APPENDIX D

HUNTINGTON BEACH TRAFFIC MODEL YEAR 2030 FORECASTS

YEAR (2030) WITHOUT PROJECT CONDITIONS

(HCM METHODOLOGY)

2030 Base Case - AM Peak Hour
39: Pacific Coast Hwy & Warner

Synchro 6 Report

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	0.88
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3525		1770	3539	1583	1770	1826		3433	1863	2787
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3525		1770	3539	1583	1770	1826		3433	1863	2787
Volume (vph)	560	1480	40	30	1250	260	20	200	30	300	50	770
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	560	1480	40	30	1250	260	20	200	30	300	50	770
RTOR Reduction (vph)	0	1	0	0	0	83	0	4	0	0	0	428
Lane Group Flow (vph)	560	1519	0	30	1250	177	20	226	0	300	50	342
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	20.8	61.7		3.3	44.2	44.2	1.5	20.0		12.3	30.8	30.8
Effective Green, g (s)	20.8	61.7		3.3	44.2	44.2	1.5	20.0		12.3	30.8	30.8
Actuated g/C Ratio	0.18	0.54		0.03	0.39	0.39	0.01	0.18		0.11	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	630	1920		52	1381	618	23	322		373	506	758
v/s Ratio Prot	c0.16	0.43		0.02	c0.35		0.01	c0.12		c0.09	0.03	
v/s Ratio Perm						0.11						0.12
v/c Ratio	0.89	0.79		0.58	0.91	0.29	0.87	0.70		0.80	0.10	0.45
Uniform Delay, d1	45.1	20.6		54.3	32.6	23.7	55.8	43.8		49.3	30.9	34.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.4	2.3		14.6	8.7	0.3	127.6	6.8		11.9	0.1	0.4
Delay (s)	59.5	22.9		68.9	41.3	24.0	183.4	50.6		61.2	31.0	34.7
Level of Service	E	C		E	D	C	F	D		E	C	C
Approach Delay (s)		32.8			38.9			61.2			41.6	
Approach LOS		C			D			E			D	

Intersection Summary

HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	113.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3521		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3521		3433	1583
Volume (vph)	150	1470	1120	40	90	350
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	1470	1120	40	90	350
RTOR Reduction (vph)	0	0	2	0	0	31
Lane Group Flow (vph)	150	1470	1158	0	90	319
Turn Type	Prot					pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases						6
Actuated Green, G (s)	10.8	39.9	25.1		7.3	18.1
Effective Green, g (s)	10.8	39.9	25.1		7.3	18.1
Actuated g/C Ratio	0.20	0.72	0.45		0.13	0.33
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	346	2558	1601		454	634
v/s Ratio Prot	0.08	c0.42	c0.33		0.03	c0.10
v/s Ratio Perm						0.10
v/c Ratio	0.43	0.57	0.72		0.20	0.50
Uniform Delay, d1	19.5	3.6	12.2		21.3	14.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.3	1.6		0.2	0.6
Delay (s)	20.4	3.9	13.9		21.6	15.6
Level of Service	C	A	B		C	B
Approach Delay (s)		5.5	13.9		16.8	
Approach LOS		A	B		B	

Intersection Summary

HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
126: Pacific Coast Hwy & Goldenwest

Synchro 6 Report

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	190	1400	1140	170	320	290
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	1400	1140	170	320	290
RTOR Reduction (vph)	0	0	0	92	0	215
Lane Group Flow (vph)	190	1400	1140	78	320	75
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	11.0	48.2	33.2	33.2	19.5	19.5
Effective Green, g (s)	11.0	48.2	33.2	33.2	19.5	19.5
Actuated g/C Ratio	0.15	0.64	0.44	0.44	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	257	2253	1552	694	456	408
v/s Ratio Prot	c0.11	0.40	c0.32		c0.18	
v/s Ratio Perm				0.05		0.05
v/c Ratio	0.74	0.62	0.73	0.11	0.70	0.18
Uniform Delay, d1	31.0	8.3	17.6	12.6	25.5	21.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.6	0.5	1.8	0.1	4.8	0.2
Delay (s)	41.6	8.8	19.4	12.6	30.3	22.1
Level of Service	D	A	B	B	C	C
Approach Delay (s)		12.7	18.6		26.4	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
127: Pacific Coast Hwy & 17th St

Synchro 6 Report

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	70	1580	1280	30	90	90
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	1580	1280	30	90	90
RTOR Reduction (vph)	0	0	0	14	0	75
Lane Group Flow (vph)	70	1580	1280	16	90	15
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	4.4	36.1	27.7	27.7	8.8	8.8
Effective Green, g (s)	4.4	36.1	27.7	27.7	8.8	8.8
Actuated g/C Ratio	0.08	0.68	0.52	0.52	0.17	0.17
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)	147	2415	1853	829	294	263
v/s Ratio Prot	0.04	c0.45	0.36		c0.05	
v/s Ratio Perm				0.01		0.01
v/c Ratio	0.48	0.65	0.69	0.02	0.31	0.06
Uniform Delay, d1	23.1	4.8	9.4	6.1	19.4	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.6	1.1	0.0	0.6	0.1
Delay (s)	25.6	5.5	10.5	6.1	20.0	18.6
Level of Service	C	A	B	A	B	B
Approach Delay (s)		6.3	10.4		19.3	
Approach LOS		A	B		B	

Intersection Summary

HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	20	1610	1250	10	40	20
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	1610	1250	10	40	20
RTOR Reduction (vph)	0	0	0	4	0	17
Lane Group Flow (vph)	20	1610	1250	6	40	3
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	1.0	31.2	26.2	26.2	6.9	6.9
Effective Green, g (s)	1.0	31.2	26.2	26.2	6.9	6.9
Actuated g/C Ratio	0.02	0.68	0.57	0.57	0.15	0.15
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	38	2395	2011	900	265	237
v/s Ratio Prot	0.01	c0.45	0.35		c0.02	
v/s Ratio Perm				0.00		0.00
v/c Ratio	0.53	0.67	0.62	0.01	0.15	0.01
Uniform Delay, d1	22.3	4.4	6.6	4.3	17.1	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.5	0.8	0.6	0.0	0.3	0.0
Delay (s)	34.8	5.2	7.2	4.3	17.3	16.7
Level of Service	C	A	A	A	B	B
Approach Delay (s)		5.5	7.2		17.1	
Approach LOS		A	A		B	

Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
129: Pacific Coast Hwy & 6th St — Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.96		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1770	5071		1770	5065			1740		1770	1676	
Flt Permitted	0.95	1.00		0.95	1.00			0.83		0.85	1.00	
Satd. Flow (perm)	1770	5071		1770	5065			1479		1592	1676	
Volume (vph)	60	1580	30	30	1120	30	40	20	30	40	30	60
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	1580	30	30	1120	30	40	20	30	40	30	60
RTOR Reduction (vph)	0	1	0	0	2	0	0	16	0	0	49	0
Lane Group Flow (vph)	60	1609	0	30	1148	0	0	74	0	40	41	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.6	23.4		2.1	22.9			8.4		8.4	8.4	
Effective Green, g (s)	2.6	23.4		2.1	22.9			8.4		8.4	8.4	
Actuated g/C Ratio	0.06	0.51		0.05	0.50			0.18		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 Grp Cap (vph)	100	2585		81	2527			271		291	307	
v/s Ratio Prot	c0.03	c0.32		0.02	0.23						0.02	
v/s Ratio Perm								c0.05		0.03		
v/c Ratio	0.60	0.62		0.37	0.45			0.27		0.14	0.13	
Uniform Delay, d1	21.1	8.1		21.3	7.5			16.1		15.7	15.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	9.7	0.5		2.8	0.1			0.5		0.2	0.2	
Delay (s)	30.9	8.5		24.1	7.6			16.7		15.9	15.9	
Level of Service	C	A		C	A			B		B	B	
Approach Delay (s)		9.4			8.0			16.7			15.9	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	45.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
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	1.00	0.91	1.00	0.91	1.00	1.00	1.00
Frt	1.00	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	5085	1770	5085	1583	1770	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	1770	5085	1583	1770	1583
Volume (vph)	50	1620	10	1260	70	90	70
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	1620	10	1260	70	90	70
RTOR Reduction (vph)	0	0	0	0	27	0	62
Lane Group Flow (vph)	50	1620	10	1260	43	90	8
Turn Type	Prot		Prot		Perm		Perm
Protected Phases	7	4	3	8		6	
Permitted Phases					8		6
Actuated Green, G (s)	5.0	37.3	1.1	33.4	33.4	9.7	9.7
Effective Green, g (s)	5.0	37.3	1.1	33.4	33.4	9.7	9.7
Actuated g/C Ratio	0.06	0.42	0.01	0.38	0.38	0.11	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	100	2153	22	1928	600	195	174
v/s Ratio Prot	c0.03	c0.32	0.01	0.25		c0.05	
v/s Ratio Perm					0.03		0.00
v/c Ratio	0.50	0.75	0.45	0.65	0.07	0.46	0.04
Uniform Delay, d1	40.3	21.5	43.2	22.6	17.5	36.8	35.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	1.5	14.2	0.8	0.1	1.7	0.1
Delay (s)	44.2	23.0	57.4	23.4	17.5	38.5	35.2
Level of Service	D	C	E	C	B	D	D
Approach Delay (s)		23.7		23.3		37.0	
Approach LOS		C		C		D	

Intersection Summary

HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	40.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
133: Pacific Coast Hwy & 1st St — Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	0.88
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1770	5049		1770	4934		1681	1753	1583	1681	1730	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1770	5049		1770	4934		1681	1753	1583	1681	1730	2787
Volume (vph)	160	1390	70	40	810	200	70	50	30	210	80	490
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	160	1390	70	40	810	200	70	50	30	210	80	490
RTOR Reduction (vph)	0	5	0	0	33	0	0	0	26	0	0	405
Lane Group Flow (vph)	160	1455	0	40	977	0	58	62	4	141	149	85
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Actuated Green, G (s)	9.8	30.5		4.2	24.9		8.7	8.7	8.7	12.5	12.5	12.5
Effective Green, g (s)	9.8	30.5		4.2	24.9		8.7	8.7	8.7	12.5	12.5	12.5
Actuated g/C Ratio	0.14	0.42		0.06	0.35		0.12	0.12	0.12	0.17	0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	241	2142		103	1709		203	212	192	292	301	485
v/s Ratio Prot	c0.09	c0.29		0.02	0.20		0.03	c0.04		0.08	c0.09	
v/s Ratio Perm									0.00			0.03
v/c Ratio	0.66	0.68		0.39	0.57		0.29	0.29	0.02	0.48	0.50	0.18
Uniform Delay, d1	29.5	16.7		32.6	19.2		28.8	28.8	27.8	26.8	26.8	25.3
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	6.7	0.9		2.4	0.5		0.8	0.8	0.0	1.3	1.3	0.2
Delay (s)	36.2	17.6		35.0	19.6		29.5	29.6	27.9	28.0	28.1	25.5
Level of Service	D	B		D	B		C	C	C	C	C	C
Approach Delay (s)		19.5			20.2			29.2			26.5	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
134: Pacific Coast Hwy & Huntington

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		0.95		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		3213		1681	1770	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.99		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		3213		1681	1770	1583
Volume (vph)	40	1550	10	60	960	110	10	20	40	50	70	30
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	1550	10	60	960	110	10	20	40	50	70	30
RTOR Reduction (vph)	0	0	4	0	0	52	0	36	0	0	0	26
Lane Group Flow (vph)	40	1550	6	60	960	58	0	34	0	50	70	4
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	3.4	39.7	39.7	3.9	40.2	40.2		7.1		9.0	9.0	9.0
Effective Green, g (s)	3.4	39.7	39.7	3.9	40.2	40.2		7.1		9.0	9.0	9.0
Actuated g/C Ratio	0.04	0.52	0.52	0.05	0.53	0.53		0.09		0.12	0.12	0.12
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	79	1856	830	91	1879	841		301		200	210	188
v/s Ratio Prot	0.02	c0.44		c0.03	0.27			c0.01		0.03	c0.04	
v/s Ratio Perm			0.00			0.04						0.00
v/c Ratio	0.51	0.84	0.01	0.66	0.51	0.07		0.11		0.25	0.33	0.02
Uniform Delay, d1	35.3	15.2	8.6	35.2	11.4	8.6		31.4		30.3	30.6	29.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	5.0	3.4	0.0	16.0	0.2	0.0		0.2		0.7	0.9	0.0
Delay (s)	40.4	18.6	8.6	51.2	11.7	8.7		31.6		30.9	31.5	29.5
Level of Service	D	B	A	D	B	A		C		C	C	C
Approach Delay (s)		19.1			13.5			31.6			30.9	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
135: Pacific Coast Hwy & Beach

Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5072		1770	3539	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5072		1770	3539	1583	1770	3539	1583	3433	1863	1583
Volume (vph)	110	1630	30	20	1060	300	20	50	10	490	80	170
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	1630	30	20	1060	300	20	50	10	490	80	170
RTOR Reduction (vph)	0	2	0	0	0	178	0	0	9	0	0	0
Lane Group Flow (vph)	110	1658	0	20	1060	122	20	50	1	490	80	170
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			Free
Actuated Green, G (s)	6.3	37.5		2.3	33.5	33.5	2.3	10.3	10.3	16.3	24.3	82.4
Effective Green, g (s)	6.3	37.5		2.3	33.5	33.5	2.3	10.3	10.3	16.3	24.3	82.4
Actuated g/C Ratio	0.08	0.46		0.03	0.41	0.41	0.03	0.12	0.12	0.20	0.29	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	262	2308		49	1439	644	49	442	198	679	549	1583
v/s Ratio Prot	c0.03	c0.33		0.01	0.30		0.01	0.01		c0.14	c0.04	
v/s Ratio Perm						0.08			0.00			0.11
v/c Ratio	0.42	0.72		0.41	0.74	0.19	0.41	0.11	0.01	0.72	0.15	0.11
Uniform Delay, d1	36.3	18.2		39.4	20.7	15.7	39.4	32.0	31.6	30.9	21.4	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	1.1		5.5	2.0	0.1	5.5	0.1	0.0	3.8	0.1	0.1
Delay (s)	37.4	19.3		44.8	22.7	15.9	44.8	32.1	31.6	34.7	21.5	0.1
Level of Service	D	B		D	C	B	D	C	C	C	C	A
Approach Delay (s)		20.4			21.5			35.2			25.3	
Approach LOS		C			C			D			C	

Intersection Summary

HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
136: Pacific Coast Hwy & Newland — Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.91			0.91	1.00		0.95			1.00	1.00
Frt	1.00	1.00			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	1770	5085			5085	1583		3453			1770	1583
Flt Permitted	0.95	1.00			1.00	1.00		0.85			0.74	1.00
Satd. Flow (perm)	1770	5085			5085	1583		3022			1385	1583
Volume (vph)	100	1800	0	0	1140	30	10	10	0	230	0	220
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	1800	0	0	1140	30	10	10	0	230	0	220
RTOR Reduction (vph)	0	0	0	0	0	17	0	0	0	0	0	124
Lane Group Flow (vph)	100	1800	0	0	1140	13	0	20	0	0	230	96
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		6
Actuated Green, G (s)	5.2	32.4			23.2	23.2		14.4			14.4	14.4
Effective Green, g (s)	5.2	32.4			23.2	23.2		14.4			14.4	14.4
Actuated g/C Ratio	0.09	0.59			0.42	0.42		0.26			0.26	0.26
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	168	3006			2153	670		794			364	416
v/s Ratio Prot	0.06	c0.35			0.22							
v/s Ratio Perm						0.01		0.01			c0.17	0.06
v/c Ratio	0.60	0.60			0.53	0.02		0.03			0.63	0.23
Uniform Delay, d1	23.8	7.1			11.7	9.2		15.0			17.9	15.9
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	5.6	0.3			0.2	0.0		0.0			3.6	0.3
Delay (s)	29.4	7.4			12.0	9.2		15.0			21.4	16.1
Level of Service	C	A			B	A		B			C	B
Approach Delay (s)		8.6			11.9			15.0			18.8	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
137: Pacific Coast Hwy & Magnolia

Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.95	0.95		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1681	1681		1681	1703	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1681	1681		1681	1703	1583
Volume (vph)	100	1910	30	20	1030	60	10	20	10	160	20	170
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	1910	30	20	1030	60	10	20	10	160	20	170
RTOR Reduction (vph)	0	0	15	0	0	34	0	9	0	0	0	147
Lane Group Flow (vph)	100	1910	15	20	1030	26	10	21	0	88	92	23
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	7.9	36.0	36.0	2.2	30.3	30.3	7.1	7.1		9.6	9.6	9.6
Effective Green, g (s)	7.9	36.0	36.0	2.2	30.3	30.3	7.1	7.1		9.6	9.6	9.6
Actuated g/C Ratio	0.11	0.51	0.51	0.03	0.43	0.43	0.10	0.10		0.14	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	197	2582	804	55	2173	677	168	168		228	231	214
v/s Ratio Prot	c0.06	c0.38		0.01	0.20		0.01	c0.01		0.05	c0.05	
v/s Ratio Perm			0.01			0.02						0.01
v/c Ratio	0.51	0.74	0.02	0.36	0.47	0.04	0.06	0.13		0.39	0.40	0.11
Uniform Delay, d1	29.7	13.8	8.7	33.7	14.6	11.8	28.9	29.1		28.0	28.0	26.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	1.1	0.0	4.1	0.2	0.0	0.1	0.3		1.1	1.1	0.2
Delay (s)	31.7	14.9	8.7	37.7	14.7	11.8	29.0	29.4		29.0	29.1	27.1
Level of Service	C	B	A	D	B	B	C	C		C	C	C
Approach Delay (s)		15.6			15.0			29.3			28.1	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - AM Peak Hour
138: Pacific Coast Hwy & Brookhurst — Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1723		3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770	1723		3433	1863	1583
Volume (vph)	160	1970	10	10	920	210	10	10	10	670	10	170
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	160	1970	10	10	920	210	10	10	10	670	10	170
RTOR Reduction (vph)	0	0	5	0	0	80	0	9	0	0	0	127
Lane Group Flow (vph)	160	1970	5	10	920	130	10	11	0	670	10	43
Turn Type	Prot		Perm	Prot		pm+ov	Split			Split		Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	10.5	41.4	41.4	0.6	31.5	53.3	6.6	6.6		21.8	21.8	21.8
Effective Green, g (s)	10.5	41.4	41.4	0.6	31.5	53.3	6.6	6.6		21.8	21.8	21.8
Actuated g/C Ratio	0.12	0.48	0.48	0.01	0.36	0.62	0.08	0.08		0.25	0.25	0.25
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	215	2437	759	12	1854	977	135	132		866	470	399
v/s Ratio Prot	c0.09	c0.39		0.01	0.18	0.03	0.01	c0.01		c0.20	0.01	
v/s Ratio Perm			0.00			0.05						0.03
v/c Ratio	0.74	0.81	0.01	0.83	0.50	0.13	0.07	0.08		0.77	0.02	0.11
Uniform Delay, d1	36.7	19.1	11.8	42.9	21.3	6.9	37.1	37.1		30.0	24.3	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.0	2.1	0.0	168.3	0.2	0.1	0.2	0.3		4.3	0.0	0.1
Delay (s)	49.7	21.2	11.8	211.2	21.5	7.0	37.3	37.3		34.4	24.3	24.9
Level of Service	D	C	B	F	C	A	D	D		C	C	C
Approach Delay (s)		23.3			20.5			37.3			32.4	
Approach LOS		C			C			D			C	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	AM Peak

Site Information

Intersection	Main Street/Walnut Avenue
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: *Walnut Avenue*

North/South Street: *Main Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	20	30	10	10	30	40
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	80	30	30	90	40
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	60		80		120		160	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.3		0.1		0.1		0.2	
Prop. Right-Turns	0.2		0.5		0.3		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		-0.3		-0.1		-0.1	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.05		0.07		0.11		0.14	
hd, final value (s)	4.59		4.32		4.27		4.25	
x, final value	0.08		0.10		0.14		0.19	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	2.6		2.3		2.3		2.2	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	310		330		370		410	
Delay (s/veh)	7.96		7.78		7.97		8.23	
LOS	A		A		A		A	
Approach: Delay (s/veh)	7.96		7.78		7.97		8.23	
LOS	A		A		A		A	
Intersection Delay (s/veh)	8.03							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	AM Peak

Site Information

Intersection	Main Street/Olive Avenue
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: Olive Avenue | North/South Street: Main Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	20	30	10	10	20	50
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	100	40	80	120	30
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	60		80		150		230	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.3		0.1		0.1		0.3	
Prop. Right-Turns	0.2		0.6		0.3		0.1	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		-0.4		-0.1		-0.0	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.05		0.07		0.13		0.20	
hd, final value (s)	4.84		4.50		4.35		4.40	
x, final value	0.08		0.10		0.18		0.28	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	2.8		2.5		2.4		2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	310		330		400		480	
Delay (s/veh)	8.26		7.99		8.32		9.11	
LOS	A		A		A		A	
Approach: Delay (s/veh)	8.26		7.99		8.32		9.11	
LOS	A		A		A		A	
Intersection Delay (s/veh)	8.61							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	AM Peak

Site Information

Intersection	Lake Street/6th Street
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: 6th Street

North/South Street: Lake Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	80	40	50	0	90	20
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	20	20	0	50	90	30
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	170		110		40		170	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.0		0.5		0.3	
Prop. Right-Turns	0.3		0.2		0.0		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		-0.1		0.1		-0.0	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.15		0.10		0.04		0.15	
hd, final value (s)	4.46		4.51		4.87		4.56	
x, final value	0.21		0.14		0.05		0.22	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	2.5		2.5		2.9		2.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	420		360		290		420	
Delay (s/veh)	8.65		8.22		8.15		8.81	
LOS	A		A		A		A	
Approach: Delay (s/veh)	8.65		8.22		8.15		8.81	
LOS	A		A		A		A	
Intersection Delay (s/veh)	8.57							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	AM Peak

Site Information

Intersection	Lake Street/Orange Avenue
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: Orange Avenue | North/South Street: Lake Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	290	20	30	200	40
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	40	10	30	100	110
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	320		270		60		240	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.1		0.2		0.1	
Prop. Right-Turns	0.1		0.1		0.2		0.5	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		-0.1		-0.1		-0.3	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.28		0.24		0.05		0.21	
hd, final value (s)	5.13		5.17		5.84		5.30	
x, final value	0.46		0.39		0.10		0.35	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	3.1		3.2		3.8		3.3	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	570		520		310		490	
Delay (s/veh)	12.36		11.40		9.46		11.16	
LOS	B		B		A		B	
Approach: Delay (s/veh)	12.36		11.40		9.46		11.16	
LOS	B		B		A		B	
Intersection Delay (s/veh)	11.55							
Intersection LOS	B							

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2030 Base Case - AM Peak Hour
108: Atlanta & Beach

Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	4974		1770	4899	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	4974		1770	4899	
Volume (vph)	90	280	50	60	480	180	20	410	70	200	620	200
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	280	50	60	480	180	20	410	70	200	620	200
RTOR Reduction (vph)	0	0	37	0	0	136	0	19	0	0	45	0
Lane Group Flow (vph)	90	280	13	60	480	44	20	461	0	200	775	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	4.9	15.3	15.3	4.2	14.6	14.6	1.0	15.0		9.8	23.8	
Effective Green, g (s)	4.9	15.3	15.3	4.2	14.6	14.6	1.0	15.0		9.8	23.8	
Actuated g/C Ratio	0.08	0.25	0.25	0.07	0.24	0.24	0.02	0.25		0.16	0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	144	898	402	123	857	383	29	1237		288	1934	
v/s Ratio Prot	c0.05	0.08		0.03	c0.14		0.01	0.09		c0.11	c0.16	
v/s Ratio Perm			0.01			0.03						
v/c Ratio	0.62	0.31	0.03	0.49	0.56	0.11	0.69	0.37		0.69	0.40	
Uniform Delay, d1	26.8	18.2	16.9	27.0	20.0	17.8	29.5	18.8		23.8	13.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.2	0.2	0.0	3.0	0.8	0.1	51.3	0.2		7.1	0.1	
Delay (s)	35.0	18.4	17.0	30.0	20.9	17.9	80.8	18.9		30.9	13.3	
Level of Service	C	B	B	C	C	B	F	B		C	B	
Approach Delay (s)		21.8			20.9			21.4			16.7	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	5085	4949	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	5085	4949	
Volume (vph)	50	40	70	360	690	150
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	40	70	360	690	150
RTOR Reduction (vph)	0	37	0	0	15	0
Lane Group Flow (vph)	50	3	70	360	825	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	4.0	4.0	4.4	47.4	39.0	
Effective Green, g (s)	4.0	4.0	4.4	47.4	39.0	
Actuated g/C Ratio	0.07	0.07	0.07	0.80	0.66	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	119	107	131	4058	3249	
v/s Ratio Prot	c0.03		c0.04	0.07	c0.17	
v/s Ratio Perm		0.00				
v/c Ratio	0.42	0.03	0.53	0.09	0.25	
Uniform Delay, d1	26.6	25.9	26.5	1.3	4.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.4	0.1	4.1	0.0	0.0	
Delay (s)	29.0	26.0	30.7	1.3	4.2	
Level of Service	C	C	C	A	A	
Approach Delay (s)	27.6			6.1	4.2	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
39: Pacific Coast Hwy & Warner

Synchro 6 Report

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	0.88
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3527		1770	3539	1583	1770	1788		3433	1863	2787
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3527		1770	3539	1583	1770	1788		3433	1863	2787
Volume (vph)	410	1240	30	20	1560	330	30	110	40	350	70	830
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	410	1240	30	20	1560	330	30	110	40	350	70	830
RTOR Reduction (vph)	0	1	0	0	0	83	0	11	0	0	0	281
Lane Group Flow (vph)	410	1269	0	20	1560	247	30	139	0	350	70	549
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	15.4	68.8		1.9	55.3	55.3	2.2	15.5		14.1	27.4	27.4
Effective Green, g (s)	15.4	68.8		1.9	55.3	55.3	2.2	15.5		14.1	27.4	27.4
Actuated g/C Ratio	0.13	0.59		0.02	0.48	0.48	0.02	0.13		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	455	2086		29	1683	753	33	238		416	439	657
v/s Ratio Prot	c0.12	0.36		0.01	c0.44		0.02	0.08		c0.10	0.04	
v/s Ratio Perm						0.16						c0.20
v/c Ratio	0.90	0.61		0.69	0.93	0.33	0.91	0.58		0.84	0.16	0.84
Uniform Delay, d1	49.7	15.2		56.9	28.6	19.0	57.0	47.4		50.0	35.3	42.3
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	20.7	0.5		51.3	9.2	0.3	118.0	3.6		14.2	0.2	9.0
Delay (s)	70.4	15.7		108.2	37.8	19.2	174.9	51.0		64.2	35.5	51.3
Level of Service	E	B		F	D	B	F	D		E	D	D
Approach Delay (s)		29.0			35.4			71.6			54.0	
Approach LOS		C			D			E			D	

Intersection Summary

HCM Average Control Delay	39.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	116.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
125: Pacific Coast Hwy & Seapoint

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3512		3433	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3512		3433	1583
Volume (vph)	340	1380	1500	80	50	410
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	340	1380	1500	80	50	410
RTOR Reduction (vph)	0	0	3	0	0	13
Lane Group Flow (vph)	340	1380	1577	0	50	397
Turn Type	Prot					pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases						6
Actuated Green, G (s)	21.4	71.5	46.1		7.2	28.6
Effective Green, g (s)	21.4	71.5	46.1		7.2	28.6
Actuated g/C Ratio	0.25	0.82	0.53		0.08	0.33
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	437	2919	1867		285	595
v/s Ratio Prot	c0.19	0.39	c0.45		0.01	c0.16
v/s Ratio Perm						0.09
v/c Ratio	0.78	0.47	0.84		0.18	0.67
Uniform Delay, d1	30.4	2.2	17.3		37.0	25.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.5	0.1	3.7		0.3	2.8
Delay (s)	38.9	2.3	21.0		37.3	27.8
Level of Service	D	A	C		D	C
Approach Delay (s)		9.5	21.0		28.8	
Approach LOS		A	C		C	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	86.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	540	1420	1430	230	210	490
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	540	1420	1430	230	210	490
RTOR Reduction (vph)	0	0	0	100	0	410
Lane Group Flow (vph)	540	1420	1430	130	210	80
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	36.3	88.5	48.2	48.2	16.2	16.2
Effective Green, g (s)	36.3	88.5	48.2	48.2	16.2	16.2
Actuated g/C Ratio	0.32	0.79	0.43	0.43	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	570	2779	1514	677	254	228
v/s Ratio Prot	c0.31	0.40	c0.40		c0.12	
v/s Ratio Perm				0.08		0.05
v/c Ratio	0.95	0.51	0.94	0.19	0.83	0.35
Uniform Delay, d1	37.3	4.3	31.0	20.1	46.9	43.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.0	0.2	12.3	0.1	19.3	0.9
Delay (s)	62.3	4.5	43.2	20.2	66.2	44.4
Level of Service	E	A	D	C	E	D
Approach Delay (s)		20.4	40.0		51.0	
Approach LOS		C	D		D	

Intersection Summary

HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	112.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	340	1310	1640	70	110	100
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	340	1310	1640	70	110	100
RTOR Reduction (vph)	0	0	0	26	0	88
Lane Group Flow (vph)	340	1310	1640	44	110	12
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	22.5	77.4	50.9	50.9	11.4	11.4
Effective Green, g (s)	22.5	77.4	50.9	50.9	11.4	11.4
Actuated g/C Ratio	0.23	0.80	0.53	0.53	0.12	0.12
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)	411	2830	1861	832	208	186
v/s Ratio Prot	c0.19	0.37	c0.46		c0.06	
v/s Ratio Perm				0.03		0.01
v/c Ratio	0.83	0.46	0.88	0.05	0.53	0.06
Uniform Delay, d1	35.3	3.1	20.3	11.2	40.2	38.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.8	0.1	5.3	0.0	2.4	0.1
Delay (s)	48.1	3.2	25.6	11.2	42.6	38.1
Level of Service	D	A	C	B	D	D
Approach Delay (s)		12.5	25.0		40.5	
Approach LOS		B	C		D	

Intersection Summary

HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	96.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Volume (vph)	20	1480	1760	30	50	20
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	1480	1760	30	50	20
RTOR Reduction (vph)	0	0	0	11	0	17
Lane Group Flow (vph)	20	1480	1760	19	50	3
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	2.0	42.9	36.9	36.9	8.2	8.2
Effective Green, g (s)	2.0	42.9	36.9	36.9	8.2	8.2
Actuated g/C Ratio	0.03	0.73	0.62	0.62	0.14	0.14
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	60	2569	2210	988	246	220
v/s Ratio Prot	0.01	c0.42	c0.50		c0.03	
v/s Ratio Perm				0.01		0.00
v/c Ratio	0.33	0.58	0.80	0.02	0.20	0.01
Uniform Delay, d1	27.9	3.8	8.3	4.2	22.6	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.3	2.1	0.0	0.4	0.0
Delay (s)	31.2	4.1	10.4	4.2	23.0	22.0
Level of Service	C	A	B	A	C	C
Approach Delay (s)		4.5	10.3		22.7	
Approach LOS		A	B		C	

Intersection Summary

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
129: Pacific Coast Hwy & 6th St — Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.93		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1770	5067		1770	5040			1701		1770	1667	
Flt Permitted	0.95	1.00		0.95	1.00			0.88		0.64	1.00	
Satd. Flow (perm)	1770	5067		1770	5040			1521		1194	1667	
Volume (vph)	210	1190	30	40	1570	100	40	20	70	90	30	70
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	210	1190	30	40	1570	100	40	20	70	90	30	70
RTOR Reduction (vph)	0	2	0	0	6	0	0	36	0	0	58	0
Lane Group Flow (vph)	210	1218	0	40	1664	0	0	94	0	90	42	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	11.0	42.6		2.7	34.3			12.0		12.0	12.0	
Effective Green, g (s)	11.0	42.6		2.7	34.3			12.0		12.0	12.0	
Actuated g/C Ratio	0.16	0.61		0.04	0.49			0.17		0.17	0.17	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	281	3115		69	2495			263		207	289	
v/s Ratio Prot	c0.12	0.24		0.02	c0.33						0.03	
v/s Ratio Perm								0.06		c0.08		
v/c Ratio	0.75	0.39		0.58	0.67			0.36		0.43	0.15	
Uniform Delay, d1	27.8	6.8		32.7	13.2			25.2		25.6	24.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	10.3	0.1		11.3	0.7			0.8		1.5	0.2	
Delay (s)	38.2	6.9		44.0	13.9			26.1		27.1	24.5	
Level of Service	D	A		D	B			C		C	C	
Approach Delay (s)		11.5			14.6			26.1			25.7	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
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	1.00	0.91	1.00	0.91	1.00	1.00	1.00
Frt	1.00	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	5085	1770	5085	1583	1770	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	1770	5085	1583	1770	1583
Volume (vph)	100	1250	40	1590	200	200	90
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	1250	40	1590	200	200	90
RTOR Reduction (vph)	0	0	0	0	59	0	76
Lane Group Flow (vph)	100	1250	40	1590	141	200	14
Turn Type	Prot		Prot		Perm		Perm
Protected Phases	7	4	3	8		6	
Permitted Phases					8		6
Actuated Green, G (s)	7.9	44.1	3.8	40.0	40.0	16.6	16.6
Effective Green, g (s)	7.9	44.1	3.8	40.0	40.0	16.6	16.6
Actuated g/C Ratio	0.07	0.41	0.04	0.37	0.37	0.15	0.15
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	130	2086	63	1892	589	273	244
v/s Ratio Prot	c0.06	0.25	0.02	c0.31		c0.11	
v/s Ratio Perm					0.09		0.01
v/c Ratio	0.77	0.60	0.63	0.84	0.24	0.73	0.06
Uniform Delay, d1	48.9	24.8	51.2	30.8	23.3	43.3	38.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.5	0.5	19.1	3.6	0.2	9.7	0.1
Delay (s)	72.4	25.3	70.2	34.4	23.5	53.1	38.9
Level of Service	E	C	E	C	C	D	D
Approach Delay (s)		28.7		34.0		48.7	
Approach LOS		C		C		D	

Intersection Summary

HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	43.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
133: Pacific Coast Hwy & 1st St

Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	0.88
Frt	1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.96	1.00
Satd. Flow (prot)	1770	5071		1770	5002		1681	1751	1583	1681	1706	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.96	1.00
Satd. Flow (perm)	1770	5071		1770	5002		1681	1751	1583	1681	1706	2787
Volume (vph)	360	1030	20	60	1540	190	60	40	70	200	30	260
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	360	1030	20	60	1540	190	60	40	70	200	30	260
RTOR Reduction (vph)	0	1	0	0	12	0	0	0	64	0	0	230
Lane Group Flow (vph)	360	1049	0	60	1718	0	49	51	6	112	118	30
Turn Type	Prot			Prot			Split		Perm	Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Actuated Green, G (s)	24.0	59.1		6.4	41.5		8.5	8.5	8.5	11.8	11.8	11.8
Effective Green, g (s)	24.0	59.1		6.4	41.5		8.5	8.5	8.5	11.8	11.8	11.8
Actuated g/C Ratio	0.24	0.58		0.06	0.41		0.08	0.08	0.08	0.12	0.12	0.12
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	417	2944		111	2039		140	146	132	195	198	323
v/s Ratio Prot	c0.20	0.21		0.03	c0.34		c0.03	0.03		0.07	c0.07	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.86	0.36		0.54	0.84		0.35	0.35	0.04	0.57	0.60	0.09
Uniform Delay, d1	37.3	11.3		46.3	27.2		44.0	44.0	42.9	42.6	42.7	40.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.6	0.1		5.3	3.4		1.5	1.4	0.1	4.0	4.8	0.1
Delay (s)	54.0	11.4		51.6	30.6		45.6	45.5	43.1	46.7	47.5	40.3
Level of Service	D	B		D	C		D	D	D	D	D	D
Approach Delay (s)		22.2			31.3			44.5			43.5	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	30.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
134: Pacific Coast Hwy & Huntington — Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		0.95		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		3253		1681	1770	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.99		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		3253		1681	1770	1583
Volume (vph)	60	1220	10	40	1720	80	40	60	90	30	40	50
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	1220	10	40	1720	80	40	60	90	30	40	50
RTOR Reduction (vph)	0	0	4	0	0	20	0	81	0	0	0	45
Lane Group Flow (vph)	60	1220	6	40	1720	60	0	109	0	30	40	5
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	4.4	50.7	50.7	3.6	49.9	49.9		8.6		8.0	8.0	8.0
Effective Green, g (s)	4.4	50.7	50.7	3.6	49.9	49.9		8.6		8.0	8.0	8.0
Actuated g/C Ratio	0.05	0.58	0.58	0.04	0.57	0.57		0.10		0.09	0.09	0.09
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	90	2065	924	73	2032	909		322		155	163	146
v/s Ratio Prot	c0.03	0.34		0.02	c0.49			c0.03		0.02	c0.02	
v/s Ratio Perm			0.00			0.04						0.00
v/c Ratio	0.67	0.59	0.01	0.55	0.85	0.07		0.34		0.19	0.25	0.03
Uniform Delay, d1	40.5	11.5	7.6	40.9	15.3	8.2		36.5		36.5	36.6	35.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	17.1	0.5	0.0	8.2	3.5	0.0		0.6		0.6	0.8	0.1
Delay (s)	57.6	12.0	7.6	49.0	18.8	8.2		37.1		37.1	37.4	36.0
Level of Service	E	B	A	D	B	A		D		D	D	D
Approach Delay (s)		14.1			19.0			37.1			36.8	
Approach LOS		B			B			D			D	

Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
135: Pacific Coast Hwy & Beach

Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5067		1770	3539	1583	1770	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5067		1770	3539	1583	1770	3539	1583	3433	1863	1583
Volume (vph)	200	1220	30	40	1530	860	20	50	30	340	50	110
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	1220	30	40	1530	860	20	50	30	340	50	110
RTOR Reduction (vph)	0	2	0	0	0	332	0	0	27	0	0	0
Lane Group Flow (vph)	200	1248	0	40	1530	528	20	50	3	340	50	110
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			Free
Actuated Green, G (s)	9.4	59.8		3.8	54.2	54.2	1.8	9.7	9.7	13.9	21.8	103.2
Effective Green, g (s)	9.4	59.8		3.8	54.2	54.2	1.8	9.7	9.7	13.9	21.8	103.2
Actuated g/C Ratio	0.09	0.58		0.04	0.53	0.53	0.02	0.09	0.09	0.13	0.21	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	313	2936		65	1859	831	31	333	149	462	394	1583
v/s Ratio Prot	c0.06	0.25		0.02	c0.43		0.01	0.01		c0.10	c0.03	
v/s Ratio Perm						0.33			0.00			0.07
v/c Ratio	0.64	0.43		0.62	0.82	0.63	0.65	0.15	0.02	0.74	0.13	0.07
Uniform Delay, d1	45.3	12.1		49.0	20.5	17.5	50.4	43.0	42.4	42.9	33.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.1		16.1	3.1	1.6	37.9	0.2	0.1	6.0	0.1	0.1
Delay (s)	49.5	12.2		65.0	23.6	19.0	88.3	43.2	42.5	48.9	33.1	0.1
Level of Service	D	B		E	C	B	F	D	D	D	C	A
Approach Delay (s)		17.4			22.7			52.0			36.6	
Approach LOS		B			C			D			D	

Intersection Summary

HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
136: Pacific Coast Hwy & Newland — Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.91	1.00		0.91	1.00		0.95			1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00		1.00			0.95	1.00
Satd. Flow (prot)	1770	5085	1583		5085	1583		3539			1770	1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00		1.00			0.75	1.00
Satd. Flow (perm)	1770	5085	1583		5085	1583		3539			1398	1583
Volume (vph)	200	1330	10	0	2230	320	0	10	0	110	0	210
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	1330	10	0	2230	320	0	10	0	110	0	210
RTOR Reduction (vph)	0	0	2	0	0	132	0	0	0	0	0	181
Lane Group Flow (vph)	200	1330	8	0	2230	188	0	10	0	0	110	29
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		6
Actuated Green, G (s)	12.6	69.8	69.8		53.2	53.2		12.7			12.7	12.7
Effective Green, g (s)	12.6	69.8	69.8		53.2	53.2		12.7			12.7	12.7
Actuated g/C Ratio	0.14	0.77	0.77		0.59	0.59		0.14			0.14	0.14
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)	246	3922	1221		2989	931		497			196	222
v/s Ratio Prot	c0.11	0.26			c0.44			0.00				
v/s Ratio Perm			0.00			0.12					c0.08	0.02
v/c Ratio	0.81	0.34	0.01		0.75	0.20		0.02			0.56	0.13
Uniform Delay, d1	37.8	3.2	2.4		13.7	8.7		33.5			36.3	34.1
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	18.2	0.1	0.0		1.0	0.1		0.0			3.6	0.3
Delay (s)	56.0	3.3	2.4		14.7	8.8		33.6			39.9	34.3
Level of Service	E	A	A		B	A		C			D	C
Approach Delay (s)		10.1			14.0			33.6			36.3	
Approach LOS		B			B			C			D	

Intersection Summary

HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
137: Pacific Coast Hwy & Magnolia

Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.95	0.95		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1681	1703		1681	1719	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1681	1703		1681	1719	1583
Volume (vph)	150	1220	30	30	2580	190	20	30	10	110	30	100
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	1220	30	30	2580	190	20	30	10	110	30	100
RTOR Reduction (vph)	0	0	10	0	0	72	0	9	0	0	0	91
Lane Group Flow (vph)	150	1220	20	30	2580	118	20	31	0	68	72	9
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	11.0	70.3	70.3	3.5	62.8	62.8	7.5	7.5		9.7	9.7	9.7
Effective Green, g (s)	11.0	70.3	70.3	3.5	62.8	62.8	7.5	7.5		9.7	9.7	9.7
Actuated g/C Ratio	0.10	0.66	0.66	0.03	0.59	0.59	0.07	0.07		0.09	0.09	0.09
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	182	3341	1040	58	2984	929	118	119		152	156	144
v/s Ratio Prot	c0.08	0.24		0.02	c0.51		0.01	c0.02		0.04	c0.04	
v/s Ratio Perm			0.01			0.07						0.01
v/c Ratio	0.82	0.37	0.02	0.52	0.86	0.13	0.17	0.26		0.45	0.46	0.06
Uniform Delay, d1	47.1	8.3	6.4	50.9	18.5	9.9	46.8	47.1		46.1	46.2	44.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	25.1	0.1	0.0	7.6	2.9	0.1	0.7	1.2		2.1	2.2	0.2
Delay (s)	72.1	8.3	6.4	58.5	21.4	9.9	47.5	48.3		48.2	48.3	44.7
Level of Service	E	A	A	E	C	A	D	D		D	D	D
Approach Delay (s)		15.1			21.0			48.0			46.8	
Approach LOS		B			C			D			D	

Intersection Summary

HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
138: Pacific Coast Hwy & Brookhurst

Synchro 6 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1743		3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770	1743		3433	1863	1583
Volume (vph)	220	1410	10	20	2130	550	20	40	30	290	30	160
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	1410	10	20	2130	550	20	40	30	290	30	160
RTOR Reduction (vph)	0	0	4	0	0	186	0	24	0	0	0	139
Lane Group Flow (vph)	220	1410	6	20	2130	364	20	46	0	290	30	21
Turn Type	Prot		Perm	Prot		pm+ov	Split			Split		Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	16.2	66.9	66.9	1.8	52.5	66.4	8.4	8.4		13.9	13.9	13.9
Effective Green, g (s)	16.2	66.9	66.9	1.8	52.5	66.4	8.4	8.4		13.9	13.9	13.9
Actuated g/C Ratio	0.15	0.63	0.63	0.02	0.49	0.62	0.08	0.08		0.13	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	268	3179	990	30	2495	982	139	137		446	242	206
v/s Ratio Prot	c0.12	0.28		0.01	c0.42	0.05	0.01	c0.03		c0.08	0.02	
v/s Ratio Perm			0.00			0.18						0.01
v/c Ratio	0.82	0.44	0.01	0.67	0.85	0.37	0.14	0.34		0.65	0.12	0.10
Uniform Delay, d1	44.0	10.4	7.5	52.3	23.9	10.0	45.9	46.7		44.2	41.2	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.9	0.1	0.0	44.1	3.1	0.2	0.5	1.5		3.4	0.2	0.2
Delay (s)	61.9	10.5	7.5	96.4	26.9	10.2	46.4	48.1		47.6	41.4	41.3
Level of Service	E	B	A	F	C	B	D	D		D	D	D
Approach Delay (s)		17.4			24.1			47.7			45.1	
Approach LOS		B			C			D			D	

Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	PM Peak

Site Information

Intersection	Main Street/Walnut Avenue
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: *Walnut Avenue* | North/South Street: *Main Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	50	70	40	50	40
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	20	160	70	40	120	
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	130		130		250		200	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.1		0.3		0.1		0.2	
Prop. Right-Turns	0.5		0.3		0.3		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.3		-0.1		-0.2		-0.1	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.12		0.12		0.22		0.18	
hd, final value (s)	4.90		5.08		4.70		4.83	
x, final value	0.18		0.18		0.33		0.27	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	2.9		3.1		2.7		2.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	380		380		500		450	
Delay (s/veh)	8.95		9.21		9.95		9.59	
LOS	A		A		A		A	
Approach: Delay (s/veh)	8.95		9.21		9.95		9.59	
LOS	A		A		A		A	
Intersection Delay (s/veh)	9.53							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	PM Peak

Site Information

Intersection	Main Street/Olive Avenue
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: Olive Avenue | North/South Street: Main Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	30	70	30	30	60	60
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	40	150	40	50	130	40
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	130		150		230		220	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.2		0.2		0.2	
Prop. Right-Turns	0.2		0.4		0.2		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		-0.2		-0.1		-0.1	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.12		0.13		0.20		0.20	
hd, final value (s)	5.18		5.04		4.88		4.90	
x, final value	0.19		0.21		0.31		0.30	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	3.2		3.0		2.9		2.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	380		400		480		470	
Delay (s/veh)	9.37		9.38		10.09		9.99	
LOS	A		A		B		A	
Approach: Delay (s/veh)	9.37		9.38		10.09		9.99	
LOS	A		A		B		A	
Intersection Delay (s/veh)	9.78							
Intersection LOS	A							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	PM Peak

Site Information

Intersection	Lake Street/6th Street
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: 6th Street | North/South Street: Lake Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	70	70	30	10	80	30
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	30	220	20	40	200	110
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	170		120		270		350	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.4		0.1		0.1		0.1	
Prop. Right-Turns	0.2		0.3		0.1		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		-0.1		-0.0		-0.2	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.15		0.11		0.24		0.31	
hd, final value (s)	5.73		5.73		5.27		5.02	
x, final value	0.27		0.19		0.39		0.49	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	3.7		3.7		3.3		3.0	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	420		370		520		600	
Delay (s/veh)	10.84		10.08		11.66		12.71	
LOS	B		B		B		B	
Approach: Delay (s/veh)	10.84		10.08		11.66		12.71	
LOS	B		B		B		B	
Intersection Delay (s/veh)	11.70							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SA
Agency/Co.	
Date Performed	3/31/2009
Analysis Time Period	PM Peak

Site Information

Intersection	Lake Street/Orange Avenue
Jurisdiction	
Analysis Year	2030 Base Case

Project ID

East/West Street: *Orange Avenue*

North/South Street: *Lake Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	230	40	140	280	150
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	50	80	150	40	190	30
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	280		570		280		260	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.2		0.2		0.2	
Prop. Right-Turns	0.1		0.3		0.5		0.1	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		-0.1		-0.3		-0.0	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.25		0.51		0.25		0.23	
hd, final value (s)	7.47		6.75		7.46		7.76	
x, final value	0.58		1.07		0.58		0.56	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	5.5		4.7		5.5		5.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	457		570		459		440	
Delay (s/veh)	20.33		84.10		20.28		20.21	
LOS	C		F		C		C	
Approach: Delay (s/veh)	20.33		84.10		20.28		20.21	
LOS	C		F		C		C	
Intersection Delay (s/veh)	46.45							
Intersection LOS	E							

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2030 Base Case - PM Peak Hour
108: Atlanta & Beach

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5001		1770	4960	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5001		1770	4960	
Volume (vph)	200	550	30	70	500	220	90	880	110	310	510	100
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	550	30	70	500	220	90	880	110	310	510	100
RTOR Reduction (vph)	0	0	21	0	0	176	0	13	0	0	25	0
Lane Group Flow (vph)	200	550	9	70	500	44	90	977	0	310	585	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	15.1	27.5	27.5	6.7	19.1	19.1	7.7	25.5		20.8	38.6	
Effective Green, g (s)	15.1	27.5	27.5	6.7	19.1	19.1	7.7	25.5		20.8	38.6	
Actuated g/C Ratio	0.16	0.28	0.28	0.07	0.20	0.20	0.08	0.26		0.22	0.40	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	277	1009	451	123	700	313	141	1322		382	1984	
v/s Ratio Prot	c0.11	0.16		0.04	c0.14		0.05	c0.20		c0.18	0.12	
v/s Ratio Perm			0.01			0.03						
v/c Ratio	0.72	0.55	0.02	0.57	0.71	0.14	0.64	0.74		0.81	0.30	
Uniform Delay, d1	38.7	29.2	24.8	43.5	36.2	31.9	43.0	32.5		36.0	19.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.9	0.6	0.0	5.9	3.5	0.2	9.1	2.2		12.3	0.1	
Delay (s)	47.7	29.8	24.8	49.4	39.6	32.1	52.2	34.7		48.3	19.8	
Level of Service	D	C	C	D	D	C	D	C		D	B	
Approach Delay (s)		34.2			38.4			36.1			29.4	
Approach LOS		C			D			D			C	

Intersection Summary

HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	96.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2030 Base Case - PM Peak Hour
163: Pacific View & Beach

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	5085	4945	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	5085	4945	
Volume (vph)	200	50	140	970	490	110
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	50	140	970	490	110
RTOR Reduction (vph)	0	40	0	0	25	0
Lane Group Flow (vph)	200	10	140	970	575	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.2	10.2	6.6	32.1	21.5	
Effective Green, g (s)	10.2	10.2	6.6	32.1	21.5	
Actuated g/C Ratio	0.20	0.20	0.13	0.64	0.43	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	359	321	232	3245	2114	
v/s Ratio Prot	c0.11		c0.08	c0.19	0.12	
v/s Ratio Perm		0.01				
v/c Ratio	0.56	0.03	0.60	0.30	0.27	
Uniform Delay, d1	18.0	16.1	20.6	4.1	9.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.9	0.0	4.4	0.1	0.1	
Delay (s)	19.9	16.1	25.0	4.1	9.4	
Level of Service	B	B	C	A	A	
Approach Delay (s)	19.1			6.8	9.4	
Approach LOS	B			A	A	

Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group