

APPENDIX M

YEAR 2030 WITH PROJECT BUILD-OUT SYNCHRO WORKSHEETS

Movement	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	SBL	SBT	SSB
Lane Configurations	10	300	521	701	460	10	460	5	202	10	10	10	10
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost Time (s)	1.00	0.95	1.00	0.97	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Satd Flow (prot)	1770	3539	1563	3433	3528	1770	3539	1563	3433	3528	1770	3539	1563
Satd Flow (perm)	1770	3539	1563	3433	3528	1770	3539	1563	3433	3528	1770	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	422	579	779	511	31	511	5	224	11	11	11	11
RTOR Reduction (vph)	0	0	408	0	0	0	0	0	167	0	8	0	0
Lane Group Flow (vph)	11	422	171	779	520	0	261	265	57	0	25	0	0
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	7	4	4	8	2	2	2	2	6	6	6	6	6
Permitted Phases	7	4	4	8	2	2	2	2	6	6	6	6	6
Actuated Green, G (s)	0.8	17.4	17.4	14.6	31.2	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9
Effective Green, g (s)	0.8	17.4	17.4	14.6	31.2	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9
Actuated C/R Ratio	0.01	0.30	0.30	0.25	0.53	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
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	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	3.0
Lane Grp Cap (vph)	24	1045	468	851	1869	329	316	400	389	389	389	389	389
v/s Ratio Prot	0.01	0.12	0.11	0.23	0.15	0.20	0.20	0.04	0.02	0.02	0.02	0.02	0.02
v/s Ratio Perm	0.46	0.40	0.37	0.92	0.28	0.79	0.81	0.14	0.05	0.05	0.05	0.05	0.05
Uniform Delay, d1	28.8	16.6	16.4	21.5	7.6	20.6	20.7	17.0	16.7	16.7	16.7	16.7	16.7
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	1.00
Incremental Delay, d2	13.2	0.3	0.5	14.3	0.1	12.3	14.5	0.2	0.1	0.1	0.1	0.1	0.1
Delay (s)	12.1	16.9	16.9	35.8	7.7	32.9	35.1	17.2	16.8	16.8	16.8	16.8	16.8
Level of Service	D	B	B	D	A	C	D	B	B	B	B	B	B
Approach Delay (s)	17.1	17.1	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
Approach LOS	B	B	C	C	C	C	C	C	C	C	C	C	C
Intersection Summary													
HCM Average Control Delay	23.1												C
HCM Volume to Capacity ratio	0.89												C
Actuated Cycle Length (s)	58.9												12.0
Intersection Capacity Utilization	85.6%												0
Analysis Period (min)	15												15
Critical Lane Group													

Movement	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	SBL	SBT	SSB
Lane Configurations	10	300	521	701	460	10	460	5	202	10	10	10	10
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost Time (s)	1.00	0.95	1.00	0.97	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Satd Flow (prot)	1770	3539	1563	3433	3528	1770	3539	1563	3433	3528	1770	3539	1563
Satd Flow (perm)	1770	3539	1563	3433	3528	1770	3539	1563	3433	3528	1770	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	422	579	779	511	31	511	5	224	11	11	11	11
RTOR Reduction (vph)	0	0	408	0	0	0	0	0	167	0	8	0	0
Lane Group Flow (vph)	11	422	171	779	520	0	261	265	57	0	25	0	0
Turn Type	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	7	4	4	8	2	2	2	2	6	6	6	6	6
Permitted Phases	7	4	4	8	2	2	2	2	6	6	6	6	6
Actuated Green, G (s)	0.8	17.4	17.4	14.6	31.2	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9
Effective Green, g (s)	0.8	17.4	17.4	14.6	31.2	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9
Actuated C/R Ratio	0.01	0.30	0.30	0.25	0.53	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
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	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	3.0
Lane Grp Cap (vph)	24	1045	468	851	1869	329	316	400	389	389	389	389	389
v/s Ratio Prot	0.01	0.12	0.11	0.23	0.15	0.20	0.20	0.04	0.02	0.02	0.02	0.02	0.02
v/s Ratio Perm	0.46	0.40	0.37	0.92	0.28	0.79	0.81	0.14	0.05	0.05	0.05	0.05	0.05
Uniform Delay, d1	28.8	16.6	16.4	21.5	7.6	20.6	20.7	17.0	16.7	16.7	16.7	16.7	16.7
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	1.00
Incremental Delay, d2	13.2	0.3	0.5	14.3	0.1	12.3	14.5	0.2	0.1	0.1	0.1	0.1	0.1
Delay (s)	12.1	16.9	16.9	35.8	7.7	32.9	35.1	17.2	16.8	16.8	16.8	16.8	16.8
Level of Service	D	B	B	D	A	C	D	B	B	B	B	B	B
Approach Delay (s)	17.1	17.1	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
Approach LOS	B	B	C	C	C	C	C	C	C	C	C	C	C
Intersection Summary													
HCM Average Control Delay	26.7												C
HCM Volume to Capacity ratio	0.86												C
Actuated Cycle Length (s)	67.7												12.0
Intersection Capacity Utilization	82.9%												B
Analysis Period (min)	15												15
Critical Lane Group													

ICM Signalized Intersection Capacity Analysis
 3: Derby Downs Road & El Camino Real
 Year 2030 + Project AM
 12/1/2010

Movement	WBC	WBR	NBT	NBY	NBB	USB	USY	↓
Lane Configurations	YY		J	J				↑
Volume (vph)	95	8	0	518	152	3	943	
Ideal Flow (vph)	1900	1900	1900	1900	1900	1900	1900	
Total Lost Time (s)	4.0			4.0			4.0	
Lane Util. Factor	0.97			0.95			1.00	0.95
PH	0.99			0.99			1.00	1.00
PH Protected	0.96			1.00			0.95	1.00
Satd. Flow (prot)	3414			3491			1770	3539
PH Permitted	0.96			1.00			0.95	1.00
Satd. Flow (perm)	3414			3491			1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	9	0	576	58	3	1048	
RTOR Reduction (vph)	8	0	0	11	0	0	0	
RTOR Group Flow (vph)	107	0	0	623	0	3	1048	
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	0		5		2		1	
Permitted Phases								
Actuated Green, G (s)	3.4			17.7			0.6	22.3
Effective Green, g (s)	3.4			17.7			0.6	22.3
Actuated g/C Ratio	0.10			0.53			0.02	0.66
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)	341			1834			32	2942
v/s Ratio Prot	0.03			0.18			0.00	0.30
v/s Ratio Perm								
v/s Ratio	0.3			0.34			0.09	0.45
Uniform Delay, d1	14.1			4.6			18.3	2.7
Progression Factor	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.5			0.1			1.3	0.1
Delay (s)	14.6			4.7			19.6	2.9
Level of Service	B			A			B	A
Approach Delay (s)	14.6			4.7			2.9	A
Approach LOS	B			A				
Intersection Summary								
HCM Average Control Delay	4.3			HCM Level of Service				
HCM Volume to Capacity ratio	0.43			A				
Actuated Cycle Length (s)	33.7			Sum of lost time (s)				
Intersection Capacity Utilization	36.1%			ICU Level of Service				
Analysis Period (min)	15			A				
Critical Lane Group				B				

HCM Signalized Intersection Capacity Analysis
4: Half Mile Road & El Camino Real

	MON	TUE	WED	THUR	FRI	SAT	SUN	MON	TUE	WED	THUR	FRI	SAT	SUN	MON	TUE	WED	THUR	FRI	SAT	SUN	SER																			
Lane Configurations	26	14	21	172	84	160	6	357	18	165	774	107																													
Voluming (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900																			
Ideal Flow (vphpl)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240																			
Total lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00																			
Lane Util. Factor	1.00	0.90	1.00	0.90	1.00	0.90	1.00	0.95	1.00	0.95	1.00	0.98																													
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00																													
Flt Protected	1770	1820	1770	1820	1770	1820	1770	1820	1770	1820	1770	1820																													
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00																													
Peak-Flow (perm)	1770	1820	1770	1820	1770	1820	1770	1820	1770	1820	1770	1820																													
Spd-Hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90																			
Adj. Flow (vph)	29	127	23	80	93	187	7	397	20	183	964	119																													
RTOR Reduction (vph)	0	12	0	0	123	0	0	6	0	6	0	15	0																												
Lane Group Flow (vph)	29	138	0	80	157	0	7	413	0	7	413	0	183	964	119																										
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot																			
Protected Phases	1	2	3	4	5	6	7	8	9	10	11	12																													
Permitted Phases	1	2	3	4	5	6	7	8	9	10	11	12																													
Actuated Green G (s)	0.1	10.9	2.8	129	0.7	5.0	5.3	19.6																																	
Effective Green G (s)	0.8	10.9	2.8	129	0.7	15.0	5.3	19.6																																	
Actuated G/C Ratio	0.72	0.22	0.06	0.26	0.01	0.30	0.11	0.39																																	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0																																	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0																																	
Lane Grp Can (vph)	28	397	99	432	25	1054	188	1382																																	
v/s Ratio Perm	0.02	0.08	0.05	0.09	0.00	0.12	0.01	0.28																																	
v/s Ratio Prot	1.04	0.35	0.94	0.96	0.28	0.39	0.97	0.71																																	
Uniform Delay, d1	24.6	16.5	23.3	15.2	24.4	13.9	22.3	12.8																																	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00																																	
Incremental Delay, d2	181.3	0.5	38.6	0.5	6.0	0.2	57.5	1.7																																	
Delay (s)	205.9	17.1	59.9	15.7	30.4	1.1	79.8	14.5																																	
Level of Service	F	B	E	B	C	B	E	B																																	
Approach Delay (s)	4.7			25.5			14.4																																		
Approach LOS	D			C			B																																		
Intersection Summary																																									
HCM Average Control Delay											24.8											C																			
HCM Volume to Capacity ratio											0.67																														
Actuated Cycle Length (s)											60.0											8.0																			
Intersection Capacity Utilization											85.5%											B																			
Analysis Period (min)											15																														
c. Critical Lane Group																																									

HCM Signalized Intersection Capacity Analysis
5: Quarter Mile Road & El Camino Real

HCM Signalized Intersection Capacity Analysis
6: Del Mar Heights Road & Mango Drive

Movement	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	6	85	78	105	141	41	381	59	12	374	12	197
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
FL Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	1963	1963	1770	1963	1770	1963	1770	1963	1770	1963	1770
Satd. Flow (perm)	1770	1963	1963	1770	1963	1770	1963	1770	1963	1770	1963	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	7	94	88	118	157	46	423	66	17	371	12	197
RTOR Reduction (vph)	0	0	72	0	19	0	18	0	0	0	0	1
Lane Group Flow (vph)	7	94	16	118	104	0	46	471	0	47	370	0
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	7	4	3	8	7	4	3	8	7	4	3	8
Actuated Green, G (s)	0.6	8.7	8.7	3.5	11.6	1.2	19.7	1.2	19.7	1.2	19.7	1.2
Effective Green, g (s)	0.6	8.7	8.7	3.5	11.6	1.2	19.7	1.2	19.7	1.2	19.7	1.2
Actuated v/c Ratio	0.01	0.16	0.16	0.07	0.24	0.02	0.40	0.02	0.40	0.02	0.40	0.02
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
Yellow 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)	22	330	280	126	425	43	1391	43	1418	43	1418	43
v/c Ratio Prot	0.00	0.06	0.06	0.07	0.10	0.03	0.14	0.03	0.14	0.03	0.14	0.03
v/c Ratio Perm	0.00	0.06	0.06	0.07	0.10	0.03	0.14	0.03	0.14	0.03	0.14	0.03
Uniform Delay, d1	24.0	17.5	16.8	22.7	16.0	24.0	10.2	24.0	10.2	24.0	10.2	24.0
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	8.2	0.5	0.1	60.2	0.7	168.5	0.1	168.9	1.4	169.9	1.4	169.9
Delay (s)	32.2	18.0	16.9	82.9	16.7	192.5	10.3	193.9	11.6	193.9	11.6	193.9
Level of Service	C	B	B	F	B	F	B	F	B	F	B	F
Approach Delay (s)	10.0	10.0	10.0	41.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Approach LOS	B	B	B	D	B	B	B	D	B	B	B	D
Intersection Summary	C											
HCM Average Control Delay	26.2											
HCM Volume to Capacity Ratio	0.06											
Actuated Cycle Length (s)	49.1											
Intersection Capacity Utilization	50.4%											
Analysis Period (min)	15											
Critical Lane Group	C											

Movement	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	130	1002	40	104	154	244	80	172	492	1900	1900	1900
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	0.91	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
FL Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1963	1770	1963	1770	1963	1770	1963	1770	1963	1770	1963
Satd. Flow (perm)	1770	1963	1770	1963	1770	1963	1770	1963	1770	1963	1770	1963
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	1113	44	116	169	271	88	191	547	1900	1900	1900
RTOR Reduction (vph)	0	5	0	22	0	0	0	0	127	0	24	0
Lane Group Flow (vph)	144	1152	0	116	1642	0	165	64	355	333	0	0
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	7	4	3	8	7	4	3	8	7	4	3	8
Actuated Green, G (s)	5.6	33.3	7.6	35.3	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
Effective Green, g (s)	5.6	33.3	7.6	35.3	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
Actuated v/c Ratio	0.07	0.42	0.10	0.44	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
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
Yellow 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)	125	2115	189	1529	321	531	376	406	321	531	376	406
v/c Ratio Prot	0.008	0.23	0.07	0.45	0.16	0.04	0.32	0.27	0.16	0.04	0.32	0.27
v/c Ratio Perm	0.008	0.23	0.07	0.45	0.16	0.04	0.32	0.27	0.16	0.04	0.32	0.27
Uniform Delay, d1	37.0	17.4	34.8	22.2	21.0	16.3	25.8	24.3	21.0	16.3	25.8	24.3
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	127.1	0.3	11.0	25.2	1.2	0.1	32.5	12.5	1.2	0.1	32.5	12.5
Delay (s)	164.1	17.7	45.8	47.3	22.2	16.4	58.4	36.7	22.2	16.4	58.4	36.7
Level of Service	F	B	D	D	C	B	E	D	C	B	E	D
Approach Delay (s)	33.9	33.9	17.2	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
Approach LOS	C	C	D	D	C	C	D	D	C	C	D	D
Intersection Summary	C											
HCM Average Control Delay	40.7											
HCM Volume to Capacity Ratio	0.94											
Actuated Cycle Length (s)	79.6											
Intersection Capacity Utilization	86.4%											
Analysis Period (min)	15											
Critical Lane Group	C											

HCM Signalized Intersection Capacity Analysis

[illegible]

Movement	EBF	EIEB	WB	NB	WBT	NBT
Lane Configurations	↑↑↑	↑	↑↑	↑↑	↑↑	↑
Volume (vph)	1974	190	147	2182	86	67
Ideal Flow (vehpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ft.	1.00	0.85	1.00	1.00	1.00	0.85
Ft Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1683	1770	5085	3433	1583
Ft Penitilled	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm.)	5085	1583	1770	5085	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2146	207	160	2372	93	73
RTOR Reduction (vph)	0	92	0	0	0	66
Lane Group Flow (vph)	2146	115	160	2372	93	73
Turn Type	Perm	Prot	Perm	Perm	Perm	Perm
Protected Phases	1	3	6	2		
Permitted Phases	4			2		
Actuated Green, G (s)	32.3	32.3	4.0	44.3	5.7	5.7
Effective Green, g (s)	32.3	32.3	8.0	44.3	5.7	5.7
Actuated g/C Ratio	0.56	0.56	0.14	0.76	0.10	0.10
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 Sgn Cap (vph)	2832	602	244	3884	337	158
v/s Ratio Prot	0.42		0.09	0.47	0.03	
v/s Ratio Perm	0.07					
w/C Ratio	0.76	0.13	0.68	0.51	0.28	0.05
Uniform Delay, d1	9.9	6.1	23.7	3.0	24.2	23.7
Progression Factor,	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	6.2	0.3	0.4	0.1
Delay (s)	11.1	6.2	29.9	3.3	24.7	23.8
Level of Service	B	A	C	A	C	C
Approach Delay (s)	10.6			6.0	24.3	
Approach LOS	B			A	C	
Intersection Summary:						
HCM Average Control Delay	8.3			HCM Level of Service		
HCM Volume to Capacity ratio	0.69			A		
Actuated Cycle Length (s)	58.0			Sum of lost time (s)		
Intersection Capacity Utilization	59.6%			C/L Level of Service		
Analysis Period (min)	15			B		
Critical Lane Group						

[illegible]

HCM Signalized Intersection Capacity Analysis

Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Lane Configurations																											
209		912		332		289		1529		170		466		200		240		200		310		282		1900		1900	
1900		1900		1900		1900		1900		1900		1900		1900		1900		1900		1900		1900		1900		1900	
4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0	
0.97		0.91		0.97		0.91		0.97		0.91		0.97		0.91		0.97		0.91		0.97		0.91		0.97		0.95	
1900		0.96		1.00		0.98		1.00		0.98		1.00		0.92		1.00		0.93		1.00		0.93		1.00		0.95	
0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00	
3433		3882		3433		5009		3433		4668		3433		4668		1770		3286		1770		3286		1770		3286	
0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00		0.95		1.00	
3433		4882		3433		5009		3433		4668		3433		4668		1770		3286		1770		3286		1770		3286	
0.90		0.90		0.90		0.90		0.90		0.90		0.90		0.90		0.90		0.90		0.90		0.90		0.90		0.90	
232		1013		369		321		699		518		222		267		222		344		313		344		222		344	
0		73		0		0		15		0		0		184		0		134		0		134		0		134	
222		309		0		321		673		0		518		325		0		523		523		523		0		523	
Prot		Prot		Prot		Prot		Prot		Prot		Prot		Prot		Prot		Prot		Prot		Prot		Prot		Prot	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
Permitted Phases																											
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5		2		1		6		1		6		1		6		1	
7		4		3		3		8		5																	

HCM Signalized Intersection Capacity Analysis

Movement	EBU	EET	EEB	TEBR	WBE	WBW	SWBC	NHLE	NHTS	NBD	SSEL	SBL	SBSR
Lane Configurations	TTT	TTT	TTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	T	TT	TT	TTT
Volume (vph)	260	086	584	306	7793	150	299	159	102	170	531	462	
Ideal Flow (veh/pl)	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	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	
Flt.	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot.)	3433	4820	3433	5026	3433	5026	3433	5026	1583	3433	4722	3433	
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4820	3433	5026	3433	5026	3433	5026	1583	3433	4722	3433	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Aadj. Flow (vph)	269	1218	546	340	3981	167	332	177	113	189	590	536	
RTOR Reduction (vph)	0	107	0	0	11	0	0	0	0	69	0	140	
Lane Group Flow (vph)	269	1760	0	340	2167	0	332	177	24	189	906	0	
Turn Type	Prot	1	4	Prot	3	8	5	Prot	Perm	Prot	2	5	
Predicted Phases													
Permitted Phases													
Actuated Green, G (s)	8.5	35.1	10.2	36.8	8.6	19.5	19.5	9.2	19.5	9.2	19.1	9.1	
Effective Green, g (s)	8.5	35.1	10.2	36.8	9.6	19.5	19.5	9.2	19.5	9.2	19.1	9.1	
Actuated g/C Ratio	0.09	0.39	0.11	0.41	0.11	0.22	0.22	0.10	0.22	0.10	0.21	0.21	
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	
Vehcicle 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)	324	1880	389	2055	366	1102	343	351	1002	1006	3521	0	
% Rate Prot.	0.08	0.37	0.10	0.43	0.10	0.03	0.03	0.06	0.03	0.06	0.21	0	
% Rate Perm													
% Ratio:	0.69	0.94	0.67	1.04	0.91	0.16	0.07	0.64	0.16	0.64	1.50	0	
Uniform Delay, d1	40.3	28.4	39.3	26.6	39.8	28.6	28.0	38.4	35.3				
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	25.0	94	19.0	31.2	25.2	0.1	0.1	1.6	24.3				
Delay (s)	65.3	35.8	58.3	57.6	64.9	28.7	28.1	40.0	56.6				
Level of Service	E	D	E	E	E	C	C	C	D	E			
Approach Delay (s)	40.7	27.9	37.9	27.9	40.7	27.9	27.9	37.9	40.7				
Approach LOS	D	D	E	E	E	D	D	D	E				
Intersection Summary													
HCM Average Control Delay	60.8 HCM Level of Service D												
HCM Volume to Capacity ratio	0.96												
Actuated Cycle Length (s)	90.0 Sum of lost time (s) 120												
Intersection Capacity Utilization	88.1% HCM Level of Service E												
Analysis Period (min)	15												
dt, Delacdo Right Lane: Recode with 1 though lane as a right lane													
c, Critical Lane Group													

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SSBL	SSBT
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	212	932	134	91	1521	216	163	156	16	76	62	180
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	0.91	1.00	0.91	1.00	0.99	1.00	0.99	1.00	0.88	1.00	0.88
Flt Protected	1.00	0.98	1.00	0.98	1.00	0.99	1.00	0.99	1.00	0.88	1.00	0.88
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499
Satd. Flow (perm)	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	236	1036	149	90	1690	240	170	173	18	87	69	200
RTOR Reduction (vph)	0	19	0	0	20	0	0	4	0	0	123	0
Lane Group Flow (vph)	236	1165	0	90	1910	0	170	187	0	87	146	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	3	8	5	2	1	6	1	6	1
Permitted Phases												
Actuated Green, G (s)	13.0	40.5	7.5	35.0	9.6	16.5	5.8	5.8	12.7	5.8	12.7	5.8
Effective Green, g (s)	13.0	40.5	7.5	35.0	9.6	16.5	5.8	5.8	12.7	5.8	12.7	5.8
Actuated g/C Ratio	0.15	0.47	0.09	0.41	0.11	0.19	0.07	0.07	0.16	0.07	0.16	0.07
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)	267	2341	154	2024	197	351	119	244	60	10	05	009
v/s Ratio Prot	0.13	0.23	0.05	0.38	0.10	0.10	0.05	0.05	0.05	0.05	0.05	0.05
v/s Ratio Perm	0.88	0.50	0.56	0.94	0.86	0.63	0.73	0.60	0.73	0.60	0.73	0.60
Uniform Delay, d1	35.9	15.9	37.9	24.7	37.7	31.4	39.5	34.4	100	100	100	100
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	27.3	0.2	5.6	9.8	30.0	1.6	20.5	3.9	100	100	100	100
Delay (s)	63.2	16.0	43.5	34.5	67.7	33.0	60.0	38.3	100	100	100	100
Level of Service	E	B	D	C	E	C	E	D	E	D	E	D
Approach Delay (s)	23.9	34.9	49.3	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6
Approach LOS	C	C	D	D	D	D	D	D	D	D	D	D
Intersection Summary												
HCM Average Control Delay	33.1											
HCM Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	86.3											
Sum of lost time (s)	16.0											
Intersection Capacity Utilization	82.4%											
Analysis Period (min)	15											
Critical Lane Group												

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SSBL	SSBT
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	169	309	35	57	1587	35	62	26	76	60	495	1900
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	0.91	1.00	0.91	1.00	0.99	1.00	0.99	1.00	0.88	1.00	0.88
Flt Protected	1.00	0.98	1.00	0.98	1.00	0.99	1.00	0.99	1.00	0.88	1.00	0.88
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499
Satd. Flow (perm)	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499	1770	1499
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	187	339	38	64	1763	40	69	29	84	77	551	1900
RTOR Reduction (vph)	0	5	0	0	3	0	0	64	0	0	191	0
Lane Group Flow (vph)	187	339	0	74	1800	0	89	49	0	77	427	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	3	8	5	2	1	6	1	6	1
Permitted Phases												
Actuated Green, G (s)	13.0	40.5	7.5	35.0	9.6	16.5	5.8	5.8	12.7	5.8	12.7	5.8
Effective Green, g (s)	13.0	40.5	7.5	35.0	9.6	16.5	5.8	5.8	12.7	5.8	12.7	5.8
Actuated g/C Ratio	0.15	0.47	0.09	0.41	0.11	0.19	0.07	0.07	0.16	0.07	0.16	0.07
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)	208	1995	147	1828	197	351	119	244	60	10	05	009
v/s Ratio Prot	0.11	0.18	0.04	0.36	0.10	0.10	0.05	0.05	0.05	0.05	0.05	0.05
v/s Ratio Perm	0.90	0.47	0.50	0.90	0.86	0.63	0.73	0.60	0.73	0.60	0.73	0.60
Uniform Delay, d1	34.5	17.8	34.8	25.1	37.6	31.4	39.5	34.4	100	100	100	100
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	35.6	0.2	2.7	17.4	30.0	1.6	20.5	3.9	100	100	100	100
Delay (s)	70.1	18.0	37.5	42.6	67.6	33.0	60.0	38.3	100	100	100	100
Level of Service	E	B	D	D	E	C	E	D	E	D	E	D
Approach Delay (s)	25.7	42.4	50.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7
Approach LOS	C	D	D	D	D	D	D	D	D	D	D	D
Intersection Summary												
HCM Average Control Delay	41.1											
HCM Volume to Capacity ratio	0.91											
Actuated Cycle Length (s)	79.3											
Sum of lost time (s)	15											
Intersection Capacity Utilization	91.3%											
Analysis Period (min)	15											
Critical Lane Group												

Movement	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	191	100	130	80	210	200	190	985	20	100	489	185
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
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1770	1726	1770	1770	1770	1770	1770	1770	1770	1770
Satd. Flow (perm)	1770	1863	1770	1726	1770	1770	1770	1770	1770	1770	1770	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	212	111	144	87	233	222	167	850	22	111	543	206
RTOR Reduction (vph)	0	0	89	0	41	0	0	3	0	0	0	162
Lane Group Flow (vph)	212	111	155	87	233	222	167	850	22	111	543	206
Turn Type	Prot	Prot	Perm	Prot	Prot	Perm	Prot	Perm	Prot	Prot	Perm	Perm
Permitted Phases	7	4	3	8	7	4	3	8	7	4	3	8
Actuated Green, G (s)	13.4	28.6	28.6	5.6	20.8	9.0	18.9	16.9	6.4	16.3	16.3	16.3
Effective Green, g (s)	13.4	28.6	28.6	5.6	20.8	9.0	18.9	16.9	6.4	16.3	16.3	16.3
Actuated g/C Ratio	0.18	0.38	0.38	0.07	0.28	0.12	0.25	0.08	0.08	0.22	0.22	0.22
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)	314	706	600	131	476	211	882	150	764	342	150	764
vs Ratio Prot	0.12	0.06	0.04	0.04	0.21	0.09	0.19	0.06	0.15	0.15	0.03	0.03
vs Ratio Perm	0.68	0.16	0.09	0.51	0.87	0.79	0.76	0.74	0.74	0.74	0.74	0.74
Uniform Delay, d1	29.0	15.5	15.1	33.6	26.1	32.3	26.2	33.7	27.4	23.9	33.7	27.4
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	5.6	0.1	0.1	3.3	15.4	18.1	3.8	17.7	3.1	0.2	17.7	3.1
Delay (s)	34.7	15.6	15.2	37.0	41.5	50.4	30.0	51.4	30.5	24.1	51.4	30.5
Level of Service	C	B	B	D	D	D	D	D	D	C	D	C
Approach Delay (s)	24.1	24.1	24.1	40.9	40.9	40.9	40.9	40.9	40.9	24.1	40.9	24.1
Approach LOS	C	C	C	D	D	D	D	D	D	C	D	C
Intersection Summary												
HCM Average Control Delay	32.9											
HCM Volume to Capacity Ratio	0.80											
Actuated Cycle Length (s)	75.5											
Intersection Capacity Utilization	69.5%											
Analysis Period (min)	15											
c. Critical Lane Group												

Movement	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	191	100	130	80	210	200	190	985	20	100	489	185
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
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1770	1726	1770	1770	1770	1770	1770	1770	1770	1770
Satd. Flow (perm)	1770	1863	1770	1726	1770	1770	1770	1770	1770	1770	1770	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	212	111	144	87	233	222	167	850	22	111	543	206
RTOR Reduction (vph)	0	0	89	0	41	0	0	3	0	0	0	162
Lane Group Flow (vph)	212	111	155	87	233	222	167	850	22	111	543	206
Turn Type	Prot	Prot	Perm	Prot	Prot	Perm	Prot	Perm	Prot	Prot	Perm	Perm
Permitted Phases	7	4	3	8	7	4	3	8	7	4	3	8
Actuated Green, G (s)	13.4	28.6	28.6	5.6	20.8	9.0	18.9	16.9	6.4	16.3	16.3	16.3
Effective Green, g (s)	13.4	28.6	28.6	5.6	20.8	9.0	18.9	16.9	6.4	16.3	16.3	16.3
Actuated g/C Ratio	0.18	0.38	0.38	0.07	0.28	0.12	0.25	0.08	0.08	0.22	0.22	0.22
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)	314	706	600	131	476	211	882	150	764	342	150	764
vs Ratio Prot	0.12	0.06	0.04	0.04	0.21	0.09	0.19	0.06	0.15	0.15	0.03	0.03
vs Ratio Perm	0.68	0.16	0.09	0.51	0.87	0.79	0.76	0.74	0.74	0.74	0.74	0.74
Uniform Delay, d1	29.0	15.5	15.1	33.6	26.1	32.3	26.2	33.7	27.4	23.9	33.7	27.4
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	5.6	0.1	0.1	3.3	15.4	18.1	3.8	17.7	3.1	0.2	17.7	3.1
Delay (s)	34.7	15.6	15.2	37.0	41.5	50.4	30.0	51.4	30.5	24.1	51.4	30.5
Level of Service	C	B	B	D	D	D	D	D	D	C	D	C
Approach Delay (s)	24.1	24.1	24.1	40.9	40.9	40.9	40.9	40.9	40.9	24.1	40.9	24.1
Approach LOS	C	C	C	D	D	D	D	D	D	C	D	C
Intersection Summary												
HCM Average Control Delay	32.9											
HCM Volume to Capacity Ratio	0.80											
Actuated Cycle Length (s)	75.5											
Intersection Capacity Utilization	69.5%											
Analysis Period (min)	15											
c. Critical Lane Group												

Movement	EB	WB	NB	S	EW	WN	NS	SE	SW	NE	NW	ES	WS	SS	SW	SWR
Lane Configurations	T	F	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Volume (vph)	407	120	263	100	230	142	289	635	90	129	993	110				
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	0.97	0.97	0.91	1.00	0.91	1.00	0.91	1.00				
Flt	1.00	0.85	0.85	1.00	0.94	1.00	0.96	1.00	0.96	1.00	0.96	1.00				
Flt Protected	0.95	1.00	1.00	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00	0.95				
Satc. Flow (prot)	1770	1593	1593	1770	1905	1770	1905	1770	1905	1770	1905	1770				
Flt Permitted	0.95	1.00	1.00	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00	0.95				
Satc. Flow (perm)	1770	1593	1593	1770	1905	1770	1905	1770	1905	1770	1905	1770				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90				
AAdj. Flow (vph)	44	133	281	111	256	158	289	705	100	143	1103	122				
RTOR Reduction (vph)	0	0	230	0	144	0	0	26	0	0	19	0				
Adj. Group Flow (vph)	44	133	511	111	270	10	299	730	0	143	1206	0				
Turn Type	P	P	P	P	P	P	P	P	P	P	P	P				
Protected Phases	2	2	2	2	2	2	2	2	2	2	2	2				
Permitted Phases	10.0	10.0	10.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0				
Actuated Green G(s)	10.0	10.0	10.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0				
Effective Green g(s)	10.0	10.0	10.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0				
Actuated G/C Ratio	0.16	0.16	0.16	0.09	0.09	0.13	0.13	0.13	0.13	0.13	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	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)	321	287	287	161	300	---	436	1519	---	225	1555	---				
Vs Ratio Ctrl	0.02	0.06	0.06	0.06	0.06	0.09	0.16	0.09	0.16	0.08	0.24	---				
v/s Ratio Perm	c0.09	c0.09	c0.09	---	---	---	---	---	---	---	---	---				
v/s Ratio	0.47	0.46	0.46	0.59	0.90	0.65	0.50	0.64	0.78	0.64	0.78	---				
Uniform Delay d1	18.9	20.2	19.1	24.3	24.8	23.0	15.5	22.8	17.3	22.8	17.3	---				
Roadway Friction f	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	0.2	1.2	0.3	11.5	28.1	4.4	0.3	5.8	2.5	5.8	2.5	---				
Delay (s)	9.1	21.3	19.4	35.9	52.9	27.4	15.0	28.6	19.7	28.6	19.7	---				
Level of Service	B	C	B	D	D	C	B	C	B	C	B	---				
Approach Delay (s)	19.9	49.3	49.3	49.3	4	18.3	6	20.7	16.0	20.7	16.0	---				
Approach LOS	B	B	B	D	D	B	B	C	C	B	C	---				
Intersection Summary																
HCM Average Control Delay	24.4			HCM Level of Service			C									
HCM Volume to Capacity ratio	0.70															
Actuated Cycle Length (s)	55.1			Sum of lost time (s)			16.0									
Intersection Capacity Utilization	57.0%			CU1 Level of Service			B									
Analysis Period (min)	15															
Critical Lane Group																

[illegible]

HCM Unsignalized Intersection Capacity Analysis
23: High Bluff Drive & Carmel Vista Road

HCM Signalized Intersection Capacity Analysis

Movement	USE 1		USE 2		USE 3		USE 4		USE 5		USE 6		USE 7		USE 8		USE 9		USE 10		USE 11		USE 12		USE 13		USE 14		USE 15		USE 16		USE 17		USE 18		USE 19		USE 20		USE 21		USE 22		USE 23		USE 24		USE 25		USE 26		USE 27		USE 28		USE 29		USE 30		USE 31		USE 32		USE 33		USE 34		USE 35		USE 36		USE 37		USE 38		USE 39		USE 40		USE 41		USE 42		USE 43		USE 44		USE 45		USE 46		USE 47		USE 48		USE 49		USE 50		USE 51		USE 52		USE 53		USE 54		USE 55		USE 56		USE 57		USE 58		USE 59		USE 60		USE 61		USE 62		USE 63		USE 64		USE 65		USE 66		USE 67		USE 68		USE 69		USE 70		USE 71		USE 72		USE 73		USE 74		USE 75		USE 76		USE 77		USE 78		USE 79		USE 80		USE 81		USE 82		USE 83		USE 84		USE 85		USE 86		USE 87		USE 88		USE 89		USE 90		USE 91		USE 92		USE 93		USE 94		USE 95		USE 96		USE 97		USE 98		USE 99		USE 100		USE 101		USE 102		USE 103		USE 104		USE 105		USE 106		USE 107		USE 108		USE 109		USE 110		USE 111		USE 112		USE 113		USE 114		USE 115		USE 116		USE 117		USE 118		USE 119		USE 120		USE 121		USE 122		USE 123		USE 124		USE 125		USE 126		USE 127		USE 128		USE 129		USE 130		USE 131		USE 132		USE 133		USE 134		USE 135		USE 136		USE 137		USE 138		USE 139		USE 140		USE 141		USE 142		USE 143		USE 144		USE 145		USE 146		USE 147		USE 148		USE 149		USE 150		USE 151		USE 152		USE 153		USE 154		USE 155		USE 156		USE 157		USE 158		USE 159		USE 160		USE 161		USE 162		USE 163		USE 164		USE 165		USE 166		USE 167		USE 168		USE 169		USE 170		USE 171		USE 172		USE 173		USE 174		USE 175		USE 176		USE 177		USE 178		USE 179		USE 180		USE 181		USE 182		USE 183		USE 184		USE 185		USE 186		USE 187		USE 188		USE 189		USE 190		USE 191		USE 192		USE 193		USE 194		USE 195		USE 196		USE 197		USE 198		USE 199		USE 200		USE 201		USE 202		USE 203		USE 204		USE 205		USE 206		USE 207		USE 208		USE 209		USE 210		USE 211		USE 212		USE 213		USE 214		USE 215		USE 216		USE 217		USE 218		USE 219		USE 220		USE 221		USE 222		USE 223		USE 224		USE 225		USE 226		USE 227		USE 228		USE 229		USE 230		USE 231		USE 232		USE 233		USE 234		USE 235		USE 236		USE 237		USE 238		USE 239		USE 240		USE 241		USE 242		USE 243		USE 244		USE 245		USE 246		USE 247		USE 248		USE 249		USE 250		USE 251		USE 252		USE 253		USE 254		USE 255		USE 256		USE 257		USE 258		USE 259		USE 260		USE 261		USE 262		USE 263		USE 264		USE 265		USE 266		USE 267		USE 268		USE 269		USE 270		USE 271		USE 272		USE 273		USE 274		USE 275		USE 276		USE 277		USE 278		USE 279		USE 280		USE 281		USE 282		USE 283		USE 284		USE 285		USE 286		USE 287		USE 288		USE 289		USE 290		USE 291		USE 292		USE 293		USE 294		USE 295		USE 296		USE 297		USE 298		USE 299	
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HCM Signalized Intersection Capacity Analysis
241 Carmel Grove Road & Carmel Creek Road
12/1/2010
Year 2030 + Project AM

Location	EB1	EB2	EB3	EB4	WB1B	WB2B	WB3B	WB4B	WB5B	WB6B	WB7B	WB8B	WB9B	WB10B	WB11B	WB12B	WB13B	WB14B	WB15B	WB16B	WB17B	WB18B	WB19B	WB20B	WB21B	WB22B	WB23B	WB24B	WB25B	WB26B	WB27B	WB28B	WB29B	WB30B	WB31B	WB32B	WB33B	WB34B	WB35B	WB36B	WB37B	WB38B	WB39B	WB40B	WB41B	WB42B	WB43B	WB44B	WB45B	WB46B	WB47B	WB48B	WB49B	WB50B	WB51B	WB52B	WB53B	WB54B	WB55B	WB56B	WB57B	WB58B	WB59B	WB60B	WB61B	WB62B	WB63B	WB64B	WB65B	WB66B	WB67B	WB68B	WB69B	WB70B	WB71B	WB72B	WB73B	WB74B	WB75B	WB76B	WB77B	WB78B	WB79B	WB80B	WB81B	WB82B	WB83B	WB84B	WB85B	WB86B	WB87B	WB88B	WB89B	WB90B	WB91B	WB92B	WB93B	WB94B	WB95B	WB96B	WB97B	WB98B	WB99B	WB100B	WB101B	WB102B	WB103B	WB104B	WB105B	WB106B	WB107B	WB108B	WB109B	WB110B	WB111B	WB112B	WB113B	WB114B	WB115B	WB116B	WB117B	WB118B	WB119B	WB120B	WB121B	WB122B	WB123B	WB124B	WB125B	WB126B	WB127B	WB128B	WB129B	WB130B	WB131B	WB132B	WB133B	WB134B	WB135B	WB136B	WB137B	WB138B	WB139B	WB140B	WB141B	WB142B	WB143B	WB144B	WB145B	WB146B	WB147B	WB148B	WB149B	WB150B	WB151B	WB152B	WB153B	WB154B	WB155B	WB156B	WB157B	WB158B	WB159B	WB160B	WB161B	WB162B	WB163B	WB164B	WB165B	WB166B	WB167B	WB168B	WB169B	WB170B	WB171B	WB172B	WB173B	WB174B	WB175B	WB176B	WB177B	WB178B	WB179B	WB180B	WB181B	WB182B	WB183B	WB184B	WB185B	WB186B	WB187B	WB188B	WB189B	WB190B	WB191B	WB192B	WB193B	WB194B	WB195B	WB196B	WB197B	WB198B	WB199B	WB200B	WB201B	WB202B	WB203B	WB204B	WB205B	WB206B	WB207B	WB208B	WB209B	WB210B	WB211B	WB212B	WB213B	WB214B	WB215B	WB216B	WB217B	WB218B	WB219B	WB220B	WB221B	WB222B	WB223B	WB224B	WB225B	WB226B	WB227B	WB228B	WB229B	WB230B	WB231B	WB232B	WB233B	WB234B	WB235B	WB236B	WB237B	WB238B	WB239B	WB240B	WB241B	WB242B	WB243B	WB244B	WB245B	WB246B	WB247B	WB248B	WB249B	WB250B	WB251B	WB252B	WB253B	WB254B	WB255B	WB256B	WB257B	WB258B	WB259B	WB260B	WB261B	WB262B	WB263B	WB264B	WB265B	WB266B	WB267B	WB268B	WB269B	WB270B	WB271B	WB272B	WB273B	WB274B	WB275B	WB276B	WB277B	WB278B	WB279B	WB280B	WB281B	WB282B	WB283B	WB284B	WB285B	WB286B	WB287B	WB288B	WB289B	WB290B	WB291B	WB292B	WB293B	WB294B	WB295B	WB296B	WB297B	WB298B	WB299B	WB300B	WB301B	WB302B	WB303B	WB304B	WB305B	WB306B	WB307B	WB308B	WB309B	WB310B	WB311B	WB312B	WB313B	WB314B	WB315B	WB316B	WB317B	WB318B	WB319B	WB320B	WB321B	WB322B	WB323B	WB324B	WB325B	WB326B	WB327B	WB328B	WB329B	WB330B	WB331B	WB332B	WB333B	WB334B	WB335B	WB336B	WB337B	WB338B	WB339B	WB340B	WB341B	WB342B	WB343B	WB344B	WB345B	WB346B	WB347B	WB348B	WB349B	WB350B	WB351B	WB352B	WB353B	WB354B	WB355B	WB356B	WB357B	WB358B	WB359B	WB360B	WB361B	WB362B	WB363B	WB364B	WB365B	WB366B	WB367B	WB368B	WB369B	WB370B	WB371B	WB372B	WB373B	WB374B	WB375B	WB376B	WB377B	WB378B	WB379B	WB380B	WB381B	WB382B	WB383B	WB384B	WB385B	WB386B	WB387B	WB388B	WB389B	WB390B	WB391B	WB392B	WB393B	WB394B	WB395B	WB396B	WB397B	WB398B	WB399B	WB400B	WB401B	WB402B	WB403B	WB404B	WB405B	WB406B	WB407B	WB408B	WB409B	WB410B	WB411B	WB412B	WB413B	WB414B	WB415B	WB416B</
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4-1CM Signalized Intersection Capacity Analysis
 Location: Valley Centre Drive & Carmel View Road
 Year 2030 + Project AM
 12/1/2010

Movement	22	23	E	B	F	W	W	SBR
Lane Configurations	18	239	0	485	27	107	127	
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	
Vehicle Flow (veh/h)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Total Lost time (s)	100	95	100	95	100	95	100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
RTI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
FL Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	3511	1770	1663			
FL Permitted	0.95	1.00	1.00	0.95	1.00			
Satd. Flow (perm)	1770	3539	3511	1770	1663			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	20	266	0	539	30	119	141	
RTOR Reduction (vph)	0	0	0	8	0	0	110	
Lane Group Flow (vph)	20	266	0	561	0	118	31	
Turn Type	Prot	Prot	Prot	Perm	Perm	Perm	Perm	
Prohibited Phases	7	1	3	5	6	6	6	
Permitted Phases	5	125	8.1	5.8	5.8	5.8	5.8	
Activated Green, G (s)	0.5	12.5	8.1	5.8	5.8	5.8	5.8	
Effective Green, g (s)	0.5	12.5	8.1	5.8	5.8	5.8	5.8	
Activated C/Ratio	0.02	0.48	0.31	0.22	0.22	0.22	0.22	
Clearance Time (s)	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	
Lane Grp Cap (vph)	34	1689	1077	389	348			
V/S Ratio Prot	0.01	0.108	0.16	0.07	0.07	0.02		
V/S Ratio Perm	0.59	0.16	0.52	0.31	0.09			
VC Ratio	12.8	3.9	7.5	8.6	8.2			
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00			
Progression Factor	23.4	0.0	0.5	0.4	0.1			
Incremental Delay, d2	36.2	3.9	8.0	9.1	8.3			
Delay(s)	D	A	A	A	A	A	A	
Level of Service	D	A	A	A	A	A	A	
Approach Delay (s)	6.2	8.0	8.7	8.7	8.7			
Approach LOS	A	A	A	A	A			
Intersection Summary								
HCM Average Control Delay	7.7							A
HCM Volume to Capacity ratio	0.44							12.0
Actuated Cycle Length (s)	26.4							A
Intersection Capacity Utilization	26.8%							A
Analysis Period (min)	15							
Critical Lane Group								

HCM Signalized Intersection Capacity Analysis
29: SR-56 EB on ramp & E Camino Real

Movement	EB	WB	SB	EB	WB	SB	EB	WB	SB	EB	WB	SB	EB	WB	SB	EB	WB	SB
Lane Configurations	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T	4T
Volume (vph)	800	930	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.86	0.91	0.91	0.86	0.91	0.91	0.86	0.91	0.91	0.86	0.91	0.91	0.86	0.91	0.91	0.86	0.91
Phi	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Phi Protected	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00
Satd. Flow (prot)	1510	3162	1441	1510	3162	1441	1510	3162	1441	1510	3162	1441	1510	3162	1441	1510	3162	1441
Phi Permitted	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00	0.95	0.99	1.00
Satd. Flow (perm)	1610	3162	1441	1610	3162	1441	1610	3162	1441	1610	3162	1441	1610	3162	1441	1610	3162	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	889	1033	344	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	500	1314	308	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Type	Prot	Perm	Perm	Prot	Perm	Perm	Prot	Perm	Perm	Prot	Perm	Perm	Prot	Perm	Perm	Prot	Perm	Perm
Protected Phases	7	2	2	7	2	2	7	2	2	7	2	2	7	2	2	7	2	2
Permitted Phases	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Actuated Green, G (s)	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Effective Green, g (s)	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Actuated C/R Ratio	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	776	1524	694	776	1524	694	776	1524	694	776	1524	694	776	1524	694	776	1524	694
v/s Ratio Prot	0.40	0.40	0.21	0.40	0.40	0.21	0.40	0.40	0.21	0.40	0.40	0.21	0.40	0.40	0.21	0.40	0.40	0.21
v/s Ratio Perm	0.87	0.86	0.44	0.87	0.86	0.44	0.87	0.86	0.44	0.87	0.86	0.44	0.87	0.86	0.44	0.87	0.86	0.44
v/c Ratio	16.5	17.2	12.8	16.5	17.2	12.8	16.5	17.2	12.8	16.5	17.2	12.8	16.5	17.2	12.8	16.5	17.2	12.8
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	7.1	5.3	0.5	7.1	5.3	0.5	7.1	5.3	0.5	7.1	5.3	0.5	7.1	5.3	0.5	7.1	5.3	0.5
Incremental Delay, d2	23.0	22.1	13.2	23.0	22.1	13.2	23.0	22.1	13.2	23.0	22.1	13.2	23.0	22.1	13.2	23.0	22.1	13.2
Delay (s)	C	C	B	C	C	B	C	C	B	C	C	B	C	C	B	C	C	B
Level of Service	C	C	B	C	C	B	C	C	B	C	C	B	C	C	B	C	C	B
Approach Delay (s)	21.5	21.5	13.2	21.5	21.5	13.2	21.5	21.5	13.2	21.5	21.5	13.2	21.5	21.5	13.2	21.5	21.5	13.2
Approach LOS	C	C	B	C	C	B	C	C	B	C	C	B	C	C	B	C	C	B
Intersection Summary																		
HCM Average Control Delay	23.6																	
HCM Volume to Capacity ratio	0.89																	
Actuated Cycle Length (s)	74.7																	
Sum of lost time (s)	105.3																	
Intersection Capacity Utilization	15																	
Analysis Period (min)	15																	
Analysis Lane Group	C : Critical Lane Group																	

HCM Signalized Intersection Capacity Analysis
 31: Valley Centre Drive & Carmel Creek Road
 Year 2030 + Project AM
 12/1/2010

Intersection Summary											
Lane Configurations	65	220	180	300	555	95	300	571	354	465	230
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd Flow (prot)	1770	2787	1593	1770	1822	1770	3539	1593	3433	3539	1593
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd Flow (perm)	1770	2787	1593	1770	1822	1770	3539	1593	3433	3539	1593
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	72	244	200	333	617	106	422	534	393	517	256
RTOR Reduction (vph)	0	0	108	0	6	0	0	0	294	0	168
Lane Group Flow (vph)	72	244	92	333	717	0	422	634	99	517	256
Turn Type	Prot	custom	custom	Perm	Prot	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	7	4	4	8	5	2	5	2	5	2	5
Actuated Green, G (s)	5.4	50.6	50.6	41.2	41.2	26.4	27.4	27.4	19.5	20.5	20.5
Effective Green, G (s)	5.4	50.6	50.6	41.2	41.2	26.4	27.4	27.4	19.5	20.5	20.5
Actuated g/C Ratio	0.05	0.46	0.46	0.38	0.38	0.21	0.25	0.25	0.18	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	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)	87	1288	732	866	686	427	886	366	611	663	296
Wt Ratio Prot	0.04	0.09	0.06	0.19	0.05	0.24	0.10	0.15	0.07	0.07	0.18
Wt Ratio Perm	0.83	0.19	0.13	0.60	1.05	0.89	0.72	0.26	0.85	0.89	0.95
Uniform Delay, d1	51.6	17.4	16.8	26.2	34.2	41.4	37.5	32.8	43.5	39.0	44.0
Progression Factor	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	44.8	0.1	0.1	0.6	46.9	40.0	2.8	0.3	10.5	0.4	39.0
Delay (s)	96.4	17.4	16.9	26.8	81.1	81.4	40.3	33.2	54.0	39.4	83.0
Level of Service	F	B	B	C	F	F	D	C	D	D	F
Approach Delay (s)											
Approach LOS											
Intersection Summary											
HCM Average Control Delay	54.2				HCM Level of Service				D		
HCM Volume to Capacity ratio	1.00				Sum of lost time (s)				16.0		
Actuated Cycle Length (s)	109.5				ICU Level of Service				E		
Intersection Capacity Utilization	90.5%				Analysis Period (min)				15		
C: Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
32nd SR-56 FB Ramps & Carmel Creek Road

Year 2030 + Project AM
12/1/2010

Movement	EB	EB2	EB3	WB	WB2	WB3	NB	NB2	NB3	SB	SB2	SB3
Lane Configurations	7	4	7	7	7	7	7	7	7	7	7	7
Volume (vph)	750	0	319	0	0	0	351	105	250	360	0	0
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	0.95	0.95	1.00	0.95	0.95	0.95	0.97	0.97	0.95	0.95	0.95	0.95
Flt	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	0.95	1.00	0.95	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00
Satd. Flow (prot)	1681	1681	1583	1681	1681	1681	3417	3433	3539	3539	3417	3417
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	833	0	354	0	0	0	390	117	276	400	0	0
RTOR Reduction (vph)	0	0	209	0	0	0	57	0	0	0	0	0
Lane Group Flow (vph)	418	417	148	0	0	0	450	0	278	400	0	0
Turn Type	Prot	Perm	Perm	Prot	Perm	Prot	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	7	4	7	7	7	7	7	7	7	7	7	7
Permitted Phases	20.1	20.1	20.1	12.1	12.1	12.1	5.0	21.1	5.0	21.1	5.0	21.1
Actuated Green, G (s)	20.1	20.1	20.1	12.1	12.1	12.1	5.0	21.1	5.0	21.1	5.0	21.1
Effective Green, g (s)	20.1	20.1	20.1	12.1	12.1	12.1	5.0	21.1	5.0	21.1	5.0	21.1
Actuated g/C Ratio	0.41	0.41	0.41	0.25	0.25	0.25	0.10	0.43	0.10	0.43	0.10	0.43
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)	597	597	647	840	840	840	349	1518	349	1518	840	840
v/s Ratio Prot	0.25	0.25	0.09	0.13	0.13	0.13	0.06	0.41	0.06	0.41	0.13	0.13
v/s Ratio Perm	0.61	0.61	0.22	0.54	0.54	0.54	0.26	0.80	0.26	0.80	0.54	0.54
IC Ratio	11.4	11.4	9.5	16.1	16.1	16.1	21.6	9.0	21.6	9.0	16.1	16.1
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1.5	1.5	0.2	0.7	0.7	0.7	11.9	0.1	11.9	0.1	0.7	0.7
Delay (s)	12.9	12.9	1.2	1.7	1.7	1.7	12.7	1.1	12.7	1.1	1.4	1.4
Level of Service	B	B	A	B	B	B	C	A	C	A	B	B
Approach Delay (s)	12.9	12.9	1.2	1.7	1.7	1.7	12.7	1.1	12.7	1.1	1.4	1.4
Approach LOS	B	B	A	B	B	B	C	A	C	A	B	B
Intersection Summary												
HCM Average Control Delay	15.0											
HCM Level of Service	B											
HCM Volume to Capacity ratio	0.61											

HCM Signalized Intersection Capacity Analysis
33: Carmel Country Road & Carmel Canyon Road

Year 2030 + Project AM
12/1/2010

Model	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	
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[illegible][illegible]

Movement	W	E	N	S	W	E	N	S	W	E	N	S
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	222	130	0	941	417	370	397	1900	1900	1900	1900	1900
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	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Flt. Protected	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Flt. Permitted	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Satd. Flow (perm)	3433	1953	1863	1953	1953	1953	1953	3433	1953	1953	1953	1953
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	307	145	0	991	439	389	418	1900	1900	1900	1900	1900
RTOR Reduction (vph)	0	327	0	0	0	129	0	0	0	0	0	0
Lane Group Flow (vph)	307	126	0	991	310	389	418	1900	1900	1900	1900	1900
Turn Type	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Permitted Phases	1	3	6	7	8	9	6	7	8	9	6	7
Actuated Green, G (s)	16.1	16.1	57.0	57.0	57.0	24.0	16.1	16.1	57.0	57.0	24.0	16.1
Effective Green, g (s)	16.1	16.1	57.0	57.0	57.0	24.0	16.1	16.1	57.0	57.0	24.0	16.1
Actuated g/C Ratio	0.15	0.15	0.52	0.52	0.52	0.22	0.15	0.15	0.52	0.52	0.22	0.15
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)	507	234	973	827	389	522	507	234	973	827	389	522
W/S Ratio Prot.	0.09	0.08	0.53	0.53	0.53	0.22	0.09	0.08	0.53	0.53	0.22	0.09
W/S Ratio Perm	0.61	0.54	1.02	0.97	1.00	0.60	0.61	0.54	1.02	0.97	1.00	0.60
Uniform Delay, d1	43.5	43.0	26.0	15.5	42.6	44.9	43.5	43.0	26.0	15.5	42.6	44.9
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	2.0	2.4	33.6	0.3	45.6	8.6	2.0	2.4	33.6	0.3	45.6	8.6
Delay (s)	45.5	45.4	59.6	15.8	88.2	53.5	45.5	45.4	59.6	15.8	88.2	53.5
Level of Service	D	D	E	B	F	D	D	D	E	B	F	D
Approach Delay (s)	45.5	45.4	46.2	10.2	46.2	46.2	45.5	45.4	46.2	10.2	46.2	46.2
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D
Intersection Summary	32	32	32	32	32	32	32	32	32	32	32	32
HCM Average Control Delay	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5
HCM Volume to Capacity ratio	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Actuated Cycle Length (s)	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1
Intersection Capacity Utilization	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%
Analysis Period (min)	15	15	15	15	15	15	15	15	15	15	15	15
c. Critical Lane Group												

Movement	W	E	N	S	W	E	N	S	W	E	N	S
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	222	130	0	941	417	370	397	1900	1900	1900	1900	1900
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	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Flt. Protected	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Flt. Permitted	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Satd. Flow (perm)	3433	1953	1863	1953	1953	1953	1953	3433	1953	1953	1953	1953
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	307	145	0	991	439	389	418	1900	1900	1900	1900	1900
RTOR Reduction (vph)	0	327	0	0	0	129	0	0	0	0	0	0
Lane Group Flow (vph)	307	126	0	991	310	389	418	1900	1900	1900	1900	1900
Turn Type	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Permitted Phases	1	3	6	7	8	9	6	7	8	9	6	7
Actuated Green, G (s)	16.1	16.1	57.0	57.0	57.0	24.0	16.1	16.1	57.0	57.0	24.0	16.1
Effective Green, g (s)	16.1	16.1	57.0	57.0	57.0	24.0	16.1	16.1	57.0	57.0	24.0	16.1
Actuated g/C Ratio	0.15	0.15	0.52	0.52	0.52	0.22	0.15	0.15	0.52	0.52	0.22	0.15
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)	507	234	973	827	389	522	507	234	973	827	389	522
W/S Ratio Prot.	0.09	0.08	0.53	0.53	0.53	0.22	0.09	0.08	0.53	0.53	0.22	0.09
W/S Ratio Perm	0.61	0.54	1.02	0.97	1.00	0.60	0.61	0.54	1.02	0.97	1.00	0.60
Uniform Delay, d1	43.5	43.0	26.0	15.5	42.6	44.9	43.5	43.0	26.0	15.5	42.6	44.9
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	2.0	2.4	33.6	0.3	45.6	8.6	2.0	2.4	33.6	0.3	45.6	8.6
Delay (s)	45.5	45.4	59.6	15.8	88.2	53.5	45.5	45.4	59.6	15.8	88.2	53.5
Level of Service	D	D	E	B	F	D	D	D	E	B	F	D
Approach Delay (s)	45.5	45.4	46.2	10.2	46.2	46.2	45.5	45.4	46.2	10.2	46.2	46.2
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D
Intersection Summary	32	32	32	32	32	32	32	32	32	32	32	32
HCM Average Control Delay	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5	52.5
HCM Volume to Capacity ratio	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Actuated Cycle Length (s)	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1
Intersection Capacity Utilization	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%
Analysis Period (min)	15	15	15	15	15	15	15	15	15	15	15	15
c. Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	
Volume (vph)	25	22	16	28	21	163	28	318	66	79	510	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.94	1.00	0.95	1.00	0.95	1.00	
Flt	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99	1.00	0.95	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1748	1583	1770	1748	1770	1770	1770	1770	1770	3530	
Satd. Flow (perm)	1770	1748	1583	1770	1748	1770	1770	1770	1770	1770	3530	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	28	24	18	31	23	188	29	353	73	87	576	
RTOR Reduction (vph)	0	0	36	0	20	0	0	0	10	0	1	
Lane Group Flow (vph)	28	26	0	31	43	36	0	53	134	0	26	
Turn Type	Prot	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	
Permitted Phases	4	4	4	4	4	4	4	4	4	4	4	
Actuated Green, G (s)	0.8	4.7	4.7	2.6	6.5	6.5	2.9	29.1	1.3	27.5	27.5	
Effective Green, g (s)	0.8	4.7	4.7	2.6	6.5	6.5	2.9	29.1	1.3	27.5	27.5	
Actuated g/C Ratio	0.01	0.08	0.08	0.05	0.12	0.12	0.05	0.54	0.02	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	
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)	26	183	139	86	212	212	98	1886	43	1808	1808	
vs Ratio Prot	0.01	0.003	0.004	0.02	0.03	0.03	0.01	0.16	0.01	0.16	0.16	
vs Ratio Perm	0.55	0.29	0.03	0.73	0.17	0.17	0.55	0.71	0.60	0.36	0.36	
Uniform Delay, d1	26.2	22.9	22.4	25.2	21.2	21.2	24.8	9.2	25.9	7.8	7.8	
Progression Factor	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	7.9	1.0	0.1	27.2	0.4	0.4	6.7	1.3	21.7	0.1	0.1	
Delay (s)	34.0	23.9	22.5	52.4	21.6	21.6	31.5	10.5	47.6	7.9	7.9	
Level of Service	C	C	C	D	C	C	C	B	D	A	A	
Approach Delay (s)	24.3			27.9			11.3			B		
Approach LOS	C			D			B			A		
Intersection Summary												
HCM Average Control Delay	12.7					12.7					HCM Level of Service	
HCM Volume to Capacity Ratio	0.61					0.61					B	
Actuated Cycle Length (s)	53.7					53.7					Sum of lost time (s)	
Intersection Capacity Utilization	58.4%					58.4%					B	
Analysis Period (min)	15					15					Critical Lane Group	
c. Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	
Volume (vph)	25	22	16	28	21	163	28	318	66	79	510	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	
Flt	1.00	0.94	1.00	0.97	1.00	0.99	1.00	0.99	1.00	0.95	1.00	
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1743	1770	1770	1770	1614	1770	1614	1770	1770	3512	
Satd. Flow (perm)	1770	1743	1770	1770	1770	1614	1770	1614	1770	1770	3512	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	28	24	18	31	23	188	29	350	73	87	576	
RTOR Reduction (vph)	0	16	0	0	168	0	0	0	0	0	4	
Lane Group Flow (vph)	28	26	0	31	43	40	29	1087	0	99	603	
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	
Permitted Phases	4	4	4	4	4	4	4	4	4	4	4	
Actuated Green, G (s)	1.4	5.5	1.4	5.5	1.4	5.5	1.4	5.5	1.4	5.5	26.2	
Effective Green, g (s)	1.4	5.5	1.4	5.5	1.4	5.5	1.4	5.5	1.4	5.5	26.2	
Actuated g/C Ratio	0.03	0.11	0.03	0.11	0.03	0.11	0.03	0.11	0.03	0.11	0.52	
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)	49	189	49	175	55	1673	55	1673	126	1815	1815	
vs Ratio Prot	0.02	0.01	0.02	0.03	0.02	0.03	0.02	0.03	0.06	0.17	0.17	
vs Ratio Perm	0.57	0.14	0.53	0.25	0.52	0.25	0.52	0.25	0.79	0.33	0.33	
Uniform Delay, d1	24.4	20.5	24.4	20.7	24.2	10.0	24.2	10.0	23.2	7.1	7.1	
Progression Factor	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	15.1	0.3	23.7	0.7	7.9	0.9	7.9	0.9	26.7	0.1	0.1	
Delay (s)	39.4	20.8	48.1	21.4	32.0	10.9	32.0	10.9	49.9	7.3	7.3	
Level of Service	D	C	D	C	C	B	C	B	D	A	A	
Approach Delay (s)	28.2	20.8	24.9	21.5	11.5	13.2	11.5	13.2	33.2	7.3	7.3	
Approach LOS	C	C	C	C	B	B	C	B	B	A	A	
Intersection Summary												
HCM Average Control Delay	14.1					12.7					HCM Level of Service	
HCM Volume to Capacity ratio	0.59					0.61					B	
Actuated Cycle Length (s)	50.7					53.7					Sum of lost time (s)	
Intersection Capacity Utilization	60.6%					58.4%					B	
Analysis Period (min)	15					15					Critical Lane Group	
c. Critical Lane Group												

Movement: EB, EB, WB, WB, SB, SB											
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	0	1428	1344	0	931	400	0	931	400	0	931
Ideal Flow (vphpl)	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	0.95	0.95	0.95	0.95	0.97	0.91	0.95	0.97	0.91	0.95	0.91
Fit Protected	1.00	1.00	1.00	1.00	0.99	0.85	1.00	0.99	0.85	1.00	0.99
Satd. Flow (prot)	3539	3539	3539	3539	3427	1441	3539	3427	1441	3539	3427
Fit Permitted	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Satd. Flow (perm)	3539	3539	3539	3539	3427	1441	3539	3427	1441	3539	3427
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1587	1493	0	1034	444	0	1034	444	0	1034
RTOR Reduction (vph)	0	0	0	0	0	4	24	0	0	0	4
Lane Group Flow (vph)	0	1587	1493	0	1074	376	0	1074	376	0	1074
Turn Type	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	2,5	6,2	4	4	4	4	4	4	4	4	4
Permitted Phases	2,5	6,2	4	4	4	4	4	4	4	4	4
Actuated Green, G (s)	47.0	47.0	25.0	25.0	25.0	25.0	47.0	47.0	25.0	25.0	25.0
Effective Green, g (s)	47.0	47.0	25.0	25.0	25.0	25.0	47.0	47.0	25.0	25.0	25.0
Actuated g/C Ratio	0.59	0.59	0.31	0.31	0.31	0.31	0.59	0.59	0.31	0.31	0.31
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)	2079	2079	1071	1071	450	450	2079	2079	1071	1071	450
Wt Ratio Prot	0.45	0.42	0.31	0.31	0.26	0.26	0.45	0.42	0.31	0.31	0.26
Wt Ratio Perm	0.76	0.72	1.00	1.00	0.84	0.84	0.76	0.72	1.00	1.00	0.84
Uniform Delay, d1	12.3	11.8	27.5	27.5	25.6	25.6	12.3	11.8	27.5	27.5	25.6
Progression Factor	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	1.7	1.2	28.1	28.1	12.6	12.6	1.7	1.2	28.1	28.1	12.6
Delay (s)	14.1	13.0	55.6	55.6	38.2	38.2	14.1	13.0	55.6	55.6	38.2
Level of Service	B	B	E	E	D	D	B	B	E	E	D
Approach Delay (s)	14.1	13.0	50.9	50.9	38.2	38.2	14.1	13.0	50.9	50.9	38.2
Approach LOS	B	B	D	D	D	D	B	B	D	D	D
Intersection Summary											
HCM Average Control Delay	25.7	25.7	HCM Level of Service	C	C	C	25.7	25.7	HCM Level of Service	C	C
HCM Volume to Capacity ratio	0.85	0.85					0.85	0.85			
Actuated Cycle Length (s)	80.0	80.0	Sum of lost time (s)	8.0	8.0	8.0	80.0	80.0	Sum of lost time (s)	8.0	8.0
Intersection Capacity Utilization	148.5%	148.5%	ICU Level of Service	H	H	H	148.5%	148.5%	ICU Level of Service	H	H
Analysis Period (min)	15	15					15	15			
c Critical Lane Group											

Movement: EB, EB, WB, WB, SB, SB											
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	750	1891	0	0	1897	753	630	30	1072	0	0
Ideal Flow (vphpl)	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	0.95	0.91	0.91	0.91	0.95	0.91	0.95	0.91	0.95	0.91
Fit Protected	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.87	0.95	1.00	0.95
Satd. Flow (prot)	3539	3539	3539	3539	3539	3427	1441	3539	3427	1441	3539
Fit Permitted	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.99	1.00	1.00	0.99
Satd. Flow (perm)	3539	3539	3539	3539	3539	3427	1441	3539	3427	1441	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	833	2101	0	0	1896	837	700	33	1191	0	0
RTOR Reduction (vph)	0	0	0	0	0	327	0	4	4	0	0
Lane Group Flow (vph)	833	2101	0	0	1896	510	630	647	639	0	0
Turn Type	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6	6	6	6	6	6	6	6	6
Permitted Phases	5	2	6	6	6	6	6	6	6	6	6
Actuated Green, G (s)	24.0	24.0	41.0	41.0	41.0	43.0	43.0	43.0	43.0	43.0	43.0
Effective Green, g (s)	24.0	24.0	41.0	41.0	41.0	43.0	43.0	43.0	43.0	43.0	43.0
Actuated g/C Ratio	0.30	0.30	0.34	0.34	0.34	0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	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)	687	2035	1737	541	602	528	539	539	539	539	539
Wt Ratio Prot	0.24	0.24	0.37	0.37	0.37	0.37	0.44	0.44	0.44	0.44	0.44
Wt Ratio Perm	0.76	0.76	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Uniform Delay, d1	48.0	25.5	39.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	108.8	28.8	46.9	26.8	49.4	117.0	100.7	100.7	100.7	100.7	100.7
Delay (s)	156.8	54.3	86.4	65.3	87.9	155.5	139.2	139.2	139.2	139.2	139.2
Level of Service	F	D	F	E	F	F	F	F	F	F	F
Approach Delay (s)	63.4	63.4	81.3	81.3	128.0	128.0	128.0	128.0	128.0	128.0	128.0
Approach LOS	F	F	F	F	F	F	F	F	F	F	F
Intersection Summary											
HCM Average Control Delay	94.0	94.0	HCM Level of Service	F	F	F	94.0	94.0	HCM Level of Service	F	F
HCM Volume to Capacity ratio	1.13	1.13					1.13	1.13			
Actuated Cycle Length (s)	120.0	120.0	Sum of lost time (s)	8.0	8.0	8.0	120.0	120.0	Sum of lost time (s)	8.0	8.0
Intersection Capacity Utilization	107.2%	107.2%	ICU Level of Service	C	C	C	107.2%	107.2%	ICU Level of Service	C	C
Analysis Period (min)	15	15					15	15			
c Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 Year 2030 + Project PM
 12/1/2010
 140 Del Mar Heights Road & Third Ave.

HCM Signalized Intersection Capacity Analysis

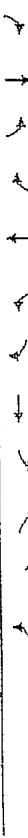
HCM Sign

Movement	S	T	B	L	R	VB	NB	WB	SB	NB	WB	S	T	B	L	R	VB	NB	WB	SB	NB	WB	
Lane Configurations	↑↑↑	↑↑	↑	↓	↓	↓	↓	↓	↓	↓	↓	↑↑↑	↑↑	↑	↓	↓	↓	↓	↓	↓	↓	↑	
Volumes (vph)	2633	221	172	2047	306	236						2633	221	172	2047	306	236						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900						1900	1900	1900	1900	1900	1900						
Total Lost Time (s)	5.0	5.0	4.0	5.0	4.0	4.0						5.0	5.0	4.0	5.0	4.0	4.0						
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00						0.91	1.00	1.00	0.91	0.97	1.00						
Flt. Protected	1.00	1.00	0.95	1.00	1.00	1.00						1.00	1.00	0.95	1.00	0.95	1.00						
Satd. Flow (prot)	5085	5593	4770	5085	3433	1863						5085	5593	4770	5085	3433	1863						
Flt. Permitted	1.00	1.00	0.95	1.00	0.95	1.00						1.00	1.00	0.95	1.00	0.95	1.00						
Satd. Flow (perm)	5085	5593	4770	5085	3433	1863						5085	5593	4770	5085	3433	1863						
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)	2662	240	187	2225	333	259						2662	240	187	2225	333	259						
RTOR Reduction (vph)	0	97	0	0	0	153						0	97	0	0	0	153						
Lane Group Flow (vph)	2662	143	187	2225	333	106						2662	143	187	2225	333	106						
Turn Type	P	P	P	P	P	P						P	P	P	P	P	P						
Protected Phases	4	4	4	4	4	4						8	2	2	8	2	2						
Permitted Phases	2											2											
Acquired Green, G (s)	51.0	51.0	10.0	65.0	13.3	13.3						51.0	51.0	10.0	65.0	13.3	13.3						
Effective Green, g (s)	51.0	51.0	10.0	65.0	13.3	13.3						51.0	51.0	10.0	65.0	13.3	13.3						
Acquired GO Ratio	0.38	0.38	0.11	0.74	0.15	0.15						0.38	0.38	0.11	0.74	0.15	0.15						
Clearance Time (s)	5.0	5.0	4.0	5.0	4.0	4.0						5.0	5.0	4.0	5.0	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)	2917	926	203	3786	623	241						2917	926	203	3786	623	241						
vs Ratio/Prot	0.36	0.09	0.01	0.44	0.10	0.07						0.36	0.09	0.01	0.44	0.10	0.07						
vs Ratio Perm																							
W/Ratio	0.95	0.5	0.97	0.59	0.56	0.44						0.95	0.5	0.97	0.59	0.56	0.44						
Uniform Delay, d1	17.3	8.3	38.3	5.1	34.7	33.6						17.3	8.3	38.3	5.1	34.7	33.6						
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	9.5	0.1	41.6	0.2	2.5	1.3						9.5	0.1	41.6	0.2	2.5	1.3						
Delay(s)	26.7	8.4	79.9	5.3	37.3	34.9						26.7	8.4	79.9	5.3	37.3	34.9						
Level of Service	C	A	E	A	D	C						C	A	E	A	D	C						
Approach Delay (s)	25.3			11.1	36.2							25.3			11.1	36.2							
Approach LOS	C			B	D							C			B	D							
Intersection Summary																							
HCM Average Control Delay	20.7											HCM Level of Service											C
HCM Volume to Capacity ratio	0.90																						
Acquired Cycle Length (s)	67.3											Sum of lost time (s)											13.0
Intersection Capacity Utilization	80.0%											TCU Level of Service											D
Analysis Period (min)	15																						
Critical Lane Group																							

[illegible]

Movement	←	→	↔	↖	↗	←	→	↔	↖	↗	
	EB	WB	EB	WB	WB	EB	WB	EB	WB	WB	
Lane Configurations	↑↑↑	↑↑↑	↑	↑	↑	↑	↑	↑	↑	↑	
Volume (vph)	2887	184	184	1964	255	255	255	1900	1900	1900	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	
Lane Util. Factor	0.91	1.00	0.97	0.91	0.97	1.00	0.97	1.00	0.97	1.00	
Flt	1.00	0.95	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	5005	1563	3433	5095	3433	1563	5005	3433	1563	5005	
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	5005	1563	3433	5095	3433	1563	5005	3433	1563	5005	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	2921	200	200	2195	277	277	277	2195	277	277	
RTOR Reduction (vph)	0	77	0	0	0	0	0	0	0	98	
Lane Group Flow (vph)	2921	123	200	2195	277	181	277	2195	277	181	
Turn Type	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	
Projected Phases	1	1	3	8	2	2	2	8	2	2	
Permitted Phases	53.1	53.1	6.2	63.3	14.0	14.0	14.0	63.3	14.0	14.0	
Actuated Green, G (s)	53.1	53.1	6.2	63.3	14.0	14.0	14.0	63.3	14.0	14.0	
Effective Green, g (s)	0.62	0.62	0.07	0.73	0.16	0.16	0.16	0.73	0.16	0.16	
Actuated/C Ratio	5.0	5.0	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3129	974	247	3730	557	257	257	3730	557	257	
Lane Grp Cap (vph)	2057	0.08	0.05	0.42	0.08	0.11	0.11	0.42	0.08	0.11	
v/s Ratio Prot	0.93	0.13	0.81	0.57	0.50	0.70	0.70	0.57	0.50	0.70	
v/s Ratio	15.0	6.9	35.5	5.3	32.9	34.2	34.2	5.3	32.9	34.2	
Uniform Delay d1	100	100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Progression Factor	6.0	6.0	17.5	0.2	0.7	8.4	8.4	0.2	0.7	8.4	
Incremental Delay d2	21.0	7.0	57.0	5.5	33.6	42.9	42.9	5.5	33.6	42.9	
Delay (s)	C	A	E	A	E	A	D	E	A	D	
Level of Service	C	A	E	A	E	A	D	E	A	D	
Approach Delay (s)	20.1			9.9	36.1			9.9	36.1		
Approach LOS	C			A	D			A	D		
Intersection Summary											
HCM Average Control Delay	17.8				17.8				HCM Level of Service		
HCM Volume to Capacity ratio	0.98				0.98				B		
Actuated Cycle Length (s)	86.3				86.3				Sum of lost time (s)		
Intersection Capacity Utilization	75.3%				75.3%				IC Level of Service		
Analysis Period (min)	15				15				ID		
Critical Lane Group											

	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
Lane Configurations	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641																																																																																																																																																																																																																																																																																																																																																																							



Movement	EB	WB	NB	SB	EB	WB	NB	SB
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	206	1768	643	120	925	300	175	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Flt Protected	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd Flow (prot)	3433	4081	3433	4081	3433	4081	3433	4081
Satd Flow (perm)	3433	4081	3433	4081	3433	4081	3433	4081
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	219	1846	677	126	951	316	184	211
RTOR Reduction (vph)	0	58	0	17	0	58	0	17
Lane Group Flow (vph)	219	1846	677	126	951	316	184	211
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	1	2	3	4	5	6	7	8
Actuated Green, G (s)	11.2	52.2	3.6	44.6	18.5	7.5	15.7	14.7
Effective Green, g (s)	11.2	52.2	3.6	44.6	18.5	7.5	15.7	14.7
Actuated g/C Ratio	0.16	0.49	0.03	0.42	0.17	0.16	0.15	0.14
Clearance Time (s)	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	359	2381	116	2080	594	786	260	455
W/S Ratio Prot	0.06	0.51	0.03	0.20	0.16	0.08	0.12	0.10
W/S Ratio Perm	0.61	1.04	0.77	0.47	0.93	0.51	0.51	0.73
Uniform Delay, d1	45.8	27.4	51.3	22.6	43.6	40.9	44.2	44.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	28.5	25.6	0.2	20.7	0.6	17.2	6.1
Delay (s)	48.9	55.9	76.9	22.8	64.3	41.4	61.4	50.4
Level of Service	D	E	E	C	D	D	E	D
Approach Delay (s)	55.4	55.4	27.2	55.4	55.4	55.4	55.4	55.4
Approach LOS	E	E	C	E	E	E	E	E
Interaction Summary								
HCM Average Control Delay	49.3							
HCM Volume to Capacity ratio	1.00							
Actuated Cycle Length (s)	107.0							
Intersection Capacity Utilization	94.5%							
Analysis Period (min)	15							
c - Critical Lane Group								



Movement	EB	WB	NB	SB	EB	WB	NB	SB
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	29	1799	175	9	974	23	101	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	0.91	1.00	0.91
Flt Protected	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd Flow (prot)	1770	2077	1770	2077	1770	2077	1770	2077
Satd Flow (perm)	1770	2077	1770	2077	1770	2077	1770	2077
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	54	1999	166	9	1082	26	112	16
RTOR Reduction (vph)	0	12	0	3	0	12	0	3
Lane Group Flow (vph)	54	1999	166	9	1082	26	112	16
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	1	2	3	4	5	6	7	8
Actuated Green, G (s)	3.3	33.1	0.7	30.5	5.8	7.4	2.2	3.8
Effective Green, g (s)	3.3	33.1	0.7	30.5	5.8	7.4	2.2	3.8
Actuated g/C Ratio	0.06	0.54	0.01	0.50	0.09	0.12	0.04	0.06
Clearance Time (s)	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	95	2705	20	2517	187	199	63	101
W/S Ratio Prot	0.03	0.44	0.01	0.22	0.06	0.07	0.02	0.01
W/S Ratio Perm	0.57	0.91	0.45	0.44	0.67	0.11	0.68	0.12
Uniform Delay, d1	28.4	11.5	30.2	9.9	28.9	24.1	29.3	27.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	1.9	15.3	0.1	10.1	0.2	26.3	0.5
Delay (s)	36.0	13.4	45.4	10.0	39.0	24.3	55.6	27.7
Level of Service	D	B	D	B	D	C	E	C
Approach Delay (s)	13.9	10.2	32.3	10.2	32.3	32.3	39.7	39.7
Approach LOS	B	B	C	B	C	C	D	D
Interaction Summary								
HCM Average Control Delay	14.4							
HCM Volume to Capacity ratio	1.72							
Actuated Cycle Length (s)	61.4							
Intersection Capacity Utilization	61.3%							
Analysis Period (min)	15							
c - Critical Lane Group								

Moisture									
Lane Configurations	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4	4+4
Volume (vph)	1351	300	153	510	170	410			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.91	1.00	0.91	0.97	1.00				
Flt Protected	0.97	1.00	1.00	1.00	1.00	0.95			
Flt Permitted	1.00	0.95	1.00	0.95	1.00				
Satd Flow (vph)	1770	5005	3433	583					
Satd Flow (perm)	4947	1770	5005	3433	583				
Peak hour factor, PHF	0.90	0.90	0.90	0.90	0.90				
Adj. Flow (vph)	1601	333	170	678	168	456			
RTOR Reduction (vph)	55	0	0	0	0	213			
Lane Group Flow (vph)	1778	0	170	678	168	243			
Turn Type	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted			
Permitted Phases	4	3	3	3	3	2			
Actuated Green, G (s)	22.4	7.5	33.9	12.4	12.4				
Effective Green, g (s)	22.4	7.5	33.9	12.4	12.4				
Actuated C Ratio	0.41	0.41	0.52	0.23	0.23				
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)	2041	244	3175	784	361				
W/S Ratio Perm	0.35	0.10	0.13	0.08	0.15				
W/S Ratio Perm	0.97	0.70	0.21	0.24	0.67				
Uniform Delay, d1	14.6	22.3	4.4	17.1	19.1				
Progression Factor	1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	4.4	8.4	0.0	0.2	4.9				
Delay (s)	19.0	30.7	4.5	17.3	24.0				
Level of Service	B	C	A	B	C				
Approach Delay (s)	19.0		9.7	22.0					
Approach LOS	B		A	C					
Section Summary									
HCM Average Control Delay	17.2	HCM Level of Service				B			
HCM Volume/Capacity Ratio	0.78								
Actuated Cycle Length (s)	51.3	Sum of lost time (s)				12.0			
Intersection Capacity Utilization	64.6%	ICU Level of Service				C			
Analysis Period (min)	15								
C: Critical Lane Group									

Movement	EBE	EBT	EBR	SWB	WBL	WBR	NBL	NBT	NBR	SDB	SBL	SBR
Lane Configurations	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
Volumes (vph)	312	1379	65	22	693	25	56	46	1900	1900	1900	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Lane Util. Factor	1.00	0.91	1.00	0.99	1.00	0.91	1.00	1.00	0.92	1.00	0.87	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	5051	1770	5051	1770	5051	1770	5051	1770	5051	1770	5051
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	5051	1770	5051	1770	5051	1770	5051	1770	5051	1770	5051
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	347	1532	72	24	770	26	62	51	64	37	37	308
RTOR Reduction (vph)	0	6	0	0	5	0	0	0	45	0	0	261
Lane Group Flow (vph)	347	1598	0	24	793	0	62	60	0	37	84	30
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1	6	5	2	1	6
Permitted Phases	14B	30.6	15	17.3	24	10.3	15	9.4	24	10.3	15	9.4
Actuated Green, G (s)	14.9	30.6	15	17.3	24	10.3	15	9.4	24	10.3	15	9.4
Effective Green, g (s)	0.24	0.49	0.02	0.28	0.04	0.17	0.02	0.15	0.04	0.17	0.02	0.15
Actuated Q/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (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
Vehicle Extension (s)	43	1414	0	16	0	0	0	0	0	0	0	0
Lane Grp Cap (vph)	423	2497	43	1414	69	206	43	245	69	206	43	245
v/s Ratio Prot	0.20	0.37	0.01	0.16	0.04	0.03	0.02	0.05	0.04	0.03	0.02	0.05
v/s Ratio Perm	0.02	0.61	0.56	0.56	0.90	0.21	0.86	0.34	0.90	0.21	0.86	0.34
Uniform Delay, d1	22.3	11.5	29.9	19.1	29.6	22.3	30.1	23.5	29.6	22.3	30.1	23.5
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	12.0	0.5	14.8	0.5	73.2	0.4	85.1	0.8	73.2	0.4	85.1	0.8
Delay (s)	34.3	12.1	44.6	19.6	102.8	22.7	115.2	24.3	102.8	22.7	115.2	24.3
Level of Service	C	B	D	B	F	C	F	C	F	C	F	C
Approach Delay (s)	16.1	20.3	32.1	33.1	32.1	33.1	32.1	33.1	32.1	33.1	32.1	33.1
Approach LOS	B	B	C	C	C	C	D	D	C	C	C	C
Intersection Summary												
HCM Average Control Delay	20.9 HCM Level of Service C											
HCM Volume to Capacity ratio	0.62											
Actual Cycle Length (s)	61.9											
Intersection Capacity Utilization	66.6% 13.0 C											
Analysis Period (min)	15											

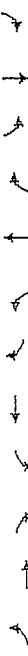
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HCM Signalized Intersection Capacity Analysis

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Movement	NB	EB	WB	CB	SB	NR	WR	CR	SR	NS	WS	CS	SS
Lane Configurations	5	7	6	28	28	56	28	9	109	784	195	6	375
Volume (vph)	117	50	71	56	28	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vehpl)	1900	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	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.98	1.00	0.95	1.00	0.95	1.00
FIT	1.00	0.95	0.99	0.97	0.95	1.00	0.98	1.00	0.95	1.00	0.97	0.95	1.00
FIT Protected	0.97	1.00	0.97	0.97	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1800	1583	1783	1783	1770	3460	3460	3460	1770	3460	1770	3460	1770
Satd. Flow (perm)	1900	1583	1783	1783	1770	3460	3460	3460	1770	3460	1770	3460	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Aj. RTOR Delay (vph)	130	56	79	62	29	19	121	849	150	7	417	92	20
Adj. RTOR Reduction (vph)	0	0	67	0	5	0	0	15	0	0	0	20	0
Lane Group Flow (vph)	0	186	12	0	96	0	121	964	0	7	469	0	7
Turn Type	Split	Prot	Split	Split	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	4	8	8	5	5	2	4	8	4	8	4
Permitted Phases	4	4	4	8	8	5	5	2	4	8	4	8	4
Activated Green, G (s)	8.8	8.8	8.8	6.7	6.7	7.0	7.0	27.7	0.7	27.7	0.7	27.7	0.7
Effective Green, g (s)	8.8	8.8	8.8	6.7	6.7	7.0	7.0	27.7	0.7	27.7	0.7	27.7	0.7
Activated g/C Ratio	0.15	0.15	0.15	0.31	0.31	0.12	0.12	0.46	0.01	0.36	0.01	0.36	0.01
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	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	3.0
Lane Grp Cap (vph)	264	233	199	207	1800	21	1800	21	1230	21	1230	21	1230
W/S Ratio Prot.	<0.10	<0.10	<0.05	<0.05	<0.07	<0.25	<0.00	0.14	<0.00	0.14	<0.00	0.14	<0.00
W/S Ratio Perm	0.70	0.05	0.46	0.46	0.68	0.69	0.68	0.69	0.33	0.40	0.33	0.40	0.33
W/C Ratio	24.3	22.0	25.0	25.1	12.1	14.4	14.4	14.4	29.4	14.4	29.4	14.4	29.4
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor,	8.3	0.1	1.6	4.2	0.7	4.2	0.7	4.2	9.1	0.2	9.1	0.2	9.1
Incremental Delay, d2	32.6	22.0	26.8	26.8	24.2	22.8	24.2	22.8	39.5	14.5	39.5	14.5	39.5
Delay of Service	C	C	C	C	C	B	C	B	D	B	D	B	B
Level of Service	C	C	C	C	C	B	C	B	D	B	D	B	B
Approach Delay (s)	29.1	26.0	26.0	26.0	14.5	12.0	14.5	12.0	14.5	12.0	14.5	12.0	14.5
Approach LOS	C	C	C	C	B	B	C	B	D	B	D	B	B
Intersection Summary													
HCM Average Control Delay	17.3												
HCM Volume to Capacity ratio	0.59												
Actuator Cycle Length (s)	59.9												
Intersection Capacity Utilization	90.4%												
Analysis Period (min)	15												
Critical Lane Group	B												

HCM Signalized Intersection Capacity Analysis

25: Carmel Valley Road & I-5 SB Ramps

Year 2030 + Project PM
12/1/2010

[illegible]

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	130	114	0	0	694	420	800	10	650	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.95	0.95	1.00	0.95	1.00	0.95	0.91	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flt	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.88	0.85	0.95	1.00	0.88	0.85	0.95	1.00	0.85
Flt Protected	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Satd Flow (prot)	3433	3539	3433	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539
Satd Flow (perm)	3433	3539	3433	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	128	0	0	771	467	844	11	844	0	0	12	12	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	327	0	327	0	12	12	0	0	0	0
Lane Group Flow (vph)	144	128	0	0	771	140	554	514	507	0	0	0	0	0	0	0
Turn Type	Prot	Prot	Perm	Perm	Prot	Perm	Perm	Perm	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	7	1	4	8	15	2	2	2	2	2	2	2	2	2	2	2
Permitted Phases																
Actuated Green, G (s)	3.5	25.4	17.9	17.9	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5
Effective Green, g (s)	3.5	25.4	17.9	17.9	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5
Actuated g/C Ratio	0.06	0.12	0.30	0.30	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	201	1501	1058	473	744	653	655	655	655	655	655	655	655	655	655	655
Via Ratio Prot	0.04	c0.35	0.22	0.09	0.33	c0.35	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Via Ratio Perm	0.72	0.82	0.73	0.30	0.74	0.78	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Uniform Delay, d1	27.7	15.3	16.8	16.1	13.9	14.3	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1
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	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.5	3.8	2.5	0.4	4.1	6.3	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Delay (s)	39.2	19.1	21.4	16.5	17.9	20.5	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
Level of Service	D	B	C	B	B	C	B	B	B	B	B	B	B	B	B	B
Approach Delay (s)	21.2	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Approach LOS	C	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Intersection Summary																
HCM Average Control Delay	20.0															
HCM Volume to Capacity ratio	0.81															
Actuated Cycle Length (s)	59.9															
Intersection Capacity Utilization	80.1%															
Analysis Period (min)	15															
Critical Lane Group	c - Critical Lane Group															

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Volume (vph)	110	80	190	320	80	267	10	1204	240	281	1632	100	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.91	0.95	0.95	0.91	0.95	0.95	1.00	0.91	0.95	1.00	0.91	0.95	0.95	0.95	0.95
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Permitted	0.95	0.99	0.95	0.95	0.97	0.95	0.97	0.95	0.95	0.97	0.95	0.95	0.95	0.95	0.95	0.95
Satd Flow (prot)	1661	1665	1661	1661	1661	1616	1616	1616	1616	1616	1616	1616	1616	1616	1616	1616
Satd Flow (perm)	1661	1515	1504	1504	1661	1616	1616	1616	1616	1616	1616	1616	1616	1616	1616	1616
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	122	89	199	319	89	278	10	1338	267	312	1813	111	1900	1900	1900	1900
RTOR Reduction (vph)	0	3	51	0	4	42	0	33	0	0	7	0	7	0	7	0
Lane Group Flow (vph)	105	108	234	347	346	245	122	1572	0	312	1917	0	1900	1900	1900	1900
Turn Type	Prot	Prot	Perm	Spill	Perm	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	1	4	8	15	2	2	2	2	2	2	2	2	2	2	2
Permitted Phases	4															
Actuated Green, G (s)	7.1	32.3	32.3	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
Effective Green, g (s)	7.1	32.3	32.3	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
Actuated g/C Ratio	0.08	0.36	0.36	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
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	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	133	556	540	396	381	354	149	2738	749	2134	2134	2134	2134	2134	2134	2134
Via Ratio Prot	0.06	0.02	0.02	0.21	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Via Ratio Perm	0.05	0.02	0.05	0.88	0.91	0.88	0.92	0.87	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
g/C Ratio	0.82	0.82	0.82	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Uniform Delay, d1	40.8	19.9	16.9	33.1	33.5	31.4	40.5	13.2	18.2	24.1	24.1	24.1	24.1	24.1	24.1	24.1
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	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.0	0.2	0.0	19.0	25.8	5.7	28.2	0.3	0.4	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Delay (s)	71.8	20.1	16.9	53.1	59.3	37.2	68.7	13.5	18.5	29.6	29.6	29.6	29.6	29.6	29.6	29.6
Level of Service	E	C	B	D	E	D	E	B	B	C	C	C	C	C	C	C
Approach Delay (s)	38.5															
Approach LOS	D															
Intersection Summary																
HCM Average Control Delay	29.3															
HCM Volume to Capacity Ratio	0.88															
Actuated Cycle Length (s)	90.0															
Intersection Capacity Utilization	82.9%															
Analysis Period (min)	15															
c - Critical Lane Group																

29· SR-56 EB on ramp & El Camino Real

Year 2030 + Project PM
12/1/2010[illegible]

c Critical Lane Group

28: Carmel Valley Road & El Camino Real

Year 2030 + Project PM
12/1/2010

Lane Configurations															
Volume (vph)	0	0	0	220	100	200	600	289	0	0	1478	564	1900	1800	1900
Flow (vphpl)	1900	1900	1900	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.96	0.86	0.86	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	1.00	0.85	1.00	1.00	0.95	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Flt Protected	3433	5085	593	3433	3539	3433	5085	593	3433	3539	3433	5085	593	3433	3539
Satd. Flow (pc/m)	3433	5085	593	3433	3539	3433	5085	593	3433	3539	3433	5085	593	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	244	111	222	556	1432	0	0	1642	504	125	7	125
RTOR Reduction (vph)	0	0	0	0	0	68	0	0	0	0	7	125	0	0	7
Lane Group Flow (vph)	0	0	0	244	111	164	556	1432	0	0	1736	376	0	0	1736
Conf. Peds. (h/hr)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Intersection Summary															
HCM Average Control Delay	19.2	HCM Level of Service													
HCM Volume to Capacity ratio	0.77	B													
Actuated Cycle Length (s)	84.9	Sum of lost time (s)													
Intersection Capacity Utilization	118.5%	ICU Level of Service													
Analysis Period (min)	15	H													
Critical Lane Group															

c Critical Lane Group

Year 2030 + Project PM
12/1/2010

[illegible]

4-CM Signalized Intersection Capacity Analysis
33: Carmel Country Road & Carmel Canyon Road

[illegible]

Lane	WB	WB	SE	SE	NW	NW	WB	WB	SE	SE	NW	NW	WB	WB
Lane	Left	Thru	Thru	Right	Left	Thru	Thru	Right	Left	Thru	Thru	Right	Left	Thru
Lane Configurations														
Volume (vph)	0	0	390	622	810	0	270	150	275					
Local Flow (vphpl)	1500	1900	1900	1900	1900	1900	1900	1900	1900					
Total Lost time (s)	4.0	4.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0					
Lane Util. Factor	0.97	0.95	0.95											
FIT	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.85					
FIT Protected	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00						
Satd. Flow (prot.)	3433	3539	3539				1563	3433	1563					
FIT Permitted	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00						
Satd. Flow (perm)	3433	3539	3539				1563	3433	1563					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90					
Adj. Flow (vph)	0	0	433	691	900	0	300	167	306					
RTOR Reduction (vph)	0	0	0	0	0	0	186	0	254					
Lane Group Flow (vph)	0	0	433	691	900	0	114	167	521					
Turn Type			Prot		Perm		Perm		Perm					
Protected Phases			5	2	5		6		4					
Permitted Phases														
Actuated Green, G (s)			10.3	32.2	18.9		18.9	8.5	8.5					
Effective Green, g (s)			10.3	32.2	18.9		18.9	8.5	8.5					
Actuated y/C Ratio			0.21	0.65	0.38		0.38	0.17	0.17					
Clearance Time (s)			4.0	5.0	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)			711	2293	1346		602	597	271					
v/s Ratio Prot			60.13	120	60.25									
v/s Ratio Perm							0.07		0.03					
v/c Ratio			0.61	0.30	0.57		0.19	0.28	0.19					
Uniform Delay, d1			17.9	3.6	12.8		10.3	18.0	17.7					
Progression Factor			1.00	1.00	1.00		1.00	1.00	1.00					
Incremental Delay, d2			1.5	0.1	1.3		0.2	0.3	0.3					
Delay (s)			19.4	3.9	14.1		10.4	18.3	18.0					
Level of Service			B	A	B		B	B	B					
Approach Delay (s)	0.0		9.9	13.2			18.1							
Approach LOS	A		A	B			B							
Intersection Summary														
HCM Average Control Delay	127													
HCM Volume to Capacity ratio	0.57													
Actualized Cycle Length (s)	49.7													
Intersection Capacity Utilization	47.8%													
Analysis Period (min)	15													
c. Critical Lane Group.														

[illegible]

ALL-WAY STOP CONTROL ANALYSIS											
General Information			Site Information								
Analyst	Jacob Swin		Intersection		Carmel Creek Rd/Del Mar Trail		City of San Diego				
Capacity Co.	USM		Jurisdiction		City of San Diego		2030				
Date Performed	1/22/2010		Analysis Year		2030						
Analysis Time Period	10 Year 2030 + Project PM										
Project ID 002407 - San Diego Corporate Center Lot											
East/West Street: Del Mar Trail											
North/South Street: Carmel Creek Road											
Volume Adjustments and Site Characteristics											
Approach			Eastbound			Westbound					
Movement			L	T	R	L	T	R			
Volume (veh/h)			5	5	4	56	12	10			
%Thrus Left Lane			Northbound			Southbound					
Approach			L	T	R	L	T	R			
Movement			12	777	101	15	444	10			
Volume (veh/h)			50			50					
%Thrus Left Lane			Westbound			Southbound					
Configuration			L1	L2	L1	L2	L1	L2			
L/TR			L1	L2	L1	L2	L1	L2			
PHF			0.90	0.90	0.90	0.90	0.90	0.90			
Flow Rate (veh/h)			14	86	444	544	262	257			
% Heavy Vehicles			2	2	2	2	2	2			
No. Lanes			1	2	2	2	2	2			
Geometry Group			2	2	5	5	5	5			
Duration, T			0.25								
Saturation Headway Adjustment Worksheet											
Prep. Left-Turns			0.4	0.7	0.0	0.0	0.1	0.0			
Prep. Right-Turns			0.3	0.1	0.0	0.2	0.0	0.0			
Prep. Heavy Vehicle			0.0	0.0	0.0	0.0	0.0	0.0			
h/LT-adj			0.2	0.2	0.5	0.5	0.5	0.5			
h/RT-adj			-0.6	-0.6	-0.6	-0.7	-0.7	-0.7			
h/HV-adj			1.7	1.7	1.7	1.7	1.7	1.7			
hadj, computed			-0.1	0.1	0.0	-0.1	0.1	0.0			
Departure Headway and Service Time											
hadj, initial value (s)			3.20	3.20	3.20	3.20	3.20	3.20			
k, initial			0.01	0.08	0.39	0.48	0.23	0.23			
hadj, final value (s)			6.76	6.65	5.54	5.38	6.09	6.03			
k, final value			0.03	0.16	0.68	0.81	0.44	0.43			
Moveup time, m (s)			2.0	2.0	2.3	2.3	2.3	2.3			
Service Time, ts (s)			4.8	4.6	3.2	3.1	3.8	3.7			
Capacity and Level of Service											
Eastbound			Westbound			Northbound			Southbound		
L1			L2	L1	L2	L1	L2	L1	L2		
Capacity (veh/h)			264	336	645	666	512	507			
Delay (s/veh)			9.95	10.90	19.32	27.14	13.55	13.21			
LOS			A	B	C	D	B	B			
Approach: Delay (s/veh)			9.95	10.90	23.62	23.62	13.38				
LOS			A	B	C	C	B				
Intersection Delay (s/veh)			19.51								
Intersection LOS			C								