

APPENDIX D LEVEL OF SERVICE REPORTS

This appendix shows level of service (LOS) calculations at 48 intersections for year 2017 Existing conditions, year 2037 No Action, and year 2037 With Potential Mitigations. The 2017 volumes represent counts collected in 2015 and 2016. For both of the 2037 future scenarios, volumes represent traffic forecasts developed using the Kittitas County Travel Demand Model and the traffic growth assumptions described in **Appendix B**. The 2037 No Action LOS calculations assume no changes are made to the City's existing transportation network. The 2037 With Potential Mitigations LOS calculations assume intersection improvements to reach the City's level of service standards. The City's level of service policy sets the following standards for its roadways:

- LOS B for local streets
- LOS C for arterials and collectors
- LOS D for arterials at the interchanges with I-90

2017 Level of Service Reports

HCM 2010 TWSC

1: I-90 WestBound Offramp/I-90 Westbound Onramp

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	273	0	0	231	148	13	1	89	0	0	0
Future Vol, veh/h	2	273	0	0	231	148	13	1	89	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	15	15	15	11	11	11	0	0	0
Mvmt Flow	2	297	0	0	251	161	14	1	97	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	251	0	-	-	-	0	552	552	297
Stage 1	-	-	-	-	-	-	301	301	-
Stage 2	-	-	-	-	-	-	251	251	-
Critical Hdwy	4.2	-	-	-	-	-	6.51	6.61	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	5.51	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.51	5.61	-
Follow-up Hdwy	2.29	-	-	-	-	-	3.599	4.099	3.399
Pot Cap-1 Maneuver	1269	-	0	0	-	-	480	429	722
Stage 1	-	-	0	0	-	-	731	649	-
Stage 2	-	-	0	0	-	-	770	683	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1269	-	-	-	-	-	479	0	722
Mov Cap-2 Maneuver	-	-	-	-	-	-	479	0	-
Stage 1	-	-	-	-	-	-	730	0	-
Stage 2	-	-	-	-	-	-	770	0	-

Approach	EB		WB		NB	
HCM Control Delay, s	0.1		0		11.4	
HCM LOS					B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	678	1269	-	-	-
HCM Lane V/C Ratio	0.165	0.002	-	-	-
HCM Control Delay (s)	11.4	7.8	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.6	0	-	-	-

Existing

Synchro 9 Report
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HCM 2010 AWSC
2: Dolarway Rd & University Way

Intersection												
Intersection Delay, s/veh	15.9											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	102	166	123	25	183	43	147	28	62	48	34	101
Future Vol, veh/h	102	166	123	25	183	43	147	28	62	48	34	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	20	20	20	13	13	13	15	15	15	5	5	5
Mvmt Flow	111	180	134	27	199	47	160	30	67	52	37	110
Number of Lanes	1	1	0	1	1	1	1	1	0	1	1	1
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	3			2			3			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	3			2			2			3		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			3			3			2		
HCM Control Delay	19.1			14.8			14.5			12.1		
HCM LOS	C			B			B			B		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3		
Vol Left, %	100%	0%	100%	0%	100%	0%	0%	100%	0%	0%		
Vol Thru, %	0%	31%	0%	57%	0%	100%	0%	0%	100%	0%		
Vol Right, %	0%	69%	0%	43%	0%	0%	100%	0%	0%	100%		
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop		
Traffic Vol by Lane	147	90	102	289	25	183	43	48	34	101		
LT Vol	147	0	102	0	25	0	0	48	0	0		
Through Vol	0	28	0	166	0	183	0	0	34	0		
RT Vol	0	62	0	123	0	0	43	0	0	101		
Lane Flow Rate	160	98	111	314	27	199	47	52	37	110		
Geometry Grp	8	8	8	8	8	8	8	8	8	8		
Degree of Util (X)	0.372	0.201	0.245	0.625	0.063	0.43	0.092	0.123	0.082	0.222		
Departure Headway (Hd)	8.392	7.393	7.971	7.163	8.285	7.776	7.063	8.499	7.988	7.273		
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Cap	428	484	450	503	432	463	507	422	448	493		
Service Time	6.149	5.15	5.721	4.912	6.04	5.531	4.817	6.26	5.749	5.034		
HCM Lane V/C Ratio	0.374	0.202	0.247	0.624	0.063	0.43	0.093	0.123	0.083	0.223		
HCM Control Delay	16.1	12	13.3	21.2	11.6	16.3	10.5	12.5	11.5	12.1		
HCM Lane LOS	C	B	B	C	B	C	B	B	B	B		
HCM 95th-tile Q	1.7	0.7	1	4.2	0.2	2.1	0.3	0.4	0.3	0.8		

Existing

Synchro 9 Report
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HCM 2010 TWSC
3: University Way & Reecer Creek Rd

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	132	180	167	190	92	62
Future Vol, veh/h	132	180	167	190	92	62
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
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	143	196	182	207	100	67
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	388	0	-	0	768	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	483	-
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	1170	-	-	-	370	754
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	620	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1170	-	-	-	325	754
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	544	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.6	0		16.6		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1170	-	-	-	325	754
HCM Lane V/C Ratio	0.123	-	-	-	0.308	0.089
HCM Control Delay (s)	8.5	-	-	-	20.9	10.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.3	0.3

Existing

Synchro 9 Report
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HCM 2010 TWSC
4: Water St & Bender Rd

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	76	38	40	43	40	71
Future Vol, veh/h	76	38	40	43	40	71
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	41	43	47	43	77
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	124	0	237	103
Stage 1	-	-	-	-	103	-
Stage 2	-	-	-	-	134	-
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	-	-	1463	-	751	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	892	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1463	-	728	952
Mov Cap-2 Maneuver	-	-	-	-	728	-
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	865	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	3.6		9.9		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	857	-	-	1463	-	
HCM Lane V/C Ratio	0.141	-	-	0.03	-	
HCM Control Delay (s)	9.9	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-	

Existing

Synchro 9 Report
Page 3

HCM 2010 TWSC

5: Airport Rd & Bender Rd/Sanders Rd

Intersection												
Int Delay, s/veh	7.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	70	35	14	68	18	34	31	18	16	36	4
Future Vol, veh/h	10	70	35	14	68	18	34	31	18	16	36	4
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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	76	38	15	74	20	37	34	20	17	39	4
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	240	203	41	250	195	43	43	0	0	53	0	0
Stage 1	76	76	-	117	117	-	-	-	-	-	-	-
Stage 2	164	127	-	133	78	-	-	-	-	-	-	-
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	714	693	1030	703	700	1027	1566	-	-	1553	-	-
Stage 1	933	832	-	888	799	-	-	-	-	-	-	-
Stage 2	838	791	-	870	830	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	625	669	1030	602	676	1027	1566	-	-	1553	-	-
Mov Cap-2 Maneuver	625	669	-	602	676	-	-	-	-	-	-	-
Stage 1	911	823	-	867	780	-	-	-	-	-	-	-
Stage 2	726	772	-	752	821	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.8			11			3			2.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1566	-	-	744	707	1553	-	-				
HCM Lane V/C Ratio	0.024	-	-	0.168	0.154	0.011	-	-				
HCM Control Delay (s)	7.4	0	-	10.8	11	7.3	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.5	0	-	-				

Existing

Synchro 9 Report
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HCM 2010 TWSC
6: Alder St & Sanders Rd

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	61	22	20	44	28	9
Future Vol, veh/h	61	22	20	44	28	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	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	24	22	48	30	10
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	90	0	169	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	91	-
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	-	-	1505	-	821	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1505	-	809	983
Mov Cap-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	919	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	2.3		9.4		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	809	983	-	-	1505	-
HCM Lane V/C Ratio	0.038	0.01	-	-	0.014	-
HCM Control Delay (s)	9.6	8.7	-	-	7.4	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Existing

Synchro 9 Report
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HCM 2010 AWSC
7: Water Street & Idaho St

Intersection												
Intersection Delay, s/veh	8.8											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1	19	19	0	6	35	208	36	6	110	7
Future Vol, veh/h	3	1	19	19	0	6	35	208	36	6	110	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	21	21	0	7	38	226	39	7	120	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	7.6			8.1			9.3			8.2		
HCM LOS	A			A			A			A		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	13%	13%	76%	5%								
Vol Thru, %	75%	4%	0%	89%								
Vol Right, %	13%	83%	24%	6%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	279	23	25	123								
LT Vol	35	3	19	6								
Through Vol	208	1	0	110								
RT Vol	36	19	6	7								
Lane Flow Rate	303	25	27	134								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.343	0.031	0.037	0.161								
Departure Headway (Hd)	4.073	4.443	4.917	4.332								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	870	809	731	832								
Service Time	2.153	2.451	2.926	2.338								
HCM Lane V/C Ratio	0.348	0.031	0.037	0.161								
HCM Control Delay	9.3	7.6	8.1	8.2								
HCM Lane LOS	A	A	A	A								
HCM 95th-tile Q	1.5	0.1	0.1	0.6								

Existing

Synchro 9 Report
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HCM 2010 AWSC
8: Water Street & Helena Avenue

Intersection												
Intersection Delay, s/veh	8.9											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	5	4	121	2	10	16	77	167	26	134	2
Future Vol, veh/h	10	5	4	121	2	10	16	77	167	26	134	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	5	4	132	2	11	17	84	182	28	146	2
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			1			1			1		
HCM Control Delay	8.3			9.4			8.5			9.2		
HCM LOS	A			A			A			A		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1							
Vol Left, %	17%	0%	53%	91%	16%							
Vol Thru, %	83%	0%	26%	2%	83%							
Vol Right, %	0%	100%	21%	8%	1%							
Sign Control	Stop	Stop	Stop	Stop	Stop							
Traffic Vol by Lane	93	167	19	133	162							
LT Vol	16	0	10	121	26							
Through Vol	77	0	5	2	134							
RT Vol	0	167	4	10	2							
Lane Flow Rate	101	182	21	145	176							
Geometry Grp	7	7	2	2	5							
Degree of Util (X)	0.145	0.221	0.029	0.204	0.232							
Departure Headway (Hd)	5.171	4.381	5.104	5.073	4.753							
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes							
Cap	693	819	698	705	754							
Service Time	2.906	2.115	3.162	3.117	2.792							
HCM Lane V/C Ratio	0.146	0.222	0.03	0.206	0.233							
HCM Control Delay	8.8	8.4	8.3	9.4	9.2							
HCM Lane LOS	A	A	A	A	A							
HCM 95th-tile Q	0.5	0.8	0.1	0.8	0.9							

Existing

Synchro 9 Report
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HCM 2010 TWSC

9: Walnut Street/Airport Rd & Helena Avenue

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Vol, veh/h	24	61	54	9	52	29	56	151	22	20	127	24
Future Vol, veh/h	24	61	54	9	52	29	56	151	22	20	127	24
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	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	1	1	1
Mvmt Flow	26	66	59	10	57	32	61	164	24	22	138	26
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	537	505	151	555	506	176	164	0	0	188	0	0
Stage 1	195	195	-	298	298	-	-	-	-	-	-	-
Stage 2	342	310	-	257	208	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	458	473	901	445	472	872	1421	-	-	1392	-	-
Stage 1	811	743	-	715	671	-	-	-	-	-	-	-
Stage 2	677	663	-	752	734	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	379	443	901	351	442	872	1421	-	-	1392	-	-
Mov Cap-2 Maneuver	379	443	-	351	442	-	-	-	-	-	-	-
Stage 1	772	730	-	681	639	-	-	-	-	-	-	-
Stage 2	566	631	-	628	722	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	14.4			13.3			1.9			0.9		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	1421	-	-	533	351	537	1392	-	-			
HCM Lane V/C Ratio	0.043	-	-	0.283	0.028	0.164	0.016	-	-			
HCM Control Delay (s)	7.6	0	-	14.4	15.6	13	7.6	0	-			
HCM Lane LOS	A	A	-	B	C	B	A	A	-			
HCM 95th %tile Q(veh)	0.1	-	-	1.2	0.1	0.6	0	-	-			

Existing

Synchro 9 Report
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HCM 2010 TWSC
10: Wildcat Way & 18th Avenue

Intersection						
Int Delay, s/veh	8.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	368	29	22	57	368
Future Vol, veh/h	50	368	29	22	57	368
Conflicting Peds, #/hr	0	5	3	0	3	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	10	10	0	0	0	0
Mvmt Flow	54	400	32	24	62	400
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	459	0	349	263
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1113	-	652	781
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	939	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1109	-	628	774
Mov Cap-2 Maneuver	-	-	-	-	628	-
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	909	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	4.7	17.1			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	751	-	-	1109	-	
HCM Lane V/C Ratio	0.615	-	-	0.028	-	
HCM Control Delay (s)	17.1	-	-	8.3	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	4.3	-	-	0.1	-	

Existing

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HCM 2010 AWSC
11: Walnut Street & 18th Avenue

Intersection

Intersection Delay, s/veh	19.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	142	179	17	51	184	92	28	77	96	68	83	121
Future Vol, veh/h	142	179	17	51	184	92	28	77	96	68	83	121
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	1	1	1
Mvmt Flow	154	195	18	55	200	100	30	84	104	74	90	132
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	22.2	20.2	14.8	17.6
HCM LOS	C	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	42%	16%	25%
Vol Thru, %	38%	53%	56%	31%
Vol Right, %	48%	5%	28%	44%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	201	338	327	272
LT Vol	28	142	51	68
Through Vol	77	179	184	83
RT Vol	96	17	92	121
Lane Flow Rate	218	367	355	296
Geometry Grp	1	1	1	1
Degree of Util (X)	0.416	0.673	0.637	0.548
Departure Headway (Hd)	6.857	6.591	6.448	6.678
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	524	547	562	541
Service Time	4.917	4.625	4.481	4.721
HCM Lane V/C Ratio	0.416	0.671	0.632	0.547
HCM Control Delay	14.8	22.2	20.2	17.6
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	2	5	4.5	3.3

Existing

Synchro 9 Report
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HCM 2010 AWSC
12: Alder Street & 18th Avenue

Intersection

Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Vol, veh/h	23	25	57	37	30	7	79	213	40	7	134	27
Future Vol, veh/h	23	25	57	37	30	7	79	213	40	7	134	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	27	62	40	33	8	86	232	43	8	146	29
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.3	9.4	11.7	9.4
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	22%	100%	0%	4%
Vol Thru, %	64%	24%	0%	81%	80%
Vol Right, %	12%	54%	0%	19%	16%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	332	105	37	37	168
LT Vol	79	23	37	0	7
Through Vol	213	25	0	30	134
RT Vol	40	57	0	7	27
Lane Flow Rate	361	114	40	40	183
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.466	0.163	0.072	0.065	0.243
Departure Headway (Hd)	4.649	5.147	6.443	5.802	4.793
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	769	689	551	611	743
Service Time	2.707	3.235	4.236	3.595	2.863
HCM Lane V/C Ratio	0.469	0.165	0.073	0.065	0.246
HCM Control Delay	11.7	9.3	9.7	9	9.4
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	2.5	0.6	0.2	0.2	1

Existing

Synchro 9 Report
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HCM 2010 TWSC
13: Water Street & 15th Avenue

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	52	77	111	234	143	34
Future Vol, veh/h	52	77	111	234	143	34
Conflicting Peds, #/hr	1	1	1	0	0	1
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	57	84	121	254	155	37

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	672	176	193	0	-	0
Stage 1	175	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	424	872	1392	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	386	870	1391	-	-	-
Mov Cap-2 Maneuver	386	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	561	-	-	-	-	-

Approach	EB	NB		SB		
HCM Control Delay, s	13.2	2.5		0		
HCM LOS	B					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1391	-	578	-	-
HCM Lane V/C Ratio	0.087	-	0.243	-	-
HCM Control Delay (s)	7.8	-	13.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.9	-	-

Existing

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HCM 2010 TWSC
14: Main St & 14th Avenue

Intersection						
Int Delay, s/veh	5.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	97	31	126	115	36	144
Future Vol, veh/h	97	31	126	115	36	144
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	34	137	125	39	157
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	139	0	521	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	399	-
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	-	-	1445	-	516	929
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	678	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1445	-	463	929
Mov Cap-2 Maneuver	-	-	-	-	463	-
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	609	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	4.1	11.2			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	773	-	-	1445	-	
HCM Lane V/C Ratio	0.253	-	-	0.095	-	
HCM Control Delay (s)	11.2	-	-	7.8	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	1	-	-	0.3	-	

Existing

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HCM 2010 AWSC
15: Wildcat Way & 14th Avenue/Dean Nicholson Blvd

Intersection												
Intersection Delay, s/veh	21.3											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	123	147	28	133	127	14	70	213	44	20	256	105
Future Vol, veh/h	123	147	28	133	127	14	70	213	44	20	256	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	134	160	30	145	138	15	76	232	48	22	278	114
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	15.7			15.2			19			32		
HCM LOS	C			C			C			D		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	83%	0%	84%	0%	90%	0%	71%				
Vol Right, %	0%	17%	0%	16%	0%	10%	0%	29%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	70	257	123	175	133	141	20	361				
LT Vol	70	0	123	0	133	0	20	0				
Through Vol	0	213	0	147	0	127	0	256				
RT Vol	0	44	0	28	0	14	0	105				
Lane Flow Rate	76	279	134	190	145	153	22	392				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.173	0.587	0.314	0.413	0.342	0.337	0.049	0.797				
Departure Headway (Hd)	8.205	7.566	8.447	7.815	8.506	7.917	8.038	7.315				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	435	475	424	458	421	452	444	494				
Service Time	5.991	5.352	6.238	5.605	6.298	5.709	5.815	5.091				
HCM Lane V/C Ratio	0.175	0.587	0.316	0.415	0.344	0.338	0.05	0.794				
HCM Control Delay	12.7	20.7	15.1	16.1	15.7	14.7	11.2	33.2				
HCM Lane LOS	B	C	C	C	C	B	B	D				
HCM 95th-tile Q	0.6	3.7	1.3	2	1.5	1.5	0.2	7.4				

Existing

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HCM 2010 AWSC

16: Alder Street & Dean Nicholson Blvd/14th Avenue

Intersection												
Intersection Delay, s/veh	12.6											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	12	106	7	18	10	68	305	8	8	217	38
Future Vol, veh/h	59	12	106	7	18	10	68	305	8	8	217	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	1	1	1	0	0	0	0	0	0	2	2	2
Mvmt Flow	64	13	115	8	20	11	74	332	9	9	236	41
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	10.7			9.3			14.6			11.5		
HCM LOS	B			A			B			B		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	18%	33%	20%	3%								
Vol Thru, %	80%	7%	51%	83%								
Vol Right, %	2%	60%	29%	14%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	381	177	35	263								
LT Vol	68	59	7	8								
Through Vol	305	12	18	217								
RT Vol	8	106	10	38								
Lane Flow Rate	414	192	38	286								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.576	0.29	0.062	0.403								
Departure Headway (Hd)	5.005	5.43	5.902	5.079								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	725	662	605	709								
Service Time	3.005	3.47	3.954	3.108								
HCM Lane V/C Ratio	0.571	0.29	0.063	0.403								
HCM Control Delay	14.6	10.7	9.3	11.5								
HCM Lane LOS	B	B	A	B								
HCM 95th-tile Q	3.7	1.2	0.2	2								

Existing

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HCM 2010 TWSC
17: Wenas Street & University Way

Intersection						
Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰		↰	↰	↰	↰
Traffic Vol, veh/h	408	46	52	460	95	60
Future Vol, veh/h	408	46	52	460	95	60
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	2	2	1	1
Mvmt Flow	443	50	57	500	103	65
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	494	0	1082	469
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	613	-
Critical Hdwy	-	-	4.12	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.218	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1070	-	242	596
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	542	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1070	-	229	595
Mov Cap-2 Maneuver	-	-	-	-	229	-
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	513	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.9		24.8		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	229	595	-	-	1070	-
HCM Lane V/C Ratio	0.451	0.11	-	-	0.053	-
HCM Control Delay (s)	33	11.8	-	-	8.6	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.2	0.4	-	-	0.2	-

Existing

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HCM 2010 Signalized Intersection Summary
18: Water Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	420	68	78	475	121	79	254	98	41	185	67
Future Volume (veh/h)	44	420	68	78	475	121	79	254	98	41	185	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1900	1900	1810	1900	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	48	457	74	85	516	132	86	276	107	45	201	73
Adj No. of Lanes	0	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	5	5	5	5	5	5	5	5	5
Cap, veh/h	165	1451	231	224	1269	319	295	383	149	212	391	142
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	181	2520	402	278	2205	554	1069	1243	482	968	1268	460
Grp Volume(v), veh/h	292	0	287	364	0	369	86	0	383	45	0	274
Grp Sat Flow(s),veh/h/ln	1542	0	1560	1488	0	1549	1069	0	1725	968	0	1728
Q Serve(g_s), s	0.0	0.0	6.6	1.2	0.0	9.2	5.0	0.0	13.6	3.0	0.0	9.0
Cycle Q Clear(g_c), s	5.7	0.0	6.6	7.8	0.0	9.2	14.0	0.0	13.6	16.6	0.0	9.0
Prop In Lane	0.16		0.26	0.23		0.36	1.00		0.28	1.00		0.27
Lane Grp Cap(c), veh/h	948	0	898	921	0	892	295	0	532	212	0	533
V/C Ratio(X)	0.31	0.00	0.32	0.40	0.00	0.41	0.29	0.00	0.72	0.21	0.00	0.51
Avail Cap(c_a), veh/h	948	0	898	921	0	892	368	0	650	278	0	651
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	7.4	0.0	7.6	7.8	0.0	8.2	25.4	0.0	21.2	28.6	0.0	19.6
Incr Delay (d2), s/veh	0.8	0.0	0.9	1.3	0.0	1.4	0.7	0.0	3.3	0.6	0.0	0.9
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	3.0	0.0	3.0	4.0	0.0	4.2	1.5	0.0	7.0	0.8	0.0	4.4
LnGrp Delay(d),s/veh	8.3	0.0	8.6	9.1	0.0	9.6	26.0	0.0	24.6	29.2	0.0	20.5
LnGrp LOS	A		A	A		A	C		C	C		C
Approach Vol, veh/h	579			733			469			319		
Approach Delay, s/veh	8.4			9.3			24.8			21.8		
Approach LOS	A			A			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	25.3		43.7		25.3		43.7					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	26.0		35.0		26.0		35.0					
Max Q Clear Time (g_c+I1), s	16.0		8.6		18.6		11.2					
Green Ext Time (p_c), s	3.2		8.6		2.7		8.3					
Intersection Summary												
HCM 2010 Ctrl Delay				14.4								
HCM 2010 LOS				B								

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HCM 2010 Signalized Intersection Summary
19: Main St & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	332	46	32	315	82	53	141	28	181	202	141
Future Volume (veh/h)	175	332	46	32	315	82	53	141	28	181	202	141
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		0.98	1.00		0.98	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1900	1845	1845	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	190	361	50	35	342	89	58	153	30	197	220	153
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	1	1	1
Cap, veh/h	579	1515	208	561	1218	312	287	275	229	385	410	344
Arrive On Green	0.08	0.51	0.51	0.02	0.44	0.44	0.04	0.15	0.15	0.11	0.22	0.22
Sat Flow, veh/h	1707	3000	412	1757	2748	704	1774	1863	1556	1792	1881	1576
Grp Volume(v), veh/h	190	204	207	35	216	215	58	153	30	197	220	153
Grp Sat Flow(s),veh/h/ln	1707	1703	1709	1757	1752	1700	1774	1863	1556	1792	1881	1576
Q Serve(g_s), s	3.8	4.6	4.7	0.8	5.4	5.6	1.9	5.3	1.2	6.1	7.1	5.8
Cycle Q Clear(g_c), s	3.8	4.6	4.7	0.8	5.4	5.6	1.9	5.3	1.2	6.1	7.1	5.8
Prop In Lane	1.00		0.24	1.00		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	579	860	863	561	776	753	287	275	229	385	410	344
V/C Ratio(X)	0.33	0.24	0.24	0.06	0.28	0.29	0.20	0.56	0.13	0.51	0.54	0.45
Avail Cap(c_a), veh/h	622	860	863	715	776	753	412	513	429	385	518	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.2	9.6	9.6	10.1	12.2	12.2	23.7	27.3	25.6	20.3	23.9	23.4
Incr Delay (d2), s/veh	0.1	0.6	0.7	0.0	0.9	1.0	0.1	0.7	0.1	0.5	0.4	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	1.8	2.3	2.3	0.4	2.8	2.8	0.9	2.8	0.5	3.0	3.8	2.5
LnGrp Delay(d),s/veh	8.3	10.2	10.3	10.1	13.1	13.2	23.8	28.0	25.7	20.8	24.3	23.7
LnGrp LOS	A	B	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h	601			466			241			570		
Approach Delay, s/veh	9.6			12.9			26.7			22.9		
Approach LOS	A			B			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	11.0	14.2	5.0	38.9	6.1	19.0	9.3	34.6				
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0				
Max Green Setting (Gmax), s	7.5	19.0	7.5	20.0	7.5	19.0	7.5	20.0				
Max Q Clear Time (g_c+I1), s	8.1	7.3	2.8	6.7	3.9	9.1	5.8	7.6				
Green Ext Time (p_c), s	0.0	1.1	0.0	1.7	0.0	1.0	0.1	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay				16.7								
HCM 2010 LOS				B								

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HCM Signalized Intersection Capacity Analysis 20: Wildcat Way & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔		↔	↔	
Traffic Volume (vph)	23	482	84	103	505	11	102	120	124	15	80	27
Future Volume (vph)	23	482	84	103	505	11	102	120	124	15	80	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.98			1.00		1.00	0.92		1.00	0.96	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3526			3571		1805	1755		1805	1829	
Flt Permitted		0.92			0.76		0.68	1.00		0.34	1.00	
Satd. Flow (perm)		3253			2736		1296	1755		654	1829	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	524	91	112	549	12	111	130	135	16	87	29
RTOR Reduction (vph)	0	13	0	0	1	0	0	67	0	0	22	0
Lane Group Flow (vph)	0	627	0	0	672	0	111	198	0	16	94	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		47.7			47.7		13.3	13.3		13.3	13.3	
Effective Green, g (s)		47.7			47.7		13.3	13.3		13.3	13.3	
Actuated g/C Ratio		0.69			0.69		0.19	0.19		0.19	0.19	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		0.2			0.2		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		2248			1891		249	338		126	352	
v/s Ratio Prot							c0.11				0.05	
v/s Ratio Perm		0.19			c0.25		0.09			0.02		
v/c Ratio		0.28			0.36		0.45	0.59		0.13	0.27	
Uniform Delay, d1		4.1			4.4		24.6	25.3		23.0	23.7	
Progression Factor		1.08			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.5		1.3	2.6		0.5	0.4	
Delay (s)		4.7			4.9		25.9	27.9		23.5	24.1	
Level of Service		A			A		C	C		C	C	
Approach Delay (s)		4.7			4.9			27.3			24.0	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		10.8					HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio		0.41										
Actuated Cycle Length (s)		69.0					Sum of lost time (s)			8.0		
Intersection Capacity Utilization		57.9%					ICU Level of Service			B		
Analysis Period (min)		15										
c Critical Lane Group												

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HCM Signalized Intersection Capacity Analysis 21: Walnut Street & University Way

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	↑
Traffic Volume (vph)	743	32	12	700	26	24
Future Volume (vph)	743	32	12	700	26	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.5	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.99			1.00	0.94	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	3517			3536	1698	
Flt Permitted	1.00			0.94	0.97	
Satd. Flow (perm)	3517			3330	1698	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	808	35	13	761	28	26
RTOR Reduction (vph)	2	0	0	0	24	0
Lane Group Flow (vph)	841	0	0	774	30	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			2	8	
Permitted Phases			2			
Actuated Green, G (s)	57.3			57.3	4.7	
Effective Green, g (s)	57.3			57.3	4.7	
Actuated g/C Ratio	0.81			0.81	0.07	
Clearance Time (s)	4.0			4.0	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2858			2706	113	
v/s Ratio Prot	c0.24				c0.02	
v/s Ratio Perm				0.23		
v/c Ratio	0.29			0.29	0.26	
Uniform Delay, d1	1.6			1.6	31.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.3			0.3	1.2	
Delay (s)	1.9			1.9	32.5	
Level of Service	A			A	C	
Approach Delay (s)	1.9			1.9	32.5	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			2.9		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.29			
Actuated Cycle Length (s)			70.5		Sum of lost time (s)	8.5
Intersection Capacity Utilization			39.1%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Existing

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HCM 2010 Signalized Intersection Summary
22: Chestnut Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	452	1	30	495	80	25	59	54	72	24	268
Future Volume (veh/h)	213	452	1	30	495	80	25	59	54	72	24	268
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	232	491	1	33	538	87	27	64	59	78	26	291
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	1	1	1	0	0	0	1	1	1
Cap, veh/h	544	1925	4	572	1459	235	197	246	226	372	36	400
Arrive On Green	0.09	0.53	0.53	0.03	0.48	0.48	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1774	3623	7	1792	3064	493	1072	899	829	1264	131	1465
Grp Volume(v), veh/h	232	240	252	33	313	312	27	0	123	78	0	317
Grp Sat Flow(s),veh/h/ln	1774	1770	1861	1792	1787	1770	1072	0	1728	1264	0	1596
Q Serve(g_s), s	4.5	5.4	5.4	0.7	8.2	8.3	1.7	0.0	4.1	3.8	0.0	13.3
Cycle Q Clear(g_c), s	4.5	5.4	5.4	0.7	8.2	8.3	15.1	0.0	4.1	7.9	0.0	13.3
Prop In Lane	1.00		0.00	1.00		0.28	1.00		0.48	1.00		0.92
Lane Grp Cap(c), veh/h	544	940	989	572	851	843	197	0	472	372	0	436
V/C Ratio(X)	0.43	0.26	0.26	0.06	0.37	0.37	0.14	0.00	0.26	0.21	0.00	0.73
Avail Cap(c_a), veh/h	555	940	989	875	851	843	252	0	560	437	0	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.1	9.4	9.4	9.1	12.3	12.3	31.2	0.0	21.0	24.1	0.0	24.4
Incr Delay (d2), s/veh	0.5	0.7	0.6	0.0	1.2	1.2	0.4	0.0	0.4	0.4	0.0	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	2.2	2.8	2.9	0.3	4.3	4.3	0.5	0.0	2.0	1.4	0.0	6.4
LnGrp Delay(d),s/veh	8.6	10.1	10.0	9.1	13.5	13.6	31.7	0.0	21.5	24.5	0.0	29.3
LnGrp LOS	A	B	B	A	B	B	C		C	C		C
Approach Vol, veh/h	724			658			150			395		
Approach Delay, s/veh	9.6			13.3			23.3			28.3		
Approach LOS	A			B			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	43.3		24.2	10.5	39.2		24.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	15.0	23.0		24.0	7.0	31.0		24.0				
Max Q Clear Time (g_c+I1), s	2.7	7.4		15.3	6.5	10.3		17.1				
Green Ext Time (p_c), s	0.0	6.3		2.4	0.0	7.2		2.0				
Intersection Summary												
HCM 2010 Ctrl Delay				15.8								
HCM 2010 LOS				B								

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HCM 2010 Signalized Intersection Summary
23: Alder Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	503	8	2	294	78	7	0	3	88	3	202
Future Volume (veh/h)	222	503	8	2	294	78	7	0	3	88	3	202
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	241	547	9	2	320	85	8	0	3	96	3	220
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	531	1817	30	454	1416	371	414	13	129	657	19	633
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.39	0.00	0.39	0.39	0.39	0.39
Sat Flow, veh/h	996	3635	60	866	2833	741	841	34	328	1431	49	1615
Grp Volume(v), veh/h	241	272	284	2	202	203	11	0	0	99	0	220
Grp Sat Flow(s),veh/h/ln	996	1805	1889	866	1805	1769	1203	0	0	1480	0	1615
Q Serve(g_s), s	13.3	6.6	6.6	0.1	4.7	4.8	0.0	0.0	0.0	0.0	0.0	7.1
Cycle Q Clear(g_c), s	18.1	6.6	6.6	6.7	4.7	4.8	2.6	0.0	0.0	2.6	0.0	7.1
Prop In Lane	1.00		0.03	1.00		0.42	0.73		0.27	0.97		1.00
Lane Grp Cap(c), veh/h	531	903	945	454	903	885	556	0	0	676	0	633
V/C Ratio(X)	0.45	0.30	0.30	0.00	0.22	0.23	0.02	0.00	0.00	0.15	0.00	0.35
Avail Cap(c_a), veh/h	531	903	945	454	903	885	556	0	0	676	0	633
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	10.9	10.9	12.8	10.4	10.4	13.8	0.0	0.0	14.5	0.0	15.8
Incr Delay (d2), s/veh	2.8	0.9	0.8	0.0	0.6	0.6	0.1	0.0	0.0	0.5	0.0	1.5
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	4.0	3.5	3.6	0.0	2.4	2.5	0.1	0.0	0.0	1.4	0.0	3.4
LnGrp Delay(d),s/veh	18.4	11.7	11.7	12.9	11.0	11.1	13.9	0.0	0.0	14.9	0.0	17.3
LnGrp LOS	B	B	B	B	B	B	B			B		B
Approach Vol, veh/h	797			407			11			319		
Approach Delay, s/veh	13.7			11.0			13.9			16.6		
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	41.0		33.0		41.0		33.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	37.0		29.0		37.0		29.0					
Max Q Clear Time (g_c+I1), s	20.1		4.6		8.7		9.1					
Green Ext Time (p_c), s	8.6		1.4		11.2		1.3					
Intersection Summary												
HCM 2010 Ctrl Delay	13.6											
HCM 2010 LOS	B											

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HCM 2010 Signalized Intersection Summary
24: Pfenning Rd & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	289	48	49	153	18	22	302	71	20	28	18
Future Volume (veh/h)	43	289	48	49	153	18	22	302	71	20	28	18
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	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	47	314	52	53	166	20	24	328	77	22	30	20
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	579	560	93	437	586	71	141	490	111	258	304	157
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1193	1559	258	1012	1631	197	46	1422	321	300	883	455
Grp Volume(v), veh/h	47	0	366	53	0	186	429	0	0	72	0	0
Grp Sat Flow(s),veh/h/ln	1193	0	1817	1012	0	1828	1789	0	0	1638	0	0
Q Serve(g_s), s	0.9	0.0	4.9	1.3	0.0	2.2	0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	4.9	6.3	0.0	2.2	6.2	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.11	0.06		0.18	0.31		0.28
Lane Grp Cap(c), veh/h	579	0	653	437	0	657	741	0	0	719	0	0
V/C Ratio(X)	0.08	0.00	0.56	0.12	0.00	0.28	0.58	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	856	0	1076	672	0	1082	1179	0	0	1066	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.0	0.0	7.8	10.3	0.0	6.9	8.6	0.0	0.0	6.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.8	0.1	0.0	0.2	0.7	0.0	0.0	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	0.3	0.0	2.6	0.4	0.0	1.1	3.1	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	8.1	0.0	8.6	10.4	0.0	7.2	9.3	0.0	0.0	6.9	0.0	0.0
LnGrp LOS	A		A	B		A	A			A		
Approach Vol, veh/h	413			239			429			72		
Approach Delay, s/veh	8.5			7.9			9.3			6.9		
Approach LOS	A			A			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	15.0		15.4		15.0		15.4					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	8.2		6.9		2.8		8.3					
Green Ext Time (p_c), s	2.3		2.9		2.8		2.7					
Intersection Summary												
HCM 2010 Ctrl Delay				8.6								
HCM 2010 LOS				A								

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HCM 2010 TWSC
25: 5th Avenue & Railroad Avenue

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	2	19	0	62	34	181	0	33	63	180	46	3
Future Vol, veh/h	2	19	0	62	34	181	0	33	63	180	46	3
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	-	-	-	0	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	21	0	67	37	197	0	36	68	196	50	3

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	630	547	52	523	515	70	53	0
Stage 1	443	443	-	70	70	-	-	-
Stage 2	187	104	-	453	445	-	-	-
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	394	445	1016	465	464	993	1553	-
Stage 1	594	576	-	940	837	-	-	-
Stage 2	815	809	-	586	575	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	265	386	1016	401	403	993	1553	-
Mov Cap-2 Maneuver	265	386	-	401	403	-	-	-
Stage 1	594	500	-	940	837	-	-	-
Stage 2	625	809	-	488	499	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	12.3	0	6.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1553	-	-	370	401	806	1488	-	-
HCM Lane V/C Ratio	-	-	-	0.062	0.168	0.29	0.131	-	-
HCM Control Delay (s)	0	-	-	15.4	15.8	11.3	7.8	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.6	1.2	0.5	-	-

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HCM 2010 Signalized Intersection Summary
26: Water Street & 5th Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	89	73	40	54	19	88	360	36	40	397	30
Future Volume (veh/h)	39	89	73	40	54	19	88	360	36	40	397	30
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)	0.99		0.99	1.00		0.99	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	1792	1792	1900	1743	1743	1900	1881	1881	1900	1863	1863	1900
Adj Flow Rate, veh/h	42	97	79	43	59	21	96	391	39	43	432	33
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	9	9	9	1	1	1	2	2	2
Cap, veh/h	288	171	139	206	229	82	658	1173	117	681	1191	91
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	1256	912	743	1121	1226	436	932	1683	168	953	1709	131
Grp Volume(v), veh/h	42	0	176	43	0	80	96	0	430	43	0	465
Grp Sat Flow(s),veh/h/ln	1256	0	1654	1121	0	1662	932	0	1851	953	0	1839
Q Serve(g_s), s	2.0	0.0	6.7	2.5	0.0	2.8	3.2	0.0	6.3	1.3	0.0	7.1
Cycle Q Clear(g_c), s	4.9	0.0	6.7	9.2	0.0	2.8	10.3	0.0	6.3	7.6	0.0	7.1
Prop In Lane	1.00		0.45	1.00		0.26	1.00		0.09	1.00		0.07
Lane Grp Cap(c), veh/h	288	0	310	206	0	311	658	0	1290	681	0	1282
V/C Ratio(X)	0.15	0.00	0.57	0.21	0.00	0.26	0.15	0.00	0.33	0.06	0.00	0.36
Avail Cap(c_a), veh/h	489	0	575	386	0	578	658	0	1290	681	0	1282
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	26.0	0.0	25.5	29.7	0.0	23.9	6.3	0.0	4.1	5.6	0.0	4.2
Incr Delay (d2), s/veh	0.3	0.0	2.3	0.7	0.0	0.6	0.5	0.0	0.7	0.2	0.0	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	0.7	0.0	3.2	0.8	0.0	1.3	0.9	0.0	3.5	0.4	0.0	3.8
LnGrp Delay(d),s/veh	26.4	0.0	27.8	30.4	0.0	24.6	6.8	0.0	4.8	5.8	0.0	5.0
LnGrp LOS	C		C	C		C	A		A	A		A
Approach Vol, veh/h	218			123			526			508		
Approach Delay, s/veh	27.5			26.6			5.2			5.1		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	52.1		16.9		52.1		16.9					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	37.0		24.0		37.0		24.0					
Max Q Clear Time (g_c+I1), s	12.3		8.7		9.6		11.2					
Green Ext Time (p_c), s	5.1		1.8		5.2		1.7					
Intersection Summary												
HCM 2010 Ctrl Delay				10.6								
HCM 2010 LOS				B								

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HCM 2010 Signalized Intersection Summary
27: Main St & 5th Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	26	131	49	79	157	41	32	446	31	27	417	23
Future Volume (veh/h)	26	131	49	79	157	41	32	446	31	27	417	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	28	142	53	86	171	45	35	485	34	29	453	25
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	359	314	117	390	389	102	411	871	61	381	886	49
Arrive On Green	0.03	0.25	0.25	0.06	0.28	0.28	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	1740	1257	469	1757	1395	367	912	1717	120	879	1746	96
Grp Volume(v), veh/h	28	0	195	86	0	216	35	0	519	29	0	478
Grp Sat Flow(s),veh/h/ln	1740	0	1726	1757	0	1762	912	0	1837	879	0	1843
Q Serve(g_s), s	0.8	0.0	6.5	2.4	0.0	6.9	1.8	0.0	13.2	1.6	0.0	11.7
Cycle Q Clear(g_c), s	0.8	0.0	6.5	2.4	0.0	6.9	13.5	0.0	13.2	14.8	0.0	11.7
Prop In Lane	1.00		0.27	1.00		0.21	1.00		0.07	1.00		0.05
Lane Grp Cap(c), veh/h	359	0	432	390	0	491	411	0	932	381	0	934
V/C Ratio(X)	0.08	0.00	0.45	0.22	0.00	0.44	0.09	0.00	0.56	0.08	0.00	0.51
Avail Cap(c_a), veh/h	435	0	432	415	0	491	411	0	932	381	0	934
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	18.1	0.0	21.6	17.4	0.0	20.2	15.7	0.0	11.5	16.6	0.0	11.2
Incr Delay (d2), s/veh	0.1	0.0	3.4	0.3	0.0	2.8	0.4	0.0	2.4	0.4	0.0	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	0.4	0.0	3.5	1.2	0.0	3.7	0.5	0.0	7.3	0.4	0.0	6.5
LnGrp Delay(d),s/veh	18.2	0.0	25.0	17.7	0.0	23.0	16.1	0.0	13.9	17.0	0.0	13.2
LnGrp LOS	B		C	B		C	B		B	B		B
Approach Vol, veh/h	223			302			554			507		
Approach Delay, s/veh	24.1			21.5			14.0			13.4		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	21.0		38.5	6.6	23.0		38.5				
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		4.0				
Max Green Setting (Gmax), s	5.0	17.0		33.0	5.0	17.0		33.0				
Max Q Clear Time (g_c+I1), s	4.4	8.5		16.8	2.8	8.9		15.5				
Green Ext Time (p_c), s	0.0	1.1		4.6	0.0	1.1		4.7				
Intersection Summary												
HCM 2010 Ctrl Delay				16.7								
HCM 2010 LOS				B								

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Synchro 9 Report
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HCM 2010 AWSC
28: Ruby Street & 5th Avenue

Intersection												
Intersection Delay, s/veh	18.3											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	151	75	81	155	11	151	157	70	43	152	31
Future Vol, veh/h	18	151	75	81	155	11	151	157	70	43	152	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	164	82	88	168	12	164	171	76	47	165	34
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	15.5			16.4			23.2			15		
HCM LOS	C			C			C			B		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	40%	7%	33%	19%								
Vol Thru, %	42%	62%	63%	67%								
Vol Right, %	19%	31%	4%	14%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	378	244	247	226								
LT Vol	151	18	81	43								
Through Vol	157	151	155	152								
RT Vol	70	75	11	31								
Lane Flow Rate	411	265	268	246								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.71	0.48	0.5	0.449								
Departure Headway (Hd)	6.222	6.519	6.7	6.584								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	579	549	534	543								
Service Time	4.292	4.599	4.781	4.668								
HCM Lane V/C Ratio	0.71	0.483	0.502	0.453								
HCM Control Delay	23.2	15.5	16.4	15								
HCM Lane LOS	C	C	C	B								
HCM 95th-tile Q	5.8	2.6	2.8	2.3								

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HCM 2010 TWSC
29: Chestnut Street & 5th Avenue

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	3	2	9	5	21	2	333	4	11	283	3
Future Vol, veh/h	2	3	2	9	5	21	2	333	4	11	283	3
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	0	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	2	10	5	23	2	362	4	12	308	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	716	704	309	704	703	364	311	0	0	366	0	0
Stage 1	333	333	-	368	368	-	-	-	-	-	-	-
Stage 2	383	371	-	336	335	-	-	-	-	-	-	-
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	345	361	731	352	362	681	1249	-	-	1193	-	-
Stage 1	681	644	-	652	621	-	-	-	-	-	-	-
Stage 2	640	620	-	678	643	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	327	357	731	345	358	681	1249	-	-	1193	-	-
Mov Cap-2 Maneuver	327	357	-	345	358	-	-	-	-	-	-	-
Stage 1	680	638	-	651	620	-	-	-	-	-	-	-
Stage 2	612	619	-	666	637	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	14			12.9			0			0.3		
HCM LOS	B			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1249	-	-	327	449	494	1193	-	-
HCM Lane V/C Ratio	0.002	-	-	0.007	0.012	0.077	0.01	-	-
HCM Control Delay (s)	7.9	-	-	16.1	13.1	12.9	8	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.2	0	-	-

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HCM 2010 Signalized Intersection Summary
30: Water Street & 3rd Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	81	71	44	83	43	27	362	40	68	382	16
Future Volume (veh/h)	7	81	71	44	83	43	27	362	40	68	382	16
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)	0.99		0.99	0.99		0.99	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	1845	1845	1900	1845	1845	1900	1863	1863	1900	1827	1827	1900
Adj Flow Rate, veh/h	8	88	77	48	90	47	29	393	43	74	415	17
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	2	2	2	4	4	4
Cap, veh/h	239	162	142	213	205	107	687	1162	127	673	1228	50
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	1228	904	791	1196	1139	595	952	1650	181	930	1743	71
Grp Volume(v), veh/h	8	0	165	48	0	137	29	0	436	74	0	432
Grp Sat Flow(s),veh/h/ln	1228	0	1695	1196	0	1734	952	0	1830	930	0	1814
Q Serve(g_s), s	0.4	0.0	6.1	2.6	0.0	4.9	0.8	0.0	6.4	2.3	0.0	6.4
Cycle Q Clear(g_c), s	5.3	0.0	6.1	8.7	0.0	4.9	7.2	0.0	6.4	8.7	0.0	6.4
Prop In Lane	1.00		0.47	1.00		0.34	1.00		0.10	1.00		0.04
Lane Grp Cap(c), veh/h	239	0	305	213	0	312	687	0	1289	673	0	1278
V/C Ratio(X)	0.03	0.00	0.54	0.22	0.00	0.44	0.04	0.00	0.34	0.11	0.00	0.34
Avail Cap(c_a), veh/h	356	0	467	328	0	477	687	0	1289	673	0	1278
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	27.5	0.0	25.7	29.7	0.0	25.2	5.4	0.0	4.0	5.6	0.0	4.0
Incr Delay (d2), s/veh	0.1	0.0	2.1	0.8	0.0	1.4	0.1	0.0	0.7	0.3	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	0.1	0.0	3.0	0.9	0.0	2.4	0.2	0.0	3.4	0.7	0.0	3.4
LnGrp Delay(d),s/veh	27.6	0.0	27.8	30.4	0.0	26.6	5.5	0.0	4.7	6.0	0.0	4.7
LnGrp LOS	C		C	C		C	A		A	A		A
Approach Vol, veh/h	173			185			465			506		
Approach Delay, s/veh	27.8			27.6			4.7			4.9		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	52.6		16.4		52.6		16.4					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	42.0		19.0		42.0		19.0					
Max Q Clear Time (g_c+I1), s	9.2		8.1		10.7		10.7					
Green Ext Time (p_c), s	4.9		1.6		4.8		1.4					
Intersection Summary												
HCM 2010 Ctrl Delay				11.0								
HCM 2010 LOS				B								

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HCM Signalized Intersection Capacity Analysis

31: Main St & 3rd Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	119	32	98	110	79	32	578	60	69	576	22
Future Volume (vph)	32	119	32	98	110	79	32	578	60	69	576	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Grpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1759	1790		1781	1743		1766	1831		1768	1851	
Flt Permitted	0.53	1.00		0.61	1.00		0.32	1.00		0.30	1.00	
Satd. Flow (perm)	978	1790		1137	1743		598	1831		549	1851	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	129	35	107	120	86	35	628	65	75	626	24
RTOR Reduction (vph)	0	15	0	0	40	0	0	5	0	0	2	0
Lane Group Flow (vph)	35	149	0	107	166	0	35	688	0	75	648	0
Confl. Peds. (#/hr)	4		4	2		3	3		4	2		2
Confl. Bikes (#/hr)			3			1			4			3
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	17.0	17.0		17.0	17.0		44.0	44.0		44.0	44.0	
Effective Green, g (s)	17.0	17.0		17.0	17.0		44.0	44.0		44.0	44.0	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.64	0.64		0.64	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	240	441		280	429		381	1167		350	1180	
v/s Ratio Prot		0.08			c0.10			c0.38			0.35	
v/s Ratio Perm	0.04			0.09			0.06			0.14		
v/c Ratio	0.15	0.34		0.38	0.39		0.09	0.59		0.21	0.55	
Uniform Delay, d1	20.3	21.4		21.6	21.7		4.8	7.3		5.2	7.0	
Progression Factor	1.21	1.18		1.00	1.00		0.73	1.18		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.3	0.2		0.4	2.0		1.4	1.8	
Delay (s)	24.8	25.4		21.9	21.9		4.0	10.6		6.6	8.8	
Level of Service	C	C		C	C		A	B		A	A	
Approach Delay (s)		25.3			21.9			10.3			8.6	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay			13.0			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			69.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			95.7%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

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HCM 2010 AWSC
32: Ruby Street & 3rd Avenue

Intersection												
Intersection Delay, s/veh	20											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	159	36	28	130	26	29	176	33	42	212	130
Future Vol, veh/h	130	159	36	28	130	26	29	176	33	42	212	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	141	173	39	30	141	28	32	191	36	46	230	141
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	21.2			14.6			16.1			24		
HCM LOS	C			B			C			C		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	12%	40%	15%	11%								
Vol Thru, %	74%	49%	71%	55%								
Vol Right, %	14%	11%	14%	34%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	238	325	184	384								
LT Vol	29	130	28	42								
Through Vol	176	159	130	212								
RT Vol	33	36	26	130								
Lane Flow Rate	259	353	200	417								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.489	0.647	0.392	0.721								
Departure Headway (Hd)	6.803	6.708	7.054	6.323								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	533	540	512	576								
Service Time	4.803	4.708	5.071	4.323								
HCM Lane V/C Ratio	0.486	0.654	0.391	0.724								
HCM Control Delay	16.1	21.2	14.6	24								
HCM Lane LOS	C	C	B	C								
HCM 95th-tile Q	2.7	4.6	1.8	6								

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HCM 2010 AWSC
33: Chestnut Street & 3rd Avenue

Intersection												
Intersection Delay, s/veh	11.3											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	63	21	6	44	48	28	205	13	60	228	36
Future Vol, veh/h	45	63	21	6	44	48	28	205	13	60	228	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	68	23	7	48	52	30	223	14	65	248	39
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	10.4			9.7			11.4			12		
HCM LOS	B			A			B			B		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2						
Vol Left, %	100%	0%	35%	6%	100%	0%						
Vol Thru, %	0%	94%	49%	45%	0%	86%						
Vol Right, %	0%	6%	16%	49%	0%	14%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	28	218	129	98	60	264						
LT Vol	28	0	45	6	60	0						
Through Vol	0	205	63	44	0	228						
RT Vol	0	13	21	48	0	36						
Lane Flow Rate	30	237	140	107	65	287						
Geometry Grp	7	7	2	2	7	7						
Degree of Util (X)	0.052	0.372	0.222	0.164	0.111	0.439						
Departure Headway (Hd)	6.206	5.657	5.711	5.537	6.105	5.503						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	578	637	628	647	588	654						
Service Time	3.934	3.386	3.75	3.577	3.83	3.227						
HCM Lane V/C Ratio	0.052	0.372	0.223	0.165	0.111	0.439						
HCM Control Delay	9.3	11.7	10.4	9.7	9.6	12.5						
HCM Lane LOS	A	B	B	A	A	B						
HCM 95th-tile Q	0.2	1.7	0.8	0.6	0.4	2.2						

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HCM 2010 Signalized Intersection Summary
34: Water Street & Capitol Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	84	59	4	62	63	23	221	26	49	321	63
Future Volume (veh/h)	56	84	59	4	62	63	23	221	26	49	321	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1900	1900	1827	1827	1900	1900	1863	1863
Adj Flow Rate, veh/h	61	91	64	4	67	68	25	240	28	53	349	68
Adj No. of Lanes	0	1	1	1	1	0	1	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	4	4	4	2	2	2
Cap, veh/h	138	163	275	170	149	151	704	1144	133	178	1126	1127
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	376	945	1599	1251	866	879	947	1606	187	167	1582	1583
Grp Volume(v), veh/h	152	0	64	4	0	135	25	0	268	402	0	68
Grp Sat Flow(s),veh/h/ln	1321	0	1599	1251	0	1745	947	0	1794	1749	0	1583
Q Serve(g_s), s	3.4	0.0	2.4	0.2	0.0	4.8	0.7	0.0	3.5	0.0	0.0	0.9
Cycle Q Clear(g_c), s	8.2	0.0	2.4	8.4	0.0	4.8	6.1	0.0	3.5	5.5	0.0	0.9
Prop In Lane	0.40		1.00	1.00		0.50	1.00		0.10	0.13		1.00
Lane Grp Cap(c), veh/h	300	0	275	170	0	300	704	0	1277	1304	0	1127
V/C Ratio(X)	0.51	0.00	0.23	0.02	0.00	0.45	0.04	0.00	0.21	0.31	0.00	0.06
Avail Cap(c_a), veh/h	554	0	533	372	0	582	704	0	1277	1304	0	1127
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	27.0	0.0	24.6	31.1	0.0	25.6	4.8	0.0	3.4	3.6	0.0	3.0
Incr Delay (d2), s/veh	1.6	0.0	0.5	0.1	0.0	1.3	0.1	0.0	0.4	0.6	0.0	0.1
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	2.9	0.0	1.1	0.1	0.0	2.4	0.2	0.0	1.8	3.0	0.0	0.4
LnGrp Delay(d),s/veh	28.6	0.0	25.2	31.1	0.0	26.9	4.9	0.0	3.7	4.3	0.0	3.1
LnGrp LOS	C		C	C		C	A		A	A		A
Approach Vol, veh/h	216			139			293			470		
Approach Delay, s/veh	27.6			27.0			3.8			4.1		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	53.1		15.9		53.1		15.9					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	38.0		23.0		38.0		23.0					
Max Q Clear Time (g_c+I1), s	8.1		10.2		7.5		10.4					
Green Ext Time (p_c), s	3.5		1.4		3.5		1.4					
Intersection Summary												
HCM 2010 Ctrl Delay	11.4											
HCM 2010 LOS	B											

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HCM 2010 Signalized Intersection Summary
35: Main St & Capitol Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	80	23	97	75	59	19	564	34	47	522	27
Future Volume (veh/h)	49	80	23	97	75	59	19	564	34	47	522	27
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	1881	1881	1900	1881	1881	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	53	87	25	105	82	64	21	613	37	51	567	29
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	3	3	3
Cap, veh/h	234	251	72	265	175	137	560	1215	73	522	1227	63
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	1249	1406	404	1288	981	765	811	1722	104	771	1740	89
Grp Volume(v), veh/h	53	0	112	105	0	146	21	0	650	51	0	596
Grp Sat Flow(s),veh/h/ln	1249	0	1810	1288	0	1746	811	0	1826	771	0	1829
Q Serve(g_s), s	2.7	0.0	3.7	5.4	0.0	5.2	0.8	0.0	11.2	2.2	0.0	9.8
Cycle Q Clear(g_c), s	7.9	0.0	3.7	9.1	0.0	5.2	10.6	0.0	11.2	13.5	0.0	9.8
Prop In Lane	1.00		0.22	1.00		0.44	1.00		0.06	1.00		0.05
Lane Grp Cap(c), veh/h	234	0	324	265	0	312	560	0	1288	522	0	1290
V/C Ratio(X)	0.23	0.00	0.35	0.40	0.00	0.47	0.04	0.00	0.50	0.10	0.00	0.46
Avail Cap(c_a), veh/h	391	0	551	427	0	531	560	0	1288	522	0	1290
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	28.9	0.0	24.8	28.8	0.0	25.4	6.8	0.0	4.7	7.7	0.0	4.4
Incr Delay (d2), s/veh	0.5	0.0	0.6	1.0	0.0	1.1	0.1	0.0	1.4	0.4	0.0	1.2
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	1.0	0.0	1.9	2.0	0.0	2.6	0.2	0.0	6.1	0.5	0.0	5.2
LnGrp Delay(d),s/veh	29.4	0.0	25.4	29.7	0.0	26.5	6.9	0.0	6.1	8.1	0.0	5.6
LnGrp LOS	C		C	C		C	A		A	A		A
Approach Vol, veh/h	165			251			671			647		
Approach Delay, s/veh	26.7			27.8			6.1			5.8		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	52.7		16.3		52.7		16.3					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	40.0		21.0		40.0		21.0					
Max Q Clear Time (g_c+I1), s	13.2		9.9		15.5		11.1					
Green Ext Time (p_c), s	7.2		1.3		7.1		1.2					
Intersection Summary												
HCM 2010 Ctrl Delay				11.1								
HCM 2010 LOS				B								

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HCM 2010 AWSC
36: Chestnut Street & Capitol Avenue

Intersection												
Intersection Delay, s/veh	10.1											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	75	13	14	47	33	15	181	18	42	198	19
Future Vol, veh/h	24	75	13	14	47	33	15	181	18	42	198	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	82	14	15	51	36	16	197	20	46	215	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	9.5			9.1			10.1			10.7		
HCM LOS	A			A			B			B		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	7%	21%	15%	16%								
Vol Thru, %	85%	67%	50%	76%								
Vol Right, %	8%	12%	35%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	214	112	94	259								
LT Vol	15	24	14	42								
Through Vol	181	75	47	198								
RT Vol	18	13	33	19								
Lane Flow Rate	233	122	102	282								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.311	0.178	0.146	0.374								
Departure Headway (Hd)	4.815	5.261	5.143	4.781								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	740	674	690	746								
Service Time	2.888	3.351	3.235	2.85								
HCM Lane V/C Ratio	0.315	0.181	0.148	0.378								
HCM Control Delay	10.1	9.5	9.1	10.7								
HCM Lane LOS	B	A	A	B								
HCM 95th-tile Q	1.3	0.6	0.5	1.7								

Existing

Synchro 9 Report
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HCM 2010 TWSC
37: Willow Street & Capitol Avenue

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	83	40	57	79	15	41
Future Vol, veh/h	83	40	57	79	15	41
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	43	62	86	16	45

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	134	0	322	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	210	-
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	-	-	1451	-	672	941
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1451	-	643	941
Mov Cap-2 Maneuver	-	-	-	-	643	-
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	790	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	9.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	837	-	-	1451	-
HCM Lane V/C Ratio	0.073	-	-	0.043	-
HCM Control Delay (s)	9.6	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Existing

Synchro 9 Report
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HCM 2010 Signalized Intersection Summary
38: Main Street & Manitoba Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	34	276	20	44	34	160	654	10	23	639	17
Future Volume (veh/h)	22	34	276	20	44	34	160	654	10	23	639	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1900	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	24	37	300	22	48	37	174	711	11	25	695	18
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	0	0	0	1	1	1
Cap, veh/h	190	263	365	106	203	130	408	1224	19	431	968	25
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.07	0.66	0.66	0.53	0.53	0.53
Sat Flow, veh/h	514	1154	1599	188	892	571	1810	1866	29	735	1826	47
Grp Volume(v), veh/h	61	0	300	107	0	0	174	0	722	25	0	713
Grp Sat Flow(s),veh/h/ln	1669	0	1599	1650	0	0	1810	0	1895	735	0	1873
Q Serve(g_s), s	0.0	0.0	12.3	0.0	0.0	0.0	2.7	0.0	14.6	1.3	0.0	19.9
Cycle Q Clear(g_c), s	1.8	0.0	12.3	3.4	0.0	0.0	2.7	0.0	14.6	7.3	0.0	19.9
Prop In Lane	0.39		1.00	0.21		0.35	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	453	0	365	439	0	0	408	0	1243	431	0	993
V/C Ratio(X)	0.13	0.00	0.82	0.24	0.00	0.00	0.43	0.00	0.58	0.06	0.00	0.72
Avail Cap(c_a), veh/h	576	0	487	558	0	0	469	0	1243	431	0	993
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	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	25.3	21.9	0.0	0.0	9.9	0.0	6.6	11.0	0.0	12.3
Incr Delay (d2), s/veh	0.2	0.0	8.9	0.3	0.0	0.0	0.7	0.0	2.0	0.3	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	6.3	1.7	0.0	0.0	1.4	0.0	8.1	0.3	0.0	11.3
LnGrp Delay(d),s/veh	21.4	0.0	34.2	22.2	0.0	0.0	10.6	0.0	8.6	11.3	0.0	16.8
LnGrp LOS	C		C	C			B		A	B		B
Approach Vol, veh/h	361			107			896			738		
Approach Delay, s/veh	32.1			22.2			9.0			16.6		
Approach LOS	C			C			A			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	49.3		19.7		8.7		40.6		19.7			
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0		4.0			
Max Green Setting (Gmax), s	40.0		21.0		7.0		29.0		21.0			
Max Q Clear Time (g_c+I1), s	16.6		14.3		4.7		21.9		5.4			
Green Ext Time (p_c), s	11.9		1.4		0.1		5.0		2.3			
Intersection Summary												
HCM 2010 Ctrl Delay				16.3								
HCM 2010 LOS				B								

Existing

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HCM 2010 TWSC
39: Manitoba Avenue

Intersection						
Int Delay, s/veh	5.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	302	13	126	114	21	233
Future Vol, veh/h	302	13	126	114	21	233
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	328	14	137	124	23	253
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	342	0	733	335
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	398	-
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	-	-	1217	-	388	707
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	678	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1217	-	341	707
Mov Cap-2 Maneuver	-	-	-	-	341	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	596	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	4.4		14.6		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	649	-	-	1217	-	
HCM Lane V/C Ratio	0.425	-	-	0.113	-	
HCM Control Delay (s)	14.6	-	-	8.3	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	2.1	-	-	0.4	-	

Existing

Synchro 9 Report
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HCM 2010 TWSC
40: Manitoba Avenue & Ruby Street

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	73	462	115	10	37	125
Future Vol, veh/h	73	462	115	10	37	125
Conflicting Peds, #/hr	1	0	0	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	79	502	125	11	40	136
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	137	0	0	793	132	
Stage 1	-	-	-	131	-	
Stage 2	-	-	-	662	-	
Critical Hdwy	4.11	-	-	6.4	6.2	
Critical Hdwy Stg 1	-	-	-	5.4	-	
Critical Hdwy Stg 2	-	-	-	5.4	-	
Follow-up Hdwy	2.209	-	-	3.5	3.3	
Pot Cap-1 Maneuver	1453	-	-	360	923	
Stage 1	-	-	-	900	-	
Stage 2	-	-	-	517	-	
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	1452	-	-	332	921	
Mov Cap-2 Maneuver	-	-	-	332	-	
Stage 1	-	-	-	899	-	
Stage 2	-	-	-	478	-	
Approach	EB	WB	SB			
HCM Control Delay, s	1	0	12.5			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1452	-	-	-	655	
HCM Lane V/C Ratio	0.055	-	-	-	0.269	
HCM Control Delay (s)	7.6	0	-	-	12.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1	

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Synchro 9 Report
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HCM 2010 Signalized Intersection Summary
 41: Canyon Rd/Main St & Mountain View Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	26	6	149	43	224	11	436	90	204	533	13
Future Volume (veh/h)	18	26	6	149	43	224	11	436	90	204	533	13
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	1776	1776	1900	1827	1827	1900	1810	1810	1900	1827	1827	1900
Adj Flow Rate, veh/h	20	28	7	162	47	0	12	474	0	222	579	14
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	4	4	4	5	5	5	4	4	4
Cap, veh/h	297	235	59	311	313	0	500	1290	0	653	1142	28
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.00	0.01	0.71	0.00	0.64	0.64	0.64
Sat Flow, veh/h	1290	1372	343	1342	1827	0	1723	1810	0	899	1776	43
Grp Volume(v), veh/h	20	0	35	162	47	0	12	474	0	222	0	593
Grp Sat Flow(s),veh/h/ln	1290	0	1715	1342	1827	0	1723	1810	0	899	0	1819
Q Serve(g_s), s	0.9	0.0	1.2	8.0	1.5	0.0	0.2	7.0	0.0	8.8	0.0	11.9
Cycle Q Clear(g_c), s	2.4	0.0	1.2	9.2	1.5	0.0	0.2	7.0	0.0	11.0	0.0	11.9
Prop In Lane	1.00		0.20	1.00		0.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	297	0	294	311	313	0	500	1290	0	653	0	1170
V/C Ratio(X)	0.07	0.00	0.12	0.52	0.15	0.00	0.02	0.37	0.00	0.34	0.00	0.51
Avail Cap(c_a), veh/h	469	0	522	489	556	0	679	1290	0	653	0	1170
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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.4	0.0	24.2	28.1	24.3	0.0	4.9	3.9	0.0	6.9	0.0	6.5
Incr Delay (d2), s/veh	0.0	0.0	0.1	1.6	0.3	0.0	0.0	0.8	0.0	1.4	0.0	1.6
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	0.3	0.0	0.6	3.1	0.8	0.0	0.1	3.7	0.0	2.4	0.0	6.4
LnGrp Delay(d),s/veh	25.4	0.0	24.3	29.7	24.6	0.0	4.9	4.7	0.0	8.3	0.0	8.1
LnGrp LOS	C		C	C	C		A	A		A		A
Approach Vol, veh/h	55			209			486			815		
Approach Delay, s/veh	24.7			28.6			4.7			8.2		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	53.2		15.8		4.8		48.4		15.8			
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0		4.0			
Max Green Setting (Gmax), s	40.0		21.0		8.0		28.0		21.0			
Max Q Clear Time (g_c+I1), s	9.0		4.4		2.2		13.9		11.2			
Green Ext Time (p_c), s	9.5		0.9		0.0		6.7		0.7			
Intersection Summary												
HCM 2010 Ctrl Delay				10.4								
HCM 2010 LOS				B								

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HCM 2010 Signalized Intersection Summary
42: Ruby Street & Mountain View Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	229	16	75	232	22	23	54	159	24	40	24
Future Volume (veh/h)	15	229	16	75	232	22	23	54	159	24	40	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1881	1881	1900	1900	1900	1900	1900	1863	1900	1900	1900	1900
Adj Flow Rate, veh/h	16	249	17	82	252	24	25	59	173	26	43	26
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	2	2	2	0	0	0
Cap, veh/h	749	991	68	786	1049	100	73	86	214	121	181	89
Arrive On Green	0.02	0.57	0.57	0.07	0.61	0.61	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1792	1741	119	1810	1709	163	89	445	1099	290	930	459
Grp Volume(v), veh/h	16	0	266	82	0	276	257	0	0	95	0	0
Grp Sat Flow(s),veh/h/ln	1792	0	1860	1810	0	1871	1633	0	0	1678	0	0
Q Serve(g_s), s	0.3	0.0	5.1	1.2	0.0	4.7	4.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	5.1	1.2	0.0	4.7	10.6	0.0	0.0	3.2	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.09	0.10		0.67	0.27		0.27
Lane Grp Cap(c), veh/h	749	0	1058	786	0	1149	373	0	0	391	0	0
V/C Ratio(X)	0.02	0.00	0.25	0.10	0.00	0.24	0.69	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	961	0	1058	867	0	1149	536	0	0	549	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.0	0.0	7.7	4.8	0.0	6.2	27.3	0.0	0.0	24.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	0.0	0.5	2.7	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	2.8	0.6	0.0	2.6	5.1	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	6.0	0.0	8.3	4.8	0.0	6.7	30.0	0.0	0.0	24.7	0.0	0.0
LnGrp LOS	A		A	A		A	C			C		
Approach Vol, veh/h	282			358			257			95		
Approach Delay, s/veh	8.1			6.3			30.0			24.7		
Approach LOS	A			A			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	44.4		17.8	5.6	47.6		17.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	8.0	28.0		21.0	10.0	28.0		21.0				
Max Q Clear Time (g_c+I1), s	3.2	7.1		5.2	2.3	6.7		12.6				
Green Ext Time (p_c), s	0.0	3.3		1.7	0.0	3.3		1.2				
Intersection Summary												
HCM 2010 Ctrl Delay				14.7								
HCM 2010 LOS				B								

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HCM 2010 Signalized Intersection Summary
43: Chestnut Street & Mountain View Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	209	53	114	290	15	76	37	93	15	24	5
Future Volume (veh/h)	1	209	53	114	290	15	76	37	93	15	24	5
Number	5	2	12	1	6	16	7	4	14	3	8	18
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	1827	1827	1900	1863	1863	1900
Adj Flow Rate, veh/h	1	227	58	124	315	16	83	40	101	16	26	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	4	4	4	2	2	2
Cap, veh/h	741	850	217	777	1044	53	406	71	179	305	287	0
Arrive On Green	0.59	0.59	0.59	0.59	0.59	0.59	0.15	0.15	0.15	0.15	0.15	0.00
Sat Flow, veh/h	1045	1432	366	1090	1758	89	1352	460	1162	1243	1863	0
Grp Volume(v), veh/h	1	0	285	124	0	331	83	0	141	16	26	0
Grp Sat Flow(s),veh/h/ln	1045	0	1798	1090	0	1847	1352	0	1622	1243	1863	0
Q Serve(g_s), s	0.0	0.0	2.6	2.1	0.0	3.0	1.9	0.0	2.7	0.4	0.4	0.0
Cycle Q Clear(g_c), s	3.0	0.0	2.6	4.7	0.0	3.0	2.3	0.0	2.7	3.1	0.4	0.0
Prop In Lane	1.00		0.20	1.00		0.05	1.00		0.72	1.00		0.00
Lane Grp Cap(c), veh/h	741	0	1068	777	0	1097	406	0	250	305	287	0
V/C Ratio(X)	0.00	0.00	0.27	0.16	0.00	0.30	0.20	0.00	0.56	0.05	0.09	0.00
Avail Cap(c_a), veh/h	943	0	1415	988	0	1453	1001	0	963	851	1106	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.1	0.0	3.3	4.4	0.0	3.4	13.2	0.0	13.2	14.7	12.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.2	0.1	0.0	0.7	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	1.3	0.6	0.0	1.5	0.7	0.0	1.3	0.1	0.2	0.0
LnGrp Delay(d),s/veh	4.1	0.0	3.5	4.6	0.0	3.6	13.3	0.0	14.0	14.7	12.3	0.0
LnGrp LOS	A		A	A		A	B		B	B	B	
Approach Vol, veh/h	286			455			224			42		
Approach Delay, s/veh	3.5			3.9			13.7			13.2		
Approach LOS	A			A			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	24.5		9.2		24.5		9.2					
Change Period (Y+Rc), s	4.5		4.0		4.5		4.0					
Max Green Setting (Gmax), s	26.5		20.0		26.5		20.0					
Max Q Clear Time (g_c+I1), s	5.0		4.7		6.7		5.1					
Green Ext Time (p_c), s	4.9		0.5		4.8		0.5					
Intersection Summary												
HCM 2010 Ctrl Delay	6.3											
HCM 2010 LOS	A											

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HCM 2010 TWSC
44: Bull Road/Willow Street & Mountain View Avenue

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	226	9	0	114	6	0	4	3	12	2	26
Future Vol, veh/h	40	226	9	0	114	6	0	4	3	12	2	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	246	10	0	124	7	0	4	3	13	2	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	130	0	0	255	0	0	466	468	251	468	469	127
Stage 1	-	-	-	-	-	-	338	338	-	127	127	-
Stage 2	-	-	-	-	-	-	128	130	-	341	342	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1455	-	-	1310	-	-	507	493	788	505	492	923
Stage 1	-	-	-	-	-	-	676	641	-	877	791	-
Stage 2	-	-	-	-	-	-	876	789	-	674	638	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1455	-	-	1310	-	-	479	478	788	488	477	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	479	478	-	488	477	-
Stage 1	-	-	-	-	-	-	656	622	-	851	791	-
Stage 2	-	-	-	-	-	-	847	789	-	647	619	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	11.3	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	575	1455	-	-	1310	-	-	486	923
HCM Lane V/C Ratio	0.013	0.03	-	-	-	-	-	0.031	0.031
HCM Control Delay (s)	11.3	7.5	-	-	0	-	-	12.6	9
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1	0.1

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HCM 2010 TWSC
45: Umptanum Road & Railroad Ave

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	69	98	36	52	21
Future Vol, veh/h	10	69	98	36	52	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	75	107	39	57	23
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	146	0	-	0	223	126
Stage 1	-	-	-	-	126	-
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	1436	-	-	-	765	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1436	-	-	-	759	924
Mov Cap-2 Maneuver	-	-	-	-	759	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	920	-
Approach	EB	WB		SB		
HCM Control Delay, s	1	0		10		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1436	-	-	-	800	
HCM Lane V/C Ratio	0.008	-	-	-	0.099	
HCM Control Delay (s)	7.5	-	-	-	10	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

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HCM 2010 Signalized Intersection Summary
46: Canyon Road & Umptanum Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	61	101	64	68	77	116	383	84	100	434	25
Future Volume (veh/h)	13	61	101	64	68	77	116	383	84	100	434	25
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	1776	1776	1900	1827	1827	1900	1810	1810	1810	1827	1827	1900
Adj Flow Rate, veh/h	14	66	110	70	74	84	126	416	0	109	472	27
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	4	4	4	5	5	5	4	4	4
Cap, veh/h	235	121	201	218	158	179	161	983	836	139	1746	100
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.09	0.54	0.00	0.08	0.52	0.52
Sat Flow, veh/h	1166	600	1000	1180	782	888	1723	1810	1538	1740	3338	191
Grp Volume(v), veh/h	14	0	176	70	0	158	126	416	0	109	245	254
Grp Sat Flow(s),veh/h/ln	1166	0	1599	1180	0	1670	1723	1810	1538	1740	1736	1793
Q Serve(g_s), s	0.8	0.0	7.3	4.2	0.0	6.2	5.3	10.1	0.0	4.6	5.8	5.8
Cycle Q Clear(g_c), s	7.0	0.0	7.3	11.5	0.0	6.2	5.3	10.1	0.0	4.6	5.8	5.8
Prop In Lane	1.00		0.63	1.00		0.53	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	235	0	322	218	0	336	161	983	836	139	908	938
V/C Ratio(X)	0.06	0.00	0.55	0.32	0.00	0.47	0.78	0.42	0.00	0.79	0.27	0.27
Avail Cap(c_a), veh/h	386	0	530	380	0	564	268	983	836	188	908	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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	26.5	31.7	0.0	26.1	32.8	10.0	0.0	33.4	9.8	9.8
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.8	0.0	1.0	9.6	1.3	0.0	14.2	0.7	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	0.3	0.0	3.4	1.4	0.0	2.9	3.0	5.3	0.0	2.7	3.0	3.1
LnGrp Delay(d),s/veh	29.2	0.0	28.0	32.5	0.0	27.1	42.5	11.4	0.0	47.7	10.5	10.5
LnGrp LOS	C		C	C		C	D	B		D	B	B
Approach Vol, veh/h	190			228			542			608		
Approach Delay, s/veh	28.1			28.7			18.6			17.2		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	9.9	44.7			19.4	11.4	43.2	19.4				
Change Period (Y+Rc), s	4.0	4.5			4.5	4.5	4.5	*4.5				
Max Green Setting (Gmax), s	8.0	28.5			24.5	11.5	24.5	*25				
Max Q Clear Time (g_c+I1), s	6.6	12.1			9.3	7.3	7.8	13.5				
Green Ext Time (p_c), s	0.0	5.4			1.6	0.2	5.4	1.4				
Intersection Summary												
HCM 2010 Ctrl Delay	20.7											
HCM 2010 LOS	C											
Notes												

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HCM 2010 Signalized Intersection Summary
47: Canyon Rd & I-90 WB Ramp

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	24	280	170	24	88	363		
Future Volume (veh/h)	24	280	170	24	88	363		
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	26	304	185	26	96	395		
Adj No. of Lanes	1	1	2	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	456	407	1022	142	663	1860		
Arrive On Green	0.26	0.26	0.33	0.32	0.10	0.53		
Sat Flow, veh/h	1774	1583	3216	433	1774	3632		
Grp Volume(v), veh/h	26	304	104	107	96	395		
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1786	1774	1770		
Q Serve(g_s), s	0.5	8.4	2.0	2.0	1.4	2.8		
Cycle Q Clear(g_c), s	0.5	8.4	2.0	2.0	1.4	2.8		
Prop In Lane	1.00	1.00		0.24	1.00			
Lane Grp Cap(c), veh/h	456	407	579	584	663	1860		
V/C Ratio(X)	0.06	0.75	0.18	0.18	0.14	0.21		
Avail Cap(c_a), veh/h	921	822	1311	1323	1060	2622		
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	13.3	16.2	11.4	11.5	7.2	6.0		
Incr Delay (d2), s/veh	0.1	3.9	0.1	0.1	0.0	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	0.3	4.1	1.0	1.0	0.7	1.4		
LnGrp Delay(d),s/veh	13.3	20.1	11.5	11.6	7.2	6.1		
LnGrp LOS	B	C	B	B	A	A		
Approach Vol, veh/h	330		211			491		
Approach Delay, s/veh	19.5		11.6			6.3		
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	9.4	20.4				29.8		17.6
Change Period (Y+Rc), s	5.1	5.4				5.4		5.9
Max Green Setting (Gmax), s	14.9	34.6				34.6		24.1
Max Q Clear Time (g_c+I1), s	3.4	4.0				4.8		10.4
Green Ext Time (p_c), s	0.1	4.2				4.2		1.5
Intersection Summary								
HCM 2010 Ctrl Delay			11.6					
HCM 2010 LOS			B					
Notes								

Existing

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HCM 2010 TWSC
48: Canyon Road & I-90 EB Ramp

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	104	186	41	135	181
Future Vol, veh/h	54	104	186	41	135	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	0	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	16	16	9	9
Mvmt Flow	59	113	202	45	147	197

Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	714	-	0	0	247	0
Stage 1	224	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Critical Hdwy	6.6	-	-	-	4.19	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	-	-	-	2.281	-
Pot Cap-1 Maneuver	372	0	-	-	1279	-
Stage 1	773	0	-	-	-	-
Stage 2	580	0	-	-	-	-
Platoon blocked, %		-	-	-	-	-
Mov Cap-1 Maneuver	329	-	-	-	1279	-
Mov Cap-2 Maneuver	329	-	-	-	-	-
Stage 1	773	-	-	-	-	-
Stage 2	513	-	-	-	-	-

Approach	WB	NB		SB		
HCM Control Delay, s	18.3	0		3.5		
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)	-	-	329	-	1279	-
HCM Lane V/C Ratio	-	-	0.178	-	0.115	-
HCM Control Delay (s)	-	-	18.3	0	8.2	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.6	-	0.4	-

Existing

Synchro 9 Report
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2037 Projected Level of Service Reports – without capital improvement projects

HCM 2010 TWSC

1: I-90 WestBound Offramp/I-90 Westbound Onramp

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑	↗		↖				
Traffic Vol, veh/h	10	570	0	0	430	450	20	10	100	0	0	0
Future Vol, veh/h	10	570	0	0	430	450	20	10	100	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	15	15	15	11	11	11	0	0	0
Mvmt Flow	11	620	0	0	467	489	22	11	109	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	467	0	-	-	-	0	1108	1108	620			
Stage 1	-	-	-	-	-	-	641	641	-			
Stage 2	-	-	-	-	-	-	467	467	-			
Critical Hdwy	4.2	-	-	-	-	-	6.51	6.61	6.31			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.51	5.61	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.51	5.61	-			
Follow-up Hdwy	2.29	-	-	-	-	-	3.599	4.099	3.399			
Pot Cap-1 Maneuver	1054	-	0	0	-	-	223	202	472			
Stage 1	-	-	0	0	-	-	508	456	-			
Stage 2	-	-	0	0	-	-	613	547	-			
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1054	-	-	-	-	-	219	0	472			
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	0	-			
Stage 1	-	-	-	-	-	-	500	0	-			
Stage 2	-	-	-	-	-	-	613	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.1			0			19.1					
HCM LOS							C					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	396	1054	-	-	-							
HCM Lane V/C Ratio	0.357	0.01	-	-	-							
HCM Control Delay (s)	19.1	8.5	0	-	-							
HCM Lane LOS	C	A	A	-	-							
HCM 95th %tile Q(veh)	1.6	0	-	-	-							

2037 No Projects

Synchro 9 Report
Page 1

MOVEMENT SUMMARY

 **Site: 101 [US-97 & Dolarway]**

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Dolarway Rd											
3	L2	196	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.7
8	T1	109	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.7
18	R2	109	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.0
Approach		413	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.5
East: University Way											
1	L2	54	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.7
6	T1	609	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.7
16	R2	65	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.2
Approach		728	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.6
North: US-97											
7	L2	130	3.0	0.713	18.6	LOS C	8.2	209.9	0.93	1.10	28.9
4	T1	163	3.0	0.713	18.6	LOS C	8.2	209.9	0.93	1.10	28.9
14	R2	293	3.0	0.713	17.4	LOS C	8.2	209.9	0.93	1.10	28.3
Approach		587	3.0	0.713	18.0	LOS C	8.2	209.9	0.93	1.10	28.6
West: University Way/US-97											
5	L2	152	3.0	0.153	5.0	LOS A	0.6	15.8	0.44	0.35	32.5
2	T1	554	3.0	0.732	16.5	LOS C	7.4	188.5	0.81	0.84	29.9
12	R2	174	3.0	0.732	16.5	LOS C	7.4	188.5	0.81	0.84	29.1
Approach		880	3.0	0.732	14.5	LOS B	7.4	188.5	0.75	0.75	30.1
All Vehicles		2609	3.0	0.835	18.7	LOS C	11.7	298.5	0.86	0.99	28.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: \\FPSE03\Data\2016\Projects\SE16-0489_Ellensburg_Transportation_Element\Analysis\Sidra\DolarwayRoundabout.sip7

HCM 2010 TWSC
3: University Way & Reecer Creek Rd

Intersection						
Int Delay, s/veh	43.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	320	470	280	380	110	80
Future Vol, veh/h	320	470	280	380	110	80
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
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	348	511	304	413	120	87
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	717	0	-	0	1718	511
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	1207	-
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	884	-	-	-	~ 99	563
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	283	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	884	-	-	-	~ 60	563
Mov Cap-2 Maneuver	-	-	-	-	~ 60	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	172	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.7	0		\$ 358.7		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	884	-	-	-	60	563
HCM Lane V/C Ratio	0.393	-	-	-	1.993	0.154
HCM Control Delay (s)	11.7	-	-	-	\$ 610.4	12.6
HCM Lane LOS	B	-	-	-	F	B
HCM 95th %tile Q(veh)	1.9	-	-	-	11.4	0.5
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 2010 TWSC
4: Water St & Bender Rd

Intersection						
Int Delay, s/veh	5.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	80	80	100	80	160
Future Vol, veh/h	160	80	80	100	80	160
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	87	87	109	87	174
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	261	0	500	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	283	-
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	-	-	1303	-	530	823
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1303	-	492	823
Mov Cap-2 Maneuver	-	-	-	-	492	-
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	711	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	3.5	13.7			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	672	-	-	1303	-	
HCM Lane V/C Ratio	0.388	-	-	0.067	-	
HCM Control Delay (s)	13.7	-	-	8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.8	-	-	0.2	-	

HCM 2010 TWSC

5: Airport Rd & Bender Rd/Sanders Rd

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	50	120	60	40	80	200	100	540	80	310	650	40
Future Vol, veh/h	50	120	60	40	80	200	100	540	80	310	650	40
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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	130	65	43	87	217	109	587	87	337	707	43
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2402	2293	728	2348	2272	630	750	0	0	674	0	0
Stage 1	1402	1402	-	848	848	-	-	-	-	-	-	-
Stage 2	1000	891	-	1500	1424	-	-	-	-	-	-	-
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	~ 23	~ 39	423	~ 25	~ 40	482	859	-	-	917	-	-
Stage 1	173	207	-	356	378	-	-	-	-	-	-	-
Stage 2	293	361	-	152	202	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 11	423	-	~ 12	482	859	-	-	917	-	-
Mov Cap-2 Maneuver	-	~ 11	-	-	~ 12	-	-	-	-	-	-	-
Stage 1	137	~ 76	-	283	300	-	-	-	-	-	-	-
Stage 2	91	287	-	-	~ 74	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s					1.4		3.5					
HCM LOS	-		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	859	-	-	-	-	917	-	-				
HCM Lane V/C Ratio	0.127	-	-	-	-	0.367	-	-				
HCM Control Delay (s)	9.8	0	-	-	-	11.2	0	-				
HCM Lane LOS	A	A	-	-	-	B	A	-				
HCM 95th %tile Q(veh)	0.4	-	-	-	-	1.7	-	-				
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 2010 TWSC
6: Alder St & Sanders Rd

Intersection						
Int Delay, s/veh	7.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	150	80	260	150	50
Future Vol, veh/h	440	150	80	260	150	50
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	478	163	87	283	163	54
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	641	0	1017	560
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	457	-
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	-	-	943	-	263	528
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	638	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	943	-	234	528
Mov Cap-2 Maneuver	-	-	-	-	234	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	568	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	2.2		40.3		
HCM LOS	E					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	528	-	-	943	-
HCM Lane V/C Ratio	0.697	0.103	-	-	0.092	-
HCM Control Delay (s)	49.5	12.6	-	-	9.2	0
HCM Lane LOS	E	B	-	-	A	A
HCM 95th %tile Q(veh)	4.6	0.3	-	-	0.3	-

HCM 2010 AWSC
7: Water Street & Idaho St

Intersection												
Intersection Delay, s/veh	11.6											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	20	20	0	10	60	320	60	20	170	20
Future Vol, veh/h	10	10	20	20	0	10	60	320	60	20	170	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	11	22	22	0	11	65	348	65	22	185	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	8.7			8.8			13.1			9.5		
HCM LOS	A			A			B			A		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	14%	25%	67%	10%								
Vol Thru, %	73%	25%	0%	81%								
Vol Right, %	14%	50%	33%	10%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	440	40	30	210								
LT Vol	60	10	20	20								
Through Vol	320	10	0	170								
RT Vol	60	20	10	20								
Lane Flow Rate	478	43	33	228								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.575	0.064	0.05	0.291								
Departure Headway (Hd)	4.329	5.272	5.476	4.59								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	832	676	651	781								
Service Time	2.358	3.331	3.536	2.626								
HCM Lane V/C Ratio	0.575	0.064	0.051	0.292								
HCM Control Delay	13.1	8.7	8.8	9.5								
HCM Lane LOS	B	A	A	A								
HCM 95th-tile Q	3.7	0.2	0.2	1.2								

HCM 2010 AWSC
8: Water Street & Helena Avenue

Intersection												
Intersection Delay, s/veh	13.5											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	20	10	260	20	20	30	120	240	70	180	20
Future Vol, veh/h	20	20	10	260	20	20	30	120	240	70	180	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	22	22	11	283	22	22	33	130	261	76	196	22
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			1			1			1		
HCM Control Delay	10.2			15.9			11.6			14.1		
HCM LOS	B			C			B			B		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1							
Vol Left, %	20%	0%	40%	87%	26%							
Vol Thru, %	80%	0%	40%	7%	67%							
Vol Right, %	0%	100%	20%	7%	7%							
Sign Control	Stop	Stop	Stop	Stop	Stop							
Traffic Vol by Lane	150	240	50	300	270							
LT Vol	30	0	20	260	70							
Through Vol	120	0	20	20	180							
RT Vol	0	240	10	20	20							
Lane Flow Rate	163	261	54	326	293							
Geometry Grp	7	7	2	2	5							
Degree of Util (X)	0.283	0.393	0.097	0.54	0.474							
Departure Headway (Hd)	6.24	5.427	6.447	5.966	5.82							
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes							
Cap	574	660	552	603	616							
Service Time	4.003	3.189	4.538	4.025	3.884							
HCM Lane V/C Ratio	0.284	0.395	0.098	0.541	0.476							
HCM Control Delay	11.5	11.7	10.2	15.9	14.1							
HCM Lane LOS	B	B	B	C	B							
HCM 95th-tile Q	1.2	1.9	0.3	3.2	2.5							

HCM 2010 TWSC

9: Walnut Street/Airport Rd & Helena Avenue

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Vol, veh/h	120	90	80	10	90	90	70	630	110	100	350	40
Future Vol, veh/h	120	90	80	10	90	90	70	630	110	100	350	40
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	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	1	1	1
Mvmt Flow	130	98	87	11	98	98	76	685	120	109	380	43
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1615	1577	402	1609	1538	745	424	0	0	804	0	0
Stage 1	620	620	-	897	897	-	-	-	-	-	-	-
Stage 2	995	957	-	712	641	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	~ 84	111	653	85	117	417	1141	-	-	825	-	-
Stage 1	479	483	-	337	361	-	-	-	-	-	-	-
Stage 2	297	339	-	427	473	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 80	653	-	~ 85	417	1141	-	-	825	-	-
Mov Cap-2 Maneuver	-	~ 80	-	-	~ 85	-	-	-	-	-	-	-
Stage 1	420	399	-	296	317	-	-	-	-	-	-	-
Stage 2	138	297	-	231	391	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s						0.7			2			
HCM LOS	-		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	1141	-	-	-	-	-	141	825	-	-		
HCM Lane V/C Ratio	0.067	-	-	-	-	-	1.388	0.132	-	-		
HCM Control Delay (s)	8.4	0	-	-	-	-	271.2	10	0	-		
HCM Lane LOS	A	A	-	-	-	-	F	B	A	-		
HCM 95th %tile Q(veh)	0.2	-	-	-	-	-	12.6	0.5	-	-		
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 2010 TWSC
10: Wildcat Way & 18th Avenue

Intersection						
Int Delay, s/veh	28.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	100	470	140	40	60	500
Future Vol, veh/h	100	470	140	40	60	500
Conflicting Peds, #/hr	0	5	3	0	3	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	10	10	0	0	0	0
Mvmt Flow	109	511	152	43	65	543
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	625	0	720	373
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	351	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	966	-	398	678
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	717	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	962	-	331	672
Mov Cap-2 Maneuver	-	-	-	-	331	-
Stage 1	-	-	-	-	701	-
Stage 2	-	-	-	-	599	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	7.3	64.2			
HCM LOS			F			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	605	-	-	962	-	
HCM Lane V/C Ratio	1.006	-	-	0.158	-	
HCM Control Delay (s)	64.2	-	-	9.4	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	15.3	-	-	0.6	-	

HCM 2010 AWSC
11: Walnut Street & 18th Avenue

Intersection

Intersection Delay, s/veh	275.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	280	220	30	80	200	330	40	290	130	140	100	220
Future Vol, veh/h	280	220	30	80	200	330	40	290	130	140	100	220
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	1	1	1
Mvmt Flow	304	239	33	87	217	359	43	315	141	152	109	239
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	298.2	365.9	204.8	200.8
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	9%	53%	13%	30%
Vol Thru, %	63%	42%	33%	22%
Vol Right, %	28%	6%	54%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	460	530	610	460
LT Vol	40	280	80	140
Through Vol	290	220	200	100
RT Vol	130	30	330	220
Lane Flow Rate	500	576	663	500
Geometry Grp	1	1	1	1
Degree of Util (X)	1.314	1.547	1.713	1.304
Departure Headway (Hd)	14.558	14.113	13.12	14.528
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	255	265	285	255
Service Time	12.558	12.113	11.12	12.528
HCM Lane V/C Ratio	1.961	2.174	2.326	1.961
HCM Control Delay	204.8	298.2	365.9	200.8
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	16.9	23.7	30.3	16.7

HCM 2010 AWSC
12: Alder Street & 18th Avenue

Intersection												
Intersection Delay, s/veh	17.6											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	30	100	40	30	10	200	240	40	10	150	60
Future Vol, veh/h	60	30	100	40	30	10	200	240	40	10	150	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	33	109	43	33	11	217	261	43	11	163	65
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			1		
HCM Control Delay	12.2			10.6			23.5			11.8		
HCM LOS	B			B			C			B		
Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1							
Vol Left, %	42%	32%	100%	0%	5%							
Vol Thru, %	50%	16%	0%	75%	68%							
Vol Right, %	8%	53%	0%	25%	27%							
Sign Control	Stop	Stop	Stop	Stop	Stop							
Traffic Vol by Lane	480	190	40	40	220							
LT Vol	200	60	40	0	10							
Through Vol	240	30	0	30	150							
RT Vol	40	100	0	10	60							
Lane Flow Rate	522	207	43	43	239							
Geometry Grp	2	5	7	7	2							
Degree of Util (X)	0.765	0.345	0.09	0.082	0.367							
Departure Headway (Hd)	5.278	6.008	7.489	6.798	5.519							
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes							
Cap	683	595	476	524	648							
Service Time	3.328	4.079	5.272	4.581	3.583							
HCM Lane V/C Ratio	0.764	0.348	0.09	0.082	0.369							
HCM Control Delay	23.5	12.2	11	10.2	11.8							
HCM Lane LOS	C	B	B	B	B							
HCM 95th-tile Q	7.2	1.5	0.3	0.3	1.7							

HCM 2010 TWSC
13: Water Street & 15th Avenue

Intersection						
Int Delay, s/veh	6.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	90	220	150	380	320	80
Future Vol, veh/h	90	220	150	380	320	80
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	98	239	163	413	348	87

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1132	393	436	0	-	0
Stage 1	392	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	227	660	1134	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	194	659	1133	-	-	-
Mov Cap-2 Maneuver	194	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	406	-	-	-	-	-

Approach	EB	NB		SB		
HCM Control Delay, s	21.5	2.5		0		
HCM LOS	C					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1133	-	194	659	-	-
HCM Lane V/C Ratio	0.144	-	0.504	0.363	-	-
HCM Control Delay (s)	8.7	-	41.1	13.5	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.5	-	2.5	1.7	-	-

HCM 2010 TWSC
14: Main St & 14th Avenue

Intersection						
Int Delay, s/veh	7.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	130	110	210	200	70	350
Future Vol, veh/h	130	110	210	200	70	350
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	120	228	217	76	380

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	261	0	875	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	674	-
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	-	-	1303	-	320	840
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1303	-	256	840
Mov Cap-2 Maneuver	-	-	-	-	256	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	405	-

Approach	EB	WB	NB			
HCM Control Delay, s	0	4.3	14.8			
HCM LOS	B					

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	256	840	-	-	1303	-
HCM Lane V/C Ratio	0.297	0.453	-	-	0.175	-
HCM Control Delay (s)	24.9	12.8	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	2.4	-	-	0.6	-

HCM 2010 AWSC
15: Wildcat Way & 14th Avenue/Dean Nicholson Blvd

Intersection												
Intersection Delay, s/veh	150.4											
Intersection LOS	F											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	140	360	40	220	210	30	90	340	70	30	410	170
Future Vol, veh/h	140	360	40	220	210	30	90	340	70	30	410	170
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	152	391	43	239	228	33	98	370	76	33	446	185
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			2			2		
HCM Control Delay	99.2			37.2			113.8			311.2		
HCM LOS	F			E			F			F		
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2				
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%				
Vol Thru, %	0%	83%	0%	90%	0%	88%	0%	71%				
Vol Right, %	0%	17%	0%	10%	0%	12%	0%	29%				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop				
Traffic Vol by Lane	90	410	140	400	220	240	30	580				
LT Vol	90	0	140	0	220	0	30	0				
Through Vol	0	340	0	360	0	210	0	410				
RT Vol	0	70	0	40	0	30	0	170				
Lane Flow Rate	98	446	152	435	239	261	33	630				
Geometry Grp	7	7	7	7	7	7	7	7				
Degree of Util (X)	0.272	1.163	0.422	1.137	0.68	0.699	0.091	1.644				
Departure Headway (Hd)	11.67	11.008	11.687	11.077	12.187	11.556	10.884	10.138				
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Cap	310	334	310	330	299	316	331	366				
Service Time	9.37	8.708	9.387	8.777	9.887	9.256	8.584	7.838				
HCM Lane V/C Ratio	0.316	1.335	0.49	1.318	0.799	0.826	0.1	1.721				
HCM Control Delay	18.7	134.7	22.7	126	37.3	37.2	14.7	326.5				
HCM Lane LOS	C	F	C	F	E	E	B	F				
HCM 95th-tile Q	1.1	15.7	2	14.9	4.6	4.9	0.3	34.9				

HCM 2010 AWSC
16: Alder Street & Dean Nicholson Blvd/14th Avenue

Intersection												
Intersection Delay, s/veh	41.3											
Intersection LOS	E											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	20	120	30	30	40	80	490	10	10	280	40
Future Vol, veh/h	80	20	120	30	30	40	80	490	10	10	280	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	1	1	1	0	0	0	0	0	0	2	2	2
Mvmt Flow	87	22	130	33	33	43	87	533	11	11	304	43
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	15.3			12.5			68.9			18.9		
HCM LOS	C			B			F			C		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	14%	36%	30%	3%								
Vol Thru, %	84%	9%	30%	85%								
Vol Right, %	2%	55%	40%	12%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	580	220	100	330								
LT Vol	80	80	30	10								
Through Vol	490	20	30	280								
RT Vol	10	120	40	40								
Lane Flow Rate	630	239	109	359								
Geometry Grp	1	1	1	1								
Degree of Util (X)	1.032	0.445	0.217	0.614								
Departure Headway (Hd)	5.894	6.912	7.463	6.35								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	618	524	484	574								
Service Time	3.894	4.912	5.463	4.35								
HCM Lane V/C Ratio	1.019	0.456	0.225	0.625								
HCM Control Delay	68.9	15.3	12.5	18.9								
HCM Lane LOS	F	C	B	C								
HCM 95th-tile Q	16.6	2.3	0.8	4.1								

HCM 2010 TWSC
17: Wenas Street & University Way

Intersection						
Int Delay, s/veh	17.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰		↰	↰	↰	↰
Traffic Vol, veh/h	630	60	70	750	110	70
Future Vol, veh/h	630	60	70	750	110	70
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	2	2	1	1
Mvmt Flow	685	65	76	815	120	76
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	751	0	1685	718
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	967	-
Critical Hdwy	-	-	4.12	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.218	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	858	-	~ 104	431
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	370	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	858	-	~ 95	431
Mov Cap-2 Maneuver	-	-	-	-	~ 95	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	337	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.8	164			
HCM LOS			F			
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	95	431	-	-	858	-
HCM Lane V/C Ratio	1.259	0.177	-	-	0.089	-
HCM Control Delay (s)	258.7	15.1	-	-	9.6	-
HCM Lane LOS	F	C	-	-	A	-
HCM 95th %tile Q(veh)	8.4	0.6	-	-	0.3	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 2010 Signalized Intersection Summary
18: Water Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	510	80	100	680	180	120	370	120	60	370	120
Future Volume (veh/h)	180	510	80	100	680	180	120	370	120	60	370	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1900	1900	1810	1900	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	196	554	87	109	739	196	130	402	130	65	402	130
Adj No. of Lanes	0	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	5	5	5	5	5	5	5	5	5
Cap, veh/h	208	768	131	140	931	290	190	494	160	190	494	160
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	240	1514	258	151	1836	571	844	1311	424	844	1311	424
Grp Volume(v), veh/h	302	0	535	513	0	531	130	0	532	65	0	532
Grp Sat Flow(s),veh/h/ln	427	0	1586	1011	0	1546	844	0	1735	844	0	1735
Q Serve(g_s), s	17.2	0.0	17.3	17.7	0.0	17.8	7.0	0.0	19.0	5.2	0.0	19.0
Cycle Q Clear(g_c), s	35.0	0.0	17.3	35.0	0.0	17.8	26.0	0.0	19.0	24.2	0.0	19.0
Prop In Lane	0.65		0.16	0.21		0.37	1.00		0.24	1.00		0.24
Lane Grp Cap(c), veh/h	302	0	804	576	0	784	190	0	654	190	0	654
V/C Ratio(X)	1.00	0.00	0.66	0.89	0.00	0.68	0.69	0.00	0.81	0.34	0.00	0.81
Avail Cap(c_a), veh/h	302	0	804	576	0	784	190	0	654	190	0	654
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	25.9	0.0	12.6	18.7	0.0	12.8	32.2	0.0	19.3	30.2	0.0	19.3
Incr Delay (d2), s/veh	51.8	0.0	4.3	18.5	0.0	4.7	10.3	0.0	8.0	1.3	0.0	8.0
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	10.1	0.0	8.4	12.7	0.0	8.5	3.0	0.0	10.5	1.3	0.0	10.5
LnGrp Delay(d),s/veh	77.7	0.0	16.9	37.2	0.0	17.4	42.5	0.0	27.3	31.5	0.0	27.3
LnGrp LOS	F		B	D		B	D		C	C		C
Approach Vol, veh/h	837			1044			662			597		
Approach Delay, s/veh	38.9			27.2			30.3			27.8		
Approach LOS	D			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	30.0		39.0		30.0		39.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	26.0		35.0		26.0		35.0					
Max Q Clear Time (g_c+I1), s	28.0		37.0		26.2		37.0					
Green Ext Time (p_c), s	0.0		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				31.1								
HCM 2010 LOS				C								

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HCM 2010 Signalized Intersection Summary
19: Main St & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	250	370	70	100	530	130	80	290	70	250	280	150
Future Volume (veh/h)	250	370	70	100	530	130	80	290	70	250	280	150
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		0.98	1.00		0.98	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1900	1845	1845	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	272	402	76	109	576	141	87	315	76	272	304	163
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	1	1	1
Cap, veh/h	421	1153	216	485	988	241	314	391	327	348	496	416
Arrive On Green	0.11	0.40	0.40	0.06	0.36	0.36	0.05	0.21	0.21	0.11	0.26	0.26
Sat Flow, veh/h	1707	2852	534	1757	2779	678	1774	1863	1559	1792	1881	1577
Grp Volume(v), veh/h	272	238	240	109	363	354	87	315	76	272	304	163
Grp Sat Flow(s),veh/h/ln	1707	1703	1683	1757	1752	1705	1774	1863	1559	1792	1881	1577
Q Serve(g_s), s	6.7	6.7	6.8	2.7	11.6	11.7	2.6	11.1	2.8	7.5	9.8	5.9
Cycle Q Clear(g_c), s	6.7	6.7	6.8	2.7	11.6	11.7	2.6	11.1	2.8	7.5	9.8	5.9
Prop In Lane	1.00		0.32	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	421	688	680	485	623	606	314	391	327	348	496	416
V/C Ratio(X)	0.65	0.35	0.35	0.22	0.58	0.59	0.28	0.81	0.23	0.78	0.61	0.39
Avail Cap(c_a), veh/h	421	688	680	571	623	606	410	513	429	348	518	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	14.2	14.3	12.7	18.1	18.1	19.9	25.9	22.6	19.7	22.3	20.9
Incr Delay (d2), s/veh	2.7	1.4	1.4	0.1	3.9	4.1	0.2	5.2	0.1	10.1	1.4	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	3.3	3.4	3.4	1.3	6.2	6.1	1.3	6.3	1.2	2.4	5.3	2.6
LnGrp Delay(d),s/veh	15.5	15.6	15.7	12.8	22.0	22.2	20.1	31.2	22.8	29.8	23.7	21.1
LnGrp LOS	B	B	B	B	C	C	C	C	C	C	C	C
Approach Vol, veh/h	750			826			478			739		
Approach Delay, s/veh	15.6			20.9			27.8			25.3		
Approach LOS	B			C			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	11.0	18.5	7.6	31.9	7.3	22.2	11.0	28.5				
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0				
Max Green Setting (Gmax), s	7.5	19.0	7.5	20.0	7.5	19.0	7.5	20.0				
Max Q Clear Time (g_c+I1), s	9.5	13.1	4.7	8.8	4.6	11.8	8.7	13.7				
Green Ext Time (p_c), s	0.0	1.3	0.0	2.5	0.0	1.4	0.0	1.9				
Intersection Summary												
HCM 2010 Ctrl Delay				21.8								
HCM 2010 LOS				C								

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HCM Signalized Intersection Capacity Analysis 20: Wildcat Way & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	610	90	110	710	30	110	170	130	30	110	150
Future Volume (vph)	100	610	90	110	710	30	110	170	130	30	110	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.98			0.99		1.00	0.94		1.00	0.91	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3527			3568		1805	1777		1805	1736	
Flt Permitted		0.73			0.73		0.39	1.00		0.31	1.00	
Satd. Flow (perm)		2606			2632		733	1777		590	1736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	663	98	120	772	33	120	185	141	33	120	163
RTOR Reduction (vph)	0	11	0	0	3	0	0	46	0	0	82	0
Lane Group Flow (vph)	0	859	0	0	922	0	120	280	0	33	201	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		44.2			44.2		16.8	16.8		16.8	16.8	
Effective Green, g (s)		44.2			44.2		16.8	16.8		16.8	16.8	
Actuated g/C Ratio		0.64			0.64		0.24	0.24		0.24	0.24	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		0.2			0.2		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1669			1686		178	432		143	422	
v/s Ratio Prot								0.16			0.12	
v/s Ratio Perm		0.33			0.35		0.16			0.06		
v/c Ratio		0.51			0.55		0.67	0.65		0.23	0.48	
Uniform Delay, d1		6.6			6.9		23.6	23.4		20.9	22.3	
Progression Factor		0.88			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0			1.3		9.7	3.3		0.8	0.8	
Delay (s)		6.9			8.1		33.3	26.8		21.7	23.2	
Level of Service		A			A		C	C		C	C	
Approach Delay (s)		6.9			8.1			28.5			23.0	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		13.1					HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		69.0					Sum of lost time (s)			8.0		
Intersection Capacity Utilization		82.5%					ICU Level of Service			E		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 21: Walnut Street & University Way

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1010	60	30	1000	40	40
Future Volume (vph)	1010	60	30	1000	40	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.5	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.99			1.00	0.93	
Flt Protected	1.00			1.00	0.98	
Satd. Flow (prot)	3510			3534	1695	
Flt Permitted	1.00			0.90	0.98	
Satd. Flow (perm)	3510			3173	1695	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1098	65	33	1087	43	43
RTOR Reduction (vph)	3	0	0	0	39	0
Lane Group Flow (vph)	1160	0	0	1120	47	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			2	8	
Permitted Phases			2			
Actuated Green, G (s)	55.5			55.5	6.5	
Effective Green, g (s)	55.5			55.5	6.5	
Actuated g/C Ratio	0.79			0.79	0.09	
Clearance Time (s)	4.0			4.0	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2763			2497	156	
v/s Ratio Prot	0.33				c0.03	
v/s Ratio Perm				c0.35		
v/c Ratio	0.42			0.45	0.30	
Uniform Delay, d1	2.4			2.5	29.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.5			0.6	1.1	
Delay (s)	2.9			3.1	31.0	
Level of Service	A			A	C	
Approach Delay (s)	2.9			3.1	31.0	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			4.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			70.5		Sum of lost time (s)	8.5
Intersection Capacity Utilization			61.1%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
22: Chestnut Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	580	10	80	720	110	100	80	80	110	40	380
Future Volume (veh/h)	310	580	10	80	720	110	100	80	80	110	40	380
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	337	630	11	87	783	120	109	87	87	120	43	413
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	1	1	1	0	0	0	1	1	1
Cap, veh/h	401	1626	28	467	1293	198	150	279	279	398	49	471
Arrive On Green	0.09	0.46	0.46	0.06	0.42	0.42	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1774	3557	62	1792	3087	473	946	862	862	1209	151	1452
Grp Volume(v), veh/h	337	313	328	87	453	450	109	0	174	120	0	456
Grp Sat Flow(s),veh/h/ln	1774	1770	1849	1792	1787	1773	946	0	1723	1209	0	1603
Q Serve(g_s), s	7.0	8.6	8.6	2.0	14.6	14.6	4.1	0.0	5.6	6.1	0.0	19.9
Cycle Q Clear(g_c), s	7.0	8.6	8.6	2.0	14.6	14.6	24.0	0.0	5.6	11.7	0.0	19.9
Prop In Lane	1.00		0.03	1.00		0.27	1.00		0.50	1.00		0.91
Lane Grp Cap(c), veh/h	401	809	846	467	749	743	150	0	559	398	0	520
V/C Ratio(X)	0.84	0.39	0.39	0.19	0.61	0.61	0.73	0.00	0.31	0.30	0.00	0.88
Avail Cap(c_a), veh/h	401	809	846	730	749	743	150	0	559	398	0	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.1	13.2	13.2	11.0	16.7	16.7	36.0	0.0	18.8	23.2	0.0	23.6
Incr Delay (d2), s/veh	14.7	1.4	1.3	0.2	3.6	3.6	17.4	0.0	0.4	0.6	0.0	15.9
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	5.5	4.5	4.7	1.0	7.9	7.9	2.9	0.0	2.7	2.1	0.0	11.0
LnGrp Delay(d),s/veh	30.7	14.6	14.6	11.2	20.4	20.4	53.4	0.0	19.2	23.8	0.0	39.6
LnGrp LOS	C	B	B	B	C	C	D		B	C		D
Approach Vol, veh/h	978			990			283			576		
Approach Delay, s/veh	20.2			19.6			32.4			36.3		
Approach LOS	C			B			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	37.8		28.0	11.0	35.0		28.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	15.0	23.0		24.0	7.0	31.0		24.0				
Max Q Clear Time (g_c+I1), s	4.0	10.6		21.9	9.0	16.6		26.0				
Green Ext Time (p_c), s	0.2	7.6		1.2	0.0	8.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				24.5								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
23: Alder Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	680	10	10	520	260	20	0	10	180	10	240
Future Volume (veh/h)	260	680	10	10	520	260	20	0	10	180	10	240
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	283	739	11	11	565	283	22	0	11	196	11	261
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	322	1821	27	367	1166	583	322	16	129	626	33	633
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.39	0.00	0.39	0.39	0.39	0.39
Sat Flow, veh/h	660	3641	54	723	2332	1167	615	41	328	1357	83	1615
Grp Volume(v), veh/h	283	366	384	11	437	411	33	0	0	207	0	261
Grp Sat Flow(s),veh/h/ln	660	1805	1890	723	1805	1694	984	0	0	1440	0	1615
Q Serve(g_s), s	25.2	9.4	9.4	0.7	11.8	11.8	0.2	0.0	0.0	0.0	0.0	8.7
Cycle Q Clear(g_c), s	37.0	9.4	9.4	10.1	11.8	11.8	7.8	0.0	0.0	7.6	0.0	8.7
Prop In Lane	1.00		0.03	1.00		0.69	0.67		0.33	0.95		1.00
Lane Grp Cap(c), veh/h	322	903	945	367	903	847	467	0	0	659	0	633
V/C Ratio(X)	0.88	0.41	0.41	0.03	0.48	0.49	0.07	0.00	0.00	0.31	0.00	0.41
Avail Cap(c_a), veh/h	322	903	945	367	903	847	467	0	0	659	0	633
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	11.6	11.6	14.8	12.2	12.2	14.2	0.0	0.0	16.0	0.0	16.3
Incr Delay (d2), s/veh	27.2	1.4	1.3	0.2	1.9	2.0	0.3	0.0	0.0	1.2	0.0	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	8.2	5.0	5.2	0.2	6.3	5.9	0.5	0.0	0.0	3.2	0.0	4.2
LnGrp Delay(d),s/veh	54.3	13.0	12.9	14.9	14.1	14.2	14.5	0.0	0.0	17.2	0.0	18.3
LnGrp LOS	D	B	B	B	B	B	B			B		B
Approach Vol, veh/h	1033			859			33			468		
Approach Delay, s/veh	24.3			14.1			14.5			17.8		
Approach LOS	C			B			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	41.0		33.0		41.0		33.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	37.0		29.0		37.0		29.0					
Max Q Clear Time (g_c+I1), s	39.0		9.8		13.8		10.7					
Green Ext Time (p_c), s	0.0		2.1		17.0		2.1					
Intersection Summary												
HCM 2010 Ctrl Delay				19.2								
HCM 2010 LOS				B								

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Synchro 9 Report
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HCM 2010 Signalized Intersection Summary
24: Pfenning Rd & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	400	140	90	260	30	100	360	110	70	120	50
Future Volume (veh/h)	70	400	140	90	260	30	100	360	110	70	120	50
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	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	76	435	152	98	283	33	109	391	120	76	130	54
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	453	530	185	249	657	77	182	453	130	216	338	118
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1059	1320	461	825	1638	191	220	1139	326	282	850	297
Grp Volume(v), veh/h	76	0	587	98	0	316	620	0	0	260	0	0
Grp Sat Flow(s),veh/h/ln	1059	0	1781	825	0	1829	1686	0	0	1428	0	0
Q Serve(g_s), s	2.5	0.0	13.2	4.8	0.0	5.6	11.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.1	0.0	13.2	18.0	0.0	5.6	15.6	0.0	0.0	4.6	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.10	0.18		0.19	0.29		0.21
Lane Grp Cap(c), veh/h	453	0	715	249	0	734	765	0	0	672	0	0
V/C Ratio(X)	0.17	0.00	0.82	0.39	0.00	0.43	0.81	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	453	0	715	249	0	734	771	0	0	677	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.7	0.0	12.0	20.3	0.0	9.7	12.7	0.0	0.0	9.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	7.6	1.0	0.0	0.4	6.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	7.9	1.2	0.0	2.9	8.6	0.0	0.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	12.8	0.0	19.6	21.3	0.0	10.1	19.2	0.0	0.0	9.9	0.0	0.0
LnGrp LOS	B		B	C		B	B			A		
Approach Vol, veh/h	663			414			620			260		
Approach Delay, s/veh	18.8			12.8			19.2			9.9		
Approach LOS	B			B			B			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	22.4		22.5		22.4		22.5					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	17.6		15.2		6.6		20.0					
Green Ext Time (p_c), s	0.2		1.7		4.7		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				16.5								
HCM 2010 LOS				B								

HCM 2010 TWSC
25: 5th Avenue & Railroad Avenue

Intersection												
Int Delay, s/veh	22											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	40	0	100	80	270	0	130	150	250	180	20
Future Vol, veh/h	20	40	0	100	80	270	0	130	150	250	180	20
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	-	-	-	0	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	43	0	109	87	293	0	141	163	272	196	22

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1163	1054	207	995	984	223	217	0	0	304	0	0
Stage 1	750	750	-	223	223	-	-	-	-	-	-	-
Stage 2	413	304	-	772	761	-	-	-	-	-	-	-
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	172	226	833	224	248	817	1353	-	-	1257	-	-
Stage 1	403	419	-	780	719	-	-	-	-	-	-	-
Stage 2	616	663	-	392	414	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	61	177	833	153	194	817	1353	-	-	1257	-	-
Mov Cap-2 Maneuver	61	177	-	153	194	-	-	-	-	-	-	-
Stage 1	403	328	-	780	719	-	-	-	-	-	-	-
Stage 2	347	663	-	266	324	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	79.6		45.2		0		4.8	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1353	-	-	108	153	471	1257	-	-
HCM Lane V/C Ratio	-	-	-	0.604	0.71	0.808	0.216	-	-
HCM Control Delay (s)	0	-	-	79.6	71.9	37.6	8.7	-	-
HCM Lane LOS	A	-	-	F	F	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	2.9	4.2	7.6	0.8	-	-

HCM 2010 Signalized Intersection Summary
26: Water Street & 5th Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	130	110	60	120	40	110	500	60	60	510	90
Future Volume (veh/h)	120	130	110	60	120	40	110	500	60	60	510	90
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		0.99	1.00		0.99	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	1792	1792	1900	1743	1743	1900	1881	1881	1900	1863	1863	1900
Adj Flow Rate, veh/h	130	141	120	65	130	43	120	543	65	65	554	98
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	9	9	9	1	1	1	2	2	2
Cap, veh/h	311	236	201	235	331	109	424	1022	122	455	956	169
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1158	893	760	1041	1253	414	785	1648	197	809	1541	273
Grp Volume(v), veh/h	130	0	261	65	0	173	120	0	608	65	0	652
Grp Sat Flow(s),veh/h/ln	1158	0	1653	1041	0	1667	785	0	1846	809	0	1814
Q Serve(g_s), s	7.2	0.0	9.5	4.0	0.0	5.9	7.4	0.0	12.9	3.4	0.0	14.7
Cycle Q Clear(g_c), s	13.0	0.0	9.5	13.5	0.0	5.9	22.1	0.0	12.9	16.3	0.0	14.7
Prop In Lane	1.00		0.46	1.00		0.25	1.00		0.11	1.00		0.15
Lane Grp Cap(c), veh/h	311	0	436	235	0	440	424	0	1145	455	0	1125
V/C Ratio(X)	0.42	0.00	0.60	0.28	0.00	0.39	0.28	0.00	0.53	0.14	0.00	0.58
Avail Cap(c_a), veh/h	408	0	575	323	0	580	424	0	1145	455	0	1125
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	26.2	0.0	22.2	28.1	0.0	20.9	14.3	0.0	7.4	12.0	0.0	7.8
Incr Delay (d2), s/veh	1.3	0.0	1.9	0.9	0.0	0.8	1.7	0.0	1.8	0.7	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	4.6	1.2	0.0	2.8	1.8	0.0	7.0	0.8	0.0	7.9
LnGrp Delay(d),s/veh	27.5	0.0	24.1	29.0	0.0	21.7	16.0	0.0	9.2	12.7	0.0	10.0
LnGrp LOS	C		C	C		C	B		A	B		A
Approach Vol, veh/h	391			238			728			717		
Approach Delay, s/veh	25.2			23.7			10.3			10.2		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	46.8		22.2		46.8		22.2					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	37.0		24.0		37.0		24.0					
Max Q Clear Time (g_c+I1), s	24.1		15.0		18.3		15.5					
Green Ext Time (p_c), s	6.2		2.8		7.5		2.7					
Intersection Summary												
HCM 2010 Ctrl Delay				14.6								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
27: Main St & 5th Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	180	70	100	210	70	50	600	50	60	480	70
Future Volume (veh/h)	110	180	70	100	210	70	50	600	50	60	480	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	120	196	76	109	228	76	54	652	54	65	522	76
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	326	318	123	348	327	109	307	837	69	238	784	114
Arrive On Green	0.07	0.26	0.26	0.07	0.25	0.25	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1740	1242	482	1757	1309	436	817	1693	140	739	1584	231
Grp Volume(v), veh/h	120	0	272	109	0	304	54	0	706	65	0	598
Grp Sat Flow(s),veh/h/ln	1740	0	1724	1757	0	1745	817	0	1833	739	0	1815
Q Serve(g_s), s	3.4	0.0	9.5	3.1	0.0	10.8	3.6	0.0	21.5	5.4	0.0	16.9
Cycle Q Clear(g_c), s	3.4	0.0	9.5	3.1	0.0	10.8	20.5	0.0	21.5	26.9	0.0	16.9
Prop In Lane	1.00		0.28	1.00		0.25	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	326	0	442	348	0	436	307	0	907	238	0	898
V/C Ratio(X)	0.37	0.00	0.62	0.31	0.00	0.70	0.18	0.00	0.78	0.27	0.00	0.67
Avail Cap(c_a), veh/h	330	0	442	362	0	436	307	0	907	238	0	898
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	17.8	0.0	22.3	17.7	0.0	23.2	20.7	0.0	14.1	25.2	0.0	12.9
Incr Delay (d2), s/veh	0.7	0.0	6.3	0.5	0.0	8.9	1.2	0.0	6.5	2.8	0.0	3.9
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	1.7	0.0	5.2	1.5	0.0	6.2	0.9	0.0	12.4	1.3	0.0	9.3
LnGrp Delay(d),s/veh	18.5	0.0	28.6	18.2	0.0	32.1	21.9	0.0	20.7	28.0	0.0	16.8
LnGrp LOS	B		C	B		C	C		C	C		B
Approach Vol, veh/h	392			413			760			663		
Approach Delay, s/veh	25.5			28.4			20.8			17.9		
Approach LOS	C			C			C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	21.4		37.6	9.4	21.0		37.6				
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		4.0				
Max Green Setting (Gmax), s	5.0	17.0		33.0	5.0	17.0		33.0				
Max Q Clear Time (g_c+I1), s	5.1	11.5		28.9	5.4	12.8		23.5				
Green Ext Time (p_c), s	0.0	1.3		2.6	0.0	1.0		5.0				
Intersection Summary												
HCM 2010 Ctrl Delay	22.2											
HCM 2010 LOS	C											

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HCM 2010 AWSC
28: Ruby Street & 5th Avenue

Intersection												
Intersection Delay, s/veh	62.4											
Intersection LOS	F											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	190	80	110	190	30	170	200	80	60	200	50
Future Vol, veh/h	30	190	80	110	190	30	170	200	80	60	200	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	33	207	87	120	207	33	185	217	87	65	217	54
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	36.7			45.5			107.8			39.2		
HCM LOS	E			E			F			E		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	38%	10%	33%	19%								
Vol Thru, %	44%	63%	58%	65%								
Vol Right, %	18%	27%	9%	16%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	450	300	330	310								
LT Vol	170	30	110	60								
Through Vol	200	190	190	200								
RT Vol	80	80	30	50								
Lane Flow Rate	489	326	359	337								
Geometry Grp	1	1	1	1								
Degree of Util (X)	1.118	0.772	0.847	0.797								
Departure Headway (Hd)	8.228	9.027	8.997	8.981								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	440	404	405	404								
Service Time	6.315	7.027	6.997	6.981								
HCM Lane V/C Ratio	1.111	0.807	0.886	0.834								
HCM Control Delay	107.8	36.7	45.5	39.2								
HCM Lane LOS	F	E	E	E								
HCM 95th-tile Q	17	6.5	8.1	7								

HCM 2010 TWSC
29: Chestnut Street & 5th Avenue

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	20	20	20	20	50	20	450	20	30	440	20
Future Vol, veh/h	20	20	20	20	20	50	20	450	20	30	440	20
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	0	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	22	22	22	22	54	22	489	22	33	478	22

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	1136	1108	489	1119	1108	500	500	0
Stage 1	554	554	-	543	543	-	-	-
Stage 2	582	554	-	576	565	-	-	-
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	179	210	579	184	210	571	1064	-
Stage 1	517	514	-	524	520	-	-	-
Stage 2	499	514	-	503	508	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	143	199	579	156	199	571	1064	-
Mov Cap-2 Maneuver	143	199	-	156	199	-	-	-
Stage 1	506	498	-	513	509	-	-	-
Stage 2	423	503	-	448	492	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.3	24.1	0.3	0.5
HCM LOS	C	C		

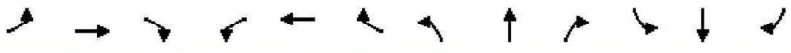
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1064	-	-	143	296	285	1054	-	-
HCM Lane V/C Ratio	0.02	-	-	0.152	0.147	0.343	0.031	-	-
HCM Control Delay (s)	8.5	-	-	34.6	19.2	24.1	8.5	-	-
HCM Lane LOS	A	-	-	D	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.5	1.5	0.1	-	-

HCM 2010 Signalized Intersection Summary
30: Water Street & 3rd Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	110	100	60	110	60	30	430	80	80	550	20
Future Volume (veh/h)	10	110	100	60	110	60	30	430	80	80	550	20
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		0.99	1.00		0.99	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	1845	1845	1900	1845	1845	1900	1863	1863	1900	1827	1827	1900
Adj Flow Rate, veh/h	11	120	109	65	120	65	33	467	87	87	598	22
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	2	2	2	4	4	4
Cap, veh/h	261	200	182	223	254	137	490	1006	187	528	1153	42
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.66	0.66	0.66	0.66	0.66	0.66
Sat Flow, veh/h	1177	888	806	1130	1124	609	800	1527	285	834	1751	64
Grp Volume(v), veh/h	11	0	229	65	0	185	33	0	554	87	0	620
Grp Sat Flow(s),veh/h/ln	1177	0	1694	1130	0	1732	800	0	1812	834	0	1815
Q Serve(g_s), s	0.6	0.0	8.4	3.8	0.0	6.4	1.5	0.0	10.4	4.0	0.0	12.2
Cycle Q Clear(g_c), s	7.0	0.0	8.4	12.1	0.0	6.4	13.8	0.0	10.4	14.3	0.0	12.2
Prop In Lane	1.00		0.48	1.00		0.35	1.00		0.16	1.00		0.04
Lane Grp Cap(c), veh/h	261	0	382	223	0	391	490	0	1193	528	0	1195
V/C Ratio(X)	0.04	0.00	0.60	0.29	0.00	0.47	0.07	0.00	0.46	0.16	0.00	0.52
Avail Cap(c_a), veh/h	320	0	466	279	0	477	490	0	1193	528	0	1195
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	26.2	0.0	23.9	29.4	0.0	23.2	9.7	0.0	5.8	9.3	0.0	6.1
Incr Delay (d2), s/veh	0.1	0.0	2.1	1.0	0.0	1.3	0.3	0.0	1.3	0.7	0.0	1.6
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	0.2	0.0	4.1	1.2	0.0	3.2	0.4	0.0	5.5	1.0	0.0	6.6
LnGrp Delay(d),s/veh	26.3	0.0	26.1	30.4	0.0	24.4	9.9	0.0	7.1	10.0	0.0	7.7
LnGrp LOS	C		C	C		C	A		A	A		A
Approach Vol, veh/h	240			250			587			707		
Approach Delay, s/veh	26.1			26.0			7.3			8.0		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	49.4		19.6		49.4		19.6					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	42.0		19.0		42.0		19.0					
Max Q Clear Time (g_c+I1), s	15.8		10.4		16.3		14.1					
Green Ext Time (p_c), s	7.1		2.0		7.1		1.3					
Intersection Summary												
HCM 2010 Ctrl Delay				12.7								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis

31: Main St & 3rd Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	130	50	120	130	100	50	710	80	80	640	30
Future Volume (vph)	50	130	50	120	130	100	50	710	80	80	640	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Grpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.93		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	1769		1782	1737		1767	1829		1770	1848	
Flt Permitted	0.45	1.00		0.55	1.00		0.27	1.00		0.19	1.00	
Satd. Flow (perm)	836	1769		1032	1737		505	1829		363	1848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	141	54	130	141	109	54	772	87	87	696	33
RTOR Reduction (vph)	0	21	0	0	43	0	0	5	0	0	2	0
Lane Group Flow (vph)	54	174	0	130	207	0	54	854	0	87	727	0
Confl. Peds. (#/hr)	4		4	2		3	3		4	2		2
Confl. Bikes (#/hr)			3			1			4			3
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	17.2	17.2		17.2	17.2		43.8	43.8		43.8	43.8	
Effective Green, g (s)	17.2	17.2		17.2	17.2		43.8	43.8		43.8	43.8	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.63	0.63		0.63	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	208	440		257	432		320	1161		230	1173	
v/s Ratio Prot		0.10			0.12			c0.47			0.39	
v/s Ratio Perm	0.06			c0.13			0.11			0.24		
v/c Ratio	0.26	0.40		0.51	0.48		0.17	0.74		0.38	0.62	
Uniform Delay, d1	20.8	21.6		22.2	22.1		5.2	8.6		6.1	7.6	
Progression Factor	1.28	1.28		1.00	1.00		0.46	0.72		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.6	0.3		0.9	3.4		4.7	2.5	
Delay (s)	26.8	27.7		22.8	22.4		3.3	9.7		10.7	10.0	
Level of Service	C	C		C	C		A	A		B	B	
Approach Delay (s)		27.5			22.5			9.3			10.1	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			13.6			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			69.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			104.8%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

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HCM 2010 AWSC
32: Ruby Street & 3rd Avenue

Intersection												
Intersection Delay, s/veh	93.2											
Intersection LOS	F											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	160	190	80	30	160	40	70	250	40	50	280	140
Future Vol, veh/h	160	190	80	30	160	40	70	250	40	50	280	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	174	207	87	33	174	43	76	272	43	54	304	152
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	106			30.5			64.1			134.4		
HCM LOS	F			D			F			F		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	19%	37%	13%	11%								
Vol Thru, %	69%	44%	70%	60%								
Vol Right, %	11%	19%	17%	30%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	360	430	230	470								
LT Vol	70	160	30	50								
Through Vol	250	190	160	280								
RT Vol	40	80	40	140								
Lane Flow Rate	391	467	250	511								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.941	1.102	0.648	1.187								
Departure Headway (Hd)	9.514	9.095	10.335	8.818								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	383	402	353	414								
Service Time	7.514	7.095	8.335	6.818								
HCM Lane V/C Ratio	1.021	1.162	0.708	1.234								
HCM Control Delay	64.1	106	30.5	134.4								
HCM Lane LOS	F	F	D	F								
HCM 95th-tile Q	10.2	15.6	4.3	19.1								

HCM 2010 AWSC
33: Chestnut Street & 3rd Avenue

Intersection												
Intersection Delay, s/veh	22.7											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	90	40	20	50	70	40	340	20	80	350	60
Future Vol, veh/h	50	90	40	20	50	70	40	340	20	80	350	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	98	43	22	54	76	43	370	22	87	380	65
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	14.6			13.2			23.8			27.5		
HCM LOS	B			B			C			D		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2						
Vol Left, %	100%	0%	28%	14%	100%	0%						
Vol Thru, %	0%	94%	50%	36%	0%	85%						
Vol Right, %	0%	6%	22%	50%	0%	15%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	40	360	180	140	80	410						
LT Vol	40	0	50	20	80	0						
Through Vol	0	340	90	50	0	350						
RT Vol	0	20	40	70	0	60						
Lane Flow Rate	43	391	196	152	87	446						
Geometry Grp	7	7	2	2	7	7						
Degree of Util (X)	0.087	0.727	0.385	0.299	0.172	0.803						
Departure Headway (Hd)	7.238	6.687	7.087	7.069	7.103	6.487						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	494	540	507	507	504	557						
Service Time	4.995	4.443	5.151	5.137	4.857	4.241						
HCM Lane V/C Ratio	0.087	0.724	0.387	0.3	0.173	0.801						
HCM Control Delay	10.7	25.3	14.6	13.2	11.3	30.7						
HCM Lane LOS	B	D	B	B	B	D						
HCM 95th-tile Q	0.3	6	1.8	1.2	0.6	7.8						

HCM 2010 Signalized Intersection Summary
34: Water Street & Capitol Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	80	20	90	120	30	290	30	70	500	90
Future Volume (veh/h)	60	90	80	20	90	120	30	290	30	70	500	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1900	1900	1827	1827	1900	1900	1863	1863
Adj Flow Rate, veh/h	65	98	87	22	98	130	33	315	33	76	543	98
Adj No. of Lanes	0	1	1	1	1	0	1	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	4	4	4	2	2	2
Cap, veh/h	144	187	374	191	174	231	471	1057	111	157	1032	1029
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	302	800	1599	1218	742	984	770	1626	170	152	1588	1583
Grp Volume(v), veh/h	163	0	87	22	0	228	33	0	348	619	0	98
Grp Sat Flow(s),veh/h/ln	1102	0	1599	1218	0	1726	770	0	1797	1740	0	1583
Q Serve(g_s), s	3.2	0.0	3.0	1.2	0.0	8.0	1.6	0.0	5.8	0.0	0.0	1.6
Cycle Q Clear(g_c), s	11.3	0.0	3.0	12.4	0.0	8.0	13.6	0.0	5.8	12.0	0.0	1.6
Prop In Lane	0.40		1.00	1.00		0.57	1.00		0.09	0.12		1.00
Lane Grp Cap(c), veh/h	331	0	374	191	0	404	471	0	1168	1189	0	1029
V/C Ratio(X)	0.49	0.00	0.23	0.12	0.00	0.56	0.07	0.00	0.30	0.52	0.00	0.10
Avail Cap(c_a), veh/h	481	0	533	312	0	575	471	0	1168	1189	0	1029
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	24.2	0.0	21.4	30.3	0.0	23.3	9.9	0.0	5.2	6.3	0.0	4.5
Incr Delay (d2), s/veh	1.4	0.0	0.4	0.3	0.0	1.5	0.3	0.0	0.7	1.6	0.0	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	3.0	0.0	1.4	0.4	0.0	4.0	0.4	0.0	3.0	6.6	0.0	0.7
LnGrp Delay(d),s/veh	25.6	0.0	21.8	30.6	0.0	24.8	10.2	0.0	5.9	8.0	0.0	4.7
LnGrp LOS	C		C	C		C	B		A	A		A
Approach Vol, veh/h	250			250			381			717		
Approach Delay, s/veh	24.3			25.3			6.3			7.5		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	48.8		20.2		48.8		20.2					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	38.0		23.0		38.0		23.0					
Max Q Clear Time (g_c+I1), s	15.6		13.3		14.0		14.4					
Green Ext Time (p_c), s	5.4		1.9		5.5		1.8					
Intersection Summary												
HCM 2010 Ctrl Delay	12.6											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
35: Main St & Capitol Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	120	30	110	100	60	50	720	40	70	580	40
Future Volume (veh/h)	60	120	30	110	100	60	50	720	40	70	580	40
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	1881	1881	1900	1881	1881	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	65	130	33	120	109	65	54	783	43	76	630	43
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	3	3	3
Cap, veh/h	267	317	80	279	242	144	459	1153	63	359	1136	78
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1218	1449	368	1230	1106	659	755	1733	95	654	1708	117
Grp Volume(v), veh/h	65	0	163	120	0	174	54	0	826	76	0	673
Grp Sat Flow(s),veh/h/ln	1218	0	1816	1230	0	1765	755	0	1828	654	0	1824
Q Serve(g_s), s	3.4	0.0	5.3	6.4	0.0	5.9	2.8	0.0	19.0	5.5	0.0	13.5
Cycle Q Clear(g_c), s	9.3	0.0	5.3	11.7	0.0	5.9	16.3	0.0	19.0	24.6	0.0	13.5
Prop In Lane	1.00		0.20	1.00		0.37	1.00		0.05	1.00		0.06
Lane Grp Cap(c), veh/h	267	0	397	279	0	386	459	0	1216	359	0	1214
V/C Ratio(X)	0.24	0.00	0.41	0.43	0.00	0.45	0.12	0.00	0.68	0.21	0.00	0.55
Avail Cap(c_a), veh/h	371	0	553	384	0	537	459	0	1216	359	0	1214
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	27.4	0.0	23.1	28.2	0.0	23.4	10.4	0.0	7.0	14.5	0.0	6.1
Incr Delay (d2), s/veh	0.5	0.0	0.7	1.1	0.0	0.8	0.5	0.0	3.1	1.3	0.0	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	1.2	0.0	2.7	2.2	0.0	2.9	0.7	0.0	10.4	1.1	0.0	7.3
LnGrp Delay(d),s/veh	27.9	0.0	23.8	29.2	0.0	24.2	11.0	0.0	10.1	15.9	0.0	8.0
LnGrp LOS	C		C	C		C	B		B	B		A
Approach Vol, veh/h	228			294			880			749		
Approach Delay, s/veh	25.0			26.2			10.2			8.8		
Approach LOS	C			C			B			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	49.9		19.1		49.9		19.1					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	40.0		21.0		40.0		21.0					
Max Q Clear Time (g_c+I1), s	21.0		11.3		26.6		13.7					
Green Ext Time (p_c), s	8.9		1.6		7.3		1.4					
Intersection Summary												
HCM 2010 Ctrl Delay				13.4								
HCM 2010 LOS				B								

HCM 2010 AWSC
36: Chestnut Street & Capitol Avenue

Intersection												
Intersection Delay, s/veh	32.1											
Intersection LOS	D											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	210	20	30	140	110	30	240	40	80	280	30
Future Vol, veh/h	50	210	20	30	140	110	30	240	40	80	280	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	228	22	33	152	120	33	261	43	87	304	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	26.1			24.7			28.5			44.7		
HCM LOS	D			C			D			E		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	10%	18%	11%	21%								
Vol Thru, %	77%	75%	50%	72%								
Vol Right, %	13%	7%	39%	8%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	310	280	280	390								
LT Vol	30	50	30	80								
Through Vol	240	210	140	280								
RT Vol	40	20	110	30								
Lane Flow Rate	337	304	304	424								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.722	0.673	0.658	0.881								
Departure Headway (Hd)	7.717	7.959	7.778	7.485								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	468	453	463	483								
Service Time	5.797	6.039	5.857	5.56								
HCM Lane V/C Ratio	0.72	0.671	0.657	0.878								
HCM Control Delay	28.5	26.1	24.7	44.7								
HCM Lane LOS	D	D	C	E								
HCM 95th-tile Q	5.7	4.9	4.7	9.5								

HCM 2010 TWSC
37: Willow Street & Capitol Avenue

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	120	170	140	190	30	170
Future Vol, veh/h	120	170	140	190	30	170
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	185	152	207	33	185
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	315	0	734	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	511	-
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	-	-	1245	-	387	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1245	-	340	817
Mov Cap-2 Maneuver	-	-	-	-	340	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	529	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	3.5	12.8			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	675	-	-	1245	-	
HCM Lane V/C Ratio	0.322	-	-	0.122	-	
HCM Control Delay (s)	12.8	-	-	8.3	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	1.4	-	-	0.4	-	

HCM 2010 Signalized Intersection Summary
38: Main Street & Manitoba Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	160	330	70	110	40	170	850	20	40	720	30
Future Volume (veh/h)	40	160	330	70	110	40	170	850	20	40	720	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1900	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	43	174	359	76	120	43	185	924	22	43	783	33
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	0	0	0	1	1	1
Cap, veh/h	122	419	429	144	209	62	296	1138	27	242	865	36
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.08	0.62	0.62	0.48	0.48	0.48
Sat Flow, veh/h	220	1561	1599	279	780	232	1810	1848	44	596	1792	76
Grp Volume(v), veh/h	217	0	359	239	0	0	185	0	946	43	0	816
Grp Sat Flow(s),veh/h/ln	1782	0	1599	1291	0	0	1810	0	1892	596	0	1868
Q Serve(g_s), s	0.0	0.0	14.6	5.3	0.0	0.0	3.2	0.0	26.5	4.1	0.0	27.7
Cycle Q Clear(g_c), s	6.6	0.0	14.6	11.9	0.0	0.0	3.2	0.0	26.5	21.4	0.0	27.7
Prop In Lane	0.20		1.00	0.32		0.18	1.00		0.02	1.00		0.04
Lane Grp Cap(c), veh/h	540	0	429	415	0	0	296	0	1165	242	0	901
V/C Ratio(X)	0.40	0.00	0.84	0.58	0.00	0.00	0.63	0.00	0.81	0.18	0.00	0.91
Avail Cap(c_a), veh/h	602	0	487	464	0	0	343	0	1165	242	0	901
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	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	23.8	22.5	0.0	0.0	14.8	0.0	10.2	21.9	0.0	16.4
Incr Delay (d2), s/veh	0.6	0.0	11.4	1.7	0.0	0.0	2.8	0.0	6.2	1.6	0.0	14.3
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	0.0	7.8	4.3	0.0	0.0	2.0	0.0	15.7	0.8	0.0	17.6
LnGrp Delay(d),s/veh	21.5	0.0	35.2	24.1	0.0	0.0	17.5	0.0	16.4	23.5	0.0	30.7
LnGrp LOS	C		D	C			B		B	C		C
Approach Vol, veh/h	576			239			1131			859		
Approach Delay, s/veh	30.0			24.1			16.6			30.4		
Approach LOS	C			C			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	46.5		22.5		9.2		37.3		22.5			
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0		4.0			
Max Green Setting (Gmax), s	40.0		21.0		7.0		29.0		21.0			
Max Q Clear Time (g_c+I1), s	28.5		16.6		5.2		29.7		13.9			
Green Ext Time (p_c), s	9.0		1.9		0.1		0.0		2.7			
Intersection Summary												
HCM 2010 Ctrl Delay				24.2								
HCM 2010 LOS				C								

HCM 2010 TWSC
39: Manitoba Avenue

Intersection						
Int Delay, s/veh	72					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	573	24	239	216	39	442
Future Vol, veh/h	573	24	239	216	39	442
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	623	26	260	235	42	480
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	649	0	1390	636
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	754	-
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	-	-	937	-	157	~ 478
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	937	-	107	~ 478
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	317	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	5.4	224.4			
HCM LOS			F			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	373	-	-	937	-	
HCM Lane V/C Ratio	1.402	-	-	0.277	-	
HCM Control Delay (s)	224.4	-	-	10.3	0	
HCM Lane LOS	F	-	-	B	A	
HCM 95th %tile Q(veh)	26.2	-	-	1.1	-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 2010 TWSC
40: Manitoba Avenue & Ruby Street

Intersection						
Int Delay, s/veh	22					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	138	877	218	19	70	237
Future Vol, veh/h	138	877	218	19	70	237
Conflicting Peds, #/hr	1	0	0	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	150	953	237	21	76	258
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	259	0	-	0	1502	249
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	1254	-
Critical Hdwy	4.11	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1311	-	-	-	135	795
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	271	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1310	-	-	-	102	793
Mov Cap-2 Maneuver	-	-	-	-	102	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	205	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.1	0		108.3		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1310	-	-	-	312	
HCM Lane V/C Ratio	0.115	-	-	-	1.07	
HCM Control Delay (s)	8.1	0	-	-	108.3	
HCM Lane LOS	A	A	-	-	F	
HCM 95th %tile Q(veh)	0.4	-	-	-	12.6	

HCM 2010 Signalized Intersection Summary
 41: Canyon Rd/Main St & Mountain View Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	30	10	230	50	300	20	710	100	270	750	20
Future Volume (veh/h)	30	30	10	230	50	300	20	710	100	270	750	20
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	1776	1776	1900	1827	1827	1900	1810	1810	1900	1827	1827	1900
Adj Flow Rate, veh/h	33	33	11	250	54	0	22	772	0	293	815	22
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	4	4	4	5	5	5	4	4	4
Cap, veh/h	382	306	102	397	438	0	263	1165	0	363	1002	27
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.00	0.02	0.64	0.00	0.57	0.57	0.57
Sat Flow, veh/h	1282	1276	425	1331	1827	0	1723	1810	0	681	1771	48
Grp Volume(v), veh/h	33	0	44	250	54	0	22	772	0	293	0	837
Grp Sat Flow(s),veh/h/ln	1282	0	1701	1331	1827	0	1723	1810	0	681	0	1818
Q Serve(g_s), s	1.4	0.0	1.4	12.5	1.6	0.0	0.3	18.3	0.0	26.2	0.0	25.5
Cycle Q Clear(g_c), s	3.0	0.0	1.4	13.8	1.6	0.0	0.3	18.3	0.0	39.1	0.0	25.5
Prop In Lane	1.00		0.25	1.00		0.00	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	382	0	408	397	438	0	263	1165	0	363	0	1030
V/C Ratio(X)	0.09	0.00	0.11	0.63	0.12	0.00	0.08	0.66	0.00	0.81	0.00	0.81
Avail Cap(c_a), veh/h	465	0	518	482	556	0	429	1165	0	363	0	1030
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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	20.5	25.9	20.5	0.0	10.9	7.6	0.0	23.0	0.0	12.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.2	0.2	0.0	0.1	3.0	0.0	17.3	0.0	7.0
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	0.5	0.0	0.7	4.8	0.8	0.0	0.2	10.0	0.0	7.3	0.0	14.6
LnGrp Delay(d),s/veh	21.8	0.0	20.5	28.1	20.7	0.0	11.0	10.6	0.0	40.3	0.0	19.0
LnGrp LOS	C		C	C	C		B	B		D		B
Approach Vol, veh/h	77			304			794			1130		
Approach Delay, s/veh	21.0			26.7			10.6			24.6		
Approach LOS	C			C			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	48.4		20.6		5.4		43.1		20.6			
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0		4.0			
Max Green Setting (Gmax), s	40.0		21.0		8.0		28.0		21.0			
Max Q Clear Time (g_c+I1), s	20.3		5.0		2.3		41.1		15.8			
Green Ext Time (p_c), s	13.3		1.4		0.0		0.0		0.7			
Intersection Summary												
HCM 2010 Ctrl Delay				19.9								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
42: Ruby Street & Mountain View Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	410	50	150	430	50	50	140	510	50	70	40
Future Volume (veh/h)	20	410	50	150	430	50	50	140	510	50	70	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1881	1881	1900	1900	1900	1900	1900	1863	1900	1900	1900	1900
Adj Flow Rate, veh/h	22	446	54	163	467	54	54	152	554	54	76	43
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	2	2	2	0	0	0
Cap, veh/h	433	748	91	477	845	98	77	107	349	138	183	84
Arrive On Green	0.03	0.45	0.45	0.08	0.51	0.51	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1792	1647	199	1810	1672	193	78	360	1179	240	620	285
Grp Volume(v), veh/h	22	0	500	163	0	521	760	0	0	173	0	0
Grp Sat Flow(s),veh/h/ln	1792	0	1846	1810	0	1866	1618	0	0	1145	0	0
Q Serve(g_s), s	0.5	0.0	14.4	3.1	0.0	13.6	14.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	14.4	3.1	0.0	13.6	21.0	0.0	0.0	6.2	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.10	0.07		0.73	0.31		0.25
Lane Grp Cap(c), veh/h	433	0	838	477	0	943	533	0	0	405	0	0
V/C Ratio(X)	0.05	0.00	0.60	0.34	0.00	0.55	1.43	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	632	0	838	535	0	943	533	0	0	405	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.3	0.0	14.5	9.8	0.0	12.0	26.0	0.0	0.0	19.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	3.1	0.2	0.0	2.3	202.5	0.0	0.0	0.9	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	0.2	0.0	7.9	1.6	0.0	7.6	40.3	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	10.3	0.0	17.6	10.0	0.0	14.4	228.6	0.0	0.0	20.4	0.0	0.0
LnGrp LOS	B		B	A		B	F			C		
Approach Vol, veh/h	522			684			760			173		
Approach Delay, s/veh	17.3			13.3			228.6			20.4		
Approach LOS	B			B			F			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	36.2		25.0	6.1	39.9		25.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	8.0	28.0		21.0	10.0	28.0		21.0				
Max Q Clear Time (g_c+I1), s	5.1	16.4		8.2	2.5	15.6		23.0				
Green Ext Time (p_c), s	0.1	5.2		5.1	0.0	5.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				91.3								
HCM 2010 LOS				F								

HCM 2010 Signalized Intersection Summary
43: Chestnut Street & Mountain View Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	400	140	180	330	40	150	180	180	40	50	20
Future Volume (veh/h)	10	400	140	180	330	40	150	180	180	40	50	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
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	1827	1827	1900	1863	1863	1900
Adj Flow Rate, veh/h	11	435	152	196	359	43	163	196	196	43	54	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	4	4	4	2	2	2
Cap, veh/h	520	687	240	378	849	102	526	261	261	243	578	0
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.31	0.31	0.31	0.31	0.31	0.00
Sat Flow, veh/h	979	1320	461	825	1633	196	1319	839	839	988	1863	0
Grp Volume(v), veh/h	11	0	587	196	0	402	163	0	392	43	54	0
Grp Sat Flow(s),veh/h/ln	979	0	1781	825	0	1828	1319	0	1679	988	1863	0
Q Serve(g_s), s	0.4	0.0	11.8	11.2	0.0	6.8	5.0	0.0	10.5	2.1	1.0	0.0
Cycle Q Clear(g_c), s	7.1	0.0	11.8	23.0	0.0	6.8	6.1	0.0	10.5	12.6	1.0	0.0
Prop In Lane	1.00		0.26	1.00		0.11	1.00		0.50	1.00		0.00
Lane Grp Cap(c), veh/h	520	0	927	378	0	951	526	0	521	243	578	0
V/C Ratio(X)	0.02	0.00	0.63	0.52	0.00	0.42	0.31	0.00	0.75	0.18	0.09	0.00
Avail Cap(c_a), veh/h	528	0	941	385	0	966	642	0	669	330	743	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.6	0.0	8.6	16.8	0.0	7.4	14.4	0.0	15.6	21.2	12.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	1.6	1.6	0.0	0.4	0.1	0.0	2.4	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	0.1	0.0	6.1	2.7	0.0	3.5	1.8	0.0	5.1	0.6	0.5	0.0
LnGrp Delay(d),s/veh	9.6	0.0	10.2	18.5	0.0	7.8	14.6	0.0	18.0	21.4	12.3	0.0
LnGrp LOS	A		B	B		A	B		B	C	B	
Approach Vol, veh/h	598			598			555			97		
Approach Delay, s/veh	10.2			11.3			17.0			16.3		
Approach LOS	B			B			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	30.6			19.6			30.6			19.6		
Change Period (Y+Rc), s	4.5			4.0			4.5			4.0		
Max Green Setting (Gmax), s	26.5			20.0			26.5			20.0		
Max Q Clear Time (g_c+I1), s	13.8			12.5			25.0			14.6		
Green Ext Time (p_c), s	6.8			1.2			1.1			1.0		
Intersection Summary												
HCM 2010 Ctrl Delay				12.9								
HCM 2010 LOS				B								

HCM 2010 TWSC

44: Bull Road/Willow Street & Mountain View Avenue

Intersection												
Int Delay, s/veh	19.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	370	80	40	180	90	60	90	30	20	10	30
Future Vol, veh/h	120	370	80	40	180	90	60	90	30	20	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	130	402	87	43	196	98	65	98	33	22	11	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	293	0	0	489	0	0	1044	1087	446	1104	1082	245
Stage 1	-	-	-	-	-	-	707	707	-	332	332	-
Stage 2	-	-	-	-	-	-	337	380	-	772	750	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1269	-	-	1074	-	-	207	216	612	188	217	794
Stage 1	-	-	-	-	-	-	426	438	-	681	644	-
Stage 2	-	-	-	-	-	-	677	614	-	392	419	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1269	-	-	1074	-	-	170	186	612	94	187	794
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	186	-	94	187	-
Stage 1	-	-	-	-	-	-	382	393	-	611	618	-
Stage 2	-	-	-	-	-	-	612	589	-	250	376	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	1.1	102.7	29.5
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	203	1269	-	-	1074	-	-	113	794
HCM Lane V/C Ratio	0.964	0.103	-	-	0.04	-	-	0.289	0.041
HCM Control Delay (s)	102.7	8.2	-	-	8.5	-	-	49.3	9.7
HCM Lane LOS	F	A	-	-	A	-	-	E	A
HCM 95th %tile Q(veh)	8.1	0.3	-	-	0.1	-	-	1.1	0.1

HCM 2010 TWSC
45: Umptanum Road & Railroad Ave

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	130	200	160	170	80
Future Vol, veh/h	20	130	200	160	170	80
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	141	217	174	185	87
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	391	0	-	0	489	304
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	185	-
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	1168	-	-	-	538	736
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	847	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1168	-	-	-	528	736
Mov Cap-2 Maneuver	-	-	-	-	528	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	831	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.1	0		16.6		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1168	-	-	-	580	
HCM Lane V/C Ratio	0.019	-	-	-	0.469	
HCM Control Delay (s)	8.1	-	-	-	16.6	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	2.5	

HCM 2010 Signalized Intersection Summary
46: Canyon Road & Umptanum Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	190	190	180	210	130	220	610	270	190	740	50
Future Volume (veh/h)	40	190	190	180	210	130	220	610	270	190	740	50
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	1776	1776	1900	1827	1827	1900	1810	1810	1810	1827	1827	1900
Adj Flow Rate, veh/h	43	207	207	196	228	141	239	663	0	207	804	54
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	4	4	4	5	5	5	4	4	4
Cap, veh/h	247	276	276	204	357	221	268	789	670	188	1261	85
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.16	0.44	0.00	0.11	0.38	0.38
Sat Flow, veh/h	962	816	816	950	1058	654	1723	1810	1538	1740	3302	222
Grp Volume(v), veh/h	43	0	414	196	0	369	239	663	0	207	423	435
Grp Sat Flow(s),veh/h/ln	962	0	1632	950	0	1712	1723	1810	1538	1740	1736	1788
Q Serve(g_s), s	2.9	0.0	16.7	8.3	0.0	13.5	10.1	24.1	0.0	8.0	14.7	14.7
Cycle Q Clear(g_c), s	16.4	0.0	16.7	25.0	0.0	13.5	10.1	24.1	0.0	8.0	14.7	14.7
Prop In Lane	1.00		0.50	1.00		0.38	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	247	0	551	204	0	578	268	789	670	188	663	683
V/C Ratio(X)	0.17	0.00	0.75	0.96	0.00	0.64	0.89	0.84	0.00	1.10	0.64	0.64
Avail Cap(c_a), veh/h	247	0	551	204	0	578	268	789	670	188	663	683
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	21.7	34.7	0.0	20.7	30.6	18.6	0.0	33.0	18.7	18.7
Incr Delay (d2), s/veh	0.3	0.0	5.7	51.2	0.0	2.3	29.2	10.5	0.0	95.1	4.6	4.5
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	0.8	0.0	8.3	6.9	0.0	6.7	7.0	14.3	0.0	8.8	7.9	8.1
LnGrp Delay(d),s/veh	27.9	0.0	27.5	85.9	0.0	23.0	59.9	29.1	0.0	128.1	23.3	23.2
LnGrp LOS	C		C	F		C	E	C		F	C	C
Approach Vol, veh/h	457			565			902			1065		
Approach Delay, s/veh	27.5			44.8			37.2			43.6		
Approach LOS	C			D			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	12.0	36.8			29.5	16.0	32.8	29.5				
Change Period (Y+Rc), s	4.0	4.5			4.5	4.5	4.5	*4.5				
Max Green Setting (Gmax), s	8.0	28.5			24.5	11.5	24.5	*25				
Max Q Clear Time (g_c+I1), s	10.0	26.1			18.7	12.1	16.7	27.0				
Green Ext Time (p_c), s	0.0	1.9			2.6	0.0	5.4	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				39.5								
HCM 2010 LOS				D								
Notes												

2037 No Projects

Synchro 9 Report
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HCM 2010 Signalized Intersection Summary
 47: Canyon Rd & I-90 WB Ramp

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations									
Traffic Volume (veh/h)	30	360	480	100	170	490			
Future Volume (veh/h)	30	360	480	100	170	490			
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	33	391	522	109	185	533			
Adj No. of Lanes	1	1	2	0	1	2			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2			
Cap, veh/h	532	475	977	203	464	1846			
Arrive On Green	0.30	0.30	0.33	0.33	0.11	0.52			
Sat Flow, veh/h	1774	1583	3012	607	1774	3632			
Grp Volume(v), veh/h	33	391	316	315	185	533			
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1756	1774	1770			
Q Serve(g_s), s	0.8	13.2	8.3	8.4	3.5	4.9			
Cycle Q Clear(g_c), s	0.8	13.2	8.3	8.4	3.5	4.9			
Prop In Lane	1.00	1.00		0.35	1.00				
Lane Grp Cap(c), veh/h	532	475	592	587	464	1846			
V/C Ratio(X)	0.06	0.82	0.53	0.54	0.40	0.29			
Avail Cap(c_a), veh/h	756	675	1076	1068	748	2153			
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	14.4	18.8	15.5	15.6	10.1	7.8			
Incr Delay (d2), s/veh	0.1	6.8	0.7	0.8	0.2	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	0.4	6.6	4.2	4.2	1.7	2.4			
LnGrp Delay(d),s/veh	14.5	25.6	16.3	16.4	10.3	7.9			
LnGrp LOS	B	C	B	B	B	A			
Approach Vol, veh/h	424		631			718			
Approach Delay, s/veh	24.7		16.4			8.5			
Approach LOS	C		B			A			
Timer	1	2	3	4	5	6	7	8	
Assigned Phs	1	2				6		8	
Phs Duration (G+Y+Rc), s	10.8	24.2				35.0		22.7	
Change Period (Y+Rc), s	5.1	5.4				5.4		5.9	
Max Green Setting (Gmax), s	14.9	34.6				34.6		24.1	
Max Q Clear Time (g_c+I1), s	5.5	10.4				6.9		15.2	
Green Ext Time (p_c), s	0.2	8.4				8.8		1.6	
Intersection Summary									
HCM 2010 Ctrl Delay			15.2						
HCM 2010 LOS			B						
Notes									

2037 No Projects

Synchro 9 Report
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HCM 2010 TWSC
48: Canyon Road & I-90 EB Ramp

Intersection						
Int Delay, s/veh	9.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	130	270	410	50	140	310
Future Vol, veh/h	130	270	410	50	140	310
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	0	0	-	100	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	16	16	9	9
Mvmt Flow	141	293	446	54	152	337
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1087	-	0	0	446	0
Stage 1	446	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Critical Hdwy	6.6	-	-	-	4.19	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	-	-	-	2.281	-
Pot Cap-1 Maneuver	221	0	-	-	1078	-
Stage 1	609	0	-	-	-	-
Stage 2	492	0	-	-	-	-
Platoon blocked, %		-	-	-	-	-
Mov Cap-1 Maneuver	190	-	-	-	1078	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	64.6	0	2.8			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 190	- 1078	-		
HCM Lane V/C Ratio	-	- 0.744	- 0.141	-		
HCM Control Delay (s)	-	- 64.6	0 8.9	-		
HCM Lane LOS	-	- F	A A	-		
HCM 95th %tile Q(veh)	-	- 4.8	- 0.5	-		

2037 Projected Level of Service Reports – with capital improvement projects

HCM 2010 TWSC

1: I-90 WestBound Offramp/I-90 Westbound Onramp

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑	↗		↖				
Traffic Vol, veh/h	10	570	0	0	430	450	20	10	100	0	0	0
Future Vol, veh/h	10	570	0	0	430	450	20	10	100	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	15	15	15	11	11	11	0	0	0
Mvmt Flow	11	620	0	0	467	489	22	11	109	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	467	0	-	-	-	0	1108	1108	620			
Stage 1	-	-	-	-	-	-	641	641	-			
Stage 2	-	-	-	-	-	-	467	467	-			
Critical Hdwy	4.2	-	-	-	-	-	6.51	6.61	6.31			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.51	5.61	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.51	5.61	-			
Follow-up Hdwy	2.29	-	-	-	-	-	3.599	4.099	3.399			
Pot Cap-1 Maneuver	1054	-	0	0	-	-	223	202	472			
Stage 1	-	-	0	0	-	-	508	456	-			
Stage 2	-	-	0	0	-	-	613	547	-			
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1054	-	-	-	-	-	219	0	472			
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	0	-			
Stage 1	-	-	-	-	-	-	500	0	-			
Stage 2	-	-	-	-	-	-	613	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.1			0			19.1					
HCM LOS							C					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR							
Capacity (veh/h)	396	1054	-	-	-							
HCM Lane V/C Ratio	0.357	0.01	-	-	-							
HCM Control Delay (s)	19.1	8.5	0	-	-							
HCM Lane LOS	C	A	A	-	-							
HCM 95th %tile Q(veh)	1.6	0	-	-	-							

MOVEMENT SUMMARY

 **Site: 101 [US-97 & Dolarway]**

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Dolarway Rd											
3	L2	196	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.7
8	T1	109	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.7
18	R2	109	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.0
Approach		413	3.0	0.623	17.1	LOS C	3.7	93.6	0.78	0.88	28.5
East: University Way											
1	L2	54	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.7
6	T1	609	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.7
16	R2	65	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.2
Approach		728	3.0	0.835	25.3	LOS D	11.7	298.5	1.00	1.24	26.6
North: US-97											
7	L2	130	3.0	0.713	18.6	LOS C	8.2	209.9	0.93	1.10	28.9
4	T1	163	3.0	0.713	18.6	LOS C	8.2	209.9	0.93	1.10	28.9
14	R2	293	3.0	0.713	17.4	LOS C	8.2	209.9	0.93	1.10	28.3
Approach		587	3.0	0.713	18.0	LOS C	8.2	209.9	0.93	1.10	28.6
West: University Way/US-97											
5	L2	152	3.0	0.153	5.0	LOS A	0.6	15.8	0.44	0.35	32.5
2	T1	554	3.0	0.732	16.5	LOS C	7.4	188.5	0.81	0.84	29.9
12	R2	174	3.0	0.732	16.5	LOS C	7.4	188.5	0.81	0.84	29.1
Approach		880	3.0	0.732	14.5	LOS B	7.4	188.5	0.75	0.75	30.1
All Vehicles		2609	3.0	0.835	18.7	LOS C	11.7	298.5	0.86	0.99	28.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: \\FPSE03\Data\2016\Projects\SE16-0489_Ellensburg_Transportation_Element\Analysis\Sidra\DolarwayRoundabout.sip7

HCM 2010 Signalized Intersection Summary 3: University Way & Reecer Creek Rd

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	320	470	280	380	110	80		
Future Volume (veh/h)	320	470	280	380	110	80		
Number	7	4	8	18	1	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	1900	1863	1863		
Adj Flow Rate, veh/h	348	511	304	413	120	87		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	409	1273	490	666	384	343		
Arrive On Green	0.68	0.68	0.68	0.68	0.22	0.22		
Sat Flow, veh/h	731	1863	717	974	1774	1583		
Grp Volume(v), veh/h	348	511	0	717	120	87		
Grp Sat Flow(s),veh/h/ln	731	1863	0	1691	1774	1583		
Q Serve(g_s), s	40.5	10.8	0.0	21.0	5.1	4.1		
Cycle Q Clear(g_c), s	61.5	10.8	0.0	21.0	5.1	4.1		
Prop In Lane	1.00			0.58	1.00	1.00		
Lane Grp Cap(c), veh/h	409	1273	0	1155	384	343		
V/C Ratio(X)	0.85	0.40	0.00	0.62	0.31	0.25		
Avail Cap(c_a), veh/h	409	1273	0	1155	384	343		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	25.8	6.2	0.0	7.8	29.6	29.2		
Incr Delay (d2), s/veh	15.5	0.2	0.0	1.0	2.1	1.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.4	5.5	0.0	9.9	2.7	2.0		
LnGrp Delay(d),s/veh	41.4	6.4	0.0	8.9	31.7	31.0		
LnGrp LOS	D	A		A	C	C		
Approach Vol, veh/h	859		717	207				
Approach Delay, s/veh	20.6		8.9	31.4				
Approach LOS	C		A	C				
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4	6		8	
Phs Duration (G+Y+Rc), s				66.0	24.0		66.0	
Change Period (Y+Rc), s				4.5	4.5		4.5	
Max Green Setting (Gmax), s				61.5	19.5		61.5	
Max Q Clear Time (g_c+I1), s				63.5	7.1		23.0	
Green Ext Time (p_c), s				0.0	0.5		16.7	
Intersection Summary								
HCM 2010 Ctrl Delay				17.1				
HCM 2010 LOS				B				

HCM 2010 TWSC
4: Water St & Bender Rd

Intersection						
Int Delay, s/veh	5.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	80	80	100	80	160
Future Vol, veh/h	160	80	80	100	80	160
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	87	87	109	87	174
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	261	0	500	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	283	-
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	-	-	1303	-	530	823
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1303	-	492	823
Mov Cap-2 Maneuver	-	-	-	-	492	-
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	711	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	3.5		13.7		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	672	-	-	1303	-	
HCM Lane V/C Ratio	0.388	-	-	0.067	-	
HCM Control Delay (s)	13.7	-	-	8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.8	-	-	0.2	-	

HCM 2010 Signalized Intersection Summary
5: Airport Rd & Bender Rd/Sanders Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	120	60	40	80	200	100	540	80	310	650	40
Future Volume (veh/h)	50	120	60	40	80	200	100	540	80	310	650	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	54	130	65	43	87	217	109	587	87	337	707	43
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	212	93	86	114	243	384	1025	152	431	1124	68
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	224	912	401	138	489	1046	709	1586	235	761	1738	106
Grp Volume(v), veh/h	249	0	0	347	0	0	109	0	674	337	0	750
Grp Sat Flow(s),veh/h/ln	1538	0	0	1672	0	0	709	0	1821	761	0	1844
Q Serve(g_s), s	0.0	0.0	0.0	4.1	0.0	0.0	8.0	0.0	15.4	32.6	0.0	18.0
Cycle Q Clear(g_c), s	10.6	0.0	0.0	14.7	0.0	0.0	26.0	0.0	15.4	48.0	0.0	18.0
Prop In Lane	0.22		0.26	0.12		0.63	1.00		0.13	1.00		0.06
Lane Grp Cap(c), veh/h	416	0	0	443	0	0	384	0	1177	431	0	1192
V/C Ratio(X)	0.60	0.00	0.00	0.78	0.00	0.00	0.28	0.00	0.57	0.78	0.00	0.63
Avail Cap(c_a), veh/h	432	0	0	459	0	0	384	0	1177	431	0	1192
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	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	0.0	27.5	0.0	0.0	15.6	0.0	7.4	21.0	0.0	7.8
Incr Delay (d2), s/veh	2.1	0.0	0.0	8.3	0.0	0.0	0.4	0.0	0.7	9.0	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	0.0	7.9	0.0	0.0	1.6	0.0	7.9	7.9	0.0	9.3
LnGrp Delay(d),s/veh	27.8	0.0	0.0	35.8	0.0	0.0	16.0	0.0	8.0	30.0	0.0	8.9
LnGrp LOS	C			D			B		A	C		A
Approach Vol, veh/h	249			347			783			1087		
Approach Delay, s/veh	27.8			35.8			9.1			15.4		
Approach LOS	C			D			A			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	52.5		21.8		52.5		21.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	48.0		18.0		48.0		18.0					
Max Q Clear Time (g_c+I1), s	28.0		12.6		50.0		16.7					
Green Ext Time (p_c), s	13.6		1.8		0.0		0.5					
Intersection Summary												
HCM 2010 Ctrl Delay				17.6								
HCM 2010 LOS				B								

HCM 2010 AWSC
6: Alder St & Sanders Rd

Intersection	
Intersection Delay, s/veh	19
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	440	150	80	260	150	50
Future Vol, veh/h	440	150	80	260	150	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	478	163	87	283	163	54
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	21.5	18.1	13.1
HCM LOS	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	24%
Vol Thru, %	0%	0%	100%	0%	76%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	50	440	150	340
LT Vol	150	0	0	0	80
Through Vol	0	0	440	0	260
RT Vol	0	50	0	150	0
Lane Flow Rate	163	54	478	163	370
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.341	0.095	0.773	0.231	0.613
Departure Headway (Hd)	7.538	6.314	5.817	5.108	5.971
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	476	567	622	703	606
Service Time	5.289	4.063	3.555	2.846	4.011
HCM Lane V/C Ratio	0.342	0.095	0.768	0.232	0.611
HCM Control Delay	14.2	9.7	25.6	9.4	18.1
HCM Lane LOS	B	A	D	A	C
HCM 95th-tile Q	1.5	0.3	7.2	0.9	4.2

HCM 2010 AWSC
7: Water Street & Idaho St

Intersection												
Intersection Delay, s/veh	11.6											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	20	20	0	10	60	320	60	20	170	20
Future Vol, veh/h	10	10	20	20	0	10	60	320	60	20	170	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	11	22	22	0	11	65	348	65	22	185	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	8.7			8.8			13.1			9.5		
HCM LOS	A			A			B			A		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	14%	25%	67%	10%								
Vol Thru, %	73%	25%	0%	81%								
Vol Right, %	14%	50%	33%	10%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	440	40	30	210								
LT Vol	60	10	20	20								
Through Vol	320	10	0	170								
RT Vol	60	20	10	20								
Lane Flow Rate	478	43	33	228								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.575	0.064	0.05	0.291								
Departure Headway (Hd)	4.329	5.272	5.476	4.59								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	832	676	651	781								
Service Time	2.358	3.331	3.536	2.626								
HCM Lane V/C Ratio	0.575	0.064	0.051	0.292								
HCM Control Delay	13.1	8.7	8.8	9.5								
HCM Lane LOS	B	A	A	A								
HCM 95th-tile Q	3.7	0.2	0.2	1.2								

HCM 2010 AWSC
8: Water Street & Helena Avenue

Intersection												
Intersection Delay, s/veh	13.5											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	20	10	260	20	20	30	120	240	70	180	20
Future Vol, veh/h	20	20	10	260	20	20	30	120	240	70	180	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	22	22	11	283	22	22	33	130	261	76	196	22
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			1			1			1		
HCM Control Delay	10.2			15.9			11.6			14.1		
HCM LOS	B			C			B			B		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1							
Vol Left, %	20%	0%	40%	87%	26%							
Vol Thru, %	80%	0%	40%	7%	67%							
Vol Right, %	0%	100%	20%	7%	7%							
Sign Control	Stop	Stop	Stop	Stop	Stop							
Traffic Vol by Lane	150	240	50	300	270							
LT Vol	30	0	20	260	70							
Through Vol	120	0	20	20	180							
RT Vol	0	240	10	20	20							
Lane Flow Rate	163	261	54	326	293							
Geometry Grp	7	7	2	2	5							
Degree of Util (X)	0.283	0.393	0.097	0.54	0.474							
Departure Headway (Hd)	6.24	5.427	6.447	5.966	5.82							
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes							
Cap	574	660	552	603	616							
Service Time	4.003	3.189	4.538	4.025	3.884							
HCM Lane V/C Ratio	0.284	0.395	0.098	0.541	0.476							
HCM Control Delay	11.5	11.7	10.2	15.9	14.1							
HCM Lane LOS	B	B	B	C	B							
HCM 95th-tile Q	1.2	1.9	0.3	3.2	2.5							

HCM 2010 Signalized Intersection Summary
9: Walnut Street/Airport Rd & Helena Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	90	80	10	90	90	70	630	110	100	350	40
Future Volume (veh/h)	120	90	80	10	90	90	70	630	110	100	350	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1881	1900	1900	1881	1900
Adj Flow Rate, veh/h	130	98	87	11	98	98	76	685	120	109	380	43
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	202	139	99	379	251	251	122	805	136	179	591	62
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	418	483	344	1218	873	873	104	1418	240	193	1041	109
Grp Volume(v), veh/h	315	0	0	11	0	196	881	0	0	532	0	0
Grp Sat Flow(s),veh/h/ln	1245	0	0	1218	0	1746	1762	0	0	1343	0	0
Q Serve(g_s), s	9.9	0.0	0.0	0.0	0.0	5.6	11.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.5	0.0	0.0	0.6	0.0	5.6	26.2	0.0	0.0	14.7	0.0	0.0
Prop In Lane	0.41		0.28	1.00		0.50	0.09		0.14	0.20		0.08
Lane Grp Cap(c), veh/h	440	0	0	379	0	501	1063	0	0	832	0	0
V/C Ratio(X)	0.72	0.00	0.00	0.03	0.00	0.39	0.83	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	456	0	0	393	0	521	1265	0	0	994	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.0	0.0	0.0	15.9	0.0	17.7	11.2	0.0	0.0	8.4	0.0	0.0
Incr Delay (d2), s/veh	5.1	0.0	0.0	0.0	0.0	0.5	4.1	0.0	0.0	1.0	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	5.8	0.0	0.0	0.1	0.0	2.7	13.7	0.0	0.0	6.2	0.0	0.0
LnGrp Delay(d),s/veh	27.1	0.0	0.0	16.0	0.0	18.2	15.3	0.0	0.0	9.4	0.0	0.0
LnGrp LOS	C			B			B			A		
Approach Vol, veh/h	315			207			881			532		
Approach Delay, s/veh	27.1			18.1			15.3			9.4		
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	39.7		22.3		39.7		22.3					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	42.5		18.5		42.5		18.5					
Max Q Clear Time (g_c+I1), s	28.2		17.5		16.7		7.6					
Green Ext Time (p_c), s	7.0		0.3		9.2		1.8					
Intersection Summary												
HCM 2010 Ctrl Delay				15.9								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis

10: Wildcat Way & 18th Avenue

	→	↘	↙	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (vph)	100	470	140	40	60	500
Future Volume (vph)	100	470	140	40	60	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Grpb, ped/bikes	0.97		1.00	1.00	0.97	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.89		1.00	1.00	0.88	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	1493		1805	1900	1616	
Flt Permitted	1.00		0.19	1.00	0.99	
Satd. Flow (perm)	1493		364	1900	1616	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	511	152	43	65	543
RTOR Reduction (vph)	331	0	0	0	285	0
Lane Group Flow (vph)	289	0	152	43	323	0
Confl. Peds. (#/hr)		5	3		3	4
Confl. Bikes (#/hr)		3				4
Heavy Vehicles (%)	10%	10%	0%	0%	0%	0%
Turn Type	NA		pm+pt	NA	Perm	
Protected Phases	4		3	8		
Permitted Phases			8		2	
Actuated Green, G (s)	16.4		24.9	24.9	30.6	
Effective Green, g (s)	16.4		24.9	24.9	30.6	
Actuated g/C Ratio	0.25		0.39	0.39	0.47	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	379		229	733	766	
v/s Ratio Prot	0.19		c0.04	0.02		
v/s Ratio Perm			c0.21		c0.20	
v/c Ratio	0.76		0.66	0.06	0.42	
Uniform Delay, d1	22.2		15.7	12.4	11.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	8.8		7.1	0.0	1.7	
Delay (s)	31.0		22.7	12.5	12.8	
Level of Service	C		C	B	B	
Approach Delay (s)	31.0			20.5	12.8	
Approach LOS	C			C	B	
Intersection Summary						
HCM 2000 Control Delay			21.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			64.5		Sum of lost time (s)	13.5
Intersection Capacity Utilization			88.3%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary
11: Walnut Street & 18th Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	220	30	80	200	330	40	290	130	140	100	220
Future Volume (veh/h)	280	220	30	80	200	330	40	290	130	140	100	220
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		0.97	1.00		0.97	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1881	1900	1900	1881	1900
Adj Flow Rate, veh/h	304	239	33	87	217	359	43	315	141	152	109	239
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	247	665	92	507	258	427	121	458	193	244	156	268
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	848	1628	225	1121	632	1046	84	1182	498	354	401	692
Grp Volume(v), veh/h	304	0	272	87	0	576	499	0	0	500	0	0
Grp Sat Flow(s),veh/h/ln	848	0	1853	1121	0	1678	1764	0	0	1448	0	0
Q Serve(g_s), s	4.4	0.0	4.5	2.6	0.0	13.6	0.0	0.0	0.0	3.4	0.0	0.0
Cycle Q Clear(g_c), s	18.0	0.0	4.5	7.1	0.0	13.6	10.5	0.0	0.0	13.9	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.62	0.09		0.28	0.30		0.48
Lane Grp Cap(c), veh/h	247	0	757	507	0	685	772	0	0	668	0	0
V/C Ratio(X)	1.23	0.00	0.36	0.17	0.00	0.84	0.65	0.00	0.00	0.75	0.00	0.00
Avail Cap(c_a), veh/h	247	0	757	507	0	685	807	0	0	696	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.3	0.0	9.0	11.5	0.0	11.8	11.5	0.0	0.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	133.2	0.0	0.3	0.2	0.0	9.2	1.7	0.0	0.0	4.3	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	12.1	0.0	2.3	0.8	0.0	8.0	5.5	0.0	0.0	6.4	0.0	0.0
LnGrp Delay(d),s/veh	154.5	0.0	9.3	11.7	0.0	21.0	13.2	0.0	0.0	16.6	0.0	0.0
LnGrp LOS	F		A	B		C	B			B		
Approach Vol, veh/h	576			663			499			500		
Approach Delay, s/veh	86.0			19.7			13.2			16.6		
Approach LOS	F			B			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	21.6		22.5		21.6		22.5					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	12.5		20.0		15.9		15.6					
Green Ext Time (p_c), s	2.5		0.0		1.1		1.5					
Intersection Summary												
HCM 2010 Ctrl Delay				34.6								
HCM 2010 LOS				C								

HCM 2010 AWSC
12: Alder Street & 18th Avenue

Intersection

Intersection Delay, s/veh	17.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	60	30	100	40	30	10	200	240	40	10	150	60
Future Vol, veh/h	60	30	100	40	30	10	200	240	40	10	150	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	33	109	43	33	11	217	261	43	11	163	65
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	12.2	10.6	23.5	11.8
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	42%	32%	100%	0%	5%
Vol Thru, %	50%	16%	0%	75%	68%
Vol Right, %	8%	53%	0%	25%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	480	190	40	40	220
LT Vol	200	60	40	0	10
Through Vol	240	30	0	30	150
RT Vol	40	100	0	10	60
Lane Flow Rate	522	207	43	43	239
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.765	0.345	0.09	0.082	0.367
Departure Headway (Hd)	5.278	6.008	7.489	6.798	5.519
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	683	595	476	524	648
Service Time	3.328	4.079	5.272	4.581	3.583
HCM Lane V/C Ratio	0.764	0.348	0.09	0.082	0.369
HCM Control Delay	23.5	12.2	11	10.2	11.8
HCM Lane LOS	C	B	B	B	B
HCM 95th-tile Q	7.2	1.5	0.3	0.3	1.7

HCM 2010 Signalized Intersection Summary
13: Water Street & 15th Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	40	180	10	50	120	110	260	10	50	270	80
Future Volume (veh/h)	90	40	180	10	50	120	110	260	10	50	270	80
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1893	1900	1900	1863	1900	1900	1899	1900	1900	1895	1900
Adj Flow Rate, veh/h	98	43	196	11	54	130	120	283	11	54	293	87
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	0	0	0	0	0
Cap, veh/h	466	68	309	93	116	250	765	1039	40	158	728	199
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1219	297	1354	38	511	1097	1018	1815	71	118	1272	349
Grp Volume(v), veh/h	98	0	239	195	0	0	120	0	294	434	0	0
Grp Sat Flow(s),veh/h/ln	1219	0	1651	1645	0	0	1018	0	1886	1739	0	0
Q Serve(g_s), s	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	5.9	4.6	0.0	0.0	2.2	0.0	3.6	6.0	0.0	0.0
Prop In Lane	1.00		0.82	0.06		0.67	1.00		0.04	0.12		0.20
Lane Grp Cap(c), veh/h	466	0	376	460	0	0	765	0	1079	1085	0	0
V/C Ratio(X)	0.21	0.00	0.64	0.42	0.00	0.00	0.16	0.00	0.27	0.40	0.00	0.00
Avail Cap(c_a), veh/h	676	0	660	737	0	0	765	0	1079	1085	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.3	0.0	15.7	15.2	0.0	0.0	4.6	0.0	4.9	5.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	1.8	0.6	0.0	0.0	0.4	0.0	0.6	1.1	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	1.0	0.0	2.8	2.2	0.0	0.0	0.8	0.0	2.0	3.3	0.0	0.0
LnGrp Delay(d),s/veh	14.6	0.0	17.5	15.8	0.0	0.0	5.0	0.0	5.5	6.5	0.0	0.0
LnGrp LOS	B		B	B			A		A	A		
Approach Vol, veh/h	337			195			414			434		
Approach Delay, s/veh	16.6			15.8			5.4			6.5		
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	30.2		14.8		30.2		14.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	5.6		7.9		8.0		6.6					
Green Ext Time (p_c), s	3.3		2.3		2.9		2.5					
Intersection Summary												
HCM 2010 Ctrl Delay				10.0								
HCM 2010 LOS				A								

HCM 2010 AWSC
14: Main St & 14th Avenue

Intersection												
Intersection Delay, s/veh	15.7											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	70	60	210	80	120	20	50	350	30	60	10
Future Vol, veh/h	10	70	60	210	80	120	20	50	350	30	60	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	76	65	228	87	130	22	54	380	33	65	11
Number of Lanes	0	1	0	0	1	1	0	1	1	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			1			1			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			2			1			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			1			2			1		
HCM Control Delay	12.7			16.7			16.6			12.3		
HCM LOS	B			C			C			B		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1						
Vol Left, %	29%	0%	7%	72%	0%	30%						
Vol Thru, %	71%	0%	50%	28%	0%	60%						
Vol Right, %	0%	100%	43%	0%	100%	10%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	70	350	140	290	120	100						
LT Vol	20	0	10	210	0	30						
Through Vol	50	0	70	80	0	60						
RT Vol	0	350	60	0	120	10						
Lane Flow Rate	76	380	152	315	130	109						
Geometry Grp	7	7	6	7	7	6						
Degree of Util (X)	0.142	0.618	0.291	0.6	0.209	0.22						
Departure Headway (Hd)	6.706	5.849	6.874	6.855	5.776	7.288						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	531	613	525	523	616	495						
Service Time	4.498	3.64	4.88	4.647	3.566	5.3						
HCM Lane V/C Ratio	0.143	0.62	0.29	0.602	0.211	0.22						
HCM Control Delay	10.6	17.8	12.7	19.5	10.1	12.3						
HCM Lane LOS	B	C	B	C	B	B						
HCM 95th-tile Q	0.5	4.2	1.2	3.9	0.8	0.8						

HCM 2010 Signalized Intersection Summary
 15: Wildcat Way & 14th Avenue/Dean Nicholson Blvd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	360	40	220	210	30	90	340	70	30	410	170
Future Volume (veh/h)	140	360	40	220	210	30	90	340	70	30	410	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	152	391	43	239	228	33	98	370	76	33	446	185
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	503	673	74	372	649	94	223	612	126	360	511	212
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1136	1682	185	970	1624	235	808	1530	314	959	1277	530
Grp Volume(v), veh/h	152	0	434	239	0	261	98	0	446	33	0	631
Grp Sat Flow(s),veh/h/ln	1136	0	1867	970	0	1859	808	0	1845	959	0	1807
Q Serve(g_s), s	4.9	0.0	8.2	9.8	0.0	4.4	3.5	0.0	8.6	1.3	0.0	14.5
Cycle Q Clear(g_c), s	9.3	0.0	8.2	18.0	0.0	4.4	18.0	0.0	8.6	9.9	0.0	14.5
Prop In Lane	1.00		0.10	1.00		0.13	1.00		0.17	1.00		0.29
Lane Grp Cap(c), veh/h	503	0	747	372	0	743	223	0	738	360	0	723
V/C Ratio(X)	0.30	0.00	0.58	0.64	0.00	0.35	0.44	0.00	0.60	0.09	0.00	0.87
Avail Cap(c_a), veh/h	503	0	747	372	0	743	223	0	738	360	0	723
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	12.7	0.0	10.6	18.1	0.0	9.4	21.4	0.0	10.7	14.6	0.0	12.4
Incr Delay (d2), s/veh	0.3	0.0	1.1	3.8	0.0	0.3	6.2	0.0	3.7	0.5	0.0	13.8
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	1.6	0.0	4.3	3.3	0.0	2.3	1.6	0.0	5.1	0.4	0.0	9.8
LnGrp Delay(d),s/veh	13.0	0.0	11.7	21.9	0.0	9.7	27.6	0.0	14.3	15.1	0.0	26.3
LnGrp LOS	B		B		C		A		C		B	
Approach Vol, veh/h	586			500			544			664		
Approach Delay, s/veh	12.0			15.5			16.7			25.7		
Approach LOS	B			B			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	22.5		22.5		22.5		22.5					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	20.0		11.3		16.5		20.0					
Green Ext Time (p_c), s	0.0		3.0		0.9		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				17.9								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
 16: Alder Street & Dean Nicholson Blvd/14th Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	20	120	30	30	40	80	490	10	10	280	40
Future Volume (veh/h)	80	20	120	30	30	40	80	490	10	10	280	40
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		0.97	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1900	1900	1900	1900	1900	1900	1863	1900
Adj Flow Rate, veh/h	87	22	130	33	33	43	87	533	11	11	304	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	0	0	0	2	2	2
Cap, veh/h	185	51	171	155	146	138	180	983	19	81	982	135
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.63	0.63	0.63	0.63	0.63	0.63
Sat Flow, veh/h	454	253	844	327	720	682	163	1569	31	16	1568	216
Grp Volume(v), veh/h	239	0	0	109	0	0	631	0	0	358	0	0
Grp Sat Flow(s),veh/h/ln	1551	0	0	1728	0	0	1763	0	0	1800	0	0
Q Serve(g_s), s	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.5	0.0	0.0	2.8	0.0	0.0	9.8	0.0	0.0	4.8	0.0	0.0
Prop In Lane	0.36		0.54	0.30		0.39	0.14		0.02	0.03		0.12
Lane Grp Cap(c), veh/h	407	0	0	439	0	0	1182	0	0	1198	0	0
V/C Ratio(X)	0.59	0.00	0.00	0.25	0.00	0.00	0.53	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h	619	0	0	657	0	0	1182	0	0	1198	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.6	0.0	0.0	17.8	0.0	0.0	5.5	0.0	0.0	4.6	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.3	0.0	0.0	1.7	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.0	1.4	0.0	0.0	5.7	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	20.9	0.0	0.0	18.1	0.0	0.0	7.2	0.0	0.0	5.2	0.0	0.0
LnGrp LOS	C			B			A			A		
Approach Vol, veh/h	239			109			631			358		
Approach Delay, s/veh	20.9			18.1			7.2			5.2		
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	37.4		15.1		37.4		15.1					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	32.9		18.1		32.9		18.1					
Max Q Clear Time (g_c+I1), s	11.8		9.5		6.8		4.8					
Green Ext Time (p_c), s	4.8		1.0		5.0		1.2					
Intersection Summary												
HCM 2010 Ctrl Delay				10.0								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis 17: Wenas Street & University Way

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗	↖	↗
Traffic Volume (vph)	630	60	70	750	110	70
Future Volume (vph)	630	60	70	750	110	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Grpb, ped/bikes	1.00		1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1820		1770	1863	1787	1579
Flt Permitted	1.00		0.17	1.00	0.95	1.00
Satd. Flow (perm)	1820		318	1863	1787	1579
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	685	65	76	815	120	76
RTOR Reduction (vph)	6	0	0	0	0	50
Lane Group Flow (vph)	744	0	76	815	120	26
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)		3%			1%	1%
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	30.3		30.3	30.3	20.7	20.7
Effective Green, g (s)	30.3		30.3	30.3	20.7	20.7
Actuated g/C Ratio	0.51		0.51	0.51	0.34	0.34
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	919		160	940	616	544
v/s Ratio Prot	0.41			c0.44		
v/s Ratio Perm			0.24		c0.07	0.02
v/c Ratio	0.81		0.47	0.87	0.19	0.05
Uniform Delay, d1	12.4		9.7	13.1	13.8	13.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3		2.2	8.5	0.7	0.2
Delay (s)	17.8		11.9	21.6	14.5	13.3
Level of Service	B		B	C	B	B
Approach Delay (s)	17.8			20.7	14.0	
Approach LOS	B			C	B	
Intersection Summary						
HCM 2000 Control Delay			18.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			58.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

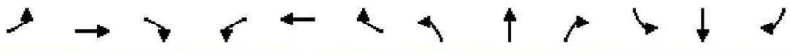
HCM 2010 Signalized Intersection Summary
18: Water Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	510	80	100	680	180	120	370	120	60	370	120
Future Volume (veh/h)	180	510	80	100	680	180	120	370	120	60	370	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1900	1900	1810	1900	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	196	554	87	109	739	196	130	402	130	65	402	130
Adj No. of Lanes	0	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	5	5	5	5	5	5	5	5	5
Cap, veh/h	208	768	131	140	931	290	190	494	160	190	494	160
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	240	1514	258	151	1836	571	844	1311	424	844	1311	424
Grp Volume(v), veh/h	302	0	535	513	0	531	130	0	532	65	0	532
Grp Sat Flow(s),veh/h/ln	427	0	1586	1011	0	1546	844	0	1735	844	0	1735
Q Serve(g_s), s	17.2	0.0	17.3	17.7	0.0	17.8	7.0	0.0	19.0	5.2	0.0	19.0
Cycle Q Clear(g_c), s	35.0	0.0	17.3	35.0	0.0	17.8	26.0	0.0	19.0	24.2	0.0	19.0
Prop In Lane	0.65		0.16	0.21		0.37	1.00		0.24	1.00		0.24
Lane Grp Cap(c), veh/h	302	0	804	576	0	784	190	0	654	190	0	654
V/C Ratio(X)	1.00	0.00	0.66	0.89	0.00	0.68	0.69	0.00	0.81	0.34	0.00	0.81
Avail Cap(c_a), veh/h	302	0	804	576	0	784	190	0	654	190	0	654
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)	0.58	0.00	0.58	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	12.6	18.7	0.0	12.8	32.2	0.0	19.3	30.2	0.0	19.3
Incr Delay (d2), s/veh	39.4	0.0	2.5	18.5	0.0	4.7	10.3	0.0	8.0	1.3	0.0	8.0
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	9.0	0.0	8.0	12.7	0.0	8.5	3.0	0.0	10.5	1.3	0.0	10.5
LnGrp Delay(d),s/veh	65.3	0.0	15.2	37.2	0.0	17.4	42.5	0.0	27.3	31.5	0.0	27.3
LnGrp LOS	F		B	D		B	D		C	C		C
Approach Vol, veh/h	837			1044			662			597		
Approach Delay, s/veh	33.3			27.2			30.3			27.8		
Approach LOS	C			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	30.0		39.0		30.0		39.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	26.0		35.0		26.0		35.0					
Max Q Clear Time (g_c+I1), s	28.0		37.0		26.2		37.0					
Green Ext Time (p_c), s	0.0		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				29.6								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
19: Main St & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	370	70	100	530	130	80	290	70	250	280	150
Future Volume (veh/h)	250	370	70	100	530	130	80	290	70	250	280	150
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		0.98	1.00		0.98	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1900	1845	1845	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	272	402	76	109	576	141	87	315	76	272	304	163
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	3	3	3	2	2	2	1	1	1
Cap, veh/h	421	1153	216	485	988	241	314	391	327	348	496	416
Arrive On Green	0.11	0.40	0.40	0.06	0.36	0.36	0.05	0.21	0.21	0.11	0.26	0.26
Sat Flow, veh/h	1707	2852	534	1757	2779	678	1774	1863	1559	1792	1881	1577
Grp Volume(v), veh/h	272	238	240	109	363	354	87	315	76	272	304	163
Grp Sat Flow(s),veh/h/ln	1707	1703	1683	1757	1752	1705	1774	1863	1559	1792	1881	1577
Q Serve(g_s), s	6.7	6.7	6.8	2.7	11.6	11.7	2.6	11.1	2.8	7.5	9.8	5.9
Cycle Q Clear(g_c), s	6.7	6.7	6.8	2.7	11.6	11.7	2.6	11.1	2.8	7.5	9.8	5.9
Prop In Lane	1.00		0.32	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	421	688	680	485	623	606	314	391	327	348	496	416
V/C Ratio(X)	0.65	0.35	0.35	0.22	0.58	0.59	0.28	0.81	0.23	0.78	0.61	0.39
Avail Cap(c_a), veh/h	421	688	680	571	623	606	410	513	429	348	518	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	14.2	14.3	12.7	18.1	18.1	19.9	25.9	22.6	19.7	22.3	20.9
Incr Delay (d2), s/veh	2.7	1.4	1.4	0.1	3.9	4.1	0.2	5.2	0.1	10.1	1.4	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	3.3	3.4	3.4	1.3	6.2	6.1	1.3	6.3	1.2	2.4	5.3	2.6
LnGrp Delay(d),s/veh	15.5	15.6	15.7	12.8	22.0	22.2	20.1	31.2	22.8	29.8	23.7	21.1
LnGrp LOS	B	B	B	B	C	C	C	C	C	C	C	C
Approach Vol, veh/h	750			826			478			739		
Approach Delay, s/veh	15.6			20.9			27.8			25.3		
Approach LOS	B			C			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	11.0	18.5	7.6	31.9	7.3	22.2	11.0	28.5				
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0				
Max Green Setting (Gmax), s	7.5	19.0	7.5	20.0	7.5	19.0	7.5	20.0				
Max Q Clear Time (g_c+I1), s	9.5	13.1	4.7	8.8	4.6	11.8	8.7	13.7				
Green Ext Time (p_c), s	0.0	1.3	0.0	2.5	0.0	1.4	0.0	1.9				
Intersection Summary												
HCM 2010 Ctrl Delay				21.8								
HCM 2010 LOS				C								

HCM Signalized Intersection Capacity Analysis 20: Wildcat Way & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔		↔	↔	
Traffic Volume (vph)	100	610	90	110	710	30	110	170	130	30	110	150
Future Volume (vph)	100	610	90	110	710	30	110	170	130	30	110	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frt		0.98			0.99		1.00	0.94		1.00	0.91	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3527			3568		1805	1777		1805	1736	
Flt Permitted		0.75			0.75		0.46	1.00		0.38	1.00	
Satd. Flow (perm)		2673			2697		865	1777		726	1736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	663	98	120	772	33	120	185	141	33	120	163
RTOR Reduction (vph)	0	15	0	0	4	0	0	66	0	0	88	0
Lane Group Flow (vph)	0	855	0	0	921	0	120	260	0	33	195	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		29.0			29.0		13.0	13.0		13.0	13.0	
Effective Green, g (s)		29.0			29.0		13.0	13.0		13.0	13.0	
Actuated g/C Ratio		0.58			0.58		0.26	0.26		0.26	0.26	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		0.2			0.2		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1550			1564		224	462		188	451	
v/s Ratio Prot								c0.15			0.11	
v/s Ratio Perm		0.32			c0.34		0.14			0.05		
v/c Ratio		0.55			0.59		0.54	0.56		0.18	0.43	
Uniform Delay, d1		6.5			6.7		15.9	16.0		14.3	15.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4			1.6		2.5	1.6		0.4	0.7	
Delay (s)		7.9			8.3		18.4	17.6		14.8	16.1	
Level of Service		A			A		B	B		B	B	
Approach Delay (s)		7.9			8.3			17.8			16.0	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		10.8			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		50.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		82.5%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 21: Walnut Street & University Way

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1010	60	30	1000	40	40
Future Volume (vph)	1010	60	30	1000	40	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.5	
Lane Util. Factor	0.95			0.95	1.00	
Frt	0.99			1.00	0.93	
Flt Protected	1.00			1.00	0.98	
Satd. Flow (prot)	3510			3534	1695	
Flt Permitted	1.00			0.90	0.98	
Satd. Flow (perm)	3510			3173	1695	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1098	65	33	1087	43	43
RTOR Reduction (vph)	3	0	0	0	39	0
Lane Group Flow (vph)	1160	0	0	1120	47	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			2	8	
Permitted Phases			2			
Actuated Green, G (s)	55.5			55.5	6.5	
Effective Green, g (s)	55.5			55.5	6.5	
Actuated g/C Ratio	0.79			0.79	0.09	
Clearance Time (s)	4.0			4.0	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2763			2497	156	
v/s Ratio Prot	0.33				c0.03	
v/s Ratio Perm				c0.35		
v/c Ratio	0.42			0.45	0.30	
Uniform Delay, d1	2.4			2.5	29.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.5			0.6	1.1	
Delay (s)	2.9			3.1	31.0	
Level of Service	A			A	C	
Approach Delay (s)	2.9			3.1	31.0	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			4.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			70.5		Sum of lost time (s)	8.5
Intersection Capacity Utilization			61.1%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
22: Chestnut Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	580	10	80	720	110	100	80	80	110	40	380
Future Volume (veh/h)	310	580	10	80	720	110	100	80	80	110	40	380
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	337	630	11	87	783	120	109	87	87	120	43	413
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	1	1	1	0	0	0	1	1	1
Cap, veh/h	401	1626	28	467	1293	198	150	279	279	398	49	471
Arrive On Green	0.09	0.46	0.46	0.06	0.42	0.42	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1774	3557	62	1792	3087	473	946	862	862	1209	151	1452
Grp Volume(v), veh/h	337	313	328	87	453	450	109	0	174	120	0	456
Grp Sat Flow(s),veh/h/ln	1774	1770	1849	1792	1787	1773	946	0	1723	1209	0	1603
Q Serve(g_s), s	7.0	8.6	8.6	2.0	14.6	14.6	4.1	0.0	5.6	6.1	0.0	19.9
Cycle Q Clear(g_c), s	7.0	8.6	8.6	2.0	14.6	14.6	24.0	0.0	5.6	11.7	0.0	19.9
Prop In Lane	1.00		0.03	1.00		0.27	1.00		0.50	1.00		0.91
Lane Grp Cap(c), veh/h	401	809	846	467	749	743	150	0	559	398	0	520
V/C Ratio(X)	0.84	0.39	0.39	0.19	0.61	0.61	0.73	0.00	0.31	0.30	0.00	0.88
Avail Cap(c_a), veh/h	401	809	846	730	749	743	150	0	559	398	0	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.1	13.2	13.2	11.0	16.7	16.7	36.0	0.0	18.8	23.2	0.0	23.6
Incr Delay (d2), s/veh	14.7	1.4	1.3	0.2	3.6	3.6	17.4	0.0	0.4	0.6	0.0	15.9
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	5.5	4.5	4.7	1.0	7.9	7.9	2.9	0.0	2.7	2.1	0.0	11.0
LnGrp Delay(d),s/veh	30.7	14.6	14.6	11.2	20.4	20.4	53.4	0.0	19.2	23.8	0.0	39.6
LnGrp LOS	C	B	B	B	C	C	D		B	C		D
Approach Vol, veh/h	978			990			283			576		
Approach Delay, s/veh	20.2			19.6			32.4			36.3		
Approach LOS	C			B			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	37.8		28.0	11.0	35.0		28.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	15.0	23.0		24.0	7.0	31.0		24.0				
Max Q Clear Time (g_c+I1), s	4.0	10.6		21.9	9.0	16.6		26.0				
Green Ext Time (p_c), s	0.2	7.6		1.2	0.0	8.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				24.5								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
23: Alder Street & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	680	10	10	520	260	20	0	10	180	10	240
Future Volume (veh/h)	260	680	10	10	520	260	20	0	10	180	10	240
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	283	739	11	11	565	283	22	0	11	196	11	261
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	481	2263	34	421	1043	522	196	16	66	452	20	436
Arrive On Green	0.11	0.62	0.62	0.45	0.45	0.45	0.27	0.00	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1810	3641	54	723	2332	1167	427	60	243	1323	74	1615
Grp Volume(v), veh/h	283	366	384	11	437	411	33	0	0	207	0	261
Grp Sat Flow(s),veh/h/ln	1810	1805	1890	723	1805	1694	729	0	0	1398	0	1615
Q Serve(g_s), s	5.7	7.1	7.1	0.6	13.1	13.1	0.3	0.0	0.0	0.0	0.0	10.4
Cycle Q Clear(g_c), s	5.7	7.1	7.1	0.6	13.1	13.1	10.0	0.0	0.0	9.8	0.0	10.4
Prop In Lane	1.00		0.03	1.00		0.69	0.67		0.33	0.95		1.00
Lane Grp Cap(c), veh/h	481	1122	1175	421	807	758	278	0	0	472	0	436
V/C Ratio(X)	0.59	0.33	0.33	0.03	0.54	0.54	0.12	0.00	0.00	0.44	0.00	0.60
Avail Cap(c_a), veh/h	699	1122	1175	421	807	758	278	0	0	472	0	436
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.1	6.6	6.6	11.5	14.9	14.9	20.7	0.0	0.0	23.3	0.0	23.5
Incr Delay (d2), s/veh	1.1	0.8	0.7	0.1	2.6	2.8	0.9	0.0	0.0	2.9	0.0	5.9
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	2.9	3.7	3.9	0.1	7.0	6.6	0.6	0.0	0.0	4.0	0.0	5.4
LnGrp Delay(d),s/veh	11.3	7.4	7.4	11.6	17.5	17.7	21.6	0.0	0.0	26.2	0.0	29.4
LnGrp LOS	B	A	A	B	B	B	C			C		C
Approach Vol, veh/h	1033			859			33			468		
Approach Delay, s/veh	8.5			17.5			21.6			28.0		
Approach LOS	A			B			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	50.0			24.0			37.1			24.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	46.0			20.0			24.2			20.0		
Max Q Clear Time (g_c+I1), s	9.1			12.0			15.1			12.4		
Green Ext Time (p_c), s	17.6			1.4			6.8			1.4		
Intersection Summary												
HCM 2010 Ctrl Delay				15.7								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
24: Pfenning Rd & University Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	400	140	90	260	30	100	360	110	70	120	50
Future Volume (veh/h)	70	400	140	90	260	30	100	360	110	70	120	50
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	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	76	435	152	98	283	33	109	391	120	76	130	54
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	453	530	185	249	657	77	182	453	130	216	338	118
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1059	1320	461	825	1638	191	220	1139	326	282	850	297
Grp Volume(v), veh/h	76	0	587	98	0	316	620	0	0	260	0	0
Grp Sat Flow(s),veh/h/ln	1059	0	1781	825	0	1829	1686	0	0	1428	0	0
Q Serve(g_s), s	2.5	0.0	13.2	4.8	0.0	5.6	11.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.1	0.0	13.2	18.0	0.0	5.6	15.6	0.0	0.0	4.6	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.10	0.18		0.19	0.29		0.21
Lane Grp Cap(c), veh/h	453	0	715	249	0	734	765	0	0	672	0	0
V/C Ratio(X)	0.17	0.00	0.82	0.39	0.00	0.43	0.81	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	453	0	715	249	0	734	771	0	0	677	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.7	0.0	12.0	20.3	0.0	9.7	12.7	0.0	0.0	9.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	7.6	1.0	0.0	0.4	6.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	7.9	1.2	0.0	2.9	8.6	0.0	0.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	12.8	0.0	19.6	21.3	0.0	10.1	19.2	0.0	0.0	9.9	0.0	0.0
LnGrp LOS	B		B	C		B	B			A		
Approach Vol, veh/h	663			414			620			260		
Approach Delay, s/veh	18.8			12.8			19.2			9.9		
Approach LOS	B			B			B			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	22.4		22.5		22.4		22.5					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	17.6		15.2		6.6		20.0					
Green Ext Time (p_c), s	0.2		1.7		4.7		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				16.5								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis 25: 5th Avenue & Railroad Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	40	0	100	80	270	0	130	150	250	180	20
Future Volume (vph)	20	40	0	100	80	270	0	130	150	250	180	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		1.00		1.00	0.88			0.92		1.00	0.98	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1832		1770	1647			1713		1770	1835	
Flt Permitted		0.76		0.71	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1418		1331	1647			1713		1770	1835	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	43	0	109	87	293	0	141	163	272	196	22
RTOR Reduction (vph)	0	0	0	0	217	0	0	77	0	0	7	0
Lane Group Flow (vph)	0	65	0	109	163	0	0	227	0	272	211	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			2!		6!		
Permitted Phases	4			8			2				6	
Actuated Green, G (s)		9.6		9.6	9.6			18.6		18.6	18.6	
Effective Green, g (s)		9.6		9.6	9.6			18.6		18.6	18.6	
Actuated g/C Ratio		0.26		0.26	0.26			0.50		0.50	0.50	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		365		343	425			856		885	917	
v/s Ratio Prot					c0.10			0.13		c0.15		
v/s Ratio Perm		0.05		0.08							0.11	
v/c Ratio		0.18		0.32	0.38			0.27		0.31	0.23	
Uniform Delay, d1		10.7		11.2	11.4			5.4		5.5	5.3	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.2		0.5	0.6			0.8		0.9	0.6	
Delay (s)		11.0		11.7	11.9			6.1		6.4	5.8	
Level of Service		B		B	B			A		A	A	
Approach Delay (s)		11.0			11.9			6.1			6.1	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay		8.5										
HCM 2000 Volume to Capacity ratio		0.33										
Actuated Cycle Length (s)		37.2										
Intersection Capacity Utilization		62.0%										
Analysis Period (min)		15										
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary
26: Water Street & 5th Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	130	110	60	120	40	110	500	60	60	510	90
Future Volume (veh/h)	120	130	110	60	120	40	110	500	60	60	510	90
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		0.99	1.00		0.99	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	1792	1792	1900	1743	1743	1900	1881	1881	1900	1863	1863	1900
Adj Flow Rate, veh/h	130	141	120	65	130	43	120	543	65	65	554	98
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	9	9	9	1	1	1	2	2	2
Cap, veh/h	311	236	201	235	331	109	424	1022	122	455	956	169
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1158	893	760	1041	1253	414	785	1648	197	809	1541	273
Grp Volume(v), veh/h	130	0	261	65	0	173	120	0	608	65	0	652
Grp Sat Flow(s),veh/h/ln	1158	0	1653	1041	0	1667	785	0	1846	809	0	1814
Q Serve(g_s), s	7.2	0.0	9.5	4.0	0.0	5.9	7.4	0.0	12.9	3.4	0.0	14.7
Cycle Q Clear(g_c), s	13.0	0.0	9.5	13.5	0.0	5.9	22.1	0.0	12.9	16.3	0.0	14.7
Prop In Lane	1.00		0.46	1.00		0.25	1.00		0.11	1.00		0.15
Lane Grp Cap(c), veh/h	311	0	436	235	0	440	424	0	1145	455	0	1125
V/C Ratio(X)	0.42	0.00	0.60	0.28	0.00	0.39	0.28	0.00	0.53	0.14	0.00	0.58
Avail Cap(c_a), veh/h	408	0	575	323	0	580	424	0	1145	455	0	1125
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	26.2	0.0	22.2	28.1	0.0	20.9	14.3	0.0	7.4	12.0	0.0	7.8
Incr Delay (d2), s/veh	1.3	0.0	1.9	0.9	0.0	0.8	1.7	0.0	1.8	0.7	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	4.6	1.2	0.0	2.8	1.8	0.0	7.0	0.8	0.0	7.9
LnGrp Delay(d),s/veh	27.5	0.0	24.1	29.0	0.0	21.7	16.0	0.0	9.2	12.7	0.0	10.0
LnGrp LOS	C		C	C		C	B		A	B		A
Approach Vol, veh/h	391			238			728			717		
Approach Delay, s/veh	25.2			23.7			10.3			10.2		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	46.8		22.2		46.8		22.2					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	37.0		24.0		37.0		24.0					
Max Q Clear Time (g_c+I1), s	24.1		15.0		18.3		15.5					
Green Ext Time (p_c), s	6.2		2.8		7.5		2.7					
Intersection Summary												
HCM 2010 Ctrl Delay				14.6								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
27: Main St & 5th Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	180	70	100	210	70	50	600	50	60	480	70
Future Volume (veh/h)	110	180	70	100	210	70	50	600	50	60	480	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	120	196	76	109	228	76	54	652	54	65	522	76
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	326	318	123	348	327	109	307	837	69	238	784	114
Arrive On Green	0.07	0.26	0.26	0.07	0.25	0.25	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1740	1242	482	1757	1309	436	817	1693	140	739	1584	231
Grp Volume(v), veh/h	120	0	272	109	0	304	54	0	706	65	0	598
Grp Sat Flow(s),veh/h/ln	1740	0	1724	1757	0	1745	817	0	1833	739	0	1815
Q Serve(g_s), s	3.4	0.0	9.5	3.1	0.0	10.8	3.6	0.0	21.5	5.4	0.0	16.9
Cycle Q Clear(g_c), s	3.4	0.0	9.5	3.1	0.0	10.8	20.5	0.0	21.5	26.9	0.0	16.9
Prop In Lane	1.00		0.28	1.00		0.25	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	326	0	442	348	0	436	307	0	907	238	0	898
V/C Ratio(X)	0.37	0.00	0.62	0.31	0.00	0.70	0.18	0.00	0.78	0.27	0.00	0.67
Avail Cap(c_a), veh/h	330	0	442	362	0	436	307	0	907	238	0	898
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	17.8	0.0	22.3	17.7	0.0	23.2	20.7	0.0	14.1	25.2	0.0	12.9
Incr Delay (d2), s/veh	0.7	0.0	6.3	0.5	0.0	8.9	1.2	0.0	6.5	2.8	0.0	3.9
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	1.7	0.0	5.2	1.5	0.0	6.2	0.9	0.0	12.4	1.3	0.0	9.3
LnGrp Delay(d),s/veh	18.5	0.0	28.6	18.2	0.0	32.1	21.9	0.0	20.7	28.0	0.0	16.8
LnGrp LOS	B		C	B		C	C		C	C		B
Approach Vol, veh/h	392			413			760			663		
Approach Delay, s/veh	25.5			28.4			20.8			17.9		
Approach LOS	C			C			C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	21.4		37.6	9.4	21.0		37.6				
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		4.0				
Max Green Setting (Gmax), s	5.0	17.0		33.0	5.0	17.0		33.0				
Max Q Clear Time (g_c+I1), s	5.1	11.5		28.9	5.4	12.8		23.5				
Green Ext Time (p_c), s	0.0	1.3		2.6	0.0	1.0		5.0				
Intersection Summary												
HCM 2010 Ctrl Delay				22.2								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
28: Ruby Street & 5th Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	190	80	110	190	30	170	200	80	60	200	50
Future Volume (veh/h)	30	190	80	110	190	30	170	200	80	60	200	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	207	87	120	207	33	185	217	87	65	217	54
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	117	342	134	233	297	43	363	407	142	206	632	142
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	98	1221	478	444	1058	152	487	787	276	212	1224	275
Grp Volume(v), veh/h	327	0	0	360	0	0	489	0	0	336	0	0
Grp Sat Flow(s),veh/h/ln	1798	0	0	1654	0	0	1550	0	0	1711	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.5	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.9	0.0	0.0	8.4	0.0	0.0	8.8	0.0	0.0	4.8	0.0	0.0
Prop In Lane	0.10		0.27	0.33		0.09	0.38		0.18	0.19		0.16
Lane Grp Cap(c), veh/h	594	0	0	572	0	0	912	0	0	981	0	0
V/C Ratio(X)	0.55	0.00	0.00	0.63	0.00	0.00	0.54	0.00	0.00	0.34	0.00	0.00
Avail Cap(c_a), veh/h	812	0	0	765	0	0	912	0	0	981	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.4	0.0	0.0	7.2	0.0	0.0	6.3	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.1	0.0	0.0	2.3	0.0	0.0	1.0	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	3.6	0.0	0.0	4.2	0.0	0.0	4.5	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	14.8	0.0	0.0	15.5	0.0	0.0	9.4	0.0	0.0	7.3	0.0	0.0
LnGrp LOS	B			B			A			A		
Approach Vol, veh/h	327			360			489			336		
Approach Delay, s/veh	14.8			15.5			9.4			7.3		
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	27.4		16.9		27.4		16.9					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	22.9		18.1		22.9		18.1					
Max Q Clear Time (g_c+I1), s	10.8		8.9		6.8		10.4					
Green Ext Time (p_c), s	3.3		2.2		3.7		2.0					
Intersection Summary												
HCM 2010 Ctrl Delay				11.6								
HCM 2010 LOS				B								

HCM 2010 TWSC
29: Chestnut Street & 5th Avenue

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	20	20	20	20	50	20	450	20	30	440	20
Future Vol, veh/h	20	20	20	20	20	50	20	450	20	30	440	20
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	0	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	22	22	22	22	54	22	489	22	33	478	22

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1136	1108	489	1119	1108	500	500	0	0	511	0	0
Stage 1	554	554	-	543	543	-	-	-	-	-	-	-
Stage 2	582	554	-	576	565	-	-	-	-	-	-	-
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	179	210	579	184	210	571	1064	-	-	1054	-	-
Stage 1	517	514	-	524	520	-	-	-	-	-	-	-
Stage 2	499	514	-	503	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	143	199	579	156	199	571	1064	-	-	1054	-	-
Mov Cap-2 Maneuver	143	199	-	156	199	-	-	-	-	-	-	-
Stage 1	506	498	-	513	509	-	-	-	-	-	-	-
Stage 2	423	503	-	448	492	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	24.3		24.1		0.3		0.5	
HCM LOS	C		C					

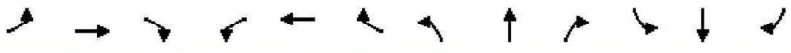
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1064	-	-	143	296	285	1054	-	-
HCM Lane V/C Ratio	0.02	-	-	0.152	0.147	0.343	0.031	-	-
HCM Control Delay (s)	8.5	-	-	34.6	19.2	24.1	8.5	-	-
HCM Lane LOS	A	-	-	D	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.5	1.5	0.1	-	-

HCM 2010 Signalized Intersection Summary
30: Water Street & 3rd Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	110	100	60	110	60	30	430	80	80	550	20
Future Volume (veh/h)	10	110	100	60	110	60	30	430	80	80	550	20
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		0.99	1.00		0.99	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	1845	1845	1900	1845	1845	1900	1863	1863	1900	1827	1827	1900
Adj Flow Rate, veh/h	11	120	109	65	120	65	33	467	87	87	598	22
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	2	2	2	4	4	4
Cap, veh/h	261	200	182	223	254	137	490	1006	187	528	1153	42
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.66	0.66	0.66	0.66	0.66	0.66
Sat Flow, veh/h	1177	888	806	1130	1124	609	800	1527	285	834	1751	64
Grp Volume(v), veh/h	11	0	229	65	0	185	33	0	554	87	0	620
Grp Sat Flow(s),veh/h/ln	1177	0	1694	1130	0	1732	800	0	1812	834	0	1815
Q Serve(g_s), s	0.6	0.0	8.4	3.8	0.0	6.4	1.5	0.0	10.4	4.0	0.0	12.2
Cycle Q Clear(g_c), s	7.0	0.0	8.4	12.1	0.0	6.4	13.8	0.0	10.4	14.3	0.0	12.2
Prop In Lane	1.00		0.48	1.00		0.35	1.00		0.16	1.00		0.04
Lane Grp Cap(c), veh/h	261	0	382	223	0	391	490	0	1193	528	0	1195
V/C Ratio(X)	0.04	0.00	0.60	0.29	0.00	0.47	0.07	0.00	0.46	0.16	0.00	0.52
Avail Cap(c_a), veh/h	320	0	466	279	0	477	490	0	1193	528	0	1195
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	26.2	0.0	23.9	29.4	0.0	23.2	9.7	0.0	5.8	9.3	0.0	6.1
Incr Delay (d2), s/veh	0.1	0.0	2.1	1.0	0.0	1.3	0.3	0.0	1.3	0.7	0.0	1.6
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	0.2	0.0	4.1	1.2	0.0	3.2	0.4	0.0	5.5	1.0	0.0	6.6
LnGrp Delay(d),s/veh	26.3	0.0	26.1	30.4	0.0	24.4	9.9	0.0	7.1	10.0	0.0	7.7
LnGrp LOS	C		C	C		C	A		A	A		A
Approach Vol, veh/h	240			250			587			707		
Approach Delay, s/veh	26.1			26.0			7.3			8.0		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	49.4		19.6		49.4		19.6					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	42.0		19.0		42.0		19.0					
Max Q Clear Time (g_c+I1), s	15.8		10.4		16.3		14.1					
Green Ext Time (p_c), s	7.1		2.0		7.1		1.3					
Intersection Summary												
HCM 2010 Ctrl Delay				12.7								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis

31: Main St & 3rd Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	130	50	120	130	100	50	710	80	80	640	30
Future Volume (vph)	50	130	50	120	130	100	50	710	80	80	640	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Grpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.93		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	1769		1782	1737		1767	1829		1770	1848	
Flt Permitted	0.45	1.00		0.55	1.00		0.27	1.00		0.20	1.00	
Satd. Flow (perm)	830	1769		1029	1737		509	1829		367	1848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	141	54	130	141	109	54	772	87	87	696	33
RTOR Reduction (vph)	0	20	0	0	41	0	0	6	0	0	3	0
Lane Group Flow (vph)	54	175	0	130	209	0	54	853	0	87	726	0
Confl. Peds. (#/hr)	4		4	2		3	3		4	2		2
Confl. Bikes (#/hr)			3			1			4			3
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	17.0	17.0		17.0	17.0		44.0	44.0		44.0	44.0	
Effective Green, g (s)	17.0	17.0		17.0	17.0		44.0	44.0		44.0	44.0	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.64	0.64		0.64	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	204	435		253	427		324	1166		234	1178	
v/s Ratio Prot		0.10			0.12			c0.47			0.39	
v/s Ratio Perm	0.07			c0.13			0.11			0.24		
v/c Ratio	0.26	0.40		0.51	0.49		0.17	0.73		0.37	0.62	
Uniform Delay, d1	21.0	21.7		22.4	22.3		5.1	8.5		5.9	7.5	
Progression Factor	1.11	1.10		1.00	1.00		0.64	1.04		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.7	0.3		0.9	3.3		4.5	2.4	
Delay (s)	23.6	24.2		23.2	22.6		4.2	12.2		10.4	9.9	
Level of Service	C	C		C	C		A	B		B	A	
Approach Delay (s)		24.1			22.8			11.7			9.9	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay			14.2			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			69.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			104.8%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary
32: Ruby Street & 3rd Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	190	80	30	160	40	70	250	40	50	280	140
Future Volume (veh/h)	160	190	80	30	160	40	70	250	40	50	280	140
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	174	207	87	33	174	43	76	272	43	54	304	152
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	321	295	109	157	503	113	204	512	73	152	424	197
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	497	808	298	116	1377	310	217	1342	193	105	1113	517
Grp Volume(v), veh/h	468	0	0	250	0	0	391	0	0	510	0	0
Grp Sat Flow(s),veh/h/ln	1603	0	0	1804	0	0	1752	0	0	1734	0	0
Q Serve(g_s), s	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0
Cycle Q Clear(g_c), s	9.0	0.0	0.0	3.5	0.0	0.0	5.9	0.0	0.0	8.9	0.0	0.0
Prop In Lane	0.37		0.19	0.13		0.17	0.19		0.11	0.11		0.30
Lane Grp Cap(c), veh/h	725	0	0	774	0	0	789	0	0	773	0	0
V/C Ratio(X)	0.65	0.00	0.00	0.32	0.00	0.00	0.50	0.00	0.00	0.66	0.00	0.00
Avail Cap(c_a), veh/h	939	0	0	1013	0	0	986	0	0	984	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.8	0.0	0.0	8.3	0.0	0.0	8.6	0.0	0.0	9.5	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.0	1.1	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	4.2	0.0	0.0	1.8	0.0	0.0	3.0	0.0	0.0	4.5	0.0	0.0
LnGrp Delay(d),s/veh	10.8	0.0	0.0	8.5	0.0	0.0	9.1	0.0	0.0	10.6	0.0	0.0
LnGrp LOS	B			A			A			B		
Approach Vol, veh/h	468			250			391			510		
Approach Delay, s/veh	10.8			8.5			9.1			10.6		
Approach LOS	B			A			A			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	18.0		17.5		18.0		17.5					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	7.9		11.0		10.9		5.5					
Green Ext Time (p_c), s	3.2		2.0		2.6		2.8					
Intersection Summary												
HCM 2010 Ctrl Delay				10.0								
HCM 2010 LOS				A								

HCM 2010 AWSC
33: Chestnut Street & 3rd Avenue

Intersection												
Intersection Delay, s/veh	22.7											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	90	40	20	50	70	40	340	20	80	350	60
Future Vol, veh/h	50	90	40	20	50	70	40	340	20	80	350	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	98	43	22	54	76	43	370	22	87	380	65
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	14.6			13.2			23.8			27.5		
HCM LOS	B			B			C			D		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2						
Vol Left, %	100%	0%	28%	14%	100%	0%						
Vol Thru, %	0%	94%	50%	36%	0%	85%						
Vol Right, %	0%	6%	22%	50%	0%	15%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	40	360	180	140	80	410						
LT Vol	40	0	50	20	80	0						
Through Vol	0	340	90	50	0	350						
RT Vol	0	20	40	70	0	60						
Lane Flow Rate	43	391	196	152	87	446						
Geometry Grp	7	7	2	2	7	7						
Degree of Util (X)	0.087	0.727	0.385	0.299	0.172	0.803						
Departure Headway (Hd)	7.238	6.687	7.087	7.069	7.103	6.487						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	494	540	507	507	504	557						
Service Time	4.995	4.443	5.151	5.137	4.857	4.241						
HCM Lane V/C Ratio	0.087	0.724	0.387	0.3	0.173	0.801						
HCM Control Delay	10.7	25.3	14.6	13.2	11.3	30.7						
HCM Lane LOS	B	D	B	B	B	D						
HCM 95th-tile Q	0.3	6	1.8	1.2	0.6	7.8						

HCM 2010 Signalized Intersection Summary
34: Water Street & Capitol Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	80	20	90	120	30	290	30	70	500	90
Future Volume (veh/h)	60	90	80	20	90	120	30	290	30	70	500	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1900	1900	1827	1827	1900	1900	1863	1863
Adj Flow Rate, veh/h	65	98	87	22	98	130	33	315	33	76	543	98
Adj No. of Lanes	0	1	1	1	1	0	1	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	4	4	4	2	2	2
Cap, veh/h	144	187	374	191	174	231	471	1057	111	157	1032	1029
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	302	800	1599	1218	742	984	770	1626	170	152	1588	1583
Grp Volume(v), veh/h	163	0	87	22	0	228	33	0	348	619	0	98
Grp Sat Flow(s),veh/h/ln	1102	0	1599	1218	0	1726	770	0	1797	1740	0	1583
Q Serve(g_s), s	3.2	0.0	3.0	1.2	0.0	8.0	1.6	0.0	5.8	0.0	0.0	1.6
Cycle Q Clear(g_c), s	11.3	0.0	3.0	12.4	0.0	8.0	13.6	0.0	5.8	12.0	0.0	1.6
Prop In Lane	0.40		1.00	1.00		0.57	1.00		0.09	0.12		1.00
Lane Grp Cap(c), veh/h	331	0	374	191	0	404	471	0	1168	1189	0	1029
V/C Ratio(X)	0.49	0.00	0.23	0.12	0.00	0.56	0.07	0.00	0.30	0.52	0.00	0.10
Avail Cap(c_a), veh/h	481	0	533	312	0	575	471	0	1168	1189	0	1029
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	24.2	0.0	21.4	30.3	0.0	23.3	9.9	0.0	5.2	6.3	0.0	4.5
Incr Delay (d2), s/veh	1.4	0.0	0.4	0.3	0.0	1.5	0.3	0.0	0.7	1.6	0.0	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	3.0	0.0	1.4	0.4	0.0	4.0	0.4	0.0	3.0	6.6	0.0	0.7
LnGrp Delay(d),s/veh	25.6	0.0	21.8	30.6	0.0	24.8	10.2	0.0	5.9	8.0	0.0	4.7
LnGrp LOS	C		C	C		C	B		A	A		A
Approach Vol, veh/h	250			250			381			717		
Approach Delay, s/veh	24.3			25.3			6.3			7.5		
Approach LOS	C			C			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	48.8		20.2		48.8		20.2					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	38.0		23.0		38.0		23.0					
Max Q Clear Time (g_c+I1), s	15.6		13.3		14.0		14.4					
Green Ext Time (p_c), s	5.4		1.9		5.5		1.8					
Intersection Summary												
HCM 2010 Ctrl Delay	12.6											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
35: Main St & Capitol Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	120	30	110	100	60	50	720	40	70	580	40
Future Volume (veh/h)	60	120	30	110	100	60	50	720	40	70	580	40
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	1881	1881	1900	1881	1881	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	65	130	33	120	109	65	54	783	43	76	630	43
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	3	3	3
Cap, veh/h	267	317	80	279	242	144	459	1153	63	359	1136	78
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1218	1449	368	1230	1106	659	755	1733	95	654	1708	117
Grp Volume(v), veh/h	65	0	163	120	0	174	54	0	826	76	0	673
Grp Sat Flow(s),veh/h/ln	1218	0	1816	1230	0	1765	755	0	1828	654	0	1824
Q Serve(g_s), s	3.4	0.0	5.3	6.4	0.0	5.9	2.8	0.0	19.0	5.5	0.0	13.5
Cycle Q Clear(g_c), s	9.3	0.0	5.3	11.7	0.0	5.9	16.3	0.0	19.0	24.6	0.0	13.5
Prop In Lane	1.00		0.20	1.00		0.37	1.00		0.05	1.00		0.06
Lane Grp Cap(c), veh/h	267	0	397	279	0	386	459	0	1216	359	0	1214
V/C Ratio(X)	0.24	0.00	0.41	0.43	0.00	0.45	0.12	0.00	0.68	0.21	0.00	0.55
Avail Cap(c_a), veh/h	371	0	553	384	0	537	459	0	1216	359	0	1214
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	27.4	0.0	23.1	28.2	0.0	23.4	10.4	0.0	7.0	14.5	0.0	6.1
Incr Delay (d2), s/veh	0.5	0.0	0.7	1.1	0.0	0.8	0.5	0.0	3.1	1.3	0.0	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	1.2	0.0	2.7	2.2	0.0	2.9	0.7	0.0	10.4	1.1	0.0	7.3
LnGrp Delay(d),s/veh	27.9	0.0	23.8	29.2	0.0	24.2	11.0	0.0	10.1	15.9	0.0	8.0
LnGrp LOS	C		C	C		C	B		B	B		A
Approach Vol, veh/h	228			294			880			749		
Approach Delay, s/veh	25.0			26.2			10.2			8.8		
Approach LOS	C			C			B			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	49.9		19.1		49.9		19.1					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	40.0		21.0		40.0		21.0					
Max Q Clear Time (g_c+I1), s	21.0		11.3		26.6		13.7					
Green Ext Time (p_c), s	8.9		1.6		7.3		1.4					
Intersection Summary												
HCM 2010 Ctrl Delay				13.4								
HCM 2010 LOS				B								

HCM 2010 AWSC
36: Chestnut Street & Capitol Avenue

Intersection												
Intersection Delay, s/veh	23.7											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	210	20	30	140	110	30	240	40	80	280	30
Future Vol, veh/h	50	210	20	30	140	110	30	240	40	80	280	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	228	22	33	152	120	33	261	43	87	304	33
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	23.4			22.2			23.6			25.1		
HCM LOS	C			C			C			D		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2						
Vol Left, %	100%	0%	18%	11%	100%	0%						
Vol Thru, %	0%	86%	75%	50%	0%	90%						
Vol Right, %	0%	14%	7%	39%	0%	10%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	30	280	280	280	80	310						
LT Vol	30	0	50	30	80	0						
Through Vol	0	240	210	140	0	280						
RT Vol	0	40	20	110	0	30						
Lane Flow Rate	33	304	304	304	87	337						
Geometry Grp	7	7	2	2	7	7						
Degree of Util (X)	0.077	0.663	0.642	0.626	0.2	0.722						
Departure Headway (Hd)	8.461	7.839	7.593	7.409	8.3	7.712						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	423	460	475	487	431	468						
Service Time	6.229	5.607	5.665	5.484	6.067	5.479						
HCM Lane V/C Ratio	0.078	0.661	0.64	0.624	0.202	0.72						
HCM Control Delay	11.9	24.8	23.4	22.2	13.1	28.2						
HCM Lane LOS	B	C	C	C	B	D						
HCM 95th-tile Q	0.2	4.7	4.4	4.2	0.7	5.7						

HCM 2010 TWSC
37: Willow Street & Capitol Avenue

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	120	170	140	190	30	170
Future Vol, veh/h	120	170	140	190	30	170
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	185	152	207	33	185
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	315	0	734	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	511	-
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	-	-	1245	-	387	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1245	-	340	817
Mov Cap-2 Maneuver	-	-	-	-	340	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	529	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	3.5		12.8		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	675	-	-	1245	-	
HCM Lane V/C Ratio	0.322	-	-	0.122	-	
HCM Control Delay (s)	12.8	-	-	8.3	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	1.4	-	-	0.4	-	

HCM 2010 Signalized Intersection Summary
38: Main Street & Manitoba Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	160	330	70	110	40	170	850	20	40	720	30
Future Volume (veh/h)	40	160	330	70	110	40	170	850	20	40	720	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1900	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	43	174	359	76	120	43	185	924	22	43	783	33
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	0	0	0	1	1	1
Cap, veh/h	122	419	429	144	209	62	296	1138	27	242	865	36
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.08	0.62	0.62	0.48	0.48	0.48
Sat Flow, veh/h	220	1561	1599	279	780	232	1810	1848	44	596	1792	76
Grp Volume(v), veh/h	217	0	359	239	0	0	185	0	946	43	0	816
Grp Sat Flow(s),veh/h/ln	1782	0	1599	1291	0	0	1810	0	1892	596	0	1868
Q Serve(g_s), s	0.0	0.0	14.6	5.3	0.0	0.0	3.2	0.0	26.5	4.1	0.0	27.7
Cycle Q Clear(g_c), s	6.6	0.0	14.6	11.9	0.0	0.0	3.2	0.0	26.5	21.4	0.0	27.7
Prop In Lane	0.20		1.00	0.32		0.18	1.00		0.02	1.00		0.04
Lane Grp Cap(c), veh/h	540	0	429	415	0	0	296	0	1165	242	0	901
V/C Ratio(X)	0.40	0.00	0.84	0.58	0.00	0.00	0.63	0.00	0.81	0.18	0.00	0.91
Avail Cap(c_a), veh/h	602	0	487	464	0	0	343	0	1165	242	0	901
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	0.80	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	23.8	22.5	0.0	0.0	14.8	0.0	10.2	21.9	0.0	16.4
Incr Delay (d2), s/veh	0.6	0.0	11.4	1.3	0.0	0.0	2.8	0.0	6.2	1.6	0.0	14.3
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	0.0	7.8	4.3	0.0	0.0	2.0	0.0	15.7	0.8	0.0	17.6
LnGrp Delay(d),s/veh	21.5	0.0	35.2	23.8	0.0	0.0	17.5	0.0	16.4	23.5	0.0	30.7
LnGrp LOS	C		D	C			B		B	C		C
Approach Vol, veh/h	576			239			1131			859		
Approach Delay, s/veh	30.0			23.8			16.6			30.4		
Approach LOS	C			C			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	46.5		22.5		9.2		37.3		22.5			
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0		4.0			
Max Green Setting (Gmax), s	40.0		21.0		7.0		29.0		21.0			
Max Q Clear Time (g_c+I1), s	28.5		16.6		5.2		29.7		13.9			
Green Ext Time (p_c), s	9.0		1.9		0.1		0.0		2.7			
Intersection Summary												
HCM 2010 Ctrl Delay				24.2								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
40: Ruby Street & Manitoba Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	495	24	115	103	19	39	60	382	70	124	113
Future Volume (veh/h)	78	495	24	115	103	19	39	60	382	70	124	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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1880	1900	1900	1882	1900	1900	1863	1900	1900	1885	1900
Adj Flow Rate, veh/h	85	538	26	125	112	21	42	65	415	76	135	123
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	2	2	2	2	2	2
Cap, veh/h	150	653	30	281	229	36	105	104	513	181	304	232
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	166	1564	72	421	549	86	70	256	1266	231	752	573
Grp Volume(v), veh/h	649	0	0	258	0	0	522	0	0	334	0	0
Grp Sat Flow(s),veh/h/ln	1802	0	0	1056	0	0	1592	0	0	1556	0	0
Q Serve(g_s), s	7.7	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.4	0.0	0.0	8.7	0.0	0.0	14.5	0.0	0.0	7.3	0.0	0.0
Prop In Lane	0.13		0.04	0.48		0.08	0.08		0.80	0.23		0.37
Lane Grp Cap(c), veh/h	832	0	0	546	0	0	722	0	0	717	0	0
V/C Ratio(X)	0.78	0.00	0.00	0.47	0.00	0.00	0.72	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	984	0	0	648	0	0	722	0	0	717	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.3	0.0	0.0	10.6	0.0	0.0	13.2	0.0	0.0	11.1	0.0	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	0.6	0.0	0.0	6.2	0.0	0.0	2.2	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	8.9	0.0	0.0	2.7	0.0	0.0	7.6	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh	16.7	0.0	0.0	11.3	0.0	0.0	19.4	0.0	0.0	13.3	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h	649			258			522			334		
Approach Delay, s/veh	16.7			11.3			19.4			13.3		
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	25.0		25.6		25.0		25.6					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	20.5		25.5		20.5		25.5					
Max Q Clear Time (g_c+I1), s	16.5		18.4		9.3		10.7					
Green Ext Time (p_c), s	2.1		2.7		4.6		4.1					
Intersection Summary												
HCM 2010 Ctrl Delay				16.1								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
41: Canyon Rd/Main St & Mountain View Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	30	10	230	50	300	20	710	100	270	750	20
Future Volume (veh/h)	30	30	10	230	50	300	20	710	100	270	750	20
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	1776	1776	1900	1827	1827	1900	1810	1810	1900	1827	1827	1900
Adj Flow Rate, veh/h	33	33	11	250	54	0	22	772	0	293	815	22
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	4	4	4	5	5	5	4	4	4
Cap, veh/h	382	306	102	397	438	0	263	1165	0	363	1002	27
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.00	0.02	0.64	0.00	0.57	0.57	0.57
Sat Flow, veh/h	1282	1276	425	1331	1827	0	1723	1810	0	681	1771	48
Grp Volume(v), veh/h	33	0	44	250	54	0	22	772	0	293	0	837
Grp Sat Flow(s),veh/h/ln	1282	0	1701	1331	1827	0	1723	1810	0	681	0	1818
Q Serve(g_s), s	1.4	0.0	1.4	12.5	1.6	0.0	0.3	18.3	0.0	26.2	0.0	25.5
Cycle Q Clear(g_c), s	3.0	0.0	1.4	13.8	1.6	0.0	0.3	18.3	0.0	39.1	0.0	25.5
Prop In Lane	1.00		0.25	1.00		0.00	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	382	0	408	397	438	0	263	1165	0	363	0	1030
V/C Ratio(X)	0.09	0.00	0.11	0.63	0.12	0.00	0.08	0.66	0.00	0.81	0.00	0.81
Avail Cap(c_a), veh/h	465	0	518	482	556	0	429	1165	0	363	0	1030
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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	20.5	25.9	20.5	0.0	10.9	7.6	0.0	23.0	0.0	12.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.2	0.2	0.0	0.1	3.0	0.0	17.3	0.0	7.0
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	0.5	0.0	0.7	4.8	0.8	0.0	0.2	10.0	0.0	7.3	0.0	14.6
LnGrp Delay(d),s/veh	21.8	0.0	20.5	28.1	20.7	0.0	11.0	10.6	0.0	40.3	0.0	19.0
LnGrp LOS	C		C	C	C		B	B		D		B
Approach Vol, veh/h	77			304			794			1130		
Approach Delay, s/veh	21.0			26.7			10.6			24.6		
Approach LOS	C			C			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	48.4		20.6		5.4		43.1		20.6			
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0		4.0			
Max Green Setting (Gmax), s	40.0		21.0		8.0		28.0		21.0			
Max Q Clear Time (g_c+I1), s	20.3		5.0		2.3		41.1		15.8			
Green Ext Time (p_c), s	13.3		1.4		0.0		0.0		0.7			
Intersection Summary												
HCM 2010 Ctrl Delay				19.9								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
42: Ruby Street & Mountain View Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	410	50	150	430	50	50	140	510	50	70	40
Future Volume (veh/h)	20	410	50	150	430	50	50	140	510	50	70	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1881	1881	1900	1900	1900	1900	1900	1863	1863	1900	1900	1900
Adj Flow Rate, veh/h	22	446	54	163	467	54	54	152	554	54	76	43
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	0	0	0	2	2	2	0	0	0
Cap, veh/h	328	581	70	375	687	79	195	510	589	188	254	122
Arrive On Green	0.03	0.35	0.35	0.09	0.41	0.41	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1792	1647	199	1810	1672	193	335	1370	1583	309	684	328
Grp Volume(v), veh/h	22	0	500	163	0	521	206	0	554	173	0	0
Grp Sat Flow(s),veh/h/ln	1792	0	1846	1810	0	1866	1705	0	1583	1321	0	0
Q Serve(g_s), s	0.5	0.0	15.4	3.4	0.0	14.7	0.0	0.0	21.7	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	15.4	3.4	0.0	14.7	5.0	0.0	21.7	5.1	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.10	0.26		1.00	0.31		0.25
Lane Grp Cap(c), veh/h	328	0	651	375	0	766	705	0	589	565	0	0
V/C Ratio(X)	0.07	0.00	0.77	0.44	0.00	0.68	0.29	0.00	0.94	0.31	0.00	0.00
Avail Cap(c_a), veh/h	441	0	834	384	0	843	708	0	592	567	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.3	0.0	18.4	12.8	0.0	15.5	14.2	0.0	19.5	14.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	3.9	0.3	0.0	2.3	0.3	0.0	23.4	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	8.5	1.7	0.0	8.0	2.6	0.0	13.3	2.2	0.0	0.0
LnGrp Delay(d),s/veh	13.4	0.0	22.4	13.1	0.0	17.8	14.5	0.0	42.9	14.4	0.0	0.0
LnGrp LOS	B		C	B		B	B		D	B		
Approach Vol, veh/h	522			684			760			173		
Approach Delay, s/veh	22.0			16.7			35.2			14.4		
Approach LOS	C			B			D			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	26.6		27.9	5.9	30.4		27.9				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	29.0		24.0	6.0	29.0		24.0				
Max Q Clear Time (g_c+I1), s	5.4	17.4		7.1	2.5	16.7		23.7				
Green Ext Time (p_c), s	0.0	5.2		5.4	0.0	5.4		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				24.4								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
43: Chestnut Street & Mountain View Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	400	140	180	330	40	150	180	180	40	50	20
Future Volume (veh/h)	10	400	140	180	330	40	150	180	180	40	50	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
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	1827	1827	1900	1863	1863	1900
Adj Flow Rate, veh/h	11	435	152	196	359	43	163	196	196	43	54	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	4	4	4	2	2	2
Cap, veh/h	520	687	240	378	849	102	526	261	261	243	578	0
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.31	0.31	0.31	0.31	0.31	0.00
Sat Flow, veh/h	979	1320	461	825	1633	196	1319	839	839	988	1863	0
Grp Volume(v), veh/h	11	0	587	196	0	402	163	0	392	43	54	0
Grp Sat Flow(s),veh/h/ln	979	0	1781	825	0	1828	1319	0	1679	988	1863	0
Q Serve(g_s), s	0.4	0.0	11.8	11.2	0.0	6.8	5.0	0.0	10.5	2.1	1.0	0.0
Cycle Q Clear(g_c), s	7.1	0.0	11.8	23.0	0.0	6.8	6.1	0.0	10.5	12.6	1.0	0.0
Prop In Lane	1.00		0.26	1.00		0.11	1.00		0.50	1.00		0.00
Lane Grp Cap(c), veh/h	520	0	927	378	0	951	526	0	521	243	578	0
V/C Ratio(X)	0.02	0.00	0.63	0.52	0.00	0.42	0.31	0.00	0.75	0.18	0.09	0.00
Avail Cap(c_a), veh/h	528	0	941	385	0	966	642	0	669	330	743	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.6	0.0	8.6	16.8	0.0	7.4	14.4	0.0	15.6	21.2	12.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	1.6	1.6	0.0	0.4	0.1	0.0	2.4	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	0.1	0.0	6.1	2.7	0.0	3.5	1.8	0.0	5.1	0.6	0.5	0.0
LnGrp Delay(d),s/veh	9.6	0.0	10.2	18.5	0.0	7.8	14.6	0.0	18.0	21.4	12.3	0.0
LnGrp LOS	A		B	B		A	B		B	C	B	
Approach Vol, veh/h	598			598			555			97		
Approach Delay, s/veh	10.2			11.3			17.0			16.3		
Approach LOS	B			B			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	30.6		19.6		30.6		19.6					
Change Period (Y+Rc), s	4.5		4.0		4.5		4.0					
Max Green Setting (Gmax), s	26.5		20.0		26.5		20.0					
Max Q Clear Time (g_c+I1), s	13.8		12.5		25.0		14.6					
Green Ext Time (p_c), s	6.8		1.2		1.1		1.0					
Intersection Summary												
HCM 2010 Ctrl Delay				12.9								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
 44: Bull Road/Willow Street & Mountain View Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	370	20	40	180	20	60	20	20	40	20	30
Future Volume (veh/h)	120	370	20	40	180	20	60	20	20	40	20	30
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	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	130	402	22	43	196	22	65	22	22	43	22	33
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	441	582	32	288	547	61	511	173	141	575	269	740
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1158	1750	96	959	1645	185	821	370	301	946	575	1583
Grp Volume(v), veh/h	130	0	424	43	0	218	109	0	0	65	0	33
Grp Sat Flow(s),veh/h/ln	1158	0	1846	959	0	1830	1492	0	0	1520	0	1583
Q Serve(g_s), s	4.3	0.0	9.0	1.8	0.0	4.1	0.2	0.0	0.0	0.0	0.0	0.5
Cycle Q Clear(g_c), s	8.4	0.0	9.0	10.8	0.0	4.1	1.6	0.0	0.0	0.9	0.0	0.5
Prop In Lane	1.00		0.05	1.00		0.10	0.60		0.20	0.66		1.00
Lane Grp Cap(c), veh/h	441	0	614	288	0	609	825	0	0	844	0	740
V/C Ratio(X)	0.30	0.00	0.69	0.15	0.00	0.36	0.13	0.00	0.00	0.08	0.00	0.04
Avail Cap(c_a), veh/h	519	0	738	353	0	732	825	0	0	844	0	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	13.0	17.7	0.0	11.4	6.8	0.0	0.0	6.6	0.0	6.5
Incr Delay (d2), s/veh	0.4	0.0	2.1	0.2	0.0	0.4	0.3	0.0	0.0	0.2	0.0	0.1
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	1.4	0.0	4.8	0.5	0.0	2.1	0.8	0.0	0.0	0.5	0.0	0.2
LnGrp Delay(d),s/veh	14.9	0.0	15.2	17.9	0.0	11.7	7.1	0.0	0.0	6.8	0.0	6.6
LnGrp LOS	B		B	B		B	A			A		A
Approach Vol, veh/h	554			261			109			98		
Approach Delay, s/veh	15.1			12.8			7.1			6.7		
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	25.5		19.5		25.5		19.5					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	3.6		11.0		2.9		12.8					
Green Ext Time (p_c), s	0.9		2.7		0.9		2.2					
Intersection Summary												
HCM 2010 Ctrl Delay				12.9								
HCM 2010 LOS				B								

HCM 2010 TWSC
45: Umptanum Road & Railroad Ave

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	130	200	160	170	80
Future Vol, veh/h	20	130	200	160	170	80
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	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	141	217	174	185	87
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	391	0	-	0	489	304
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	185	-
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	1168	-	-	-	538	736
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	847	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1168	-	-	-	528	736
Mov Cap-2 Maneuver	-	-	-	-	528	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	831	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.1	0		13.8		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1168	-	-	-	528	736
HCM Lane V/C Ratio	0.019	-	-	-	0.35	0.118
HCM Control Delay (s)	8.1	-	-	-	15.4	10.5
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.6	0.4

HCM 2010 Signalized Intersection Summary
46: Canyon Road & Umptanum Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	190	190	180	210	130	220	610	270	190	740	50
Future Volume (veh/h)	40	190	190	180	210	130	220	610	270	190	740	50
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	1776	1776	1776	1827	1827	1900	1810	1810	1810	1827	1827	1900
Adj Flow Rate, veh/h	43	207	207	196	228	141	239	663	0	207	804	54
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	4	4	4	5	5	5	4	4	4
Cap, veh/h	225	568	482	316	338	209	282	725	616	212	1161	78
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.16	0.40	0.00	0.12	0.35	0.35
Sat Flow, veh/h	962	1776	1509	950	1058	654	1723	1810	1538	1740	3302	222
Grp Volume(v), veh/h	43	207	207	196	0	369	239	663	0	207	423	435
Grp Sat Flow(s),veh/h/ln	962	1776	1509	950	0	1712	1723	1810	1538	1740	1736	1788
Q Serve(g_s), s	3.0	6.6	8.0	14.8	0.0	13.8	10.0	25.7	0.0	8.8	15.4	15.4
Cycle Q Clear(g_c), s	16.8	6.6	8.0	21.5	0.0	13.8	10.0	25.7	0.0	8.8	15.4	15.4
Prop In Lane	1.00		1.00	1.00		0.38	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	225	568	482	316	0	547	282	725	616	212	611	629
V/C Ratio(X)	0.19	0.36	0.43	0.62	0.00	0.67	0.85	0.92	0.00	0.98	0.69	0.69
Avail Cap(c_a), veh/h	225	568	482	320	0	555	326	725	616	212	611	629
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	19.4	19.9	27.7	0.0	21.8	30.1	21.0	0.0	32.4	20.6	20.6
Incr Delay (d2), s/veh	0.4	0.4	0.6	3.6	0.0	3.2	17.2	18.1	0.0	55.4	6.3	6.2
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	0.8	3.3	3.4	4.2	0.0	6.9	6.1	16.4	0.0	7.5	8.5	8.7
LnGrp Delay(d),s/veh	29.5	19.8	20.5	31.2	0.0	25.0	47.3	39.1	0.0	87.8	26.9	26.7
LnGrp LOS	C	B	C	C		C	D	D		F	C	C
Approach Vol, veh/h	457			565			902			1065		
Approach Delay, s/veh	21.0			27.2			41.3			38.7		
Approach LOS	C			C			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	13.0	34.1			28.2	16.6	30.5	28.2				
Change Period (Y+Rc), s	4.0	4.5			4.5	4.5	4.5	*4.5				
Max Green Setting (Gmax), s	9.0	28.5			23.5	14.0	23.0	*24				
Max Q Clear Time (g_c+I1), s	10.8	27.7			18.8	12.0	17.4	23.5				
Green Ext Time (p_c), s	0.0	0.7			2.2	0.2	4.1	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				34.6								
HCM 2010 LOS				C								
Notes												

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HCM 2010 Signalized Intersection Summary
47: Canyon Rd & I-90 WB Ramp

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	30	360	480	100	170	490		
Future Volume (veh/h)	30	360	480	100	170	490		
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	33	391	522	109	185	533		
Adj No. of Lanes	1	1	2	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	532	475	977	203	464	1846		
Arrive On Green	0.30	0.30	0.33	0.33	0.11	0.52		
Sat Flow, veh/h	1774	1583	3012	607	1774	3632		
Grp Volume(v), veh/h	33	391	316	315	185	533		
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1756	1774	1770		
Q Serve(g_s), s	0.8	13.2	8.3	8.4	3.5	4.9		
Cycle Q Clear(g_c), s	0.8	13.2	8.3	8.4	3.5	4.9		
Prop In Lane	1.00	1.00		0.35	1.00			
Lane Grp Cap(c), veh/h	532	475	592	587	464	1846		
V/C Ratio(X)	0.06	0.82	0.53	0.54	0.40	0.29		
Avail Cap(c_a), veh/h	756	675	1076	1068	748	2153		
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	14.4	18.8	15.5	15.6	10.1	7.8		
Incr Delay (d2), s/veh	0.1	6.8	0.7	0.8	0.2	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	0.4	6.6	4.2	4.2	1.7	2.4		
LnGrp Delay(d),s/veh	14.5	25.6	16.3	16.4	10.3	7.9		
LnGrp LOS	B	C	B	B	B	A		
Approach Vol, veh/h	424		631			718		
Approach Delay, s/veh	24.7		16.4			8.5		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.8	24.2				35.0		22.7
Change Period (Y+Rc), s	5.1	5.4				5.4		5.9
Max Green Setting (Gmax), s	14.9	34.6				34.6		24.1
Max Q Clear Time (g_c+I1), s	5.5	10.4				6.9		15.2
Green Ext Time (p_c), s	0.2	8.4				8.8		1.6
Intersection Summary								
HCM 2010 Ctrl Delay			15.2					
HCM 2010 LOS			B					
Notes								

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HCM 2010 Signalized Intersection Summary
48: Canyon Road & I-90 EB Ramp

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	130	270	410	50	140	310		
Future Volume (veh/h)	130	270	410	50	140	310		
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	1583	1583	1638	1638	1743	1743		
Adj Flow Rate, veh/h	141	0	446	54	152	337		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	20	20	16	16	9	9		
Cap, veh/h	179	160	1116	948	630	1187		
Arrive On Green	0.12	0.00	0.68	0.68	0.68	0.68		
Sat Flow, veh/h	1508	1346	1638	1392	837	1743		
Grp Volume(v), veh/h	141	0	446	54	152	337		
Grp Sat Flow(s),veh/h/ln	1508	1346	1638	1392	837	1743		
Q Serve(g_s), s	4.1	0.0	5.4	0.6	4.4	3.4		
Cycle Q Clear(g_c), s	4.1	0.0	5.4	0.6	9.7	3.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	179	160	1116	948	630	1187		
V/C Ratio(X)	0.79	0.00	0.40	0.06	0.24	0.28		
Avail Cap(c_a), veh/h	603	538	1116	948	630	1187		
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	1.00		
Uniform Delay (d), s/veh	19.3	0.0	3.1	2.4	5.3	2.8		
Incr Delay (d2), s/veh	7.5	0.0	1.1	0.1	0.9	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	2.1	0.0	2.7	0.2	1.1	1.8		
LnGrp Delay(d),s/veh	26.7	0.0	4.2	2.5	6.2	3.4		
LnGrp LOS	C		A	A	A	A		
Approach Vol, veh/h	141		500			489		
Approach Delay, s/veh	26.7		4.0			4.3		
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		35.2				35.2		9.8
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		18.0				18.0		18.0
Max Q Clear Time (g_c+I1), s		7.4				11.7		6.1
Green Ext Time (p_c), s		3.7				2.6		0.4
Intersection Summary								
HCM 2010 Ctrl Delay			7.0					
HCM 2010 LOS			A					