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MEMORANDUM

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Date: January 4, 2012

To: Robert Blume, P.E.
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From: Sri Chakravarthy, P.E, T.E
Kimley-Horn and Associates, Inc.

Subject: Palo Comado Interchange PA/ED – 2035 LOS for Palo Comado/Chesebro Intersection

This memo is in response to Caltrans comment on the LOS for the intersection of Palo Comado/Chesebro (intersection #4) in the 2035 buildout scenario. The traffic study prepared for this project indicates that this intersection would operate at LOS F during the AM and LOS E during the PM peak period. After further investigation, analysis has provided an improvement that will achieve a LOS D during the AM and PM peak periods with the restriping of eastbound approach to provide dedicated left turn pocket lane and a shared thru-right lane and re-striping the southbound approach to provide one through lane and a free right turn lane. This improvement would result in a 3-lane cross-section for the eastbound movement that is identified in the City General Plan. The improvement in LOS for the buildout (2035 condition) is presented in the table below. The intersection #4 delay and LOS for tables 7 and 8 of the May 2011 Traffic Impact Analysis have been revised as presented in the table below. The technical worksheets are attached to this memo.

Table 7 and Table 8: Intersection LOS Summary for Buildout 2035 Conditions

No.	Intersection	Intersection Control	2035 (without Improvements)				2035 (with Improvements)			
			AM		PM		AM		PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palo Comado @Chesebro	Two-way stop (stop signs on Chesebro)	34.9	D	31.7	D	34.9	D	31.7	D

Section 6 text is also revised as follows to address this revision.

"6. Buildout Year (2035) Condition with Improvements - Build

Improvements that were identified to the Palo Comado Canyon Road interchange to improve the LOS were analyzed for the buildout year (2035) conditions. As described in section 5, the improvements include widening the overpass to four lanes, installation of a traffic signal, adding turn lanes to the northbound ramp (one left turn lane, a shared left-through lane, and a right turn lane), and improving the southbound approach to one though lane and one shared through-right lane. In addition, LOS at the intersections of Dorothy Drive/101 SB Ramps and Palo Comado Canyon Road/Chesebro would be improved to LOS D during the AM peak period and LOS C/D during the PM peak period with the re-striping of the northbound and eastbound movements to include ~~an~~ exclusive left turn lanes and ~~a~~ shared through-right lanes. No widening of the roadway would be required. These~~is~~ improvements would result in a 3-lane cross-section for the

northbound and eastbound movements that haves already been identified in the City General Plan Update 2010. The results of the analysis with delay in seconds are presented in **Table 8**."

We hope that this information addresses Caltrans comment on the LOS at this intersection for the 2035 buildout scenario. Please let us know should you have any questions.

HCM Unsignalized Intersection Capacity Analysis
4: Chesebro Rd & Palo Comado

1/3/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	275	16	98	1	2	3	27	244	2	2	290	569
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	299	17	107	1	2	3	29	265	2	2	315	618
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											904	
pX, platoon unblocked												
vC, conflicting volume	648	646	315	760	645	266	315			267		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	648	646	315	760	645	266	315			267		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	20	95	85	100	99	100	98			100		
cM capacity (veh/h)	372	379	723	259	380	770	1239			1291		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	299	124	7	29	267	317	618
Volume Left	299	0	1	29	0	2	0
Volume Right	0	107	3	0	2	0	618
cSH	372	641	461	1239	1700	1291	1700
Volume to Capacity	0.80	0.19	0.01	0.02	0.16	0.00	0.36
Queue Length 95th (ft)	174	18	1	2	0	0	0
Control Delay (s)	44.5	12.0	12.9	8.0	0.0	0.1	0.0
Lane LOS	E	B	B	A		A	
Approach Delay (s)	34.9		12.9	0.8		0.0	
Approach LOS	D		B				

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: Chesebro Rd & Palo Comado

1/3/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	188	2	35	1	6	2	57	210	0	2	346	438
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	204	2	38	1	7	2	62	228	0	2	376	476
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											904	
pX, platoon unblocked												
vC, conflicting volume	738	733	376	772	733	228	376			228		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	738	733	376	772	733	228	376			228		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	35	99	94	100	98	100	95			100		
cM capacity (veh/h)	313	328	668	284	328	809	1177			1334		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	204	40	10	62	228	378	476
Volume Left	204	0	1	62	0	2	0
Volume Right	0	38	2	0	0	0	476
cSH	313	633	371	1177	1700	1334	1700
Volume to Capacity	0.65	0.06	0.03	0.05	0.13	0.00	0.28
Queue Length 95th (ft)	107	5	2	4	0	0	0
Control Delay (s)	35.8	11.1	15.0	8.2	0.0	0.1	0.0
Lane LOS	E	B	B	A		A	
Approach Delay (s)	31.7		15.0	1.8		0.0	
Approach LOS	D		B				

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		