

CHSRA Representative Alignment

Segment	File Name	Order of Alignment Segment (File Tabs)	Comments
San Jose – Merced	2.San Jose - Merced.xls	a. SR 87 - I 280 b. Refined Program c. US 101 to East Gilroy d. PP-close prox to 152 e. HM to Ave 24	<ul style="list-style-type: none"> <li>Connect segments in the spreadsheet in accordance with the segment order (tabs) shown. Station Equation for: End of Henry Miller to Avenue 24 (HM to Ave 24) alignment <math>6163+23 = \text{Station } 870+00</math> on Merced to Fresno Hybrid (UPRR FOR M TO F hybrid) Alignment.</li> </ul>
Merced – Fresno	3.Merced to Fresno.xlsx	a. UPRR FOR M TO F hybrid	<ul style="list-style-type: none"> <li>Station Equation for: Station <math>870+00</math> on Merced to Fresno Hybrid Alignment = Station <math>616+23</math> end of Henry Miller to Avenue 24 alignment.</li> <li>Station Equation for: Station <math>3098+85</math> on Merced to Fresno Alignment = Station <math>100+00</math> (Clinton Ave) on Alignment F2 for Fresno to Bakersfield segment.</li> </ul>
Fresno – Bakersfield	4.Fresno - Bakersfield.xls	a. Alignment F2 b. Alignment H c. Alignment C1 d. Alignment P e. Alignment A1 f. Alignment L1 g. Alignment WS1 h. Alignment B1	<ul style="list-style-type: none"> <li>Connect segments in the spreadsheet in accordance with the segment order (tabs) shown.</li> <li>Station Equation for: Station <math>100+00</math> (Clinton Ave) on Alignment F2 for Fresno to Bakersfield segment = Station <math>3098+85</math> on Merced to Fresno Alignment.</li> </ul>
Bakersfield – Palmdale	5.Bakersfield - Palmdale.xls	a. East Bakersfield – Alt. E2 b. Tehachapi – Alt. T3-1 c. Antelope Valley – Alt. AV4	<ul style="list-style-type: none"> <li>Connect segments in the spreadsheet in accordance with the segment order (tabs) shown.</li> <li>Station Equation for: Station <math>7431+00</math> on B1 Alignment for Fresno to Bakersfield segment = Station <math>7442+64.24</math> on East Bakersfield - E2 Alignment of Bakersfield to Palmdale segment.</li> </ul>
Palmdale - Los Angeles	6.Palmdale - Los Angeles.xlsx	a. SR14W 7.0 HST SB b. SSU 7.0 HST SB c. SFV HST SB d. LT1 HST SB	<ul style="list-style-type: none"> <li>Connect segments in the spreadsheet in accordance with the segment order (tabs) shown.</li> <li>Station Equation for: Station <math>11743+92</math> on Antelope Valley - AV4 Alignment for Bakersfield to Palmdale segment = Station <math>0+00</math> on “SR14W” alignment for Palmdale to Los Angeles (LA) segment.</li> <li>Starting point at LA Union Station is station <math>3710+44</math> on alternative “LT1” alignment.</li> </ul>

Name: San Jose Station Approach

Prepared by: Peter Chu

Date: 2010-11-17

Alignment: SR 87/ I-280

San Jose Station Approach Subsection

Horizontal

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	5462	SAN JOSE DIRIDON STATION (HST)	143		50
Clothoid	5605		450		50
Circular	6055		1183	1150	50
Clothoid	7238		450		50
Linear	7688		1298		50
Clothoid	8986		450		50
Circular	9436	SR 87 - I 280	1052	1150	50
Clothoid	10488		450		50
Linear	10938		332		50
Clothoid	11270		450		55
Circular	11720		238	1550	55
Clothoid	11958		450		55
Linear	12408		301		55
Clothoid	12709		340		95
Circular	13049		299	11000	95
Clothoid	13348		340		95
Linear	13688	EX. CALTRAIN TAMIEN STATION	1212		95
END ALIGNMENT	14900	WEST ALMA			

Vertical

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	5462	713	159.72	0
Parabola	6175	250	158.26	
Linear	6425	625	150.93	-1.17
Parabola	7050	500	149.62	
Linear	7550	1025	156.25	0.65
Parabola	8575	850	159.00	
Linear	9425	5475	159.00	0

Name: Monterey Highway Subsections

Prepared by: Peter Chu

Date: 2010-11-17

Alignment: Refined Program

**Monterey Highway Subsection**

**Horizontal**

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	14900	WEST ALMA	1859		95
Clothoid	16759		250		95
Circular	17009		293	10500	95
Clothoid	17302		250		95
Linear	17552		324		95
Clothoid	17876		250		95
Circular	18126		254	10500	95
Clothoid	18380		250		95
Linear	18630		643		95
Clothoid	19273		850		110
Circular	20123		2539	5700	110
Clothoid	22662		850		110
Linear	23512		3862		110
Clothoid	27374		1025		125
Circular	28399	LICK PT.	3177	8500	125
Clothoid	31576		1025		125
Linear	32601		1760		125
Clothoid	34361		975		125
Circular	35336		281	7100	125
Clothoid	35617		975		125
Linear	36592		2232		125
Clothoid	38824		550		130
Circular	39374		411	12000	130
Clothoid	39784		550		130
Linear	40334		17042		130
Clothoid	57376		850		185
Circular	58226		1082	22500	185
Clothoid	59308		850		185
Linear	60158		926		185
END ALIGNMENT	61085	BERNAL WAY			

**Vertical**

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	14900	1073	159.00	0
Parabola	15973	450	154.83	
Linear	16423	1195	132.67	-1.85
Parabola	17618	500	128.54	
Linear	18118	8832	146.31	0.2
Parabola	26950	550	150.90	
Linear	27500	2871	193.09	1.47
Parabola	30371	1680	184.20	
Linear	32051	441	173.06	-2.53
Parabola	32492	1320	160.40	
Linear	33812	3947	184.44	0.61
Parabola	37759	600	186.27	
Linear	38359	5070	186.27	0
Parabola	43429	775	188.15	
Linear	44204	2985	202.60	0.48
Parabola	47189	825	203.36	
Linear	48014	2897	194.67	-0.3
Parabola	50911	775	194.35	
Linear	51686	4513	204.12	0.22
Parabola	56199	880	210.23	
Linear	57079	4006	257.17	1.17

0

Name: Morgan Hill - Gilroy  
 Prepared by: Kai Lee Win  
 Date: 2010-11-17  
 Alignment: US 101 to East Gilroy

Horizontal

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	STA EQUA: 61084.51 = 70000	BERNAL WAY	#VALUE!		250
Clothoid	71842		1550		250
Circular	73392	COYOTE PARK	4938	45000	250
Clothoid	78330		1550		250
Linear	79880		1657		250
Clothoid	81537		1300		250
Circular	82837		1916	38000	250
Clothoid	84754		1300		250
Linear	86054		1580		250
Clothoid	87634		1650		250
Circular	89284		4974	32000	250
Clothoid	94258		1650		250
Linear	95908		12377		250
Clothoid	108285		1550		250
Circular	109835		2408	45000	250
Clothoid	112244		1550		250
Linear	113794		4071		250
Clothoid	117864		1200		250
Circular	119064	CITY OF MORGAN HILL	3008	100000	250
Clothoid	122073		1200		250
Linear	123273		7834		250
Clothoid	131107		2000		250
Circular	133107		3574	28000	250
Clothoid	136680		2000		250
Linear	138680	SAN MARTIN	12412		250
Clothoid	151092	AIRPORT/CHP WEIGH STATION	1550		250
Circular	152642		8372	45000	250
Clothoid	161014		1550		250
Linear	162564	PREFERRED MOW	6878		250
Clothoid	169443	EAST GILROY STATION	1800		250
Circular	171243	CITY OF GILROY	7833	35000	250
Clothoid	179076		1800		250
Linear	180876		7928		250
Clothoid	188804		2500		250
Circular	191304		38457	28066	250
Clothoid	229761		2500		250
Linear	232261		159		250
END ALIGNMENT	232420	CASA DE FRUTA	-232420		250

	Tunnel	Stationing	Lenth (ft)	Single Track Tunnel Free Cross Section
				Area (sf)
	Begin Cov. Trench	1364+50		
	End Cov. Trench	1385+50	2100	630
	Begin Cov. Trench	1404+00		
	End Cov. Trench	1406+00	200	630
	Begin Cov. Trench	1410+00		
	End Cov. Trench	1411+50	150	630
	Begin Cov. Trench	1416+00		
	End Cov. Trench	1420+00	400	630
	Begin Cov. Trench	1457+00		
	End Cov. Trench	1481+00	2400	630
	Begin Cov. Trench	1406+00		
	End Cov. Trench	1407+50	150	630
	Begin Cov. Trench	1522+00		
	End Cov. Trench	1524+00	200	630
	Begin Cov. Trench	1525+50		
	End Cov. Trench	1527+00	150	630
	Begin Cov. Trench	1528+50		
	End Cov. Trench	1530+50	200	630
	Begin Bored	2164+50		
	End Bored	2252+50	8800	630

Vertical

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	70000	4700	257.17	1.17
Parabola	74700	2000	312.16	
Linear	76700	6433	323.86	0
Parabola	83133	1335	323.86	
Linear	84468	13465	327.84	0.6
Parabola	97933	1335	408.02	
Linear	99268	6163	412.00	0
Parabola	105430	1140	412.00	
Linear	106570	13130	412.89	0.16
Parabola	119700	1800	433.38	
Linear	121500	5650	426.61	-0.91
Parabola	127150	1400	375.35	
Linear	128550	5250	358.33	-1.52
Parabola	133800	2400	278.29	
Linear	136200	2730	258.67	-0.11
Parabola	138930	1140	255.63	
Linear	140070	9060	252.65	-0.41
Parabola	149130	1140	215.35	
Linear	150270	4145	213.00	0
Parabola	154415	1170	213.00	
Linear	155585	1615	215.92	0.5
Parabola	157200	1500	224.00	
Linear	158700	14347	226.35	-0.2
Parabola	173047	1200	197.79	
Linear	174247	2629	196.59	0
Parabola	176876	1200	196.59	
Linear	178076	3800	195.69	-0.15
Parabola	181876	1200	189.99	
Linear	183076	2244	186.67	-0.4
Parabola	185320	1200	177.62	
Linear	186520	22028	175.20	0
Parabola	208548	2900	175.20	
Linear	211448	11060	193.33	1.25
Parabola	222508	2200	331.58	
Linear	224708	7712	348.74	0.31
END ALIGNMENT	232420			

Name: Pacheco Pass  
 Prepared by: Oliver Martinez  
 Date: 2010-11-17  
 Alignment: Close Proximity to SR 152

Horizontal

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)				
POB/Linear	STA EQUA: 241048.73 = 315000	CASA DE FRUTA	#VALUE!		220				
Clothoid	315266		2500.00		220				Single Track Tunnel Free Cross Section Area (sf)
Circular	317766		7397.17	28,000	220	Tunnel	Stationing	Length (ft)	
Clothoid	325163		2500.00		220	Begin Bore	3247+50		630
Linear	327663		20018.28		220	End Bore	3258+00	1050	
Clothoid	347682		1100.00		220	Begin Bore	3327+00		630
Circular	348782		1315.23	100,000	220	End Bore	3432+00	10500	
Clothoid	350097		1100.00		220	Begin Bore	3451+50		630
Linear	351197		29465.82		220	End Bore	3484+00	3250	
Clothoid	380663		1300.00		220	Begin Bore	3502+00		630
Circular	381963		4063.63	50,000	220	End Bore	3747+00	24500	
Clothoid	386026		1300.00		220	Begin Bore	3847+00		630
Linear	387326		9971.49		220	End Bore	3867+50	2050	
Clothoid	397298		1600.00		220	Begin Bore	3992+00		630
Circular	398898		38637.32	40,000	220	End Bore	4054+20	6220	
Clothoid	437535	I-5	1600.00		220	Begin Bore	4071+30		630
Linear	439135		699.11		220	End Bore	4091+40	2010	
END ALIGNMENT	439834	SOUTH OF FAHEY RD			220				

Vertical

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	3150+00.00	22850.00	349.61	0.25
Parabola	3378+50.00	1800.00	406.73	
Linear	3396+50.00	21450.00	418.43	1.05
Parabola	3611+00.00	1800.00	643.29	
Linear	3629+00.00	19550.00	654.99	0.25
Parabola	3824+50.00	3100.00	704.11	
Linear	3855+50.00	9000.00	691.04	-1.09
Parabola	3945+50.00	1200.00	592.57	
Linear	3957+50.00	12600.00	576.53	-1.58
Parabola	4083+50.00	2500.00	377.72	
Linear	4108+50.00	4250.00	351.85	-0.49
Parabola	4151+00.00	1200.00	330.95	
Linear	4163+00.00	11770.00	322.59	-0.90
Parabola	4280+70.00	1200.00	216.41	
Linear	4292+70.00	5240.00	207.46	-0.59
Parabola	4345+10.00	1200.00	176.54	
Linear	4357+10.00	4124.18	171.29	-0.29
END ALIGNMENT	4398+34.18		159.50	

Name: San Joaquin Valley Crossing  
 Prepared by: Sampath Goolla  
 Date: 2010-11-17  
 Alignment: Henry Miller to Avenue 24

Horizontal

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	STA EQUA: 439834 = 441000	SOUTH OF FAHEY RD	9375.85		250
Clothoid	450376		1650.00		250
Circular	452026		15859.70	45000	250
Clothoid	467886		1650.00		250
Linear	469536		12647.23		250
Clothoid	482183		660.00		250
Circular	482843		698.35	230000	250
Clothoid	483541		660.00		250
Linear	484201		13882.21		250
Clothoid	498083		660.00		250
Circular	498743	GEA	710.80	280000	250
Clothoid	499454		660.00		250
Linear	500114		25317.82		250
Clothoid	525432		1150.00		250
Circular	526582		1189.18	140000	250
Clothoid	527771		1150.00		250
Linear	528921		22899.66		250
Clothoid	551821		1150.00		250
Circular	552971		1304.37	110000	250
Clothoid	554275		1150.00		250
Linear	555425		11599.04		250
Clothoid	567024	SAN JOAQUIN RIVER	1150.00		250
Circular	568174		1288.14	120000	250
Clothoid	569462		1150.00		250
Linear	570612	DRY WASH	18794.35		250
Clothoid	589407		660.00		250
Circular	590067		666.47	750000	250
Clothoid	590733		660.00		250
Linear	591393		11217.27		250
Clothoid	602610		660.00		250
Circular	603270		753.40	550000	250
Clothoid	604024		660.00		250
Linear	604684		11639.17		250
END ALIGNMENT	616323	ROAD 8			

Vertical

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	441000	100	159.50	-0.286
Parabola	441100	1200		
Linear	442300	2500	156.55	-0.159
Parabola	444800	2000		
Linear	446800	1350	140.71	-1.029
Parabola	448150	2100		
Linear	450250	1700	114.83	-0.111
Parabola	451950	1700		
Linear	453650	3550	117.35	0.629
Parabola	457200	3600		
Linear	460800	1150	133.45	-0.975
Parabola	461950	2100		
Linear	464050	6750	111.25	-0.071
Parabola	470800	1200		
Linear	472000	2200	107.59	0.265
Parabola	474200	1200		
Linear	475400	12250	114.42	-0.097
Parabola	487650	1200		
Linear	488850	2700	102.00	0
Parabola	491550	1200		
Linear	492750	1900	104.52	0.419
Parabola	494650	1200		
Linear	495850	6500	115.23	0.038
Parabola	502350	1600		
Linear	503950	1300	112.76	-0.655
Parabola	505250	1600		
Linear	506850	9850	99.43	0.053
Parabola	516700	1200		
Linear	517900	40200	105.09	0.015
Parabola	558100	1500		
Linear	559600	3950	116.06	0.644
Parabola	563550	1400		
Linear	564950	7200	146.40	0.056
Parabola	572150	1900		
Linear	574050	2100	143.73	-0.765
Parabola	576150	2000		
Linear	578150	1800	120.88	0.088
Parabola	579950	1200		
Linear	581150	4900	124.08	0.18
Parabola	586050	1200		
Linear	587250	12950	134.93	0.155
Parabola	600200	1200		
Linear	601400	14923	156.77	0.129
END ALIGNMENT	616323.00			

name: Merced to Fresno hybrid

Horizontal

Element Type	START STATION (ft)	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	600+00.00	9178.00		250.00
Spiral	691+78.00	1400.00		180.00
Circular	705+78.00	4032.71	15000.00	180.00
Spiral	746+10.71	1400.00		180.00
Linear	760+10.71	41469.22		250.00
Spiral	1174+79.93	2000.00		250.00
Circular	1194+79.93	19868.55	28000.00	250.00
Spiral	1393+48.48	2000.00		250.00
linear	1413+48.48	6525.31		250.00
Spiral	1478+73.79	1000.00		150.00
Circular	1488+73.79	14727.02	10000.00	150.00
Spiral	1636+00.81	1000.00		150.00
Linear	1646+00.81	2929.81		150.00
Spiral	1675+30.62	220.00		150.00
Circular	1677+50.62	538.95	24000.00	150.00
Spiral	1682+89.57	220.00		150.00
spiral	1685+09.57	220.00		150.00
circular	1687+29.57	748.23	32000.00	150.00
spiral	1694+77.80	220.00		150.00
linear	1696+97.80	12873.15		250.00
Spiral	1825+70.95	1300.00		250.00
Circular	1838+70.95	30795.52	40500.00	250.00
Spiral	2146+66.47	1300.00		250.00
Linear	2159+66.47	38306.71		250.00
spiral	2542+73.18	2000.00		250.00
Circular	2562+73.18	2312.71	28000.00	250.00
spiral	2585+85.89	2000.00		250.00
Linear	2605+85.89	11853.19		250.00
spiral	2724+39.08	2000.00		250.00
Circular	2744+39.08	10473.05	28000.00	250.00
spiral	2849+12.13	2000.00		250.00
Linear	2869+12.13	2888.01		250.00
spiral	2898+00.14	2000.00		250.00
Circular	2918+00.14	7393.64	28016.50	250.00
spiral	2991+93.78	2000.00		250.00
Linear	3011+93.78	2724.55		250.00
spiral	3039+18.33	2000.00		250.00
Circular	3059+18.33	10108.84	28000	250.00
spiral	3160+27.17	2000		250.00
spiral	3180+27.17	1199.86		250.00
Circular	3192+27.03	1261.7	42994.85	250.00
spiral	3204+88.73	1199.86		250.00
Linear	3216+88.59	11341.50		250.00
spiral	3330+30.09	1200.00		250.00
Circular	3342+30.09	5100.68	43000	250.00
spiral	3393+30.77	1200		250.00
Linear	3405+30.77	20851.26		250.00
Cosine	3613+82.03	1200		250.00
Circular	3625+82.03	1256.55	148000	250.00
Cosine	3638+38.58	1200		250.00
Linear	3650+38.58	1315.43		250.00
Cosine	3663+54.01	1200		250.00
Circular	3675+54.01	1306.97	155000	250.00
Cosine	3688+60.98	1200.00		
Linear	3700+60.98	6402.88		
	3764+63.86	316463.86		

Vertical

Element Type	Start station (ft)	Length (ft)	Grade(%)
Linear	600+00.00	8503.53	-0.169
Parabola	685+03.53	880.00	
Linear	693+83.53	14121.67	0.019
Parabola	835+05.20	980.00	
Linear	844+85.20	4494.55	0.670
Parabola	889+79.75	880.00	
Linear	898+59.75	41886.95	-0.079
Parabola	1317+46.70	880.00	
Linear	1326+26.70	24696.19	0.019
Parabola	1573+22.89	1225.00	
Linear	1585+47.89	1979.29	-2.000
Parabola	1605+27.18	2420.00	
Linear	1629+47.18	1216.87	2.000
Parabola	1641+64.05	1135.00	
Linear	1652+99.05	10066.91	0.130
Parabola	1753+65.96	1290.00	
Linear	1766+55.96	4369.46	1.000
Parabola	1810+25.42	1500.00	
Linear	1825+25.42	1620.00	0.000
Parabola	1841+45.42	1500.00	
Linear	1856+45.42	1544.79	-1.000
Parabola	1871+90.21	1615.00	
Linear	1888+05.21	24434.63	0.074
Parabola	2132+39.84	880.00	
Linear	2141+19.84	14477.47	-0.057
Parabola	2285+97.31	1610.00	
Linear	2302+07.31	3424.39	1.000
Parabola	2336+31.70	1605.00	
Linear	2352+36.70	10762.63	0.036
Parabola	2459+99.33	1480.00	
Linear	2474+79.33	1456.43	-0.918
Parabola	2489+35.76	1350.00	
Linear	2502+85.76	23033.38	-0.020
Parabola	2733+19.14	880.00	
Linear	2741+99.14	5734.80	-0.187
Parabola	2799+33.94	880.00	
Linear	2808+13.94	27491.19	0.037
Parabola	3083+05.13	880.00	
Linear	3091+85.13	3343.51	1.250
Parabola	3125+28.64	1885.00	
Linear	3144+13.64	7765.92	0.000
Parabola	3221+79.56	1250	
Linear	3234+29.56	1125	0.400
Parabola	3245+54.56	1250	
Linear	3258+04.56	50659	0.000
	3764+63.86	316464	

Fresno to Bakersfield  
Horizontal Alignment

Element Type	START STATION (ft)	Alignment	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	100+00	F2	CLINTON AVE	1282		250
Spiral	112+82	F2		1200		250
Circular	124+82	F2		1746	86000	250
Spiral	142+28	F2		1200		250
Linear	154+28	F2		1159		250
Spiral	165+87	F2		1200		250
Circular	177+87	F2	SR 180	1815	86000	250
Spiral	196+02	F2		1200		250
Linear	208+02	F2	FRESNO HST STATION	14361		250
Spiral	351+63	F2		2500		250
Circular	376+63	F2	CALWA	20347	31500	250
Spiral	580+10	F2		2500		250
Linear	605+10	F2		2690		250
END ALIGNMENT	632+00					
Linear	632+00	H	E LINCOLN AVE	12787		250
Spiral	759+87	H		1500		250
Circular	774+87	H	BOWLES	7405	45000	250
Spiral	848+92	H		1500		250
Linear	863+92	H		7554		250
Spiral	939+46	H		1500		250
Circular	954+46	H	MONMOUTH	4788	45000	250
Spiral	1002+34	H		1500		250
Linear	1017+34	H		7123		250
Spiral	1088+57	H		2500		250
Circular	1113+57	H	CONEJO	16547	28000	250
Spiral	1279+04	H		2500		250
Linear	1304+04	H		10275		250
Spiral	1406+79	H		1700		250
Circular	1423+79	H	KINGS RIVER	35296	36500	250
Spiral	1776+75	H		1700		250
Linear	1793+75	H	HANFORD STATION	58526		250
END ALIGNMENT	2379+01					
Linear	2340+06	C1		11342		250
Spiral	2453+48	C1		1500		250
Circular	2468+48	C1	CROSS CREEK	25698	51000	250
Spiral	2725+46	C1		1500		250
Linear	2740+46	C1	DOWNTOWN CORCORAN	6429		250
Spiral	2804+75	C1		1200		250
Circular	2816+75	C1		1282	120000	250
Spiral	2829+57	C1		1200		250
Linear	2841+57	C1		1387		250
Spiral	2855+44	C1		1400		250
Circular	2869+44	C1		2175	50000	250
Spiral	2891+19	C1		1400		250
Linear	2905+19	C1		1460		250
Spiral	2919+79	C1		1200		250
Circular	2931+79	C1		4054	75000	250
Spiral	2972+33	C1		1200		250
Linear	2984+33	C1		2677		250
Circular	3011+10	C1	TULE RIVER	5687	350000	250
Linear	3067+97	C1		38852		250
END ALIGNMENT	3096+00					
Linear	3096+00	P		36325		250
END ALIGNMENT	3459+25					
Linear	3459+25	A1		3881		250
Spiral	3498+06	A1		1500		250
Circular	3513+06	A1		18801	45000	250
Spiral	3701+07	A1		1500		250
Linear	3716+07	A1		28081		250
Spiral	3996+88	A1		1500		250
Circular	4011+88	A1		25441	45000	250
Spiral	4266+29	A1		1500		250
Linear	4281+29	A1		1500		250
Spiral	4296+29	A1		1500		250
Circular	4311+29	A1		15462	45000	250
END ALIGNMENT	4465+91					
Circular	4465+91	L1		14096	45000	250
Spiral	4606+87	L1		1500		250
Linear	4621+87	L1		1204		250
END ALIGNMENT	4633+91					
Linear	4633+91	WS1		21507		250
Spiral	4848+98	WS1		2100		220
Circular	4869+98	WS1		15369	22000	220
Spiral	5023+67	WS1		2100		220
Linear	5044+67	WS1		17154		250
Circular	5216+21	WS1		1500	870000	250
Linear	5231+21	WS1		1400		250
Circular	5245+21	WS1		1500	870000	250
Linear	5260+21	WS1		46314		250
END ALIGNMENT	5723+36					
Linear	6800+00	B1		7582.75		250
Spiral	6875+82.75	B1		1720.53		220



Circular	6893+03.29	B1		17816.88		220
Spiral	7071+20.17	B1		1890.81		220
Spiral	7090+10.98	B1		1890.81		220
Circular	7109+01.79	B1		2579.19		220
Spiral	7134+80.98	B1		1680.2		220
Linear	7151+61.18	B1		4597.67		220
Spiral	7197+58.85	B1		956.44		220
Circular	7207+15.29	B1		1290.8		220
Spiral	7220+06.09	B1		956.44		220
Linear	7229+62.53	B1		7332.9		220
Spiral	7302+95.43	B1		1720.24		220
Circular	7320+15.67	B1		5347.64		220
Spiral	7373+63.31	B1		1720.24		220
Linear	7390+83.54	B1		4016.46		220
END ALIGNMENT	7431+00					

Fresno to Bakersfield

**Vertical Alignment**

Element Type	Start station (ft)	Alignment	Length (ft)	Elevation(ft)	Grade(%)
Linear	100+00	F2	25163	364.50	0.00
Parabola	351+63	F2	1200	364.50	
Linear	363+63	F2	10894	363.60	-0.15
Parabola	472+57	F2	2000	347.26	
Linear	492+57	F2	2947	355.76	-1.00
Parabola	522+04	F2	2000	306.29	
Linear	542+04	F2	1292	297.41	0.11
Parabola	554+96	F2	1200	298.85	
Linear	566+96	F2	6993	299.30	-0.04
END ALIGNMENT	632+00			296.92	
Linear	632+00	H	7398	296.81	-0.04
Parabola	705+98	H	1200	294.11	
Linear	717+98	H	10744	293.35	-0.09
Parabola	825+42	H	1200	283.65	
Linear	837+42	H	13551	282.99	-0.02
Parabola	972+93	H	1200	280.32	
Linear	984+93	H	8358	279.96	-0.04
Parabola	1068+51	H	1800	276.53	
Linear	1086+51	H	3249	282.91	0.75
Parabola	1119+00	H	3200	307.27	
Linear	1151+00	H	1621	301.67	-1.10
Parabola	1167+21	H	2600	283.84	
Linear	1193+21	H	5079	270.31	0.06
Parabola	1244+00	H	1200	273.32	
Linear	1256+00	H	6800	273.70	0.00
Parabola	1324+00	H	1200	273.93	
Linear	1336+00	H	4800	273.76	-0.03
Parabola	1384+00	H	1200	272.19	
Linear	1396+00	H	3100	272.75	0.13
Parabola	1427+00	H	1800	276.65	
Linear	1445+00	H	1600	288.50	1.19
Parabola	1461+00	H	2400	307.54	
Linear	1485+00	H	3475	319.42	-0.20
Parabola	1519+75	H	1200	312.47	
Linear	1531+75	H	4125	312.47	0.20
Parabola	1573+00	H	3000	320.72	
Linear	1603+00	H	1525	307.22	-1.10
Parabola	1618+25	H	2400	290.44	
Linear	1642+25	H	4422	276.52	-0.06
Parabola	1686+47	H	1200	273.88	
Linear	1698+47	H	17297	273.32	-0.03
Parabola	1871+44	H	1700	267.37	
Linear	1888+44	H	1406	273.02	0.70
Parabola	1902+50	H	1200	282.87	
Linear	1914+50	H	1450	288.57	0.25
Parabola	1929+00	H	1200	292.19	
Linear	1941+00	H	1700	293.69	0.00
Parabola	1958+00	H	1200	293.69	
Linear	1970+00	H	1450	292.19	-0.25
Parabola	1984+50	H	1800	288.57	
Linear	2002+50	H	1594	276.87	-1.05
Parabola	2018+44	H	2300	260.13	
Linear	2041+44	H	5757	247.59	-0.04
Parabola	2099+01	H	1200	245.27	
Linear	2111+01	H	26800	244.58	-0.08
END ALIGNMENT	2379+01			224.32	
Linear	2340+06	C1	1483	224.32	-0.08
Parabola	2354+89	C1	1200	223.20	
Linear	2366+89	C1	10732	224.24	0.25
Parabola	2474+21	C1	3000	251.07	
Linear	2504+21	C1	2211	241.32	-0.90
Parabola	2526+32	C1	2100	221.42	
Linear	2547+32	C1	6268	211.97	0.00
Parabola	2610+00	C1	1200	211.97	
Linear	2622+00	C1	1856	210.17	-0.30
Parabola	2640+56	C1	3000	204.60	
Linear	2670+56	C1	2540	215.10	1.00
Parabola	2695+96	C1	2300	240.50	
Linear	2718+96	C1	6979	252.00	0.00
Parabola	2788+75	C1	1200	252.00	
Linear	2800+75	C1	4082	250.70	-0.22
Parabola	2841+57	C1	1387	241.83	
Linear	2855+44	C1	16540	240.32	0.00
Parabola	3020+84	C1	1600	240.32	
Linear	3036+84	C1	3495	234.72	-0.70
Parabola	3071+79	C1	1600	210.26	
Linear	3087+79	C1	821	204.42	-0.03
END ALIGNMENT	3096+00			204.17	
Linear	3096+00	P	23393	204.17	-0.03

Parabola	3329+93	P	1200	197.15	
Linear	3341+93	P	8850	197.27	0.05
Parabola	3430+43	P	1200	201.70	
Linear	3442+43	P	1682	202.00	0.00
END ALIGNMENT	3459+25			202	
Linear	3459+25	A1	5650	202.00	0.00
Parabola	3515+75	A1	2300	202.00	
Linear	3538+75	A1	2000	213.76	1.02
Parabola	3558+75	A1	4600	234.20	
Linear	3604+75	A1	2000	234.96	0.99
Parabola	3624+75	A1	2400	215.17	
Linear	3648+75	A1	10600	203.66	0.03
Parabola	3754+75	A1	1200	206.85	
Linear	3766+75	A1	8200	207.03	0.00
Parabola	3848+75	A1	1200	207.01	
Linear	3860+75	A1	2000	208.25	0.21
Parabola	3880+75	A1	1200	212.36	
Linear	3892+75	A1	13100	214.15	0.09
Parabola	4023+75	A1	1200	226.28	
Linear	4035+75	A1	9000	227.42	0.10
Parabola	4125+75	A1	1200	236.33	
Linear	4137+75	A1	4000	238.26	0.22
Parabola	4177+75	A1	1200	247.15	
Linear	4189+75	A1	2500	248.86	0.06
Parabola	4214+75	A1	1200	250.43	
Linear	4226+75	A1	9200	251.81	0.17
Parabola	4318+75	A1	1200	267.11	
Linear	4330+75	A1	10700	269.27	0.19
Parabola	4437+75	A1	1200	290.05	
Linear	4449+75	A1	1616	292.29	0.18
END ALIGNMENT	4465+91			295.19	
Linear	4465+91	L1	2050	295.19	0.18
Parabola	4486+41	L1	1600	298.88	
Linear	4502+41	L1	1900	307.07	0.85
Parabola	4521+41	L1	3400	323.12	
Linear	4555+41	L1	1200	327.21	-0.60
Parabola	4567+41	L1	1600	319.96	
Linear	4583+41	L1	5050	315.96	0.10
END ALIGNMENT	4633+91			320.53	
Linear	4633+91	WS1	100	320.53	0.10
Parabola	4634+91	WS1	1200	320.73	
Linear	4646+91	WS1	7000	322.51	0.09
Parabola	4716+91	WS1	1900	329.10	
Linear	4735+91	WS1	3100	338.92	0.94
Parabola	4766+91	WS1	1900	368.02	
Linear	4785+91	WS1	7800	377.83	0.09
Parabola	4863+91	WS1	2500	385.19	
Linear	4888+91	WS1	2000	374.76	-0.93
Parabola	4908+91	WS1	2400	356.20	
Linear	4932+91	WS1	6400	346.60	0.13
Parabola	4996+91	WS1	1200	354.80	
Linear	5008+91	WS1	3900	355.77	0.03
Parabola	5047+91	WS1	2200	357.09	
Linear	5069+91	WS1	1400	367.60	0.92
Parabola	5083+91	WS1	1800	380.50	
Linear	5101+91	WS1	10000	390.80	0.22
Parabola	5201+91	WS1	1200	413.05	
Linear	5213+91	WS1	28300	414.25	-0.02
Parabola	5496+91	WS1	2400	407.91	
Linear	5520+91	WS1	3300	396.28	-0.95
Parabola	5553+91	WS1	2500	365.04	
Linear	5578+91	WS1	3000	354.18	0.08
Parabola	5608+91	WS1	2400	356.51	
Linear	5632+91	WS1	2900	370.22	1.06
Parabola	5661+91	WS1	2500	401.08	
Linear	5686+91	WS1	3645	414.38	0.00
END ALIGNMENT	5723+36				

Linear	6800+00	B1	1376.58	414.38	0
Parabola	6813+76.58	B1	1100	414.39	
Linear	6824+76.58	B1	7036.44	416.28	0.34
Parabola	6895+13.02	B1	1100	440.52	
Linear	6906+13.02	B1	10513.03	443.4	0.18
Parabola	7011+26.05	B1	1000	462.22	
Linear	7021+26.05	B1	13228.95	463.72	0.1
Parabola	7153+55.00	B1	1000	476.95	
Linear	7163+55.00	B1	4540.55	474.95	-0.5
Parabola	7208+95.55	B1	900	452.25	
Linear	7217+95.55	B1	10459.45	450	0
Parabola	7322+55.00	B1	1200	450	
Linear	7334+55.00	B1	5800	454.5	0.75
Parabola	7392+55.00	B1	1200	498	
Linear	7404+55.00	B1	2645	502.02	-0.08
END ALIGNMENT	7431+00.00	B1		499.9	

East Bakersfield - E2 Alignment

**Horizontal**

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	7442+64.24	Match Urban Bakersfield Alignments-Oswell St.	8503.69		220
Spiral	7527+67.93		2000.00		220
Circular Curve	7547+67.93		2249.05	28,000	220
Spiral	7570+16.98		2000.00		220
Linear	7590+16.98		1366.01		220
Spiral	7603+82.99		2000.00		220
Circular Curve	7623+82.99		4476.94	28,000	220
Spiral	7668+59.93		2000.00		220
Linear	7688+59.93		1062.13		220
Spiral	7699+22.06		1400.00		220
Circular Curve	7713+22.06		1424.46	35,000	220
Spiral	7727+46.52		1400.00		220
Linear	7741+46.52		16648.63		220
Spiral	7907+95.15		1400.00		220
Circular Curve	7921+95.15		9204.11	25,000	220
Spiral	8013+99.26		1400.00		220
Linear	8027+99.26		318.39		220
END ALIGNMENT	8031+17.65	Caliente Creek - Match Tehachapi Alignments			220
			Total Length (ft)	58,853.41	
			Total Length (miles)	11.15	

Tunnel

Stationing

**Vertical - E2-B (Elevated Option)**

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	7442+64.24	7135.76	499.90	-0.08
Parabola	7514+00.00	1200.00	494.20	
Linear	7526+00.00	6400.00	496.31	0.43
Parabola	7590+00.00	1200.00	523.90	
Linear	7602+00.00	4350.00	531.01	0.75
Parabola	7645+50.00	1200.00	563.75	
Linear	7657+50.00	9800.00	574.13	0.98
Parabola	7755+50.00	1200.00	669.96	
Linear	7767+50.00	18515.11	683.72	1.32
Parabola	7952+65.11	2100.00	927.23	
Linear	7973+65.11	5752.54	951.81	1.02
END ALIGNMENT	8031+17.65		1010.77	
		Total Length (ft)	58,853.41	
		Total Length (miles)	11.15	

Tehachapi - T3-1 Alignment

Horizontal

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Linear	8269+50.00	Caliente Creek - Match East Bakersfield Alignments	1184.77		220
Spiral	8281+34.77		1400.00		220
Circular Curve	8295+34.77		7001.19	25,000	220
Spiral	8365+35.96		1400.00		220
Linear	8379+35.96		26012.14		220
Spiral	8639+48.10		1200.00		220
Circular Curve	8651+48.10		3364.13	28,000	220
Spiral	8685+12.23		1200.00		220
Linear	8697+12.23		3728.30		220
Spiral	8734+40.53		1700.00		220
Circular Curve	8751+40.53		6701.04	22,000	220
Spiral	8818+41.57		1700.00		220
Linear	8835+41.57		8699.64		220
Spiral	8922+41.21		1700.00		220
Circular Curve	8939+41.21		5533.65	22,000	220
Spiral	8994+74.86		1700.00		220
Linear	9011+74.86		1001.68		220
Spiral	9021+76.54		1200.00		220
Circular Curve	9033+76.54		7486.98	28,000	220
Spiral	9108+63.52		1200.00		220
Linear	9120+63.52		13288.78		220
Spiral	9253+52.30		1700.00		220
Circular Curve	9270+52.30		776.09	22,500	220
Spiral	9278+28.39		1700.00		220
Linear	9295+28.39		7274.85		220
Spiral	9368+03.24		1700.00		220
Circular Curve	9385+03.24		2742.68	22,000	220
Spiral	9412+45.92		1700.00		220
Linear	9429+45.92		21635.30		220
Spiral	9645+81.22		1700.00		220
Circular Curve	9662+81.22		5509.48	22,000	220
Spiral	9717+90.70		1700.00		220
Linear	9734+90.70		1152.30		220
Spiral	9746+43.00		1700.00		220
Circular Curve	9763+43.00		10531.98	22,000	220
Spiral	9868+74.98		1700.00		220
Linear	9885+74.98		11107.64		220
Spiral	9996+82.62		1200.00		220
Circular Curve	10008+82.62		10692.52	28,000	220
Spiral	10115+75.14		1200.00		220
Linear	10127+75.14		7332.33		220
Spiral	10201+07.47		1700.00		220
Circular Curve	10218+07.47		18192.53	22,000	220
POC - END ALIGNMENT	10400+00.00	Purdy Ave.-Match Antelope Valley Alignments			220
			Total Length (ft)	213,050.00	
			Total Length (miles)	40.35	

Tunnel	Stationing	Length (ft)	Single Track Tunnel Free Cross Section Area (sf)
Begin Bore	8395+00		
End Bore	8455+00	6000	630
Begin Bore	8580+00		
End Bore	8605+00	2500	630
Begin Bore	8780+00		
End Bore	8820+00	4000	630
Begin Bore	9000+00		
End Bore	9030+00	3000	630
Begin Bore	9180+00		
End Bore	9290+00	11000	630
Begin Bore	9298+00		
End Bore	9317+00	1900	630
Begin Bore	9330+00		
End Bore	9395+00	6500	630
Begin Bore	9516+00		
End Bore	9542+00	2600	630
Begin Bore	9777+00		
End Bore	9805+00	2800	630
Begin Bore	9850+00		
End Bore	9865+00	1500	630
Begin Bore	9890+00		
End Bore	10080+00	19000	630

Vertical

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	8269+50.00	1300.00	1010.77	1.02
Parabola	8282+50.00	3500.00	1024.09	
Linear	8317+50.00	46500.00	1085.84	2.50
Parabola	8782+50.00	1500.00	2249.99	
Linear	8797+50.00	50600.00	2289.19	2.72
Parabola	9303+50.00	1500.00	3666.58	
Linear	9318+50.00	9750.00	3708.23	2.83
Parabola	9416+00.00	7000.00	3984.21	
Linear	9486+00.00	12450.00	4073.61	-0.28
Parabola	9610+50.00	2700.00	4039.18	
Linear	9637+50.00	3150.00	4015.75	-1.46
Parabola	9669+00.00	3600.00	3969.79	
Linear	9705+00.00	9409.59	3945.26	0.10
Parabola	9799+09.59	5900.00	3954.30	
Linear	9858+09.59	43303.59	3883.38	-2.50
Parabola	10291+13.18	5000.00	2800.79	
Linear	10341+13.18	5886.82	2725.58	-0.51
END ALIGNMENT	10400+00.00		2695.56	
		Total Length (ft)	213,050.00	
		Total Length (miles)	40.35	

Antelope Valley - AV4 Alignment

**Horizontal**

Element Type	START STATION (ft)	LOCATION	Element Length (ft)	Radius (ft)	Design Speed (mph)
Circular Curve	10400+00.00	Purdy Ave.-Match Tehachapi Alignments	1939.26	22,000	220
Spiral	10419+39.26		1700.00		220
Linear	10436+39.26		1521.63		220
Spiral	10451+60.89		1200.00		220
Circular Curve	10463+60.89		7753.35	28,000	220
Spiral	10541+14.24		1200.00		220
Linear	10553+14.24		22429.29		220
Spiral	10777+43.53		1500.00		220
Circular Curve	10792+43.53		7656.80	45,000	220
Spiral	10869+00.33		1500.00		220
Linear	10884+00.33		65283.64		220
Spiral	11536+83.97		1000.00		220
Circular Curve	11546+83.97		1029.06	75,000	220
Spiral	11557+13.03		1000.00		220
Linear	11567+13.03		1420.51		220
Spiral	11581+33.54		1000.00		220
Circular Curve	11591+33.54		1079.65	75,000	220
Spiral	11602+13.19		14178.80		220
END ALIGNMENT	11743+91.99	Avenue M - Match LA-Palmdale Alignments			220
		Total Length (ft)	134,391.99		
		Total Length (miles)	25.45		

Tunnel

Stationing

**Vertical**

Element Type	Start station (ft)	Length (ft)	Elevation(ft)	Grade(%)
Linear	10400+00.00	4501.94	2695.56	-0.51
Parabola	10445+01.94	2000.00	2672.68	
Linear	10465+01.94	27044.27	2665.54	-0.20
Parabola	10735+46.21	3000.00	2610.15	
Linear	10765+46.21	24453.79	2591.61	-1.02
Parabola	11010+00.00	3000.00	2341.31	
Linear	11040+00.00	29246.21	2323.14	-0.06
Parabola	11332+46.21	3000.00	2307.03	
Linear	11362+46.21	4300.00	2309.19	0.19
Parabola	11405+46.21	3000.00	2317.49	
Linear	11435+46.21	2400.00	2335.45	1.00
Parabola	11459+46.21	3000.00	2359.56	
Linear	11489+46.21	7400.00	2380.17	0.37
Parabola	11563+46.21	3000.00	2407.50	
Linear	11593+46.21	8000.00	2428.61	1.04
Parabola	11673+46.21	3000.00	2511.62	
Linear	11703+46.21	2649.94	2530.49	0.22
Parabola	11729+96.15	1395.84	2536.31	
END ALIGNMENT	11743+91.99		2547.70	
		Total Length (ft)	134,391.99	
		Total Length (miles)	25.45	

**CALIFORNIA HIGH SPEED TRAIN PROJECT**  
**PALMDALE TO LOS ANGELES**  
15 % ALIGNMENT DESIGN  
PALMDALE TO SYLMAR ALIGNMENT "SR14W"  
HORIZONTAL AND VERTICAL ALIGNMENT DATA

Revision: **00**  
Date: **11/18/2010**  
Engr Alignment Ref: **SR 14 WEST SB-7.0**

HORIZONTAL ALIGNMENT								
TYPE	START STATION (FT)	LENGTH (FT)	RADIUS (R) (FT)	DESIGN SPEED (MPH)	Tunnel	Stationing	Length (ft)	Single Track Tunnel Free Cross Section Area (sf)
Linear	0+00	3196		220				
Cosine	31+96	1716		220				
Circular	49+12	4030	22000	220				
Cosine	89+42	1716		220				
Linear	106+58	13649		220				
Cosine	243+08	1500		220				
Circular	258+08	6401	28000	220				
Cosine	322+08	500		220				
Circular	327+08	13509	26500	220				
Cosine	462+18	1498		220				
Linear	477+16	8436		220				
Cosine	561+52	900		220				
Circular	570+52	10328	40000	220	End bore	637+04	27541	630
Cosine	673+81	900		220	Begin bore	680+02		
Linear	682+81	21562		220	End bore	851+66	17164	630
Cosine	898+43	901		220				
Circular	907+44	16967	-50068.5	220	Begin bore	930+17		
Cosine	1077+11	901		220	End bore	958+14	2797	630
Linear	1086+12	5929		220	Begin bore	1037+47		
Cosine	1145+40	1430		220	End bore	1085+02	4755	630
Circular	1159+70	9248	26500	220				
Cosine	1252+19	1430		220				
Linear	1266+49	5654		220				
Cosine	1323+03	1145		220				
Circular	1334+48	2718	-35068.5	220				

**Notes**

1. Stationing increases from north to south for all tracks.
2. Negative curve radii are left hand curves, facing direction of increasing stationing.
3. Negative gradients fall in the direction of increasing stationing.

VERTICAL ALIGNMENT				
TYPE	START STATION (FT)	START ELEVATION (FT)	GRADIENT (FT)	LENGTH (FT)
Linear	0+00	2531	0.64%	13645
Parabola	136+45	2619		775
Linear	144+20	2622	0.25%	1551
Parabola	159+71	2626		775
Linear	167+46	2630	0.70%	4612
Parabola	213+58	2662		2300
Linear	236+58	2705	3.00%	3236
Parabola	268+94	2802		2475
Linear	293+69	2862	1.90%	4682
Parabola	340+51	2951		2800
Linear	368+51	2986	0.60%	22460
Parabola	593+11	3121		3100
Linear	624+11	3108	-1.45%	11700
Parabola	741+12	2938		2400
Linear	765+12	2890	-2.50%	46985
Parabola	1234+97	1716		1500
Linear	1249+97	1689	-1.05%	8770
Parabola	1337+66	1597		2400

**CALIFORNIA HIGH SPEED TRAIN PROJECT**  
**PALMDALE TO LOS ANGELES**  
 15 % ALIGNMENT DESIGN  
 PALMDALE TO SYLMAR ALIGNMENT "SSU"  
 HORIZONTAL AND VERTICAL ALIGNMENT DATA

Revision: **00**  
 Date: **11/18/2010**  
 Engr Alignment Ref: **SSU SB-7.0**

HORIZONTAL ALIGNMENT					Tunnel	Stationing	Length (ft)	Single Track Tunnel Free Cross Section Area (sf)
TYPE	START STATION (FT)	LENGTH (FT)	RADIUS (R) (FT)	DESIGN SPEED (MPH)				
Circular	1570+00	5317	-35068.5	220	Begin bore	1604+52		
Cosine	1623+17	1145		220				
Linear	1634+62	5690		220	End bore	1976+74	37222	630
Cosine	1691+52	2000		220				
Circular	1711+52	26749	-19500	220				
Cosine	1979+01	500		220				
Circular	1984+01	6785	-20650	220				
Cosine	2051+85	2000		220				
Linear	2071+85	5508		220				

**Notes**

1. Stationing increases from north to south for all tracks.
2. Negative curve radii are left hand curves, facing direction of increasing stationing.
3. Negative gradients fall in the direction of increasing stationing.

VERTICAL ALIGNMENT				
TYPE	START STATION (FT)	START ELEVATION (FT)	GRADIENT (FT)	LENGTH (FT)
Linear	1570+00	1542	-3.50%	1920
Parabola	1589+20	1475		3800
Linear	1627+20	1401	-0.40%	16092
Parabola	1788+12	1337		2100
Linear	1809+12	1338	0.50%	17659
Parabola	1985+70	1426		4900
Linear	2034+70	1377	-2.53%	5560
Parabola	2090+31	1236		1470
Linear	2105+01	1207	-1.40%	2193



**CALIFORNIA HIGH SPEED TRAIN PROJECT**  
**PALMDALE TO LOS ANGELES**  
 15 % ALIGNMENT DESIGN  
 SYLMAR TO LAUS "SFV"  
 HORIZONTAL AND VERTICAL ALIGNMENT DATA

Revision: 00  
 Date: 12/13/2010  
 Engr Alignment Ref: SFV 7.6, HST SB

No tunnels. Stationing

HORIZONTAL ALIGNMENT				
TYPE	START STATION (FT)	LENGTH (FT)	RADIUS (R) (FT)	DESIGN SPEED (MPH)
Linear	2555+00.00	2650.61		
Spiral	2581+50.61	1500		
Circular	2596+50.61	1485.66	30000	220
Spiral	2611+36.26	1500		
Linear	2626+36.26	25927.91		
Spiral	2885+64.18	1720		
Circular	2902+84.18	1904.75	-21600	220
Spiral	2921+88.92	1720		
Linear	2939+08.92	6433.6		
Spiral	3003+42.52	900		
Circular	3012+42.52	798.13	180000	220
Spiral	3020+40.64	900		
Linear	3029+40.64	9410.32		
Spiral	3123+50.96	840		
Circular	3131+90.96	1460.9	17000	160
Spiral	3146+51.86	840		
Linear	3154+91.86	578.66		
Spiral	3160+70.52	980.45		
Circular	3170+50.97	3355.06	-18016.5	160
Spiral	3204+06.03	980.45		
Linear	3213+86.48	6253.49		
Spiral	3276+39.96	1138.87		
Circular	3287+78.83	2999.36	8283.5	140
Spiral	3317+78.19	2487.53		
Linear	3342+65.72	7680.47		
Spiral	3419+46.19	910.72		
Circular	3428+56.91	2910.33	-10416.5	140
Spiral	3457+67.24	910.72		
Linear	3466+77.96	1322.04		

**Notes**

1. Stationing increases from north to south for all tracks.
2. Negative curve radii are left hand curves, facing direction of increasing stationing.
3. Negative gradients fall in the direction of increasing stationing.

VERTICAL ALIGNMENT				
TYPE	START STATION (FT)	START ELEVATION (FT)	GRADIENT (FT)	LENGTH (FT)
Linear	2555+00	1253.23	-1.40%	1185.02
Parabola	2566+85	1159.64		1050
Linear	2577+35	1144.15	-1.55%	2058.44
Parabola	2597+93	1112.25		1200
Linear	2609+93	1099.05	-0.65%	5031.56
Parabola	2660+25	1066.32		800
Linear	2668+25	1059.72	-1.00%	1575
Parabola	2684+00	1043.97		800
Linear	2692+00	1037.37	-0.65%	3800
Parabola	2730+00	1012.67		2000
Linear	2750+00	993.67	-1.25%	4375
Parabola	2793+75	938.99		1650
Linear	2810+25	928.67	0.00%	1440
Parabola	2824+65	928.67		1110
Linear	2835+75	923.96	-0.85%	10738
Parabola	2943+13	832.68		2150
Linear	2964+63	810.75	-1.19%	6727
Parabola	3031+90	730.72		1120
Linear	3043+10	722.21	-0.33%	1412
Parabola	3057+22	717.55		1650
Linear	3073+72	702.04	-1.55%	6063
Parabola	3134+35	608.06		970
Linear	3144+05	596.62	-0.81%	7620
Parabola	3220+25	534.89		600
Linear	3226+25	529.16	-1.10%	1600
Parabola	3242+25	511.57		1550
Linear	3257+75	511.95	1.15%	422
Parabola	3261+97	516.81		1140
Linear	3273+37	520.51	-0.50%	2413
Parabola	3297+50	508.45		850
Linear	3306+00	498.88	-1.75%	1410
Parabola	3320+10	474.21		930
Linear	3329+40	466.08	0.00%	2020
Parabola	3349+60	466.08		500
Linear	3354+60	466.7	0.25%	1465
Parabola	3369+25	470.37		500
Linear	3374+25	469.97	-0.41%	7625
Parabola	3450+50	438.73		500
Linear	3455+50	435.33	-0.95%	2450

**CALIFORNIA HIGH SPEED TRAIN PROJECT**  
**PALMDALE TO LOS ANGELES**  
 15 % ALIGNMENT DESIGN  
 SR-2 TO LAUS "LT1"  
 HORIZONTAL AND VERTICAL ALIGNMENT DATA

Revision: **00**  
 Date: **12/13/2010**  
 Engr Alignment Ref: **LT1 9.6, HST SB**

HORIZONTAL ALIGNMENT					Tunnel	Stationing	Length (ft)	Single Track Tunnel Free Cross Section Area (sf)
TYPE	START STATION (FT)	LENGTH (FT)	RADIUS (R) (FT)	DESIGN SPEED (MPH)				
Linear	3480+00	886.38		140	Begin bore	3534+67		630
Spiral	3488+86	870		140				
Circular	3497+56	1876.04	11000	140				
Spiral	3516+32	870		140				
Linear	3525+02	2484.13		140				
Spiral	3549+87	960		140				
Circular	3559+47	2409.8	10000	140				
Spiral	3583+56	960		140				
Linear	3593+16	1632.88		140				
Spiral	3609+49	960		140				
Circular	3619+09	448.86	10000	140				
Spiral	3623+58	960		140				
Linear	3633+18	2728.37		140				
Spiral	3660+46	100		35				
Circular	3661+46	539.34	3000	35				
Spiral	3666+86	100		35				
Linear	3667+86	257.84		35				
Spiral	3670+44	100		35				
Circular	3671+44	386.81	-3000	35				
Spiral	3675+30	100		35				
Linear	3676+30	158.44		35				
Spiral	3677+89	120		35				
Circular	3679+09	213.33	2000	35				
Spiral	3681+22	120		35				
Linear	3682+42	2150		35				
Spiral	3703+92	100		35				
Circular	3704+92	91.9	3500	35				
Spiral	3705+84	100		35				
Spiral	3706+84	100		35				
Circular	3707+84	91.9	-3500	35				
Spiral	3708+76	100		35				
Linear	3709+76	68.19		35				
Linear				End bore	3684+25	14958		

- Notes**
1. Stationing increases from north to south for all tracks.
  2. Negative curve radii are left hand curves, facing direction of increasing stationing.
  3. Negative gradients fall in the direction of increasing stationing.

VERTICAL ALIGNMENT				
TYPE	START STATION (FT)	START ELEVATION (FT)	GRADIENT (FT)	LENGTH (FT)
Linear	3480+00	412.06	-0.95%	1825
Parabola	3498+25	394.72		1250
Linear	3510+75	368.78	-3.20%	5752
Parabola	3568+27	184.70		1820
Linear	3586+47	157.86	0.25%	6008
Parabola	3646+55	172.88		1190
Linear	3658+45	189.24	2.50%	4580
Parabola	3704+25	303.73		550
Linear	3709+75	310.60	0.00%	69.19