PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ KRAEMER BOULEVARD
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: KRAEMER BOULEVARD
DESCRIPTION : 2010 PREFERRED ALTERNATIVE - AM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:		0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :		
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :		5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :		2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	89	168300	0	N-S(1):	0.37
	TH	3		1157	5100	0.23	N-S(2):	0.33
	LT	2		279	3400	0.08	E-W(1):	0.14
WESTBOUND	RT	99	*	108	185130	0	E-W(2):	0.22
	TH	3		646	5610	0.12		
	LT	2		347	3740	0.09	V/C:	0.59
NORTHBOUND	RT	99	*	1067	168300	0	AMBER:	0.05
	TH	3		1265	5100	0.25		
	LT	2		474	3400	0.14		
EASTBOUND	RT	99	*	206	185130	0	ICU:	0.64
	TH	3		749	5610	0.13		
	LT	2		75	3740	0.02	LOS: B	

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ TUSTIN AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: TUSTIN AVENUE
DESCRIPTION : 2010 PREFERRED ALTERNATIVE - AM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:			0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :			
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :			5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :			2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1		204	1700	0.08	N-S(1):	0.67
	TH	2		1160	3400	0.34	N-S(2):	0.56
	LT	2		88	3400	0.03	E-W(1):	0.31
WESTBOUND	RT	99	*	240	185130	0	E-W(2):	0.37
	TH	3		1548	5610	0.28		
	LT	2		936	3740	0.25	V/C:	1.04
NORTHBOUND	RT	1		922	1700	0.24	AMBER:	0.05
	TH	2		1799	3400	0.53		
	LT	2		1107	3400	0.33		
EASTBOUND	RT	99	*	140	185130	0	ICU:	1.09
	TH	3		663	5610	0.12		
	LT	2		122	3740	0.03	LOS:	F

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ KRAEMER BOULEVARD
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: KRAEMER BOULEVARD
DESCRIPTION : 2010 PREFERRED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:	0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :	2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	74	168300	0	N-S(1):	0.38
	TH	3		1588	5100	0.31	N-S(2):	0.36
	LT	2		214	3400	0.06	E-W(1):	0.22
WESTBOUND	RT	99	*	280	185130	0	E-W(2):	0.37
	TH	3		1092	5610	0.19		
	LT	2		914	3740	0.24	V/C:	0.75
NORTHBOUND	RT	99	*	447	168300	0	AMBER:	0.05
	TH	3		1507	5100	0.3		
	LT	2		225	3400	0.07		
EASTBOUND	RT	99	*	535	185130	0	ICU:	0.8
	TH	3		715	5610	0.13		
	LT	2		102	3740	0.03	LOS:	C

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ TUSTIN AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: TUSTIN AVENUE
DESCRIPTION : 2010 PREFERRED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:		0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.)	:	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle)	:	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.)	:	2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1		730	1700	0.33	N-S(1):	0.61
	TH	2		1591	3400	0.47	N-S(2):	0.5
	LT	2		279	3400	0.08	E-W(1):	0.24
WESTBOUND	RT	99	*	169	185130	0	E-W(2):	0.53
	TH	3		991	5610	0.18		
	LT	2		855	3740	0.23	V/C:	1.14
NORTHBOUND	RT	1		833	1700	0.22	AMBER:	0.05
	TH	2		1432	3400	0.42		
	LT	2		459	3400	0.14		
EASTBOUND	RT	99	*	976	185130	0	ICU:	1.19
	TH	3		1711	5610	0.3		
	LT	2		210	3740	0.06	LOS:	F

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ LAKEVIEW AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: LAKEVIEW AVENUE
DESCRIPTION : 2010 REVISED ALTERNATIVE - AM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:		0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.)	:	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle)	:	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.)	:	2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	127	168300	0	N-S(1):	0.46
	TH	3		1092	5100	0.21	N-S(2):	0.22
	LT	2		118	3400	0.03	E-W(1):	0.38
WESTBOUND	RT	99	*	112	185130	0	E-W(2):	0.24
	TH	3		1991	5610	0.35		
	LT	2		502	3740	0.13	V/C:	0.84
NORTHBOUND	RT	99	*	817	168300	0	AMBER:	0.05
	TH	3		953	5100	0.19		
	LT	2		862	3400	0.25		
EASTBOUND	RT	99	*	204	185130	0	ICU:	0.89
	TH	3		606	5610	0.11		
	LT	2		121	3740	0.03	LOS:	D

* - Free-flow Lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ IMPERIAL HIGHWAY
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: IMPERIAL HIGHWAY
DESCRIPTION : 2010 REVISED ALTERNATIVE - AM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:			0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :			
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :			5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :			2

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1	413	1700	0.21	N-S(1):	0.62
	TH	4	1396	6800	0.21	N-S(2):	0.25
	LT	2	143	3400	0.04	E-W(1):	0.19
WESTBOUND	RT	1	405	1870	0.18	E-W(2):	0.12
	TH	3	929	5610	0.17		
	LT	2	369	3740	0.1	V/C:	0.81
NORTHBOUND	RT	0	155	0	0	AMBER:	0.05
	TH	4	1240	6800	0.21		
	LT	2	1403	3400	0.41		
EASTBOUND	RT	1	184	1870	0	ICU:	0.86
	TH	3	134	5610	0.02		
	LT	2	56	3740	0.01	LOS:	D

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ LAKEVIEW AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: LAKEVIEW AVENUE
DESCRIPTION : 2010 PREFERRED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:		0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :		
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :		5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :		2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	96	168300	0	N-S(1):	0.31
	TH	3		1149	5100	0.23	N-S(2):	0.26
	LT	2		162	3400	0.05	E-W(1):	0.22
WESTBOUND	RT	99	*	172	185130	0	E-W(2):	0.58
	TH	3		831	5610	0.15		
	LT	2		841	3740	0.22	V/C:	0.89
NORTHBOUND	RT	99	*	469	168300	0	AMBER:	0.05
	TH	3		1063	5100	0.21		
	LT	2		255	3400	0.08		
EASTBOUND	RT	99	*	855	185130	0	ICU:	0.94
	TH	3		2010	5610	0.36		
	LT	2		251	3740	0.07	LOS:	E

* - Free-flow Lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ IMPERIAL HIGHWAY
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: IMPERIAL HIGHWAY
DESCRIPTION : 2010 PREFERRED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:	0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :	2

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1	117	1700	0	N-S(1):	0.31
	TH	4	1373	6800	0.2	N-S(2):	0.52
	LT	2	726	3400	0.21	E-W(1):	0.17
WESTBOUND	RT	1	357	1870	0	E-W(2):	0.54
	TH	3	319	5610	0.06		
	LT	2	262	3740	0.07	V/C:	1.06
NORTHBOUND	RT	0	785	0	0	AMBER:	0.05
	TH	4	1327	6800	0.31		
	LT	2	368	3400	0.11		
EASTBOUND	RT	1	1068	1870	0.47	ICU:	1.11
	TH	3	1359	5610	0.24		
	LT	2	395	3740	0.11	LOS:	F

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ KRAEMER BOULEVARD
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: KRAEMER BOULEVARD
DESCRIPTION : 2010 REVISED ALTERNATIVE - AM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:		0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :		
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :		5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :		2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	89	168300	0	N-S(1):	0.37
	TH	3		1152	5100	0.23	N-S(2):	0.32
	LT	2		279	3400	0.08	E-W(1):	0.13
WESTBOUND	RT	99	*	108	185130	0	E-W(2):	0.22
	TH	3		640	5610	0.11		
	LT	2		347	3740	0.09	V/C:	0.59
NORTHBOUND	RT	99	*	1067	168300	0	AMBER:	0.05
	TH	3		1216	5100	0.24		
	LT	2		474	3400	0.14		
EASTBOUND	RT	99	*	206	185130	0	ICU:	0.64
	TH	3		714	5610	0.13		
	LT	2		75	3740	0.02	LOS: B	

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ TUSTIN AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: TUSTIN AVENUE
DESCRIPTION : 2010 REVISED ALTERNATIVE - AM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:			0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :			
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :			5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :			2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1		202	1700	0.08	N-S(1):	0.67
	TH	2		1142	3400	0.34	N-S(2):	0.52
	LT	2		88	3400	0.03	E-W(1):	0.31
WESTBOUND	RT	99	*	240	185130	0	E-W(2):	0.36
	TH	3		1544	5610	0.28		
	LT	2		936	3740	0.25	V/C:	1.03
NORTHBOUND	RT	1		922	1700	0.24	AMBER:	0.05
	TH	2		1651	3400	0.49		
	LT	2		1107	3400	0.33		
EASTBOUND	RT	99	*	140	185130	0	ICU:	1.08
	TH	3		638	5610	0.11		
	LT	2		122	3740	0.03	LOS:	F

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ TUSTIN AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: TUSTIN AVENUE
DESCRIPTION : 2010 REVISED ALTERNATIVE - AM PEAK HOUR - MITIGATED

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:	0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :	2

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99 *	202	168300	0	N-S(1):	0.55
	TH	3	1142	5100	0.22	N-S(2):	0.35
	LT	2	88	3400	0.03	E-W(1):	0.31
WESTBOUND	RT	99 *	240	185130	0	E-W(2):	0.36
	TH	3	1544	5610	0.28		
	LT	2	936	3740	0.25	V/C:	0.91
NORTHBOUND	RT	99 *	922	168300	0	AMBER:	0.05
	TH	3	1651	5100	0.32		
	LT	2	1107	3400	0.33		
EASTBOUND	RT	99 *	140	185130	0	ICU:	0.96
	TH	3	638	5610	0.11		
	LT	2	122	3740	0.03	LOS:	E

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ IMPERIAL HIGHWAY
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: IMPERIAL HIGHWAY
DESCRIPTION : 2010 REVISED ALTERNATIVE - AM PEAK HOUR - MITIGATED

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:	0		
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :			
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :	5		
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :	2		

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1	413	1700	0.21	N-S(1):	0.62
	TH	4	1396	6800	0.21	N-S(2):	0.25
	LT	2	143	3400	0.04	E-W(1):	0.19
WESTBOUND	RT	1	405	1870	0.18	E-W(2):	0.12
	TH	3	929	5610	0.17		
	LT	2	369	3740	0.1	V/C:	0.81
NORTHBOUND	RT	0	155	0	0	AMBER:	0.05
	TH	4	1240	6800	0.21		
	LT	2	1403	3400	0.41		
EASTBOUND	RT	99 *	184	185130	0	ICU:	0.86
	TH	3	134	5610	0.02		
	LT	2	56	3740	0.01	LOS:	D

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ KRAEMER BOULEVARD
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: KRAEMER BOULEVARD
DESCRIPTION : 2010 REVISED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:		0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.)	:	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle)	:	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.)	:	2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	74	168300	0	N-S(1):	0.37
	TH	3		1542	5100	0.3	N-S(2):	0.35
	LT	2		214	3400	0.06	E-W(1):	0.22
WESTBOUND	RT	99	*	280	185130	0	E-W(2):	0.37
	TH	3		1060	5610	0.19		
	LT	2		914	3740	0.24	V/C:	0.74
NORTHBOUND	RT	99	*	447	168300	0	AMBER:	0.05
	TH	3		1498	5100	0.29		
	LT	2		225	3400	0.07		
EASTBOUND	RT	99	*	225	185130	0	ICU:	0.79
	TH	3		710	5610	0.13		
	LT	2		102	3740	0.03	LOS:	C

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ TUSTIN AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: TUSTIN AVENUE
DESCRIPTION : 2010 REVISED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:			0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :			
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :			5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :			2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1		721	1700	0.33	N-S(1):	0.57
	TH	2		1453	3400	0.43	N-S(2):	0.49
	LT	2		278	3400	0.08	E-W(1):	0.23
WESTBOUND	RT	99	*	169	185130	0	E-W(2):	0.53
	TH	3		968	5610	0.17		
	LT	2		855	3740	0.23	V/C:	1.1
NORTHBOUND	RT	1		833	1700	0.22	AMBER:	0.05
	TH	2		1404	3400	0.41		
	LT	2		459	3400	0.14		
EASTBOUND	RT	99	*	976	185130	0	ICU:	1.15
	TH	3		1707	5610	0.3		
	LT	2		209	3740	0.06	LOS:	F

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ LAKEVIEW AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: LAKEVIEW AVENUE
DESCRIPTION : 2010 REVISED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:		0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :		
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :		5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :		2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	96	168300	0	N-S(1):	0.27
	TH	3		980	5100	0.19	N-S(2):	0.24
	LT	2		136	3400	0.04	E-W(1):	0.22
WESTBOUND	RT	99	*	166	185130	0	E-W(2):	0.57
	TH	3		827	5610	0.15		
	LT	2		841	3740	0.22	V/C:	0.84
NORTHBOUND	RT	99	*	569	168300	0	AMBER:	0.05
	TH	3		1029	5100	0.2		
	LT	2		255	3400	0.08		
EASTBOUND	RT	99	*	855	185130	0	ICU:	0.89
	TH	3		1987	5610	0.35		
	LT	2		251	3740	0.07	LOS:	D

* - Free-flow Lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ IMPERIAL HIGHWAY
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: IMPERIAL HIGHWAY
DESCRIPTION : 2010 REVISED ALTERNATIVE - PM PEAK HOUR

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:	0		
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :			
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :	5		
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :	2		

APPROACH	MVMT	LANES	VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1	117	1700	0	N-S(1):	0.3
	TH	4	1313	6800	0.19	N-S(2):	0.52
	LT	2	726	3400	0.21	E-W(1):	0.17
WESTBOUND	RT	1	357	1870	0	E-W(2):	0.53
	TH	3	313	5610	0.06		
	LT	2	262	3740	0.07	V/C:	1.05
NORTHBOUND	RT	0	785	0	0	AMBER:	0.05
	TH	4	1316	6800	0.31		
	LT	2	364	3400	0.11		
EASTBOUND	RT	1	1045	1870	0.46	ICU:	1.1
	TH	3	1333	5610	0.24		
	LT	2	395	3740	0.11	LOS:	F

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ TUSTIN AVENUE
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: TUSTIN AVENUE
DESCRIPTION : 2010 REVISED ALTERNATIVE - PM PEAK HOUR - MITIGATED

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:	0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :	2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	99	*	721	168300	0	N-S(1):	0.41
	TH	3		1453	5100	0.28	N-S(2):	0.36
	LT	2		278	3400	0.08	E-W(1):	0.23
WESTBOUND	RT	99	*	169	185130	0	E-W(2):	0.53
	TH	3		968	5610	0.17		
	LT	2		855	3740	0.23	V/C:	0.94
NORTHBOUND	RT	99	*	833	168300	0	AMBER:	0.05
	TH	3		1404	5100	0.28		
	LT	2		459	3400	0.13		
EASTBOUND	RT	99	*	976	185130	0	ICU:	0.99
	TH	3		1707	5610	0.3		
	LT	2		209	3740	0.06	LOS:	E

* - Free-flow lane.

PROJECT TITLE : NORTHEAST ANAHEIM REDEVELOPMENT
INTERSECTION : LA PALMA AVENUE @ IMPERIAL HIGHWAY
EAST-WEST ST : LA PALMA AVENUE
NORTH-SOUTH ST: IMPERIAL HIGHWAY
DESCRIPTION : 2010 REVISED ALTERNATIVE - PM PEAK HOUR - MITIGATED

CAPACITY	E/W THRU LN: 1870 vph.	RT. TURN ON RED (cr) vpc:	0
	N/S THRU LN: 1700 vph.	CYCLE LENGTH (secs.) :	
	E/W LEFT LN: 1870 vph.	AMBER (% of cycle) :	5
	N/S LEFT LN: 1700 vph.	V/C ROUND OFF (decs.) :	2

APPROACH	MVMT	LANES		VOLUME	CAPACITY	V/C	ICU ANALYSIS	
SOUTHBOUND	RT	1		117	1700	0	N-S(1):	0.3
	TH	4		1313	6800	0.19	N-S(2):	0.52
	LT	2		726	3400	0.21	E-W(1):	0.17
WESTBOUND	RT	1		357	1870	0	E-W(2):	0.31
	TH	3		313	5610	0.06		
	LT	2		262	3740	0.07	V/C:	0.83
NORTHBOUND	RT	0		785	0	0	AMBER:	0.05
	TH	4		1316	6800	0.31		
	LT	2		364	3400	0.11		
EASTBOUND	RT	99	*	1045	185130	0	ICU:	0.88
	TH	3		1333	5610	0.24		
	LT	2		395	3740	0.11	LOS:	D

* - Free-flow lane.

APPENDIX

TRAFFIC SYSTEMS MANAGEMENT ALONG LA PALMA AVENUE

As part of the on-going Traffic Management Systems program, the City of Anaheim is implementing system elements such as Changeable Message Signs (CMS), Highway Advisory Radio (HAR), Closed Circuit Television (CCTV) to control traffic, monitor traffic operations and provide information to travelers and guide motorists. With the establishment of these high technology information system, the operating conditions on various congested streets can be closely monitored during peak periods and various problem areas such as intersections can be managed effectively to avoid bottlenecks. These information systems will facilitate in the early detection of incidents and reduce the response time of patrol officers. In addition, drivers would be advised of accidents and any potential delays on the streets in advance and in real time so that they can choose alternative paths to reach their destination. In general, with various components of the above Intelligent Vehicle/Highway Systems (IVHS) in place, the operating conditions of the highways are expected to improve by better traffic management.

The City of Anaheim Traffic Management Center (TMC) is installing traffic management systems along SR-91/La Palma Avenue in the City of Anaheim[1]. The following section presents a brief description of these systems and their potential locations along La Palma Avenue.

Trailblazer Changeable Message Signs (CMS)

Trailblazer CMS are designed to guide unfamiliar motorists through the surface street network and then to the freeway. These signs are a key element of the corridor management project due to their ability to balance demand and capacity among facilities in the corridor. These signs are designed to provide dynamic route guidance, in response to real time traffic conditions. The sign also provides alternate route identification.

In the Northeast area the trailblazers are proposed to be located at the intersections of La Palma Avenue and Kraemer Avenue, La Palma Avenue and Tustin Avenue, La Palma Avenue and Lakeview Avenue and La Palma Avenue and Imperial Highway. These signs would be placed within 100-250 feet of each intersection depending upon the constraints.

Highway Advisory Radio (HAR)

HAR in the SR-91/La Palma Avenue corridor can provide an effective means of communicating information to the motorists. This information can consist of messages related to street closures, exit and entrance locations, accidents, emergency conditions and alternate routes. The messages will be generated by a voice processor machine or a digital recorder and transmitted on a low power AM transmitter. HAR technology is already being implemented by the City of Anaheim through a transmitter at the Convention Center.

Closed Circuit Television (CCTV)

CCTV's are proposed at the intersections of La Palma Avenue and Kraemer Avenue and La Palma Avenue and Tustin Avenue in the Northeast area. System detectors are proposed at other major intersections along La Palma Avenue. The CCTV's provide TMC with visual images of the intersection operation in real time. This enables the TMC operating personnel to identify problem areas and modify signal operations to reduce delays.

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[1] Motorist Information and Route Diversion System for the State Route 91/La Palma Avenue Corridor, Draft Preliminary Design Report, JHK & Associates, December 1992.

Communications Network

The Communications Network provides a backbone for various elements such as CMS, HAR, system detectors and CCTV. A fiber optic cable network is proposed to connect these various systems with the City of Anaheim TMC located at the Broadway/Anaheim site.

BENEFITS

The information systems described above provide a variety of benefits with real time traffic signal operation to the motorists such as early warning, route guidance and higher operating speeds. These are achieved by a close monitoring of the intersections and arterial street operations through CCTV and system detectors and effectively communicating with the motorists and patrol officers through HAR and CMS and maximizing traffic signal operation based on real time operations. A study by JHK & Associates[2] has concluded that, with the improvements along La Palma Avenue corridor Traffic Systems Management project, the operating speeds on La Palma Avenue are expected to increase by approximately 13 percent. The increase in operating speeds along arterials is due to reduced delay at the intersections and midblock locations. Since, the majority of vehicular delay on arterials is experienced at intersections, the intersections are expected to benefit with maximum delay reductions due to the implementation of traffic systems management. To quantify the benefits of this traffic systems management project at major intersections along La Palma Avenue using Intersection Capacity Utilization (ICU) methodology, it can be assumed that the reduced intersection delay will result in a 10 percent enhancement in approach lane capacity. In other words, approach lanes on La Palma Avenue are assumed to have a capacity of 1,870 vehicles per hour compared to 1,700 vehicles per hour capacity for locations which do not have real time traffic systems management. Level of service analyses were performed at the intersections of La Palma Avenue and Kraemer Boulevard, La Palma Avenue and Tustin Avenue, La Palma Avenue and Lakeview Avenue and La Palma Avenue and Imperial Highway with the implementation of the La Palma Avenue Traffic Systems Management project.

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2 Real time Traffic Signal Operation SR-91/La Palma Avenue corridor, August 15, 1991

can be found on Table 11 of *Traffic Impact Study for the Northeast Anaheim Redevelopment Area*, February 19, 1993.

Morning peak-hour volumes for the Revised Preferred Alternative are presented in Figure 2. Evening peak-hour volumes for the Revised Preferred Alternative are presented in Figure 3. The lane configuration assumed for the capacity analyses for the Revised Preferred Alternative and the results thereof are presented in Figure 1 and Table 1, respectively.

Under this alternative, the intersection of Kraemer Boulevard and La Palma Avenue will operate acceptably at level of service B, with an ICU of 0.64 in the morning peak-hour period, and at level of service C, with an ICU of 0.79 in the evening peak-hour period.

The intersection of Lakeview Avenue - La Palma Avenue will operate at level of service D, with an ICU of 0.89 in the morning peak period, and level of service D, with an ICU of 0.89 in the evening peak-hour period. No "further mitigation" is required.

The intersection of Imperial Highway at La Palma will operate at level of service D with an ICU of 0.86 in the morning peak-hour period and at level of service F with an ICU of 1.10 in the evening peak-hour period. The intersection of Imperial Highway and La Palma is a Congestion Management Plan intersection. In order to achieve level of service D during both peak periods, the proposed Superstreet configuration with a free flow right-turn lane or dual right-turn lanes on the west approach (dual left turn lanes, three through lanes and an optional through or right-turn lane on the south approach; dual left-turn lanes, four through lanes and a separate right-turn lane on the north approach; dual left-turn lanes, three through lanes and a separate right turn lane on the east approach; and dual left-turn lanes, three through lanes and a free-flow right-turn lane or dual right-turn lanes on the west approach) is required. Under either configuration, the intersection is projected to operate at an ICU of 0.86 during the morning peak hour and at an ICU of 0.88 during the evening peak hour period.

The intersection of Tustin Avenue and La Palma Avenue will operate at level of service F, with an ICU of 1.08 in the morning peak-hour period, and at level of service F, with an ICU of 1.15 in the evening peak period. With the mitigation of this intersection to full critical intersection standards on the north and south approaches (that is, dual left-turn lanes, three through lanes and free flow right-turn lanes on the north, south and east approaches and dual left-turn lanes, three through lanes and two right-turn lanes on the west approach), this intersection is projected to operate at level of service E, with an ICU of 0.96 in the morning peak hour, and at level of service E, with an ICU of 0.99, in the evening peak hour period. The City of Anaheim accepts level of service E as the acceptable service level for intersections within a quarter of a mile of a commuter rail station/multimodal transportation center. Since the intersection of Tustin Avenue - La Palma Avenue will be within a quarter of a mile of a planned commuter rail station, no "further mitigation" is required at this intersection. Comparison with the preliminary results of the City's General Plan traffic study at this intersection confirms that the critical intersection standard, with two separate right-turn lanes on the west approach, will result in acceptable traffic conditions in year 2010.

CONCLUSIONS

Barton-Aschman performed traffic analyses for the Northeast Area Specific Plan assuming the Preferred Alternative land uses at buildout. The findings of these analyses are documented in *Traffic Impact Study for the Northeast Anaheim Redevelopment Area*, February 19, 1993. Since the preparation of this report, the Preferred

Alternative has been modified to reflect less intense growth in Placentia, as presented in the Revised Preferred Alternative.

Due to this revision, less trips will be generated by the Specific Plan that indicated in the February traffic report. Many of the study intersections will be positively affected by this reduction in trip generation. Hence, the results of the February traffic report can be considered conservative in terms of the Revised Preferred Alternative, and present a "worst case" scenario in terms of traffic impacts.

Four study intersections in the February report were identified as requiring "further mitigation" beyond the assumed critical intersection or Superstreet project standard to achieve level of service D or better during both the morning and evening peak periods. These four intersections were reanalyzed assuming the Revised Preferred Alternative, free-flow right-turn lanes on critical intersection approaches, and enhanced lane capacity on La Palma due to the implementation of the real time signal operation. Based on this subsequent analysis, two intersections are projected to operate at level of service D or better during the morning and/or evening peak-hour periods without any "further mitigation". The intersection of La Palma - Imperial Highway will achieve level of service D in both peak hour periods with the conversion of the eastbound right-turn lane to a free-flow right-turn lane or with two eastbound right-turn lanes. This improvement can be incorporated in the Imperial Highway Superstreet Project.

With the improvements to the north and south approaches at Tustin Avenue - La Palma Avenue to full critical intersection standards, this intersection is projected to operate at level of service E during both the morning and evening peak hour periods. Since this intersection is within a quarter mile of a commuter rail/multimodal transit station, no "further mitigation" is required.

In conclusion, the improvements identified in the February 1993 traffic study, in combination with the improvements identified in this addendum report for the intersections of Imperial Highway - La Palma Avenue and Tustin Avenue - La Palma Avenue, will mitigate traffic impacts resulting from the proposed Revised Preferred Alternative land uses in the Northeast Anaheim Redevelopment Area Specific Plan.

If you have any questions or require additional information regarding the above, please give me a call at (714) 453-1619.

Sincerely,
BARTON-ASCHMAN ASSOCIATES, INC.,

Tijana S Hamilton

Tijana Stojsic Hamilton, P.E.
Senior Associate

attachments

cc: Michael L. Welch, ARA (with attachments)

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TABLE 1

NORTHEAST ANAHEIM REDEVELOPMENT AREA
REVISED INTERSECTION CAPACITY ANALYSES RESULTS

AM PEAK HOUR	Preferred Alternative		Revised Preferred Alternative		Revised Preferred Alternative Mitigated	
Intersection	ICU	LOS	ICU	LOS	ICU	LOS
La Palma-Kraemer	0.64	B	0.64	B		
La Palma-Tustin	1.09	F	1.08	F	0.96	E
La Palma-Lakeview	0.91	E	0.89	D		
La Palma-Imperial	0.87	D	0.86	D	0.86	D

PM PEAK HOUR	Preferred Alternative		Revised Preferred Alternative		Revised Preferred Alternative Mitigated	
Intersection	ICU	LOS	ICU	LOS	ICU	LOS
La Palma-Kraemer	0.80	C	0.79	C		
La Palma-Tustin	1.19	F	1.15	F	0.99	E
La Palma-Lakeview	0.94	E	0.89	D		
La Palma-Imperial	1.11	F	1.10	F	0.88	D

TABLE 2

Northeast Area Specific Plan
Land Use Analysis
Overall - Modified

Zones with change in allocation

Building SqFt at Build Out

% Retail	TAZ	Warehousing	Industry	Business Park	Corporate Headquarters	General Office	Retail	Residential	Public/Utility	Vacant	Totals
1%	T00						3,856	303,623			307,479
9%	T01	67,446	512,574	286,431	103,315		94,706				1,064,472
	T02	143,316	276,303	379,086							798,705
10%	T03	11,270	512,711	274,154			90,260				888,395
4%	T04	4,376	177,899	194,808			13,809				390,893
9%	T05	43,746	488,163	127,994		34,246	70,377				764,525
15%	T06	34,404	219,715	506,034	54,232	14,533	146,686				975,603
3%	T07		376,748			10,927	11,932				399,607
2%	T08	7,146	386,520	399,667		8,400	19,633				821,366
9%	T09	11,708	481,771	167,669	118,332		73,425				852,904
25%	T10	56,575	188,858	155,463	46,825		149,052				596,773
7%	T11		248,349	511,914	302,190	171,014	102,145	73,810			1,409,421
1%	T12	97,864	2,641,146	111,316	508,189	31,547	32,279				3,422,340
8%	T13			639,857	220,017	364,017	111,160				1,335,050
30%	T14		18,699	34,193	21,371	16,028	38,200				128,491
	T15		297,857		40,035						337,892
8%	T16		44,945	304,970	172,572	172,572	63,916				758,975
10%	T17				143,922	143,922	31,983				319,826
100%	T18						375,000				375,000
	T19										
7%	T20					930,096	70,011				1,000,107
10%	T21			106,400	79,800	79,800	29,555				295,555
9%	T22		79,610	33,496	129,244	66,992	30,107				339,448
11%	T23		124,115	19,200			18,135				161,450
10%	T24		63,409	43,314	64,971	86,628	29,673				287,996
10%	T25	21,699	121,517				15,913				159,129
6%	T26		92,756	152,086	35,707	47,609	19,617				347,775
1%	T27	12,300	70,277	175,303	199,082	3,867	3,704		32,384		492,917
52%	T28		86,772			32,390	130,964				250,126
	T29					27,874					27,874
	T30			899,402							899,402
4%	T31	81,284	127,598	56,079	80,443		16,709	111,633			473,747
5%	T32	57,490	407,655	198,603	197,234		46,320	6,700	1		914,001
20%	T33	12,115	276,048	115,476	136,306	26,659	145,090				711,693
10%	T34	6,204	89,010	133,138	86,860	24,817	37,820				377,849
1%	T35	67,000		267,620	1,118,735	5,739	13,884				1,472,977
6%	T36	46,902	166,712	134,000	1,077,810	95,203	101,187				1,621,815
11%	T37		124,832	243,912	1,091,543	17,239	189,625				1,667,151
10%	T38	101,890	359,742	206,449	319,352	48,716	119,908				1,156,058
8%	T39	17,642	63,877	365,768	115,254	184,406	63,517				810,464
10%	T40	19,688	271,760	94,503		32,060	44,332				462,342
10%	T41	72,000	8,848	17,718	480,666	7,383	67,193				653,808
22%	T42	48,787	45,250	152,982			71,389				318,408
7%	T43		93,339	1,510	3,775	629	7,484				106,738
9%	T44		32,625	56,131	168,392	168,392	43,657				469,197
10%	T45			238,172	214,355	142,903	66,159				661,589
	Totals	1,042,854	9,578,005	7,804,816	7,326,528	2,996,610	2,810,371	495,766	32,385		32,087,335

Notes: Traffic zone T00 is a new zone in the north section of sub-area 1 that has been included in the analysis. It consists of primarily residential land uses.