Cumulative Plus Project with Mitigations Conditions

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
Lane Util. Factor		0.91		1.00	0.91					0.95	0.91	0.95
Frt		0.98		1.00	1.00					1.00	0.91	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.98	1.00
Satd. Flow (prot)		4968		1770	5085					1681	1511	1504
Flt Permitted		1.00		0.95	1.00					0.95	0.98	1.00
Satd. Flow (perm)		4968		1770	5085					1681	1511	1504
Volume (vph)	0	2110	385	506	1045	0	0	0	0	430	0	600
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2293	418	550	1136	0	0	0	0	467	0	652
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	47	122
Lane Group Flow (vph)	0	2689	0	550	1136	0	0	0	0	319	332	299
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		56.0		30.0	90.0					22.0	22.0	22.0
Effective Green, g (s)		56.0		30.0	90.0					22.0	22.0	22.0
Actuated g/C Ratio		0.47		0.25	0.75					0.18	0.18	0.18
Clearance Time (s)		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
Lane Grp Cap (vph)		2318		443	3814					308	277	276
v/s Ratio Prot		c0.54		c0.31	0.22					0.19	c0.22	
v/s Ratio Perm												0.20
v/c Ratio		1.16		1.24	0.30					1.04	1.20	1.08
Uniform Delay, d1		32.0		45.0	4.8					49.0	49.0	49.0
Progression Factor		1.00		0.25	0.36					1.00	1.00	1.00
Incremental Delay, d2		77.3		110.5	0.0					60.8	119.5	78.5
Delay (s)		109.3		121.8	1.7					109.8	168.5	127.5
Level of Service		F		F	A					F	F	F
Approach Delay (s)		109.3			40.9			0.0			136.4	
Approach LOS		F			D			A			F	

Intersection Summary			
HCM Average Control Delay	93.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

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			
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.91	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (prot)	1770	5085			4857		1681	1508	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (perm)	1770	5085			4857		1681	1508	1504			
Volume (vph)	900	1640	0	0	1216	520	335	0	436	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	978	1783	0	0	1322	565	364	0	474	0	0	0
RTOR Reduction (vph)	0	0	0	0	64	0	0	48	48	0	0	0
Lane Group Flow (vph)	978	1783	0	0	1823	0	248	262	232	0	0	0
Turn Type	Prot						Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	50.0	96.0			42.0		16.0	16.0	16.0			
Effective Green, g (s)	50.0	96.0			42.0		16.0	16.0	16.0			
Actuated g/C Ratio	0.42	0.80			0.35		0.13	0.13	0.13			
Clearance Time (s)	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			
Lane Grp Cap (vph)	738	4068			1700		224	201	201			
v/s Ratio Prot	c0.55	0.35			c0.38		0.15	c0.17				
v/s Ratio Perm									0.15			
v/c Ratio	1.33	0.44			1.07		1.11	1.31	1.16			
Uniform Delay, d1	35.0	3.7			39.0		52.0	52.0	52.0			
Progression Factor	0.10	0.18			1.00		1.00	1.00	1.00			
Incremental Delay, d2	147.2	0.0			44.1		91.8	168.5	111.8			
Delay (s)	150.8	0.7			83.1		143.8	220.5	163.8			
Level of Service	F	A			F		F	F	F			
Approach Delay (s)		53.9			83.1			178.9			0.0	
Approach LOS		D			F			F			A	

Intersection Summary			
HCM Average Control Delay	83.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

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
Lane Util. Factor		0.91	1.00	1.00	0.95					1.00		1.00
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	3539					1770		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5085	1583	1770	3539					1770		1583
Volume (vph)	0	1280	791	269	1181	0	0	0	0	160	0	640
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1391	860	292	1284	0	0	0	0	174	0	696
RTOR Reduction (vph)	0	0	566	0	0	0	0	0	0	0	0	21
Lane Group Flow (vph)	0	1391	294	292	1284	0	0	0	0	174	0	675
Turn Type			Perm	Prot						custom		custom
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		36.0	36.0	21.0	61.0					51.0		51.0
Effective Green, g (s)		36.0	36.0	21.0	61.0					51.0		51.0
Actuated g/C Ratio		0.30	0.30	0.18	0.51					0.42		0.42
Clearance Time (s)		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
Lane Grp Cap (vph)		1526	475	310	1799					752		673
v/s Ratio Prot		c0.27		c0.17	0.36							
v/s Ratio Perm			0.19							0.10		c0.43
v/c Ratio		0.91	0.62	0.94	0.71					0.23		1.00
Uniform Delay, d1		40.5	36.1	48.9	22.8					22.0		34.5
Progression Factor		1.00	1.00	1.53	1.34					1.00		1.00
Incremental Delay, d2		9.8	6.0	6.2	0.2					0.2		35.5
Delay (s)		50.2	42.1	81.1	30.8					22.2		70.0
Level of Service		D	D	F	C					C		E
Approach Delay (s)		47.1			40.1			0.0			60.5	
Approach LOS		D			D			A			E	

Intersection Summary			
HCM Average Control Delay	47.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

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			
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1770	3539			3539	1583	1770		1583			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	1770	3539			3539	1583	1770		1583			
Volume (vph)	700	740	0	0	869	290	581	0	239	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	761	804	0	0	945	315	632	0	260	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	133	0	0	145	0	0	0
Lane Group Flow (vph)	761	804	0	0	945	182	632	0	115	0	0	0
Turn Type	Prot					Perm	custom		custom			
Protected Phases	5	2			6							
Permitted Phases						6	8		8			
Actuated Green, G (s)	43.0	76.0			29.0	29.0	36.0		36.0			
Effective Green, g (s)	43.0	76.0			29.0	29.0	36.0		36.0			
Actuated g/C Ratio	0.36	0.63			0.24	0.24	0.30		0.30			
Clearance Time (s)	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			
Lane Grp Cap (vph)	634	2241			855	383	531		475			
v/s Ratio Prot	c0.43	0.23			c0.27							
v/s Ratio Perm						0.11	c0.36		0.07			
v/c Ratio	1.20	0.36			1.11	0.47	1.19		0.24			
Uniform Delay, d1	38.5	10.4			45.5	39.0	42.0		31.7			
Progression Factor	2.09	0.83			1.00	1.00	1.00		1.00			
Incremental Delay, d2	96.4	0.3			63.8	4.2	103.2		0.3			
Delay (s)	177.0	8.9			109.3	43.1	145.2		32.0			
Level of Service	F	A			F	D	F		C			
Approach Delay (s)		90.7			92.7			112.2			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM Average Control Delay	96.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

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		4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.96		0.88	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	1863	1787		1631	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	1863	1787		1631	
Volume (vph)	500	187	177	75	75	560
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	543	203	192	82	82	609
RTOR Reduction (vph)	0	0	28	0	474	0
Lane Group Flow (vph)	543	203	246	0	217	0
Confl. Peds. (#/hr)					100	
Turn Type	Prot					
Protected Phases	7	4	8		6	
Permitted Phases						
Actuated Green, G (s)	15.4	31.0	11.6		11.0	
Effective Green, g (s)	15.4	31.0	11.6		11.0	
Actuated g/C Ratio	0.31	0.62	0.23		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)	545	1155	415		359	
v/s Ratio Prot	c0.31	0.11	c0.14		c0.13	
v/s Ratio Perm						
v/c Ratio	1.00	0.18	0.59		0.60	
Uniform Delay, d1	17.3	4.1	17.1		17.5	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	37.4	0.1	2.3		2.9	
Delay (s)	54.6	4.1	19.4		20.4	
Level of Service	D	A	B		C	
Approach Delay (s)		40.9	19.4		20.4	
Approach LOS		D	B		C	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	10	19	19	212	232	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	21	21	230	252	22
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	535	263	274			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	535	263	274			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	98			
cM capacity (veh/h)	498	776	1289			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	32	251	274
Volume Left	11	21	0
Volume Right	21	0	22
cSH	651	1289	1700
Volume to Capacity	0.05	0.02	0.16
Queue Length 95th (ft)	4	1	0
Control Delay (s)	10.8	0.8	0.0
Lane LOS	B	A	
Approach Delay (s)	10.8	0.8	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

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	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	1.00	0.85
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	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.74	1.00	1.00	0.73	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1384	1863	1583	1358	1863	1583	1770	1863	1583	1770	1863	1583
Volume (vph)	180	40	215	20	20	20	185	350	20	60	720	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	43	234	22	22	22	201	380	22	65	783	163
RTOR Reduction (vph)	0	0	187	0	0	18	0	0	10	0	0	70
Lane Group Flow (vph)	196	43	47	22	22	4	201	380	12	65	783	93
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	13.5	13.5	13.5	13.5	13.5	13.5	9.3	38.2	38.2	3.7	32.6	32.6
Effective Green, g (s)	13.5	13.5	13.5	13.5	13.5	13.5	9.3	38.2	38.2	3.7	32.6	32.6
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.14	0.57	0.57	0.05	0.48	0.48
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)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	277	373	317	272	373	317	244	1056	897	97	901	766
v/s Ratio Prot		0.02			0.01		c0.11	0.20		0.04	c0.42	
v/s Ratio Perm	c0.14		0.03	0.02		0.00			0.01			0.06
v/c Ratio	0.71	0.12	0.15	0.08	0.06	0.01	0.82	0.36	0.01	0.67	0.87	0.12
Uniform Delay, d1	25.1	22.1	22.2	21.9	21.8	21.6	28.3	7.9	6.4	31.3	15.5	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.0	0.1	0.2	0.1	0.1	0.0	19.7	0.2	0.0	16.7	8.9	0.1
Delay (s)	33.1	22.2	22.4	22.0	21.9	21.6	47.9	8.2	6.4	47.9	24.4	9.6
Level of Service	C	C	C	C	C	C	D	A	A	D	C	A
Approach Delay (s)		26.8			21.8			21.3			23.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	1.00	1.00	0.95	1.00	0.95	
Satd. Flow (prot)	1863	1583	1770	1863	1765	
Flt Permitted	1.00	1.00	0.44	1.00	0.95	
Satd. Flow (perm)	1863	1583	828	1863	1765	
Volume (vph)	445	167	10	585	167	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	484	182	11	636	182	11
RTOR Reduction (vph)	0	68	0	0	6	0
Lane Group Flow (vph)	484	114	11	636	187	0
Turn Type		Perm	Perm			
Protected Phases	4			8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	30.0	30.0	30.0	30.0	10.0	
Effective Green, g (s)	30.0	30.0	30.0	30.0	10.0	
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1164	989	518	1164	368	
v/s Ratio Prot	0.26			c0.34	c0.11	
v/s Ratio Perm		0.07	0.01			
v/c Ratio	0.42	0.12	0.02	0.55	0.51	
Uniform Delay, d1	4.6	3.6	3.4	5.1	16.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.0	0.5	1.1	
Delay (s)	4.8	3.7	3.4	5.7	17.9	
Level of Service	A	A	A	A	B	
Approach Delay (s)	4.5			5.6	17.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	0.97	1.00	1.00	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	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	1.00	1.00
Satd. Flow (prot)	3433	1845	1615	1805	3539	1583	902	1758		1770	1900	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1845	1615	1805	3539	1583	902	1758		1770	1900	1583
Volume (vph)	125	317	19	10	657	85	19	10	10	115	10	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	345	21	11	714	92	21	11	11	125	11	190
RTOR Reduction (vph)	0	0	6	0	0	34	0	11	0	0	0	172
Lane Group Flow (vph)	136	345	15	11	714	58	21	11	0	125	11	18
Heavy Vehicles (%)	2%	3%	0%	0%	2%	2%	100%	0%	0%	2%	0%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	10.1	84.5	84.5	1.5	75.9	75.9	6.5	4.6		13.4	11.5	11.5
Effective Green, g (s)	10.1	84.5	84.5	1.5	75.9	75.9	6.5	4.6		13.4	11.5	11.5
Actuated g/C Ratio	0.08	0.70	0.70	0.01	0.63	0.63	0.05	0.04		0.11	0.10	0.10
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)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	289	1299	1137	23	2238	1001	49	67		198	182	152
v/s Ratio Prot	c0.04	0.19		0.01	c0.20		0.02	c0.01		c0.07	0.01	
v/s Ratio Perm			0.01			0.04						0.01
v/c Ratio	0.47	0.27	0.01	0.48	0.32	0.06	0.43	0.17		0.63	0.06	0.12
Uniform Delay, d1	52.4	6.5	5.3	58.9	10.2	8.4	55.0	55.9		50.9	49.3	49.6
Progression Factor	0.78	1.12	1.26	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.5	0.0	14.8	0.4	0.1	5.9	1.2		6.4	0.1	0.4
Delay (s)	42.1	7.7	6.7	73.7	10.5	8.5	60.9	57.1		57.4	49.5	50.0
Level of Service	D	A	A	E	B	A	E	E		E	D	D
Approach Delay (s)		17.0			11.2			58.9			52.8	
Approach LOS		B			B			E			D	

Intersection Summary				
HCM Average Control Delay	22.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	44.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12	12	12	12	12	12	12
Grade (%)		-4%			4%			0%			0%	
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1805	3541			3855	1493		1523	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1805	3541			3855	1493		1523	1504			
Volume (vph)	50	713	0	0	790	998	40	0	735	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	775	0	0	859	1085	43	0	799	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	444	0	50	50	0	0	0
Lane Group Flow (vph)	54	775	0	0	859	641	0	392	350	0	0	0
Heavy Vehicles (%)	2%	4%	0%	0%	4%	6%	2%	2%	2%	0%	0%	0%
Turn Type	Prot					Perm	Perm		Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	7.5	78.7			67.2	67.2		33.3	33.3			
Effective Green, g (s)	7.5	78.7			67.2	67.2		33.3	33.3			
Actuated g/C Ratio	0.06	0.66			0.56	0.56		0.28	0.28			
Clearance Time (s)	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			
Lane Grp Cap (vph)	113	2322			2159	836		423	417			
v/s Ratio Prot	c0.03	0.22			0.22							
v/s Ratio Perm						c0.43		0.26	0.23			
v/c Ratio	0.48	0.33			0.40	0.77		0.93	0.84			
Uniform Delay, d1	54.4	9.1			14.9	20.4		42.2	40.8			
Progression Factor	0.47	0.23			1.29	5.86		1.00	1.00			
Incremental Delay, d2	3.0	0.2			0.4	5.2		26.2	13.8			
Delay (s)	28.3	2.3			19.7	124.5		68.4	54.6			
Level of Service	C	A			B	F		E	D			
Approach Delay (s)		4.0			78.2			61.9			0.0	
Approach LOS		A			E			E			A	

Intersection Summary			
HCM Average Control Delay	57.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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
Grade (%)		4%			-4%			0%			0%	
Total Lost time (s)		4.0		4.0	4.0					4.0		4.0
Lane Util. Factor		1.00		0.97	1.00					0.97		1.00
Frt		0.97		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		1762		3434	1900					3367		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		1762		3434	1900					3367		1583
Volume (vph)	0	88	30	733	97	0	0	0	0	675	0	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	96	33	797	105	0	0	0	0	734	0	87
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	64
Lane Group Flow (vph)	0	118	0	797	105	0	0	0	0	734	0	23
Heavy Vehicles (%)	0%	2%	2%	4%	2%	0%	0%	0%	0%	4%	0%	2%
Turn Type				Prot						Prot		custom
Protected Phases		2		1	6					7		
Permitted Phases												7
Actuated Green, G (s)		23.0		53.8	80.8					31.2		31.2
Effective Green, g (s)		23.0		53.8	80.8					31.2		31.2
Actuated g/C Ratio		0.19		0.45	0.67					0.26		0.26
Clearance Time (s)		4.0		4.0	4.0					4.0		4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		338		1540	1279					875		412
v/s Ratio Prot		c0.07		c0.23	0.06					c0.22		
v/s Ratio Perm												0.01
v/c Ratio		0.35		0.52	0.08					0.84		0.05
Uniform Delay, d1		42.0		23.8	6.8					42.0		33.3
Progression Factor		1.00		0.37	0.79					1.00		1.00
Incremental Delay, d2		0.6		1.2	0.1					7.1		0.1
Delay (s)		42.7		10.0	5.4					49.1		33.4
Level of Service		D		B	A					D		C
Approach Delay (s)		42.7			9.5			0.0			47.5	
Approach LOS		D			A			A			D	

Intersection Summary			
HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	29	10	129	38	10	10	10	79	10	10	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	32	11	140	41	11	11	11	86	11	11	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	53	192	108	33
Volume Left (vph)	11	140	11	11
Volume Right (vph)	11	11	86	11
Hadj (s)	-0.05	0.14	-0.43	-0.12
Departure Headway (s)	4.4	4.4	4.1	4.5
Degree Utilization, x	0.06	0.24	0.12	0.04
Capacity (veh/h)	786	782	828	746
Control Delay (s)	7.7	8.8	7.6	7.7
Approach Delay (s)	7.7	8.8	7.6	7.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.2		
HCM Level of Service	A		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

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	1.00					1.00		1.00
Frt		0.97		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		1800		1770	1863					1770		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		1800		1770	1863					1770		1583
Volume (vph)	0	538	180	470	400	0	0	0	0	129	0	368
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	585	196	511	435	0	0	0	0	140	0	400
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	0	346
Lane Group Flow (vph)	0	767	0	511	435	0	0	0	0	140	0	54
Turn Type				Prot						custom		custom
Protected Phases		4		3	8							
Permitted Phases										6		6
Actuated Green, G (s)		37.0		28.8	69.8					12.2		12.2
Effective Green, g (s)		37.0		28.8	69.8					12.2		12.2
Actuated g/C Ratio		0.41		0.32	0.78					0.14		0.14
Clearance Time (s)		4.0		4.0	4.0					4.0		4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		740		566	1445					240		215
v/s Ratio Prot		c0.43		c0.29	0.23							
v/s Ratio Perm										c0.08		0.03
v/c Ratio		1.04		0.90	0.30					0.58		0.25
Uniform Delay, d1		26.5		29.3	3.0					36.5		34.8
Progression Factor		1.00		0.83	1.05					1.00		1.00
Incremental Delay, d2		43.1		15.5	0.4					3.6		0.6
Delay (s)		69.6		39.8	3.6					40.1		35.4
Level of Service		E		D	A					D		D
Approach Delay (s)		69.6			23.1			0.0			36.6	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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	1.00	1.00	1.00	1.00	1.00	1.00
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)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	339	328	89	730	140	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	357	97	793	152	261
RTOR Reduction (vph)	0	143	0	0	0	224
Lane Group Flow (vph)	368	214	97	793	152	37
Turn Type		Perm	Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Actuated Green, G (s)	54.0	54.0	11.2	69.2	12.8	12.8
Effective Green, g (s)	54.0	54.0	11.2	69.2	12.8	12.8
Actuated g/C Ratio	0.60	0.60	0.12	0.77	0.14	0.14
Clearance Time (s)	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
Lane Grp Cap (vph)	1118	950	220	1432	252	225
v/s Ratio Prot	0.20		0.05	c0.43	c0.09	
v/s Ratio Perm		0.14				0.02
v/c Ratio	0.33	0.23	0.44	0.55	0.60	0.16
Uniform Delay, d1	9.0	8.3	36.5	4.2	36.2	33.9
Progression Factor	0.08	0.34	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	1.4	1.5	4.0	0.3
Delay (s)	1.1	2.9	37.9	5.7	40.3	34.3
Level of Service	A	A	D	A	D	C
Approach Delay (s)	2.0			9.2	36.5	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
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	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		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	1.00	1.00
Satd. Flow (prot)	3433	3860	1615	1805	3326	1583	1805	1710		1770	1863	2787
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3860	1615	1805	3326	1583	1805	1710		1770	1863	2787
Volume (vph)	993	345	40	20	735	96	60	10	20	96	10	993
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1079	375	43	22	799	104	65	11	22	104	11	1079
RTOR Reduction (vph)	0	0	14	0	0	65	0	20	0	0	0	448
Lane Group Flow (vph)	1079	375	29	22	799	39	65	13	0	104	11	631
Heavy Vehicles (%)	2%	6%	0%	0%	23%	2%	0%	0%	0%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Split			Split		pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases			2			6						4
Actuated Green, G (s)	39.6	81.0	81.0	3.6	45.0	45.0	11.4	11.4		8.0	8.0	47.6
Effective Green, g (s)	39.6	81.0	81.0	3.6	45.0	45.0	11.4	11.4		8.0	8.0	47.6
Actuated g/C Ratio	0.33	0.68	0.68	0.03	0.38	0.38	0.10	0.10		0.07	0.07	0.40
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)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1133	2606	1090	54	1247	594	171	162		118	124	1198
v/s Ratio Prot	c0.31	0.10		0.01	c0.24		c0.04	0.01		c0.06	0.01	0.17
v/s Ratio Perm			0.02			0.02						0.05
v/c Ratio	0.95	0.14	0.03	0.41	0.64	0.07	0.38	0.08		0.88	0.09	0.53
Uniform Delay, d1	39.3	7.0	6.5	57.2	30.9	24.0	51.0	49.5		55.5	52.6	27.6
Progression Factor	0.56	0.37	0.27	0.88	0.77	0.45	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.9	0.1	0.0	4.7	2.4	0.2	1.4	0.2		48.1	0.3	0.4
Delay (s)	36.0	2.7	1.8	55.1	26.1	11.0	52.4	49.7		103.7	52.9	28.0
Level of Service	D	A	A	E	C	B	D	D		F	D	C
Approach Delay (s)		26.7			25.1			51.5			34.9	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM Average Control Delay	29.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	70.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	26	26	26	194	274	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	28	28	211	298	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				332		
pX, platoon unblocked						
vC, conflicting volume	474	163	326			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	474	163	326			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	97	98			
cM capacity (veh/h)	507	853	1230			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	28	28	99	141	199	128
Volume Left	28	0	28	0	0	0
Volume Right	0	28	0	0	0	28
cSH	507	853	1230	1700	1700	1700
Volume to Capacity	0.06	0.03	0.02	0.08	0.12	0.08
Queue Length 95th (ft)	4	3	2	0	0	0
Control Delay (s)	12.5	9.4	2.4	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.9		1.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	17	18	18	202	282	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	20	20	220	307	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				522		
pX, platoon unblocked						
vC, conflicting volume	574	162	325			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	162	325			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	98	98			
cM capacity (veh/h)	442	854	1231			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	18	20	20	220	204	121
Volume Left	18	0	20	0	0	0
Volume Right	0	20	0	0	0	18
cSH	442	854	1231	1700	1700	1700
Volume to Capacity	0.04	0.02	0.02	0.13	0.12	0.07
Queue Length 95th (ft)	3	2	1	0	0	0
Control Delay (s)	13.5	9.3	8.0	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	11.4		0.7		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	9	17	17	202	282	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	18	18	220	307	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				832		
pX, platoon unblocked						
vC, conflicting volume	568	311	316			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	568	311	316			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	99			
cM capacity (veh/h)	477	729	1244			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	10	18	238	316
Volume Left	10	0	18	0
Volume Right	0	18	0	10
cSH	477	729	1244	1700
Volume to Capacity	0.02	0.03	0.01	0.19
Queue Length 95th (ft)	2	2	1	0
Control Delay (s)	12.7	10.1	0.7	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0		0.7	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	9	9	9	202	282	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	10	10	220	307	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				1022		
pX, platoon unblocked						
vC, conflicting volume	551	311	316			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	551	311	316			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	492	729	1244			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	10	10	229	316
Volume Left	10	0	10	0
Volume Right	0	10	0	10
cSH	492	729	1244	1700
Volume to Capacity	0.02	0.01	0.01	0.19
Queue Length 95th (ft)	2	1	1	0
Control Delay (s)	12.5	10.0	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.2		0.4	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

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
Lane Util. Factor		0.91		1.00	0.91					0.95	0.91	0.95
Frt		0.99		1.00	1.00					1.00	0.97	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		5020		1770	5085					1681	1580	1504
Flt Permitted		1.00		0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		5020		1770	5085					1681	1580	1504
Volume (vph)	0	1950	184	183	1583	0	0	0	0	440	0	290
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2120	200	199	1721	0	0	0	0	478	0	315
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	8	30
Lane Group Flow (vph)	0	2312	0	199	1721	0	0	0	0	259	267	229
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		67.1		16.6	87.7					24.3	24.3	24.3
Effective Green, g (s)		67.1		16.6	87.7					24.3	24.3	24.3
Actuated g/C Ratio		0.56		0.14	0.73					0.20	0.20	0.20
Clearance Time (s)		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
Lane Grp Cap (vph)		2807		245	3716					340	320	305
v/s Ratio Prot		c0.46		c0.11	0.34					0.15	c0.17	
v/s Ratio Perm												0.15
v/c Ratio		0.82		0.81	0.46					0.76	0.83	0.75
Uniform Delay, d1		21.6		50.2	6.6					45.1	45.9	45.0
Progression Factor		1.00		1.41	0.45					1.00	1.00	1.00
Incremental Delay, d2		2.9		1.9	0.0					9.7	16.8	9.7
Delay (s)		24.5		72.8	3.0					54.8	62.8	54.7
Level of Service		C		E	A					D	E	D
Approach Delay (s)		24.5			10.2			0.0			57.5	
Approach LOS		C			B			A			E	

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

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			
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (prot)	1770	5085			4863		1681	1610	1504			
Flt Permitted	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (perm)	1770	5085			4863		1681	1610	1504			
Volume (vph)	1090	1300	0	0	1363	560	403	0	63	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1185	1413	0	0	1482	609	438	0	68	0	0	0
RTOR Reduction (vph)	0	0	0	0	62	0	0	0	59	0	0	0
Lane Group Flow (vph)	1185	1413	0	0	2029	0	219	219	9	0	0	0
Turn Type	Prot						Split		Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	55.0	96.0			37.0		16.0	16.0	16.0			
Effective Green, g (s)	55.0	96.0			37.0		16.0	16.0	16.0			
Actuated g/C Ratio	0.46	0.80			0.31		0.13	0.13	0.13			
Clearance Time (s)	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			
Lane Grp Cap (vph)	811	4068			1499		224	215	201			
v/s Ratio Prot	c0.67	0.28			c0.42		0.13	c0.14				
v/s Ratio Perm									0.01			
v/c Ratio	1.46	0.35			1.35		0.98	1.02	0.05			
Uniform Delay, d1	32.5	3.3			41.5		51.8	52.0	45.3			
Progression Factor	1.73	1.08			1.00		1.00	1.00	1.00			
Incremental Delay, d2	211.2	0.1			163.7		53.2	66.3	0.1			
Delay (s)	267.6	3.7			205.2		105.0	118.3	45.4			
Level of Service	F	A			F		F	F	D			
Approach Delay (s)		124.1			205.2			102.8			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM Average Control Delay	154.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

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
Lane Util. Factor		0.91	1.00	1.00	0.95					1.00		1.00
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	3539					1770		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5085	1583	1770	3539					1770		1583
Volume (vph)	0	1300	514	301	1043	0	0	0	0	180	0	690
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1413	559	327	1134	0	0	0	0	196	0	750
RTOR Reduction (vph)	0	0	391	0	0	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	1413	168	327	1134	0	0	0	0	196	0	716
Turn Type			Perm	Prot						custom		custom
Protected Phases		2		1	6							
Permitted Phases			2							4		4
Actuated Green, G (s)		33.0	33.0	20.0	57.0					45.0		45.0
Effective Green, g (s)		33.0	33.0	20.0	57.0					45.0		45.0
Actuated g/C Ratio		0.30	0.30	0.18	0.52					0.41		0.41
Clearance Time (s)		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
Lane Grp Cap (vph)		1526	475	322	1834					724		648
v/s Ratio Prot		c0.28		c0.18	0.32							
v/s Ratio Perm			0.11							0.11		c0.45
v/c Ratio		0.93	0.35	1.02	0.62					0.27		1.10
Uniform Delay, d1		37.3	30.1	45.0	18.8					21.6		32.5
Progression Factor		1.00	1.00	1.59	1.35					1.00		1.00
Incremental Delay, d2		11.1	2.1	32.0	0.1					0.2		67.5
Delay (s)		48.4	32.2	103.4	25.6					21.8		100.0
Level of Service		D	C	F	C					C		F
Approach Delay (s)		43.8			43.0			0.0			83.8	
Approach LOS		D			D			A			F	

Intersection Summary			
HCM Average Control Delay	52.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

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			
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1770	3539			3539	1583	1770		1583			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	1770	3539			3539	1583	1770		1583			
Volume (vph)	690	790	0	0	851	220	493	0	341	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	750	859	0	0	925	239	536	0	371	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	113	0	0	187	0	0	0
Lane Group Flow (vph)	750	859	0	0	925	126	536	0	184	0	0	0
Turn Type	Prot					Perm	custom		custom			
Protected Phases	5	2			6							
Permitted Phases						6	8		8			
Actuated Green, G (s)	46.0	80.0			30.0	30.0	22.0		22.0			
Effective Green, g (s)	46.0	80.0			30.0	30.0	22.0		22.0			
Actuated g/C Ratio	0.42	0.73			0.27	0.27	0.20		0.20			
Clearance Time (s)	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			
Lane Grp Cap (vph)	740	2574			965	432	354		317			
v/s Ratio Prot	c0.42	0.24			c0.26							
v/s Ratio Perm						0.08	c0.30		0.12			
v/c Ratio	1.01	0.33			0.96	0.29	1.51		0.58			
Uniform Delay, d1	32.0	5.4			39.4	31.6	44.0		39.8			
Progression Factor	2.06	1.16			1.00	1.00	1.00		1.00			
Incremental Delay, d2	23.5	0.2			20.5	1.7	245.5		2.6			
Delay (s)	89.4	6.5			59.9	33.3	289.5		42.4			
Level of Service	F	A			E	C	F		D			
Approach Delay (s)		45.1			54.5			188.4			0.0	
Approach LOS		D			D			F			A	

Intersection Summary			
HCM Average Control Delay	83.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

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		4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.98		0.89	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	1863	1819		1643	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	1863	1819		1643	
Volume (vph)	290	252	252	53	74	320
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	274	274	58	80	348
RTOR Reduction (vph)	0	0	13	0	279	0
Lane Group Flow (vph)	315	274	319	0	149	0
Confl. Peds. (#/hr)					100	
Turn Type	Prot					
Protected Phases	7	4	8		6	
Permitted Phases						
Actuated Green, G (s)	12.3	29.1	12.8		9.1	
Effective Green, g (s)	12.3	29.1	12.8		9.1	
Actuated g/C Ratio	0.27	0.63	0.28		0.20	
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)	471	1173	504		324	
v/s Ratio Prot	c0.18	0.15	c0.18		c0.09	
v/s Ratio Perm						
v/c Ratio	0.67	0.23	0.63		0.46	
Uniform Delay, d1	15.1	3.7	14.6		16.4	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.6	0.1	2.6		1.0	
Delay (s)	18.7	3.8	17.2		17.4	
Level of Service	B	A	B		B	
Approach Delay (s)		11.8	17.2		17.4	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	46.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	20	31	31	206	206	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	34	34	224	224	22
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	526	235	246			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	526	235	246			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	96	97			
cM capacity (veh/h)	499	804	1320			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	55	258	246
Volume Left	22	34	0
Volume Right	34	0	22
cSH	649	1320	1700
Volume to Capacity	0.09	0.03	0.14
Queue Length 95th (ft)	7	2	0
Control Delay (s)	11.1	1.2	0.0
Lane LOS	B	A	
Approach Delay (s)	11.1	1.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

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	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	1.00	0.85
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	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.74	1.00	1.00	0.74	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1370	1863	1583	1370	1863	1583	1770	1863	1583	1770	1863	1583
Volume (vph)	137	30	154	20	30	30	124	420	30	50	490	137
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	33	167	22	33	33	135	457	33	54	533	149
RTOR Reduction (vph)	0	0	137	0	0	27	0	0	14	0	0	73
Lane Group Flow (vph)	149	33	30	22	33	6	135	457	19	54	533	76
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	9.9	9.9	9.9	9.9	9.9	9.9	5.1	31.1	31.1	2.2	28.2	28.2
Effective Green, g (s)	9.9	9.9	9.9	9.9	9.9	9.9	5.1	31.1	31.1	2.2	28.2	28.2
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18	0.18	0.09	0.56	0.56	0.04	0.51	0.51
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)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	246	334	284	246	334	284	164	1050	892	71	952	809
v/s Ratio Prot		0.02			0.02		c0.08	c0.25		0.03	c0.29	
v/s Ratio Perm	c0.11		0.02	0.02		0.00			0.01			0.05
v/c Ratio	0.61	0.10	0.11	0.09	0.10	0.02	0.82	0.44	0.02	0.76	0.56	0.09
Uniform Delay, d1	20.9	18.9	18.9	18.9	18.9	18.7	24.6	7.0	5.3	26.2	9.2	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.1	0.2	0.2	0.1	0.0	27.1	0.3	0.0	37.3	0.7	0.1
Delay (s)	25.0	19.1	19.1	19.0	19.1	18.7	51.7	7.3	5.3	63.6	10.0	7.0
Level of Service	C	B	B	B	B	B	D	A	A	E	A	A
Approach Delay (s)		21.6			18.9			16.8			13.3	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	1.00	1.00	0.95	1.00	0.96	
Satd. Flow (prot)	1863	1583	1770	1863	1761	
Flt Permitted	1.00	1.00	0.56	1.00	0.96	
Satd. Flow (perm)	1863	1583	1049	1863	1761	
Volume (vph)	301	172	10	281	222	20
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	327	187	11	305	241	22
RTOR Reduction (vph)	0	93	0	0	10	0
Lane Group Flow (vph)	327	94	11	305	253	0
Turn Type		Perm	Perm			
Protected Phases	4			8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	17.4	17.4	17.4	17.4	9.1	
Effective Green, g (s)	17.4	17.4	17.4	17.4	9.1	
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.26	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	940	798	529	940	464	
v/s Ratio Prot	c0.18			0.16	c0.14	
v/s Ratio Perm		0.06	0.01			
v/c Ratio	0.35	0.12	0.02	0.32	0.55	
Uniform Delay, d1	5.1	4.5	4.3	5.1	10.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.0	0.2	1.3	
Delay (s)	5.4	4.6	4.3	5.3	12.2	
Level of Service	A	A	A	A	B	
Approach Delay (s)	5.1			5.2	12.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	34.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	0.97	1.00	1.00	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	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	1.00	1.00
Satd. Flow (prot)	3433	1845	1615	1805	3539	1583	902	1758		1770	1900	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1845	1615	1805	3539	1583	902	1758		1770	1900	1583
Volume (vph)	83	269	21	10	439	74	21	10	10	124	10	103
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	292	23	11	477	80	23	11	11	135	11	112
RTOR Reduction (vph)	0	0	10	0	0	37	0	10	0	0	0	97
Lane Group Flow (vph)	90	292	13	11	477	43	23	12	0	135	11	15
Heavy Vehicles (%)	2%	3%	0%	0%	2%	2%	100%	0%	0%	2%	0%	2%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	4.8	41.0	41.0	1.2	37.4	37.4	2.4	3.2		8.6	9.4	9.4
Effective Green, g (s)	4.8	41.0	41.0	1.2	37.4	37.4	2.4	3.2		8.6	9.4	9.4
Actuated g/C Ratio	0.07	0.59	0.59	0.02	0.53	0.53	0.03	0.05		0.12	0.13	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	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	3.0
Lane Grp Cap (vph)	235	1081	946	31	1891	846	31	80		217	255	213
v/s Ratio Prot	c0.03	c0.16		0.01	c0.13		0.03	c0.01		c0.08	0.01	
v/s Ratio Perm			0.01			0.03						0.01
v/c Ratio	0.38	0.27	0.01	0.35	0.25	0.05	0.74	0.14		0.62	0.04	0.07
Uniform Delay, d1	31.2	7.1	6.1	34.0	8.8	7.8	33.5	32.1		29.2	26.4	26.5
Progression Factor	1.19	1.34	1.63	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.0	0.6	0.0	6.9	0.3	0.1	64.1	0.8		5.5	0.1	0.1
Delay (s)	38.0	10.1	9.9	40.9	9.1	7.9	97.6	32.9		34.6	26.5	26.6
Level of Service	D	B	A	D	A	A	F	C		C	C	C
Approach Delay (s)		16.3			9.5			66.0			30.8	
Approach LOS		B			A			E			C	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12	12	12	12	12	12	12
Grade (%)		-4%			4%			0%			0%	
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00		0.95	0.95			
Frt	1.00	1.00			1.00	0.85		0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)	1805	3541			3855	1493		1520	1504			
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)	1805	3541			3855	1493		1520	1504			
Volume (vph)	110	865	0	0	746	959	30	0	686	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	940	0	0	811	1042	33	0	746	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	708	0	24	24	0	0	0
Lane Group Flow (vph)	120	940	0	0	811	334	0	382	349	0	0	0
Heavy Vehicles (%)	2%	4%	0%	0%	4%	6%	2%	2%	2%	0%	0%	0%
Turn Type	Prot					Perm	Perm		Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	6.0	28.0			18.0	18.0		34.0	34.0			
Effective Green, g (s)	6.0	28.0			18.0	18.0		34.0	34.0			
Actuated g/C Ratio	0.09	0.40			0.26	0.26		0.49	0.49			
Clearance Time (s)	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			
Lane Grp Cap (vph)	155	1416			991	384		738	731			
v/s Ratio Prot	0.07	c0.27			0.21							
v/s Ratio Perm						c0.22		0.25	0.23			
v/c Ratio	0.77	0.66			0.82	0.87		0.52	0.48			
Uniform Delay, d1	31.3	17.2			24.5	24.9		12.4	12.1			
Progression Factor	0.59	0.03			1.06	3.78		1.00	1.00			
Incremental Delay, d2	20.0	1.2			5.6	17.7		2.6	2.2			
Delay (s)	38.6	1.7			31.5	111.8		15.0	14.3			
Level of Service	D	A			C	F		B	B			
Approach Delay (s)		5.9			76.7			14.6			0.0	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM Average Control Delay	43.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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
Grade (%)		4%			-4%			0%			0%	
Total Lost time (s)		4.0		4.0	4.0					4.0		4.0
Lane Util. Factor		1.00		0.97	1.00					0.97		1.00
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)		1791		3434	1900					3367		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		1791		3434	1900					3367		1583
Volume (vph)	0	122	20	634	142	0	0	0	0	853	0	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	133	22	689	154	0	0	0	0	927	0	65
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	146	0	689	154	0	0	0	0	927	0	21
Heavy Vehicles (%)	0%	2%	2%	4%	2%	0%	0%	0%	0%	4%	0%	2%
Turn Type				Prot						Prot		custom
Protected Phases		2		1	6					7		
Permitted Phases												7
Actuated Green, G (s)		12.8		22.6	39.4					22.6		22.6
Effective Green, g (s)		12.8		22.6	39.4					22.6		22.6
Actuated g/C Ratio		0.18		0.32	0.56					0.32		0.32
Clearance Time (s)		4.0		4.0	4.0					4.0		4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		327		1109	1069					1087		511
v/s Ratio Prot		c0.08		c0.20	0.08					c0.28		
v/s Ratio Perm												0.01
v/c Ratio		0.45		0.62	0.14					0.85		0.04
Uniform Delay, d1		25.4		20.1	7.3					22.1		16.3
Progression Factor		1.00		0.02	0.19					1.00		1.00
Incremental Delay, d2		1.0		1.4	0.2					6.6		0.0
Delay (s)		26.4		1.9	1.6					28.8		16.3
Level of Service		C		A	A					C		B
Approach Delay (s)		26.4			1.9			0.0			28.0	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	31	0	141	51	10	0	0	101	10	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	34	0	153	55	11	0	0	110	11	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	34	220	110	11
Volume Left (vph)	0	153	0	11
Volume Right (vph)	0	11	110	0
Hadj (s)	0.03	0.14	-0.57	0.22
Departure Headway (s)	4.4	4.3	3.9	4.8
Degree Utilization, x	0.04	0.26	0.12	0.01
Capacity (veh/h)	778	809	859	693
Control Delay (s)	7.6	8.9	7.5	7.9
Approach Delay (s)	7.6	8.9	7.5	7.9
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
HCM Level of Service	A		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

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	1.00					1.00		1.00
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)		1824		1770	1863					1770		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		1824		1770	1863					1770		1583
Volume (vph)	0	718	130	70	420	0	0	0	0	191	0	278
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	780	141	76	457	0	0	0	0	208	0	302
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	0	251
Lane Group Flow (vph)	0	914	0	76	457	0	0	0	0	208	0	51
Turn Type				Prot						custom		custom
Protected Phases		4		3	8							
Permitted Phases										6		6
Actuated Green, G (s)		49.0		5.5	58.5					13.5		13.5
Effective Green, g (s)		49.0		5.5	58.5					13.5		13.5
Actuated g/C Ratio		0.61		0.07	0.73					0.17		0.17
Clearance Time (s)		4.0		4.0	4.0					4.0		4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1117		122	1362					299		267
v/s Ratio Prot		c0.50		c0.04	0.25							
v/s Ratio Perm										c0.12		0.03
v/c Ratio		0.82		0.62	0.34					0.70		0.19
Uniform Delay, d1		12.0		36.2	3.8					31.3		28.6
Progression Factor		1.00		0.88	0.58					1.00		1.00
Incremental Delay, d2		6.7		9.3	0.6					6.9		0.3
Delay (s)		18.7		41.3	2.8					38.2		28.9
Level of Service		B		D	A					D		C
Approach Delay (s)		18.7			8.3			0.0			32.7	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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	1.00	1.00	1.00	1.00	1.00	1.00
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)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	351	558	131	340	150	20
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	382	607	142	370	163	22
RTOR Reduction (vph)	0	272	0	0	0	19
Lane Group Flow (vph)	382	335	142	370	163	3
Turn Type		Perm	Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Actuated Green, G (s)	44.2	44.2	11.5	59.7	12.3	12.3
Effective Green, g (s)	44.2	44.2	11.5	59.7	12.3	12.3
Actuated g/C Ratio	0.55	0.55	0.14	0.75	0.15	0.15
Clearance Time (s)	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
Lane Grp Cap (vph)	1029	875	254	1390	272	243
v/s Ratio Prot	0.21		c0.08	0.20	c0.09	
v/s Ratio Perm		c0.21				0.00
v/c Ratio	0.37	0.38	0.56	0.27	0.60	0.01
Uniform Delay, d1	10.1	10.2	31.9	3.2	31.6	28.7
Progression Factor	0.39	4.90	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.7	2.7	0.5	3.5	0.0
Delay (s)	4.6	50.5	34.5	3.7	35.1	28.7
Level of Service	A	D	C	A	D	C
Approach Delay (s)	32.8			12.2	34.3	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	16	12	12	12	12	12	12	12
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	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		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	1.00	1.00
Satd. Flow (prot)	3433	3860	1615	1805	3326	1583	1805	1663		1770	1863	2787
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3860	1615	1805	3326	1583	1805	1663		1770	1863	2787
Volume (vph)	1297	204	20	50	393	120	20	10	50	119	10	1292
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1410	222	22	54	427	130	22	11	54	129	11	1404
RTOR Reduction (vph)	0	0	7	0	0	85	0	50	0	0	0	506
Lane Group Flow (vph)	1410	222	15	54	427	45	22	15	0	129	11	898
Heavy Vehicles (%)	2%	6%	0%	0%	23%	2%	0%	0%	0%	2%	2%	2%
Turn Type	Prot		Perm	Prot		Perm	Split			Split		pm+ov
Protected Phases	5	2		1	6		8	8		7	7	5
Permitted Phases			2			6						7
Actuated Green, G (s)	55.0	94.2	94.2	8.8	48.0	48.0	10.0	10.0		11.0	11.0	66.0
Effective Green, g (s)	55.0	94.2	94.2	8.8	48.0	48.0	10.0	10.0		11.0	11.0	66.0
Actuated g/C Ratio	0.39	0.67	0.67	0.06	0.34	0.34	0.07	0.07		0.08	0.08	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	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	3.0
Lane Grp Cap (vph)	1349	2597	1087	113	1140	543	129	119		139	146	1314
v/s Ratio Prot	c0.41	0.06		0.03	c0.13		c0.01	0.01		c0.07	0.01	0.27
v/s Ratio Perm			0.01			0.03						0.05
v/c Ratio	1.05	0.09	0.01	0.48	0.37	0.08	0.17	0.12		0.93	0.08	0.68
Uniform Delay, d1	42.5	7.9	7.6	63.4	34.7	31.1	61.1	60.9		64.1	59.8	28.8
Progression Factor	1.03	0.93	1.02	0.87	0.83	1.47	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	34.8	0.1	0.0	3.1	0.9	0.3	0.6	0.5		54.4	0.2	1.5
Delay (s)	78.5	7.5	7.7	58.4	29.9	46.0	61.7	61.4		118.5	60.0	30.3
Level of Service	E	A	A	E	C	D	E	E		F	E	C
Approach Delay (s)		68.0			35.8			61.5			37.9	
Approach LOS		E			D			E			D	

Intersection Summary					
HCM Average Control Delay	50.9	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	71.1%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	33	32	32	135	205	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	35	35	147	223	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				332		
pX, platoon unblocked						
vC, conflicting volume	384	129	259			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	384	129	259			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	96	97			
cM capacity (veh/h)	576	896	1303			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	36	35	84	98	149	110
Volume Left	36	0	35	0	0	0
Volume Right	0	35	0	0	0	36
cSH	576	896	1303	1700	1700	1700
Volume to Capacity	0.06	0.04	0.03	0.06	0.09	0.06
Queue Length 95th (ft)	5	3	2	0	0	0
Control Delay (s)	11.7	9.2	3.4	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.4		1.6		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	24.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	22	22	22	146	216	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	24	24	159	235	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				522		
pX, platoon unblocked						
vC, conflicting volume	453	129	259			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	453	129	259			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	97	98			
cM capacity (veh/h)	525	896	1303			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	24	24	24	159	157	102
Volume Left	24	0	24	0	0	0
Volume Right	0	24	0	0	0	24
cSH	525	896	1303	1700	1700	1700
Volume to Capacity	0.05	0.03	0.02	0.09	0.09	0.06
Queue Length 95th (ft)	4	2	1	0	0	0
Control Delay (s)	12.2	9.1	7.8	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.7		1.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	11	22	22	146	216	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	24	24	159	235	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				832		
pX, platoon unblocked						
vC, conflicting volume	447	241	247			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	447	241	247			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	98			
cM capacity (veh/h)	559	798	1319			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	12	24	183	247
Volume Left	12	0	24	0
Volume Right	0	24	0	12
cSH	559	798	1319	1700
Volume to Capacity	0.02	0.03	0.02	0.15
Queue Length 95th (ft)	2	2	1	0
Control Delay (s)	11.6	9.6	1.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.3		1.2	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	11	11	11	146	216	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	12	12	159	235	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				1022		
pX, platoon unblocked						
vC, conflicting volume	423	241	247			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	423	241	247			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	582	798	1319			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	12	12	171	247
Volume Left	12	0	12	0
Volume Right	0	12	0	12
cSH	582	798	1319	1700
Volume to Capacity	0.02	0.01	0.01	0.15
Queue Length 95th (ft)	2	1	1	0
Control Delay (s)	11.3	9.6	0.6	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.4		0.6	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

SimTraffic Post-Processor
Average Results from 10 Runs
Queue Length

Knighton & Churn Creek
Cumulative Plus Project With Mitigation Conditions
PM Peak Hour

Intersection 9 Knighton Rd & Churn Creek Rd (West) — Signalized

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	1,211	35	23	84	48	85	54	0
	Through	1,211	21	28	45	43	48	45	0
	Right Turn	1,211	21	28	45	43	48	45	0
SB	Left Turn	222	58	34	102	44	108	45	0
	Through								
	Right Turn	222	7	5	28	13	35	17	0
EB	Left Turn	235	58	34	102	44	108	45	0
	Through	235	58	34	133	44	148	45	0
	Right Turn	200	11	12	33	20	38	21	0
WB	Left Turn	250	23	27	56	53	61	52	0
	Through	2,674	55	28	106	37	106	39	0
	Right Turn								

Intersection 10 Knighton Rd & I-5 NB Ramps — Signalized

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	1,286	439	129	772	289	750	214	21
	Through								
	Right Turn	250	246	16	**314**	20	**282**	11	17
SB	Left Turn								
	Through								
	Right Turn								
EB	Left Turn	100	**246**	19	**314**	20	**282**	18	17
	Through	532	472	93	**631**	54	**564**	11	60
	Right Turn								
WB	Left Turn								
	Through	470	215	33	314	57	318	66	2
	Right Turn	470	338	42	400	32	370	0	22

Intersection 11 Knighton Rd & I-5 SB Ramps — Signalized

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn								
	Through								
	Right Turn								
SB	Left Turn	500	**503**	355	**840**	598	**807**	497	31
	Through								
	Right Turn	250	78	52	215	131	205	113	0
EB	Left Turn								
	Through	255	81	17	136	32	140	30	0
	Right Turn	255	81	17	136	32	140	30	0
WB	Left Turn	300	141	43	232	85	224	92	0
	Through	532	51	44	131	111	131	107	0
	Right Turn								

SimTraffic Post-Processor
Average Results from 10 Runs
Queue Length

Knighton & Churn Creek
Cumulative Plus Project With Mitigation Conditions
PM Peak Hour

Intersection 15 Knighton Rd & Main Project Access Signalized

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	155	22	6	47	12	45	19	0
	Through	155	80	63	145	94	139	91	0
	Right Turn	155	80	63	145	94	139	91	0
SB	Left Turn	1,434	242	158	493	437	512	445	0
	Through	1,434	331	352	703	769	606	636	0
	Right Turn	1,434	874	314	1324	419	1228	330	3
EB	Left Turn	470	242	158	**493**	437	**512**	445	54
	Through	470	331	352	**703**	769	**606**	636	0
	Right Turn	470	**874**	305	**1324**	352	**1228**	294	3
WB	Left Turn	140	88	52	**149**	71	**142**	65	5
	Through	235	156	60	**238**	73	**239**	44	11
	Right Turn	235	65	41	151	102	186	117	1

SimTraffic Post-Processor
Average Results from 10 Runs
Queue Length

Knighton & Churn Creek
Cumulative Plus Project With Mitigation Conditions
PM Peak Hour

Intersection 9 Knighton Rd & Churn Creek Rd (West) — Signalized

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	1,211	39	30	99	69	112	96	0
	Through	1,211	50	51	90	87	90	89	0
	Right Turn	1,211	50	51	90	87	90	89	0
SB	Left Turn	222	58	48	102	67	110	76	0
	Through	222	42	47	90	80	88	74	0
	Right Turn	222	14	14	51	38	62	41	0
EB	Left Turn	235	74	48	113	67	110	76	0
	Through	235	42	47	90	80	88	74	0
	Right Turn	200	14	14	51	38	62	41	0
WB	Left Turn	250	37	39	74	62	72	56	0
	Through	2,674	113	58	213	95	225	111	1
	Right Turn								

Intersection 10 Knighton Rd & I-5 NB Ramps — Signalized

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	1,286	187	58	324	148	349	176	3
	Through								
	Right Turn	250	168	29	**270**	47	**260**	33	3
SB	Left Turn								
	Through								
	Right Turn								
EB	Left Turn	100	**168**	29	**270**	47	**260**	33	3
	Through	532	168	49	337	85	336	84	8
	Right Turn								
WB	Left Turn								
	Through	470	237	42	381	66	348	40	7
	Right Turn	470	261	39	423	23	368	2	8

Intersection 11 Knighton Rd & I-5 SB Ramps — Signalized

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn								
	Through								
	Right Turn								
SB	Left Turn	500	281	28	366	55	357	55	8
	Through								
	Right Turn	250	59	34	163	108	186	118	0
EB	Left Turn								
	Through	255	100	11	184	22	194	33	0
	Right Turn	255	100	11	184	22	194	33	0
WB	Left Turn	300	157	44	**309**	76	**318**	95	1
	Through	532	86	52	246	128	254	128	0
	Right Turn								

SimTraffic Post-Processor
Average Results from 10 Runs
Queue Length

Knighton & Churn Creek
Cumulative Plus Project With Mitigation Conditions
PM Peak Hour

Intersection 15 **Knighton Rd & Main Project Access** **Signalized**

Direction	Movement	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time %
			Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	155	55	9	104	21	108	30	0
	Through	155	23	6	54	12	55	18	0
	Right Turn	155	23	6	54	12	55	18	0
SB	Left Turn	1,434	184	76	249	78	248	90	0
	Through	1,434	10	6	28	11	29	1	0
	Right Turn	1,434	476	96	687	127	681	118	0
EB	Left Turn	470	212	76	249	78	248	90	56
	Through	470	34	10	78	23	82	29	0
	Right Turn	470	476	96	687	127	681	118	0
WB	Left Turn	140	47	20	132	54	141	54	0
	Through	235	233	23	295	26	279	27	21
	Right Turn	235	86	58	221	120	235	87	4

HCM 2000 HCM 2000
Basic Freeway Segi Basic Freeway Segments
Capacity Analysis Capacity Analysis

Jurisdiction CalTrans
Analysis Year
Analyst Fehr & Peers

Agency or Company
Date 6/12/2009
Project Description Knighton and Churn Creek Commons

General Information **Cumulative plus Project** EM MITIGATION

				Weekday	Generation 2439	*Flow Rate Calculation*														
	Freeway/ Direction	From/To	Analysis Time Period	Saturday % Distribution	3155 No Project	Volume (vph)	PHF	Lanes	HOV Lane?	HOV Lane Volume	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_p	Flow Rate v_p (pcphpl)
1013	I-5 NB	North Street - Balls Ferry Road / Riverside Avenue	PM	0.125	3900	3,478	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,323
1011	I-5 NB	Riverside Avenue / Knighton Road	PM	0.175	2320	3,515	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,337
1009	I-5 NB	Knighton Road / S Bonneview Road	PM	0.205	2600	3,788	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,441
1007	I-5 NB	Bonnyview Road / Cypress Avenue	PM	0.125	4440	3,958	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,506
1005	I-5 NB	Cypress Avenue / CA Highway 44	PM	0.125	4300	4,607	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,753
1006	I-5 SB	CA Highway 44 / Cypress Avenue	PM	0.125	5210	4,586	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,745
1008	I-5 SB	Cypress Avenue / Bonnyview Road	PM	0.125	4820	4,447	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,692
1010	I-5 SB	S Bonneview Road / Knighton Road	PM	0.205	3610	4,707	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,791
1012	I-5 SB	Knighton Road / Riverside Avenue	PM	0.175	3740	4,715	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,794
1014	I-5 SB	Riverside Avenue / North Street-Balls Ferry Road	PM	0.125	5570	4,868	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,852
2013	I-5 NB	North Street - Balls Ferry Road / Riverside Avenue	Saturday	0.125	4200	3,533	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,344
2011	I-5 NB	Riverside Avenue / Knighton Road	Saturday	0.175	2450	4,052	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,542
2009	I-5 NB	Knighton Road / S Bonneview Road	Saturday	0.205	2770	4,405	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,676
2007	I-5 NB	Bonnyview Road / Cypress Avenue	Saturday	0.125	4900	4,481	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,705
2005	I-5 NB	Cypress Avenue / CA Highway 44	Saturday	0.125	4800	5,665	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	2,155
2006	I-5 SB	CA Highway 44 / Cypress Avenue	Saturday	0.125	3500	3,576	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,360
2008	I-5 SB	Cypress Avenue / Bonnyview Road	Saturday	0.125	3300	3,213	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,222
2010	I-5 SB	S Bonneview Road / Knighton Road	Saturday	0.205	2380	3,158	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,201
2012	I-5 SB	Knighton Road / Riverside Avenue	Saturday	0.175	2320	2,899	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,103
2014	I-5 SB	Riverside Avenue / North Street-Balls Ferry Road	Saturday	0.125	3500	2,630	0.92	3	No		Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,001

HCM 2000 HCM 2000
Basic Freeway Segi Basic Freeway Segments
Capacity Analysis Capacity Analysis

General Information		Cumulative plus Project		Speed Calculation										Results	
	Freeway/ Direction	From/To	Analysis Time Period	BFFS (mph)	Lane Width (ft)	f_{LW}	R. Shoulder Width (ft)	f_{LC}	f_N	IC Density (per mi)	f_{ID}	Calculated FFS (mph)	Measured FFS (mph)	FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
1013	I-5 NB	North Street - Balls Ferry Road / Riverside Avenue	PM										65.0	65.0	65.0	20.4	C
1011	I-5 NB	Riverside Avenue / Knighton Road	PM										65.0	65.0	65.0	20.6	C
1009	I-5 NB	Knighton Road / S Bonneview Road	PM										65.0	65.0	65.0	22.2	C
1007	I-5 NB	Bonnyview Road / Cypress Avenue	PM										65.0	65.0	65.0	23.2	C
1005	I-5 NB	Cypress Avenue / CA Highway 44	PM										65.0	65.0	64.2	27.3	D
1006	I-5 SB	CA Highway 44 / Cypress Avenue	PM										65.0	65.0	64.3	27.1	D
1008	I-5 SB	Cypress Avenue / Bonnyview Road	PM										65.0	65.0	64.6	26.2	D
1010	I-5 SB	S Bonneview Road / Knighton Road	PM										65.0	65.0	64.0	28.0	D
1012	I-5 SB	Knighton Road / Riverside Avenue	PM										65.0	65.0	64.0	28.0	D
1014	I-5 SB	Riverside Avenue / North Street-Balls Ferry Road	PM										65.0	65.0	63.4	29.2	D
2013	I-5 NB	North Street - Balls Ferry Road / Riverside Avenue	Saturday										65.0	65.0	65.0	20.7	C
2011	I-5 NB	Riverside Avenue / Knighton Road	Saturday										65.0	65.0	65.0	23.7	C
2009	I-5 NB	Knighton Road / S Bonneview Road	Saturday										65.0	65.0	64.6	25.9	C
2007	I-5 NB	Bonnyview Road / Cypress Avenue	Saturday										65.0	65.0	64.5	26.4	D
2005	I-5 NB	Cypress Avenue / CA Highway 44	Saturday										65.0	65.0	58.2	37.0	E
2006	I-5 SB	CA Highway 44 / Cypress Avenue	Saturday										65.0	65.0	65.0	20.9	C
2008	I-5 SB	Cypress Avenue / Bonnyview Road	Saturday										65.0	65.0	65.0	19.8	C
2010	I-5 SB	S Bonneview Road / Knighton Road	Saturday										65.0	65.0	65.0	18.5	C
2012	I-5 SB	Knighton Road / Riverside Avenue	Saturday										65.0	65.0	65.0	17.0	B
2014	I-5 SB	Riverside Avenue / North Street-Balls Ferry Road	Saturday										65.0	65.0	65.0	15.4	B

HCM 2000 **HCM 2000**
Merge Ramp Junct **Merge Ramp Junctions**
Capacity Analysis **Capacity Analysis**

Jurisdiction CalTrans
Analysis Year 0
Analyst Fehr & Peers

Agency or Company 0
Date 6/12/2009
Project Description Knighton and Churn Creek Commons

General Information **Cumulative plus Project**

Freeway Data | *Freeway Volume Adjustment*

ID	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
1013	I-5 NB	Riverside Avenue	PM	3	0	3,098	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,536
1011	I-5 NB	Knighton Road	PM	3	0	2,740	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,127
1009	I-5 NB	Bonnyview Road	PM	3	0	2,968	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,387
1007	I-5 NB	Cypress Avenue	PM	3	0	3,187	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,637
1006	I-5 SB	Cypress Avenue	PM	3	0	3,556	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,058
1008	I-5 SB	Bonnyview Road	PM	3	0	3,647	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,162
1010	I-5 SB	Knighton Road	PM	3	0	3,952	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,510
1012	I-5 SB	Riverside Avenue	PM	3	0	4,218	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,814
2013	I-5 NB	Riverside Avenue	Saturday	3	0	3,363	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,838
2011	I-5 NB	Knighton Road	Saturday	3	0	3,336	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,807
2009	I-5 NB	Bonnyview Road	Saturday	3	0	3,571	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,076
2007	I-5 NB	Cypress Avenue	Saturday	3	0	4,015	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,582
2006	I-5 SB	Cypress Avenue	Saturday	3	0	2,846	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,248
2008	I-5 SB	Bonnyview Road	Saturday	3	0	2,343	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	2,674
2010	I-5 SB	Knighton Road	Saturday	3	0	2,245	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	2,562
2012	I-5 SB	Riverside Avenue	Saturday	3	0	2,430	No	0	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	2,773

General Information **Cumulative plus Project** *On-Ramp Data* *On-Ramp Volume Adjustment*

ID	Freeway/ Direction	On-ramp	Analysis Time Period	Type	Lanes	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
1013	I-5 NB	Riverside Avenue	PM	Right	1	35.0	417	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	476
1011	I-5 NB	Knighton Road	PM	Right	1	35.0	848	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	968
1009	I-5 NB	Bonnyview Road	PM	Right	1	35.0	990	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,130
1007	I-5 NB	Cypress Avenue	PM	Right	1	35.0	1,420	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,621
1006	I-5 SB	Cypress Avenue	PM	Right	1	35.0	891	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,017
1008	I-5 SB	Bonnyview Road	PM	Right	1	35.0	1,060	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,210
1010	I-5 SB	Knighton Road	PM	Right	1	35.0	615	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	702
1012	I-5 SB	Riverside Avenue	PM	Right	1	35.0	650	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	742
2013	I-5 NB	Riverside Avenue	Saturday	Right	1	35.0	689	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	786
2011	I-5 NB	Knighton Road	Saturday	Right	1	35.0	785	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	896
2009	I-5 NB	Bonnyview Road	Saturday	Right	1	35.0	910	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,039
2007	I-5 NB	Cypress Avenue	Saturday	Right	1	35.0	1,650	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,883
2006	I-5 SB	Cypress Avenue	Saturday	Right	1	35.0	367	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	419
2008	I-5 SB	Bonnyview Road	Saturday	Right	1	35.0	815	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	930
2010	I-5 SB	Knighton Road	Saturday	Right	1	35.0	449	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	512
2012	I-5 SB	Riverside Avenue	Saturday	Right	1	35.0	200	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	228

HCM 2000 **HCM 2000**
Merge Ramp Juncl Merge Ramp Junctions
Capacity Analysis Capacity Analysis

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General Information **Cumulative plus Project** *Adjacent Upstream Ramp Data*

ID	Freeway/ Direction	On-ramp	Analysis Time Period	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
1013	I-5 NB	Riverside Avenue	PM	Off	600	380	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	434
1011	I-5 NB	Knighton Road	PM	Off	1,400	575	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	656
1009	I-5 NB	Bonnyview Road	PM	Off	1,450	820	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	936
1007	I-5 NB	Cypress Avenue	PM	Off	1,650	771	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	880
1006	I-5 SB	Cypress Avenue	PM	Off	1,650	1,030	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,176
1008	I-5 SB	Bonnyview Road	PM	Off	1,450	800	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	913
1010	I-5 SB	Knighton Road	PM	Off	1,400	607	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	693
1012	I-5 SB	Riverside Avenue	PM	Off	1,150	497	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	567
2013	I-5 NB	Riverside Avenue	Saturday	Off	600	170	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	194
2011	I-5 NB	Knighton Road	Saturday	Off	1,400	432	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	493
2009	I-5 NB	Bonnyview Road	Saturday	Off	1,450	834	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	952
2007	I-5 NB	Cypress Avenue	Saturday	Off	1,650	466	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	532
2006	I-5 SB	Cypress Avenue	Saturday	Off	1,650	730	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	833
2008	I-5 SB	Bonnyview Road	Saturday	Off	1,450	870	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	993
2010	I-5 SB	Knighton Road	Saturday	Off	1,400	708	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	808
2012	I-5 SB	Riverside Avenue	Saturday	Off	1,150	469	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	535
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HCM 2000 **HCM 2000**
Merge Ramp Junct Merge Ramp Junctions
Capacity Analysis Capacity Analysis

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General Information **Cumulative plus Project** *Adjacent Downstream Ramp Data* *v_{12} Estimation*

ID	Freeway/ Direction	On-ramp	Analysis Time Period	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	L_{EQ} 25-2	L_{EQ} 25-3	P_{FM} Equations 1	P_{FM} Equations 2	P_{FM} Equations 3
1013	I-5 NB	Riverside Avenue	PM	No														331	9,487	0.580	0.709	
1011	I-5 NB	Knighton Road	PM	No														349	9,487	0.580	0.759	
1009	I-5 NB	Bonnyview Road	PM	No														439	9,487	0.580	0.756	
1007	I-5 NB	Cypress Avenue	PM	No														598	9,487	0.580	0.759	
1006	I-5 SB	Cypress Avenue	PM	No														559	9,487	0.580	0.761	
1008	I-5 SB	Bonnyview Road	PM	No														622	9,487	0.580	0.744	
1010	I-5 SB	Knighton Road	PM	No														588	9,487	0.580	0.743	
1012	I-5 SB	Riverside Avenue	PM	No														662	9,487	0.580	0.723	
2013	I-5 NB	Riverside Avenue	Saturday	No														462	9,487	0.580	0.701	
2011	I-5 NB	Knighton Road	Saturday	No														479	9,487	0.580	0.750	
2009	I-5 NB	Bonnyview Road	Saturday	No														567	9,487	0.580	0.748	
2007	I-5 NB	Cypress Avenue	Saturday	No														856	9,487	0.580	0.742	
2006	I-5 SB	Cypress Avenue	Saturday	No														257	9,487	0.580	0.780	
2008	I-5 SB	Bonnyview Road	Saturday	No														244	9,487	0.580	0.768	
2010	I-5 SB	Knighton Road	Saturday	No														131	9,487	0.580	0.772	
2012	I-5 SB	Riverside Avenue	Saturday	No														115	9,487	0.580	0.758	
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HCM 2000 Merge Ramp Junct Capacity Analysis | **HCM 2000 Merge Ramp Junctions Capacity Analysis** | Juri Analys

General Information **Cumulative plus Project**

ID	Freeway/ Direction	On-ramp	Analysis Time Period	P_{FM}	v_{12} (pcph)
1013	I-5 NB	Riverside Avenue	PM	0.580	2,052
1011	I-5 NB	Knighton Road	PM	0.580	1,815
1009	I-5 NB	Bonnyview Road	PM	0.580	1,966
1007	I-5 NB	Cypress Avenue	PM	0.580	2,111
1006	I-5 SB	Cypress Avenue	PM	0.580	2,355
1008	I-5 SB	Bonnyview Road	PM	0.580	2,415
1010	I-5 SB	Knighton Road	PM	0.580	2,617
1012	I-5 SB	Riverside Avenue	PM	0.580	2,794
2013	I-5 NB	Riverside Avenue	Saturday	0.580	2,227
2011	I-5 NB	Knighton Road	Saturday	0.580	2,209
2009	I-5 NB	Bonnyview Road	Saturday	0.580	2,365
2007	I-5 NB	Cypress Avenue	Saturday	0.580	2,659
2006	I-5 SB	Cypress Avenue	Saturday	0.580	1,885
2008	I-5 SB	Bonnyview Road	Saturday	0.580	1,552
2010	I-5 SB	Knighton Road	Saturday	0.580	1,487
2012	I-5 SB	Riverside Avenue	Saturday	0.580	1,609

HCM 2000 **HCM 2000** Juri
Merge Ramp Junct **Merge Ramp Junctions** Analy
Capacity Analysis **Capacity Analysis**

General Information **Cumulative plus Project** *Capacity Checks*

ID	Freeway/ Direction	On-ramp	Analysis Time Period	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?	v_R (pcph)	Max v_R (pcph)	LOS F?
1013	I-5 NB	Riverside Avenue	PM	3,536	6,750	No	4,012	6,750	No	1,484	No	No	2,052	2,528	4,600	No	476	2,000	No
1011	I-5 NB	Knighton Road	PM	3,127	6,750	No	4,095	6,750	No	1,312	No	No	1,815	2,783	4,600	No	968	2,000	No
1009	I-5 NB	Bonnyview Road	PM	3,387	6,750	No	4,517	6,750	No	1,422	No	No	1,966	3,096	4,600	No	1,130	2,000	No
1007	I-5 NB	Cypress Avenue	PM	3,637	6,750	No	5,258	6,750	No	1,527	No	No	2,111	3,731	4,600	No	1,621	2,000	No
1006	I-5 SB	Cypress Avenue	PM	4,058	6,750	No	5,075	6,750	No	1,703	No	No	2,355	3,372	4,600	No	1,017	2,000	No
1008	I-5 SB	Bonnyview Road	PM	4,162	6,750	No	5,372	6,750	No	1,747	No	No	2,415	3,625	4,600	No	1,210	2,000	No
1010	I-5 SB	Knighton Road	PM	4,510	6,750	No	5,212	6,750	No	1,893	No	No	2,617	3,319	4,600	No	702	2,000	No
1012	I-5 SB	Riverside Avenue	PM	4,814	6,750	No	5,556	6,750	No	2,020	No	No	2,794	3,535	4,600	No	742	2,000	No
2013	I-5 NB	Riverside Avenue	Saturday	3,838	6,750	No	4,625	6,750	No	1,611	No	No	2,227	3,014	4,600	No	786	2,000	No
2011	I-5 NB	Knighton Road	Saturday	3,807	6,750	No	4,703	6,750	No	1,598	No	No	2,209	3,105	4,600	No	896	2,000	No
2009	I-5 NB	Bonnyview Road	Saturday	4,076	6,750	No	5,114	6,750	No	1,711	No	No	2,365	3,404	4,600	No	1,039	2,000	No
2007	I-5 NB	Cypress Avenue	Saturday	4,582	6,750	No	6,465	6,750	No	1,923	No	No	2,659	4,542	4,600	No	1,883	2,000	No
2006	I-5 SB	Cypress Avenue	Saturday	3,248	6,750	No	3,667	6,750	No	1,363	No	No	1,885	2,304	4,600	No	419	2,000	No
2008	I-5 SB	Bonnyview Road	Saturday	2,674	6,750	No	3,604	6,750	No	1,122	No	No	1,552	2,482	4,600	No	930	2,000	No
2010	I-5 SB	Knighton Road	Saturday	2,562	6,750	No	3,075	6,750	No	1,075	No	No	1,487	1,999	4,600	No	512	2,000	No
2012	I-5 SB	Riverside Avenue	Saturday	2,773	6,750	No	3,002	6,750	No	1,164	No	No	1,609	1,838	4,600	No	228	2,000	No

General Information **Cumulative plus Project** *Results* *Speed Estimation*

ID	Freeway/ Direction	On-ramp	Analysis Time Period	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
1013	I-5 NB	Riverside Avenue	PM	**24.3**	**C**	0.363	15.2	-3.5	-15.9
1011	I-5 NB	Knighton Road	PM	**26.1**	**C**	0.377	15.8	-2.9	-15.0
1009	I-5 NB	Bonnyview Road	PM	**28.5**	**D**	0.400	16.8	-3.3	-18.5
1007	I-5 NB	Cypress Avenue	PM	**33.2**	**D**	0.477	20.0	-3.7	-23.2
1006	I-5 SB	Cypress Avenue	PM	**30.7**	**D**	0.428	18.0	-4.3	-24.7
1008	I-5 SB	Bonnyview Road	PM	**32.6**	**D**	0.460	19.3	-4.5	-26.6
1010	I-5 SB	Knighton Road	PM	**30.4**	**D**	0.422	17.7	-5.0	-27.4
1012	I-5 SB	Riverside Avenue	PM	**32.1**	**D**	0.448	18.8	-5.5	-30.7
2013	I-5 NB	Riverside Avenue	Saturday	**28.0**	**C**	0.393	16.5	-4.0	-21.0
2011	I-5 NB	Knighton Road	Saturday	**28.7**	**D**	0.401	16.8	-4.0	-21.4
2009	I-5 NB	Bonnyview Road	Saturday	**30.9**	**D**	0.431	18.1	-4.4	-25.0
2007	I-5 NB	Cypress Avenue	Saturday	**39.4**	**E**	0.680	28.6	-5.1	-29.9
2006	I-5 SB	Cypress Avenue	Saturday	**22.6**	**C**	0.353	14.8	-3.1	-12.9
2008	I-5 SB	Bonnyview Road	Saturday	**23.8**	**C**	0.361	15.1	-2.2	-10.7
2010	I-5 SB	Knighton Road	Saturday	**20.2**	**C**	0.343	14.4	-2.1	-8.1
2012	I-5 SB	Riverside Avenue	Saturday	**19.1**	**B**	0.338	14.2	-2.4	-8.4

HCM 2000 **HCM 2000**
Diverge Ramp Jun **Diverge Ramp Junctions**
Capacity Analysis **Capacity Analysis**

Jurisdiction CalTrans
Analysis Year 0
Analyst Fehr & Peers

Agency or Company 0
Date 6/12/2009
Project Description Knighton and Churn Creek Commons

General Information **Cumulative plus Project**

Freeway Data

Freeway Volume Adjustment

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
1013	I-5 NB	Riverside Avenue	PM	3	0	3478	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,969
1011	I-5 NB	Knighton Road	PM	3	0	3515	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,012
1009	I-5 NB	Bonnyview Road	PM	3	0	3788	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,323
1007	I-5 NB	Cypress Avenue	PM	3	0	3958	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,517
1006	I-5 SB	Cypress Avenue	PM	3	0	4586	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	5,234
1008	I-5 SB	Bonnyview Road	PM	3	0	4447	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	5,075
1010	I-5 SB	Knighton Road	PM	3	0	4707	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	5,372
1012	I-5 SB	Riverside Avenue	PM	3	0	4715	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	5,381
2013	I-5 NB	Riverside Avenue	Saturday	3	0	3533	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,032
2011	I-5 NB	Knighton Road	Saturday	3	0	4052	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,625
2009	I-5 NB	Bonnyview Road	Saturday	3	0	4405	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	5,027
2007	I-5 NB	Cypress Avenue	Saturday	3	0	4481	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	5,114
2006	I-5 SB	Cypress Avenue	Saturday	3	0	3576	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	4,081
2008	I-5 SB	Bonnyview Road	Saturday	3	0	3213	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,667
2010	I-5 SB	Knighton Road	Saturday	3	0	3158	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,604
2012	I-5 SB	Riverside Avenue	Saturday	3	0	2899	No		0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1	3,309

General Information **Cumulative plus Project**

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	Effective Flow Rate v_p (pcph)
1013	I-5 NB	Riverside Avenue	PM	3,969
1011	I-5 NB	Knighton Road	PM	4,012
1009	I-5 NB	Bonnyview Road	PM	4,323
1007	I-5 NB	Cypress Avenue	PM	4,517
1006	I-5 SB	Cypress Avenue	PM	5,234
1008	I-5 SB	Bonnyview Road	PM	5,075
1010	I-5 SB	Knighton Road	PM	5,372
1012	I-5 SB	Riverside Avenue	PM	5,381
2013	I-5 NB	Riverside Avenue	Saturday	4,032
2011	I-5 NB	Knighton Road	Saturday	4,625
2009	I-5 NB	Bonnyview Road	Saturday	5,027
2007	I-5 NB	Cypress Avenue	Saturday	5,114
2006	I-5 SB	Cypress Avenue	Saturday	4,081
2008	I-5 SB	Bonnyview Road	Saturday	3,667
2010	I-5 SB	Knighton Road	Saturday	3,604
2012	I-5 SB	Riverside Avenue	Saturday	3,309

General Information **Cumulative plus Project**

Off-Ramp Data

Off-Ramp Volume Adjustment

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	Type	Lanes	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
1013	I-5 NB	Riverside Avenue	PM	Right	1	45.0	380	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	434
1011	I-5 NB	Knighton Road	PM	Right	1	45.0	575	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	656
1009	I-5 NB	Bonnyview Road	PM	Right	1	45.0	820	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	936
1007	I-5 NB	Cypress Avenue	PM	Right	1	45.0	771	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	880
1006	I-5 SB	Cypress Avenue	PM	Right	1	45.0	1,030	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	1,176
1008	I-5 SB	Bonnyview Road	PM	Right	1	45.0	800	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	913
1010	I-5 SB	Knighton Road	PM	Right	1	45.0	607	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	693
1012	I-5 SB	Riverside Avenue	PM	Right	1	45.0	497	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	567
2013	I-5 NB	Riverside Avenue	Saturday	Right	1	45.0	170	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	194
2011	I-5 NB	Knighton Road	Saturday	Right	1	45.0	432	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	493
2009	I-5 NB	Bonnyview Road	Saturday	Right	1	45.0	834	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	952
2007	I-5 NB	Cypress Avenue	Saturday	Right	1	45.0	466	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	532
2006	I-5 SB	Cypress Avenue	Saturday	Right	1	45.0	730	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	833
2008	I-5 SB	Bonnyview Road	Saturday	Right	1	45.0	870	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	993
2010	I-5 SB	Knighton Road	Saturday	Right	1	45.0	708	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	808
2012	I-5 SB	Riverside Avenue	Saturday	Right	1	45.0	469	100	0	100	0.92	Level			10.0%	0.0%	1.5	1.2	0.95	1.00	535

General Information **Cumulative plus Project** *Adjacent Upstream Ramp Data*

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
1013	I-5 NB	Riverside Avenue	PM	No													
1011	I-5 NB	Knighton Road	PM	No													
1009	I-5 NB	Bonnyview Road	PM	No													
1007	I-5 NB	Cypress Avenue	PM	No													
1006	I-5 SB	Cypress Avenue	PM	No													
1008	I-5 SB	Bonnyview Road	PM	No													
1010	I-5 SB	Knighton Road	PM	No													
1012	I-5 SB	Riverside Avenue	PM	No													
2013	I-5 NB	Riverside Avenue	Saturday	No													
2011	I-5 NB	Knighton Road	Saturday	No													
2009	I-5 NB	Bonnyview Road	Saturday	No													
2007	I-5 NB	Cypress Avenue	Saturday	No													
2006	I-5 SB	Cypress Avenue	Saturday	No													
2008	I-5 SB	Bonnyview Road	Saturday	No													
2010	I-5 SB	Knighton Road	Saturday	No													
2012	I-5 SB	Riverside Avenue	Saturday	No													

HCM 2000 Diverge Ramp Jun Capacity Analysis | **HCM 2000 Diverge Ramp Junctions Capacity Analysis** | Juri / Analy:

General Information **Cumulative plus Project** | *Adjacent Downstream Ramp Data* | v_{12} *Estimation*

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	Exists?	Distance	Volume (vph)	PHF	Terrain	Grade %	Length (mi)	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	L_{EQ} 25-13	L_{EQ} 25-14	P_{FD}
1013	I-5 NB	Riverside Avenue	PM	On	600	417	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	4,412	1,323	0.641
1011	I-5 NB	Knighton Road	PM	On	1,400	848	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	5,032	1,464	0.630
1009	I-5 NB	Bonnyview Road	PM	On	1,450	990	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	5,746	1,713	0.609
1007	I-5 NB	Cypress Avenue	PM	On	1,650	1,420	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	5,283	1,677	0.607
1006	I-5 SB	Cypress Avenue	PM	On	1,650	891	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	5,592	2,080	0.575
1008	I-5 SB	Bonnyview Road	PM	On	1,450	1,060	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	4,822	1,754	0.591
1010	I-5 SB	Knighton Road	PM	On	1,400	615	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	4,021	1,580	0.594
1012	I-5 SB	Riverside Avenue	PM	On	1,150	650	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	3,763	1,485	0.599
2013	I-5 NB	Riverside Avenue	Saturday	On	600	689	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	3,830	1,202	0.650
2011	I-5 NB	Knighton Road	Saturday	On	1,400	785	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	4,079	1,392	0.622
2009	I-5 NB	Bonnyview Road	Saturday	On	1,450	910	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	4,993	1,789	0.591
2007	I-5 NB	Cypress Avenue	Saturday	On	1,650	1,650	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	3,850	1,445	0.608
2006	I-5 SB	Cypress Avenue	Saturday	On	1,650	367	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	5,619	1,603	0.620
2008	I-5 SB	Bonnyview Road	Saturday	On	1,450	815	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	7,144	1,713	0.623
2010	I-5 SB	Knighton Road	Saturday	On	1,400	449	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	6,170	1,550	0.633
2012	I-5 SB	Riverside Avenue	Saturday	On	1,150	200	0.92	Level	4.0%	0.70	10.0%	0.0%	1.5	1.2	0.95	1.00	1,141	5,362	1,348	0.653

General Information **Cumulative plus Project**

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	v_{12} (pcph)
1013	I-5 NB	Riverside Avenue	PM	2,699
1011	I-5 NB	Knighton Road	PM	2,769
1009	I-5 NB	Bonnyview Road	PM	2,998
1007	I-5 NB	Cypress Avenue	PM	3,086
1006	I-5 SB	Cypress Avenue	PM	3,509
1008	I-5 SB	Bonnyview Road	PM	3,373
1010	I-5 SB	Knighton Road	PM	3,472
1012	I-5 SB	Riverside Avenue	PM	3,453
2013	I-5 NB	Riverside Avenue	Saturday	2,690
2011	I-5 NB	Knighton Road	Saturday	3,062
2009	I-5 NB	Bonnyview Road	Saturday	3,359
2007	I-5 NB	Cypress Avenue	Saturday	3,316
2006	I-5 SB	Cypress Avenue	Saturday	2,846
2008	I-5 SB	Bonnyview Road	Saturday	2,658
2010	I-5 SB	Knighton Road	Saturday	2,577
2012	I-5 SB	Riverside Avenue	Saturday	2,345

HCM 2000 Diverge Ramp Junctions Capacity Analysis | **HCM 2000 Diverge Ramp Junctions Capacity Analysis** | Juri / Analy:

General Information **Cumulative plus Project** | *Capacity Checks*

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_R (pcph)	Max v_R (pcph)	LOS F?
1013	I-5 NB	Riverside Avenue	PM	3,969	6,750	No	1,270	No	No	2,699	4,400	No	3,536	6,750	No	434	2,100	No
1011	I-5 NB	Knighton Road	PM	4,012	6,750	No	1,243	No	No	2,769	4,400	No	3,355	6,750	No	656	2,100	No
1009	I-5 NB	Bonnyview Road	PM	4,323	6,750	No	1,325	No	No	2,998	4,400	No	3,387	6,750	No	936	2,100	No
1007	I-5 NB	Cypress Avenue	PM	4,517	6,750	No	1,431	No	No	3,086	4,400	No	3,637	6,750	No	880	2,100	No
1006	I-5 SB	Cypress Avenue	PM	5,234	6,750	No	1,725	No	No	3,509	4,400	No	4,058	6,750	No	1,176	2,100	No
1008	I-5 SB	Bonnyview Road	PM	5,075	6,750	No	1,702	No	No	3,373	4,400	No	4,162	6,750	No	913	2,100	No
1010	I-5 SB	Knighton Road	PM	5,372	6,750	No	1,901	No	No	3,472	4,400	No	4,679	6,750	No	693	2,100	No
1012	I-5 SB	Riverside Avenue	PM	5,381	6,750	No	1,929	No	No	3,453	4,400	No	4,814	6,750	No	567	2,100	No
2013	I-5 NB	Riverside Avenue	Saturday	4,032	6,750	No	1,342	No	No	2,690	4,400	No	3,838	6,750	No	194	2,100	No
2011	I-5 NB	Knighton Road	Saturday	4,625	6,750	No	1,563	No	No	3,062	4,400	No	4,132	6,750	No	493	2,100	No
2009	I-5 NB	Bonnyview Road	Saturday	5,027	6,750	No	1,669	No	No	3,359	4,400	No	4,076	6,750	No	952	2,100	No
2007	I-5 NB	Cypress Avenue	Saturday	5,114	6,750	No	1,798	No	No	3,316	4,400	No	4,582	6,750	No	532	2,100	No
2006	I-5 SB	Cypress Avenue	Saturday	4,081	6,750	No	1,235	No	No	2,846	4,400	No	3,248	6,750	No	833	2,100	No
2008	I-5 SB	Bonnyview Road	Saturday	3,667	6,750	No	1,009	No	No	2,658	4,400	No	2,674	6,750	No	993	2,100	No
2010	I-5 SB	Knighton Road	Saturday	3,604	6,750	No	1,027	No	No	2,577	4,400	No	2,796	6,750	No	808	2,100	No
2012	I-5 SB	Riverside Avenue	Saturday	3,309	6,750	No	963	No	No	2,345	4,400	No	2,773	6,750	No	535	2,100	No

General Information **Cumulative plus Project** *Results* *Speed Estimation*

ID	Freeway/ Direction	Off-ramp	Analysis Time Period	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
1013	I-5 NB	Riverside Avenue	PM	**26.6**	**C**	0.337	14.2	-1.1	-3.9
1011	I-5 NB	Knighton Road	PM	**27.2**	**C**	0.357	15.0	-0.9	-3.6
1009	I-5 NB	Bonnyview Road	PM	**29.1**	**D**	0.382	16.1	-1.3	-5.0
1007	I-5 NB	Cypress Avenue	PM	**29.9**	**D**	0.377	15.8	-1.7	-6.9
1006	I-5 SB	Cypress Avenue	PM	**33.5**	**D**	0.404	17.0	-2.8	-13.0
1008	I-5 SB	Bonnyview Road	PM	**32.4**	**D**	0.380	16.0	-2.7	-12.4
1010	I-5 SB	Knighton Road	PM	**33.2**	**D**	0.360	15.1	-3.5	-17.2
1012	I-5 SB	Riverside Avenue	PM	**33.0**	**D**	0.349	14.7	-3.6	-18.1
2013	I-5 NB	Riverside Avenue	Saturday	**26.5**	**C**	0.315	13.2	-1.3	-5.0
2011	I-5 NB	Knighton Road	Saturday	**29.7**	**D**	0.342	14.4	-2.2	-9.3
2009	I-5 NB	Bonnyview Road	Saturday	**32.2**	**D**	0.384	16.1	-2.6	-11.7
2007	I-5 NB	Cypress Avenue	Saturday	**31.9**	**D**	0.346	14.5	-3.1	-14.6
2006	I-5 SB	Cypress Avenue	Saturday	**27.8**	**C**	0.373	15.7	-0.9	-3.5
2008	I-5 SB	Bonnyview Road	Saturday	**26.2**	**C**	0.387	16.3	0.0	-0.1
2010	I-5 SB	Knighton Road	Saturday	**25.5**	**C**	0.371	15.6	-0.1	-0.4
2012	I-5 SB	Riverside Avenue	Saturday	**23.5**	**C**	0.346	14.5	0.0	20.5

Leisch Method for Weaving Analysis

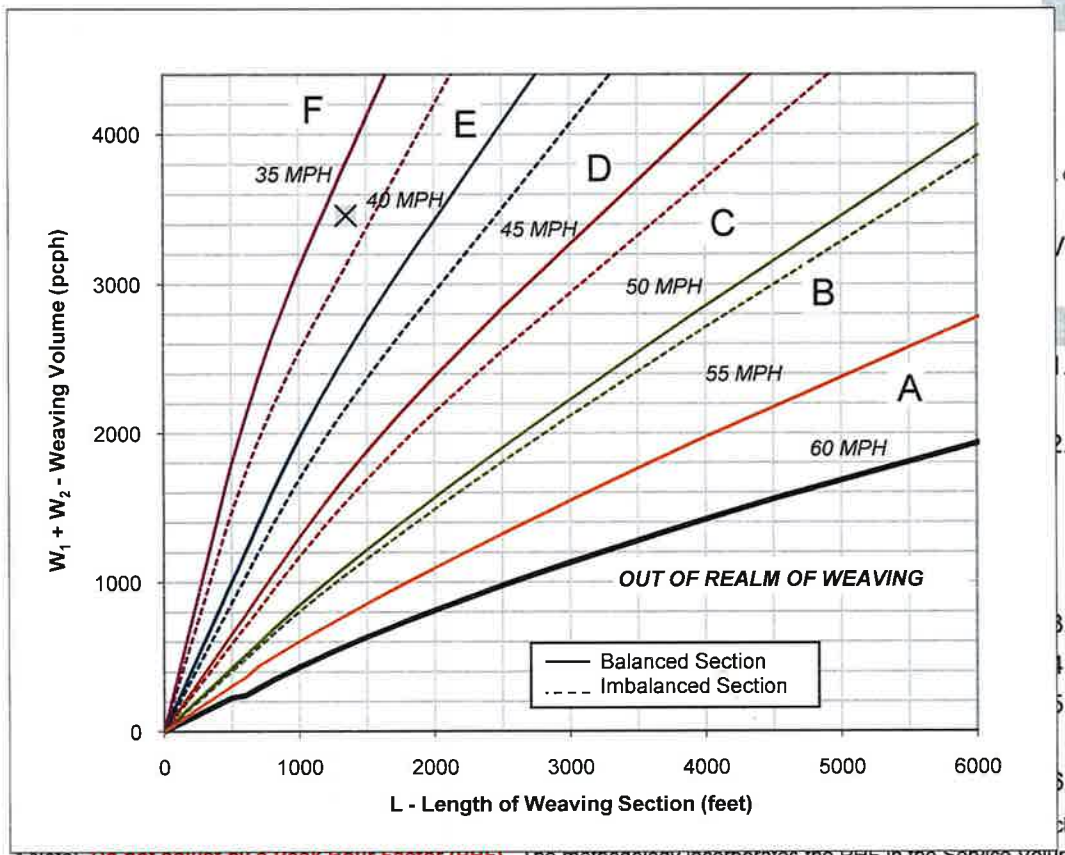
Data Input

Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	1,350

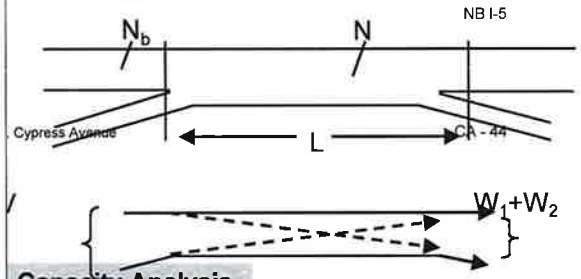
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,607	Volume (vph)*	1,420	Volume (vph)*	1,841
Truck Percentage	20%	Truck Percentage	15%	Truck Percentage	10%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,068	Volume (pcph)	1,527	Volume (pcph)	1,933

Project Information

Project	Knighton & Churn Creek
Scenario	Cumulative PP Mit. Conditions - PM
Freeway	NB I-5
On-ramp	E. Cypress Avenue
Off-ramp	CA - 44



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	30 MPH and 35 MPH
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed (S_w, mph)	-
4. Weaving Intensity Factor (k)	-
5. Service Volume (SV, pcph) SV = (1/N)*[V + (k - 1)*min(W_1, W_2)]	-
6. Level of Service (LOS)	F

cluded.

* Note: Do not adjust by a Peak Hour Factor (PHF). The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983; *Highway Design Manual*, California Department of Transportation, July 24, 2009; and Freeway and Interchange Geometric Design Handbook, Institue of Transportation Engineers, 2005.

Leisch Method for Weaving Analysis

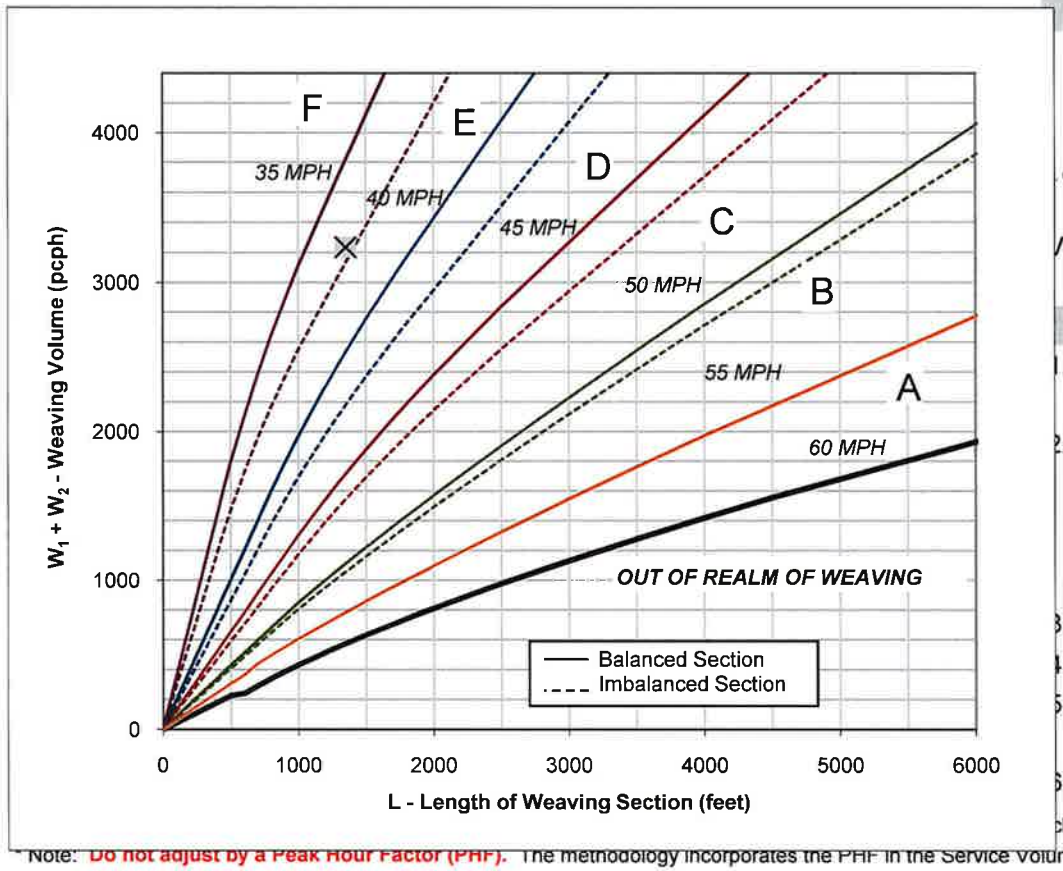
Data Input

Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	1,350

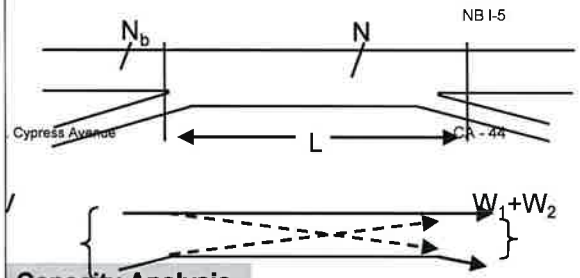
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	5,665	Volume (vph)*	1,650	Volume (vph)*	1,391
Truck Percentage	20%	Truck Percentage	15%	Truck Percentage	10%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	6,232	Volume (pcph)	1,774	Volume (pcph)	1,461

Project Information

Project	Knighton & Churn Creek
Scenario	Cumulative PP Mit. Conditions - SAT
Freeway	NB I-5
On-ramp	E. Cypress Avenue
Off-ramp	CA - 44



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	30 MPH and 35 MPH
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed (S_w, mph)	-
4. Weaving Intensity Factor (k)	-
5. Service Volume (SV, pcph) SV = (1/N)*[V + (k - 1)*min(W_1, W_2)]	-
6. Level of Service (LOS)	F

cluded.

* Note: Do not adjust by a Peak Hour Factor (PHF). The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983; *Highway Design Manual*, California Department of Transportation, July 24, 2009; and Freeway and Interchange Geometric Design Handbook, Institue of Transportation Engineers, 2005.

Leisch Method for Weaving Analysis

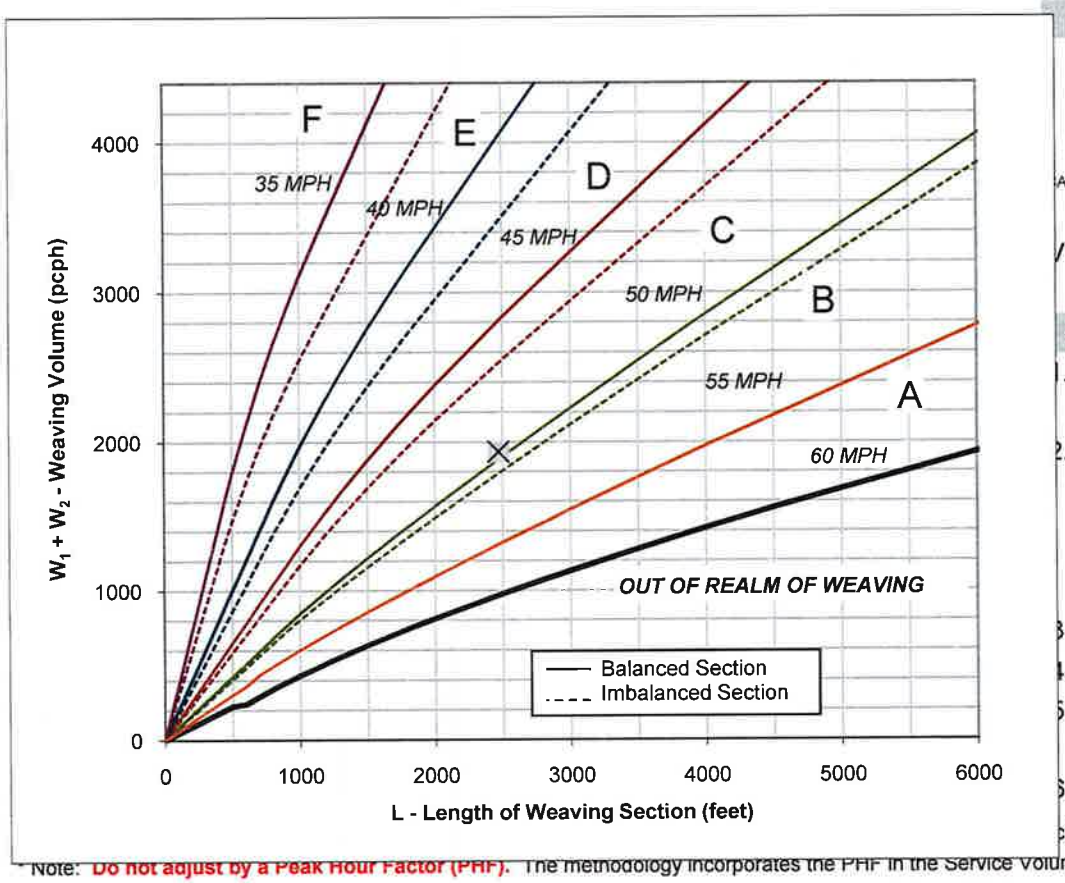
Data Input

Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	2,470

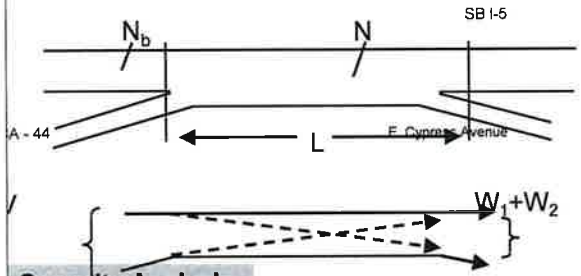
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,586	Volume (vph)*	792	Volume (vph)*	1,030
Truck Percentage	20%	Truck Percentage	15%	Truck Percentage	10%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,045	Volume (pcph)	851	Volume (pcph)	1,082

Project Information

Project	Knighton & Churn Creek
Scenario	Cumulative PP Mit. Conditions - PM
Freeway	SB I-5
On-ramp	CA - 44
Off-ramp	E. Cypress Avenue



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	45 MPH and 50 MPH
	If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph)	44.0
4. Weaving Intensity Factor (k)	2.10
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,495
6. Level of Service (LOS)	C

cluded.

Note: Do not adjust by a Peak Hour Factor (PHF). The methodology incorporates the PHF in the service volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983; *Highway Design Manual*, California Department of Transportation, July 24, 2009; and Freeway and Interchange Geometric Design Handbook, Institue of Transportation Engineers, 2005.

Leisch Method for Weaving Analysis

Data Input

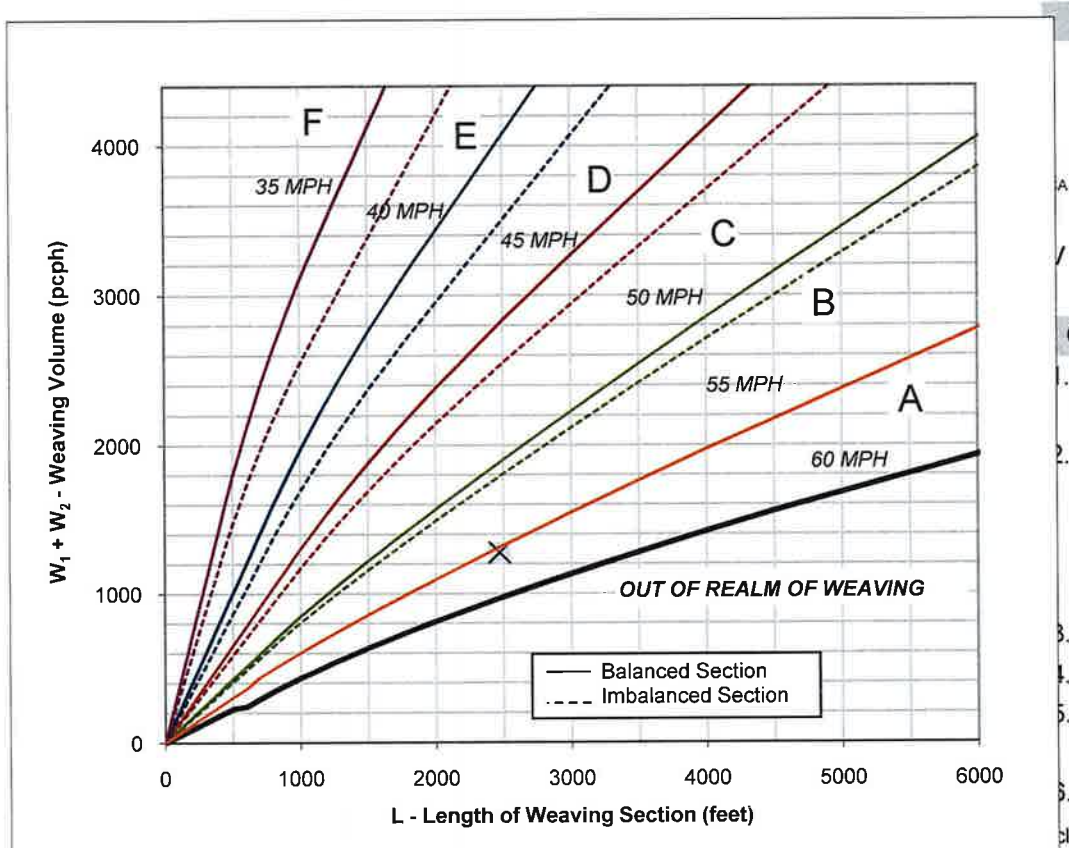
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	2,470

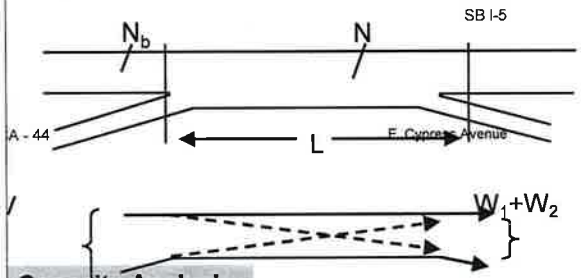
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,576	Volume (vph)*	472	Volume (vph)*	730
Truck Percentage	20%	Truck Percentage	15%	Truck Percentage	10%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,934	Volume (pcph)	507	Volume (pcph)	767

Project Information

Project	Knighton & Churn Creek
Scenario	Cumulative PP Mit. Conditions - SAT
Freeway	SB I-5
On-ramp	CA - 44
Off-ramp	E. Cypress Avenue

Figure





Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	N
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	55 MPH and 60 MPH
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed (S_w, mph)	50.5
4. Weaving Intensity Factor (k)	1.00
5. Service Volume (SV, pcph) SV = (1/N)*[V + (k - 1)*min(W_1, W_2)]	983
6. Level of Service (LOS)	B

cluded.

* Note: Do not adjust by a Peak Hour Factor (PHF). The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983; *Highway Design Manual*, California Department of Transportation, July 24, 2009; and Freeway and Interchange Geometric Design Handbook, Institue of Transportation Engineers, 2005.