

Appendix A

Existing + Project (Phase 1) Synchro Worksheets

ONE PASEO – Updated Traffic Analysis for Revised Project

January 7, 2014

HCM Signalized Intersection Capacity Analysis
1: Via De La Valle & El Camino Real

Existing + Project (Phase 1) AM

7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NET	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗			↑	↗		↔	
Volume (vph)	2	352	370	290	448	8	368	5	149	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1583	1770	1858			1775	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1583	1770	1858			1775	1583		1750	
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)	2	391	411	322	498	9	409	6	166	1	1	1
RTOR Reduction (vph)	0	0	239	0	1	0	0	0	120	0	1	0
Lane Group Flow (vph)	2	391	172	322	506	0	0	415	46	0	2	0
Turn Type	Prot		Prot	Prot			Split		Prot	Split		
Protected Phases	7	4	4	3	8		2	2	2	6	6	
Permitted Phases												
Actuated Green, G (s)	0.7	24.7	24.7	18.9	42.9			23.7	23.7		3.0	
Effective Green, g (s)	0.7	24.7	24.7	18.9	42.9			23.7	23.7		3.0	
Actuated g/C Ratio	0.01	0.29	0.29	0.22	0.50			0.27	0.27		0.03	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	14	533	453	388	924			487	435		61	
v/s Ratio Prot	0.00	c0.21	0.11	c0.18	0.27			c0.23	0.03		c0.00	
v/s Ratio Perm												
v/c Ratio	0.14	0.73	0.38	0.83	0.55			0.85	0.10		0.03	
Uniform Delay, d1	42.5	27.8	24.7	32.2	15.0			29.6	23.4		40.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	4.7	5.2	0.5	13.7	0.7			13.5	0.1		0.2	
Delay (s)	47.2	33.0	25.2	45.8	15.7			43.1	23.5		40.5	
Level of Service	D	C	C	D	B			D	C		D	
Approach Delay (s)		29.1			27.4			37.5			40.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 2: San Dieguito Road & El Camino Real

Existing + Project (Phase 1) AM
 7/11/2013



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	394	299	0	194	281	281	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	0.95
Fr _t	1.00	0.85		1.00	0.85	1.00	1.00
Fl _t Protected	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583		1863	1583	1770	3539
Fl _t Permitted	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583		1863	1583	1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	438	332	0	216	312	312	474
RTOR Reduction (vph)	0	247	0	0	235	0	0
Lane Group Flow (vph)	438	85	0	216	77	312	474
Turn Type		Perm	Prot		Perm	Prot	
Protected Phases	1		3	8		7	
Permitted Phases		1			8		6
Actuated Green, G (s)	13.7	13.7		13.2	13.2	14.8	13.7
Effective Green, g (s)	13.7	13.7		13.2	13.2	14.8	13.7
Actuated g/C Ratio	0.26	0.26		0.25	0.25	0.28	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	876	404		458	389	488	903
v/s Ratio Prot	0.13			0.12		0.18	
v/s Ratio Perm		0.05			0.05		0.13
v/c Ratio	0.50	0.21		0.47	0.20	0.64	0.52
Uniform Delay, d1	17.1	15.7		17.3	16.1	17.1	17.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3		0.8	0.2	2.8	0.6
Delay (s)	17.5	16.0		18.0	16.3	19.9	17.8
Level of Service	B	B		B	B	B	B
Approach Delay (s)	16.9			17.0			18.6
Approach LOS	B			B			B

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	53.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 3: Derby Downs Road & El Camino Real

Existing + Project (Phase 1) AM
 7/11/2013



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations	←←←		□	↑↑		↘	↑↑
Volume (vph)	84	7	0	449	50	3	830
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0	4.0
Lane Util. Factor	0.97			0.95		1.00	0.95
Frt	0.99			0.98		1.00	1.00
Flt Protected	0.96			1.00		0.95	1.00
Satd. Flow (prot)	3414			3486		1770	3539
Flt Permitted	0.96			1.00		0.95	1.00
Satd. Flow (perm)	3414			3486		1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	93	8	0	499	56	3	922
RTOR Reduction (vph)	7	0	0	10	0	0	0
Lane Group Flow (vph)	94	0	0	545	0	3	922
Turn Type			Prot			Prot	
Protected Phases	8		5	2		1	6
Permitted Phases							
Actuated Green, G (s)	5.2			16.7		0.5	21.2
Effective Green, g (s)	5.2			16.7		0.5	21.2
Actuated g/C Ratio	0.15			0.49		0.01	0.62
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)	516			1692		26	2181
v/s Ratio Prot	c0.03			0.16		0.00	c0.26
v/s Ratio Perm							
v/c Ratio	0.18			0.32		0.12	0.42
Uniform Delay, d1	12.7			5.4		16.7	3.4
Progression Factor	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.2			0.1		2.0	0.1
Delay (s)	12.9			5.5		18.7	3.6
Level of Service	B			A		B	A
Approach Delay (s)	12.9			5.5			3.6
Approach LOS	B			A			A

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	34.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1) AM

7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↕	
Volume (vph)	23	111	19	62	82	149	6	306	15	160	680	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.90		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1822		1770	1682		1770	3514		1770	3469	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1822		1770	1682		1770	3514		1770	3469	
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)	26	123	21	69	91	166	7	340	17	178	756	116
RTOR Reduction (vph)	0	8	0	0	84	0	0	4	0	0	13	0
Lane Group Flow (vph)	26	136	0	69	173	0	7	353	0	178	859	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.7	14.4		3.5	17.2		0.6	16.0		8.8	24.2	
Effective Green, g (s)	0.7	14.4		3.5	17.2		0.6	16.0		8.8	24.2	
Actuated g/C Ratio	0.01	0.25		0.06	0.29		0.01	0.27		0.15	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	21	447		106	493		18	958		265	1430	
v/s Ratio Prot	0.01	0.07		c0.04	c0.10		0.00	0.10		c0.10	c0.25	
v/s Ratio Perm												
v/c Ratio	1.24	0.30		0.65	0.35		0.39	0.37		0.67	0.60	
Uniform Delay, d1	29.0	18.1		27.0	16.3		28.9	17.3		23.6	13.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	278.6	0.4		13.4	0.4		13.4	0.2		6.5	0.7	
Delay (s)	307.6	18.4		40.4	16.8		42.2	17.5		30.1	14.2	
Level of Service	F	B		D	B		D	B		C	B	
Approach Delay (s)		62.7			21.8			18.0			16.9	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1) AM
7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↗		↖	↗	
Volume (vph)	5	83	70	92	137	36	40	325	54	41	767	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1805		1770	3464		1770	3534	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1805		1770	3464		1770	3534	
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)	6	92	78	102	152	40	44	361	60	46	852	8
RTOR Reduction (vph)	0	0	61	0	9	0	0	10	0	0	1	0
Lane Group Flow (vph)	6	92	17	102	183	0	44	411	0	46	859	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	0.5	15.7	15.7	9.4	24.6		3.5	24.8		4.1	25.4	
Effective Green, g (s)	0.5	15.7	15.7	9.4	24.6		3.5	24.8		4.1	25.4	
Actuated g/C Ratio	0.01	0.22	0.22	0.13	0.35		0.05	0.35		0.06	0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	13	418	355	238	634		89	1227		104	1282	
v/s Ratio Prot	0.00	0.05		0.06	0.10		0.02	0.12		0.03	0.24	
v/s Ratio Perm			0.01									
v/c Ratio	0.46	0.22	0.05	0.43	0.29		0.49	0.33		0.44	0.67	
Uniform Delay, d1	34.6	22.2	21.3	27.8	16.4		32.4	16.6		31.8	18.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	23.8	0.3	0.1	1.2	0.3		4.3	0.2		3.0	1.4	
Delay (s)	58.4	22.4	21.4	29.1	16.6		36.7	16.7		34.8	20.2	
Level of Service	E	C	C	C	B		D	B		C	C	
Approach Delay (s)		23.2			21.0			18.6			20.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1) AM

7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑		↙	↑↑			↑	↗	↙	↔	
Volume (vph)	93	848	23	86	854	195	68	56	76	438	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5065		1770	3440			1813	1583	1681	1638	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5065		1770	3440			1813	1583	1681	1638	
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)	103	942	26	96	949	217	76	62	84	487	24	91
RTOR Reduction (vph)	0	2	0	0	12	0	0	0	72	0	12	0
Lane Group Flow (vph)	103	966	0	96	1154	0	0	138	12	307	283	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	10.9	59.0		11.6	59.5			20.2	20.2	29.5	29.5	
Effective Green, g (s)	10.9	59.0		11.6	59.5			20.2	20.2	29.5	29.5	
Actuated g/C Ratio	0.08	0.42		0.08	0.42			0.14	0.14	0.21	0.21	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	138	2135		147	1462			262	228	354	345	
v/s Ratio Prot	0.06	0.19		0.05	0.34			0.08		0.18	0.17	
v/s Ratio Perm									0.01			
v/c Ratio	0.75	0.45		0.65	0.79			0.53	0.05	0.87	0.82	
Uniform Delay, d1	63.2	29.0		62.2	34.8			55.5	51.7	53.4	52.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.3	0.7		7.7	3.0			0.9	0.0	19.4	14.4	
Delay (s)	80.5	29.6		69.9	37.9			56.4	51.7	72.8	67.2	
Level of Service	F	C		E	D			E	D	E	E	
Approach Delay (s)		34.5			40.3			54.6			70.0	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	45.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

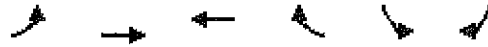
Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1391	53	0	1342	0	130
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1546	59	0	1491	0	144
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	575			607		
pX, platoon unblocked				0.87	0.89	0.87
vC, conflicting volume				1604	2321	545
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				1172	1360	0
tC, single (s)				4.1	6.8	6.9
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	85
cM capacity (veh/h)				515	124	943
Direction Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	618	618	368	746	746	144
Volume Left	0	0	0	0	0	0
Volume Right	0	0	59	0	0	144
cSH	1700	1700	1700	1700	1700	943
Volume to Capacity	0.36	0.36	0.22	0.44	0.44	0.15
Queue Length 95th (ft)	0	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.5
Approach LOS						A
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	42.8%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	↑
Volume (vph)	0	753	1010	0	919	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		0.99	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3430	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3430	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	837	1122	0	1021	362
RTOR Reduction (vph)	0	0	0	0	3	44
Lane Group Flow (vph)	0	837	1122	0	1054	282
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.3	42.3		25.5	25.5
Effective Green, g (s)		42.3	42.3		25.5	25.5
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1878	1878		1097	461
v/s Ratio Prot		0.24	c0.32		c0.31	
v/s Ratio Perm						0.20
v/c Ratio		0.45	0.60		0.96	0.61
Uniform Delay, d1		11.5	12.8		26.6	22.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.5		18.4	2.4
Delay (s)		11.7	13.4		45.0	25.3
Level of Service		B	B		D	C
Approach Delay (s)		11.7	13.4		40.3	
Approach LOS		B	B		D	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	79.7	Sum of lost time (s)	11.9
Intersection Capacity Utilization	115.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕			↕↕↕	↕	↕	↕↔	↕			
Volume (vph)	224	1428	0	0	1459	901	373	0	904	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1455	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1455	1504			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	238	1519	0	0	1552	959	397	0	962	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	453	0	14	14	0	0	0
Lane Group Flow (vph)	238	1519	0	0	1552	506	357	488	486	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	9.4	64.8			50.2	50.2	43.3	43.3	43.3			
Effective Green, g (s)	9.4	64.8			50.2	50.2	43.3	43.3	43.3			
Actuated g/C Ratio	0.08	0.54			0.42	0.42	0.36	0.36	0.36			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	269	1911			2127	662	607	525	543			
v/s Ratio Prot	0.07	c0.43			0.31	0.32	0.21	c0.34	0.32			
v/s Ratio Perm												
v/c Ratio	0.88	0.79			0.73	0.77	0.59	0.93	0.89			
Uniform Delay, d1	54.8	22.2			29.2	29.9	31.1	36.9	36.2			
Progression Factor	1.00	1.00			0.53	1.97	1.00	1.00	1.00			
Incremental Delay, d2	27.2	3.5			1.2	4.5	1.5	22.9	17.1			
Delay (s)	82.0	25.8			16.8	63.3	32.6	59.8	53.3			
Level of Service	F	C			B	E	C	E	D			
Approach Delay (s)		33.4			34.5			50.2			0.0	
Approach LOS		C			C			D			A	

Intersection Summary			
HCM Average Control Delay	38.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Existing + Project (Phase 1) AM
 7/11/2013

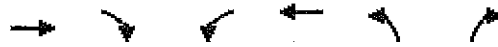


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↗	↙	↑↑↑		↙	↑↑		↙	↑	↗
Volume (vph)	108	1484	674	97	1852	64	195	10	36	102	57	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5060		3433	3123		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5060		3433	3123		1770	1863	1583
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)	120	1649	749	108	2058	71	217	11	40	113	63	337
RTOR Reduction (vph)	0	0	291	0	2	0	0	34	0	0	0	29
Lane Group Flow (vph)	120	1649	458	108	2127	0	217	17	0	113	63	308
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	14.1	59.3	71.5	10.4	56.0		12.2	18.3		12.3	18.4	32.5
Effective Green, g (s)	14.1	59.3	71.5	10.4	56.0		12.2	18.3		12.3	18.4	32.5
Actuated g/C Ratio	0.12	0.49	0.60	0.09	0.47		0.10	0.15		0.10	0.15	0.27
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	208	2513	943	153	2361		349	476		181	286	429
v/s Ratio Prot	0.07	c0.32	0.05	0.06	c0.42		0.06	0.01		c0.06	0.03	c0.08
v/s Ratio Perm			0.24									0.11
v/c Ratio	0.58	0.66	0.49	0.71	0.90		0.62	0.04		0.62	0.22	0.72
Uniform Delay, d1	50.1	22.7	13.8	53.3	29.4		51.7	43.3		51.6	44.5	39.6
Progression Factor	1.05	0.93	0.53	1.06	0.91		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.3	0.7	0.1	9.8	5.3		2.5	0.0		4.8	0.1	4.7
Delay (s)	53.7	21.9	7.5	68.3	32.1		54.2	43.3		56.4	44.7	44.3
Level of Service	D	C	A	E	C		D	D		E	D	D
Approach Delay (s)		19.1			33.7			52.1			47.0	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: Del Mar Heights Road & Third Ave.

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	1774	196	117	2175	40	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1971	218	130	2417	44	27
RTOR Reduction (vph)	0	45	0	0	0	25
Lane Group Flow (vph)	1971	173	130	2417	44	2
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	84.3	84.3	14.1	101.4	9.6	9.6
Effective Green, g (s)	84.3	84.3	14.1	101.4	9.6	9.6
Actuated g/C Ratio	0.70	0.70	0.12	0.85	0.08	0.08
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3572	1112	208	4297	275	127
v/s Ratio Prot	0.39		c0.07	c0.48	c0.01	
v/s Ratio Perm		0.11				0.00
v/c Ratio	0.55	0.16	0.62	0.56	0.16	0.02
Uniform Delay, d1	8.7	6.0	50.4	2.7	51.4	50.9
Progression Factor	1.41	1.55	1.07	1.67	1.00	1.00
Incremental Delay, d2	0.5	0.3	4.1	0.4	0.3	0.1
Delay (s)	12.8	9.5	58.0	5.0	51.7	50.9
Level of Service	B	A	E	A	D	D
Approach Delay (s)	12.5			7.7	51.4	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	1641	157	78	2260	32	16
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	0.97	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1823	174	87	2511	36	18
RTOR Reduction (vph)	0	72	0	0	0	13
Lane Group Flow (vph)	1823	102	87	2511	36	5
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	70.4	70.4	7.5	81.9	30.1	30.1
Effective Green, g (s)	70.4	70.4	7.5	81.9	30.1	30.1
Actuated g/C Ratio	0.59	0.59	0.06	0.68	0.25	0.25
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2983	929	215	3471	444	397
v/s Ratio Prot	0.36	0.06	0.03	0.49	0.02	
v/s Ratio Perm						0.00
v/c Ratio	0.61	0.11	0.40	0.72	0.08	0.01
Uniform Delay, d1	16.0	11.0	54.1	11.9	34.4	33.8
Progression Factor	1.74	6.89	0.90	0.92	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.9	0.5	0.4	0.1
Delay (s)	28.2	75.6	49.5	11.6	34.7	33.8
Level of Service	C	E	D	B	C	C
Approach Delay (s)	32.3			12.8	34.4	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing + Project (Phase 1) AM

7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑		↔↔	↑↑↑		↔↔	↑↑↑	↔	↔↔	↑↑↑	
Volume (vph)	219	903	195	282	1497	92	222	104	87	159	310	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4950		3433	5041		3433	5085	1583	3433	4643	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4950		3433	5041		3433	5085	1583	3433	4643	
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)	243	1003	217	313	1663	102	247	116	97	177	344	476
RTOR Reduction (vph)	0	26	0	0	5	0	0	0	73	0	145	0
Lane Group Flow (vph)	243	1194	0	313	1760	0	247	116	24	177	675	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	12.3	48.3		15.7	51.9		10.4	29.7	29.7	5.8	24.3	
Effective Green, g (s)	12.3	48.3		15.7	51.9		10.4	29.7	29.7	5.8	24.3	
Actuated g/C Ratio	0.10	0.40		0.13	0.43		0.09	0.25	0.25	0.05	0.20	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	352	1992		449	2180		298	1259	392	166	940	
v/s Ratio Prot	0.07	0.24		c0.09	c0.35		c0.07	0.02		0.05	c0.15	
v/s Ratio Perm									0.02			
v/c Ratio	0.69	0.60		0.70	0.81		0.83	0.09	0.06	1.07	1.02dr	
Uniform Delay, d1	52.0	28.2		49.9	29.7		53.9	34.8	34.5	57.1	44.7	
Progression Factor	1.14	0.50		1.28	0.84		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.8	1.1		3.6	3.2		16.3	0.0	0.1	88.6	2.7	
Delay (s)	63.1	15.3		67.3	28.2		70.2	34.8	34.6	145.7	47.4	
Level of Service	E	B		E	C		E	C	C	F	D	
Approach Delay (s)		23.3			34.1			53.8			64.8	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.1
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing + Project (Phase 1) AM

7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	612	283	272	1210	169	414	183	108	142	180	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4844		3433	4992		3433	4802		1770	3302	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4844		3433	4992		3433	4802		1770	3302	
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)	160	680	314	302	1344	188	460	203	120	158	200	161
RTOR Reduction (vph)	0	57	0	0	12	0	0	98	0	0	120	0
Lane Group Flow (vph)	160	937	0	302	1520	0	460	225	0	158	241	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.1	49.1		14.1	53.9		18.6	22.2		14.8	18.9	
Effective Green, g (s)	9.1	49.1		14.1	53.9		18.6	22.2		14.8	18.9	
Actuated g/C Ratio	0.08	0.41		0.12	0.45		0.16	0.18		0.12	0.16	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	260	1982		403	2242		532	888		218	520	
v/s Ratio Prot	0.05	0.19		c0.09	c0.30		c0.13	c0.05		0.09	c0.07	
v/s Ratio Perm												
v/c Ratio	0.62	0.47		0.75	0.68		0.86	0.25		0.72	0.46	
Uniform Delay, d1	53.8	26.0		51.2	26.2		49.5	41.8		50.6	45.9	
Progression Factor	1.17	1.05		1.07	0.67		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.8		5.9	1.5		13.3	0.2		9.7	1.7	
Delay (s)	65.6	27.9		60.8	19.0		62.7	42.0		60.3	47.7	
Level of Service	E	C		E	B		E	D		E	D	
Approach Delay (s)	33.2			25.9			54.2			51.5		
Approach LOS	C			C			D			D		

Intersection Summary			
HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖↖		↖	↖		↖	↖	
Volume (vph)	206	634	118	79	1063	210	108	151	11	54	60	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4966		1770	4960		1770	1844		1770	1674	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4966		1770	4960		1770	1844		1770	1674	
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)	229	704	131	88	1181	233	120	168	12	60	67	139
RTOR Reduction (vph)	0	17	0	0	20	0	0	2	0	0	68	0
Lane Group Flow (vph)	229	818	0	88	1394	0	120	178	0	60	138	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	18.9	63.6		9.9	53.9		12.5	21.1		6.7	15.3	
Effective Green, g (s)	18.9	63.6		9.9	53.9		12.5	21.1		6.7	15.3	
Actuated g/C Ratio	0.16	0.53		0.08	0.45		0.10	0.18		0.06	0.13	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	279	2632		146	2228		184	324		99	213	
v/s Ratio Prot	c0.13	0.16		0.05	c0.28		c0.07	0.10		0.03	c0.08	
v/s Ratio Perm												
v/c Ratio	0.82	0.31		0.60	0.63		0.65	0.55		0.61	0.65	
Uniform Delay, d1	48.9	15.9		53.2	25.3		51.7	45.1		55.4	49.8	
Progression Factor	0.88	1.45		1.01	0.84		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.5	0.3		4.0	1.1		6.2	1.0		7.0	5.0	
Delay (s)	58.6	23.3		57.6	22.4		57.8	46.1		62.4	54.8	
Level of Service	E	C		E	C		E	D		E	D	
Approach Delay (s)		30.9			24.4			50.8			56.5	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	31.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	554	34	65	1107	35	43	25	53	48	58	347
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5041		1770	5062		1770	1673		1770	1623	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5041		1770	5062		1770	1673		1770	1623	
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)	168	616	38	72	1230	39	48	28	59	53	64	386
RTOR Reduction (vph)	0	4	0	0	2	0	0	48	0	0	209	0
Lane Group Flow (vph)	168	650	0	72	1267	0	48	39	0	53	241	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.3	64.7		7.6	57.0		6.7	21.7		6.9	21.7	
Effective Green, g (s)	15.3	64.7		7.6	57.0		6.7	21.7		6.9	21.7	
Actuated g/C Ratio	0.13	0.54		0.06	0.48		0.06	0.18		0.06	0.18	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	226	2718		112	2404		99	303		102	293	
v/s Ratio Prot	0.09	0.13		0.04	0.25		0.03	0.02		0.03	0.15	
v/s Ratio Perm												
v/c Ratio	0.74	0.24		0.64	0.53		0.48	0.13		0.52	0.82	
Uniform Delay, d1	50.5	14.6		54.9	22.1		55.0	41.2		54.9	47.3	
Progression Factor	1.41	0.30		0.85	1.16		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.6	0.2		8.9	0.8		1.4	0.1		1.9	16.1	
Delay (s)	81.7	4.5		55.7	26.4		56.3	41.3		56.8	63.4	
Level of Service	F	A		E	C		E	D		E	E	
Approach Delay (s)		20.3			28.0			46.6			62.7	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing + Project (Phase 1) AM
 7/11/2013

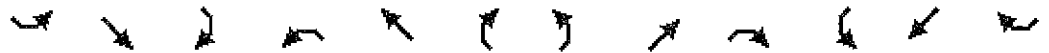


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↙	↑↑↑	↙↘	↗
Volume (vph)	548	122	385	990	265	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4946		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4946		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	609	136	428	1100	294	369
RTOR Reduction (vph)	23	0	0	0	0	40
Lane Group Flow (vph)	722	0	428	1100	294	329
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	53.8		32.3	91.2	17.9	50.2
Effective Green, g (s)	53.8		32.3	91.2	17.9	50.2
Actuated g/C Ratio	0.45		0.27	0.76	0.15	0.42
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	2217		476	3865	512	662
v/s Ratio Prot	c0.15		c0.24	0.22	c0.09	0.13
v/s Ratio Perm						0.07
v/c Ratio	0.33		0.90	0.28	0.57	0.50
Uniform Delay, d1	21.4		42.3	4.4	47.5	25.6
Progression Factor	1.48		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		19.0	0.2	1.0	0.2
Delay (s)	31.9		61.3	4.6	48.5	25.8
Level of Service	C		E	A	D	C
Approach Delay (s)	31.9			20.5	35.9	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 18: Del Mar Highlands Town Ctr. & El Camino Real

Existing + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	5	5	94	23	107	94	308	98	160	661	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	0.94			1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1647			1791	1583	3433	4901		3433	5043	
Flt Permitted	0.95	0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1647			1791	1583	3433	4901		3433	5043	
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)	18	6	6	104	26	119	104	342	109	178	734	43
RTOR Reduction (vph)	0	6	0	0	0	92	0	46	0	0	5	0
Lane Group Flow (vph)	15	9	0	0	130	27	104	405	0	178	772	0
Turn Type	Split			Split		Perm	Prot			Prot		
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	2.1	2.1			12.6	12.6	6.2	15.5		9.4	18.7	
Effective Green, g (s)	2.1	2.1			12.6	12.6	6.2	15.5		9.4	18.7	
Actuated g/C Ratio	0.04	0.04			0.23	0.23	0.11	0.28		0.17	0.34	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	63	62			406	359	383	1366		580	1696	
v/s Ratio Prot	c0.01	0.01			c0.07		0.03	0.08		c0.05	c0.15	
v/s Ratio Perm						0.02						
v/c Ratio	0.24	0.15			0.32	0.08	0.27	0.30		0.31	0.46	
Uniform Delay, d1	26.0	25.9			17.9	16.9	22.6	15.8		20.2	14.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.1			0.5	0.1	0.4	0.1		0.3	0.2	
Delay (s)	27.9	27.0			18.4	17.0	23.0	15.9		20.5	14.7	
Level of Service	C	C			B	B	C	B		C	B	
Approach Delay (s)		27.5			17.7			17.2			15.8	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Townsgate Drive & Carmel Country Road

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑		↙	↑		↙	↑	↗
Volume (vph)	166	83	113	45	189	149	111	427	7	100	446	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1739		1770	3530		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1739		1770	3530		1770	3539	1583
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)	184	92	126	50	210	166	123	474	8	111	496	183
RTOR Reduction (vph)	0	0	73	0	25	0	0	1	0	0	0	140
Lane Group Flow (vph)	184	92	53	50	351	0	123	481	0	111	496	43
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	14.4	34.8	34.8	4.2	24.6		8.7	19.9		8.3	19.5	19.5
Effective Green, g (s)	14.4	34.8	34.8	4.2	24.6		8.7	19.9		8.3	19.5	19.5
Actuated g/C Ratio	0.17	0.42	0.42	0.05	0.30		0.10	0.24		0.10	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	306	779	662	89	514		185	844		177	829	371
v/s Ratio Prot	c0.10	0.05		0.03	c0.20		c0.07	0.14		0.06	c0.14	
v/s Ratio Perm			0.03									0.03
v/c Ratio	0.60	0.12	0.08	0.56	0.68		0.66	0.57		0.63	0.60	0.12
Uniform Delay, d1	31.8	14.8	14.6	38.6	25.9		35.8	27.9		36.0	28.4	25.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.3	0.1	0.1	7.9	3.7		8.7	0.9		6.8	1.2	0.1
Delay (s)	35.1	14.9	14.6	46.5	29.6		44.5	28.8		42.7	29.5	25.2
Level of Service	D	B	B	D	C		D	C		D	C	C
Approach Delay (s)		24.0			31.6			32.0			30.4	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM Average Control Delay	29.9	HCM Level of Service C
HCM Volume to Capacity ratio	0.64	
Actuated Cycle Length (s)	83.2	Sum of lost time (s) 16.0
Intersection Capacity Utilization	60.1%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 20: Townsgate Drive & El Camino Real

Existing + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	38	67	6	226	45	135	14	307	52	145	457	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1839		1770	1863	1583	1770	4974		1770	4989	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1839		1770	1863	1583	1770	4974		1770	4989	
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)	42	74	7	251	50	150	16	341	58	161	508	73
RTOR Reduction (vph)	0	3	0	0	0	104	0	20	0	0	15	0
Lane Group Flow (vph)	42	78	0	251	50	46	16	379	0	161	566	0
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						
Actuated Green, G (s)	3.8	9.6		16.2	22.0	22.0	0.6	17.7		12.7	29.8	
Effective Green, g (s)	3.8	9.6		16.2	22.0	22.0	0.6	17.7		12.7	29.8	
Actuated g/C Ratio	0.05	0.13		0.22	0.30	0.30	0.01	0.25		0.18	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	93	245		397	568	482	15	1219		311	2059	
v/s Ratio Prot	0.02	c0.04		c0.14	0.03		0.01	0.08		c0.09	c0.11	
v/s Ratio Perm						0.03						
v/c Ratio	0.45	0.32		0.63	0.09	0.09	1.07	0.31		0.52	0.28	
Uniform Delay, d1	33.2	28.3		25.3	17.9	18.0	35.8	22.3		27.0	14.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.7		3.3	0.1	0.1	255.5	0.1		1.5	0.1	
Delay (s)	36.6	29.1		28.6	18.0	18.1	291.3	22.4		28.4	14.1	
Level of Service	D	C		C	B	B	F	C		C	B	
Approach Delay (s)		31.7			23.9			32.8			17.2	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 21: Carmel Creek Road & Carmel Country Road

Existing + Project (Phase 1) AM
 7/11/2013



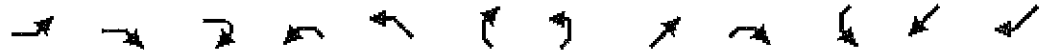
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	302	118	123	60	291	29	269	411	28	66	400	387
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	14	12	12	16	12	12	16	12
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Fr _t	1.00	1.00	0.85		0.99		1.00	0.99		1.00	0.93	
Fl _t Protected	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1794		1951		1770	3973		1770	3715	
Fl _t Permitted	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1794		1951		1770	3973		1770	3715	
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)	336	131	137	67	323	32	299	457	31	73	444	430
RTOR Reduction (vph)	0	0	107	0	2	0	0	4	0	0	146	0
Lane Group Flow (vph)	336	131	30	0	420	0	299	484	0	73	728	0
Turn Type	Split		Perm	Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	25.2	25.2	25.2		25.2		21.3	41.5		7.7	27.9	
Effective Green, g (s)	25.2	25.2	25.2		25.2		21.3	41.5		7.7	27.9	
Actuated g/C Ratio	0.22	0.22	0.22		0.22		0.18	0.36		0.07	0.24	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	386	406	391		425		326	1426		118	897	
v/s Ratio Prot	c0.19	0.07			c0.22		c0.17	0.12		0.04	c0.20	
v/s Ratio Perm			0.02									
v/c Ratio	0.87	0.32	0.08		0.99		0.92	0.34		0.62	0.81	
Uniform Delay, d ₁	43.6	38.0	35.9		45.0		46.3	27.0		52.5	41.4	
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	18.8	0.5	0.1		39.9		29.3	0.1		9.3	5.6	
Delay (s)	62.4	38.5	36.0		85.0		75.6	27.2		61.8	47.0	
Level of Service	E	D	D		F		E	C		E	D	
Approach Delay (s)		51.2			85.0			45.6			48.1	
Approach LOS		D			F			D			D	

Intersection Summary		
HCM Average Control Delay	53.7	HCM Level of Service D
HCM Volume to Capacity ratio	0.89	
Actuated Cycle Length (s)	115.6	Sum of lost time (s) 16.0
Intersection Capacity Utilization	88.8%	ICU Level of Service E
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 22: High Bluff Drive & El Camino Real

Existing + Project (Phase 1) AM
 7/11/2013

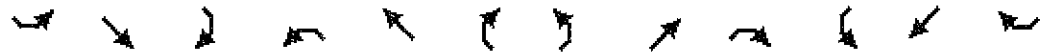


Movement	EBL	EBR	EBR2	NWL2	NWL	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	110	245	94	221	94	212	312	29	74	875	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97		0.97	0.91		1.00	0.91	
Frt	1.00	0.85	0.85	1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583	1583	1770	3335		3433	5021		1770	5002	
Flt Permitted	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1583	1583	1770	3335		3433	5021		1770	5002	
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)	33	122	272	104	246	104	236	347	32	82	972	119
RTOR Reduction (vph)	0	0	231	0	40	0	0	8	0	0	11	0
Lane Group Flow (vph)	33	122	41	104	310	0	236	371	0	82	1080	0
Turn Type		Perm	Perm	Split			Prot			Prot		
Protected Phases	2			6	6		3	8		7	4	
Permitted Phases		2	2									
Actuated Green, G (s)	12.3	12.3	12.3	13.0	13.0		14.5	30.7		10.5	26.7	
Effective Green, g (s)	12.3	12.3	12.3	13.0	13.0		14.5	30.7		10.5	26.7	
Actuated g/C Ratio	0.15	0.15	0.15	0.16	0.16		0.18	0.37		0.13	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	264	236	236	279	526		603	1868		225	1619	
v/s Ratio Prot	0.02			0.06	c0.09		c0.07	c0.07		0.05	c0.22	
v/s Ratio Perm		c0.08	0.03									
v/c Ratio	0.12	0.52	0.17	0.37	0.59		0.39	0.20		0.36	0.67	
Uniform Delay, d1	30.4	32.4	30.7	31.1	32.3		30.1	17.6		32.9	24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.9	0.3	0.8	1.8		0.4	0.1		1.0	1.1	
Delay (s)	30.6	34.3	31.0	31.9	34.1		30.5	17.6		34.0	25.1	
Level of Service	C	C	C	C	C		C	B		C	C	
Approach Delay (s)	31.9				33.6			22.6			25.7	
Approach LOS	C				C			C			C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c - Critical Lane Group			

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

Existing + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕	↗		↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	47	6	68	13	26	14	121	30	2	3	16	191
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	52	7	76	14	29	16	134	33	2	3	18	212

Direction Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total (vph)	59	76	59	170	233
Volume Left (vph)	52	0	14	134	3
Volume Right (vph)	0	76	16	2	212
Hadj (s)	0.48	-0.67	-0.08	0.18	-0.51
Departure Headway (s)	6.0	4.8	5.0	4.8	4.1
Degree Utilization x	0.10	0.10	0.08	0.23	0.27
Capacity (veh/h)	560	689	645	708	829
Control Delay (s)	8.4	7.2	8.5	9.3	8.6
Approach Delay (s)	7.7		8.5	9.3	8.6
Approach LOS	A		A	A	A

Intersection Summary				
Delay			8.6	
HCM Level of Service			A	
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
 24: Carmel Grove Road & Carmel Creek Road

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↕		↖	↕		↖	↕	
Volume (vph)	52	89	116	199	61	24	30	287	81	15	761	140
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	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.99		1.00	0.97		1.00	0.98	
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1829	1583		1779		1770	3422		1770	3457	
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1829	1583		1779		1770	3422		1770	3457	
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)	58	99	129	221	68	27	33	319	90	17	846	156
RTOR Reduction (vph)	0	0	107	0	3	0	0	20	0	0	12	0
Lane Group Flow (vph)	0	157	22	0	313	0	33	389	0	17	990	0
Turn Type	Split		Prot	Split			Prot			Prot		
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		14.1	14.1		19.3		2.4	32.2		1.8	31.6	
Effective Green, g (s)		14.1	14.1		19.3		2.4	32.2		1.8	31.6	
Actuated g/C Ratio		0.17	0.17		0.23		0.03	0.39		0.02	0.38	
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)		309	268		412		51	1321		38	1310	
v/s Ratio Prot		c0.09	0.01		c0.18		c0.02	0.11		0.01	c0.29	
v/s Ratio Perm												
v/c Ratio		0.51	0.08		0.76		0.65	0.29		0.45	0.76	
Uniform Delay, d1		31.5	29.2		29.9		40.1	17.7		40.3	22.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3	0.1		7.8		24.8	0.1		8.2	2.5	
Delay (s)		32.8	29.3		37.7		64.9	17.9		48.5	25.1	
Level of Service		C	C		D		E	B		D	C	
Approach Delay (s)		31.2			37.7			21.4			25.5	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 25: Carmel Valley Road & I-5 SB Ramps

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↓	↑
Volume (vph)	0	302	176	382	618	0	0	0	0	997	3	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.95					0.95	0.91	0.95
Frt		0.94		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3344		3433	3539					1681	1610	1504
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3344		3433	3539					1681	1610	1504
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)	0	336	196	424	687	0	0	0	0	1108	3	160
RTOR Reduction (vph)	0	116	0	0	0	0	0	0	0	0	2	82
Lane Group Flow (vph)	0	416	0	424	687	0	0	0	0	565	560	62
Turn Type				Prot						Split		Prot
Protected Phases		4		3	8					6	6	6
Permitted Phases												
Actuated Green, G (s)		13.7		11.6	29.3					28.5	28.5	28.5
Effective Green, g (s)		13.7		11.6	29.3					28.5	28.5	28.5
Actuated g/C Ratio		0.21		0.18	0.45					0.43	0.43	0.43
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		696		605	1576					728	697	651
v/s Ratio Prot		c0.12		c0.12	0.19					0.34	c0.35	0.04
v/s Ratio Perm												
v/c Ratio		0.60		0.70	0.44					0.78	0.80	0.10
Uniform Delay, d1		23.6		25.5	12.6					15.9	16.2	11.0
Progression Factor		1.00		1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		1.4		3.7	0.2					5.2	6.7	0.1
Delay (s)		24.9		29.1	12.8					21.1	22.9	11.1
Level of Service		C		C	B					C	C	B
Approach Delay (s)		24.9			19.0			0.0			20.8	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 26: Carmel Valley Road & I-5 NB Ramps

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	1183	0	0	928	834	106	2	547	0	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			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			3539	1583	1681	1449	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			3539	1583	1681	1449	1504			
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)	68	1314	0	0	1031	927	118	2	608	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	521	0	9	9	0	0	0
Lane Group Flow (vph)	68	1314	0	0	1031	406	106	303	301	0	0	0
Turn Type	Prot						Prot	Split	Prot			
Protected Phases	7	4					8	8	2	2	2	
Permitted Phases												
Actuated Green, G (s)	2.4	34.0					27.6	27.6	21.0	21.0	21.0	
Effective Green, g (s)	2.4	34.0					27.6	27.6	21.0	21.0	21.0	
Actuated g/C Ratio	0.04	0.54					0.44	0.44	0.33	0.33	0.33	
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)	131	1910					1550	694	560	483	501	
v/s Ratio Prot	0.02	0.37					0.29	0.26	0.06	0.21	0.20	
v/s Ratio Perm												
v/c Ratio	0.52	0.69					0.67	0.59	0.19	0.63	0.60	
Uniform Delay, d1	29.7	10.6					14.0	13.4	14.9	17.7	17.5	
Progression Factor	1.00	1.00					1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	1.0					1.1	1.3	0.2	2.6	2.0	
Delay (s)	33.2	11.7					15.1	14.6	15.1	20.3	19.5	
Level of Service	C	B					B	B	B	C	B	
Approach Delay (s)		12.7					14.9			19.2		0.0
Approach LOS		B					B			B		A
Intersection Summary												
HCM Average Control Delay			14.9					HCM Level of Service		B		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			63.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			73.6%					ICU Level of Service		D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 27: Valley Centre Drive & El Camino Real

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	6	16	704	14	156	69	904	145	116	1051	17
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	5.0		4.0	4.0	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.91	0.95	1.00	0.91		1.00	0.91	
Frt	1.00	0.97	0.85	1.00	0.99	0.85	1.00	0.98		1.00	1.00	
Flt Protected	0.95	0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1617	1504	1681	1610	1504	1770	4980		1770	5073	
Flt Permitted	0.95	0.98	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1617	1504	1681	1610	1504	1770	4980		1770	5073	
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)	22	7	18	782	16	173	77	1004	161	129	1168	19
RTOR Reduction (vph)	0	3	14	0	1	105	0	15	0	0	1	0
Lane Group Flow (vph)	16	13	1	407	407	51	77	1150	0	129	1186	0
Turn Type	Split		Prot	Split		Prot	Prot			Prot		
Protected Phases	4	4	4	8	8	8	5	21		61		
Permitted Phases												6
Actuated Green, G (s)	7.5	7.5	7.5	28.1	28.1	28.1	6.2	36.7		27.5	27.5	
Effective Green, g (s)	7.5	7.5	7.5	28.1	28.1	28.1	6.2	36.7		27.5	27.5	
Actuated g/C Ratio	0.09	0.09	0.09	0.33	0.33	0.33	0.07	0.43		0.32	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lane Grp Cap (vph)	148	142	132	554	530	495	129	2143		571	1635	
v/s Ratio Prot	c0.01	0.01	0.00	0.24	c0.25	0.03	0.04	c0.23		0.07		
v/s Ratio Perm												c0.23
v/c Ratio	0.11	0.09	0.01	0.73	0.77	0.10	0.60	0.54		0.23	0.73	
Uniform Delay, d1	35.8	35.8	35.5	25.3	25.7	19.9	38.3	18.0		21.1	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.3	0.0	5.0	6.6	0.1	7.2	0.3		0.2	1.6	
Delay (s)	36.1	36.1	35.5	30.3	32.2	20.0	45.6	18.3		21.3	27.2	
Level of Service	D	D	D	C	C	B	D	B		C	C	
Approach Delay (s)		35.9			29.5			20.0			26.6	
Approach LOS		D			C			B			C	

Intersection Summary		
HCM Average Control Delay	25.2	HCM Level of Service C
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	85.3	Sum of lost time (s) 17.0
Intersection Capacity Utilization	66.1%	ICU Level of Service C
Analysis Period (min)	15	

! Phase conflict between lane groups
 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 28: Carmel Valley Road & El Camino Real

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖↗	↖↖↗	↖	↖↗	↖↖			↖↖↗	↖
Volume (vph)	0	0	0	308	1008	200	147	819	0	0	550	632
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
Lane Util. Factor				0.97	0.91	1.00	0.97	0.95			0.86	0.86
Frpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			0.90	0.71
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			0.95	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3433	5085	1583	3433	3539			4070	973
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				3433	5085	1583	3433	3539			4070	973
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)	0	0	0	342	1120	222	163	910	0	0	611	702
RTOR Reduction (vph)	0	0	0	0	0	51	0	0	0	0	21	21
Lane Group Flow (vph)	0	0	0	342	1120	171	163	910	0	0	941	830
Confl. Peds. (#/hr)												200
Turn Type				Prot		Perm	Prot					Perm
Protected Phases				3	8		5	2				6
Permitted Phases						8						6
Actuated Green, G (s)				29.4	29.4	29.4	5.5	41.6			32.1	32.1
Effective Green, g (s)				29.4	29.4	29.4	5.5	41.6			32.1	32.1
Actuated g/C Ratio				0.37	0.37	0.37	0.07	0.53			0.41	0.41
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)				1278	1892	589	239	1864			1654	395
v/s Ratio Prot				0.10	0.22		0.05	0.26			0.23	
v/s Ratio Perm						0.11						0.34
v/c Ratio				0.27	0.59	0.29	0.68	0.49			0.57	0.84
Uniform Delay, d1				17.3	20.0	17.5	35.9	11.9			18.1	21.1
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.5	0.3	7.8	0.2			0.5	14.2
Delay (s)				17.4	20.5	17.7	43.7	12.1			18.6	35.3
Level of Service				B	C	B	D	B			B	D
Approach Delay (s)		0.0			19.5			16.9			23.0	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	589	896	265	0	0	0	0	362	192	114	679	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	
Lane Util. Factor	0.91	0.86	0.91					0.86		1.00	0.91	
Frt	1.00	1.00	0.85					0.95		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1610	3176	1441					6075		1770	5085	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1610	3176	1441					6075		1770	5085	
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)	654	996	294	0	0	0	0	402	213	127	754	0
RTOR Reduction (vph)	0	2	91	0	0	0	0	53	0	0	0	0
Lane Group Flow (vph)	543	1134	174	0	0	0	0	562	0	127	754	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	36.9	36.9	36.9					16.1		9.5	29.6	
Effective Green, g (s)	36.9	36.9	36.9					16.1		9.5	29.6	
Actuated g/C Ratio	0.50	0.50	0.50					0.22		0.13	0.40	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	797	1573	714					1313		226	2020	
v/s Ratio Prot	0.34	0.36						0.09		0.07	0.15	
v/s Ratio Perm			0.12									
v/c Ratio	0.68	0.72	0.24					0.43		0.56	0.37	
Uniform Delay, d1	14.3	14.8	10.8					25.2		30.5	15.9	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	2.4	1.7	0.2					0.2		3.2	0.1	
Delay (s)	16.7	16.4	11.0					25.5		33.7	16.0	
Level of Service	B	B	B					C		C	B	
Approach Delay (s)		15.8			0.0			25.5			18.6	
Approach LOS		B			A			C			B	
Intersection Summary:												
HCM Average Control Delay			18.2	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			74.5	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			98.8%	ICU Level of Service				F				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 30: Valley Centre Drive & Carmel View Road

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	16	209	0	426	24	94	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		0.95		1.00	1.00
Frt	1.00	1.00		0.99		1.00	0.85
Flt Protected	0.95	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1770	3539		3511		1770	1583
Flt Permitted	0.95	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1770	3539		3511		1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	232	0	473	27	104	124
RTOR Reduction (vph)	0	0	0	4	0	0	95
Lane Group Flow (vph)	18	232	0	496	0	104	29
Turn Type	Prot		Prot				Perm
Protected Phases	7	4	3	8		6	
Permitted Phases							6
Actuated Green, G (s)	0.7	17.4		12.7		7.7	7.7
Effective Green, g (s)	0.7	17.4		12.7		7.7	7.7
Actuated g/C Ratio	0.02	0.53		0.38		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)	37	1860		1347		412	368
v/s Ratio Prot	0.01	0.07		0.14		0.06	
v/s Ratio Perm							0.02
v/c Ratio	0.49	0.12		0.37		0.25	0.08
Uniform Delay, d1	16.0	4.0		7.3		10.4	9.9
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	9.7	0.0		0.2		0.3	0.1
Delay (s)	25.8	4.0		7.5		10.7	10.0
Level of Service	C	A		A		B	B
Approach Delay (s)		5.6		7.5		10.3	
Approach LOS		A		A		B	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	33.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 31: Valley Centre Drive & Carmel Creek Road

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	73	214	142	157	362	97	316	325	209	1070	186	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Flt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1804		1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1804		1770	3539	1583	3433	3539	1583
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)	81	238	158	174	402	108	351	361	232	1189	207	222
RTOR Reduction (vph)	0	0	120	0	7	0	0	0	87	0	0	129
Lane Group Flow (vph)	81	238	38	174	503	0	351	361	145	1189	207	93
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)	7.2	31.3	31.3	14.8	38.9		30.3	19.5	34.3	48.1	37.3	44.5
Effective Green, g (s)	7.2	31.3	31.3	14.8	38.9		30.3	19.5	34.3	48.1	37.3	44.5
Actuated g/C Ratio	0.06	0.24	0.24	0.11	0.30		0.23	0.15	0.26	0.37	0.29	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
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)	98	854	382	202	541		414	532	467	1273	1018	592
v/s Ratio Prot	0.05	0.07		c0.10	c0.28		0.20	c0.10	0.04	c0.35	0.06	0.01
v/s Ratio Perm			0.02						0.06			0.05
v/c Ratio	0.83	0.28	0.10	0.86	0.93		0.85	0.68	0.31	0.93	0.20	0.16
Uniform Delay, d1	60.6	40.0	38.2	56.4	44.1		47.5	52.1	38.2	39.3	35.0	29.6
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	40.9	0.2	0.1	29.3	22.5		14.8	3.4	0.4	12.5	0.1	0.1
Delay (s)	101.5	40.2	38.4	85.7	66.5		62.3	55.6	38.6	51.8	35.1	29.7
Level of Service	F	D	D	F	E		E	E	D	D	D	C
Approach Delay (s)		50.0			71.4			53.9				46.6
Approach LOS		D			E			D				D

Intersection Summary			
HCM Average Control Delay	53.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	129.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 32: SR-56 EB Ramps & Carmel Creek Road

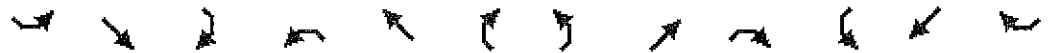
Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	437	0	180	0	0	0	0	410	74	183	272	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	
Lane Util. Factor	0.95	0.95	1.00					0.95		0.97	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1681	1681	1583					3458		3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1681	1681	1583					3458		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
Adj. Flow (vph)	486	0	200	0	0	0	0	456	82	203	302	0
RTOR Reduction (vph)	0	0	136	0	0	0	0	14	0	0	0	0
Lane Group Flow (vph)	243	243	64	0	0	0	0	524	0	203	302	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	17.1	17.1	17.1					15.3		9.4	28.7	
Effective Green, g (s)	17.1	17.1	17.1					15.3		9.4	28.7	
Actuated g/C Ratio	0.32	0.32	0.32					0.28		0.17	0.53	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	534	534	503					983		600	1888	
v/s Ratio Prot	c0.14	0.14						c0.15		c0.06	0.09	
v/s Ratio Perm			0.04									
v/c Ratio	0.46	0.46	0.13					0.53		0.34	0.16	
Uniform Delay, d1	14.6	14.6	13.0					16.2		19.5	6.4	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6	0.1					0.6		0.3	0.0	
Delay (s)	15.3	15.3	13.2					16.8		19.8	6.4	
Level of Service	B	B	B					B		B	A	
Approach Delay (s)		14.6			0.0			16.8			11.8	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM Average Control Delay			14.5					HCM Level of Service		B		
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			53.8					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			41.0%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

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

Existing + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	86	492	35	141	453	335	56	64	236	623	139	178
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	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	0.94		1.00	0.88		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3504		1770	3314		1770	1643		3433	1706	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3504		1770	3314		1770	1643		3433	1706	
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)	96	547	39	157	503	372	62	71	262	692	154	198
RTOR Reduction (vph)	0	5	0	0	140	0	0	128	0	0	51	0
Lane Group Flow (vph)	96	581	0	157	735	0	62	205	0	692	301	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	4.1	18.4		9.9	23.2		6.3	16.1		18.3	28.1	
Effective Green, g (s)	4.1	18.4		9.9	23.2		6.3	16.1		18.3	28.1	
Actuated g/C Ratio	0.05	0.23		0.12	0.29		0.08	0.20		0.23	0.35	
Clearance Time (s)	5.0	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)	90	799		217	953		138	328		778	594	
v/s Ratio Prot	0.05	0.17		0.09	0.22		0.04	0.12		0.20	0.18	
v/s Ratio Perm												
v/c Ratio	1.07	0.73		0.72	0.77		0.45	0.62		0.89	0.51	
Uniform Delay, d1	38.3	28.8		34.1	26.3		35.5	29.5		30.2	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	114.1	3.3		11.3	3.9		2.3	3.7		12.1	0.7	
Delay (s)	152.4	32.1		45.4	30.2		37.9	33.2		42.3	21.5	
Level of Service	F	C		D	C		D	C		D	C	
Approach Delay (s)		49.1			32.5			33.9			35.3	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations			↖↗	↖↗	↖↗		↖	↖↗	↖
Volume (vph)	0	0	754	580	742	0	306	133	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	5.0	4.0		4.0	4.0	4.0
Lane Util. Factor			0.97	0.95	0.95		1.00	0.97	1.00
Frt			1.00	1.00	1.00		0.85	1.00	0.85
Flt Protected			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)			3433	3539	3539		1583	3433	1583
Flt Permitted			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)			3433	3539	3539		1583	3433	1583
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	838	644	824	0	340	148	250
RTOR Reduction (vph)	0	0	0	0	0	0	216	0	217
Lane Group Flow (vph)	0	0	838	644	824	0	124	148	33
Turn Type			Prot				Perm		Perm
Protected Phases			5	2	6			4	
Permitted Phases							6		4
Actuated Green, G (s)			22.9	51.2	25.3		25.3	9.0	9.0
Effective Green, g (s)			22.9	51.2	25.3		25.3	9.0	9.0
Actuated g/C Ratio			0.33	0.74	0.37		0.37	0.13	0.13
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)			1136	2618	1294		579	446	206
v/s Ratio Prot			c0.24	0.18	c0.23			c0.04	
v/s Ratio Perm							0.08		0.02
v/c Ratio			0.74	0.25	0.64		0.21	0.33	0.16
Uniform Delay, d1			20.5	2.9	18.2		15.1	27.4	26.7
Progression Factor			1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2			2.5	0.0	1.0		0.2	0.4	0.4
Delay (s)			23.0	2.9	19.2		15.3	27.8	27.1
Level of Service			C	A	B		B	C	C
Approach Delay (s)	0.0			14.3	18.1			27.4	
Approach LOS	A			B	B			C	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 35: SR-56 EB Ramps & Carmel Country Rd.

Existing + Project (Phase 1) AM
 7/11/2013



Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	300	0	161	340	370	0	0	723	214	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		
Lane Util. Factor	0.95	0.95	1.00	0.97	0.95			0.95	1.00		
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		
Flt Protected	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (prot)	1681	1681	1583	3433	3539			3539	1583		
Flt Permitted	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (perm)	1681	1681	1583	3433	3539			3539	1583		
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)	333	0	179	378	411	0	0	803	238	0	0
RTOR Reduction (vph)	0	0	136	0	0	0	0	0	151	0	0
Lane Group Flow (vph)	166	167	43	378	411	0	0	803	87	0	0
Turn Type	Split		Perm	Prot					Perm		
Protected Phases	4	4		1	6			2			
Permitted Phases			4						2		
Actuated Green, G (s)	14.4	14.4	14.4	12.0	38.2			22.2	22.2		
Effective Green, g (s)	14.4	14.4	14.4	12.0	38.2			22.2	22.2		
Actuated g/C Ratio	0.24	0.24	0.24	0.20	0.63			0.37	0.37		
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)	399	399	376	680	2231			1296	580		
v/s Ratio Prot	0.10	0.10		0.11	0.12			0.23			
v/s Ratio Perm			0.03						0.06		
v/c Ratio	0.42	0.42	0.11	0.56	0.18			0.62	0.15		
Uniform Delay, d1	19.5	19.6	18.1	21.9	4.7			15.7	12.9		
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		
Incremental Delay, d2	0.7	0.7	0.1	1.0	0.0			0.9	0.1		
Delay (s)	20.2	20.3	18.2	22.9	4.7			16.6	13.0		
Level of Service	C	C	B	C	A			B	B		
Approach Delay (s)		19.5			13.4			15.8		0.0	
Approach LOS		B			B			B		A	
Intersection Summary											
HCM Average Control Delay			15.8			HCM Level of Service				B	
HCM Volume to Capacity ratio			0.54								
Actuated Cycle Length (s)			60.6			Sum of lost time (s)				12.0	
Intersection Capacity Utilization			48.0%			ICU Level of Service				A	
Analysis Period (min)			15								
c Critical Lane Group											

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	Jacob Swim	Intersection	Carmel Creek Rd./Del Mar Trail
Agency/Co.	USAI	Jurisdiction	City of San Diego
Date Performed	7/9/2013	Analysis Year	2013
Analysis Time Period	36 Existing + Project Ph. 1 AM		

Project ID 002407 - San Diego Corporate Center Lots
 East/West Street: Del Mar Trail North/South Street: Carmel Creek Road

Volume Adjustments and Site Characteristics						
Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	10	10	10	200	2	25
%Thrus Left Lane						
Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	3	260	100	15	929	3
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LT	TR	LT	TR
PHF	0.90		0.90		0.90	0.90	0.90	0.90
Flow Rate (veh/h)	33		251		147	255	531	519
% Heavy Vehicles	2		2		2	2	2	2
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet								
Prop. Left-Turns	0.3		0.9		0.0	0.0	0.0	0.0
Prop. Right-Turns	0.3		0.1		0.0	0.4	0.0	0.0
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.1		0.0	-0.3	0.0	0.0

Departure Headway and Service Time								
hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.03		0.22		0.13	0.23	0.47	0.46
hd, final value (s)	7.40		6.79		7.07	6.75	6.27	6.25
x, final value	0.07		0.47		0.29	0.48	0.92	0.90
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t _s (s)	5.4		4.8		4.8	4.5	4.0	3.9

Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	283		501		397	505	574	576
Delay (s/veh)	10.94		15.74		12.62	15.48	45.82	41.70
LOS	B		C		B	C	E	E
Approach: Delay (s/veh)	10.94		15.74		14.44		43.79	
LOS	B		C		B		E	
Intersection Delay (s/veh)	32.31							
Intersection LOS	D							

HCM Signalized Intersection Capacity Analysis
 1: Via De La Valle & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑			↖	↗		↕	
Volume (vph)	6	397	497	168	363	3	533	2	403	0	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Flt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1861			1774	1583		1779	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1861			1774	1583		1779	
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	441	552	187	403	3	592	2	448	0	2	1
RTOR Reduction (vph)	0	0	237	0	0	0	0	0	276	0	1	0
Lane Group Flow (vph)	7	441	315	187	406	0	0	594	172	0	2	0
Turn Type	Prot		Perm	Prot			Split		Prot		Split	
Protected Phases	7	4		3	8		2	2	2		6	6
Permitted Phases			4									
Actuated Green, G (s)	0.7	27.2	27.2	14.9	41.4			38.7	38.7		4.1	
Effective Green, g (s)	0.7	27.2	27.2	14.9	41.4			38.7	38.7		4.1	
Actuated g/C Ratio	0.01	0.27	0.27	0.15	0.41			0.38	0.38		0.04	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	12	502	427	261	764			680	607		72	
v/s Ratio Prot	0.00	0.24		0.11	0.22			0.33	0.11		0.00	
v/s Ratio Perm			0.20									
v/c Ratio	0.58	0.88	0.74	0.72	0.53			0.87	0.28		0.03	
Uniform Delay, d1	50.0	35.3	33.6	41.0	22.4			28.8	21.5		46.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	56.2	15.9	6.5	9.0	0.7			12.0	0.3		0.2	
Delay (s)	106.2	51.2	40.1	50.0	23.1			40.8	21.8		46.6	
Level of Service	F	D	D	D	C			D	C		D	
Approach Delay (s)		45.4			31.6			32.6			46.6	
Approach LOS		D			C			C			D	

Intersection Summary				
HCM Average Control Delay		37.3	HCM Level of Service	D
HCM Volume to Capacity ratio		0.81		
Actuated Cycle Length (s)		100.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization		76.5%	ICU Level of Service	D
Analysis Period (min)		15		
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
 2: San Dieguito Road & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	207	256	0	553	365	332	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	0.95
Frt	1.00	0.85		1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583		1863	1583	1770	3539
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583		1863	1583	1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	230	284	0	614	406	369	322
RTOR Reduction (vph)	0	231	0	0	245	0	0
Lane Group Flow (vph)	230	53	0	614	161	369	322
Turn Type		Perm	Prot		Perm	Prot	
Protected Phases	1		3	8		7	
Permitted Phases		1			8		6
Actuated Green, G (s)	12.6	12.6		25.3	25.3	18.1	12.6
Effective Green, g (s)	12.6	12.6		25.3	25.3	18.1	12.6
Actuated g/C Ratio	0.19	0.19		0.37	0.37	0.27	0.19
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	636	293		693	589	471	656
v/s Ratio Prot	0.07			c0.33		c0.21	
v/s Ratio Perm		0.03			0.10		c0.09
v/c Ratio	0.36	0.18		0.89	0.27	0.78	0.49
Uniform Delay, d1	24.2	23.3		20.0	14.9	23.1	24.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.3		13.0	0.3	8.3	0.6
Delay (s)	24.5	23.6		33.0	15.2	31.4	25.4
Level of Service	C	C		C	B	C	C
Approach Delay (s)	24.0			25.9			28.6
Approach LOS	C			C			C

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 3: Derby Downs Road & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	63	6	0	878	108	8	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0	4.0
Lane Util. Factor	0.97			0.95		1.00	0.95
Frt	0.99			0.98		1.00	1.00
Flt Protected	0.96			1.00		0.95	1.00
Satd. Flow (prot)	3409			3481		1770	3539
Flt Permitted	0.96			1.00		0.95	1.00
Satd. Flow (perm)	3409			3481		1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	7	0	976	120	9	549
RTOR Reduction (vph)	6	0	0	10	0	0	0
Lane Group Flow (vph)	71	0	0	1086	0	9	549
Turn Type			Prot			Prot	
Protected Phases	8		5	2		1	6
Permitted Phases							
Actuated Green, G (s)	5.1			20.3		0.5	24.8
Effective Green, g (s)	5.1			20.3		0.5	24.8
Actuated g/C Ratio	0.13			0.54		0.01	0.65
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)	459			1864		23	2316
v/s Ratio Prot	c0.02			c0.31		0.01	c0.16
v/s Ratio Perm							
v/c Ratio	0.15			0.58		0.39	0.24
Uniform Delay, d1	14.5			5.9		18.5	2.7
Progression Factor	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.2			0.5		10.7	0.1
Delay (s)	14.7			6.4		29.2	2.7
Level of Service	B			A		C	A
Approach Delay (s)	14.7			6.4			3.2
Approach LOS	B			A			A

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	21	14	20	20	150	25	796	59	86	440	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1748		1770	1616		1770	3502		1770	3509	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1748		1770	1616		1770	3502		1770	3509	
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)	24	23	16	22	22	167	28	884	66	96	489	30
RTOR Reduction (vph)	0	14	0	0	144	0	0	5	0	0	4	0
Lane Group Flow (vph)	24	25	0	22	45	0	28	945	0	96	515	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.6	7.6		0.5	7.5		1.6	24.6		5.3	28.3	
Effective Green, g (s)	0.6	7.6		0.5	7.5		1.6	24.6		5.3	28.3	
Actuated g/C Ratio	0.01	0.14		0.01	0.14		0.03	0.46		0.10	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	20	246		16	224		52	1595		174	1839	
v/s Ratio Prot	c0.01	0.01		0.01	c0.03		0.02	c0.27		c0.05	c0.15	
v/s Ratio Perm												
v/c Ratio	1.20	0.10		1.38	0.20		0.54	0.59		0.55	0.28	
Uniform Delay, d1	26.7	20.2		26.8	20.6		25.8	11.0		23.2	7.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	270.0	0.2		361.4	0.4		10.3	0.6		3.7	0.1	
Delay (s)	296.7	20.4		388.1	21.0		36.1	11.6		27.0	7.3	
Level of Service	F	C		F	C		D	B		C	A	
Approach Delay (s)		125.7			59.3			12.3			10.3	
Approach LOS		F			E			B			B	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1) PM
7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↑↗		↖	↑↗	
Volume (vph)	7	41	32	46	29	19	47	939	125	22	467	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1752		1770	3477		1770	3528	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1752		1770	3477		1770	3528	
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)	8	46	36	51	32	21	52	1043	139	24	519	11
RTOR Reduction (vph)	0	0	31	0	17	0	0	6	0	0	1	0
Lane Group Flow (vph)	8	46	5	51	36	0	52	1176	0	24	529	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	0.5	9.8	9.8	6.1	15.4		4.1	38.8		1.3	36.0	
Effective Green, g (s)	0.5	9.8	9.8	6.1	15.4		4.1	38.8		1.3	36.0	
Actuated g/C Ratio	0.01	0.14	0.14	0.08	0.21		0.06	0.54		0.02	0.50	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	12	254	215	150	375		101	1874		32	1764	
v/s Ratio Prot	0.00	c0.02		c0.03	0.02		c0.03	c0.34		0.01	0.15	
v/s Ratio Perm			0.00									
v/c Ratio	0.67	0.18	0.02	0.34	0.10		0.51	0.63		0.75	0.30	
Uniform Delay, d1	35.7	27.5	27.0	31.1	22.7		33.0	11.6		35.2	10.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	89.5	0.3	0.0	1.4	0.1		4.4	0.7		65.2	0.1	
Delay (s)	125.1	27.9	27.0	32.4	22.8		37.4	12.2		100.4	10.7	
Level of Service	F	C	C	C	C		D	B		F	B	
Approach Delay (s)		36.2			27.5			13.3			14.6	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1) PM
7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑		↙	↑↑			↑	↗	↙	↔	
Volume (vph)	124	831	16	134	898	202	40	31	54	386	35	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Flt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (prot)	1770	5071		1770	3442			1812	1583	1681	1610	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (perm)	1770	5071		1770	3442			1812	1583	1681	1610	
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)	135	903	17	146	976	220	43	34	59	420	38	141
RTOR Reduction (vph)	0	1	0	0	14	0	0	0	53	0	29	0
Lane Group Flow (vph)	135	919	0	146	1182	0	0	77	6	307	263	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	19.7	40.1		21.2	41.4			12.1	12.1	26.9	26.9	
Effective Green, g (s)	19.7	40.1		21.2	41.4			12.1	12.1	26.9	26.9	
Actuated g/C Ratio	0.16	0.33		0.18	0.34			0.10	0.10	0.22	0.22	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	291	1695		313	1187			183	160	377	361	
v/s Ratio Prot	0.08	0.18		c0.08	c0.34			c0.04		c0.18	0.16	
v/s Ratio Perm									0.00			
v/c Ratio	0.46	0.54		0.47	1.00			0.42	0.04	0.81	0.73	
Uniform Delay, d1	45.4	32.5		44.3	39.2			50.7	48.7	44.2	43.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	1.2		0.4	25.1			0.6	0.0	12.7	7.1	
Delay (s)	45.8	33.7		44.7	64.3			51.2	48.7	56.8	50.3	
Level of Service	D	C		D	E			D	D	E	D	
Approach Delay (s)		35.3			62.1			50.1			53.6	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1237	62	0	1506	0	94
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1374	69	0	1673	0	104
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	575			607		
pX, platoon unblocked				0.87	0.79	0.87
vC, conflicting volume				1443	2246	493
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				992	1061	0
tC, single (s)				4.1	6.8	6.9
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	89
cM capacity (veh/h)				604	172	945
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	550	550	344	837	837	104
Volume Left	0	0	0	0	0	0
Volume Right	0	0	69	0	0	104
cSH	1700	1700	1700	1700	1700	945
Volume to Capacity	0.32	0.32	0.20	0.49	0.49	0.11
Queue Length 95th (ft)	0	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.3
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.3
Approach LOS						A
Intersection Summary						
Average Delay				0.3		
Intersection Capacity Utilization				45.0%		ICU Level of Service
Analysis Period (min)				15		
						A

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	↑
Volume (vph)	0	946	1260	0	903	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3431	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3431	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1051	1400	0	1003	322
RTOR Reduction (vph)	0	0	0	0	3	21
Lane Group Flow (vph)	0	1051	1400	0	1032	269
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.7	42.7		25.3	25.3
Effective Green, g (s)		42.7	42.7		25.3	25.3
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1891	1891		1086	456
v/s Ratio Prot		0.30	0.40		0.30	
v/s Ratio Perm						0.19
v/c Ratio		0.56	0.74		0.95	0.59
Uniform Delay, d1		12.3	14.3		26.7	22.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4	1.6		16.7	2.0
Delay (s)		12.7	15.9		43.4	24.9
Level of Service		B	B		D	C
Approach Delay (s)		12.7	15.9		39.4	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay			23.2		HCM Level of Service	C
HCM Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			79.9		Sum of lost time (s)	11.9
Intersection Capacity Utilization			109.9%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

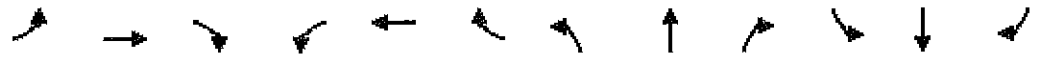
Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	235	1588	0	0	1334	891	615	10	856	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1483	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1483	1504			
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)	247	1672	0	0	1404	938	647	11	901	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	485	0	9	9	0	0	0
Lane Group Flow (vph)	247	1672	0	0	1404	453	543	502	496	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	10.7	63.8			47.9	47.9	44.3	44.3	44.3			
Effective Green, g (s)	10.7	63.8			47.9	47.9	44.3	44.3	44.3			
Actuated g/C Ratio	0.09	0.53			0.40	0.40	0.37	0.37	0.37			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	306	1882			2030	632	621	547	555			
v/s Ratio Prot	0.07	0.47			0.28	0.29	0.32	0.34	0.33			
v/s Ratio Perm												
v/c Ratio	0.81	0.89			0.69	0.72	0.87	0.92	0.89			
Uniform Delay, d1	53.6	24.9			29.9	30.3	35.3	36.1	35.6			
Progression Factor	1.00	1.00			0.78	2.64	1.00	1.00	1.00			
Incremental Delay, d2	14.4	6.7			0.2	0.6	13.0	20.3	16.7			
Delay (s)	68.0	31.7			23.4	80.7	48.3	56.5	52.3			
Level of Service	E	C			C	F	D	E	D			
Approach Delay (s)		36.3			46.3			52.3			0.0	
Approach LOS		D			D			D			A	
Intersection Summary												
HCM Average Control Delay		44.6				HCM Level of Service		D				
HCM Volume to Capacity ratio		0.90										
Actuated Cycle Length (s)		120.0				Sum of lost time (s)		11.9				
Intersection Capacity Utilization		102.1%				ICU Level of Service		G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑		↖↗	↑↗		↖	↑	↗
Volume (vph)	242	2216	251	47	1552	60	618	65	152	45	29	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5057		3433	3167		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5057		3433	3167		1770	1863	1583
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)	269	2462	279	52	1724	67	687	72	169	50	32	89
RTOR Reduction (vph)	0	0	71	0	3	0	0	133	0	0	0	0
Lane Group Flow (vph)	269	2462	208	52	1788	0	687	108	0	50	32	89
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	28.1	61.6	77.4	6.3	40.2		15.8	25.5		6.9	16.6	44.7
Effective Green, g (s)	28.1	61.6	77.4	6.3	40.2		15.8	25.5		6.9	16.6	44.7
Actuated g/C Ratio	0.23	0.51	0.64	0.05	0.34		0.13	0.21		0.06	0.14	0.37
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	414	2610	1021	93	1694		452	673		102	258	590
v/s Ratio Prot	c0.15	c0.48	0.03	0.03	c0.35		c0.20	c0.03		0.03	0.02	0.04
v/s Ratio Perm			0.10									0.02
v/c Ratio	0.65	0.94	0.20	0.56	1.06		1.52	0.16		0.49	0.12	0.15
Uniform Delay, d1	41.5	27.6	8.7	55.5	39.9		52.1	38.5		54.8	45.3	25.0
Progression Factor	1.01	1.04	0.84	1.17	1.06		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	5.9	0.0	3.8	37.4		245.1	0.0		1.3	0.1	0.0
Delay (s)	43.7	34.5	7.4	68.6	79.8		297.2	38.6		56.2	45.4	25.1
Level of Service	D	C	A	E	E		F	D		E	D	C
Approach Delay (s)		32.8			79.5			230.0			38.0	
Approach LOS		C			E			F			D	

Intersection Summary		
HCM Average Control Delay	78.1	HCM Level of Service E
HCM Volume to Capacity ratio	0.93	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 20.4
Intersection Capacity Utilization	86.0%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 11: Del Mar Heights Road & Third Ave.

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	2404	149	89	1478	264	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2671	166	99	1642	293	177
RTOR Reduction (vph)	0	37	0	0	0	118
Lane Group Flow (vph)	2671	129	99	1642	293	59
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	80.1	80.1	10.9	94.0	17.0	17.0
Effective Green, g (s)	80.1	80.1	10.9	94.0	17.0	17.0
Actuated g/C Ratio	0.67	0.67	0.09	0.78	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3394	1057	161	3983	486	224
v/s Ratio Prot	c0.53		c0.06	0.32	c0.09	
v/s Ratio Perm		0.08				0.04
v/c Ratio	0.79	0.12	0.61	0.41	0.60	0.26
Uniform Delay, d1	14.0	7.2	52.5	4.2	48.3	45.9
Progression Factor	0.70	0.13	1.03	0.28	1.00	1.00
Incremental Delay, d2	1.1	0.1	6.2	0.3	2.1	0.6
Delay (s)	10.9	1.1	60.3	1.5	50.4	46.5
Level of Service	B	A	E	A	D	D
Approach Delay (s)	10.3			4.8	49.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	2444	119	60	1356	211	106
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	0.97	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2716	132	67	1507	234	118
RTOR Reduction (vph)	0	36	0	0	0	60
Lane Group Flow (vph)	2716	96	67	1507	234	58
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	75.0	75.0	4.6	83.6	28.4	28.4
Effective Green, g (s)	75.0	75.0	4.6	83.6	28.4	28.4
Actuated g/C Ratio	0.62	0.62	0.04	0.70	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3178	989	132	3543	419	375
v/s Ratio Prot	c0.53	0.06	0.02	c0.30	c0.13	
v/s Ratio Perm						0.04
v/c Ratio	0.85	0.10	0.51	0.43	0.56	0.15
Uniform Delay, d1	18.1	9.0	56.6	7.8	40.3	36.3
Progression Factor	1.93	2.03	0.76	0.95	1.00	1.00
Incremental Delay, d2	1.5	0.0	2.4	0.1	5.3	0.9
Delay (s)	36.4	18.3	45.3	7.5	45.6	37.2
Level of Service	D	B	D	A	D	D
Approach Delay (s)	35.6			9.1	42.8	
Approach LOS	D			A	D	
Intersection Summary						
HCM Average Control Delay		27.4		HCM Level of Service		C
HCM Volume to Capacity ratio		0.76				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		65.6%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	471	1584	344	173	860	176	269	426	312	147	164	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4949		3433	4956		3433	5085	1583	3433	4658	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4949		3433	4956		3433	5085	1583	3433	4658	
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)	523	1760	382	192	956	196	299	473	347	163	182	232
RTOR Reduction (vph)	0	25	0	0	25	0	0	0	90	0	194	0
Lane Group Flow (vph)	523	2117	0	192	1127	0	299	473	257	163	220	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	25.9	55.3		12.4	42.0		11.5	26.2	26.2	5.6	19.5	
Effective Green, g (s)	25.9	55.3		12.4	42.0		11.5	26.2	26.2	5.6	19.5	
Actuated g/C Ratio	0.22	0.46		0.10	0.35		0.10	0.22	0.22	0.05	0.16	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	741	2281		355	1735		329	1110	346	160	757	
v/s Ratio Prot	c0.15	c0.43		0.06	0.23		c0.09	0.09		0.05	0.05	
v/s Ratio Perm									c0.16			
v/c Ratio	0.71	0.93		0.54	0.65		0.91	0.43	0.74	1.02	0.29	
Uniform Delay, d1	43.5	30.5		51.1	32.8		53.7	40.4	43.8	57.2	44.2	
Progression Factor	1.20	0.30		1.23	0.97		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	4.7		0.9	1.9		27.0	0.3	8.8	76.2	0.2	
Delay (s)	53.6	14.0		63.7	33.6		80.7	40.8	52.5	133.4	44.4	
Level of Service	D	B		E	C		F	D	D	F	D	
Approach Delay (s)		21.7			37.9			55.1			69.5	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	1206	551	80	606	72	374	167	145	78	124	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Flt	1.00	0.95		1.00	0.98		1.00	0.93		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4846		3433	5004		3433	4731		1770	3276	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4846		3433	5004		3433	4731		1770	3276	
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)	139	1340	612	89	673	80	416	186	161	87	138	136
RTOR Reduction (vph)	0	54	0	0	10	0	0	132	0	0	117	0
Lane Group Flow (vph)	139	1898	0	89	744	0	416	215	0	87	157	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	8.7	62.2		6.7	60.0		15.2	21.4		9.9	16.6	
Effective Green, g (s)	8.7	62.2		6.7	60.0		15.2	21.4		9.9	16.6	
Actuated g/C Ratio	0.07	0.52		0.06	0.50		0.13	0.18		0.08	0.14	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	249	2512		192	2502		435	844		146	453	
v/s Ratio Prot	c0.04	c0.39		0.03	0.15		c0.12	0.05		0.05	c0.05	
v/s Ratio Perm												
v/c Ratio	0.56	0.76		0.46	0.30		0.96	0.25		0.60	0.35	
Uniform Delay, d1	53.8	22.9		54.9	17.6		52.1	42.4		53.1	46.8	
Progression Factor	1.08	0.91		1.31	0.44		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	1.8		0.6	0.3		31.6	0.2		4.3	1.2	
Delay (s)	59.3	22.6		72.6	8.1		83.7	42.7		57.4	48.0	
Level of Service	E	C		E	A		F	D		E	D	
Approach Delay (s)		25.0			14.9			65.0			50.3	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑		↘	↑↑↑		↘	↑		↘	↑	
Volume (vph)	48	1241	147	8	655	22	60	14	31	27	8	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5005		1770	5061		1770	1673		1770	1643	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5005		1770	5061		1770	1673		1770	1643	
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)	53	1379	163	9	728	24	67	16	34	30	9	33
RTOR Reduction (vph)	0	8	0	0	2	0	0	29	0	0	29	0
Lane Group Flow (vph)	53	1534	0	9	750	0	67	21	0	30	13	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.9	78.3		0.9	71.6		7.7	17.9		4.2	14.4	
Effective Green, g (s)	6.9	78.3		0.9	71.6		7.7	17.9		4.2	14.4	
Actuated g/C Ratio	0.06	0.65		0.01	0.60		0.06	0.15		0.04	0.12	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	102	3266		13	3020		114	250		62	197	
v/s Ratio Prot	c0.03	c0.31		0.01	0.15		c0.04	c0.01		0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.52	0.47		0.69	0.25		0.59	0.08		0.48	0.07	
Uniform Delay, d1	54.9	10.4		59.4	11.5		54.6	44.0		56.8	46.8	
Progression Factor	0.75	1.69		1.09	0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.3		80.7	0.2		4.9	0.1		2.2	0.1	
Delay (s)	42.8	18.0		145.3	6.9		59.5	44.0		59.0	46.9	
Level of Service	D	B		F	A		E	D		E	D	
Approach Delay (s)		18.8			8.6			52.9			51.9	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM Average Control Delay			18.2			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			13.3			
Intersection Capacity Utilization			52.8%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	279	954	63	21	469	24	39	45	34	23	32	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5038		1770	5048		1770	1742		1770	1625	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5038		1770	5048		1770	1742		1770	1625	
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)	310	1060	70	23	521	27	43	50	38	26	36	203
RTOR Reduction (vph)	0	4	0	0	4	0	0	27	0	0	173	0
Lane Group Flow (vph)	310	1126	0	23	544	0	43	61	0	26	66	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	23.9	75.3		3.5	54.9		4.1	19.6		2.5	17.8	
Effective Green, g (s)	23.9	75.3		3.5	54.9		4.1	19.6		2.5	17.8	
Actuated g/C Ratio	0.20	0.63		0.03	0.46		0.03	0.16		0.02	0.15	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	353	3161		52	2309		60	285		37	241	
v/s Ratio Prot	c0.18	c0.22		0.01	0.11		c0.02	0.04		0.01	c0.04	
v/s Ratio Perm												
v/c Ratio	0.88	0.36		0.44	0.24		0.72	0.21		0.70	0.27	
Uniform Delay, d1	46.6	10.7		57.3	19.8		57.4	43.5		58.4	45.4	
Progression Factor	1.36	0.81		1.25	1.02		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.2	0.3		2.2	0.2		28.5	0.1		39.1	0.2	
Delay (s)	82.6	9.0		73.5	20.4		85.9	43.7		97.5	45.6	
Level of Service	F	A		E	C		F	D		F	D	
Approach Delay (s)		24.8			22.6			57.5			50.7	
Approach LOS		C			C			E			D	

Intersection Summary		
HCM Average Control Delay	28.9	HCM Level of Service C
HCM Volume to Capacity ratio	0.46	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 13.9
Intersection Capacity Utilization	57.4%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing + Project (Phase 1) PM
 7/11/2013

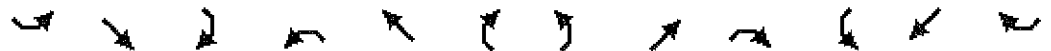


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↙	↑↑↑	↘	↗
Volume (vph)	819	176	89	417	113	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Flt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4950		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4950		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	910	196	99	463	126	276
RTOR Reduction (vph)	18	0	0	0	0	44
Lane Group Flow (vph)	1088	0	99	463	126	232
Turn Type			Prot		pm+ov	
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	74.3		11.2	90.6	18.5	29.7
Effective Green, g (s)	74.3		11.2	90.6	18.5	29.7
Actuated g/C Ratio	0.62		0.09	0.76	0.15	0.25
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	3065		165	3839	529	392
v/s Ratio Prot	c0.22		c0.06	0.09	0.04	c0.06
v/s Ratio Perm						0.09
v/c Ratio	0.35		0.60	0.12	0.24	0.59
Uniform Delay, d1	11.2		52.2	4.0	44.6	39.8
Progression Factor	1.81		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		4.2	0.1	0.1	1.6
Delay (s)	20.5		56.4	4.0	44.6	41.4
Level of Service	C		E	A	D	D
Approach Delay (s)	20.5			13.3	42.4	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 18: Del Mar Highlands Town Ctr. & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013

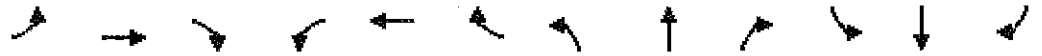


Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	106	32	32	188	18	248	71	631	163	286	378	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	0.94			1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1648			1781	1583	3433	4929		3433	5030	
Flt Permitted	0.95	0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1648			1781	1583	3433	4929		3433	5030	
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)	118	36	36	209	20	276	79	701	181	318	420	33
RTOR Reduction (vph)	0	19	0	0	0	215	0	36	0	0	6	0
Lane Group Flow (vph)	97	74	0	0	229	61	79	846	0	318	447	0
Turn Type	Split		Split		Perm		Prot		Prot			
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases					6							
Actuated Green, G (s)	10.6	10.6		17.9	17.9	6.0	22.4			13.5	29.9	
Effective Green, g (s)	10.6	10.6		17.9	17.9	6.0	22.4			13.5	29.9	
Actuated g/C Ratio	0.13	0.13		0.22	0.22	0.07	0.28			0.17	0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0			4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	222	217		397	352	256	1373			576	1871	
v/s Ratio Prot	c0.06	0.04		c0.13		0.02	c0.17			c0.09	0.09	
v/s Ratio Perm					0.04							
v/c Ratio	0.44	0.34		0.58	0.17	0.31	0.62			0.55	0.24	
Uniform Delay, d1	32.2	31.7		27.9	25.3	35.2	25.3			30.7	17.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2	1.4	0.9		2.0	0.2	0.7	0.8			1.1	0.1	
Delay (s)	33.5	32.7		29.9	25.5	35.9	26.1			31.8	17.5	
Level of Service	C	C		C	C	D	C			C	B	
Approach Delay (s)	33.1		27.5		26.9		23.4					
Approach LOS	C		C		C		C					

Intersection Summary			
HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Townsgate Drive & Carmel Country Road

Existing + Project (Phase 1) PM
 7/11/2013

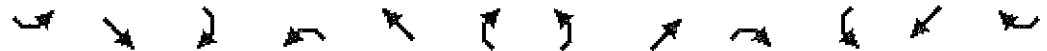


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↑↗		↖	↑↑	↗
Volume (vph)	122	105	173	14	54	115	113	500	10	182	578	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1673		1770	3529		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1673		1770	3529		1770	3539	1583
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)	136	117	192	16	60	128	126	556	11	202	642	99
RTOR Reduction (vph)	0	0	132	0	77	0	0	1	0	0	0	64
Lane Group Flow (vph)	136	117	60	16	111	0	126	566	0	202	642	35
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	9.1	23.4	23.4	0.6	14.9		8.7	20.3		14.5	26.1	26.1
Effective Green, g (s)	9.1	23.4	23.4	0.6	14.9		8.7	20.3		14.5	26.1	26.1
Actuated g/C Ratio	0.12	0.31	0.31	0.01	0.20		0.12	0.27		0.19	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	215	583	495	14	333		206	958		343	1235	552
v/s Ratio Prot	c0.08	0.06		0.01	c0.07		0.07	c0.16		c0.11	0.18	
v/s Ratio Perm			0.04									0.02
v/c Ratio	0.63	0.20	0.12	1.14	0.33		0.61	0.59		0.59	0.52	0.06
Uniform Delay, d1	31.3	18.8	18.4	37.1	25.7		31.4	23.6		27.4	19.4	16.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.0	0.2	0.1	291.3	0.6		5.3	1.0		2.6	0.4	0.0
Delay (s)	37.2	19.0	18.5	328.4	26.3		36.7	24.6		30.0	19.7	16.3
Level of Service	D	B	B	F	C		D	C		C	B	B
Approach Delay (s)		24.3			50.0			26.8			21.6	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 20: Townsgate Drive & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013



Movement	SEL	SEI	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	11	6	10	140	0	102	7	746	200	136	506	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00		1.00	1.00	0.91		1.00	0.91	
Flt	1.00	0.91		1.00		0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95		1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1692		1770		1583	1770	4924		1770	5083	
Flt Permitted	0.95	1.00		0.95		1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1692		1770		1583	1770	4924		1770	5083	
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)	12	7	11	156	0	113	8	829	222	151	562	2
RTOR Reduction (vph)	0	10	0	0	0	87	0	36	0	0	0	0
Lane Group Flow (vph)	12	8	0	156	0	26	8	1015	0	151	564	0
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						
Actuated Green, G (s)	0.6	4.9		13.1		17.4	0.6	27.9		12.8	40.1	
Effective Green, g (s)	0.6	4.9		13.1		17.4	0.6	27.9		12.8	40.1	
Actuated g/C Ratio	0.01	0.07		0.18		0.23	0.01	0.37		0.17	0.54	
Clearance Time (s)	4.0	4.0		4.0		4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	14	111		310		369	14	1839		303	2729	
v/s Ratio Prot	0.01	0.00		c0.09			0.00	c0.21		c0.09	0.11	
v/s Ratio Perm						c0.02						
v/c Ratio	0.86	0.07		0.50		0.07	0.57	0.55		0.50	0.21	
Uniform Delay, d1	37.0	32.8		27.9		22.3	36.9	18.5		28.0	9.0	
Progression Factor	1.00	1.00		1.00		1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	164.6	0.3		1.3		0.1	46.0	0.4		1.3	0.0	
Delay (s)	201.6	33.0		29.1		22.4	82.9	18.8		29.3	9.0	
Level of Service	F	C		C		C	F	B		C	A	
Approach Delay (s)		100.5			26.3			19.3			13.3	
Approach LOS		F			C			B			B	
Intersection Summary												
HCM Average Control Delay			19.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			74.7			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			50.8%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 21: Carmel Creek Road & Carmel Country Road

Existing + Project (Phase 1) PM
 7/11/2013



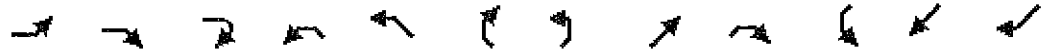
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	302	237	123	32	99	17	94	374	39	25	434	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	14	12	12	16	12	12	16	12
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Fr't	1.00	1.00	0.85		0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1794		1935		1770	3955		1770	3790	
Flt Permitted	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1794		1935		1770	3955		1770	3790	
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)	336	263	137	36	110	19	104	416	43	28	482	281
RTOR Reduction (vph)	0	0	99	0	4	0	0	7	0	0	69	0
Lane Group Flow (vph)	336	263	38	0	161	0	104	452	0	28	694	0
Turn Type	Split		Perm	Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	24.2	24.2	24.2		13.7		8.5	30.5		3.1	25.1	
Effective Green, g (s)	24.2	24.2	24.2		13.7		8.5	30.5		3.1	25.1	
Actuated g/C Ratio	0.28	0.28	0.28		0.16		0.10	0.35		0.04	0.29	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	490	515	496		303		172	1379		63	1087	
v/s Ratio Prot	c0.19	0.14			c0.08		c0.06	0.11		0.02	c0.18	
v/s Ratio Perm			0.02									
v/c Ratio	0.69	0.51	0.08		0.53		0.60	0.33		0.44	0.64	
Uniform Delay, d1	28.3	26.7	23.4		33.9		37.9	21.0		41.4	27.2	
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	0.9	0.1		1.8		5.9	0.1		4.9	1.2	
Delay (s)	32.2	27.5	23.5		35.7		43.8	21.1		46.3	28.5	
Level of Service	C	C	C		D		D	C		D	C	
Approach Delay (s)		28.9			35.7			25.3			29.1	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay		28.6	HCM Level of Service	C
HCM Volume to Capacity ratio		0.63		
Actuated Cycle Length (s)		87.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization		63.4%	ICU Level of Service	B
Analysis Period (min)		15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 22: High Bluff Drive & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013

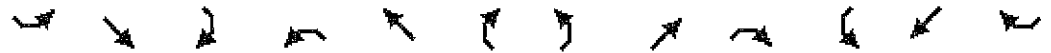


Movement	EBL	EBR	EBR2	NWL2	NWL	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	72	271	315	96	168	116	258	999	92	155	559	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97		0.97	0.91		1.00	0.91	
Frt	1.00	0.85	0.85	1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583	1583	1770	3295		3433	5021		1770	5031	
Flt Permitted	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1583	1583	1770	3295		3433	5021		1770	5031	
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)	80	301	350	107	187	129	287	1110	102	172	621	48
RTOR Reduction (vph)	0	0	265	0	103	0	0	8	0	0	6	0
Lane Group Flow (vph)	80	301	85	107	213	0	287	1204	0	172	663	0
Turn Type		Perm	Perm	Split			Prot			Prot		
Protected Phases	2			6	6		3	8		7	4	
Permitted Phases		2	2									
Actuated Green, G (s)	23.4	23.4	23.4	10.4	10.4		16.6	29.5		16.7	29.6	
Effective Green, g (s)	23.4	23.4	23.4	10.4	10.4		16.6	29.5		16.7	29.6	
Actuated g/C Ratio	0.24	0.24	0.24	0.11	0.11		0.17	0.31		0.17	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	431	386	386	192	357		594	1543		308	1551	
v/s Ratio Prot	0.05			0.06	c0.06		0.08	c0.24		c0.10	0.13	
v/s Ratio Perm		c0.19	0.05									
v/c Ratio	0.19	0.78	0.22	0.56	0.60		0.48	0.78		0.56	0.43	
Uniform Delay, d1	28.8	33.9	29.0	40.6	40.8		35.8	30.3		36.3	26.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	9.6	0.3	3.5	2.7		0.6	2.6		2.2	0.2	
Delay (s)	29.0	43.5	29.3	44.1	43.5		36.5	32.9		38.5	26.6	
Level of Service	C	D	C	D	D		D	C		D	C	
Approach Delay (s)	35.1				43.6			33.6			29.1	
Approach LOS	D				D			C			C	

Intersection Summary			
HCM Average Control Delay	34.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1) PM
 7/11/2013



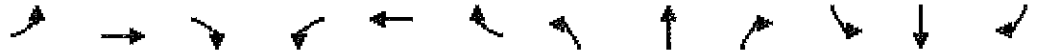
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↔	↔		↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	199	25	146	4	11	4	102	24	8	2	7	98
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	221	28	162	4	12	4	113	27	9	2	8	109

Direction Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total (vph)	249	162	21	149	119
Volume Left (vph)	221	0	4	113	2
Volume Right (vph)	0	162	4	9	109
Hadj (s)	0.48	-0.67	-0.05	0.15	-0.51
Departure Headway (s)	5.7	4.5	5.2	5.2	4.6
Degree Utilization, x	0.39	0.20	0.03	0.22	0.15
Capacity (veh/h)	608	761	639	648	716
Control Delay (s)	11.1	7.5	8.3	9.7	8.5
Approach Delay (s)	9.7		8.3	9.7	8.5
Approach LOS	A		A	A	A

Intersection Summary	
Delay	9.4
HCM Level of Service	A
Intersection Capacity Utilization	39.7%
ICU Level of Service	A
Analysis Period (min)	15

HCM Signalized Intersection Capacity Analysis
 24: Carmel Grove Road & Carmel Creek Road

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↕↗		↖	↕↗	
Volume (vph)	116	50	70	55	26	9	108	738	134	6	353	82
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	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1800	1583		1783		1770	3458		1770	3439	
Flt Permitted		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1800	1583		1783		1770	3458		1770	3439	
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 (yph)	129	56	78	61	29	10	120	820	149	7	392	91
RTOR Reduction (vph)	0	0	63	0	4	0	0	10	0	0	16	0
Lane Group Flow (yph)	0	185	15	0	96	0	120	959	0	7	467	0
Turn Type	Split		Prot	Split			Prot			Prot		
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		13.8	13.8		9.5		7.7	31.4		0.6	24.3	
Effective Green, g (s)		13.8	13.8		9.5		7.7	31.4		0.6	24.3	
Actuated g/C Ratio		0.19	0.19		0.13		0.11	0.44		0.01	0.34	
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)		348	306		238		191	1523		15	1172	
v/s Ratio Prot		c0.10	0.01		c0.05		c0.07	c0.28		0.00	0.14	
v/s Ratio Perm												
v/c Ratio		0.53	0.05		0.40		0.63	0.63		0.47	0.40	
Uniform Delay, d1		25.8	23.4		28.3		30.4	15.4		35.2	17.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.6	0.1		1.1		6.3	0.8		21.2	0.2	
Delay (s)		27.4	23.5		29.4		36.8	16.3		56.4	18.2	
Level of Service		C	C		C		D	B		E	B	
Approach Delay (s)		26.2			29.4			18.5			18.7	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			20.2				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			71.3				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			49.6%				ICU Level of Service				A	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 25: Carmel Valley Road & I-5 SB Ramps

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↓	↑
Volume (vph)	0	623	137	604	872	0	0	0	0	835	1	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.95					0.95	0.91	0.95
Frt		0.97		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3444		3433	3539					1681	1612	1504
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3444		3433	3539					1681	1612	1504
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)	0	692	152	671	969	0	0	0	0	928	1	81
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	1	48
Lane Group Flow (vph)	0	819	0	671	969	0	0	0	0	473	463	25
Turn Type				Prot						Split		Prot
Protected Phases		4		3	8					6	6	6
Permitted Phases												
Actuated Green, G (s)		18.2		16.3	38.5					24.9	24.9	24.9
Effective Green, g (s)		18.2		16.3	38.5					24.9	24.9	24.9
Actuated g/C Ratio		0.25		0.23	0.54					0.35	0.35	0.35
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		878		784	1908					586	562	525
v/s Ratio Prot		c0.24		c0.20	0.27					0.28	c0.29	0.02
v/s Ratio Perm												
v/c Ratio		0.93		0.86	0.51					0.81	0.82	0.05
Uniform Delay, d1		26.0		26.4	10.4					21.1	21.3	15.4
Progression Factor		1.00		1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		16.4		9.1	0.2					8.0	9.6	0.0
Delay (s)		42.5		35.5	10.7					29.1	30.8	15.4
Level of Service		D		D	B					C	C	B
Approach Delay (s)		42.5			20.8			0.0			28.9	
Approach LOS		D			C			A			C	
Intersection Summary												
HCM Average Control Delay			28.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			71.4			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			80.9%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 26: Carmel Valley Road & I-5 NB Ramps

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	1367	0	0	988	780	439	7	667	0	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			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			3539	1583	1681	1472	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			3539	1583	1681	1472	1504			
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)	137	1519	0	0	1098	867	488	8	741	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	545	0	4	4	0	0	0
Lane Group Flow (vph)	137	1519	0	0	1098	322	429	404	396	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	7	4			8	8	2	2	2			
Permitted Phases												
Actuated Green, G (s)	4.6	35.6			27.0	27.0	29.1	29.1	29.1			
Effective Green, g (s)	4.6	35.6			27.0	27.0	29.1	29.1	29.1			
Actuated g/C Ratio	0.06	0.49			0.37	0.37	0.40	0.40	0.40			
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)	217	1733			1314	588	673	589	602			
v/s Ratio Prot	0.04	0.43			0.31	0.20	0.26	0.27	0.26			
v/s Ratio Perm												
v/c Ratio	0.63	0.88			0.84	0.55	0.64	0.69	0.66			
Uniform Delay, d1	33.2	16.6			20.8	18.0	17.6	18.0	17.7			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	5.9	5.3			4.8	1.0	2.0	3.3	2.6			
Delay (s)	39.1	21.9			25.6	19.1	19.5	21.3	20.3			
Level of Service	D	C			C	B	B	C	C			
Approach Delay (s)		23.3			22.7			20.4			0.0	
Approach LOS		C			C			C			A	
Intersection Summary												
HCM Average Control Delay			22.3				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			72.7				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			80.9%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 27: Valley Centre Drive & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗	↖	↕	↗	↖	↕↗		↖	↕↗	
Volume (vph)	38	30	28	476	22	110	75	910	214	185	1364	25
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	5.0		4.0	4.0	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.91	0.95	1.00	0.91		1.00	0.91	
Frt	1.00	0.99	0.85	1.00	0.99	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1668	1504	1681	1614	1504	1770	4940		1770	5071	
Flt Permitted	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1668	1504	1681	1614	1504	1770	4940		1770	5071	
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)	42	33	31	529	24	122	83	1011	238	206	1516	28
RTOR Reduction (vph)	0	3	25	0	1	82	0	26	0	0	1	0
Lane Group Flow (vph)	38	37	3	280	284	28	83	1223	0	206	1543	0
Turn Type	Split		Prot	Split		Prot	Prot			Prot		
Protected Phases	4	4	4	8	8	8	5	2		6		
Permitted Phases												6
Actuated Green, G (s)	9.2	9.2	9.2	20.1	20.1	20.1	5.3	37.1		28.8	28.8	
Effective Green, g (s)	9.2	9.2	9.2	20.1	20.1	20.1	5.3	37.1		28.8	28.8	
Actuated g/C Ratio	0.12	0.12	0.12	0.25	0.25	0.25	0.07	0.47		0.36	0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lane Grp Cap (vph)	195	193	174	426	409	381	118	2308		642	1839	
v/s Ratio Prot	c0.02	0.02	0.00	0.17	c0.18	0.02	c0.05	0.25		0.12		
v/s Ratio Perm												c0.30
v/c Ratio	0.19	0.19	0.02	0.66	0.69	0.07	0.70	0.53		0.32	0.84	
Uniform Delay, d1	31.7	31.7	31.1	26.6	26.9	22.6	36.3	15.0		18.2	23.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5	0.0	3.6	5.0	0.1	17.3	0.2		0.3	3.5	
Delay (s)	32.2	32.2	31.1	30.2	31.9	22.6	53.6	15.2		18.5	26.7	
Level of Service	C	C	C	C	C	C	D	B		B	C	
Approach Delay (s)		31.9			29.7			17.6			25.8	
Approach LOS		C			C			B			C	

Intersection Summary		
HCM Average Control Delay	23.8	HCM Level of Service C
HCM Volume to Capacity ratio	0.69	
Actuated Cycle Length (s)	79.4	Sum of lost time (s) 16.0
Intersection Capacity Utilization	65.0%	ICU Level of Service C
Analysis Period (min)	15	

f Phase conflict between lane groups
 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 28: Carmel Valley Road & El Camino Real

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↑↑↑↑	↗	↔↔	↑↑			↑↑↑↑	↗
Volume (vph)	0	0	0	166	807	170	341	988	0	0	633	765
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
Lane Util. Factor				0.97	0.91	1.00	0.97	0.95			0.86	0.86
Frbp, ped/bikes				1.00	1.00	1.00	1.00	1.00			0.90	0.73
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			0.94	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3433	5085	1583	3433	3539			4075	996
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				3433	5085	1583	3433	3539			4075	996
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)	0	0	0	184	897	189	379	1098	0	0	703	850
RTOR Reduction (vph)	0	0	0	0	0	31	0	0	0	0	37	37
Lane Group Flow (vph)	0	0	0	184	897	158	379	1098	0	0	1091	388
Confl. Peds. (#/hr)												200
Turn Type				Prot		Perm	Prot					Perm
Protected Phases				3	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				23.7	23.7	23.7	8.1	42.5			30.4	30.4
Effective Green, g (s)				23.7	23.7	23.7	8.1	42.5			30.4	30.4
Actuated g/C Ratio				0.32	0.32	0.32	0.11	0.57			0.41	0.41
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)				1097	1624	506	375	2027			1670	408
v/s Ratio Prot				0.05	c0.18		c0.11	0.31			0.27	
v/s Ratio Perm						0.10						c0.39
v/c Ratio				0.17	0.55	0.31	1.01	0.54			0.65	0.95
Uniform Delay, d1				18.2	20.9	19.1	33.1	9.8			17.7	21.2
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.4	0.4	49.2	0.3			0.9	32.3
Delay (s)				18.2	21.3	19.4	82.2	10.1			18.6	53.5
Level of Service				B	C	B	F	B			B	D
Approach Delay (s)		0.0			20.6			28.6			28.1	
Approach LOS		A			C			C			C	
Intersection Summary												
HCM Average Control Delay			26.1		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			74.2		Sum of lost time (s)						12.0	
Intersection Capacity Utilization			108.6%		ICU Level of Service						G	
Analysis Period (min)			15									

c Critical Lane Group

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

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	492	989	92	0	0	0	0	804	385	214	571	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	
Lane Util. Factor	0.91	0.86	0.91					0.86		1.00	0.91	
Frt	1.00	1.00	0.85					0.95		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1610	3192	1441					6096		1770	5085	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1610	3192	1441					6096		1770	5085	
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)	547	1099	102	0	0	0	0	893	428	238	634	0
RTOR Reduction (vph)	0	1	51	0	0	0	0	28	0	0	0	0
Lane Group Flow (vph)	492	1163	41	0	0	0	0	1293	0	238	634	0
Turn Type	Split		Perm					Prot				
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	34.2	34.2	34.2					28.8		13.9	46.7	
Effective Green, g (s)	34.2	34.2	34.2					28.8		13.9	46.7	
Actuated g/C Ratio	0.38	0.38	0.38					0.32		0.16	0.53	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	619	1228	554					1975		277	2671	
v/s Ratio Prot	0.31	0.36						0.21		0.13	0.12	
v/s Ratio Perm			0.03									
v/c Ratio	0.79	0.95	0.07					0.65		0.86	0.24	
Uniform Delay, d1	24.2	26.5	17.3					25.8		36.5	11.4	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	7.0	14.7	0.1					0.8		22.3	0.0	
Delay (s)	31.2	41.2	17.4					26.6		58.8	11.5	
Level of Service	C	D	B					C		E	B	
Approach Delay (s)		37.1			0.0			26.6			24.4	
Approach LOS		D			A			C			C	
Intersection Summary												
HCM Average Control Delay			30.8	HCM Level of Service		C						
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			88.9	Sum of lost time (s)		12.0						
Intersection Capacity Utilization			108.6%	ICU Level of Service		G						
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 30: Valley Centre Drive & Carmel View Road

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	66	385	0	358	94	30	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		0.95		1.00	1.00
Frt	1.00	1.00		0.97		1.00	0.85
Flt Protected	0.95	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1770	3539		3429		1770	1583
Flt Permitted	0.95	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1770	3539		3429		1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	73	428	0	398	104	33	51
RTOR Reduction (vph)	0	0	0	26	0	0	43
Lane Group Flow (vph)	73	428	0	476	0	33	8
Turn Type	Prot		Prot				Perm
Protected Phases	7	4	3	8		6	
Permitted Phases							6
Actuated Green, G (s)	3.7	18.4		10.7		4.7	4.7
Effective Green, g (s)	3.7	18.4		10.7		4.7	4.7
Actuated g/C Ratio	0.12	0.59		0.34		0.15	0.15
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)	211	2094		1180		267	239
v/s Ratio Prot	c0.04	0.12		c0.14		c0.02	
v/s Ratio Perm							0.00
v/c Ratio	0.35	0.20		0.40		0.12	0.03
Uniform Delay, d1	12.6	2.9		7.8		11.4	11.3
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0	0.0		0.2		0.2	0.1
Delay (s)	13.6	3.0		8.0		11.6	11.3
Level of Service	B	A		A		B	B
Approach Delay (s)		4.5		8.0		11.4	
Approach LOS		A		A		B	

Intersection Summary			
HCM Average Control Delay		6.7	HCM Level of Service A
HCM Volume to Capacity ratio		0.32	
Actuated Cycle Length (s)		31.1	Sum of lost time (s) 12.0
Intersection Capacity Utilization		29.9%	ICU Level of Service A
Analysis Period (min)		15	
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 31: Valley Centre Drive & Carmel Creek Road

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	284	290	31	157	96	312	808	111	264	126	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1756		1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1756		1770	3539	1583	3433	3539	1583
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)	126	316	322	34	174	107	347	898	123	293	140	153
RTOR Reduction (vph)	0	0	233	0	16	0	0	0	71	0	0	98
Lane Group Flow (vph)	126	316	89	34	265	0	347	898	52	293	140	55
Turn Type	Prot		Perm	Prot			Prot	pm+ov	Prot		pm+ov	
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)	13.0	27.7	27.7	7.0	21.7		26.5	35.4	42.4	14.6	23.5	36.5
Effective Green, g (s)	13.0	27.7	27.7	7.0	21.7		26.5	35.4	42.4	14.6	23.5	36.5
Actuated g/C Ratio	0.13	0.28	0.28	0.07	0.22		0.26	0.35	0.42	0.14	0.23	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)	229	973	435	123	378		466	1244	729	498	826	637
v/s Ratio Prot	c0.07	0.09		0.02	c0.15		c0.20	c0.25	0.00	0.09	0.04	0.01
v/s Ratio Perm			0.06						0.03			0.02
v/c Ratio	0.55	0.32	0.20	0.28	0.70		0.74	0.72	0.07	0.59	0.17	0.09
Uniform Delay, d1	41.1	29.1	28.0	44.4	36.5		34.0	28.4	17.4	40.2	30.8	21.1
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	2.8	0.2	0.2	1.2	5.6		6.4	2.1	0.0	1.8	0.1	0.1
Delay (s)	44.0	29.3	28.3	45.7	42.1		40.4	30.5	17.4	42.0	30.9	21.2
Level of Service	D	C	C	D	D		D	C	B	D	C	C
Approach Delay (s)		31.3			42.5			31.8			33.9	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 32: SR-56 EB Ramps & Carmel Creek Road

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	908	0	92	0	0	0	0	329	43	348	94	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	
Lane Util. Factor	0.95	0.95	1.00					0.95		0.97	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1681	1681	1583					3478		3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1681	1681	1583					3478		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
Adj. Flow (vph)	1009	0	102	0	0	0	0	366	48	387	104	0
RTOR Reduction (vph)	0	0	57	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	504	505	45	0	0	0	0	404	0	387	104	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	32.9	32.9	32.9					15.7		14.8	34.5	
Effective Green, g (s)	32.9	32.9	32.9					15.7		14.8	34.5	
Actuated g/C Ratio	0.44	0.44	0.44					0.21		0.20	0.46	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	733	733	691					724		674	1619	
v/s Ratio Prot	0.30	c0.30						c0.12		c0.11	0.03	
v/s Ratio Perm			0.03									
v/c Ratio	0.69	0.69	0.06					0.56		0.57	0.06	
Uniform Delay, d1	17.1	17.1	12.3					26.7		27.4	11.4	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	2.7	2.7	0.0					0.9		1.2	0.0	
Delay (s)	19.8	19.8	12.4					27.7		28.6	11.4	
Level of Service	B	B	B					C		C	B	
Approach Delay (s)		19.1			0.0			27.7			25.0	
Approach LOS		B			A			C			C	

Intersection Summary		
HCM Average Control Delay	22.3	HCM Level of Service C
HCM Volume to Capacity ratio	0.63	
Actuated Cycle Length (s)	75.4	Sum of lost time (s) 12.0
Intersection Capacity Utilization	55.5%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing + Project (Phase 1) PM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	127	449	41	91	400	400	50	128	104	230	52	65
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	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	0.93		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3494		1770	3274		1770	1737		3433	1708	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3494		1770	3274		1770	1737		3433	1708	
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)	141	499	46	101	444	444	56	142	116	256	58	72
RTOR Reduction (vph)	0	7	0	0	191	0	0	34	0	0	48	0
Lane Group Flow (vph)	141	538	0	101	697	0	56	224	0	256	82	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	10.1	27.0		7.8	23.7		3.9	17.7		9.7	23.5	
Effective Green, g (s)	10.1	27.0		7.8	23.7		3.9	17.7		9.7	23.5	
Actuated g/C Ratio	0.13	0.34		0.10	0.30		0.05	0.22		0.12	0.29	
Clearance Time (s)	5.0	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)	223	1176		172	968		86	383		415	500	
v/s Ratio Prot	c0.08	c0.15		0.06	c0.21		0.03	c0.13		c0.07	0.05	
v/s Ratio Perm												
v/c Ratio	0.63	0.46		0.59	0.72		0.65	0.59		0.62	0.16	
Uniform Delay, d1	33.3	20.9		34.7	25.3		37.5	28.0		33.5	21.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.7	0.3		5.0	2.7		16.3	2.3		2.7	0.2	
Delay (s)	39.0	21.1		39.7	27.9		53.8	30.3		36.2	21.2	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		24.8			29.1			34.5			31.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	24.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 34: SR-56 WB Ramps & Carmel Country Rd.

Existing + Project (Phase 1) PM
 7/11/2013



Movement	WBL	WBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations			↖↖	↗↗	↖↖		↗	↖↖	↗
Volume (vph)	0	0	269	494	621	0	190	147	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	5.0	4.0		4.0	4.0	4.0
Lane Util. Factor			0.97	0.95	0.95		1.00	0.97	1.00
Flt			1.00	1.00	1.00		0.85	1.00	0.85
Flt Protected			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)			3433	3539	3539		1583	3433	1583
Flt Permitted			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)			3433	3539	3539		1583	3433	1583
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	299	549	690	0	211	163	281
RTOR Reduction (vph)	0	0	0	0	0	0	132	0	232
Lane Group Flow (vph)	0	0	299	549	690	0	79	163	49
Turn Type			Prot				Perm		Perm
Protected Phases			5	2	6			4	
Permitted Phases							6		4
Actuated Green, G (s)			10.2	31.4	18.2		18.2	8.5	8.5
Effective Green, g (s)			10.2	31.4	18.2		18.2	8.5	8.5
Actuated g/C Ratio			0.21	0.64	0.37		0.37	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)			716	2272	1317		589	597	275
v/s Ratio Prot			c0.09	0.16	c0.19			c0.05	
v/s Ratio Perm							0.05		0.03
v/c Ratio			0.42	0.24	0.52		0.13	0.27	0.18
Uniform Delay, d1			16.8	3.7	12.0		10.1	17.5	17.2
Progression Factor			1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2			0.4	0.1	0.4		0.1	0.2	0.3
Delay (s)			17.2	3.8	12.3		10.2	17.8	17.5
Level of Service			B	A	B		B	B	B
Approach Delay (s)	0.0			8.5	11.9			17.6	
Approach LOS	A			A	B			B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	48.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 35: SR-56 EB Ramps & Carmel Country Rd.

Existing + Project (Phase 1) PM
 7/11/2013



Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	399	0	241	271	375	0	0	401	255	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		
Lane Util. Factor	0.95	0.95	1.00	0.97	0.95			0.95	1.00		
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		
Flt Protected	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (prot)	1681	1681	1583	3433	3539			3539	1583		
Flt Permitted	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (perm)	1681	1681	1583	3433	3539			3539	1583		
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)	443	0	268	301	417	0	0	446	283	0	0
RTOR Reduction (vph)	0	0	189	0	0	0	0	0	205	0	0
Lane Group Flow (vph)	221	222	79	301	417	0	0	446	78	0	0
Turn Type	Split		Perm	Prot					Perm		
Protected Phases	4	4		1	6			2			
Permitted Phases			4						2		
Actuated Green, G (s)	15.5	15.5	15.5	10.8	29.4			14.6	14.6		
Effective Green, g (s)	15.5	15.5	15.5	10.8	29.4			14.6	14.6		
Actuated g/C Ratio	0.29	0.29	0.29	0.20	0.56			0.28	0.28		
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)	493	493	464	701	1967			977	437		
v/s Ratio Prot	0.13	0.13		0.09	0.12			0.13			
v/s Ratio Perm			0.05						0.05		
v/c Ratio	0.45	0.45	0.17	0.43	0.21			0.46	0.18		
Uniform Delay, d1	15.2	15.2	13.9	18.4	5.9			15.9	14.6		
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		
Incremental Delay, d2	0.7	0.7	0.2	0.4	0.1			0.3	0.2		
Delay (s)	15.9	15.9	14.1	18.8	6.0			16.2	14.8		
Level of Service	B	B	B	B	A			B	B		
Approach Delay (s)		15.2			11.3			15.7		0.0	
Approach LOS		B			B			B		A	
Intersection Summary											
HCM Average Control Delay			14.1			HCM Level of Service				B	
HCM Volume to Capacity ratio			0.45								
Actuated Cycle Length (s)			52.9			Sum of lost time (s)			12.0		
Intersection Capacity Utilization			39.9%			ICU Level of Service				A	
Analysis Period (min)			15								
c Critical Lane Group											

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	Jacob Swim	Intersection	Carmel Creek Rd./Del Mar Trail
Agency/Co.	USAI	Jurisdiction	City of San Diego
Date Performed	7/9/2013	Analysis Year	2013
Analysis Time Period	36 Existing + Project Ph. 1 PM		

Project ID 002407 - San Diego Corporate Center Lots	
East/West Street: Del Mar Trail	North/South Street: Carmel Creek Road

Volume Adjustments and Site Characteristics						
Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	5	5	4	55	12	10
%Thrus Left Lane						
Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	12	751	100	15	421	10
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LT	TR	LT	TR
PHF	0.90		0.90		0.90	0.90	0.90	0.90
Flow Rate (veh/h)	14		85		429	528	249	245
% Heavy Vehicles	2		2		2	2	2	2
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet								
Prop. Left-Turns	0.4		0.7		0.0	0.0	0.1	0.0
Prop. Right-Turns	0.3		0.1		0.0	0.2	0.0	0.0
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	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								
hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.01		0.08		0.38	0.47	0.22	0.22
hd, final value (s)	6.69		6.58		5.49	5.33	6.03	5.96
x, final value	0.03		0.16		0.65	0.78	0.42	0.41
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t _s (s)	4.7		4.6		3.2	3.0	3.7	3.7

Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	264		335		650	672	499	495
Delay (s/veh)	9.86		10.79		17.97	24.36	12.97	12.68
LOS	A		B		C	C	B	B
Approach: Delay (s/veh)	9.86		10.79		21.49		12.83	
LOS	A		B		C		B	
Intersection Delay (s/veh)	18.04							
Intersection LOS	C							

Appendix B

Near Term + Project (Phase 1) Synchro Worksheets

ONE PASEO – Updated Traffic Analysis for Revised Project

January 7, 2014

HCM Signalized Intersection Capacity Analysis
1: Via De La Valle & El Camino Real

Near Term + Project (Phase 1) AM
7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗			↖	↗		↖	↗
Volume (vph)	2	378	386	310	507	8	393	5	156	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1583	1770	1858			1775	1583		1750	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1583	1770	1858			1775	1583		1750	
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)	2	420	429	344	563	9	437	6	173	1	1	1
RTOR Reduction (vph)	0	0	235	0	1	0	0	0	123	0	1	0
Lane Group Flow (vph)	2	420	194	344	571	0	0	443	50	0	2	0
Turn Type	Prot		Prot	Prot			Split		Prot	Split		
Protected Phases	7	4	4	3	8		2	2	2	6	6	
Permitted Phases												
Actuated Green, G (s)	0.7	24.6	24.6	19.2	43.1			25.3	25.3		3.1	
Effective Green, g (s)	0.7	24.6	24.6	19.2	43.1			25.3	25.3		3.1	
Actuated g/C Ratio	0.01	0.28	0.28	0.22	0.49			0.29	0.29		0.04	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	14	520	442	385	908			509	454		62	
v/s Ratio Prot	0.00	0.23	0.12	0.19	0.31			0.25	0.03		0.00	
v/s Ratio Perm												
v/c Ratio	0.14	0.81	0.44	0.89	0.63			0.87	0.11		0.03	
Uniform Delay, d1	43.5	29.6	26.1	33.5	16.7			29.9	23.2		41.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	4.7	9.0	0.7	22.1	1.4			15.0	0.1		0.2	
Delay (s)	48.1	38.6	26.8	55.6	18.0			44.9	23.3		41.3	
Level of Service	D	D	C	E	B			D	C		D	
Approach Delay (s)		32.7			32.1			38.8			41.3	
Approach LOS		C			C			D			D	

Intersection Summary		
HCM Average Control Delay	34.1	HCM Level of Service C
HCM Volume to Capacity ratio	0.82	
Actuated Cycle Length (s)	88.2	Sum of lost time (s) 16.0
Intersection Capacity Utilization	75.8%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	406	308	0	200	289	289	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	0.95
Frt	1.00	0.85		1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583		1863	1583	1770	3539
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583		1863	1583	1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	451	342	0	222	321	321	488
RTOR Reduction (vph)	0	254	0	0	242	0	0
Lane Group Flow (vph)	451	88	0	222	79	321	488
Turn Type		Perm	Prot		Perm	Prot	
Protected Phases	1		3	8		7	
Permitted Phases		1			8		6
Actuated Green, G (s)	14.1	14.1		13.5	13.5	15.3	14.1
Effective Green, g (s)	14.1	14.1		13.5	13.5	15.3	14.1
Actuated g/C Ratio	0.26	0.26		0.25	0.25	0.28	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	882	407		458	389	493	909
v/s Ratio Prot	0.13			c0.12		c0.18	
v/s Ratio Perm		0.06			0.05		c0.14
v/c Ratio	0.51	0.22		0.48	0.20	0.65	0.54
Uniform Delay, d1	17.5	16.1		17.7	16.4	17.4	17.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3		0.8	0.3	3.1	0.6
Delay (s)	18.0	16.3		18.5	16.7	20.5	18.2
Level of Service	B	B		B	B	C	B
Approach Delay (s)	17.2			17.4			19.1
Approach LOS	B			B			B
Intersection Summary							
HCM Average Control Delay			18.0		HCM Level of Service		B
HCM Volume to Capacity ratio			0.56				
Actuated Cycle Length (s)			54.9		Sum of lost time (s)		12.0
Intersection Capacity Utilization			48.1%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis
 3: Derby Downs Road & El Camino Real

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	87	7	0	462	52	3	854
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0	4.0
Lane Util. Factor	0.97			0.95		1.00	0.95
Frt	0.99			0.98		1.00	1.00
Flt Protected	0.96			1.00		0.95	1.00
Satd. Flow (prot)	3415			3485		1770	3539
Flt Permitted	0.96			1.00		0.95	1.00
Satd. Flow (perm)	3415			3485		1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	8	0	513	58	3	949
RTOR Reduction (vph)	7	0	0	10	0	0	0
Lane Group Flow (vph)	98	0	0	561	0	3	949
Turn Type			Prot			Prot	
Protected Phases	8		5	2		1	6
Permitted Phases							
Actuated Green, G (s)	5.2			17.1		0.5	21.6
Effective Green, g (s)	5.2			17.1		0.5	21.6
Actuated g/C Ratio	0.15			0.49		0.01	0.62
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)	510			1712		25	2197
v/s Ratio Prot	c0.03			0.16		0.00	c0.27
v/s Ratio Perm							
v/c Ratio	0.19			0.33		0.12	0.43
Uniform Delay, d1	13.0			5.4		16.9	3.4
Progression Factor	1.00			1.00		1.00	1.00
Incremental Delay, d2	0.2			0.1		2.1	0.1
Delay (s)	13.1			5.5		19.1	3.6
Level of Service	B			A		B	A
Approach Delay (s)	13.1			5.5			3.6
Approach LOS	B			A			A

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	34.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Near Term + Project (Phase 1) AM
7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	114	20	64	84	153	6	315	15	165	399	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.90		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1821		1770	1682		1770	3515		1770	3427	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1821		1770	1682		1770	3515		1770	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	0.90
Adj. Flow (vph)	27	127	22	71	93	170	7	350	17	183	443	119
RTOR Reduction (vph)	0	9	0	0	84	0	0	4	0	0	25	0
Lane Group Flow (vph)	27	140	0	71	179	0	7	363	0	183	537	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	0.7	14.3		3.5	17.1		0.6	16.0		8.8	24.2	
Effective Green, g (s)	0.7	14.3		3.5	17.1		0.6	16.0		8.8	24.2	
Actuated g/C Ratio	0.01	0.24		0.06	0.29		0.01	0.27		0.15	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	21	444		106	491		18	960		266	1415	
v/s Ratio Prot	0.02	0.08		c0.04	c0.11		0.00	0.10		c0.10	c0.16	
v/s Ratio Perm												
v/c Ratio	1.29	0.32		0.67	0.36		0.39	0.38		0.69	0.38	
Uniform Delay, d1	29.0	18.1		27.0	16.4		28.8	17.3		23.6	12.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	296.1	0.4		14.9	0.5		13.4	0.3		7.2	0.2	
Delay (s)	325.0	18.5		41.9	16.9		42.2	17.5		30.8	12.1	
Level of Service	F	B		D	B		D	B		C	B	
Approach Delay (s)		65.6			22.2			18.0			16.7	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Near Term + Project (Phase 1) AM
7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	
Volume (vph)	5	85	72	95	141	37	41	335	56	42	789	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1805		1770	3463		1770	3534	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1805		1770	3463		1770	3534	
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)	6	94	80	106	157	41	46	372	62	47	877	8
RTOR Reduction (vph)	0	0	62	0	9	0	0	10	0	0	1	0
Lane Group Flow (vph)	6	94	18	106	189	0	46	424	0	47	884	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	0.5	15.8	15.8	9.5	24.8		3.5	25.3		4.1	25.9	
Effective Green, g (s)	0.5	15.8	15.8	9.5	24.8		3.5	25.3		4.1	25.9	
Actuated g/C Ratio	0.01	0.22	0.22	0.13	0.35		0.05	0.36		0.06	0.37	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	13	416	354	238	633		88	1239		103	1295	
v/s Ratio Prot	0.00	0.05		c0.06	c0.10		0.03	0.12		c0.03	c0.25	
v/s Ratio Perm			0.01									
v/c Ratio	0.46	0.23	0.05	0.45	0.30		0.52	0.34		0.46	0.68	
Uniform Delay, d1	35.0	22.4	21.6	28.2	16.6		32.8	16.6		32.2	18.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	23.8	0.3	0.1	1.3	0.3		5.5	0.2		3.2	1.5	
Delay (s)	58.7	22.7	21.6	29.5	16.9		38.3	16.8		35.4	20.4	
Level of Service	E	C	C	C	B		D	B		D	C	
Approach Delay (s)		23.4			21.3			18.8			21.2	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM Average Control Delay			20.8			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			70.7			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			47.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

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

Near Term + Project (Phase 1) AM
7/11/2013

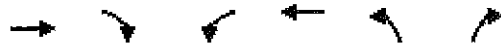


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑			↑	↗	↖	↗	
Volume (vph)	96	873	24	88	880	201	70	58	78	451	23	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5065		1770	3441			1813	1583	1681	1639	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5065		1770	3441			1813	1583	1681	1639	
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)	107	970	27	98	978	223	78	64	87	501	26	93
RTOR Reduction (vph)	0	2	0	0	12	0	0	0	74	0	12	0
Lane Group Flow (vph)	107	995	0	98	1189	0	0	142	13	316	292	0
Turn Type	Prot		Prot		Split		Perm		Split			
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	11.2	58.4		11.7	58.7			20.3	20.3	29.9	29.9	
Effective Green, g (s)	11.2	58.4		11.7	58.7			20.3	20.3	29.9	29.9	
Actuated g/C Ratio	0.08	0.42		0.08	0.42			0.15	0.15	0.21	0.21	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	142	2113		148	1443			263	230	359	350	
v/s Ratio Prot	0.06	0.20		0.06	0.35			0.08		0.19	0.18	
v/s Ratio Perm									0.01			
v/c Ratio	0.75	0.47		0.66	0.82			0.54	0.05	0.88	0.83	
Uniform Delay, d1	63.0	29.6		62.2	36.1			55.5	51.6	53.3	52.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.0	0.8		8.3	4.1			1.1	0.0	21.3	15.6	
Delay (s)	81.1	30.4		70.6	40.2			56.6	51.6	74.6	68.3	
Level of Service	F	C		E	D			E	D	E	E	
Approach Delay (s)	35.3		42.5		54.7		71.5					
Approach LOS	D		D		D		E					

Intersection Summary			
HCM Average Control Delay	46.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1431	55	0	1382	0	133
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1590	61	0	1536	0	148
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	575			607		
pX, platoon unblocked				0.86	0.89	0.86
vC, conflicting volume				1651	2388	561
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				1202	1387	0
tC, single (s)				4.1	6.8	6.9
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	84
cM capacity (veh/h)				498	119	937
Direction Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	636	636	379	768	768	148
Volume Left	0	0	0	0	0	0
Volume Right	0	0	61	0	0	148
cSH	1700	1700	1700	1700	1700	937
Volume to Capacity	0.37	0.37	0.22	0.45	0.45	0.16
Queue Length 95th (ft)	0	0	0	0	0	14
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.6
Approach LOS						A
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	43.8%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	↑
Volume (vph)	0	779	1041	0	997	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3430	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3430	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	866	1157	0	1108	373
RTOR Reduction (vph)	0	0	0	0	3	38
Lane Group Flow (vph)	0	866	1157	0	1142	298
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.1	42.1		26.0	26.0
Effective Green, g (s)		42.1	42.1		26.0	26.0
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1862	1862		1115	468
v/s Ratio Prot		0.24	0.33		0.33	
v/s Ratio Perm						0.21
v/c Ratio		0.47	0.62		1.02	0.64
Uniform Delay, d1		11.9	13.3		27.0	23.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.7		33.3	2.8
Delay (s)		12.1	14.0		60.3	25.8
Level of Service		B	B		E	C
Approach Delay (s)		12.1	14.0		52.5	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay			29.8		HCM Level of Service	C
HCM Volume to Capacity ratio			0.78			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	11.9
Intersection Capacity Utilization			121.2%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	1466	0	0	1516	934	384	59	1055	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1479	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1479	1504			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	246	1560	0	0	1613	994	409	63	1122	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	454	0	7	7	0	0	0
Lane Group Flow (vph)	246	1560	0	0	1613	540	368	613	599	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	9.4	56.7			42.1	42.1	51.4	51.4	51.4			
Effective Green, g (s)	9.4	56.7			42.1	42.1	51.4	51.4	51.4			
Actuated g/C Ratio	0.08	0.47			0.35	0.35	0.43	0.43	0.43			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	269	1672			1784	555	720	634	644			
v/s Ratio Prot	0.07	0.44			0.32	0.34	0.22	0.41	0.40			
v/s Ratio Perm												
v/c Ratio	0.91	0.93			0.90	0.97	0.51	0.97	0.93			
Uniform Delay, d1	54.9	29.9			37.0	38.4	25.1	33.5	32.6			
Progression Factor	1.00	1.00			0.80	1.47	1.00	1.00	1.00			
Incremental Delay, d2	33.0	11.0			4.1	20.3	0.6	27.4	20.2			
Delay (s)	87.9	40.8			33.9	76.9	25.7	60.9	52.8			
Level of Service	F	D			C	E	C	E	D			
Approach Delay (s)		47.3			50.3			49.7			0.0	
Approach LOS		D			D			D			A	
Intersection Summary												
HCM Average Control Delay	49.2		HCM Level of Service					D				
HCM Volume to Capacity ratio	0.95											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)					11.9				
Intersection Capacity Utilization	101.6%		ICU Level of Service					G				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑		↖↗	↑↗		↖	↑	↗
Volume (vph)	111	1706	694	100	1927	66	201	10	36	104	59	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5060		3433	3123		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5060		3433	3123		1770	1863	1583
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)	123	1896	771	111	2141	73	223	11	40	116	66	347
RTOR Reduction (vph)	0	0	271	0	2	0	0	34	0	0	0	26
Lane Group Flow (vph)	123	1896	500	111	2212	0	223	17	0	116	66	321
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	14.3	58.6	71.2	10.7	55.4		12.6	18.5		12.5	18.4	32.7
Effective Green, g (s)	14.3	58.6	71.2	10.7	55.4		12.6	18.5		12.5	18.4	32.7
Actuated g/C Ratio	0.12	0.49	0.59	0.09	0.46		0.10	0.15		0.10	0.15	0.27
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	211	2483	939	158	2336		360	481		184	286	431
v/s Ratio Prot	0.07	c0.37	0.06	0.06	c0.44		0.06	0.01		c0.07	0.04	c0.09
v/s Ratio Perm			0.26									0.11
v/c Ratio	0.58	0.76	0.53	0.70	0.95		0.62	0.04		0.63	0.23	0.74
Uniform Delay, d1	50.0	25.0	14.5	53.1	30.9		51.4	43.2		51.5	44.6	39.8
Progression Factor	1.01	0.96	0.55	1.11	0.86		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.9	0.1	9.6	8.7		2.2	0.0		5.1	0.2	6.0
Delay (s)	51.8	25.0	8.1	68.7	35.2		53.6	43.2		56.6	44.7	45.8
Level of Service	D	C	A	E	D		D	D		E	D	D
Approach Delay (s)		21.5			36.8			51.7			48.1	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.8
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

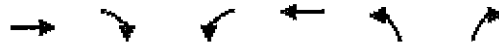


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	1846	196	117	2084	40	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2051	218	130	2316	44	27
RTOR Reduction (vph)	0	43	0	0	0	25
Lane Group Flow (vph)	2051	175	130	2316	44	2
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	84.3	84.3	14.1	101.4	9.6	9.6
Effective Green, g (s)	84.3	84.3	14.1	101.4	9.6	9.6
Actuated g/C Ratio	0.70	0.70	0.12	0.85	0.08	0.08
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3572	1112	208	4297	275	127
v/s Ratio Prot	c0.40		c0.07	0.46	c0.01	
v/s Ratio Perm		0.11				0.00
v/c Ratio	0.57	0.16	0.62	0.54	0.16	0.02
Uniform Delay, d1	8.9	6.0	50.4	2.6	51.4	50.9
Progression Factor	1.38	1.41	1.00	1.80	1.00	1.00
Incremental Delay, d2	0.5	0.2	4.3	0.4	0.3	0.1
Delay (s)	12.8	8.7	54.9	5.1	51.7	50.9
Level of Service	B	A	D	A	D	D
Approach Delay (s)	12.4			7.8	51.4	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	1713	157	78	2169	32	16
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	0.97	0.91	1.00	1.00
Flt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1903	174	87	2410	36	18
RTOR Reduction (vph)	0	72	0	0	0	13
Lane Group Flow (vph)	1903	102	87	2410	36	5
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	69.1	69.1	7.5	80.6	31.4	31.4
Effective Green, g (s)	69.1	69.1	7.5	80.6	31.4	31.4
Actuated g/C Ratio	0.58	0.58	0.06	0.67	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2928	912	215	3415	463	414
v/s Ratio Prot	0.37	0.06	0.03	0.47	0.02	
v/s Ratio Perm						0.00
v/c Ratio	0.65	0.11	0.40	0.71	0.08	0.01
Uniform Delay, d1	17.3	11.5	54.1	12.3	33.4	32.8
Progression Factor	1.81	6.64	0.89	1.07	1.00	1.00
Incremental Delay, d2	0.4	0.0	0.7	0.4	0.3	0.1
Delay (s)	31.7	76.7	48.7	13.6	33.7	32.9
Level of Service	C	E	D	B	C	C
Approach Delay (s)	35.5			14.8	33.4	
Approach LOS	D			B	C	

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔↔		↔↔	↔↔↔		↔↔	↔↔↔	↔	↔↔	↔↔↔	
Volume (vph)	225	929	388	300	1537	95	249	109	90	164	335	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4861		3433	5041		3433	5085	1583	3433	4652	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4861		3433	5041		3433	5085	1583	3433	4652	
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)	250	1032	431	333	1708	106	277	121	100	182	372	489
RTOR Reduction (vph)	0	61	0	0	5	0	0	0	73	0	137	0
Lane Group Flow (vph)	250	1402	0	333	1809	0	277	121	27	182	724	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	12.8	44.7		17.1	49.2		12.1	32.1	32.1	5.6	24.8	
Effective Green, g (s)	12.8	44.7		17.1	49.2		12.1	32.1	32.1	5.6	24.8	
Actuated g/C Ratio	0.11	0.37		0.14	0.41		0.10	0.27	0.27	0.05	0.21	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	366	1811		489	2067		346	1360	423	160	961	
v/s Ratio Prot	0.07	0.29		c0.10	c0.36		c0.08	0.02		c0.05	c0.16	
v/s Ratio Perm									0.02			
v/c Ratio	0.68	0.77		0.68	0.88		0.80	0.09	0.06	1.14	1.05dr	
Uniform Delay, d1	51.6	33.2		48.9	32.6		52.8	33.0	32.7	57.2	44.7	
Progression Factor	1.09	0.53		1.27	0.85		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	2.6		3.0	5.3		11.8	0.0	0.1	112.9	3.4	
Delay (s)	59.5	20.2		65.1	32.9		64.6	33.0	32.8	170.1	48.2	
Level of Service	E	C		E	C		E	C	C	F	D	
Approach Delay (s)		25.9			37.9			50.5			69.4	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	41.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.1
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
dr: De facto Right Lane Recode with 1 though lane as a right lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	630	291	280	1243	174	424	188	111	146	185	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4844		3433	4992		3433	4803		1770	3304	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4844		3433	4992		3433	4803		1770	3304	
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)	164	700	323	311	1381	193	471	209	123	162	206	164
RTOR Reduction (vph)	0	58	0	0	13	0	0	100	0	0	109	0
Lane Group Flow (vph)	164	965	0	311	1561	0	471	232	0	162	261	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.3	48.8		14.3	53.6		18.2	22.3		14.8	19.4	
Effective Green, g (s)	9.3	48.8		14.3	53.6		18.2	22.3		14.8	19.4	
Actuated g/C Ratio	0.08	0.41		0.12	0.45		0.15	0.19		0.12	0.16	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	266	1970		409	2230		521	893		218	534	
v/s Ratio Prot	0.05	0.20		c0.09	c0.31		c0.14	c0.05		0.09	c0.08	
v/s Ratio Perm												
v/c Ratio	0.62	0.49		0.76	0.70		0.90	0.26		0.74	0.49	
Uniform Delay, d1	53.6	26.4		51.2	26.7		50.0	41.8		50.8	45.8	
Progression Factor	1.14	1.15		1.10	0.63		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	0.8		6.5	1.6		18.6	0.2		11.3	1.9	
Delay (s)	64.0	31.1		62.6	18.5		68.7	42.0		62.1	47.7	
Level of Service	E	C		E	B		E	D		E	D	
Approach Delay (s)		35.6			25.8			57.7			52.1	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM Average Control Delay	37.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↗		↖	↗	
Volume (vph)	212	653	121	81	1093	216	110	156	11	56	62	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4966		1770	4959		1770	1845		1770	1674	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4966		1770	4959		1770	1845		1770	1674	
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	726	134	90	1214	240	122	173	12	62	69	143
RTOR Reduction (vph)	0	17	0	0	21	0	0	2	0	0	68	0
Lane Group Flow (vph)	236	843	0	90	1433	0	122	183	0	62	144	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	19.4	63.3		10.1	53.3		12.2	22.1		5.8	15.7	
Effective Green, g (s)	19.4	63.3		10.1	53.3		12.2	22.1		5.8	15.7	
Actuated g/C Ratio	0.16	0.53		0.08	0.44		0.10	0.18		0.05	0.13	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	286	2620		149	2203		180	340		86	219	
v/s Ratio Prot	c0.13	0.17		0.05	c0.29		c0.07	0.10		0.04	c0.09	
v/s Ratio Perm												
v/c Ratio	0.83	0.32		0.60	0.65		0.68	0.54		0.72	0.66	
Uniform Delay, d1	48.7	16.1		53.0	26.1		52.0	44.3		56.3	49.6	
Progression Factor	0.85	1.58		1.00	0.86		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.4	0.3		3.9	1.2		7.7	0.8		22.1	5.4	
Delay (s)	56.9	25.8		56.9	23.6		59.7	45.1		78.4	55.0	
Level of Service	E	C		E	C		E	D		E	D	
Approach Delay (s)		32.5			25.5			50.9			60.3	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

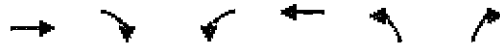
Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	570	35	67	1139	36	44	26	55	49	60	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5041		1770	5062		1770	1673		1770	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5041		1770	5062		1770	1673		1770	1624	
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)	172	633	39	74	1266	40	49	29	61	54	67	396
RTOR Reduction (vph)	0	4	0	0	2	0	0	49	0	0	202	0
Lane Group Flow (vph)	172	668	0	74	1304	0	49	41	0	54	261	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.3	64.2		7.8	56.7		5.8	23.0		5.9	22.9	
Effective Green, g (s)	15.3	64.2		7.8	56.7		5.8	23.0		5.9	22.9	
Actuated g/C Ratio	0.13	0.54		0.06	0.47		0.05	0.19		0.05	0.19	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	226	2697		115	2392		86	321		87	310	
v/s Ratio Prot	c0.10	0.13		0.04	c0.26		0.03	0.02		c0.03	c0.16	
v/s Ratio Perm												
v/c Ratio	0.76	0.25		0.64	0.55		0.57	0.13		0.62	0.84	
Uniform Delay, d1	50.6	15.0		54.7	22.5		55.9	40.2		56.0	46.8	
Progression Factor	1.44	0.30		0.86	1.23		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.3	0.2		8.6	0.9		5.1	0.1		9.5	17.6	
Delay (s)	85.2	4.7		55.5	28.5		61.0	40.2		65.4	64.4	
Level of Service	F	A		E	C		E	D		E	E	
Approach Delay (s)		21.1			29.9			47.5			64.5	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM Average Control Delay	34.4		HCM Level of Service		C							
HCM Volume to Capacity ratio	0.62											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)		14.2							
Intersection Capacity Utilization	75.9%		ICU Level of Service		D							
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↵	↑↑↑	↵↵	↗
Volume (vph)	564	126	397	1019	272	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4946		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4946		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	627	140	441	1132	302	380
RTOR Reduction (vph)	24	0	0	0	0	37
Lane Group Flow (vph)	743	0	441	1132	302	343
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	52.5		33.3	90.9	18.2	51.5
Effective Green, g (s)	52.5		33.3	90.9	18.2	51.5
Actuated g/C Ratio	0.44		0.28	0.76	0.15	0.43
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	2164		491	3852	521	679
v/s Ratio Prot	c0.15		c0.25	0.22	c0.09	0.14
v/s Ratio Perm						0.08
v/c Ratio	0.34		0.90	0.29	0.58	0.51
Uniform Delay, d1	22.3		41.7	4.5	47.3	25.0
Progression Factor	1.48		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		18.5	0.2	1.0	0.2
Delay (s)	33.4		60.2	4.7	48.3	25.2
Level of Service	C		E	A	D	C
Approach Delay (s)	33.4			20.3	35.4	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 18: Del Mar Highlands Town Ctr. & El Camino Real

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↖	↔		↗	↖	↗	↖↗	↖↗↘		↖↗	↖↗↘	
Volume (vph)	16	5	5	97	23	110	94	341	101	165	893	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	0.95	0.95		1.00	1.00	0.97	0.91		0.97	0.91		
Flt	1.00	0.94		1.00	0.85	1.00	0.97		1.00	0.99		
Flt Protected	0.95	0.99		0.96	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1681	1647		1791	1583	3433	4911		3433	5054		
Flt Permitted	0.95	0.99		0.96	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (perm)	1681	1647		1791	1583	3433	4911		3433	5054		
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)	18	6	6	108	26	122	104	379	112	183	992	43
RTOR Reduction (vph)	0	6	0	0	0	96	0	43	0	0	3	0
Lane Group Flow (vph)	15	9	0	0	134	26	104	448	0	183	1032	0
Turn Type	Split			Split			Perm	Prot		Prot		
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases	6											
Actuated Green, G (s)	2.1	2.1		13.2	13.2	6.3	19.9		10.0	23.6		
Effective Green, g (s)	2.1	2.1		13.2	13.2	6.3	19.9		10.0	23.6		
Actuated g/C Ratio	0.03	0.03		0.22	0.22	0.10	0.33		0.16	0.39		
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	58	57		386	341	353	1597		561	1949		
v/s Ratio Prot	c0.01	0.01		c0.07		0.03	0.09		c0.05	c0.20		
v/s Ratio Perm	0.02											
v/c Ratio	0.26	0.16		0.35	0.08	0.29	0.28		0.33	0.53		
Uniform Delay, d1	28.8	28.7		20.3	19.1	25.4	15.3		22.6	14.5		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	2.4	1.3		0.5	0.1	0.5	0.1		0.3	0.3		
Delay (s)	31.2	30.0		20.9	19.2	25.9	15.4		23.0	14.8		
Level of Service	C	C		C	B	C	B		C	B		
Approach Delay (s)	30.6			20.1			17.3			16.0		
Approach LOS	C			C			B			B		

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Townsgate Drive & Carmel Country Road

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	171	85	116	46	195	153	114	438	7	103	459	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1740		1770	3531		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1740		1770	3531		1770	3539	1583
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)	190	94	129	51	217	170	127	487	8	114	510	189
RTOR Reduction (vph)	0	0	77	0	26	0	0	1	0	0	0	144
Lane Group Flow (vph)	190	94	52	51	361	0	127	494	0	114	510	45
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	14.4	34.8	34.8	4.4	24.8		10.9	23.1		8.7	20.9	20.9
Effective Green, g (s)	14.4	34.8	34.8	4.4	24.8		10.9	23.1		8.7	20.9	20.9
Actuated g/C Ratio	0.17	0.40	0.40	0.05	0.29		0.13	0.27		0.10	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
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	293	745	633	90	496		222	938		177	850	380
v/s Ratio Prot	c0.11	0.05		0.03	c0.21		c0.07	0.14		0.06	c0.14	
v/s Ratio Perm			0.03									0.03
v/c Ratio	0.65	0.13	0.08	0.57	0.73		0.57	0.53		0.64	0.60	0.12
Uniform Delay, d1	33.9	16.5	16.2	40.4	28.1		35.9	27.3		37.7	29.3	25.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.9	0.1	0.1	7.9	5.3		3.5	0.5		7.8	1.2	0.1
Delay (s)	38.8	16.6	16.2	48.3	33.4		39.4	27.8		45.5	30.5	26.0
Level of Service	D	B	B	D	C		D	C		D	C	C
Approach Delay (s)		26.7			35.1			30.2			31.6	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 20: Townsgate Drive & El Camino Real

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	63	70	6	233	52	138	104	313	54	150	560	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1840		1770	1863	1583	1770	4973		1770	4890	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1840		1770	1863	1583	1770	4973		1770	4890	
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)	70	78	7	259	58	153	116	348	60	167	622	214
RTOR Reduction (vph)	0	3	0	0	0	113	0	20	0	0	50	0
Lane-Group Flow (vph)	70	82	0	259	58	40	116	388	0	167	786	0
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						
Actuated Green, G (s)	6.7	8.9		17.5	19.7	19.7	8.5	19.2		13.4	24.1	
Effective Green, g (s)	6.7	8.9		17.5	19.7	19.7	8.5	19.2		13.4	24.1	
Actuated g/C Ratio	0.09	0.12		0.23	0.26	0.26	0.11	0.26		0.18	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	158	218		413	489	416	201	1273		316	1571	
v/s Ratio Prot	0.04	c0.04		c0.15	0.03		0.07	0.08		c0.09	c0.16	
v/s Ratio Perm						0.03						
v/c Ratio	0.44	0.38		0.63	0.12	0.10	0.58	0.30		0.53	0.50	
Uniform Delay, d1	32.4	30.5		25.8	21.0	20.9	31.5	22.5		27.9	20.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.1		3.0	0.1	0.1	4.0	0.1		1.6	0.3	
Delay (s)	34.4	31.6		28.8	21.2	21.0	35.5	22.7		29.5	20.8	
Level of Service	C	C		C	C	C	D	C		C	C	
Approach Delay (s)		32.8			25.3			25.5			22.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 21: Carmel Creek Road & Carmel Country Road

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗		↕		↖	↕		↖	↕	
Volume (vph)	310	122	127	62	300	30	277	422	29	68	412	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	14	12	12	16	12	12	16	12
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Fr't	1.00	1.00	0.85		0.99		1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1794		1951		1770	3973		1770	3716	
Flt Permitted	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1794		1951		1770	3973		1770	3716	
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)	344	136	141	69	333	33	308	469	32	76	458	442
RTOR Reduction (vph)	0	0	108	0	2	0	0	5	0	0	163	0
Lane Group Flow (vph)	344	136	33	0	433	0	308	496	0	76	737	0
Turn Type	Split		Perm	Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	23.8	23.8	23.8		21.2		14.1	33.2		7.4	26.5	
Effective Green, g (s)	23.8	23.8	23.8		21.2		14.1	33.2		7.4	26.5	
Actuated g/C Ratio	0.23	0.23	0.23		0.21		0.14	0.33		0.07	0.26	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	415	436	420		407		246	1298		129	969	
v/s Ratio Prot	c0.19	0.07			c0.22		c0.17	0.12		0.04	c0.20	
v/s Ratio Perm			0.02									
v/c Ratio	0.83	0.31	0.08		1.06		1.25	0.38		0.59	0.76	
Uniform Delay, d1	37.0	32.1	30.3		40.2		43.8	26.3		45.6	34.6	
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.8	0.4	0.1		62.3		142.4	0.2		6.7	3.6	
Delay (s)	49.8	32.5	30.4		102.5		186.1	26.5		52.3	38.2	
Level of Service	D	C	C		F		F	C		D	D	
Approach Delay (s)		41.6			102.5			87.3			39.3	
Approach LOS		D			F			F			D	

Intersection Summary		
HCM Average Control Delay	63.1	HCM Level of Service E
HCM Volume to Capacity ratio	0.94	
Actuated Cycle Length (s)	101.6	Sum of lost time (s) 16.0
Intersection Capacity Utilization	91.1%	ICU Level of Service F
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 22: High Bluff Drive & El Camino Real

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBR	EBR2	NWL2	NWE	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↖	↗	↗	↖	↖↗		↖↗	↖↗↘		↖	↖↗↘	
Volume (vph)	31	113	252	97	228	96	218	409	30	76	911	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	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97		0.97	0.91		1.00	0.91	
Flt	1.00	0.85	0.85	1.00	0.96		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583	1583	1770	3335		3433	5034		1770	5003	
Flt Permitted	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1583	1583	1770	3335		3433	5034		1770	5003	
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)	34	126	280	108	253	107	242	454	33	84	1012	122
RTOR Reduction (vph)	0	0	238	0	40	0	0	6	0	0	11	0
Lane Group Flow (vph)	34	126	42	108	320	0	242	481	0	84	1123	0
Turn Type		Perm	Perm	Split			Prot			Prot		
Protected Phases	2			6	6		3	8		7	4	
Permitted Phases		2	2									
Actuated Green, G (s)	12.6	12.6	12.6	13.3	13.3		14.6	31.6		10.6	27.6	
Effective Green, g (s)	12.6	12.6	12.6	13.3	13.3		14.6	31.6		10.6	27.6	
Actuated g/C Ratio	0.15	0.15	0.15	0.16	0.16		0.17	0.38		0.13	0.33	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	265	237	237	280	527		596	1891		223	1642	
v/s Ratio Prot	0.02			0.06	c0.10		c0.07	c0.10		0.05	c0.22	
v/s Ratio Perm		c0.08	0.03									
v/c Ratio	0.13	0.53	0.18	0.39	0.61		0.41	0.25		0.38	0.68	
Uniform Delay, d1	31.0	33.0	31.2	31.7	33.0		30.9	18.1		33.7	24.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.3	0.4	0.9	2.0		0.5	0.1		1.1	1.2	
Delay (s)	31.2	35.3	31.6	32.6	35.0		31.3	18.2		34.8	25.7	
Level of Service	C	D	C	C	C		C	B		C	C	
Approach Delay (s)	32.6				34.4			22.6			26.3	
Approach LOS	C				C			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↔	↗		↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	48	6	70	13	27	14	124	31	2	3	16	196
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	53	7	78	14	30	16	138	34	2	3	18	218

Direction Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total (vph)	60	78	60	174	239
Volume Left (vph)	53	0	14	138	3
Volume Right (vph)	0	78	16	2	218
Hadj (s)	0.48	-0.67	-0.07	0.18	-0.51
Departure Headway (s)	6.0	4.8	5.1	4.9	4.1
Degree Utilization, x	0.10	0.10	0.08	0.24	0.27
Capacity (veh/h)	557	684	639	705	825
Control Delay (s)	8.5	7.2	8.6	9.3	8.7
Approach Delay (s)	7.8		8.6	9.3	8.7
Approach LOS	A		A	A	A

Intersection Summary	
Delay	8.6
HCM Level of Service	A
Intersection Capacity Utilization	41.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Signalized Intersection Capacity Analysis
 24: Carmel Grove Road & Carmel Creek Road

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↕		↖	↕	
Volume (vph)	54	92	119	205	63	25	31	295	83	15	784	144
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	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.99		1.00	0.97		1.00	0.98	
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1829	1583		1779		1770	3423		1770	3457	
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1829	1583		1779		1770	3423		1770	3457	
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)	60	102	132	228	70	28	34	328	92	17	871	160
RTOR Reduction (vph)	0	0	109	0	3	0	0	20	0	0	12	0
Lane Group Flow (vph)	0	162	23	0	323	0	34	400	0	17	1019	0
Turn Type	Split		Prot	Split			Prot			Prot		
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		14.4	14.4		19.7		2.4	32.2		1.8	31.6	
Effective Green, g (s)		14.4	14.4		19.7		2.4	32.2		1.8	31.6	
Actuated g/C Ratio		0.17	0.17		0.23		0.03	0.38		0.02	0.38	
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)		313	271		417		51	1311		38	1299	
v/s Ratio Prot		c0.09	0.01		c0.18		c0.02	0.12		0.01	c0.29	
v/s Ratio Perm												
v/c Ratio		0.52	0.08		0.77		0.67	0.31		0.45	0.78	
Uniform Delay, d1		31.7	29.3		30.1		40.5	18.1		40.7	23.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4	0.1		8.7		28.3	0.1		8.2	3.2	
Delay (s)		33.1	29.4		38.8		68.7	18.3		48.8	26.4	
Level of Service		C	C		D		E	B		D	C	
Approach Delay (s)		31.5			38.8			22.0			26.8	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 25: Carmel Valley Road & I-5 SB Ramps

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↓	↑
Volume (vph)	0	322	181	405	641	0	0	0	0	1081	3	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.95					0.95	0.91	0.95
Frt		0.95		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3348		3433	3539					1681	1610	1504
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3348		3433	3539					1681	1610	1504
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)	0	358	201	450	712	0	0	0	0	1201	3	164
RTOR Reduction (vph)	0	108	0	0	0	0	0	0	0	0	1	77
Lane Group Flow (vph)	0	451	0	450	712	0	0	0	0	613	606	71
Turn Type				Prot						Split		Prot
Protected Phases		4		3	8					6	6	6
Permitted Phases												
Actuated Green, G (s)		14.6		11.8	30.4					30.6	30.6	30.6
Effective Green, g (s)		14.6		11.8	30.4					30.6	30.6	30.6
Actuated g/C Ratio		0.21		0.17	0.44					0.44	0.44	0.44
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		708		587	1559					745	714	667
v/s Ratio Prot		c0.13		c0.13	0.20					0.36	c0.38	0.05
v/s Ratio Perm												
v/c Ratio		0.64		0.77	0.46					0.82	0.85	0.11
Uniform Delay, d1		24.8		27.3	13.5					16.8	17.1	11.2
Progression Factor		1.00		1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		1.9		5.9	0.2					7.3	9.3	0.1
Delay (s)		26.7		33.2	13.7					24.1	26.4	11.3
Level of Service		C		C	B					C	C	B
Approach Delay (s)		26.7			21.3			0.0			23.7	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	115.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 26: Carmel Valley Road & I-5 NB Ramps

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕			↕↕	↗	↖	↕	↗			
Volume (vph)	63	1268	0	0	974	879	109	2	570	0	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			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			3539	1583	1681	1449	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			3539	1583	1681	1449	1504			
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)	70	1409	0	0	1082	977	121	2	633	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	540	0	6	6	0	0	0
Lane Group Flow (vph)	70	1409	0	0	1082	437	109	318	317	0	0	0
Turn Type	Prot			Prot			Split		Prot			
Protected Phases	7	4			8	8	2	2	2			
Permitted Phases												
Actuated Green, G (s)	2.5	35.9			29.4	29.4	21.9	21.9	21.9			
Effective Green, g (s)	2.5	35.9			29.4	29.4	21.9	21.9	21.9			
Actuated g/C Ratio	0.04	0.55			0.45	0.45	0.33	0.33	0.33			
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)	130	1931			1581	707	559	482	501			
v/s Ratio Prot	0.02	c0.40			0.31	0.28	0.06	c0.22	0.21			
v/s Ratio Perm												
v/c Ratio	0.54	0.73			0.68	0.62	0.19	0.66	0.63			
Uniform Delay, d1	31.1	11.3			14.5	13.9	15.7	18.8	18.6			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	4.2	1.4			1.2	1.6	0.2	3.3	2.6			
Delay (s)	35.3	12.7			15.7	15.5	15.8	22.0	21.2			
Level of Service	D	B			B	B	B	C	C			
Approach Delay (s)		13.8			15.6			20.8			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	115.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 27: Valley Centre Drive & El Camino Real

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗	↖	↕	↗	↖	↑↑↑		↖	↑↑↑	
Volume (vph)	36	13	44	725	19	160	90	1026	149	119	1110	28
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	5.0		4.0	4.0	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.91	0.95	1.00	0.91		1.00	0.91	
Frt	1.00	0.93	0.85	1.00	0.99	0.85	1.00	0.98		1.00	1.00	
Flt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1563	1504	1681	1611	1504	1770	4988		1770	5067	
Flt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1563	1504	1681	1611	1504	1770	4988		1770	5067	
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)	40	14	49	806	21	178	100	1140	166	132	1233	31
RTOR Reduction (vph)	0	15	29	0	1	106	0	14	0	0	2	0
Lane Group Flow (vph)	36	20	3	419	425	54	100	1292	0	132	1262	0
Turn Type	Split		Prot	Split		Prot	Prot			Prot		
Protected Phases	4	4	4	8	8	8	5	2		6		
Permitted Phases												6
Actuated Green, G (s)	9.6	9.6	9.6	29.9	29.9	29.9	6.2	36.2		27.0	27.0	
Effective Green, g (s)	9.6	9.6	9.6	29.9	29.9	29.9	6.2	36.2		27.0	27.0	
Actuated g/C Ratio	0.11	0.11	0.11	0.34	0.34	0.34	0.07	0.41		0.30	0.30	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lane Grp Cap (vph)	182	169	163	567	543	507	124	2036		539	1542	
v/s Ratio Prot	c0.02	0.01	0.00	0.25	c0.26	0.04	c0.06	0.26		0.07		
v/s Ratio Perm												c0.25
v/c Ratio	0.20	0.12	0.02	0.74	0.78	0.11	0.81	0.63		0.24	0.82	
Uniform Delay, d1	36.0	35.7	35.4	26.0	26.5	20.2	40.7	21.0		23.2	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.3	0.1	5.0	7.2	0.1	30.5	0.7		0.2	3.5	
Delay (s)	36.6	36.0	35.4	31.0	33.7	20.3	71.1	21.6		23.4	32.1	
Level of Service	D	D	D	C	C	C	E	C		C	C	
Approach Delay (s)		36.0			30.4			25.1			31.3	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

l Phase conflict between lane groups
 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 28: Carmel Valley Road & El Camino Real

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖↗	↖↖↗	↗	↖↗	↖↖			↖↖↗	↗
Volume (vph)	0	0	0	349	1043	261	165	912	0	0	620	674
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
Lane Util. Factor				0.97	0.91	1.00	0.97	0.95			0.86	0.86
Frbp, ped/bikes				1.00	1.00	1.00	1.00	1.00			0.90	0.71
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			0.95	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3433	5085	1583	3433	3539			4080	961
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				3433	5085	1583	3433	3539			4080	961
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)	0	0	0	388	1159	290	183	1013	0	0	689	749
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	0	0	18	18
Lane Group Flow (vph)	0	0	0	388	1159	253	183	1013	0	0	1046	356
Confl. Peds. (#/hr)												200
Turn Type				Prot		Perm	Prot					Perm
Protected Phases				3	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)				31.3	31.3	31.3	5.4	42.3			32.9	32.9
Effective Green, g (s)				31.3	31.3	31.3	5.4	42.3			32.9	32.9
Actuated g/C Ratio				0.38	0.38	0.38	0.07	0.52			0.40	0.40
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)				1317	1950	607	227	1835			1645	387
v/s Ratio Prot				0.11	c0.23		c0.05	0.29			0.26	
v/s Ratio Perm						0.16						c0.37
v/c Ratio				0.29	0.59	0.42	0.81	0.55			0.64	0.92
Uniform Delay, d1				17.5	20.1	18.5	37.6	13.3			19.5	23.1
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.5	0.5	18.5	0.4			0.8	26.8
Delay (s)				17.6	20.6	18.9	56.1	13.6			20.4	49.9
Level of Service				B	C	B	E	B			C	D
Approach Delay (s)		0.0			19.7			20.1			28.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

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

Near Term + Project (Phase 1) AM
 7/11/2013

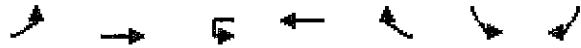


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↔	↗					↑↑↑		↖	↗↗↗	
Volume (vph)	651	943	317	0	0	0	0	407	227	147	748	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	0.91	0.86	0.91					0.86		1.00	0.91	
Frt	1.00	1.00	0.85					0.95		1.00	1.00	
Flt Protected	0.95	0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1610	3172	1441					6064		1770	5085	
Flt Permitted	0.95	0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1610	3172	1441					6064		1770	5085	
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)	723	1048	352	0	0	0	0	452	252	163	831	0
RTOR Reduction (vph)	0	2	77	0	0	0	0	35	0	0	0	0
Lane Group Flow (vph)	586	1218	240	0	0	0	0	669	0	163	831	0
Turn Type	Split		Perm					Prot				
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	37.6	37.6	37.6					17.8		10.2	32.0	
Effective Green, g (s)	37.6	37.6	37.6					17.8		10.2	32.0	
Actuated g/C Ratio	0.48	0.48	0.48					0.23		0.13	0.41	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	780	1537	698					1391		233	2097	
v/s Ratio Prot	0.36	c0.38						c0.11		c0.09	0.16	
v/s Ratio Perm			0.17									
v/c Ratio	0.75	0.79	0.34					0.48		0.70	0.40	
Uniform Delay, d1	16.2	16.7	12.4					25.9		32.2	16.0	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	4.1	2.9	0.3					0.3		8.8	0.1	
Delay (s)	20.3	19.6	12.7					26.2		41.1	16.1	
Level of Service	C	B	B					C		D	B	
Approach Delay (s)		18.8			0.0			26.2			20.2	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 30: Valley Centre Drive & Carmel View Road

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations	↙	↕	↕	↕		↙	↗
Volume (vph)	16	215	0	439	25	97	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		0.95		1.00	1.00
Frt	1.00	1.00		0.99		1.00	0.85
Flt Protected	0.95	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1770	3539		3510		1770	1583
Flt Permitted	0.95	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1770	3539		3510		1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	239	0	488	28	108	128
RTOR Reduction (vph)	0	0	0	4	0	0	98
Lane Group Flow (vph)	18	239	0	512	0	108	30
Turn Type	Prot		Prot		Perm		
Protected Phases	7	4	3	8	6		
Permitted Phases							6
Actuated Green, G (s)	0.7	17.6		12.9		7.7	7.7
Effective Green, g (s)	0.7	17.6		12.9		7.7	7.7
Actuated g/C Ratio	0.02	0.53		0.39		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)	37	1870		1360		409	366
v/s Ratio Prot	0.01	0.07		0.15		0.06	
v/s Ratio Perm							0.02
v/c Ratio	0.49	0.13		0.38		0.26	0.08
Uniform Delay, d1	16.1	4.0		7.3		10.5	10.0
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	9.7	0.0		0.2		0.3	0.1
Delay (s)	25.9	4.0		7.5		10.8	10.1
Level of Service	C	A		A		B	B
Approach Delay (s)		5.5		7.5		10.4	
Approach LOS		A		A		B	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Valley Centre Drive & Carmel Creek Road

Near Term + Project (Phase 1) AM
7/11/2013



Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖		↖	↖↖	↖	↖↖	↖↖	↖
Volume (vph)	75	220	179	275	373	100	342	344	287	1102	224	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1804		1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1804		1770	3539	1583	3433	3539	1583
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)	79	232	188	289	393	105	360	362	302	1160	236	217
RTOR Reduction (vph)	0	0	154	0	6	0	0	0	69	0	0	143
Lane Group Flow (vph)	79	232	34	289	492	0	360	362	233	1160	236	74
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)	8.6	24.9	24.9	24.5	40.8		33.2	21.5	46.0	49.6	37.9	46.5
Effective Green, g (s)	8.6	24.9	24.9	24.5	40.8		33.2	21.5	46.0	49.6	37.9	46.5
Actuated g/C Ratio	0.06	0.18	0.18	0.18	0.30		0.24	0.16	0.34	0.36	0.28	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
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)	112	646	289	318	539		431	557	580	1247	983	586
v/s Ratio Prot	0.04	0.07		c0.16	c0.27		0.20	c0.10	0.07	c0.34	0.07	0.01
v/s Ratio Perm			0.02						0.08			0.04
v/c Ratio	0.71	0.36	0.12	0.91	0.91		0.84	0.65	0.40	0.93	0.24	0.13
Uniform Delay, d1	62.7	48.8	46.6	54.9	46.1		49.1	54.0	34.7	41.8	38.2	31.0
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	18.3	0.3	0.2	28.1	19.8		13.1	2.6	0.5	12.3	0.1	0.1
Delay (s)	81.0	49.2	46.8	83.0	65.9		62.2	56.6	35.2	54.1	38.3	31.1
Level of Service	F	D	D	F	E		E	E	D	D	D	C
Approach Delay (s)		53.3			72.2			52.2			48.7	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	54.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	136.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 32: SR-56 EB Ramps & Carmel Creek Road

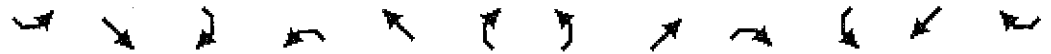
Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘					↕		↖	↗	↘
Volume (vph)	450	0	330	0	0	0	0	528	129	188	459	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	
Lane Util. Factor	0.95	0.95	1.00					0.95		0.97	0.95	
Frt	1.00	1.00	0.85					0.97		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1681	1681	1583					3435		3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1681	1681	1583					3435		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
Adj. Flow (vph)	500	0	367	0	0	0	0	587	143	209	510	0
RTOR Reduction (vph)	0	0	225	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	250	250	142	0	0	0	0	710	0	209	510	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	19.3	19.3	19.3					21.3		10.0	35.3	
Effective Green, g (s)	19.3	19.3	19.3					21.3		10.0	35.3	
Actuated g/C Ratio	0.31	0.31	0.31					0.34		0.16	0.56	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	518	518	488					1169		548	1996	
v/s Ratio Prot	c0.15	0.15						c0.21		c0.06	0.14	
v/s Ratio Perm			0.09									
v/c Ratio	0.48	0.48	0.29					0.61		0.38	0.26	
Uniform Delay, d1	17.6	17.6	16.5					17.2		23.5	7.0	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.7	0.3					0.9		0.4	0.1	
Delay (s)	18.3	18.3	16.8					18.1		24.0	7.0	
Level of Service	B	B	B					B		C	A	
Approach Delay (s)		17.7			0.0			18.1			12.0	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM Average Control Delay			16.0					HCM Level of Service			B	
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			62.6					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			46.5%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

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

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	↖
Volume (vph)	89	507	36	145	466	345	57	66	243	642	143	183
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	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	0.94		1.00	0.88		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3504		1770	3314		1770	1643		3433	1706	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3504		1770	3314		1770	1643		3433	1706	
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)	99	563	40	161	518	383	63	73	270	713	159	203
RTOR Reduction (vph)	0	5	0	0	139	0	0	123	0	0	51	0
Lane Group Flow (vph)	99	598	0	161	762	0	63	220	0	713	311	0
Turn Type	Prot		Prot		Prot		Prot		Prot			
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	4.1	19.1		10.0	24.0		6.3	16.7		18.3	28.7	
Effective Green, g (s)	4.1	19.1		10.0	24.0		6.3	16.7		18.3	28.7	
Actuated g/C Ratio	0.05	0.23		0.12	0.29		0.08	0.20		0.22	0.35	
Clearance Time (s)	5.0	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)	88	815		216	969		136	334		765	596	
v/s Ratio Prot	0.06	0.17		0.09	0.23		0.04	0.13		0.21	0.18	
v/s Ratio Perm												
v/c Ratio	1.12	0.73		0.75	0.79		0.46	0.66		0.93	0.52	
Uniform Delay, d1	39.0	29.1		34.8	26.7		36.3	30.1		31.3	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	133.7	3.4		13.1	4.3		2.5	4.6		18.0	0.8	
Delay (s)	172.7	32.6		47.9	30.9		38.8	34.7		49.3	22.1	
Level of Service	F	C		D	C		D	C		D	C	
Approach Delay (s)	52.3			33.5			35.3			40.1		
Approach LOS	D			C			D			D		

Intersection Summary			
HCM Average Control Delay	40.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	82.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
g Critical Lane Group			



Movement	WBL	WBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations			↑↑	↑↑	↑↑		↑	↑↑	↑
Volume (vph)	0	0	777	597	764	0	315	137	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	5.0	4.0		4.0	4.0	4.0
Lane Util. Factor			0.97	0.95	0.95		1.00	0.97	1.00
Frt			1.00	1.00	1.00		0.85	1.00	0.85
Flt Protected			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)			3433	3539	3539		1583	3433	1583
Flt Permitted			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)			3433	3539	3539		1583	3433	1583
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	863	663	849	0	350	152	257
RTOR Reduction (vph)	0	0	0	0	0	0	222	0	224
Lane Group Flow (vph)	0	0	863	663	849	0	128	152	33
Turn Type			Prot				Perm		Perm
Protected Phases			5	2	6			4	
Permitted Phases							6		4
Actuated Green, G (s)			23.5	52.4	25.9		25.9	9.2	9.2
Effective Green, g (s)			23.5	52.4	25.9		25.9	9.2	9.2
Actuated g/C Ratio			0.33	0.74	0.37		0.37	0.13	0.13
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)			1143	2627	1298		581	447	206
v/s Ratio Prot			c0.25	0.19	c0.24			c0.04	
v/s Ratio Perm							0.08		0.02
v/c Ratio			0.76	0.25	0.65		0.22	0.34	0.16
Uniform Delay, d1			21.0	2.9	18.6		15.4	27.9	27.3
Progression Factor			1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2			2.9	0.1	1.2		0.2	0.5	0.4
Delay (s)			23.9	2.9	19.8		15.6	28.4	27.7
Level of Service			C	A	B		B	C	C
Approach Delay (s)	0.0			14.8	18.6			27.9	
Approach LOS	A			B	B			C	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 35: SR-56 EB Ramps & Carmel Country Rd.

Near Term + Project (Phase 1) AM
 7/11/2013



Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	309	0	166	350	381	0	0	745	220	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		
Lane Util. Factor	0.95	0.95	1.00	0.97	0.95			0.95	1.00		
FH	1.00	1.00	0.85	1.00	1.00			1.00	0.85		
Flt Protected	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (prot)	1681	1681	1583	3433	3539			3539	1583		
Flt Permitted	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (perm)	1681	1681	1583	3433	3539			3539	1583		
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)	343	0	184	389	423	0	0	828	244	0	0
RTOR Reduction (vph)	0	0	140	0	0	0	0	0	155	0	0
Lane Group Flow (vph)	171	172	44	389	423	0	0	828	89	0	0
Turn Type	Split		Perm	Prot					Perm		
Protected Phases	4	4		1	6			2			
Permitted Phases			4						2		
Actuated Green, G (s)	14.6	14.6	14.6	12.3	38.8			22.5	22.5		
Effective Green, g (s)	14.6	14.6	14.6	12.3	38.8			22.5	22.5		
Actuated g/C Ratio	0.24	0.24	0.24	0.20	0.63			0.37	0.37		
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)	400	400	376	688	2236			1297	580		
v/s Ratio Prot	0.10	c0.10		c0.11	0.12			c0.23			
v/s Ratio Perm			0.03						0.06		
v/c Ratio	0.43	0.43	0.12	0.57	0.19			0.64	0.15		
Uniform Delay, d1	19.9	19.9	18.3	22.1	4.7			16.1	13.1		
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		
Incremental Delay, d2	0.7	0.7	0.1	1.1	0.0			1.0	0.1		
Delay (s)	20.6	20.6	18.5	23.2	4.8			17.1	13.2		
Level of Service	C	C	B	C	A			B	B		
Approach Delay (s)		19.9			13.6			16.2		0.0	
Approach LOS		B			B			B		A	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	Jacob Swim	Intersection	Carmel Creek Rd./Del Mar Trail
Agency/Co.	USAI	Jurisdiction	City of San Diego
Date Performed	7/9/2013	Analysis Year	2015
Analysis Time Period	36 Near Term + Proj Ph. 1 AM		

Project ID 002407 - San Diego Corporate Center Lots	
East/West Street: Del Mar Trail	North/South Street: Carmel Creek Road

Volume Adjustments and Site Characteristics								
Approach	Eastbound				Westbound			
	L	T	R	L	T	R		
Movement								
Volume (veh/h)	10	10	10	206	2	26		
%Thrus Left Lane								
Approach	Northbound			Southbound				
	L	T	R	L	T	R		
Movement								
Volume (veh/h)	3	267	103	15	957	3		
%Thrus Left Lane	50			50				
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LT	TR	LT	TR
PHF	0.90		0.90		0.90	0.90	0.90	0.90
Flow Rate (veh/h)	33		258		150	262	547	535
% Heavy Vehicles	2		2		2	2	2	2
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet								
Prop. Left-Turns	0.3		0.9		0.0	0.0	0.0	0.0
Prop. Right-Turns	0.3		0.1		0.0	0.4	0.0	0.0
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.1		0.0	-0.3	0.0	0.0

Departure Headway and Service Time								
hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.03		0.23		0.13	0.23	0.49	0.48
hd, final value (s)	7.48		6.82		7.15	6.83	6.33	6.31
x, final value	0.07		0.49		0.30	0.50	0.96	0.94
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t _s (s)	5.5		4.8		4.9	4.5	4.0	4.0

Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	283		508		400	512	569	570
Delay (s/veh)	11.03		16.17		12.86	16.10	53.45	48.48
LOS	B		C		B	C	F	E
Approach: Delay (s/veh)	11.03		16.17		14.92		51.00	
LOS	B		C		B		F	
Intersection Delay (s/veh)	36.90							
Intersection LOS	E							

HCM Signalized Intersection Capacity Analysis
 1: Via De La Valle & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗			↖	↗		↕	
Volume (vph)	6	478	534	178	425	3	560	2	432	0	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.96	
Fit Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1861			1774	1583		1779	
Fit Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1861			1774	1583		1779	
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	531	593	198	472	3	622	2	480	0	2	1
RTOR Reduction (vph)	0	0	256	0	0	0	0	0	308	0	1	0
Lane Group Flow (vph)	7	531	337	198	475	0	0	624	172	0	2	0
Turn Type	Prot		Prot	Prot			Split		Prot	Split		
Protected Phases	7	4	4	3	8		2	2	2	6	6	
Permitted Phases												
Actuated Green, G (s)	0.8	24.6	24.6	12.7	36.5			31.4	31.4		3.1	
Effective Green, g (s)	0.8	24.6	24.6	12.7	36.5			31.4	31.4		3.1	
Actuated g/C Ratio	0.01	0.28	0.28	0.14	0.42			0.36	0.36		0.04	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	16	522	444	256	774			634	566		63	
v/s Ratio Prot	0.00	c0.29	0.21	c0.11	0.26			c0.35	0.11		c0.00	
v/s Ratio Perm												
v/c Ratio	0.44	1.02	0.76	0.77	0.61			0.98	0.30		0.03	
Uniform Delay, d1	43.3	31.6	28.9	36.2	20.1			28.0	20.3		40.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	18.0	43.8	7.3	13.5	1.5			31.5	0.3		0.2	
Delay (s)	61.2	75.4	36.2	49.7	21.6			59.5	20.6		41.1	
Level of Service	E	E	D	D	C			E	C		D	
Approach Delay (s)		54.7			29.8			42.6			41.1	
Approach LOS		D			C			D			D	
Intersection Summary												
HCM Average Control Delay			44.4			HCM Level of Service					D	
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			87.8			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			82.8%			ICU Level of Service					E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 2: San Dieguito Road & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↗	↖	↑	↗	↖	↑↑
Volume (vph)	213	264	0	569	376	342	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	0.95
Frt	1.00	0.85		1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583		1863	1583	1770	3539
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1583		1863	1583	1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	237	293	0	632	418	380	331
RTOR Reduction (vph)	0	239	0	0	250	0	0
Lane Group Flow (vph)	237	54	0	632	168	380	331
Turn Type		Perm	Prot		Perm	Prot	
Protected Phases	1		3	8		7	
Permitted Phases		1			8		6
Actuated Green, G (s)	12.9	12.9		27.7	27.7	17.9	12.9
Effective Green, g (s)	12.9	12.9		27.7	27.7	17.9	12.9
Actuated g/C Ratio	0.18	0.18		0.39	0.39	0.25	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	628	290		732	622	449	648
v/s Ratio Prot	0.07			c0.34		c0.21	
v/s Ratio Perm		0.03			0.11		c0.09
v/c Ratio	0.38	0.18		0.86	0.27	0.85	0.51
Uniform Delay, d1	25.3	24.4		19.7	14.5	25.0	26.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.3		10.3	0.2	13.7	0.7
Delay (s)	25.7	24.7		30.0	14.8	38.7	26.6
Level of Service	C	C		C	B	D	C
Approach Delay (s)	25.1			23.9			33.1
Approach LOS	C			C			C

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 3: Derby Downs Road & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Volume (vph)	65	6	0	903	111	8	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0	4.0
Lane Util. Factor	0.97			0.95		1.00	0.95
Fr _t	0.99			0.98		1.00	1.00
Fl _t Protected	0.96			1.00		0.95	1.00
Satd. Flow (prot)	3410			3481		1770	3539
Fl _t Permitted	0.96			1.00		0.95	1.00
Satd. Flow (perm)	3410			3481		1770	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	72	7	0	1003	123	9	564
RTOR Reduction (vph)	6	0	0	10	0	0	0
Lane Group Flow (vph)	73	0	0	1116	0	9	564
Turn Type			Prot			Prot	
Protected Phases	8		5	2		1	6
Permitted Phases							
Actuated Green, G (s)	5.1			20.5		0.5	25.0
Effective Green, g (s)	5.1			20.5		0.5	25.0
Actuated g/C Ratio	0.13			0.54		0.01	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)	456			1873		23	2322
v/s Ratio Prot	c0.02			c0.32		0.01	c0.16
v/s Ratio Perm							
v/c Ratio	0.16			0.60		0.39	0.24
Uniform Delay, d ₁	14.6			6.0		18.6	2.7
Progression Factor	1.00			1.00		1.00	1.00
Incremental Delay, d ₂	0.2			0.5		10.7	0.1
Delay (s)	14.8			6.5		29.3	2.7
Level of Service	B			A		C	A
Approach Delay (s)	14.8			6.5			3.2
Approach LOS	B			A			A

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	38.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	22	14	20	21	155	26	819	60	89	452	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.87		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1751		1770	1616		1770	3503		1770	3508	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1751		1770	1616		1770	3503		1770	3508	
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)	26	24	16	22	23	172	29	910	67	99	502	31
RTOR Reduction (vph)	0	13	0	0	140	0	0	5	0	0	4	0
Lane Group Flow (vph)	26	27	0	22	55	0	29	972	0	99	529	0
Turn Type	Prot		Prot		Prot		Prot		Prot		Prot	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	1.6	11.8		0.6	10.8		1.6	23.6		5.5	27.5	
Effective Green, g (s)	1.6	11.8		0.6	10.8		1.6	23.6		5.5	27.5	
Actuated g/C Ratio	0.03	0.21		0.01	0.19		0.03	0.41		0.10	0.48	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	49	359		18	304		49	1438		169	1678	
v/s Ratio Prot	c0.01	0.02		0.01	c0.03		0.02	c0.28		c0.06	c0.15	
v/s Ratio Perm												
v/c Ratio	0.53	0.08		1.22	0.18		0.59	0.68		0.59	0.32	
Uniform Delay, d1	27.6	18.4		28.4	19.6		27.6	13.8		24.9	9.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.6	0.1		289.8	0.3		17.7	1.3		5.1	0.1	
Delay (s)	38.2	18.5		318.2	19.9		45.3	15.1		30.0	9.3	
Level of Service	D	B		F	B		D	B		C	A	
Approach Delay (s)		26.3			50.2			16.0			12.6	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Near Term + Project (Phase 1) PM
7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↑	↗	↖	↑	↗
Volume (vph)	7	42	33	47	30	20	48	966	128	23	480	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1751		1770	3477		1770	3528	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1751		1770	3477		1770	3528	
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)	8	47	37	52	33	22	53	1073	142	26	533	11
RTOR Reduction (vph)	0	0	32	0	17	0	0	6	0	0	1	0
Lane Group Flow (vph)	8	47	5	52	38	0	53	1209	0	26	543	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	0.5	10.1	10.1	6.2	15.8		4.2	42.0		1.3	39.1	
Effective Green, g (s)	0.5	10.1	10.1	6.2	15.8		4.2	42.0		1.3	39.1	
Actuated g/C Ratio	0.01	0.13	0.13	0.08	0.21		0.06	0.56		0.02	0.52	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	12	249	211	145	366		98	1932		30	1825	
v/s Ratio Prot	0.00	c0.03		c0.03	0.02		c0.03	c0.35		0.01	0.15	
v/s Ratio Perm			0.00									
v/c Ratio	0.67	0.19	0.02	0.36	0.10		0.54	0.63		0.87	0.30	
Uniform Delay, d1	37.5	29.1	28.5	32.8	24.2		34.8	11.4		37.1	10.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	89.5	0.4	0.0	1.5	0.1		6.0	0.6		108.1	0.1	
Delay (s)	126.9	29.5	28.5	34.3	24.3		40.7	12.1		145.1	10.5	
Level of Service	F	C	C	C	C		D	B		F	B	
Approach Delay (s)		37.6			29.2			13.3			16.6	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Near Term + Project (Phase 1) PM
7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑			↑	↗	↖	↕	
Volume (vph)	128	856	16	137	924	207	41	32	55	397	36	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (prot)	1770	5071		1770	3442			1812	1583	1681	1610	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (perm)	1770	5071		1770	3442			1812	1583	1681	1610	
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)	142	951	18	152	1027	230	46	36	61	441	40	149
RTOR Reduction (vph)	0	1	0	0	12	0	0	0	53	0	24	0
Lane Group Flow (vph)	142	968	0	152	1245	0	0	82	8	322	284	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	15.5	56.6		15.5	56.4			18.0	18.0	30.2	30.2	
Effective Green, g (s)	15.5	56.6		15.5	56.4			18.0	18.0	30.2	30.2	
Actuated g/C Ratio	0.11	0.40		0.11	0.40			0.13	0.13	0.22	0.22	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	196	2050		196	1387			233	204	363	347	
v/s Ratio Prot	0.08	0.19		0.09	0.36			0.05		0.19	0.18	
v/s Ratio Perm									0.00			
v/c Ratio	0.72	0.47		0.78	0.90			0.35	0.04	0.89	0.82	
Uniform Delay, d1	60.2	30.7		60.6	39.1			55.7	53.4	53.2	52.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.7	0.8		15.9	8.2			0.3	0.0	22.0	13.8	
Delay (s)	70.9	31.5		76.5	47.3			56.0	53.4	75.2	66.1	
Level of Service	E	C		E	D			E	D	E	E	
Approach Delay (s)		36.5			50.4			54.9			70.8	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	49.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.7
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1272	64	0	1548	0	96
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1413	71	0	1720	0	107
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	575			607		
pX, platoon unblocked				0.87	0.76	0.87
vC, conflicting volume				1484	2309	507
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				1015	1017	0
tC, single (s)				4.1	6.8	6.9
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	89
cM capacity (veh/h)				587	177	938

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	565	565	354	860	860	107
Volume Left	0	0	0	0	0	0
Volume Right	0	0	71	0	0	107
cSH	1700	1700	1700	1700	1700	938
Volume to Capacity	0.33	0.33	0.21	0.51	0.51	0.11
Queue Length 95th (ft)	0	0	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.3
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.3
Approach LOS						A

Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	46.1%			ICU Level of Service		A
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	↑
Volume (vph)	0	981	1325	0	955	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Flt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3431	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3431	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1090	1472	0	1061	332
RTOR Reduction (vph)	0	0	0	0	3	17
Lane Group Flow (vph)	0	1090	1472	0	1091	282
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.2	42.2		25.9	25.9
Effective Green, g (s)		42.2	42.2		25.9	25.9
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1867	1867		1111	467
v/s Ratio Prot		0.31	0.42		0.32	
v/s Ratio Perm						0.20
v/c Ratio		0.58	0.79		0.98	0.60
Uniform Delay, d1		12.9	15.3		26.8	22.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.5	2.3		22.6	2.2
Delay (s)		13.4	17.6		49.5	24.9
Level of Service		B	B		D	C
Approach Delay (s)		13.4	17.6		44.2	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay			25.8		HCM Level of Service	C
HCM Volume to Capacity ratio			0.86			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	11.9
Intersection Capacity Utilization			120.9%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖↗	↖↗			↖↗↖↗	↖↗	↖↗	↕	↖↗				
Volume (vph)	242	1639	0	0	1505	985	649	24	909	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6				
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95				
Frt	1.00	1.00			1.00	0.85	1.00	0.88	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00				
Satd. Flow (prot)	3433	3539			5085	1583	1681	1486	1504				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00				
Satd. Flow (perm)	3433	3539			5085	1583	1681	1486	1504				
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)	255	1725	0	0	1584	1037	683	25	957	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	478	0	5	5	0	0	0	
Lane Group Flow (vph)	255	1725	0	0	1584	559	581	543	531	0	0	0	
Turn Type	Prot						Prot	Split	Prot				
Protected Phases	5	2					6	6	8	8	8		
Permitted Phases													
Actuated Green, G (s)	10.3	60.7					45.2	45.2	47.4	47.4	47.4		
Effective Green, g (s)	10.3	60.7					45.2	45.2	47.4	47.4	47.4		
Actuated g/C Ratio	0.09	0.51					0.38	0.38	0.39	0.39	0.39		
Clearance Time (s)	5.2	6.3					6.3	6.3	5.6	5.6	5.6		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	295	1790					1915	596	664	587	594		
v/s Ratio Prot	0.07	0.49					0.31	0.35	0.35	0.37	0.35		
v/s Ratio Perm													
v/c Ratio	0.86	0.96					0.83	0.94	0.88	0.92	0.89		
Uniform Delay, d1	54.2	28.6					33.9	36.0	33.6	34.6	33.9		
Progression Factor	1.00	1.00					0.65	1.74	1.00	1.00	1.00		
Incremental Delay, d2	22.1	14.3					0.4	3.6	12.3	20.4	15.7		
Delay (s)	76.3	42.8					22.4	66.5	45.9	55.0	49.7		
Level of Service	E	D					C	E	D	E	D		
Approach Delay (s)	47.2						39.9			50.1			0.0
Approach LOS	D						D			D			A
Intersection Summary													
HCM Average Control Delay	44.9		HCM Level of Service				D						
HCM Volume to Capacity ratio	0.95												
Actuated Cycle Length (s)	120.0		Sum of lost time (s)				11.9						
Intersection Capacity Utilization	110.0%		ICU Level of Service				H						
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑		↖	↑		↖	↑	↗
Volume (vph)	249	2321	259	47	1765	61	637	67	156	46	30	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5060		3433	3167		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5060		3433	3167		1770	1863	1583
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)	277	2579	288	52	1961	68	708	74	173	51	33	91
RTOR Reduction (vph)	0	0	70	0	3	0	0	125	0	0	0	0
Lane Group Flow (vph)	277	2579	218	52	2026	0	708	122	0	51	33	91
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	28.4	64.4	77.4	6.3	42.7		13.0	23.1		6.5	16.6	45.0
Effective Green, g (s)	28.4	64.4	77.4	6.3	42.7		13.0	23.1		6.5	16.6	45.0
Actuated g/C Ratio	0.24	0.54	0.64	0.05	0.36		0.11	0.19		0.05	0.14	0.38
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	419	2729	1021	93	1801		372	610		96	258	594
v/s Ratio Prot	c0.16	c0.51	0.02	0.03	c0.40		c0.21	c0.04		0.03	0.02	0.04
v/s Ratio Perm			0.11									0.02
v/c Ratio	0.66	0.95	0.21	0.56	1.12		1.90	0.20		0.53	0.13	0.15
Uniform Delay, d1	41.4	26.1	8.8	55.5	38.6		53.5	40.7		55.3	45.4	24.9
Progression Factor	0.99	1.03	0.85	1.08	1.27		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	5.3	0.0	3.6	63.3		416.4	0.1		2.8	0.1	0.0
Delay (s)	42.9	32.3	7.5	63.3	112.2		469.9	40.7		58.1	45.4	24.9
Level of Service	D	C	A	E	F		F	D		E	D	C
Approach Delay (s)		31.0			111.0			358.9			38.4	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM Average Control Delay	106.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: Del Mar Heights Road & Third Ave.

Near Term + Project (Phase 1) PM
 7/11/2013

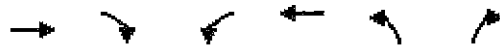


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	2420	149	89	1799	264	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2689	166	99	1999	293	177
RTOR Reduction (vph)	0	37	0	0	0	118
Lane Group Flow (vph)	2689	129	99	1999	293	59
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	80.1	80.1	10.9	94.0	17.0	17.0
Effective Green, g (s)	80.1	80.1	10.9	94.0	17.0	17.0
Actuated g/C Ratio	0.67	0.67	0.09	0.78	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3394	1057	161	3983	486	224
v/s Ratio Prot	c0.53		c0.06	0.39	c0.09	
v/s Ratio Perm		0.08				0.04
v/c Ratio	0.79	0.12	0.61	0.50	0.60	0.26
Uniform Delay, d1	14.1	7.2	52.5	4.6	48.3	45.9
Progression Factor	0.64	0.09	1.10	0.19	1.00	1.00
Incremental Delay, d2	1.0	0.1	5.9	0.4	2.1	0.6
Delay (s)	10.1	0.7	63.9	1.3	50.4	46.5
Level of Service	B	A	E	A	D	D
Approach Delay (s)	9.5			4.2	49.0	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	2460	119	60	1677	211	106
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	0.97	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2733	132	67	1863	234	118
RTOR Reduction (vph)	0	36	0	0	0	59
Lane Group Flow (vph)	2733	96	67	1863	234	59
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	75.0	75.0	4.5	83.5	28.5	28.5
Effective Green, g (s)	75.0	75.0	4.5	83.5	28.5	28.5
Actuated g/C Ratio	0.62	0.62	0.04	0.70	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3178	989	129	3538	420	376
v/s Ratio Prot	c0.54	0.06	0.02	c0.37	c0.13	
v/s Ratio Perm						0.04
v/c Ratio	0.86	0.10	0.52	0.53	0.56	0.16
Uniform Delay, d1	18.2	9.0	56.7	8.8	40.2	36.2
Progression Factor	1.90	1.97	0.75	1.05	1.00	1.00
Incremental Delay, d2	1.6	0.0	2.1	0.1	5.3	0.9
Delay (s)	36.2	17.7	44.6	9.3	45.5	37.1
Level of Service	D	B	D	A	D	D
Approach Delay (s)	35.3			10.5	42.7	
Approach LOS	D			B	D	

Intersection Summary			
HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖↗↘		↖↗	↖↗↘		↖↗	↖↗↘	↖	↖↗	↖↗↘	
Volume (vph)	484	1625	399	179	882	181	456	453	331	151	172	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	*0.95		0.97	*0.95		0.97	*0.95	1.00	0.97	*0.95	
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	5152		3433	5173		3433	5309	1583	3433	4866	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	5152		3433	5173		3433	5309	1583	3433	4866	
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)	538	1806	443	199	980	201	507	503	368	168	191	239
RTOR Reduction (vph)	0	34	0	0	28	0	0	0	89	0	118	0
Lane Group Flow (vph)	538	2215	0	199	1153	0	507	503	279	168	312	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	24.0	54.4		12.9	43.5		10.6	27.6	27.6	4.6	20.8	
Effective Green, g (s)	24.0	54.4		12.9	43.5		10.6	27.6	27.6	4.6	20.8	
Actuated g/C Ratio	0.20	0.45		0.11	0.36		0.09	0.23	0.23	0.04	0.17	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	687	2336		369	1875		303	1221	364	132	843	
v/s Ratio Prot	c0.16	c0.43		0.06	0.22		c0.15	0.09		0.05	0.06	
v/s Ratio Perm									c0.18			
v/c Ratio	0.78	0.95		0.54	0.61		1.67	0.41	0.77	1.27	0.37	
Uniform Delay, d1	45.5	31.5		50.7	31.4		54.7	39.3	43.2	57.7	43.8	
Progression Factor	1.07	0.50		1.02	1.12		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	5.9		0.7	1.5		317.1	0.3	9.8	169.0	0.3	
Delay (s)	51.4	21.4		52.3	36.6		371.8	39.6	53.0	226.7	44.1	
Level of Service	D	C		D	D		F	D	D	F	D	
Approach Delay (s)	27.2			38.8			165.4			95.4		
Approach LOS	C			D			F			F		

Intersection Summary			
HCM Average Control Delay	67.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔↔		↔↔	↔↔↔		↔↔	↔↔↔		↔	↔↔	
Volume (vph)	127	1238	564	82	622	74	383	172	149	80	128	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.93		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4847		3433	5004		3433	4731		1770	3277	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4847		3433	5004		3433	4731		1770	3277	
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)	141	1376	627	91	691	82	426	191	166	89	142	139
RTOR Reduction (vph)	0	55	0	0	10	0	0	132	0	0	120	0
Lane Group Flow (vph)	141	1948	0	91	763	0	426	225	0	89	161	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	8.8	61.6		6.8	59.4		15.6	21.8		10.0	16.7	
Effective Green, g (s)	8.8	61.6		6.8	59.4		15.6	21.8		10.0	16.7	
Actuated g/C Ratio	0.07	0.51		0.06	0.50		0.13	0.18		0.08	0.14	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	252	2488		195	2477		446	859		148	456	
v/s Ratio Prot	c0.04	c0.40		0.03	0.15		c0.12	0.05		0.05	c0.05	
v/s Ratio Perm												
v/c Ratio	0.56	0.78		0.47	0.31		0.96	0.26		0.60	0.35	
Uniform Delay, d1	53.7	23.8		54.8	18.1		51.9	42.2		53.1	46.8	
Progression Factor	1.07	0.99		1.31	0.44		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	2.0		0.6	0.3		30.9	0.2		4.6	1.3	
Delay (s)	58.5	25.6		72.5	8.3		82.8	42.4		57.7	48.0	
Level of Service	E	C		E	A		F	D		E	D	
Approach Delay (s)		27.7			15.1			64.4			50.4	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	34.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c - Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↑	
Volume (vph)	49	1275	150	8	673	23	61	14	32	28	8	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5005		1770	5060		1770	1669		1770	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5005		1770	5060		1770	1669		1770	1642	
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)	54	1417	167	9	748	26	68	16	36	31	9	34
RTOR Reduction (vph)	0	8	0	0	2	0	0	31	0	0	30	0
Lane Group Flow (vph)	54	1576	0	9	772	0	68	21	0	31	13	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.0	78.4		0.9	71.6		7.8	17.9		4.1	14.2	
Effective Green, g (s)	7.0	78.4		0.9	71.6		7.8	17.9		4.1	14.2	
Actuated g/C Ratio	0.06	0.65		0.01	0.60		0.06	0.15		0.03	0.12	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	103	3270		13	3019		115	249		60	194	
v/s Ratio Prot	c0.03	c0.31		0.01	0.15		c0.04	c0.01		0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.52	0.48		0.69	0.26		0.59	0.09		0.52	0.07	
Uniform Delay, d1	54.9	10.5		59.4	11.5		54.6	44.0		57.0	47.0	
Progression Factor	0.77	1.71		1.08	0.58		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.4		80.5	0.2		5.3	0.1		3.1	0.1	
Delay (s)	43.6	18.3		145.0	6.9		59.9	44.1		60.1	47.1	
Level of Service	D	B		F	A		E	D		E	D	
Approach Delay (s)	19.1			8.5			53.0			52.5		
Approach LOS	B			A			D			D		

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.3
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

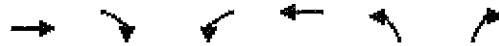
Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NET	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	286	981	65	22	482	25	40	46	35	24	33	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5038		1770	5047		1770	1742		1770	1625	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5038		1770	5047		1770	1742		1770	1625	
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)	318	1090	72	24	536	28	44	51	39	27	37	209
RTOR Reduction (vph)	0	4	0	0	4	0	0	28	0	0	178	0
Lane Group Flow (vph)	318	1158	0	24	560	0	44	62	0	27	68	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	24.2	75.1		3.6	54.5		4.2	19.7		2.5	17.8	
Effective Green, g (s)	24.2	75.1		3.6	54.5		4.2	19.7		2.5	17.8	
Actuated g/C Ratio	0.20	0.63		0.03	0.45		0.04	0.16		0.02	0.15	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	357	3153		53	2292		62	286		37	241	
v/s Ratio Prot	c0.18	c0.23		0.01	0.11		c0.02	0.04		0.02	c0.04	
v/s Ratio Perm												
v/c Ratio	0.89	0.37		0.45	0.24		0.71	0.22		0.73	0.28	
Uniform Delay, d1	46.6	10.9		57.2	20.1		57.3	43.5		58.4	45.4	
Progression Factor	1.34	0.84		1.27	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.2	0.3		2.2	0.3		26.0	0.1		45.8	0.2	
Delay (s)	83.4	9.5		74.8	20.9		83.3	43.6		104.2	45.7	
Level of Service	F	A		E	C		F	D		F	D	
Approach Delay (s)		25.3			23.1			56.7			51.4	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay	29.4		HCM Level of Service		C							
HCM Volume to Capacity ratio	0.48											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)		13.9							
Intersection Capacity Utilization	58.5%		ICU Level of Service		B							
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↙	↑↑↑	↘	↗
Volume (vph)	843	181	92	429	116	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4951		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4951		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	937	201	102	477	129	283
RTOR Reduction (vph)	18	0	0	0	0	37
Lane Group Flow (vph)	1120	0	102	477	129	246
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	73.6		11.8	90.5	18.6	30.4
Effective Green, g (s)	73.6		11.8	90.5	18.6	30.4
Actuated g/C Ratio	0.61		0.10	0.75	0.16	0.25
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	3037		174	3835	532	401
v/s Ratio Prot	c0.23		0.06	0.09	0.04	c0.06
v/s Ratio Perm						0.10
v/c Ratio	0.37		0.59	0.12	0.24	0.61
Uniform Delay, d1	11.6		51.8	4.0	44.5	39.6
Progression Factor	1.94		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		3.2	0.1	0.1	2.0
Delay (s)	22.9		55.0	4.1	44.6	41.6
Level of Service	C		D	A	D	D
Approach Delay (s)	22.9			13.0	42.5	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	106	32	32	194	18	255	71	856	168	295	440	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	0.94			1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1648			1781	1583	3433	4960		3433	5037	
Flt Permitted	0.95	0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1648			1781	1583	3433	4960		3433	5037	
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)	118	36	36	216	20	283	79	951	187	328	489	33
RTOR Reduction (vph)	0	19	0	0	0	223	0	23	0	0	5	0
Lane Group Flow (vph)	97	74	0	0	236	60	79	1115	0	328	517	0
Turn Type	Split			Split			Perm	Prot		Prot		
Protected Phases	2	2		6	6		3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	11.0	11.0			18.9	18.9	6.2	28.9		14.2	36.9	
Effective Green, g (s)	11.0	11.0			18.9	18.9	6.2	28.9		14.2	36.9	
Actuated g/C Ratio	0.12	0.12			0.21	0.21	0.07	0.32		0.16	0.41	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	208	204			378	336	239	1611		548	2088	
v/s Ratio Prot	c0.06	0.04			c0.13		0.02	c0.22		c0.10	0.10	
v/s Ratio Perm						0.04						
v/c Ratio	0.47	0.36			0.62	0.18	0.33	0.69		0.60	0.25	
Uniform Delay, d1	36.3	35.8			31.8	28.7	39.4	26.2		34.8	17.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.1			3.2	0.3	0.8	1.3		1.8	0.1	
Delay (s)	37.9	36.9			35.0	29.0	40.2	27.5		36.5	17.1	
Level of Service	D	D			D	C	D	C		D	B	
Approach Delay (s)	37.4			31.7			28.3			24.6		
Approach LOS	D			C			C			C		

Intersection Summary			
HCM Average Control Delay	28.4	HCM Level of Service	C
HCM Volume-to-Capacity ratio	0.62		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Townsgate Drive & Carmel Country Road

Near Term + Project (Phase 1) PM
 7/11/2013

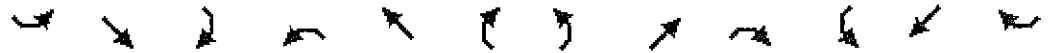


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↕		↖	↕	↗
Volume (vph)	125	108	178	14	56	118	116	514	10	187	593	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1673		1770	3529		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1673		1770	3529		1770	3539	1583
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)	139	120	198	16	62	131	129	571	11	208	659	101
RTOR Reduction (vph)	0	0	129	0	75	0	0	1	0	0	0	68
Lane-Group Flow (vph)	139	120	69	16	118	0	129	581	0	208	659	33
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	11.6	27.1	27.1	0.6	16.1		9.0	19.9		14.6	25.5	25.5
Effective Green, g (s)	11.6	27.1	27.1	0.6	16.1		9.0	19.9		14.6	25.5	25.5
Actuated g/C Ratio	0.15	0.35	0.35	0.01	0.21		0.12	0.25		0.19	0.33	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	263	646	549	14	344		204	898		330	1154	516
v/s Ratio Prot	c0.08	0.06		0.01	c0.07		0.07	c0.16		c0.12	0.19	
v/s Ratio Perm			0.04									0.02
v/c Ratio	0.53	0.19	0.12	1.14	0.34		0.63	0.65		0.63	0.57	0.06
Uniform Delay, d1	30.8	17.8	17.5	38.8	26.5		33.0	26.0		29.3	21.8	18.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.9	0.1	0.1	291.3	0.6		6.3	1.6		3.9	0.7	0.1
Delay (s)	32.7	18.0	17.6	330.1	27.1		39.3	27.6		33.2	22.5	18.2
Level of Service	C	B	B	F	C		D	C		C	C	B
Approach Delay (s)		22.3			50.3			29.7			24.4	
Approach LOS		C			D			C			C	

Intersection Summary		
HCM Average Control Delay	27.9	HCM Level of Service C
HCM Volume to Capacity ratio	0.54	
Actuated Cycle Length (s)	78.2	Sum of lost time (s) 16.0
Intersection Capacity Utilization	55.3%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 20: Townsgate Drive & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Volume (vph)	217	12	10	144	2	104	29	766	206	139	539	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91		1.00	0.91		
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	0.99		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1735		1770	1863	1583	1770	4924		1770	5042		
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (perm)	1770	1735		1770	1863	1583	1770	4924		1770	5042		
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)	241	13	11	160	2	116	32	851	229	154	599	36	
RTOR Reduction (vph)	0	10	0	0	0	101	0	37	0	0	5	0	
Lane Group Flow (vph)	241	14	0	160	2	15	32	1043	0	154	630	0	
Turn Type	Prot			Prot		Perm	Prot			Prot			
Protected Phases	1	6		5	2		7	4		3	8		
Permitted Phases	2												
Actuated Green, G (s)	17.2	8.7		19.6	11.1	11.1	3.4	27.4		12.9	36.9		
Effective Green, g (s)	17.2	8.7		19.6	11.1	11.1	3.4	27.4		12.9	36.9		
Actuated g/C Ratio	0.20	0.10		0.23	0.13	0.13	0.04	0.32		0.15	0.44		
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	360	178		410	244	208	71	1595		270	2199		
v/s Ratio Prot	c0.14	0.01		0.09	0.00		0.02	c0.21		c0.09	0.12		
v/s Ratio Perm	c0.01												
v/c Ratio	0.67	0.08		0.39	0.01	0.07	0.45	0.65		0.57	0.29		
Uniform Delay, d1	31.1	34.3		27.5	32.0	32.2	39.7	24.5		33.3	15.4		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	4.7	0.2		0.6	0.0	0.2	4.5	1.0		2.9	0.1		
Delay (s)	35.8	34.5		28.1	32.0	32.4	44.2	25.5		36.2	15.4		
Level of Service	D	C		C	C	C	D	C		D	B		
Approach Delay (s)	35.6			29.9			26.0			19.5			
Approach LOS	D			C			C			B			
Intersection Summary													
HCM Average Control Delay	25.4			HCM Level of Service					C				
HCM Volume to Capacity ratio	0.52												
Actuated Cycle Length (s)	84.6			Sum of lost time (s)					12.0				
Intersection Capacity Utilization	55.8%			ICU Level of Service					B				
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 21: Carmel Creek Road & Carmel Country Road

Near Term + Project (Phase 1) PM
 7/11/2013



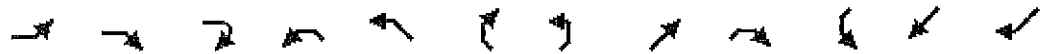
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗		↕		↖	↑↕		↖	↑↕	
Volume (vph)	311	244	127	33	102	18	97	384	40	26	445	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	14	12	12	16	12	12	16	12
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Fr _t	1.00	1.00	0.85		0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1794		1934		1770	3955		1770	3789	
Flt Permitted	0.95	1.00	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1794		1934		1770	3955		1770	3789	
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)	346	271	141	37	113	20	108	427	44	29	494	289
RTOR Reduction (vph)	0	0	102	0	4	0	0	6	0	0	69	0
Lane Group Flow (vph)	346	271	39	0	166	0	108	465	0	29	714	0
Turn Type	Split		Perm	Split			Prot			Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	24.9	24.9	24.9		14.1		8.8	31.6		3.1	25.9	
Effective Green, g (s)	24.9	24.9	24.9		14.1		8.8	31.6		3.1	25.9	
Actuated g/C Ratio	0.28	0.28	0.28		0.16		0.10	0.35		0.03	0.29	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	491	517	498		304		174	1393		61	1094	
v/s Ratio Prot	c0.20	0.15			c0.09		c0.06	0.12		0.02	c0.19	
v/s Ratio Perm			0.02									
v/c Ratio	0.70	0.52	0.08		0.55		0.62	0.33		0.48	0.65	
Uniform Delay, d1	29.1	27.4	23.9		34.8		38.8	21.3		42.5	28.0	
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.0	0.1		2.0		6.7	0.1		5.7	1.4	
Delay (s)	33.7	28.4	24.0		36.8		45.6	21.5		48.2	29.4	
Level of Service	C	C	C		D		D	C		D	C	
Approach Delay (s)		30.0			36.8			26.0			30.0	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 22: High Bluff Drive & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBR	EBR2	NWL2	NWL	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	74	279	324	99	173	119	266	1049	95	158	660	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97		0.97	0.91		1.00	0.91	
Frt	1.00	0.85	0.85	1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583	1583	1770	3295		3433	5022		1770	5037	
Flt Permitted	0.95	1.00	1.00	0.95	0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1583	1583	1770	3295		3433	5022		1770	5037	
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)	82	310	360	110	192	132	296	1166	106	176	733	49
RTOR Reduction (vph)	0	0	271	0	103	0	0	8	0	0	5	0
Lane Group Flow (vph)	82	310	89	110	221	0	296	1264	0	176	777	0
Turn Type		Perm	Perm	Split			Prot			Prot		
Protected Phases	2			6	6		3	8		7	4	
Permitted Phases		2	2									
Actuated Green, G (s)	24.0	24.0	24.0	9.8	9.8		16.9	30.6		16.9	30.6	
Effective Green, g (s)	24.0	24.0	24.0	9.8	9.8		16.9	30.6		16.9	30.6	
Actuated g/C Ratio	0.25	0.25	0.25	0.10	0.10		0.17	0.31		0.17	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	390	390	178	332		596	1579		307	1584	
v/s Ratio Prot	0.05			0.06	c0.07		0.09	c0.25		c0.10	0.15	
v/s Ratio Perm		c0.20	0.06									
v/c Ratio	0.19	0.79	0.23	0.62	0.67		0.50	0.80		0.57	0.49	
Uniform Delay, d1	28.9	34.3	29.3	42.0	42.2		36.4	30.6		36.9	27.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	10.7	0.3	6.3	5.0		0.7	3.0		2.6	0.2	
Delay (s)	29.2	45.0	29.6	48.2	47.2		37.0	33.6		39.5	27.3	
Level of Service	C	D	C	D	D		D	C		D	C	
Approach Delay (s)	35.9				47.4			34.2			29.5	
Approach LOS	D				D			C			C	

Intersection Summary			
HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	97.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↖	↗		↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	204	26	150	4	11	4	105	25	8	2	7	101
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	227	29	167	4	12	4	117	28	9	2	8	112

Direction - Lane #	SE 1	SE 2	NW 1	NE 1	SW 1
Volume Total (vph)	256	167	21	153	122
Volume Left (vph)	227	0	4	117	2
Volume Right (vph)	0	167	4	9	112
Hadj (s)	0.48	-0.67	-0.05	0.15	-0.51
Departure Headway (s)	5.7	4.6	5.2	5.3	4.7
Degree Utilization, x	0.41	0.21	0.03	0.22	0.16
Capacity (veh/h)	605	757	633	644	711
Control Delay (s)	11.4	7.6	8.4	9.8	8.5
Approach Delay (s)	9.9		8.4	9.8	8.5
Approach LOS	A		A	A	A

Intersection Summary	
Delay	9.6
HCM Level of Service	A
Intersection Capacity Utilization	40.3%
ICU Level of Service	A
Analysis Period (min)	15

HCM Signalized Intersection Capacity Analysis
 24: Carmel Grove Road & Carmel Creek Road

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Volume (vph)	119	52	72	57	27	9	111	760	138	6	363	84
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	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1800	1583		1784		1770	3458		1770	3440	
Flt Permitted		0.97	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1800	1583		1784		1770	3458		1770	3440	
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)	132	58	80	63	30	10	123	844	153	7	403	93
RTOR Reduction (vph)	0	0	65	0	4	0	0	10	0	0	16	0
Lane Group Flow (vph)	0	190	15	0	99	0	123	987	0	7	480	0
Turn Type	Split		Prot	Split			Prot			Prot		
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		14.0	14.0		9.7		7.6	32.1		0.6	25.1	
Effective Green, g (s)		14.0	14.0		9.7		7.6	32.1		0.6	25.1	
Actuated g/C Ratio		0.19	0.19		0.13		0.10	0.44		0.01	0.35	
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)		348	306		239		186	1533		15	1193	
v/s Ratio Prot		c0.11	0.01		c0.06		c0.07	c0.29		0.00	0.14	
v/s Ratio Perm												
v/c Ratio		0.55	0.05		0.41		0.66	0.64		0.47	0.40	
Uniform Delay, d1		26.3	23.8		28.7		31.2	15.7		35.7	18.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8	0.1		1.2		8.5	0.9		21.2	0.2	
Delay (s)		28.1	23.9		29.9		39.7	16.6		57.0	18.2	
Level of Service		C	C		C		D	B		E	B	
Approach Delay (s)		26.8			29.9			19.2			18.7	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			20.6				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			72.4				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			50.5%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 25: Carmel Valley Road & I-5 SB Ramps

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↓	↑
Volume (vph)	0	652	141	631	911	0	0	0	0	906	1	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95		0.97	0.95					0.95	0.91	0.95
Frt		0.97		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3445		3433	3539					1681	1612	1504
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3445		3433	3539					1681	1612	1504
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)	0	724	157	701	1012	0	0	0	0	1007	1	83
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	1	48
Lane Group Flow (vph)	0	857	0	701	1012	0	0	0	0	503	512	27
Turn Type				Prot						Split		Prot
Protected Phases		4		3	8					6	6	6
Permitted Phases												
Actuated Green, G (s)		18.1		16.6	38.7					26.3	26.3	26.3
Effective Green, g (s)		18.1		16.6	38.7					26.3	26.3	26.3
Actuated g/C Ratio		0.25		0.23	0.53					0.36	0.36	0.36
Clearance Time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		854		781	1876					606	581	542
v/s Ratio Prot		c0.25		c0.20	0.29					0.30	c0.32	0.02
v/s Ratio Perm												
v/c Ratio		1.00		0.90	0.54					0.83	0.88	0.05
Uniform Delay, d1		27.4		27.4	11.3					21.3	21.9	15.2
Progression Factor		1.00		1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		31.6		13.0	0.3					9.4	14.6	0.0
Delay (s)		59.1		40.4	11.6					30.7	36.5	15.2
Level of Service		E		D	B					C	D	B
Approach Delay (s)		59.1			23.4			0.0			32.4	
Approach LOS		E			C			A			C	

Intersection Summary		
HCM Average Control Delay	34.6	HCM Level of Service C
HCM Volume to Capacity ratio	0.92	
Actuated Cycle Length (s)	73.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	87.5%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 26: Carmel Valley Road & I-5 NB Ramps

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕			↕	↖	↗	↕	↖			
Volume (vph)	127	1455	0	0	1046	872	452	7	700	0	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			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			3539	1583	1681	1469	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			3539	1583	1681	1469	1504			
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)	141	1617	0	0	1162	969	502	8	778	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	614	0	3	3	0	0	0
Lane Group Flow (vph)	141	1617	0	0	1162	355	447	418	417	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	7	4			8	8	2	2	2			
Permitted Phases												
Actuated Green, G (s)	4.6	35.6			27.0	27.0	30.2	30.2	30.2			
Effective Green, g (s)	4.6	35.6			27.0	27.0	30.2	30.2	30.2			
Actuated g/C Ratio	0.06	0.48			0.37	0.37	0.41	0.41	0.41			
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)	214	1707			1295	579	688	601	615			
v/s Ratio Prot	0.04	0.46			0.33	0.22	0.27	0.28	0.28			
v/s Ratio Perm												
v/c Ratio	0.66	0.95			0.90	0.61	0.65	0.70	0.68			
Uniform Delay, d1	33.8	18.2			22.1	19.1	17.5	18.0	17.8			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	7.1	11.5			8.5	1.9	2.1	3.5	3.0			
Delay (s)	41.0	29.7			30.5	21.1	19.7	21.5	20.8			
Level of Service	D	C			C	C	B	C	C			
Approach Delay (s)		30.6			26.2			20.6			0.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 27: Valley Centre Drive & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	37	50	490	31	113	109	980	220	190	1505	43
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	5.0		4.0	4.0	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.91	0.95	1.00	0.91		1.00	0.91	
Frt	1.00	0.98	0.85	1.00	0.99	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1648	1504	1681	1616	1504	1770	4945		1770	5064	
Flt Permitted	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1648	1504	1681	1616	1504	1770	4945		1770	5064	
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)	53	39	53	516	33	119	115	1032	232	200	1584	45
RTOR Reduction (vph)	0	5	41	0	2	83	0	22	0	0	2	0
Lane Group Flow (vph)	48	47	4	279	280	24	115	1242	0	200	1627	0
Turn Type	Split		Prot	Split		Prot	Prot			Prot		
Protected Phases	4	4	4	8	8	8	5	2		1		
Permitted Phases												6
Actuated Green, G (s)	10.3	10.3	10.3	23.2	23.2	23.2	10.1	36.3		16.4	43.6	
Effective Green, g (s)	10.3	10.3	10.3	23.2	23.2	23.2	10.1	36.3		16.4	43.6	
Actuated g/C Ratio	0.10	0.10	0.10	0.22	0.22	0.22	0.10	0.35		0.16	0.42	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lane Grp Cap (vph)	168	164	150	378	363	338	173	1739		281	2139	
v/s Ratio Prot	c0.03	0.03	0.00	0.17	c0.17	0.02	0.06	0.25		c0.11		
v/s Ratio Perm												c0.32
v/c Ratio	0.29	0.28	0.03	0.74	0.77	0.07	0.66	0.71		0.71	0.76	
Uniform Delay, d1	43.0	43.0	41.9	37.2	37.5	31.5	44.9	29.0		41.2	25.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.0	0.1	7.4	9.8	0.1	9.3	1.4		8.2	1.6	
Delay (s)	44.0	44.0	42.0	44.5	47.3	31.6	54.2	30.4		49.4	27.0	
Level of Service	D	D	D	D	D	C	D	C		D	C	
Approach Delay (s)		43.4			43.6			32.4			29.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 28: Carmel Valley Road & El Camino Real

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↔↔↔	↔	↔↔	↔↔			↔↔↔	↔
Volume (vph)	0	0	0	223	860	220	405	1092	0	0	742	832
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
Lane Util. Factor				0.97	0.91	1.00	0.97	0.95			0.86	0.86
Frbp, ped/bikes				1.00	1.00	1.00	1.00	1.00			0.90	0.72
Flpb, ped/bikes				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt				1.00	1.00	0.85	1.00	1.00			0.95	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3433	5085	1583	3433	3539			4097	987
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				3433	5085	1583	3433	3539			4097	987
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)	0	0	0	248	956	244	450	1213	0	0	824	924
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	0	0	31	31
Lane Group Flow (vph)	0	0	0	248	956	222	450	1213	0	0	1255	431
Confl. Peds. (#/hr)												200
Turn Type				Prot		Perm	Prot					Perm
Protected Phases				3	8		5	2				6
Permitted Phases						8						6
Actuated Green, G (s)				25.7	25.7	25.7	9.1	42.4			29.3	29.3
Effective Green, g (s)				25.7	25.7	25.7	9.1	42.4			29.3	29.3
Actuated g/C Ratio				0.34	0.34	0.34	0.12	0.56			0.39	0.39
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)				1159	1717	535	411	1972			1577	380
v/s Ratio Prot				0.07	c0.19		c0.13	0.34			0.31	
v/s Ratio Perm						0.14						c0.44
v/c Ratio				0.21	0.56	0.42	1.09	0.62			0.80	1.13
Uniform Delay, d1				18.0	20.6	19.4	33.5	11.4			20.7	23.4
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				0.1	0.4	0.5	72.5	0.6			2.9	87.6
Delay (s)				18.1	20.9	19.9	106.0	11.9			23.6	111.0
Level of Service				B	C	B	F	B			C	F
Approach Delay (s)		0.0			20.3			37.4			46.7	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM Average Control Delay	35.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	537	1031	133	0	0	0	0	911	442	281	641	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	
Lane Util. Factor	0.91	0.86	0.91					0.86		1.00	0.91	
Frt	1.00	1.00	0.85					0.95		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1610	3190	1441					6094		1770	5085	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1610	3190	1441					6094		1770	5085	
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)	597	1146	148	0	0	0	0	1012	491	312	712	0
RTOR Reduction (vph)	0	1	71	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	537	1220	62	0	0	0	0	1495	0	312	712	0
Turn Type	Split		Perm					Prot				
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	33.3	33.3	33.3					32.5		11.0	47.5	
Effective Green, g (s)	33.3	33.3	33.3					32.5		11.0	47.5	
Actuated g/C Ratio	0.38	0.38	0.38					0.37		0.12	0.53	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	604	1196	540					2230		219	2720	
v/s Ratio Prot	0.33	0.38						0.25		0.18	0.14	
v/s Ratio Perm			0.04									
v/c Ratio	0.89	1.02	0.12					0.67		1.42	0.26	
Uniform Delay, d1	26.0	27.8	18.1					23.6		38.9	11.2	
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2	14.9	31.3	0.1					0.8		215.5	0.1	
Delay (s)	40.9	59.0	18.2					24.5		254.4	11.2	
Level of Service	D	E	B					C		F	B	
Approach Delay (s)		51.0			0.0			24.5			85.3	
Approach LOS		D			A			C			F	
Intersection Summary												
HCM Average Control Delay			49.9	HCM Level of Service				D				
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			88.8	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			116.9%	ICU Level of Service				H				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 30: Valley Centre Drive & Carmel View Road

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Volume (vph)	68	396	0	368	97	31	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		0.95		1.00	1.00
Frt	1.00	1.00		0.97		1.00	0.85
Flt Protected	0.95	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1770	3539		3428		1770	1583
Flt Permitted	0.95	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1770	3539		3428		1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	76	440	0	409	108	34	52
RTOR Reduction (vph)	0	0	0	27	0	0	44
Lane Group Flow (vph)	76	440	0	490	0	34	8
Turn Type	Prot		Prot			Perm	
Protected Phases	7	4	3	8		6	
Permitted Phases							6
Actuated Green, G (s)	3.7	18.6		10.9		4.7	4.7
Effective Green, g (s)	3.7	18.6		10.9		4.7	4.7
Actuated g/C Ratio	0.12	0.59		0.35		0.15	0.15
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)	209	2103		1194		266	238
v/s Ratio Prot	0.04	0.12		0.14		0.02	
v/s Ratio Perm							0.00
v/c Ratio	0.36	0.21		0.41		0.13	0.03
Uniform Delay, d1	12.7	2.9		7.8		11.5	11.4
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.1	0.0		0.2		0.2	0.1
Delay (s)	13.8	3.0		8.0		11.7	11.4
Level of Service	B	A		A		B	B
Approach Delay (s)		4.6		8.0		11.5	
Approach LOS		A		A		B	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	31.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 31: Valley Centre Drive & Carmel Creek Road

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	116	293	331	126	162	99	370	837	332	272	161	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1757		1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	1757		1770	3539	1583	3433	3539	1583
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)	129	326	368	140	180	110	411	930	369	302	179	158
RTOR Reduction (vph)	0	0	268	0	16	0	0	0	123	0	0	105
Lane Group Flow (vph)	129	326	100	140	274	0	411	930	246	302	179	53
Turn Type	Prot		Perm	Prot			Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2						8			4
Actuated Green, G (s)	13.3	28.0	28.0	7.7	22.4		30.1	36.8	44.5	15.0	21.7	35.0
Effective Green, g (s)	13.3	28.0	28.0	7.7	22.4		30.1	36.8	44.5	15.0	21.7	35.0
Actuated g/C Ratio	0.13	0.27	0.27	0.07	0.22		0.29	0.36	0.43	0.14	0.21	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
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)	227	957	428	132	380		515	1258	742	498	742	596
v/s Ratio Prot	c0.07	0.09		c0.08	c0.16		c0.23	c0.26	0.02	0.09	0.05	0.01
v/s Ratio Perm			0.06						0.13			0.02
v/c Ratio	0.57	0.34	0.23	1.06	0.72		0.80	0.74	0.33	0.61	0.24	0.09
Uniform Delay, d1	42.4	30.3	29.4	47.9	37.6		33.9	29.2	19.6	41.5	34.0	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.2	0.3	95.5	6.4		8.4	2.3	0.3	2.1	0.2	0.1
Delay (s)	45.6	30.5	29.7	143.4	44.1		42.3	31.5	19.9	43.6	34.2	23.4
Level of Service	D	C	C	F	D		D	C	B	D	C	C
Approach Delay (s)		32.5			76.4			31.6			36.0	
Approach LOS		C			E			C			D	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 32: SR-56 EB Ramps & Carmel Creek Road

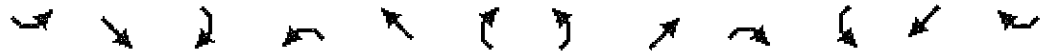
Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	935	0	221	0	0	0	0	654	213	358	253	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		
Lane Util. Factor	0.95	0.95	1.00					0.95		0.97	0.95		
Frt	1.00	1.00	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1681	1681	1583					3409		3433	3539		
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00		
Satd. Flow (perm)	1681	1681	1583					3409		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	
Adj. Flow (vph)	1039	0	246	0	0	0	0	727	237	398	281	0	
RTOR Reduction (vph)	0	0	152	0	0	0	0	29	0	0	0	0	
Lane Group Flow (vph)	519	520	94	0	0	0	0	935	0	398	281	0	
Turn Type	Split		Perm							Prot			
Protected Phases	4	4						2		1	6		
Permitted Phases			4										
Actuated Green, G (s)	37.3	37.3	37.3					33.2		15.4	52.6		
Effective Green, g (s)	37.3	37.3	37.3					33.2		15.4	52.6		
Actuated g/C Ratio	0.38	0.38	0.38					0.34		0.16	0.54		
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	640	640	603					1156		540	1901		
v/s Ratio Prot	0.31	0.31						0.27		0.12	0.08		
v/s Ratio Perm			0.06										
v/c Ratio	0.81	0.81	0.16					0.81		0.74	0.15		
Uniform Delay, d1	27.1	27.2	19.9					29.5		39.3	11.4		
Progression Factor	1.00	1.00	1.00					1.00		1.00	1.00		
Incremental Delay, d2	7.7	7.8	0.1					4.3		5.2	0.0		
Delay (s)	34.8	34.9	20.1					33.7		44.5	11.4		
Level of Service	C	C	C					C		D	B		
Approach Delay (s)		32.0			0.0			33.7			30.8		
Approach LOS		C			A			C			C		
Intersection Summary													
HCM Average Control Delay			32.3									HCM Level of Service	C
HCM Volume to Capacity ratio			0.80										
Actuated Cycle Length (s)			97.9									Sum of lost time (s)	12.0
Intersection Capacity Utilization			71.0%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

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

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	131	461	42	94	411	412	51	132	107	237	54	67
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	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	0.93		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3495		1770	3273		1770	1738		3433	1708	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3495		1770	3273		1770	1738		3433	1708	
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)	146	512	47	104	457	458	57	147	119	263	60	74
RTOR Reduction (vph)	0	7	0	0	189	0	0	33	0	0	48	0
Lane Group Flow (vph)	146	552	0	104	726	0	57	233	0	263	86	0
Turn Type	Prot		Prot		Prot		Prot		Prot		Prot	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	10.3	27.7		8.0	24.4		4.6	18.3		9.7	23.4	
Effective Green, g (s)	10.3	27.7		8.0	24.4		4.6	18.3		9.7	23.4	
Actuated g/C Ratio	0.13	0.34		0.10	0.30		0.06	0.22		0.12	0.29	
Clearance Time (s)	5.0	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)	223	1185		173	977		100	389		408	489	
v/s Ratio Prot	c0.08	c0.16		0.06	c0.22		0.03	c0.13		c0.08	0.05	
v/s Ratio Perm												
v/c Ratio	0.65	0.47		0.60	0.74		0.57	0.60		0.64	0.18	
Uniform Delay, d1	34.0	21.2		35.3	25.8		37.6	28.4		34.4	21.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.7	0.3		5.8	3.1		7.3	2.5		3.5	0.2	
Delay (s)	40.8	21.5		41.1	28.9		44.9	30.9		37.8	22.1	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		25.5			30.2			33.3			32.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	24.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c	Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 34: SR-56 WB Ramps & Carmel Country Rd.

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	WB	WBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations			↑↑	↑↑	↑↑		↑	↑↑	↑
Volume (vph)	0	0	277	508	640	0	196	151	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	5.0	4.0		4.0	4.0	4.0
Lane Util. Factor			0.97	0.95	0.95		1.00	0.97	1.00
Frt			1.00	1.00	1.00		0.85	1.00	0.85
Flt Protected			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)			3433	3539	3539		1583	3433	1583
Flt Permitted			0.95	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)			3433	3539	3539		1583	3433	1583
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	308	564	711	0	218	168	289
RTOR Reduction (vph)	0	0	0	0	0	0	135	0	239
Lane Group Flow (vph)	0	0	308	564	711	0	83	168	50
Turn Type			Prot				Perm		Perm
Protected Phases			5	2	6			4	
Permitted Phases							6		4
Actuated Green, G (s)			10.5	32.6	19.1		19.1	8.7	8.7
Effective Green, g (s)			10.5	32.6	19.1		19.1	8.7	8.7
Actuated g/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)			717	2294	1344		601	594	274
v/s Ratio Prot			c0.09	0.16	c0.20			c0.05	
v/s Ratio Perm							0.05		0.03
v/c Ratio			0.43	0.25	0.53		0.14	0.28	0.18
Uniform Delay, d1			17.3	3.7	12.1		10.2	18.1	17.8
Progression Factor			1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2			0.4	0.1	0.4		0.1	0.3	0.3
Delay (s)			17.7	3.8	12.5		10.3	18.3	18.1
Level of Service			B	A	B		B	B	B
Approach Delay (s)	0.0			8.7	12.0			18.2	
Approach LOS	A			A	B			B	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 35: SR-56 EB Ramps & Carmel Country Rd.

Near Term + Project (Phase 1) PM
 7/11/2013



Movement	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations											
Volume (vph)	411	0	248	279	386	0	0	413	263	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		
Lane Util. Factor	0.95	0.95	1.00	0.97	0.95			0.95	1.00		
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		
Flt Protected	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (prot)	1681	1681	1583	3433	3539			3539	1583		
Flt Permitted	0.95	0.95	1.00	0.95	1.00			1.00	1.00		
Satd. Flow (perm)	1681	1681	1583	3433	3539			3539	1583		
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)	457	0	276	310	429	0	0	459	292	0	0
RTOR Reduction (vph)	0	0	195	0	0	0	0	0	211	0	0
Lane Group Flow (vph)	228	229	81	310	429	0	0	459	81	0	0
Turn Type	Split		Perm	Prot					Perm		
Protected Phases	4	4		1	6			2			
Permitted Phases			4						2		
Actuated Green, G (s)	15.8	15.8	15.8	10.9	29.8			14.9	14.9		
Effective Green, g (s)	15.8	15.8	15.8	10.9	29.8			14.9	14.9		
Actuated g/C Ratio	0.29	0.29	0.29	0.20	0.56			0.28	0.28		
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)	496	496	467	698	1968			984	440		
v/s Ratio Prot	0.14	c0.14		c0.09	0.12			c0.13			
v/s Ratio Perm			0.05						0.05		
v/c Ratio	0.46	0.46	0.17	0.44	0.22			0.47	0.18		
Uniform Delay, d1	15.4	15.4	14.1	18.7	6.0			16.1	14.7		
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		
Incremental Delay, d2	0.7	0.7	0.2	0.5	0.1			0.4	0.2		
Delay (s)	16.1	16.1	14.2	19.1	6.1			16.4	14.9		
Level of Service	B	B	B	B	A			B	B		
Approach Delay (s)		15.4			11.6			15.8		0.0	
Approach LOS		B			B			B		A	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

ALL-WAY STOP CONTROL ANALYSIS								
General Information				Site Information				
Analyst	Jacob Swim			Intersection	Carmel Creek Rd./Del Mar Trail			
Agency/Co.	USAI			Jurisdiction	City of San Diego			
Date Performed	7/9/2013			Analysis Year	2015			
Analysis Time Period	36 Near Term + Proj Ph. 1 PM							
Project ID 002407 - San Diego Corporate Center Lots								
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	57	12	10		
%Thrus Left Lane								
Approach	Northbound				Southbound			
Movement	L	T	R	L	T	R		
Volume (veh/h)	12	773	103	15	433	10		
%Thrus Left Lane	50			50				
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LT	TR	LT	TR
PHF	0.90		0.90		0.90	0.90	0.90	0.90
Flow Rate (veh/h)	14		87		441	544	256	252
% Heavy Vehicles	2		2		2	2	2	2
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							
Saturation Headway Adjustment Worksheet								
Prop. Left-Turns	0.4		0.7		0.0	0.0	0.1	0.0
Prop. Right-Turns	0.3		0.1		0.0	0.2	0.0	0.0
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	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								
hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.01		0.08		0.39	0.48	0.23	0.22
hd, final value (s)	6.75		6.63		5.53	5.36	6.09	6.02
x, final value	0.03		0.16		0.68	0.81	0.43	0.42
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t _s (s)	4.7		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		337		646	668	506	502
Delay (s/veh)	9.93		10.89		19.01	26.88	13.35	13.04
LOS	A		B		C	D	B	B
Approach: Delay (s/veh)	9.93		10.89		23.36		13.20	
LOS	A		B		C		B	
Intersection Delay (s/veh)	19.32							
Intersection LOS	C							

Appendix C

**Existing
Existing + Project (Phase 1&2)
Existing + Project (Build-out)
Synchro Worksheets**

ONE PASEO – Updated Traffic Analysis for Revised Project

January 7, 2014

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

Existing AM
7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑			↑	↗	↖	↔	
Volume (vph)	93	830	23	82	850	191	68	56	58	420	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5064		1770	3442			1813	1583	1681	1637	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5064		1770	3442			1813	1583	1681	1637	
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)	103	922	26	91	944	212	76	62	64	467	24	91
RTOR Reduction (vph)	0	2	0	0	12	0	0	0	55	0	12	0
Lane Group Flow (vph)	103	946	0	91	1144	0	0	138	9	294	276	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	10.9	60.0		11.3	60.2			20.2	20.2	28.8	28.8	
Effective Green, g (s)	10.9	60.0		11.3	60.2			20.2	20.2	28.8	28.8	
Actuated g/C Ratio	0.08	0.43		0.08	0.43			0.14	0.14	0.21	0.21	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle-Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	138	2170		143	1480			262	228	346	337	
v/s Ratio Prot	c0.06	0.19		0.05	c0.33			c0.08		c0.17	0.17	
v/s Ratio Perm									0.01			
v/c Ratio	0.75	0.44		0.64	0.77			0.53	0.04	0.85	0.82	
Uniform Delay, d1	63.2	28.1		62.4	34.1			55.5	51.6	53.5	53.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.3	0.6		6.6	2.7			0.9	0.0	17.4	14.3	
Delay (s)	80.5	28.8		69.0	36.8			56.4	51.6	70.9	67.4	
Level of Service	F	C		E	D			E	D	E	E	
Approach Delay (s)		33.8			39.1			54.8			69.2	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
7: Del Mar Heights Road & Portofino Drive

Existing AM
7/16/2013



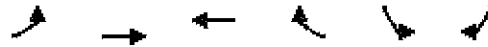
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1321	53	0	1327	0	107
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1468	59	0	1474	0	119
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	575			607		
pX, platoon unblocked				0.88	0.90	0.88
vC, conflicting volume				1527	2234	519
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				1103	1317	0
tC, single (s)				4.1	6.8	6.9
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	87
cM capacity (veh/h)				550	134	949

Direction Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	587	587	352	737	737	119
Volume Left	0	0	0	0	0	0
Volume Right	0	0	59	0	0	119
cSH	1700	1700	1700	1700	1700	949
Volume to Capacity	0.35	0.35	0.21	0.43	0.43	0.13
Queue Length 95th (ft)	0	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.3
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.3
Approach LOS						A

Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	40.0%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Existing AM
 7/16/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	↑
Volume (vph)	0	659	991	0	849	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		0.99	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3429	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3429	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	732	1101	0	943	362
RTOR Reduction (vph)	0	0	0	0	3	44
Lane Group Flow (vph)	0	732	1101	0	976	282
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		41.1	41.1		25.1	25.1
Effective Green, g (s)		41.1	41.1		25.1	25.1
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1862	1862		1102	463
v/s Ratio Prot		0.21	c0.31		c0.28	
v/s Ratio Perm						0.20
v/c Ratio		0.39	0.59		0.89	0.61
Uniform Delay, d1		11.1	12.7		25.1	22.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.5		8.7	2.3
Delay (s)		11.2	13.2		33.9	24.6
Level of Service		B	B		C	C
Approach Delay (s)		11.2	13.2		31.5	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	78.1	Sum of lost time (s)	11.9
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Existing AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑			↑↑↑	↑	↔	↕	↑			
Volume (vph)	224	1264	0	0	1411	886	373	0	763	0	0	0
Ideal Flow (yphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1458	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1458	1504			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	238	1345	0	0	1501	943	397	0	812	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	447	0	32	32	0	0	0
Lane Group Flow (vph)	238	1345	0	0	1501	496	357	398	390	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	11.2	71.0			54.6	54.6	37.1	37.1	37.1			
Effective Green, g (s)	11.2	71.0			54.6	54.6	37.1	37.1	37.1			
Actuated g/C Ratio	0.09	0.59			0.46	0.46	0.31	0.31	0.31			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	320	2094			2314	720	520	451	465			
v/s Ratio Prot	0.07	c0.38			0.30	c0.31	0.21	c0.27	0.26			
v/s Ratio Perm												
v/c Ratio	0.74	0.64			0.65	0.69	0.69	0.88	0.84			
Uniform Delay, d1	53.0	16.1			25.3	25.9	36.4	39.4	38.6			
Progression Factor	1.00	1.00			0.50	2.65	1.00	1.00	1.00			
Incremental Delay, d2	9.0	1.5			0.8	3.1	3.8	17.9	12.4			
Delay (s)	62.0	17.7			13.5	71.8	40.1	57.3	51.1			
Level of Service	E	B			B	E	D	E	D			
Approach Delay (s)		24.3			36.0			50.0			0.0	
Approach LOS		C			D			D			A	

Intersection Summary			
HCM Average Control Delay	35.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Existing AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑		↖	↑↑		↖	↑	↗
Volume (vph)	108	1179	674	92	1789	59	195	10	13	79	57	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5061		3433	3242		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5061		3433	3242		1770	1863	1583
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)	120	1310	749	102	1988	66	217	11	14	88	63	337
RTOR Reduction (vph)	0	0	298	0	2	0	0	12	0	0	0	24
Lane Group Flow (vph)	120	1310	451	102	2052	0	217	13	0	88	63	313
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	14.3	59.0	71.1	9.9	55.0		12.1	17.8		13.6	19.3	33.6
Effective Green, g (s)	14.3	59.0	71.1	9.9	55.0		12.1	17.8		13.6	19.3	33.6
Actuated g/C Ratio	0.12	0.49	0.59	0.08	0.46		0.10	0.15		0.11	0.16	0.28
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	211	2500	938	146	2320		346	481		201	300	443
v/s Ratio Prot	0.07	c0.26	0.05	0.06	c0.41		c0.06	0.00		0.05	0.03	c0.08
v/s Ratio Perm			0.24									0.11
v/c Ratio	0.57	0.52	0.48	0.70	0.88		0.63	0.03		0.44	0.21	0.71
Uniform Delay, d1	49.9	20.9	13.9	53.6	29.6		51.8	43.7		49.6	43.7	38.8
Progression Factor	1.07	0.77	0.64	1.02	0.91		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.6	0.1	9.8	4.8		2.6	0.0		0.6	0.1	4.2
Delay (s)	54.8	16.7	9.1	64.6	31.8		54.3	43.7		50.2	43.9	42.9
Level of Service	D	B	A	E	C		D	D		D	D	D
Approach Delay (s)		16.2			33.3			53.2			44.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔	↔	↔	↔	
Volume (vph)	214	867	195	188	1340	92	206	99	76	159	287	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4945		3433	5036		3433	5085	1583	3433	4639	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4945		3433	5036		3433	5085	1583	3433	4639	
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)	238	963	217	209	1489	102	229	110	84	177	319	450
RTOR Reduction (vph)	0	26	0	0	6	0	0	0	64	0	139	0
Lane Group Flow (vph)	238	1154	0	209	1585	0	229	110	20	177	630	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	11.9	52.9		10.9	52.1		11.8	28.1	28.1	7.6	23.1	
Effective Green, g (s)	11.9	52.9		10.9	52.1		11.8	28.1	28.1	7.6	23.1	
Actuated g/C Ratio	0.10	0.44		0.09	0.43		0.10	0.23	0.23	0.06	0.19	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	340	2180		312	2186		338	1191	371	217	893	
v/s Ratio Prot	c0.07	0.23		0.06	c0.31		c0.07	c0.02		0.05	c0.14	
v/s Ratio Perm									0.01			
v/c Ratio	0.70	0.53		0.67	0.73		0.68	0.09	0.05	0.82	1.01dr	
Uniform Delay, d1	52.3	24.5		52.8	28.0		52.3	36.0	35.6	55.5	45.3	
Progression Factor	0.88	0.64		1.29	0.82		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	0.8		3.9	2.0		4.2	0.0	0.1	19.5	2.6	
Delay (s)	50.8	16.6		71.9	24.9		56.5	36.0	35.7	75.1	47.9	
Level of Service	D	B		E	C		E	D	D	E	D	
Approach Delay (s)		22.3			30.3			47.0			53.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔			↔↔			↔↔			↔	↔	
Volume (vph)	138	591	267	272	1108	169	336	183	108	142	180	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.94		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4848		3433	4984		3433	4802		1770	3333	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4848		3433	4984		3433	4802		1770	3333	
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)	153	657	297	302	1231	188	373	203	120	158	200	127
RTOR Reduction (vph)	0	55	0	0	14	0	0	100	0	0	100	0
Lane Group Flow (vph)	153	899	0	302	1405	0	373	223	0	158	227	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	8.9	52.5		14.0	57.4		15.7	19.9		13.8	18.5	
Effective Green, g (s)	8.9	52.5		14.0	57.4		15.7	19.9		13.8	18.5	
Actuated g/C Ratio	0.07	0.44		0.12	0.48		0.13	0.17		0.12	0.15	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	255	2121		401	2384		449	796		204	514	
v/s Ratio Prot	0.04	0.19		c0.09	c0.28		c0.11	0.05		0.09	c0.07	
v/s Ratio Perm												
v/c Ratio	0.60	0.42		0.75	0.59		0.83	0.28		0.77	0.44	
Uniform Delay, d1	53.8	23.3		51.3	22.7		50.9	43.8		51.6	46.1	
Progression Factor	1.12	1.01		1.07	0.67		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.6		6.5	1.0		11.8	0.3		15.3	1.6	
Delay (s)	63.0	24.1		61.6	16.1		62.7	44.0		66.9	47.7	
Level of Service	E	C		E	B		E	D		E	D	
Approach Delay (s)	29.5			24.1			54.0			53.9		
Approach LOS	C			C			D			D		

Intersection Summary			
HCM Average Control Delay	34.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	206	619	112	79	993	210	77	151	11	54	60	125
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4969		1770	4952		1770	1844		1770	1674	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4969		1770	4952		1770	1844		1770	1674	
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)	229	688	124	88	1103	233	86	168	12	60	67	139
RTOR Reduction (vph)	0	16	0	0	21	0	0	3	0	0	70	0
Lane Group Flow (vph)	229	796	0	88	1315	0	86	177	0	60	136	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	18.9	66.7		9.9	57.0		8.6	19.0		5.7	16.1	
Effective Green, g (s)	18.9	66.7		9.9	57.0		8.6	19.0		5.7	16.1	
Actuated g/C Ratio	0.16	0.56		0.08	0.48		0.07	0.16		0.05	0.13	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	279	2762		146	2352		127	292		84	225	
v/s Ratio Prot	c0.13	0.16		0.05	c0.27		c0.05	c0.10		0.03	0.08	
v/s Ratio Perm												
v/c Ratio	0.82	0.29		0.60	0.56		0.68	0.61		0.71	0.60	
Uniform Delay, d1	48.9	14.1		53.2	22.5		54.3	47.0		56.3	48.9	
Progression Factor	0.85	1.38		1.01	0.82		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.6	0.2		4.1	0.8		10.7	2.4		21.2	3.1	
Delay (s)	57.3	19.7		57.6	19.4		65.0	49.5		77.5	52.1	
Level of Service	E	B		E	B		E	D		E	D	
Approach Delay (s)		28.0			21.8			54.5			57.8	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	145	546	34	65	1068	35	43	25	53	48	58	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5040		1770	5061		1770	1673		1770	1626	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5040		1770	5061		1770	1673		1770	1626	
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)	161	607	38	72	1187	39	48	28	59	53	64	351
RTOR Reduction (vph)	0	4	0	0	2	0	0	49	0	0	192	0
Lane Group Flow (vph)	161	641	0	72	1224	0	48	38	0	53	223	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.0	66.0		7.8	58.8		6.3	20.5		6.6	20.6	
Effective Green, g (s)	15.0	66.0		7.8	58.8		6.3	20.5		6.6	20.6	
Actuated g/C Ratio	0.12	0.55		0.06	0.49		0.05	0.17		0.06	0.17	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	221	2772		115	2480		93	286		97	279	
v/s Ratio Prot	c0.09	0.13		0.04	c0.24		0.03	0.02		c0.03	c0.14	
v/s Ratio Perm												
v/c Ratio	0.73	0.23		0.63	0.49		0.52	0.13		0.55	0.80	
Uniform Delay, d1	50.5	13.9		54.7	20.6		55.4	42.2		55.2	47.7	
Progression Factor	1.41	0.33		0.85	1.18		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.5	0.2		7.3	0.7		2.0	0.1		3.3	13.8	
Delay (s)	80.8	4.8		53.9	24.9		57.4	42.3		58.6	61.5	
Level of Service	F	A		D	C		E	D		E	E	
Approach Delay (s)		20.0			26.5			47.7			61.2	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing AM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↑	↑↑↑	↑↑	↑
Volume (vph)	543	119	385	967	249	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4948		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4948		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	603	132	428	1074	277	369
RTOR Reduction (vph)	22	0	0	0	0	42
Lane Group Flow (vph)	713	0	428	1074	277	327
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	54.2		32.3	91.6	17.5	49.8
Effective Green, g (s)	54.2		32.3	91.6	17.5	49.8
Actuated g/C Ratio	0.45		0.27	0.76	0.15	0.42
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	2235		476	3882	501	657
v/s Ratio Prot	0.14		0.24	0.21	0.08	0.13
v/s Ratio Perm						0.07
v/c Ratio	0.32		0.90	0.28	0.55	0.50
Uniform Delay, d1	21.1		42.3	4.3	47.6	25.9
Progression Factor	1.46		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		19.0	0.2	0.8	0.2
Delay (s)	31.2		61.3	4.4	48.4	26.1
Level of Service	C		E	A	D	C
Approach Delay (s)	31.2			20.6	35.7	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing PM
7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑		↙	↑↑			↑	↑	↙	↕	
Volume (vph)	124	817	16	110	874	178	40	31	40	372	35	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (prot)	1770	5071		1770	3450			1812	1583	1681	1608	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (perm)	1770	5071		1770	3450			1812	1583	1681	1608	
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)	135	888	17	120	950	193	43	34	43	404	38	141
RTOR Reduction (vph)	0	1	0	0	12	0	0	0	39	0	31	0
Lane Group Flow (vph)	135	904	0	120	1131	0	0	77	4	299	253	0
Turn Type	Prot		Prot		Split		Perm		Split			
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases							3					
Actuated Green, G (s)	19.7	44.3		17.4	41.8			12.1	12.1	26.5	26.5	
Effective Green, g (s)	19.7	44.3		17.4	41.8			12.1	12.1	26.5	26.5	
Actuated g/C Ratio	0.16	0.37		0.14	0.35			0.10	0.10	0.22	0.22	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	291	1872		257	1202			183	160	371	355	
v/s Ratio Prot	c0.08	0.18		0.07	c0.33			c0.04		c0.18	0.16	
v/s Ratio Perm							0.00					
v/c Ratio	0.46	0.48		0.47	0.94			0.42	0.03	0.81	0.71	
Uniform Delay, d1	45.4	29.1		47.0	37.9			50.7	48.6	44.3	43.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.9		0.5	14.2			0.6	0.0	12.0	6.6	
Delay (s)	45.8	29.9		47.5	52.1			51.2	48.7	56.4	49.8	
Level of Service	D	C		D	D			D	D	E	D	
Approach Delay (s)	32.0		51.7		50.3		53.2					
Approach LOS	C		D		D		D					

Intersection Summary			
HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

Existing PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1183	62	0	1401	0	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1314	69	0	1557	0	84
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	575		607			
pX, platoon unblocked			0.87		0.84	0.87
vC, conflicting volume			1383		2127	473
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			897		1006	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	91
cM capacity (veh/h)			651		200	938
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	526	526	332	778	778	84
Volume Left	0	0	0	0	0	0
Volume Right	0	0	69	0	0	84
cSH	1700	1700	1700	1700	1700	938
Volume to Capacity	0.31	0.31	0.20	0.46	0.46	0.09
Queue Length 95th (ft)	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.2
Lane LOS						A
Approach Delay (s)	0.0		0.0		9.2	
Approach LOS						A
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			42.1%		ICU Level of Service A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Existing PM
 7/16/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	↑
Volume (vph)	0	875	1133	0	849	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3430	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3430	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	972	1259	0	943	322
RTOR Reduction (vph)	0	0	0	0	3	29
Lane Group Flow (vph)	0	972	1259	0	972	261
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		41.9	41.9		25.1	25.1
Effective Green, g (s)		41.9	41.9		25.1	25.1
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1879	1879		1091	458
v/s Ratio Prot		0.27	0.36		0.28	
v/s Ratio Perm						0.18
v/c Ratio		0.52	0.67		0.89	0.57
Uniform Delay, d1		12.0	13.5		25.6	22.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	1.0		9.3	1.6
Delay (s)		12.2	14.4		34.9	24.0
Level of Service		B	B		C	C
Approach Delay (s)		12.2	14.4		32.4	
Approach LOS		B	B		C	
Intersection Summary						
HCM Average Control Delay			20.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			78.9		Sum of lost time (s)	11.9
Intersection Capacity Utilization			96.0%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Existing PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕			↖↗↕	↖	↗	↕	↖			
Volume (vph)	235	1463	0	0	1017	796	615	10	749	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	15	12	12	13	12	12	12
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			*0.91	1.00	0.95	0.91	0.95			
Friction	1.00	1.00			1.00	0.85	1.00	0.90	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			5085	1742	1681	1500	1554			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			5085	1742	1681	1500	1554			
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)	247	1540	0	0	1071	838	647	11	788	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	470	0	15	15	0	0	0
Lane Group Flow (vph)	247	1540	0	0	1071	368	505	461	450	0	0	0
Turn Type	Prot					Perm	Split		Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases						6						
Actuated Green, G (s)	8.6	66.5			52.7	52.7	41.6	41.6	41.6			
Effective Green, g (s)	8.6	66.5			52.7	52.7	41.6	41.6	41.6			
Actuated g/C Ratio	0.07	0.55			0.44	0.44	0.35	0.35	0.35			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	246	1961			2233	765	583	520	539			
v/s Ratio Prot	0.07	c0.44			0.21		0.30	c0.31	0.29			
v/s Ratio Perm						0.21						
v/c Ratio	1.00	0.79			0.48	0.48	0.87	0.89	0.83			
Uniform Delay, d1	55.7	21.1			23.9	23.9	36.6	37.0	36.0			
Progression Factor	1.00	1.00			0.47	3.83	1.00	1.00	1.00			
Incremental Delay, d2	58.4	3.2			0.2	0.5	12.8	16.5	10.7			
Delay (s)	114.1	24.4			11.5	92.1	49.4	53.5	46.8			
Level of Service	F	C			B	F	D	D	D			
Approach Delay (s)		36.8			46.9			49.9			0.0	
Approach LOS		D			D			D			A	

Intersection Summary			
HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Existing PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑		↖↗	↑↗		↖	↑	↗
Volume (vph)	242	1984	251	15	1140	28	618	65	134	27	29	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5067		3433	3181		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5067		3433	3181		1770	1863	1583
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)	269	2204	279	17	1267	31	687	72	149	30	32	89
RTOR Reduction (vph)	0	0	70	0	2	0	0	115	0	0	0	2
Lane Group Flow (vph)	269	2204	209	17	1296	0	687	106	0	30	32	87
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	27.2	67.5	82.1	1.6	42.3		14.6	27.4		3.8	16.6	43.8
Effective Green, g (s)	27.2	67.5	82.1	1.6	42.3		14.6	27.4		3.8	16.6	43.8
Actuated g/C Ratio	0.23	0.56	0.68	0.01	0.35		0.12	0.23		0.03	0.14	0.36
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	401	2860	1083	24	1786		418	726		56	258	578
v/s Ratio Prot	c0.15	c0.43	0.02	0.01	0.26		c0.20	c0.03		0.02	0.02	0.03
v/s Ratio Perm			0.11									0.02
v/c Ratio	0.67	0.77	0.19	0.71	0.73		1.64	0.15		0.54	0.12	0.15
Uniform Delay, d1	42.3	20.3	6.9	59.0	33.8		52.7	37.0		57.2	45.3	25.6
Progression Factor	1.01	1.04	0.74	1.16	1.29		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.5	1.5	0.0	54.2	2.5		300.2	0.0		4.9	0.1	0.0
Delay (s)	45.3	22.6	5.2	122.3	46.1		352.9	37.0		62.1	45.4	25.6
Level of Service	D	C	A	F	D		F	D		E	D	C
Approach Delay (s)		23.1			47.1			276.0			37.1	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM Average Control Delay	74.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.8
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	439	1351	344	102	741	176	257	394	238	147	146	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4931		3433	4939		3433	5085	1583	3433	4653	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4931		3433	4939		3433	5085	1583	3433	4653	
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)	488	1501	382	113	823	196	286	438	264	163	162	212
RTOR Reduction (vph)	0	29	0	0	28	0	0	0	90	0	185	0
Lane Group Flow (vph)	488	1854	0	113	991	0	286	438	174	163	189	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	21.7	63.4		7.5	49.4		12.5	22.2	22.2	6.4	15.3	
Effective Green, g (s)	21.7	63.4		7.5	49.4		12.5	22.2	22.2	6.4	15.3	
Actuated g/C Ratio	0.18	0.53		0.06	0.41		0.10	0.18	0.18	0.05	0.13	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	621	2605		215	2033		358	941	293	183	593	
v/s Ratio Prot	c0.14	c0.38		0.03	0.20		c0.08	0.09		0.05	0.04	
v/s Ratio Perm									c0.11			
v/c Ratio	0.79	0.71		0.53	0.49		0.80	0.47	0.59	0.89	0.32	
Uniform Delay, d1	46.9	21.4		54.5	26.0		52.5	43.6	44.8	56.5	47.6	
Progression Factor	1.16	0.37		1.18	0.86		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	1.0		1.0	0.8		11.0	0.5	3.6	36.8	0.3	
Delay (s)	58.1	8.8		65.3	23.3		63.6	44.1	48.3	93.2	48.0	
Level of Service	E	A		E	C		E	D	D	F	D	
Approach Delay (s)		19.0			27.5			50.9			61.7	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	31.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔			↔↔			↔↔			↔	↔↔	
Volume (vph)	83	1069	445	80	529	72	314	167	145	78	124	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.93		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4861		3433	4994		3433	4731		1770	3305	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4861		3433	4994		3433	4731		1770	3305	
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)	92	1188	494	89	588	80	349	186	161	87	138	109
RTOR Reduction (vph)	0	48	0	0	11	0	0	133	0	0	94	0
Lane Group Flow (vph)	92	1634	0	89	657	0	349	214	0	87	153	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.1	62.6		6.6	61.9		14.8	21.1		9.9	16.7	
Effective Green, g (s)	7.1	62.6		6.6	61.9		14.8	21.1		9.9	16.7	
Actuated g/C Ratio	0.06	0.52		0.06	0.52		0.12	0.18		0.08	0.14	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	203	2536		189	2576		423	832		146	460	
v/s Ratio Prot	c0.03	c0.34		0.03	0.13		c0.10	0.05		0.05	c0.05	
v/s Ratio Perm												
v/c Ratio	0.45	0.64		0.47	0.25		0.83	0.26		0.60	0.33	
Uniform Delay, d1	54.6	20.7		55.0	16.2		51.3	42.7		53.1	46.6	
Progression Factor	1.11	0.81		1.15	0.55		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.9		0.7	0.2		11.8	0.2		4.3	1.1	
Delay (s)	61.2	17.7		64.0	9.2		63.1	42.9		57.4	47.8	
Level of Service	E	B		E	A		E	D		E	D	
Approach Delay (s)	19.9			15.6			53.1			50.3		
Approach LOS	B			B			D			D		

Intersection Summary			
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c - Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↑	
Volume (vph)	48	1146	105	8	601	22	36	14	31	27	8	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5021		1770	5059		1770	1673		1770	1643	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5021		1770	5059		1770	1673		1770	1643	
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)	53	1273	117	9	668	24	40	16	34	30	9	33
RTOR Reduction (vph)	0	6	0	0	2	0	0	29	0	0	29	0
Lane Group Flow (vph)	53	1384	0	9	690	0	40	21	0	30	13	0
Turn Type	Prot		Prot		Prot		Prot		Prot		Prot	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.1	78.4		1.3	71.9		6.1	17.2		4.4	15.5	
Effective Green, g (s)	7.1	78.4		1.3	71.9		6.1	17.2		4.4	15.5	
Actuated g/C Ratio	0.06	0.65		0.01	0.60		0.05	0.14		0.04	0.13	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	105	3280		19	3031		90	240		65	212	
v/s Ratio Prot	c0.03	c0.28		0.01	0.14		c0.02	c0.01		0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.50	0.42		0.47	0.23		0.44	0.09		0.46	0.06	
Uniform Delay, d1	54.7	10.0		59.0	11.2		55.3	44.6		56.6	45.9	
Progression Factor	0.81	1.47		1.08	0.61		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.3		6.5	0.2		1.3	0.1		1.9	0.0	
Delay (s)	45.3	14.9		70.0	7.0		56.6	44.6		58.5	45.9	
Level of Service	D	B		E	A		E	D		E	D	
Approach Delay (s)		16.0			7.8			49.9			51.2	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing PM
 7/16/2013

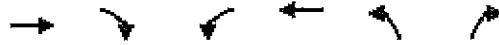


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↑	
Volume (vph)	237	901	63	21	439	24	39	45	34	23	32	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5035		1770	5045		1770	1742		1770	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5035		1770	5045		1770	1742		1770	1631	
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)	263	1001	70	23	488	27	43	50	38	26	36	177
RTOR Reduction (vph)	0	5	0	0	4	0	0	27	0	0	151	0
Lane Group Flow (vph)	263	1066	0	23	511	0	43	61	0	26	62	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	21.3	74.9		3.5	57.1		4.5	19.7		2.8	17.8	
Effective Green, g (s)	21.3	74.9		3.5	57.1		4.5	19.7		2.8	17.8	
Actuated g/C Ratio	0.18	0.62		0.03	0.48		0.04	0.16		0.02	0.15	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	314	3143		52	2401		66	286		41	242	
v/s Ratio Prot	c0.15	c0.21		0.01	0.10		c0.02	0.04		0.01	c0.04	
v/s Ratio Perm												
v/c Ratio	0.84	0.34		0.44	0.21		0.65	0.21		0.63	0.26	
Uniform Delay, d1	47.7	10.8		57.3	18.3		57.0	43.4		58.1	45.2	
Progression Factor	1.44	0.67		1.30	1.01		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.9	0.3		2.2	0.2		16.2	0.1		21.2	0.2	
Delay (s)	84.5	7.5		76.6	18.8		73.2	43.6		79.3	45.5	
Level of Service	F	A		E	B		E	D		E	D	
Approach Delay (s)		22.7			21.2			53.3			49.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.9
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↑	↑↑↑	↑↑	↑
Volume (vph)	787	155	89	399	101	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4960		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4960		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	874	172	99	443	112	276
RTOR Reduction (vph)	16	0	0	0	0	46
Lane Group Flow (vph)	1030	0	99	443	112	230
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	74.4		11.3	90.8	18.3	29.6
Effective Green, g (s)	74.4		11.3	90.8	18.3	29.6
Actuated g/C Ratio	0.62		0.09	0.76	0.15	0.25
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	3075		167	3848	524	390
v/s Ratio Prot	0.21		0.06	0.09	0.03	0.06
v/s Ratio Perm						0.09
v/c Ratio	0.34		0.59	0.12	0.21	0.59
Uniform Delay, d1	10.9		52.1	3.9	44.5	39.8
Progression Factor	1.83		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		3.7	0.1	0.1	1.5
Delay (s)	20.3		55.9	4.0	44.6	41.3
Level of Service	C		E	A	D	D
Approach Delay (s)	20.3			13.4	42.3	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1&2) AM

7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↖	↖↗	↖	↖↗	
Volume (vph)	93	850	23	88	856	197	68	56	78	440	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5065		1770	3440			1813	1583	1681	1638	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5065		1770	3440			1813	1583	1681	1638	
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)	103	944	26	98	951	219	76	62	87	489	24	91
RTOR Reduction (vph)	0	2	0	0	12	0	0	0	74	0	12	0
Lane Group Flow (vph)	103	968	0	98	1158	0	0	138	13	308	284	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	10.9	58.8		11.7	59.4			20.2	20.2	29.6	29.6	
Effective Green, g (s)	10.9	58.8		11.7	59.4			20.2	20.2	29.6	29.6	
Actuated g/C Ratio	0.08	0.42		0.08	0.42			0.14	0.14	0.21	0.21	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	138	2127		148	1460			262	228	355	346	
v/s Ratio Prot	c0.06	0.19		0.06	c0.34			c0.08		c0.18	0.17	
v/s Ratio Perm									0.01			
v/c Ratio	0.75	0.46		0.66	0.79			0.53	0.06	0.87	0.82	
Uniform Delay, d1	63.2	29.1		62.2	35.0			55.5	51.7	53.3	52.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.3	0.7		8.3	3.2			0.9	0.0	19.4	14.4	
Delay (s)	80.5	29.8		70.6	38.1			56.4	51.7	72.7	67.1	
Level of Service	F	C		E	D			E	D	E	E	
Approach Delay (s)		34.7			40.6			54.6			70.0	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	45.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
7: Del Mar Heights Road & Portofino Drive

Existing + Project (Phase 1&2) AM
7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1399	53	0	1360	0	133
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1554	59	0	1511	0	148
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	575			607		
pX, platoon unblocked				0.87	0.89	0.87
vC, conflicting volume				1613	2339	548
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				1180	1380	0
tC, single (s)				4.1	6.8	6.9
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	84
cM capacity (veh/h)				511	121	943
Direction Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	622	622	370	756	756	148
Volume Left	0	0	0	0	0	0
Volume Right	0	0	59	0	0	148
cSH	1700	1700	1700	1700	1700	943
Volume to Capacity	0.37	0.37	0.22	0.44	0.44	0.16
Queue Length 95th (ft)	0	0	0	0	0	14
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.5
Approach LOS						A
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	43.1%			ICU Level of Service		A
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
8: Del Mar Heights Road & I-5 SB Ramps

Existing + Project (Phase 1&2) AM
7/16/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑↑	↑
Volume (vph)	0	763	1023	0	927	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Flt		1.00	1.00		0.99	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3430	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3430	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	848	1137	0	1030	362
RTOR Reduction (vph)	0	0	0	0	3	43
Lane Group Flow (vph)	0	848	1137	0	1063	283
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.5	42.5		25.5	25.5
Effective Green, g (s)		42.5	42.5		25.5	25.5
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1882	1882		1095	460
v/s Ratio Prot		0.24	c0.32		c0.31	
v/s Ratio Perm						0.20
v/c Ratio		0.45	0.60		0.97	0.62
Uniform Delay, d1		11.5	12.9		26.8	23.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.6		20.3	2.4
Delay (s)		11.7	13.5		47.1	25.5
Level of Service		B	B		D	C
Approach Delay (s)		11.7	13.5		42.1	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay			24.8		HCM Level of Service	C
HCM Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			79.9		Sum of lost time (s)	11.9
Intersection Capacity Utilization			117.4%		ICU Level of Service	H
Analysis Period (min)			15			
c - Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Existing + Project (Phase 1&2) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖↗			↖↗↖↗	↖↗	↖↗	↕	↖↗			
Volume (vph)	224	1446	0	0	1490	910	373	0	919	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1455	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1455	1504			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	238	1538	0	0	1585	968	397	0	978	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	448	0	13	13	0	0	0
Lane Group Flow (vph)	238	1538	0	0	1585	520	357	496	496	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	9.4	64.6			50.0	50.0	43.5	43.5	43.5			
Effective Green, g (s)	9.4	64.6			50.0	50.0	43.5	43.5	43.5			
Actuated g/C Ratio	0.08	0.54			0.42	0.42	0.36	0.36	0.36			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	269	1905			2119	660	609	527	545			
v/s Ratio Prot	0.07	0.43			0.31	0.33	0.21	0.34	0.33			
v/s Ratio Perm												
v/c Ratio	0.88	0.81			0.75	0.79	0.59	0.94	0.91			
Uniform Delay, d1	54.8	22.6			29.7	30.4	31.0	37.0	36.4			
Progression Factor	1.00	1.00			0.48	2.12	1.00	1.00	1.00			
Incremental Delay, d2	27.2	3.8			1.3	5.0	1.4	25.2	19.0			
Delay (s)	82.0	26.4			15.5	69.5	32.4	62.1	55.4			
Level of Service	F	C			B	E	C	E	E			
Approach Delay (s)		33.9			36.0			51.9			0.0	
Approach LOS		C			D			D			A	

Intersection Summary			
HCM Average Control Delay	39.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
10: Del Mar Heights Road & High Bluff Drive

Existing + Project (Phase 1&2) AM
7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↗	↙	↑↑↑		↙↗	↑↗		↙	↑	↗
Volume (vph)	108	1518	674	100	1891	67	195	10	39	105	57	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.88		1.00	1.00	0.85
Frt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5059		3433	3116		1770	1863	1583
Frt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5059		3433	3116		1770	1863	1583
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)	120	1687	749	111	2101	74	217	11	43	117	63	337
RTOR Reduction (vph)	0	0	285	0	3	0	0	37	0	0	0	29
Lane Group Flow (vph)	120	1687	464	111	2172	0	217	17	0	117	63	308
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	14.1	59.3	71.5	10.5	56.1		12.2	18.0		12.5	18.3	32.4
Effective Green, g (s)	14.1	59.3	71.5	10.5	56.1		12.2	18.0		12.5	18.3	32.4
Actuated g/C Ratio	0.12	0.49	0.60	0.09	0.47		0.10	0.15		0.10	0.15	0.27
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	208	2513	943	155	2365		349	467		184	284	427
v/s Ratio Prot	0.07	c0.33	0.05	0.06	c0.43		0.06	0.01		c0.07	0.03	c0.08
v/s Ratio Perm			0.24									0.11
v/c Ratio	0.58	0.67	0.49	0.72	0.92		0.62	0.04		0.64	0.22	0.72
Uniform Delay, d1	50.1	23.0	13.9	53.3	29.8		51.7	43.6		51.6	44.6	39.7
Progression Factor	1.05	0.94	0.52	1.06	0.92		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.3	0.8	0.1	10.5	6.2		2.5	0.0		5.2	0.1	5.0
Delay (s)	53.7	22.3	7.3	66.9	33.6		54.2	43.6		56.8	44.7	44.7
Level of Service	D	C	A	E	C		D	D		E	D	D
Approach Delay (s)		19.4			35.3			52.1			47.5	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: Del Mar Heights Road & Third Ave.

Existing + Project (Phase 1&2) AM
 7/16/2013

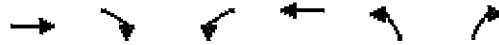


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	1851	156	121	2214	47	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2057	173	134	2460	52	41
RTOR Reduction (vph)	0	35	0	0	0	38
Lane Group Flow (vph)	2057	139	134	2460	52	3
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	84.0	84.0	14.3	101.3	9.7	9.7
Effective Green, g (s)	84.0	84.0	14.3	101.3	9.7	9.7
Actuated g/C Ratio	0.70	0.70	0.12	0.84	0.08	0.08
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3560	1108	211	4293	278	128
v/s Ratio Prot	0.40		c0.08	c0.48	c0.02	
v/s Ratio Perm		0.09				0.00
v/c Ratio	0.58	0.12	0.64	0.57	0.19	0.03
Uniform Delay, d1	9.1	5.9	50.4	2.8	51.5	50.8
Progression Factor	1.51	1.51	1.03	1.76	1.00	1.00
Incremental Delay, d2	0.6	0.2	4.3	0.4	0.3	0.1
Delay (s)	14.3	9.1	56.2	5.4	51.8	50.9
Level of Service	B	A	E	A	D	D
Approach Delay (s)	13.9			8.0	51.4	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Existing + Project (Phase 1&2) AM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	1758	130	130	2295	39	39
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	0.97	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Frt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Frt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1953	144	144	2550	43	43
RTOR Reduction (vph)	0	56	0	0	0	32
Lane Group Flow (vph)	1953	88	144	2550	43	11
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	70.4	70.4	7.9	82.3	29.7	29.7
Effective Green, g (s)	70.4	70.4	7.9	82.3	29.7	29.7
Actuated g/C Ratio	0.59	0.59	0.07	0.69	0.25	0.25
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2983	929	226	3487	438	392
v/s Ratio Prot	0.38	0.06	0.04	c0.50	c0.02	
v/s Ratio Perm						0.01
v/c Ratio	0.65	0.09	0.64	0.73	0.10	0.03
Uniform Delay, d1	16.6	10.9	54.7	11.9	34.8	34.2
Progression Factor	1.71	5.24	0.90	1.03	1.00	1.00
Incremental Delay, d2	0.4	0.0	3.9	0.5	0.4	0.1
Delay (s)	28.8	56.9	53.1	12.7	35.3	34.3
Level of Service	C	E	D	B	D	C
Approach Delay (s)	30.8			14.9	34.8	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c - Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing + Project (Phase 1&2) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↓		↔↔	↑↑↓		↔↔	↑↑↑	↔	↔↔	↑↑↓	
Volume (vph)	225	933	299	240	1540	92	254	104	87	159	304	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4900		3433	5042		3433	5085	1583	3433	4634	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4900		3433	5042		3433	5085	1583	3433	4634	
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)	250	1037	332	267	1711	102	282	116	97	177	338	489
RTOR Reduction (vph)	0	44	0	0	5	0	0	0	73	0	144	0
Lane Group Flow (vph)	250	1325	0	267	1808	0	282	116	24	177	683	0
Turn Type	Prot			Prot			Prot			Perm	Prot	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	8											
Actuated Green, G (s)	12.5	48.9		13.3	49.9		12.2	30.3	30.3	7.0	24.3	
Effective Green, g (s)	12.5	48.9		13.3	49.9		12.2	30.3	30.3	7.0	24.3	
Actuated g/C Ratio	0.10	0.41		0.11	0.42		0.10	0.25	0.25	0.06	0.20	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	358	1997		380	2097		349	1284	400	200	938	
v/s Ratio Prot	0.07	0.27		c0.08	c0.36		c0.08	0.02		0.05	c0.15	
v/s Ratio Perm	0.02											
v/c Ratio	0.70	0.66		0.70	0.86		0.81	0.09	0.06	0.88	1.05dr	
Uniform Delay, d1	51.9	28.9		51.4	31.9		52.8	34.3	34.1	56.1	44.8	
Progression Factor	1.14	0.50		1.26	0.85		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	1.4		4.6	4.8		12.2	0.0	0.1	33.1	2.9	
Delay (s)	62.7	15.7		69.1	31.9		64.9	34.3	34.1	89.2	47.7	
Level of Service	E	B		E	C		E	C	C	F	D	
Approach Delay (s)	23.0			36.7			51.7			55.0		
Approach LOS	C			D			D			D		

Intersection Summary			
HCM Average Control Delay	37.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
dr Defacto Right Lane Recode with 1 though lane as a right lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing + Project (Phase 1&2) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↓		↖↗	↑↑↓		↖↗	↑↑↓		↖	↑↓	
Volume (vph)	149	625	293	272	1221	169	423	183	108	142	180	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4841		3433	4992		3433	4802		1770	3298	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4841		3433	4992		3433	4802		1770	3298	
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)	166	694	326	302	1357	188	470	203	120	158	200	166
RTOR Reduction (vph)	0	59	0	0	12	0	0	98	0	0	119	0
Lane Group Flow (vph)	166	961	0	302	1533	0	470	225	0	158	247	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.3	49.4		14.1	54.0		18.2	22.2		14.5	19.0	
Effective Green, g (s)	9.3	49.4		14.1	54.0		18.2	22.2		14.5	19.0	
Actuated g/C Ratio	0.08	0.41		0.12	0.45		0.15	0.18		0.12	0.16	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	266	1993		403	2246		521	888		214	522	
v/s Ratio Prot	0.05	0.20		c0.09	c0.31		c0.14	c0.05		0.09	c0.07	
v/s Ratio Perm												
v/c Ratio	0.62	0.48		0.75	0.68		0.90	0.25		0.74	0.47	
Uniform Delay, d1	53.7	25.9		51.2	26.2		50.0	41.8		50.9	46.0	
Progression Factor	1.16	1.01		1.07	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	0.8		5.9	1.5		18.4	0.2		10.9	1.8	
Delay (s)	65.5	26.9		60.8	19.4		68.4	42.0		61.8	47.8	
Level of Service	E	C		E	B		E	D		E	D	
Approach Delay (s)		32.3			26.2			57.7			52.0	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing + Project (Phase 1&2) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↑	
Volume (vph)	206	643	123	79	1071	210	112	151	11	54	60	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4962		1770	4960		1770	1844		1770	1674	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4962		1770	4960		1770	1844		1770	1674	
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)	229	714	137	88	1190	233	124	168	12	60	67	139
RTOR Reduction (vph)	0	18	0	0	19	0	0	2	0	0	68	0
Lane Group Flow (vph)	229	833	0	88	1404	0	124	178	0	60	138	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	18.9	63.4		9.9	53.7		12.7	21.3		6.7	15.3	
Effective Green, g (s)	18.9	63.4		9.9	53.7		12.7	21.3		6.7	15.3	
Actuated g/C Ratio	0.16	0.53		0.08	0.45		0.11	0.18		0.06	0.13	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	279	2622		146	2220		187	327		99	213	
v/s Ratio Prot	c0.13	0.17		0.05	c0.28		c0.07	0.10		0.03	c0.08	
v/s Ratio Perm												
v/c Ratio	0.82	0.32		0.60	0.63		0.66	0.54		0.61	0.65	
Uniform Delay, d1	48.9	16.0		53.2	25.5		51.6	44.9		55.4	49.8	
Progression Factor	0.87	1.45		1.01	0.84		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.4	0.3		4.0	1.2		6.7	1.0		7.0	5.0	
Delay (s)	57.9	23.6		57.6	22.7		58.3	45.9		62.4	54.8	
Level of Service	E	C		E	C		E	D		E	D	
Approach Delay (s)		30.9			24.7			51.0			56.5	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing + Project (Phase 1&2) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖↖		↖	↖		↖	↖	
Volume (vph)	156	559	34	65	1111	35	43	25	53	48	58	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Flt	1.00	0.99		1.00	1.00		1.00	0.90		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5041		1770	5062		1770	1673		1770	1623	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5041		1770	5062		1770	1673		1770	1623	
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)	173	621	38	72	1234	39	48	28	59	53	64	390
RTOR Reduction (vph)	0	4	0	0	2	0	0	48	0	0	211	0
Lane Group Flow (vph)	173	655	0	72	1271	0	48	39	0	53	243	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.6	64.7		7.6	56.7		6.7	21.7		6.9	21.7	
Effective Green, g (s)	15.6	64.7		7.6	56.7		6.7	21.7		6.9	21.7	
Actuated g/C Ratio	0.13	0.54		0.06	0.47		0.06	0.18		0.06	0.18	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	230	2718		112	2392		99	303		102	293	
v/s Ratio Prot	c0.10	0.13		0.04	c0.25		0.03	0.02		c0.03	c0.15	
v/s Ratio Perm												
v/c Ratio	0.75	0.24		0.64	0.53		0.48	0.13		0.52	0.83	
Uniform Delay, d1	50.3	14.6		54.9	22.3		55.0	41.2		54.9	47.4	
Progression Factor	1.42	0.29		0.85	1.16		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.3	0.2		8.9	0.8		1.4	0.1		1.9	16.5	
Delay (s)	82.6	4.5		55.6	26.7		56.3	41.3		56.8	63.9	
Level of Service	F	A		E	C		E	D		E	E	
Approach Delay (s)		20.7			28.2			46.6			63.1	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing + Project (Phase 1&2) AM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↑	↑↑↑	↑↑	↑
Volume (vph)	551	124	385	993	266	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4945		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4945		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	612	138	428	1103	296	369
RTOR Reduction (vph)	24	0	0	0	0	39
Lane Group Flow (vph)	726	0	428	1103	296	330
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	53.7		32.3	91.1	18.0	50.3
Effective Green, g (s)	53.7		32.3	91.1	18.0	50.3
Actuated g/C Ratio	0.45		0.27	0.76	0.15	0.42
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	2213		476	3860	515	664
v/s Ratio Prot	c0.15		c0.24	0.22	c0.09	0.13
v/s Ratio Perm						0.07
v/c Ratio	0.33		0.90	0.29	0.57	0.50
Uniform Delay, d1	21.5		42.3	4.4	47.4	25.6
Progression Factor	1.48		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		19.0	0.2	1.0	0.2
Delay (s)	32.3		61.3	4.6	48.4	25.8
Level of Service	C		E	A	D	C
Approach Delay (s)	32.3			20.5	35.8	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Phase 1&2) PM

7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖			↖	↖	↖	↖↖	
Volume (vph)	124	837	16	139	903	207	40	31	60	392	35	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	*0.95		1.00	*0.98			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (prot)	1770	5294		1770	3549			1812	1583	1681	1611	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (perm)	1770	5294		1770	3549			1812	1583	1681	1611	
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)	135	910	17	151	982	225	43	34	65	426	38	141
RTOR Reduction (vph)	0	1	0	0	16	0	0	0	58	0	29	0
Lane Group Flow (vph)	135	926	0	151	1191	0	0	77	7	311	265	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	19.7	38.1		21.9	40.1			13.2	13.2	27.1	27.1	
Effective Green, g (s)	19.7	38.1		21.9	40.1			13.2	13.2	27.1	27.1	
Actuated g/C Ratio	0.16	0.32		0.18	0.33			0.11	0.11	0.23	0.23	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	291	1681		323	1186			199	174	380	364	
v/s Ratio Prot	0.08	0.17		c0.09	c0.34			c0.04		c0.18	0.16	
v/s Ratio Perm									0.00			
v/c Ratio	0.46	0.55		0.47	1.00			0.39	0.04	0.82	0.73	
Uniform Delay, d1	45.4	33.9		43.8	39.9			49.6	47.7	44.1	43.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	1.3		0.4	27.2			0.5	0.0	12.8	7.1	
Delay (s)	45.8	35.2		44.2	67.1			50.1	47.8	57.0	50.1	
Level of Service	D	D		D	E			D	D	E	D	
Approach Delay (s)		36.5			64.6			49.0			53.6	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	52.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

Existing + Project (Phase 1&2) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↗
Volume (veh/h)	1259	62	0	1556	0	101
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1399	69	0	1729	0	112
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (ft)	575		607			
pX, platoon unblocked			0.87		0.78	0.87
vC, conflicting volume			1468		2298	501
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1011		1081	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	88
cM capacity (veh/h)			592		165	942
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	560	560	349	864	864	112
Volume Left	0	0	0	0	0	0
Volume Right	0	0	69	0	0	112
cSH	1700	1700	1700	1700	1700	942
Volume to Capacity	0.33	0.33	0.21	0.51	0.51	0.12
Queue Length 95th (ft)	0	0	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.3
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.3
Approach LOS						A
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			46.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
8: Del Mar Heights Road & I-5 SB Ramps

Existing + Project (Phase 1&2) PM
7/16/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑↑	↑
Volume (vph)	0	977	1287	0	925	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3431	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3431	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1086	1430	0	1028	322
RTOR Reduction (vph)	0	0	0	0	3	20
Lane-Group Flow (vph)	0	1086	1430	0	1057	270
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.7	42.7		25.4	25.4
Effective Green, g (s)		42.7	42.7		25.4	25.4
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1889	1889		1089	458
v/s Ratio Prot		0.31	c0.40		c0.31	
v/s Ratio Perm						0.19
v/c Ratio		0.57	0.76		0.97	0.59
Uniform Delay, d1		12.5	14.6		26.9	22.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4	1.8		20.5	1.9
Delay (s)		13.0	16.4		47.4	24.9
Level of Service		B	B		D	C
Approach Delay (s)		13.0	16.4		42.6	
Approach LOS		B	B		D	

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	113.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Existing + Project (Phase 1&2) PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕			↕↕↕	↖	↗	↕	↖			
Volume (vph)	235	1641	0	0	1401	911	615	10	902	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1477	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1477	1504			
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)	247	1727	0	0	1475	959	647	11	949	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	480	0	7	7	0	0	0
Lane Group Flow (vph)	247	1727	0	0	1475	479	556	522	515	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	9.6	62.5			47.7	47.7	45.6	45.6	45.6			
Effective Green, g (s)	9.6	62.5			47.7	47.7	45.6	45.6	45.6			
Actuated g/C Ratio	0.08	0.52			0.40	0.40	0.38	0.38	0.38			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	275	1843			2021	629	639	561	572			
v/s Ratio Prot	0.07	0.49			0.29	0.30	0.33	0.35	0.34			
v/s Ratio Perm												
v/c Ratio	0.90	0.94			0.73	0.76	0.87	0.93	0.90			
Uniform Delay, d1	54.7	26.9			30.7	31.2	34.5	35.7	35.1			
Progression Factor	1.00	1.00			0.77	2.15	1.00	1.00	1.00			
Incremental Delay, d2	29.1	10.6			0.2	0.8	12.3	22.3	17.3			
Delay (s)	83.8	37.5			23.9	67.9	46.8	58.0	52.3			
Level of Service	F	D			C	E	D	E	D			
Approach Delay (s)		43.3			41.2			52.3			0.0	
Approach LOS		D			D			D			A	

Intersection Summary			
HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Existing + Project (Phase 1&2) PM
 7/16/2013

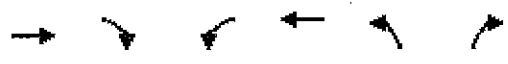


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NET	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑		↖↗	↑↗		↖	↑	↗
Volume (vph)	242	2315	251	53	1639	66	618	65	159	52	29	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5056		3433	3162		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5056		3433	3162		1770	1863	1583
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)	269	2572	279	59	1821	73	687	72	177	58	32	89
RTOR Reduction (vph)	0	0	69	0	3	0	0	125	0	0	0	0
Lane Group Flow (vph)	269	2572	210	59	1891	0	687	124	0	58	32	89
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	28.0	62.7	76.5	7.2	42.3		13.8	23.6		6.8	16.6	44.6
Effective Green, g (s)	28.0	62.7	76.5	7.2	42.3		13.8	23.6		6.8	16.6	44.6
Actuated g/C Ratio	0.23	0.52	0.64	0.06	0.35		0.12	0.20		0.06	0.14	0.37
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	413	2657	1009	106	1782		395	622		100	258	588
v/s Ratio Prot	c0.15	c0.51	0.02	0.03	c0.37		c0.20	c0.04		0.03	0.02	0.04
v/s Ratio Perm			0.11									0.02
v/c Ratio	0.65	0.97	0.21	0.56	1.06		1.74	0.20		0.58	0.12	0.15
Uniform Delay, d1	41.6	27.7	9.1	54.8	38.8		53.1	40.3		55.2	45.3	25.1
Progression Factor	1.00	1.03	0.87	1.13	1.21		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	7.8	0.0	3.3	38.9		343.1	0.1		5.0	0.1	0.0
Delay (s)	43.4	36.1	7.9	65.0	86.0		396.2	40.4		60.2	45.4	25.1
Level of Service	D	D	A	E	F		F	D		E	D	C
Approach Delay (s)		34.2			85.4			301.5			40.1	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM Average Control Delay	91.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: Del Mar Heights Road & Third Ave.

Existing + Project (Phase 1&2) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	2514	153	119	1613	230	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2793	170	132	1792	256	199
RTOR Reduction (vph)	0	38	0	0	0	120
Lane Group Flow (vph)	2793	132	132	1792	256	79
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	78.3	78.3	13.7	95.0	16.0	16.0
Effective Green, g (s)	78.3	78.3	13.7	95.0	16.0	16.0
Actuated g/C Ratio	0.65	0.65	0.11	0.79	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3318	1033	202	4026	458	211
v/s Ratio Prot	c0.55		c0.07	0.35	c0.07	
v/s Ratio Perm		0.08				0.05
v/c Ratio	0.84	0.13	0.65	0.45	0.56	0.38
Uniform Delay, d1	16.1	7.9	50.9	4.0	48.7	47.4
Progression Factor	0.67	0.10	0.99	0.20	1.00	1.00
Incremental Delay, d2	1.5	0.1	6.6	0.3	1.5	1.1
Delay (s)	12.3	1.0	56.9	1.1	50.2	48.6
Level of Service	B	A	E	A	D	D
Approach Delay (s)	11.6			5.0	49.5	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Existing + Project (Phase 1&2) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	2566	127	127	1539	192	192
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	0.97	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2851	141	141	1710	213	213
RTOR Reduction (vph)	0	36	0	0	0	61
Lane Group Flow (vph)	2851	105	141	1710	213	152
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	75.0	75.0	5.7	84.7	27.3	27.3
Effective Green, g (s)	75.0	75.0	5.7	84.7	27.3	27.3
Actuated g/C Ratio	0.62	0.62	0.05	0.71	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3178	989	163	3589	403	360
v/s Ratio Prot	c0.56	0.07	c0.04	0.34	c0.12	
v/s Ratio Perm						0.10
v/c Ratio	0.90	0.11	0.87	0.48	0.53	0.42
Uniform Delay, d1	19.2	9.0	56.8	7.8	40.7	39.6
Progression Factor	1.83	1.82	0.72	1.20	1.00	1.00
Incremental Delay, d2	2.1	0.0	22.7	0.1	4.9	3.6
Delay (s)	37.3	16.4	63.7	9.5	45.6	43.2
Level of Service	D	B	E	A	D	D
Approach Delay (s)	36.3			13.6	44.4	
Approach LOS	D			B	D	

Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing + Project (Phase 1&2) PM

7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↑		↖↗	↑↑↑		↖↗	↑↑↑	↖	↖↗	↑↑↑	
Volume (vph)	490	1671	446	153	936	176	427	419	289	147	163	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4925		3433	4964		3433	5085	1583	3433	4643	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4925		3433	4964		3433	5085	1583	3433	4643	
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)	544	1857	496	170	1040	196	474	466	321	163	181	250
RTOR Reduction (vph)	0	34	0	0	21	0	0	0	91	0	193	0
Lane Group Flow (vph)	544	2319	0	170	1215	0	474	466	230	163	238	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	27.3	58.4		10.7	42.0		11.5	24.8	24.8	5.6	18.1	
Effective Green, g (s)	27.3	58.4		10.7	42.0		11.5	24.8	24.8	5.6	18.1	
Actuated g/C Ratio	0.23	0.49		0.09	0.35		0.10	0.21	0.21	0.05	0.15	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	781	2397		306	1737		329	1051	327	160	700	
vs Ratio Prot	c0.16	c0.47		0.05	0.24		c0.14	0.09		0.05	0.05	
vs Ratio Perm									c0.15			
v/c Ratio	0.70	0.97		0.56	0.70		1.44	0.44	0.70	1.02	0.34	
Uniform Delay, d1	42.5	29.9		52.4	33.6		54.2	41.6	44.2	57.2	45.6	
Progression Factor	1.23	0.34		1.22	0.97		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	7.0		1.2	2.3		214.8	0.4	7.1	76.2	0.3	
Delay (s)	53.4	17.1		65.3	35.0		269.1	42.0	51.2	133.4	45.9	
Level of Service	D	B		E	D		F	D	D	F	D	
Approach Delay (s)		24.0			38.7			129.7			69.9	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM Average Control Delay	53.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing + Project (Phase 1&2) PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NET	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑↓		↖↗	↑↑↓		↖↗	↑↑↓		↖	↑↓	
Volume (vph)	134	1235	537	80	639	72	399	167	145	78	124	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.93		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4854		3433	5008		3433	4731		1770	3265	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4854		3433	5008		3433	4731		1770	3265	
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)	149	1372	597	89	710	80	443	186	161	87	138	147
RTOR Reduction (vph)	0	52	0	0	9	0	0	132	0	0	127	0
Lane Group Flow (vph)	149	1917	0	89	781	0	443	215	0	87	158	0
Turn Type	Prot		Prot		Prot		Prot		Prot		Prot	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.0	62.2		6.7	59.7		15.2	21.4		9.9	16.6	
Effective Green, g (s)	9.0	62.2		6.7	59.7		15.2	21.4		9.9	16.6	
Actuated g/C Ratio	0.08	0.52		0.06	0.50		0.13	0.18		0.08	0.14	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	257	2516		192	2491		435	844		146	452	
v/s Ratio Prot	c0.04	c0.39		0.03	0.16		c0.13	0.05		0.05	c0.05	
v/s Ratio Perm												
v/c Ratio	0.58	0.76		0.46	0.31		1.02	0.25		0.60	0.35	
Uniform Delay, d1	53.7	23.0		54.9	18.0		52.4	42.4		53.1	46.8	
Progression Factor	1.08	0.91		1.31	0.45		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.9		0.6	0.3		47.9	0.2		4.3	1.3	
Delay (s)	59.7	22.9		72.6	8.4		100.3	42.7		57.4	48.1	
Level of Service	E	C		E	A		F	D		E	D	
Approach Delay (s)	25.5		14.9		75.0		50.3					
Approach LOS	C		B		E		D					

Intersection Summary			
HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing + Project (Phase 1&2) PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↑	
Volume (vph)	48	1261	156	8	677	22	70	14	31	27	8	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.90		1.00	0.88	
Frt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5001		1770	5062		1770	1673		1770	1643	
Frt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5001		1770	5062		1770	1673		1770	1643	
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)	53	1401	173	9	752	24	78	16	34	30	9	33
RTOR Reduction (vph)	0	8	0	0	2	0	0	29	0	0	29	0
Lane Group Flow (vph)	53	1566	0	9	774	0	78	21	0	30	13	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.9	78.0		0.9	71.3		8.2	18.2		4.2	14.2	
Effective Green, g (s)	6.9	78.0		0.9	71.3		8.2	18.2		4.2	14.2	
Actuated g/C Ratio	0.06	0.65		0.01	0.59		0.07	0.15		0.04	0.12	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	102	3251		13	3008		121	254		62	194	
v/s Ratio Prot	c0.03	c0.31		0.01	0.15		c0.04	c0.01		0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.52	0.48		0.69	0.26		0.64	0.08		0.48	0.07	
Uniform Delay, d1	54.9	10.7		59.4	11.7		54.5	43.7		56.8	47.0	
Progression Factor	0.75	1.70		1.10	0.58		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.4		80.5	0.2		8.5	0.1		2.2	0.1	
Delay (s)	42.5	18.5		146.0	7.0		63.0	43.8		59.0	47.1	
Level of Service	D	B		F	A		E	D		E	D	
Approach Delay (s)		19.3			8.6			55.5			52.0	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.3
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing + Project (Phase 1&2) PM
 7/16/2013

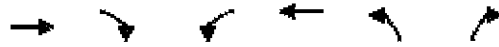


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↗		↖	↗	
Volume (vph)	288	965	63	21	481	24	39	45	34	23	32	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	0.87	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5039		1770	5049		1770	1742		1770	1624	
Fit Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5039		1770	5049		1770	1742		1770	1624	
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)	320	1072	70	23	534	27	43	50	38	26	36	214
RTOR Reduction (vph)	0	4	0	0	3	0	0	27	0	0	182	0
Lane Group Flow (vph)	320	1138	0	23	558	0	43	61	0	26	68	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	24.3	75.3		3.5	54.5		4.1	19.6		2.5	17.8	
Effective Green, g (s)	24.3	75.3		3.5	54.5		4.1	19.6		2.5	17.8	
Actuated g/C Ratio	0.20	0.63		0.03	0.45		0.03	0.16		0.02	0.15	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	358	3162		52	2293		60	285		37	241	
v/s Ratio Prot	c0.18	c0.23		0.01	0.11		c0.02	0.04		0.01	c0.04	
v/s Ratio Perm												
v/c Ratio	0.89	0.36		0.44	0.24		0.72	0.21		0.70	0.28	
Uniform Delay, d1	46.6	10.8		57.3	20.1		57.4	43.5		58.4	45.4	
Progression Factor	1.36	0.83		1.25	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.5	0.3		2.2	0.3		28.5	0.1		39.1	0.2	
Delay (s)	84.8	9.2		73.5	20.9		85.9	43.7		97.5	45.6	
Level of Service	F	A		E	C		F	D		F	D	
Approach Delay (s)		25.8			23.0			57.5			50.5	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.9
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c - Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing + Project (Phase 1&2) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↑	↑↑↑	↑↑	↑
Volume (vph)	825	181	89	424	118	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Flt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4948		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4948		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	917	201	99	471	131	276
RTOR Reduction (vph)	19	0	0	0	0	42
Lane Group Flow (vph)	1099	0	99	471	131	234
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	74.2		11.2	90.5	18.6	29.8
Effective Green, g (s)	74.2		11.2	90.5	18.6	29.8
Actuated g/C Ratio	0.62		0.09	0.75	0.16	0.25
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	3060		165	3835	532	393
v/s Ratio Prot	c0.22		c0.06	0.09	0.04	c0.06
v/s Ratio Perm						0.09
v/c Ratio	0.36		0.60	0.12	0.25	0.60
Uniform Delay, d1	11.2		52.2	4.0	44.5	39.8
Progression Factor	1.84		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		4.2	0.1	0.1	1.6
Delay (s)	21.0		56.4	4.1	44.6	41.4
Level of Service	C		E	A	D	D
Approach Delay (s)	21.0			13.2	42.4	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Buildout) AM
7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑			↖	↗	↖	↕	
Volume (vph)	93	852	23	92	860	201	68	56	80	442	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.95			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5065		1770	3439			1813	1583	1681	1638	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5065		1770	3439			1813	1583	1681	1638	
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)	103	947	26	102	956	223	76	62	89	491	24	91
RTOR Reduction (vph)	0	2	0	0	13	0	0	0	76	0	12	0
Lane Group Flow (vph)	103	971	0	102	1166	0	0	138	13	309	285	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	10.9	58.6		11.9	59.4			20.2	20.2	29.6	29.6	
Effective Green, g (s)	10.9	58.6		11.9	59.4			20.2	20.2	29.6	29.6	
Actuated g/C Ratio	0.08	0.42		0.08	0.42			0.14	0.14	0.21	0.21	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	138	2120		150	1459			262	228	355	346	
v/s Ratio Prot	c0.06	0.19		0.06	c0.34			c0.08		c0.18	0.17	
v/s Ratio Perm									0.01			
v/c Ratio	0.75	0.46		0.68	0.80			0.53	0.06	0.87	0.82	
Uniform Delay, d1	63.2	29.3		62.2	35.1			55.5	51.7	53.3	52.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.3	0.7		9.7	3.3			0.9	0.0	20.1	14.7	
Delay (s)	80.5	30.0		71.9	38.4			56.4	51.7	73.4	67.4	
Level of Service	F	C		E	D			E	D	E	E	
Approach Delay (s)		34.8			41.1			54.5			70.5	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	45.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.4
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Volume (veh/h)	1406	53	0	1384	0	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1562	59	0	1538	0	150
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	575			607		
pX, platoon unblocked			0.87		0.88	0.87
vC, conflicting volume			1621		2361	550
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1185		1384	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	84
cM capacity (veh/h)			508		119	942
Direction Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	625	625	371	769	769	150
Volume Left	0	0	0	0	0	0
Volume Right	0	0	59	0	0	150
cSH	1700	1700	1700	1700	1700	942
Volume to Capacity	0.37	0.37	0.22	0.45	0.45	0.16
Queue Length 95th (ft)	0	0	0	0	0	14
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.5
Approach LOS						A
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			43.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑↑	↑
Volume (vph)	0	772	1043	0	934	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		0.99	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3430	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3430	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	858	1159	0	1038	362
RTOR Reduction (vph)	0	0	0	0	3	40
Lane Group Flow (vph)	0	858	1159	0	1071	286
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.5	42.5		25.5	25.5
Effective Green, g (s)		42.5	42.5		25.5	25.5
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1882	1882		1095	460
v/s Ratio Prot		0.24	c0.33		c0.31	
v/s Ratio Perm						0.20
v/c Ratio		0.46	0.62		0.98	0.62
Uniform Delay, d1		11.6	13.0		26.9	23.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.6		21.7	2.6
Delay (s)		11.7	13.6		48.6	25.7
Level of Service		B	B		D	C
Approach Delay (s)		11.7	13.6		43.3	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay			25.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			79.9		Sum of lost time (s)	11.9
Intersection Capacity Utilization			119.8%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖↗			↖↗↖↗	↖	↗	↕	↖			
Volume (vph)	224	1462	0	0	1541	925	373	0	933	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1455	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1455	1504			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	238	1555	0	0	1639	984	397	0	993	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	443	0	13	13	0	0	0
Lane Group Flow (vph)	238	1555	0	0	1639	541	357	504	503	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	9.4	64.3			49.7	49.7	43.8	43.8	43.8			
Effective Green, g (s)	9.4	64.3			49.7	49.7	43.8	43.8	43.8			
Actuated g/C Ratio	0.08	0.54			0.41	0.41	0.36	0.36	0.36			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	269	1896			2106	656	614	531	549			
v/s Ratio Prot	0.07	0.44			0.32	0.34	0.21	0.35	0.33			
v/s Ratio Perm												
v/c Ratio	0.88	0.82			0.78	0.82	0.58	0.95	0.92			
Uniform Delay, d1	54.8	23.1			30.4	31.3	30.7	37.0	36.4			
Progression Factor	1.00	1.00			0.47	1.99	1.00	1.00	1.00			
Incremental Delay, d2	27.2	4.1			1.4	5.7	1.4	26.6	20.1			
Delay (s)	82.0	27.2			15.6	67.9	32.1	63.6	56.5			
Level of Service	F	C			B	E	C	E	E			
Approach Delay (s)		34.5			35.2			52.9			0.0	
Approach LOS		C			D			D			A	

Intersection Summary			
HCM Average Control Delay	39.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖	↗	↖	↖↖↖		↖↖	↖↖		↖	↖	↖
Volume (vph)	108	1547	674	105	1958	72	195	10	41	107	57	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5058		3433	3111		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5058		3433	3111		1770	1863	1583
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)	120	1719	749	117	2176	80	217	11	46	119	63	337
RTOR Reduction (vph)	0	0	282	0	3	0	0	39	0	0	0	29
Lane Group Flow (vph)	120	1719	467	117	2253	0	217	18	0	119	63	308
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	14.1	58.9	71.1	10.9	56.1		12.2	17.9		12.6	18.3	32.4
Effective Green, g (s)	14.1	58.9	71.1	10.9	56.1		12.2	17.9		12.6	18.3	32.4
Actuated g/C Ratio	0.12	0.49	0.59	0.09	0.47		0.10	0.15		0.10	0.15	0.27
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	208	2496	938	161	2365		349	464		186	284	427
v/s Ratio Prot	0.07	c0.34	0.05	0.07	c0.45		0.06	0.01		c0.07	0.03	c0.08
v/s Ratio Perm			0.24									0.11
v/c Ratio	0.58	0.69	0.50	0.73	0.95		0.62	0.04		0.64	0.22	0.72
Uniform Delay, d1	50.1	23.5	14.1	53.1	30.7		51.7	43.7		51.5	44.6	39.7
Progression Factor	1.04	0.94	0.53	1.04	0.92		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.8	0.1	10.8	8.9		2.5	0.0		5.2	0.1	5.0
Delay (s)	53.4	22.9	7.6	66.2	37.1		54.2	43.7		56.8	44.7	44.7
Level of Service	D	C	A	E	D		D	D		E	D	D
Approach Delay (s)		19.9			38.5			52.0			47.5	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	1872	170	132	2260	78	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Frt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Frt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2080	189	147	2511	87	68
RTOR Reduction (vph)	0	40	0	0	0	61
Lane Group Flow (vph)	2080	149	147	2511	87	7
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	81.1	81.1	15.2	99.3	11.7	11.7
Effective Green, g (s)	81.1	81.1	15.2	99.3	11.7	11.7
Actuated g/C Ratio	0.68	0.68	0.13	0.83	0.10	0.10
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3437	1070	224	4208	335	154
v/s Ratio Prot	0.41		c0.08	c0.49	c0.03	
v/s Ratio Perm		0.09				0.00
v/c Ratio	0.61	0.14	0.66	0.60	0.26	0.04
Uniform Delay, d1	10.7	7.0	49.9	3.5	50.1	49.1
Progression Factor	1.49	1.56	1.05	1.72	1.00	1.00
Incremental Delay, d2	0.7	0.2	4.7	0.4	0.4	0.1
Delay (s)	16.6	11.1	57.2	6.5	50.6	49.2
Level of Service	B	B	E	A	D	D
Approach Delay (s)	16.2			9.3	50.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	1791	141	142	2327	65	65
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	0.97	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1990	157	158	2586	72	72
RTOR Reduction (vph)	0	60	0	0	0	54
Lane Group Flow (vph)	1990	97	158	2586	72	18
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	70.6	70.6	8.0	82.6	29.4	29.4
Effective Green, g (s)	70.6	70.6	8.0	82.6	29.4	29.4
Actuated g/C Ratio	0.59	0.59	0.07	0.69	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2992	931	229	3500	434	388
v/s Ratio Prot	0.39	0.06	0.05	0.51	0.04	
v/s Ratio Perm						0.01
v/c Ratio	0.67	0.10	0.69	0.74	0.17	0.05
Uniform Delay, d1	16.7	10.8	54.8	11.9	35.7	34.6
Progression Factor	1.77	5.26	0.89	1.07	1.00	1.00
Incremental Delay, d2	0.5	0.0	5.4	0.5	0.8	0.2
Delay (s)	30.0	57.1	54.3	13.2	36.5	34.8
Level of Service	C	E	D	B	D	C
Approach Delay (s)	32.0			15.5	35.6	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing + Project (Buildout) AM

7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑↔		↔↔	↑↑↑	↔	↔↔	↑↑↔	
Volume (vph)	231	975	308	245	1557	92	277	107	93	159	306	443
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4902		3433	5043		3433	5085	1583	3433	4634	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4902		3433	5043		3433	5085	1583	3433	4634	
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)	257	1083	342	272	1730	102	308	119	103	177	340	492
RTOR Reduction (vph)	0	44	0	0	5	0	0	0	77	0	143	0
Lane Group Flow (vph)	257	1381	0	272	1827	0	308	119	26	177	689	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	12.9	48.3		13.5	49.1		12.5	30.7	30.7	7.0	24.4	
Effective Green, g (s)	12.9	48.3		13.5	49.1		12.5	30.7	30.7	7.0	24.4	
Actuated g/C Ratio	0.11	0.40		0.11	0.41		0.10	0.26	0.26	0.06	0.20	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	369	1973		386	2063		358	1301	405	200	942	
v/s Ratio Prot	0.07	0.28		c0.08	c0.36		c0.09	0.02		0.05	c0.15	
v/s Ratio Perm									0.02			
v/c Ratio	0.70	0.70		0.70	0.89		0.86	0.09	0.07	0.88	1.06dr	
Uniform Delay, d1	51.7	29.8		51.3	32.9		52.9	34.0	33.8	56.1	44.7	
Progression Factor	1.13	0.52		1.25	0.85		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	1.6		4.5	5.8		18.0	0.0	0.1	33.1	3.0	
Delay (s)	62.1	17.2		69.0	33.9		70.9	34.1	33.9	89.2	47.7	
Level of Service	E	B		E	C		E	C	C	F	D	
Approach Delay (s)		24.1			38.4			55.4			55.0	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM Average Control Delay	38.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
dr Defacto Right Lane. Recode with 1 though lane as a right lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕↔		↖↗	↕↔		↖↗	↕↔		↖	↕↔	
Volume (vph)	155	647	310	272	1231	169	430	183	108	142	180	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prct)	3433	4838		3433	4993		3433	4802		1770	3296	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4838		3433	4993		3433	4802		1770	3296	
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)	172	719	344	302	1368	188	478	203	120	158	200	169
RTOR Reduction (vph)	0	60	0	0	12	0	0	98	0	0	119	0
Lane Group Flow (vph)	172	1003	0	302	1544	0	478	225	0	158	250	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.5	49.2		14.1	53.6		18.3	22.4		14.5	19.1	
Effective Green, g (s)	9.5	49.2		14.1	53.6		18.3	22.4		14.5	19.1	
Actuated g/C Ratio	0.08	0.41		0.12	0.45		0.15	0.19		0.12	0.16	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	272	1984		403	2230		524	896		214	525	
v/s Ratio Prot	0.05	0.21		c0.09	c0.31		c0.14	c0.05		0.09	c0.08	
v/s Ratio Perm												
v/c Ratio	0.63	0.51		0.75	0.69		0.91	0.25		0.74	0.48	
Uniform Delay, d1	53.6	26.3		51.2	26.6		50.1	41.6		50.9	45.9	
Progression Factor	1.15	1.03		1.08	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	0.9		5.9	1.6		19.9	0.2		10.9	1.8	
Delay (s)	64.7	28.1		61.0	19.7		70.0	41.8		61.8	47.7	
Level of Service	E	C		E	B		E	D		E	D	
Approach Delay (s)		33.2			26.4			58.6			51.9	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↑	
Volume (vph)	206	658	129	79	1078	210	115	151	11	54	60	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4960		1770	4961		1770	1844		1770	1674	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4960		1770	4961		1770	1844		1770	1674	
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)	229	731	143	88	1198	233	128	168	12	60	67	139
RTOR Reduction (vph)	0	19	0	0	19	0	0	2	0	0	68	0
Lane Group Flow (vph)	229	855	0	88	1412	0	128	178	0	60	138	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	18.9	63.2		9.9	53.5		12.9	21.5		6.7	15.3	
Effective Green, g (s)	18.9	63.2		9.9	53.5		12.9	21.5		6.7	15.3	
Actuated g/C Ratio	0.16	0.53		0.08	0.45		0.11	0.18		0.06	0.13	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	279	2612		146	2212		190	330		99	213	
v/s Ratio Prot	c0.13	0.17		0.05	c0.28		c0.07	0.10		0.03	c0.08	
v/s Ratio Perm												
v/c Ratio	0.82	0.33		0.60	0.64		0.67	0.54		0.61	0.65	
Uniform Delay, d1	48.9	16.2		53.2	25.8		51.5	44.7		55.4	49.8	
Progression Factor	0.86	1.48		1.01	0.85		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.3	0.3		4.0	1.2		7.2	0.8		7.0	5.0	
Delay (s)	57.6	24.4		57.6	23.1		58.7	45.6		62.4	54.8	
Level of Service	E	C		E	C		E	D		E	D	
Approach Delay (s)		31.3			25.1			51.0			56.5	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c - Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing + Project (Buildout) AM

7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖↖		↖	↖		↖	↖	
Volume (vph)	162	568	34	65	1115	35	43	25	53	48	58	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5042		1770	5062		1770	1673		1770	1622	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5042		1770	5062		1770	1673		1770	1622	
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)	180	631	38	72	1239	39	48	28	59	53	64	393
RTOR Reduction (vph)	0	4	0	0	2	0	0	48	0	0	213	0
Lane Group Flow (vph)	180	665	0	72	1276	0	48	39	0	53	244	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.9	64.6		7.6	56.3		6.7	21.8		6.9	21.8	
Effective Green, g (s)	15.9	64.6		7.6	56.3		6.7	21.8		6.9	21.8	
Actuated g/C Ratio	0.13	0.54		0.06	0.47		0.06	0.18		0.06	0.18	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	235	2714		112	2375		99	304		102	295	
v/s Ratio Prot	c0.10	0.13		0.04	c0.25		0.03	0.02		c0.03	c0.15	
v/s Ratio Perm												
v/c Ratio	0.77	0.24		0.64	0.54		0.48	0.13		0.52	0.83	
Uniform Delay, d1	50.3	14.7		54.9	22.6		55.0	41.1		54.9	47.3	
Progression Factor	1.42	0.29		0.85	1.16		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.1	0.2		8.8	0.9		1.4	0.1		1.9	16.4	
Delay (s)	83.7	4.4		55.6	27.1		56.3	41.2		56.8	63.7	
Level of Service	F	A		E	C		E	D		E	E	
Approach Delay (s)		21.2			28.6			46.6			63.0	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.2
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing + Project (Buildout) AM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↑	↑↑↑	↑↑	↑
Volume (vph)	556	128	385	995	268	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4943		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4943		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	618	142	428	1106	298	369
RTOR Reduction (vph)	24	0	0	0	0	39
Lane Group Flow (vph)	736	0	428	1106	298	330
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	53.6		32.3	91.0	18.1	50.4
Effective Green, g (s)	53.6		32.3	91.0	18.1	50.4
Actuated g/C Ratio	0.45		0.27	0.76	0.15	0.42
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	2208		476	3856	518	665
v/s Ratio Prot	c0.15		c0.24	0.22	c0.09	0.13
v/s Ratio Perm						0.07
v/c Ratio	0.33		0.90	0.29	0.58	0.50
Uniform Delay, d1	21.6		42.3	4.5	47.4	25.5
Progression Factor	1.48		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		19.0	0.2	1.0	0.2
Delay (s)	32.4		61.3	4.7	48.3	25.7
Level of Service	C		E	A	D	C
Approach Delay (s)	32.4			20.5	35.8	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing + Project (Build-out) PM

7/16/2013

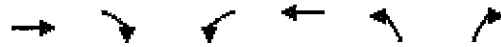


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖			↖	↖	↖	↖↖	
Volume (vph)	124	843	16	143	907	211	40	31	66	398	35	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Lane Util. Factor	1.00	*0.95		1.00	*0.98			1.00	1.00	0.95	0.95	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (prot)	1770	5294		1770	3548			1812	1583	1681	1612	
Flt Permitted	0.95	1.00		0.95	1.00			0.97	1.00	0.95	0.98	
Satd. Flow (perm)	1770	5294		1770	3548			1812	1583	1681	1612	
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)	135	916	17	155	986	229	43	34	72	433	38	141
RTOR Reduction (vph)	0	1	0	0	16	0	0	0	64	0	28	0
Lane Group Flow (vph)	135	932	0	155	1199	0	0	77	8	312	272	0
Turn Type	Prot			Prot			Split		Perm	Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	19.7	37.4		22.5	40.0			13.2	13.2	27.2	27.2	
Effective Green, g (s)	19.7	37.4		22.5	40.0			13.2	13.2	27.2	27.2	
Actuated g/C Ratio	0.16	0.31		0.19	0.33			0.11	0.11	0.23	0.23	
Clearance Time (s)	4.6	5.5		4.4	5.5			4.9	4.9	4.9	4.9	
Vehicle Extension (s)	2.0	3.7		2.0	3.7			2.0	2.0	3.0	3.0	
Lane Grp Cap (vph)	291	1650		332	1183			199	174	381	365	
v/s Ratio Prot	0.08	0.18		c0.09	c0.34			c0.04		c0.19	0.17	
v/s Ratio Perm									0.01			
v/c Ratio	0.46	0.56		0.47	1.01			0.39	0.05	0.82	0.75	
Uniform Delay, d1	45.4	34.5		43.4	40.0			49.6	47.8	44.1	43.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	1.4		0.4	29.6			0.5	0.0	12.8	8.1	
Delay (s)	45.8	35.9		43.8	69.6			50.1	47.8	56.9	51.2	
Level of Service	D	D		D	E			D	D	E	D	
Approach Delay (s)		37.2			66.6			49.0			54.1	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	53.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.7
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 7: Del Mar Heights Road & Portofino Drive

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↗
Volume (veh/h)	1283	62	0	1605	0	109
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1426	69	0	1783	0	121
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	575			607		
pX, platoon unblocked				0.85	0.78	0.85
vC, conflicting volume				1494	2352	510
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				945	973	0
tC, single (s)				4.1	6.8	6.9
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	87
cM capacity (veh/h)				610	194	917
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	570	570	354	892	892	121
Volume Left	0	0	0	0	0	0
Volume Right	0	0	69	0	0	121
cSH	1700	1700	1700	1700	1700	917
Volume to Capacity	0.34	0.34	0.21	0.52	0.52	0.13
Queue Length 95th (ft)	0	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS	A					
Approach Delay (s)	0.0			0.0		9.5
Approach LOS	A					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	47.7%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
 8: Del Mar Heights Road & I-5 SB Ramps

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	↑
Volume (vph)	0	1008	1308	0	949	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3431	1441
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3431	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1120	1453	0	1054	322
RTOR Reduction (vph)	0	0	0	0	3	18
Lane Group Flow (vph)	0	1120	1453	0	1083	272
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		42.7	42.7		25.4	25.4
Effective Green, g (s)		42.7	42.7		25.4	25.4
Actuated g/C Ratio		0.53	0.53		0.32	0.32
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1889	1889		1089	458
v/s Ratio Prot		0.32	c0.41		c0.32	
v/s Ratio Perm						0.19
v/c Ratio		0.59	0.77		0.99	0.59
Uniform Delay, d1		12.7	14.8		27.2	23.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.5	1.9		25.8	2.1
Delay (s)		13.2	16.7		53.1	25.0
Level of Service		B	B		D	C
Approach Delay (s)		13.2	16.7		47.1	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay			26.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	11.9
Intersection Capacity Utilization			117.3%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 9: Del Mar Heights Road & I-5 NB Ramps

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕			↕↕↕	↗	↖	↕	↗			
Volume (vph)	235	1696	0	0	1454	927	615	10	949	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1470	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1470	1504			
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)	247	1785	0	0	1531	976	647	11	999	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	469	0	6	6	0	0	0
Lane Group Flow (vph)	247	1785	0	0	1531	507	576	536	533	0	0	0
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	5	2			6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	10.7	62.7			46.8	46.8	45.4	45.4	45.4			
Effective Green, g (s)	10.7	62.7			46.8	46.8	45.4	45.4	45.4			
Actuated g/C Ratio	0.09	0.52			0.39	0.39	0.38	0.38	0.38			
Clearance Time (s)	5.2	6.3			6.3	6.3	5.6	5.6	5.6			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	306	1849			1983	617	636	556	569			
v/s Ratio Prot	0.07	c0.50			0.30	0.32	0.34	c0.36	0.35			
v/s Ratio Perm												
v/c Ratio	0.81	0.97			0.77	0.82	0.91	0.96	0.94			
Uniform Delay, d1	53.6	27.6			31.9	32.9	35.3	36.5	35.9			
Progression Factor	1.00	1.00			0.64	1.84	1.00	1.00	1.00			
Incremental Delay, d2	14.4	14.2			0.3	1.2	16.4	29.0	22.9			
Delay (s)	68.0	41.8			20.8	61.8	51.7	65.5	58.9			
Level of Service	E	D			C	E	D	E	E			
Approach Delay (s)		45.0			36.8			58.5			0.0	
Approach LOS		D			D			E			A	

Intersection Summary			
HCM Average Control Delay	45.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 10: Del Mar Heights Road & High Bluff Drive

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↗	↙	↑↑↑		↙↗	↑↗		↙	↑	↗
Volume (vph)	242	2417	251	59	1708	72	618	65	167	60	29	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5054		3433	3156		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5054		3433	3156		1770	1863	1583
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)	269	2686	279	66	1898	80	687	72	186	67	32	89
RTOR Reduction (vph)	0	0	68	0	4	0	0	121	0	0	0	0
Lane Group Flow (vph)	269	2686	211	66	1974	0	687	137	0	67	32	89
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2									4
Actuated Green, G (s)	28.0	62.6	75.7	8.0	43.0		13.1	22.4		7.3	16.6	44.6
Effective Green, g (s)	28.0	62.6	75.7	8.0	43.0		13.1	22.4		7.3	16.6	44.6
Actuated g/C Ratio	0.23	0.52	0.63	0.07	0.36		0.11	0.19		0.06	0.14	0.37
Clearance Time (s)	4.4	6.0	4.4	4.4	5.6		4.4	4.9		4.4	4.9	4.4
Vehicle Extension (s)	2.0	5.0	2.0	2.0	5.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	413	2653	999	118	1811		375	589		108	258	588
v/s Ratio Prot	c0.15	c0.53	0.02	0.04	c0.39		c0.20	c0.04		0.04	0.02	0.04
v/s Ratio Perm			0.11									0.02
v/c Ratio	0.65	1.01	0.21	0.56	1.09		1.83	0.23		0.62	0.12	0.15
Uniform Delay, d1	41.6	28.7	9.4	54.3	38.5		53.4	41.5		55.0	45.3	25.1
Progression Factor	1.00	1.03	0.88	1.09	1.24		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	16.0	0.0	2.9	49.5		384.7	0.1		7.7	0.1	0.0
Delay (s)	43.0	45.5	8.4	62.2	97.2		438.1	41.6		62.7	45.4	25.1
Level of Service	D	D	A	E	F		F	D		E	D	C
Approach Delay (s)		42.1			96.1			329.9			42.0	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM Average Control Delay	101.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 11: Del Mar Heights Road & Third Ave.

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑↑	↑
Volume (vph)	2585	200	155	1660	262	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted	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	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2872	222	172	1844	291	227
RTOR Reduction (vph)	0	50	0	0	0	149
Lane Group Flow (vph)	2872	172	172	1844	291	78
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases		2				3
Actuated Green, G (s)	74.4	74.4	16.6	94.0	17.0	17.0
Effective Green, g (s)	74.4	74.4	16.6	94.0	17.0	17.0
Actuated g/C Ratio	0.62	0.62	0.14	0.78	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3153	981	245	3983	486	224
v/s Ratio Prot	c0.56		c0.10	0.36	c0.08	
v/s Ratio Perm		0.11				0.05
v/c Ratio	0.91	0.18	0.70	0.46	0.60	0.35
Uniform Delay, d1	19.9	9.7	49.3	4.4	48.3	46.5
Progression Factor	0.60	0.09	1.01	0.12	1.00	1.00
Incremental Delay, d2	2.5	0.2	7.7	0.3	2.0	0.9
Delay (s)	14.5	1.0	57.5	0.9	50.3	47.4
Level of Service	B	A	E	A	D	D
Approach Delay (s)	13.5			5.7	49.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 12: Del Mar Heights Road & First Ave.

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑↑	↑	↑
Volume (vph)	2622	166	166	1597	218	218
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	0.97	0.91	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2913	184	184	1774	242	242
RTOR Reduction (vph)	0	47	0	0	0	60
Lane Group Flow (vph)	2913	138	184	1774	242	182
Turn Type		Prot	Prot			Perm
Protected Phases	4	4	3	8	2	
Permitted Phases						2
Actuated Green, G (s)	75.0	75.0	5.7	84.7	27.3	27.3
Effective Green, g (s)	75.0	75.0	5.7	84.7	27.3	27.3
Actuated g/C Ratio	0.62	0.62	0.05	0.71	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3178	989	163	3589	403	360
v/s Ratio Prot	c0.57	0.09	c0.05	0.35	c0.14	
v/s Ratio Perm						0.11
v/c Ratio	0.92	0.14	1.13	0.49	0.60	0.50
Uniform Delay, d1	19.8	9.2	57.2	8.0	41.5	40.5
Progression Factor	1.83	2.01	0.71	1.28	1.00	1.00
Incremental Delay, d2	2.3	0.0	88.2	0.1	6.5	5.0
Delay (s)	38.4	18.6	128.8	10.3	48.0	45.4
Level of Service	D	B	F	B	D	D
Approach Delay (s)	37.2			21.4	46.7	
Approach LOS	D			C	D	

Intersection Summary			
HCM Average Control Delay	32.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 13: Del Mar Heights Road & El Camino Real

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖↗↘		↖↗	↖↗↘		↖↗	↖↗↘	↖	↖↗	↖↗↘	
Volume (vph)	497	1715	477	169	996	176	454	423	296	147	168	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4919		3433	4971		3433	5085	1583	3433	4641	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4919		3433	4971		3433	5085	1583	3433	4641	
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)	552	1906	530	188	1107	196	504	470	329	163	187	261
RTOR Reduction (vph)	0	37	0	0	20	0	0	0	91	0	190	0
Lane Group Flow (vph)	552	2399	0	188	1283	0	504	470	238	163	258	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	27.9	56.5		12.1	40.9		11.5	25.3	25.3	5.6	18.6	
Effective Green, g (s)	27.9	56.5		12.1	40.9		11.5	25.3	25.3	5.6	18.6	
Actuated g/C Ratio	0.23	0.47		0.10	0.34		0.10	0.21	0.21	0.05	0.16	
Clearance Time (s)	4.4	6.1		4.4	5.9		4.4	5.6	5.6	4.4	6.4	
Vehicle Extension (s)	2.0	3.8		2.0	3.8		2.0	3.8	3.8	2.0	3.3	
Lane Grp Cap (vph)	798	2316		346	1694		329	1072	334	160	719	
v/s Ratio Prot	c0.16	c0.49		0.05	0.26		c0.15	0.09		0.05	0.06	
v/s Ratio Perm									c0.15			
v/c Ratio	0.69	1.04		0.54	0.76		1.53	0.44	0.71	1.02	0.36	
Uniform Delay, d1	42.1	31.8		51.3	35.1		54.2	41.2	44.0	57.2	45.4	
Progression Factor	1.21	0.39		1.22	0.97		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	23.0		0.9	3.2		254.2	0.4	7.4	76.2	0.3	
Delay (s)	52.1	35.3		63.7	37.4		308.4	41.5	51.4	133.4	45.7	
Level of Service	D	D		E	D		F	D	D	F	D	
Approach Delay (s)		38.4			40.8			147.3			69.1	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM Average Control Delay	64.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 14: Del Mar Heights Road & Carmel Country Rd.

Existing + Project (Build-out) PM
 7/16/2013



Movement	EB	EBT	EBR	WB	WBT	WBR	NB	NBT	NBR	SB	SBT	SBR
Lane Configurations												
Volume (vph)	141	1258	591	80	673	72	425	167	145	78	124	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.97	0.91		1.00	0.95	
Frt	1.00	0.95		1.00	0.99		1.00	0.93		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	4841		3433	5012		3433	4731		1770	3256	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	4841		3433	5012		3433	4731		1770	3256	
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)	157	1398	657	89	748	80	472	186	161	87	138	158
RTOR Reduction (vph)	0	57	0	0	8	0	0	132	0	0	120	0
Lane Group Flow (vph)	157	1998	0	89	820	0	472	215	0	87	176	0
Turn Type	Prot		Prot		Prot		Prot		Prot			
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.2	61.7		6.7	59.0		15.2	21.9		9.9	17.1	
Effective Green, g (s)	9.2	61.7		6.7	59.0		15.2	21.9		9.9	17.1	
Actuated g/C Ratio	0.08	0.51		0.06	0.49		0.13	0.18		0.08	0.14	
Clearance Time (s)	4.4	5.6		4.4	5.8		4.4	5.4		4.4	4.9	
Vehicle Extension (s)	2.0	3.8		2.0	4.0		2.0	4.0		2.0	5.8	
Lane Grp Cap (vph)	263	2489		192	2464		435	863		146	464	
v/s Ratio Prot	c0.05	c0.41		0.03	0.16		c0.14	0.05		0.05	c0.05	
v/s Ratio Perm												
v/c Ratio	0.60	0.80		0.46	0.33		1.09	0.25		0.60	0.38	
Uniform Delay, d1	53.6	24.1		54.9	18.5		52.4	42.0		53.1	46.6	
Progression Factor	1.08	0.90		1.18	0.55		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	2.4		0.6	0.4		68.0	0.2		4.3	1.4	
Delay (s)	60.1	24.0		65.7	10.5		120.4	42.2		57.4	48.0	
Level of Service	E	C		E	B		F	D		E	D	
Approach Delay (s)	26.6			15.8			87.3			50.2		
Approach LOS	C			B			F			D		
Intersection Summary												
HCM Average Control Delay	37.9			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.73											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			13.7					
Intersection Capacity Utilization	77.1%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 15: Del Mar Heights Road & Torrey Ridge Dr.

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↑	
Volume (vph)	48	1277	163	8	701	22	80	14	31	27	8	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4999		1770	5062		1770	1673		1770	1643	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4999		1770	5062		1770	1673		1770	1643	
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)	53	1419	181	9	779	24	89	16	34	30	9	33
RTOR Reduction (vph)	0	8	0	0	2	0	0	30	0	0	30	0
Lane Group Flow (vph)	53	1592	0	9	801	0	89	20	0	30	12	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.9	81.1		0.9	74.4		9.8	15.1		4.2	9.5	
Effective Green, g (s)	6.9	81.1		0.9	74.4		9.8	15.1		4.2	9.5	
Actuated g/C Ratio	0.06	0.68		0.01	0.62		0.08	0.13		0.04	0.08	
Clearance Time (s)	4.4	5.4		4.4	6.1		4.0	4.9		4.0	4.9	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	102	3378		13	3138		145	211		62	130	
v/s Ratio Prot	c0.03	c0.32		0.01	0.16		c0.05	c0.01		0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.52	0.47		0.69	0.26		0.61	0.10		0.48	0.09	
Uniform Delay, d1	54.9	9.3		59.4	10.3		53.3	46.4		56.8	51.2	
Progression Factor	0.76	1.82		1.01	0.60		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.3		80.4	0.2		5.3	0.1		2.2	0.1	
Delay (s)	43.0	17.1		140.3	6.4		58.6	46.5		59.0	51.3	
Level of Service	D	B		F	A		E	D		E	D	
Approach Delay (s)	18.0			7.9			54.2			54.5		
Approach LOS	B			A			D			D		

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.4
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Del Mar Heights Road & Lansdale Drive

Existing + Project (Build-out) PM

7/16/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖↖		↖	↖		↖	↖	
Volume (vph)	295	974	63	21	495	24	39	45	34	23	32	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5039		1770	5050		1770	1742		1770	1622	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5039		1770	5050		1770	1742		1770	1622	
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)	328	1082	70	23	550	27	43	50	38	26	36	226
RTOR Reduction (vph)	0	4	0	0	3	0	0	27	0	0	192	0
Lane Group Flow (vph)	328	1148	0	23	574	0	43	61	0	26	70	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	24.8	75.3		3.5	54.0		4.1	19.6		2.5	17.8	
Effective Green, g (s)	24.8	75.3		3.5	54.0		4.1	19.6		2.5	17.8	
Actuated g/C Ratio	0.21	0.63		0.03	0.45		0.03	0.16		0.02	0.15	
Clearance Time (s)	4.4	5.4		4.4	5.4		4.4	4.9		4.4	5.1	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	366	3162		52	2273		60	285		37	241	
v/s Ratio Prot	c0.19	c0.23		0.01	0.11		c0.02	0.04		0.01	c0.04	
v/s Ratio Perm												
v/c Ratio	0.90	0.36		0.44	0.25		0.72	0.21		0.70	0.29	
Uniform Delay, d1	46.3	10.8		57.3	20.5		57.4	43.5		58.4	45.5	
Progression Factor	1.25	0.78		1.23	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.4	0.3		2.2	0.3		28.5	0.1		39.1	0.2	
Delay (s)	79.1	8.7		72.9	21.4		85.9	43.7		97.5	45.7	
Level of Service	E	A		E	C		F	D		F	D	
Approach Delay (s)		24.3			23.4			57.5			50.4	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.9
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Del Mar Heights Road & Carmel Canyon Road

Existing + Project (Build-out) PM
 7/16/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↑	↑↑↑	↑↑	↑
Volume (vph)	831	184	89	432	123	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		4.4	5.6	5.3	4.4
Lane Util. Factor	0.91		1.00	0.91	0.97	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4947		1770	5085	3433	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	4947		1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	923	204	99	480	137	276
RTOR Reduction (vph)	19	0	0	0	0	41
Lane Group Flow (vph)	1108	0	99	480	137	235
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	74.1		11.2	90.4	18.7	29.9
Effective Green, g (s)	74.1		11.2	90.4	18.7	29.9
Actuated g/C Ratio	0.62		0.09	0.75	0.16	0.25
Clearance Time (s)	6.3		4.4	5.6	5.3	4.4
Vehicle Extension (s)	3.5		2.0	3.3	2.0	2.0
Lane Grp Cap (vph)	3055		165	3831	535	394
v/s Ratio Prot	c0.22		c0.06	0.09	0.04	c0.06
v/s Ratio Perm						0.09
v/c Ratio	0.36		0.60	0.13	0.26	0.60
Uniform Delay, d1	11.3		52.2	4.0	44.5	39.7
Progression Factor	2.06		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		4.2	0.1	0.1	1.6
Delay (s)	23.6		56.4	4.1	44.6	41.3
Level of Service	C		E	A	D	D
Approach Delay (s)	23.6			13.0	42.4	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			