























**TECHNICAL APPENDIX**  
**ANTIOCH EBART STATION AREA PLAN**

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**APPENDIX A:  
EXISTING CONDITIONS**

HCM Signalized Intersection Capacity Analysis  
1: E 18th St & Hillcrest Ave

Hillcrest eBART  
Existing Conditions AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3323		1770	3529		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3323		1770	3529		1770	1863	1583	1770	1863	1583
Volume (vph)	25	187	129	412	478	10	309	169	302	27	71	52
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	195	134	429	498	10	322	176	315	28	74	54
RTOR Reduction (vph)	0	104	0	0	1	0	0	0	235	0	0	49
Lane Group Flow (vph)	26	225	0	429	507	0	322	176	80	28	74	5
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	1	6		5	2		8	8		4		4
Permitted Phases									8			4
Actuated Green, G (s)	2.9	13.5		26.5	38.1		21.6	21.6	21.6	7.2	7.2	7.2
Effective Green, g (s)	2.9	14.5		27.0	38.6		22.1	22.1	22.1	7.7	7.7	7.7
Actuated g/C Ratio	0.03	0.17		0.31	0.44		0.25	0.25	0.25	0.09	0.09	0.09
Clearance Time (s)	4.0	5.0		4.5	4.5		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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	59	552		547	1560		448	472	401	156	164	140
v/s Ratio Prot	0.01	c0.07		c0.24	0.14		c0.18	0.09		0.02	c0.04	
v/s Ratio Perm									0.05			0.00
v/c Ratio	0.44	0.41		0.78	0.32		0.72	0.37	0.20	0.18	0.45	0.03
Uniform Delay, d1	41.4	32.6		27.5	15.9		29.8	26.9	25.6	36.9	37.8	36.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	0.5		7.3	0.1		5.5	0.5	0.2	0.6	2.0	0.1
Delay (s)	46.6	33.0		34.8	16.0		35.2	27.4	25.9	37.4	39.8	36.5
Level of Service	D	C		C	B		D	C	C	D	D	D
Approach Delay (s)		34.0			24.6			29.9			38.2	
Approach LOS		C			C			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			28.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			87.3			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			65.9%			ICU Level of Service		C				
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
2: E 18th St & Viera Ave

Hillcrest eBART  
Existing Conditions AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1770	1846			1787	1583		1722	
Flt Permitted	0.24	1.00	1.00	0.56	1.00			0.71	1.00		0.91	
Satd. Flow (perm)	454	3539	1583	1047	1846			1327	1583		1581	
Volume (vph)	26	275	58	2	513	32	200	37	6	16	16	28
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	30	312	66	2	583	36	227	42	7	18	18	32
RTOR Reduction (vph)	0	0	39	0	5	0	0	0	4	0	20	0
Lane Group Flow (vph)	30	312	27	2	614	0	0	269	3	0	48	0
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	16.4	16.4	16.4	16.4	16.4			15.6	15.6		15.6	
Effective Green, g (s)	16.4	16.4	16.4	16.4	16.4			15.6	15.6		15.6	
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41			0.39	0.39		0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	186	1451	649	429	757			518	617		617	
v/s Ratio Prot		0.09			c0.33							
v/s Ratio Perm	0.07		0.02	0.00				c0.20	0.00		0.03	
v/c Ratio	0.16	0.22	0.04	0.00	0.81			0.52	0.00		0.08	
Uniform Delay, d1	7.5	7.6	7.1	7.0	10.4			9.3	7.5		7.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.50	
Incremental Delay, d2	0.4	0.1	0.0	0.0	6.6			3.7	0.0		0.2	
Delay (s)	7.9	7.7	7.1	7.0	17.0			13.0	7.5		11.7	
Level of Service	A	A	A	A	B			B	A		B	
Approach Delay (s)		7.6			17.0			12.9			11.7	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis  
 3: E 18th St & Phillips Ln

Hillcrest eBART  
 Existing Conditions AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	215	0	4	420	7	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	234	0	4	457	8	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			234		471	117
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			234		471	117
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1331		520	913

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	156	78	4	228	228	18
Volume Left	0	0	4	0	0	8
Volume Right	0	0	0	0	0	11
cSH	1700	1700	1331	1700	1700	696
Volume to Capacity	0.09	0.05	0.00	0.13	0.13	0.03
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	7.7	0.0	0.0	10.3
Lane LOS			A			B
Approach Delay (s)	0.0		0.1			10.3
Approach LOS						B

Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			21.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
4: E 18th St & SR 4 WB Ramps

Hillcrest eBART  
Existing Conditions AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
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	4.0		
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.87		1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3505		3433	3539	1542	1765	1625		1770	1791		
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (perm)	1770	3505		3433	3539	1542	1769	1625		1774	1791		
Volume (vph)	8	206	13	1079	401	59	22	20	116	5	13	4	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	8	212	13	1112	413	61	23	21	120	5	13	4	
RTOR Reduction (vph)	0	4	0	0	0	27	0	109	0	0	4	0	
Lane Group Flow (vph)	8	221	0	1112	413	34	23	32	0	5	13	0	
Confl. Peds. (#/hr)			5			5	5					5	
Turn Type	Prot			Prot		Perm	Perm			Perm			
Protected Phases	5	2		1	6			8				4	
Permitted Phases						6	8			4			
Actuated Green, G (s)	5.4	9.0		21.6	25.7	25.7	4.7	4.7		4.7	4.7		
Effective Green, g (s)	4.4	9.0		21.1	25.7	25.7	4.2	4.2		4.2	4.2		
Actuated g/C Ratio	0.10	0.19		0.46	0.56	0.56	0.09	0.09		0.09	0.09		
Clearance Time (s)	3.0	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5		
Vehicle Extension (s)	2.0	3.0		3.0	4.0	4.0	2.0	2.0		2.0	2.0		
Lane Grp Cap (vph)	168	681		1564	1964	856	160	147		161	162		
v/s Ratio Prot	0.00	c0.06		c0.32	0.12			c0.02			0.01		
v/s Ratio Perm						0.02	0.01			0.00			
v/c Ratio	0.05	0.32		0.71	0.21	0.04	0.14	0.22		0.03	0.08		
Uniform Delay, d1	19.0	16.0		10.1	5.2	4.7	19.4	19.5		19.2	19.3		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.0	0.3		1.6	0.1	0.0	0.2	0.3		0.0	0.1		
Delay (s)	19.1	16.3		11.7	5.3	4.7	19.5	19.8		19.2	19.4		
Level of Service	B	B		B	A	A	B	B		B	B		
Approach Delay (s)		16.4			9.8			19.8			19.3		
Approach LOS		B			A			B			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.4		HCM Level of Service						B		
HCM Volume to Capacity ratio			0.55										
Actuated Cycle Length (s)			46.3		Sum of lost time (s)						12.0		
Intersection Capacity Utilization			57.0%		ICU Level of Service						B		
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: E 18th St & SR 160 NB Ramps

Hillcrest eBART  
Existing Conditions AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	0.88
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3481		1770	3539	1770	2787
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3481		1770	3539	1770	2787
Volume (vph)	291	36	77	1511	28	738
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	300	37	79	1558	29	761
RTOR Reduction (vph)	6	0	0	0	0	598
Lane Group Flow (vph)	331	0	79	1558	29	163
Turn Type			Prot			pt+ov
Protected Phases	2		1	6	8	8 1
Permitted Phases						
Actuated Green, G (s)	70.1		10.8	83.9	7.6	22.4
Effective Green, g (s)	70.6		9.8	84.4	7.6	21.4
Actuated g/C Ratio	0.71		0.10	0.84	0.08	0.21
Clearance Time (s)	4.5		3.0	4.5	4.0	
Vehicle Extension (s)	4.0		3.0	4.0	2.0	
Lane Grp Cap (vph)	2458		173	2987	135	596
v/s Ratio Prot	0.09		0.04	c0.44	0.02	c0.06
v/s Ratio Perm						
v/c Ratio	0.13		0.46	0.52	0.21	0.27
Uniform Delay, d1	4.8		42.6	2.2	43.4	32.8
Progression Factor	1.00		1.46	0.95	1.00	1.00
Incremental Delay, d2	0.1		1.5	0.5	0.3	0.1
Delay (s)	4.9		63.6	2.6	43.7	32.9
Level of Service	A		E	A	D	C
Approach Delay (s)	4.9			5.5	33.3	
Approach LOS	A			A	C	

**Intersection Summary**

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
6: Main St & Bridgehead Rd

Hillcrest eBART  
Existing Conditions AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1770	3405		1770	5085	1531	1770	1825		1681	1741	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1770	3405		1770	5085	1531	1770	1825		1681	1741	1583
Volume (vph)	63	774	205	26	1158	274	363	211	29	136	71	68
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	65	798	211	27	1194	282	374	218	30	140	73	70
RTOR Reduction (vph)	0	19	0	0	0	151	0	5	0	0	0	63
Lane Group Flow (vph)	65	990	0	27	1194	131	374	243	0	104	109	7
Confl. Peds. (#/hr)			5			5			5			
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases						6						7
Actuated Green, G (s)	7.1	49.0		3.6	45.5	45.5	22.0	22.0		10.4	10.4	10.4
Effective Green, g (s)	6.1	50.0		2.6	46.5	46.5	21.5	21.5		9.9	9.9	9.9
Actuated g/C Ratio	0.06	0.50		0.03	0.46	0.46	0.22	0.22		0.10	0.10	0.10
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	108	1703		46	2365	712	381	392		166	172	157
v/s Ratio Prot	0.04	c0.29		0.02	c0.23		c0.21	0.13		0.06	c0.06	
v/s Ratio Perm						0.09						0.00
v/c Ratio	0.60	0.58		0.59	0.50	0.18	0.98	0.62		0.63	0.63	0.04
Uniform Delay, d1	45.8	17.6		48.2	18.7	15.7	39.1	35.6		43.3	43.3	40.8
Progression Factor	1.00	0.91		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.8	1.3		11.7	0.8	0.6	40.9	2.2		5.2	5.5	0.0
Delay (s)	51.7	17.3		59.9	19.5	16.2	80.0	37.8		48.5	48.8	40.8
Level of Service	D	B		E	B	B	E	D		D	D	D
Approach Delay (s)		19.4			19.6			63.1			46.7	
Approach LOS		B			B			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			71.0%			ICU Level of Service				C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
7: Sunset Dr & Hillcrest Ave

Hillcrest eBART  
Existing Conditions AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
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	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1615		1770	1711		1770	3492		1770	3460	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1615		1770	1711		1770	3492		1770	3460	
Volume (vph)	37	13	56	32	25	24	119	727	58	47	508	71
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	39	14	58	33	26	25	124	757	60	49	529	74
RTOR Reduction (vph)	0	55	0	0	24	0	0	2	0	0	4	0
Lane Group Flow (vph)	39	17	0	33	27	0	124	815	0	49	599	0
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Split		Split		Prot		Prot					
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	5.7	5.7		5.4	5.4		7.2	76.1		3.3	72.2	
Effective Green, g (s)	5.2	5.2		4.9	4.9		6.7	76.1		2.8	72.2	
Actuated g/C Ratio	0.05	0.05		0.05	0.05		0.06	0.72		0.03	0.69	
Clearance Time (s)	3.5	3.5		3.5	3.5		3.5	4.0		3.5	4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	88	80		83	80		113	2531		47	2379	
v/s Ratio Prot	c0.02	0.01		c0.02	0.02		c0.07	c0.23		c0.03	0.17	
v/s Ratio Perm												
v/c Ratio	0.44	0.21		0.40	0.34		1.10	0.32		1.04	0.25	
Uniform Delay, d1	48.5	47.9		48.6	48.5		49.1	5.2		51.1	6.2	
Progression Factor	1.00	1.00		1.00	1.00		0.74	0.23		1.00	1.00	
Incremental Delay, d2	1.3	0.5		1.1	0.9		103.8	0.3		144.0	0.3	
Delay (s)	49.8	48.4		49.8	49.4		140.1	1.5		195.1	6.4	
Level of Service	D	D		D	D		F	A		F	A	
Approach Delay (s)		48.9			49.5			19.7			20.6	
Approach LOS		D			D			B			C	

Intersection Summary

HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 8: Oakley Rd & Phillips Ln

Hillcrest eBART  
 Existing Conditions AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	93	282	33	46	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	107	324	38	53	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	362				450	343
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362				450	343
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	100
cM capacity (veh/h)	1197				567	700

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	362	54
Volume Left	0	0	53
Volume Right	0	38	1
cSH	1197	1700	569
Volume to Capacity	0.00	0.21	0.09
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.0	0.0	12.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	12.0
Approach LOS			B

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis  
 9: Oakley Rd & Neroly Rd

Hillcrest eBART  
 Existing Conditions AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	71	73	18	145	145	143	424	6	53	221	7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	76	78	19	154	154	152	451	6	56	235	7

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	160	328	610	299
Volume Left (vph)	6	19	152	56
Volume Right (vph)	78	154	6	7
Hadj (s)	-0.25	-0.24	0.08	0.06
Departure Headway (s)	7.5	6.9	6.6	7.0
Degree Utilization, x	0.33	0.63	1.11	0.58
Capacity (veh/h)	428	502	552	487
Control Delay (s)	14.2	20.9	96.5	19.4
Approach Delay (s)	14.2	20.9	96.5	19.4
Approach LOS	B	C	F	C

Intersection Summary			
Delay		52.8	
HCM Level of Service		F	
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis  
 10: SR 4 WB Ramps & Hillcrest Ave

Hillcrest eBART  
 Existing Conditions AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						↕	↗	↖	↕		↕	↕
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	
Lane Util. Factor					1.00	1.00	0.97	1.00			0.95	
Frbp, ped/bikes					1.00	1.00	1.00	1.00			1.00	
Flpb, ped/bikes					1.00	1.00	1.00	1.00			1.00	
Frt					1.00	0.85	1.00	1.00			0.97	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	3433	1863			3424	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	3433	1863			3424	
Volume (vph)	0	0	0	219	0	33	1189	871	0	0	483	113
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	228	0	34	1239	907	0	0	503	118
RTOR Reduction (vph)	0	0	0	0	0	29	0	0	0	0	19	0
Lane Group Flow (vph)	0	0	0	0	228	5	1239	907	0	0	602	0
Confl. Peds. (#/hr)									5			5
Turn Type				Perm		Perm	Prot					
Protected Phases					4		1	6			2	
Permitted Phases				4		4						
Actuated Green, G (s)					16.4	16.4	53.0	81.1			24.6	
Effective Green, g (s)					15.9	15.9	52.5	81.1			24.6	
Actuated g/C Ratio					0.15	0.15	0.50	0.77			0.23	
Clearance Time (s)					3.5	3.5	3.5	4.0			4.0	
Vehicle Extension (s)					2.5	2.5	2.0	2.0			2.0	
Lane Grp Cap (vph)					268	240	1717	1439			802	
v/s Ratio Prot							c0.36	0.49			c0.18	
v/s Ratio Perm					0.13	0.00						
v/c Ratio					0.85	0.02	0.72	0.63			0.75	
Uniform Delay, d1					43.4	37.9	20.5	5.3			37.3	
Progression Factor					1.00	1.00	0.58	0.31			0.81	
Incremental Delay, d2					21.7	0.0	1.0	1.7			6.3	
Delay (s)					65.1	38.0	12.9	3.3			36.4	
Level of Service					E	D	B	A			D	
Approach Delay (s)		0.0			61.6			8.9			36.4	
Approach LOS		A			E			A			D	

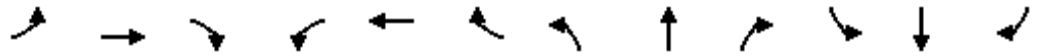
Intersection Summary

HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 11: SR 4 EB Ramps & Hillcrest Ave

Hillcrest eBART  
 Existing Conditions AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗↘					↕↗↘		↕	↗↘	
Ideal Flow (vphpl)	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		1.00	0.88					0.91		1.00	0.95	
Frbp, ped/bikes		1.00	1.00					1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		1770	2640					5013		1770	3539	
Flt Permitted		0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		1770	2640					5013		1770	3539	
Volume (vph)	163	0	1006	0	0	0	0	1897	159	19	683	0
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	170	0	1048	0	0	0	0	1976	166	20	711	0
RTOR Reduction (vph)	0	0	131	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	170	917	0	0	0	0	2135	0	20	711	0
Confl. Peds. (#/hr)									5			5
Turn Type	Perm	custom								Prot		
Protected Phases		8						6		5	2	
Permitted Phases	8	1 8										
Actuated Green, G (s)		18.0	42.8					71.7		4.8	54.7	
Effective Green, g (s)		17.0	41.8					72.2		3.8	55.2	
Actuated g/C Ratio		0.16	0.40					0.69		0.04	0.53	
Clearance Time (s)		3.0						4.5		3.0	4.5	
Vehicle Extension (s)		2.5						3.0		2.0	3.0	
Lane Grp Cap (vph)		287	1051					3447		64	1861	
v/s Ratio Prot								c0.43		0.01	c0.20	
v/s Ratio Perm		0.10	c0.35									
v/c Ratio		0.59	0.87					0.62		0.31	0.38	
Uniform Delay, d1		40.8	29.1					8.9		49.3	14.8	
Progression Factor		1.00	1.00					0.27		1.36	1.80	
Incremental Delay, d2		2.7	7.9					0.6		0.6	0.4	
Delay (s)		43.5	37.0					3.1		68.0	26.9	
Level of Service		D	D					A		E	C	
Approach Delay (s)		37.9			0.0			3.1			28.0	
Approach LOS		D			A			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay		17.9		HCM Level of Service				B				
HCM Volume to Capacity ratio		0.69										
Actuated Cycle Length (s)		105.0		Sum of lost time (s)				4.0				
Intersection Capacity Utilization		73.1%		ICU Level of Service				D				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Larkspur Dr & Hillcrest Ave

Hillcrest eBART  
 Existing Conditions AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↖	↗	↖	↗	↕	↖	↗	↖
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	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	1.00
Frbp, ped/bikes		1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1799	1551	1770	1863	1583	1770	5079		1770	5085	1537
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1799	1551	1770	1863	1583	1770	5079		1770	5085	1537
Volume (vph)	90	36	95	17	62	214	101	1752	12	104	1531	54
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	38	99	18	65	223	105	1825	12	108	1595	56
RTOR Reduction (vph)	0	0	87	0	0	208	0	0	0	0	0	6
Lane Group Flow (vph)	0	132	12	18	65	15	105	1837	0	108	1595	50
Confl. Peds. (#/hr)			5	5					5			5
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4						6
Actuated Green, G (s)		13.5	13.5	7.1	7.1	7.1	10.4	57.8		10.6	58.0	58.0
Effective Green, g (s)		13.0	13.0	7.1	7.1	7.1	9.9	58.8		10.1	59.0	59.0
Actuated g/C Ratio		0.12	0.12	0.07	0.07	0.07	0.09	0.56		0.10	0.56	0.56
Clearance Time (s)		3.5	3.5	4.0	4.0	4.0	3.5	5.0		3.5	5.0	5.0
Vehicle Extension (s)		5.0	5.0	2.0	2.0	2.0	2.0	4.0		2.5	4.0	4.0
Lane Grp Cap (vph)		223	192	120	126	107	167	2844		170	2857	864
v/s Ratio Prot		c0.07		0.01	c0.03		0.06	c0.36		c0.06	0.31	
v/s Ratio Perm			0.01			0.01						0.03
v/c Ratio		0.59	0.06	0.15	0.52	0.14	0.63	0.65		0.64	0.56	0.06
Uniform Delay, d1		43.5	40.6	46.1	47.3	46.1	45.8	15.9		45.7	14.7	10.4
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.16	0.47	0.45
Incremental Delay, d2		6.2	0.3	0.2	1.5	0.2	5.2	1.1		5.3	0.6	0.1
Delay (s)		49.7	40.9	46.3	48.8	46.3	51.0	17.1		58.3	7.5	4.8
Level of Service		D	D	D	D	D	D	B		E	A	A
Approach Delay (s)		45.9			46.8			18.9			10.6	
Approach LOS		D			D			B			B	

**Intersection Summary**

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 13: Davison Dr & Hillcrest Ave

Hillcrest eBART  
 Existing Conditions AM


























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.88	1.00	0.95		0.97	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3333		1770	3539	2787	1770	3532		3433	3539	1563
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3333		1770	3539	2787	1770	3532		3433	3539	1563
Volume (vph)	92	145	80	39	186	1107	95	655	8	783	734	129
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	97	153	84	41	196	1165	100	689	8	824	773	136
RTOR Reduction (vph)	0	59	0	0	0	210	0	1	0	0	0	0
Lane Group Flow (vph)	97	178	0	41	196	955	100	696	0	824	773	136
Confl. Peds. (#/hr)			2						2			2
Turn Type	Prot			Prot		pm+ov	Prot			Prot		Free
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	13.7	17.8		12.2	16.3	56.3	13.0	51.0		40.0	72.0	140.0
Effective Green, g (s)	13.7	18.8		12.2	17.3	58.3	20.0	52.0		41.0	73.0	140.0
Actuated g/C Ratio	0.10	0.13		0.09	0.12	0.42	0.14	0.37		0.29	0.52	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	11.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	173	448		154	437	1161	253	1312		1005	1845	1563
v/s Ratio Prot	c0.05	0.05		0.02	0.06	c0.24	0.06	c0.20		0.24	0.22	
v/s Ratio Perm						0.10						0.09
v/c Ratio	0.56	0.40		0.27	0.45	0.82	0.40	0.53		0.82	0.42	0.09
Uniform Delay, d1	60.3	55.4		59.7	56.9	36.3	54.5	34.4		46.1	20.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.0	1.6		1.3	2.1	5.7	1.4	1.5		6.3	0.7	0.1
Delay (s)	65.3	57.1		61.0	59.0	41.9	55.9	36.0		52.4	21.2	0.1
Level of Service	E	E		E	E	D	E	D		D	C	A
Approach Delay (s)		59.4			44.9			38.5			34.4	
Approach LOS		E			D			D			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			40.5			HCM Level of Service					D	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)					16.0	
Intersection Capacity Utilization			73.8%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
1: E 18th St & Hillcrest Ave

Hillcrest eBART  
Existing Conditions PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							 
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3382		1770	3509		1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3382		1770	3509		1770	1863	1583	1770	1863	1583
Volume (vph)	39	481	202	245	305	18	189	135	265	38	101	24
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	40	496	208	253	314	19	195	139	273	39	104	25
RTOR Reduction (vph)	0	28	0	0	3	0	0	0	232	0	0	18
Lane Group Flow (vph)	40	676	0	253	330	0	195	139	41	39	104	7
Turn Type	Prot		Prot			Split		Perm	Split		Perm	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases									8			4
Actuated Green, G (s)	4.2	30.0		13.1	39.9		11.7	11.7	11.7	7.8	7.8	7.8
Effective Green, g (s)	4.2	31.0		13.6	40.4		12.2	12.2	12.2	8.3	8.3	8.3
Actuated g/C Ratio	0.05	0.38		0.17	0.50		0.15	0.15	0.15	0.10	0.10	0.10
Clearance Time (s)	4.0	5.0		4.5	4.5		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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	92	1293		297	1748		266	280	238	181	191	162
v/s Ratio Prot	0.02	c0.20		c0.14	0.09		c0.11	0.07		0.02	c0.06	
v/s Ratio Perm								0.03				0.00
v/c Ratio	0.43	0.52		0.85	0.19		0.73	0.50	0.17	0.22	0.54	0.04
Uniform Delay, d1	37.3	19.3		32.8	11.3		32.9	31.6	30.0	33.4	34.6	32.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.4		20.3	0.1		10.0	1.4	0.3	0.6	3.2	0.1
Delay (s)	40.6	19.7		53.1	11.3		42.9	33.0	30.4	34.0	37.8	32.9
Level of Service	D	B		D	B		D	C	C	C	D	C
Approach Delay (s)		20.8			29.4			35.0			36.2	
Approach LOS		C			C			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			28.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			81.1			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			63.0%			ICU Level of Service				B		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
2: E 18th St & Viera Ave

Hillcrest eBART  
Existing Conditions PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑	↔	↔	↔			↔	↔		↕	
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	0.95	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1770	1845			1785	1583		1776	
Flt Permitted	0.50	1.00	1.00	0.47	1.00			0.65	1.00		0.90	
Satd. Flow (perm)	932	3539	1583	880	1845			1217	1583		1613	
Volume (vph)	33	477	131	2	354	24	102	16	3	47	95	49
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	34	492	135	2	365	25	105	16	3	48	98	51
RTOR Reduction (vph)	0	0	60	0	2	0	0	0	2	0	15	0
Lane Group Flow (vph)	34	492	75	2	388	0	0	121	1	0	182	0
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2		6	
Actuated Green, G (s)	23.7	23.7	23.7	23.7	23.7			10.7	10.7		10.7	
Effective Green, g (s)	24.7	24.7	24.7	24.7	24.7			11.7	11.7		11.7	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.56			0.26	0.26		0.26	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	518	1969	881	490	1026			321	417		425	
v/s Ratio Prot		0.14			c0.21							
v/s Ratio Perm	0.04		0.05	0.00				0.10	0.00		c0.11	
v/c Ratio	0.07	0.25	0.09	0.00	0.38			0.38	0.00		0.43	
Uniform Delay, d1	4.5	5.1	4.6	4.4	5.5			13.4	12.0		13.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.1	0.0	0.0	0.2			0.7	0.0		0.7	
Delay (s)	4.6	5.1	4.6	4.4	5.8			14.1	12.0		14.3	
Level of Service	A	A	A	A	A			B	B		B	
Approach Delay (s)		5.0			5.8			14.1			14.3	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis  
 3: E 18th St & Phillips Ln

Hillcrest eBART  
 Existing Conditions PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	390	13	8	312	9	8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	402	13	8	322	9	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			415		586	208
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			415		586	208
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1140		438	798

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	268	147	8	161	161	18
Volume Left	0	0	8	0	0	9
Volume Right	0	13	0	0	0	8
cSH	1700	1700	1140	1700	1700	556
Volume to Capacity	0.16	0.09	0.01	0.09	0.09	0.03
Queue Length 95th (ft)	0	0	1	0	0	2
Control Delay (s)	0.0	0.0	8.2	0.0	0.0	11.7
Lane LOS			A			B
Approach Delay (s)	0.0		0.2			11.7
Approach LOS						B

Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			21.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
4: E 18th St & SR 4 WB Ramps

Hillcrest eBART  
Existing Conditions PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.92		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3521		3433	3539	1540	1764	1711		1770	1727	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.62	1.00	
Satd. Flow (perm)	1770	3521		3433	3539	1540	1384	1711		1164	1727	
Volume (vph)	14	370	12	1103	266	228	41	71	84	17	10	8
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	14	381	12	1137	274	235	42	73	87	18	10	8
RTOR Reduction (vph)	0	2	0	0	0	98	0	43	0	0	7	0
Lane Group Flow (vph)	14	391	0	1137	274	137	42	117	0	18	11	0
Confl. Peds. (#/hr)			5			5	5					5
Turn Type	Prot			Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		
Actuated Green, G (s)	5.9	12.3		25.4	32.3	32.3	6.9	6.9		6.9	6.9	
Effective Green, g (s)	4.9	12.3		24.9	32.3	32.3	6.4	6.4		6.4	6.4	
Actuated g/C Ratio	0.09	0.22		0.45	0.58	0.58	0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	4.0		3.5	4.0	4.0	3.5	3.5		3.5	3.5	
Vehicle Extension (s)	2.0	3.0		3.0	4.0	4.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	156	779		1537	2056	895	159	197		134	199	
v/s Ratio Prot	0.01	c0.11		c0.33	0.08			c0.07			0.01	
v/s Ratio Perm						0.09	0.03			0.02		
v/c Ratio	0.09	0.50		0.74	0.13	0.15	0.26	0.59		0.13	0.05	
Uniform Delay, d1	23.3	19.0		12.7	5.3	5.4	22.5	23.4		22.1	21.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.5		1.9	0.0	0.1	0.3	3.2		0.2	0.0	
Delay (s)	23.4	19.5		14.6	5.3	5.5	22.8	26.5		22.3	21.9	
Level of Service	C	B		B	A	A	C	C		C	C	
Approach Delay (s)		19.6			11.7			25.7			22.1	
Approach LOS		B			B			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.5									B
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			55.6						12.0			
Intersection Capacity Utilization			68.4%									C
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: E 18th St & SR 160 NB Ramps

Hillcrest eBART  
 Existing Conditions PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	0.88
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)	3505		1770	3539	1770	2787
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3505		1770	3539	1770	2787
Volume (vph)	441	30	16	1561	36	1594
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	455	31	16	1609	37	1643
RTOR Reduction (vph)	4	0	0	0	0	310
Lane Group Flow (vph)	482	0	16	1609	37	1333
Turn Type			Prot			pt+ov
Protected Phases	2		1	6	8	8 1
Permitted Phases						
Actuated Green, G (s)	62.5		40.0	105.5	16.0	60.0
Effective Green, g (s)	63.0		39.0	106.0	16.0	59.0
Actuated g/C Ratio	0.48		0.30	0.82	0.12	0.45
Clearance Time (s)	4.5		3.0	4.5	4.0	
Vehicle Extension (s)	4.0		3.0	4.0	2.0	
Lane Grp Cap (vph)	1699		531	2886	218	1265
v/s Ratio Prot	0.14		0.01	c0.45	0.02	c0.48
v/s Ratio Perm						
v/c Ratio	0.28		0.03	0.56	0.17	1.05
Uniform Delay, d1	20.0		32.1	4.1	51.1	35.5
Progression Factor	1.00		0.63	1.85	1.00	1.00
Incremental Delay, d2	0.4		0.0	0.6	0.1	40.7
Delay (s)	20.4		20.4	8.1	51.2	76.2
Level of Service	C		C	A	D	E
Approach Delay (s)	20.4			8.3	75.6	
Approach LOS	C			A	E	

**Intersection Summary**

HCM Average Control Delay	39.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
6: Main St & Bridgehead Rd

Hillcrest eBART  
Existing Conditions PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗↘	↖	↖	↖		↖	↖↗	↖
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1770	3390		1770	5085	1525	1770	1756		1681	1726	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1770	3390		1770	5085	1525	1770	1756		1681	1726	1583
Volume (vph)	73	1529	448	22	1276	144	268	79	41	334	115	46
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	75	1576	462	23	1315	148	276	81	42	344	119	47
RTOR Reduction (vph)	0	18	0	0	0	72	0	14	0	0	0	34
Lane Group Flow (vph)	75	2020	0	23	1315	76	276	109	0	225	238	13
Conf. Peds. (#/hr)			5			5			5			
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases						6						7
Actuated Green, G (s)	8.5	68.0		6.0	65.5	65.5	20.0	20.0		21.0	21.0	21.0
Effective Green, g (s)	7.5	69.0		5.0	66.5	66.5	19.5	19.5		20.5	20.5	20.5
Actuated g/C Ratio	0.06	0.53		0.04	0.51	0.51	0.15	0.15		0.16	0.16	0.16
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	102	1799		68	2601	780	266	263		265	272	250
v/s Ratio Prot	0.04	c0.60		0.01	c0.26		c0.16	0.06		0.13	c0.14	
v/s Ratio Perm						0.05						0.01
v/c Ratio	0.74	1.12		0.34	0.51	0.10	1.04	0.41		0.85	0.88	0.05
Uniform Delay, d1	60.3	30.5		60.9	20.9	16.3	55.2	50.1		53.2	53.5	46.5
Progression Factor	1.21	0.83		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.4	59.1		1.1	0.7	0.2	65.3	0.4		20.8	24.7	0.0
Delay (s)	83.1	84.4		62.0	21.6	16.6	120.6	50.4		74.1	78.2	46.5
Level of Service	F	F		E	C	B	F	D		E	E	D
Approach Delay (s)		84.3			21.7			98.9			73.4	
Approach LOS		F			C			F			E	

Intersection Summary

HCM Average Control Delay	63.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Sunset Dr & Hillcrest Ave

Hillcrest eBART  
Existing Conditions PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.89		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1604		1770	1637		1770	3472		1770	3474	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1604		1770	1637		1770	3472		1770	3474	
Volume (vph)	101	21	112	80	10	26	141	496	57	11	520	58
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	104	22	115	82	10	27	145	511	59	11	536	60
RTOR Reduction (vph)	0	105	0	0	25	0	0	3	0	0	4	0
Lane Group Flow (vph)	104	32	0	82	12	0	145	567	0	11	592	0
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Split			Split			Prot			Prot		
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	10.9	10.9		8.4	8.4		19.3	85.4		0.8	66.9	
Effective Green, g (s)	10.4	10.4		7.9	7.9		18.8	85.4		0.3	66.9	
Actuated g/C Ratio	0.09	0.09		0.07	0.07		0.16	0.71		0.00	0.56	
Clearance Time (s)	3.5	3.5		3.5	3.5		3.5	4.0		3.5	4.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	153	139		117	108		277	2471		4	1937	
v/s Ratio Prot	c0.06	0.02		c0.05	0.01		c0.08	0.16		c0.01	c0.17	
v/s Ratio Perm												
v/c Ratio	0.68	0.23		0.70	0.11		0.52	0.23		2.75	0.31	
Uniform Delay, d1	53.2	51.1		54.9	52.7		46.5	6.0		59.9	14.2	
Progression Factor	1.00	1.00		1.00	1.00		0.70	0.55		1.00	1.00	
Incremental Delay, d2	9.1	0.3		14.3	0.2		0.8	0.2		1237.5	0.4	
Delay (s)	62.3	51.4		69.2	52.9		33.4	3.5		1297.3	14.6	
Level of Service	E	D		E	D		C	A		F	B	
Approach Delay (s)		56.1			64.2			9.5			37.8	
Approach LOS		E			E			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			30.3				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			54.2%				ICU Level of Service				A	
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Unsignalized Intersection Capacity Analysis  
 8: Oakley Rd & Phillips Ln

Hillcrest eBART  
 Existing Conditions PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	256	126	33	34	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	264	130	34	35	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	164			413	147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164			413	147	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			94	100	
cM capacity (veh/h)	1415			595	900	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	265	164	36
Volume Left	1	0	35
Volume Right	0	34	1
cSH	1415	1700	601
Volume to Capacity	0.00	0.10	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.0	11.4
Lane LOS	A		B
Approach Delay (s)	0.0	0.0	11.4
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		



HCM Unsignalized Intersection Capacity Analysis  
 9: Oakley Rd & Neroly Rd

Hillcrest eBART  
 Existing Conditions PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	125	155	10	51	126	87	250	11	119	445	9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	4	129	160	10	53	130	90	258	11	123	459	9

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	293	193	359	591
Volume Left (vph)	4	10	90	123
Volume Right (vph)	160	130	11	9
Hadj (s)	-0.29	-0.36	0.07	0.07
Departure Headway (s)	7.2	7.5	7.1	6.8
Degree Utilization, x	0.59	0.40	0.71	1.11
Capacity (veh/h)	470	427	488	526
Control Delay (s)	19.9	15.6	25.5	98.7
Approach Delay (s)	19.9	15.6	25.5	98.7
Approach LOS	C	C	D	F

Intersection Summary			
Delay		53.2	
HCM Level of Service		F	
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis  
 10: SR 4 WB Ramps & Hillcrest Ave

Hillcrest eBART  
 Existing Conditions PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						↕	↗	↗	↕		↕	↗
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	
Lane Util. Factor					1.00	1.00	0.97	1.00			0.95	
Frbp, 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					1.00	0.85	1.00	1.00			0.96	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1774	1583	3433	1863			3384	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1774	1583	3433	1863			3384	
Volume (vph)	0	0	0	205	1	48	1281	646	0	0	532	180
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	211	1	49	1321	666	0	0	548	186
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	28	0
Lane Group Flow (vph)	0	0	0	0	212	7	1321	666	0	0	706	0
Confl. Peds. (#/hr)									5			5
Turn Type				Perm		Perm	Prot					
Protected Phases					4		1	6			2	
Permitted Phases				4		4						
Actuated Green, G (s)					17.3	17.3	61.0	95.2			30.7	
Effective Green, g (s)					16.8	16.8	60.5	95.2			30.7	
Actuated g/C Ratio					0.14	0.14	0.50	0.79			0.26	
Clearance Time (s)					3.5	3.5	3.5	4.0			4.0	
Vehicle Extension (s)					2.5	2.5	2.0	2.0			2.0	
Lane Grp Cap (vph)					248	222	1731	1478			866	
v/s Ratio Prot							c0.38	0.36			c0.21	
v/s Ratio Perm					0.12	0.00						
v/c Ratio					0.85	0.03	0.76	0.45			0.82	
Uniform Delay, d1					50.4	44.6	24.0	4.0			42.0	
Progression Factor					1.00	1.00	0.57	0.17			0.68	
Incremental Delay, d2					23.6	0.0	1.5	0.8			8.2	
Delay (s)					74.0	44.6	15.1	1.5			36.9	
Level of Service					E	D	B	A			D	
Approach Delay (s)		0.0			68.5			10.5			36.9	
Approach LOS		A			E			B			D	

Intersection Summary

HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 11: SR 4 EB Ramps & Hillcrest Ave

Hillcrest eBART  
 Existing Conditions PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗↘					↕↗↘		↕	↗↘	
Ideal Flow (vphpl)	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor		1.00	0.88					0.91		1.00	0.95	
Frbp, ped/bikes		1.00	1.00					1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		1770	2640					4995		1770	3539	
Flt Permitted		0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		1770	2640					4995		1770	3539	
Volume (vph)	177	0	1617	0	0	0	0	1750	186	26	711	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	182	0	1667	0	0	0	0	1804	192	27	733	0
RTOR Reduction (vph)	0	0	51	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	182	1616	0	0	0	0	1987	0	27	733	0
Confl. Peds. (#/hr)									5			5
Turn Type	Perm	custom								Prot		
Protected Phases		8						6		5	2	
Permitted Phases	8		1 8									
Actuated Green, G (s)		22.0	70.0					80.3		7.2	42.5	
Effective Green, g (s)		21.0	69.0					80.8		6.2	43.0	
Actuated g/C Ratio		0.18	0.58					0.67		0.05	0.36	
Clearance Time (s)		3.0						4.5		3.0	4.5	
Vehicle Extension (s)		2.5						3.0		2.0	3.0	
Lane Grp Cap (vph)		310	1518					3363		91	1268	
v/s Ratio Prot								c0.40		0.02	c0.21	
v/s Ratio Perm		0.10	c0.61									
v/c Ratio		0.59	1.06					0.59		0.30	0.58	
Uniform Delay, d1		45.5	25.5					10.6		54.8	31.2	
Progression Factor		1.00	1.00					0.23		1.38	1.65	
Incremental Delay, d2		2.3	42.3					0.6		0.4	1.1	
Delay (s)		47.9	67.8					3.0		75.7	52.4	
Level of Service		D	E					A		E	D	
Approach Delay (s)		65.9			0.0			3.0			53.2	
Approach LOS		E			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			36.5					HCM Level of Service			D	
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			120.0					Sum of lost time (s)		4.0		
Intersection Capacity Utilization			86.0%					ICU Level of Service		E		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
12: Larkspur Dr & Hillcrest Ave

Hillcrest eBART  
Existing Conditions PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↖	↗	↖	↗	↕	↖	↗	↖
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	4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.91		1.00	0.91	1.00
Frbp, ped/bikes		1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1809	1549	1770	1863	1583	1770	5080		1770	5085	1534
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1809	1549	1770	1863	1583	1770	5080		1770	5085	1534
Volume (vph)	91	62	103	15	26	73	66	1772	10	223	2053	52
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	64	106	15	27	75	68	1827	10	230	2116	54
RTOR Reduction (vph)	0	0	94	0	0	72	0	0	0	0	0	4
Lane Group Flow (vph)	0	158	12	15	27	3	68	1837	0	230	2116	50
Confl. Peds. (#/hr)			5	5					5			5
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4						6
Actuated Green, G (s)		14.4	14.4	5.1	5.1	5.1	7.7	65.4		19.1	76.8	76.8
Effective Green, g (s)		13.9	13.9	5.1	5.1	5.1	7.2	66.4		18.6	77.8	77.8
Actuated g/C Ratio		0.12	0.12	0.04	0.04	0.04	0.06	0.55		0.16	0.65	0.65
Clearance Time (s)		3.5	3.5	4.0	4.0	4.0	3.5	5.0		3.5	5.0	5.0
Vehicle Extension (s)		5.0	5.0	2.0	2.0	2.0	2.0	4.0		2.5	4.0	4.0
Lane Grp Cap (vph)		210	179	75	79	67	106	2811		274	3297	995
v/s Ratio Prot		c0.09		0.01	c0.01		0.04	0.36		c0.13	c0.42	
v/s Ratio Perm			0.01			0.00						0.03
v/c Ratio		0.75	0.07	0.20	0.34	0.05	0.64	0.65		0.84	0.64	0.05
Uniform Delay, d1		51.4	47.3	55.5	55.8	55.1	55.1	18.7		49.2	12.7	7.7
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.10	0.66	0.68
Incremental Delay, d2		16.6	0.3	0.5	0.9	0.1	9.5	1.2		8.5	0.4	0.0
Delay (s)		67.9	47.6	56.0	56.8	55.2	64.7	19.9		62.8	8.8	5.2
Level of Service		E	D	E	E	E	E	B		E	A	A
Approach Delay (s)		59.8			55.7			21.5			13.9	
Approach LOS		E			E			C			B	

Intersection Summary

HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
13: Davison Dr & Hillcrest Ave

Hillcrest eBART  
Existing Conditions PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.88	1.00	0.95		0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3357		1770	3539	2775	1770	3525		3433	3539	1563
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3357		1770	3539	2775	1770	3525		3433	3539	1563
Volume (vph)	118	258	117	55	141	1012	130	716	17	1047	937	131
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	122	266	121	57	145	1043	134	738	18	1079	966	135
RTOR Reduction (vph)	0	39	0	0	0	177	0	1	0	0	0	0
Lane Group Flow (vph)	122	348	0	57	145	866	134	755	0	1079	966	135
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot			Prot		pm+ov	Prot			Prot		Free
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	15.7	24.3		9.3	17.9	57.9	13.0	47.4		40.0	74.4	140.0
Effective Green, g (s)	15.7	25.3		9.3	18.9	59.9	14.0	48.4		41.0	75.4	140.0
Actuated g/C Ratio	0.11	0.18		0.07	0.13	0.43	0.10	0.35		0.29	0.54	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	198	607		118	478	1187	177	1219		1005	1906	1563
v/s Ratio Prot	0.07	c0.10		0.03	0.04	c0.21	0.08	c0.21		c0.31	0.27	
v/s Ratio Perm						0.10						0.09
v/c Ratio	0.62	0.57		0.48	0.30	0.73	0.76	0.62		1.07	0.51	0.09
Uniform Delay, d1	59.3	52.4		63.0	54.6	33.3	61.3	38.1		49.5	20.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.4	2.6		4.2	1.0	3.2	17.7	2.4		50.3	1.0	0.1
Delay (s)	65.7	55.0		67.2	55.6	36.5	79.1	40.5		99.8	21.5	0.1
Level of Service	E	E		E	E	D	E	D		F	C	A
Approach Delay (s)		57.6			40.2			46.3			58.9	
Approach LOS		E			D			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			51.6				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			78.6%				ICU Level of Service				D	
Analysis Period (min)			15									

c Critical Lane Group

-----

Scenario Report

Scenario: Existing AM  
Command: Default Command  
Volume: Existing AM  
Geometry: Existing  
Impact Fee: Default Impact Fee  
Trip Generation: Default Trip Generation  
Trip Distribution: Default Trip Distribution  
Paths: Default Path  
Routes: Default Route  
Configuration: Default Configuration

-----  
Impact Analysis Report  
Level Of Service

Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh C	Del/ LOS	V/ Veh C	
# 1	A	xxxxxx 0.576	A	xxxxxx 0.576	+ 0.000 V/C
# 2	A	xxxxxx 0.310	A	xxxxxx 0.310	+ 0.000 V/C
# 3		xxxxxx 0.000		xxxxxx 0.000	+ 0.000 V/C
# 4	A	xxxxxx 0.491	A	xxxxxx 0.491	+ 0.000 V/C
# 5	B	xxxxxx 0.651	B	xxxxxx 0.651	+ 0.000 V/C
# 6	B	xxxxxx 0.602	B	xxxxxx 0.602	+ 0.000 V/C
# 7	A	xxxxxx 0.338	A	xxxxxx 0.338	+ 0.000 V/C
# 8		xxxxxx 0.000		xxxxxx 0.000	+ 0.000 V/C
# 9		xxxxxx 0.000		xxxxxx 0.000	+ 0.000 V/C
# 10	B	xxxxxx 0.681	B	xxxxxx 0.681	+ 0.000 V/C
# 11	C	xxxxxx 0.731	C	xxxxxx 0.731	+ 0.000 V/C
# 12	A	xxxxxx 0.562	A	xxxxxx 0.562	+ 0.000 V/C
# 13	C	xxxxxx 0.743	C	xxxxxx 0.743	+ 0.000 V/C

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #1
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.576
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 54 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Split Phase, Protected), Rights (Include), Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Volume, and Crit Moves.



Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #2
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.310
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 21 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different volume types and 12 rows of adjustment factors.

Saturation Flow Module: Table with 12 columns representing saturation flow values and 4 rows of adjustment factors.

Capacity Analysis Module: Table with 12 columns representing capacity analysis metrics and 4 rows of values.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #3
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.000
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 0 Level Of Service:
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, RTOR Reduct, RTOR Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #4
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.491
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 37 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns showing saturation flow rates and adjustment factors for different lanes.

Capacity Analysis Module: Table with 12 columns showing capacity analysis metrics like Vol/Sat, Crit Volume, and Crit Moves.

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #5
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.651
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 73 Level Of Service: B
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows of adjustment factors.

Saturation Flow Module: Table with 12 columns representing saturation flow values and 4 rows of adjustment factors.

Capacity Analysis Module: Table with 12 columns representing capacity analysis metrics and 4 rows of values.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #6
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.602
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 57 Level Of Service: B
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Volume, and Crit Moves.

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #7
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.338
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 34 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Protected, Split Phase), Rights (Include), Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 10 rows of adjustment factors (Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, RTOR Reduct, RTOR Vol, PCE Adj, MLF Adj, Final Volume).

Saturation Flow Module: Table with 12 columns and 4 rows (Sat/Lane, Adjustment, Lanes, Final Sat.).

Capacity Analysis Module: Table with 12 columns and 4 rows (Vol/Sat, Crit Volume, Crit Moves).

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #8
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.000
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 0 Level Of Service:
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, RTOR Reduct, RTOR Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module: Table with 12 columns representing different traffic movements. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns representing different traffic movements. Rows include Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #9
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.000
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 0 Level Of Service:

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 10 rows of adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns and 4 rows showing Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns and 3 rows showing Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*



Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #10
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.681
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 58 Level Of Service: B
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 10 rows of adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns and 4 rows showing Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns and 4 rows showing Vol/Sat, Crit Volume, and Crit Moves.

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #11
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.731
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 69 Level Of Service: C
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Permitted/Protected), Rights (Include), Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows for various adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat., and 4 rows of data.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Volume, and Crit Moves, and 3 rows of data.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #12
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.562
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 52 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 10 rows of adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns and 4 rows showing Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns and 4 rows showing Vol/Sat, Crit Volume, and Crit Moves.

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #13
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.743
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 89 Level Of Service: C
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns representing saturation flow rates and adjustment factors like Sat/Lane, Adjustment, Lanes, etc.

Capacity Analysis Module: Table with 12 columns representing capacity analysis metrics like Vol/Sat, Crit Volume, Crit Moves, etc.



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Scenario Report

Scenario: Existing PM

Command: Default Command

Volume: Existing PM

Geometry: Existing

Impact Fee: Default Impact Fee

Trip Generation: Default Trip Generation

Trip Distribution: Default Trip Distribution

Paths: Default Path

Routes: Default Route

Configuration: Default Configuration

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 Impact Analysis Report  
 Level Of Service

Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh C	Del/ LOS	V/ Veh C	
# 1	A xxxxxx	0.531	A xxxxxx	0.531	+ 0.000 V/C
# 2	A xxxxxx	0.296	A xxxxxx	0.296	+ 0.000 V/C
# 3	xxxxxx	0.000	xxxxxx	0.000	+ 0.000 V/C
# 4	A xxxxxx	0.564	A xxxxxx	0.564	+ 0.000 V/C
# 5	E xxxxxx	0.958	E xxxxxx	0.958	+ 0.000 V/C
# 6	E xxxxxx	0.925	E xxxxxx	0.925	+ 0.000 V/C
# 7	A xxxxxx	0.390	A xxxxxx	0.390	+ 0.000 V/C
# 8	xxxxxx	0.000	xxxxxx	0.000	+ 0.000 V/C
# 9	xxxxxx	0.000	xxxxxx	0.000	+ 0.000 V/C
# 10	C xxxxxx	0.736	C xxxxxx	0.736	+ 0.000 V/C
# 11	E xxxxxx	0.907	E xxxxxx	0.907	+ 0.000 V/C
# 12	B xxxxxx	0.604	B xxxxxx	0.604	+ 0.000 V/C
# 13	C xxxxxx	0.788	C xxxxxx	0.788	+ 0.000 V/C

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #1
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.531
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 49 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Split Phase, Protected), Rights (Include), Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, RTOR Reduct, RTOR Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Volume, and Crit Moves.



Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #2
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.296
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 20 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns showing saturation flow rates and adjustment factors for different lanes.

Capacity Analysis Module: Table with 12 columns showing capacity analysis metrics like Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #3
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.000
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 0 Level Of Service:

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, RTOR Reduct, RTOR Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #4
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.564
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 43 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Permitted/Protected), Rights (Include), Min. Green, and Lanes.

Volume Module: Table with 13 columns representing different volume types (Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, RTOR Reduct, RTOR Vol, PCE Adj, MLF Adj, Final Volume).

Saturation Flow Module: Table with 13 columns representing saturation flow metrics (Sat/Lane, Adjustment, Lanes, Final Sat.).

Capacity Analysis Module: Table with 13 columns representing capacity analysis metrics (Vol/Sat, Crit Volume, Crit Moves).

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #5
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.958
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 12 rows for various adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns for movements and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for movements and 3 rows for Vol/Sat, Crit Volume, and Crit Moves.

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #6
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.925
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #7
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.390
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 37 Level Of Service: A
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 12 rows of adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns and 4 rows showing Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns and 4 rows showing Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #8
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.000
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 0 Level Of Service:
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements. Rows include Base Vol, Growth Adj, Initial Bse, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, RTOR Reduct, RTOR Vol, PCE Adj, MLF Adj, and Final Volume.

Saturation Flow Module: Table with 12 columns. Rows include Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns. Rows include Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #9
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.000
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 0 Level Of Service:

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 12 rows of adjustment factors like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns and 4 rows showing Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns and 3 rows showing Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*



Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #10
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.736
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 70 Level Of Service: C
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different volume and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #11
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.907
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control (Permitted/Protected), Rights (Include), Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows for various adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for saturation flow values and 4 rows for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for capacity analysis metrics and 4 rows for Vol/Sat, Crit Volume, and Crit Moves.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #12
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.604
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 58 Level Of Service: B
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic movements and 11 rows of volume-related metrics like Base Vol, Growth Adj, etc.

Saturation Flow Module: Table with 12 columns and 4 rows showing saturation flow rates and adjustments.

Capacity Analysis Module: Table with 12 columns and 4 rows showing capacity analysis metrics like Vol/Sat, Crit Volume, etc.

\*\*\*\*\*

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*
Intersection #13
\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.788
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 108 Level Of Service: C
\*\*\*\*\*

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement (L-T-R), Control, Rights, Min. Green, and Lanes.

Volume Module: Table with 12 columns representing different traffic volumes and adjustment factors like Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns for Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns for Vol/Sat, Crit Volume, and Crit Moves.



**Existing Conditions**

<b>Measures of Effectiveness across All Time Slices</b>				
<b>Measure of Effectiveness</b>	<b>Eastbound AM</b>	<b>Westbound AM</b>	<b>Eastbound PM</b>	<b>Westbound PM</b>
Vehicle-Miles of Travel	8,726	10,743	16,536	12,245
Person-Miles of Travel	10,994	13,536	20,836	15,429
Average Travel Time (min:sec)	3:19	4:54	3:26	3:15
Average Travel Speed (mph)	70	46	68	70
Mainline Vehicle Delay (veh-hr)	0	93	13	1
Ramp Vehicle Delay (veh-hr)	0	0	589	3
Mainline Person Delay (pass-hr)	0	117	17	1
Ramp Person Delay (pass-hr)	0	0	733	3
Demand Served	19,636 (100%)	25,876 (95%)	30,398 (91%)	32,304 (100%)

<b>Measures of Effectiveness for Peak Hours</b>				
<b>Measure of Effectiveness</b>	<b>Eastbound AM</b>	<b>Westbound AM</b>	<b>Eastbound PM</b>	<b>Westbound PM</b>
Vehicle-Miles of Travel	4,344	5,098	8,335	6,531
Person-Miles of Travel	5,473	6,424	10,502	8,229
Average Travel Time (min:sec)	3:19	3:24	3:27	3:15
Average Travel Speed (mph)	70	67	67	70
Mainline Vehicle Delay (veh-hr)	0	6	7	1
Ramp Vehicle Delay (veh-hr)	0	0	273	2
Mainline Person Delay (pass-hr)	0	8	9	1
Ramp Person Delay (pass-hr)	0	0	341	3
Demand Served	9,816 (100%)	12,752 (95%)	15,130 (90%)	16,732 (100%)

Note: VMT, Travel Time, Travel Speed, and Delay only include subsections From A Street Merge Segment On-Ramp (SS 3) to Wilbur Off Off-Ramp (SS 11) in the Eastbound direction and From Wilbur On On-Ramp (SS 3) to A Street Diverge Segment Off-Ramp (SS 11) in the Westbound direction.

**APPENDIX B:  
2035 PREFERRED PLAN – TWO STATION TOD VERSION**

HCM Signalized Intersection Capacity Analysis  
 1: E 18th St & Hillcrest Ave

Hillcrest eBART  
 2035 Full Station Development AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖
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	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3269		1770	3533		1770	1682		1770	1863	1583
Flt Permitted	0.22	1.00		0.36	1.00		0.70	1.00		0.31	1.00	1.00
Satd. Flow (perm)	415	3269		674	3533		1310	1682		571	1863	1583
Volume (vph)	30	280	290	420	830	10	760	170	310	30	80	90
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	292	302	438	865	10	792	177	323	31	83	94
RTOR Reduction (vph)	0	164	0	0	1	0	0	73	0	0	0	47
Lane Group Flow (vph)	31	430	0	438	874	0	792	427	0	31	83	47
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases	4			8			2			6		6
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	41.0	41.0		41.0	41.0		41.0	41.0		41.0	41.0	41.0
Effective Green, g (s)	41.0	41.0		41.0	41.0		41.0	41.0		41.0	41.0	41.0
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.46	0.46		0.46	0.46	0.46
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	189	1489		307	1609		597	766		260	849	721
v/s Ratio Prot		0.13			0.25			0.25			0.04	
v/s Ratio Perm	0.07			c0.65			c0.60			0.05		0.03
v/c Ratio	0.16	0.29		1.43	0.54		1.33	0.56		0.12	0.10	0.06
Uniform Delay, d1	14.4	15.4		24.5	17.7		24.5	17.9		14.1	14.0	13.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1		209.9	0.4		158.4	2.9		0.9	0.2	0.2
Delay (s)	14.8	15.5		234.4	18.1		182.9	20.8		15.0	14.2	13.9
Level of Service	B	B		F	B		F	C		B	B	B
Approach Delay (s)		15.4			90.3			120.1			14.2	
Approach LOS		B			F			F			B	
























**Intersection Summary**

HCM Average Control Delay	83.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
2: E 18th St & Viera Ave

Hillcrest eBART  
2035 Full Station Development AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
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	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1770	3515			1788	1583		1682	
Flt Permitted	0.14	1.00	1.00	0.56	1.00			0.71	1.00		0.93	
Satd. Flow (perm)	261	3539	1583	1041	3515			1324	1583		1579	
Volume (vph)	110	280	90	10	1030	50	200	40	10	20	20	80
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	125	318	102	11	1170	57	227	45	11	23	23	91
RTOR Reduction (vph)	0	0	51	0	6	0	0	0	5	0	59	0
Lane Group Flow (vph)	125	318	51	11	1221	0	0	272	6	0	78	0
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	28.6	28.6	28.6	28.6	28.6			20.2	20.2		20.2	
Effective Green, g (s)	28.6	28.6	28.6	28.6	28.6			20.2	20.2		20.2	
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.50			0.36	0.36		0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	131	1782	797	524	1770			471	563		562	
v/s Ratio Prot		0.09			0.35							
v/s Ratio Perm	c0.48		0.03	0.01				c0.21	0.00		0.05	
v/c Ratio	0.95	0.18	0.06	0.02	0.69			0.58	0.01		0.14	
Uniform Delay, d1	13.5	7.7	7.2	7.1	10.7			14.8	11.8		12.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	64.1	0.0	0.0	0.0	1.1			5.1	0.0		0.5	
Delay (s)	77.6	7.7	7.3	7.1	11.9			19.9	11.9		12.9	
Level of Service	E	A	A	A	B			B	B		B	
Approach Delay (s)		23.7			11.8			19.6			12.9	
Approach LOS		C			B			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.8			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			56.8			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			66.0%			ICU Level of Service					C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 3: E 18th St & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development AM




























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	3539		1770	3539	1667	
Flt Permitted	1.00		0.59	1.00	0.98	
Satd. Flow (perm)	3539		1100	3539	1667	
Volume (vph)	240	0	80	1080	10	20
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	261	0	87	1174	11	22
RTOR Reduction (vph)	0	0	0	0	17	0
Lane Group Flow (vph)	261	0	87	1174	16	0
Turn Type			Perm			
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	14.7		14.7	14.7	5.9	
Effective Green, g (s)	14.7		14.7	14.7	5.9	
Actuated g/C Ratio	0.51		0.51	0.51	0.21	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1819		565	1819	344	
v/s Ratio Prot	0.07			c0.33	c0.01	
v/s Ratio Perm			0.08			
v/c Ratio	0.14		0.15	0.65	0.05	
Uniform Delay, d1	3.6		3.7	5.1	9.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.0		0.1	0.8	0.1	
Delay (s)	3.7		3.8	5.9	9.1	
Level of Service	A		A	A	A	
Approach Delay (s)	3.7			5.7	9.1	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	28.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
4: E 18th St & SR 4 WB Ramps

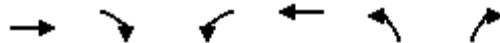
Hillcrest eBART  
2035 Full Station Development AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 						 	
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				
Lane Util. Factor		0.95		0.97	0.95			1.00				
Frbp, ped/bikes		1.00		1.00	1.00			1.00				
Flpb, ped/bikes		1.00		1.00	1.00			1.00				
Frt		0.97		1.00	1.00			1.00				
Flt Protected		1.00		0.95	1.00			0.95				
Satd. Flow (prot)		3405		3433	3539			1766				
Flt Permitted		1.00		0.95	1.00			1.00				
Satd. Flow (perm)		3405		3433	3539			1859				
Volume (vph)	0	200	60	350	1110	0	50	0	0	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	206	62	361	1144	0	52	0	0	0	0	0
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	238	0	361	1144	0	0	52	0	0	0	0
Confl. Peds. (#/hr)			5			5	5					5
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8		8	4		
Actuated Green, G (s)		18.9		4.7	19.4			2.4				
Effective Green, g (s)		18.9		4.2	19.4			1.9				
Actuated g/C Ratio		0.51		0.11	0.52			0.05				
Clearance Time (s)		4.0		3.5	4.0			3.5				
Vehicle Extension (s)		3.0		3.0	4.0			2.0				
Lane Grp Cap (vph)		1739		390	1856			95				
v/s Ratio Prot		0.07		c0.11	c0.32							
v/s Ratio Perm								c0.03				
v/c Ratio		0.14		0.93	0.62			0.55				
Uniform Delay, d1		4.8		16.2	6.2			17.1				
Progression Factor		1.00		1.00	1.00			1.00				
Incremental Delay, d2		0.0		27.5	0.7			3.4				
Delay (s)		4.8		43.7	6.9			20.6				
Level of Service		A		D	A			C				
Approach Delay (s)		4.8			15.7			20.6			0.0	
Approach LOS		A			B			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			37.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			53.5%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: E 18th St & SR 160 NB Ramps

Hillcrest eBART  
 2035 Full Station Development AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑↑	↓	↑↑
Ideal Flow (vphpl)	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	0.91	1.00	1.00	0.91	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	1770	2787
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	1770	5085	1770	2787
Volume (vph)	160	40	20	1380	80	600
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	165	41	21	1423	82	619
RTOR Reduction (vph)	0	12	0	0	0	495
Lane Group Flow (vph)	165	29	21	1423	82	124
Turn Type		Perm	Prot			pt+ov
Protected Phases	2		1	6	8	8 1
Permitted Phases		2				
Actuated Green, G (s)	63.4	63.4	6.8	73.2	8.3	19.1
Effective Green, g (s)	63.9	63.9	5.8	73.7	8.3	18.1
Actuated g/C Ratio	0.71	0.71	0.06	0.82	0.09	0.20
Clearance Time (s)	4.5	4.5	3.0	4.5	4.0	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	2.0	
Lane Grp Cap (vph)	3610	1124	114	4164	163	560
v/s Ratio Prot	0.03		0.01	c0.28	c0.05	0.04
v/s Ratio Perm		0.02				
v/c Ratio	0.05	0.03	0.18	0.34	0.50	0.22
Uniform Delay, d1	3.9	3.9	39.9	2.0	38.9	30.1
Progression Factor	1.00	1.00	1.53	0.25	1.00	1.00
Incremental Delay, d2	0.0	0.0	0.7	0.2	0.9	0.1
Delay (s)	3.9	3.9	61.7	0.7	39.8	30.1
Level of Service	A	A	E	A	D	C
Approach Delay (s)	3.9			1.6	31.3	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
6: Main St & Bridgehead Rd

Hillcrest eBART  
2035 Full Station Development AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1770	3539	1533	1770	5085	1533	1770	1833		1681	1711	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1770	3539	1533	1770	5085	1533	1770	1833		1681	1711	1583
Volume (vph)	60	610	90	10	1240	270	140	90	10	50	10	20
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	62	629	93	10	1278	278	144	93	10	52	10	21
RTOR Reduction (vph)	0	0	33	0	0	112	0	5	0	0	0	20
Lane Group Flow (vph)	62	629	60	10	1278	166	144	98	0	30	32	1
Conf. Peds. (#/hr)			5			5			5			
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6						7
Actuated Green, G (s)	6.3	56.9	56.9	2.3	52.9	52.9	11.0	11.0		4.8	4.8	4.8
Effective Green, g (s)	5.3	57.9	57.9	1.3	53.9	53.9	10.5	10.5		4.3	4.3	4.3
Actuated g/C Ratio	0.06	0.64	0.64	0.01	0.60	0.60	0.12	0.12		0.05	0.05	0.05
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	104	2277	986	26	3045	918	207	214		80	82	76
v/s Ratio Prot	c0.04	0.18		0.01	c0.25		c0.08	0.05		0.02	c0.02	
v/s Ratio Perm			0.04			0.11						0.00
v/c Ratio	0.60	0.28	0.06	0.38	0.42	0.18	0.70	0.46		0.38	0.39	0.01
Uniform Delay, d1	41.3	7.0	6.0	44.0	9.7	8.1	38.2	37.1		41.5	41.6	40.8
Progression Factor	0.95	0.89	0.57	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.7	0.3	0.1	3.4	0.4	0.4	7.9	0.6		1.1	1.1	0.0
Delay (s)	44.8	6.5	3.5	47.4	10.1	8.6	46.1	37.7		42.6	42.7	40.9
Level of Service	D	A	A	D	B	A	D	D		D	D	D
Approach Delay (s)		9.2			10.1			42.6			42.2	
Approach LOS		A			B			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.8				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			53.1%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Oakley Rd & Phillips Ln

Hillcrest eBART  
2035 Full Station Development AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↑↑	↗	↖	↗	
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	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1850		1770	3539	1583	1770	1665	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1850		1770	3539	1583	1770	1665	
Volume (vph)	120	530	770	200	830	40	50	50	50	50	50	110
Peak-hour factor, PHF	0.87	0.87	0.97	0.97	0.87	0.87	0.97	0.97	0.97	0.87	0.97	0.87
Adj. Flow (vph)	138	609	794	206	954	46	52	52	52	57	52	126
RTOR Reduction (vph)	0	0	264	0	1	0	0	0	48	0	84	0
Lane Group Flow (vph)	138	609	530	206	999	0	52	52	4	57	94	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	4.1	45.4	45.4	16.0	57.3		4.1	7.1	7.1	8.5	11.5	
Effective Green, g (s)	4.1	45.4	45.4	16.0	57.3		4.1	7.1	7.1	8.5	11.5	
Actuated g/C Ratio	0.04	0.49	0.49	0.17	0.62		0.04	0.08	0.08	0.09	0.12	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	78	909	773	305	1140		78	270	121	162	206	
v/s Ratio Prot	c0.08	0.33		0.12	c0.54		c0.03	0.01		c0.03	c0.06	
v/s Ratio Perm			0.33						0.00			
v/c Ratio	1.77	0.67	0.69	0.68	0.88		0.67	0.19	0.03	0.35	0.46	
Uniform Delay, d1	44.5	18.1	18.3	36.1	14.9		43.8	40.3	39.8	39.7	37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	392.9	1.9	2.5	5.8	7.8		19.4	0.3	0.1	1.3	1.6	
Delay (s)	437.4	20.0	20.8	41.9	22.7		63.2	40.6	39.9	41.0	39.4	
Level of Service	F	B	C	D	C		E	D	D	D	D	
Approach Delay (s)		57.8			25.9			47.9			39.8	
Approach LOS		E			C			D			D	

Intersection Summary

HCM Average Control Delay	43.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis  
 9: Oakley Rd & Neroly Rd

Hillcrest eBART  
 2035 Full Station Development AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	150	100	20	780	150	250	430	10	60	230	40
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	11	160	106	21	830	160	266	457	11	64	245	43

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	277	1011	734	351
Volume Left (vph)	11	21	266	64
Volume Right (vph)	106	160	11	43
Hadj (s)	-0.19	-0.06	0.10	0.00
Departure Headway (s)	9.0	8.4	8.6	8.8
Degree Utilization, x	0.69	2.36	1.74	0.85
Capacity (veh/h)	385	436	426	396
Control Delay (s)	29.9	637.3	365.7	45.7
Approach Delay (s)	29.9	637.3	365.7	45.7
Approach LOS	D	F	F	E

Intersection Summary			
Delay		394.9	
HCM Level of Service		F	
Intersection Capacity Utilization	122.8%		ICU Level of Service H
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis  
 13: Davison Dr & Hillcrest Ave

Hillcrest eBART  
 2035 Full Station Development AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕		↘	↕	↗	↘	↕		↗	↕	↗
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.88	1.00	0.95		0.97	0.95	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3210		1770	3539	2787	1770	3534		3433	3539	1583
Flt Permitted	0.65	1.00		0.61	1.00	1.00	0.36	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1214	3210		1143	3539	2787	668	3534		636	3539	1583
Volume (vph)	200	80	130	30	150	1040	160	980	10	210	610	120
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	84	137	32	158	1095	168	1032	11	221	642	126
RTOR Reduction (vph)	0	82	0	0	0	59	0	1	0	0	0	67
Lane Group Flow (vph)	211	139	0	32	158	1036	168	1042	0	221	642	59
Turn Type	Perm			Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	24.0	24.0		24.0	24.0	24.0	28.0	28.0		28.0	28.0	28.0
Effective Green, g (s)	24.0	24.0		24.0	24.0	24.0	28.0	28.0		28.0	28.0	28.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40	0.40	0.47	0.47		0.47	0.47	0.47
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	486	1284		457	1416	1115	312	1649		297	1652	739
v/s Ratio Prot		0.04			0.04			0.29			0.18	
v/s Ratio Perm	0.17			0.03		0.37	0.25			0.35		0.04
v/c Ratio	0.43	0.11		0.07	0.11	0.93	0.54	0.63		0.74	0.39	0.08
Uniform Delay, d1	13.1	11.3		11.1	11.3	17.2	11.4	12.1		13.1	10.4	8.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.57	0.68	1.14
Incremental Delay, d2	2.8	0.2		0.3	0.2	14.5	6.5	1.9		15.0	0.7	0.2
Delay (s)	15.9	11.5		11.4	11.5	31.7	17.9	14.0		35.6	7.8	10.3
Level of Service	B	B		B	B	C	B	B		D	A	B
Approach Delay (s)		13.6			28.7			14.5			14.3	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 14: Slatten Ranch Rd & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.76	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	0.98
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	3610	3433	1863	1553	3433	3539	1533	1770	3475	3475
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	3610	3433	1863	1553	3433	3539	1533	1770	3475	3475
Volume (vph)	150	460	390	150	50	60	470	750	440	140	1080	130
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	156	479	406	156	52	62	490	781	458	146	1125	135
RTOR Reduction (vph)	0	0	23	0	0	52	0	0	145	0	10	0
Lane Group Flow (vph)	156	479	383	156	52	10	490	781	313	146	1250	0
Confl. Peds. (#/hr)						5			5			5
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	12.6	23.8	36.8	4.0	15.2	15.2	13.0	36.7	36.7	9.5	33.2	33.2
Effective Green, g (s)	12.6	23.8	36.8	4.0	15.2	15.2	13.0	36.7	36.7	9.5	33.2	33.2
Actuated g/C Ratio	0.14	0.26	0.41	0.04	0.17	0.17	0.14	0.41	0.41	0.11	0.37	0.37
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	248	493	1476	153	315	262	496	1443	625	187	1282	1282
v/s Ratio Prot	0.09	c0.26	0.04	c0.05	0.03		c0.14	0.22		0.08	c0.36	c0.36
v/s Ratio Perm			0.07			0.01			0.20			
v/c Ratio	0.63	0.97	0.26	1.02	0.17	0.04	0.99	0.54	0.50	0.78	0.97	0.97
Uniform Delay, d1	36.5	32.8	17.6	43.0	32.0	31.3	38.4	20.3	19.8	39.2	28.0	28.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.18	1.44	1.00	1.00	1.00
Incremental Delay, d2	3.6	33.0	0.0	78.0	0.1	0.0	33.2	1.2	2.4	17.5	19.8	19.8
Delay (s)	40.1	65.8	17.6	121.0	32.1	31.3	73.3	25.2	30.9	56.7	47.8	47.8
Level of Service	D	E	B	F	C	C	E	C	C	E	D	D
Approach Delay (s)		43.1			83.3			40.3			48.7	
Approach LOS		D			F			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			46.3				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		16.0			
Intersection Capacity Utilization			89.3%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: SR4 WB Ramp & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						↕	↕	↕			↕	↕
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
Lane Util. Factor						0.88		0.95			0.95	0.88
Frt						0.85		1.00			1.00	0.85
Flt Protected						1.00		1.00			1.00	1.00
Satd. Flow (prot)						2787		3539			3539	2787
Flt Permitted						1.00		1.00			1.00	1.00
Satd. Flow (perm)						2787		3539			3539	2787
Volume (vph)	0	0	0	0	0	650	0	950	0	0	260	960
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	0	677	0	990	0	0	271	1000
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	0	0	0	282
Lane Group Flow (vph)	0	0	0	0	0	641	0	990	0	0	271	718
Turn Type				Perm		custom	Prot					custom
Protected Phases						8		5			2	6
Permitted Phases				8		1		8			1	2
Actuated Green, G (s)						43.4		38.6			64.6	64.6
Effective Green, g (s)						43.4		38.6			64.6	64.6
Actuated g/C Ratio						0.48		0.43			0.72	0.72
Clearance Time (s)								4.0			4.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)						1344		1518			2540	2000
v/s Ratio Prot								c0.28			0.08	
v/s Ratio Perm						c0.23						0.26
v/c Ratio						0.48		0.65			0.11	0.36
Uniform Delay, d1						15.7		20.4			3.9	4.8
Progression Factor						1.00		0.05			0.80	1.33
Incremental Delay, d2						0.1		1.9			0.0	0.3
Delay (s)						15.8		2.9			3.2	6.7
Level of Service								B			A	A
Approach Delay (s)		0.0				15.8		2.9			6.0	
Approach LOS		A				B		A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.2					HCM Level of Service			A	
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)			8.0	
Intersection Capacity Utilization			82.6%					ICU Level of Service			E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 16: SR4 EB Ramp & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗			↖↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	
Lane Util. Factor	0.95	0.95			0.97	
Frt	1.00	1.00			1.00	
Flt Protected	0.95	0.95			0.95	
Satd. Flow (prot)	1681	1681			3433	
Flt Permitted	0.95	0.95			0.95	
Satd. Flow (perm)	1681	1681			3433	
Volume (vph)	950	0	0	0	260	0
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	990	0	0	0	271	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	495	495	0	0	271	0
Turn Type	Perm					
Protected Phases	4			6		
Permitted Phases	4					
Actuated Green, G (s)	28.5	28.5			53.5	
Effective Green, g (s)	28.5	28.5			53.5	
Actuated g/C Ratio	0.32	0.32			0.59	
Clearance Time (s)	4.0	4.0			4.0	
Vehicle Extension (s)	2.0	2.0			3.0	
Lane Grp Cap (vph)	532	532			2041	
v/s Ratio Prot					c0.08	
v/s Ratio Perm	c0.29	0.29				
v/c Ratio	0.93	0.93			0.13	
Uniform Delay, d1	29.8	29.8			8.0	
Progression Factor	1.00	1.00			1.18	
Incremental Delay, d2	22.9	22.9			0.1	
Delay (s)	52.7	52.7			9.6	
Level of Service	D	D			A	
Approach Delay (s)		52.7	0.0		9.6	
Approach LOS		D	A		A	

**Intersection Summary**

HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

## SIMTRAFFIC LEVEL OF SERVICE REPORT

**Project:** Antioch eBART Station Area Plan **HCM:** 2000  
**Scenario:** 2035 East Median and Phillips Stations **# of Runs:** 10  
**TOD:** AM Peak **Analysis Period:** Hourly **PHF:** 1

**Intersection:** 13: Sunset Dr & Hillcrest Ave **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	20	19	95	4	69.6	E	19.9
	T	860	772	90	31	11.8	B	1.9
	R	280	246	88	14	3.9	A	0.8
	<b>Subtotal</b>	<b>1160</b>	<b>1037</b>	<b>89</b>	<b>--</b>	<b>11.0</b>	<b>B</b>	<b>--</b>
SB	L	250	253	101	14	71.2	E	9.0
	T	510	514	101	23	15.7	B	2.4
	R	10	11	110	4	15.5	B	5.1
	<b>Subtotal</b>	<b>770</b>	<b>778</b>	<b>101</b>	<b>--</b>	<b>33.8</b>	<b>C</b>	<b>--</b>
EB	L	30	27	90	4	58.2	E	14.8
	T	70	64	91	9	53.3	D	9.4
	R	60	57	95	6	25.7	C	7.0
	<b>Subtotal</b>	<b>160</b>	<b>148</b>	<b>93</b>	<b>--</b>	<b>43.7</b>	<b>D</b>	<b>--</b>
WB	L	430	426	99	18	49.8	D	2.9
	T	10	17	170	4	18.5	B	7.6
	R	350	351	100	13	16.2	B	2.2
	<b>Subtotal</b>	<b>790</b>	<b>794</b>	<b>101</b>	<b>--</b>	<b>34.3</b>	<b>C</b>	<b>--</b>
<b>Total</b>	<b>2880</b>	<b>2756</b>	<b>96</b>	<b>--</b>	<b>25.9</b>	<b>C</b>	<b>--</b>	

**Intersection:** 16: SR 4 WB Ramps & Hillcrest Ave **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1160	1038	89	45	2.0	A	0.3
	R	1510	1347	89	17	12.0	B	0.5
	<b>Subtotal</b>	<b>2670</b>	<b>2385</b>	<b>89</b>	<b>--</b>	<b>7.7</b>	<b>A</b>	<b>--</b>
SB	T	770	770	100	24	1.4	A	0.1
	R	230	226	98	15	1.9	A	0.2
	<b>Subtotal</b>	<b>1000</b>	<b>995</b>	<b>100</b>	<b>--</b>	<b>1.5</b>	<b>A</b>	<b>--</b>
<b>Total</b>	<b>3670</b>	<b>3381</b>	<b>92</b>	<b>--</b>	<b>5.9</b>	<b>A</b>	<b>--</b>	

## SIMTRAFFIC LEVEL OF SERVICE REPORT

**Project:** Antioch eBART Station Area Plan **HCM:** 2000  
**Scenario:** 2035 East Median and Phillips Stations **# of Runs:** 10  
**TOD:** AM Peak **Analysis Period:** Hourly **PHF:** 1

**Intersection:** 17: SR 4 EB Ramps & Hillcrest Ave **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	2630	2343	89	42	5.2	A	0.2
	R	280	251	90	12	5.1	A	0.5
	<b>Subtotal</b>	<b>2910</b>	<b>2594</b>	<b>89</b>	<b>--</b>	<b>5.2</b>	<b>A</b>	<b>--</b>
SB	L	160	156	98	12	51.9	D	3.0
	T	610	612	100	23	6.2	A	1.1
	<b>Subtotal</b>	<b>770</b>	<b>768</b>	<b>100</b>	<b>--</b>	<b>15.5</b>	<b>B</b>	<b>--</b>
EB	L	40	39	98	7	54.3	D	13.0
	R	390	391	100	16	12.3	B	2.1
	<b>Subtotal</b>	<b>430</b>	<b>431</b>	<b>100</b>	<b>--</b>	<b>16.1</b>	<b>B</b>	<b>--</b>
<b>Total</b>	<b>4110</b>	<b>3792</b>	<b>92</b>	<b>--</b>	<b>8.5</b>	<b>A</b>	<b>--</b>	

**Intersection:** 18: Larkspur Dr & Hillcrest Ave **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	80	69	86	5	339.8	F	86.3
	T	2430	2188	90	42	291.3	F	66.0
	R	10	9	90	2	290.5	F	138.0
	<b>Subtotal</b>	<b>2520</b>	<b>2266</b>	<b>90</b>	<b>--</b>	<b>292.8</b>	<b>F</b>	<b>--</b>
SB	L	100	98	98	11	62.7	E	11.4
	T	850	855	101	28	12.7	B	0.8
	R	50	51	102	7	3.2	A	1.0
	<b>Subtotal</b>	<b>1000</b>	<b>1004</b>	<b>100</b>	<b>--</b>	<b>17.1</b>	<b>B</b>	<b>--</b>
EB	L	190	167	88	7	408.6	F	109.4
	T	60	54	90	4	412.7	F	114.8
	R	80	74	93	7	336.1	F	116.0
	<b>Subtotal</b>	<b>330</b>	<b>294</b>	<b>89</b>	<b>--</b>	<b>391.2</b>	<b>F</b>	<b>--</b>
WB	L	10	9	90	3	498.0	F	284.0
	T	60	48	80	9	509.8	F	210.4
	R	290	240	83	14	539.3	F	221.0
	<b>Subtotal</b>	<b>360</b>	<b>296</b>	<b>82</b>	<b>--</b>	<b>533.3</b>	<b>F</b>	<b>--</b>
<b>Total</b>	<b>4210</b>	<b>3861</b>	<b>92</b>	<b>--</b>	<b>247.1</b>	<b>F</b>	<b>--</b>	

## SIMTRAFFIC LEVEL OF SERVICE REPORT

**Project:** Antioch eBART Station Area Plan **HCM:** 2000  
**Scenario:** 2035 East Median and Phillips Stations **# of Runs:** 10  
**TOD:** AM Peak **Analysis Period:** Hourly **PHF:** 1

**Intersection:** 29: Slatten Ranch Rd & SR4 WB Hook Ramps **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	570	562	99	16	8.3	A	0.6
	R	70	69	99	7	3.3	A	0.7
	<b>Subtotal</b>	<b>640</b>	<b>631</b>	<b>99</b>	<b>--</b>	<b>7.7</b>	<b>A</b>	<b>--</b>
EB	T	590	559	95	20	14.6	B	1.1
	R	10	10	100	4	10.7	B	7.1
	<b>Subtotal</b>	<b>600</b>	<b>569</b>	<b>95</b>	<b>--</b>	<b>14.5</b>	<b>B</b>	<b>--</b>
WB	L	50	51	102	8	24.3	C	4.5
	T	220	222	101	17	12.4	B	1.1
	<b>Subtotal</b>	<b>270</b>	<b>273</b>	<b>101</b>	<b>--</b>	<b>14.6</b>	<b>B</b>	<b>--</b>
<b>Total</b>		<b>1510</b>	<b>1472</b>	<b>97</b>	<b>--</b>	<b>11.6</b>	<b>B</b>	<b>--</b>

HCM Signalized Intersection Capacity Analysis  
 1: E 18th St & Hillcrest Ave

Hillcrest eBART  
 2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖
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	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	0.99		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3302		1770	3512		1770	1679		1770	1863	1583
Flt Permitted	0.51	1.00		0.11	1.00		0.68	1.00		0.25	1.00	1.00
Satd. Flow (perm)	956	3302		207	3512		1272	1679		466	1863	1583
Volume (vph)	80	820	660	250	370	20	350	140	270	40	110	30
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	854	688	260	385	21	365	146	281	42	115	31
RTOR Reduction (vph)	0	243	0	0	6	0	0	115	0	0	0	23
Lane Group Flow (vph)	83	1299	0	260	400	0	365	312	0	42	115	8
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases	4			8			2			6		6
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	36.0	36.0		36.0	36.0		16.0	16.0		16.0	16.0	16.0
Effective Green, g (s)	36.0	36.0		36.0	36.0		16.0	16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.27	0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	574	1981		124	2107		339	448		124	497	422
v/s Ratio Prot	0.39			0.11			0.19			0.06		
v/s Ratio Perm	0.09			c1.26			c0.29			0.09		0.01
v/c Ratio	0.14	0.66		2.10	0.19		1.08	0.70		0.34	0.23	0.02
Uniform Delay, d1	5.3	7.9		12.0	5.4		22.0	19.8		17.7	17.2	16.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.8		519.9	0.0		70.8	8.7		7.3	1.1	0.1
Delay (s)	5.4	8.7		531.9	5.5		92.8	28.5		25.0	18.3	16.3
Level of Service	A			F			C			C		B
Approach Delay (s)	8.5			211.0			58.1			19.5		
Approach LOS	A			F			E			B		

Intersection Summary

HCM Average Control Delay	62.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.78		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
2: E 18th St & Viera Ave

Hillcrest eBART  
2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑			↗	↗		↕	
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	0.95	1.00	1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1770	3498			1785	1583		1730	
Flt Permitted	0.48	1.00	1.00	0.18	1.00			0.57	1.00		0.90	
Satd. Flow (perm)	890	3539	1583	330	3498			1064	1583		1569	
Volume (vph)	100	910	140	10	360	30	140	20	10	70	100	140
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	114	1034	159	11	409	34	159	23	11	80	114	159
RTOR Reduction (vph)	0	0	93	0	11	0	0	0	6	0	46	0
Lane Group Flow (vph)	114	1034	66	11	432	0	0	182	5	0	307	0
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	22.6	22.6	22.6	22.6	22.6			24.2	24.2		24.2	
Effective Green, g (s)	22.6	22.6	22.6	22.6	22.6			24.2	24.2		24.2	
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41			0.44	0.44		0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	367	1460	653	136	1443			470	699		693	
v/s Ratio Prot		c0.29			0.12							
v/s Ratio Perm	0.13		0.04	0.03				0.17	0.00		c0.20	
v/c Ratio	0.31	0.71	0.10	0.08	0.30			0.39	0.01		0.44	
Uniform Delay, d1	10.9	13.4	9.9	9.8	10.8			10.3	8.6		10.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.5	1.6	0.1	0.3	0.1			2.4	0.0		2.1	
Delay (s)	11.3	15.0	9.9	10.0	10.9			12.7	8.6		12.7	
Level of Service	B	B	A	B	B			B	A		B	
Approach Delay (s)		14.0			10.9			12.5			12.7	
Approach LOS		B			B			B			B	

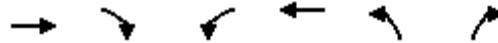
Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
 3: E 18th St & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.88	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	3529		1770	3539	1636	
Flt Permitted	1.00		0.27	1.00	0.99	
Satd. Flow (perm)	3529		510	3539	1636	
Volume (vph)	1040	20	20	370	10	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1130	22	22	402	11	65
RTOR Reduction (vph)	3	0	0	0	19	0
Lane Group Flow (vph)	1149	0	22	402	57	0
Turn Type			Perm			
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	14.6		14.6	14.6	6.5	
Effective Green, g (s)	14.6		14.6	14.6	6.5	
Actuated g/C Ratio	0.50		0.50	0.50	0.22	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1771		256	1776	365	
v/s Ratio Prot	c0.33			0.11	c0.04	
v/s Ratio Perm			0.04			
v/c Ratio	0.65		0.09	0.23	0.16	
Uniform Delay, d1	5.4		3.8	4.1	9.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.8		0.1	0.1	0.2	
Delay (s)	6.2		3.9	4.1	9.3	
Level of Service	A		A	A	A	
Approach Delay (s)	6.2			4.1	9.3	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	29.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
4: E 18th St & SR 4 WB Ramps

Hillcrest eBART  
2035 Full Station Development PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			
Lane Util. Factor		0.95		0.97	0.95			1.00	1.00			
Frbp, ped/bikes		1.00		1.00	1.00			1.00	1.00			
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)		3497		3433	3539			1764	1583			
Flt Permitted		1.00		0.95	1.00			0.98	1.00			
Satd. Flow (perm)		3497		3433	3539			1811	1583			
Volume (vph)	0	1020	80	620	320	0	70	0	10	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1052	82	639	330	0	72	0	10	0	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	9	0	0	0
Lane Group Flow (vph)	0	1128	0	639	330	0	0	72	1	0	0	0
Confl. Peds. (#/hr)			5			5	5					5
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8		8	4		
Actuated Green, G (s)		24.8		16.0	36.6			4.6	4.6			
Effective Green, g (s)		24.8		15.5	36.6			4.1	4.1			
Actuated g/C Ratio		0.44		0.27	0.65			0.07	0.07			
Clearance Time (s)		4.0		3.5	4.0			3.5	3.5			
Vehicle Extension (s)		3.0		3.0	4.0			2.0	2.0			
Lane Grp Cap (vph)		1538		943	2297			132	115			
v/s Ratio Prot		c0.32		c0.19	0.09							
v/s Ratio Perm								c0.04	0.00			
v/c Ratio		0.73		0.68	0.14			0.55	0.01			
Uniform Delay, d1		13.1		18.2	3.8			25.3	24.3			
Progression Factor		1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2		1.8		1.9	0.0			2.5	0.0			
Delay (s)		14.9		20.2	3.9			27.7	24.3			
Level of Service		B		C	A			C	C			
Approach Delay (s)		14.9			14.6			27.3			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			56.4			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			69.0%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 5: E 18th St & SR 160 NB Ramps

Hillcrest eBART  
 2035 Full Station Development PM

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘	↑↑↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.91	1.00		0.91	1.00	0.88
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	5085	1583		5085	1770	2787
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	5085	1583		5085	1770	2787
Volume (vph)	1010	20	0	900	40	440
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1041	21	0	928	41	454
RTOR Reduction (vph)	0	7	0	0	0	45
Lane Group Flow (vph)	1041	14	0	928	41	409
Turn Type		Perm	Prot			pt+ov
Protected Phases	2		1	6	8	8 1
Permitted Phases		2				
Actuated Green, G (s)	56.4	56.4		65.5	16.0	26.1
Effective Green, g (s)	56.9	56.9		66.0	16.0	25.1
Actuated g/C Ratio	0.63	0.63		0.73	0.18	0.28
Clearance Time (s)	4.5	4.5		4.5	4.0	
Vehicle Extension (s)	4.0	4.0		4.0	2.0	
Lane Grp Cap (vph)	3215	1001		3729	315	777
v/s Ratio Prot	c0.20			0.18	0.02	c0.15
v/s Ratio Perm		0.01				
v/c Ratio	0.32	0.01		0.25	0.13	0.53
Uniform Delay, d1	7.7	6.1		3.9	31.1	27.4
Progression Factor	1.00	1.00		0.35	1.00	1.00
Incremental Delay, d2	0.3	0.0		0.2	0.1	0.3
Delay (s)	7.9	6.2		1.5	31.2	27.7
Level of Service	A	A		A	C	C
Approach Delay (s)	7.9			1.5	28.0	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
6: Main St & Bridgehead Rd

Hillcrest eBART  
2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑	↗	↘	↗		↘	↗	↗
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		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00
Satd. Flow (prot)	1770	3539	1533	1770	5085	1533	1770	1709		1681	1743	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00
Satd. Flow (perm)	1770	3539	1533	1770	5085	1533	1770	1709		1681	1743	1583
Volume (vph)	40	1220	190	10	740	50	100	20	20	250	140	60
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	1258	196	10	763	52	103	21	21	258	144	62
RTOR Reduction (vph)	0	0	72	0	0	22	0	19	0	0	0	54
Lane Group Flow (vph)	41	1258	124	10	763	30	103	23	0	196	206	8
Conf. Peds. (#/hr)			5			5			5			
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2			6						7
Actuated Green, G (s)	4.1	54.2	54.2	1.2	51.3	51.3	8.0	8.0		11.6	11.6	11.6
Effective Green, g (s)	3.1	55.2	55.2	0.2	52.3	52.3	7.5	7.5		11.1	11.1	11.1
Actuated g/C Ratio	0.03	0.61	0.61	0.00	0.58	0.58	0.08	0.08		0.12	0.12	0.12
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	61	2171	940	4	2955	891	148	142		207	215	195
v/s Ratio Prot	c0.02	c0.36		0.01	0.15		c0.06	0.01		0.12	c0.12	
v/s Ratio Perm			0.08			0.02						0.00
v/c Ratio	0.67	0.58	0.13	2.50	0.26	0.03	0.70	0.16		0.95	0.96	0.04
Uniform Delay, d1	42.9	10.4	7.3	44.9	9.3	8.1	40.1	38.3		39.2	39.2	34.8
Progression Factor	1.08	0.70	0.25	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.7	1.1	0.3	1125.0	0.2	0.1	10.9	0.2		46.8	48.7	0.0
Delay (s)	65.8	8.4	2.1	1169.9	9.5	8.1	51.0	38.5		85.9	87.9	34.8
Level of Service	E	A	A	F	A	A	D	D		F	F	C
Approach Delay (s)		9.2			23.5			47.4			80.0	
Approach LOS		A			C			D			E	

Intersection Summary

HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Oakley Rd & Phillips Ln

Hillcrest eBART  
2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1835		1770	3539	1583	1770	1652	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1835		1770	3539	1583	1770	1652	
Volume (vph)	100	1000	700	70	370	40	50	50	50	50	50	140
Peak-hour factor, PHF	0.87	0.87	0.97	0.97	0.87	0.87	0.97	0.97	0.97	0.87	0.97	0.87
Adj. Flow (vph)	115	1149	722	72	425	46	52	52	52	57	52	161
RTOR Reduction (vph)	0	0	181	0	3	0	0	0	46	0	100	0
Lane Group Flow (vph)	115	1149	541	72	468	0	52	52	6	57	113	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	11.7	67.3	67.3	5.0	60.6		6.6	12.2	12.2	8.8	14.4	
Effective Green, g (s)	11.7	67.3	67.3	5.0	60.6		6.6	12.2	12.2	8.8	14.4	
Actuated g/C Ratio	0.11	0.62	0.62	0.05	0.55		0.06	0.11	0.11	0.08	0.13	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	189	1147	975	81	1017		107	395	177	143	218	
v/s Ratio Prot	0.06	c0.62		c0.04	0.26		0.03	0.01		c0.03	c0.07	
v/s Ratio Perm			0.34						0.00			
v/c Ratio	0.61	1.00	0.56	0.89	0.46		0.49	0.13	0.03	0.40	0.52	
Uniform Delay, d1	46.6	21.0	12.3	51.9	14.6		49.7	43.8	43.3	47.7	44.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.5	27.0	0.7	63.4	0.3		3.4	0.2	0.1	1.8	2.1	
Delay (s)	52.1	48.0	13.0	115.2	14.9		53.2	43.9	43.4	49.6	46.3	
Level of Service	D	D	B	F	B		D	D	D	D	D	
Approach Delay (s)		35.5			28.2			46.8			47.0	
Approach LOS		D			C			D			D	

Intersection Summary

HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	109.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis  
 9: Oakley Rd & Neroly Rd

Hillcrest eBART  
 2035 Full Station Development PM



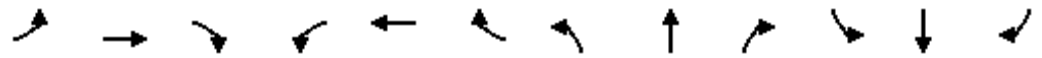
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	40	600	410	10	330	140	120	250	20	120	450	30
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	43	638	436	11	351	149	128	266	21	128	479	32

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	1117	511	415	638
Volume Left (vph)	43	11	128	128
Volume Right (vph)	436	149	21	32
Hadj (s)	-0.19	-0.14	0.06	0.04
Departure Headway (s)	9.4	9.4	9.6	9.6
Degree Utilization, x	2.91	1.34	1.11	1.70
Capacity (veh/h)	396	390	384	379
Control Delay (s)	885.1	195.3	110.9	351.0
Approach Delay (s)	885.1	195.3	110.9	351.0
Approach LOS	F	F	F	F

Intersection Summary			
Delay		506.7	
HCM Level of Service		F	
Intersection Capacity Utilization	122.4%		ICU Level of Service H
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis  
 13: Davison Dr & Hillcrest Ave

Hillcrest eBART  
 2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↷		↶	↶↷	↶↷	↶	↶↷		↶↷	↶↷	↶
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	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.88	1.00	0.95		0.97	0.95	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3299		1770	3539	2787	1770	3518		3433	3539	1583
Flt Permitted	0.70	1.00		0.25	1.00	1.00	0.12	1.00		0.46	1.00	1.00
Satd. Flow (perm)	1303	3299		466	3539	2787	217	3518		1663	3539	1583
Volume (vph)	140	230	190	30	80	410	190	470	20	950	1590	210
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	242	200	32	84	432	200	495	21	1000	1674	221
RTOR Reduction (vph)	0	58	0	0	0	374	0	3	0	0	0	44
Lane Group Flow (vph)	147	384	0	32	84	58	200	513	0	1000	1674	177
Turn Type	Perm			Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	16.0	16.0		16.0	16.0	16.0	96.0	96.0		96.0	96.0	96.0
Effective Green, g (s)	16.0	16.0		16.0	16.0	16.0	96.0	96.0		96.0	96.0	96.0
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.80	0.80		0.80	0.80	0.80
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	174	440		62	472	372	174	2814		1330	2831	1266
v/s Ratio Prot		c0.12			0.02			0.15			0.47	
v/s Ratio Perm	0.11			0.07		0.02	c0.92			0.60		0.11
v/c Ratio	0.84	0.87		0.52	0.18	0.15	1.15	0.18		0.75	0.59	0.14
Uniform Delay, d1	50.8	51.0		48.4	46.2	46.0	12.0	2.8		6.0	4.6	2.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	36.9	20.6		27.5	0.8	0.9	114.1	0.1		4.0	0.9	0.2
Delay (s)	87.6	71.6		75.9	47.0	46.9	126.1	3.0		10.0	5.5	2.9
Level of Service	F	E		E	D	D	F	A		A	A	A
Approach Delay (s)		75.6			48.6			37.4			6.8	
Approach LOS		E			D			D			A	

Intersection Summary		
HCM Average Control Delay	24.8	HCM Level of Service C
HCM Volume to Capacity ratio	1.11	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 8.0
Intersection Capacity Utilization	83.6%	ICU Level of Service E
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: Slatten Ranch Rd & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗↗↗	↘↘	↑	↗	↘↘	↑↑	↗	↘	↑↑	
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	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	0.76	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	3610	3433	1863	1550	3433	3539	1527	1770	3458	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	3610	3433	1863	1550	3433	3539	1527	1770	3458	
Volume (vph)	170	80	890	560	300	250	500	1080	130	110	1230	190
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	177	83	927	583	312	260	521	1125	135	115	1281	198
RTOR Reduction (vph)	0	0	31	0	0	125	0	0	32	0	10	0
Lane Group Flow (vph)	177	83	896	583	312	135	521	1125	103	115	1469	0
Confl. Peds. (#/hr)						5			5			5
Turn Type	Prot		pm+ov	Prot		Perm	Prot		Perm		Prot	
Protected Phases	7	4	5	3	8		5	2			1	6
Permitted Phases			4			8			2			
Actuated Green, G (s)	12.0	9.3	30.3	22.7	20.0	20.0	21.0	60.4	60.4	11.6	51.0	
Effective Green, g (s)	12.0	9.3	30.3	22.7	20.0	20.0	21.0	60.4	60.4	11.6	51.0	
Actuated g/C Ratio	0.10	0.08	0.25	0.19	0.17	0.17	0.18	0.50	0.50	0.10	0.42	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	177	144	912	649	311	258	601	1781	769	171	1470	
v/s Ratio Prot	c0.10	0.04	c0.17	0.17	c0.17		0.15	0.32		0.06	c0.42	
v/s Ratio Perm			0.08			0.09			0.07			
v/c Ratio	1.00	0.58	0.98	0.90	1.00	0.52	0.87	0.63	0.13	0.67	1.00	
Uniform Delay, d1	54.0	53.4	44.6	47.5	50.0	45.6	48.1	21.7	15.9	52.4	34.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.83	1.10	1.00	1.00	
Incremental Delay, d2	67.6	3.4	25.2	14.8	51.8	0.9	11.0	1.5	0.3	7.9	23.3	
Delay (s)	121.6	56.9	69.8	62.4	101.8	46.5	49.3	19.5	17.7	60.3	57.7	
Level of Service	F	E	E	E	F	D	D	B	B	E	E	
Approach Delay (s)		76.6			69.5			28.1			57.9	
Approach LOS		E			E			C			E	

Intersection Summary

HCM Average Control Delay	54.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 15: SR4 WB Ramp & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						↕	↕↕	↕	↕↕		↕↕	↕↕
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
Lane Util. Factor						0.88		0.95			0.95	0.88
Frt						0.85		1.00			1.00	0.85
Flt Protected						1.00		1.00			1.00	1.00
Satd. Flow (prot)						2787		3539			3539	2787
Flt Permitted						1.00		1.00			1.00	1.00
Satd. Flow (perm)						2787		3539			3539	2787
Volume (vph)	0	0	0	0	0	260	0	1120	0	0	820	1760
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	0	271	0	1167	0	0	854	1833
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	0	0	0	280
Lane Group Flow (vph)	0	0	0	0	0	244	0	1167	0	0	854	1553
Turn Type				Perm		custom	Prot					custom
Protected Phases						8		5			2	6
Permitted Phases				8		1		8			1	2
Actuated Green, G (s)						54.3		57.7			101.7	101.7
Effective Green, g (s)						54.3		57.7			101.7	101.7
Actuated g/C Ratio						0.45		0.48			0.85	0.85
Clearance Time (s)								4.0			4.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)						1261		1702			2999	2362
v/s Ratio Prot								0.33			0.24	
v/s Ratio Perm						c0.09						c0.56
v/c Ratio						0.19		0.69			0.28	0.66
Uniform Delay, d1						19.7		24.1			1.8	3.2
Progression Factor						1.00		0.11			1.27	5.25
Incremental Delay, d2						0.0		1.7			0.1	0.4
Delay (s)						19.7		4.5			2.4	17.0
Level of Service							B	A			A	B
Approach Delay (s)		0.0				19.7		4.5			12.4	
Approach LOS		A				B		A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.6								HCM Level of Service	B
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			120.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			101.7%								ICU Level of Service	G
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 16: SR4 EB Ramp & Phillips Ln

Hillcrest eBART  
 2035 Full Station Development PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷			↶↷	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	
Lane Util. Factor	0.95	0.95			0.97	
Frt	1.00	1.00			1.00	
Flt Protected	0.95	0.95			0.95	
Satd. Flow (prot)	1681	1681			3433	
Flt Permitted	0.95	0.95			0.95	
Satd. Flow (perm)	1681	1681			3433	
Volume (vph)	1120	0	0	0	820	0
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1167	0	0	0	854	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	584	583	0	0	854	0
Turn Type	Perm					
Protected Phases	4			6		
Permitted Phases	4					
Actuated Green, G (s)	44.2	44.2			67.8	
Effective Green, g (s)	44.2	44.2			67.8	
Actuated g/C Ratio	0.37	0.37			0.56	
Clearance Time (s)	4.0	4.0			4.0	
Vehicle Extension (s)	2.0	2.0			3.0	
Lane Grp Cap (vph)	619	619			1940	
v/s Ratio Prot				c0.25		
v/s Ratio Perm	c0.35	0.35				
v/c Ratio	0.94	0.94			0.44	
Uniform Delay, d1	36.7	36.7			15.1	
Progression Factor	1.00	1.00			0.98	
Incremental Delay, d2	22.8	22.6			0.7	
Delay (s)	59.5	59.2			15.5	
Level of Service	E	E			B	
Approach Delay (s)		59.4	0.0		15.5	
Approach LOS		E	A		B	

**Intersection Summary**

HCM Average Control Delay	40.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

## SIMTRAFFIC LEVEL OF SERVICE REPORT

**Project:** Antioch eBART Station Area Plan **HCM:** 2000  
**Scenario:** 2035 East Median and Phillips Stations **# of Runs:** 10  
**TOD:** PM Peak **Analysis Period:** Hourly **PHF:** 1

**Intersection:** 13: Sunset Dr & Hillcrest Ave **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	110	97	88	9	72.1	E	10.3
	T	320	284	89	15	8.8	A	1.7
	R	250	208	83	11	2.5	A	0.5
	<b>Subtotal</b>	<b>680</b>	<b>589</b>	<b>87</b>	<b>--</b>	<b>17.0</b>	<b>B</b>	<b>--</b>
SB	L	200	210	105	12	65.9	E	4.4
	T	750	731	97	24	25.6	C	2.3
	R	100	101	101	6	23.0	C	3.9
	<b>Subtotal</b>	<b>1050</b>	<b>1042</b>	<b>99</b>	<b>--</b>	<b>33.5</b>	<b>C</b>	<b>--</b>
EB	L	30	32	107	4	60.0	E	9.3
	T	40	44	110	6	50.1	D	9.6
	R	20	21	105	4	24.1	C	9.3
	<b>Subtotal</b>	<b>90</b>	<b>97</b>	<b>108</b>	<b>--</b>	<b>47.6</b>	<b>D</b>	<b>--</b>
WB	L	530	530	100	19	56.1	E	6.4
	T	90	99	110	5	31.2	C	4.5
	R	390	395	101	17	16.6	B	3.6
	<b>Subtotal</b>	<b>1010</b>	<b>1024</b>	<b>101</b>	<b>--</b>	<b>38.4</b>	<b>D</b>	<b>--</b>
<b>Total</b>	<b>2830</b>	<b>2752</b>	<b>97</b>	<b>--</b>	<b>32.3</b>	<b>C</b>	<b>--</b>	

**Intersection:** 16: SR 4 WB Ramps & Hillcrest Ave **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	680	587	86	23	1.3	A	0.1
	R	870	839	96	27	13.6	B	1.0
	<b>Subtotal</b>	<b>1550</b>	<b>1426</b>	<b>92</b>	<b>--</b>	<b>8.5</b>	<b>A</b>	<b>--</b>
SB	T	1220	1201	98	28	2.1	A	0.8
	R	80	81	101	10	2.1	A	1.1
	<b>Subtotal</b>	<b>1300</b>	<b>1282</b>	<b>99</b>	<b>--</b>	<b>2.1</b>	<b>A</b>	<b>--</b>
<b>Total</b>	<b>2850</b>	<b>2708</b>	<b>95</b>	<b>--</b>	<b>5.5</b>	<b>A</b>	<b>--</b>	

## SIMTRAFFIC LEVEL OF SERVICE REPORT

**Project:** Antioch eBART Station Area Plan **HCM:** 2000  
**Scenario:** 2035 East Median and Phillips Stations **# of Runs:** 10  
**TOD:** PM Peak **Analysis Period:** Hourly **PHF:** 1

**Intersection:** 17: SR 4 EB Ramps & Hillcrest Ave **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1160	1132	98	25	4.7	A	0.4
	R	380	379	100	19	4.6	A	0.2
	<b>Subtotal</b>	<b>1540</b>	<b>1512</b>	<b>98</b>	<b>--</b>	<b>4.7</b>	<b>A</b>	<b>--</b>
SB	L	190	189	99	16	49.0	D	7.1
	T	1030	1015	99	24	63.9	E	21.3
	<b>Subtotal</b>	<b>1220</b>	<b>1204</b>	<b>99</b>	<b>--</b>	<b>61.6</b>	<b>E</b>	<b>--</b>
EB	L	390	297	76	20	127.4	F	12.1
	R	2140	1603	75	58	263.0	F	5.8
	<b>Subtotal</b>	<b>2530</b>	<b>1900</b>	<b>75</b>	<b>--</b>	<b>241.8</b>	<b>F</b>	<b>--</b>
<b>Total</b>	<b>5290</b>	<b>4615</b>	<b>87</b>	<b>--</b>	<b>117.1</b>	<b>F</b>	<b>--</b>	

**Intersection:** 18: Larkspur Dr & Hillcrest Ave **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	40	38	95	6	202.3	F	86.3
	T	1320	1291	98	22	105.8	F	43.1
	R	10	9	90	4	127.5	F	79.8
	<b>Subtotal</b>	<b>1370</b>	<b>1339</b>	<b>98</b>	<b>--</b>	<b>108.8</b>	<b>F</b>	<b>--</b>
SB	L	320	253	79	10	27.8	C	3.8
	T	2690	2239	83	77	5.7	A	0.3
	R	160	128	80	9	2.4	A	0.5
	<b>Subtotal</b>	<b>3170</b>	<b>2620</b>	<b>83</b>	<b>--</b>	<b>7.6</b>	<b>A</b>	<b>--</b>
EB	L	120	120	100	13	88.0	F	22.4
	T	40	38	95	8	86.7	F	24.2
	R	50	51	102	8	38.2	D	16.8
	<b>Subtotal</b>	<b>210</b>	<b>208</b>	<b>99</b>	<b>--</b>	<b>75.6</b>	<b>E</b>	<b>--</b>
WB	L	10	10	100	3	57.3	E	23.9
	T	30	28	93	4	61.6	E	10.5
	R	100	100	100	8	19.9	B	2.9
	<b>Subtotal</b>	<b>140</b>	<b>138</b>	<b>99</b>	<b>--</b>	<b>31.1</b>	<b>C</b>	<b>--</b>
<b>Total</b>	<b>4890</b>	<b>4305</b>	<b>88</b>	<b>--</b>	<b>43.1</b>	<b>D</b>	<b>--</b>	

## SIMTRAFFIC LEVEL OF SERVICE REPORT

**Project:** Antioch eBART Station Area Plan **HCM:** 2000  
**Scenario:** 2035 East Median and Phillips Stations **# of Runs:** 10  
**TOD:** PM Peak **Analysis Period:** Hourly **PHF:** 1

**Intersection:** 29: Slatten Ranch Rd & SR4 WB Hook Ramps **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	400	396	99	23	8.2	A	0.8
	R	100	98	98	12	2.7	A	0.5
	<b>Subtotal</b>	<b>500</b>	<b>494</b>	<b>99</b>	<b>--</b>	<b>7.1</b>	<b>A</b>	<b>--</b>
EB	T	480	458	95	17	11.3	B	1.2
	R	10	10	100	5	8.1	A	4.4
	<b>Subtotal</b>	<b>490</b>	<b>467</b>	<b>95</b>	<b>--</b>	<b>11.3</b>	<b>B</b>	<b>--</b>
WB	L	30	29	97	5	19.0	B	3.2
	T	610	620	102	19	14.5	B	1.4
	<b>Subtotal</b>	<b>640</b>	<b>649</b>	<b>101</b>	<b>--</b>	<b>14.7</b>	<b>B</b>	<b>--</b>
<b>Total</b>		<b>1630</b>	<b>1610</b>	<b>99</b>	<b>--</b>	<b>11.4</b>	<b>B</b>	<b>--</b>

---

Scenario Report

Scenario: 2035 Full Development AM

Command: Default Command

Volume: 2035 Full Development AM

Geometry: 2035

Impact Fee: Default Impact Fee

Trip Generation: Default Trip Generation

Trip Distribution: Default Trip Distribution

Paths: Default Path

Routes: Default Route

Configuration: Default Configuration

-----  
 Impact Analysis Report  
 Level Of Service  
 -----

Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh C	Del/ LOS	V/ Veh C	
# 1	D xxxxxx	0.861	D xxxxxx	0.861	+ 0.000 V/C
# 2	A xxxxxx	0.539	A xxxxxx	0.539	+ 0.000 V/C
# 3	A xxxxxx	0.317	A xxxxxx	0.317	+ 0.000 V/C
# 4	A xxxxxx	0.352	A xxxxxx	0.352	+ 0.000 V/C
# 5	A xxxxxx	0.453	A xxxxxx	0.453	+ 0.000 V/C
# 6	A xxxxxx	0.410	A xxxxxx	0.410	+ 0.000 V/C
# 7	A xxxxxx	0.574	A xxxxxx	0.574	+ 0.000 V/C
# 8	C xxxxxx	0.727	C xxxxxx	0.727	+ 0.000 V/C
# 10	A xxxxxx	0.215	A xxxxxx	0.215	+ 0.000 V/C
# 11	A xxxxxx	0.561	A xxxxxx	0.561	+ 0.000 V/C
# 12	D xxxxxx	0.820	D xxxxxx	0.820	+ 0.000 V/C
# 13	D xxxxxx	0.816	D xxxxxx	0.816	+ 0.000 V/C
# 14	D xxxxxx	0.852	D xxxxxx	0.852	+ 0.000 V/C
# 15	A xxxxxx	0.484	A xxxxxx	0.484	+ 0.000 V/C
# 16	A xxxxxx	0.343	A xxxxxx	0.343	+ 0.000 V/C
# 17	A xxxxxx	0.370	A xxxxxx	0.370	+ 0.000 V/C

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #1
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.861
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        104          Level Of Service:              D
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|
Control:          Permitted      Permitted      Permitted      Permitted
Rights:          Include      Include      Include      Include
Min. Green:      0 0 0      0 0 0      0 0 0      0 0 0
Lanes:          1 0 0 1 0      1 0 1 0 1      1 0 1 1 0      1 0 1 1 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      760 170 310 30 80 90 30 280 290 420 830 10
Growth 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
Initial Bse:    760 170 310 30 80 90 30 280 290 420 830 10
User 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
PHF 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
PHF Volume:    760 170 310 30 80 90 30 280 290 420 830 10
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   760 170 310 30 80 90 30 280 290 420 830 10
RTOR Reduct:   0 0 0 0 0 0 30 0 0 0 0 0
RTOR Vol:      760 170 310 30 80 60 30 280 290 420 830 10
PCE 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
MLF 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
FinalVolume:   760 170 310 30 80 60 30 280 290 420 830 10
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800
Adjustment:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        1.00 0.35 0.65 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.98 0.02
Final Sat.:    1800 638 1163 1800 1800 1800 1800 1800 1800 1800 3557 43
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.42 0.27 0.27 0.02 0.04 0.03 0.02 0.16 0.16 0.23 0.23 0.23
Crit Volume:   760          80          290 420
Crit Moves:   ****          ****          **** ****
*****
    
```



Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #2  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.539  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 31 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	1	0	0	0	1	1	0	2	1	0	1

Volume Module:

Base Vol:	200	40	10	20	20	80	110	280	90	10	1030	50
Growth 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
Initial Bse:	200	40	10	20	20	80	110	280	90	10	1030	50
User 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
PHF 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
PHF Volume:	200	40	10	20	20	80	110	280	90	10	1030	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	200	40	10	20	20	80	110	280	90	10	1030	50
RTOR Reduct:	0	0	10	0	0	0	0	0	90	0	0	0
RTOR Vol:	200	40	0	20	20	80	110	280	0	10	1030	50
PCE 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
MLF 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
FinalVolume:	200	40	0	20	20	80	110	280	0	10	1030	50

Saturation Flow Module:

Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.83	0.17	1.00	0.17	0.17	0.66	1.00	2.00	1.00	1.00	1.91	0.09
Final Sat.:	1500	300	1800	300	300	1200	1800	3600	1800	1800	3433	167

Capacity Analysis Module:

Vol/Sat:	0.13	0.13	0.00	0.07	0.07	0.07	0.06	0.08	0.00	0.01	0.30	0.30
Crit Volume:	200			120			110			540		
Crit Moves:	****			****			****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #3  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.317  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 21 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	0	0	0	0	1	1	0	2

Volume Module:

Base Vol:	10	0	20	0	0	0	0	240	0	80	1080	0
Growth 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
Initial Bse:	10	0	20	0	0	0	0	240	0	80	1080	0
User 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
PHF 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
PHF Volume:	10	0	20	0	0	0	0	240	0	80	1080	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	0	20	0	0	0	0	240	0	80	1080	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	10	0	20	0	0	0	0	240	0	80	1080	0
PCE 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
MLF 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
FinalVolume:	10	0	20	0	0	0	0	240	0	80	1080	0

Saturation Flow Module:

Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.33	0.00	0.67	0.00	0.00	0.00	0.00	2.00	0.00	1.00	2.00	0.00
Final Sat.:	600	0	1200	0	0	0	0	3600	0	1800	3600	0

Capacity Analysis Module:

Vol/Sat:	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.07	0.00	0.04	0.30	0.00
Crit Volume:	30			0			0			540		
Crit Moves:	****						****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*

Intersection #4

\*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.352  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 29 Level Of Service: A

\*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	1	0	0	1	0	1	0	1	1	0	0

-----|-----|-----|-----|-----|

Volume Module:

Base Vol:	50	0	0	0	0	0	0	200	60	350	1110	0
Growth 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
Initial Bse:	50	0	0	0	0	0	0	200	60	350	1110	0
User 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
PHF 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
PHF Volume:	50	0	0	0	0	0	0	200	60	350	1110	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	0	0	0	0	0	0	200	60	350	1110	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	50	0	0	0	0	0	0	200	60	350	1110	0
PCE 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
MLF 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
FinalVolume:	50	0	0	0	0	0	0	200	60	350	1110	0

-----|-----|-----|-----|-----|

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.54	0.46	2.00	2.00	1.00
Final Sat.:	1720	0	1720	1720	1720	0	1720	2646	794	3127	3440	1720

-----|-----|-----|-----|-----|

Capacity Analysis Module:

Vol/Sat:	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.11	0.32	0.00
Crit Volume:	50				0		0			555		
Crit Moves:	****						****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

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*****
Intersection #5
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.453
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Protected      Protected      Permitted      Protected
Rights:      Ovl      Include      Include      Include
Min. Green:    0 0 0      0 0 0      0 0 0      0 0 0
Lanes:        1 0 0 0 2      0 0 0 0 0      0 0 3 0 1      1 0 3 0 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      80 0 600      0 0 0      0 160 40      20 1380 0
Growth 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
Initial Bse:    80 0 600      0 0 0      0 160 40      20 1380 0
User 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
PHF 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
PHF Volume:    80 0 600      0 0 0      0 160 40      20 1380 0
Reduct Vol:    0 0 0      0 0 0      0 0 0      0 0 0
Reduced Vol:   80 0 600      0 0 0      0 160 40      20 1380 0
RTOR Reduct:   0 0 20      0 0 0      0 0 40      0 0 0
RTOR Vol:      80 0 580      0 0 0      0 160 0      20 1380 0
PCE 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
MLF 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
FinalVolume:   80 0 580      0 0 0      0 160 0      20 1380 0
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment:    1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        1.00 0.00 2.00 0.00 0.00 0.00 0.00 3.00 1.00 1.00 3.00 0.00
Final Sat.:    1720 0 3127      0 0 0      0 5160 1720 1720 5160 0
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.05 0.00 0.19 0.00 0.00 0.00 0.00 0.03 0.00 0.01 0.27 0.00
Crit Volume:   290 0      53 460
Crit Moves:      ****      ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #6
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.410
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        39          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Split Phase      Split Phase      Protected      Protected
Rights:      Include      Include      Include      Include
Min. Green:    0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:        1 0 0 1 0      1 1 0 0 1      1 0 2 0 1      1 0 3 0 1
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      140 90 10 50 10 20 90 610 90 10 1240 270
Growth 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
Initial Bse:    140 90 10 50 10 20 90 610 90 10 1240 270
User 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
PHF 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
PHF Volume:    140 90 10 50 10 20 90 610 90 10 1240 270
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   140 90 10 50 10 20 90 610 90 10 1240 270
RTOR Reduct:   0 0 0 0 0 0 0 0 0 0 0 0
RTOR Vol:      140 90 10 50 10 0 90 610 0 10 1240 243
PCE 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
MLF 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
FinalVolume:   140 90 10 50 10 0 90 610 0 10 1240 243
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:    1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        1.00 0.90 0.10 1.67 0.33 1.00 1.00 2.00 1.00 1.00 3.00 1.00
Final Sat.:    1650 1485 165 2500 550 1650 1650 3300 1650 1650 4950 1650
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.08 0.06 0.06 0.02 0.02 0.00 0.05 0.18 0.00 0.01 0.25 0.15
Crit Volume:   140 30 90 413
Crit Moves:   ****          ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #7  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.574  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 54 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	T	R	L	T	R	L	T	R	L	T	R						
Control:	Protected			Protected			Protected			Protected								
Rights:	Include			Include			Include			Include								
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0						
Lanes:	1	0	1	1	1	1	2	0	1	1	1	0	2	0	1	1	1	0

Volume Module:

Base Vol:	20	860	280	250	510	10	30	70	60	430	10	350
Growth 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
Initial Bse:	20	860	280	250	510	10	30	70	60	430	10	350
User 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
PHF 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
PHF Volume:	20	860	280	250	510	10	30	70	60	430	10	350
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	860	280	250	510	10	30	70	60	430	10	350
RTOR Reduct:	0	0	237	0	0	0	0	0	0	0	0	0
RTOR Vol:	20	860	44	250	510	10	30	70	60	430	10	350
PCE 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
MLF 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
FinalVolume:	20	860	44	250	510	10	30	70	60	430	10	350

Saturation Flow Module:

Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	1.96	0.04	1.00	1.08	0.92	2.00	1.00	1.00
Final Sat.:	1650	3300	1500	3000	3237	63	1650	1777	1523	3000	1650	1650

Capacity Analysis Module:

Vol/Sat:	0.01	0.26	0.03	0.08	0.16	0.16	0.02	0.04	0.04	0.14	0.01	0.21
Crit Volume:	430		125		30		350					
Crit Moves:	****			****			****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #8  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.727  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 84 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	2	0	1	0	1	0	1	0	1	0

Volume Module:

Base Vol:	50	50	50	50	50	110	120	530	770	200	830	40
Growth 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
Initial Bse:	50	50	50	50	50	110	120	530	770	200	830	40
User 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
PHF 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
PHF Volume:	50	50	50	50	50	110	120	530	770	200	830	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	50	50	50	50	110	120	530	770	200	830	40
RTOR Reduct:	0	0	50	0	0	0	0	0	50	0	0	0
RTOR Vol:	50	50	0	50	50	110	120	530	720	200	830	40
PCE 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
MLF 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
FinalVolume:	50	50	0	50	50	110	120	530	720	200	830	40

Saturation Flow Module:

Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	0.31	0.69	1.00	1.00	1.00	1.00	0.95	0.05
Final Sat.:	1650	3300	1650	1650	516	1134	1650	1650	1650	1650	1574	76

Capacity Analysis Module:

Vol/Sat:	0.03	0.02	0.00	0.03	0.10	0.10	0.07	0.32	0.44	0.12	0.53	0.53
Crit Volume:	50			160			120			870		
Crit Moves:	****			****			****			****		

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Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #10  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.215  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 29 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	3	0	0	2	0	0	0	0	0	0

Volume Module:

Base Vol:	0	1160	1510	0	770	230	0	0	0	0	0	0
Growth 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
Initial Bse:	0	1160	1510	0	770	230	0	0	0	0	0	0
User 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
PHF 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
PHF Volume:	0	1160	1510	0	770	230	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1160	1510	0	770	230	0	0	0	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	1160	1510	0	770	230	0	0	0	0	0	0
PCE 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
MLF 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
FinalVolume:	0	1160	1510	0	770	230	0	0	0	0	0	0

Saturation Flow Module:

Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	3.00	1.00	0.00	2.31	0.69	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	5400	1800	0	4158	1242	0	0	0	0	0	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.21	0.84	0.00	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00
Crit Volume:		387		0			0			0		
Crit Moves:		****		****								

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Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

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*****
Intersection #11
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.561
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        42          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Permitted      Protected      Split Phase      Split Phase
Rights:      Include      Include      Include      Include
Min. Green:    0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:        0 0 3 1 0      2 0 3 0 0      0 1 1 0 3      0 0 0 0 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      0 2630 280 160 610 0 40 0 390 0 0 0
Growth 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
Initial Bse:    0 2630 280 160 610 0 40 0 390 0 0 0
User 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
PHF 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
PHF Volume:    0 2630 280 160 610 0 40 0 390 0 0 0
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   0 2630 280 160 610 0 40 0 390 0 0 0
RTOR Reduct:   0 0 0 0 0 0 0 0 0 0 0 0
RTOR Vol:      0 2630 280 160 610 0 40 0 390 0 0 0
PCE 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
MLF 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
FinalVolume:   0 2630 280 160 610 0 40 0 390 0 0 0
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment:    1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 0.87 1.00 1.00 1.00
Lanes:        0.00 3.62 0.38 2.00 3.00 0.00 1.00 1.00 3.00 0.00 0.00 0.00
Final Sat.:    0 6218 662 3127 5160 0 1720 1720 4489 0 0 0
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.00 0.42 0.42 0.05 0.12 0.00 0.02 0.00 0.09 0.00 0.00 0.00
Crit Volume:   728 80 130 0
Crit Moves:    **** **** ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

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*****
Intersection #12
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.820
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        127          Level Of Service:          D
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Protected      Protected      Split Phase      Split Phase
Rights:      Include      Ovl      Include      Include
Min. Green:    0 0 0      0 0 0      0 0 0      0 0 0
Lanes:      1 0 2 1 0      2 0 3 0 1      0 1 0 0 1      1 0 1 0 1
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      80 2430      10 100 850      50 190 60 80      10 60 290
Growth Adj:    1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
Initial Bse:    80 2430      10 100 850      50 190 60 80      10 60 290
User Adj:      1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
PHF Adj:      1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
PHF Volume:    80 2430      10 100 850      50 190 60 80      10 60 290
Reduct Vol:    0 0 0      0 0 0      0 0 0      0 0 0
Reduced Vol:   80 2430      10 100 850      50 190 60 80      10 60 290
RTOR Reduct:   0 0 0      0 0 0      50 0 0 80      0 0 55
RTOR Vol:      80 2430      10 100 850      0 190 60 0      10 60 235
PCE Adj:      1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
MLF Adj:      1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
FinalVolume:   80 2430      10 100 850      0 190 60 0      10 60 235
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650      1650 1650 1650      1650 1650 1650      1650 1650 1650
Adjustment:    1.00 1.00      1.00 0.91 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
Lanes:      1.00 2.99      0.01 2.00 3.00 1.00      0.76 0.24 1.00      1.00 1.00 1.00
Final Sat.:    1650 4930      20 3000 4950 1650      1254 396 1650      1650 1650 1650
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.05 0.49      0.03 0.17 0.00      0.15 0.15 0.00      0.01 0.04 0.14
Crit Volume:   813      50      250      235
Crit Moves:    ****      ****      ****      ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #13  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.816  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 78 Level Of Service: D  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	1	1	0	1	1	0	1	1	0	2

Volume Module:

Base Vol:	160	1280	10	210	610	120	200	80	130	30	150	1040
Growth 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
Initial Bse:	160	1280	10	210	610	120	200	80	130	30	150	1040
User 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
PHF 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
PHF Volume:	160	1280	10	210	610	120	200	80	130	30	150	1040
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	160	1280	10	210	610	120	200	80	130	30	150	1040
RTOR Reduct:	0	0	0	0	0	120	0	0	0	0	0	116
RTOR Vol:	160	1280	10	210	610	0	200	80	130	30	150	925
PCE 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
MLF 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
FinalVolume:	160	1280	10	210	610	0	200	80	130	30	150	925

Saturation Flow Module:

Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91
Lanes:	1.00	1.98	0.02	2.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Final Sat.:	1800	3572	28	3272	3600	1800	1800	1800	1800	1800	3600	3272

Capacity Analysis Module:

Vol/Sat:	0.09	0.36	0.36	0.06	0.17	0.00	0.11	0.04	0.07	0.02	0.04	0.28
Crit Volume:	645			105			200			462		
Crit Moves:	****			****			****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #14  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.852  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 154 Level Of Service: D  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ovl			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2	0	2	0	1	0	1	0	1	0	3	0

Volume Module:

Base Vol:	470	750	440	140	1080	130	150	460	390	150	50	60
Growth 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
Initial Bse:	470	750	440	140	1080	130	150	460	390	150	50	60
User 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
PHF 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
PHF Volume:	470	750	440	140	1080	130	150	460	390	150	50	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	470	750	440	140	1080	130	150	460	390	150	50	60
RTOR Reduct:	0	0	83	0	0	0	0	0	259	0	0	60
RTOR Vol:	470	750	358	140	1080	130	150	460	132	150	50	0
PCE 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
MLF 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
FinalVolume:	470	750	358	140	1080	130	150	460	132	150	50	0

Saturation Flow Module:

Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.91	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	1.79	0.21	1.00	1.00	3.00	2.00	1.00	1.00
Final Sat.:	3000	3300	1650	1650	2945	355	1650	1650	4307	3000	1650	1650

Capacity Analysis Module:

Vol/Sat:	0.16	0.23	0.22	0.08	0.37	0.37	0.09	0.28	0.03	0.05	0.03	0.00
Crit Volume:	235				605		460			75		
Crit Moves:	****				****		****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #15  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.484  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 42 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	2	0	0	2	0	0	0	0	1	0

Volume Module:

Base Vol:	0	950	0	0	260	960	0	0	0	0	0	650
Growth 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
Initial Bse:	0	950	0	0	260	960	0	0	0	0	0	650
User 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
PHF 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
PHF Volume:	0	950	0	0	260	960	0	0	0	0	0	650
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	950	0	0	260	960	0	0	0	0	0	650
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	950	0	0	260	960	0	0	0	0	0	650
PCE 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
MLF 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
FinalVolume:	0	950	0	0	260	960	0	0	0	0	0	650

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.91
Lanes:	1.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	1.00	2.00
Final Sat.:	1720	3440	0	0	3440	3127	0	0	0	0	1720	3127

Capacity Analysis Module:

Vol/Sat:	0.00	0.28	0.00	0.00	0.08	0.31	0.00	0.00	0.00	0.00	0.00	0.21
Crit Volume:		475			130		0					325
Crit Moves:	****			****			****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #16  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.343  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 22 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	0	2	0	0	1	1	0	0	0	0

Volume Module:

Base Vol:	0	0	0	260	0	0	950	0	0	0	0	0
Growth 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
Initial Bse:	0	0	0	260	0	0	950	0	0	0	0	0
User 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
PHF 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
PHF Volume:	0	0	0	260	0	0	950	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	260	0	0	950	0	0	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	0	0	260	0	0	950	0	0	0	0	0
PCE 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
MLF 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
FinalVolume:	0	0	0	260	0	0	950	0	0	0	0	0

Saturation Flow Module:

Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	3272	0	0	3272	0	0	0	0	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00
Crit Volume:	0			130			475			0		
Crit Moves:				****			****					

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #17  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.370  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 30 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2	0	0	0	0	0	0	0	2	0	1	0

Volume Module:

Base Vol:	570	0	70	0	0	0	0	590	10	50	220	0
Growth 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
Initial Bse:	570	0	70	0	0	0	0	590	10	50	220	0
User 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
PHF 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
PHF Volume:	570	0	70	0	0	0	0	590	10	50	220	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	570	0	70	0	0	0	0	590	10	50	220	0
RTOR Reduct:	0	0	28	0	0	0	0	0	10	0	0	0
RTOR Vol:	570	0	43	0	0	0	0	590	0	50	220	0
PCE 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
MLF 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
FinalVolume:	570	0	43	0	0	0	0	590	0	50	220	0

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	2.00	1.00	0.00
Final Sat.:	3127	0	1720	0	0	0	0	3440	1720	3127	1720	0

Capacity Analysis Module:

Vol/Sat:	0.18	0.00	0.02	0.00	0.00	0.00	0.00	0.17	0.00	0.02	0.13	0.00
Crit Volume:	285			0				295		25		
Crit Moves:	****							****		****		

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Scenario Report

Scenario: 2035 Full Development PM

Command: Default Command

Volume: 2035 Full Development PM

Geometry: 2035

Impact Fee: Default Impact Fee

Trip Generation: Default Trip Generation

Trip Distribution: Default Trip Distribution

Paths: Default Path

Routes: Default Route

Configuration: Default Configuration

-----  
 Impact Analysis Report  
 Level Of Service  
 -----

Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh C	Del/ LOS	V/ Veh C	
# 1	D xxxxxx	0.806	D xxxxxx	0.806	+ 0.000 V/C
# 2	A xxxxxx	0.508	A xxxxxx	0.508	+ 0.000 V/C
# 3	A xxxxxx	0.344	A xxxxxx	0.344	+ 0.000 V/C
# 4	A xxxxxx	0.559	A xxxxxx	0.559	+ 0.000 V/C
# 5	A xxxxxx	0.336	A xxxxxx	0.336	+ 0.000 V/C
# 6	A xxxxxx	0.566	A xxxxxx	0.566	+ 0.000 V/C
# 7	A xxxxxx	0.579	A xxxxxx	0.579	+ 0.000 V/C
# 8	C xxxxxx	0.794	C xxxxxx	0.794	+ 0.000 V/C
# 10	A xxxxxx	0.241	A xxxxxx	0.241	+ 0.000 V/C
# 11	C xxxxxx	0.761	C xxxxxx	0.761	+ 0.000 V/C
# 12	B xxxxxx	0.683	B xxxxxx	0.683	+ 0.000 V/C
# 13	B xxxxxx	0.681	B xxxxxx	0.681	+ 0.000 V/C
# 14	E xxxxxx	0.926	E xxxxxx	0.926	+ 0.000 V/C
# 15	A xxxxxx	0.409	A xxxxxx	0.409	+ 0.000 V/C
# 16	A xxxxxx	0.562	A xxxxxx	0.562	+ 0.000 V/C
# 17	A xxxxxx	0.483	A xxxxxx	0.483	+ 0.000 V/C

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #1
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.806
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        74          Level Of Service:          D
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:          Permitted          Permitted          Permitted          Permitted
Rights:          Include          Include          Include          Include
Min. Green:      0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:          1 0 0 1 0      1 0 1 0 1      1 0 1 1 0      1 0 1 1 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      350 140 270 40 110 30 80 820 660 250 370 20
Growth 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
Initial Bse:   350 140 270 40 110 30 80 820 660 250 370 20
User 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
PHF 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
PHF Volume:   350 140 270 40 110 30 80 820 660 250 370 20
Reduct Vol:   0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:  350 140 270 40 110 30 80 820 660 250 370 20
RTOR Reduct:  0 0 0 0 0 0 30 0 0 0 0 0
RTOR Vol:     350 140 270 40 110 0 80 820 660 250 370 20
PCE 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
MLF 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
FinalVolume:  350 140 270 40 110 0 80 820 660 250 370 20
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:     1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800
Adjustment:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       1.00 0.34 0.66 1.00 1.00 1.00 1.00 1.11 0.89 1.00 1.90 0.10
Final Sat.:  1800 615 1185 1800 1800 1800 1800 1995 1605 1800 3415 185
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:     0.19 0.23 0.23 0.02 0.06 0.00 0.04 0.41 0.41 0.14 0.11 0.11
Crit Volume:  350          110          740          250
Crit Moves:  ****          ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #2
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.508
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:          Permitted      Permitted      Permitted      Permitted
Rights:          Include      Include      Include      Include
Min. Green:      0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:          0 1 0 0 1      0 0 1! 0 0      1 0 2 0 1      1 0 1 1 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      140 20 10 70 100 140 100 910 140 10 360 30
Growth 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
Initial Bse:    140 20 10 70 100 140 100 910 140 10 360 30
User 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
PHF 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
PHF Volume:    140 20 10 70 100 140 100 910 140 10 360 30
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   140 20 10 70 100 140 100 910 140 10 360 30
RTOR Reduct:   0 0 10 0 0 0 0 0 0 140 0 0 0
RTOR Vol:      140 20 0 70 100 140 100 910 0 10 360 30
PCE 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
MLF 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
FinalVolume:   140 20 0 70 100 140 100 910 0 10 360 30
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800
Adjustment:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:         0.88 0.12 1.00 0.23 0.32 0.45 1.00 2.00 1.00 1.00 1.85 0.15
Final Sat.:    1575 225 1800 406 581 813 1800 3600 1800 1800 3323 277
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.09 0.09 0.00 0.17 0.17 0.17 0.06 0.25 0.00 0.01 0.11 0.11
Crit Volume:   140          310          455          10
Crit Moves:    ****          ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #3
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.344
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|
Control:      Permitted      Permitted      Permitted      Permitted
Rights:      Include      Include      Include      Include
Min. Green:    0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:        0 0 1! 0 0      0 0 0 0 0      0 0 1 1 0      1 0 2 0 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      10 0 60 0 0 0      0 1040 20 20 370 0
Growth 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
Initial Bse:   10 0 60 0 0 0      0 1040 20 20 370 0
User 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
PHF 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
PHF Volume:    10 0 60 0 0 0      0 1040 20 20 370 0
Reduct Vol:    0 0 0 0 0 0      0 0 0 0 0 0
Reduced Vol:   10 0 60 0 0 0      0 1040 20 20 370 0
RTOR Reduct:   0 0 0 0 0 0      0 0 0 0 0 0
RTOR Vol:      10 0 60 0 0 0      0 1040 20 20 370 0
PCE 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
MLF 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
FinalVolume:   10 0 60 0 0 0      0 1040 20 20 370 0
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800
Adjustment:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:         0.14 0.00 0.86 0.00 0.00 0.00 0.00 1.96 0.04 1.00 2.00 0.00
Final Sat.:    257 0 1543 0 0 0      0 3532 68 1800 3600 0
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.04 0.00 0.04 0.00 0.00 0.00 0.00 0.29 0.29 0.01 0.10 0.00
Crit Volume:           70 0 530 20
Crit Moves:      ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #4
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.559
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Permitted      Permitted      Protected      Protected
Rights:      Include      Include      Include      Include
Min. Green:    0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes:        0 1 0 0 1 1 0 0 1 0 1 0 2 0 2 0 1
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      70 0 10 0 0 0 0 0 1020 80 620 320 0
Growth 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
Initial Bse:    70 0 10 0 0 0 0 0 1020 80 620 320 0
User 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
PHF 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
PHF Volume:    70 0 10 0 0 0 0 0 1020 80 620 320 0
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   70 0 10 0 0 0 0 0 1020 80 620 320 0
RTOR Reduct:   0 0 10 0 0 0 0 0 0 0 0 0 0
RTOR Vol:      70 0 0 0 0 0 0 0 1020 80 620 320 0
PCE 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
MLF 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
FinalVolume:   70 0 0 0 0 0 0 0 1020 80 620 320 0
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.91 1.00 1.00
Lanes:        1.00 0.00 1.00 1.00 1.00 0.00 1.00 1.85 0.15 2.00 2.00 1.00
Final Sat.:    1720 0 1720 1720 1720 0 1720 3190 250 3127 3440 1720
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.04 0.00 0.00 0.00 0.00 0.00 0.00 0.32 0.32 0.20 0.09 0.00
Crit Volume:   70 0 0 0 0 0 0 550 310
Crit Moves:    ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #5
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.336
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        28          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Protected      Protected      Permitted      Protected
Rights:      Ovl      Include      Include      Include
Min. Green:    0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes:        1 0 0 0 2 0 0 0 0 0 0 0 3 0 1 1 0 3 0 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      40 0 440 0 0 0 0 0 1010 20 0 900 0
Growth 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 1.00
Initial Bse:    40 0 440 0 0 0 0 0 1010 20 0 900 0
User 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 1.00
PHF 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 1.00
PHF Volume:    40 0 440 0 0 0 0 0 1010 20 0 900 0
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   40 0 440 0 0 0 0 0 1010 20 0 900 0
RTOR Reduct:   0 0 0 0 0 0 0 0 0 0 20 0 0 0
RTOR Vol:      40 0 440 0 0 0 0 0 1010 0 0 900 0
PCE 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 1.00
MLF 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 1.00
FinalVolume:   40 0 440 0 0 0 0 0 1010 0 0 900 0
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment:    1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        1.00 0.00 2.00 0.00 0.00 0.00 0.00 3.00 1.00 1.00 3.00 0.00
Final Sat.:    1720 0 3127 0 0 0 0 0 5160 1720 1720 5160 0
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.02 0.00 0.14 0.00 0.00 0.00 0.00 0.20 0.00 0.00 0.17 0.00
Crit Volume:   220 0 337 0
Crit Moves:    ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #6  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.566  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 53 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	0	1	1	0	1	0	2	1	0	3

Volume Module:

Base Vol:	100	20	20	250	140	60	40	1220	190	10	740	50
Growth 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
Initial Bse:	100	20	20	250	140	60	40	1220	190	10	740	50
User 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
PHF 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
PHF Volume:	100	20	20	250	140	60	40	1220	190	10	740	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	100	20	20	250	140	60	40	1220	190	10	740	50
RTOR Reduct:	0	0	0	0	0	40	0	0	100	0	0	50
RTOR Vol:	100	20	20	250	140	20	40	1220	90	10	740	0
PCE 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
MLF 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
FinalVolume:	100	20	20	250	140	20	40	1220	90	10	740	0

Saturation Flow Module:

Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.50	0.50	1.28	0.72	1.00	1.00	2.00	1.00	1.00	3.00	1.00
Final Sat.:	1650	825	825	1923	1185	1650	1650	3300	1650	1650	4950	1650

Capacity Analysis Module:

Vol/Sat:	0.06	0.02	0.02	0.13	0.12	0.01	0.02	0.37	0.05	0.01	0.15	0.00
Crit Volume:	100			195			610			10		
Crit Moves:	****			****			****			****		

\*\*\*\*\*



Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #7
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.579
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:        Protected      Protected      Protected      Protected
Rights:         Include      Include      Include      Include
Min. Green:     0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:         1 0 1 1 1      2 0 1 1 0      1 0 1 1 0      2 0 1 1 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:       110 320 250 200 750 100 30 40 20 530 90 390
Growth 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
Initial Bse:    110 320 250 200 750 100 30 40 20 530 90 390
User 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
PHF 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
PHF Volume:    110 320 250 200 750 100 30 40 20 530 90 390
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   110 320 250 200 750 100 30 40 20 530 90 390
RTOR Reduct:   0 0 250 0 0 0 0 0 0 0 0 0
RTOR Vol:      110 320 0 200 750 100 30 40 20 530 90 390
PCE 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
MLF 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
FinalVolume:   110 320 0 200 750 100 30 40 20 530 90 390
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:    1.00 1.00 0.91 0.91 1.00 1.00 1.00 1.00 1.00 0.91 1.00 1.00
Lanes:        1.00 2.00 1.00 2.00 1.76 0.24 1.00 1.33 0.67 2.00 1.00 1.00
Final Sat.:    1650 3300 1500 3000 2912 388 1650 2200 1100 3000 1650 1650
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.07 0.10 0.00 0.07 0.26 0.26 0.02 0.02 0.02 0.18 0.05 0.24
Crit Volume:   110          425 30          390
Crit Moves:    ****          **** ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #8
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.794
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        111          Level Of Service:          C
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Protected      Protected      Protected      Protected
Rights:      Include      Include      Include      Include
Min. Green:    0 0 0      0 0 0      0 0 0      0 0 0
Lanes:      1 0 2 0 1      1 0 0 1 0      1 0 1 0 1      1 0 0 1 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      50 50 50      50 50 140      100 1000 700      70 370 40
Growth 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
Initial Bse:    50 50 50      50 50 140      100 1000 700      70 370 40
User 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
PHF 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
PHF Volume:    50 50 50      50 50 140      100 1000 700      70 370 40
Reduct Vol:    0 0 0      0 0 0      0 0 0      0 0 0
Reduced Vol:   50 50 50      50 50 140      100 1000 700      70 370 40
RTOR Reduct:   0 0 50      0 0 0      0 0 0      50 0 0
RTOR Vol:      50 50 0      50 50 140      100 1000 650      70 370 40
PCE 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
MLF 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
FinalVolume:   50 50 0      50 50 140      100 1000 650      70 370 40
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650 1650      1650 1650 1650      1650 1650 1650      1650 1650 1650
Adjustment:    1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00      1.00 1.00 1.00
Lanes:      1.00 2.00 1.00      1.00 0.26 0.74      1.00 1.00 1.00      1.00 0.90 0.10
Final Sat.:    1650 3300 1650      1650 434 1216      1650 1650 1650      1650 1489 161
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.03 0.02 0.00      0.03 0.12 0.12      0.06 0.61 0.39      0.04 0.25 0.25
Crit Volume:   50          190          1000          70
Crit Moves:   ****          ****          ****          ****
*****
  
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #10
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.241
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        30          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Protected      Protected      Protected      Protected
Rights:      Ignore      Include      Include      Include
Min. Green:    0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:      0 0 3 0 1      0 0 2 1 0      0 0 0 0 0      0 0 0 0 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      0 680 870      0 1220 80      0 0 0 0      0 0 0 0
Growth 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
Initial Bse:    0 680 870      0 1220 80      0 0 0 0      0 0 0 0
User 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
PHF 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
PHF Volume:    0 680 870      0 1220 80      0 0 0 0      0 0 0 0
Reduct Vol:    0 0 0      0 0 0      0 0 0      0 0 0
Reduced Vol:   0 680 870      0 1220 80      0 0 0      0 0 0
RTOR Reduct:   0 0 0      0 0 0      0 0 0      0 0 0
RTOR Vol:      0 680 870      0 1220 80      0 0 0      0 0 0
PCE 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
MLF 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
FinalVolume:   0 680 870      0 1220 80      0 0 0      0 0 0
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800
Adjustment:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:      0.00 3.00 1.00 0.00 2.82 0.18 0.00 0.00 0.00 0.00 0.00 0.00
Final Sat.:    0 5400 1800      0 5068 332      0 0 0      0 0 0
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.00 0.13 0.48 0.00 0.24 0.24 0.00 0.00 0.00 0.00 0.00 0.00
Crit Volume:   0          433      0          0
Crit Moves:    ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #11
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.761
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        78          Level Of Service:          C
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:          Permitted      Protected      Split Phase      Split Phase
Rights:          Include      Include      Include      Include
Min. Green:      0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:          0 0 3 1 0      2 0 3 0 0      0 1 1 0 3      0 0 0 0 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:        0 1160 380 190 1030 0 390 0 2140 0 0 0
Growth Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:     0 1160 380 190 1030 0 390 0 2140 0 0 0
User Adj:       1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:        1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume:     0 1160 380 190 1030 0 390 0 2140 0 0 0
Reduct Vol:     0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:    0 1160 380 190 1030 0 390 0 2140 0 0 0
RTOR Reduct:    0 0 0 0 0 0 0 0 0 0 0 0
RTOR Vol:       0 1160 380 190 1030 0 390 0 2140 0 0 0
PCE Adj:        1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:        1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume:    0 1160 380 190 1030 0 390 0 2140 0 0 0
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:       1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment:     1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 0.87 1.00 1.00 1.00
Lanes:         0.00 3.01 0.99 2.00 3.00 0.00 1.00 1.00 3.00 0.00 0.00 0.00
Final Sat.:     0 5182 1698 3127 5160 0 1720 1720 4489 0 0 0
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:        0.00 0.22 0.22 0.06 0.20 0.00 0.23 0.00 0.48 0.00 0.00 0.00
Crit Volume:    385 95 713 0
Crit Moves:     **** **** ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #12  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.683  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 72 Level Of Service: B  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	2	1	0	1	0	1	0	0	1	0

Volume Module:

Base Vol:	40	1320	10	320	2690	160	120	40	50	10	30	100
Growth 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
Initial Bse:	40	1320	10	320	2690	160	120	40	50	10	30	100
User 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
PHF 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
PHF Volume:	40	1320	10	320	2690	160	120	40	50	10	30	100
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	40	1320	10	320	2690	160	120	40	50	10	30	100
RTOR Reduct:	0	0	0	0	0	120	0	0	40	0	0	100
RTOR Vol:	40	1320	10	320	2690	40	120	40	10	10	30	0
PCE 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
MLF 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
FinalVolume:	40	1320	10	320	2690	40	120	40	10	10	30	0

Saturation Flow Module:

Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.98	0.02	2.00	3.00	1.00	0.75	0.25	1.00	1.00	1.00	1.00
Final Sat.:	1650	4913	37	3000	4950	1650	1238	413	1650	1650	1650	1650

Capacity Analysis Module:

Vol/Sat:	0.02	0.27	0.27	0.11	0.54	0.02	0.10	0.10	0.01	0.01	0.02	0.00
Crit Volume:	40			897			160			30		
Crit Moves:	****			****			****			****		

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #13
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.681
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        45          Level Of Service:          B
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|
Control:          Permitted      Permitted      Permitted      Permitted
Rights:          Include      Include      Include      Include
Min. Green:      0 0 0      0 0 0      0 0 0      0 0 0
Lanes:          1 0 1 1 0      2 0 2 0 1      1 0 1 1 0      1 0 2 0 2
-----|-----|-----|-----|
Volume Module:
Base Vol:      190 820 20 950 1590 210 140 230 190 30 80 410
Growth 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
Initial Bse:    190 820 20 950 1590 210 140 230 190 30 80 410
User 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
PHF 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
PHF Volume:    190 820 20 950 1590 210 140 230 190 30 80 410
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   190 820 20 950 1590 210 140 230 190 30 80 410
RTOR Reduct:   0 0 0 0 0 140 0 0 0 0 0 410
RTOR Vol:      190 820 20 950 1590 70 140 230 190 30 80 0
PCE 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
MLF 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
FinalVolume:   190 820 20 950 1590 70 140 230 190 30 80 0
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800
Adjustment:    1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.91
Lanes:         1.00 1.95 0.05 2.00 2.00 1.00 1.00 1.10 0.90 1.00 2.00 2.00
Final Sat.:   1800 3514 86 3272 3600 1800 1800 1971 1629 1800 3600 3272
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.11 0.23 0.23 0.29 0.44 0.04 0.08 0.12 0.12 0.02 0.02 0.00
Crit Volume:   190          795          210          30
Crit Moves:    ****          ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #14
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.926
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        180          Level Of Service:              E
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:       Protected      Protected      Protected      Protected
Rights:        Include      Include      Ovl      Include
Min. Green:    0 0 0      0 0 0      0 0 0      0 0 0
Lanes:         2 0 2 0 1      1 0 1 1 0      1 0 1 0 3      2 0 1 0 1
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      500 1080 130 110 1230 190 170 80 890 560 300 250
Growth 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
Initial Bse:   500 1080 130 110 1230 190 170 80 890 560 300 250
User 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
PHF 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
PHF Volume:    500 1080 130 110 1230 190 170 80 890 560 300 250
Reduct Vol:    0 0 0      0 0 0      0 0 0      0 0 0
Reduced Vol:   500 1080 130 110 1230 190 170 80 890 560 300 250
RTOR Reduct:   0 0 130      0 0 0      0 0 275      0 0 110
RTOR Vol:      500 1080 0 110 1230 190 170 80 615 560 300 140
PCE 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
MLF 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
FinalVolume:   500 1080 0 110 1230 190 170 80 615 560 300 140
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:    0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.87 0.91 1.00 1.00
Lanes:         2.00 2.00 1.00 1.00 1.73 0.27 1.00 1.00 3.00 2.00 1.00 1.00
Final Sat.:    3000 3300 1650 1650 2858 442 1650 1650 4307 3000 1650 1650
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.17 0.33 0.00 0.07 0.43 0.43 0.10 0.05 0.14 0.19 0.18 0.08
Crit Volume:   250          710          205 280
Crit Moves:    ****          ****          **** ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #15
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.409
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:        Protected      Permitted      Permitted      Permitted
Rights:         Include      Include      Include      Include
Min. Green:     0 0 0      0 0 0      0 0 0      0 0 0
Lanes:         1 0 2 0 0      0 0 2 0 2      0 0 0 0 0      0 1 0 0 2
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:       0 1120      0      0 820 1760      0 0 0      0 0 0 260
Growth 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
Initial Bse:   0 1120      0      0 820 1760      0 0 0      0 0 0 260
User 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
PHF 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
PHF Volume:    0 1120      0      0 820 1760      0 0 0      0 0 0 260
Reduct Vol:    0 0 0      0 0 0      0 0 0      0 0 0 0
Reduced Vol:   0 1120      0      0 820 1760      0 0 0      0 0 0 260
RTOR Reduct:   0 0 0      0 0 0      0 0 0      0 0 0 0
RTOR Vol:      0 1120      0      0 820 1760      0 0 0      0 0 0 260
PCE 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
MLF 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
FinalVolume:   0 1120      0      0 820 1760      0 0 0      0 0 0 260
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720 1720
Adjustment:    1.00 1.00 1.00 1.00 1.00 0.91 1.00 1.00 1.00 1.00 1.00 0.91
Lanes:         1.00 2.00 0.00 0.00 2.00 2.00 0.00 0.00 0.00 0.00 1.00 2.00
Final Sat.:    1720 3440      0      0 3440 3127      0 0 0      0 1720 3127
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.00 0.33 0.00 0.00 0.24 0.56 0.00 0.00 0.00 0.00 0.00 0.08
Crit Volume:   560          410          0          130
Crit Moves:    ****          ****
*****
    
```



Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #16  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.562  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 33 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound											
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	
Control:	Permitted			Permitted			Permitted			Permitted											
Rights:	Include			Include			Include			Include											
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Lanes:	0	0	0	0	0	0	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0

Volume Module:

Base Vol:	0	0	0	820	0	0	1120	0	0	0	0	0	0	0	0
Growth 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	1.00	1.00	1.00
Initial Bse:	0	0	0	820	0	0	1120	0	0	0	0	0	0	0	0
User 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	1.00	1.00	1.00
PHF 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	1.00	1.00	1.00
PHF Volume:	0	0	0	820	0	0	1120	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	820	0	0	1120	0	0	0	0	0	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	0	0	820	0	0	1120	0	0	0	0	0	0	0	0
PCE 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	1.00	1.00	1.00
MLF 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	1.00	1.00	1.00
FinalVolume:	0	0	0	820	0	0	1120	0	0	0	0	0	0	0	0

Saturation Flow Module:

Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	3272	0	0	3272	0	0	0	0	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.25	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00
Crit Volume:	0			410			560			0		
Crit Moves:				****			****					

\*\*\*\*\*

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #17  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.483  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 49 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2	0	0	0	0	0	0	0	2	0	1	0

Volume Module:

Base Vol:	400	0	100	0	0	0	0	480	10	30	610	0
Growth 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
Initial Bse:	400	0	100	0	0	0	0	480	10	30	610	0
User 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
PHF 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
PHF Volume:	400	0	100	0	0	0	0	480	10	30	610	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	400	0	100	0	0	0	0	480	10	30	610	0
RTOR Reduct:	0	0	17	0	0	0	0	0	10	0	0	0
RTOR Vol:	400	0	84	0	0	0	0	480	0	30	610	0
PCE 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
MLF 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
FinalVolume:	400	0	84	0	0	0	0	480	0	30	610	0

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	2.00	1.00	0.00
Final Sat.:	3127	0	1720	0	0	0	0	3440	1720	3127	1720	0

Capacity Analysis Module:

Vol/Sat:	0.13	0.00	0.05	0.00	0.00	0.00	0.00	0.14	0.00	0.01	0.35	0.00
Crit Volume:	200			0			240			610		
Crit Moves:	****									****		

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**2035 SR4-SR4 Bypass-Plus Project-Mixed Flow Lanes**

<b>Measures of Effectiveness across All Time Slices</b>				
<b>Measure of Effectiveness</b>	<b>Eastbound AM</b>	<b>Westbound AM</b>	<b>Eastbound PM</b>	<b>Westbound PM</b>
Vehicle-Miles of Travel	20,479	33,334	36,876	23,469
Person-Miles of Travel	22,788	35,449	40,958	24,693
Average Travel Time (min:sec)	2:55	2:50	3:08	2:46
Average Travel Speed (mph)	70	68	65	70
Mainline Vehicle Delay (veh-hr)	0	14	36	2
Ramp Vehicle Delay (veh-hr)	0	1	1	726
Mainline Person Delay (pass-hr)	0	15	40	3
Ramp Person Delay (pass-hr)	0	1	1	837
Demand Served	42,136 (100%)	82,140 (98%)	78,030 (100%)	64,651 (96%)

<b>Measures of Effectiveness for Peak Hours</b>				
<b>Measure of Effectiveness</b>	<b>Eastbound AM</b>	<b>Westbound AM</b>	<b>Eastbound PM</b>	<b>Westbound PM</b>
Vehicle-Miles of Travel	10,264	16,018	18,698	12,642
Person-Miles of Travel	11,419	17,045	20,771	13,306
Average Travel Time (min:sec)	2:55	2:48	3:12	2:47
Average Travel Speed (mph)	70	69	64	69
Mainline Vehicle Delay (veh-hr)	0	4	24	2
Ramp Vehicle Delay (veh-hr)	0	0	0	354
Mainline Person Delay (pass-hr)	0	5	26	3
Ramp Person Delay (pass-hr)	0	1	0	408
Demand Served	20,904 (100%)	40,097 (99%)	39,246 (100%)	34,123 (96%)

Note: VMT, Travel Time, Travel Speed, and Delay only include subsections From A St Merge Segment On-Ramp (SS 4) to Laurel Rd Off-Ramp (SS 15) in the Eastbound direction and From Laurel Rd On-Ramp (SS 3) to A Street Diverge Segment Off-Ramp (SS 12) in the Westbound direction.

**2035 Plus Project - SR 160**

<b>Measures of Effectiveness across All Time Slices</b>				
<b>Measure of Effectiveness</b>	<b>Northbound AM</b>	<b>Southbound AM</b>	<b>Northbound PM</b>	<b>Southbound PM</b>
Vehicle-Miles of Travel	5,911	2,691	3,120	4,631
Person-Miles of Travel	7,448	3,390	3,931	5,834
Average Travel Time (min:sec)	1:30	1:21	1:30	1:21
Average Travel Speed (mph)	70	70	70	70
Mainline Vehicle Delay (veh-hr)	0	0	0	0
Ramp Vehicle Delay (veh-hr)	0	0	0	0
Mainline Person Delay (pass-hr)	0	0	0	0
Ramp Person Delay (pass-hr)	0	0	0	0
Demand Served	18,540 (100%)	8,624 (100%)	13,044 (100%)	15,080 (100%)

<b>Measures of Effectiveness for Peak Hours</b>				
<b>Measure of Effectiveness</b>	<b>Northbound AM</b>	<b>Southbound AM</b>	<b>Northbound PM</b>	<b>Southbound PM</b>
Vehicle-Miles of Travel	2,921	1,202	1,429	2,589
Person-Miles of Travel	3,681	1,514	1,801	3,262
Average Travel Time (min:sec)	1:30	1:21	1:30	1:21
Average Travel Speed (mph)	70	70	70	70
Mainline Vehicle Delay (veh-hr)	0	0	0	0
Ramp Vehicle Delay (veh-hr)	0	0	0	0
Mainline Person Delay (pass-hr)	0	0	0	0
Ramp Person Delay (pass-hr)	0	0	0	0
Demand Served	9,252 (100%)	3,936 (100%)	6,248 (100%)	8,280 (100%)

Note: VMT, Travel Time, Travel Speed, and Delay only include subsections From SR 4 Bypass Ramps On-Ramp (SS 1) to Wilbur Off Off-Ramp (SS 5) in the Northbound direction and From Wilbur On On-Ramp (SS 3) to SR 4 Bypass Ramps Off-Ramp (SS 7) in the Southbound direction.

HCM Signalized Intersection Capacity Analysis  
1: E 18th St & Hillcrest Ave

Hillcrest eBART  
2035 Full Station Development AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	↘
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	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3533		3433	1682		1770	1863	1583
Flt Permitted	0.32	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	604	3539	1583	1770	3533		3433	1682		1770	1863	1583
Volume (vph)	30	280	290	420	830	10	760	170	310	30	80	90
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	292	302	438	865	10	792	177	323	31	83	94
RTOR Reduction (vph)	0	0	264	0	1	0	0	51	0	0	0	60
Lane Group Flow (vph)	31	292	38	438	874	0	792	449	0	31	83	34
Turn Type	Perm		Perm	Prot			Prot			Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4									6
Actuated Green, G (s)	13.8	13.8	13.8	29.9	47.7		28.5	47.0		2.2	20.7	20.7
Effective Green, g (s)	13.8	13.8	13.8	29.9	47.7		28.5	47.0		2.2	20.7	20.7
Actuated g/C Ratio	0.13	0.13	0.13	0.27	0.44		0.26	0.43		0.02	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	77	448	201	486	1548		898	726		36	354	301
v/s Ratio Prot		0.08		c0.25	c0.25		c0.23	c0.27		0.02	0.04	
v/s Ratio Perm	0.05		0.02									0.02
v/c Ratio	0.40	0.65	0.19	0.90	0.56		0.88	0.62		0.86	0.23	0.11
Uniform Delay, d1	43.8	45.3	42.6	38.1	22.9		38.6	24.0		53.2	37.4	36.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.4	3.4	0.5	19.7	0.5		10.2	3.9		95.3	1.6	0.8
Delay (s)	47.2	48.6	43.0	57.8	23.3		48.7	27.9		148.5	38.9	37.3
Level of Service	D	D	D	E	C		D	C		F	D	D
Approach Delay (s)		45.9			34.8			40.7			54.5	
Approach LOS		D			C			D			D	

Intersection Summary

HCM Average Control Delay	40.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	108.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
2: E 18th St & Viera Ave

Hillcrest eBART  
2035 Full Station Development AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑		↙	↗			↕	
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1583	1770	3515		1770	1808			1682	
Flt Permitted	0.14	1.00	1.00	0.56	1.00		0.71	1.00			0.96	
Satd. Flow (perm)	261	3539	1583	1041	3515		1331	1808			1627	
Volume (vph)	110	280	90	10	1030	50	200	40	10	20	20	80
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	125	318	102	11	1170	57	227	45	11	23	23	91
RTOR Reduction (vph)	0	0	51	0	6	0	0	7	0	0	59	0
Lane Group Flow (vph)	125	318	51	11	1221	0	227	49	0	0	78	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	28.6	28.6	28.6	28.6	28.6		20.2	20.2			20.2	
Effective Green, g (s)	28.6	28.6	28.6	28.6	28.6		20.2	20.2			20.2	
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.50		0.36	0.36			0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	131	1782	797	524	1770		473	643			579	
v/s Ratio Prot		0.09			0.35			0.03				
v/s Ratio Perm	c0.48		0.03	0.01			c0.17				0.05	
v/c Ratio	0.95	0.18	0.06	0.02	0.69		0.48	0.08			0.14	
Uniform Delay, d1	13.5	7.7	7.2	7.1	10.7		14.2	12.1			12.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	64.1	0.0	0.0	0.0	1.1		3.5	0.2			0.5	
Delay (s)	77.6	7.7	7.3	7.1	11.9		17.7	12.4			12.9	
Level of Service	E	A	A	A	B		B	B			B	
Approach Delay (s)		23.7			11.8			16.6			12.9	
Approach LOS		C			B			B			B	

Intersection Summary

HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
9: Oakley Rd & Neroly Rd

Hillcrest eBART  
2035 Full Station Development AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1856		1770	1821	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1856		1770	1821	
Volume (vph)	10	150	100	20	780	150	250	430	10	60	230	40
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	160	106	21	830	160	266	457	11	64	245	43
RTOR Reduction (vph)	0	0	58	0	0	82	0	1	0	0	7	0
Lane Group Flow (vph)	11	160	48	21	830	78	266	467	0	64	281	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	0.7	38.9	38.9	1.9	40.1	40.1	13.0	26.5		3.2	16.7	
Effective Green, g (s)	0.7	38.9	38.9	1.9	40.1	40.1	13.0	26.5		3.2	16.7	
Actuated g/C Ratio	0.01	0.45	0.45	0.02	0.46	0.46	0.15	0.31		0.04	0.19	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	14	838	712	39	864	734	266	569		65	352	
v/s Ratio Prot	0.01	0.09		c0.01	c0.45		c0.15	c0.25		0.04	0.15	
v/s Ratio Perm			0.03			0.05						
v/c Ratio	0.79	0.19	0.07	0.54	0.96	0.11	1.00	0.82		0.98	0.80	
Uniform Delay, d1	42.8	14.3	13.5	41.9	22.4	13.1	36.8	27.8		41.6	33.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	130.6	0.1	0.0	13.5	21.5	0.1	55.2	9.3		105.6	11.9	
Delay (s)	173.4	14.4	13.5	55.4	43.9	13.2	91.9	37.1		147.2	45.2	
Level of Service	F	B	B	E	D	B	F	D		F	D	
Approach Delay (s)		20.4			39.3			57.0			63.7	
Approach LOS		C			D			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			46.2	HCM Level of Service				D				
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			86.5	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			79.4%	ICU Level of Service				D				
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
1: E 18th St & Hillcrest Ave

Hillcrest eBART  
2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	↘
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	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3512		3433	1679		1770	1863	1583
Flt Permitted	0.51	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	956	3539	1583	1770	3512		3433	1679		1770	1863	1583
Volume (vph)	80	820	660	250	370	20	350	140	270	40	110	30
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	854	688	260	385	21	365	146	281	42	115	31
RTOR Reduction (vph)	0	0	304	0	4	0	0	53	0	0	0	19
Lane Group Flow (vph)	83	854	384	260	402	0	365	374	0	42	115	12
Turn Type	Perm		Perm	Prot			Prot			Prot		Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4									6
Actuated Green, G (s)	34.4	34.4	34.4	18.0	56.4		14.5	30.1		3.1	18.7	18.7
Effective Green, g (s)	34.4	34.4	34.4	18.0	56.4		14.5	30.1		3.1	18.7	18.7
Actuated g/C Ratio	0.34	0.34	0.34	0.18	0.56		0.14	0.30		0.03	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	324	1198	536	314	1950		490	497		54	343	291
v/s Ratio Prot		0.24		c0.15	0.11		c0.11	c0.22		0.02	0.06	
v/s Ratio Perm	0.09		c0.24									0.01
v/c Ratio	0.26	0.71	0.72	0.83	0.21		0.74	0.75		0.78	0.34	0.04
Uniform Delay, d1	24.3	29.3	29.4	40.3	11.4		41.8	32.4		48.9	36.0	34.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	2.0	4.6	16.2	0.1		6.1	10.1		49.7	2.6	0.3
Delay (s)	24.8	31.3	33.9	56.6	11.4		47.8	42.4		98.6	38.7	34.4
Level of Service	C	C	C	E	B		D	D		F	D	C
Approach Delay (s)		32.1			29.0			44.9			51.4	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	35.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
2: E 18th St & Viera Ave

Hillcrest eBART  
2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑		↙	↗			↕	
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	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.95			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1583	1770	3498		1770	1772			1730	
Flt Permitted	0.48	1.00	1.00	0.18	1.00		0.52	1.00			0.93	
Satd. Flow (perm)	890	3539	1583	330	3498		978	1772			1628	
Volume (vph)	100	910	140	10	360	30	140	20	10	70	100	140
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	114	1034	159	11	409	34	159	23	11	80	114	159
RTOR Reduction (vph)	0	0	93	0	11	0	0	6	0	0	46	0
Lane Group Flow (vph)	114	1034	66	11	432	0	159	28	0	0	307	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	22.6	22.6	22.6	22.6	22.6		24.2	24.2			24.2	
Effective Green, g (s)	22.6	22.6	22.6	22.6	22.6		24.2	24.2			24.2	
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41		0.44	0.44			0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	367	1460	653	136	1443		432	783			719	
v/s Ratio Prot		c0.29			0.12			0.02				
v/s Ratio Perm	0.13		0.04	0.03			0.16				c0.19	
v/c Ratio	0.31	0.71	0.10	0.08	0.30		0.37	0.04			0.43	
Uniform Delay, d1	10.9	13.4	9.9	9.8	10.8		10.2	8.7			10.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.5	1.6	0.1	0.3	0.1		2.4	0.1			1.9	
Delay (s)	11.3	15.0	9.9	10.0	10.9		12.6	8.8			12.4	
Level of Service	B	B	A	B	B		B	A			B	
Approach Delay (s)		14.0			10.9			11.9			12.4	
Approach LOS		B			B			B			B	

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 9: Oakley Rd & Neroly Rd

Hillcrest eBART  
 2035 Full Station Development PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↗		↖	↗	
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		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1842		1770	1845	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1842		1770	1845	
Volume (vph)	40	600	410	10	330	140	120	250	20	120	450	30
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	638	436	11	351	149	128	266	21	128	479	32
RTOR Reduction (vph)	0	0	255	0	0	96	0	3	0	0	3	0
Lane Group Flow (vph)	43	638	181	11	351	53	128	284	0	128	508	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	2.2	29.9	29.9	0.7	28.4	28.4	8.0	26.9		6.7	25.6	
Effective Green, g (s)	2.2	29.9	29.9	0.7	28.4	28.4	8.0	26.9		6.7	25.6	
Actuated g/C Ratio	0.03	0.37	0.37	0.01	0.35	0.35	0.10	0.34		0.08	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	49	695	590	15	660	561	177	618		148	589	
v/s Ratio Prot	c0.02	c0.34		0.01	0.19		c0.07	0.15		0.07	c0.28	
v/s Ratio Perm			0.11			0.03						
v/c Ratio	0.88	0.92	0.31	0.73	0.53	0.09	0.72	0.46		0.86	0.86	
Uniform Delay, d1	38.9	24.0	17.8	39.7	20.6	17.3	35.0	20.9		36.3	25.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	83.1	17.0	0.3	103.2	0.8	0.1	13.6	0.5		37.4	12.4	
Delay (s)	122.0	41.0	18.1	142.9	21.4	17.4	48.6	21.5		73.7	38.1	
Level of Service	F	D	B	F	C	B	D	C		E	D	
Approach Delay (s)		35.2			22.9			29.9			45.2	
Approach LOS		D			C			C			D	

Intersection Summary

HCM Average Control Delay	34.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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Scenario Report

Scenario: 2035 Full Development AM

Command: Default Command

Volume: 2035 Full Development AM

Geometry: 2035

Impact Fee: Default Impact Fee

Trip Generation: Default Trip Generation

Trip Distribution: Default Trip Distribution

Paths: Default Path

Routes: Default Route

Configuration: Default Configuration

Impact Analysis Report  
Level Of Service

Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh C	Del/ LOS	V/ Veh C	
# 1	B xxxxx	0.648	B xxxxx	0.648	+ 0.000 V/C
# 2	A xxxxx	0.539	A xxxxx	0.539	+ 0.000 V/C
# 9	C xxxxx	0.794	C xxxxx	0.794	+ 0.000 V/C

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #1
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.648
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53          Level Of Service:              B
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:       Protected      Protected      Permitted      Protected
Rights:        Include      Include      Include      Include
Min. Green:    0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:         2 0 0 1 0      1 0 1 0 1      1 0 2 0 1      1 0 1 1 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      760 170 310 30 80 90 30 280 290 420 830 10
Growth 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
Initial Bse:   760 170 310 30 80 90 30 280 290 420 830 10
User 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
PHF 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
PHF Volume:    760 170 310 30 80 90 30 280 290 420 830 10
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   760 170 310 30 80 90 30 280 290 420 830 10
RTOR Reduct:   0 0 0 0 0 0 30 0 0 290 0 0
RTOR Vol:      760 170 310 30 80 60 30 280 0 420 830 10
PCE 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
MLF 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
FinalVolume:   760 170 310 30 80 60 30 280 0 420 830 10
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:    0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:         2.00 0.35 0.65 1.00 1.00 1.00 1.00 2.00 1.00 1.00 1.98 0.02
Final Sat.:    3000 584 1066 1650 1650 1650 1650 3300 1650 1650 3261 39
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.25 0.29 0.29 0.02 0.05 0.04 0.02 0.08 0.00 0.25 0.25 0.25
Crit Volume:   480 30 140 420
Crit Moves:    **** **** **** ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #2
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.539
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        31          Level Of Service:          A
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|
Control:          Permitted      Permitted      Permitted      Permitted
Rights:          Include      Include      Include      Include
Min. Green:      0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:          1 0 0 1 0      0 0 1! 0 0      1 0 2 0 1      1 0 1 1 0
-----|-----|-----|-----|
Volume Module:
Base Vol:      200 40 10 20 20 80 110 280 90 10 1030 50
Growth 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
Initial Bse:   200 40 10 20 20 80 110 280 90 10 1030 50
User 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
PHF 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
PHF Volume:   200 40 10 20 20 80 110 280 90 10 1030 50
Reduct Vol:   0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:  200 40 10 20 20 80 110 280 90 10 1030 50
RTOR Reduct:  0 0 0 0 0 0 0 0 0 90 0 0
RTOR Vol:     200 40 10 20 20 80 110 280 0 10 1030 50
PCE 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
MLF 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
FinalVolume:  200 40 10 20 20 80 110 280 0 10 1030 50
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:     1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800
Adjustment:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        1.00 0.80 0.20 0.17 0.17 0.66 1.00 2.00 1.00 1.00 1.91 0.09
Final Sat.:   1800 1440 360 300 300 1200 1800 3600 1800 1800 3433 167
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:      0.11 0.03 0.03 0.07 0.07 0.07 0.06 0.08 0.00 0.01 0.30 0.30
Crit Volume:  200          120          110          540
Crit Moves:   ****          ****          ****          ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

```

*****
Intersection #9
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.794
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        111          Level Of Service:              C
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:        Protected      Protected      Protected      Protected
Rights:         Include      Include      Include      Include
Min. Green:     0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:         1 0 0 1 0      1 0 0 1 0      1 0 1 0 1      1 0 1 0 1
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:       250 430 10 60 230 40 10 150 100 20 780 150
Growth 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
Initial Bse:   250 430 10 60 230 40 10 150 100 20 780 150
User 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
PHF 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
PHF Volume:    250 430 10 60 230 40 10 150 100 20 780 150
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   250 430 10 60 230 40 10 150 100 20 780 150
RTOR Reduct:   0 0 0 0 0 0 0 0 0 100 0 0 60
RTOR Vol:      250 430 10 60 230 40 10 150 0 20 780 90
PCE 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
MLF 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
FinalVolume:   250 430 10 60 230 40 10 150 0 20 780 90
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        1.00 0.98 0.02 1.00 0.85 0.15 1.00 1.00 1.00 1.00 1.00 1.00
Final Sat.:    1650 1613 38 1650 1406 244 1650 1650 1650 1650 1650 1650
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.15 0.27 0.27 0.04 0.16 0.16 0.01 0.09 0.00 0.01 0.47 0.05
Crit Volume:   250          270 10          780
Crit Moves:    ****          **** ****          ****
*****
    
```





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Scenario Report

Scenario: 2035 Full Development PM

Command: Default Command

Volume: 2035 Full Development PM

Geometry: 2035

Impact Fee: Default Impact Fee

Trip Generation: Default Trip Generation

Trip Distribution: Default Trip Distribution

Paths: Default Path

Routes: Default Route

Configuration: Default Configuration

Impact Analysis Report  
Level Of Service

Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh C	Del/ LOS	V/ Veh C	
# 1	C xxxxx	0.708	C xxxxx	0.708	+ 0.000 V/C
# 2	A xxxxx	0.508	A xxxxx	0.508	+ 0.000 V/C
# 9	C xxxxx	0.733	C xxxxx	0.733	+ 0.000 V/C

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

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*****
Intersection #1
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.708
Loss Time (sec):      0 (Y+R=4.0 sec) Average Delay (sec/veh):          xxxxxx
Optimal Cycle:        64          Level Of Service:          C
*****
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L - T - R      L - T - R      L - T - R      L - T - R
-----|-----|-----|-----|-----|
Control:      Protected      Protected      Permitted      Protected
Rights:      Include      Include      Include      Include
Min. Green:    0 0 0 0      0 0 0 0      0 0 0 0      0 0 0 0
Lanes:        2 0 0 1 0      1 0 1 0 1      1 0 2 0 1      1 0 1 1 0
-----|-----|-----|-----|-----|
Volume Module:
Base Vol:      350 140 270 40 110 30 80 820 660 250 370 20
Growth 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
Initial Bse:    350 140 270 40 110 30 80 820 660 250 370 20
User 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
PHF 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
PHF Volume:    350 140 270 40 110 30 80 820 660 250 370 20
Reduct Vol:    0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol:   350 140 270 40 110 30 80 820 660 250 370 20
RTOR Reduct:   0 0 0 0 0 0 30 0 0 193 0 0 0
RTOR Vol:      350 140 270 40 110 0 80 820 468 250 370 20
PCE 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
MLF 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
FinalVolume:   350 140 270 40 110 0 80 820 468 250 370 20
-----|-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:      1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650 1650
Adjustment:    0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:        2.00 0.34 0.66 1.00 1.00 1.00 1.00 2.00 1.00 1.00 1.90 0.10
Final Sat.:    3000 563 1087 1650 1650 1650 1650 3300 1650 1650 3131 169
-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:       0.12 0.25 0.25 0.02 0.07 0.00 0.05 0.25 0.28 0.15 0.12 0.12
Crit Volume:   410 40 468 250
Crit Moves:    ****      ****      ****      ****
*****
    
```

Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #2  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.508  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 29 Level Of Service: A  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	0	1	0	0	1	0	2	0	1	1

Volume Module:

Base Vol:	140	20	10	70	100	140	100	910	140	10	360	30
Growth 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
Initial Bse:	140	20	10	70	100	140	100	910	140	10	360	30
User 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
PHF 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
PHF Volume:	140	20	10	70	100	140	100	910	140	10	360	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	140	20	10	70	100	140	100	910	140	10	360	30
RTOR Reduct:	0	0	0	0	0	0	0	0	140	0	0	0
RTOR Vol:	140	20	10	70	100	140	100	910	0	10	360	30
PCE 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
MLF 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
FinalVolume:	140	20	10	70	100	140	100	910	0	10	360	30

Saturation Flow Module:

Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.67	0.33	0.23	0.32	0.45	1.00	2.00	1.00	1.00	1.85	0.15
Final Sat.:	1800	1200	600	406	581	813	1800	3600	1800	1800	3323	277

Capacity Analysis Module:

Vol/Sat:	0.08	0.02	0.02	0.17	0.17	0.17	0.06	0.25	0.00	0.01	0.11	0.11
Crit Volume:	140			310			455			10		
Crit Moves:	****			****			****			****		

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Level Of Service Computation Report  
 CCTALOS Method (Base Volume Alternative)

\*\*\*\*\*  
 Intersection #9  
 \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.733  
 Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): xxxxxx  
 Optimal Cycle: 86 Level Of Service: C  
 \*\*\*\*\*

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	0	1	0	0	1	0	1	1	0	1

Volume Module:

Base Vol:	120	250	20	120	450	30	40	600	410	10	330	140
Growth 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
Initial Bse:	120	250	20	120	450	30	40	600	410	10	330	140
User 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
PHF 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
PHF Volume:	120	250	20	120	450	30	40	600	410	10	330	140
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	120	250	20	120	450	30	40	600	410	10	330	140
RTOR Reduct:	0	0	0	0	0	0	0	0	120	0	0	120
RTOR Vol:	120	250	20	120	450	30	40	600	290	10	330	20
PCE 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
MLF 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
FinalVolume:	120	250	20	120	450	30	40	600	290	10	330	20

Saturation Flow Module:

Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.93	0.07	1.00	0.94	0.06	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1650	1528	122	1650	1547	103	1650	1650	1650	1650	1650	1650

Capacity Analysis Module:

Vol/Sat:	0.07	0.16	0.16	0.07	0.29	0.29	0.02	0.36	0.18	0.01	0.20	0.01
Crit Volume:	120			480			600			10		
Crit Moves:	****			****			****			****		

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