	2.8	1.1	6.7	6.7	5.3	4.3	4.3
Cycle Q Clear(g_c), s	3.5	0.0	0.6	4.1	0.0	2.8	5.4	6.7	6.7	12.0	4.3	4.3
Prop In Lane	1.00		0.43	1.00		0.70	1.00		0.43	1.00		0.03
Lane Grp Cap(c), veh/h	280	0	273	359	0	261	511	950	929	409	950	994
V/C Ratio(X)	0.07	0.00	0.10	0.32	0.00	0.45	0.07	0.46	0.46	0.25	0.32	0.32
Avail Cap(c_a), veh/h	554	0	646	656	0	618	527	986	964	422	986	1031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	16.1	17.8	0.0	17.0	7.3	6.3	6.3	10.0	5.8	5.8
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.5	0.0	1.2	0.1	0.3	0.4	0.3	0.2	0.2
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	0.2	0.0	0.3	1.4	0.0	1.4	0.3	3.4	3.3	1.0	2.1	2.2
LnGrp Delay(d),s/veh	18.7	0.0	16.2	18.3	0.0	18.2	7.3	6.7	6.7	10.3	6.0	6.0
LnGrp LOS	B		B	B		B	A	A	A	B	A	A
Approach Vol, veh/h		48			232			894			732	
Approach Delay, s/veh		17.3			18.3			6.7			6.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		30.7		13.8		30.7		13.8
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 25		* 17		* 25		* 17
Max Q Clear Time (g_c+I1), s		8.7		5.5		14.0		6.1
Green Ext Time (p_c), s		14.4		1.2		9.9		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2031 Total Traffic Volumes with Improvements

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	82	167	315	210	68	201	871	110	35	897	216
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	1863	1863	1863	1900
Adj Flow Rate, veh/h	159	86	176	332	221	72	212	917	116	37	944	227
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	329	280	570	352	115	272	1463	655	278	1037	249
Arrive On Green	0.10	0.18	0.18	0.19	0.26	0.26	0.09	0.41	0.41	0.05	0.37	0.35
Sat Flow, veh/h	1774	1863	1583	1774	1347	439	1774	3539	1583	1774	2832	680
Grp Volume(v), veh/h	159	86	176	332	0	293	212	917	116	37	589	582
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1785	1774	1770	1583	1774	1770	1743
Q Serve(g_s), s	6.1	3.4	8.8	12.1	0.0	12.4	6.0	17.6	4.0	1.1	27.2	27.3
Cycle Q Clear(g_c), s	6.1	3.4	8.8	12.1	0.0	12.4	6.0	17.6	4.0	1.1	27.2	27.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	393	329	280	570	0	466	272	1463	655	278	648	638
V/C Ratio(X)	0.40	0.26	0.63	0.58	0.00	0.63	0.78	0.63	0.18	0.13	0.91	0.91
Avail Cap(c_a), veh/h	396	404	343	689	0	655	272	1463	655	363	648	638
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	30.5	32.7	20.0	0.0	28.0	19.3	19.9	15.9	16.3	25.9	26.1
Incr Delay (d2), s/veh	0.7	0.4	2.5	0.9	0.0	1.4	13.4	2.0	0.6	0.2	19.1	19.6
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	3.0	1.8	4.0	6.0	0.0	6.3	3.9	8.9	1.8	0.5	16.7	16.6
LnGrp Delay(d),s/veh	25.2	30.9	35.2	21.0	0.0	29.4	32.7	22.0	16.5	16.5	44.9	45.7
LnGrp LOS	C	C	D	C		C	C	C	B	B	D	D
Approach Vol, veh/h		421			625			1245			1208	
Approach Delay, s/veh		30.6			24.9			23.3			44.4	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	41.3	18.1	20.5	10.0	37.2	10.9	27.7
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.1	19.6	14.1	10.8	8.0	29.3	8.1	14.4
Green Ext Time (p_c), s	0.0	10.6	1.0	3.3	0.0	1.1	0.0	6.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	295	268	245	223	154	55	188	1264	401	93	1091	205
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	1863	1863	1863	1900
Adj Flow Rate, veh/h	311	282	258	235	162	58	198	1331	422	98	1148	216
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	440	375	319	377	231	83	239	1573	704	206	1253	235
Arrive On Green	0.17	0.20	0.20	0.14	0.18	0.18	0.08	0.44	0.44	0.06	0.42	0.41
Sat Flow, veh/h	1774	1863	1583	1774	1311	469	1774	3539	1583	1774	2977	557
Grp Volume(v), veh/h	311	282	258	235	0	220	198	1331	422	98	680	684
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1780	1774	1770	1583	1774	1770	1764
Q Serve(g_s), s	13.3	14.0	15.3	10.2	0.0	11.4	5.9	32.9	19.8	3.0	35.5	36.0
Cycle Q Clear(g_c), s	13.3	14.0	15.3	10.2	0.0	11.4	5.9	32.9	19.8	3.0	35.5	36.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	440	375	319	377	0	314	239	1573	704	206	745	743
V/C Ratio(X)	0.71	0.75	0.81	0.62	0.00	0.70	0.83	0.85	0.60	0.47	0.91	0.92
Avail Cap(c_a), veh/h	451	375	319	520	0	428	239	1573	704	248	745	743
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	36.9	37.4	27.2	0.0	38.0	21.8	24.3	20.7	21.2	26.7	27.0
Incr Delay (d2), s/veh	4.9	8.3	14.5	1.7	0.0	3.1	20.7	5.8	3.8	1.7	17.5	18.6
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	7.0	8.1	8.0	5.1	0.0	5.9	4.2	17.2	9.4	1.5	20.8	21.3
LnGrp Delay(d),s/veh	30.2	45.2	51.9	28.9	0.0	41.1	42.5	30.1	24.4	22.8	44.3	45.6
LnGrp LOS	C	D	D	C		D	D	C	C	C	D	D
Approach Vol, veh/h		851			455			1951			1462	
Approach Delay, s/veh		41.7			34.8			30.1			43.4	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	49.4	16.0	25.0	10.0	47.1	18.4	22.6
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 40	20.9	* 18	7.0	* 40	16.0	* 23
Max Q Clear Time (g_c+I1), s	5.0	34.9	12.2	17.3	7.9	38.0	15.3	13.4
Green Ext Time (p_c), s	0.1	5.4	0.8	0.3	0.0	2.3	0.1	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2041 Total Traffic Volumes

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	202	428	297	34	33	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	213	451	313	36	35	453

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1207	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1211	-	-	-	203	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	407	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	155	-
Mov Cap-2 Maneuver	-	-	-	-	155	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	311	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	34.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1211	-	-	-	155	-
HCM Lane V/C Ratio	0.176	-	-	-	0.224	-
HCM Control Delay (s)	8.6	0	-	-	34.8	0
HCM Lane LOS	A	A	-	-	D	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.8	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	234	25	588	74	4	92	1	1561	4	7	0
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	246	26	619	78	4	97	1	0	4	7	0
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	91	417	44	650	841	43	546	652	554	451	476	0
Arrive On Green	0.00	0.25	0.25	0.19	0.48	0.48	0.06	0.35	0.00	0.26	0.26	0.00
Sat Flow, veh/h	1311	1657	175	3442	1757	90	1774	1863	1583	1410	1863	0
Grp Volume(v), veh/h	0	0	272	619	0	82	97	1	0	4	7	0
Grp Sat Flow(s),veh/h/ln	1311	0	1832	1721	0	1847	1774	1863	1583	1410	1863	0
Q Serve(g_s), s	0.0	0.0	10.4	14.1	0.0	1.9	3.0	0.0	0.0	0.2	0.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.4	14.1	0.0	1.9	3.0	0.0	0.0	0.2	0.2	0.0
Prop In Lane	1.00		0.10	1.00		0.05	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	91	0	461	650	0	884	546	652	554	451	476	0
V/C Ratio(X)	0.00	0.00	0.59	0.95	0.00	0.09	0.18	0.00	0.00	0.01	0.01	0.00
Avail Cap(c_a), veh/h	101	0	475	650	0	898	624	652	554	451	476	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	26.1	31.8	0.0	11.3	18.5	16.8	0.0	22.1	22.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	1.8	24.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.4	8.9	0.0	1.0	1.5	0.0	0.0	0.1	0.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	27.9	55.9	0.0	11.3	18.6	16.8	0.0	22.1	22.1	0.0
LnGrp LOS			C	E		B	B	B		C	C	
Approach Vol, veh/h		272			701			98			11	
Approach Delay, s/veh		27.9			50.7			18.6			22.1	
Approach LOS		C			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6		8
Phs Duration (G+Y+Rc), s		35.2	18.0	26.8	7.5	27.7		44.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8	3.0	* 6.8		* 6.8
Max Green Setting (Gmax), s		* 28	15.0	* 21	8.0	* 17		* 39
Max Q Clear Time (g_c+I1), s		2.0	16.1	12.4	5.0	2.2		3.9
Green Ext Time (p_c), s		0.0	0.0	2.8	0.1	0.0		6.5

Intersection Summary	
HCM 2010 Ctrl Delay	41.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

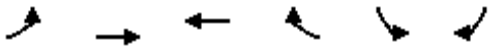
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	592	1238	102	627	69	38
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	623	0	107	660	73	0
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1433	641	367	1433	596	532
Arrive On Green	0.40	0.00	0.40	0.40	0.34	0.00
Sat Flow, veh/h	3632	1583	798	3632	1774	1583
Grp Volume(v), veh/h	623	0	107	660	73	0
Grp Sat Flow(s),veh/h/ln	1770	1583	798	1770	1774	1583
Q Serve(g_s), s	6.3	0.0	5.5	6.7	1.4	0.0
Cycle Q Clear(g_c), s	6.3	0.0	11.8	6.7	1.4	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1433	641	367	1433	596	532
V/C Ratio(X)	0.43	0.00	0.29	0.46	0.12	0.00
Avail Cap(c_a), veh/h	1476	660	377	1476	596	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.6	0.0	14.9	10.8	11.4	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	1.3	3.3	0.8	0.0
LnGrp Delay(d),s/veh	10.8	0.0	15.3	11.0	11.8	0.0
LnGrp LOS	B		B	B	B	
Approach Vol, veh/h	623			767	73	
Approach Delay, s/veh	10.8			11.6	11.8	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		23.2		26.8				26.8
Change Period (Y+Rc), s		6.0		* 6.8				* 6.8
Max Green Setting (Gmax), s		16.6		* 21				* 21
Max Q Clear Time (g_c+I1), s		3.4		8.3				13.8
Green Ext Time (p_c), s		0.2		10.7				6.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	19	257	224	278	433	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.61	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1140	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	271	236	293	456	13
RTOR Reduction (vph)	0	0	0	176	0	8
Lane Group Flow (vph)	20	271	236	117	456	5
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	20.0	20.0	20.0	20.0	18.0	18.0
Effective Green, g (s)	20.0	20.0	20.0	20.0	18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.36	0.36
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	456	745	745	633	637	569
v/s Ratio Prot		c0.15	0.13		c0.26	
v/s Ratio Perm	0.02			0.07		0.00
v/c Ratio	0.04	0.36	0.32	0.19	0.72	0.01
Uniform Delay, d1	9.2	10.5	10.3	9.7	13.8	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.3	0.2	0.1	6.8	0.0
Delay (s)	9.2	10.8	10.6	9.9	20.6	10.3
Level of Service	A	B	B	A	C	B
Approach Delay (s)		10.7	10.2		20.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

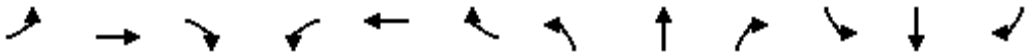
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	109	181	410	285	75	208	958	141	38	981	222
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1863	1863	1863	1900
Adj Flow Rate, veh/h	171	115	191	432	300	79	219	1008	148	40	1033	234
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	337	287	611	435	115	234	1362	609	228	985	222
Arrive On Green	0.10	0.18	0.18	0.22	0.31	0.31	0.09	0.38	0.38	0.05	0.34	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1422	375	1774	3539	1583	1774	2870	648
Grp Volume(v), veh/h	171	115	191	432	0	379	219	1008	148	40	636	631
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1797	1774	1770	1583	1774	1770	1748
Q Serve(g_s), s	7.0	4.9	10.3	16.9	0.0	17.0	7.1	22.4	5.8	1.3	31.4	31.4
Cycle Q Clear(g_c), s	7.0	4.9	10.3	16.9	0.0	17.0	7.1	22.4	5.8	1.3	31.4	31.4
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	374	337	287	611	0	550	234	1362	609	228	607	600
V/C Ratio(X)	0.46	0.34	0.67	0.71	0.00	0.69	0.94	0.74	0.24	0.18	1.05	1.05
Avail Cap(c_a), veh/h	374	379	322	639	0	619	234	1362	609	302	607	600
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	32.7	34.9	20.4	0.0	27.9	22.1	24.2	19.1	19.5	30.0	30.2
Incr Delay (d2), s/veh	0.9	0.6	4.4	3.4	0.0	2.8	41.6	3.6	0.9	0.4	49.2	51.3
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	3.5	2.6	4.9	8.7	0.0	8.8	8.2	11.6	2.7	0.6	23.5	23.5
LnGrp Delay(d),s/veh	27.4	33.3	39.3	23.8	0.0	30.7	63.7	27.9	20.0	19.9	79.3	81.5
LnGrp LOS	C	C	D	C		C	E	C	C	B	F	F
Approach Vol, veh/h		477			811			1375			1307	
Approach Delay, s/veh		33.6			27.0			32.7			78.5	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	41.0	22.4	21.9	10.0	37.2	11.0	33.3
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 30	20.9	* 18	7.0	* 30	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.3	24.4	18.9	12.3	9.1	33.4	9.0	19.0
Green Ext Time (p_c), s	0.0	5.9	0.5	3.3	0.0	0.0	0.0	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	46.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	30	499	2	94	1	668	552	10	1	764	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1860		1770	3529		1770	3474	
Flt Permitted	0.69	1.00	1.00	0.74	1.00		0.15	1.00		0.43	1.00	
Satd. Flow (perm)	1290	1863	1583	1372	1860		275	3529		798	3474	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	32	525	2	99	1	703	581	11	1	804	112
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	12	0
Lane Group Flow (vph)	21	32	525	2	100	0	703	591	0	1	904	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	8.0	8.0	79.9	8.0	8.0		59.1	59.1		24.1	24.1	
Effective Green, g (s)	8.0	8.0	79.9	8.0	8.0		59.1	59.1		24.1	24.1	
Actuated g/C Ratio	0.10	0.10	1.00	0.10	0.10		0.74	0.74		0.30	0.30	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	129	186	1583	137	186		802	2610		240	1047	
v/s Ratio Prot		0.02					c0.35	0.17			0.26	
v/s Ratio Perm	0.02		c0.33	0.00	0.05		c0.30			0.00		
v/c Ratio	0.16	0.17	0.33	0.01	0.54		0.88	0.23		0.00	0.86	
Uniform Delay, d1	32.9	32.9	0.0	32.4	34.2		16.6	3.3		19.5	26.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.4	0.6	0.0	3.0		10.6	0.0		0.0	7.5	
Delay (s)	33.5	33.4	0.6	32.4	37.2		27.2	3.3		19.5	33.9	
Level of Service	C	C	A	C	D		C	A		B	C	
Approach Delay (s)		3.6			37.1			16.3			33.9	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	15.8
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



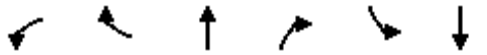
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	189	126	394	177	40	672
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	199	133	415	186	42	707
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	394	351	1125	499	455	1668
Arrive On Green	0.22	0.22	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1774	1583	2480	1058	815	3632
Grp Volume(v), veh/h	199	133	306	295	42	707
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1676	815	1770
Q Serve(g_s), s	4.4	3.2	4.9	5.0	1.5	5.8
Cycle Q Clear(g_c), s	4.4	3.2	4.9	5.0	6.5	5.8
Prop In Lane	1.00	1.00		0.63	1.00	
Lane Grp Cap(c), veh/h	394	351	834	790	455	1668
V/C Ratio(X)	0.51	0.38	0.37	0.37	0.09	0.42
Avail Cap(c_a), veh/h	729	650	926	877	497	1853
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.1	14.6	7.5	7.5	9.6	7.7
Incr Delay (d2), s/veh	1.0	0.7	0.3	0.3	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.4	2.4	2.4	0.3	2.9
LnGrp Delay(d),s/veh	16.1	15.3	7.8	7.8	9.7	7.9
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	332		601			749
Approach Delay, s/veh	15.8		7.8			8.0
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		27.7				27.7		16.6
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 23				* 23		18.2
Max Q Clear Time (g_c+I1), s		7.0				8.5		6.4
Green Ext Time (p_c), s		13.5				12.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	243	216	333	246	245	445
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	256	227	351	259	258	468
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	365	532	621	527	523	977
Arrive On Green	0.21	0.21	0.33	0.33	0.13	0.52
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	256	227	351	259	258	468
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	6.5	5.4	7.5	6.3	4.1	7.8
Cycle Q Clear(g_c), s	6.5	5.4	7.5	6.3	4.1	7.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	365	532	621	527	523	977
V/C Ratio(X)	0.70	0.43	0.57	0.49	0.49	0.48
Avail Cap(c_a), veh/h	584	727	709	602	635	1183
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.9	12.5	13.3	12.9	8.4	7.3
Incr Delay (d2), s/veh	2.4	0.5	0.8	0.7	0.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	2.4	3.9	2.8	2.0	4.0
LnGrp Delay(d),s/veh	20.4	13.1	14.1	13.6	9.1	7.7
LnGrp LOS	C	B	B	B	A	A
Approach Vol, veh/h	483		610			726
Approach Delay, s/veh	16.9		13.9			8.2
Approach LOS	B		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.3	23.0				32.3		16.3
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	9.4	* 19				* 31		16.0
Max Q Clear Time (g_c+I1), s	6.1	9.5				9.8		8.5
Green Ext Time (p_c), s	0.4	6.7				13.2		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	20	33	204	10	117	14	438	77	56	569	5
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	21	35	215	11	123	15	461	81	59	599	5
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	164	273	492	34	383	410	1221	213	433	1458	12
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1250	629	1049	1342	132	1471	812	3013	526	860	3597	30
Grp Volume(v), veh/h	12	0	56	215	0	134	15	270	272	59	295	309
Grp Sat Flow(s),veh/h/ln	1250	0	1678	1342	0	1603	812	1770	1770	860	1770	1857
Q Serve(g_s), s	0.3	0.0	1.0	5.9	0.0	2.7	0.5	4.3	4.4	2.1	4.8	4.8
Cycle Q Clear(g_c), s	3.1	0.0	1.0	7.0	0.0	2.7	5.4	4.3	4.4	6.5	4.8	4.8
Prop In Lane	1.00		0.63	1.00		0.92	1.00		0.30	1.00		0.02
Lane Grp Cap(c), veh/h	418	0	437	492	0	417	410	717	717	433	717	753
V/C Ratio(X)	0.03	0.00	0.13	0.44	0.00	0.32	0.04	0.38	0.38	0.14	0.41	0.41
Avail Cap(c_a), veh/h	652	0	751	743	0	717	444	792	792	469	792	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.4	0.0	11.5	14.2	0.0	12.1	10.6	8.5	8.5	10.8	8.6	8.6
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.6	0.0	0.4	0.0	0.3	0.3	0.1	0.4	0.4
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	0.1	0.0	0.5	2.2	0.0	1.2	0.1	2.2	2.2	0.5	2.4	2.5
LnGrp Delay(d),s/veh	13.4	0.0	11.6	14.8	0.0	12.6	10.6	8.8	8.8	10.9	9.0	9.0
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		68			349			557			663	
Approach Delay, s/veh		11.9			13.9			8.9			9.2	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.3		17.4		23.3		17.4
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 18		* 18		* 18		* 18
Max Q Clear Time (g_c+I1), s		7.4		5.1		8.5		9.0
Green Ext Time (p_c), s		8.8		2.1		8.0		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	139	321	450	49	111	1230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	338	474	52	117	1295

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	525	0	-	0	1130	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1042	-	-	-	225	0
Stage 1	-	-	-	-	610	0
Stage 2	-	-	-	-	530	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	186	-
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	52.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1042	-	-	-	186	-
HCM Lane V/C Ratio	0.14	-	-	-	0.628	-
HCM Control Delay (s)	9	0	-	-	52.4	0
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.5	-	-	-	3.6	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	125	67	1514	218	7	68	11	946	5	10	0
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	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	132	71	1594	229	7	72	12	0	5	11	0
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	227	122	1611	1254	38	299	312	265	298	312	0
Arrive On Green	0.00	0.20	0.20	0.47	0.70	0.70	0.17	0.17	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1140	1141	614	3442	1798	55	1398	1863	1583	1397	1863	0
Grp Volume(v), veh/h	0	0	203	1594	0	236	72	12	0	5	11	0
Grp Sat Flow(s),veh/h/ln	1140	0	1754	1721	0	1853	1398	1863	1583	1397	1863	0
Q Serve(g_s), s	0.0	0.0	10.5	46.1	0.0	4.4	4.6	0.5	0.0	0.3	0.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.5	46.1	0.0	4.4	5.1	0.5	0.0	0.8	0.5	0.0
Prop In Lane	1.00		0.35	1.00		0.03	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	72	0	349	1611	0	1292	299	312	265	298	312	0
V/C Ratio(X)	0.00	0.00	0.58	0.99	0.00	0.18	0.24	0.04	0.00	0.02	0.04	0.00
Avail Cap(c_a), veh/h	79	0	360	1611	0	1303	299	312	265	298	312	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	36.4	26.5	0.0	5.3	37.1	35.0	0.0	35.4	35.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.2	19.9	0.0	0.1	1.9	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.3	26.1	0.0	2.3	1.9	0.3	0.0	0.1	0.3	0.0
LnGrp Delay(d),s/veh	0.0	0.0	38.6	46.3	0.0	5.3	39.0	35.3	0.0	35.5	35.2	0.0
LnGrp LOS			D	D		A	D	D		D	D	
Approach Vol, veh/h		203			1830			84			16	
Approach Delay, s/veh		38.6			41.0			38.5			35.3	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.2	50.0	26.8		24.2		76.8
Change Period (Y+Rc), s		* 6.8	3.0	* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 17	47.0	* 21		* 17		* 71
Max Q Clear Time (g_c+I1), s		7.1	48.1	12.5		2.8		6.4
Green Ext Time (p_c), s		0.2	0.0	3.4		0.3		9.2

Intersection Summary	
HCM 2010 Ctrl Delay	40.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

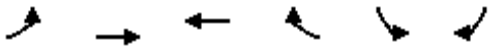
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	397	671	54	1629	145	17
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	418	0	57	1715	153	0
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1840	823	559	1840	473	422
Arrive On Green	0.52	0.00	0.52	0.52	0.27	0.00
Sat Flow, veh/h	3632	1583	965	3632	1774	1583
Grp Volume(v), veh/h	418	0	57	1715	153	0
Grp Sat Flow(s),veh/h/ln	1770	1583	965	1770	1774	1583
Q Serve(g_s), s	3.9	0.0	2.1	27.1	4.2	0.0
Cycle Q Clear(g_c), s	3.9	0.0	5.9	27.1	4.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1840	823	559	1840	473	422
V/C Ratio(X)	0.23	0.00	0.10	0.93	0.32	0.00
Avail Cap(c_a), veh/h	1841	824	560	1841	473	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.8	0.0	9.4	13.4	17.6	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	9.2	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.6	15.2	2.3	0.0
LnGrp Delay(d),s/veh	7.9	0.0	9.5	22.6	19.5	0.0
LnGrp LOS	A		A	C	B	
Approach Vol, veh/h	418			1772	153	
Approach Delay, s/veh	7.9			22.2	19.5	
Approach LOS	A			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		22.0		38.0				38.0
Change Period (Y+Rc), s		6.0		* 6.8				* 6.8
Max Green Setting (Gmax), s		16.0		* 31				* 31
Max Q Clear Time (g_c+I1), s		6.2		5.9				29.1
Green Ext Time (p_c), s		0.5		24.6				2.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	12	340	314	567	431	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.54	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1005	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	358	331	597	454	22
RTOR Reduction (vph)	0	0	0	358	0	14
Lane Group Flow (vph)	13	358	331	239	454	8
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	20.0	20.0	20.0	20.0	18.0	18.0
Effective Green, g (s)	20.0	20.0	20.0	20.0	18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.36	0.36
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	402	745	745	633	637	569
v/s Ratio Prot		c0.19	0.18		c0.26	
v/s Ratio Perm	0.01			0.15		0.01
v/c Ratio	0.03	0.48	0.44	0.38	0.71	0.01
Uniform Delay, d1	9.1	11.1	10.9	10.6	13.8	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.5	0.4	0.4	6.7	0.0
Delay (s)	9.2	11.6	11.4	11.0	20.4	10.3
Level of Service	A	B	B	B	C	B
Approach Delay (s)		11.5	11.1		20.0	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

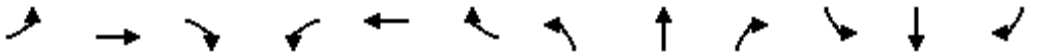
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	303	342	257	276	198	61	203	1381	497	103	1193	215
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking 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	1863	1863	1863	1900
Adj Flow Rate, veh/h	319	360	271	291	208	64	214	1454	523	108	1256	226
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	370	314	338	281	87	226	1653	739	180	1302	232
Arrive On Green	0.15	0.20	0.20	0.15	0.21	0.21	0.09	0.47	0.47	0.06	0.43	0.43
Sat Flow, veh/h	1774	1863	1583	1774	1368	421	1774	3539	1583	1774	3002	536
Grp Volume(v), veh/h	319	360	271	291	0	272	214	1454	523	108	736	746
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1788	1774	1770	1583	1774	1770	1768
Q Serve(g_s), s	17.5	23.5	20.2	15.3	0.0	17.4	10.1	45.4	32.1	4.0	49.3	50.5
Cycle Q Clear(g_c), s	17.5	23.5	20.2	15.3	0.0	17.4	10.1	45.4	32.1	4.0	49.3	50.5
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	390	370	314	338	0	368	226	1653	739	180	767	767
V/C Ratio(X)	0.82	0.97	0.86	0.86	0.00	0.74	0.95	0.88	0.71	0.60	0.96	0.97
Avail Cap(c_a), veh/h	390	370	314	382	0	408	226	1653	739	196	767	767
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	48.7	47.4	32.5	0.0	45.5	36.2	29.5	25.9	27.3	33.6	34.1
Incr Delay (d2), s/veh	12.9	39.7	21.0	16.4	0.0	6.3	45.4	7.0	5.6	4.3	24.0	26.5
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	9.9	16.2	10.7	9.0	0.0	9.3	10.0	23.6	15.1	2.2	29.0	30.3
LnGrp Delay(d),s/veh	46.3	88.4	68.4	48.9	0.0	51.8	81.6	36.5	31.6	31.6	57.5	60.6
LnGrp LOS	D	F	E	D		D	F	D	C	C	E	E
Approach Vol, veh/h		950			563			2191			1590	
Approach Delay, s/veh		68.6			50.3			39.7			57.2	
Approach LOS		E			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	62.9	20.9	29.6	13.0	58.8	20.0	30.4
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 55	20.9	* 23	10.0	* 52	17.0	* 27
Max Q Clear Time (g_c+I1), s	6.0	47.4	17.3	25.5	12.1	52.5	19.5	19.4
Green Ext Time (p_c), s	0.0	7.6	0.5	0.0	0.0	0.0	0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	51.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	90	642	3	54	2	590	1151	11	6	849	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		3.0	6.8		6.8	6.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1853		1770	3534		1770	3512	
Flt Permitted	0.72	1.00	1.00	0.70	1.00		0.14	1.00		0.23	1.00	
Satd. Flow (perm)	1338	1863	1583	1295	1853		267	3534		427	3512	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	95	676	3	57	2	621	1212	12	6	894	49
RTOR Reduction (vph)	0	0	0	0	2	0	0	1	0	0	4	0
Lane Group Flow (vph)	64	95	676	3	57	0	621	1223	0	6	939	0
Turn Type	Perm	NA	Free	custom	NA		pm+pt	NA		Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4		Free	8	8		2			6		
Actuated Green, G (s)	7.6	7.6	77.4	7.6	7.6		57.0	57.0		24.9	24.9	
Effective Green, g (s)	7.6	7.6	77.4	7.6	7.6		57.0	57.0		24.9	24.9	
Actuated g/C Ratio	0.10	0.10	1.00	0.10	0.10		0.74	0.74		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		3.0	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	131	182	1583	127	181		761	2602		137	1129	
v/s Ratio Prot		0.05					c0.31	0.35			0.27	
v/s Ratio Perm	0.05		c0.43	0.00	0.03		c0.29			0.01		
v/c Ratio	0.49	0.52	0.43	0.02	0.32		0.82	0.47		0.04	0.83	
Uniform Delay, d1	33.1	33.2	0.0	31.5	32.5		15.6	4.1		18.1	24.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	2.7	0.8	0.1	1.0		6.8	0.1		0.1	5.4	
Delay (s)	35.9	35.9	0.8	31.6	33.5		22.4	4.2		18.2	29.7	
Level of Service	D	D	A	C	C		C	A		B	C	
Approach Delay (s)		7.5			33.4			10.3			29.6	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	15.8
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	219	67	965	235	117	675
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	231	71	1016	247	123	711
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	298	266	1751	424	290	2192
Arrive On Green	0.17	0.17	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1774	1583	2920	685	437	3632
Grp Volume(v), veh/h	231	71	635	628	123	711
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1742	437	1770
Q Serve(g_s), s	8.0	2.5	13.6	13.7	14.9	6.1
Cycle Q Clear(g_c), s	8.0	2.5	13.6	13.7	28.6	6.1
Prop In Lane	1.00	1.00		0.39	1.00	
Lane Grp Cap(c), veh/h	298	266	1096	1079	290	2192
V/C Ratio(X)	0.78	0.27	0.58	0.58	0.42	0.32
Avail Cap(c_a), veh/h	461	411	1101	1084	291	2203
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	25.5	23.2	7.2	7.2	15.8	5.8
Incr Delay (d2), s/veh	4.4	0.5	0.8	0.8	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	1.1	6.8	6.7	1.9	3.0
LnGrp Delay(d),s/veh	29.8	23.7	8.0	8.0	16.8	5.9
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	302		1263			834
Approach Delay, s/veh	28.4		8.0			7.5
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.4				46.4		17.5
Change Period (Y+Rc), s		* 6.8				* 6.8		6.8
Max Green Setting (Gmax), s		* 40				* 40		16.6
Max Q Clear Time (g_c+I1), s		15.7				30.6		10.0
Green Ext Time (p_c), s		23.1				9.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	318	408	507	308	358	413
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	335	429	534	324	377	435
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	437	639	669	568	450	1044
Arrive On Green	0.25	0.25	0.36	0.36	0.16	0.56
Sat Flow, veh/h	1774	1583	1863	1583	1774	1863
Grp Volume(v), veh/h	335	429	534	324	377	435
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	1583	1774	1863
Q Serve(g_s), s	11.9	15.0	17.5	11.2	8.3	9.1
Cycle Q Clear(g_c), s	11.9	15.0	17.5	11.2	8.3	9.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	437	639	669	568	450	1044
V/C Ratio(X)	0.77	0.67	0.80	0.57	0.84	0.42
Avail Cap(c_a), veh/h	437	639	692	588	485	1104
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	23.8	16.5	19.5	17.5	13.4	8.5
Incr Delay (d2), s/veh	8.0	2.7	6.4	1.2	11.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	7.0	10.1	5.1	5.4	4.7
LnGrp Delay(d),s/veh	31.8	19.3	25.9	18.8	24.9	8.8
LnGrp LOS	C	B	C	B	C	A
Approach Vol, veh/h	764		858			812
Approach Delay, s/veh	24.7		23.2			16.3
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.7	31.1				44.8		23.0
Change Period (Y+Rc), s	3.0	* 6.8				* 6.8		6.3
Max Green Setting (Gmax), s	12.0	* 25				* 40		16.7
Max Q Clear Time (g_c+I1), s	10.3	19.5				11.1		17.0
Green Ext Time (p_c), s	0.4	4.9				19.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	15	11	118	33	83	32	697	191	106	626	10
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	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	16	12	124	35	87	34	734	201	112	659	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	258	157	118	342	75	187	506	1572	430	391	2038	34
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1264	990	742	1377	475	1180	764	2747	752	596	3562	59
Grp Volume(v), veh/h	20	0	28	124	0	122	34	473	462	112	327	343
Grp Sat Flow(s),veh/h/ln	1264	0	1732	1377	0	1655	764	1770	1730	596	1770	1852
Q Serve(g_s), s	0.7	0.0	0.7	4.3	0.0	3.4	1.2	7.9	7.9	6.8	4.9	4.9
Cycle Q Clear(g_c), s	4.1	0.0	0.7	5.0	0.0	3.4	6.1	7.9	7.9	14.7	4.9	4.9
Prop In Lane	1.00		0.43	1.00		0.71	1.00		0.43	1.00		0.03
Lane Grp Cap(c), veh/h	258	0	274	342	0	262	506	1013	990	391	1013	1060
V/C Ratio(X)	0.08	0.00	0.10	0.36	0.00	0.47	0.07	0.47	0.47	0.29	0.32	0.32
Avail Cap(c_a), veh/h	474	0	570	576	0	544	520	1045	1021	402	1045	1094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	18.2	20.3	0.0	19.3	7.3	6.3	6.3	10.6	5.7	5.7
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.6	0.0	1.3	0.1	0.3	0.3	0.4	0.2	0.2
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	0.3	0.0	0.3	1.7	0.0	1.6	0.3	3.9	3.8	1.2	2.4	2.5
LnGrp Delay(d),s/veh	21.3	0.0	18.3	20.9	0.0	20.6	7.3	6.6	6.6	11.0	5.8	5.8
LnGrp LOS	C		B	C		C	A	A	A	B	A	A
Approach Vol, veh/h		48			246			969			782	
Approach Delay, s/veh		19.6			20.8			6.7			6.6	
Approach LOS		B			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		35.7		14.8		35.7		14.8
Change Period (Y+Rc), s		* 6.8		* 6.8		* 6.8		* 6.8
Max Green Setting (Gmax), s		* 30		* 17		* 30		* 17
Max Q Clear Time (g_c+I1), s		9.9		6.1		16.7		7.0
Green Ext Time (p_c), s		18.1		1.2		12.2		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

2041 Total Traffic Volumes with Improvements

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	303	342	257	276	198	61	203	1381	497	103	1193	215
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	1863	1863	1863	1863
Adj Flow Rate, veh/h	319	360	271	291	208	64	214	1454	523	108	1256	226
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	376	462	350	316	97	259	1578	953	184	1469	829
Arrive On Green	0.13	0.20	0.20	0.16	0.23	0.23	0.09	0.45	0.45	0.06	0.42	0.41
Sat Flow, veh/h	1774	1863	1583	1774	1368	421	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	319	360	271	291	0	272	214	1454	523	108	1256	226
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1788	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	14.0	21.1	16.2	13.5	0.0	15.2	7.2	42.7	21.7	3.8	35.6	8.8
Cycle Q Clear(g_c), s	14.0	21.1	16.2	13.5	0.0	15.2	7.2	42.7	21.7	3.8	35.6	8.8
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	376	462	350	0	413	259	1578	953	184	1469	829
V/C Ratio(X)	0.81	0.96	0.59	0.83	0.00	0.66	0.83	0.92	0.55	0.59	0.85	0.27
Avail Cap(c_a), veh/h	393	376	462	425	0	485	259	1578	953	207	1469	829
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	43.7	33.4	28.4	0.0	38.5	23.8	28.8	13.1	25.4	29.3	14.6
Incr Delay (d2), s/veh	12.2	35.6	1.9	11.1	0.0	2.6	19.4	10.3	2.3	3.4	6.6	0.8
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	4.0	14.6	7.3	7.6	0.0	7.8	4.9	23.1	10.0	2.0	18.6	4.0
LnGrp Delay(d),s/veh	45.3	79.3	35.3	39.5	0.0	41.1	43.3	39.1	15.3	28.8	35.9	15.4
LnGrp LOS	D	E	D	D		D	D	D	B	C	D	B
Approach Vol, veh/h		950			563			2191			1590	
Approach Delay, s/veh		55.3			40.3			33.9			32.5	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	55.1	19.3	27.6	12.0	51.7	16.0	30.9
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 47	20.9	* 21	9.0	* 45	13.0	* 29
Max Q Clear Time (g_c+I1), s	5.8	44.7	15.5	23.1	9.2	37.6	16.0	17.2
Green Ext Time (p_c), s	0.0	2.2	0.7	0.0	0.0	7.3	0.0	7.3

Intersection Summary	
HCM 2010 Ctrl Delay	38.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	139	321	450	49	111	1230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	500	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	338	474	52	117	1295

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	525	0	-	0	1130	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1042	-	-	-	225	0
Stage 1	-	-	-	-	610	0
Stage 2	-	-	-	-	530	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	193	-
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	456	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	22.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1042	-	-	-	323	-
HCM Lane V/C Ratio	0.14	-	-	-	0.362	-
HCM Control Delay (s)	9	-	-	-	22.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	-	1.6	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	109	181	410	285	75	208	958	141	38	981	222
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	1863	1863	1863	1863
Adj Flow Rate, veh/h	171	115	191	432	300	79	219	1008	148	40	1033	234
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	406	353	455	639	439	116	267	1233	913	218	1058	608
Arrive On Green	0.11	0.19	0.19	0.23	0.31	0.31	0.10	0.35	0.35	0.05	0.30	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1422	375	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	171	115	191	432	0	379	219	1008	148	40	1033	234
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1797	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.1	4.4	8.0	14.6	0.0	15.1	6.6	21.2	3.6	1.2	23.6	8.7
Cycle Q Clear(g_c), s	6.1	4.4	8.0	14.6	0.0	15.1	6.6	21.2	3.6	1.2	23.6	8.7
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	406	353	455	639	0	554	267	1233	913	218	1058	608
V/C Ratio(X)	0.42	0.33	0.42	0.68	0.00	0.68	0.82	0.82	0.16	0.18	0.98	0.38
Avail Cap(c_a), veh/h	407	425	516	710	0	693	267	1233	913	305	1058	608
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	28.6	23.6	17.2	0.0	24.7	19.8	24.2	8.1	19.7	28.3	18.2
Incr Delay (d2), s/veh	0.7	0.5	0.6	2.2	0.0	2.0	18.3	6.1	0.4	0.4	22.5	1.8
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	3.0	2.3	3.5	7.5	0.0	7.8	4.6	11.3	1.6	0.6	14.8	4.1
LnGrp Delay(d),s/veh	23.1	29.1	24.2	19.4	0.0	26.7	38.1	30.3	8.4	20.1	50.8	20.0
LnGrp LOS	C	C	C	B		C	D	C	A	C	D	C
Approach Vol, veh/h		477			811			1375			1307	
Approach Delay, s/veh		25.0			22.8			29.2			44.4	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	34.2	20.7	20.8	10.0	30.2	10.9	30.5
Change Period (Y+Rc), s	3.0	* 6.8	3.0	* 6.3	3.0	* 6.8	3.0	* 6.3
Max Green Setting (Gmax), s	7.0	* 23	20.9	* 18	7.0	* 23	8.0	* 31
Max Q Clear Time (g_c+I1), s	3.2	23.2	16.6	10.0	8.6	25.6	8.1	17.1
Green Ext Time (p_c), s	0.0	0.2	1.0	4.5	0.0	0.0	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	202	428	297	34	33	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	500	-	-	-	0	800
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	213	451	313	36	35	453

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1207	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1211	-	-	-	203	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	407	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	167	-
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	20.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1211	-	-	-	270	-
HCM Lane V/C Ratio	0.176	-	-	-	0.129	-
HCM Control Delay (s)	8.6	-	-	-	20.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	191	235	468	11
Demand Flow Rate, veh/h	195	240	478	11
Vehicles Circulating, veh/h	204	191	140	426
Vehicles Exiting, veh/h	233	427	259	5
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.1	6.6	9.7	5.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	195	240	478	11
Cap Entry Lane, veh/h	921	933	982	738
Entry HV Adj Factor	0.981	0.980	0.979	0.988
Flow Entry, veh/h	191	235	468	11
Cap Entry, veh/h	904	915	962	729
V/C Ratio	0.212	0.257	0.487	0.015
Control Delay, s/veh	6.1	6.6	9.7	5.1
LOS	A	A	A	A
95th %tile Queue, veh	1	1	3	0

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	247	485	314
Demand Flow Rate, veh/h	252	494	320
Vehicles Circulating, veh/h	154	107	224
Vehicles Exiting, veh/h	390	299	377
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.4	9.4	8.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	252	494	320
Cap Entry Lane, veh/h	969	1015	903
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	247	485	314
Cap Entry, veh/h	949	996	886
V/C Ratio	0.260	0.487	0.354
Control Delay, s/veh	6.4	9.4	8.0
LOS	A	A	A
95th %tile Queue, veh	1	3	2

Intersection	
Intersection Delay, s/veh	98.9
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	696	39	1327	1707
Demand Flow Rate, veh/h	710	39	1354	1741
Vehicles Circulating, veh/h	1566	1651	318	160
Vehicles Exiting, veh/h	335	21	1958	1530
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	430.7	11.9	19.6	27.2
Approach LOS	F	B	C	D

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	710	39	636	718	818	923
Cap Entry Lane, veh/h	378	356	890	904	1002	1010
Entry HV Adj Factor	0.980	0.998	0.981	0.980	0.981	0.980
Flow Entry, veh/h	696	39	624	703	802	905
Cap Entry, veh/h	370	355	873	886	983	990
V/C Ratio	1.881	0.110	0.714	0.794	0.816	0.914
Control Delay, s/veh	430.7	11.9	17.3	21.7	21.7	32.0
LOS	F	B	C	C	C	D
95th %tile Queue, veh	46	0	6	8	9	14

Intersection	
Intersection Delay, s/veh	13.8
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	578	102	1295	917
Demand Flow Rate, veh/h	590	104	1321	935
Vehicles Circulating, veh/h	823	1331	55	820
Vehicles Exiting, veh/h	932	45	822	615
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.6	11.9	11.8	25.3
Approach LOS	A	B	B	D

Lane	Left	Bypass	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	L	TR	LT	TR
RT Channelized		Free					
Lane Util	1.000		1.000	0.543	0.457	0.470	0.530
Critical Headway, s	4.113		4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	54	535	104	717	604	439	496
Cap Entry Lane, veh/h	635	1938	445	1084	1087	611	636
Entry HV Adj Factor	0.988	0.980	0.981	0.980	0.981	0.982	0.980
Flow Entry, veh/h	53	525	102	703	592	431	486
Cap Entry, veh/h	628	1900	437	1063	1066	600	624
V/C Ratio	0.085	0.276	0.234	0.661	0.556	0.719	0.779
Control Delay, s/veh	6.7	0.0	11.9	13.0	10.3	23.4	27.0
LOS	A	A	B	B	B	C	D
95th %tile Queue, veh	0	1	1	5	4	6	7

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	332	601	749
Demand Flow Rate, veh/h	339	613	764
Vehicles Circulating, veh/h	423	43	203
Vehicles Exiting, veh/h	233	924	559
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	9.3	6.1	8.1
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	339	288	325	359	405
Cap Entry Lane, veh/h	840	1094	1096	970	980
Entry HV Adj Factor	0.979	0.980	0.980	0.980	0.980
Flow Entry, veh/h	332	282	318	352	397
Cap Entry, veh/h	823	1073	1074	951	961
V/C Ratio	0.403	0.263	0.296	0.370	0.413
Control Delay, s/veh	9.3	5.9	6.2	7.8	8.4
LOS	A	A	A	A	A
95th %tile Queue, veh	2	1	1	2	2

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	68	349	557	663
Demand Flow Rate, veh/h	69	355	568	676
Vehicles Circulating, veh/h	890	497	93	245
Vehicles Exiting, veh/h	31	164	866	607
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.4	10.4	6.1	7.8
Approach LOS	A	B	A	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	69	355	267	301	318	358
Cap Entry Lane, veh/h	606	798	1054	1059	940	952
Entry HV Adj Factor	0.980	0.982	0.980	0.980	0.980	0.982
Flow Entry, veh/h	68	349	262	295	312	351
Cap Entry, veh/h	594	784	1033	1038	921	934
V/C Ratio	0.114	0.445	0.253	0.284	0.338	0.376
Control Delay, s/veh	7.4	10.4	5.9	6.3	7.6	8.0
LOS	A	B	A	A	A	A
95th %tile Queue, veh	0	2	1	1	2	2

Intersection	
Intersection Delay, s/veh	13.8
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	578	102	1295	917
Demand Flow Rate, veh/h	590	104	1321	935
Vehicles Circulating, veh/h	823	1331	55	820
Vehicles Exiting, veh/h	932	45	822	615
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.6	11.9	11.8	25.3
Approach LOS	A	B	B	D

Lane	Left	Bypass	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	L	TR	LT	TR
RT Channelized		Free					
Lane Util	1.000		1.000	0.543	0.457	0.470	0.530
Critical Headway, s	4.113		4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	54	535	104	717	604	439	496
Cap Entry Lane, veh/h	635	1938	445	1084	1087	611	636
Entry HV Adj Factor	0.988	0.980	0.981	0.980	0.981	0.982	0.980
Flow Entry, veh/h	53	525	102	703	592	431	486
Cap Entry, veh/h	628	1900	437	1063	1066	600	624
V/C Ratio	0.085	0.276	0.234	0.661	0.556	0.719	0.779
Control Delay, s/veh	6.7	0.0	11.9	13.0	10.3	23.4	27.0
LOS	A	A	B	B	B	C	D
95th %tile Queue, veh	0	1	1	5	4	6	7

Intersection	
Intersection Delay, s/veh	25.4
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	835	62	1845	949
Demand Flow Rate, veh/h	852	63	1881	968
Vehicles Circulating, veh/h	921	1934	168	694
Vehicles Exiting, veh/h	741	115	915	1303
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	1.9	17.1	38.6	21.0
Approach LOS	A	C	E	C

Lane	Left	Bypass	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	LT	TR	LT	TR
RT Channelized		Free					
Lane Util	1.000		1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113		4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	162	690	63	884	997	455	513
Cap Entry Lane, veh/h	593	1938	292	996	1005	671	695
Entry HV Adj Factor	0.982	0.980	0.982	0.981	0.981	0.980	0.981
Flow Entry, veh/h	159	676	62	867	978	446	503
Cap Entry, veh/h	582	1900	287	977	985	658	682
V/C Ratio	0.273	0.356	0.216	0.887	0.992	0.678	0.738
Control Delay, s/veh	9.9	0.0	17.1	28.8	47.4	19.6	22.3
LOS	A	A	C	D	E	C	C
95th %tile Queue, veh	1	2	1	12	19	5	7

APPENDIX D

2015 Traffic Volumes

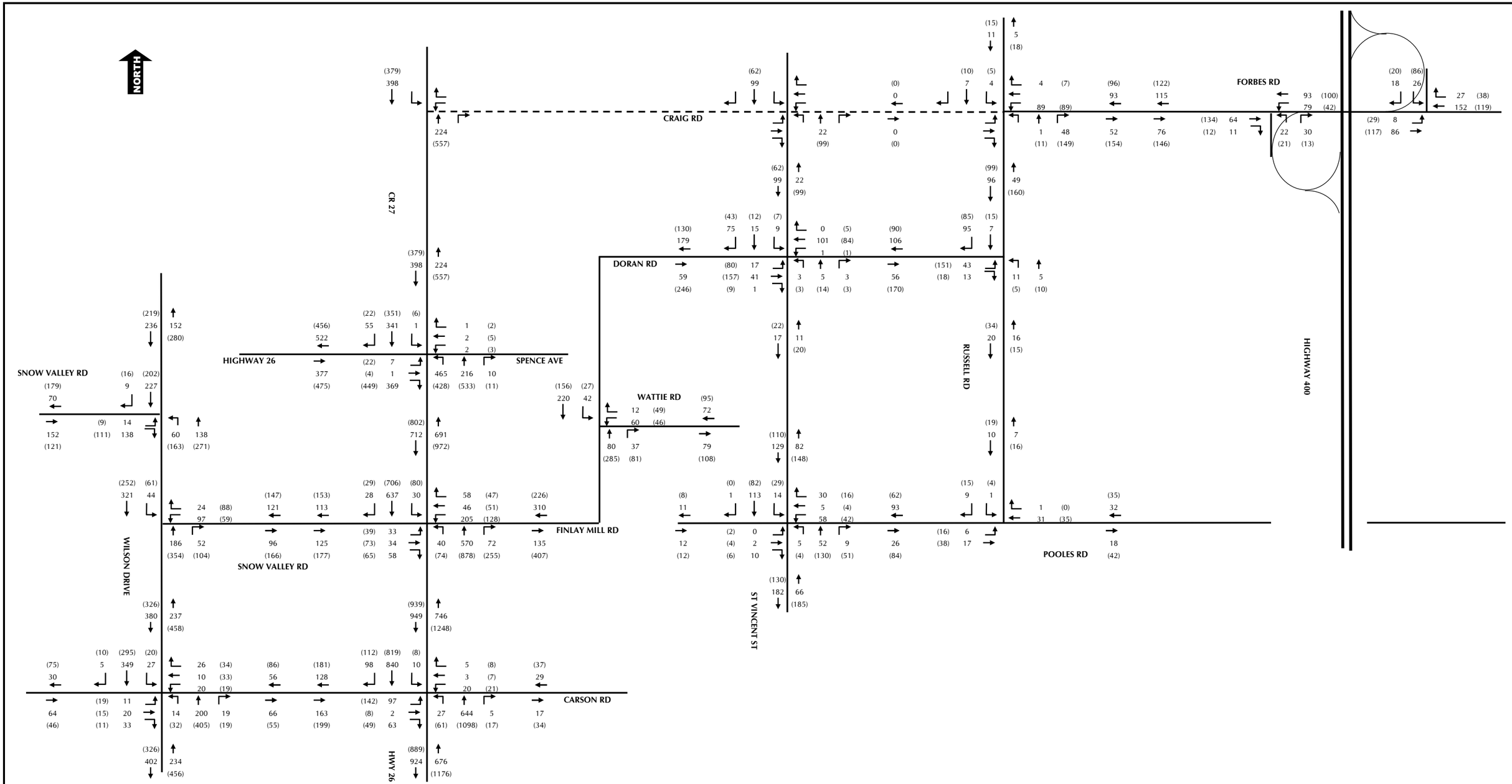
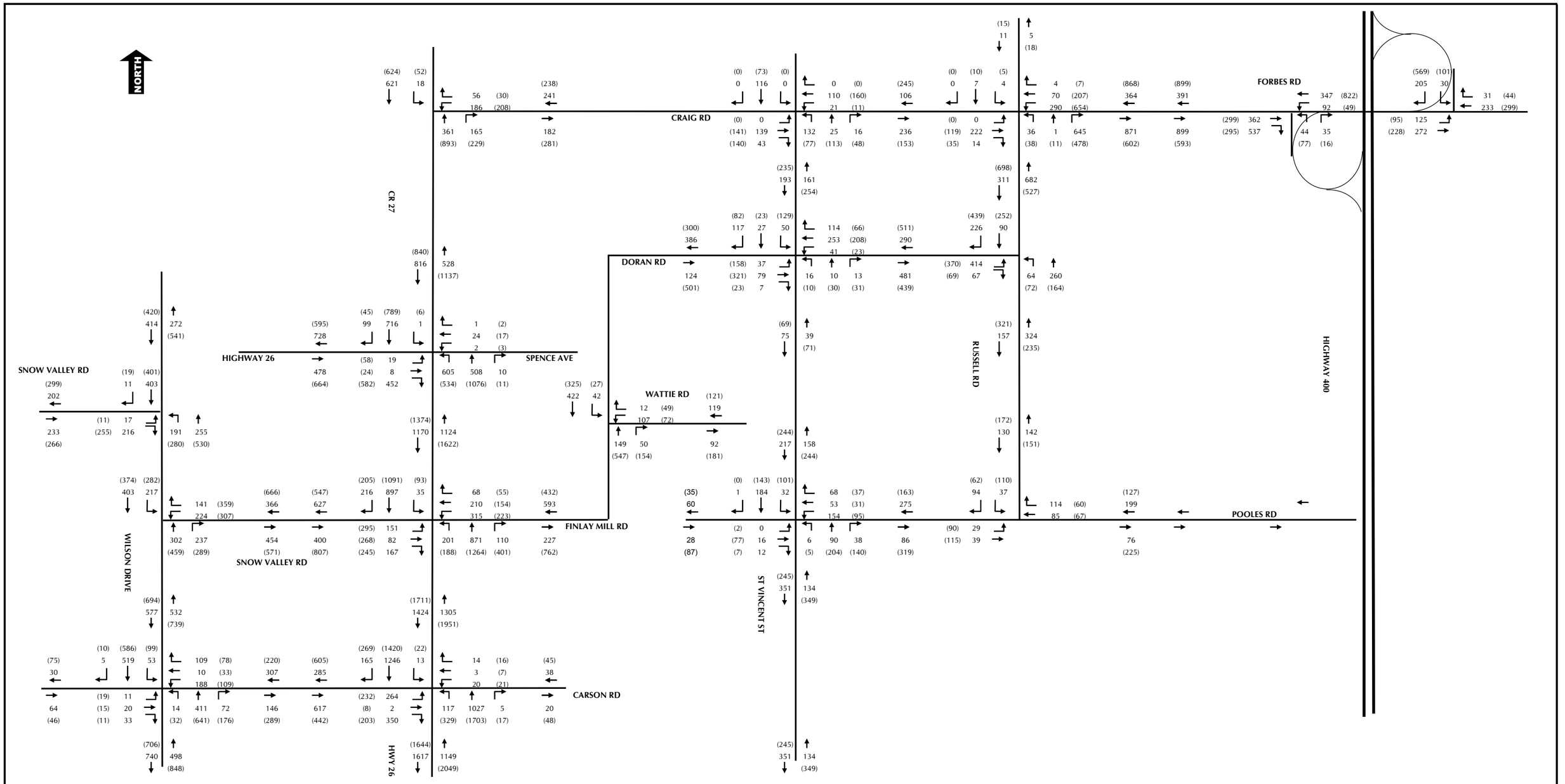


Figure 2
Existing 2015 Traffic Volumes
Midhurst EA Phases 3 & 4
Township of Springwater

Ainley Group — Consulting Engineers Planners

APPENDIX E

2031 Traffic Volumes



100 (100) AM (PM) peak hour

Figure 4
2031 Total Traffic Volumes
Midhurst EA Phases 3 & 4
Township of Springwater

Mainley GROUP CONSULTING ENGINEERS PLANNERS

APPENDIX F

2041 Traffic Volumes

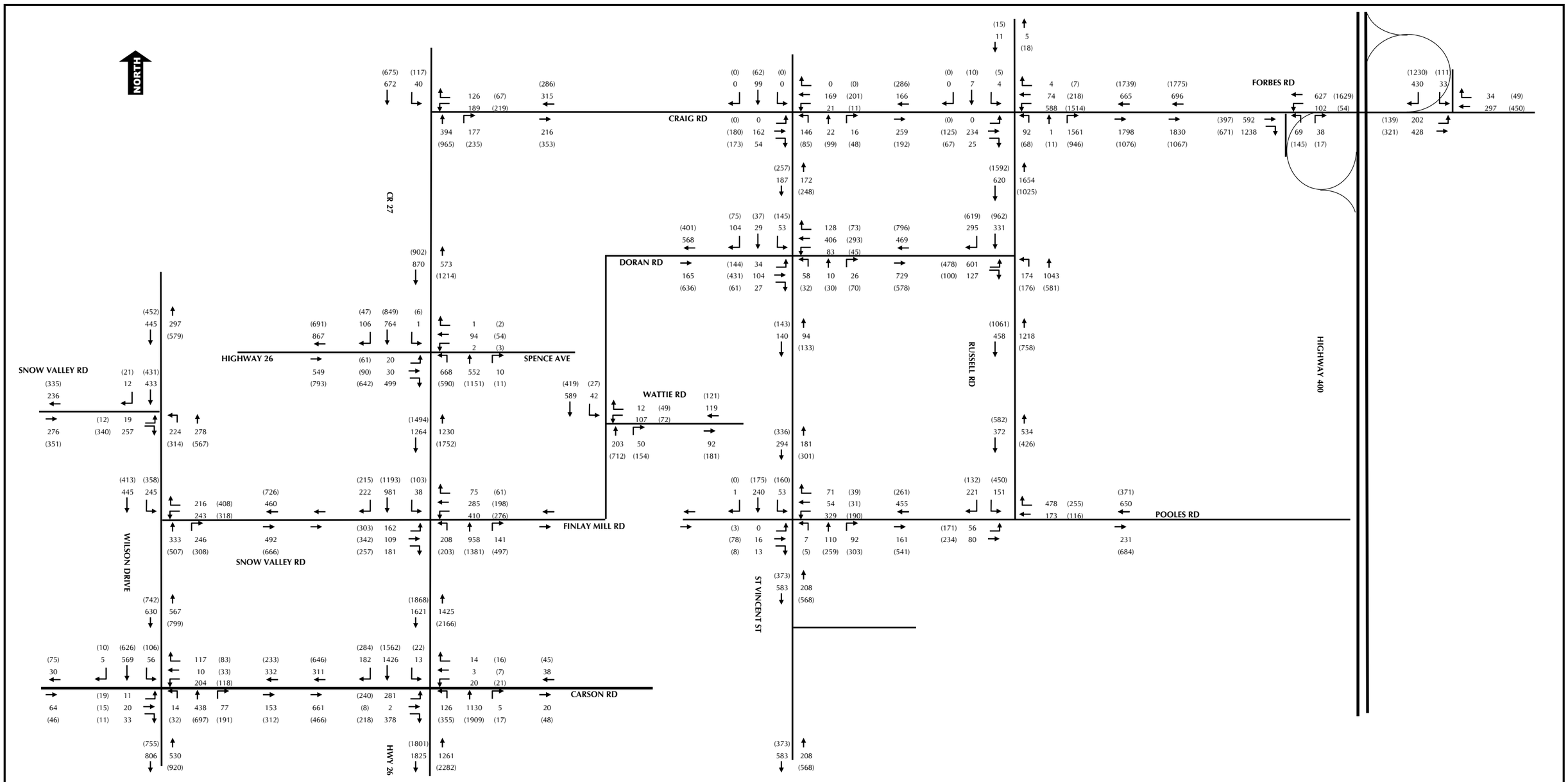
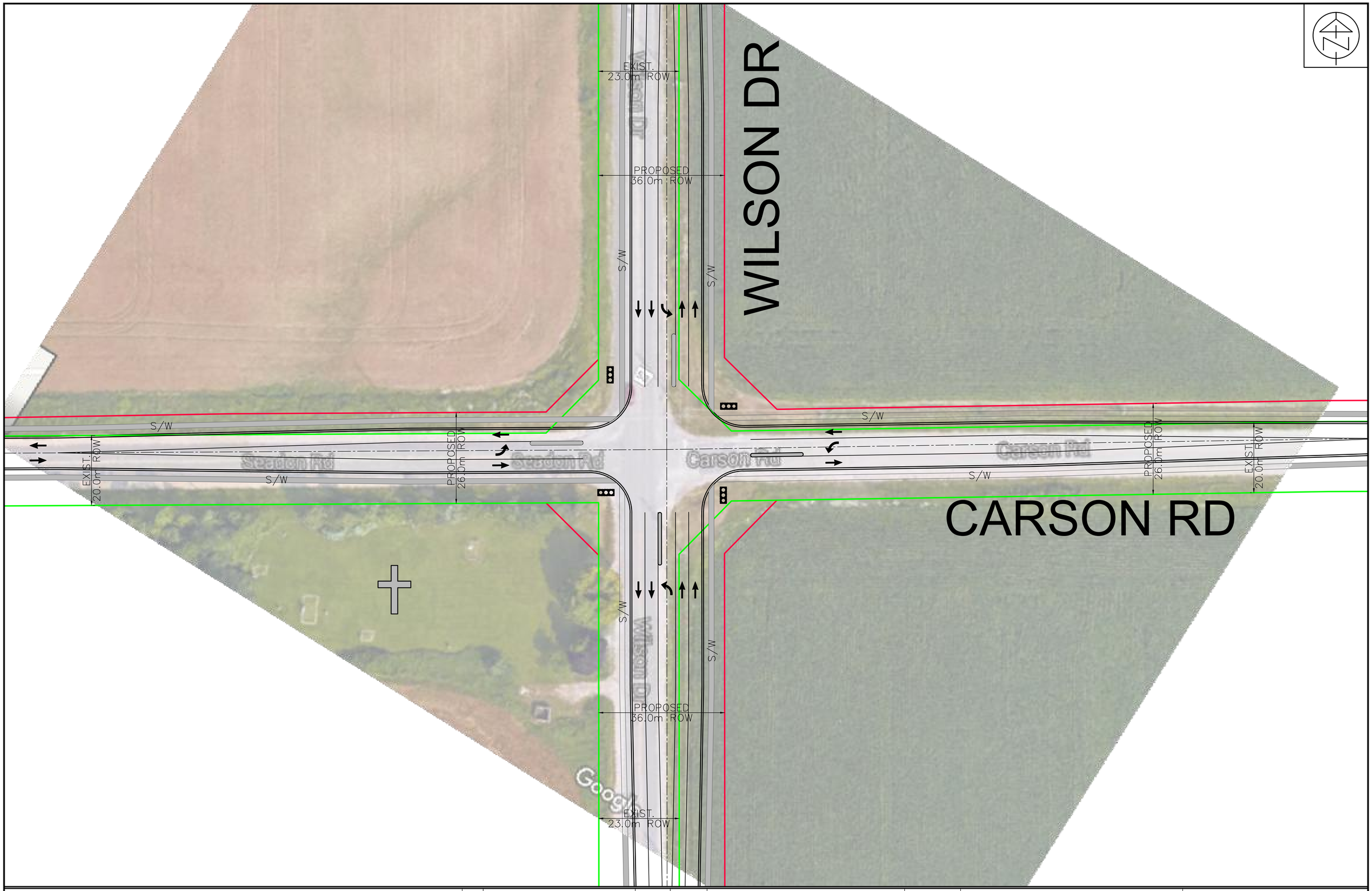


Figure 5
2041 Total Traffic Volumes
Midhurst EA Phases 3 & 4
Township of Springwater

Ainley Group — Consulting Engineers Planners

APPENDIX G

Intersection Schematics



NOTES

CONTRACT DRAWINGS
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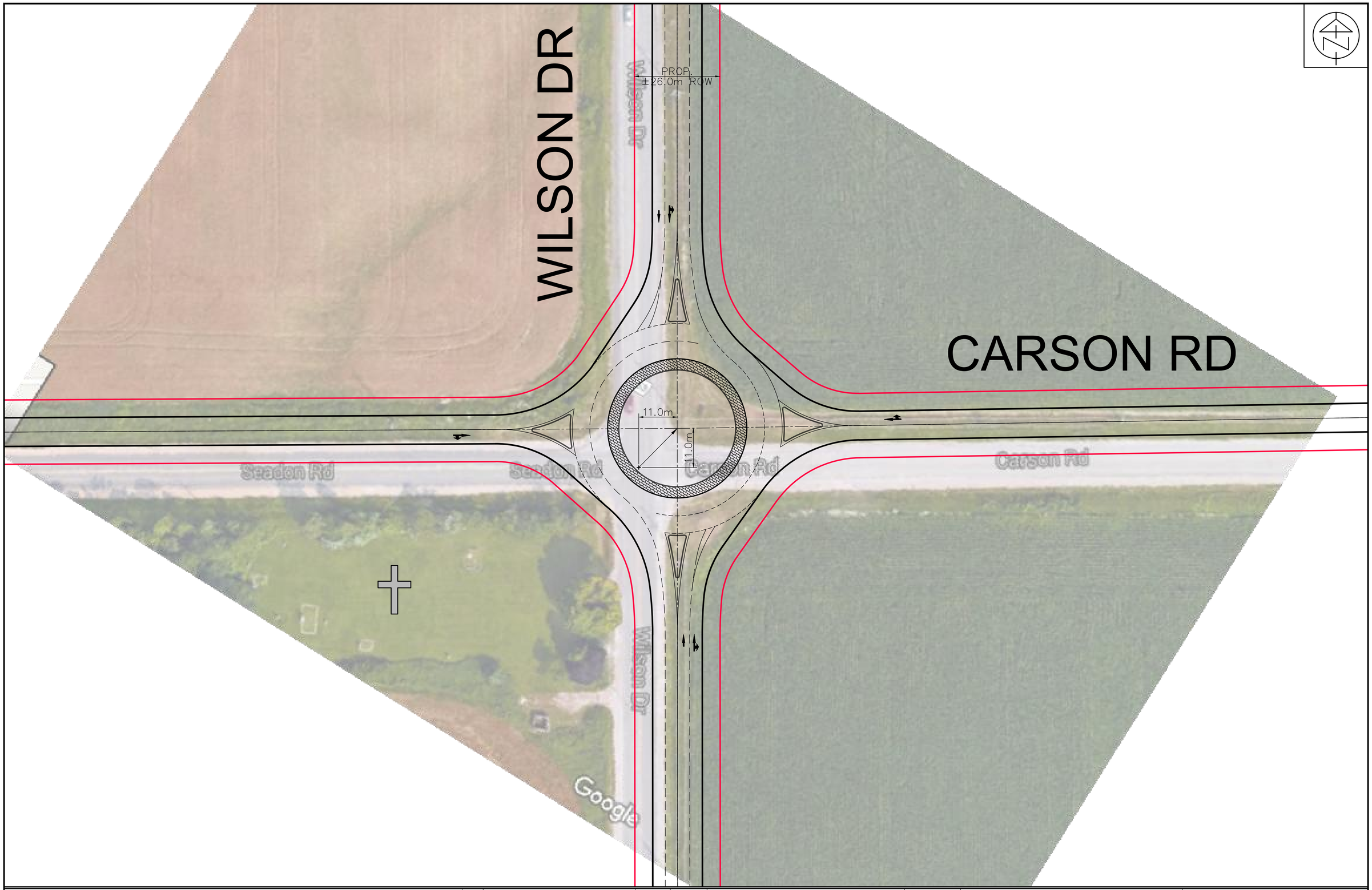
TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

CARSON RD – WILSON DR INTERSECTION

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CONSULTING ENGINEERS PLANNERS

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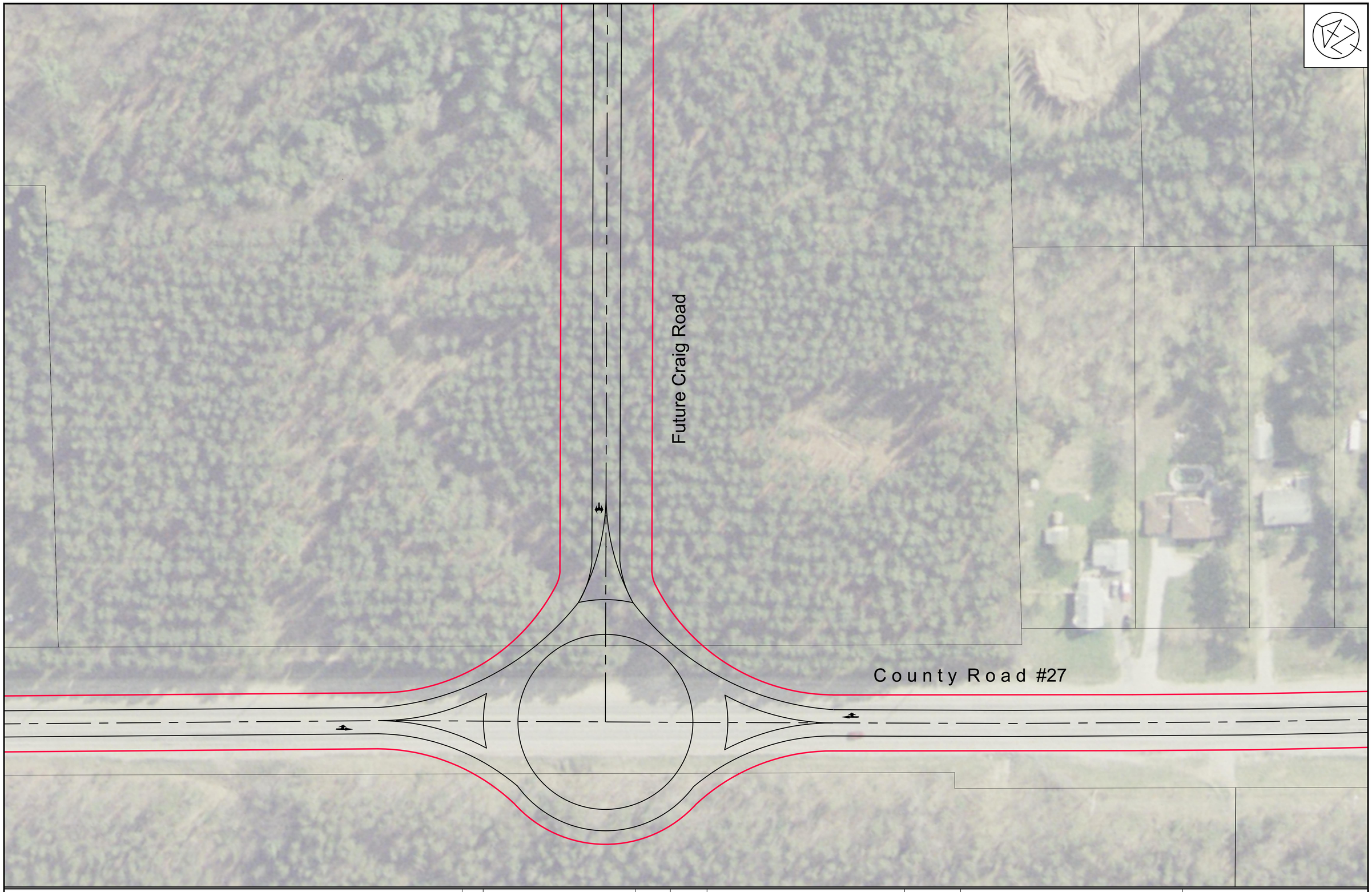
TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

CARSON RD – WILSON DR INTERSECTION

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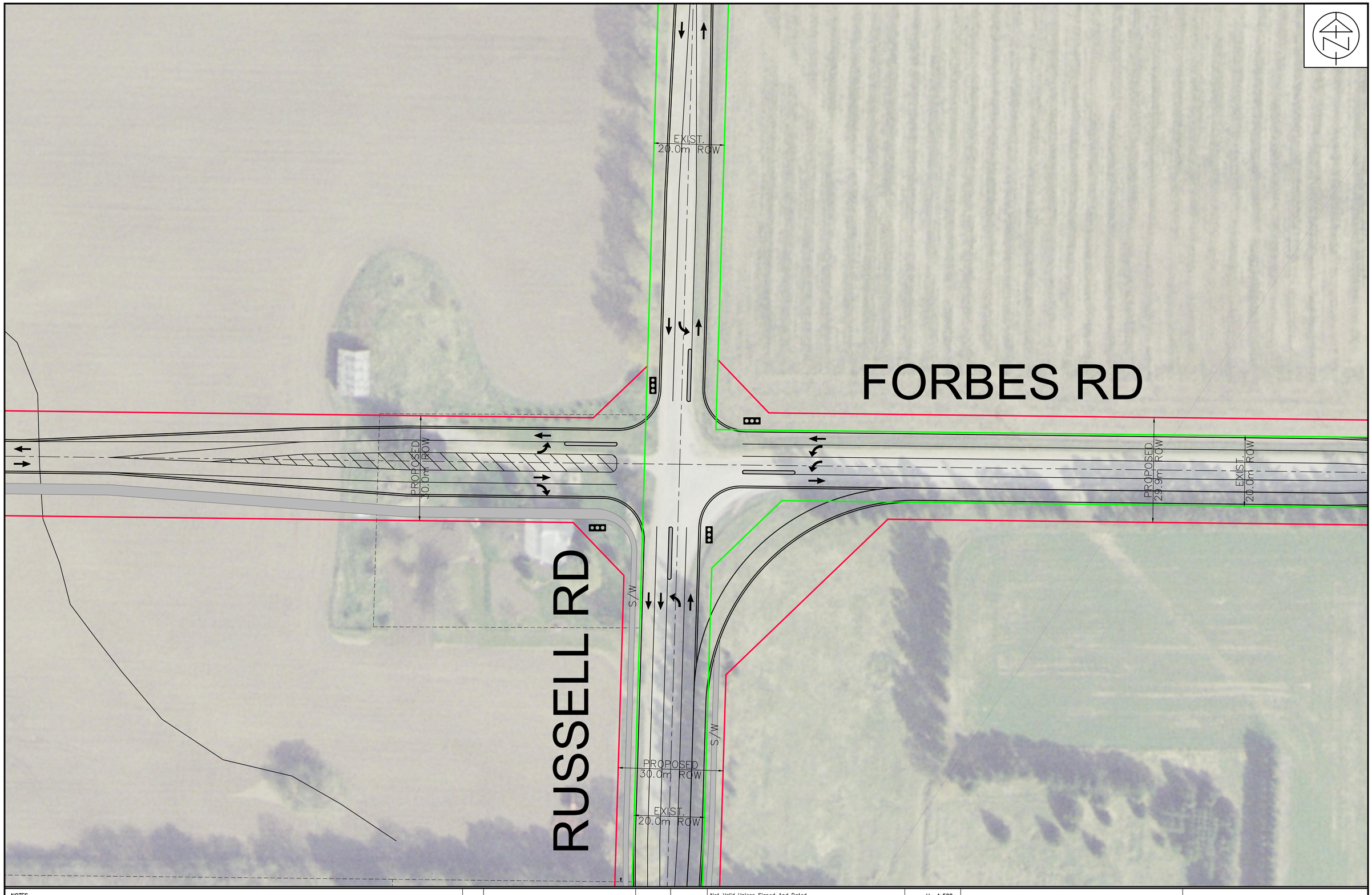
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TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

C.R. 27 & CRAIG ROAD INTERSECTION
ROUNDABOUT

Ainley GROUP
CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – RND



NOTES

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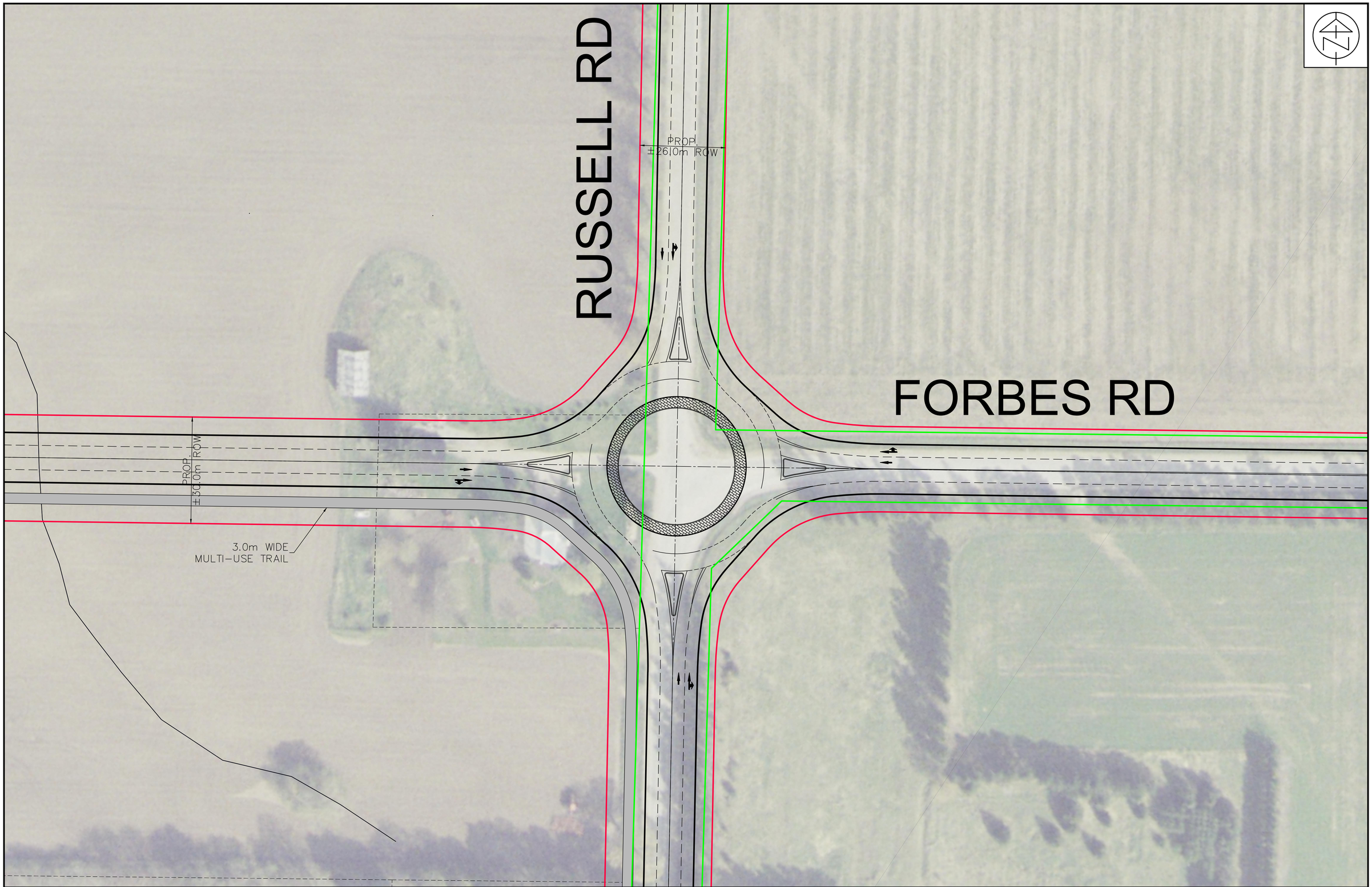
TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

FORBES RD – RUSSELL RD

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TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS

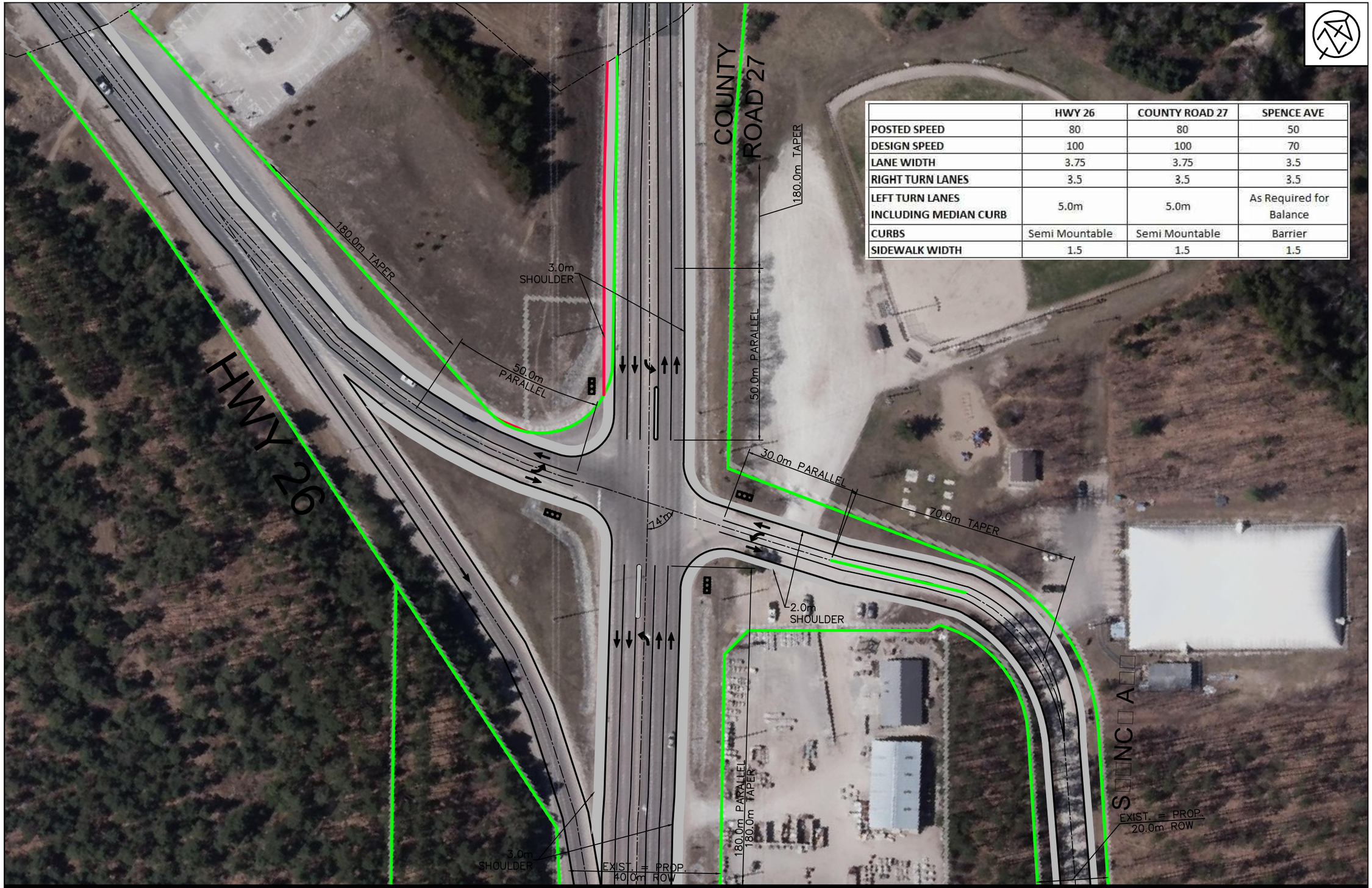
MIDHURST, ON

FORBES RD – RUSSELL RD

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	HWY 26	COUNTY ROAD 27	SPENCE AVE
POSTED SPEED	80	80	50
DESIGN SPEED	100	100	70
LANE WIDTH	3.75	3.75	3.5
RIGHT TURN LANES	3.5	3.5	3.5
LEFT TURN LANES INCLUDING MEDIAN CURB	5.0m	5.0m	As Required for Balance
CURBS	Semi Mountable	Semi Mountable	Barrier
SIDEWALK WIDTH	1.5	1.5	1.5

NOTES

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TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

COUNTRY RD 27 – HIGHWAY 26

Ainley CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on May 31, 2018 at 3:50pm
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TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

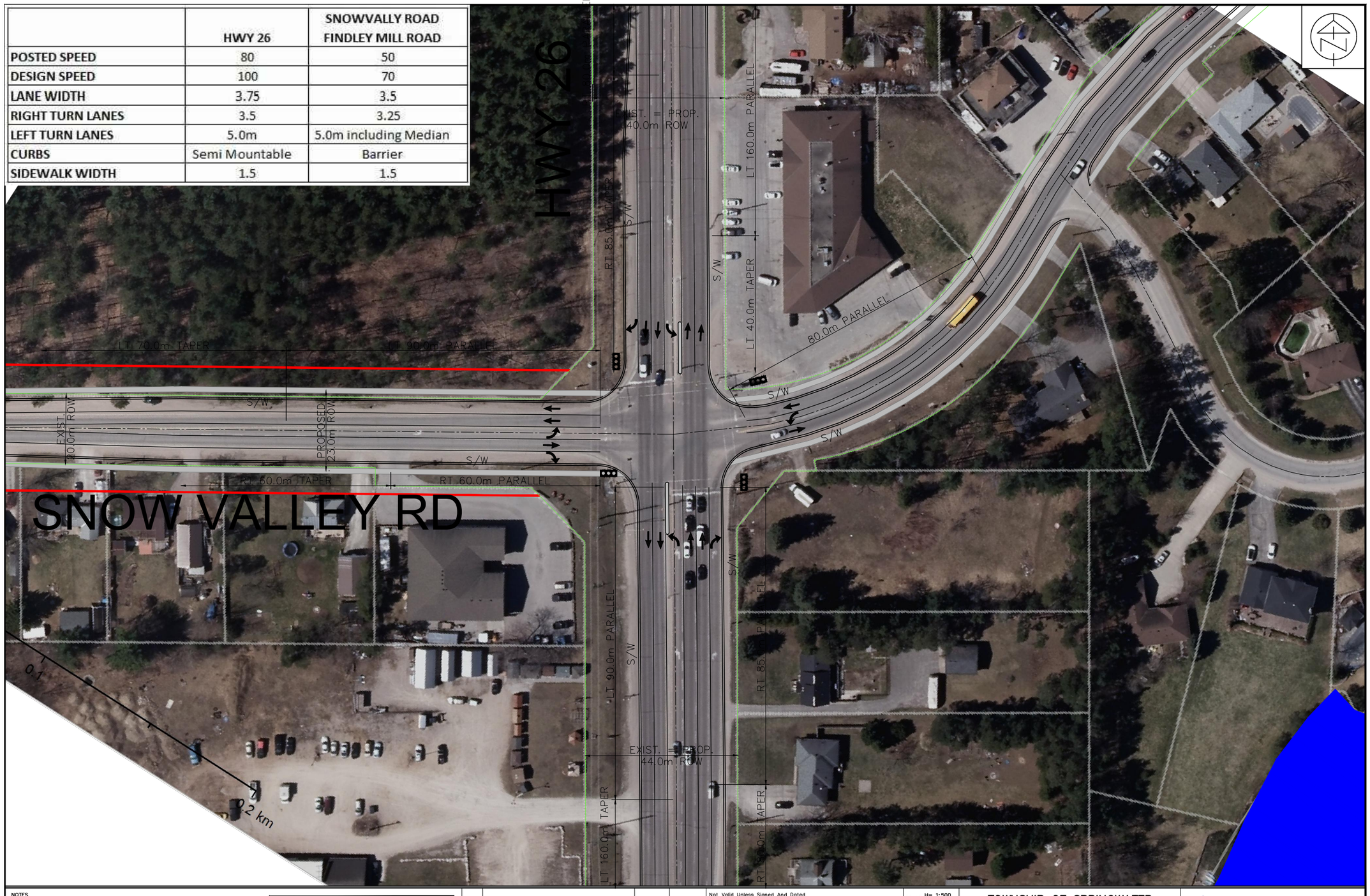
FORBES RD – RUSSELL RD

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 113027 | DWG. No. 113027 – 4–2

Plotted by: AMILLER on June 1, 2018 at 4:05pm
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	HWY 26	SNOWVALLY ROAD FINDLEY MILL ROAD
POSTED SPEED	80	50
DESIGN SPEED	100	70
LANE WIDTH	3.75	3.5
RIGHT TURN LANES	3.5	3.25
LEFT TURN LANES	5.0m	5.0m including Median
CURBS	Semi Mountable	Barrier
SIDEWALK WIDTH	1.5	1.5



NOTES

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TOWNSHIP OF SPRINGWATER
MIDHURST PHASING PLAN
CRAIG ROAD OPTIONS
MIDHURST, ON

SNOW VALLEY ROAD – HIGHWAY 26/27

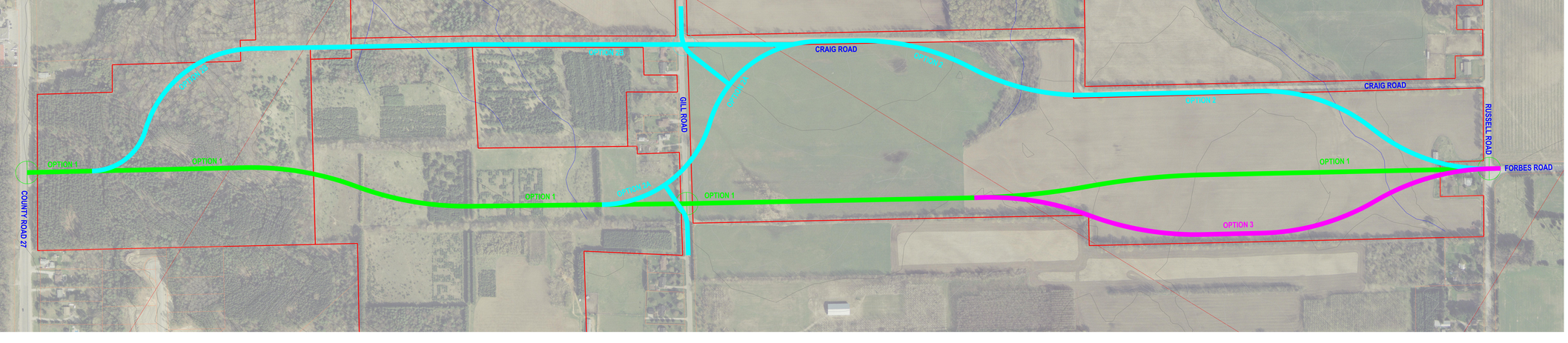
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Plotted by: AMILLER on June 1, 2016 at 9:52am
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APPENDIX H

Craig Road Alignment Options Considered


CRAIG ROAD
CRAIG ROAD
GILL ROAD
RUSSELL ROAD
COUNTY ROAD 27
FORBES ROAD
OPTION 1
OPTION 1
OPTION 1
OPTION 1
OPTION 1
OPTION 1
OPTION 2
OPTION 2
OPTION 2
OPTION 3