07-LA-101 PM 33.0/34.4
EA 257200
HE-11
Project ID: 0700001840

FACT SHEET
EXCEPTIONS TO ADVISORY DESIGN STANDARDS

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1. PROPOSED PROJECT AND NONSTANDARD FEATURES

A. PROJECT DESCRIPTION

The California Department of Transportation (Caltrans) and The City of Agoura Hills (City), propose to construct improvements at the US 101/Palo Comado Canyon Road interchange (PM 33.0/34.4), in Los Angeles County within the City of Agoura Hills (see **Figure 1**). The project would include widening the Palo Comado Canyon Road and Palo Comado Canyon Road Overcrossing over US 101 and modification of the interchange ramps in order to improve traffic circulation, safety, and bicycle/pedestrian access.

Total cost is estimated at $22.5 million dollars which includes $17.4 million for capital outlay costs. The project is proposed to be funded by Measure R funds. The Southern California Association of Governments (SCAG) included the project in Addendum #3 to their 2008 Regional Transportation Plan (RTP) and Draft Amendment #08-34 to the 2008 Regional Transportation Improvement Program (RTIP).

The Project Report presents two alternatives, the No Build Alternative and the Build Alternative.

No Build Alternative
The No Build Alternative would maintain the existing configuration of the US 101/Palo Comado Canyon Road Interchange, and the Palo Comado Canyon Overcrossing above US 101 would remain as a two-lane facility with a sidewalk on the west side.

Build Alternative
The Build Alternative would include widening the entire length of Palo Comado Canyon Road, between Driver Avenue to the north and Chesebro Road to the south; from two to four lanes (see **Figure 2**). Within these limits, the Palo Comado Canyon Road Overcrossing would be widened from one lane in each direction to provide two lanes in each direction, along with a dedicated left turn lane, for a total of five striped lanes. A Class II bike lane and six-foot sidewalks would be provided on both sides of the overcrossing.

The Build Alternative would maintain the existing layout of the interchange ramps; however, the northbound on- and off-ramps would be slightly re-configured, with an additional lane being provided on the northbound off-ramp at the Palo Comado Canyon Road intersection. The intersection of the northbound ramps and Palo Comado Road would be signalized; the remaining intersections would remain un-signalized.

Existing utilities would be protected in place during construction. Overhead electric and telephone lines would need to be relocated in some areas to accommodate the build alternative, and portions of the street light systems will be relocated along Palo Comado Canyon Road. The existing storm drain systems would remain in place. New inlets would be installed along the modified northbound off-ramp, as well as the northbound on-ramp. A

new inlet system would be added to accommodate the widening of Palo Comado Canyon Road south of the bridge.

B. EXISTING HIGHWAY

The US 101/Palo Comado Canyon Road Overcrossing structure (Bridge # 1678) was built in 1963. It provides 12-foot lanes and 4-foot shoulders in each direction. A 5-foot sidewalk is provided on the west side of the overcrossing. The minimum vertical clearance is 15.14 feet, which is located in the northeast corner of the structure over the northbound US 101 number four lane. The interchange is configured with tight diamond (L-1) ramps on the northbound side and hook ramps (L-6) on the southbound side.

The southbound hook ramps connect with Dorothy Drive and Chesebro Road at a four-point intersection south of US 101. A short section of Chesebro Road directly opposite the hook ramps provides access from the ramps to Palo Comado Canyon Road. The southbound off-ramp is a 1-lane exit that widens to 2 lanes at its termini. The southbound on-ramp is a 1-lane ramp throughout. The ramps provide 12-foot lanes with a 4-foot inside shoulder and an 8-foot outside shoulder.

The northbound ramps connect directly to Palo Comado Road. The northbound on-ramp has 2 lanes starting from the Palo Comado Road intersection and tapers to a 1-lane on-ramp before joining the freeway. The northbound off-ramp begins as 1 lane and widens to 2 lanes at its termini. The ramps provide 12-foot lanes with a 4-foot inside shoulder and an 8-foot outside shoulder.

The interchange does not currently have any signalized intersections. Palo Comado Canyon Road is a free-flowing street from Agoura Road in the south to Driver Avenue in the north, where the intersection is four-way "stop" controlled. The Canwood Street/Palo Comado Canyon Road Intersection and Dorothy Drive/Palo Comado Canyon Road Intersection, both south of the freeway, and the US 101 northbound off-ramp intersection with Palo Comado Road, are all one-way stop-controlled. The intersection of Dorothy Drive, Chesebro Road, and the southbound hook ramps are four-way stop-controlled.

C. SAFETY IMPROVEMENTS

Multiple safety improvements are to be implemented for this project, including, but not limited to, the following items: Increased horizontal sight distance at the intersection of the northbound off-ramp and Palo Comado Canyon Road was achieved by realigning the northbound off-ramp to intersect Palo Comado Canyon Road closer to a 90 degree angle, widening the bridge and adding one more foot to the south side sidewalk for a total of 6 feet wide on the bridge over US 101. The proposed design also realigns the northbound on-ramp with the northbound off-ramp to provide better connectivity and improve safety. Adding sidewalks, curb ramps, and bicycle lanes to provide safe access facilities through the interchange will largely improve the pedestrian and bicycle mobility. Signalizing the intersection and channelization would also contribute to operational efficiency and safety.

These improvements will provide safer driving conditions for the traveling public.

D. TOTAL PROJECT COST

The estimated total project costs for both alternatives are listed below.

Table 1-1: *Total Cost*

Cost Component	No Build Alternative Cost*	Build Alternative Cost*
Roadway	$0	$13,504,000
Structures	$0	$3,190,000
Right-of-Way	$0	$706,000
Total Capital Cost	$0	$17,400,000

*All Costs shown in 2011 Dollars

2. FEATURES REQUIRING AN EXCEPTION

A. Design Exception Features A1 & A3

Nonstandard Feature

The project proposes the following vertical curve lengths:

Table 2-1
Standards for Grade

Figure 2	Alignment	Existing/Proposed Vertical Curve (ft)	Standard Vertical Curve (ft)
Build Alternative (A1)	Northbound On-Ramp Sta 332+20 to 333+70	150	200
Build Alternative (A3)	Palo Comado Canyon Road Sta 20+49.92 to 20+99.92	50	200

Standard for Which Exception is Requested

Highway Design Manual, Index 204.3A, "For algebraic grade differences of less than 2%, or design speeds less than 40 mile per hour, the vertical curve length should be a minimum of 200 feet."

Reasons For Requesting Exception

The proposed project improvements require minimal modifications to the existing northbound on-ramp. Given the existing geometric constraints of the ramp connection at the overcrossing, the speeds will remain low. The signalization of the intersection will provide better efficiency and safety. The existing vertical curve meets the minimum design speed of 25 miles per hour at the ramp terminus, as required in Index 504.3 of the *HDM*. There is no evidence of any accidents being attributed to the existing nonstandard vertical curve.

The proposed bridge widening on Palo Comado Canyon Road uses the existing vertical profile. The vertical curve is part of the existing bridge design. The signalization of the intersection will provide better efficiency and safety. Given the small algebraic difference of the grades before and after the vertical curve, the existing vertical curve provides adequate stopping sight distance for over 45 miles per hour. There is no evidence of any accidents being attributed to the existing nonstandard vertical curve.

In order to make the existing vertical curve standard on the bridge requires at least reconstruction of the north end of the bridge, major reconstruction of the ramps and overcrossing at the north end. It would cause significant ramp closures and delay during construction due to stage construction activities. Additional right-of-way acquisition and additional utility relocations would also be required due to the enlarged footprint. It would result in the north end of Palo Comado Canyon Road going substantially outside the right-of-way and encroaching into private properties and businesses which would need to be relocated. The other option is to replace the bridge entirely.

Added Cost to Make Standard

The cost associated with making the vertical curve on the northbound on-ramp standard would require reconfiguration of the entire ramp and modifications at the ramp entrance, or reconstruction of the overcrossing profile. The additional cost to reconfigure the ramp would be in excess of $1 million. See Table 2-2.

Table 2-2 Feature A1
Additional Cost to Make Standard

Cost Component	Opinion of Probable Construction Cost*
Roadway	$1,000,000
Structures	$0
Right-of-Way	$0
Total Capital Cost	$1,000,000

*All Costs shown in 2011 Dollars

The cost associated with making the vertical curve on the bridge standard would require at least reconstruction of the north end of the bridge, ramps and overcrossing on north end. The additional cost would be in excess of $10 million. See Table 2-3.

Table 2-3 Feature A3
Additional Cost to Make Standard

Cost Component	Opinion of Probable Construction Cost*
Roadway	$6,000,000
Structures	$2,000,000
Right-of-Way	$2,000,000
Total Capital Cost	$10,000,000

*All Costs shown in 2011 Dollars

B. Design Exception Feature A2

Non-Standard Feature

The project proposes the following superelevation runoff placement:

Table 2-4
Superelevation Runoff Placement

Figure 2	Alignment	Existing/Proposed Runoff Placement (Fraction within tangent)	Standard Runoff Placement (Fraction within tangent)
Build Alternative	Northbound On-Ramp **Sta 332+53.67 to 333+12.00** **Sta 334+22.28 to 334+88.95**	1/2	2/3

Standard for Which Exception is Requested:

Highway Design Manual, Index 202.5(2) – Runoff, "Two-thirds of the superelvation runoff should be on the tangent and one-third within the curve."

Reasons For Requesting Exception

Given the geometric configuration of the existing diamond ramp connection at the overcrossing, a standard 10% superelevation is not attainable at the curve location without reconstructing the ramp. In addition, it is not possible to use longer radii due to the proximity of the next horizontal curve and transition needs. As is the case with similar existing interchanges, the existing ramp superelevation is controlled by the local street overcrossing profile, in this case Palo Comado Canyon Road. Even though the ramp terminates at the intersection, the proposed superelevation rate is designed to meet the comfortable speed of 45 mph for 850-foot radius, as required in Figure 202.2 of the *HDM*.

In addition, the proposed transition complies with *HDM* Index 202.5(3) of 6% per 100 feet for restricted situations and other elements of HDM Index 202.2. Based on the design requirements of 50 mph at the inlet nose and 25 mph at the ramp termini, the expected design speed for this ramp would be 35 mph to 40 mph. However, due to the physical constraints two-thirds runoff within the tangent is not attainable. There is no evidence of any accidents being attributed to the existing nonstandard superelevation rate.

Added Cost to Make Standard

The cost associated with making the superelevation runoff placement standard would require reconfiguration of the ramp intersection at the overcrossing and the entire ramp. The additional cost to make this feature standard would be in excess of $0.5 million. See Table 2-5.

Table 2-5 Feature A2
Additional Cost to Make Standard

Cost Component	Opinion of Probable Construction Cost*
Roadway	$500,000
Structures	$0
Right-of-Way	$0
Total Capital Cost	$500,000

*All Costs shown in 2011 Dollars

C. Design Exception Feature A4

Non-Standard Feature

The project proposes the following intersection spacing:

Table 2-6
Intersection Spacing

Figure 2	Alignment	Existing Spacing (ft)	Proposed Spacing (ft)	Standard Spacing (ft)
Build Alternative	Palo Comado Canyon Road	400	420	500

Standard for Which Exception is Requested:

Highway Design Manual, Index 504.3(3) – Location and Design of Ramp Intersections on Crossroads, "The preferred minimum distance should be 500 feet."

Reasons For Requesting Exception

The existing curb return to curb return distance between the northbound ramp intersection and Dorothy Drive is approximately 400 feet. The proposed northbound off-ramp is being realigned to maximize the distance between the ramp terminus and Dorothy Drive allowing up to 420 feet which meets the minimum standard intersection spacing of 400 feet. The widening of Palo Comado Canyon Road overcrossing proposes two lanes in each direction and left turn channelization to increase overall capacity and provide additional storage. In order to meet the 500 feet preferred spacing requirement between the ramp intersection and local street intersection the northbound ramp intersection and/or Dorothy Drive intersection would need to be relocated. This would cause significant impact to existing facilities and require additional right-of-way. Private residences and businesses would be greatly impacted since the area is developed. Relocating the northbound ramp intersection would potentially require acquiring two service stations. There is no evidence of any accidents being attributed to the existing nonstandard intersection spacing.

Added Cost to Make Standard

The additional cost to relocate the northbound ramp intersection and/or relocate the Dorothy Drive intersection would be in excess of $10 million. See Table 2-7.

Table 2-7 Feature A4
Additional Cost to Make Standard

Cost Component	Opinion of Probable Construction Cost*
Roadway	$3,000,000
Structures	$0
Right-of-Way	$7,000,000
Total Capital Cost	$10,000,000

*All Costs shown in 2011 Dollars

D. Design Exception Feature A5

Nonstandard Feature

The superelevation transition at the northbound off-ramp between horizontal curves (curves #4 and #7 of Geometric Approval Drawing, Figure 2) varies from HDM, Figure 202.5A.

The superelevation transition at the northbound on-ramp between horizontal curves (curves #5 and #6 of the Geometric Approval Drawing, Figure 2) varies from HDM, Figure202.5A.

Standard for Which Exception is Requested:

Highway Design Manual, Index 202.5(1) – Superelevation Transition, "A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort, and pleasing appearance."

Reasons For Requesting Exception:

The US 101/Palo Comado Canyon Road interchange is highly constrained due to the close proximity of existing residences and businesses on both sides of the freeway. In addition, the terrain is very hilly to mountainous especially in the northwest and northeast quadrants where the northbound on and off-ramp are located. The freeway is also located on a horizontal curve at the ramp entrance and exit. Due to these constraints, the northbound on-ramp and off-ramp are designed to best fit within the area and maintain existing conditions. There is no evidence of any concentration of accidents for existing conditions and none is expected with the proposed improvements.

The distance along the northbound on-ramp between the end-curve station 334+41.16 and begin-curve station 334+88.95 and the distance along the northbound off-ramp between the end-curve station 324+02.91 and begin-curve station 325+77.73 does not allow for a full transition length as required in *HDM* Index 202.5(1). For the northbound on-ramp, the first horizontal curve (#5) transitions from a 2% left curve to a 2% right curve of the second curve (#6) in a short distance. For the northbound off-ramp, the first horizontal curve (#4) transitions from a 6% superelevation directly into the 8% superelevation of the second horizontal curve (#7) without coming back down to a full crown section. Given the location of the two horizontal curves, makes the superelevation coming back down to crown unfeasible in this situation.

However, the proposed transition complies with *HDM* Index 202.5(3) of 6% per 100 feet for restricted situations and other elements of HDM Index 202.2. To comply with Index 202.5(1) of the *HDM*, the northbound off-ramp would need to be relocated further east and lengthened.

Added Cost to Make Standard:

Additional cost to meet the standard of Figure 202.5A would be in excess of $1.0 million ($0.50 million for each ramp). See Table 2-8.

Table 2-8 Feature A5
Additional Cost to Make Standard

Cost Component	Opinion of Probable Construction Cost* Northbound On-Ramp	Opinion of Probable Construction Cost* Northbound Off-Ramp
Roadway	$500,000	$500,000
Structures	$0	$0
Right-of-Way	$0	$0
Total Capital Cost	$500,000	$500,000

*All Costs shown in 2011 Dollars

E. Design Exception Feature A6

Nonstandard Feature

The proposed design speed for Palo Comado Canyon road overcrossing is 35 mph.

Standard for Which Exception is Requested

Highway Design Manual, Index 101.1-Selection of Design Speed "Where the local facility connects to a freeway or expressway (such as ramp terminal intersections), the design speed of the local facility shall be a minimum of 35 mph. However, the design speed should be 45 mph when feasible."

Reasons For Requesting Exception

Palo Comado Canyon Road meets the minimum design speed of 35 miles per hour per HDM Index 101.1. The facility is also in compliance with local standards. However, to meet the advisory design speed standard of 45 mph, Palo Comado Canyon Road would need to be designed with minimum horizontal curve radii of approximately 700 feet. A 700-foot radius would result in Palo Comado Canyon Road going substantially outside the right-of-way and encroaching into private properties and businesses which would need to be relocated. In addition, various local streets would need to be relocated.

Relocating the interchange would be difficult due to its existing location along US 101. Moving it north or south would result in non-standard interchange spacing and encroaching onto other existing facilities.

Added Cost to Make Standard

Additional cost to meet the 45 mph design speed advisory standard would be in excess of $20 million. See Table 2-9.

Table 2-9 Feature A6
Additional Cost to Make Standard

Cost Component	Opinion of Probable Construction Cost*
Roadway	$12,000,000
Structures	$4,000,000
Right-of-Way	$4,000,000
Total Capital Cost	$20,000,000

*All Costs shown in 2011 Dollars

3. TRAFFIC DATA

The traffic study was completed to evaluate the current and future traffic operations and identify the specific improvements to the US 101 Freeway interchange (US 101 Northbound Ramps) with Palo Comado Canyon Road in the City of Agoura Hills. Weekday AM and PM peak period intersection turning movement counts, average daily traffic (ADT), and vehicle classification counts were collected in November 2009 and May 2010. Five intersections were analyzed for existing (2010), opening year (2015), and forecast year (2035) as presented in Table 3-1 and 3-2 below.

Table 3-1 presents the LOS at the study intersections for Existing (2010), Opening (2015), and Horizon (2035) year scenarios for the no-build alternative.

Table 3-1: Intersection LOS Summary – No Build Alternative

No.	Intersection	Intersection Control	Existing				2015 Baseline				2035 Baseline			
			AM		PM		AM		PM		AM		PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Driver @ Chesebro	All-way Stop	50.9	F	36.5	E	61.2	F	44.9	E	128.1	F	99.3	F
2	Palo Comado @101 NB Ramps	Two-way stop (stop sign on ramp)	33.3	D	37.6	E	52.3	F	69.1	F	290.3	F	105.4	F
3	Dorothy Dr @ SB Ramps	All-way stop	19.1	C	12.6	B	22.1	C	13.4	B	41.7	E	26.3	D
4	Palo Comado @Chesebro	Two-way stop (stop signs on Chesebro)	17.6	C	19.0	C	19.0	C	19.8	C	34.9	D	31.7	D
5	Agoura @ Chesebro	All-way Stop	9.1	A	11.5	B	9.3	A	12.0	B	13.2	B	26.3	D

Note: Delay refers to the average delay for the entire intersection. At a two-way stop, delay refers to the worst approach delay.

Table 3-1 indicates that all study intersections currently operate at LOS C or better in both the AM and PM peak periods with the exception of Driver Avenue at Chesebro Road and

Palo Comado Canyon Road at US 101 NB Ramps that operate at LOS D, E, or F in both the AM and PM peak hours.

For 2015 Baseline, all study intersections would continue to operate at an LOS C or better in both the AM and PM peak period with the exception of Driver Avenue at Chesebro Road and Palo Comado Canyon Road at US 101 NB Ramps that operate at LOS E or worse in both the AM and PM peak hours.

For 2035 Baseline, all the study intersections would operate at LOS D or worse with the exception of Agoura Road at Chesebro Road (LOS B in the AM peak period).

Table 3-2 presents the LOS at the study intersections for the Opening (2015) and Horizon (2035) year scenarios for the build alternative.

Table 3-2: Intersection LOS Summary –Build Alternative

No.	Intersection	Intersection Control	2015				2035			
			AM		PM		AM		PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Driver @ Chesebro	All-way Stop	61.2	F	44.9	E	128.1	F	99.3	F
2	Palo Comado @101 NB Ramps	Traffic Signal	7.6	A	8.0	A	9.8	A	11.5	B
3	Dorothy Dr @ SB Ramps	All-way stop	22.1	C	13.4	B	26.0	D	24.3	C
4	Palo Comado @Chesebro	Two-way stop (stop signs on Chesebro)	19.0	C	19.8	C	34.9	D	31.7	D
5	Agoura @ Chesebro	All-way Stop	9.3	A	12.0	B	13.2	B	26.3	D

Note: Delay refers to the average delay for the entire intersection. At a two-way stop, delay refers to the worst approach delay.

Table 3-2 indicates that for year 2015 the proposed improvements would improve the LOS at the intersection of Palo Comado Canyon Road at 101 NB Ramps from LOS F to LOS A for both the AM and PM peak period. The remaining intersections would continue to operate at LOS C or better during both AM and PM peak periods with the exception of Driver Avenue and Chesebro Road which continues to operate at LOS F in the AM peak period and LOS E in the PM peak period.

Table 3-2 also indicates that for year 2035 the proposed improvements would improve the LOS at the intersection of Palo Comado Canyon Road at 101 NB Ramps from LOS F to LOS A for the AM peak period and LOS F to B for the PM peak period. The remaining intersections would continue to operate at LOS D or worse during both AM and PM peak periods, except the intersection of Agoura Road at Chesebro Road that operates at LOS B during the AM peak period.

Queuing Analysis

Caltrans requested that a queuing analysis be completed for the westbound direction at the intersection of Palo Comado Canyon Road and US 101 NB Off-Ramp. Queue lengths were determined based upon a queuing analysis for the westbound direction. Table 3-3 presents the queue lengths in feet for each forecast year with and without the proposed improvements.

Table 3-3: 95th Percentile Queue Lengths (feet) for NB Off-Ramp at Palo Comado Canyon Road

	Existing AM (stop sign)	Existing PM (stop sign)	2015 Base AM (stop sign)	2015 Base PM (stop sign)	2015 W/ improvements AM (traffic signal)	2015 W/ improvements PM (traffic signal)	2035 Base AM (stop sign)	2035 Base PM (stop sign)	2035 W/ Improvements AM (traffic signal)	2035 W/ Improvements PM (traffic signal)
Left	238	419	232	235	46	58	698	439	70	66
Through	153	691	135	367	47	60	251	789	71	66
Right	153	691	135	367	57	82	251	789	136	236

Table 3-3 indicates that the queue lengths are expected to be significantly reduced with the proposed improvements to the Palo Comado Canyon Road interchange.

Roadway Analysis

A roadway segment LOS analysis was completed for Palo Comado Canyon Road overpass based upon the HCM methodology. Based upon the definitions provided in the HCM, Palo Comado Canyon Road is considered to be a Class II suburban minor arterial. Existing volumes were obtained from the ADT data collected in 2010.To obtain the future 2015 and 2035 anticipated traffic volumes, a regional growth factor of 0.75% per year was applied to the existing (2010) traffic volumes to account for the general area wide and regional growth and development. Table 3-4 presents the service volumes (vehicle/hour) for AM and PM peak periods for Palo Comado Canyon Road for Existing Conditions (2010), Opening Year Conditions (2015), and Build-out Conditions (2035) and the corresponding LOS for two lanes and four lanes in both directions.

Table 3-4: Palo Comado Canyon Road Service Volumes (veh/hr)

	Peak Period	Service Volumes (vph)	LOS with 1 lane	LOS with 2 lanes
Existing (2010)	AM	1,013	F	N/A
	PM	936	F	N/A
Opening Year (2015)	AM	1,051	F	C or better
	PM	971	F	C or better
Buildout Year (2035)	AM	1,203	F	C or better
	PM	1,112	F	C or better

N/A - not applicable

Table 3-4 indicates that Palo Comado Canyon Road currently operates at LOS F or worse during both AM and PM peak hours under existing conditions. The widening of the Palo Comado Canyon Road overpass from two to four lanes would improve the operation to LOS C or better during both AM and PM peak hours under opening year (2015) and build-out (2035) year conditions.

Freeway Mainline and Ramp Analysis

Freeway mainline and ramp analysis for US-101 was conducted using the HCS+ software. Freeway analysis results are expressed in terms of density, which measures the number of passenger cars per lane mile (pc/mi/ln) on the freeway mainline. Analysis results for Existing (2010), Opening Year (2015), and Buildout Year (2035) conditions are summarized in Table 3-5.

Table 3-5: Freeway Mainline Operations for 101 Freeway

Existing (2010)				Opening Year (2015)				Buildout Year (2035)			
Northbound		Southbound		Northbound		Southbound		Northbound		Southbound	
Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
30.3	D	29.8	D	31.9	D	31.2	D	40.4	E	39.2	E

Table 3-5 indicates that the freeway segment would operate at LOS D or worse in both northbound and southbound directions for all scenarios. Ramp operations were similar to the freeway analysis. The northbound and southbound on- and off -ramps at this interchange currently have auxiliary lanes that provide additional storage for vehicles and also facilitate better operations at the merge and diverge areas in the vicinity of the interchange.

4. TRAFFIC ACCIDENT ANALYSIS

Accident data based on Caltrans Transportation Systems Network Traffic Accident Surveillance and Analysis System (TSN TASAS) for the three-year period ending December 31, 2009 shows that the total rate of accidents at the Palo Comado Canyon Road interchange is generally lower than the statewide average. There are three exceptions to this: the northbound off-ramp total accident rate is 50% higher than the statewide average and 71% higher than the statewide average for fatality plus injury; and for the southbound on-ramp the accident rate is 29% higher than the statewide average for fatality plus injury. A main reason for the higher accident rates on the existing northbound off-ramp is due to inadequate stopping sight distance at the intersection with Palo Comado Canyon Road. Another reason is vehicles tend to queue up due to the stop controlled intersection and reducing the available stopping distances between vehicles. The build alternative provides standard stopping sight distance and reduces the queue lengths for better spacing of vehicles. Based on TSN TASAS, speeding caused both accidents on the southbound on-ramp with no other apparent reason. The TSN TASAS data is summarized in **Table 4**.

Table 4: Accident Rates for US 101/Palo Comado Canyon Road Interchange (On-/Off-Ramps)

Location	Segment Actual Accident Rate*			Statewide Average Accident Rate*		
US 101/Palo Comado Canyon Road Interchange	**Fatalities**	**Fatalities & Injuries**	**Total**	**Fatalities**	**Fatalities & Injuries**	**Total**
Northbound Off Ramp	0.000	0.72	1.81	0.004	0.42	1.2
Northbound On Ramp	0.000	0.00	0.00	0.002	0.26	0.75
Southbound Off Ramp	0.000	0.00	0.35	0.004	0.28	0.95
Southbound On Ramp	0.000	0.18	0.35	0.002	0.14	0.45

* Accident rates per million vehicle miles traveled

The primary collision factor for the northbound off-ramp accidents is failure to yield which accounts for 50% of the accidents. The location of the accidents for this off-ramp are clustered around the ramp intersection and ramp area preceding the intersection, which account for 70% and 20% of the accidents, respectively. A total of 13 accidents occurred at the interchange, with zero fatalities and five injuries. Ten of the total 13 accidents and four of the five injuries occurred on the northbound off-ramp.

The primary collision factor for the accidents that occurred on the southbound on-ramp was speeding. The primary collision factor for the accidents that occurred on the southbound off-ramp was influence of alcohol. Reduced queue lengths for the northbound off-ramp will result in reduced delay at the intersection. This will not affect the southbound on-ramp and off-ramp.

With the exception of the northbound off-ramp, there does not appear to be any existing geometric design elements contributing to the higher than average accident rates. The existing bridge contributes to non-standard stopping sight distance at the northbound off-ramp intersection. The Build Alternative is expected to improve operations at the northbound off-ramp by providing standard stopping sight distance and signalizing the intersection. Sight distance will be improved the northbound off-ramp its geometry and widening the bridge.

The proposed improvements are not anticipated to contribute to an increase in accidents. Additional lanes for through and turning movements would be provided to accommodate the increased traffic. Signalized intersections in the Build Alternative would be provided to improve yielding right-of-way control. Although nonstandard intersection spacing would remain as documented in this advisory design exception fact sheet, the improvements under the Build Alternative would increase the spacing between intersections and traffic operations would be enhanced.

5. INCREMENTAL IMPROVEMENTS

There are no additional practical incremental improvements that would address the project purpose and need.

6. FUTURE CONSTRUCTION

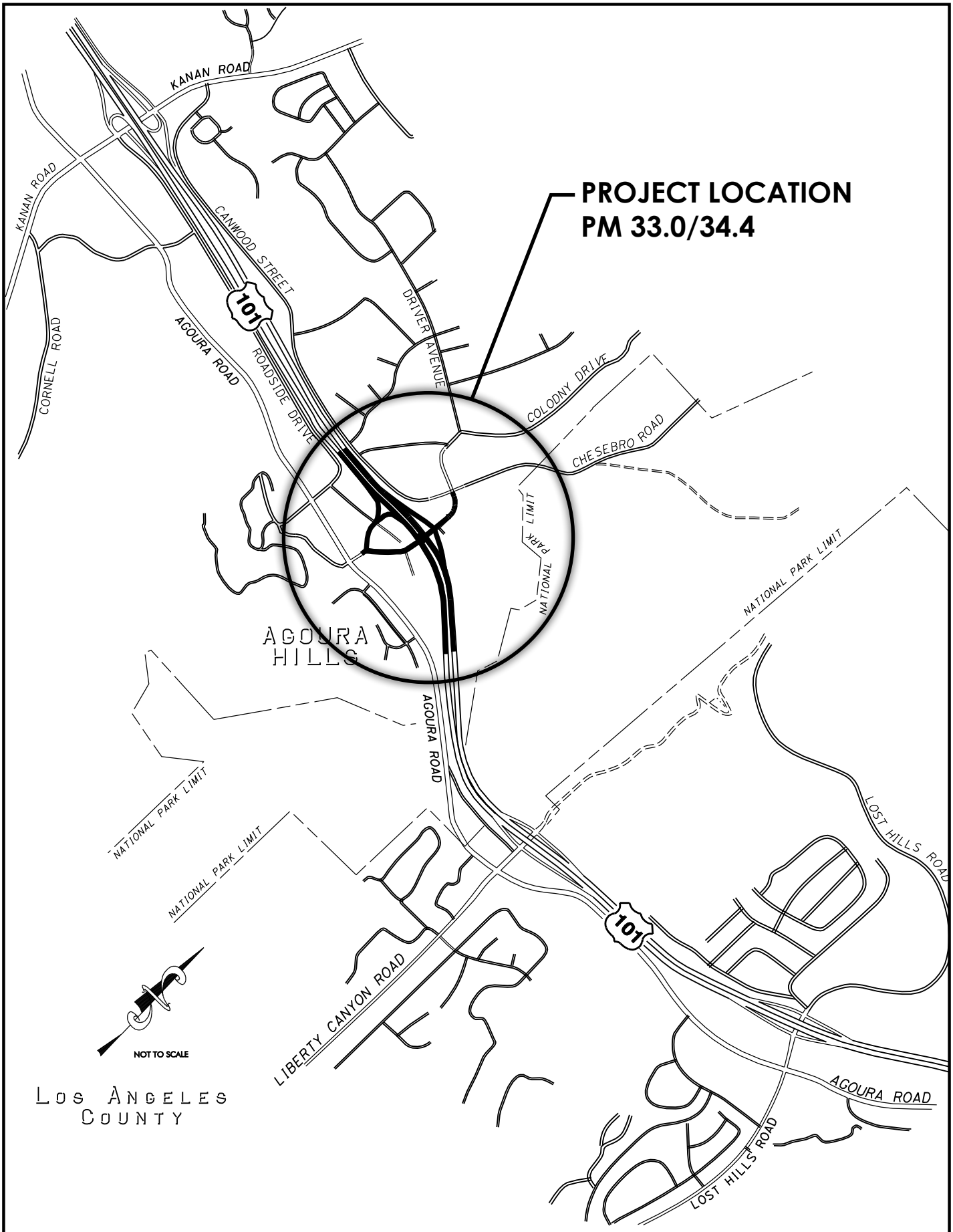
No projects have been identified that preclude the project improvements identified within this document.

7. PROJECT REVIEWS/CONCURRENCE

List of Reviewers		
Reviewer	**Title**	**Date**
JD Bamfield	HQ Design Reviewer	07/25/2012
OC Lee	Sr. Transportation Engineer Office of Design C	05/18/2012

8. ATTACHMENTS

Figure 1 - Vicinity Map
TASAS Table B
Figure 2 – Build Alternative



PROJECT LOCATION MAP

California Department of Transportation
Table B - Selective Accident Rate Calculation

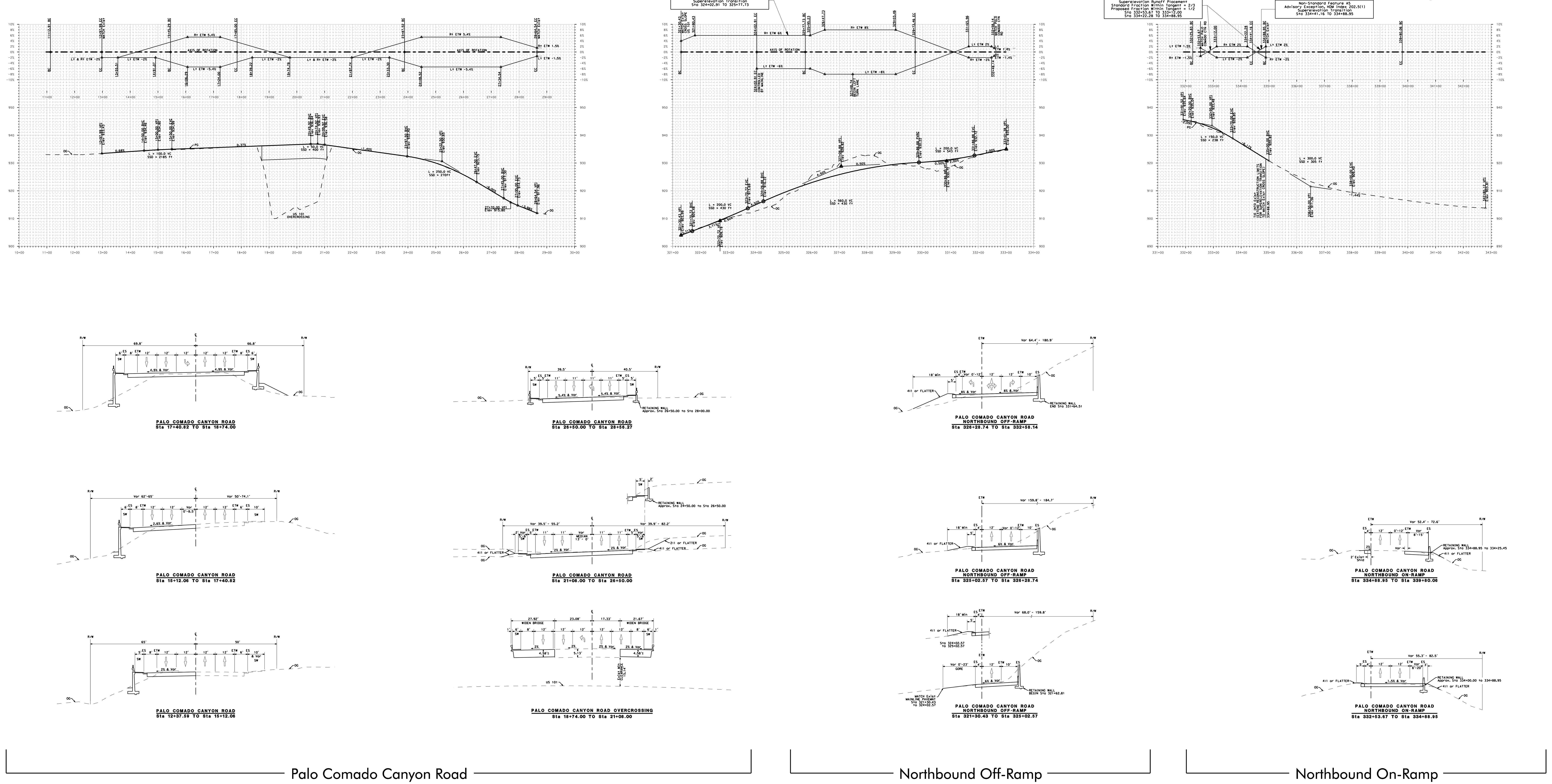
Location Description	Rate Group (RUS)	No. of Accidents / Significance							Pers Kld	ADT Main	Total MV+ or MVM	Accident Rates Actual		Accident Rates Average			
		Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark	Inj	X-St		Fat	F+I	Tot	Fat	F+I	Tot
07 LA 101 033.618 101/NB OFF TO CHEESEBRO RD	R 10	10	0	4	4	8	0	3	0	5.1	5.54 +	0.000	.72	1.81	0.004	.42	1.20
0001-0001 2007-01-01 2009-12-31 *36 mo.*	U								4	.0							
07 LA 101 033.764 101/SB ON PALO COMADO CYN	R 32	2	0	1	1	2	1	1	0	5.2	5.70 +	0.000	.18	.35	0.002	.14	.45
0001-0002 2007-01-01 2009-12-31 *36 mo.*	U								1	.0							
07 LA 101 033.798 101/NB ON FR CHEESEBRO RD	R 12	0	0	0	0	0	0	0	0	2.8	3.11 +	0.000	.00	.00	0.002	.26	.75
0001-0003 2007-01-01 2009-12-31 *36 mo.*	U								0	.0							
07 LA 101 033.893 101/SB OFF TO CHEESEBRO RD	R 26	1	0	0	0	0	0	1	0	2.6	2.87 +	0.000	.00	.35	0.004	.28	.95
0001-0004 2007-01-01 2009-12-31 *36 mo.*	U								0	.0							

Accident Rates expressed as: **# of accidents / Million vehicle miles**

+ denotes that **Million Vehicles** (MV) used in accident rates instead (for intersections and ramps).

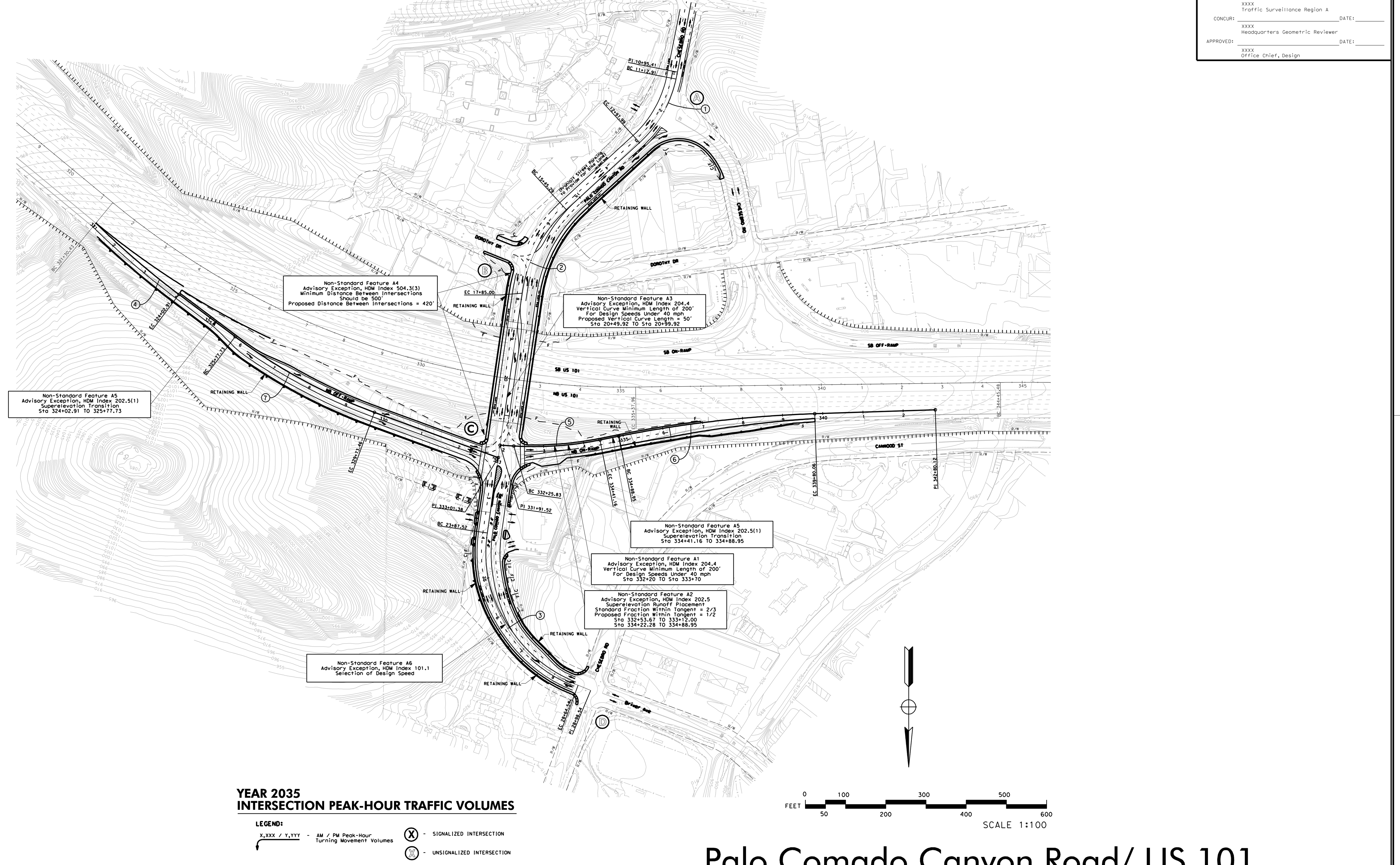
For Ramps RUS only considers R(Rural) U(Urban)

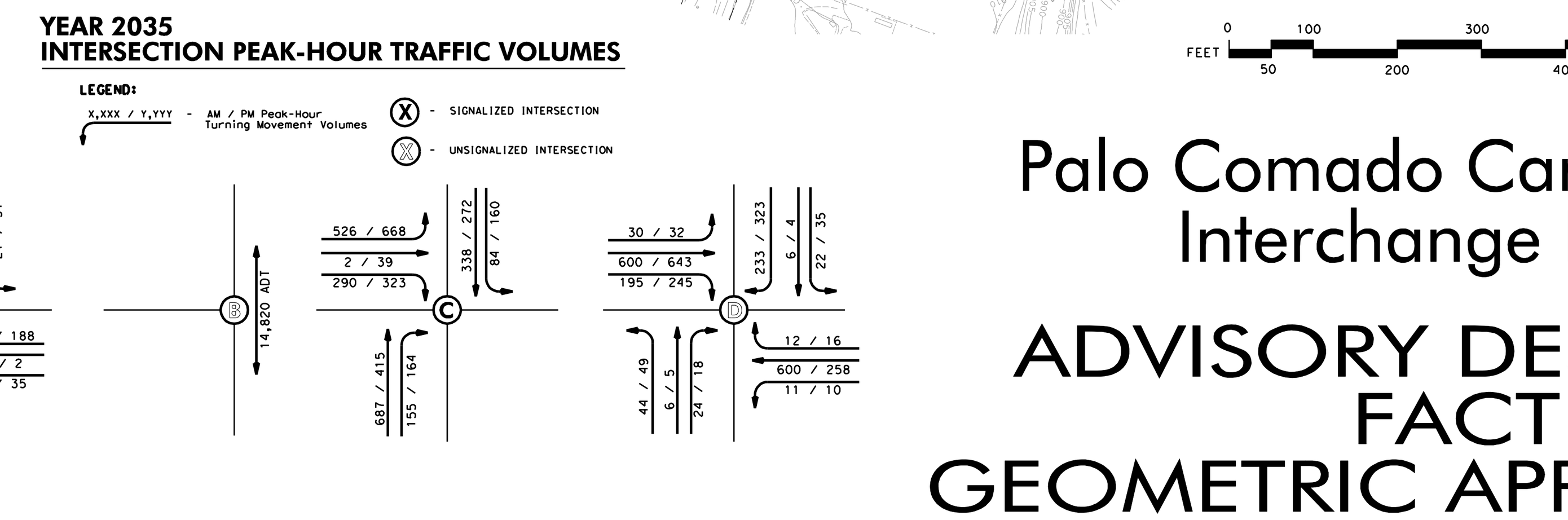
Palo Comado Canyon Road   Northbound Off-Ramp   Northbound On-Ramp



CURVE DATA TABLE

No.	R	Δ	T	L
1	300.00	35°20'55.00"	95.59	185.08
2	350.00	39°14'25.00"	124.77	239.71
3	350.00	78°5'18.80"	283.87	477.02
4	2065.95	7°33'24.11"	136.44	272.48
5	850.00	14°30'54.00"	108.25	215.33
6	3000.00	9°22'46.00"	246.10	491.11
7	1350.00	16°47'42.67"	199.29	395.73





DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

KIMLEY-HORN AND ASSOCIATES, INC.
5550 TOPANGA CANYON BLVD, SUITE 250
WOODLAND HILLS, CA 91367

RECOMMENDED: XXXX Kimley-Horn and Associates, Inc.

CONCUR: XXXX Traffic Surveillance Region

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Palo Comado Canyon Road/ US 101 Interchange Improvements

ADVISORY DESIGN EXCEPTION FACT SHEET - GEOMETRIC APPROVAL DRAWINGS

March 2011
Updated July 2012

FIGURE 2