

## APPENDIX J

### NEAR TERM WITH PROJECT BUILD-OUT SYNCHRO WORKSHEETS

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

Near Term + Project (Buildout) AM  
3/22/2012

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

Near Term + Project (Buildout) AM  
3/22/2012

Movement	WBL	WBBL	NBL	NBBL	SWL	SWBL
<b>Lane Configurations</b>						
Volume (vph)	2	378	391	313	507	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fit	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00
Said. Flow (prot)	1770	1863	1583	1770	1858	1755
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00
Said. Flow (perm)	1770	1863	1583	1770	1858	1755
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	420	434	348	563	9
R/TOR Reduction (vph)	0	0	238	0	0	0
Lane Group Flow (vph)	2	420	196	348	572	0
Turn Type	Prot	Prot	Split	Prot	Split	Prot
Protected Phases	7	4	3	8	2	2
Permitted Phases	1	4	3	8	2	2
Actuated Green, G (s)	0.8	25.8	25.8	19.6	44.6	25.6
Effective Green, g (s)	0.8	25.8	25.8	19.6	44.6	25.6
Actuated g/C Ratio	0.01	0.29	0.29	0.22	0.51	0.29
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 Gap Cap (vph)	16	546	464	394	941	516
vs Ratio Prot	0.00	0.23	0.12	0.20	0.31	0.25
vs Ratio Perm	0.00	0.23	0.12	0.20	0.31	0.25
vc Ratio	0.12	0.77	0.42	0.88	0.61	0.87
Uniform Delay, d1	43.3	28.4	25.1	33.1	15.5	29.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	6.5	0.6	20.2	1.1	15.0
Delay (s)	46.8	34.9	28.8	53.3	16.6	44.6
Level of Service	D	C	C	D	B	D
Approach Delay (s)	30.3	30.3	30.5	30.5	38.5	44.8
Approach LOS	C	C	D	D	D	D
<b>Intersection Summary</b>						
HCM Average Control Delay	32.5	HCM Level of Service	C			
HCM Volume to Capacity ratio	0.88	Actuated Cycle Length (s)	16.0			
Intersection Capacity Utilization	88.1	Sum of lost time (s)	D			
Analysis Period (min)	78.3%	ICU Level of Service	D			
c Critical Lane Group	15	Analysis Period (min)				
		c Critical Lane Group				

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

Near Term + Project (Buildout) AM  
3/2/2012

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

Near Term + Project (Buildout) AM  
3/2/2012

Movement	WB	WB	WB	WB	WB	SB	SB
Lane Configurations	4	4	4	4	3	3	3
Volume (vph)	87	7	0	475	52	3	865
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	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	1.00	0.95
Flt	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flt Protected	0.96	1.00	0.95	1.00	1.00	0.95	1.00
Said. Flow (prot)	3415	3487	3487	1770	3539	3539	1770
Flt Permitted	0.96	1.00	0.95	1.00	1.00	0.95	1.00
Said. Flow (perm)	3415	3487	3487	1770	3539	3539	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	8	0	528	58	3	961
RTOR Reduction (vph)	7	0	0	13	0	0	0
Lane Group Flow (vph)	98	0	0	573	0	3	961
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	8	5	2	1	6	7	4
Permitted Phases						Prot	Prot
Actuated Green, G (s)	3.2					Prot	Prot
Effective Green, g (s)	3.2	15.6	0.6	20.2		Prot	Prot
Actuated g/C Ratio	0.10	0.50	0.02	0.64		Prot	Prot
Clearance Time (s)	4.0	4.0	4.0	4.0		Prot	Prot
Vehicle Extension (s)	3.0	3.0	3.0	3.0		Prot	Prot
Lane Gap Cap (vph)	348	1722	34	2277		25	395
W/Ratio Prot	0.03		0.16	0.00	0.27		0.09
W/Ratio Perm						0.02	0.08
W/Ratio	0.28		0.33	0.09	0.42		0.35
Uniform Delay, d1	13.0	4.8	15.1	2.7		24.6	16.5
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.1	1.1	0.1		205.9	0.5
Delay (s)	13.5	4.9	16.3	2.9		230.5	17.1
Level of Service	B	A	B	A		F	B
Approach Delay (s)	13.5	4.9	13.5	2.9		49.8	32.4
Approach LOS	B	A	A	A		D	C

Intersection Summary	HCM Average Control Delay	HCM Volume to Capacity ratio	HCM Level of Service
	4.3	0.40	A
	Sum of lost time (s)	31.4	A
	ICU Level of Service	33.9%	A
	Analysis Period (min)	15	
c Critical Lane Group			

Movement	WB	WB	WB	WB	WB	SB	SB
Lane Configurations	4	4	4	4	3	3	3
Volume (vph)	87	7	0	475	52	3	865
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	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	1.00	0.95
Flt	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flt Protected	0.96	1.00	0.95	1.00	1.00	0.95	1.00
Said. Flow (prot)	3415	3487	3487	1770	3539	3539	1770
Flt Permitted	0.96	1.00	0.95	1.00	1.00	0.95	1.00
Said. Flow (perm)	3415	3487	3487	1770	3539	3539	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	8	0	528	58	3	961
RTOR Reduction (vph)	7	0	0	13	0	0	0
Lane Group Flow (vph)	98	0	0	573	0	3	961
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	8	5	2	1	6	7	4
Permitted Phases						Prot	Prot
Actuated Green, G (s)	3.2					Prot	Prot
Effective Green, g (s)	3.2	15.6	0.6	20.2		Prot	Prot
Actuated g/C Ratio	0.10	0.50	0.02	0.64		Prot	Prot
Clearance Time (s)	4.0	4.0	4.0	4.0		Prot	Prot
Vehicle Extension (s)	3.0	3.0	3.0	3.0		Prot	Prot
Lane Gap Cap (vph)	348	1722	34	2277		25	395
W/Ratio Prot	0.03		0.16	0.00	0.27		0.09
W/Ratio Perm						0.02	0.08
W/Ratio	0.28		0.33	0.09	0.42		0.35
Uniform Delay, d1	13.0	4.8	15.1	2.7		24.6	16.5
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.1	1.1	0.1		205.9	0.5
Delay (s)	13.5	4.9	16.3	2.9		230.5	17.1
Level of Service	B	A	B	A		F	B
Approach Delay (s)	13.5	4.9	13.5	2.9		49.8	32.4
Approach LOS	B	A	A	A		D	C

Movement	WB	WB	WB	WB	WB	SB	SB
Lane Configurations	4	4	4	4	3	3	3
Volume (vph)	87	7	0	475	52	3	865
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	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	1.00	0.95
Flt	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flt Protected	0.96	1.00	0.95	1.00	1.00	0.95	1.00
Said. Flow (prot)	3415	3487	3487	1770	3539	3539	1770
Flt Permitted	0.96	1.00	0.95	1.00	1.00	0.95	1.00
Said. Flow (perm)	3415	3487	3487	1770	3539	3539	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	97	8	0	528	58	3	961
RTOR Reduction (vph)	7	0	0	13	0	0	0
Lane Group Flow (vph)	98	0	0	573	0	3	961
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	8	5	2	1	6	7	4
Permitted Phases						Prot	Prot
Actuated Green, G (s)	3.2					Prot	Prot
Effective Green, g (s)	3.2	15.6	0.6	20.2		Prot	Prot
Actuated g/C Ratio	0.10	0.50	0.02	0.64		Prot	Prot
Clearance Time (s)	4.0	4.0	4.0	4.0		Prot	Prot
Vehicle Extension (s)	3.0	3.0	3.0	3.0		Prot	Prot
Lane Gap Cap (vph)	348	1722	34	2277		25	395
W/Ratio Prot	0.03		0.16	0.00	0.27		0.09
W/Ratio Perm						0.02	0.08
W/Ratio	0.28		0.33	0.09	0.42		0.35
Uniform Delay, d1	13.0	4.8	15.1	2.7		24.6	16.5
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.1	1.1	0.1		205.9	0.5
Delay (s)	13.5	4.9	16.3	2.9		230.5	17.1
Level of Service	B	A	B	A		F	B
Approach Delay (s)	13.5	4.9	13.5	2.9		49.8	32.4
Approach LOS	B	A	A	A		D	C

Baseline

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

Near Term + Project (Buildout) AM  
3/22/2012

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

Lane Configuration	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations	5	85	72	98	141	37	41	351
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fit	1.00	1.00	0.85	1.00	0.97	1.00	0.98	1.00
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Sold. Flow (prot)	1770	1863	1583	1770	1805	1770	3462	1770
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Sold. Flow (perm)	1770	1863	1583	1770	1805	1770	3462	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	94	80	109	157	41	46	390
RTO/R Reduction (vph)	0	0	66	0	17	0	0	1
Lane Group Flow (vph)	6	94	15	109	181	0	46	436
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Projected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Actuated Green, G (s)	0.6	8.7	8.7	3.5	11.6	1.4	18.4	14.7
Effective Green, g (s)	0.6	8.7	8.7	3.5	11.6	1.4	18.4	14.7
Actuated g/C Ratio	0.01	0.18	0.18	0.18	0.24	0.03	0.38	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)	22	338	287	129	436	52	1327	52
Vs Ratio Prot	0.00	0.05	0.01	0.06	0.10	0.03	0.13	0.03
Vs Ratio Perm								
V/C Ratio	0.27	0.28	0.05	0.84	0.42	0.88	0.33	0.90
Uniform Delay, d1	23.5	16.9	16.2	22.0	16.3	23.2	10.4	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	0.5	0.1	37.0	0.6	82.7	0.1	89.2
Delay (s)	30.1	17.4	16.3	56.0	16.0	105.9	10.6	112.5
Level of Service	C	B	B	E	B	F	B	F
Approach Delay (s)	17.3	31.2	31.2	31.2	19.3	18.4	18.4	18.4
Approach LOS	B	C	B	B	C	B	B	B
<b>Intersection Summary</b>								
HCM Average Control Delay	20.6	HCM Level of Service	C					
HCM Volume to Capacity ratio	0.63	Sum of lost time (s)	16.0					
Actuated Cycle Length (s)	48.0	ICU Level of Service	A					
Intersection Capacity Utilization	47.8%	Analysis Period (min)	15					
c Critical Lane Group								

Movement	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations	5	85	72	98	141	37	41	351
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Lane Util. Factor	1.00	1.00	0.85	1.00	0.97	1.00	0.98	1.00
Fit	1.00	1.00	0.85	1.00	0.97	1.00	0.98	1.00
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Sold. Flow (prot)	1770	1863	1583	1770	1805	1770	3462	1770
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Sold. Flow (perm)	1770	1863	1583	1770	1805	1770	3462	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	94	80	109	157	41	46	390
RTO/R Reduction (vph)	0	0	66	0	17	0	0	1
Lane Group Flow (vph)	6	94	15	109	181	0	46	436
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Projected Phases	7	4	3	8	5	2	1	6
Protected Phases								
Permitted Phases								
Actuated Green, G (s)	6.6	30.6	8.3	32.3	6.6	30.6	8.3	32.3
Effective Green, g (s)	6.6	30.6	8.3	32.3	0.08	0.36	0.10	0.38
Actuated g/C Ratio	0.08	0.36	0.38	0.38	4.0	4.0	4.0	4.0
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)	138	1826	173	1308	52	1355	52	1355
Vs Ratio Prot	0.06	0.20	0.06	0.25	0.03	0.03	0.03	0.03
Vs Ratio Perm								
V/C Ratio	0.78	0.55	0.61	0.91	0.78	0.55	0.61	0.83
Uniform Delay, d1	38.4	21.6	36.8	25.0	38.4	21.6	36.8	25.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.3	0.3	6.3	9.9	23.3	0.3	6.3	9.9
Delay (s)	61.8	22.0	43.0	34.9	61.8	22.0	43.0	34.9
Level of Service	E	C	D	C	E	C	D	D
Approach Delay (s)	28.8	35.6	35.6	35.6	28.8	35.6	35.6	35.6
Approach LOS	C	D	C	D	C	D	C	D
<b>Intersection Summary</b>								
HCM Average Control Delay	35.0	HCM Level of Service	D					
HCM Volume to Capacity ratio	0.79	Sum of lost time (s)	84.9					
Actuated Cycle Length (s)	12.0	ICU Level of Service	C					
Intersection Capacity Utilization	69.0%	Analysis Period (min)	15					
c Critical Lane Group								

Baseline

Synchro 7 - Report  
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Synchro 7 - Report  
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HCM Unsigned Intersection Capacity Analysis  
7: Del Mar Heights Road & Portofino Drive

HCM Signalized Intersection Capacity Analysis  
8: Del Mar Heights Rd. & I-15 SB Ramps

Near Term + Project (Buildout) AM  
3/2/2012

Movement	EBT	EBR	WB	WBR	NBT	NBR
Lane Configurations	↑↑↑↑					
Volume (vph)	1456	55	0	1424	0	142
Sign Control	Free	Stop				
Grade	0%	0%				
Peak Hour Factor	0.90	0.90				
Houly flow rate (vph)	1618	61	0	1582	0	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right Turn Rate (vh)						
Median type	None					
Median storage (vh)						
Upstream signal (t)						
vX, platoon unblocked						
vC, conflicting volume						
vc1, stage 1 cont vol						
vc2, stage 2 cont vol						
vcU, unblocked vol						
IC, single (s)						
IC, 2 stage (s)						
If (s)						
p0 queue free %						
cM capacity (vh/h)						
Direction, Lane #	EB1	EB2	EB3	WB1	WB2	NB1
Volume Total	647	647	305	791	791	158
Volume Left	0	0	0	0	0	0
Volume Right	0	0	61	0	0	158
cSH	1700	1700	1700	1700	1700	935
Volume to Capacity	0.38	0.38	0.23	0.47	0.47	0.17
Queue Length 95th (ft)	0	0	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						
Approach Delay (s)	0.0		0.0		0.0	A
Approach LOS						
Intersection Summary						
Average Delay						C
Intersection Capacity Utilization	0.4					H
Analysis Period (min)	44.8%					
	15					
ICU Level of Service	A					

Movement	EBT	EBR	WB	WBR	NBT	NBR
Lane Configurations	↑↑↑↑					
Volume (vph)	1456	55	0	1424	0	142
Sign Control	Free	Stop				
Grade	0%	0%				
Peak Hour Factor	0.90	0.90				
Houly flow rate (vph)	1618	61	0	1582	0	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right Turn Rate (vh)						
Median type	None					
Median storage (vh)						
Upstream signal (t)						
vX, platoon unblocked						
vC, conflicting volume						
vc1, stage 1 cont vol						
vc2, stage 2 cont vol						
vcU, unblocked vol						
IC, single (s)						
IC, 2 stage (s)						
If (s)						
p0 queue free %						
cM capacity (vh/h)						
Direction, Lane #	EB1	EB2	EB3	WB1	WB2	NB1
Volume Total	647	647	305	791	791	158
Volume Left	0	0	0	0	0	0
Volume Right	0	0	61	0	0	158
cSH	1700	1700	1700	1700	1700	935
Volume to Capacity	0.38	0.38	0.23	0.47	0.47	0.17
Queue Length 95th (ft)	0	0	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						
Approach Delay (s)	0.0		0.0		0.0	A
Approach LOS						
Intersection Summary						
Average Delay						C
Intersection Capacity Utilization	0.4					H
Analysis Period (min)	44.8%					
	15					
ICU Level of Service	A					

Lane Configurations

Volume (vph)

Ideal Flow (vph)

Total Lost time (s)

Lane Util. Factor

Fit

Fit Protected

Sid. Flow (prot)

Fit Permitted

Sid. Flow (perm)

Peak-hour factor, PHF

Adj. Flow (vph)

PTOR Reduction (vph)

Lane Group Flow (vph)

Turn Type

Protected Phases

Permitted Phases

Actualized Green, G (s)

Effective Green, g (s)

Actualized g/C Ratio

Clearance Time (s)

Vehicle Extension (s)

Lane Grp Cap (vph)

vs Ratio Prof

vs Ratio Perm

yc Ratio

Uniform Delay, d1

Progression Factor

Incremental Delay, d2

Delay (s)

Level of Service

Approach Delay (s)

Approach LOS

HCM Level of Service

C

HCM Average Control Delay

HCM Volume to Capacity ratio

Actuated Cycle Length (s)

Intersection Capacity Utilization

Analysis Period (min)

c Critical Lane Group

HCM Level of Service

C

Sum of lost time (s)

ICU Level of Service

H

124.3%

15

### HCM Signalized Intersection Capacity Analysis 9: Del Mar Heights Road & I-15 NB Ramps

### Near Term + Project (Buildout) AM 10: Del Mar Heights Road & High Bluff Drive

Movement	EBT	EBC	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBL	SBR
<b>Movement</b>												
Lane Configurations												
Volume (vph)												
Volume (vph)	1524	0	0	1569	962	364	59	1104	0	0	59	312
Ideal Flow (vphpl)	1800	1800	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	13	12	14	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt	1.00	1.00	1.00	1.00	1.00	0.87	0.85	1.00	1.00	1.00	1.00	1.00
Frt Protected	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Sld. Flow (proj)	3433	3539	5309	1636	1681	1542	1604					
Frt Permitted	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Sld. Flow (perm)	3433	3539	5309	1636	1681	1542	1604					
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	1693	0	0	1743	1069	427	66	1227	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	467	0	6	6	0	0	0
Lane Group Flow (vph)	257	1693	0	0	1743	602	384	667	657	0	0	0
Turn Type	Prot	Prot	Prot	Split	Split	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	6	6	8	8	8	8	8	7	4	4
Permitted Phases										3	5	6
Actuated Green, G (s)	9.6	6.0	46.4	46.4	52.0	52.0	52.0	7.6	40.1	40.1	8.6	41.1
Effective Green, g (s)	9.6	6.0	46.4	46.4	52.0	52.0	52.0	7.6	40.1	40.1	8.6	41.1
Actuated g/C Ratio	0.08	0.50	0.39	0.39	0.43	0.43	0.43	0.09	-0.46	0.46	0.10	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap. (vph)	275	1770	2053	633	728	668	695				274	467
w/s Ratio Prot.	0.07	0.48	0.33	0.37	0.23	c0.43	0.41				0.07	0.07
w/s Ratio Perm											0.25	0.25
w/c Ratio	0.93	0.96	0.85	0.95	0.53	1.00	0.95				0.87	0.87
Uniform Delay, d1	54.9	28.7	33.6	36.7	28.0	34.0	32.6				39.4	21.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00
Incremental Delay, d2	36.9	13.3	4.6	28.6	0.7	34.3	21.6				25.5	3.7
Delay (s)	91.7	42.1	38.2	61.3	26.7	68.3	54.3				61.0	25.2
Level of Service	F	D	D	E	C	E	D				E	C
Approach Delay (s)	48.6	47.0	53.4	53.4	0.0						25.0	41.2
Approach LOS	D	D	D	D	D	D	A				D	D

Intersection Summary			HCM Level of Service			C		
HCM Average Control Delay	19.2	HCM Level of Service	D			0.86		
HCM Volume to Capacity ratio	0.98					87.8		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0			76.4%		
Intersection Capacity Utilization						15		
Analysis Period (min)	99.6%	ICU Level of Service	F					
C Critical Lane Group	15							

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

Near Term + Project (Buildout) AM  
3/2/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1974	190	147	2192	96	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.91	0.97	1.00	1.00
Fit	1.00	0.85	1.00	1.00	0.95	1.00
Fit Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Fit 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)	2193	211	163	2424	96	74
R/TOR Reduction (vph)	0	93	0	0	67	0
Lane Group Flow (vph)	2193	118	163	2424	96	74
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	3	8	2	2
Permitted Phases						
Actuated Green, G (s)	32.3	32.3	8.0	44.3	5.7	5.7
Effective Green, g (s)	32.3	32.3	8.0	44.3	5.7	5.7
Actuated g/C Ratio	0.56	0.56	0.14	0.76	0.10	0.10
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2832	882	244	3884	337	156
vs Ratio Prot	0.43	0.07	0.09	0.48	0.03	0.00
vs Ratio Perm						
vs Ratio	0.77	0.13	0.67	0.62	0.28	0.05
Uniform Delay, d <sub>1</sub>	10.0	6.2	23.7	3.1	24.3	23.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	1.4	0.1	6.8	0.3	0.5	0.1
Delay (s)	11.4	6.2	30.5	3.4	24.7	23.8
Level of Service	B	A	C	A	C	B
Approach Delay (s)	10.9	5.1	24.3	5.1	24.3	5.1
Approach LOS	B	B	A	A	A	C

Intersection Summary	HCM Level of Service	A
HCM Average Control Delay	8.5	
HCM Volume to Capacity ratio	0.71	
Actuated Cycle Length (s)	12.0	
Intersection Capacity Utilization	58.0	
Analysis Period (min)	15	
c Critical Lane Group		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1883	148	158	2257	72	72
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	1.00	0.97	1.00
Fit	1.00	1.00	1.00	1.00	1.00	1.00
Fit Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Fit 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)	2092	176	176	2508	80	80
R/TOR Reduction (vph)	0	76	0	0	0	70
Lane Group Flow (vph)	2092	100	176	2508	80	80
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	3	8	2	2
Permitted Phases						
Actuated Green, G (s)	28.5	28.5	34	35.9	6.3	6.3
Effective Green, g (s)	28.5	28.5	3.4	35.9	6.3	6.3
Actuated g/C Ratio	0.57	0.57	0.07	0.72	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2887	898	233	3636	222	199
vs Ratio Prot	0.41	0.06	0.05	0.049	0.005	0.01
vs Ratio Perm						
vs Ratio	0.72	0.11	0.76	0.69	0.36	0.05
Uniform Delay, d <sub>1</sub>	8.0	5.0	23.0	4.0	20.1	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	0.9	0.1	13.0	0.6	1.0	0.1
Delay (s)	8.9	5.1	36.0	4.6	21.1	19.4
Level of Service	A	A	D	A	C	B
Approach Delay (s)	8.6	5.1	36.0	6.6	20.3	19.4
Approach LOS	A	A	A	A	C	B

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

### HCM Signalized Intersection Capacity Analysis Near Term + Project (Buildout) AM 14: Del Mar Heights Road & Carmel County Road

### Near Term + Project (Buildout) AM 3/2/2012

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑
Volume (vph)	239	1013	514	289	1623	95	98	164
Ideal Flow (vphpl)	1800	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	0.97	0.91	0.97	0.91	1.00	0.97	0.91	0.91
Frt	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Said. Flow (prot)	3433	4829	3433	5043	3433	5085	3433	4643
Frt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Said. Flow (perm)	3433	4829	3433	5043	3433	5085	3433	4643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	266	1126	571	289	1803	106	347	126
RTOR Reduction (vph)	0	100	0	0	7	0	0	84
Lane Group Flow (vph)	266	1597	0	289	1902	0	347	126
Turn Type	Prot							
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Actuated Green, G (s)	9.0	33.8	10.2	35.0	10.0	20.2	8.8	19.0
Effective Green, g (s)	9.0	33.8	10.2	35.0	10.0	20.2	8.8	19.0
Actuated g/C Ratio	0.10	0.38	0.11	0.39	0.11	0.23	0.10	0.21
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)	347	1834	393	1983	386	1154	399	991
v/s Ratio Prot	0.08	0.33	0.09	0.09	0.10	0.02	0.05	0.16
v/s Ratio Perm								
v/c Ratio	0.77	0.87	0.76	0.96	0.90	0.11	0.02	0.04
Uniform Delay, d <sub>1</sub>	39.0	25.6	38.2	26.3	39.0	27.3	38.2	32.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	9.7	4.8	8.4	11.9	22.8	0.0	0.1	1.6
Delay (s)	48.7	30.4	46.6	38.2	61.8	27.3	27.1	39.8
Level of Service	D	C	D	D	E	C	D	C
Approach Delay (s)	32.9	0	39.3	0	47.8	0	36.2	0
Approach LOS	C	D	D	D	D	D	D	C

Intersection Summary	HCM Level of Service	D	HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120		Actuated Cycle Length (s)	67.6	Sum of lost time (s)	120
Intersection Capacity Utilization	79.3%		Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		Analysis Period (min)	15	c Critical Lane Group	C
d Detach Right Lane. Recode with 1 though lane as a right lane.						
c Critical Lane Group						

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Configurations	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑	↑↑↑↑
Volume (vph)	239	1013	514	289	1623	95	98	164
Ideal Flow (vphpl)	1800	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	0.97	0.91	0.97	0.91	1.00	0.97	0.91	0.91
Frt	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Said. Flow (prot)	3433	4829	3433	5043	3433	5085	3433	4643
Frt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Said. Flow (perm)	3433	4829	3433	5043	3433	5085	3433	4643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	266	1126	571	289	1803	106	347	126
RTOR Reduction (vph)	0	100	0	0	7	0	0	84
Lane Group Flow (vph)	266	1597	0	289	1902	0	347	126
Turn Type	Prot							
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Actuated Green, G (s)	9.0	33.8	10.2	35.0	10.0	20.2	8.8	19.0
Effective Green, g (s)	9.0	33.8	10.2	35.0	10.0	20.2	8.8	19.0
Actuated g/C Ratio	0.10	0.38	0.11	0.39	0.11	0.23	0.10	0.21
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)	347	1834	393	1983	386	1154	399	991
v/s Ratio Prot	0.08	0.33	0.09	0.09	0.10	0.02	0.05	0.16
v/s Ratio Perm								
v/c Ratio	0.77	0.87	0.76	0.96	0.90	0.11	0.02	0.04
Uniform Delay, d <sub>1</sub>	39.0	25.6	38.2	26.3	39.0	27.3	38.2	32.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	9.7	4.8	8.4	11.9	22.8	0.0	0.1	1.6
Delay (s)	48.7	30.4	46.6	38.2	61.8	27.3	27.1	39.8
Level of Service	D	C	D	D	E	C	D	C
Approach Delay (s)	32.9	0	39.3	0	47.8	0	36.2	0
Approach LOS	C	D	D	D	D	D	D	C

Intersection Summary	HCM Level of Service	C	HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120		Actuated Cycle Length (s)	67.6	Sum of lost time (s)	120
Intersection Capacity Utilization	79.3%		Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		Analysis Period (min)	15	c Critical Lane Group	C
d Detach Right Lane. Recode with 1 though lane as a right lane.						
c Critical Lane Group						

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

Near Term + Project (Buildout) AM  
3/2/2012

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

Near Term + Project (Buildout) AM  
3/2/2012

Movement	EBT	EBS	WBT	WBS	NBT	NBS	SBT	SBR
Lane Configurations	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓
Volume (vph)	212	681	134	81	118	216	121	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00
Fit	1.00	0.98	1.00	0.99	1.00	0.99	1.00	1.00
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Said Flow (prot)	1770	4960	1770	4962	1770	1845	1770	1674
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Said Flow (perm)	1770	4960	1770	4962	1770	1845	1770	1674
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	236	757	149	90	1242	240	134	173
RTOR Reduction (vph)	0	33	0	0	34	0	3	0
Lane Group Flow (vph)	236	873	0	90	1448	0	134	182
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Actuated Green, G (s)	12.4	30.5	7.0	25.1	7.9	16.2	4.0	12.3
Effective Green, g (s)	12.4	30.5	7.0	25.1	7.9	16.2	4.0	12.3
Actuated g/C Ratio	0.17	0.41	0.09	0.34	0.11	0.22	0.05	0.17
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 Cap (vph)	298	2053	168	1690	190	406	96	279
W/Ratio Prot	0.013	0.18	0.05	0.029	0.08	0.10	0.04	0.07
W/Ratio Perm								
W/Ratio	0.79	0.43	0.54	0.66	0.71	0.45	0.65	0.40
Uniform Delay, d1	29.4	15.4	31.8	22.6	31.8	24.9	34.2	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.4	0.1	3.3	4.5	11.3	0.8	14.0	0.9
Delay (s)	42.8	15.5	35.1	27.2	43.1	28.7	48.1	28.3
Level of Service	D	B	D	C	D	C	D	C
Approach Delay (s)	21.1		27.6		33.0		32.8	
Approach LOS	C	C	C	C	C	C	C	C
Intersection Summary								
HCM Average Control Delay	26.3		HCM Level of Service	C				
HCM Volume to Capacity ratio	0.74							
Actuated Cycle Length (s)	73.7		Sum of lost time (s)	16.0				
Intersection Capacity Utilization	69.4%		ICU Level of Service	C				
Analysis Period (min)	15							
c Critical Lane Group								

Movement	EBT	EBS	WBT	WBS	NBT	NBS	SBT	SBR
Lane Configurations	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓	↑↑↓
Volume (vph)	168	586	35	67	1153	36	44	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	0.91	1.00	1.00
Fit	1.00	0.98	1.00	0.99	1.00	0.99	1.00	0.99
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Said Flow (prot)	1770	5042	1770	5042	1770	5042	1770	5042
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Said Flow (perm)	1770	5042	1770	5042	1770	5042	1770	5042
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	187	651	39	74	1281	40	49	61
RTOR Reduction (vph)	0	8	0	5	0	0	50	0
Lane Group Flow (vph)	187	682	0	74	1316	0	49	40
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Actuated Green, G (s)	8.2	25.0	3.7	20.5	24.3	11.0	3.2	11.8
Effective Green, g (s)	8.2	25.0	3.7	20.5	24.3	11.0	3.2	11.8
Actuated g/C Ratio	0.14	0.42	0.06	0.35	0.19	0.04	0.05	0.20
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 Cap (vph)	246	240	114	1782	72	312	96	325
W/Ratio Prot	c0.11	0.14	0.04	0.07	0.03	0.02	0.03	0.13
W/Ratio Perm								
W/Ratio	0.76	0.32	0.67	0.75	0.68	0.13	0.56	0.66
Uniform Delay, d1	24.4	11.3	27.0	16.9	27.9	20.0	27.2	21.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.9	0.1	14.1	1.8	23.3	0.2	7.3	4.7
Delay (s)	37.3	11.4	41.1	18.7	51.2	20.1	34.5	26.4
Level of Service	D	B	D	C	D	C	C	C
Approach Delay (s)	16.9		19.9		31.1		31.1	
Approach LOS	B	C	B	C	C	C	C	C
Intersection Summary								
HCM Average Control Delay	20.8		HCM Level of Service	C				
HCM Volume to Capacity ratio	0.66							
Actuated Cycle Length (s)	120		Sum of lost time (s)	58.9				
Intersection Capacity Utilization	74.9%		ICU Level of Service	15				
Analysis Period (min)								
c Critical Lane Group								

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

Near Term + Project (Buildout) AM  
3/22/2012  
HCM Signalized Intersection Capacity Analysis  
18: Del Mar Highlands Town Ctr. & El Camino Real

Movement	EBT	EBR	WBL	NBL	NBT	NBR
Lane Configurations	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
Volume (Vph)	573	133	397	1028	277	342
Ideal Flow (Vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.91	0.97	1.00	0.96
Frt	0.97	1.00	1.00	1.00	0.85	0.97
Ft Protected	1.00	0.95	1.00	0.95	1.00	0.95
Sold. Flow (prot)	4941	1770	5085	3433	1583	3433
Ft Permitted	1.00	0.95	1.00	0.95	1.00	0.95
Sold. Flow (perm)	4941	1770	5085	3433	1583	3433
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	637	148	441	1142	308	380
RTOR Reduction (vph)	57	0	0	0	304	0
Lane Group Flow (vph)	728	0	441	1142	308	76
Turn Type			Prot			
Protected Phases	4	3	2	2		
Permitted Phases						
Actuated Green, G (s)	14.5	17.6	36.1	11.0	11.0	
Effective Green, g (s)	14.5	17.6	36.1	11.0	11.0	
Actuated g/C Ratio	0.26	0.32	0.66	0.20	0.20	
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 Grip Cap (vph)	1300	565	3332	685	316	
v/s Ratio Prot	0.15	0.25	0.22	0.09	0.05	
v/s Ratio Perm						
v/s Ratio Ratio	0.56	0.78	0.34	0.45	0.24	
Uniform Delay, d1	17.5	17.0	4.2	19.4	18.5	
Progression Factor	-1.00	-1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	6.9	0.1	0.5	0.4	
Delay (s)	(8.1)	23.9	4.3	19.9	18.9	
Level of Service	B	C	A	B	B	
Approach Delay (s)	18.1	9.8	19.3	15.1	14.8	
Approach LOS	B	A	B	B	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NET	NET	SWL	SWR
Lane Configurations	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
Volume (Vph)	72	14	14	97	31	110	158	346	101	179
Ideal Flow (Vphpl)	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	0.95	0.95	1.00	0.96	1.00	0.97	0.91	0.97	0.91	0.95
Frt	1.00	0.96	1.00	0.97	1.00	0.98	1.00	0.97	1.00	0.95
Ft Protected	0.95	0.98	0.96	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Sold. Flow (prot)	1681	1658	1795	1583	3433	4913	3433	5034	3433	5034
Ft Permitted	0.95	0.98	0.96	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Sold. Flow (perm)	1681	1658	1795	1583	3433	4913	3433	5034	3433	5034
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	80	16	16	108	34	122	176	384	112	198
RTOR Reduction (vph)	0	16	0	0	0	76	0	70	0	12
Lane Group Flow (vph)	57	40	0	0	142	46	176	426	0	198
Turn Type			Split			Split			Prot	
Protected Phases	2	2	2	2	6	6	3	8	7	4
Permitted Phases										
Actuated Green, G (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.5	17.8	3.5	18.0
Effective Green, g (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.5	17.8	3.5	18.0
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06	0.06	0.15	0.38	0.07	0.08
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 Grip Cap (vph)	96	95	266	597	255	1853	268	1920	268	1920
v/s Ratio Prot	<0.03	0.02	<0.03	0.02	<0.03	0.02	<0.05	0.09	<0.06	0.20
v/s Ratio Perm										
v/s Ratio Ratio	0.59	0.42	0.59	0.42	0.59	0.42	0.53	0.69	0.23	0.74
Uniform Delay, d1	21.7	21.5	21.7	21.5	21.7	21.5	18.6	9.4	21.3	11.3
Progression Factor	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Incremental Delay, d2	9.5	3.0	2.1	0.1	2.1	0.1	7.8	0.1	10.2	0.3
Delay (s)	31.2	24.5	20.6	9.5	29.1	10.1	31.5	11.6	31.5	11.6
Level of Service	C	C	C	A	C	B	C	B	C	B
Approach Delay (s)	<27.9	<15.5	<15.1	<15.1	<15.1	<15.1	<14.8	<14.8	<14.8	<14.8
Approach LOS	C	B	B	B	B	B	B	B	B	B

Intersection Summary		HCM Level of Service	B
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15	46.3%	
c Critical Lane Group	c	15	

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

### Near Term + Project (Buildout) AM 3/2/2012

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

### Near Term + Project (Buildout) AM 3/2/2012

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	BBR
<b>Lane Configurations</b>									
Volume (vph)	176	85	46	195	153	114	460	7	103
Ideal Flow (vphpl)	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	0.95	1.00	1.00	1.00
Fit	1.00	1.00	0.85	1.00	0.83	1.00	1.00	1.00	0.95
Fit Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Said. Flow (prot)	1770	1863	1583	1770	1740	1770	3533	1770	3539
Fit Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Said. Flow (perm)	1770	1863	1583	1770	1740	1770	3533	1770	3539
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)	196	94	51	217	170	127	511	8	114
RTOR Reduction (vph)	0	0	79	0	36	0	2	0	0
Lane Group Flow (vph)	196	94	50	51	351	0	127	517	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1	6	6
Permitted Phases	7	4	3	8	5	2	1	6	6
Actuated Green, G (s)	12.4	26.9	3.6	18.1	7.1	16.7	6.1	15.7	15.7
Effective Green, g (s)	12.4	26.9	3.6	18.1	7.1	16.7	6.1	15.7	15.7
Actuated g/C Ratio	0.18	0.39	0.05	0.26	0.10	0.24	0.09	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
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Gap Cap (vph)	317	723	614	92	454	181	851	156	802
v/s Ratio Prot	c0.11	0.05	0.03	0.03	0.20	0.07	0.15	0.06	0.15
v/s Ratio Perm	c0.11	0.05	0.03	0.03	0.20	0.07	0.15	0.06	0.15
vic Ratio	0.62	0.13	0.08	0.55	0.77	0.70	0.61	0.67	0.12
Uniform Delay, d1	26.3	13.7	13.4	32.1	23.7	30.1	23.4	30.8	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	3.6	0.1	0.1	7.1	8.0	11.6	1.2	16.1	22
Delay (s)	29.8	13.7	13.5	39	31.7	41.7	24.6	46.9	26.7
Level of Service	C	B	B	D	C	D	C	C	B
Approach Delay (s)	21.2	32.5	32.5	32.5	32.5	28.0	28.2	28.2	28.2
Approach LOS	C	C	C	C	C	C	C	C	C

Intersection Summary	HCM Level of Service	C
HCM Average Control Delay	27.7	
HCM Volume to Capacity ratio	0.70	
Actualized Cycle Length (s)	69.3	
Intersection Capacity Utilization	62.4%	
Analysis Period (min)	15	
c Critical Lane Group		

Intersection Summary

HCM Average Control Delay

HCM Volume to Capacity ratio

Actualized Cycle Length (s)

Intersection Capacity Utilization

Analysis Period (min)

c Critical Lane Group

Near Term + Project (Buildout) AM

3/2/2012

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

Near Term + Project (Buildout) AM  
3/2/2012

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

Near Term + Project (Buildout) AM  
3/2/2012

Movement	SET	SER	NWL	NWT	NWR	NEF	SWL	SWT	SWR
<b>Lane Configurations</b>									
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Volume (vph)	55	6	77	13	27	14	129	31	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	7	86	14	30	16	143	34	18
<b>Direction: Lane #</b>									
Volume Total (vph)	68	86	60	180	244				
Volume Left (vph)	61	0	14	143	3				
Volume Right (vph)	0	86	16	2	223				
Hadj (s)	0.48	-0.67	-0.07	0.19	-0.51				
Departure Headway (s)	6.0	4.9	5.1	4.9	4.2				
Degree Utilization, x	0.11	0.12	0.09	0.25	0.28				
Capacity (veh/h)	553	679	629	696	813				
Control Delay (s)	8.6	7.3	8.6	9.5	8.8				
Approach Delay (s)	7.9	8.6	9.5	8.8	8.8				
Approach LOS	A	A	A	A	A				
<b>Intersection Summary</b>									
Delay						8.8			
HCM Level of Service						A			
Intersection Capacity Utilization						42.4%			
Analysis Period (min)						15			

Movement	SET	SER	NWL	NWT	NWR	NEF	SWL	SWT	SWR
<b>Wroteholt</b>									
Lane Configurations									
Volume (vph)	54	32	119	205	63	25	31	304	83
Ideal Flow (vphpl)	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	1.00	1.00	1.00
Fit									
Fit Protected	0.98	1.00	0.97	0.97	0.97	0.95	1.00	0.95	1.00
Said Flow (prot)	1829	1583	1779	1770	3426	1770	3458	1770	3458
Fit Permitted	0.98	1.00	0.97	0.97	0.97	0.95	1.00	0.95	1.00
Said Flow (perm)	1829	1583	1779	1770	3426	1770	3458	1770	3458
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)	60	102	132	226	70	28	34	338	92
RTOR Reduction (vph)	0	0	0	0	0	4	0	28	0
Lane Group Flow (vph)	0	102	22	0	322	0	34	402	0
Turn Type									
Protected Phases	Split	Prot	Split	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	4	4	4	4	8	8	5	2	1
Actuated Green, G (s)	11.6	11.6	15.9	15.9	16	26.0	16	26.0	16
Effective Green, G (s)	11.6	11.6	15.9	15.9	16	26.0	16	26.0	16
Actuated g/C Ratio	0.17	0.17	0.23	0.23	0.02	0.37	0.01	0.36	0.01
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Cap (vph)	302	261	402	402	40	1267	20	1240	20
v/s Ratio, Prot	0.09	0.01	0.18	0.18	0.02	0.12	0.01	0.30	0.01
v/s Ratio, Perm	0.04	0.08	0.80	0.85	0.32	0.85	0.32	0.85	0.32
Uniform Delay, d1	26.9	24.8	25.7	34.2	15.8	34.7	20.5	34.7	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	10.9	95.5	0.1	131.5	4.6	131.5	4.6
Delay (s)	28.7	28.0	36.6	119.7	16.0	165.2	25.2	165.2	25.2
Level of Service	C	C	D	F	B	F	C	F	C
Approach Delay (s)	27.0	36.6	23.6	27.4	27.4	27.4	27.4	27.4	27.4
Approach LOS	C	D	C	C	C	C	C	C	C
<b>Intersection Summary</b>									
HCM Average Control Delay						27.9			
HCM Volume to Capacity ratio						0.76			
Actuated Cycle Length (s)						70.3			
Intersection Capacity Utilization						60.1%			
Analysis Period (min)						15			
c Critical Lane Group									

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

Near Term + Project (Buildout) AM  
3/2/2012

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

Near Term + Project (Buildout) AM  
3/2/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Volume (vph)												
Volume (vph)												
Actual (vph)												
Volume (vph)												
Ideal Flow (vphpl)												
Total Lost time (s)												
Lane Util. Factor												
Frt												
Frt Protected												
Sld. Flow (prot)												
Frt Permitted												
Sld. Flow (perm)												
Peak-hour factor: PHF												
Adj. Flow (vph)												
RTOR Reduction (vph)												
Lane Group Flow (vph)												
Turn Type												
Protected Phases												
Permitted Phases												
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Gap Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)												
Approach LOS												
<b>Intersection Summary</b>												
HCM Average Control Delay												
HCM Volume to Capacity ratio												
Actualized Cycle Length (s)												
Intersection Capacity Utilization												
Analysis Period (min)												
c Critical Lane Group												

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

Near Term + Project (Buildout) AM  
3/2/2012

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

Movement	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
<b>Lane Configurations</b>								
Volume (vph)	36	13	44	725	19	169	90	1042
Ideal Flow (vph)	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	0.91	0.95	0.91	0.95	1.00	0.91	0.91
Frt	1.00	0.93	0.85	1.00	0.98	1.00	1.00	1.00
Frt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00
Sold. Flow (prot)	1681	1563	1504	1681	1611	1504	1770	5067
Frt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00
Sold. Flow (perm)	1681	1563	1504	1681	1611	1504	1770	5067
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	14	49	806	21	188	100	1158
RTOR Reduction (vph)	0	16	30	0	1	119	0	16
Lane Group Flow (vph)	36	19	2	427	418	50	100	1308
Turn Type	Split	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	4	8	8	5	2	1
Permitted Phases								
Actuated Green, g (s)	6.1	6.1	6.1	27.5	27.5	7.0	30.5	12.4
Effective Green, g (s)	6.1	6.1	6.1	27.5	27.5	7.0	30.5	35.9
Actuated g/C Ratio	0.07	0.07	0.07	0.30	0.30	0.08	0.33	0.13
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 Cap/Cap (vph)	111	103	99	500	479	417	134	1645
v/s Ratio Prot	0.32	0.19	0.02	0.05	0.87	0.11	0.75	0.60
v/s Ratio Perm	0.32	0.19	0.02	0.05	0.87	0.11	0.75	0.60
v/s Ratio	41.2	40.9	40.4	30.6	30.8	23.6	41.9	28.2
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Incremental Delay, d2	1.7	0.9	0.1	13.3	15.9	0.1	20.0	2.7
Delay (s)	42.9	41.7	40.5	43.9	46.7	23.7	61.9	30.9
Level of Service	D	D	D	D	C	C	E	D
Approach Delay (s)	41.8	41.8	41.8	41.7	41.7	33.1	25.7	25.7
Approach LOS	D	D	D	D	D	C	C	C
<b>Intersection Summary</b>								
HCM Average Control Delay	32.9		HCM Level of Service	C				
HCM Volume to Capacity ratio	0.76		Sum of lost time (s)	160				
Actuated Cycle Length (s)	92.5		ICU Level of Service	C				
Intersection Capacity Utilization	69.5%							
Analysis Period (min)	15							
c Critical Lane Group								

Movement	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
<b>Lane Configurations</b>								
Volume (vph)	36	13	44	725	19	169	90	1042
Ideal Flow (vph)	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	0.91	0.95	0.91	0.95	1.00	0.91	0.91
Frt	1.00	0.93	0.85	1.00	0.98	1.00	1.00	1.00
Frt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00
Sold. Flow (prot)	1681	1563	1504	1681	1611	1504	1770	5067
Frt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00
Sold. Flow (perm)	1681	1563	1504	1681	1611	1504	1770	5067
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	14	49	806	21	188	100	1158
RTOR Reduction (vph)	0	16	30	0	1	119	0	16
Lane Group Flow (vph)	36	19	2	427	418	50	100	142
Turn Type	Split	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	4	8	8	5	2	1
Permitted Phases								
Actuated Green, g (s)	6.1	6.1	6.1	27.5	27.5	7.0	30.5	12.4
Effective Green, g (s)	6.1	6.1	6.1	27.5	27.5	7.0	30.5	35.9
Actuated g/C Ratio	0.07	0.07	0.07	0.30	0.30	0.08	0.33	0.13
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 Cap/Cap (vph)	111	103	99	500	479	417	134	1645
v/s Ratio Prot	0.32	0.19	0.02	0.05	0.87	0.11	0.75	0.60
v/s Ratio Perm	0.32	0.19	0.02	0.05	0.87	0.11	0.75	0.60
v/s Ratio	41.2	40.9	40.4	30.6	30.8	23.6	41.9	28.2
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Incremental Delay, d2	1.7	0.9	0.1	13.3	15.9	0.1	20.0	2.7
Delay (s)	42.9	41.7	40.5	43.9	46.7	23.7	61.9	30.9
Level of Service	D	D	D	D	C	C	E	D
Approach Delay (s)	41.8	41.8	41.8	41.7	41.7	33.1	25.7	25.7
Approach LOS	D	D	D	D	D	C	C	C
<b>Intersection Summary</b>								
HCM Average Control Delay	32.9		HCM Level of Service	C				
HCM Volume to Capacity ratio	0.76		Sum of lost time (s)	160				
Actuated Cycle Length (s)	92.5		ICU Level of Service	C				
Intersection Capacity Utilization	69.5%							
Analysis Period (min)	15							
c Critical Lane Group								

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

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

Near Term + Project (Buildout) AM  
3/2/2012

Movement	EBL	EBR	WBL	WBR	NBL	NBR	SBT	SBR
Lane Configurations	4↑↓	↑	↑	↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
Volume (vph)	651	943	317	0	0	0	412	227
Ideal Flow (vphpl)	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	0.91	0.86	0.91			0.91		
Fit	1.00	1.00	0.95			1.00		
Fit Protected	0.95	0.99	1.00			1.00		
Satd. Flow (prot)	1610	3172	1441			6067	1770	5085
Fit Permitted	0.95	0.99	1.00			1.00		
Satd. Flow (perm)	1610	3172	1441			6067	1770	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	723	1048	382	0	0	0	458	252
RTOR Reduction (vph)	0	3	54	0	0	0	53	0
Lane Group Flow (vph)	596	1217	263	0	0	0	657	0
Turn Type	Spill	Prot					Prot	
Protected Phases	4	4	4				7	4
Permitted Phases							3	8
Actuated Green, G (s)	27.1	27.1	27.1				12.1	7.6
Effective Green, g (s)	27.1	27.1	27.1				12.1	7.6
Actuated g/C Ratio	0.45	0.45	0.45				0.42	0.42
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 Gap Cap (vph)	722	1423	647				1336	234
Vs Ratio Prot	0.36	0.38	0.18				0.11	0.16
Vs Ratio Perm							0.01	0.07
Vc Ratio	0.81	0.86	0.41				0.53	0.15
Uniform Delay, d1	14.4	14.9	11.2				20.6	25.2
Progression Factor	1.00	1.00	1.00				1.00	1.00
Incremental Delay, d2	6.9	5.3	0.4				0.3	11.1
Delay (s)	21.3	20.2	11.6				20.9	36.3
Level of Service	C	C	B				C	D
Approach Delay (s)	19.2	19.2	0.0				20.9	16.4
Approach LOS	B	A	A				C	B
Intersection Summary								
HCM Average Control Delay	18.8	HCM Level of Service		B				
HCM Volume to Capacity Ratio	0.73	Sum of lost time (s)		120	G			
Actuated Cycle Length (s)	60.4	ICU Level of Service		15				
Intersection Capacity Utilization	102.2%	Analysis Period (min)						
c Critical Lane Group								

Movement	EBL	EBR	WBL	WBR	NBL	NBR	SBT	SBR
Lane Configurations	↑↑↑	↑	↑	↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
Volume (vph)	651	943	317	0	0	0	412	227
Ideal Flow (vphpl)	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	0.91	0.86	0.91			0.91		
Fit	1.00	1.00	0.95			1.00		
Fit Protected	0.95	0.99	1.00			1.00		
Satd. Flow (prot)	1610	3172	1441			6067	1770	5085
Fit Permitted	0.95	0.99	1.00			1.00		
Satd. Flow (perm)	1610	3172	1441			6067	1770	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	723	1048	382	0	0	0	458	252
RTOR Reduction (vph)	0	3	54	0	0	0	53	0
Lane Group Flow (vph)	596	1217	263	0	0	0	657	0
Turn Type	Spill	Prot					Prot	
Protected Phases	4	4	4				7	4
Permitted Phases							3	8
Actuated Green, G (s)	27.1	27.1	27.1				12.1	7.6
Effective Green, g (s)	27.1	27.1	27.1				12.1	7.6
Actuated g/C Ratio	0.45	0.45	0.45				0.42	0.42
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 Gap Cap (vph)	722	1423	647				1336	234
Vs Ratio Prot	0.36	0.38	0.18				0.11	0.16
Vs Ratio Perm							0.01	0.07
Vc Ratio	0.81	0.86	0.41				0.53	0.15
Uniform Delay, d1	14.4	14.9	11.2				20.6	25.2
Progression Factor	1.00	1.00	1.00				1.00	1.00
Incremental Delay, d2	6.9	5.3	0.4				0.3	11.1
Delay (s)	21.3	20.2	11.6				20.9	36.3
Level of Service	C	C	B				C	D
Approach Delay (s)	19.2	19.2	0.0				20.9	16.4
Approach LOS	B	A	A				C	B
Intersection Summary								
HCM Average Control Delay	18.8	HCM Level of Service		B				
HCM Volume to Capacity Ratio	0.73	Sum of lost time (s)		120	G			
Actuated Cycle Length (s)	60.4	ICU Level of Service		15				
Intersection Capacity Utilization	102.2%	Analysis Period (min)						
c Critical Lane Group								

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

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

Near Term + Project (Buildout) AM  
3/2/2012

Movement	EBL	EBR	TEBL	TEBR	WBL	WBR	NBL	NBR	NET	WB	WB	SB	SB
<b>Lane Configurations</b>													
Volume (vph)	78	220	179	275	373	100	342	349	287	1102	231	209	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	0
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.95	1.00	0.95
Frt	1.00	0.85	0.85	1.00	0.97	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00
FIT Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	2787	1583	1770	1804	1770	3539	1583	3433	3539	1583	3433	3539
FIT Permitted	0.46	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	864	2787	1583	1770	1804	1770	3539	1583	3433	3539	1583	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	87	244	189	306	414	111	380	388	319	1224	257	232	0
RTOR Reduction (vph)	0	0	170	0	10	0	0	0	269	0	175	0	0
Lane Group Flow (vph)	87	244	29	306	515	0	380	388	50	1224	267	257	0
Turn Type	custom	custom	custom	Prot	Prot	Prot	Perm	Perm	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	4	3	8	5	2	6	4	4	4	4	6
Permitted Phases	4	4	4	4	4	4	2	6	4	4	4	4	6
Actuated Green, G (s)	14.1	14.1	14.1	17.0	35.1	25.5	16.0	15.0	34.1	23.6	23.6	14.2	3.6
Effective Green, g (s)	14.1	14.1	14.1	17.0	35.1	25.5	15.0	15.0	34.1	23.6	23.6	14.2	3.6
Actuated g/C Ratio	0.15	0.15	0.15	0.18	0.36	0.27	0.16	0.16	0.35	0.25	0.25	0.33	0.51
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	127	408	232	313	658	469	552	247	1217	888	388	513	483
Vs Ratio Prot	0.10	0.09	0.02	0.17	0.29	0.21	0.11	0.03	0.07	0.36	0.07	0.15	0.10
Vs Ratio Perm	0.69	0.60	0.13	0.98	0.78	0.81	0.70	0.20	1.01	0.30	0.15	0.61	0.15
V/C Ratio	38.9	38.4	35.7	38.4	27.2	33.1	38.5	36.4	31.0	29.5	28.4	12.2	11.6
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.2	2.4	0.2	44.3	6.1	10.2	4.0	0.4	27.2	0.2	0.2	0.7	0.4
Delay (s)	53.2	40.8	36.9	83.7	33.2	43.3	42.5	35.8	58.2	28.7	28.6	12.9	12.0
Level of Service	D	D	D	F	C	D	D	E	C	B	B	C	A
Approach Delay (s)	51.8	51.8	51.8	51.8	51.8	51.8	51.8	51.8	50.0	50.0	50.0	13.0	12.4
Approach LOS	D	D	D	D	D	D	D	D	D	B	B	B	B

Intersection Summary		HCM Level of Service		HCM Average Control Delay	
HCM Volume to Capacity ratio	0.88	HCM Level of Service	D	HCM Volume to Capacity ratio	0.57
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	12.0	Actuated Cycle Length (s)	42.9
Intersection Capacity Utilization	84.8%	ICU Level of Service	E	Intersection Capacity Utilization	46.7%
Analysis Period (min)	15	Analysis Period (min)	15	Analysis Period (min)	15
c Critical Lane Group		c Critical Lane Group		c Critical Lane Group	

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

Near Term + Project (Buildout) AM  
3/2/2012

HCM Signalized Intersection Capacity Analysis  
34: SR-56 WB ramps & Carmel Country Road

Near Term + Project (Buildout) AM  
3/2/2012

Movement	SEN	SER	NWL	NWR	NEL	NER	SWL	SWR
Lane Configurations								
Volume (vph)	89	520	39	145	477	345	60	243
Ideal Flow (vphpl)	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	0.98	1.00	0.92
Frt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Std. Flow (prot)	1770	3502	1770	3317	1770	1643	3433	1706
Frt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Std. Flow (perm)	1770	3502	1770	3317	1770	1643	3433	1706
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	99	578	43	161	530	383	67	270
RTOR Reduction (vph)	0	7	0	0	161	0	0	57
Lane Group Flow (vph)	99	614	0	161	752	0	67	208
Turn Type	Prot			Prot			Prot	
Protected Phases	1	6	5	2	7	4	3	8
Permitted Phases							Prot	
Actuated Green, G (s)	5.0	16.7	9.0	19.7	6.4	13.8	18.7	26.1
Effective Green, g (s)	5.0	16.7	9.0	19.7	6.4	13.8	18.7	26.1
Actuated g/C Ratio	0.07	0.22	0.12	0.26	0.08	0.18	0.25	0.34
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 Cap (vph)	116	767	209	958	149	298	842	584
W/Ratio Prot	-0.06	0.18	-0.06	0.23	0.04	0.13	-0.21	0.18
W/Ratio Perm	0.85	0.80	0.77	0.88	0.45	0.70	0.85	0.52
Wc Ratio	35.2	28.2	32.6	27.1	33.2	28.2	27.4	20.1
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Incremental Delay, d2	42.0	6.0	16.0	10.0	2.2	6.9	7.9	0.8
Delay (s)	77.2	34.2	48.6	37.1	35.4	36.2	35.3	20.9
Level of Service	E	C	D	D	D	D	C	C
Approach Delay (s)	40.1	40.1	38.8	38.8	36.1	36.1	30.4	21.2
Approach LOS	D	D	D	D	D	D	C	C

Intersection Summary	HCM Level of Service	HCM Average Control Delay	HCM Volume to Capacity ratio	HCM Level of Service
Sum of lost time (s)	18.0			
ICU Level of Service	D			
Intersection Capacity Utilization	81.8%			
Analysis Period (min)	15			
c Critical Lane Group				

Movement	WB	NBR	SEN	SEI	NET	NFR	NWR	SWL	SWR
Lane Configurations									
Volume (vph)	89	520	39	145	477	345	60	243	183
Ideal Flow (vphpl)	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	5.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	0.97	1.00	0.97
Frt	1.00	0.99	1.00	0.94	1.00	0.98	1.00	0.92	1.00
Frt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Std. Flow (prot)	1770	3502	1770	3317	1770	1643	3433	1706	1706
Frt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Std. Flow (perm)	1770	3502	1770	3317	1770	1643	3433	1706	1706
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)	99	578	43	161	530	383	67	270	159
RTOR Reduction (vph)	0	7	0	0	161	0	0	0	203
Lane Group Flow (vph)	99	614	0	161	752	0	67	208	305
Turn Type	Prot			Prot			Prot		Prot
Protected Phases	1	6	5	2	7	4	3	8	6
Permitted Phases							Prot		6
Actuated Green, G (s)	5.0	16.7	9.0	19.7	6.4	13.8	18.7	26.1	17.4
Effective Green, g (s)	5.0	16.7	9.0	19.7	6.4	13.8	18.7	26.1	17.4
Actuated g/C Ratio	0.07	0.22	0.12	0.26	0.08	0.18	0.25	0.34	0.31
Clearance Time (s)	5.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Cap (vph)	116	767	209	958	149	298	842	584	511
W/Ratio Prot	-0.06	0.18	-0.06	0.23	0.04	0.13	-0.21	0.18	0.04
W/Ratio Perm	0.85	0.80	0.77	0.88	0.45	0.70	0.85	0.52	0.07
Wc Ratio	35.2	28.2	32.6	27.1	33.2	28.2	27.4	20.1	0.02
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.70
Progression Factor	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Incremental Delay, d2	42.0	6.0	16.0	10.0	2.2	6.9	7.9	0.8	4.4
Delay (s)	77.2	34.2	48.6	37.1	35.4	36.2	35.3	20.9	21.9
Level of Service	E	C	D	D	D	D	C	B	B
Approach Delay (s)	40.1	40.1	38.8	38.8	36.1	36.1	30.4	21.2	13.7
Approach LOS	D	D	D	D	D	D	C	B	B

Intersection Summary	HCM Level of Service	HCM Average Control Delay	HCM Volume to Capacity ratio	HCM Level of Service
Sum of lost time (s)	55.5			
ICU Level of Service	B			
Intersection Capacity Utilization	57.2%			
Analysis Period (min)	15			
c Critical Lane Group				

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### HCM Signalized Intersection Capacity Analysis 35: Carmel County Road & SR-56 EB ramps

Near Term + Project (Buildout) AM  
3/2/2012

All-Way Stop Control Analysis									
General Information					Site Information				
Analyst: Jacob Swain Agency/Co.: USAA Date Performed: 11/22/2011 Analysis Time Period: 38:NT+P AM (Buildout)					Intersection: Carmel Creek Rd / Del Mar Trail Jurisdiction: City of San Diego Analysis Year: 2011				
Project ID: 0.002407 - San Diego Corporate Center Lids East/West Street: Del Mar Trail					North/South Street: Carmel Creek Road				
Volume Adjustments and Site Characteristics									
Movement	SEL	SET	SER	SWL	NET	SWL	NET	SWL	NET
Lane Configurations	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
Volume (vph)	357	381	0	0	745	220	309	0	166
Ideal Flow (vph)	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	1.00	0.95
Fit	1.00	1.00			1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00			1.00	1.00	0.95	1.00	0.95
Satd. Flow (proj)	3433	3639			3639	1583	1681	1583	1583
Fit Permitted	0.95	1.00			1.00	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	3539			3539	1583	1681	1583	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)	397	423	0	0	828	244	343	0	184
RTOF Reduction (vph)	0	0			0	0	0	0	0
Lane Group Flow (vph)	397	423	0	0	828	86	171	40	0
Turn Type	Piot	Split	Split	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	1	6	2	2	4	4	4	4	4
Permitted Phases	1	6	2	2	4	4	4	4	4
Actuated Green, G (s)	10.1	32.2			18.1	18.1	11.3	11.3	11.3
Effective Green, g (s)	10.1	32.2			18.1	18.1	11.3	11.3	11.3
Actuated g/C Ratio	0.20	0.63			0.35	0.35	0.22	0.22	0.22
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Cap Cap (vph)	673	2213			1244	556	369	347	347
vs Ratio Prol	c0.12	0.12			c0.23	0.05	0.10	c0.10	0.03
vs Ratio Perm									
vc Ratio	0.59	0.19			0.67	0.15	0.46	0.47	0.12
Uniform Delay, d1	18.8	4.1			14.1	11.5	17.5	16.1	10.0
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.0			1.4	0.1	0.9	0.2	0.2
Delay (s)	20.1	4.1			15.5	11.6	18.4	18.4	16.3
Level of Service	C	A	B	B	B	B	B	B	B
Approach LOS	B	B	B	B	B	B	B	B	B
Intersection LOS	B	B	B	B	B	B	B	B	B
Intersection Summary									
HCM Average Control Delay	14.3	HCM Level of Service		B					
HCM Volume to Capacity ratio	0.59								
Actualized Cycle Length (s)	51.5								
Intersection Capacity Utilization	49.3%								
Analysis Period (min)	15								
C Critical Lane Group									
Capacity and Level of Service									
Movement	SEL	SET	SER	SWL	NET	SWL	NET	SWL	NET
Approach	L1	L2	SER	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	283			508		406		516	
Delay (s/veh)	11.07			16.25		13.08		16.44	
LOS	B			C		B		C	
Approach Delay (s/veh)	11.07			16.25		15.20		16.44	
Intersection Delay (s/veh)	B			C		C		C	
Intersection LOS	E			38.15		F		F	
Baseline									

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

### Near Term + Project (Buildout) PM 3/2/2012

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

### Near Term + Project (Buildout) PM 3/2/2012

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
<b>Lane Configurations</b>								
<b>Volume (vph)</b>								
Volume (vph)	6	478	547	184	425	3	573	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	1.00	1.00
Fit Protected	0.95	1.00	1.00	1.00	1.00	0.85	0.95	1.00
Said. Flow (prot)	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Fit Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Said. Flow (perm)	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	7	531	608	204	472	3	637	2
RTO/R Reduction (vph)	0	0	178	0	0	0	228	0
Lane Group Flow (vph)	7	531	430	204	475	0	639	259
Turn Type	Prot.	Perm.	Prot.	Split	Perm.	Split	Perm.	Split
Projected Phases	7	4	3	8	2	2	6	6
Permitted Phases								
Actuated Green, G (s)	0.9	40.4	40.4	13.0	52.5	40.1	40.1	1.8
Effective Green, g (s)	0.9	40.4	40.4	13.0	52.5	40.1	40.1	1.8
Actuated g/C Ratio	0.01	0.36	0.36	0.12	0.47	0.36	0.36	0.02
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	676	575	207	878	639	570	33
v/s Ratio Prot	0.00	0.29	0.12	0.26	0.36	0.00	0.00	0.00
v/s Ratio Perm								
vc Ratio	0.50	0.79	0.75	0.99	0.54	1.00	0.45	0.06
Uniform Delay, d1	35.0	31.6	31.0	49.1	209	35.6	27.2	33.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.4	6.0	5.3	57.9	0.7	35.6	0.6	0.8
Delay (s)	80.4	37.6	36.3	107.0	21.5	71.2	27.8	54.7
Level of Service	F	D	D	F	C	E	C	D
Approach Delay (s)	37.1			47.2		52.4		54.7
Approach LOS	D	D	D	D	D	D	D	D
<b>Intersection Summary</b>								
HCM Average Control Delay								
HCM Volume to Capacity ratio	45.3							
Actuated Cycle Length (s)	0.89							
Intersection Capacity Utilization	83.9%							
Analysis Period (min)	15							
c Critical Lane Group								

HCM Average Control Delay      HCM Level of Service      HCM Level of Service

HCM Volume to Capacity ratio      Sum of lost time (s)      0.80

Actuated Cycle Length (s)      ICU Level of Service      72.6

Intersection Capacity Utilization      ICU Level of Service      66.1%

Analysis Period (min)      15

c Critical Lane Group

Baseline

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Near Term + Project (Buildout) PM  
3/2/2012

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### HCM Signalized Intersection Capacity Analysis

Near Term + Project (Buildout) PM  
3/2/2012

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

Movement	WBL	WBRL	NBL	NBRL	NBT	NBR	SBL	SBR	EBL	EBRL	EBT	EBR	WBL	WBRL	NET	
<b>Lane Configurations</b>																
Volume (vph)	65	6	0	929	111	8	533	11	23	22	14	26	21	155	26	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	477	
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	0.97		0.95		1.00		0.95		1.00	1.00	1.00		1.00		0.95	
Fit	0.99		0.98		1.00		0.99		1.00	0.94	1.00		1.00		0.99	
Fit Protected	0.96		1.00		0.95		1.00		0.95	1.00	0.95		1.00		0.95	
Said Flow (prot)	3410		3483		1770		3539		1770	1751	1751		1770		3510	
Fit Permitted	0.96		1.00		0.95		1.00		0.95	1.00	0.95		1.00		0.95	
Said Flow (perm)	3410		3483		1770		3539		1770	1751	1751		1770		3510	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	72	7	0	1032	123	9	592	0	24	16	23	23	172	29	93	
RTOR Reduction (vph)	6	0	0	12	0	0	0	0	0	14	0	0	0	6	0	
Lane Group Flow (vph)	73	0	0	1143	0	9	592	0	26	26	0	29	45	0	99	
Turn Type				Prot			Prot						Prot		Prot	
Protected Phases	8		5	2		1	6		7		4		3	8	1	
Permitted Phases															6	
Actuated Green, G (s)	3.2		20.0		0.6		24.6		14	6.5		16		6.7		23.7
Effective Green, g (s)	3.2		20.0		0.6		24.6		14	6.5		16		6.7		23.7
Actuated g/C Ratio	0.09		0.36		0.02		0.69		0.03	0.13		0.03		0.13		0.07
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)	305		196		30		2432		48	221		55		1611		127
v/s Ratio Prot	0.02		0.33		0.01		60.17		0.01	0.01		0.03		0.02		0.16
v/s Ratio Perm																
v/s Ratio	0.24		0.59		0.30		0.24		0.54	0.12		0.53		0.62		0.32
Uniform Delay, d1	15.2		5.2		17.4		2.1		24.7	20.0		24.6		10.5		23.5
Progression Factor	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		1.00
Incremental Delay, d2	0.4		0.5		5.6		0.1		11.9	0.2		8.8		0.8		25.4
Delay (s)	15.6		5.6		23.0		2.2		36.6	20.2		33.4		11.3		48.9
Level of Service	B		A		C		A		D	C		C		B	D	A
Approach LOS	15.6		5.6		2.5		0.1		26.7	22.2		22.2		11.9		13.9
c Critical Lane Group	B		A		A		A		C	C		C		B	B	B

### Intersection Summary

HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization (%)	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			
<b>Intersection Summary:</b>			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization (%)	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			
<b>Intersection Summary:</b>			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization (%)	57.7%	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 (Buildout) PM  
3/2/2012

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

Near Term + Project (Buildout) PM  
3/2/2012

Movement	EBR	E BT	E BT	EBR	WBR	WBT	WBT	WBR	NBR	NBT	NBT	NBR	SBR	SBR
<b>Lane Configurations</b>														
Volume (vph)	7	42	33	30	20	48	134	23	512	10	16	152	32	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Fit	1.00	1.00	0.95	1.00	0.94	1.00	0.98	1.00	1.00	0.97	1.00	0.95	1.00	0.93
Fit Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	1863	1583	1770	1751	1770	3476	1770	3529	1770	3438	1812	1583	1681
Fit Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.98
Satd. Flow (perm)	1770	1863	1583	1770	1751	1770	3476	1770	3529	1770	3438	1812	1583	1681
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	47	37	59	33	22	53	1109	149	26	568	11	77	457
RTO/R Reduction (vph)	0	0	33	0	19	0	0	13	0	0	2	0	0	0
Lane Group Flow (vph)	8	47	4	59	36	0	53	1245	0	26	578	0	82	233
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1	6	7	4	3	8	2	6
Permitted Phases														
Actuated Green, G (s)	0.6	4.8	4.8	2.2	6.4	1.4	22.0	0.6	21.2	11.1	31.2	7.6	7.6	17.3
Effective Green, g (s)	0.6	4.8	4.8	2.2	6.4	1.4	22.0	0.6	21.2	11.1	31.2	7.6	7.6	17.3
Actuated g/C Ratio	0.01	0.11	0.11	0.05	0.14	0.03	0.48	0.01	0.46	0.10	0.35	0.14	0.39	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grip Cap (vph)	23	196	167	85	246	54	1677	23	1641	173	1771	246	1342	172
Vs Ratio Prot	0.00	0.03	0.03	0.02	0.03	0.03	0.36	0.01	0.16	0.08	0.19	0.10	0.37	0.05
Vs Ratio Perm														
Vc Ratio	0.35	-0.24	0.02	0.69	0.15	0.98	0.74	1.13	0.35	0.82	0.66	0.69	0.95	0.48
Uniform Delay, d1	22.3	18.7	18.3	21.4	17.2	22.1	9.5	22.5	7.8	35.4	21.0	32.7	23.5	34.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.6	0.1	21.7	0.3	115.3	1.8	231.0	0.1	23.7	0.4	7.7	13.5	21
Delay (s)	31.2	19.4	18.4	43.1	11	137.4	11.3	233.5	7.9	61.1	2.4	40.5	37.1	36.3
Level of Service	C	B	B	D	B	F	B	A	F	E	C	D	C	D
Approach Delay (s)	20.0	B	B	30.7	16.4	18.5	18.5	18.5	18.5	26.4	37.5	34.7	34.7	49.1
Approach LOS	C	B	B	C	B	B	B	C	B	D	C	C	C	D

Intersection Summary		HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio		HCM Volume to Capacity ratio	0.86	Sum of lost time (s)	16.0
Actuated Cycle Length (s)		Actuated Cycle Length (s)	79.9	ICU Level of Service	D
Intersection Capacity Utilization		Intersection Capacity Utilization	73.8%	Analysis Period (min)	15
Analysis Period (min)				c Critical Lane Group	

Baseline

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

Near Term + Project (Buildout) PM  
8: Del Mar Heights Rd. & I-15 SB Ramps  
3/2/2012

Movement	EBT	EBC	EBR	WBL	WBT	NBL	NBT
<b>Lane Configurations</b>							
Volume (vehs)	1329	64	0	1647	0	115	
Sign Control	Free		Stop				
Grade	0%	0%	0%	0%			
Peak Hour Factor	0.90	0.90	0.90	0.90			
Hourly flow rate (vph)	1477	71	0	1830	0	128	
Pedestrians							
Lane Width (ft)							
Walking Speed (fts)							
Percent Blockage							
Right turn lane (veh)							
Median type	None						
Median storage (veh)							
Upstream signal (fl)	575			607		0.86	
pX, platoon unlocked							
VC, conflicting volume							
VC1, stage 1 conf vol							
VC2, stage 2 conf vol							
VCu, unlocked vol							
IC, single (s)							
IC, 2 stage (s)							
IF (s)							
p0, queue free %							
cm capacity (vehnl)							
<b>Direction Lane #</b>							
Volume Total	591	581	366	915	915	128	
Volume Left	0	0	0	0	0		
Volume Right	0	0	0	71	0	128	
cSH	1700	1700	1700	1700	1700	937	
Volume to Capacity	0.35	0.35	0.22	0.54	0.54	0.14	
Queue Length 5th (fl)	0	0	0	0	0	12	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.4	
Lane LOS						A	
Approach Delay (s)	0.0			0.0		9.4	
Approach LOS						A	
<b>Intersection Summary</b>							
Average Delay	0.3						
Intersection Capacity Utilization	48.9%						
Analysis Period (min)	15						

Movement	EBT	EBC	EBR	WBL	WBT	NBL	NBT
<b>Lane Configurations</b>							
Volume (vph)	1012	0	1012	399	0		
Sign Control	1900	1900	1900	1900	1900		
Grade	6.3	6.3	5.6	5.6			
Peak Hour Factor	0.95	0.95	0.97	0.91			
Hourly flow rate (vph)	1.00	1.00	1.00	0.85			
Pedestrians	1.00	1.00	0.95	1.00			
Lane Width (ft)							
Walking Speed (fts)							
Percent Blockage							
Right turn lane (veh)							
Median type	None						
Median storage (veh)							
Upstream signal (fl)	575			607		0.86	
pX, platoon unlocked							
VC, conflicting volume							
VC1, stage 1 conf vol							
VC2, stage 2 conf vol							
VCu, unlocked vol							
IC, single (s)	4.1	6.8	6.9				
IC, 2 stage (s)							
IF (s)							
p0, queue free %	2.2	3.5	3.3				
cm capacity (vehnl)	100	100	86				
<b>Intersection Summary</b>							
Average Delay	0.3						
Intersection Capacity Utilization	48.9%						
Analysis Period (min)	15						





Movement	EBL	EBT	EBC	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Volume (vph)	520	1817	546	182	1046	181	672	455	325	151	178	244	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	150
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	1900
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	1.00	0.97	0.91	0.97	0.91	0.97	1.00
Fit	1.00	0.97	1.00	0.98	1.00	1.00	0.85	1.00	0.81	1.00	0.98	1.00	0.92
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	3433	4909	3433	4973	3433	4973	3433	5085	1583	3433	4645	3433	4645
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	4909	3433	4973	3433	4973	3433	5085	1583	3433	4645	3433	4645
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	578	2019	607	202	1162	201	747	506	361	168	186	271	
RTOR Reduction (vph)	0	36	0	0	15	0	0	93	0	169	0		
Lane Group Flow (vph)	578	2590	0	202	1348	0	747	506	268	168	300	0	
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1	6	1	6	1	6	1
Penned Phases													
Actuated Green, G (s)	29.4	74.6	97	51.9	32.5	37.0	37.0	10.0	14.5				
Effective Green, g (s)	29.4	74.6	9.7	54.9	32.5	37.0	37.0	10.0	14.5				
Actuated g/C Ratio	0.20	0.51	0.07	0.37	0.22	0.25	0.25	0.07	0.10				
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)	685	2486	226	1853	757	1277	398	233	457				
Vs Ratio Prot	c0.17	c0.53	0.06	0.27	c0.22	0.10	c0.17						
Vs Ratio Penn													
V/C Ratio	0.84	1.04	0.88	0.73	0.99	0.40	0.67	0.72	0.66				
Uniform Delay, d1	56.7	36.4	68.3	39.8	57.2	45.9	48.7	67.3	64.0				
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	9.3	30.2	32.8	1.5	29.1	0.2	4.5	10.5	3.4				
Delay (s)	66.1	68.5	101.1	41.2	86.3	46.1	54.2	77.8	67.4				
Level of Service	E	E	F	D	D	E	E	E	E				
Approach Delay (s)	66.4		48.9		66.5		70.1						
Approach LOS	E		D		E		E		E				
Intersection Summary													
HCM Average Control Delay													
HCM Volume to Capacity ratio	0.97												
Actuated Cycle Length (s)	147.3												
Intersection Capacity Utilization	93.3%												
Analysis Period (min)	15												
c Critical Lane Group													

HCM Level of Service

C

HCM Average Control Delay

28.5

HCM Volume to Capacity ratio

0.82

Sum of lost time (s)

16.0

ICU Level of Service

D

Intersection Capacity Utilization

77.3%

Analysis Period (min)

15

HCM Signalized Intersection Capacity Analysis  
16. Del Mar Heights Road & Torrey Ridge Drive

Near Term + Project (Buildout) PM  
3/2/2012

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

Near Term + Project (Buildout) PM  
3/2/2012

Movement	EBT	EBT	WBT	NBT	NBT	SBT	SBT
Lane Configurations	49	1333	176	8	730	23	86
Volume (vph)	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.98	1.00	0.90	1.00	0.88	1.00
Flt	0.95	1.00	0.95	1.00	0.90	1.00	0.95
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Sold. Flow (prot)	1770	4996	1770	5062	1770	1669	1770
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Sold. Flow (perm)	1770	4996	1770	5062	1770	1669	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	54	1481	196	9	811	26	96
RTOR Reduction (vph)	0	17	0	4	0	33	31
Lane Group Flow (vph)	54	1660	0	9	833	0	96
Turn Type	Prot						
Protected Phases	7	4	3	8	5	2	1
Permitted Phases							1
Actuated Green, G (s)	1.7	23.8	0.9	23.0	3.0	3.5	2.1
Effective Green, g (s)	1.7	23.8	0.9	23.0	3.0	3.5	2.1
Actuated g/C Ratio	0.04	0.51	0.02	0.50	0.06	0.08	0.05
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 Cap (vph)	65	2568	34	2515	115	126	80
v/s Ratio Prot	0.03	0.03	0.01	0.16	0.05	0.01	0.01
v/c Ratio Perm	0.83	0.65	0.26	0.33	0.83	0.15	0.39
v/c Ratio	0.83	0.65	0.26	0.33	0.83	0.15	0.39
Uniform Delay, d1	22.2	8.2	22.4	7.0	21.4	20.0	21.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.7	0.6	4.1	0.1	38.1	0.5	3.1
Delay (s)	78.9	8.8	26.5	7.1	59.5	20.6	24.6
Level of Service	E	A	C	A	E	C	C
Approach Delay (s)	10.9	B	10.9	B	7.3	4.5	2.7
Approach LOS	A	A	A	D	C	C	C

Movement	EBC	EBT	WBC	WBT	NBC	NBT	SBT
Lane Configurations	8	176	23	14	32	28	8
Volume (vph)	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.98	1.00	0.90	1.00	0.88	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Sold. Flow (prot)	1770	4996	1770	5062	1770	1669	1770
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Sold. Flow (perm)	1770	4996	1770	5062	1770	1669	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	54	1481	196	9	811	26	96
RTOR Reduction (vph)	0	17	0	4	0	33	31
Lane Group Flow (vph)	54	1660	0	9	833	0	96
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1
Permitted Phases							1
Actuated Green, G (s)	14.8	30.2	0.7	16.1	14.8	30.2	14.8
Effective Green, g (s)	14.8	30.2	0.7	16.1	14.8	30.2	14.8
Actuated g/C Ratio	0.26	0.53	0.06	0.06	0.26	0.53	0.06
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 Gap Cap (vph)	464	2693	22	1439	44	253	44
v/s Ratio Prot	0.20	0.20	0.01	0.12	0.20	0.01	0.01
v/c Ratio Perm	0.75	0.44	0.12	0.12	0.75	0.44	0.12
v/c Ratio	0.75	0.44	0.12	0.12	0.75	0.44	0.12
Uniform Delay, d1	19.1	8.0	20.8	20.8	19.1	8.0	20.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.5	0.1	22.9	22.9	6.5	0.1	22.9
Delay (s)	25.6	8.1	249.8	249.8	25.6	8.1	249.8
Level of Service	C	A	F	B	C	F	C
Approach Delay (s)	12.1	8.8	25.5	25.5	12.1	8.8	24.8
Approach LOS	E	E	C	C	E	C	C

Intersection Summary							
HCM Average Control Delay			19.7	HCM Level of Service	B		
HCM Volume to Capacity ratio			0.52				
Actuated Cycle Length (s)			56.5	Sum of lost time (s)	12.0		
Intersection Capacity Utilization			59.3%	ICU Level of Service	B		
Analysis Period (min)			15	Analysis Period (min)	15		
C Critical Lane Group			c	Critical Lane Group	c		

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

Near Term + Project (Buildout) PM  
3/2/2012

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

Near Term + Project (Buildout) PM  
3/2/2012

Movement	FEET / VEH	WB1	WB2	NBL	NBR	SWB1	SWB2
<b>Lane Configurations</b>							
Volume (vph)	862	194	92	448	128	255	37
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	4.0
Lane Util. Factor	0.91	1.00	0.91	1.00	0.91	1.00	0.91
Fit	0.97	1.00	1.00	0.95	1.00	0.98	1.00
Fit Protected	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Said. Flow (prot)	4945	1770	5085	3433	1683	1788	1883
Fit Permitted	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Said. Flow (perm)	4945	1770	5085	3433	1683	1788	1883
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	958	216	102	498	143	283	57
R/TOR Reduction (vph)	63	0	0	0	214	0	0
Lane Group Flow (vph)	1111	0	102	496	143	69	0
Turn Type		Prot			Split		Prot
Protected Phases	4	3	8	2	2	6	6
Permitted Phases							
Actuated Green, G (s)	15.8	2.6	22.4	7.9	7.9	15.1	15.1
Effective Green, g (s)	15.8	2.6	22.4	7.9	7.9	15.1	15.1
Actuated g/C Ratio	0.41	0.07	0.58	0.21	0.21	0.18	0.18
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 Gap Cap (vph)	2040	120	2974	708	327	367	325
vs Ratio Prot	c0.22	c0.05	c0.10	c0.04	c0.04	c0.14	c0.11
vs Ratio Perm						0.06	0.023
vc Ratio	0.54	0.85	0.17	0.20	0.21	0.60	0.05
Uniform Delay, d1	8.5	17.7	3.7	12.6	12.6	27.8	27.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.4	0.0	0.1	0.3	5.5	3.2
Delay (s)	8.8	58.1	3.7	12.7	12.9	33.7	31.0
Level of Service	A	E	A	B	B	C	C
Approach Delay (s)	8.8	12.9	12.9	12.9	12.9	28.9	33.3
Approach LOS	A	B	B	B	B	C	C

Intersection Summary	
HCM Average Control Delay	10.7
HCM Volume to Capacity ratio	0.47
Actuated Cycle Length (s)	38.3
Intersection Capacity Utilization	43.1%
Analysis Period (min)	15
c Critical Lane Group	

Movement	EEB	EEF	SWB	SWF	NEB	NEF	NWB	NWF
<b>Lane Configurations</b>								
Volume (vph)	51	51	51	51	194	37	255	184
Ideal Flow (vphpl)	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	0.95	0.95	1.00	0.97	0.91	0.91
Fit	1.00	0.96	1.00	0.98	1.00	0.95	1.00	0.98
Fit Protected	0.95	0.98	0.96	1.00	0.95	1.00	0.95	1.00
Said. Flow (prot)	1681	1681	1681	1681	1883	3433	4980	4980
Fit Permitted	0.95	0.98	0.96	1.00	0.95	1.00	0.95	1.00
Said. Flow (perm)	1681	1681	1681	1681	1883	3433	4980	4980
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	283	57	216	41	204	966	187	384
R/TOR Reduction (vph)	0	0	0	0	0	35	0	0
Lane Group Flow (vph)	201	177	0	0	257	87	204	1118
Turn Type		Spill			Split		Perm	Prot
Protected Phases	2	2	2	2	6	6	6	6
Permitted Phases								
Actuated Green, G (s)	13.2	13.2	13.2	13.2	15.1	15.1	15.1	15.1
Effective Green, g (s)	13.2	13.2	13.2	13.2	15.1	15.1	15.1	15.1
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.21	0.21	0.21	0.21
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 Gap Cap (vph)	301	297	367	325	322	1294	471	1516
vs Ratio Prot	c0.12	c0.11	c0.14	c0.14	c0.14	c0.11	c0.11	c0.11
vs Ratio Perm						0.06	0.023	0.014
vc Ratio	0.67	0.60	0.60	0.60	0.60	0.70	0.27	0.38
Uniform Delay, d1	28.2	27.8	27.8	27.8	27.8	27.1	24.6	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	3.2	5.9	0.4	4.0	6.2	10.4	0.2
Delay (s)	33.7	31.0	33.1	25.0	36.2	32.2	41.3	20.3
Level of Service	C	C	C	D	C	D	C	C
Approach Delay (s)	33.3	28.9	32.8	28.5	32.8	28.5	28.5	28.5
Approach LOS	C	C	C	C	C	C	C	C

### Intersection Summary

HCM Average Control Delay

HCM Volume to Capacity ratio

Actuated Cycle Length (s)

Intersection Capacity Utilization

Analysis Period (min)

c Critical Lane Group

HCM Level of Service

Sum of lost time (s)

ICU Level of Service

Analysis Period (min)

c Critical Lane Group

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

### Near Term + Project (Buildout) PM 3/2/2012

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

### Near Term + Project (Buildout) PM 3/2/2012

Movement	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	138	108	178	14	56	118	564	104
Ideal Flow (vphpl)	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
Ft	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ft Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satl. Flow (prot)	1770	1863	1583	1770	1673	1770	3630	1770
Ft Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Satl. Flow (perm)	1770	1770	1583	1770	1673	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	-153	120	198	16	62	131	128	627
R/TOR Reduction (vph)	0	0	137	0	107	0	1	0
Lane Group Flow (vph)	153	120	61	16	86	0	129	637
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Actuated Green, G (s)	8.6	18.7	18.7	0.7	10.8	6.8	15.4	9.8
Effective Green, g (s)	8.6	18.7	18.7	0.7	10.8	6.8	15.4	9.8
Actuated g/C Ratio	0.14	0.31	0.31	0.01	0.18	0.11	0.25	0.16
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 Gap Cap (vph)	251	575	488	20	288	199	897	286
v/s Ratio Prot	0.09	0.06	0.04	0.01	0.05	0.07	0.18	0.12
v/s Ratio Perm								
w/c Ratio	0.61	0.21	0.13	0.80	0.28	0.65	0.71	0.67
Uniform Delay, d1	24.4	15.5	15.1	29.9	21.6	25.8	20.6	24.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.2	0.1	110.1	0.5	7.1	2.6	8.9
Delay (s)	28.6	15.7	15.2	140.0	22.1	32.8	23.2	33.0
Level of Service	C	B	B	F	C	C	C	B
Approach Delay (s)	19.7	19.7	31.1	31.1	31.1	24.8	22.1	22.1
Approach LOS	B	C	C	C	C	C	C	C

Intersection Summary

- HCM Average Control Delay: 23.2
- HCM Level of Service: C
- HCM Volume to Capacity ratio: 0.60
- Actuated Cycle Length (s): 60.6
- Intersection Capacity Utilization: 57.4%
- Analysis Period (min): 15
- c Critical Lane Group

Movement	SEB	SEW	SWB	SWW	NEB	NEW	NWB	NWW
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	217	12	10	144	2	29	849	206
Ideal Flow (vphpl)	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
Ft	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ft Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satl. Flow (prot)	1770	1335	1770	1883	1770	1770	4936	1770
Ft Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satl. Flow (perm)	1770	1335	1770	1883	1770	1770	4936	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	241	13	11	160	2	143	32	943
R/TOR Reduction (vph)	0	10	0	0	0	125	53	0
Lane Group Flow (vph)	241	14	0	160	2	18	32	1119
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	1	6	5	2	2	7	4	3
Permitted Phases								
Actuated Green, G (s)	10.8	4.4	14.0	7.6	7.6	21	19.2	8.1
Effective Green, g (s)	10.8	4.4	14.0	7.6	7.6	21	19.2	8.1
Actuated g/C Ratio	0.18	0.07	0.23	0.12	0.12	0.03	0.31	0.13
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 Gap Cap (vph)	310	124	402	229	195	60	1536	232
v/s Ratio Prot	60.14	0.01	0.09	0.00	0.01	0.02	0.23	0.10
v/s Ratio Perm								
w/c Ratio	0.78	0.11	0.40	0.01	0.09	0.53	0.73	0.79
Uniform Delay, d1	24.3	26.8	20.3	23.7	24.0	28.3	18.9	26.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.6	0.4	0.6	0.0	0.2	8.8	1.8	16.1
Delay (s)	35.9	27.1	20.9	24.2	38.1	20.7	42.7	12.7
Level of Service	D	C	C	C	C	C	D	B
Approach Delay (s)	35.1	22.5	21.2	21.2	35.1	21.2	35.1	18.6
Approach LOS	D	C	C	C	C	C	B	B

### Intersection Summary

HCM Level of Service: C

Sum of lost time (s): 16.0

ICU Level of Services: B

Intersection Capacity Utilization: 58.8%

Analysis Period (min): 15

c Critical Lane Group

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

Near Term + Project (Buildout) PM  
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HCM Signalized Intersection Capacity Analysis  
22: High Bluff Drive & El Camino Real

Movement	EBL	EBT	WBL	WTB	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	330	244	127	33	102	18	97	416
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	5.0	4.0	5.0	4.0	4.0
Lane Util. Factor	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	0.99	1.00	0.94	1.00
Frt Protected	0.95	1.00	1.00	0.99	0.95	1.00	0.96	1.00
Said. Flow (prot)	1770	1863	1813	1770	3493	1770	3343	1770
Frt Permitted	0.95	1.00	1.00	0.99	0.95	1.00	0.95	1.00
Said. Flow (perm)	1770	1863	1813	1770	3493	1770	3343	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	367	271	141	37	113	20	108	462
R/TOR Reduction (vph)	0	0	76	0	7	0	0	8
Lane Group Flow (vph)	367	271	65	0	183	0	108	498
Turn Type	Prot	Split	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	41	81	8	5	2	1	6
Permitted Phases	2	2	2	2	2	2	2	2
Actuated Green, G (s)	17.9	33.7	33.7	11.8	5.2	23.7	2.0	20.5
Effective Green, g (s)	17.9	33.7	33.7	11.8	5.2	23.7	2.0	20.5
Actuated g/C Ratio	0.24	0.46	0.46	0.16	0.07	0.32	0.03	0.28
Clearance Time (s)	4.0	5.0	5.0	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)	432	385	727	291	125	1128	48	934
v/s Ratio Prot	0.21	0.15	0.04	0.09	0.06	0.14	0.02	0.22
v/s Ratio Perm								
w/c Ratio	0.85	0.32	0.09	0.56	0.86	0.44	0.60	0.79
Uniform Delay, d1	26.5	12.6	11.2	284	33.8	19.6	35.3	24.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.4	0.2	0.1	2.5	42.1	0.3	19.6	4.6
Delay (s)	40.9	12.8	11.2	30.9	75.8	19.9	54.9	29.1
Level of Service	D	B	B	C	E	B	D	C
Approach Delay (s)	257	32	30	30.9	30.9	29.1	28.9	28.9
Approach LOS	C	C	C	C	C	C	C	C

Intersection Summary								
HCM Average Control Delay	28.6	HCM Level of Service	C					
HCM Volume to Capacity ratio	0.82							
Actualized Cycle Length (s)	73.4	Sum of lost time (s)	23.0					
Intersection Capacity Utilization	69.9%	ICU Level of Service	C					
Analysis Period (min)	15							
Phase conflict between lane groups.								
c Critical Lane Group								
Intersection Summary								
HCM Average Control Delay	30.5	HCM Level of Service	C					
HCM Volume to Capacity ratio	0.76							
Actualized Cycle Length (s)	72.0	Sum of lost time (s)	12.0					
Intersection Capacity Utilization	61.0%	ICU Level of Service	B					
Analysis Period (min)	15							
c Critical Lane Group								

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

Near Term + Project (Buildout) PM  
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HCM Signalized Intersection Capacity Analysis  
24: Carmel Grove Road & Carmel Creek Road

Movement	SET	SEL	NET	NWR	NWT	NER	SWL	SWT	SWR
Lane Configurations	4	7	11	8	2	7	114	138	84
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	52	57	27
Volume (vph)	217	26	163	4	11	4	119	190	1900
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	1.00	1.00	1.00
Houly flow rate (vph)	241	29	181	4	12	4	131	28	127
Direction Lane #	SE1	SE2	NW1	NE1	SW1	SW2			
Volume Total (vph)	270	181	21	168	137				
Volume Left (vph)	241	0	4	131	2				
Volume Right (vph)	0	181	4	9	127				
Hadj (s)	0.48	-0.67	-0.05	-0.16	-0.52				
Departure Headway (s)	5.8	4.7	5.3	5.4	4.8				
Degree Utilization, x	0.44	0.23	0.03	0.25	0.18				
Capacity (vph)	596	743	611	631	697				
Control Delay (s)	12.0	7.9	8.5	10.1	8.8				
Approach Delay (s)	10.3	8.5	10.1	8.8	9.0				
Approach LOS	B	A	B	A	A				

Intersection Summary									
Delay			10.0						
HCM Level of Service			A						
Intersection Capacity Utilization			45.9%						
Analysis Period (min)			15						

Movement	EEBL	EEBT	EEER	WBBL	WBTR	WBFR	NBT	NBR	NBL	SET	SEB
<b>Lane Configurations</b>											
Volume (vph)							52	72	57	27	9
Ideal Flow (vphpl)							1900	1900	1900	1900	1900
Total Lost time (s)							4.0	4.0	4.0	4.0	4.0
Lane Util. Factor							1.00	1.00	0.95	1.00	0.95
Fit							1.00	1.00	0.98	1.00	0.97
Fit Protected							0.97	1.00	0.97	1.00	0.95
Satd. Flow (prot)							1800	1583	1784	1770	3444
Fit Permitted							0.97	1.00	0.97	1.00	0.95
Satd. Flow (perm)							1800	1583	1784	1770	3444
Peak-hour factor, PHF							0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)							132	58	80	123	866
RTOR Reduction (vph)							0	0	5	0	0
Lane Group Flow (vph)							0	190	12	0	123
Turn Type				Spill			Prot	Spill		Prot	
Protected Phases				4			4	4		5	
Permitted Phases				8			8	8		2	
Actuated Green, G (s)				8.8			6.7	6.7		5.6	
Effective Green, g (s)				8.8			6.7	6.7		5.6	
Actuated g/C Ratio				0.15			0.11	0.10		0.05	
Clearance Time (s)				4.0			4.0	4.0		4.0	
Vehicle Extension (s)				3.0			3.0	3.0		3.0	
Lane Cap (vph)				271			204	169		18	
v/s Ratio Prot				0.11			0.06	0.07		0.00	
v/s Ratio Perm				0.01							
v/c Ratio				0.70			0.48	0.73		0.64	
Uniform Delay, d1				25.6			24.3	25.7		12.4	
Progression Factor				1.00			1.00	1.00		28.8	
Incremental Delay, d2				7.9			0.1	1.0		13.7	
Delay (s)				34.5			26.0	40.2		13.3	
Level of Service				C			C	D		D	
Approach Delay (s)				28.5			26.0	16.2		14.3	
Approach LOS				C			C	B		B	
<b>Intersection Summary</b>											
HCM Average Control Delay							17.9				
HCM Volume to Capacity ratio							0.62				
Actualized Cycle Length (s)							58.5				
Intersection Capacity Utilization							51.1%				
Analysis Period (min)							15				
c Critical Lane Group											

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

### Near Term + Project (Buildout) PM 3/2/2012

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

### Near Term + Project (Buildout) PM 3/2/2012

Movement	EBL	EBR	WBL	WBR	NET	NBR	SBT	SBR
<b>Lane Configurations</b>								
Volume (vph)	0	665	141	631	924	0	0	0
Ideal Flow (vphpl)	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	0.97	0.95	0.95	0.91	0.95	0.91	0.95
Frt	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FRT Protected	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Said. Flow (prot)	3446	3433	3539	3539	1681	1612	1504	1504
FRT Permitted	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Said. Flow (perm)	3446	3433	3539	3539	1681	1612	1504	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	739	157	704	1027	0	0	1007
RTROR Reduction (vph)	0	26	0	0	0	0	0	1
Lane Group Flow (vph)	0	870	0	701	1027	0	0	503
Turn Type			Prot			Spill		Prot
Protected Phases	4		3	8			7	4
Permitted Phases							8	2
Actuated Green, G (s)	18.4	15.4	37.8	37.8	23.7	23.7	24.1	24.1
Effective Green, g (s)	18.4	15.4	37.8	37.8	23.7	23.7	19.5	19.5
Actuated g/C Ratio	0.26	0.22	0.54	0.40	0.34	0.34	0.41	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)	912	761	1925	1925	573	550	513	513
v/s Ratio Prot	c0.25	c0.20	0.29	0.30	c0.32	0.02	0.04	c0.46
v/s Ratio Perm							0.33	0.28
v/c Ratio	0.95	0.92	0.53	0.53	0.88	0.93	0.05	0.82
Uniform Delay, d1	25.1	26.5	102	102	21.5	22.1	15.4	14.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.5	16.5	0.3	0.3	14.2	22.7	0.0	3.7
Delay (s)	44.6	42.9	105	105	35.7	44.9	15.4	19.2
Level of Service	D	B	D	B	D	B	C	C
Approach Delay (s)	44.6	42.9	105	105	38.6	44.9	15.4	20.0
Approach LOS	D	C	C	A	D	B	C	C
<b>Intersection Summary</b>								
HCM Average Control Delay	33.1	HCM Level of Service	C				20.8	HCM Level of Service
HCM Volume to Capacity ratio	0.94	Sum of lost time (s)	12.0				0.86	HCM Volume to Capacity ratio
Actuated Cycle Length (s)	69.5	ICU Level of Service	E				59.1	Actuated Cycle Length (s)
Intersection Capacity Utilization	87.5%	Analysis Period (min)	15				87.5%	Intersection Capacity Utilization
c Critical Lane Group							15	c Critical Lane Group

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

Near Term + Project (Buildout) PM  
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HCM Signalized Intersection Capacity Analysis  
30: Valley Centre Drive & Carmel View Road

Near Term + Project (Buildout) PM  
3/2/2012

Movement	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations								
Volume (vph)	537	1031	133	0	0	0	924	442
Ideal Flow (vphpl)	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	0.91	0.86	0.91				0.86	1.00
Fit	1.00	1.00	0.95				1.00	1.00
Flt (Protected)	0.95	1.00	1.00				1.00	0.97
Satd. Flow (prot)	1610	3190	1441				6097	1770
Flt (Permitted)	0.95	1.00	1.00				1.00	1.00
Satd. Flow (perm)	1610	3190	1441				6097	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	537	1146	148	0	0	0	1027	491
RTOR Reduction (vph)	0	1	80	0	0	0	39	0
Lane Group Flow (vph)	537	1220	53	0	0	0	1479	0
Turn Type	Split	Prot					Prot	
Protected Phases	4	4					7	
Permitted Phases							4	
Actuated Green, G (s)	31.6	31.6	31.6				20.8	15.6
Effective Green, g (s)	31.6	31.6	31.6				20.8	15.6
Actuated g/C Ratio	0.40	0.40	0.40				0.26	0.50
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 Gap Cap (vph)	636	1280	568				1885	345
v/s Ratio Plot	0.33	0.38	0.04				0.24	0.18
v/s Ratio Perm							0.14	0.14
v/s Ratio Plot	0.84	0.97	0.09				1.07dr	0.95
Uniform Delay, d1	22.0	23.7	15.2				28.9	31.8
Progression Factor	1.00	1.00	1.00				1.00	1.00
Incremental Delay, d2	10.0	18.0	0.1				10.4	34.6
Delay (s)	32.0	41.7	15.3				39.4	66.4
Level of Service	C	D	B				D	E
Approach Delay (s)	37.1	37.1	0.0				39.4	28.5
Approach LOS	D	A	A				D	C

Movement	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations								
Volume (vph)	68	402	0	374	97	31	47	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00
Fit	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85
Flt (Protected)	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (prot)	1610	3190	1441		6097	1770	5085	
Flt (Permitted)	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (perm)	1610	3190	1441		6097	1770	5085	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	76	447	0	416	108	34	52	
RTOR Reduction (vph)	0	0	0	0	46	0	0	46
Lane Group Flow (vph)	76	447	0	478	0	34	6	
Turn Type	Prot						Prot	
Protected Phases	7						3	
Permitted Phases							6	
Actuated Green, G (s)	1.3	13.6					8.3	3.0
Effective Green, g (s)	1.3	13.6					8.3	3.0
Actuated g/C Ratio	0.05	0.56					0.34	0.12
Clearance Time (s)	4.0	4.0					4.0	4.0
Vehicle Extension (s)	3.0	3.0					3.0	3.0
Lane Gap Cap (vph)	94	1957					1157	216
v/s Ratio Plot	0.04	0.13					0.02	0.00
v/s Ratio Perm							0.14	
v/s Ratio	0.81	0.23					0.41	0.03
Uniform Delay, d1	11.5	28					6.3	9.5
Progression Factor	1.00	1.00					1.00	1.00
Incremental Delay, d2	38.1	0.1					0.2	0.1
Delay (s)	49.6	2.9					6.5	9.6
Level of Service	D	A	A				D	A
Approach Delay (s)	9.7	6.5					9.8	B
Approach LOS	A	A	A				A	A

Movement	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Intersection Summary								
HCM Average Control Delay	8.2							
HCM Volume to Capacity ratio	0.39							
Actuated Cycle Length (s)	24.6							
Intersection Capacity Utilization	30.5%							
Analysis Period (min)	15							
c Critical Lane Group								

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis								
31: Valley Centre Drive & Carmel Creek Road								
Movement	EB1	EB2	WB1	WB2	NBL	NBR	WBL	WBR
Lane Configurations	122	293	331	126	162	99	370	850
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vph)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.88	1.00	1.00	1.00	0.95	1.00	0.97
Lane Util. Factor	1.00	0.85	1.00	0.94	1.00	1.00	0.86	1.00
Fit	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Flt Protected Flow (vph)	1770	2787	1853	1770	1770	1770	3539	1583
Flt Permitted Flow (vph)	1770	2787	1853	1770	1770	1770	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	136	326	368	140	110	944	369	302
RTOR Reduction (vph)	0	302	0	26	0	0	241	0
Lane Group Flow (vph)	136	326	66	140	204	0	411	944
Turn Type	Prot	custom	custom	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	4	3	8	5	2	1
Permitted Phases	7	7	7	3	8	5	2	1
Actuated Green, G (s)	8.9	14.4	14.4	11.7	17.2	22.0	27.9	10.4
Effective Green, g (s)	8.9	14.4	14.4	11.7	17.2	22.0	27.9	10.4
Actuated g/C Ratio	0.11	0.18	0.18	0.15	0.21	0.27	0.35	0.13
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)	196	499	284	268	376	484	1228	549
v/s Ratio Prot	0.08	0.12	0.08	0.15	0.08	0.23	0.07	0.05
v/s Ratio Perm	0.12	0.04	0.23	0.54	0.70	0.85	0.77	0.27
v/c Ratio	0.69	0.65	0.70	0.54	0.70	0.76	0.73	0.68
Uniform Delay, d1	34.4	30.7	28.3	31.9	29.2	27.6	23.4	18.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.2	3.1	0.4	2.3	5.8	13.1	3.0	0.2
Delay (s)	44.6	33.7	28.7	34.2	35.1	40.7	26.3	18.9
Level of Service	D	C	C	D	C	B	D	C
Approach Delay (s)	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8
Approach LOS	C	C	C	C	C	C	C	C

Intersection Summary								
HCM Average Control Delay	30.8	HCM Level of Service	C					
HCM Volume to Capacity ratio	0.75							
Actuated Cycle Length (s)	60.4	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								

Near Term + Project (Buildout) PM  
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32: SR-56 EB Ramps & Carmel Creek Road

Near Term + Project (Buildout) PM  
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HCM Signalized Intersection Capacity Analysis  
33: Carmel County Road & Carmel Canyon Road

Near Term + Project (Buildout) PM  
3/2/2012

Movement	SW	SWL	SWR	SWL	SWR
Lane Configurations					
Volume (vph)	131	487	48	94	436
Ideal Flow (vphpl)	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	1.00	0.95	1.00
Fit	1.00	0.99	1.00	0.99	1.00
Fit Protected	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	3492	1770	3281	1770
Fit Permitted	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	1770	3492	1770	3281	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	146	541	53	104	484
RTOR Reduction (vph)	0	11	0	0	257
Lane Group Flow (vph)	146	583	0	104	685
Turn Type	Prot	Prot	Prot	Prot	Prot
Protected Phases	1	6	5	2	5
Permitted Phases				3	2
Actuated Green, G (s)	6.1	17.5	5.0	16.4	4.9
Effective Green, g (s)	6.1	17.5	5.0	16.4	4.9
Actuated g/C Ratio	0.10	0.28	0.08	0.27	0.08
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 Gap Cap (vph)	176	994	144	875	141
v/s Ratio Prot	0.08	0.17	0.06	0.21	0.04
v/s Ratio Perm				0.13	0.08
v/c Ratio	0.83	0.59	0.72	0.78	0.45
Uniform Delay, d1	27.2	18.9	27.6	20.9	27.0
Progression Factor	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.4	0.9	16.3	4.6	2.2
Delay (s)	53.6	19.8	43.9	25.5	29.3
Level of Service	D	B	C	C	C
Approach Delay (s)	26.4	27.3	24.2	22.0	24.2
Approach LOS	C	C	C	C	C

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

Near Term + Project (Buildout) PM  
3/2/2012

Movement	SW	SWL	SWR	SWL	SWR
Lane Configurations					
Volume (vph)	0	0	0	277	508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97
Fit	1.00	1.00	1.00	1.00	1.00
Fit Protected	0.95	1.00	1.00	1.00	0.95
Satd. Flow (prot)	3433	3539	3539	3539	3539
Fit Permitted	0.95	1.00	1.00	1.00	0.95
Satd. Flow (perm)	3433	3539	3539	3539	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	308	564
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	308	564
Turn Type	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	6	5	4
Permitted Phases				2	6
Actuated Green, G (s)	4.1	22.9	14.8	4.1	22.9
Effective Green, g (s)	4.1	22.9	14.8	4.8	8.3
Actuated g/C Ratio	0.10	0.58	0.38	0.10	0.58
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 Gap Cap (vph)	359	267	1326	359	227
v/s Ratio Prot	0.09	0.16	0.20	0.09	0.05
v/s Ratio Perm				0.13	0.06
v/c Ratio	0.86	0.27	0.53	0.14	0.23
Uniform Delay, d1	17.3	4.0	9.5	8.0	12.8
Progression Factor	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.0	0.1	0.4	0.1	0.2
Delay (s)	35.2	4.1	9.9	8.1	13.0
Level of Service	D	A	A	A	B
Approach Delay (s)	0.0	15.5	9.5	13.3	13.3
Approach LOS	A	B	A	B	B

Intersection Summary

HCM Average Control Delay 25.8

HCM Volume to Capacity ratio 0.67

Actualized Cycle Length (s) 61.5

Intersection Capacity Utilization 66.1%

Analysis Period (min) 15

c Critical Lane Group

Intersection Summary

HCM Level of Service C

Sum of lost time (s) 16.0

ICU Level of Service C

41.3%

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Baseline

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**HCM Signalized Intersection Capacity Analysis  
35: SR-56 EB Ramps & Carmel Country Road**
**Near Term + Project (Buildout) PM  
3/2/2012**

ALL WAY STOP CONTROL ANALYSIS											
General Information			Site Information								
<b>Movement</b>									<b>Interjurisdiction</b>		
EBL1									Jacob Swin USA 11/22/2011		
<b>Lane Configurations</b>									Camel Creek Rd/Del Mar Trail City of San Diego 2011		
Volume (vph)	411	0	248	292	386	0	0	413	263	0	0
Total Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sal. Flow (prot)	1681	1681	1583	3433	3539	0	0	3539	1563	0	0
Flt Permitted	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sal. Flow (perm)	1681	1681	1583	3433	3539	0	0	3539	1563	0	0
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	324	429	0	0	459	292	0	0
RTO/R Reduction (vph)	0	0	200	0	0	0	0	205	0	0	0
Lane Group Flow (vph)	228	229	76	324	429	0	0	459	87	0	0
Turn Type	Split	Prot	Prot	1	6	2	2	2	2	2	2
Permitted Phases	4	4	4	1	6	2	2	2	2	2	2
Actuated Green, G (s)	11.2	11.2	5.2	21.3	12.1	12.1	12.1	12.1	12.1	12.1	12.1
Effective Green, g (s)	11.2	11.2	11.2	5.2	21.3	12.1	12.1	12.1	12.1	12.1	12.1
Actuated g/C Ratio	0.28	0.28	0.28	0.13	0.53	0.30	0.30	0.30	0.30	0.30	0.30
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 Gap Cap (vph)	465	465	438	441	1861	1057	473	473	473	473	473
Vs Ratio Prot	0.14	0.14	0.05	0.09	0.12	0.13	0.06	0.13	0.07	0.07	0.07
Vs Ratio Perm											
Vic Ratio	0.49	0.49	0.49	0.17	0.73	0.23	0.43	0.18	0.1	0.1	0.1
Uniform Delay, d1	12.3	12.3	11.1	17.0	5.2	11.4	11.4	10.5	0.0	0.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.2	0.2	0.2
Incremental Delay, d2	0.8	0.8	0.2	6.3	0.1	0.3	0.3	0.2	0.6	0.6	0.6
Delay (s)	13.1	13.1	11.3	23.2	5.2	11.7	11.7	10.7	0.7	0.7	0.7
Level of Service	B	B	B	C	A	B	B	B	A	A	A
Approach Delay (s)	12.4	12.4	13.0	13.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0
Approach LOS	B	B	B	B	B	A	A	A	A	A	A
<b>Intersection Summary</b>											
HCM Average Control Delay	12.2										
HCM Volume to Capacity Ratio	0.51										
Actualized Cycle Length (s)	40.5										
Intersection Capacity Utilization	41.1%										
Analysis Period (min)	15										
c Critical Lane Group											
Baseline											

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