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STRUCTURE PLANS

80-96 SAND CANYON ROAD UC LEFT BRIDGE (REPLACE) Br No. 50-0345L

THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA  
**DEPARTMENT OF TRANSPORTATION**  
**PROJECT PLANS FOR CONSTRUCTION ON**  
**STATE HIGHWAY**  
**IN KERN COUNTY**  
**NEAR TEHACHAPI**  
**FROM 0.2 MILE WEST TO 0.2 MILE EAST OF**  
**SAND CANYON ROAD UNDERCROSSING**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

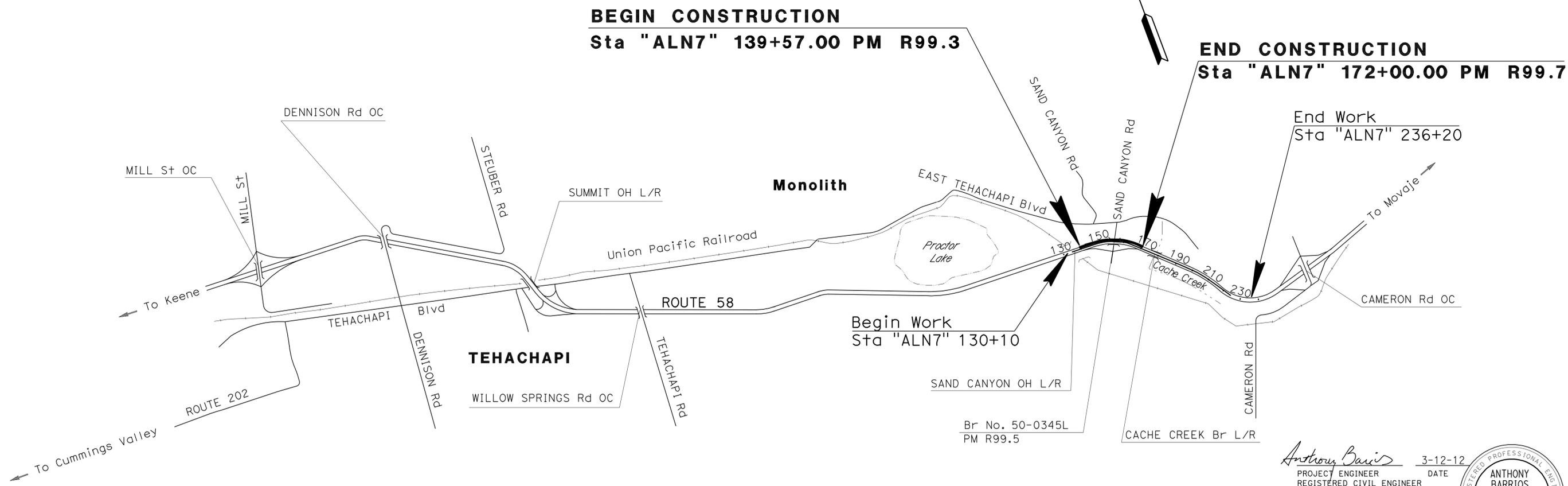
ACNH-P058(114)E

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	1	96





LOCATION MAP



PROJECT MANAGER  
**FRANK MOMEN**  
 DESIGN ENGINEER  
**NICHOLAS CHAN**

*Anthony Barrios* 3-12-12  
 PROJECT ENGINEER DATE  
 REGISTERED CIVIL ENGINEER  
**June 18, 2012**  
 PLANS APPROVAL DATE  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER

**ANTHONY BARRIOS**

No. 40510  
Exp. 3/31/13  
CIVIL

STATE OF CALIFORNIA

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

NO SCALE

DATE PLOTTED => 05-SEP-2012 TIME PLOTTED => 13:45  
 LAST REVISION 05-25-12

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN

INDERPAL GILL  
ANTHONY BARRIOS

FUNCTIONAL SUPERVISOR  
NICHOLAS CHAN

REVISOR BY  
DATE

DESIGNED BY  
CHECKED BY

**NOTES:**

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER
3. FOR REMOVAL AND PLACEMENT OF HMA DIKE (Type E), SEE LAYOUT SHEETS
4. FOR LOCATIONS OF COLD PLANE AC PAVEMENT, SEE LAYOUT SHEETS

**DESIGN DESIGNATION (ROUTE 58)**

2013 ADT 22630 D=62%  
 2033 DHV 3100 T=31%  
 2033 ADT 37080 V=70 mph

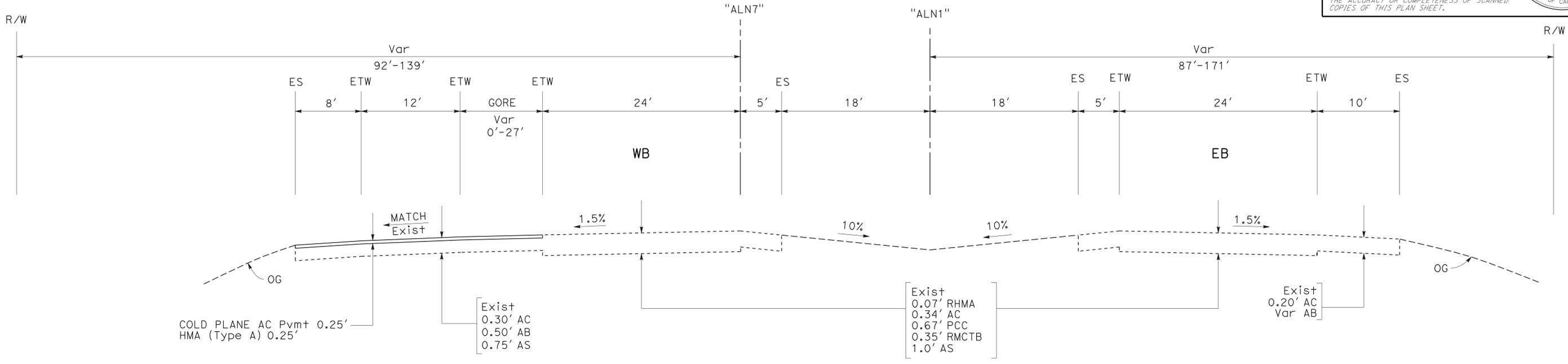
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	2	96

Anthony Barrios 3-12-12  
 REGISTERED CIVIL ENGINEER DATE

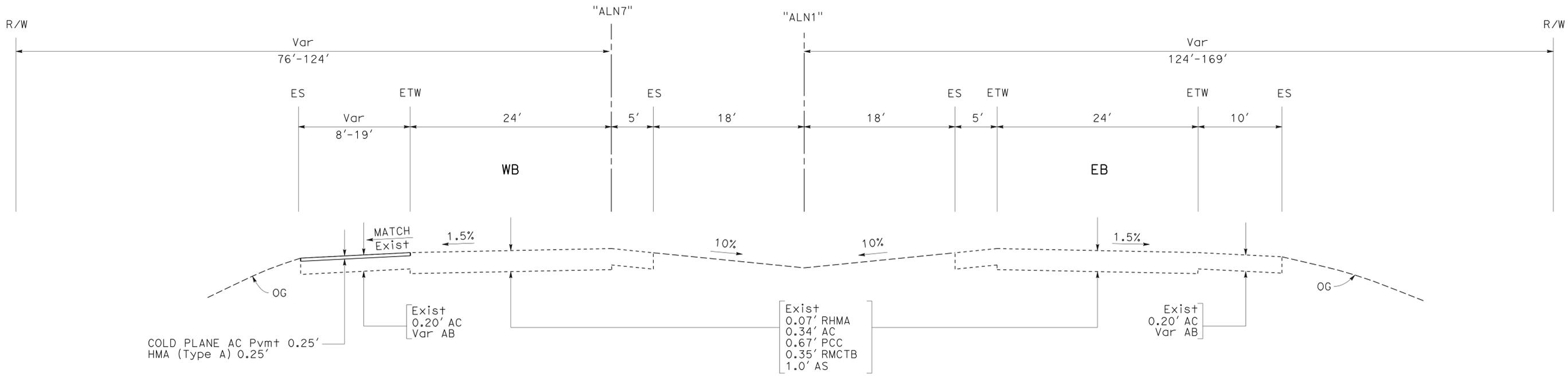
6-18-12  
 PLANS APPROVAL DATE

ANTHONY BARRIOS  
 No. 40510  
 Exp. 3/31/13  
 CIVIL

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**ROUTE 58**  
 "ALN7" 146+15 TO "ALN7" 149+03  
 "ALN7" 166+30 TO "ALN7" 169+41



**ROUTE 58**  
 "ALN7" 139+57 TO "ALN7" 142+94  
 "ALN7" 169+41 TO "ALN7" 172+00

**TYPICAL CROSS SECTIONS X-1**  
 NO SCALE

LAST REVISION DATE PLOTTED => 19-JUN-2012 03-08-12 TIME PLOTTED => 1:3:33



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	4	96

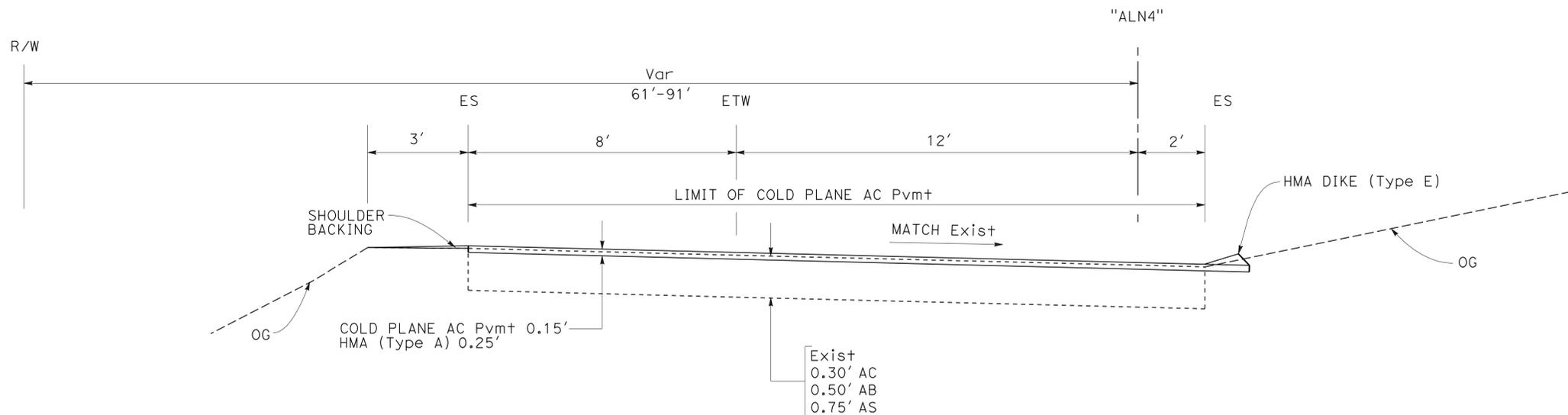
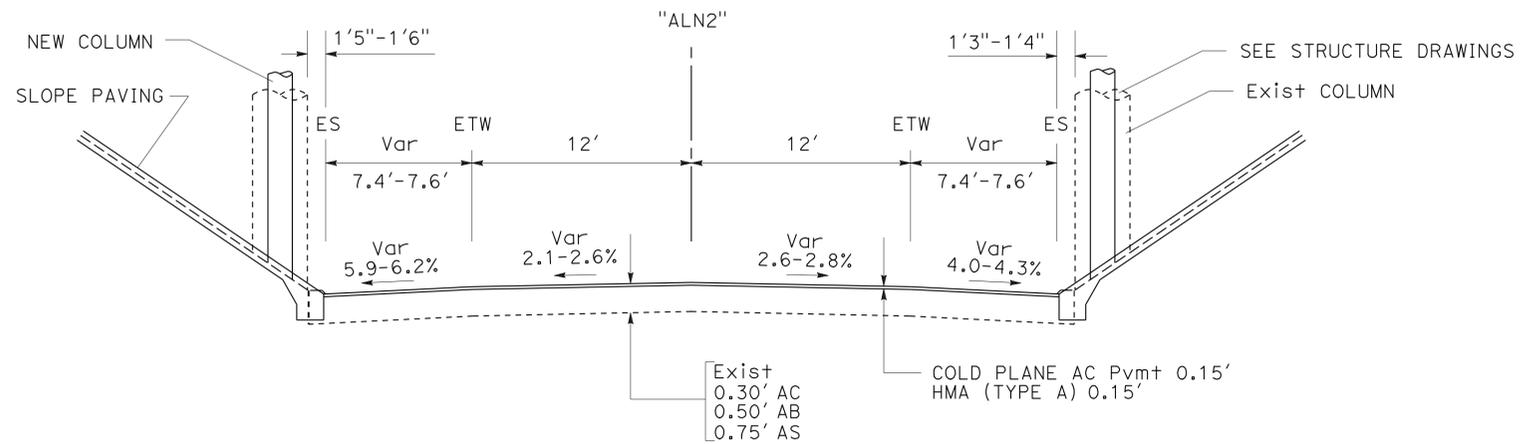
  

REGISTERED CIVIL ENGINEER	DATE
<i>Anthony Barrios</i>	3-12-12
PLANS APPROVAL DATE	
	6-18-12

REGISTERED PROFESSIONAL ENGINEER
ANTHONY BARRIOS
No. 40510
Exp. 3/31/13
CIVIL

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
Caltrans	
FUNCTIONAL SUPERVISOR	NICHOLAS CHAN
CALCULATED/DESIGNED BY	CHECKED BY
INDERPAL GILL	ANTHONY BARRIOS
REVISED BY	DATE REVISED

**TYPICAL CROSS SECTIONS X-3**

NO SCALE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	5	96

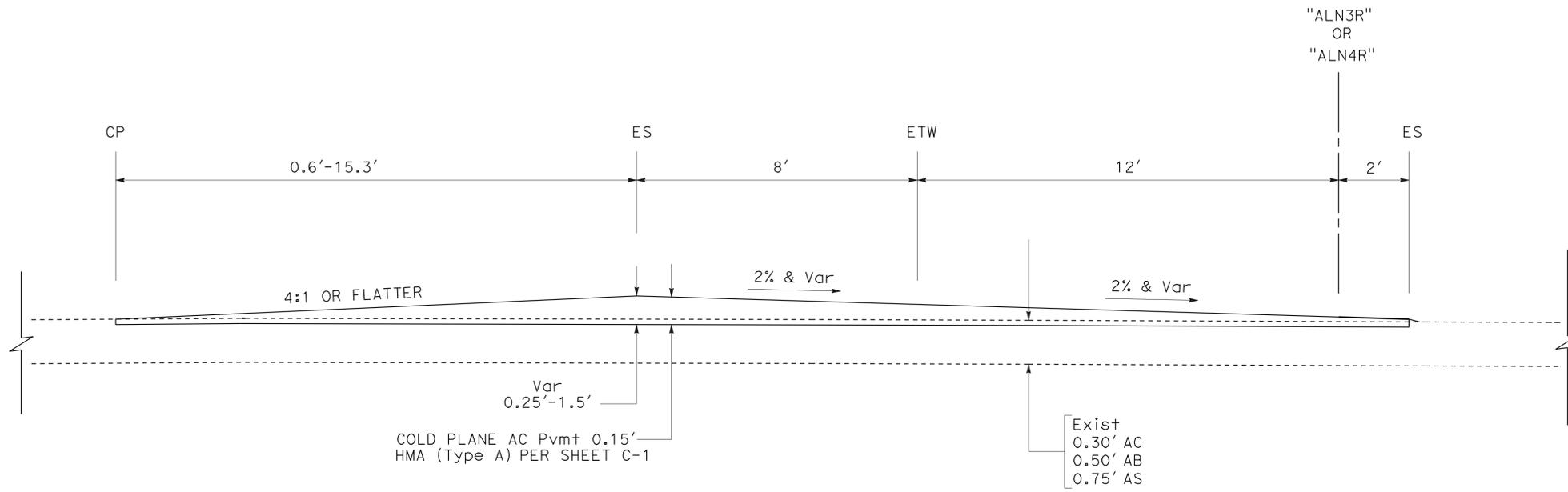
  

<i>Anthony Barrios</i>	3-12-12
REGISTERED CIVIL ENGINEER	DATE
6-18-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
ANTHONY BARRIOS
No. 40510
Exp. 3/31/13
CIVIL
STATE OF CALIFORNIA

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**WB ONRAMP AND WB OFFRAMP**

"ALN3R" 11+25 TO "ALN3R" 13+15.25  
"ALN4R" 5+40.19 TO "ALN4R" 7+50  
(SEE CONSTRUCTION DETAILS SHEETS C-1,  
C-2 AND STAGE CONSTRUCTION SHEET SC-1)

**TYPICAL CROSS SECTIONS  
X-4**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
<b>Caltrans</b>	
FUNCTIONAL SUPERVISOR	NICHOLAS CHAN
CALCULATED, DESIGNED BY	CHECKED BY
INDERPAL GILL	ANTHONY BARRIOS
REVISOR BY	DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	6	96

REGISTERED CIVIL ENGINEER *Anthony Barrios* DATE 3-12-12  
 No. 40510  
 Exp. 3/31/13  
 CIVIL  
 PLANS APPROVAL DATE 6-18-12

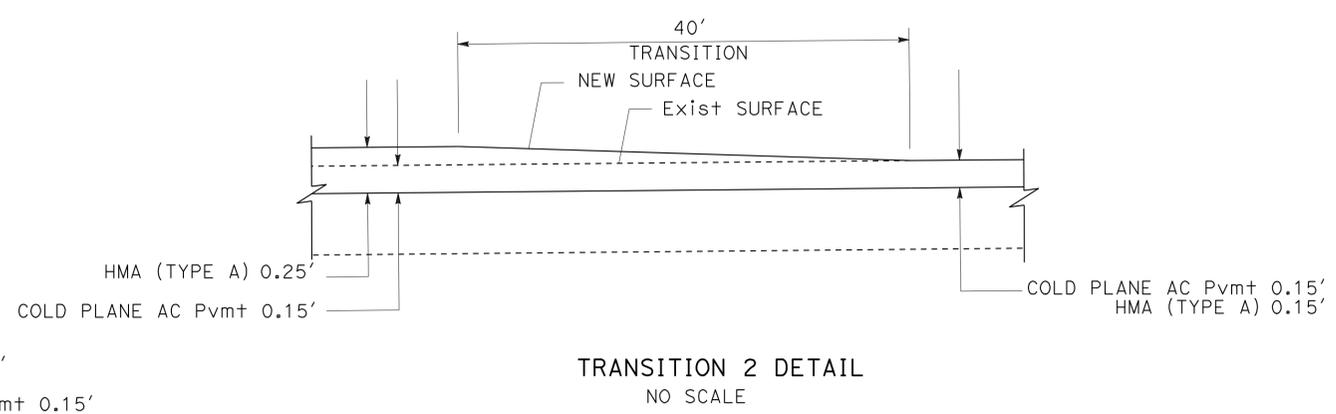
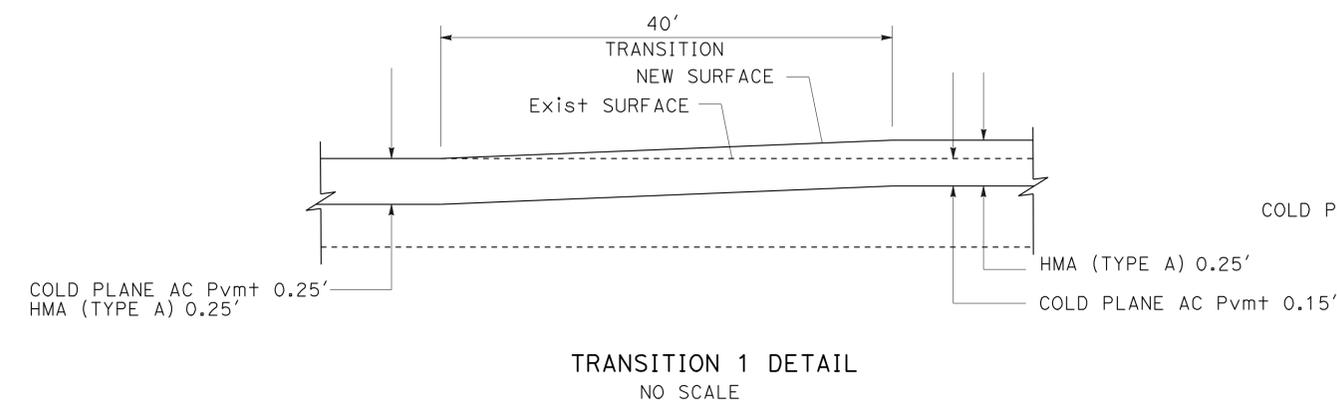
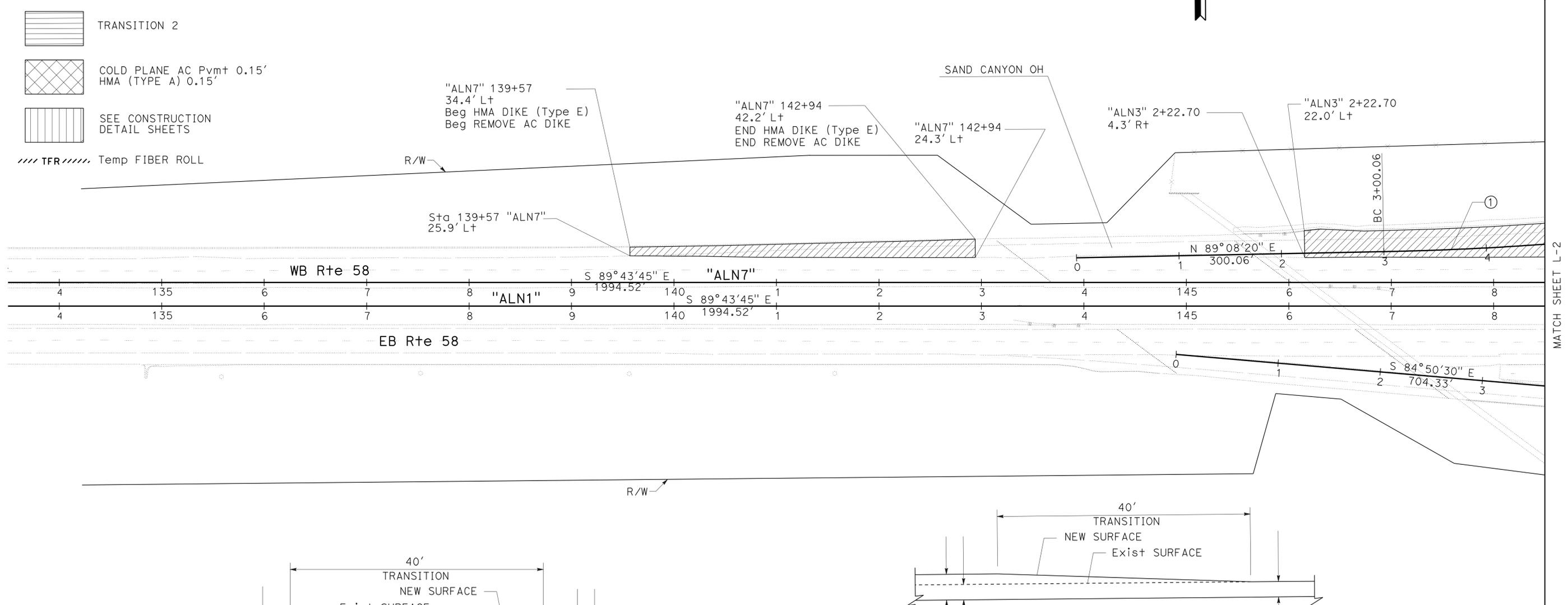
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**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

- LEGEND:**
-  COLD PLANE AC Pvm+ 0.25' HMA (TYPE A) 0.25'
  -  COLD PLANE AC Pvm+ 0.15' HMA (TYPE A) 0.25'
  -  TRANSITION 1
  -  TRANSITION 2
  -  COLD PLANE AC Pvm+ 0.15' HMA (TYPE A) 0.15'
  -  SEE CONSTRUCTION DETAIL SHEETS
  -  TFR Temp FIBER ROLL

**CURVE DATA**

No.	O	R	Δ	T	L
①		3000.00'	3°11'29"	83.57'	167.10'



SCALE 1"=50'

**LAYOUT**  
**L-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 FUNCTIONAL SUPERVISOR: NICHOLAS CHAN  
 CALCULATED/DESIGNED BY: ANTHONY BARRIOS  
 CHECKED BY:  
 INDERPAL GILL  
 ANTHONY BARRIOS  
 REVISED BY: DATE  
 REVISOR: DATE

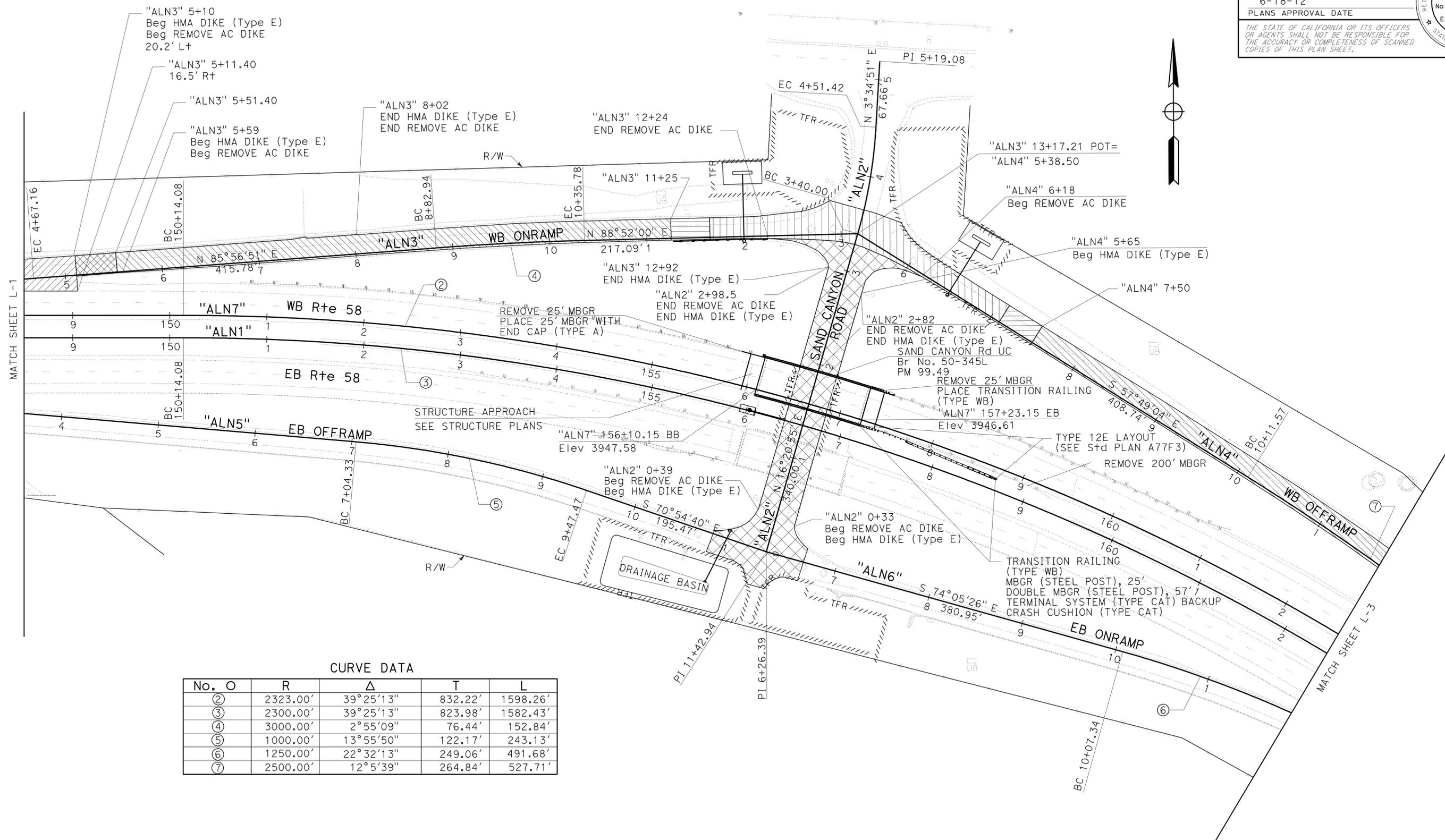
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	7	96

REGISTERED CIVIL ENGINEER  
 ANTHONY BARRIOS  
 No. 40510  
 Exp. 3/31/13  
 CIVIL

3-12-12 DATE  
 6-18-12 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



**CURVE DATA**

No.	O	R	Δ	T	L
②		2323.00'	39°25'13"	832.22'	1598.26'
③		2300.00'	39°25'13"	823.98'	1582.43'
④		3000.00'	2°55'09"	76.44'	152.84'
⑤		1000.00'	13°55'50"	122.17'	243.13'
⑥		1250.00'	22°32'13"	249.06'	491.68'
⑦		2500.00'	12°5'39"	264.84'	527.71'

REVISIONS:  
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN

FUNCTIONAL SUPERVISOR: NICHOLAS CHAN  
 CHECKED BY: ANTHONY BARRIOS  
 DESIGNED BY: ANTHONY BARRIOS  
 REVISIONS: (see list above)

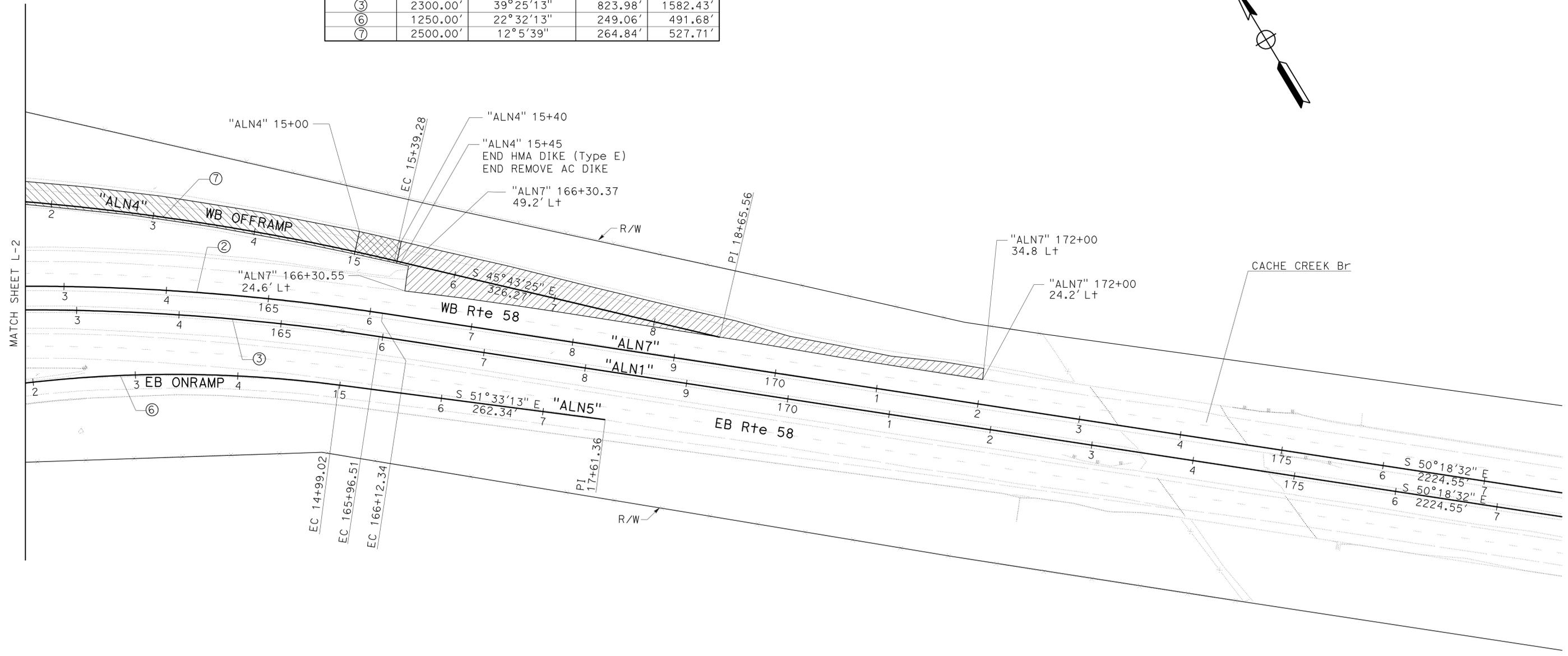
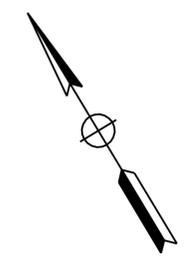
**LAYOUT**  
**L - 2**

SCALE: 1" = 50'

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**CURVE DATA**

No.	O	R	Δ	T	L
②		2323.00'	39°25'13"	832.22'	1598.26'
③		2300.00'	39°25'13"	823.98'	1582.43'
⑥		1250.00'	22°32'13"	249.06'	491.68'
⑦		2500.00'	12°5'39"	264.84'	527.71'



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 Caltrans®  
 FUNCTIONAL SUPERVISOR: NICHOLAS CHAN  
 CALCULATED/DESIGNED BY: INDERPAL GILL  
 CHECKED BY: ANTHONY BARRIOS  
 REVISED BY: INDERPAL GILL  
 DATE REVISED: ANTHONY BARRIOS

**LAYOUT**  
**L-3**

SCALE: 1" = 50'

LAST REVISION DATE PLOTTED => 19-JUN-2012 03-08-12  
 TIME PLOTTED => 14:33

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	9	96

REGISTERED CIVIL ENGINEER DATE 3-12-12  
 ANTHONY BARRIOS  
 No. 40510  
 Exp. 3/31/13  
 CIVIL  
 STATE OF CALIFORNIA

6-18-12  
 PLANS APPROVAL DATE

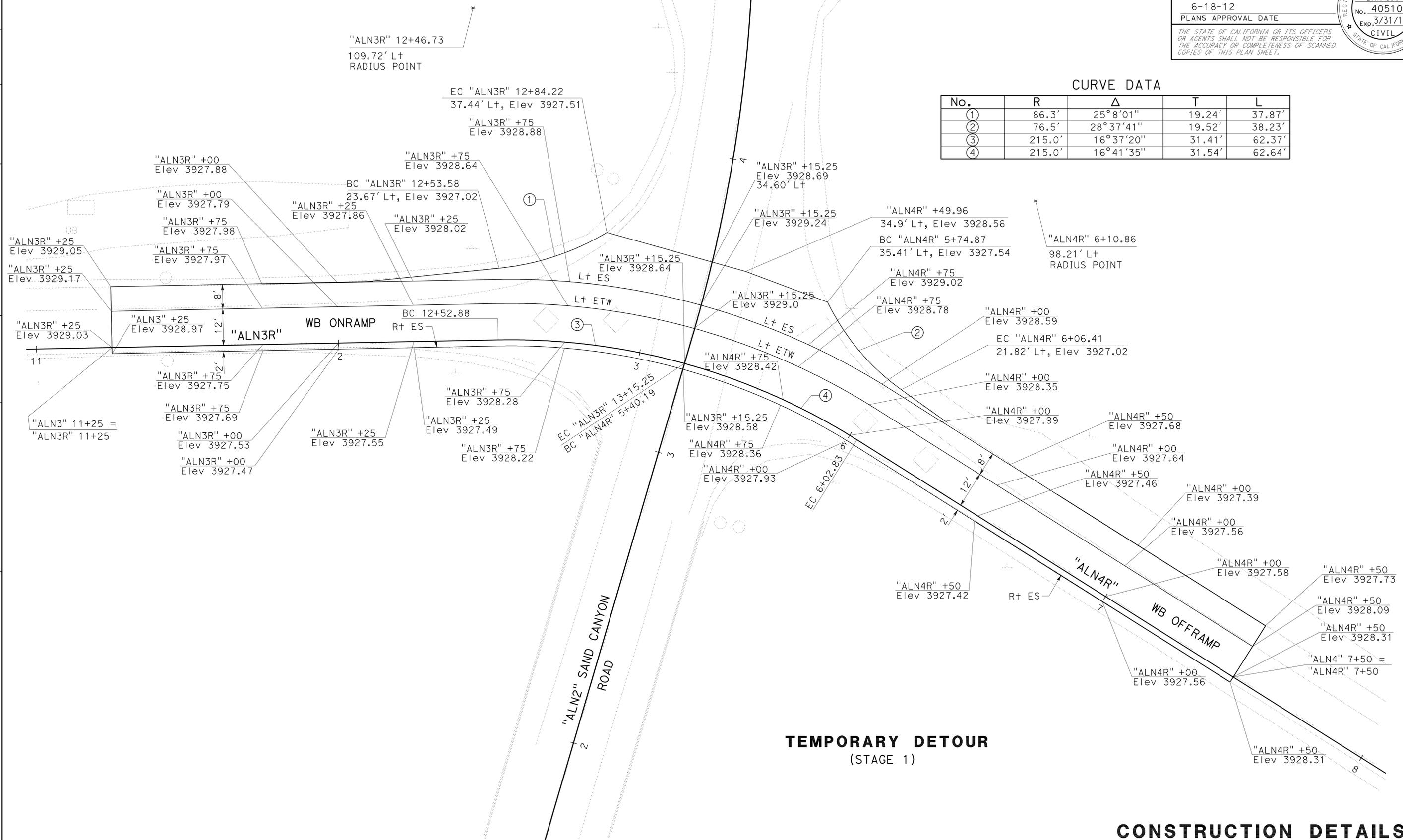
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTES:**

1. ALL PAVEMENT TO BE COLD PLANED 0.15' PRIOR TO DETOUR CONSTRUCTION
2. ALL THE STRUCTURAL SECTION TO BE FULL DEPTH AC IN THESE LIMITS
3. THE EMBANKMENTS FROM ES TO CATCH POINT BETWEEN STA 12+25 "ALN3" AND STA 6+25 "ALN4" TO BE ALL AC

**CURVE DATA**

No.	R	Δ	T	L
①	86.3'	25° 8' 01"	19.24'	37.87'
②	76.5'	28° 37' 41"	19.52'	38.23'
③	215.0'	16° 37' 20"	31.41'	62.37'
④	215.0'	16° 41' 35"	31.54'	62.64'



**TEMPORARY DETOUR**  
(STAGE 1)

**CONSTRUCTION DETAILS**

**C-1**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN

FUNCTIONAL SUPERVISOR  
 NICHOLAS CHAN

CALCULATED/DESIGNED BY  
 CHECKED BY

INDERPAL GILL  
 ANTHONY BARRIOS

REVISED BY  
 DATE REVISED

x  
 x  
 x  
 x  
 x  
 x



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	10	96

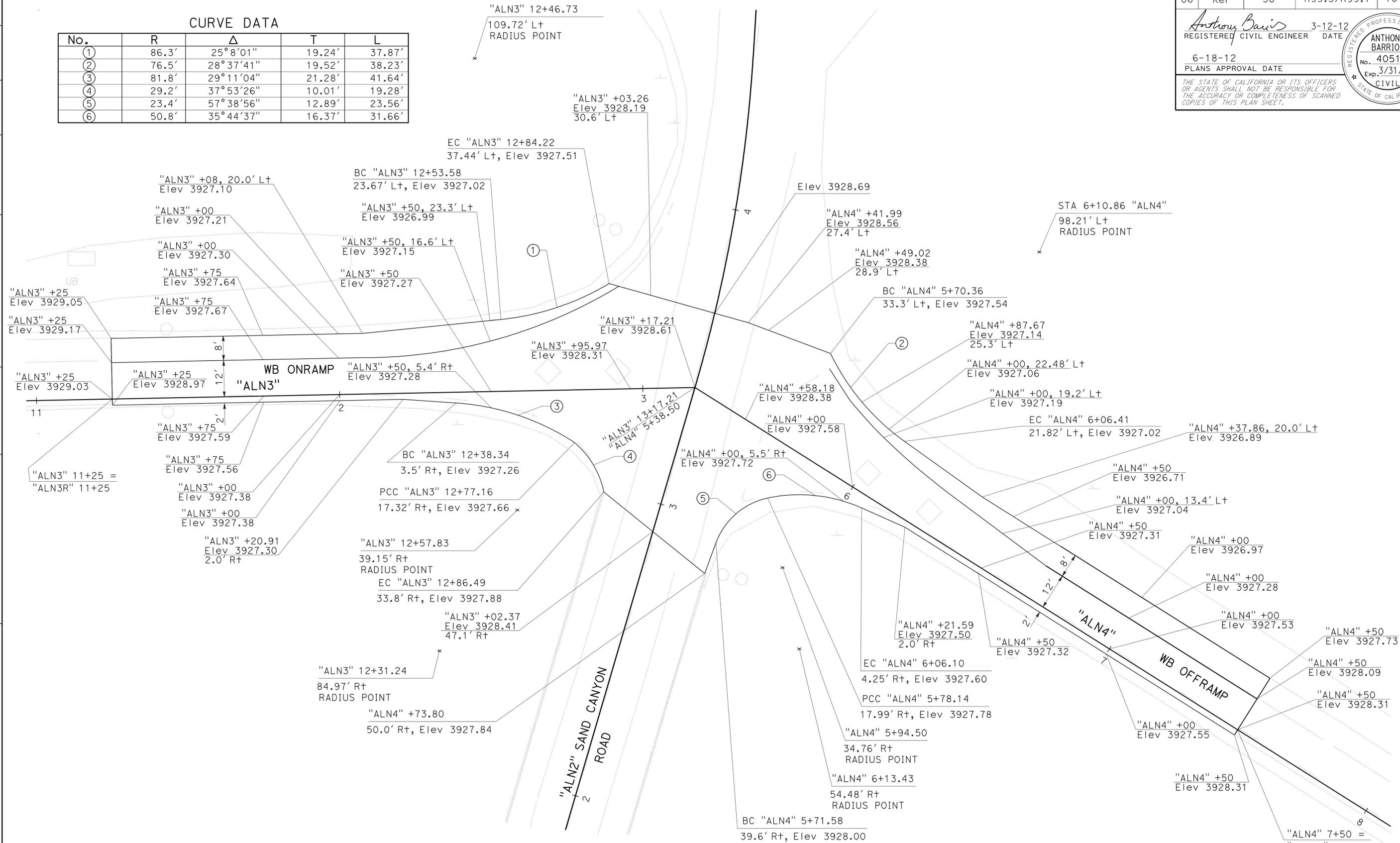
REGISTERED CIVIL ENGINEER  
 ANTHONY BARRIOS  
 No. 40510  
 Exp. 3/31/13  
 CIVIL

3-12-12 DATE  
 6-18-12 PLANS APPROVAL DATE

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**CURVE DATA**

No.	R	Δ	T	L
①	86.3'	25° 8' 01"	19.24'	37.87'
②	76.5'	28° 37' 41"	19.52'	38.23'
③	81.8'	29° 11' 04"	21.28'	41.64'
④	29.2'	37° 53' 26"	10.01'	19.28'
⑤	23.4'	57° 38' 56"	12.89'	23.56'
⑥	50.8'	35° 44' 37"	16.37'	31.66'



**REMOVE Temp DETOUR  
AND RECONSTRUCT  
(STAGE 3)**

**CONSTRUCTION DETAILS  
C-2**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 Et Caltrans®  
 FUNCTIONAL SUPERVISOR: NICHOLAS CHAN  
 CALCULATED/DESIGNED BY: ANTHONY BARRIOS  
 INTERPAL GILL: ANTHONY BARRIOS  
 REVISED BY: ANTHONY BARRIOS  
 DATE REVISED:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	11	96

*Kevin Gallo*  
 LICENSED LANDSCAPE ARCHITECT  
 6-18-12  
 PLANS APPROVAL DATE

12/31/13  
 3-30-12

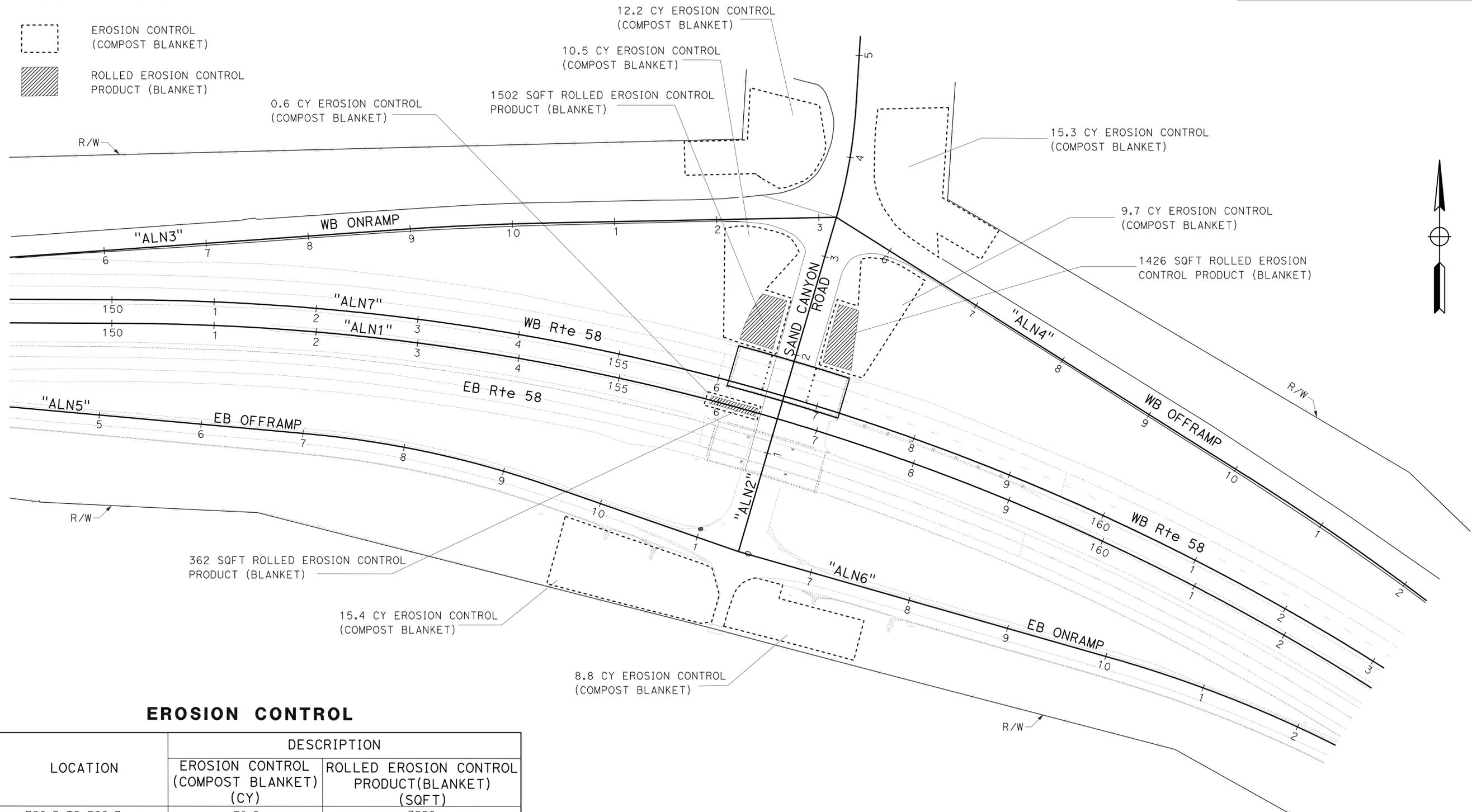
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**NOTE:**

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**LEGEND**

SYMBOL	ITEM DESCRIPTION
	EROSION CONTROL (COMPOST BLANKET)
	ROLLED EROSION CONTROL PRODUCT (BLANKET)



**EROSION CONTROL**

LOCATION	DESCRIPTION	
	EROSION CONTROL (COMPOST BLANKET) (CY)	ROLLED EROSION CONTROL PRODUCT (BLANKET) (SQFT)
R99.3 TO R99.7	72.5	3290
TOTAL	72.5	3290

APPROVED FOR EROSION CONTROL WORK ONLY

**EROSION CONTROL EC-1**

NO SCALE



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	12	96

<i>Anthony Barrios</i>	3-12-12
REGISTERED CIVIL ENGINEER	DATE
6-18-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
ANTHONY BARRIOS
No. 40510
Exp. 3/31/13
CIVIL

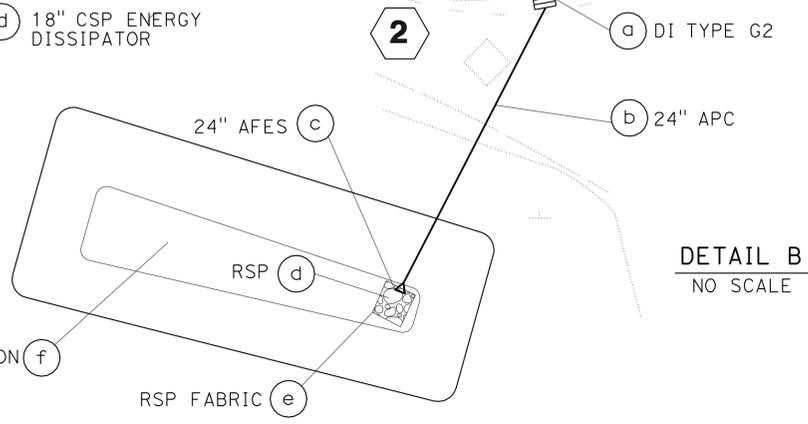
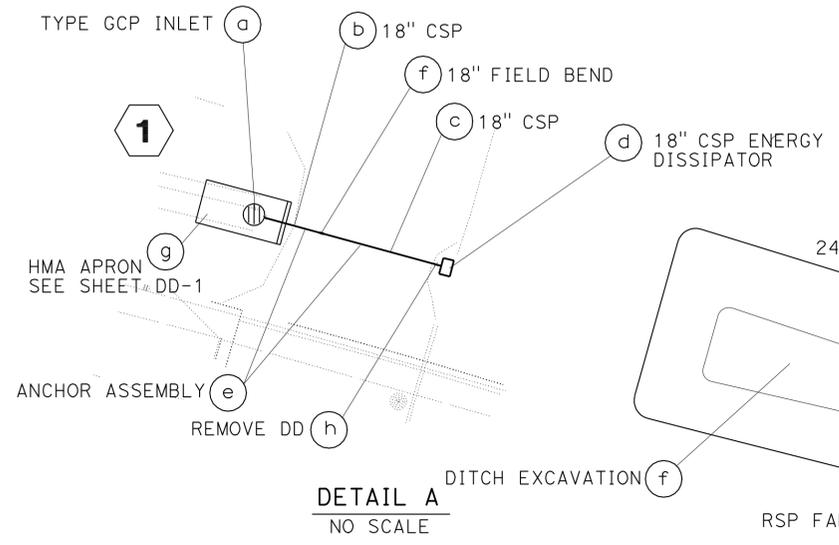
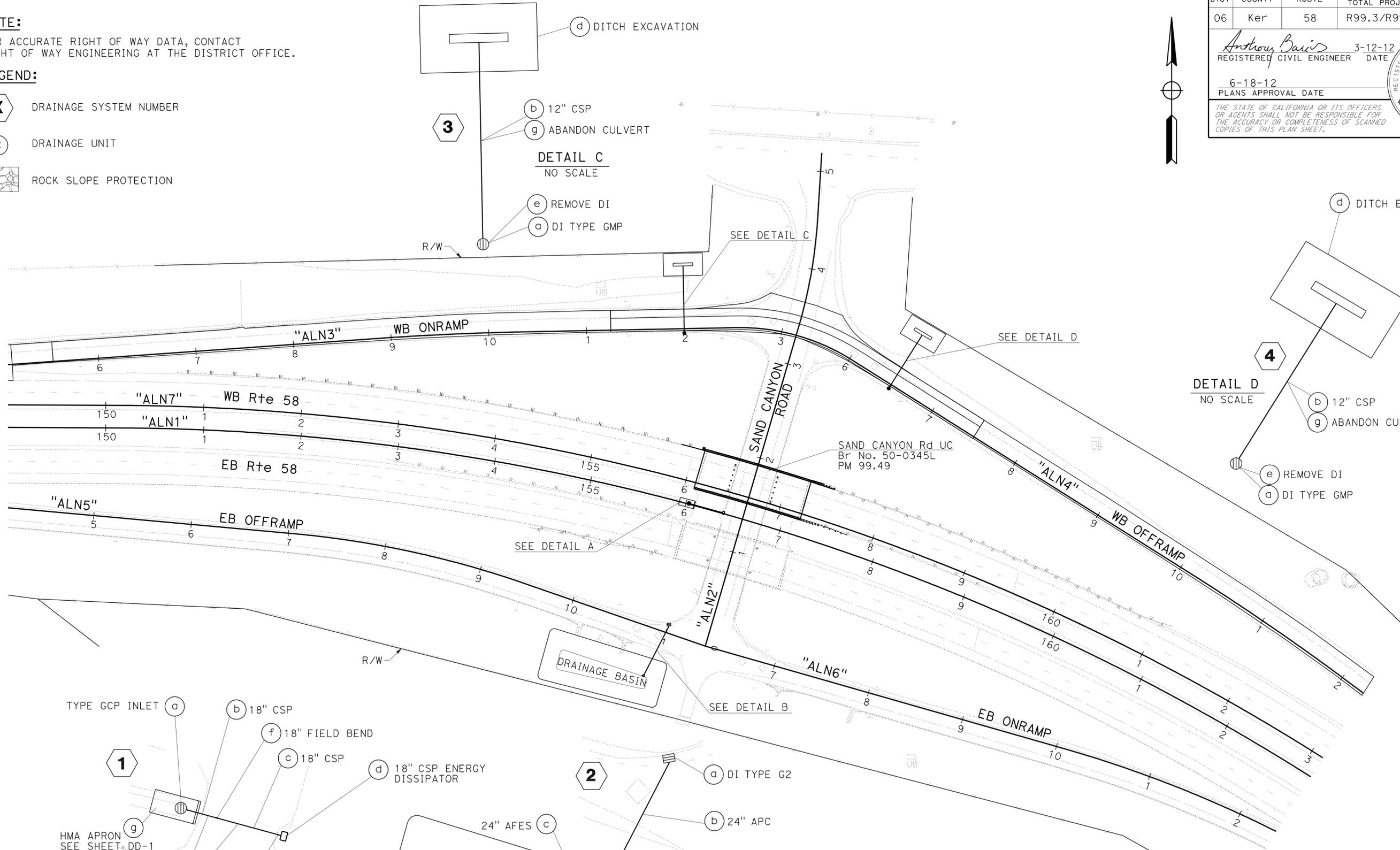
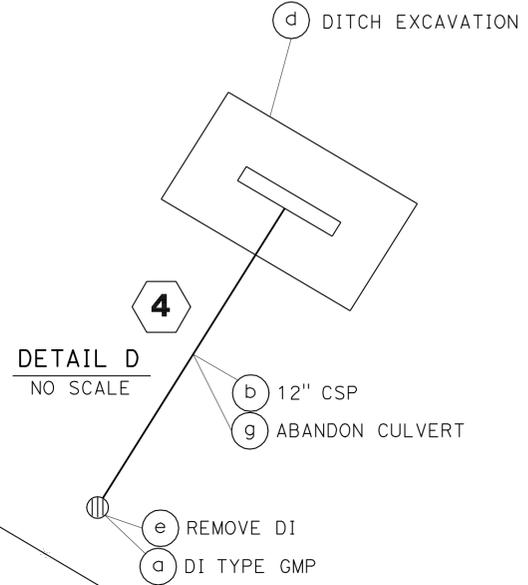
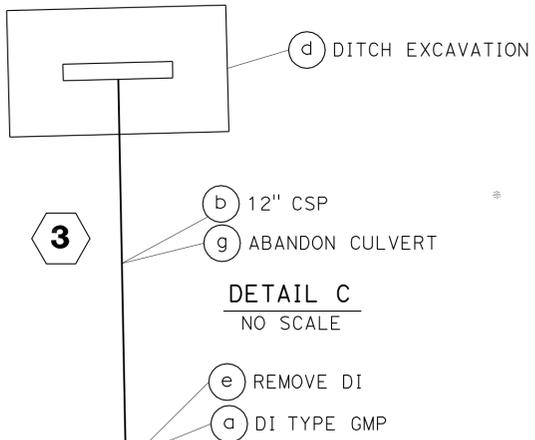
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**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**LEGEND:**

- DRAINAGE SYSTEM NUMBER
- DRAINAGE UNIT
- ROCK SLOPE PROTECTION



APPROVED FOR DRAINAGE WORK ONLY

SCALE: 1" = 50'

**DRAINAGE PLAN D-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 FUNCTIONAL SUPERVISOR: NICHOLAS CHAN  
 CALCULATED/DESIGNED BY: ANTHONY BARRIOS  
 REVISIONS: Inderpal Gill, Anthony Barrios  
 REVISOR: Inderpal Gill, Anthony Barrios  
 DATE: 7/2/2010

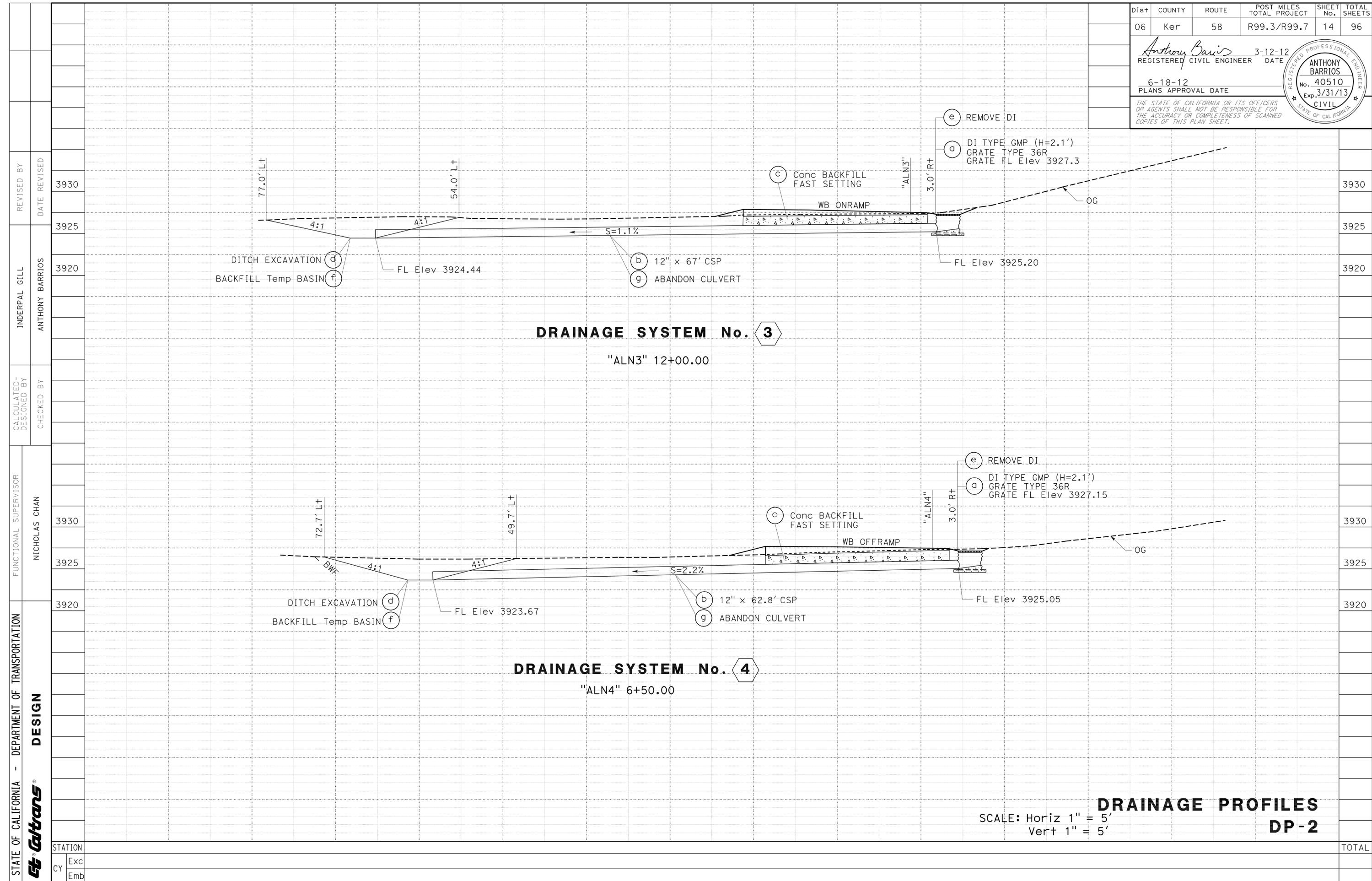
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LAST REVISION: DATE PLOTTED => 20-JUN-2012  
 03-08-12 TIME PLOTTED => 10:45



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	14	96
<i>Anthony Barrios</i> REGISTERED CIVIL ENGINEER			3-12-12	DATE	
6-18-12 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



**DRAINAGE PROFILES**  
**DP-2**

SCALE: Horiz 1" = 5'  
Vert 1" = 5'

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	15	96

<i>Anthony Barrios</i>		3-12-12
REGISTERED CIVIL ENGINEER	DATE	
6-18-12		
PLANS APPROVAL DATE		

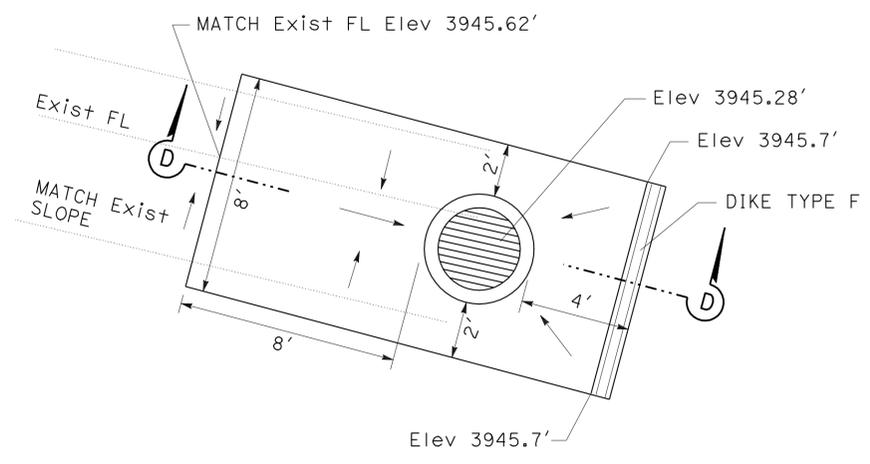
  

REGISTERED PROFESSIONAL ENGINEER
ANTHONY BARRIOS
No. 40510
Exp. 3/31/13
CIVIL
STATE OF CALIFORNIA

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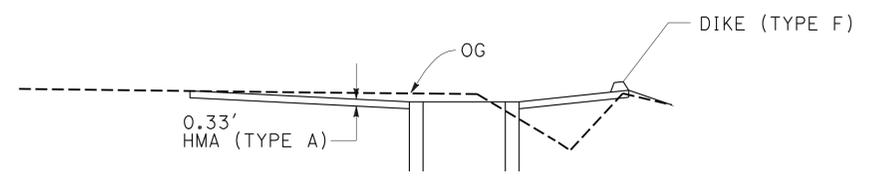
NOTES:

1. THE ROCK MATERIAL AND PLACEMENT METHOD SHALL CONFORM TO THE GRADING "FACING" FOR METHOD "B" PLACEMENTS AS SPECIFIED IN SECTIONS 72-2.02 AND 72-2.03 OF THE STANDARD SPECIFICATIONS.

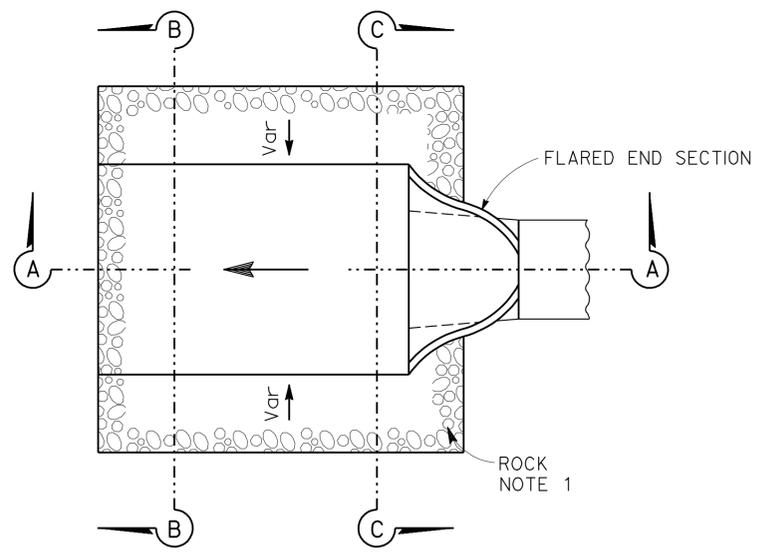


APRON DETAIL

**DRAINAGE SYSTEM No. 1g**

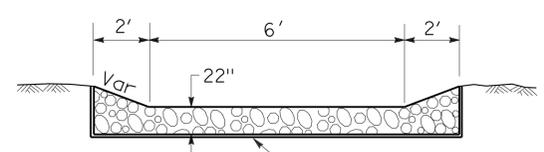


SECTION D-D

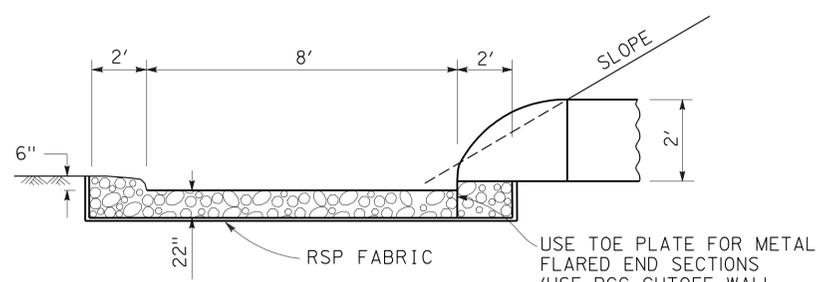


PLAN

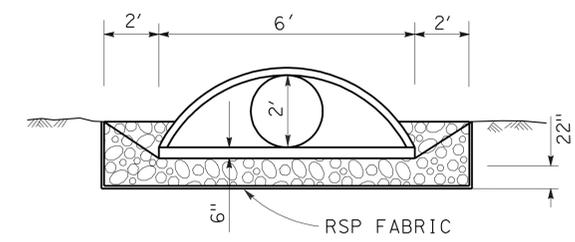
**DRAINAGE SYSTEM No. 1d**



SECTION B-B



SECTION A-A



SECTION C-C

**ROCK ENERGY DISSIPATOR**

NO SCALE

**DRAINAGE DETAILS DD-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
Caltrans	
FUNCTIONAL SUPERVISOR	NICHOLAS CHAN
CALCULATED/DESIGNED BY	CHECKED BY
INDERPAL GILL	ANTHONY BARRIOS
REVISOR	DATE

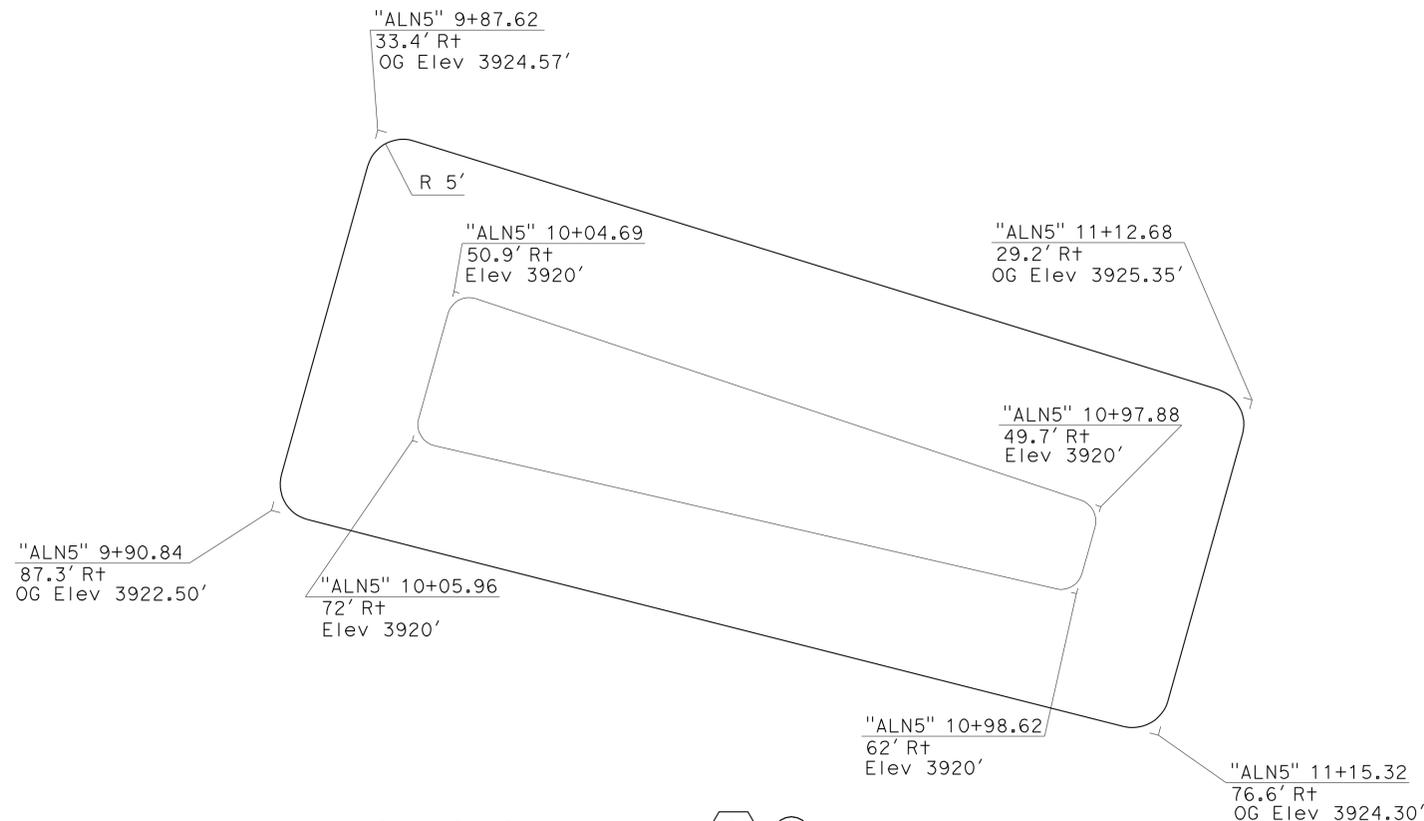
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	16	96

*Anthony Barrios* 3-12-12  
 REGISTERED CIVIL ENGINEER DATE

6-18-12  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS  
 OR AGENTS SHALL NOT BE RESPONSIBLE FOR  
 THE ACCURACY OR COMPLETENESS OF SCANNED  
 COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
**ANTHONY BARRIOS**  
 No. 40510  
 Exp. 3/31/13  
 CIVIL  
 STATE OF CALIFORNIA

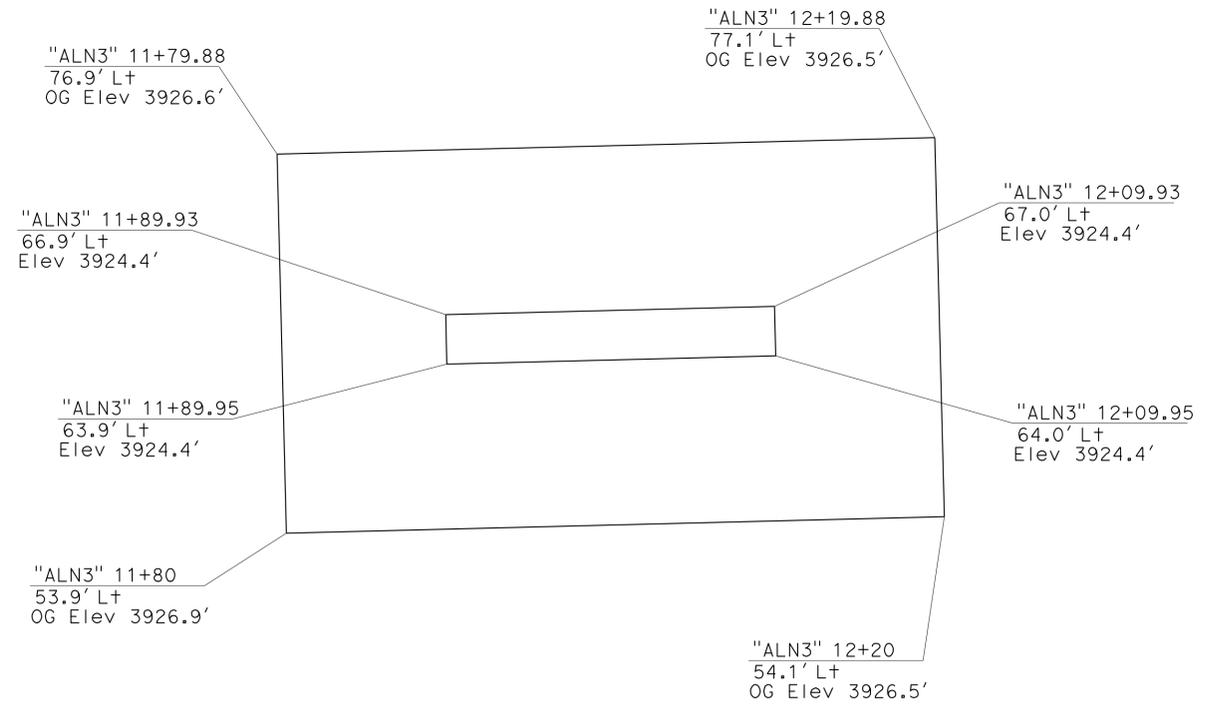


**DRAINAGE SYSTEM No. 2** (f)

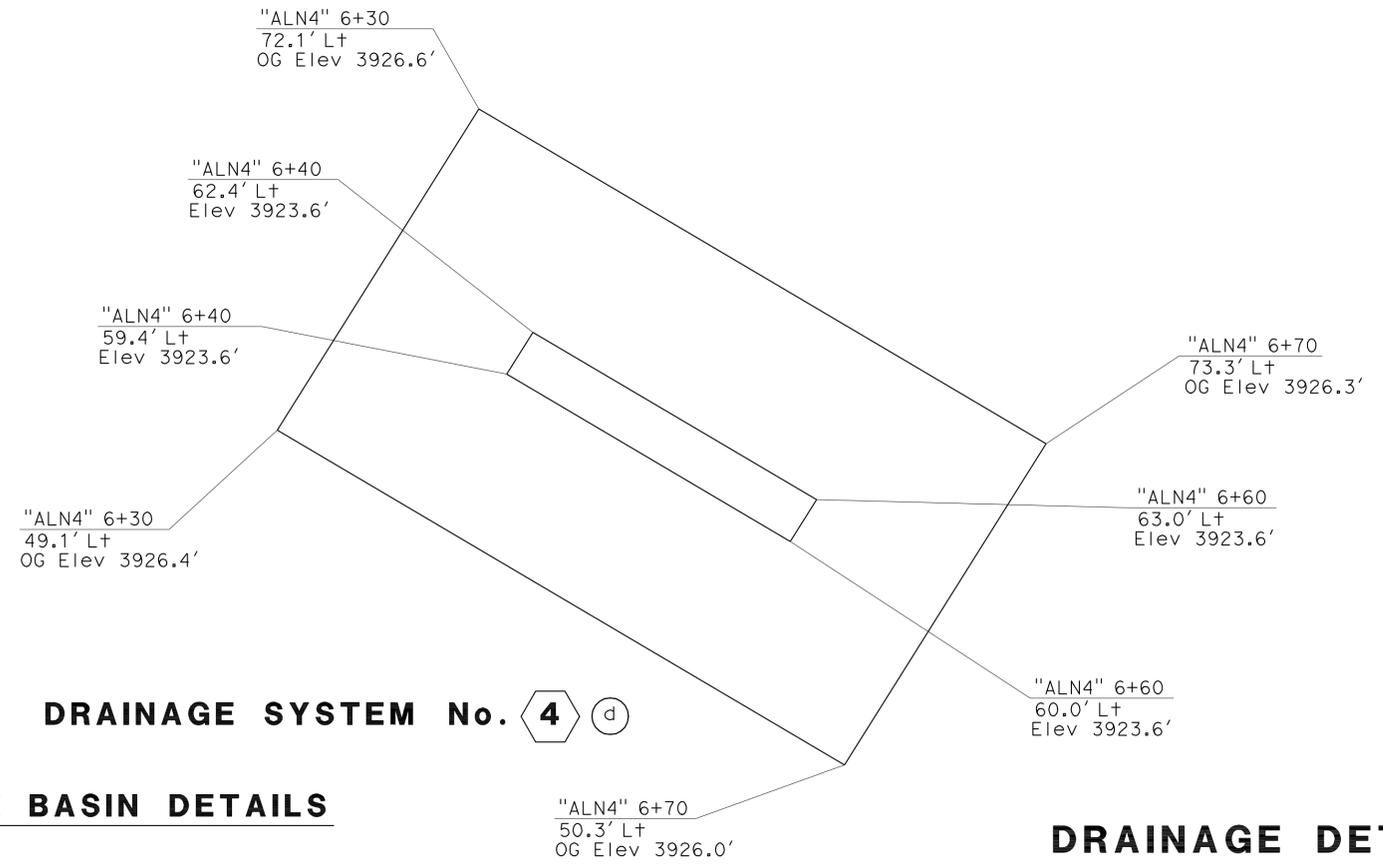
**ALTERNATE PIPE CULVERT**

DESIGNATION	ALLOWABLE PIPE MATERIAL AND PROTECTION						
	RCP	CSP			* PLASTIC		
	SIZE	SIZE	THICKNESS	BITUMINOUS COATING	BITUMINOUS COATING AND PAVED Inv	CORRUGATED INTERIOR	SMOOTH INTERIOR
24"	24"	24"	.109"	NO	NO	24"	24"

\* ALL PLASTIC PIPES SHALL HAVE WATERTIGHT JOINTS



**DRAINAGE SYSTEM No. 3** (d)



**DRAINAGE SYSTEM No. 4** (d)

**DRAINAGE BASIN DETAILS**

**DRAINAGE DETAILS DD-2**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 FUNCTIONAL SUPERVISOR NICHOLAS CHAN  
 CALCULATED/DESIGNED BY  
 CHECKED BY  
 INDERPAL GILL ANTHONY BARRIOS  
 REVISED BY DATE  
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

LAST REVISION DATE PLOTTED => 19-JUN-2012  
 03-09-12 TIME PLOTTED => 14:00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	17	96

*Anthony Barrios* 3-12-12  
 REGISTERED CIVIL ENGINEER DATE

6-18-12  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**LEGEND:**

D - DOWNDRAIN JOINT  
S - STANDARD JOINT

**NOTE:**

UNLESS NOTED OTHERWISE, CONSTRUCTION TO OCCUR IN STAGE 1 OF THE STAGE CONSTRUCTION.

**DRAINAGE QUANTITIES**

PLAN SHEET No.	DRAINAGE SYSTEM No.	DRAINAGE UNIT	DRAINAGE INLET			18" CSP (.079" THICK)	12" CSP	CONCRETE BACKFILL FAST SETTING	REMOVE DD	24" APC	18" CSP ENERGY DISSIPATOR (.064" THICK)	24" AFES	DITCH EXCAVATION	BACKFILL Temp BASIN (N)	36" PRECAST CONCRETE PIPE INLET	36" CORRUGATED STEEL PIPE INLET (.109" THICK)	HMA (TYPE A)	PLACE HMA (Misc AREA)	ROCK SLOPE PROTECTION (FACING METHOD B)	RSP FABRIC	ANCHOR ASSEMBLY	18" FIELD BEND	REMOVE INLET	JOINT CLASSIFICATION (N)	ABANDON CULVERT	DESCRIPTION
			CY	LF	LB																					
D-1	1	a	0.4	3.8	236										3.9											DI TYPE GCP/GRATE TYPE 36R , 36" RCP
		b				12																		D	18" CSP	
		c				25																		D	18" CSP	
		d									1													D	18" CSP ENERGY DISSIPATOR	
		e																			2				ANCHOR ASSEMBLY	
		f																				1			18" FIELD BEND	
		g												3.0		15.0										HMA APRON AND 8' OF DIKE (TYPE F)
		h							1																	REMOVE DD
D-1	2	a	1.6	4.0	326					54														S	DI TYPE G2/GRATE TYPE 24-12	
		b																								24" APC
		c									1								10.0							24" AFES
		d																		24						ROCK SLOPE PROTECTION
		e																								ROCK SLOPE PROTECTION FABRIC
		f											481													DRAINAGE BASIN EXCAVATION
D-1	3**	a	0.4	2.2	236										2.2											DI TYPE GMP/GRATE TYPE 36R
		b					67																		S	12" CSP
		c						3.0																		CONCRETE BACKFILL
		d											36													Temp DRAINAGE BASIN EXCAVATION
		e																					1			REMOVE DI **
		f											36													Temp DRAINAGE BASIN BACKFILL **
		g																						1		ABANDON CULVERT **
D-1	4**	a	0.4	2.2	236										2.2											DI TYPE GMP/GRATE TYPE 36R
		b					63																		S	12" CSP
		c						3.0																		CONCRETE BACKFILL
		d											36													Temp DRAINAGE BASIN EXCAVATION
		e																					1			REMOVE DI **
		f																								Temp DRAINAGE BASIN BACKFILL **
		g																							1	ABANDON CULVERT **
<b>TOTAL</b>			2.8		1034	37	130	6.0	1	54	1	1	553		3.9	4.4	3.0*	15.0	10.0	24	2		2		2	

(N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY  
 \*\* - THIS ACTION TO OCCUR IN STAGE 3 OF THE STAGE CONSTRUCTION  
 \* - SEE ROADWAY QUANTITIES TABLE ON Q-1 SHEET FOR TOTAL HMA QUANTITY

**DRAINAGE QUANTITIES  
DQ-1**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	18	96

04-03-12  
REGISTERED CIVIL ENGINEER DATE

6-18-12  
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
**FAWZI YAGHMOUR**  
 No. C-54750  
 Exp. 12/31/13  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

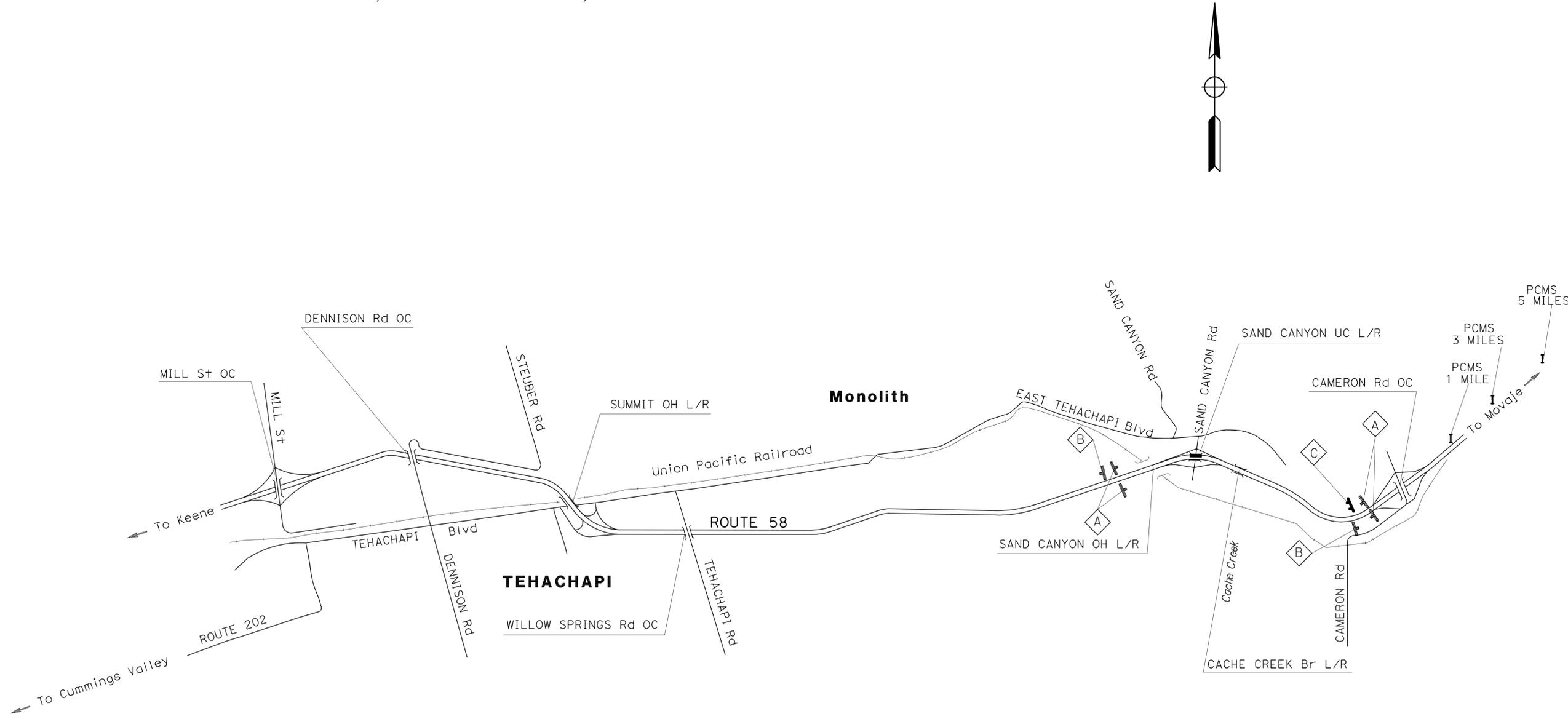
### STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

SIGN No.	SIGN CODE		PANEL SIZE	No. OF POSTS AND SIZE	No. OF SIGNS	SIGN MESSAGE
	CALIFORNIA	FEDERAL				
A		W20-1	48" x 48"	1-6" x 6"	4	ROAD WORK AHEAD
B		G20-2	24" x 36"	1-4" x 4"	2	END ROAD WORK
C	C40(CA)		108" x 42"	2-4" x 6"	1	TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES

**NOTES:**

1. EXACT LOCATION AND POSITION OF CONSTRUCTION AREA SIGNS TO BE DETERMINED BY THE ENGINEER.
2. FOR ADDITIONAL CONSTRUCTION AREA SIGNS, REFER TO PLAN SHEET THQ-1, AND PLAN SHEET MIQ-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED QATAMI  
 CALCULATED/DESIGNED BY: [Blank] CHECKED BY: [Blank]  
 DAVID BLACK  
 FAWZI YAGHMOUR  
 REVISED BY: [Blank] DATE REVISED: [Blank]



**CONSTRUCTION AREA SIGNS**  
NO SCALE  
**CS-1**

APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY

LAST REVISION DATE PLOTTED => 19-JUN-2012  
 04-04-12 TIME PLOTTED => 14:00

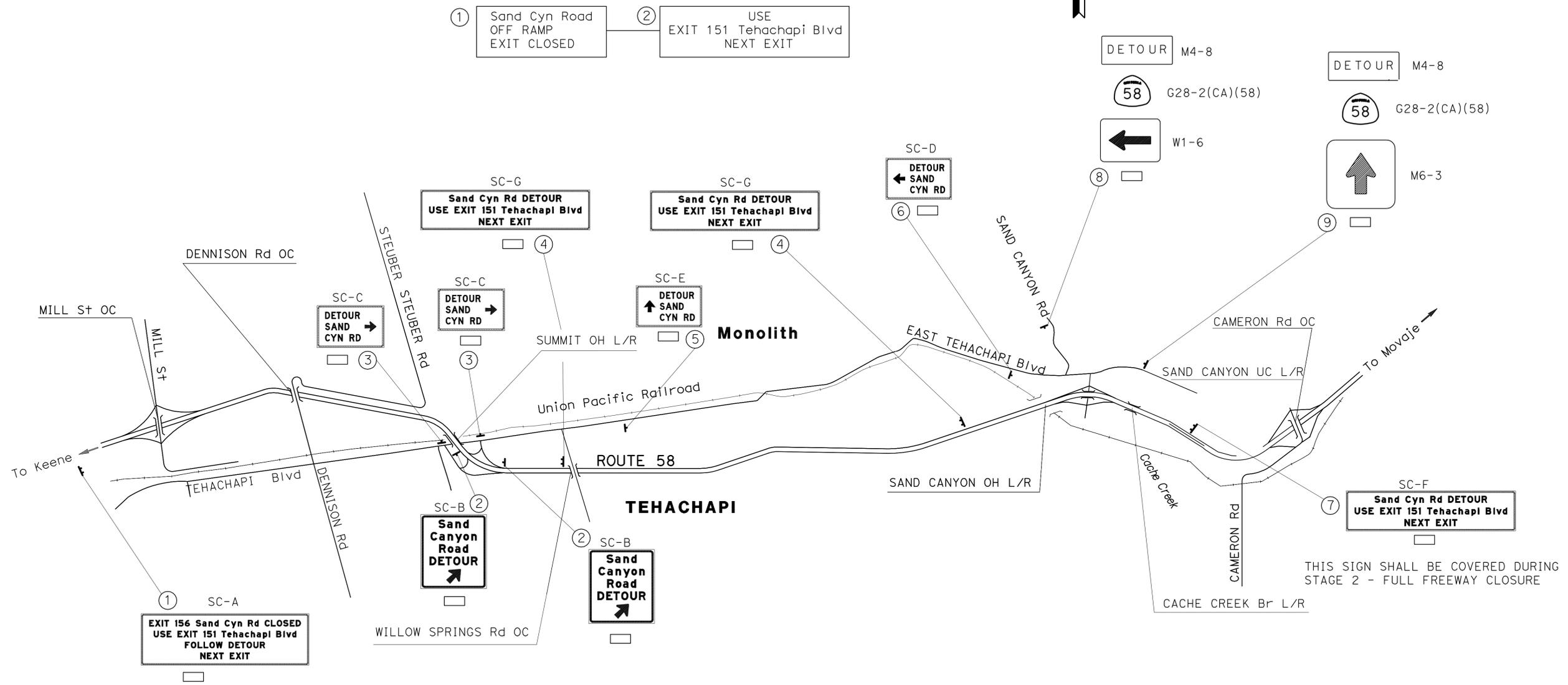
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	19	96
			04-02-12	DATE	
REGISTERED CIVIL ENGINEER			FAWZI YAGHMOUR		
PLANS APPROVAL DATE			6-18-12		
			No. C-54750		
			Exp. 12/31/13		
			CIVIL		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

**LEGEND:**

- ▬ ROADSIDE SIGN (ONE- POST)
- ▬ ROADSIDE SIGN (TWO- POST)
- STAGE 1 AND 3 ROADSIDE SIGN
- ▲ PREVIOUS STAGES ROADSIDE SIGN TO REMAIN IN PLACE

**NOTES:**

1. EXACT LOCATIONS OF PCMS TO BE DETERMINED BY THE ENGINEER.
2. EXACT LOCATIONS OF SIGNS TO BE DETERMINED BY THE ENGINEER.
3. FOR ADDITIONAL CONSTRUCTION AREA SIGNS, REFER TO PLAN SHEET THQ-1, AND PLAN SHEET CS-1
4. DURING THE SAND CYN ROAD CLOSURE, THE PCMS MESSAGE AT 1 AND 2 SHOULD READ....



STAGE 1 AND 3 EB AND WB RAMP CLOSURE

**MOTORIST INFORMATION PLAN**  
(STAGE 1 AND 3)

**MI-1**

APPROVED FOR MOTORIST INFORMATION WORK ONLY

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED OATAMI  
 CALCULATED/DESIGNED BY: FAWZI YAGHMOUR  
 REVISOR: FAWZI YAGHMOUR  
 DATE: 04-02-12

LAST REVISION: 04-10-12  
 DATE PLOTTED => 20-JUN-2012  
 TIME PLOTTED => 10:46

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	20	96

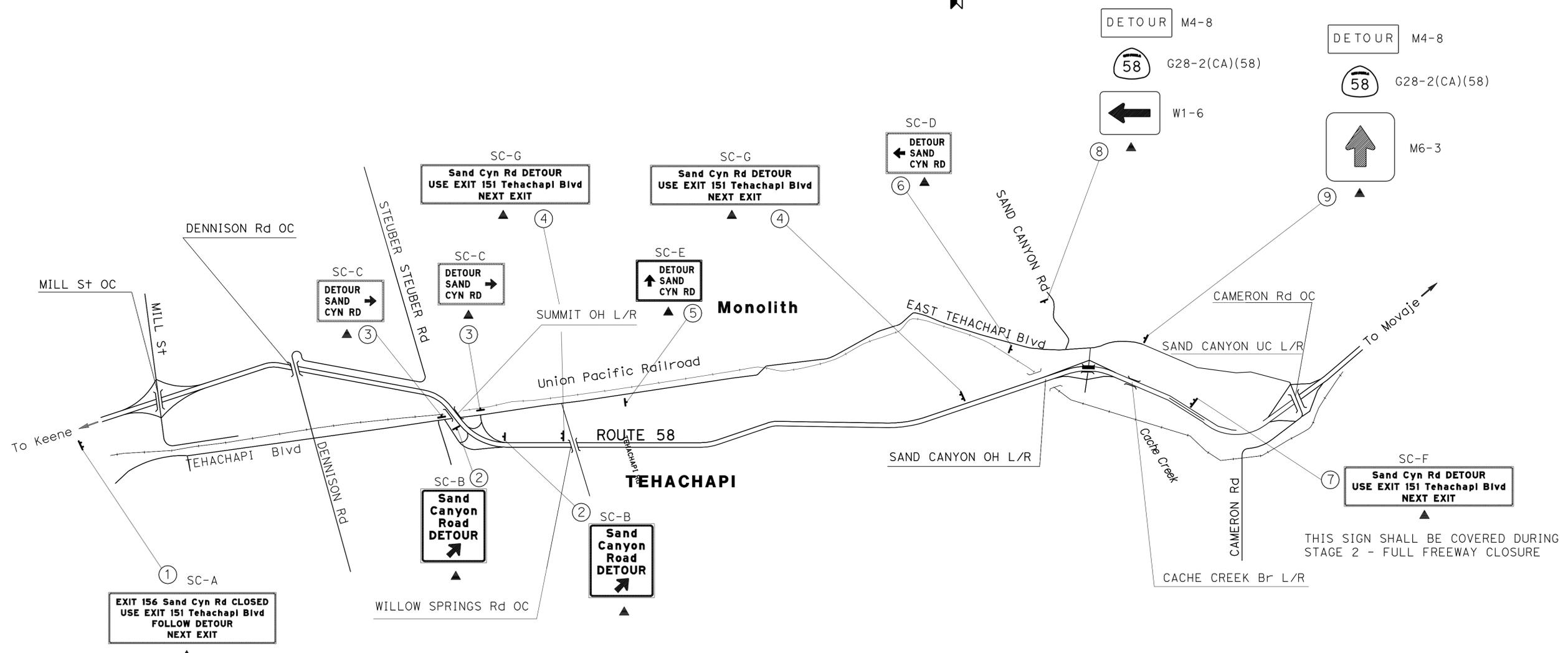
  

REGISTERED CIVIL ENGINEER	DATE
6-18-12	04-02-12
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
FAWZI YAGHMOUR
No. C-54750
Exp. 12/31/13
CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



STAGE 2 WB FREEWAY CLOSURE, EB RAMP CLOSURE, NO DIRECT WB ACCESS

# MOTORIST INFORMATION PLAN

(STAGE 2)

MI-2

NO SCALE

APPROVED FOR MOTORIST INFORMATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN

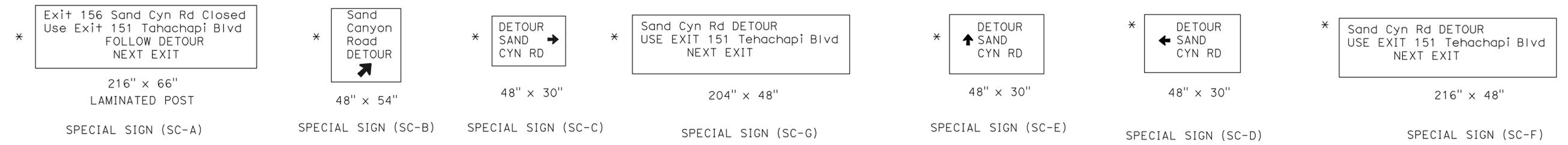
FUNCTIONAL SUPERVISOR: MOHAMMED OATAMI  
 CALCULATED/DESIGNED BY: [blank]  
 CHECKED BY: [blank]  
 REVISIONS: [blank]  
 REVISOR: [blank]  
 DATE: [blank]

LAST REVISION: [blank]  
 DATE PLOTTED => 19-JUN-2012  
 TIME PLOTTED => 14:00

NOTE:  
SEE SIGN DETAILS FOR ALL SPECIAL SIGNS: SD-1, SD-2, SD-3, SD-4, AND SD-5.

**STATIONARY MOUNTED CONSTRUCTION AREA SIGNS**

SIGN No.	SIGN CODE		PANEL SIZE	SIGN MESSAGE	No. OF POSTS AND SIZE	No. OF SIGNS
	FEDERAL	CALIFORNIA				
1	SPECIAL SIGN (SC-A)		216" x 66"	EXIT 156 SAND CYN RD CLOSED USE EXIT 151 / TEHACHAPI BLVD FOLLOW DETOUR / NEXT EXIT	LAMINATED POST	1
2	SPECIAL SIGN (SC-B)		48" x 54"	SAND CANYON ROAD DETOUR / WITH ARROW	1- 6" x 6"	2
3	SPECIAL SIGN (SC-C)		48" x 30"	DETOUR SAND CANYON ROAD / WITH ARROW	1- 4" x 6"	2
4	SPECIAL SIGN (SC-G)		204" x 48"	SAND CYN RD DETOUR USE EXIT 151 TEHACHAPI BLVD / NEXT EXIT	2- 6" x 8"	2
5	SPECIAL SIGN (SC-E)		48" x 30"	DETOUR SAND CANYON ROAD / WITH ARROW	1- 4" x 6"	1
6	SPECIAL SIGN (SC-D)		48" x 30"	DETOUR SAND CANYON ROAD / WITH ARROW	1- 4" x 6"	1
7	SPECIAL SIGN (SC-F)		216" x 48"	SAND CYN RD DETOUR USE EXIT 151 TEHACHAPI BLVD / NEXT EXIT	2- 6" x 8"	1
8	M4-8		24" x 12"	DETOUR	1- 6" x 6"	1
		G28-2 (CA)	24" x 24"	SHIELD SR 58		
	W1-6		36" x 18"	DETOUR WITH ARROW		
9	M4-8		24" x 12"	DETOUR	1- 6" x 6"	1
		G28-2 (CA)	24" x 24"	SHIELD SR 58		
	M6-3		36" x 18"	DETOUR WITH ARROW		



**MOTORIST INFORMATION QUANTITIES**

**MIQ-1**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 Caltrans® TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED OATAMI  
 CALCULATED/DESIGNED BY: [blank]  
 CHECKED BY: [blank]  
 REVISIONS: [blank]  
 REVISED BY: [blank]  
 DATE REVISED: [blank]

LAST REVISION DATE PLOTTED => 19-JUN-2012  
 04-12-12 TIME PLOTTED => 14:00



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	23	96

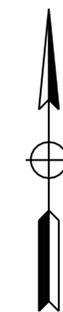
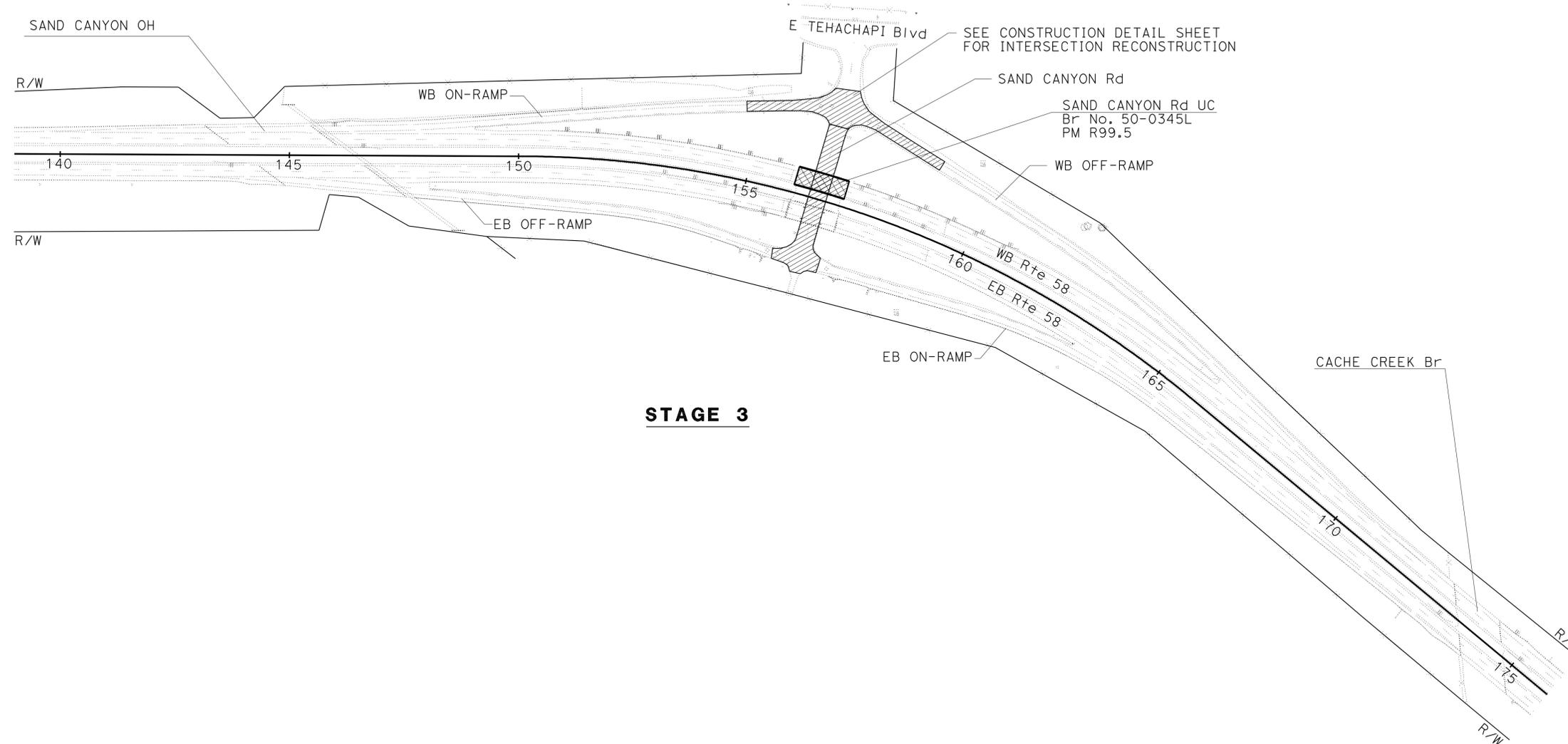
<i>Anthony Barrios</i>	3-12-12
REGISTERED CIVIL ENGINEER	DATE
6-18-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
ANTHONY BARRIOS
No. 40510
Exp. 3/31/13
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



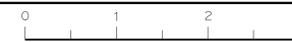
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
<b>Caltrans</b>	
FUNCTIONAL SUPERVISOR	NICHOLAS CHAN
CALCULATED/DESIGNED BY	CHECKED BY
INDERPAL GILL	ANTHONY BARRIOS
REVISOR BY	DATE
REVISOR BY	DATE

**STAGE 3**

**STAGE CONSTRUCTION**  
**SC-2**

APPROVED FOR STAGE CONSTRUCTION WORK ONLY

NO SCALE



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN

REVISOR: DAVID BLACK  
 DATE: 03-07-12  
 CHECKED BY: FAWZI YAGHMOUR  
 DESIGNED BY: MOHAMMED OATAMI

**LEGEND:**

- SURFACE MOUNTED CHANNELIZER
- ⊥ CONSTRUCTION AREA SIGN 1 POST
- ⊥ BARRICADE TYPE III
- ⊥ FLASHING ARROW SIGN (FAS)
- ➔ DIRECTION OF TRAVEL
- ☀ PORTABLE FLASHING BEACON
- ⊥ CONSTRUCTION AREA SIGN BARRICADE MOUNTED
- CHANGE IN TRAFFIC STRIPE DETAIL
- ⊥ TEMPORARY PAINT TRAFFIC STRIPE DETAIL No.
- ⊥ REMOVAL OF TRAFFIC STRIPE PAINT DETAIL No.
- ➔ TEMPORARY PAVEMENT MARKING PAINT TYPE VI ARROW
- WORK ZONE
- ▨ CLOSED TO TRAFFIC

**STAGING: STAGE 1**

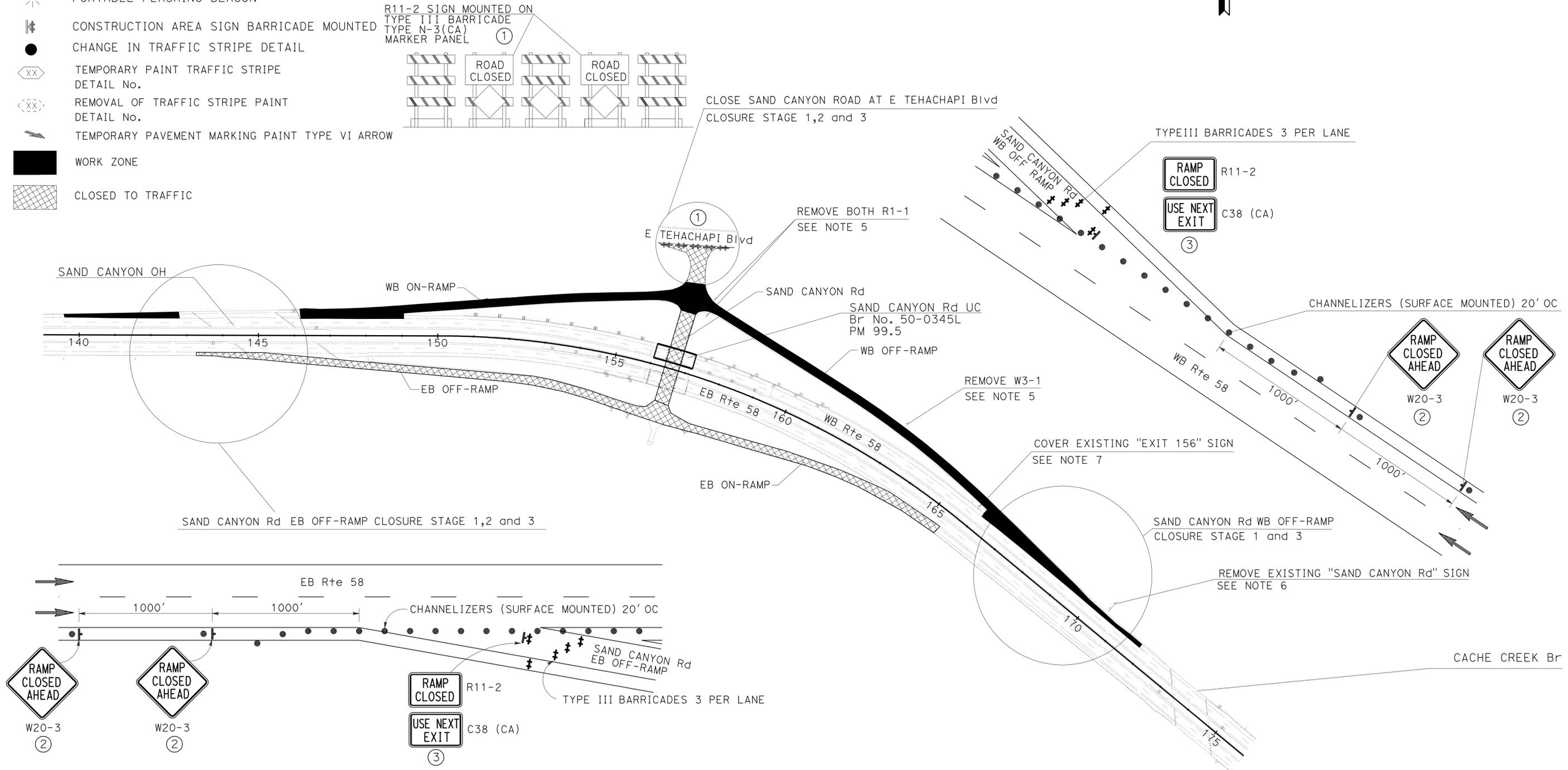
1. CLOSE WB OFF-RAMP AND ON-RAMP
2. CLOSE EB OFF-RAMP AND ON-RAMP
3. COLD PLANE AND OVERLAY WB OFF-RAMP AND ON-RAMP
4. CLOSE SAND CANYON ROAD AT E TEHACHAPI Blvd
5. REMOVAL OF R1-1 AND W3-1 SIGNS ON WB OFF-RAMP CALLED OUT ON S-1 MUST BE DONE PRIOR TO REOPENING FOR STAGE 2. NEW SIGNS WILL BE PLACED DURING STAGE 3
6. SIGN "SAND CANYON Rd." IS CALLED OUT TO BE REMOVED AND REPLACED ON S-2. IT IS TO BE REMOVED PRIOR TO STAGE 2 AND NOT REPLACED UNTIL STAGE 3
7. EXISTING SIGN "EXIT 156" IS TO REMAIN COVERED DURING STAGE 2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	24	96

REGISTERED CIVIL ENGINEER DATE 03-07-12  
 FAWZI YAGHMOUR  
 No. C-54750  
 Exp. 12/31/13  
 CIVIL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE 6-18-12

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



**TRAFFIC HANDLING PLAN**  
 (STAGE 1)  
**TH-1**

APPROVED FOR TRAFFIC HANDLING WORK ONLY

NO SCALE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	25	96

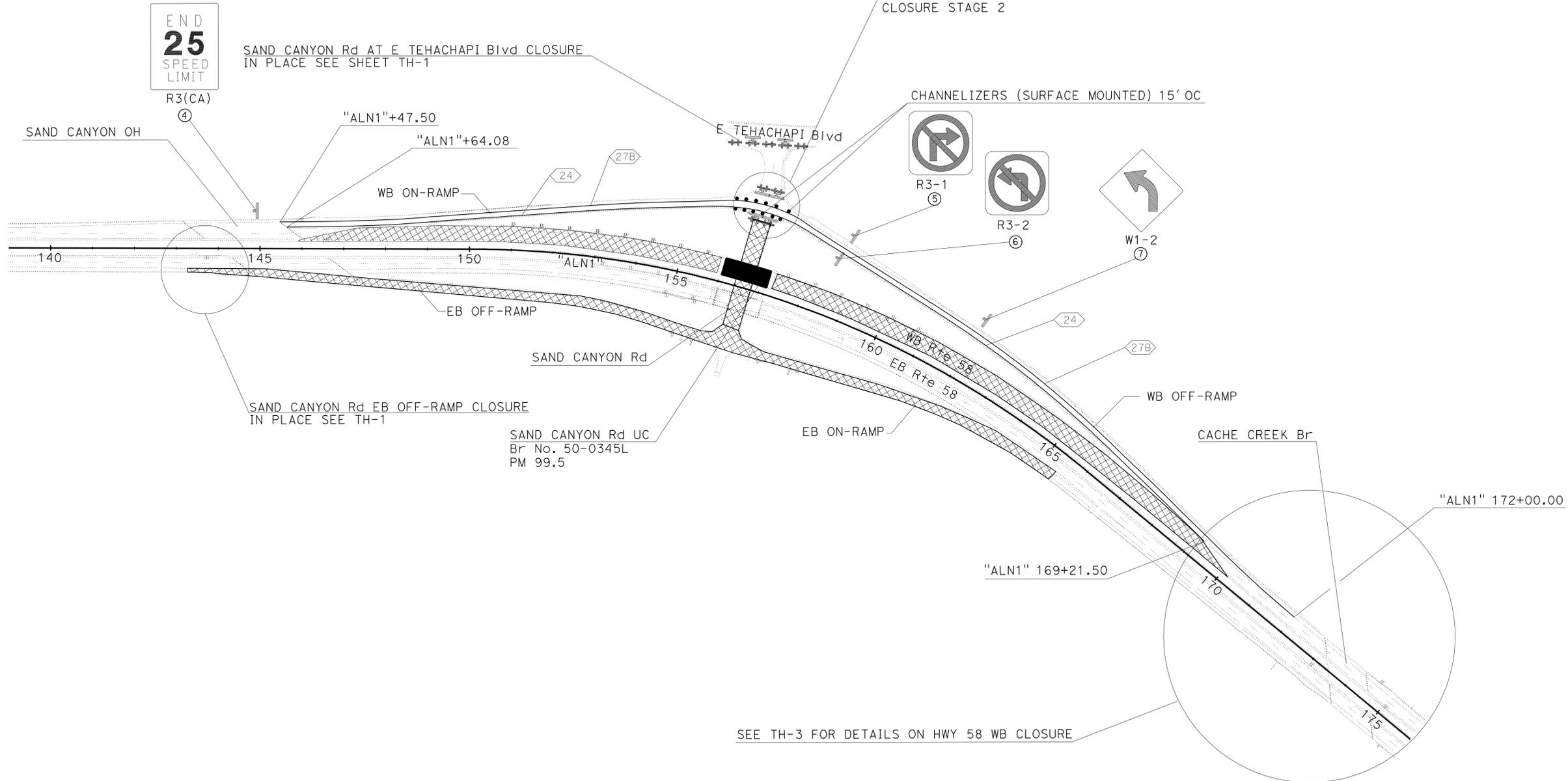
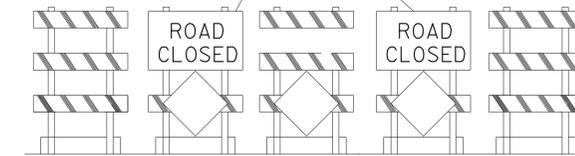
  

REGISTERED CIVIL ENGINEER		DATE
Fawzi Yaghmour		03-07-12
No. C-54750		PLANS APPROVAL DATE
Exp. 12/31/13		6-18-12
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>		

**STAGE 2**

1. CLOSE WB SR58 MAINLINE
2. OPEN WB OFF-RAMP AND ON-RAMP AS DETOUR FOR WB MAINLINE TRAFFIC
3. MAINTAIN CLOSURE OF EB OFF-RAMP AND ON RAMP
4. CLOSE SAND CANYON TO THE SOUTH OF THE DETOUR
5. CLOSE SAND CANYON TO THE NORTH OF DETOUR
6. REMOVAL OF R1-1 AND W3-1 SIGNS ON WB OFF-RAMP CALLED OUT ON S-1 MUST BE DONE PRIOR TO REOPENING FOR STAGE 2. NEW SIGNS WILL BE PLACED DURNING STAGE 3
7. SIGN "SAND CANYON Rd," IS CALLED OUT TO BE REMOVED AND REPLACED. IT IS TO BE REMOVED PRIOR TO STAGE 2 AND NOT REPLACED UNTIL STAGE 3 (SEE SHEET S-2).
8. EXISTING SIGN "EXIT 156" IS TO BE COVERED DURNING STAGE 2
9. CONSTRUCT REPLACEMENT STRUCTURE
10. REMOVE BRIDGE No. 50-0345L

R11-2 SIGN MOUNTED ON TYPE III BARRICADE TYPE N-3(CA) MARKER PANEL ①



SEE TH-3 FOR DETAILS ON HWY 58 WB CLOSURE



REVISOR	DATE	REVISION
DAVID BLACK		
FAWZI YAGHMOUR		
CALCULATED/DESIGNED BY	CHECKED BY	
MOHAMMED OATAMI		
FUNCTIONAL SUPERVISOR		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		
<b>Caltrans</b>		
<b>TRAFFIC DESIGN</b>		

**TRAFFIC HANDLING PLAN**  
**(STAGE 2)**  
**TH-2**

APPROVED FOR TRAFFIC HANDLING WORK ONLY

NO SCALE

LAST REVISION DATE PLOTTED => 20-JUN-2012 10:46

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN

REVISOR BY DATE

DAVID BLACK  
 FAWZI YAGHMOUR

CALCULATED/DESIGNED BY  
 CHECKED BY

FUNCTIONAL SUPERVISOR  
 MOHAMMED OATAMI

**LEGEND**

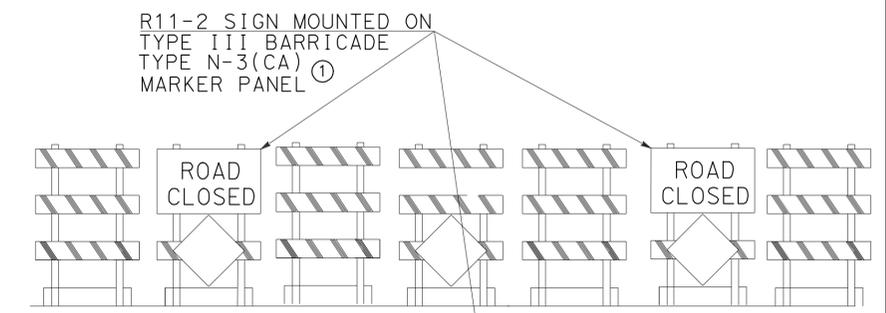
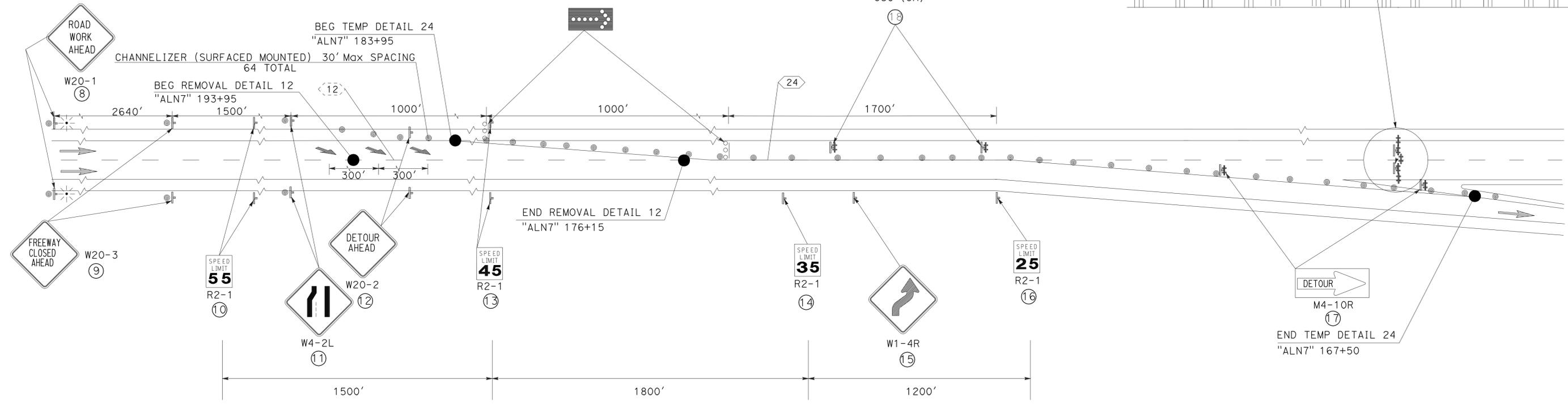
- SURFACE MOUNTED CHANNELIZER
- ⊥ CONSTRUCTION AREA SIGN 1 POST
- ⊥ BARRICADE TYPE III
- ⬆ FLASHING ARROW SIGN (FAS)
- ➔ DIRECTION OF TRAVEL
- ⚡ PORTABLE FLASHING BEACON
- ⊥ CONSTRUCTION AREA SIGN BARRICADE MOUNTED
- CHANGE IN TRAFFIC STRIPE DETAIL
- ⊞ TEMPORARY PAINT TRAFFIC STRIPE DETAIL No.
- ⊞ REMOVAL OF TRAFFIC STRIPE PAINT DETAIL No.
- ➔ TEMPORARY PAVEMENT MARKING PAINT TYPE VI ARROW

**STAGE 2**

1. CLOSE WB SR58 MAINLINE
2. OPEN WB OFF-RAMP AND ON-RAMP AS DETOUR FOR WB MAINLINE TRAFFIC
3. MAINTAIN CLOSURE OF EB OFF-RAMP AND ON-RAMP
4. CLOSE SAND CANYON TO THE SOUTH OF THE DETOUR
5. CLOSE SAND CANYON TO THE NORTH OF DETOUR
6. SIGN "SAND CANYON Rd." IS CALLED OUT TO BE REMOVED AND REPLACED ON S-2. IT IS TO BE REMOVED PRIOR TO STAGE 2 AND NOT REPLACED UNTIL STAGE 3
7. EXISTING SIGN "EXIT 156" IS TO BE COVERED DURING STAGE 2
8. REMOVE BRIDGE No. 50-0345L
9. CONSTRUCT REPLACEMENT STRUCTURE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	26	96

04-10-12  
 REGISTERED CIVIL ENGINEER DATE  
 FAWZI YAGHMOUR  
 No. C-54750  
 Exp. 12/31/13  
 CIVIL  
 STATE OF CALIFORNIA  
 REGISTERED PROFESSIONAL ENGINEER  
 6-18-12  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



COMPLETE CLOSURE Hwy 58  
 WESTBOUND TRAFFIC ONLY

**TRAFFIC HANDLING PLAN**  
 (STAGE 2)  
**TH-3**

APPROVED FOR TRAFFIC HANDLING WORK ONLY

NO SCALE









Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	31	96

03-07-12  
 REGISTERED CIVIL ENGINEER DATE  
 6-18-12  
 PLANS APPROVAL DATE

FAWZI YAGHMOUR  
 No. C-54750  
 Exp. 12/31/13  
 CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

### PAVEMENT DELINEATION QUANTITIES

SHEET No.	LOCATION/STATION	DIRECTION	DETAIL No.	PAINT TRAFFIC STRIPE (2-COAT)		THERMOPLASTIC PAVEMENT MARKING	PAVEMENT MARKER (RETRO-REFLECTIVE -RECESSED)			DELINEATOR (CLASS 2)			DESCRIPTION/ COMMENTS	
				4" STRIPE			8" STRIPE	TYPE G	TYPE H	TYPE C	TYPE F	TYPE G		TYPE L
				SOLID WHITE	BROKEN WHITE		SOLID YELLOW							
				LF			LF	SQFT	EA			EA		
PD1-PD2	"ALN7" 139+60 TO "ALN3" 13+00	WB	27B	1740						18	12			
PD1	"ALN3" +92 TO 3+18	WB	8		226									
PD1-PD2	"ALN3" 3+18 TO 6+00	WB	36A				282	13						
PD2	"ALN3" 6+00 TO 12+87	WB	25A						30					
PD2	"ALN2" +26 TO 3+07	NB	21											
PD2	"ALN7" 156+10 TO 157+92	WB	27B	182										
PD2	"ALN7" 156+10 TO 157+92	WB	24				182							
PD2	"ALN7" 156+10 TO 157+92	WB	11											
PD2	"ALN5" 11+00 TO 11+13	EB	25A						1					
PD2	"ALN5" 11+00 TO 11+13	EB	27B	13										
PD2	"ALN6" 6+47 TO 6+60	EB	27B	13										
PD2	"ALN6" 6+47 TO 6+60	EB	25A						1					
PD2-PD3	"ALN4" 5+72 TO 15+54	WB	25A						42					
PD2-PD3	"ALN4" 5+72 TO "ALN7" 172+00	WB	27B	1557						23	17	1		
PD3	"ALN4" 15+54 TO 18+57	WB	36				606	26					2 TRAFFIC STRIPES	
PD3	"ALN7" 171+91 TO 174+35	WB	12					7						
PD3	"ALN7" 174+35 TO 175+79	WB	14A									4		
PD3	"ALN7" 175+79 TO 186+41	WB	12					24						
PD2	"ALN3" 12+00	WB						25					TYPE I ARROW	
PD2	"ALN4" 5+72	WB						101					"STOP"X2, LIMITLINE	
PD2	"ALN4" 6+22	WB						33					TYPE V ARROW	
PD2	"ALN4" 7+22	WB						33					TYPE V ARROW	
PD2	"ALN4" 9+36	WB						31					"AHEAD"	
PD2	"ALN4" 10+36	WB						22					"STOP"	
PD2	"ALN5" 11+15	EB						80					"STOP"X2, LIMITLINE	
SUBTOTAL				3505	408	3608	888		70	74	4	41	29	1
TOTAL						8409		325	148			71		

### PAVEMENT DELINEATION QUANTITIES

PDQ-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	32	96

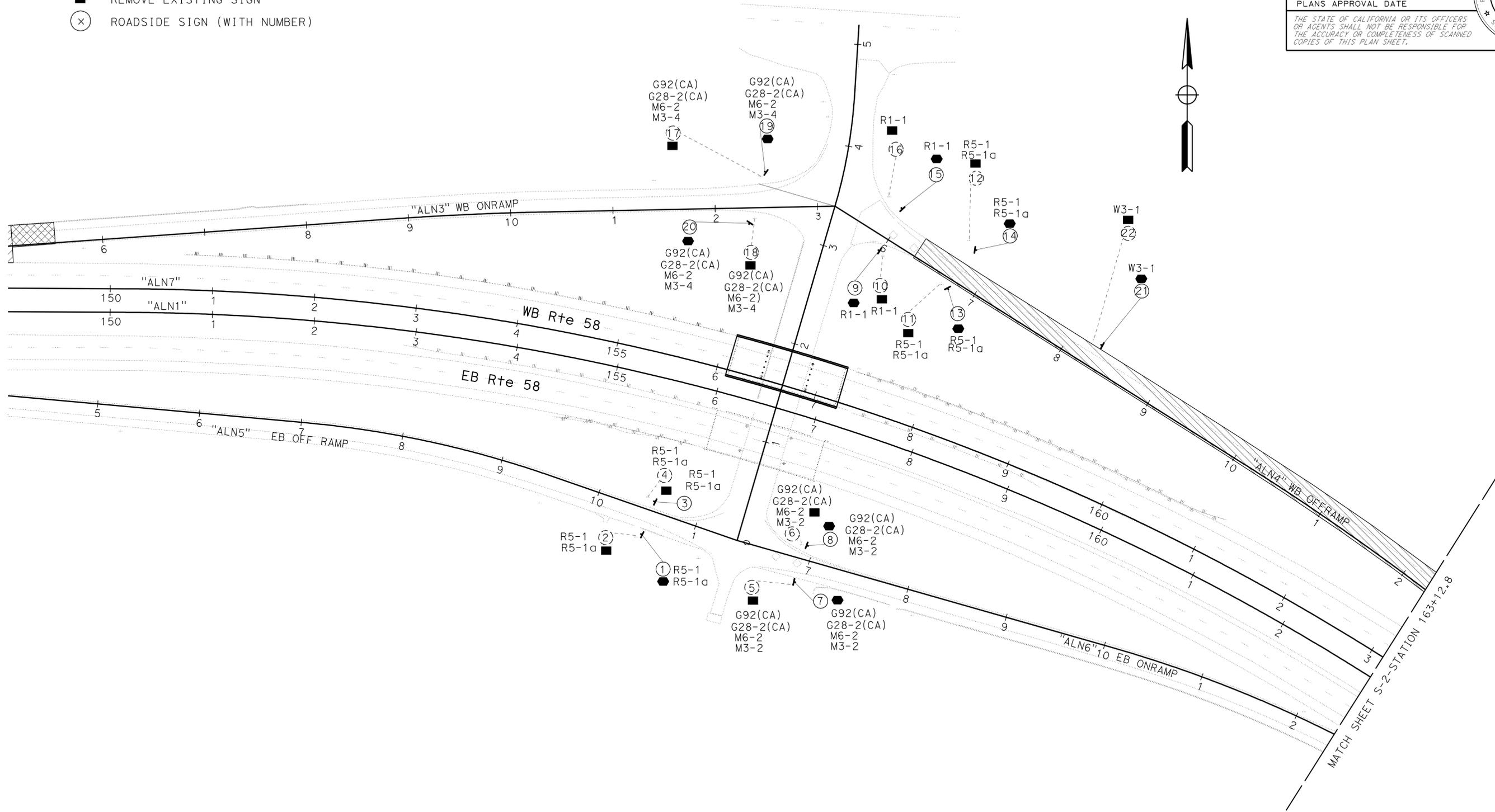
<i>[Signature]</i>	04-03-12
REGISTERED CIVIL ENGINEER	DATE
6-18-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
FAWZI YAGHMOUR
No. C-54750
Exp. 12/31/13
CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

- LEGEND:**
- RODESIDE SIGN
  - REMOVE EXISTING SIGN
  - ⊗ ROADSIDE SIGN (WITH NUMBER)



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN

REVISOR BY  
DAVID BLACK

DATE REVISION  
FAWZI YAGHMOUR

CALCULATED/DESIGNED BY  
CHECKED BY

FUNCTIONAL SUPERVISOR  
MOHAMMED OATAMI

APPROVED FOR SIGN PLAN ONLY

**SIGN PLAN**  
 SCALE: 1" = 50'  
**S-1**



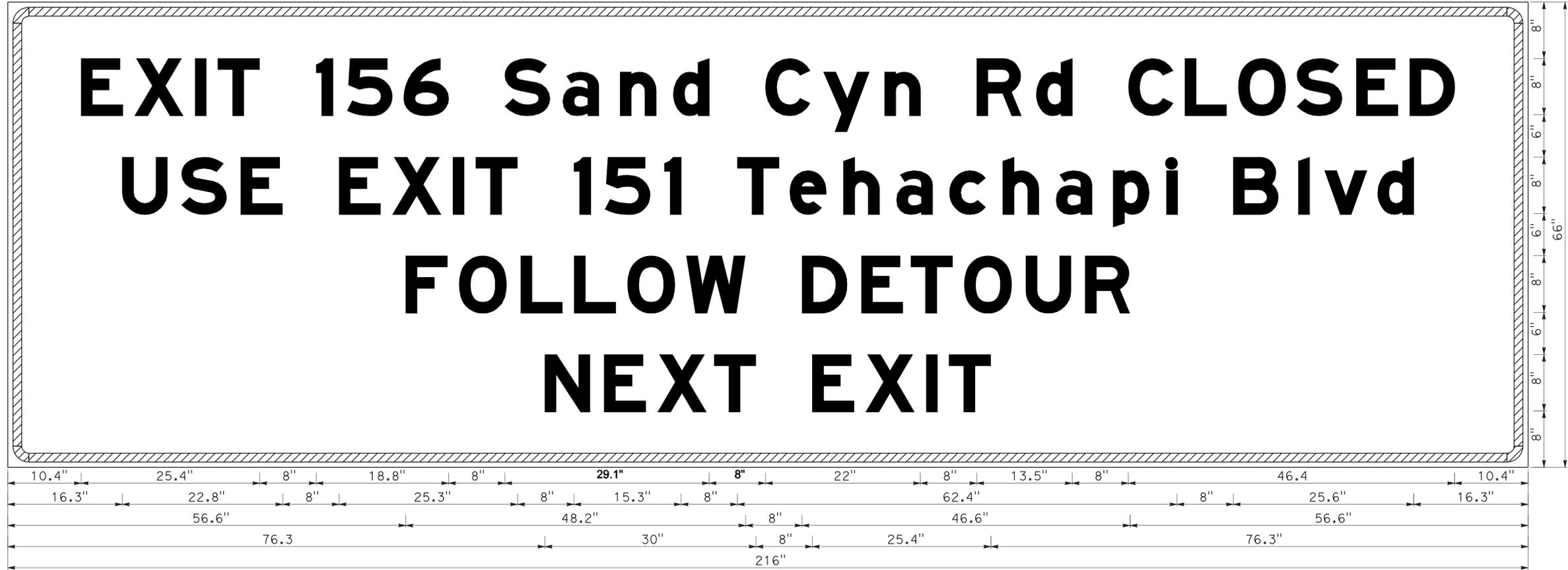
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	34	96

04-03-12  
 REGISTERED CIVIL ENGINEER DATE  
 6-18-12  
 PLANS APPROVAL DATE

FAWZI YAGHMOUR  
 No. C-54750  
 Exp. 12/31/13  
 CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

- Notes:
- Exact location of the signs to be determined by the Engineer.
  - Black on Fluorescent Orange signs shall use ASTM Type VIII retroreflective sheeting.



3.0" Radius, 1.3" Border, 0.8" Indent, Black on Fluorescent Orange;  
 [EXIT 156 Sand Cyn Rd CLOSED] E Mod; [USE EXIT 151 Tehachapi Blvd] E Mod; [FOLLOW DETOUR] E Mod; [NEXT EXIT] E Mod;

Table of letter and object lefts.

E	X	I	T	I	S	6	S	a	n	d	C	y	n	R	d	C	L	O	S	E	D	
10.4	18.0	26.6	29.9	43.8	48.2	56.3	70.6	78.9	87.0	94.6	107.7	115.9	124.6	137.7	146.1	159.2	167.2	174.8	183.2	191.6	199.2	
U	S	E	E	X	I	T	I	S	I	T	e	h	a	c	h	a	p	i	B	I	v	d
16.3	24.7	33.1	47.1	54.7	63.2	66.5	80.4	84.9	93.3	103.7	111.1	118.7	126.3	133.8	141.4	148.9	157.1	164.6	174.1	183.4	187.1	194.6
F	O	L	L	O	W	D	E	T	O	U	R											
56.6	64.1	72.9	80.5	88.1	96.4	112.8	121.3	128.3	135.9	144.6	153.1											
N	E	X	T	E	X	I	T															
76.3	84.7	92.3	100.4	114.3	121.9	130.5	133.7															

SC-A LAMINATED 1" TYPE B

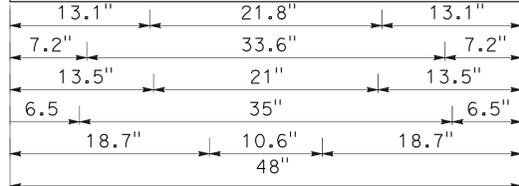
**SIGN DETAILS**

**SD-1**

APPROVED FOR SIGN PLAN ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED OATAMI  
 CALCULATED/DESIGNED BY: GURMIT GILL  
 CHECKED BY: FAWZI YAGHMOUR  
 REVISED BY: DATE  
 REVISIONS:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	35	96
			04-03-12	DATE	
			6-18-12	PLANS APPROVAL DATE	
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

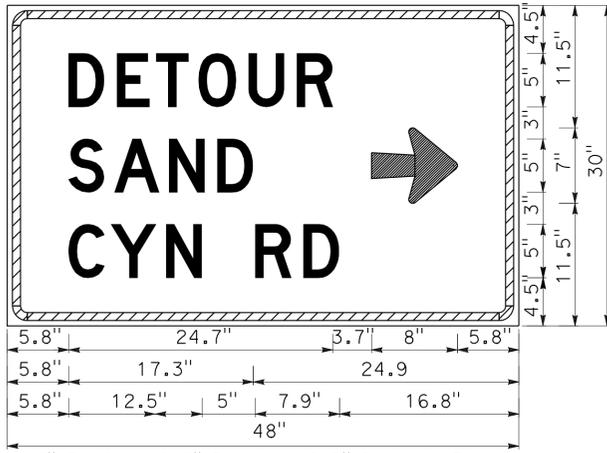


3.0" Radius, 1.3" Border, 0.8" Indent, Black on Fluorescent Orange;  
 [Sand] E Mod; [Canyon] E Mod; [Road] E Mod;  
 [DETOUR] E Mod; Arrow 6CAP-1L - 12.8" 45{;

Table of letter and object lefts.

S	a	n	d		
13.1	19.3	25.4	31.1		
C	a	n	y	o	n
7.2	13.6	19.7	25.2	31.2	37.0
R	o	a	d		
13.5	19.8	25.1	30.7		
D	E	T	O	U	R
6.5	12.8	18.2	23.8	30.4	36.7
↑					
18.7					

SC-B

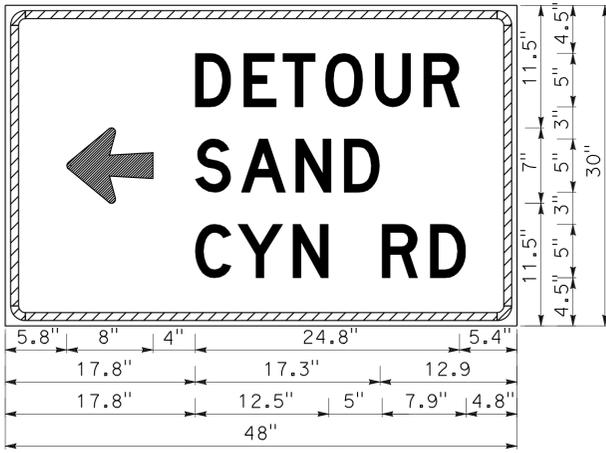


1.9" Radius, 0.8" Border, 0.5" Indent, Black on Fluorescent Orange;  
 [DETOUR] D; [SAND] D; [CYN RD] D;  
 Arrow 5CAP-1L - 8.1" 0{;

Table of letter and object lefts.

D	E	T	O	U	R	→
5.8	10.3	14.0	18.0	22.6	27.2	34.2
S	A	N	D			
5.8	10.1	15.2	19.7			
C	Y	N	R	D		
5.8	9.8	14.9	23.3	32.7	38.8	

SC-C

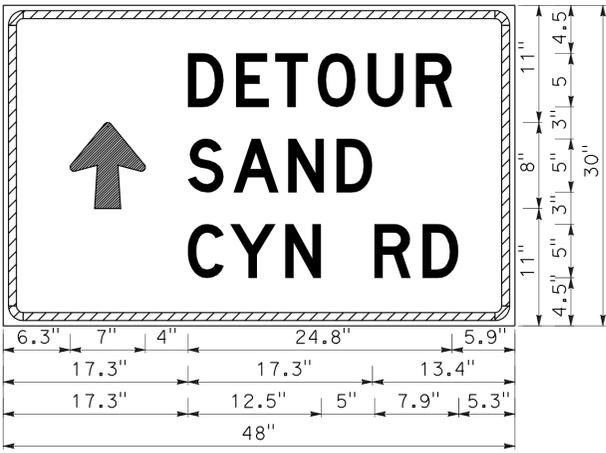


1.9" Radius, 0.8" Border, 0.5" Indent, Black on Fluorescent Orange;  
 Arrow 5CAP-1L - 8.1" 180{; [DETOUR] D; [SAND] D;  
 [CYN RD] D;

Table of letter and object lefts.

←	D	E	T	O	U	R
5.8	17.8	22.4	26.0	30.0	34.7	39.2
S	A	N	D			
17.8	22.1	27.2	31.8			
C	Y	N	R	D		
17.8	21.8	27.0	35.3	39.9		

SC-D



1.9" Radius, 0.8" Border, 0.5" Indent, Black on Fluorescent Orange;  
 Arrow 5CAP-1L - 8.1" 90{; [DETOUR] D; [SAND] D;  
 [CYN RD] D;

Table of letter and object lefts.

↑	D	E	T	O	U	R
6.3	17.3	21.9	25.5	29.5	34.2	38.7
S	A	N	D			
17.3	21.6	26.7	31.3			
C	Y	N	R	D		
17.3	21.3	26.5	34.8	39.4		

SC-E

**SIGN DETAILS**

**SD-2**

APPROVED FOR SIGN PLAN ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED QATAMI  
 GURMIT GILL: FAWZI YAGHMOUR  
 REVISIONS: REVISED BY: DATE REVISION: CALCULATED/DESIGNED BY: CHECKED BY:

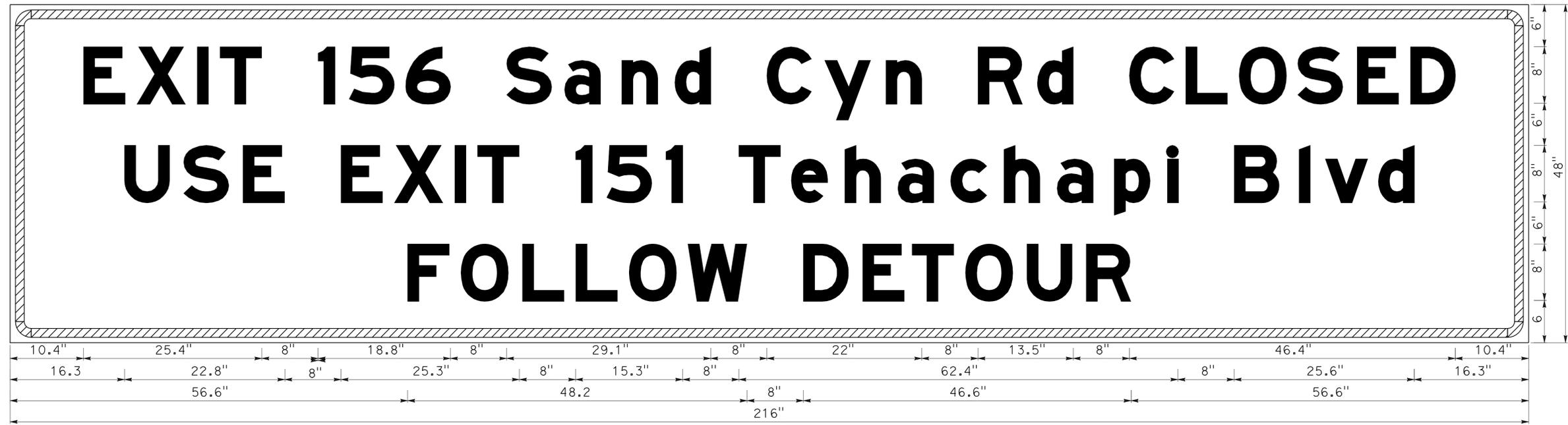
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	36	96

04-03-12  
 REGISTERED CIVIL ENGINEER DATE  
 6-18-12  
 PLANS APPROVAL DATE

FAWZI YAGHMOUR  
 No. C-54750  
 Exp. 12/31/13  
 CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED QATAMI  
 CALCULATED/DESIGNED BY: GURMIT GILL  
 CHECKED BY: FAWZI YAGHMOUR  
 REVISED BY: DATE  
 REVISED BY: DATE



3.0" Radius, 1.3" Border, 0.8" Indent, Black on Flourescent Orange;  
 [EXIT 156 Sand Cyn Rd CLOSED] E Mod; [USE EXIT 151 Tehachapi Blvd] E Mod; [FOLLOW DETOUR] E Mod;

Table of letter and object lefts.

E	X	I	T	1	5	6	S	a	n	d	C	y	n	R	d	C	L	O	S	E	D	
10.4	18.0	26.6	29.9	43.8	48.2	56.3	70.6	78.9	87.0	94.6	107.7	115.9	124.6	137.7	146.1	159.2	167.2	174.8	183.2	191.6	199.2	
U	S	E	E	X	I	T	1	5	1	T	e	h	a	c	h	a	p	i	B	I	v	d
16.3	24.7	33.1	47.1	54.7	63.2	66.5	80.4	84.9	93.3	103.7	111.1	118.7	126.3	133.8	141.4	148.9	157.1	164.6	174.1	183.4	187.1	194.6
F	O	L	L	O	W	D	E	T	O	U	R											
56.6	64.1	72.9	80.5	88.1	96.4	112.8	121.3	128.3	135.9	144.6	153.1											

SC-F LAMINATED 1" TYPE B

**SIGN DETAILS**  
**SD-3**

APPROVED FOR SIGN PLAN ONLY

LAST REVISION | DATE PLOTTED => 19-JUN-2012 | TIME PLOTTED => 14:28  
 04-03-12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	37	96

04-03-12  
 REGISTERED CIVIL ENGINEER DATE  
 6-18-12  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

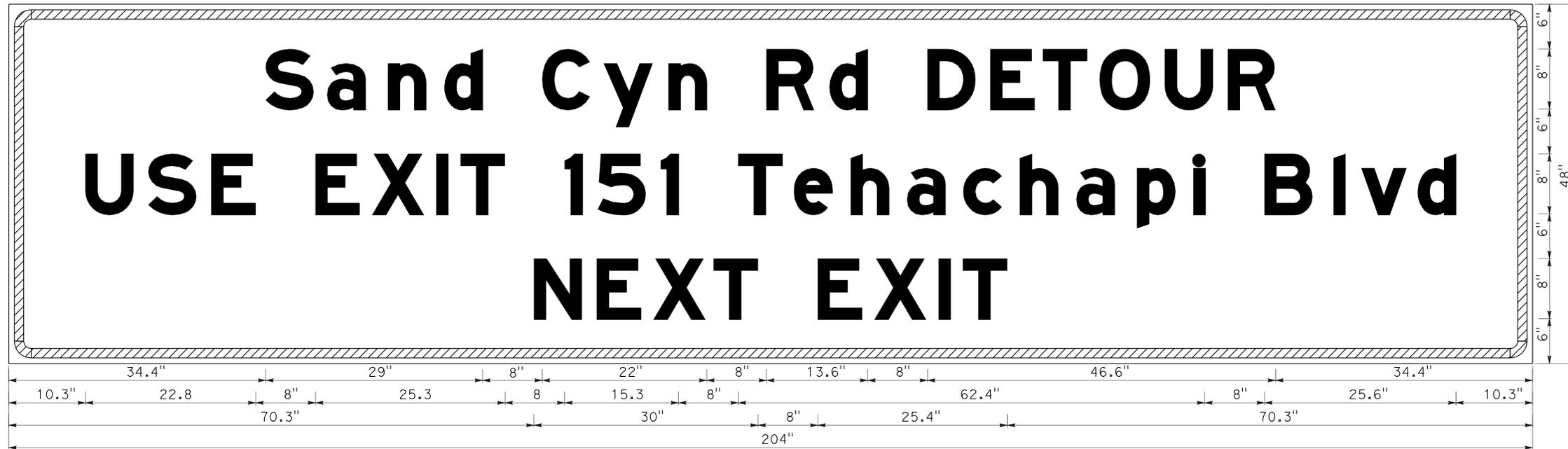


Table of letter and object lefts.

S	a	n	d	C	y	n	R	d	D	E	T	O	U	R								
34.4	42.6	50.8	58.3	71.4	79.7	88.3	101.4	109.9	123.0	131.4	138.5	146.0	154.8	163.2								
U	S	E	E	X	I	T	I	S	I	T	e	h	a	c	h	a	p	I	B	I	v	d
10.3	18.7	27.1	41.1	48.7	57.2	60.5	74.4	78.9	87.3	97.7	105.1	112.7	120.3	127.8	135.4	142.9	151.1	158.6	168.1	177.4	181.1	188.6
N	E	X	T	E	X	I	T															
70.3	78.7	86.3	94.4	108.3	115.9	124.5	127.7															

SC-G LAMINATED 1" TYPE B

**SIGN DETAILS**

**SD - 4**

APPROVED FOR SIGN PLAN ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED OATAMI  
 CALCULATED/DESIGNED BY: GURMIT GILL  
 CHECKED BY: FAWZI YAGHMOUR  
 REVISED BY: DATE  
 REVISED BY: DATE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	38	96

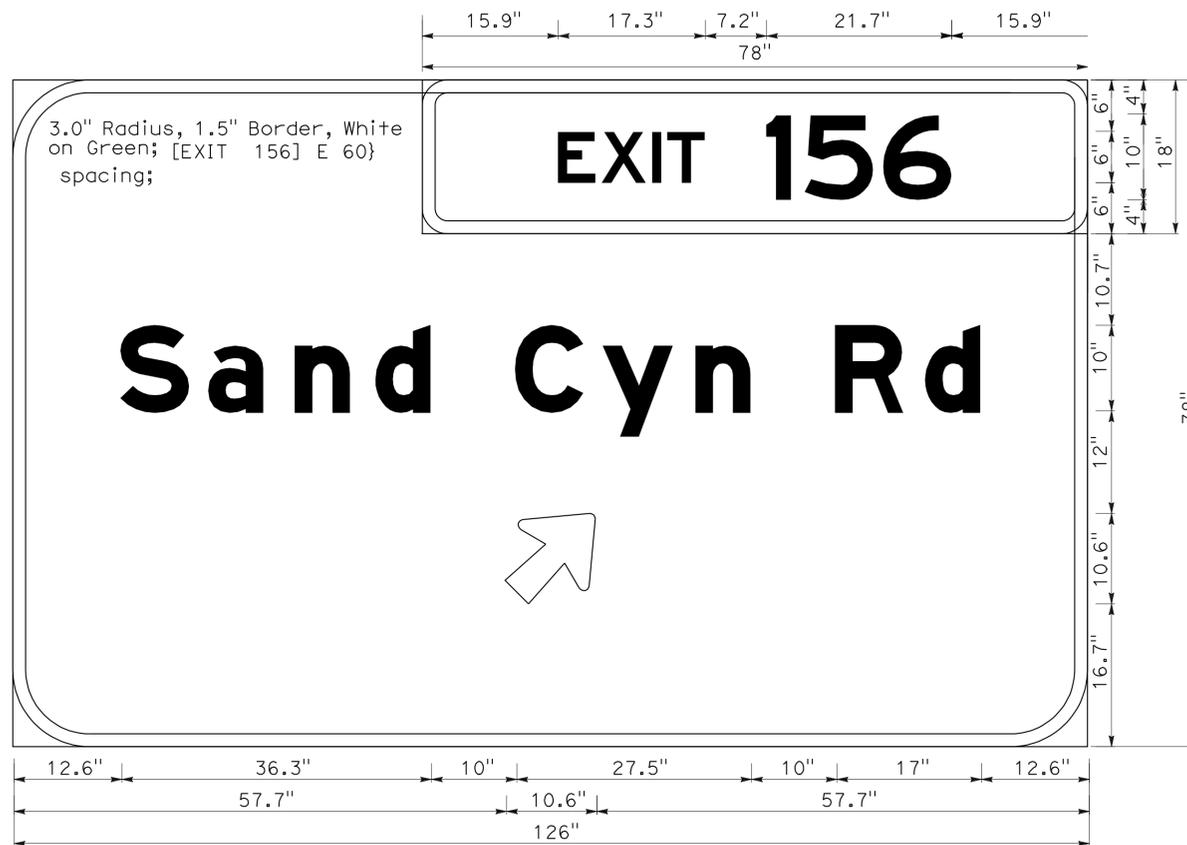
  

<i>[Signature]</i>	04-03-12
REGISTERED CIVIL ENGINEER	DATE
6-18-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER	
FAWZI YAGHMOUR	
No. C-54750	
Exp. 12/31/13	
CIVIL	

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



G85-11(CA); 9.0" Radius, 1.5" Border, White on Green;  
[Sand Cyn Rd] E Mod; Arrow 6CAP-1L - 12.8" 45{;

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	GURMIT GILL	REVISED BY
<b>Caltrans</b> TRAFFIC DESIGN	MOHAMMED OATAMI	CHECKED BY	FAWZI YAGHMOUR	DATE REVISED

APPROVED FOR SIGN PLAN ONLY

**SIGN DETAILS**

**SD-5**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	39	96

04-03-12  
REGISTERED CIVIL ENGINEER DATE

6-18-12  
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
**FAWZI YAGHMOUR**  
 No. C-54750  
 Exp. 12/31/13  
 CIVIL  
 STATE OF CALIFORNIA

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## ROADSIDE SIGN QUANTITIES

SHEET No.	SIGN No.	STATION	SIDE	SIGN CODE	No. OF POSTS & SIZE	PANEL SIZE	BACKGROUND		LEGEND		GRAFFITI FLOW		FURNISHED SINGLE SHEET ALUMINUM SIGN		ROADSIDE SIGN ONE POST	ROADSIDE SIGN TWO POST	REMOVE ROADSIDE SIGN	DESCRIPTION
							SHEETING COLOR	RETROREFLECTIVITY ASTM TYPE	LEGEND COLOR	RETROREFLECTIVITY ASTM TYPE	PREMIUM	STANDARD	(UNFRAMED) (0.063")	(FRAMED) (0.063")				
S-1	1	"ALN5" 10+30	R	R5-1 R5-1a	2- 6" x 6"	48" x 48" 42" x 30"	RED	VIII	WHITE	VIII	X	16 8.75		1			DO NOT ENTER WRONG WAY	
	2	"ALN5" 10+30	R	R5-1 R5-1a											1		DO NOT ENTER WRONG WAY	
	3	"ALN5" 10+30	L	R5-1 R5-1a	2- 6" x 6"	48" x 48" 42" x 30"	RED	VIII	WHITE	VIII	X	16 8.75		1			DO NOT ENTER WRONG WAY	
	4	"ALN5" 10+30	L	R5-1 R5-1a											1		DO NOT ENTER WRONG WAY	
	5, 6	"ALN6" 06+93	R	G92(CA) G28-2(CA) M6-2 M3-2											2			FREEWAY ENTRANCE SR 58 MARKER R+ OR L+ ARROW WEST
	7, 8	"ALN6" 06+93	R/L	G92(CA) G28-2(CA) M6-2 M3-2	1- 6" x 6"	36" x 24" 24" x 25" 21" x 15" 24" x 12"	GREEN GREEN GREEN GREEN	IV IV IV IV	WHITE WHITE WHITE WHITE	IV IV IV IV	X X X X		28.7	2				FREEWAY ENTRANCE SR 58 MARKER R+ OR L+ ARROW EAST
	9	"ALN4" 6+00	R	R1-1	1- 6" x 6"	48" x 48"	RED	VIII	WHITE	VIII	X		16	1			1	STOP
	10	"ALN4" 6+00	R	R1-1													1	STOP
	11,12	"ALN4" 6+75	R/L	R5-1 R5-1a												2		DO NOT ENTER WRONG WAY
	13,14	"ALN4" 6+75	R/L	R5-1 R5-1a	2- 6" x 6"	48" x 48" 42" x 30"	RED	VIII	WHITE	VIII	X	32 17.5		2			DO NOT ENTER WRONG WAY	
	15	"ALN4" 6+00	L	R1-1	1- 6" x 6"	48" x 48"	RED	VIII	WHITE	VIII	X	16		1			1	STOP
	16	"ALN4" 6+00	L	R1-1													1	STOP
	17, 18	"ALN3" 12+20	L/ R	G92(CA) G28-2(CA) M6-2 M3-4											2			FREEWAY ENTRANCE SR 58 MARKER R+ OR L+. ARROW EAST
	19, 20	"ALN3" 12+20	L/ R	G92(CA) G28-2(CA) M6-2 M3-4	1- 6" x 6"	36" x 24" 24" x 25" 21" x 15" 24" x 12"	GREEN GREEN GREEN GREEN	IV IV IV IV	WHITE WHITE WHITE WHITE	IV IV IV IV	X X X X		28.7	2				FREEWAY ENTRANCE SR 58 MARKER R+ OR L+ ARROW EAST
	21	"ALN4" 8+20	L	W3-1	1- 4" x 6"	48" x 48"	YELLOW	VIII	BLACK	VIII	X		16	1				STOP AHEAD
	22	"ALN4" 8+20	L	W3-1													1	STOP AHEAD
S-2	23	"ALN1" 174+00	L	G85-11(CA)	2- 6" x 8"	132" x 78"	GREEN	IV	WHITE	IV	X		68.25	1			Sand Cyn Rd	
	24	"ALN1" 174+00	L	G85-11(CA)												1		Sand Cyn Rd
<b>TOTAL</b>												204.4	68.2	7	5	12		

## SIGN QUANTITIES

### SQ-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	40	96

Anthony Barrios 3-12-12  
 REGISTERED CIVIL ENGINEER DATE

6-18-12  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

### METAL BEAM GUARD RAILING

SHEET No.	STATION	SIDE	MBGR (STEEL POST)	DOUBLE MBGR (STEEL POST)	TRANSITION RAILING (TYPE WB)	CRASH CUSHION (TYPE CAT)	REMOVE MBGR	END CAP (TYPE A)	TERMINAL SYSTEM (TYPE CAT) BACKUP
			LF	LF	EA	EA	LF	EA	EA
L-2	"ALN7" 157+39 TO "ALN7" 159+38	R+					200		
L-2	"ALN7" 157+23.15 TO "ALN7" 158+75	R+	25	57	1	1			1
L-2	"ALN7" 157+31.29 TO "ALN7" 157+56.29	L+					25		
L-2	"ALN7" 157+23.15 TO "ALN7" 157+48.15	L+			1				
L-2	"ALN7" 155+85.15 TO "ALN7" 156+10.15	L+	25				25	1	
TOTAL			50	57	2	1	250	1	1

### TEMPORARY WATER POLLUTION CONTROL QUANTITIES

STATION	SIDE	TEMPORARY FIBER ROLL	TEMPORARY CONSTRUCTION ENTRANCE	TEMPORARY COVER
		LF	EA	SQYD
"ALN3" 5+00 TO "ALN2" 4+50	L+	420	1	
"ALN2" 4+50 TO "ALN4" 15+00	R+, L+	500	1	
"ALN5" 9+75 TO "ALN5" 11+25	R+	450	1	
"ALN6" 6+50 TO "ALN6" 7+80	R+	360	1	
"ALN2" 1+05 TO "ALN2" 1+95	R+, L+	180		600
"ALN3R" 11+25 TO "ALN3R" 12+25	R+	100		
"ALN4R" 6+25 TO "ALN4R" 7+50	R+	125		
TOTAL		2135	4	600

### HMA DIKE

STATION	SIDE	PLACE HMA DIKE (TYPE E)	PLACE HMA DIKE (TYPE F)	HMA (TYPE A)	REMOVE AC DIKE
		LF	LF	TON	LF
"ALN7" 139+57 TO "ALN7" 142+94	L+	337		8.8	337
"ALN3" 5+10 TO "ALN3" 8+02	L+	292		7.6	292
"ALN3" 5+59 TO "ALN3" 12+24	R+	—		—	665
"ALN3" 5+59 TO "ALN3" 12+92	R+	741		19.5	—
"ALN4" 6+18 TO "ALN4" 15+45	R+	—		—	927
"ALN4" 5+65 TO "ALN4" 15+45	R+	1005		26.4	—
"ALN2" 0+39 TO "ALN2" 2+98.5	L+	260		6.8	260
"ALN2" 0+33 TO "ALN2" 2+82	R+	249		6.5	249
HMA APRON			8	0.06	
TOTAL		2884	8	75.66 *	2730

\* SEE ROADWAY QUANTITIES TABLE FOR TOTAL HMA QUANTITY.

### ROADWAY QUANTITIES

STATION	COLD PLANE AC PvmT	HMA (TYPE A)	SHOULDER BACKING	ROADWAY EXCAVATION	TACK COAT	
	SQYD	TON	TON	CY	TON	
"ALN7" 139+57 TO "ALN7" 142+94	492	83.0	—	—	0.23	
"ALN3" 2+22.70 TO "ALN3" 5+11.40	937	158.0	—	—	0.44	
"ALN3" 5+11.40 TO "ALN3" 5+51.40	98	13.2	—	—	0.05	
"ALN3" 5+51.40 TO "ALN3" 11+25	1390	234.6	3.9	—	0.65	
"ALN3" 11+25 TO "ALN4" 7+50 STAGE 1	1212	486.0	21.4	—	0.56	
"ALN3" 11+25 TO "ALN4" 7+50 STAGE 3	1212	191.5	—	9.0	0.56	
"ALN4" 7+50 TO "ALN4" 15+00	1845	311.2	8.7	—	0.86	
"ALN4" 15+00 TO "ALN4" 15+40	104	14.0	—	—	0.05	
"ALN4" 15+40 TO "ALN7" 172+00	1471	248.2	—	—	0.69	
"ALN2" 0+00 TO "ALN2" 3+28.5	1935	196.0	—	—	0.91	
HMA DIKE	—	75.66	—	—	—	
HMA APRON	—	3.0	—	—	—	
TOTAL		10,696	2014.36	34.0	9.0	5.00

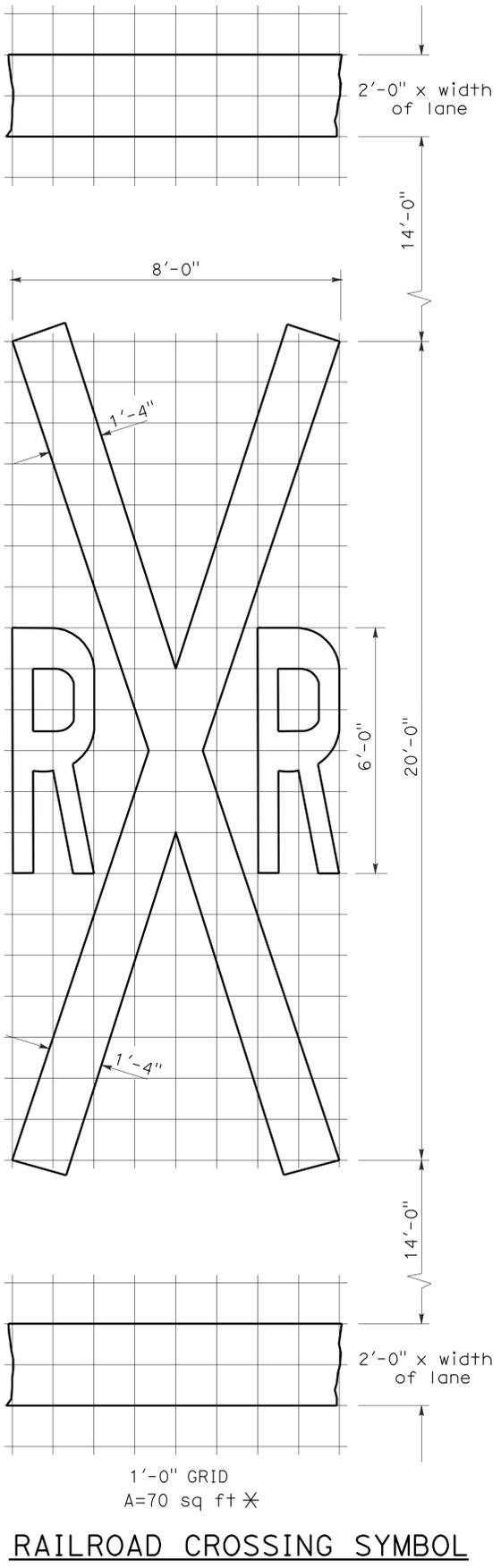
### SUMMARY OF QUANTITIES

Q-1

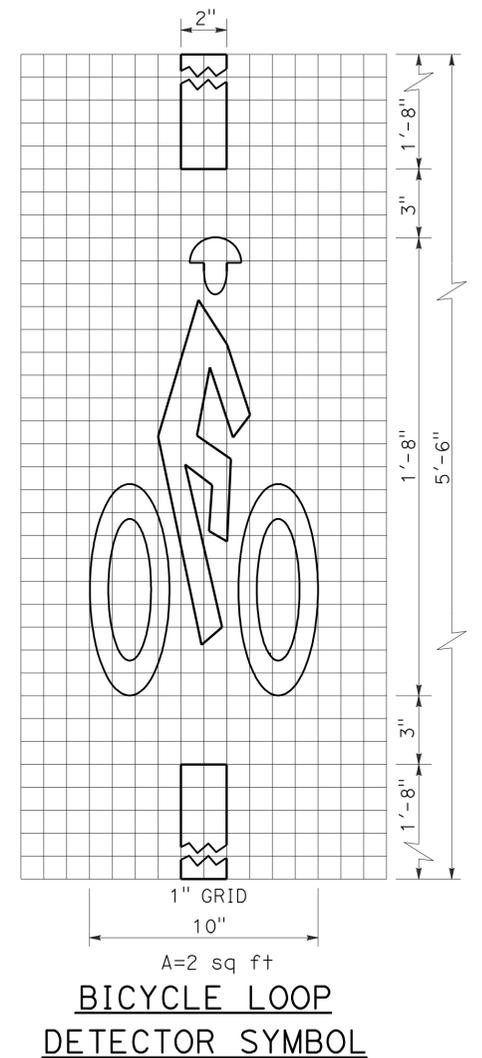
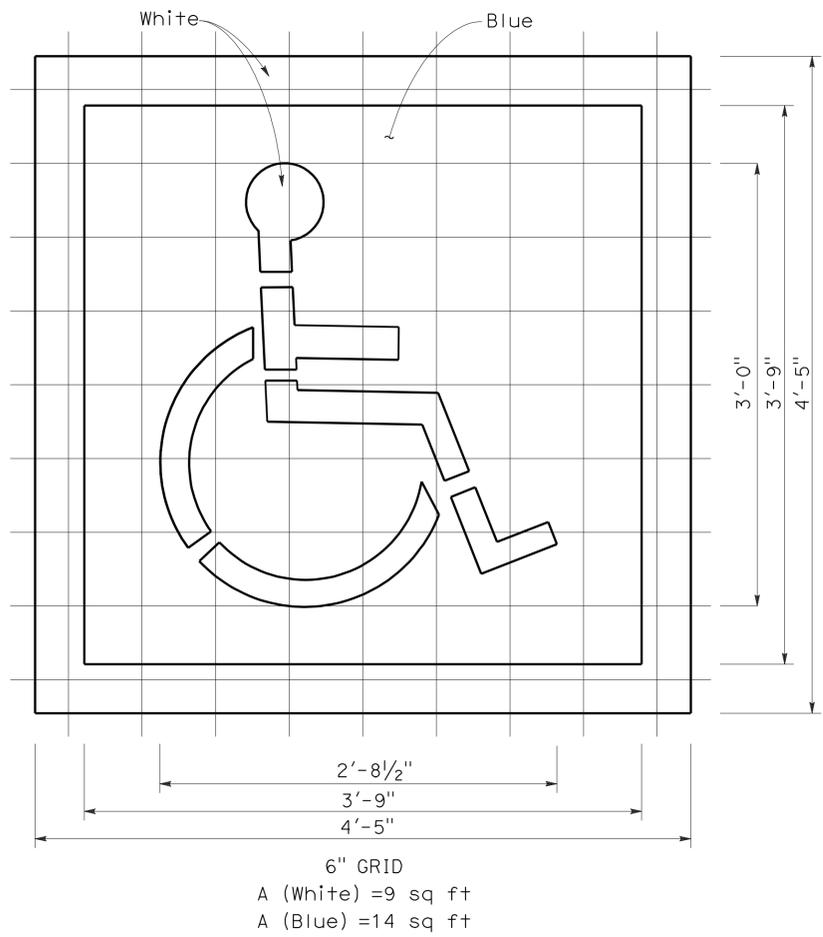
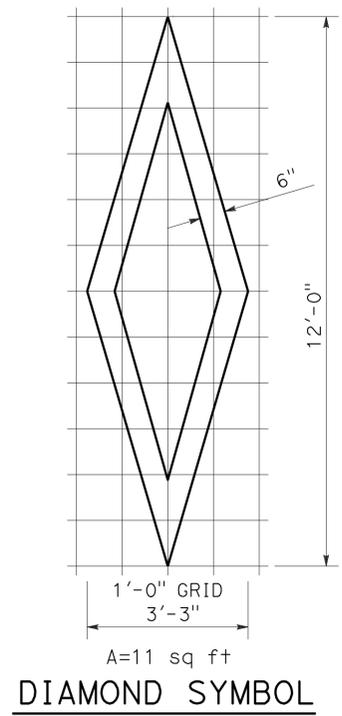
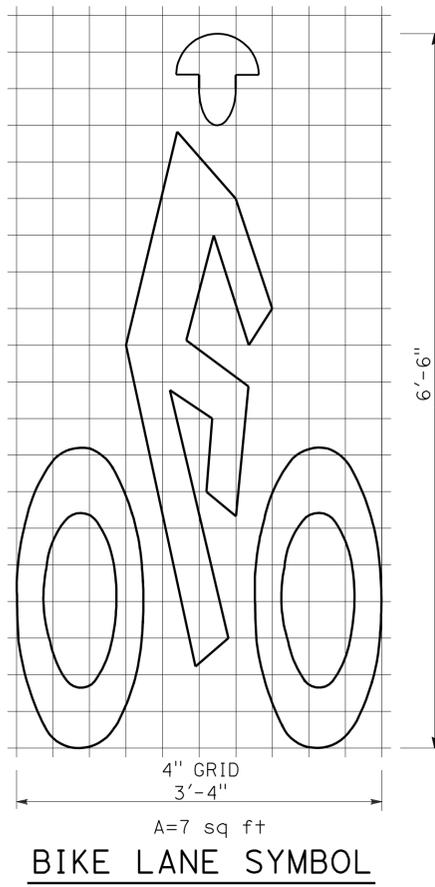
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 Caltrans  
 FUNCTIONAL SUPERVISOR: NICHOLAS CHAN  
 CALCULATED/DESIGNED BY: ANDREW GILL  
 CHECKED BY: ANTHONY BARRIOS  
 REVISIONS: Inderpal Gill, Anthony Barrios  
 REVISED BY: DATE REVISED



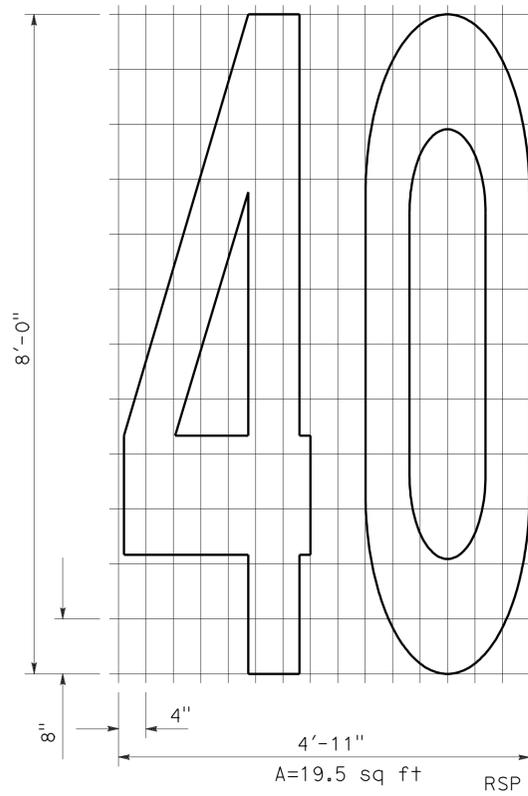
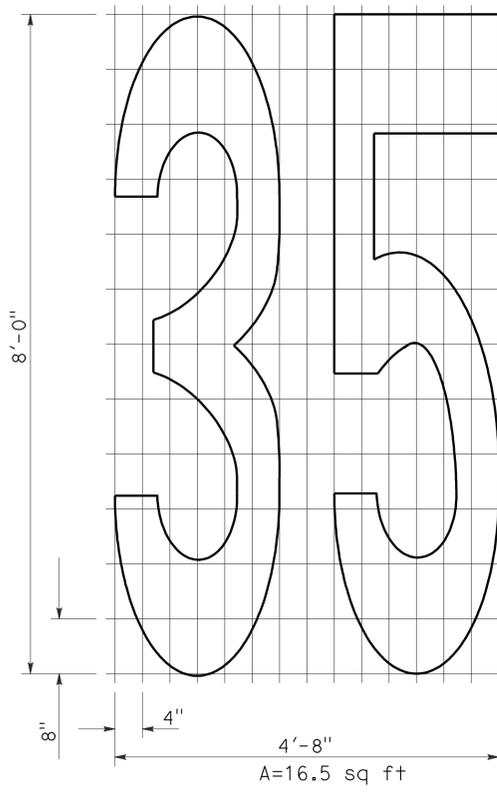
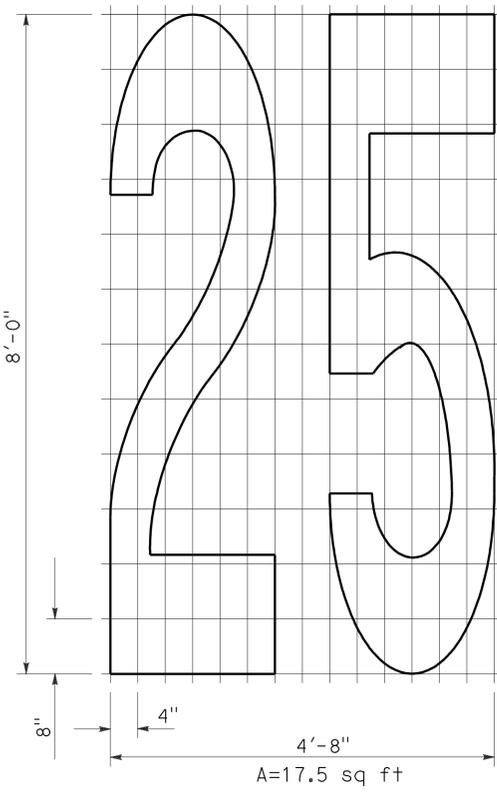
To accompany plans dated 6-18-12



\*70 sq ft DOES NOT INCLUDE THE 2'-0" x VARIABLE WIDTH TRANSVERSE LINES.



**NOTE:**  
 1. Minor variations in dimensions may be accepted by the Engineer.

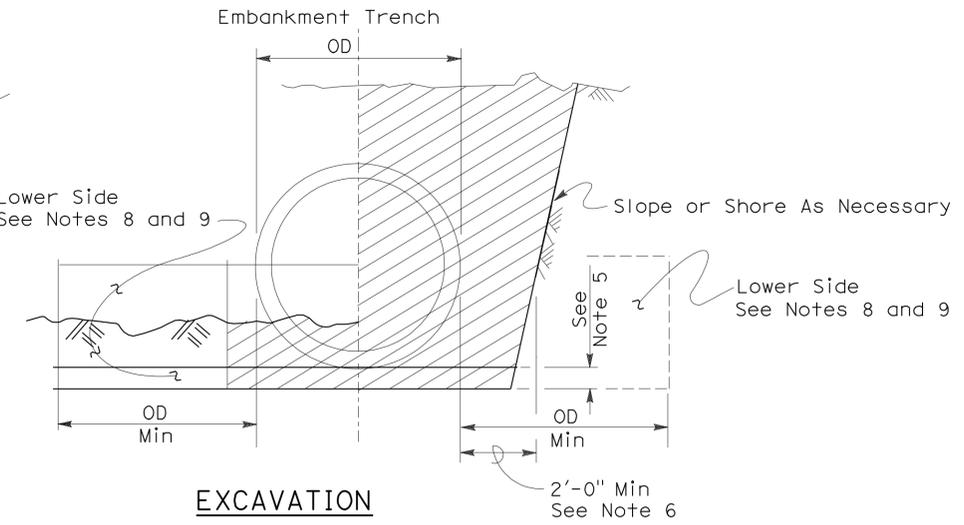
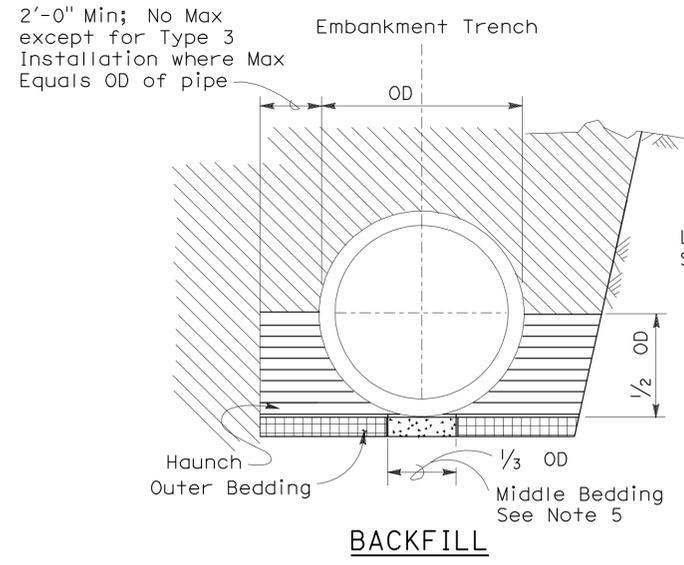


**NUMERALS**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS SYMBOLS AND NUMERALS**  
 NO SCALE

2006 REVISED STANDARD PLAN RSP A24C

To accompany plans dated 6-18-12



- |  |   |  |                                |
|--|---|--|--------------------------------|
|  | Roadway Embankment                      |  | Excavation Structure (Culvert) |
|  | Structure Backfill (Culvert) See Note 6 |  |                                |
|  | Structure Backfill (Culvert) See Note 6 |  |                                |
|  | Loose Backfill                          |  |                                |

**TYPE 1 INSTALLATION:**

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 30 and the maximum percentage passing the 75 μm sieve size shall be 12.

**TYPE 2 INSTALLATION:**

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 25.

**TYPE 3 INSTALLATION:**

The haunch and outer bedding shall be compacted to a minimum 85 percent relative compaction. 90 percent relative compaction will be required where the fill over the pipe is less than 4'-0" or 1/2 OD.

**NOTES:**

- Unless otherwise shown on the plans or specified in the special provision, the Contractor shall have the option of selecting the class of RCP and the type of installation to be used, provided the height of cover does not exceed the value shown for the RCP selected.  
Example: 24" RCP culvert with maximum cover of 19'-0" the options are:  
a) Class III or stronger with Installation Type 1.  
b) Class III Special or stronger with Installation Type 2.  
c) Class IV Special or stronger with Installation Type 3.  
Cover is defined as the maximum vertical distance from top of the pipe to finished grade within the length of any given culvert.
- The class of RCP and Installation Type selected shall be the same throughout the length of any given culvert.
- The "length of any culvert" is defined as the culvert between:  
a) Successive drainage structure (inlets, junction boxes, headwalls, etc.).  
b) A drainage structure and the inlet or outlet end of the culvert.  
c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
- Oval and arch shaped RCP shall not be used.
- 1/25 OD Min, not less than 3".
- Slurry cement backfill may be substituted for backfill in the outer bedding and haunch areas. If slurry is used the outer and middle beddings shall be omitted. Prior to installation the soil under the middle 1/3 of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of 1/25 OD, but not less than 3". Where slurry cement backfill is used clear distance to trench wall may be reduced as set forth in Section 19-3.062 of the Standard Specifications.
- Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimums.
- Lower side shall be suitable material as determined by the Engineer. Otherwise it shall be considered unsuitable as set forth in Section 19-2.02 of the Standard Specifications. See Note 9.
- Where the pipe is placed in a trench, if the trench walls are sloped at 5 vertical to 1 horizontal or steeper for at least 90 percent of the trench height or up to not less than 12" from the grading plane, the firmness of the soil in the lower side need not be considered.
- Non-reinforced precast concrete pipe sizes 3'-0" or smaller may be placed under installation Types 1, 2 or 3.

**INSTALLATION TYPE 1**

MINIMUM CLASS AND D-LOAD	COVER	
	108" Dia AND SMALLER	OVER 108" Dia
Class II 1000D	14.9'	12.9'
Class III 1350D	15.0' - 20.9'	13.0' - 18.9'
Class III Special 1700D	21.0' - 26.9'	19.0' - 24.9'
Class IV 2000D	27.0' - 31.9'	25.0' - 29.9'
Class IV Special 2500D	32.0' - 40.9'	30.0' - 38.9'
Class V 3000D	41.0' - 49.9'	39.0' - 46.9'
Class V Special 3600D	50.0' - 59.0'	47.0' - 58.0'

**INSTALLATION TYPE 2**

MINIMUM CLASS AND D-LOAD	COVER
Class II 1000D	9.9'
Class III 1350D	10.0' - 14.9'
Class III Special 1700D	15.0' - 19.9'
Class IV 2000D	20.0' - 24.9'
Class IV Special 2500D	25.0' - 31.9'
Class V 3000D	32.0' - 38.9'
Class V Special 3600D	39.0' - 47.0'

**INSTALLATION TYPE 3**

MINIMUM CLASS AND D-LOAD	COVER	
	48" Dia AND SMALLER	OVER 48" Dia
Class II 1000D	7.9'	5.9'
Class III 1350D	8.0' - 10.9'	6.0' - 8.9'
Class III Special 1700D	11.0' - 14.9'	9.0' - 12.9'
Class IV 2000D	15.0' - 17.9'	13.0' - 15.9'
Class IV Special 2500D	18.0' - 21.9'	16.0' - 19.9'
Class V 3000D	22.0' - 26.9'	20.0' - 24.9'
Class V Special 3600D	30.0' - 33.0'	25.0' - 31.0'

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**EXCAVATION AND BACKFILL  
CONCRETE PIPE CULVERTS**

NO SCALE

RSP A62DA DATED NOVEMBER 17, 2006 SUPERSEDES STANDARD PLAN A62DA DATED MAY 1, 2006 - PAGE 20 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A62DA

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	44	96

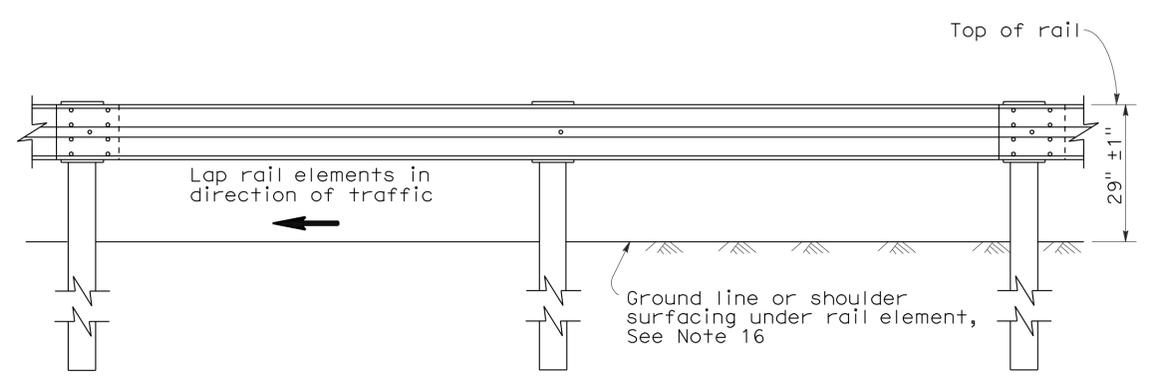
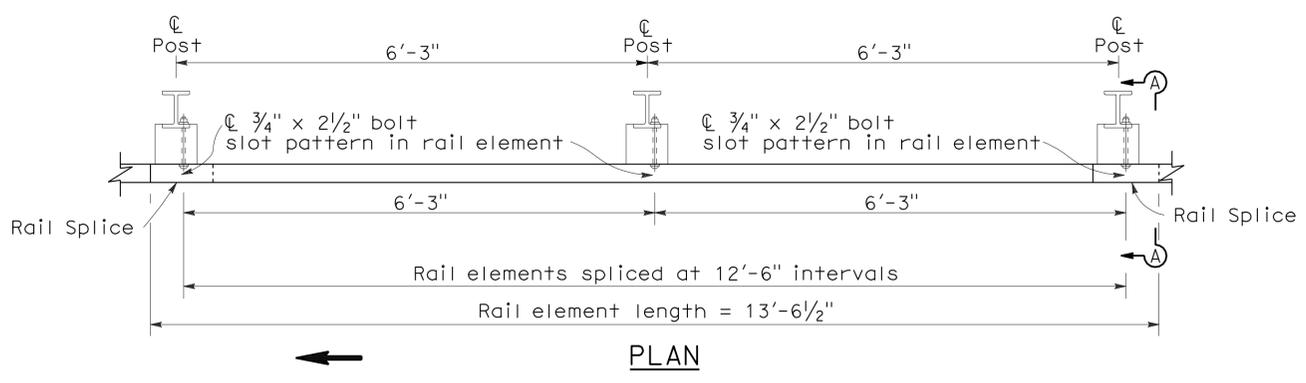
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

May 20, 2011  
PLANS APPROVAL DATE

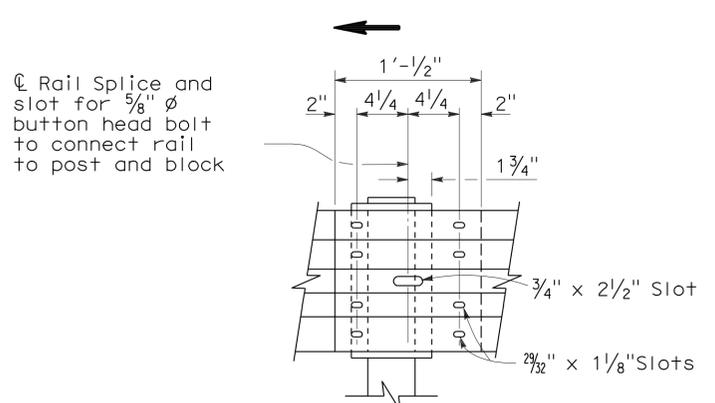
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To accompany plans dated 6-18-12

2006 REVISED STANDARD PLAN RSP A77A2

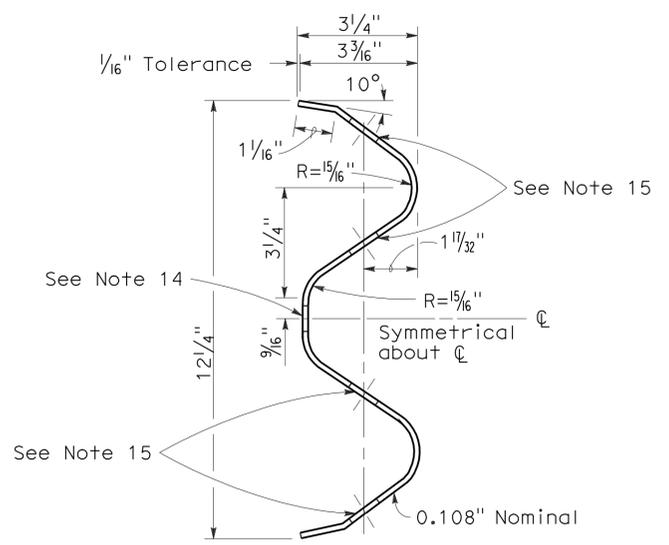


**METAL BEAM GUARD RAILING WITH STEEL POSTS AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS**

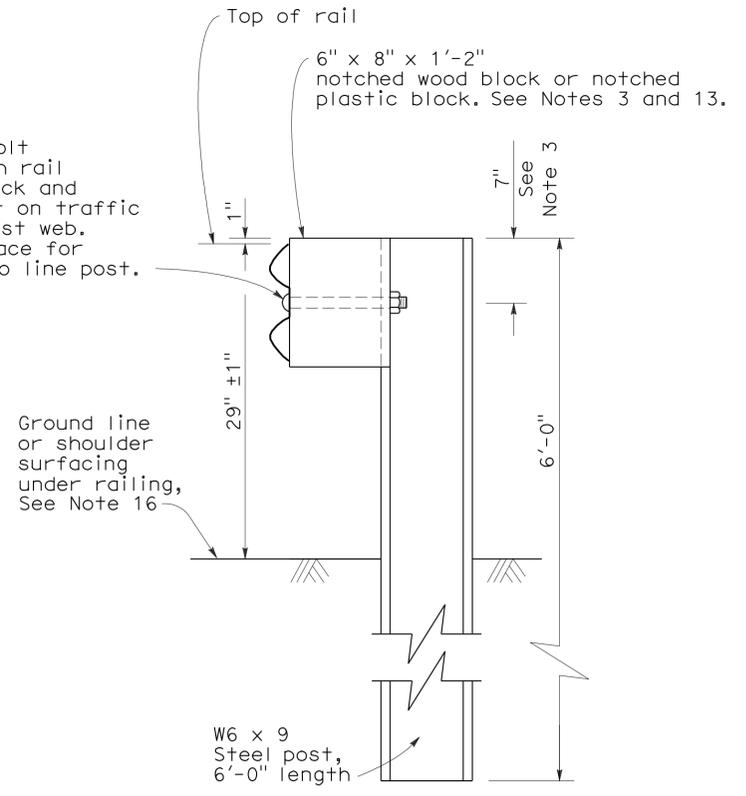


**ELEVATION RAIL ELEMENT SPLICE DETAIL**

- Connect the over lapped end of the rail elements with  $\frac{5}{8}$ "  $\phi$  x  $1\frac{3}{8}$ " button head oval shoulder splice bolts inserted into the  $\frac{29}{32}$ " x  $1\frac{1}{8}$ " slots and bolted together with  $\frac{5}{8}$ "  $\phi$  recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



**SECTION THRU RAIL ELEMENT**



**SECTION A-A TYPICAL STEEL LINE POST INSTALLATION**

See Note 4

**NOTES:**

- For details of wood post installations, see Standard Plan A77A1.
- For details of standard hardware used to construct guard railing, see Standard Plan A77B1.
- For details of steel posts and notched wood blocks used to construct guard railing, see Standard Plan A77C2.
- For additional installation details, see Standard Plan A77C3.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- For guard railing typical layouts, see the A77E, A77F and A77G Series of Standard Plans.
- For terminal system end treatment details, see the A77L Series of Standard Plans. To connect railing to terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
- For guard railing end anchor details, see Standard Plans A77H1 and A77I2.
- For details of guard railing transition to bridge railing, see Standard Plan A77J4.
- For additional details of guard railing connection to bridge railings, see Standard Plans A77J1, A77J2 and A77K1.
- For dike positioning and guard railing delineation details, see Standard Plan A77C4.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- Notched face of block faces steel post.
- Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
- Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
- Install posts in soil.

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DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING STANDARD RAILING SECTION (STEEL POST WITH NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCK)**

NO SCALE

To accompany plans dated 6-18-12

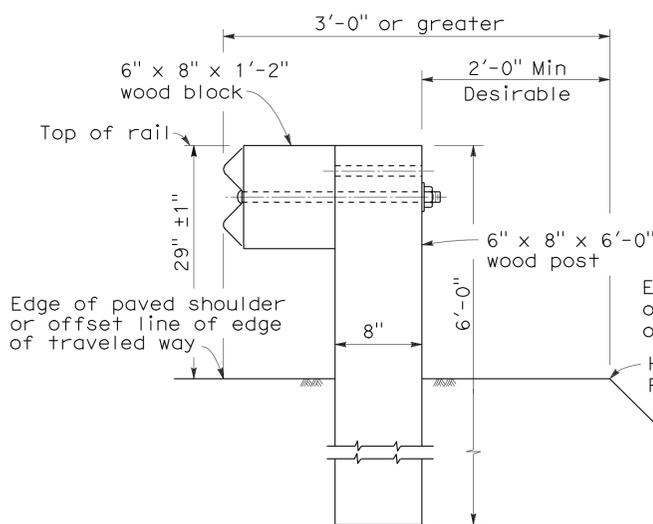
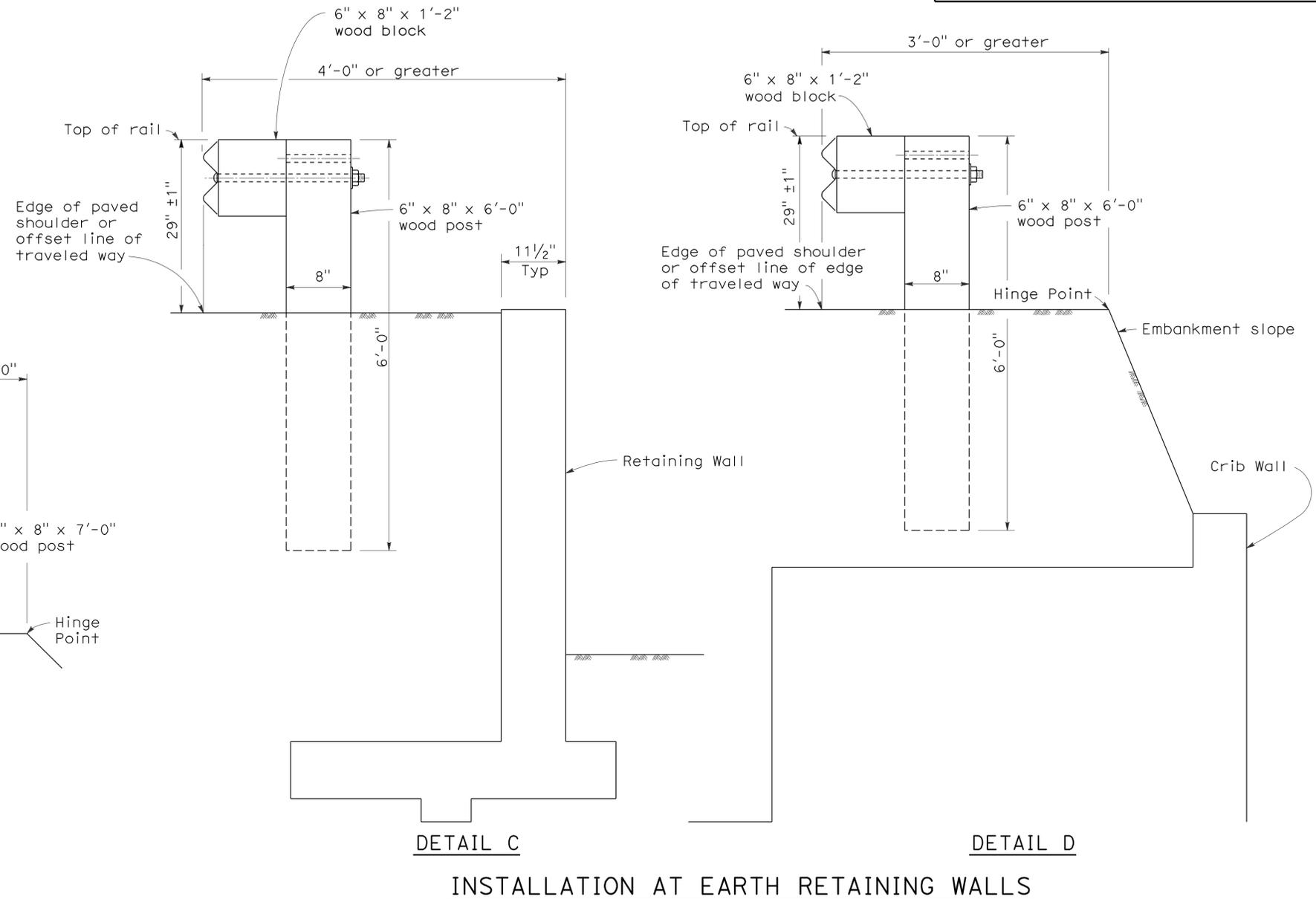
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	45	96

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REGISTERED CIVIL ENGINEER

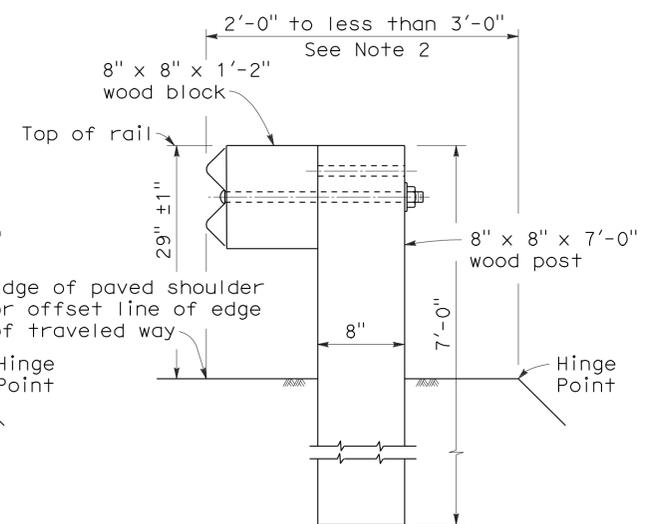
May 20, 2011  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-11  
CIVIL  
STATE OF CALIFORNIA

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**DETAIL A**  
**TYPICAL ROADWAY**  
**INSTALLATION**  
See Note 1



**DETAIL B**  
**NARROW ROADWAY**  
**INSTALLATION**  
See Note 1

**POST EMBEDMENT**

**DETAIL C**  
**INSTALLATION AT EARTH RETAINING WALLS**  
**DETAIL D**

**NOTES:**

1. These installation details also applicable to steel line post installations. For Detail A, C, and D, where steel line post installations are constructed, W6 x 9 steel post, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For Detail B, where steel line post installations are constructed, W6 x 9 steel post, 7'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For additional installation details, see Standard Plans A77A1 and A77A2.
2. Where the distance between the face of the rail and the hinge point is less than 2'-0", see the Project Plans for special details.
3. For dike positioning with guard railing installations, see Standard Plan A77C4.

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DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING**  
**TYPICAL LINE POST**  
**EMBEDMENT AND**  
**HINGE POINT OFFSET DETAILS**

NO SCALE

RSP A77C3 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77C3  
DATED MAY 1, 2006 - PAGE 46 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77C3**

2006 REVISED STANDARD PLAN RSP A77C3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	46	96

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REGISTERED CIVIL ENGINEER

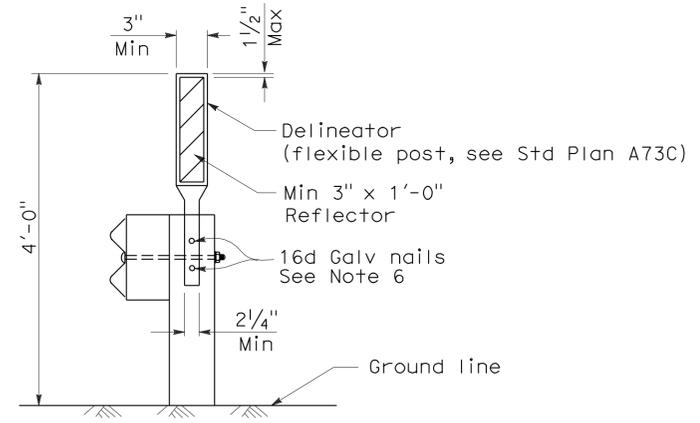
May 20, 2011  
PLANS APPROVAL DATE

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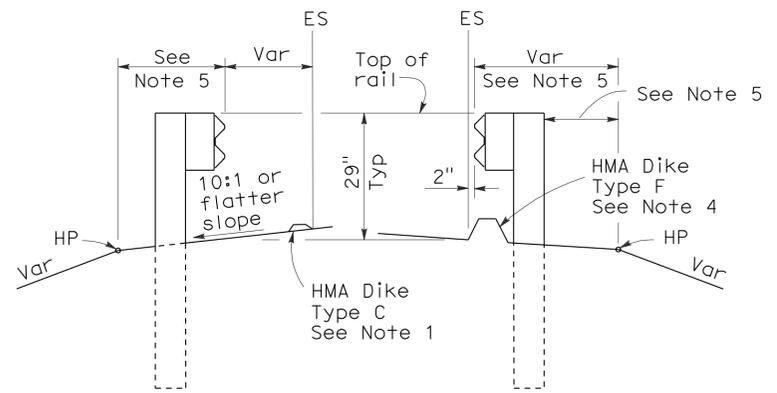
To accompany plans dated 6-18-12

**NOTES:**

1. When necessary to place dike in front of face of guard railing, only Type C dike may be used. For dike details, see Standard Plan A87B.
2. For standard railing post embedment, see Standard Plans A77C3.
3. Guard railing delineation to be used where shown on the Project Plans.
4. When dike or curb is placed under guard railing, the maximum height of the dike or curb shall be 4". Mountable dike should not be used. For dike and curb details, see Standard Plans A87A and A87B.
5. For details of typical distance between the face of rail and hinge point, see Standard Plan A77C3.
6. For steel line posts, use 1/4" - 20 self-tapping screws in 0.22" diameter holes or 1/4" bolts in 3/32" diameter holes.



**GUARD RAILING DELINEATION**  
See Note 3



**DIKE POSITIONING**  
See Note 1

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL RAILING DELINEATION  
AND DIKE POSITIONING DETAILS**

NO SCALE

RSP A77C4 DATED MAY 20, 2011 SUPERSEDES RSP A77C4 DATED JUNE 6, 2008 AND STANDARD PLAN A77C4 DATED MAY 1, 2006 - PAGE 47 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77C4**

2006 REVISED STANDARD PLAN RSP A77C4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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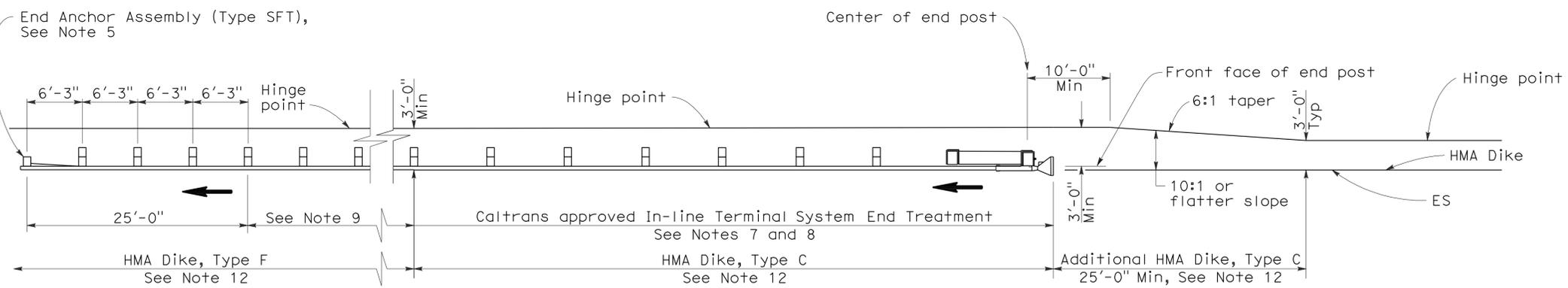
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REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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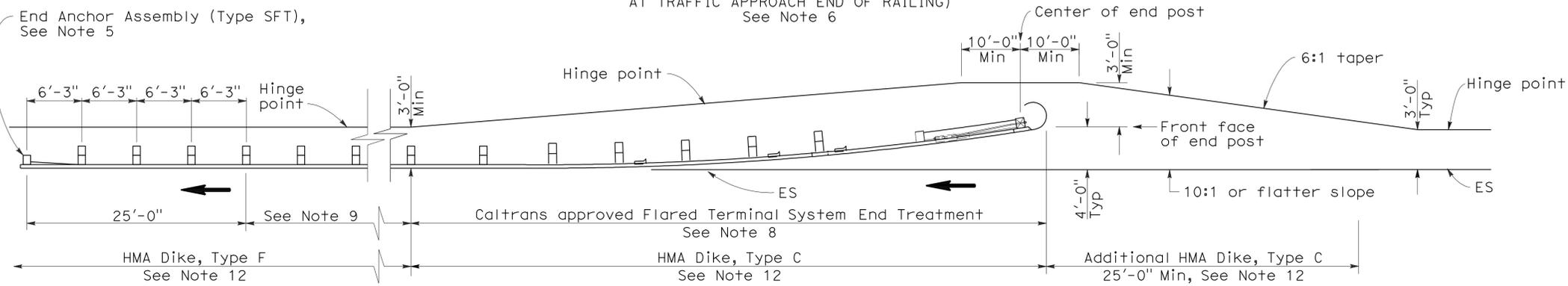
To accompany plans dated 6-18-12

2006 REVISED STANDARD PLAN RSP A77E1



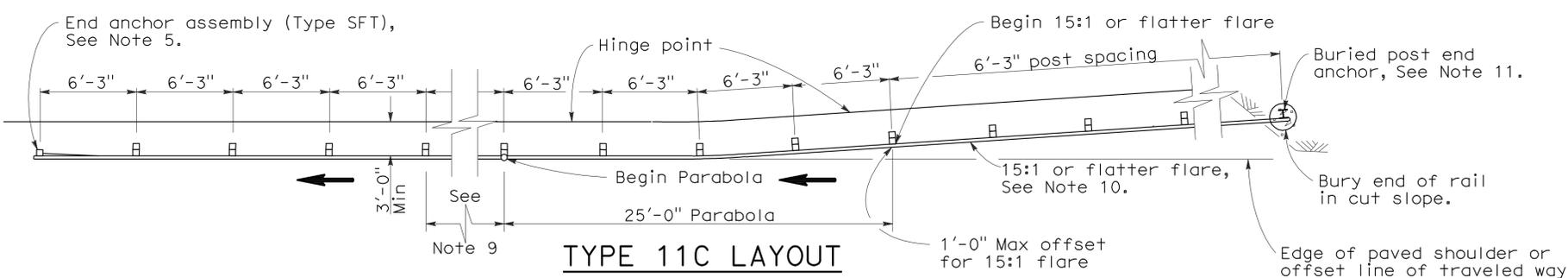
**TYPE 11A LAYOUT**

(EMBANKMENT GUARD INSTALLATION WITH IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Note 6



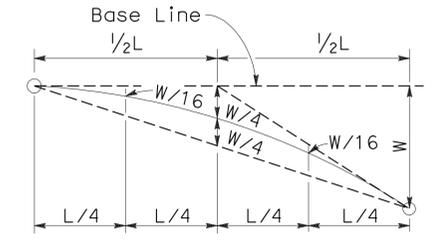
**TYPE 11B LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Note 6

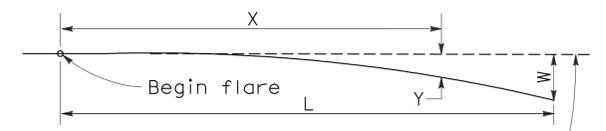


**TYPE 11C LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 6 and 12



**TYPICAL PARABOLIC LAYOUT**

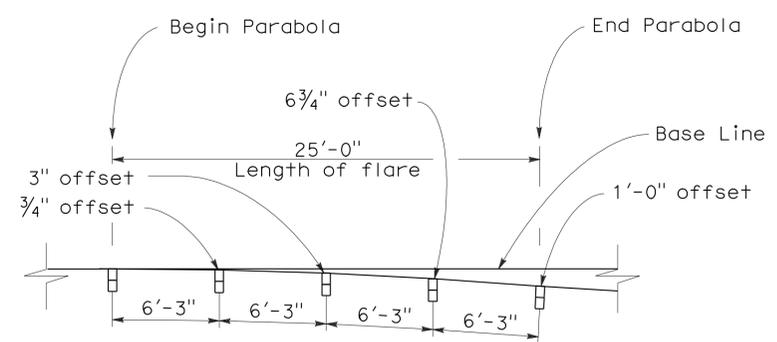


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

$Y = \frac{WX^2}{L^2}$

Y = Offset from base line  
W = Maximum offset  
X = Distance along base line  
L = Length of flare

**PARABOLIC FLARE OFFSETS**



**TYPICAL FLARE OFFSETS FOR 1 FOOT MAX END OFFSET**

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1, and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- Layout Types 11A, 11B or 11C are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for only one direction of traffic.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11C Layout, see Standard Plan A77I2.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**

NO SCALE

RSP A77E1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E1  
DATED MAY 1, 2006 - PAGE 48 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E1**

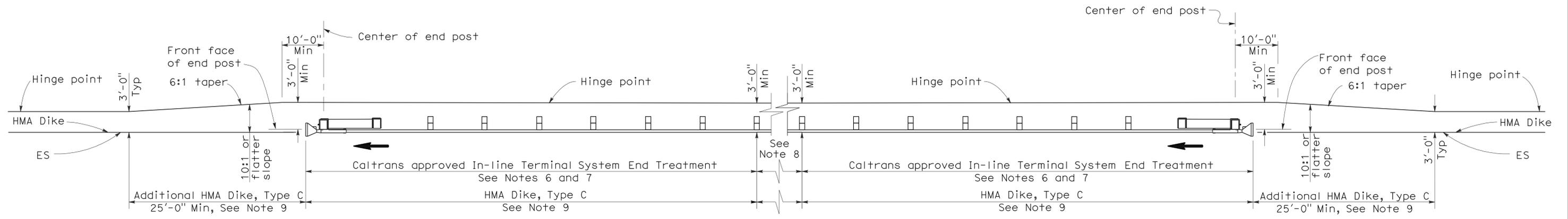
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	48	96

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

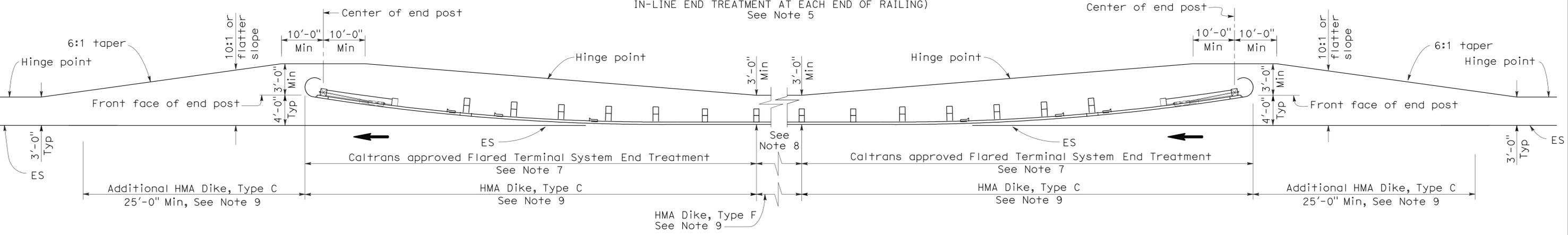
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To accompany plans dated 6-18-12



**TYPE 11D LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH IN-LINE END TREATMENT AT EACH END OF RAILING)  
See Note 5



**TYPE 11E LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AT EACH END OF RAILING)  
See Note 5

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by
- Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**

NO SCALE  
RSP A77E2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E2  
DATED MAY 1, 2006 - PAGE 49 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77E2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	49	96

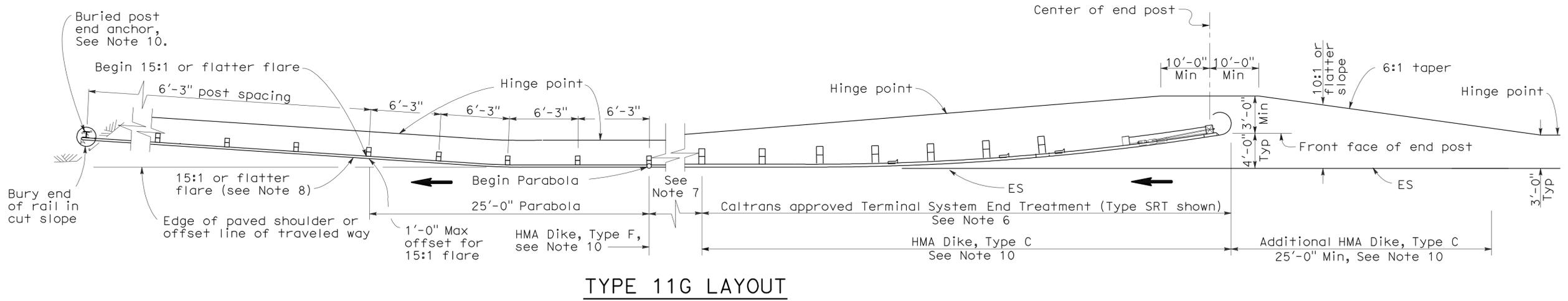
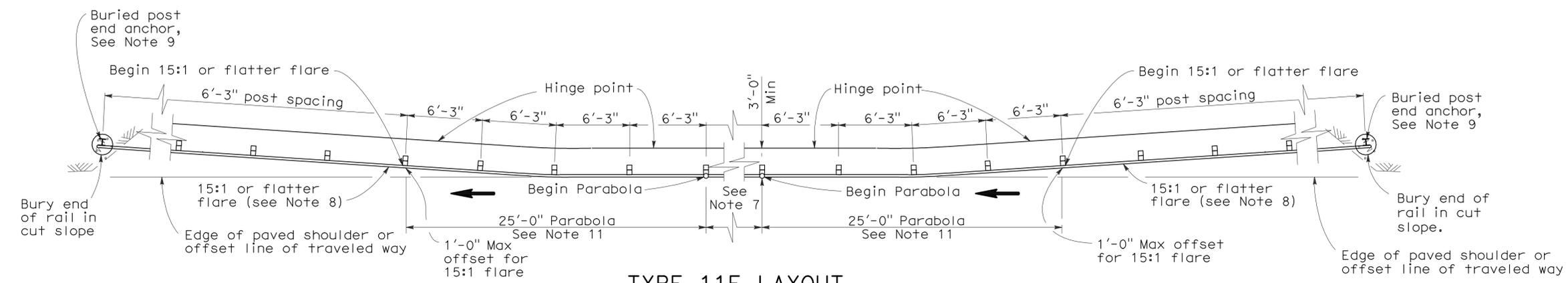
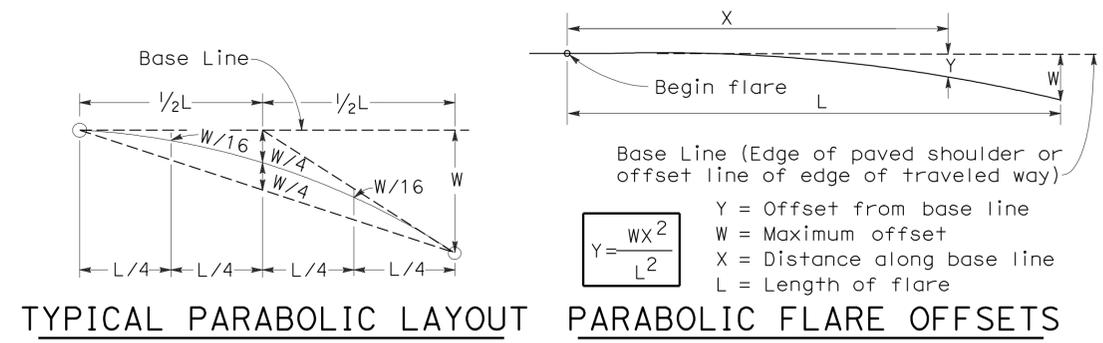
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 6-18-12



**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11F and 11G Layouts, see Standard Plan A77I2.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**

NO SCALE

RSP A77E3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E3  
DATED MAY 1, 2006 - PAGE 50 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E3**

2006 REVISED STANDARD PLAN RSP A77E3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	50	96

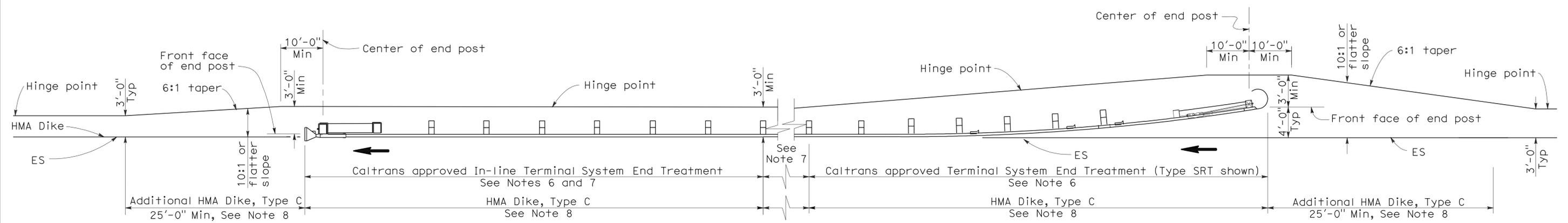
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-09  
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STATE OF CALIFORNIA

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To accompany plans dated 6-18-12



**TYPE 11H LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AND AN IN-LINE TREATMENT AT THE ENDS OF RAILING)  
See Notes 5 and 8

**NOTES:**

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Direction of adjacent traffic indicated by →.
5. Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
6. The type of terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**  
NO SCALE

RSP A77E4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E4  
DATED MAY 1, 2006 - PAGE 51 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E4**

2006 REVISED STANDARD PLAN RSP A77E4

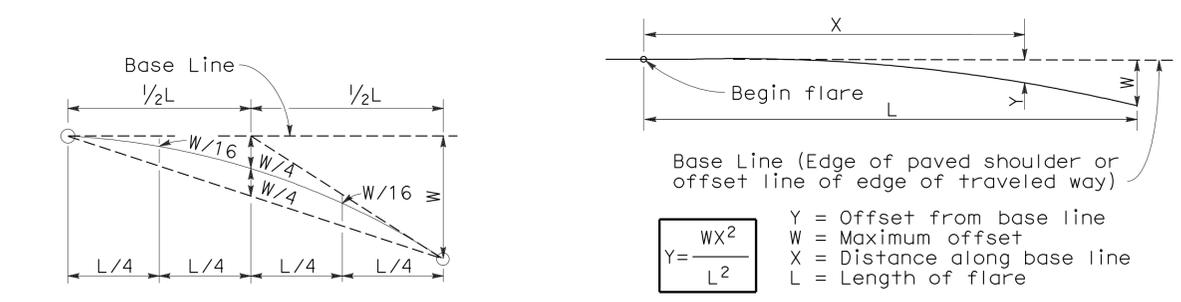
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	51	96

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

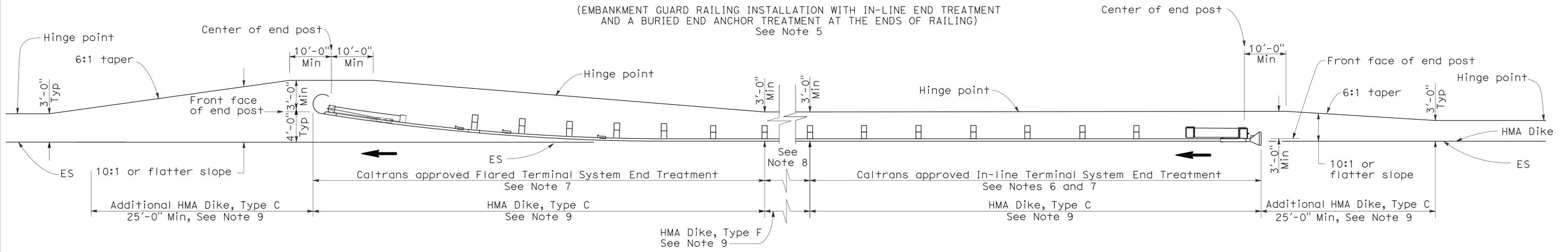
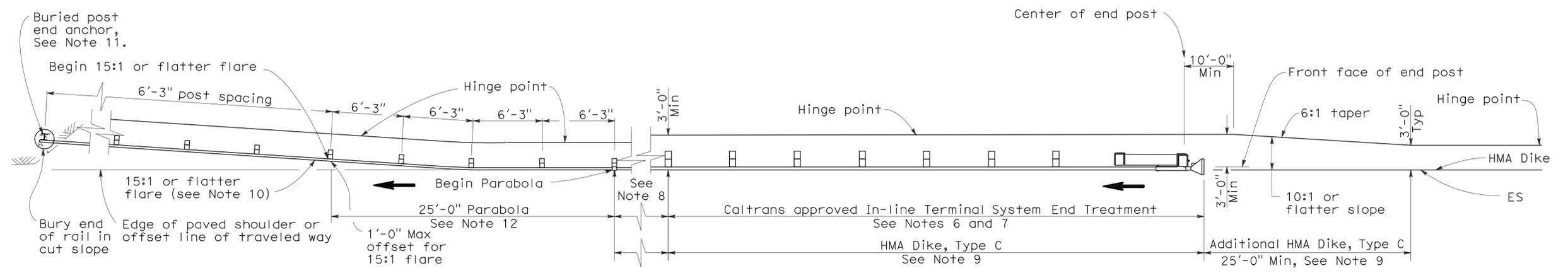
June 6, 2008  
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA



To accompany plans dated 6-18-12



**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11I Layout, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**

NO SCALE

RSP A77E5 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E5  
DATED MAY 1, 2006 - PAGE 52 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77E5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	52	96

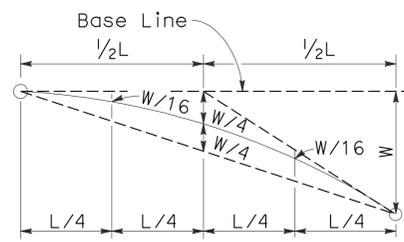
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

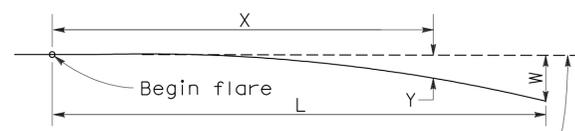
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Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 6-18-12



**TYPICAL PARABOLIC LAYOUT**

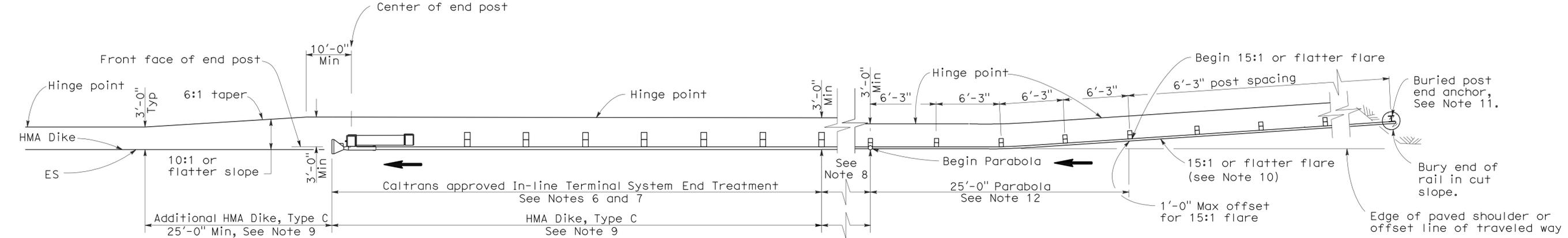


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

$Y = \frac{WX^2}{L^2}$

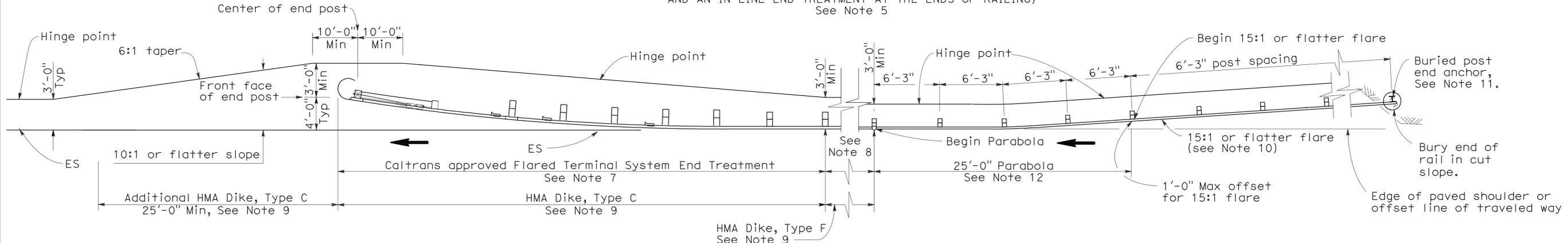
Y = Offset from base line  
W = Maximum offset  
X = Distance along base line  
L = Length of flare

**PARABOLIC FLARE OFFSETS**



**TYPE 11K LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH A BURIED END ANCHOR TREATMENT AND AN IN-LINE END TREATMENT AT THE ENDS OF RAILING)  
See Note 5



**TYPE 11L LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH A BURIED END ANCHOR TREATMENT AND A FLARED END TREATMENT AT THE ENDS OF RAILING)  
See Note 5

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by →.
- Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11K and 11L Layouts, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**

NO SCALE

RSP A77E6 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E6  
DATED MAY 1, 2006 - PAGE 53 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E6**

2006 REVISED STANDARD PLAN RSP A77E6

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	53	96

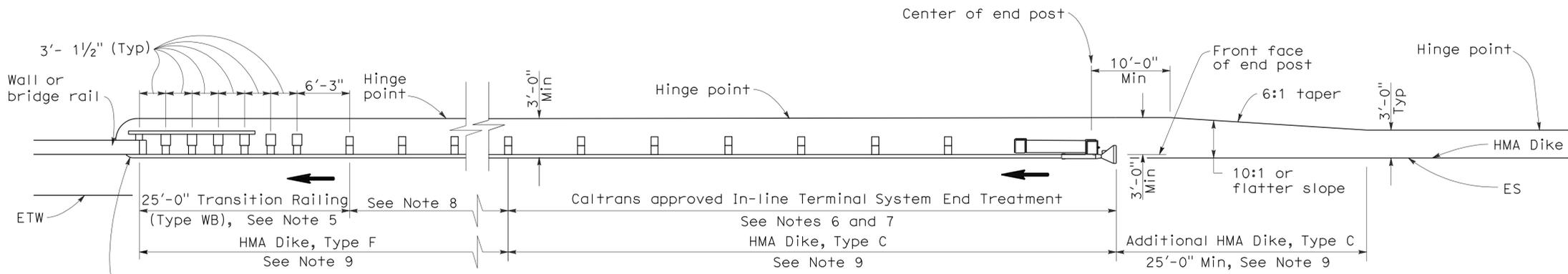
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

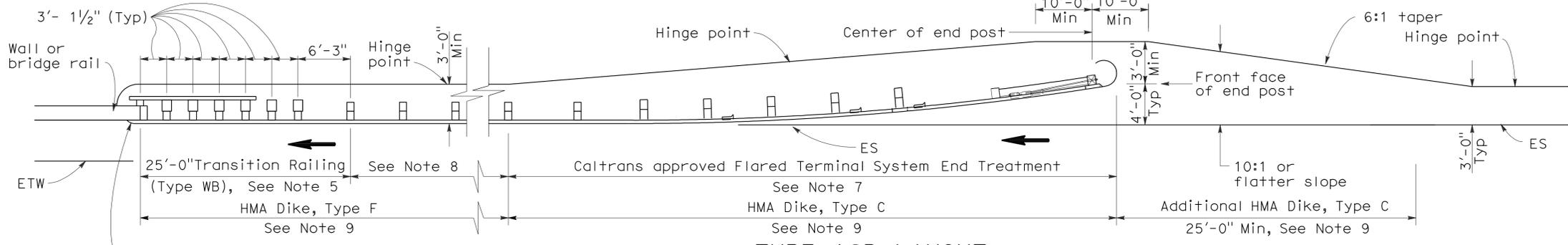
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To accompany plans dated 6-18-12



**TYPE 12A LAYOUT**

(GUARD RAILING INSTALLATION AT STRUCTURE APPROACH WITH AN IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 10



**TYPE 12B LAYOUT**

(GUARD RAILING INSTALLATION AT STRUCTURE APPROACH WITH A FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 10

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For Transition Railing (Type WB) details for Types 12A and 12B Layouts, see Standard Plan A77J4.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatment.

- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- Type 12A or Type 12B Layouts are typically used:
  - To the right of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the left of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
  - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Revised Standard Plan RSP A77F3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.

- For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77J1 and RSP A77J2 and Connection Detail FF on Standard Plans A77K1 and A77K2.
- For additional details of a typical connection to walls or abutments, see Standard Plan A77J3.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
STRUCTURE APPROACH**

NO SCALE

RSP A77F1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77F1  
DATED MAY 1, 2006 - PAGE 54 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77F1

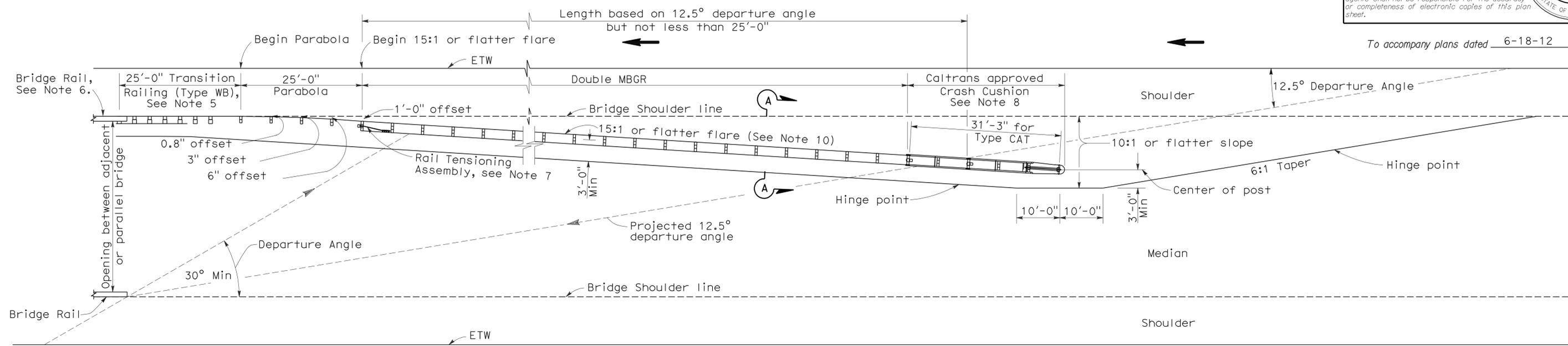
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	54	96

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

May 20, 2011  
PLANS APPROVAL DATE

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Exp. 6-30-11  
CIVIL  
STATE OF CALIFORNIA

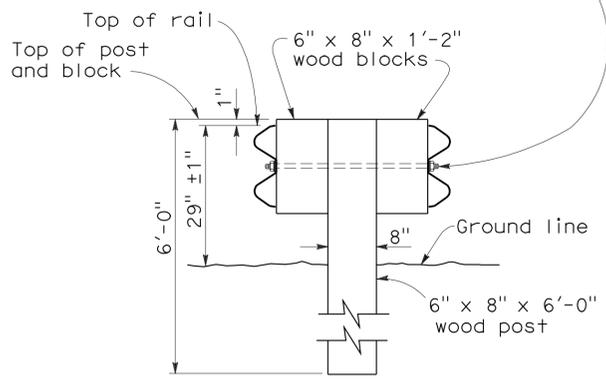


To accompany plans dated 6-18-12

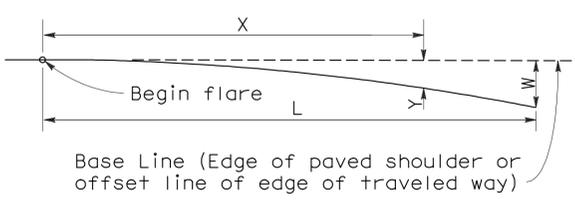
**TYPE 12E LAYOUT**

See Note 10

5/8" Ø Button head bolt with hex nut or 5/8" Ø Rod, threaded both ends, with hex nuts. 1/2" Max exposed threads after hex nut(s) tightened. No washer on rail faces for bolted connection to line post.



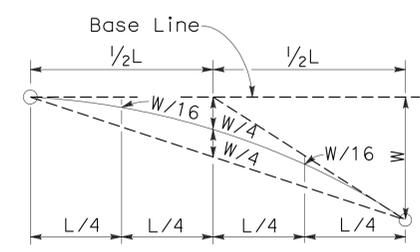
**SECTION A-A**  
**TYPICAL DOUBLE METAL BEAM GUARD RAILING**



$Y = \frac{WX^2}{L^2}$

Y = Offset from base line  
W = Maximum offset  
X = Distance along base line  
L = Length of flare

**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by →.
- For Transition Railing (Type WB) details, see Standard Plan A77J4.
- For additional details of a typical connection to bridge rail, see Connection Detail AA on Revised Standard Plan RSP A77J1.
- For Rail Tensioning Assembly details, see Standard Plan A77H2.
- The type of Crash Cushion to be used will be shown on the Project Plans.
- Type 12E Layout is typically used left of approaching traffic at the end of each structure on multilane freeways or expressways where a median type barrier is not constructed between separated roadbeds.
- The 15:1 or flatter flare is measured off of the edge of traveled way.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING**  
**TYPICAL LAYOUTS FOR**  
**STRUCTURE APPROACH**

NO SCALE

RSP A77F3 DATED MAY 20, 2011 SUPERSEDES RSP A77F3 DATED JUNE 6, 2008 AND STANDARD PLAN A77F3 DATED MAY 1, 2006 - PAGE 56 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77F3**

2006 REVISED STANDARD PLAN RSP A77F3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	55	96

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

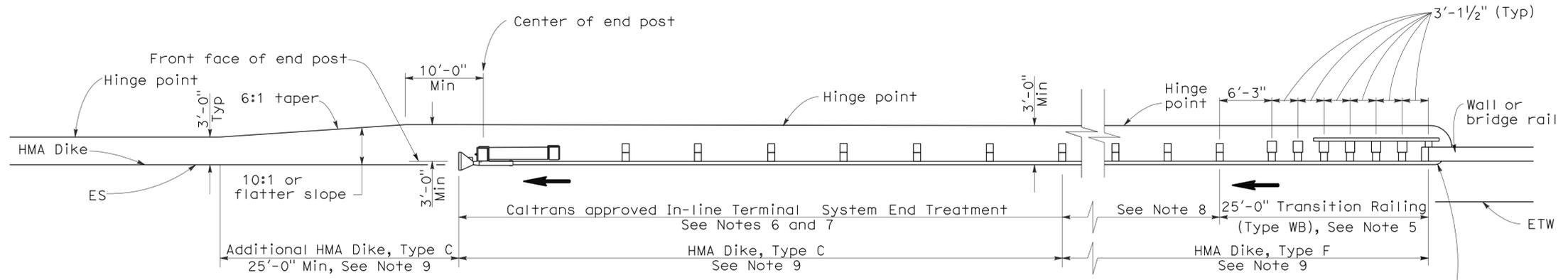
June 6, 2008  
PLANS APPROVAL DATE

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Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

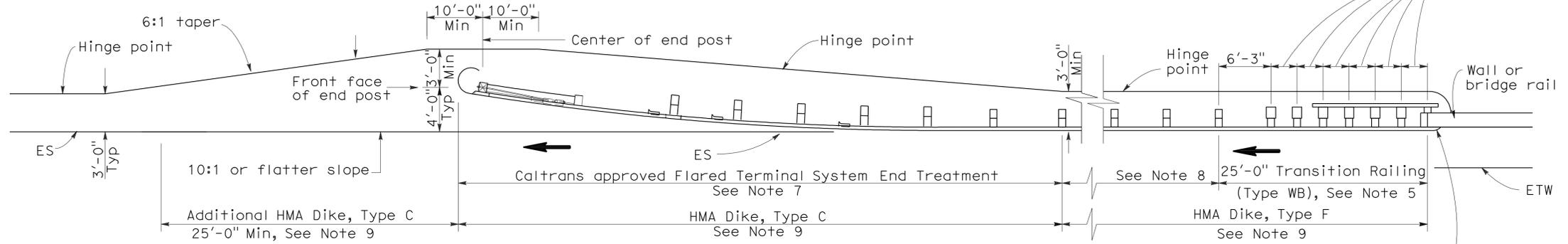
To accompany plans dated 6-18-12

2006 REVISED STANDARD PLAN RSP A77F4



**TYPE 12AA LAYOUT**

(GUARD RAILING INSTALLATION AT STRUCTURE DEPARTURE WITH AN IN-LINE END TREATMENT AT TRAILING END OF RAILING)  
See Notes 9 and 10



**TYPE 12BB LAYOUT**

(GUARD RAILING INSTALLATION AT STRUCTURE DEPARTURE WITH A FLARED END TREATMENT AT TRAILING END OF RAILING)  
See Notes 9 and 10

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by ➡.
- For Transition Railing (Type WB) details for Types 12AA and 12BB Layouts, see Standard Plan A77J4.
- In-line Terminal System Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatments.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- Type 12AA or Type 12BB Layouts are typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of typical connections to bridge rail, see Connection Detail CC on Revised Standard Plan RSP A77J2 and Connection Detail HH on Standard Plans A77k2.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
STRUCTURE DEPARTURE**

NO SCALE

RSP A77F4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77F4  
DATED MAY 1, 2006 - PAGE 57 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77F4**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	56	96

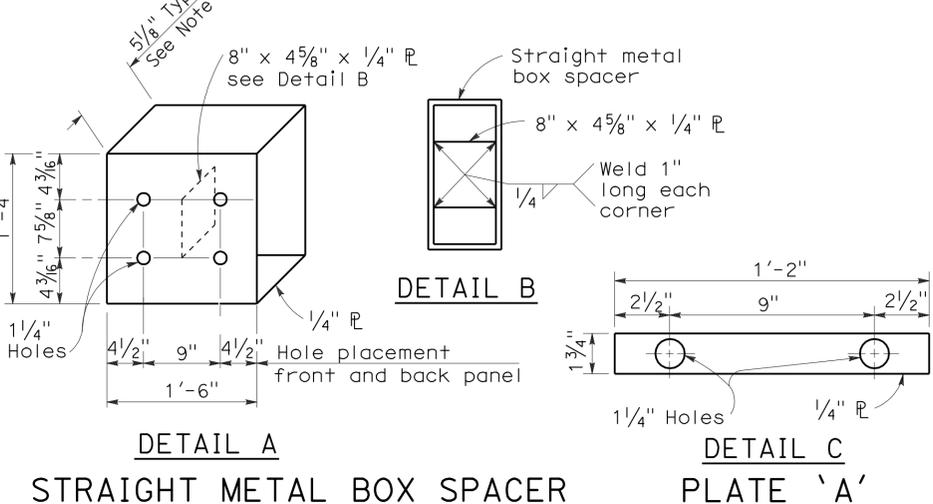
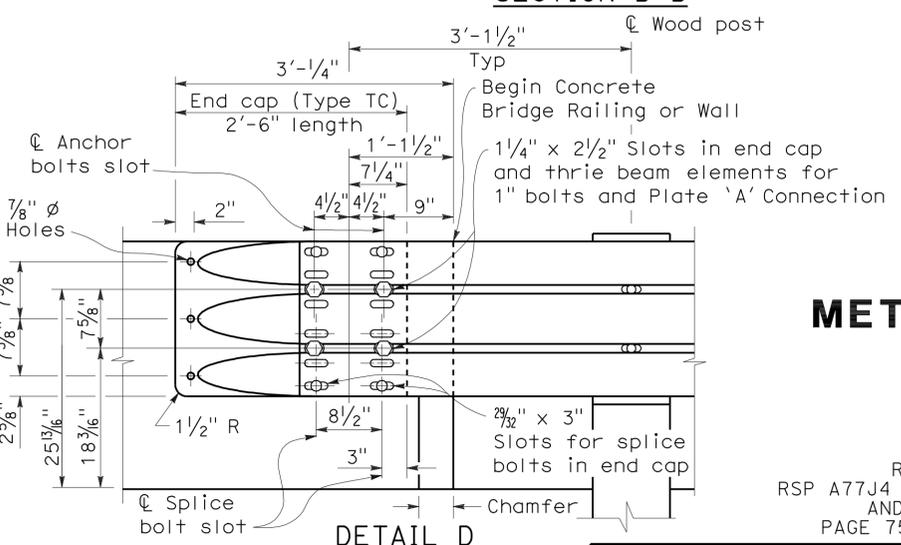
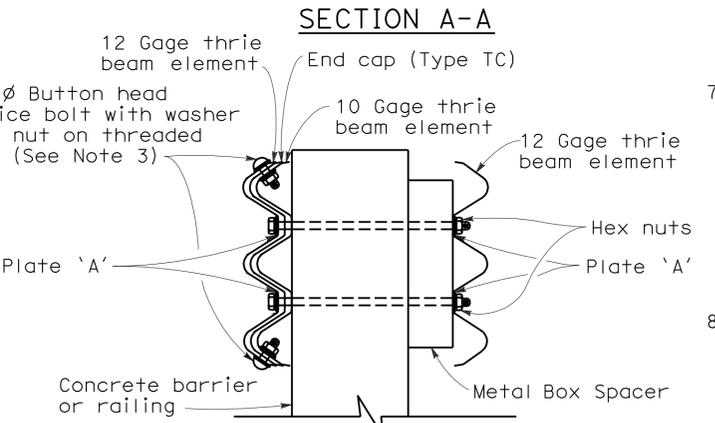
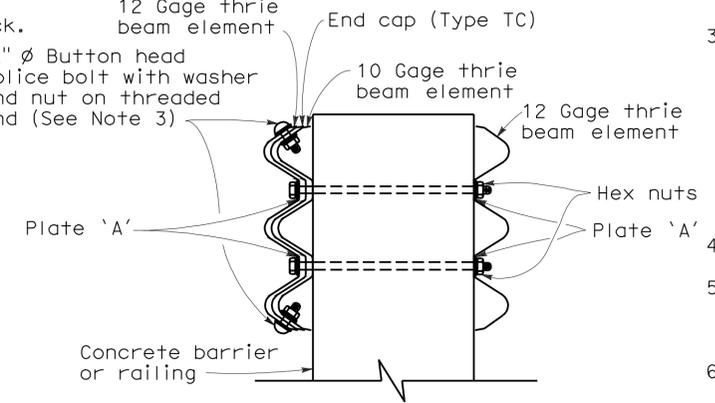
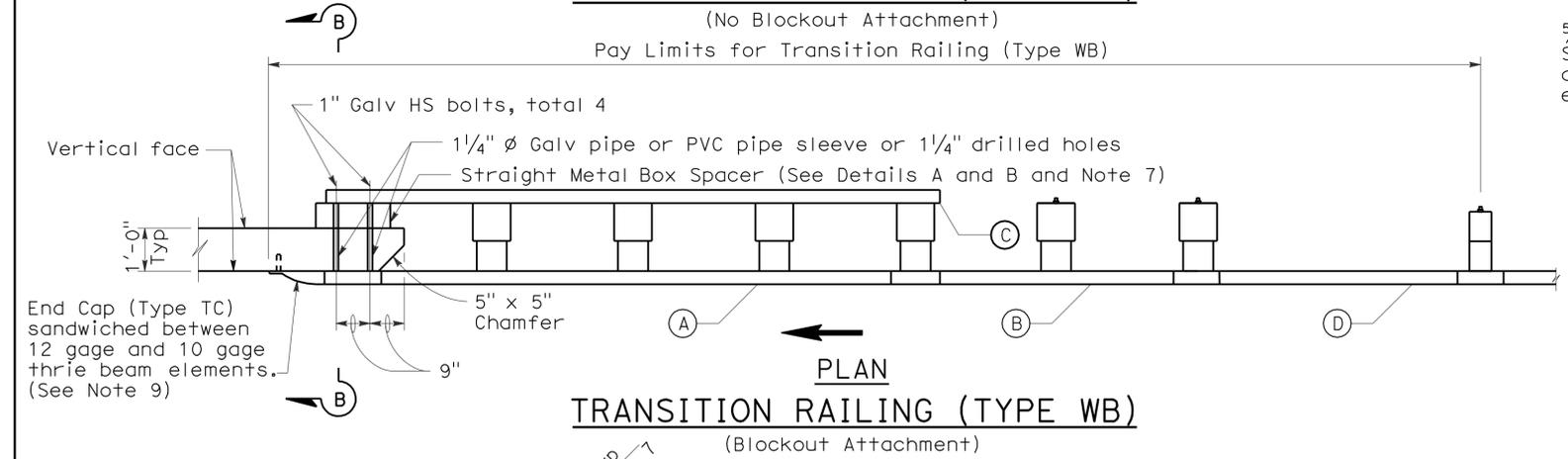
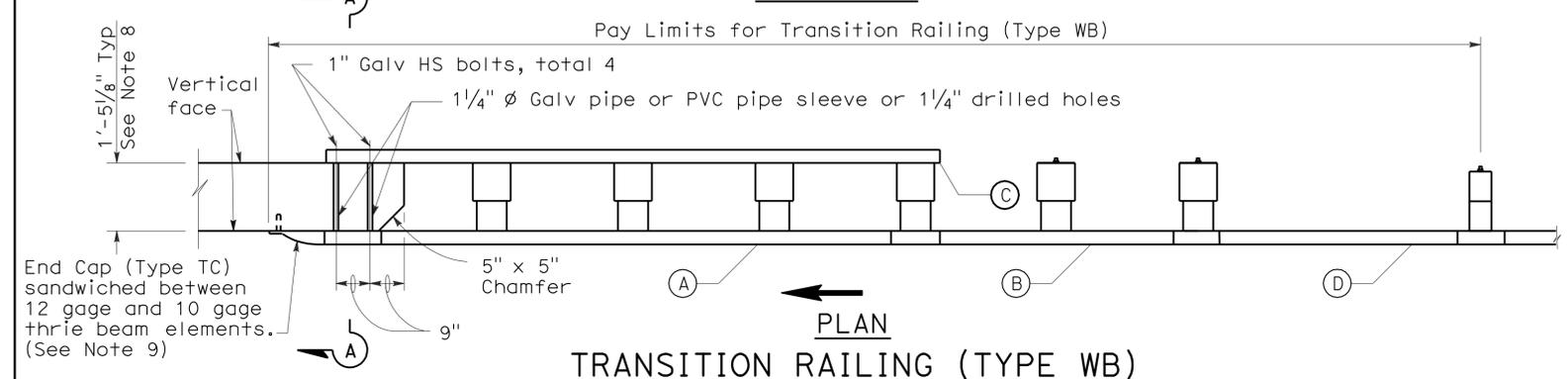
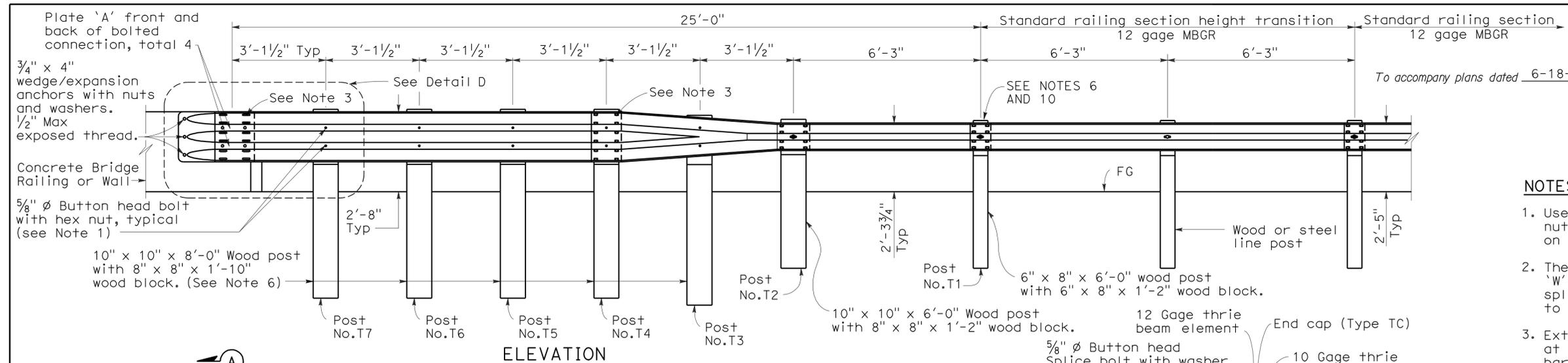
**Randell D. Hiatt**  
 REGISTERED CIVIL ENGINEER  
 No. C50200  
 Exp. 6-30-11  
 STATE OF CALIFORNIA

May 20, 2011  
PLANS APPROVAL DATE

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**NOTES:**

- Use 5/8" ø Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
- The nested rail elements, end cap, and "W" beam to thrie beam element may be spliced together prior to bolting the elements to the wood post and concrete barrier or railing.
- Exterior splice bolt holes for rail element splices at Post No. T4 and the connection to the concrete barrier or railing shall be the standard 7/32" x 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1/4" ø. Only the top 2 and the bottom 2 splice bolts with washers and nuts are required for rail splices at Post No. T4 and the connection to the concrete barrier or railing.
- Direction of adjacent traffic indicated by →.
- The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
- Typically, the railing connected to Transition Railing (Type WB) will be either standard railing section of metal beam guard railing with height transition ratio of 120:1 or an approved Caltrans end treatment attached to Post No. T1.
- The depth of the metal box spacer varies from the 5/8" to 1 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 17 1/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1 1/2", metal plates similar to Plate 'A' are to be used as spacers.
- Where the width of the concrete railing or wall is greater than 17 1/8", wood blocks are to be used to fill the space created between the backside of Posts No. T4 through No. T7 and the rear thrie beam element. These wood blocks shall be 8" in width and 1'-2" in length. The dimension between the front thrie beam element and the rear thrie beam element is to match the width of the concrete railing or wall.
- End cap may be installed over 12 gage and 10 gage thrie beam elements where transition railing is installed on the departure end of bridge railing.
- Conform standard railing section height to 2'-3 3/4" at Post No. T1 using height transition ratio of 120:1.



- LEGEND**
- (A) Nested thrie beam elements (one 12 gage element nested over one 10 gage element).
  - (B) One 10 gage "W" beam to thrie beam element.
  - (C) One 12 gage thrie beam element.
  - (D) One 10 gage "W" beam rail element (7'-3 1/2" length)
- 10 gage = 0.135" thick  
12 gage = 0.108" thick

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB)

NO SCALE

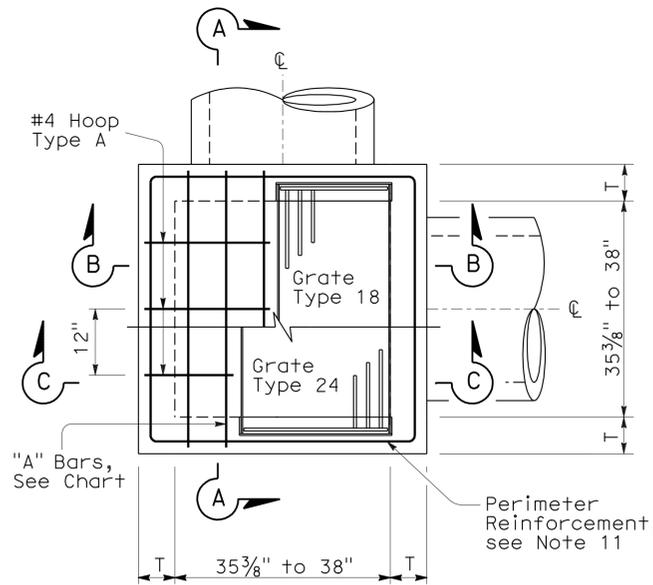
RSP A77J4 DATED MAY 20, 2011 SUPERSEDES  
RSP A77J4 DATED JUNE 5, 2009, RSP A77J4 DATED JUNE 6, 2008  
AND STANDARD PLAN A77J4 DATED MAY 1, 2006 -  
PAGE 75 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77J4

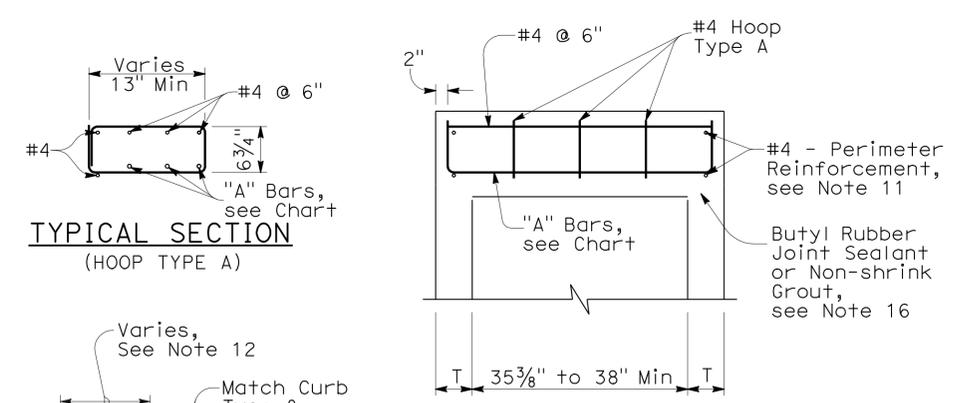
To accompany plans dated 6-18-12

**NOTES:**

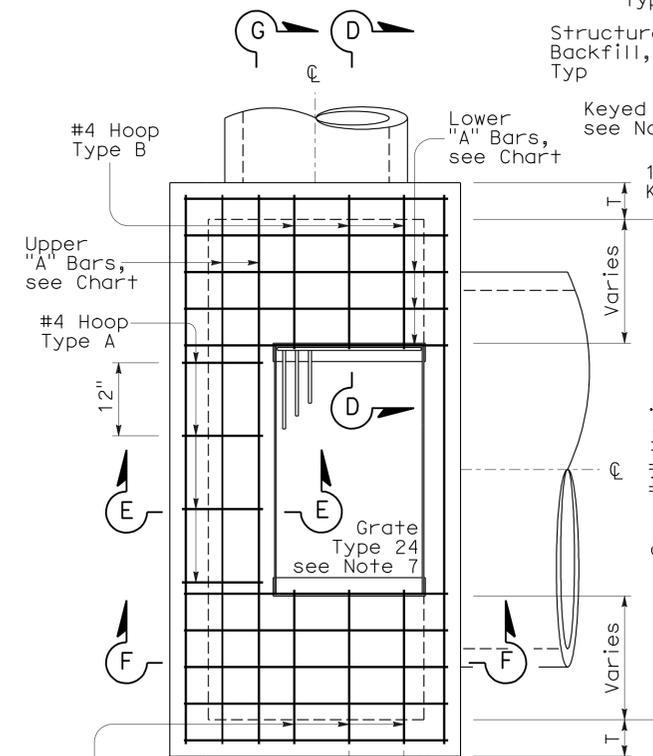
- "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
- For "T" wall thickness: T=6" when "H" is 8' or less. T=8" when "H" is over 8'.
- Wall reinforcing not required when "H" is 8' or less, and the unsupported width or length is 6'-0" or less. Reinforce wall exceeding these limits with #4 bars @ 1'-6" ± centers placed 2" clear to the inside of inlet unless otherwise shown. Short independent wall sections or height adjustment rings 6" to 24" high must have a minimum of two #4 horizontal bars.
- Seal pre-cast inlets connection openings between wall and pipe with non-shrink grout or resilient connectors as specified in the Special Provisions.
- Steps - None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below bottom of lid. The distance between steps must not exceed 1'-0" and be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts must comply with State Industrial Safety Requirements. See Standard Plan D74C for step details.
- Pipe(s) can be placed in any wall.
- Set inlet so that grate bars are parallel to direction of principal surface flow.
- Type G4 inlet can use Grate Type 18 or 24. Type G2 inlet uses Grate Type 24. See Revised Standard Plan RSP D77A and Standard Plan D77B for grate and frame details and weights of miscellaneous Iron and Steel.
- G4 inlet details are the same as the G2 with the addition of a curb and sloped grate that matches the adjacent curb and gutter depression. See Standard Plans D78A & D78B for gutter and inlet depression details. See Revised Standard Plan RSP A87A & Standard Plan A87B for Curb and Dike Details.
- Provide pre-cast inlets with separate top sections for final grade adjustment under Standard Specification Section 51-1.02. Provide keyed joints between the top and wall and multiple wall sections. Joint design may vary but must be 1" to 3" in depth.
- Perimeter reinforcement serves as a rigid frame to position and attach the required structural reinforcement and may be tack welded at outer corners when using ASTM A706 weldable bars.
- This dimension will vary with different grates, curbs types, box width and wall thickness.
- 2" unless inlet is expanded in the Span "A" direction, then clearance is 2" plus the diameter of the lower "A" bar.
- Place "A" Bars at an angle so hooked ends will maintain 2" clear coverage.
- Refer to Standard Plan D73, Table A for concrete quantities.
- Non-shrink grout can be used for upper most joint to facilitate final top grade adjustment.
- Slope inlet floors 4:1 towards the outlet pipe. Pre-cast inlets may have monolithic sloped floors, flat floors, or no floors in which case a sloped floor must be cast in the field. Inlet floors do not require reinforcing.
- Extend sand bedding under all structure backfill.



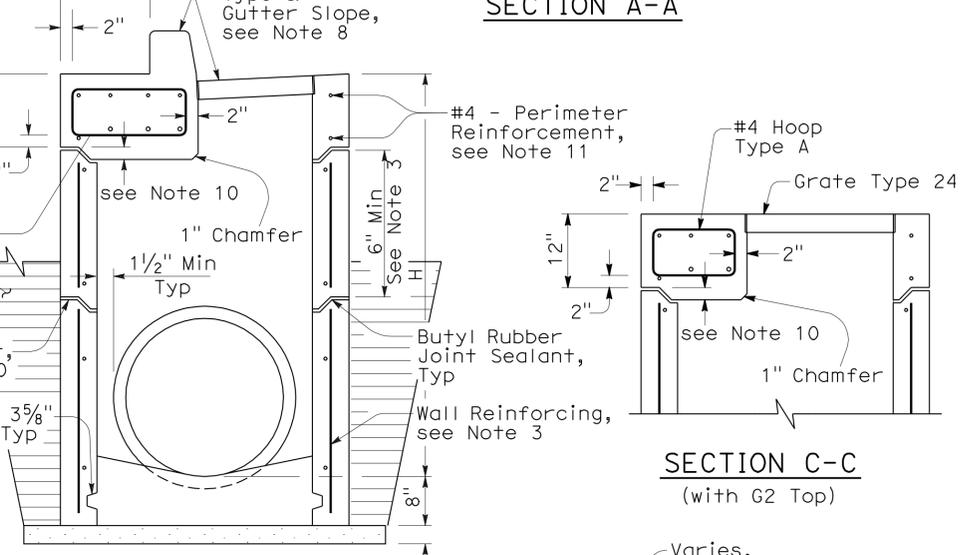
**STANDARD TYPE G2 OR G4**



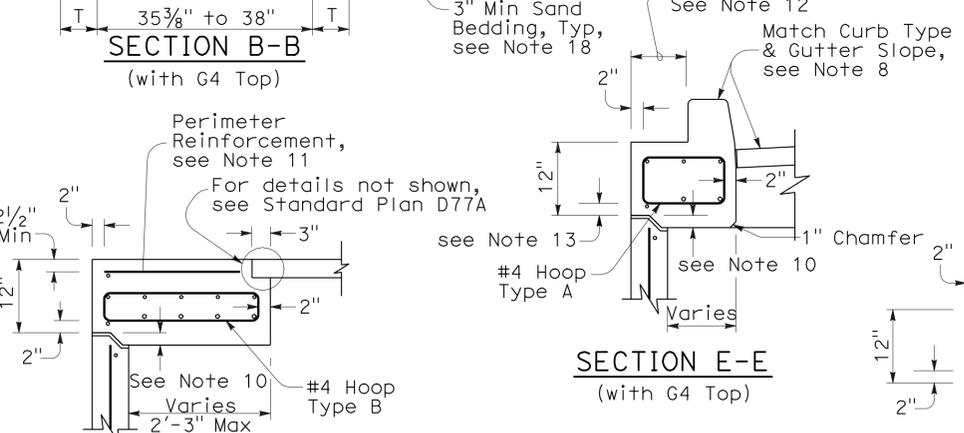
**SECTION A-A**



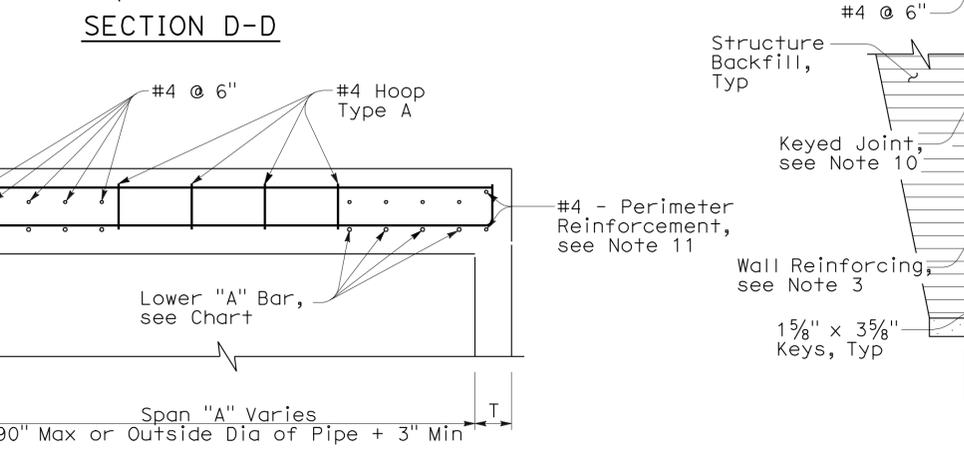
**EXPANDED TYPE G2 OR G4**  
(Top Rebar Not Shown)



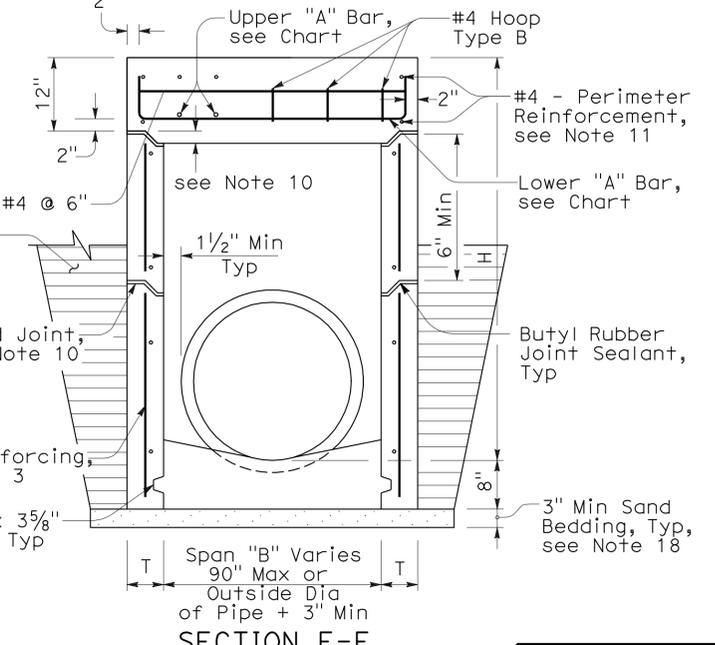
**SECTION C-C**  
(with G2 Top)



**SECTION E-E**  
(with G4 Top)



**SECTION G-G**



**SECTION F-F**  
(with G2 Top)

TOP REINFORCEMENT CHART		
Span	"A" Bars	Required steel area per foot (in <sup>2</sup> /ft)
Under 38" with Type 24 Grate	#5 @ 7" C-C 2-#5 Min	0.525
Under 38" with Type 18 Grate	#5 @ 7" C-C 3-#5 Min	0.525
38"-60"	#5 @ 6" C-C	0.621
61"-72"	#5 @ 5" C-C	0.744
73"-90"	#6 @ 6" C-C	0.811

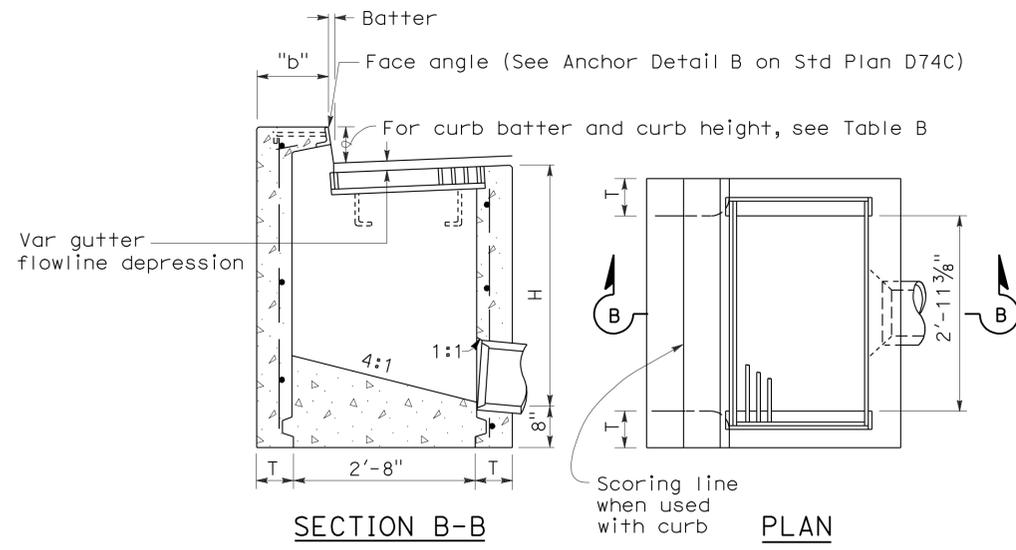
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**DRAINAGE INLETS**  
**(PRECAST)**

NO SCALE

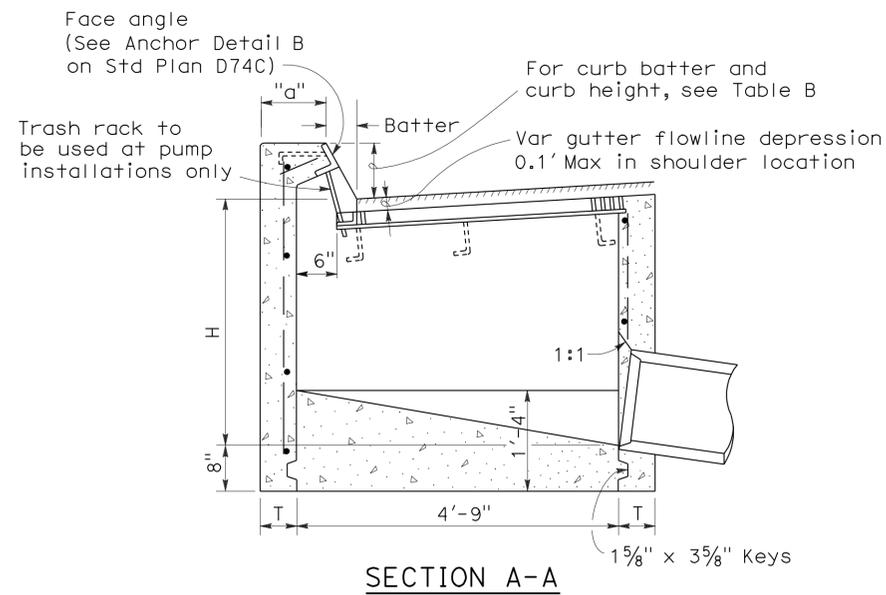
NSP D73A DATED JUNE 5, 2009 SUPPLEMENTS  
THE STANDARD PLANS BOOK DATED MAY 2006.

To accompany plans dated 6-18-12

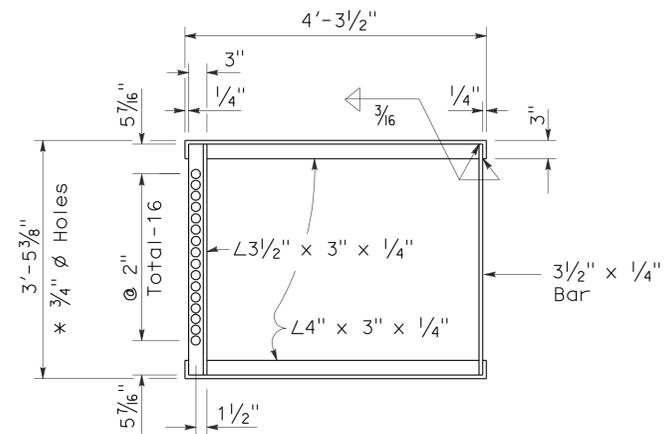
2006 REVISED STANDARD PLAN RSP D74B



**TYPE GO**

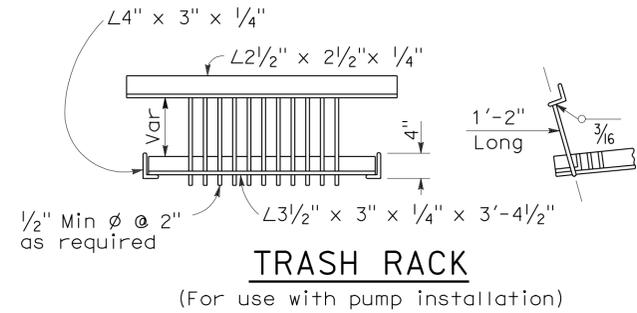


**SECTION A-A**



**GRATE FRAME FOR TYPE GDO INLET**

\* 3/4"  $\phi$  Holes required only with trash rack



**TRASH RACK**

(For use with pump installation)

**TABLE A**  
CONCRETE QUANTITIES

TYPE	H=3'-0" TO 8'-0" (T=6")	H=8'-1" TO 20'-0" (T=8")	
	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
GO	1.24	3.39	0.346
GDO	1.62	4.36	0.446

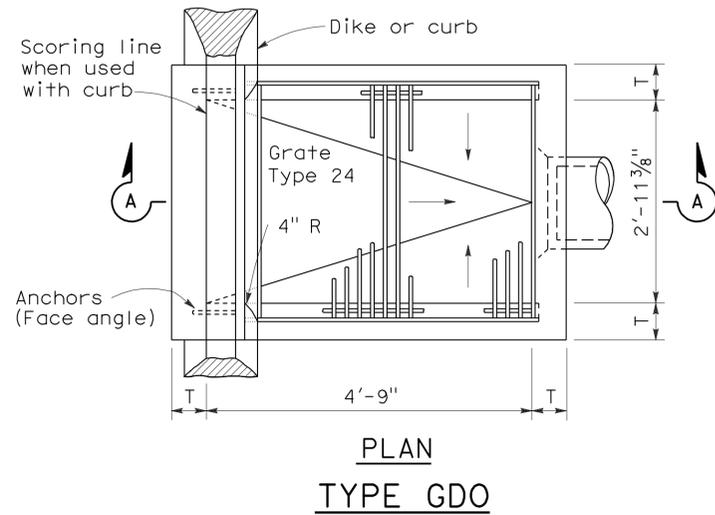
Table based on 8" floor slab, no deduction for pipe openings, and curb type giving highest quantity of concrete. No deductions or adjustments are to be made to these quantities because of pipe openings, different floor alternatives or different curb type.

**TABLE B**

CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION
A1-6	6"	1 1/2"	T+7 1/2"	T+6 1/2"
A1-8	8"	2"	T+7"	T+6"
B1-6	6"	4"	T+5"	T+4"
Type A Dike	6"	3"	T+6"	T+5"

**NOTES:**

- "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
- For "T" wall thickness, see Table A below.
- Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits shall be reinforced with #4 @ 18"  $\pm$  centers placed 1/2" clear to inside of box unless otherwise shown.
- Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom.
- Steps - None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below top of inlet. The distance between steps shall not exceed 1'-0" and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Step inserts may be substituted for the bar steps. Step Inserts shall comply with State Industrial Safety requirements. See Standard Plan D74C for step details.
- When shown on the project plans, place a 3/4" plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
- Pipe(s) can be placed in any wall.
- Curb section shall match adjacent curb.
- Basin floors shall have wood trowel finish and shall slope toward the outlet pipe as shown.
- Galvanizing - See Standard Specifications or Special Provisions.
- See Standard Plan D77A and D77B for grate and frame details and weights of miscellaneous iron and Steel.
- See Standard Plan D78A for gutter depression details.
- Full penetration butt welds may be substituted for the fillet welds on all anchors.
- Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
- Cast-in-place or precast alternative is optional with contractor. See Standard Specifications.
- Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet and concrete poured in one continuous operation. Precast inlets shall have mortared pipe connections conforming to details for Type GCP inlets on Standard Plan D75B. See Standard Specifications for mortar composition.



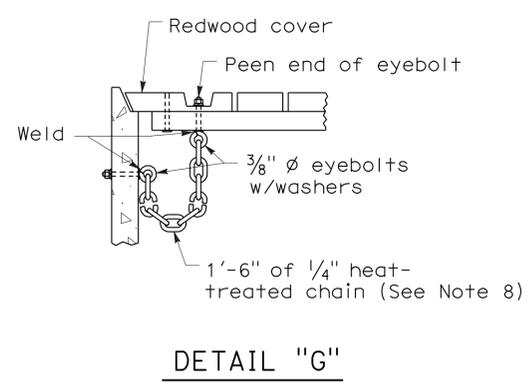
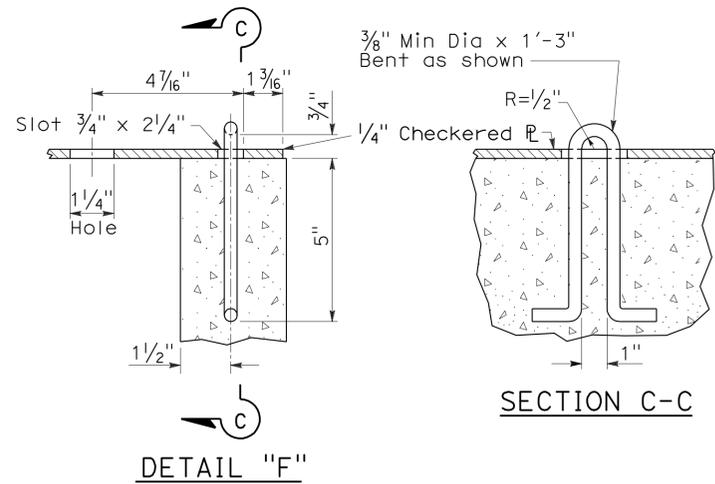
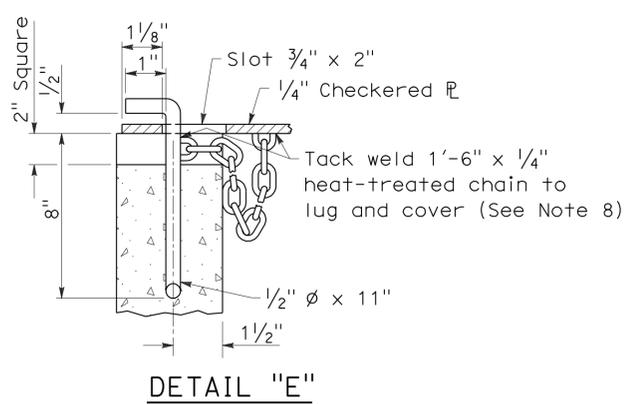
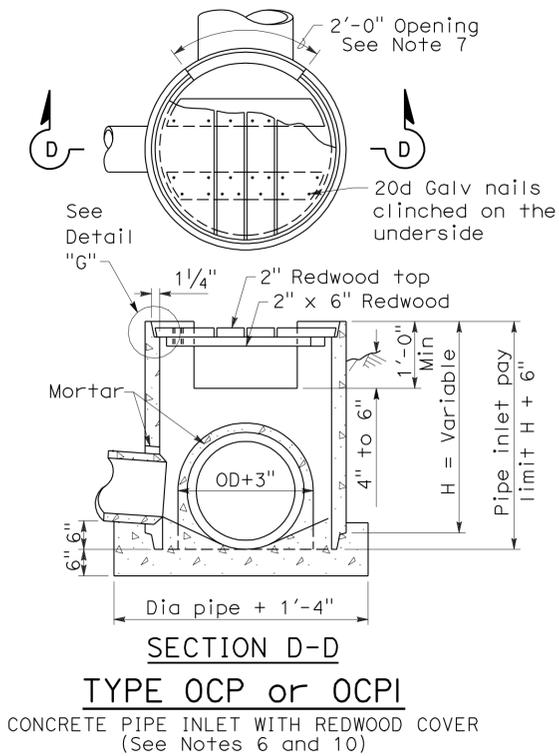
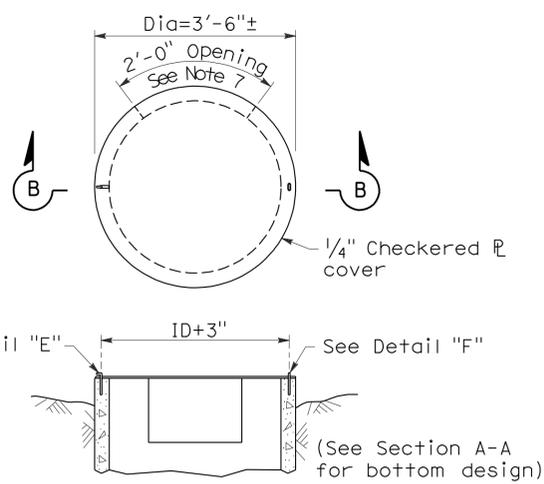
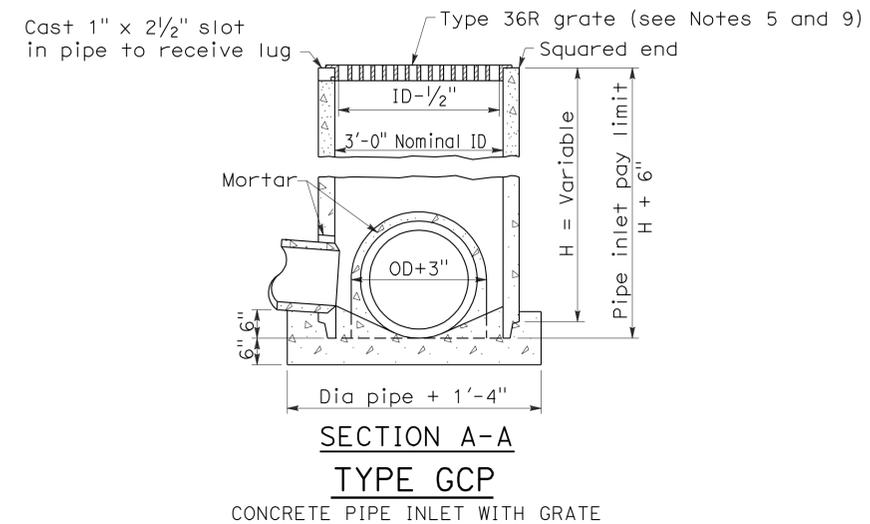
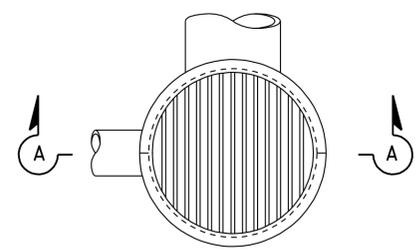
**PLAN TYPE GDO**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**DRAINAGE INLETS**  
 NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	59	96

Raymond Don Tsztsoo  
 REGISTERED CIVIL ENGINEER  
 June 6, 2008  
 PLANS APPROVAL DATE  
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2006 REVISED STANDARD PLAN RSP D75B



**NOTES:**

- For details of steel pipe inlets, see Standard Plan D75A.
- For details of ladder and steps and when ladder or steps are required, see Standard Plan D75C.
- Inlet pipes shall not protrude into basin.
- Except for inlets used for junction boxes, basin floors shall have minimum slope of 4:1 from all directions toward outlet pipe, and a wood trowel finish.
- See Revised Standard Plan RSP D77A and Standard Plan D77B for Grate and Frame Details and Weights of Miscellaneous Iron and Steel.
- Designation of Type OCPI pipe inlets on plans indicates trash racks are to be furnished and installed on all side openings. See Standard Plan D75C for Trash Rack details.
- More than one side opening may be required. Location and number as ordered by the Engineer. Opening may be cast in pipe.
- Chain to be provided when specified.
- Place pipe so bars of grate will be parallel with main surface flow.
- Redwood covers shall only be placed at locations designated on the plans.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

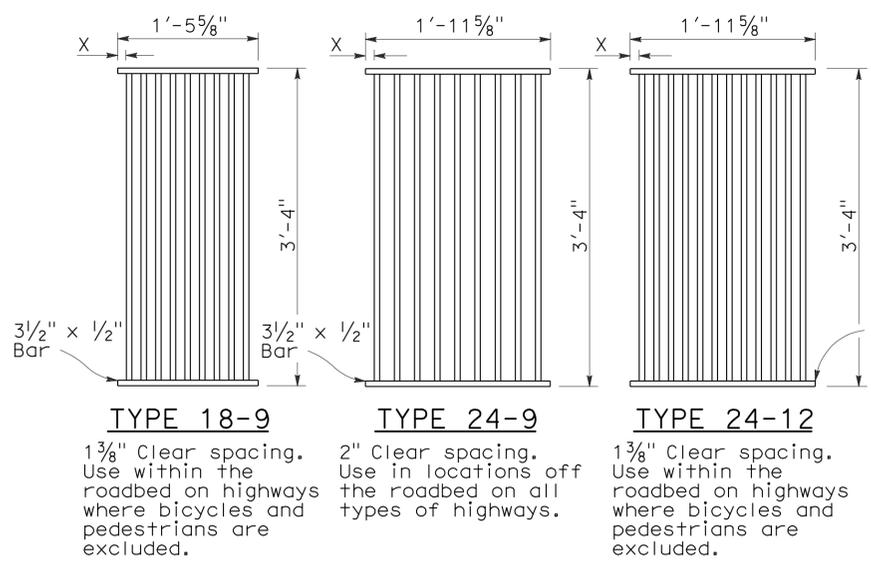
**CONCRETE PIPE INLETS**

NO SCALE

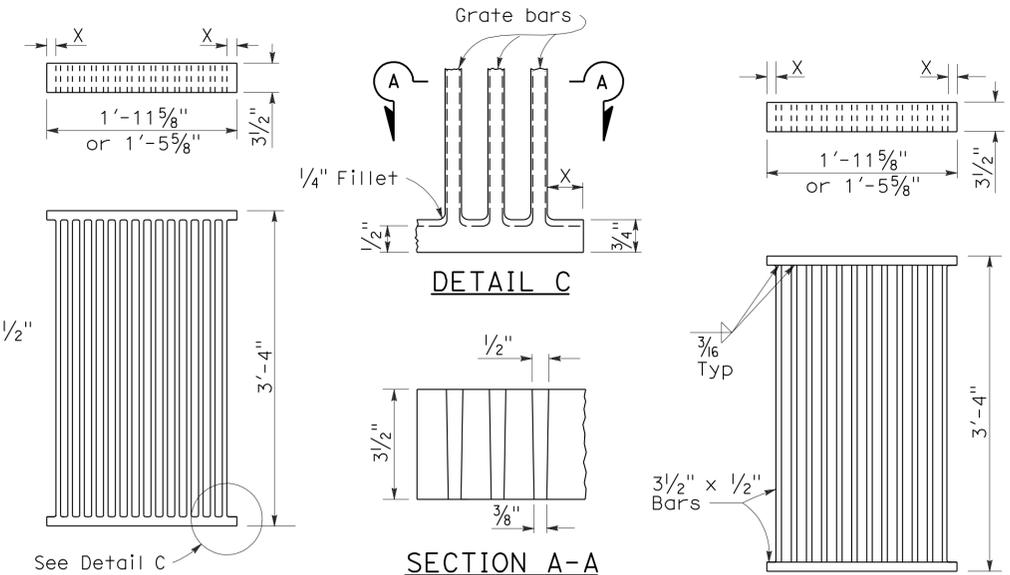
RSP D75B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D75B  
DATED MAY 1, 2006 - PAGE 153 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP D75B**

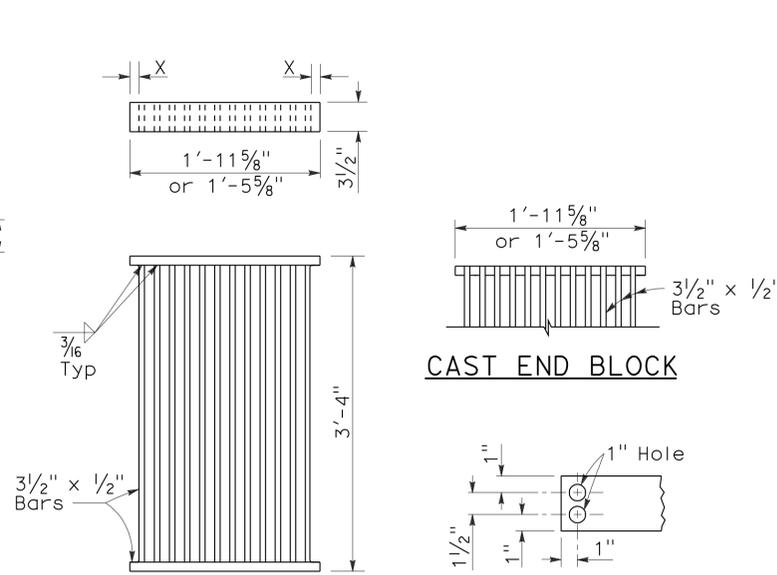
To accompany plans dated 6-18-12



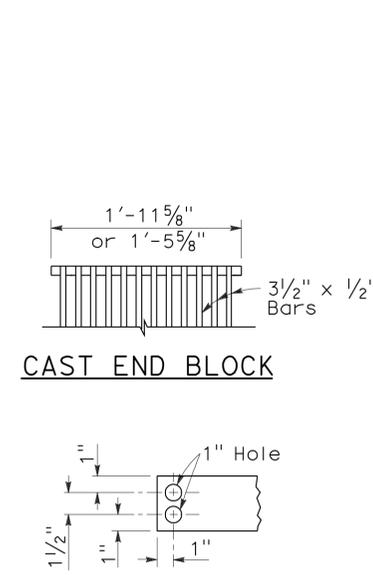
**RECTANGULAR GRATE DETAILS**  
(See table below)



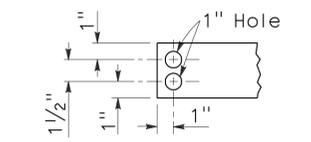
**ALTERNATIVE CAST NODULAR IRON GRATE OR CAST STEEL GRATE**



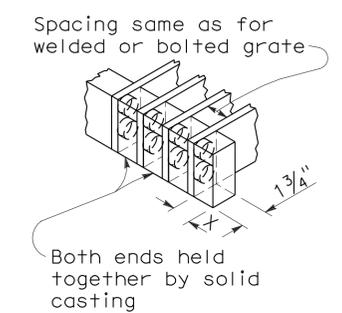
**ALTERNATIVE WELDED GRATE**



**CAST END BLOCK**



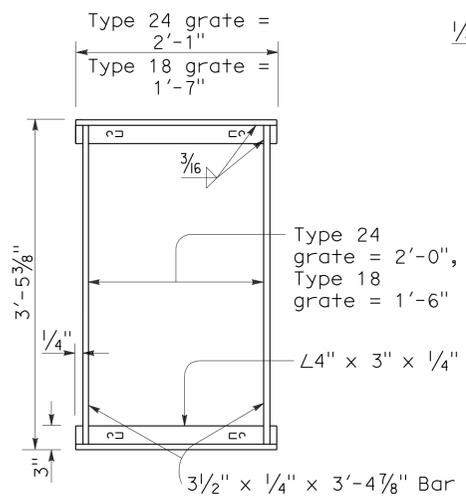
**END OF BAR**



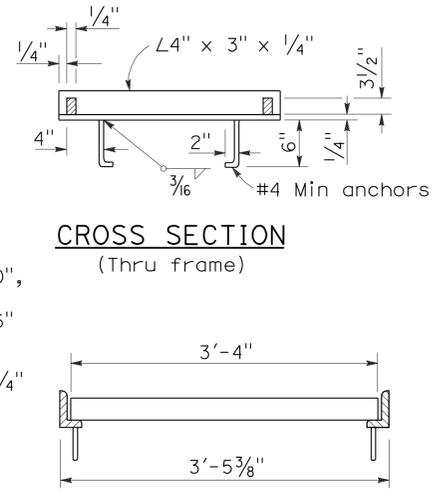
**ALTERNATIVE CAST NODULAR IRON OR CAST STEEL END BLOCK GRATE**

**NOTES:**

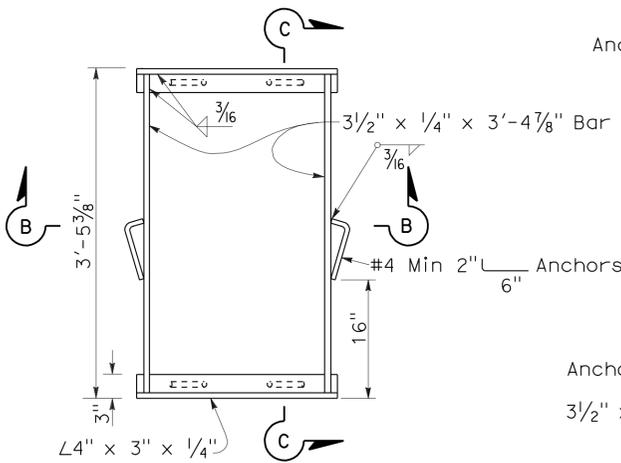
1. Grate type numbers refer to approximate width of grate in inches and number of bars, respectively.
2. Contractor has the option of using cast nodular iron, cast steel, welded, bolted, or cast end block grate.
3. See Special Provisions for requirements pertaining to galvanizing or asphalt dipping of grates and frames.
4. Rounded top of bars optional on all grates.
5. Pipe inlets with a grate shall be placed so that bars parallel direction of principle surface flow.
6. Full penetration butt welds may be substituted for the fillet welds on all anchors.
7. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
8. Grate and frame weights are based on welded grates (weights of face angles, steps, protection bars, etc. are not included).



**TYPICAL FRAME**

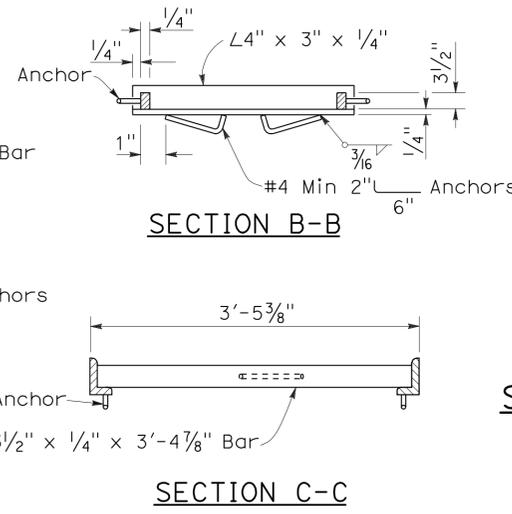


**LONGITUDINAL SECTION**  
(Thru frame and grate)



**TYPICAL FRAME**

**ALTERNATIVE ANCHOR FOR RECTANGULAR FRAME**  
(For details not shown, See Rectangular Frame Details)



**SECTION B-B**

**SECTION C-C**

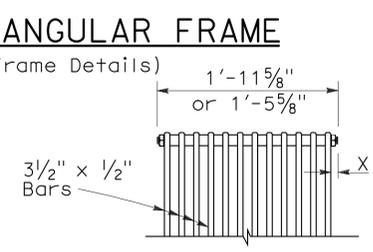
**RECTANGULAR FRAME DETAILS**  
(For all rectangular grates)

**GRATE BAR SPACING TABLE**

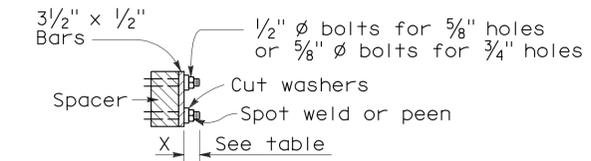
TYPE	NO. OF BARS	CLEAR BAR SPACING	X
18-9	9	1 3/8"	1 1/16"
24-9	9	2"	1 9/16"
24-12	12	1 3/8"	1 1/4"

INLET TYPE	COVER TYPE	WEIGHT LB
OS	PLATE	174
OL-7	PLATE	170
OL-10	PLATE	170
OL-14	PLATE	170
OL-21	PLATE	170
OCPI	PLATE	112
OCPI	REDWOOD	42
OMP	PLATE	177
OMPI	PLATE	177

INLET TYPE	GRATE TYPE	NO. OF GRATES	WEIGHT LB
GDO	24-12	2	634
GOL-7	24-12	1	326
GOL-10	24-12	1	326
G0,G1,G2,G3,G4 (TYPE 24)	24-9	1	263
	24-12	1	326
G4 (TYPE 18),G5,G6	18-9	1	249
GT1	18-9	2	498
GT2	18-9	2	498
GT3	24-12	2	652
GT4	24-12	2	652
TRASH RACK			22

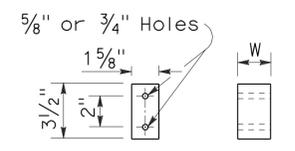


**BOLTED END BLOCK**

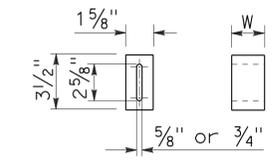


**BOLTING DETAIL**

**ALTERNATIVE BOLTED GRATE**



**BAR SPACER**



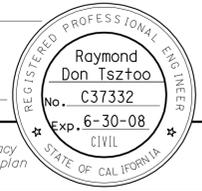
**ALTERNATIVE SPACER**  
W = 1 3/8" or 2"

**BASIS FOR MISC IRON & STEEL FINAL PAY WEIGHTS FOR DRAINAGE INLETS**

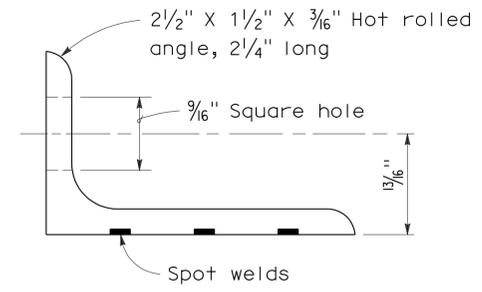
(See General Notes, No 8)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	61	96

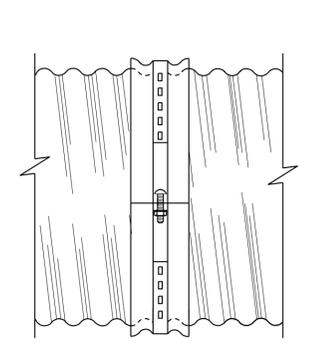
Raymond Don Tsztoo  
 REGISTERED CIVIL ENGINEER  
 June 6, 2008  
 PLANS APPROVAL DATE  
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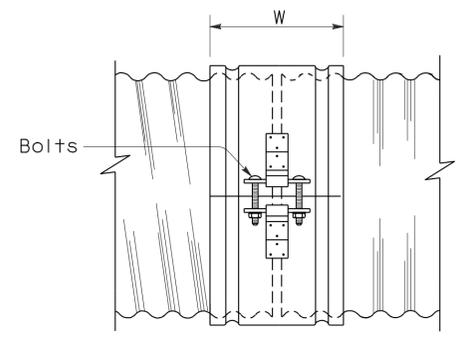
To accompany plans dated 6-18-12



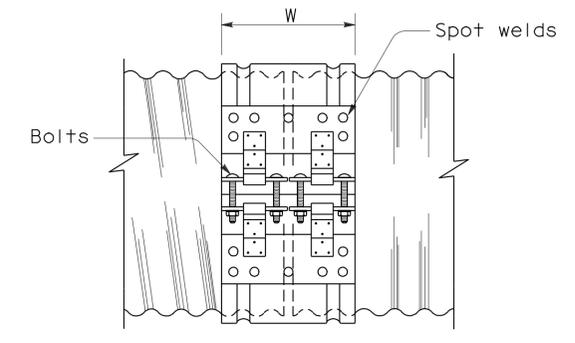
ANGLE



SIDE VIEW ANGLE



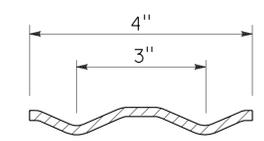
SIDE VIEW SINGLE BAR AND STRAP



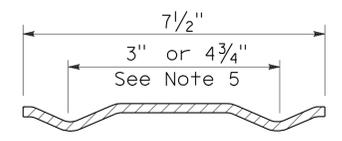
SIDE VIEW DOUBLE BAR AND STRAP

NOTES:

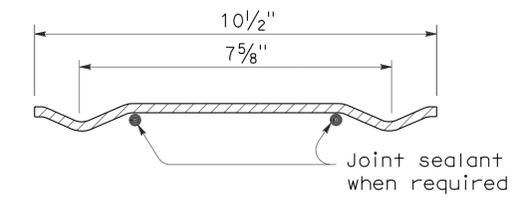
1. All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
2. Dimensions and thicknesses shown are minimum.
3. Spot welds shall develop minimum required strength of strap.
4. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
5. Dimension depends upon whether end condition is lips up or lips down.



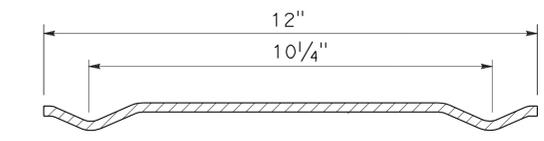
SECTION H-4 HUGGER BAND



SECTION H-7 HUGGER BAND



SECTION H-10 HUGGER BAND



SECTION H-12 HUGGER BAND

HUGGER COUPLING BANDS

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**CORRUGATED METAL PIPE  
 COUPLING DETAILS No. 4  
 HUGGER COUPLING BANDS**

NO SCALE

RSP D97D DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97D  
 DATED MAY 1, 2006 - PAGE 186 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP D97D**

2006 REVISED STANDARD PLAN RSP D97D

ANNULAR AND HELICAL PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	PIPE WALL THICKNESS				BAR AND STRAP (CSP ONLY)				ANGLE							
				CSP		CAP		STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND	
				CSP	CAP	CSP	CAP					CSP	CAP	CSP	CAP	CSP	CAP	CSP	
TWO PIECE INTEGRAL FLANGE	1 1/2' x 1/4"	6"-10"	7"	0.052"-0.079"	0.048"-0.060"	0.052"	0.060"							2-3/8"	2-3/8"				
				12"-18"	7"	0.052"-0.079"										2-1/2"			
				2 2/3" x 1/2"	12"-24"	7"	0.052"-0.079"	0.060"-0.105"	0.064"	0.060"							2-1/2"	2-1/2"	
UNIVERSAL	2 2/3" x 1/2"	THROUGH 36"	12"	0.052"-0.138"	0.060"-0.135"	0.052"	0.060"						2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
		42"-60"	12"	0.052"-0.168"	0.075"-0.164"	0.052"	0.060"						2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		THROUGH 72"	12"	0.052"-0.168"	0.164"	0.052"	0.105"	0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"	
		78"-84"	16 1/4"	0.168"		0.079"		DOUBLE 0.079"	1/2"	7/8"	32 ksi								
ANNULAR	2 2/3" x 1/2"	THROUGH 36"	7"	0.064"-0.138"	0.060"-0.135"	0.052"	0.060"	0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	2-1/2"	2-1/2"	3-3/8"	3-3/8"	3-1/2"	
		42"-72"	12"	0.064"-0.168"	0.075"-0.164"	0.052"	0.105"	0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"	
		78"-84"	12"	0.168"		0.079"		0.109"	1/2"	7/8"	45 ksi	2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
	3" x 1"	48"-90"	14"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
		96"-120"	14"	0.079"-0.109"		0.052"		0.109"	1/2"	7/8"	45 ksi	2" x 2" x 3/16"		3-1/2"		4-3/8"			
		42"-108"	14"		0.060"-0.135"		0.060"					2" x 2" x 3/16"		3-1/2"		3-3/8"			
HELICAL	2 2/3" x 1/2"	THROUGH 36"	12"	0.052"-0.138"	0.060"-0.135"	0.052"	0.060"	0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"	
		42"-72"	12"	0.052"-0.168"	0.075"-0.164"	0.052"	0.060"	0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"	
		78"-84"	12"	0.168"		0.079"		0.109"	1/2"	7/8"	45 ksi	2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
	3" x 1"	48"-90"	14"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
		96"-120"	14"	0.079"-0.109"		0.052"		0.109"	1/2"	7/8"	45 ksi	2" x 2" x 3/16"		3-1/2"		4-3/8"			
		42"-108"	14"		0.060"-0.135"		0.060"					2" x 2" x 3/16"		3-1/2"		3-3/8"			
HUGGER	2 2/3" x 1/2"	REROLLED END	12"-54"	4"	0.052"-0.109"		0.052"					2 1/2" x 1 1/2" x 3/16"	2 1/2" x 1 1/2" x 3/16"	1-1/2"				3-1/2"	
			60"-66"	4"	0.109"		0.064"						2 1/2" x 1 1/2" x 3/16"	2 1/2" x 1 1/2" x 3/16"	1-1/2"			3-1/2"	
			36"-48"	4"	0.138"		0.064"						2 1/2" x 1 1/2" x 3/16"	2 1/2" x 1 1/2" x 3/16"	1-1/2"			3-1/2"	
			THROUGH 72"	10 1/2"	0.052"-0.168"		0.052"		0.079"	1/2"	7/8"	32 ksi							
	3" x 1"	REROLLED END	48"-90"	10 1/2"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi							
			96"-120"	10 1/2"	0.079"-0.109"		0.052"		0.109"	1/2"	7/8"	45 ksi							
			48"-66"	7 1/2"	0.064"-0.109"		0.064"		0.079"	1/2"	7/8"	32 ksi	2 1/2" x 1 1/2" x 3/16"	2 1/2" x 1 1/2" x 3/16"	1-1/2"				3-1/2"
	5" x 1"	REROLLED END	72"-90"	7 1/2"	0.064"-0.079"		0.064"		0.079"	1/2"	7/8"	32 ksi	2 1/2" x 1 1/2" x 3/16"	2 1/2" x 1 1/2" x 3/16"	1-1/2"				3-1/2"
			48"-90"	7 1/2"	0.064"-0.138"		0.064"		0.079"	1/2"	7/8"	32 ksi							
			48"-120"	12" SEE	0.064"-0.109"		0.064"		0.079"	1/2"	7/8"	32 ksi							
48"-84"			12" NOTE	0.138"		0.064"		0.079"	1/2"	7/8"	32 ksi								
		90"-120"	12" 11	0.138"		0.064"		DOUBLE 0.079"	1/2"	7/8"	32 ksi								

SPIRAL RIB PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	PIPE WALL THICKNESS				BAR AND STRAP (SSRP ONLY)				ANGLE						
				SSRP		ASRP		STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				SSRP	ASRP	SSRP	ASRP					SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
ANNULAR	2 2/3" x 1/2" * REROLLED END	24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.052"	0.060"	0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		42"-60"	12"	0.064"-0.109"	0.075"-0.105"	0.052"	0.105"	0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		66"-72"	12"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		78"-114"	12"	0.079"-0.109"		0.079"		0.109"	1/2"	7/8"	45 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
HUGGER	2 2/3" x 1/2" * REROLLED END	24"-72"	10 1/2"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi							
		78"-84"	10 1/2"	0.109"		0.079"		0.109"	1/2"	7/8"	45 ksi							

\* See Note 14.

14. All profiles of Spiral Rib Pipe (3/4" x 3/4" ribs at 7 1/2" pitch and 3/4" x 1" ribs at 11 1/2" pitch in both steel and aluminum and 3/4" x 1" ribs at 8 1/2" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 2 2/3" x 1/2" annual corrugations with a minimum of two full corrugations at each end.

- NOTES:** To accompany plans dated 6-18-12
- All ferrous metal coupling band connection hardware shall be galvanized or electro-plated in accordance with the Standard Specifications.
  - For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
  - Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
  - Use 1 1/4" gage line dimension on attached angle leg for rivets and spot welds.
  - Band thickness shall not be less than:
    - 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
    - 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
  - Dimensions, thicknesses and strengths shown are minimum.
  - For pipe arches use same width band as for round pipe of equal periphery.
  - Fillet welds of equivalent strength may be substituted for spot welds or rivets.
  - Spot welds shall develop minimum required strength of strap.
  - Pipe with rerolled ends having at least two 2 2/3" x 1/2" annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having 2 2/3" x 1/2" corrugations.
  - In the case of H-12 huggerbands, two piece bands are required for diameters through 96" and three piece bands are required for diameters 102" through 120".
  - Two piece bands are required for pipes greater than 42" diameter.
  - The 2 1/4" x 2" x 0.109" thick galvanized die-formed angle connector may be used in lieu of the 2" x 2" x 3/16" angle connector for standard joints only on pipes through 72" diameter.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**CORRUGATED METAL PIPE  
COUPLING DETAILS No. 5  
STANDARD JOINT**  
NO SCALE

RSP D97E DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97E  
DATED MAY 1, 2006 - PAGE 187 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP D97E**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	62	96

Raymond Don Tsztoo  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
Raymond Don Tsztoo  
No. C37332  
Exp. 6-30-08  
CIVIL  
STATE OF CALIFORNIA

2006 REVISED STANDARD PLAN RSP D97E

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	63	96

Raymond Don Tsztso  
 REGISTERED CIVIL ENGINEER

June 6, 2008  
 PLANS APPROVAL DATE

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**ANNULAR AND HELICAL PROFILE**

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	PIPE WALL THICKNESS				BAR AND STRAP (CSP ONLY)			ANGLE							
				CSP		CAP		STRAP THICKNESS	BOLTS Dia	BAR Dia	DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND	
				CSP	CAP	CSP	CAP				CSP	CAP	CSP	CAP	CSP	CAP	CSP	
TWO PIECE INTEGRAL FLANGE	1 1/2' x 1/4"	6"	7"	0.064"-0.168"		0.052"												
	1 1/2' x 1/4"	8"-10"	7"	0.064"-0.168"		0.060"-0.164"		0.064"	0.060"									
ANNULAR	2 2/3" x 1/2"	THROUGH 24"	12"	0.064"-0.168"		0.060"-0.164"		0.064"	0.060"									
HUGGER	2 2/3" x 1/2" REROLLED END	THROUGH 24"	10 1/2"	0.064"-0.168"		0.064"		0.079"	1/2"	7/8"								

- NOTES:** To accompany plans dated 6-18-12
- All ferrous metal coupling band connection hardware shall be galvanized or electro-plated in accordance with the Standard Specifications.
  - For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
  - Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
  - Use 1 1/4" gage line dimension on attached angle leg for rivets and spot welds.
  - Band thickness shall not be less than:
    - 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
    - 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
  - Dimensions, thicknesses and strengths shown are minimum.
  - For pipe arches use same width band as for round pipe of equal periphery.
  - Fillet welds of equivalent strenght may be substituted for spot welds or rivets.
  - Spot welds shall develop minimum required strength of strap.
  - Pipe with rerolled ends having at least two 2 2/3" x 1/2" annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having 2 2/3" x 1/2" corrugations.
  - For downdrain applications, two piece integral flange couplers shall have factory applied sleeve type rubber gaskets with a minimum length of 7" measured along the length of the pipe.

**SPIRAL RIB PROFILE**

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	PIPE WALL THICKNESS				BAR AND STRAP (SSRP ONLY)			ANGLE							
				SSRP		ASRP		STRAP THICKNESS	BOLTS Dia	BAR Dia	DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND	
				SSRP	ASRP	SSRP	ASRP				SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP	
ANNULAR	2 2/3" x 1/2" * REROLLED END	24"	12"	0.064"-0.168"		0.060"-0.164"		0.064"	0.060"									
HUGGER	2 2/3" x 1/2" * REROLLED END	24"	10 1/2"	0.064"-0.168"		0.064"		0.079"	1/2"	7/8"								

\* See Note 12.

12. All profiles of Spiral Rib Pipe (3/4" x 3/4" ribs at 7 1/2" pitch and 3/4" x 1" ribs at 11 1/2" pitch in both steel and aluminum and 3/4" x 1" ribs at 8 1/2" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 2 2/3" x 1/2" annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**CORRUGATED METAL PIPE  
COUPLING DETAILS No. 7  
DOWNDRAIN**

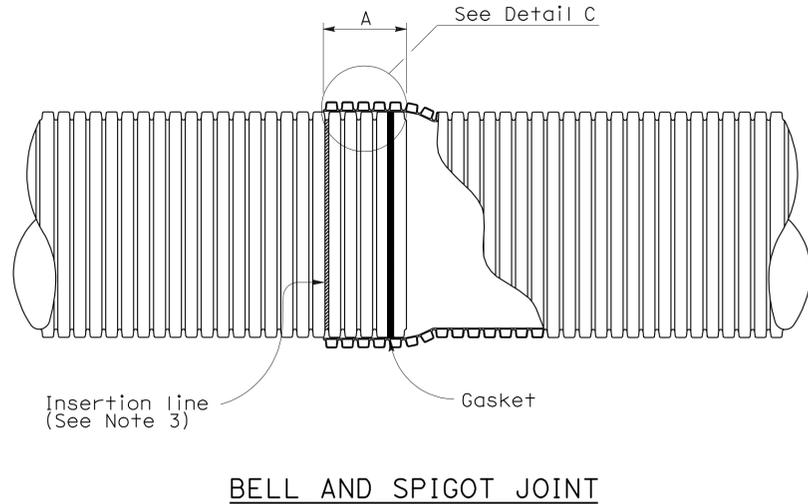
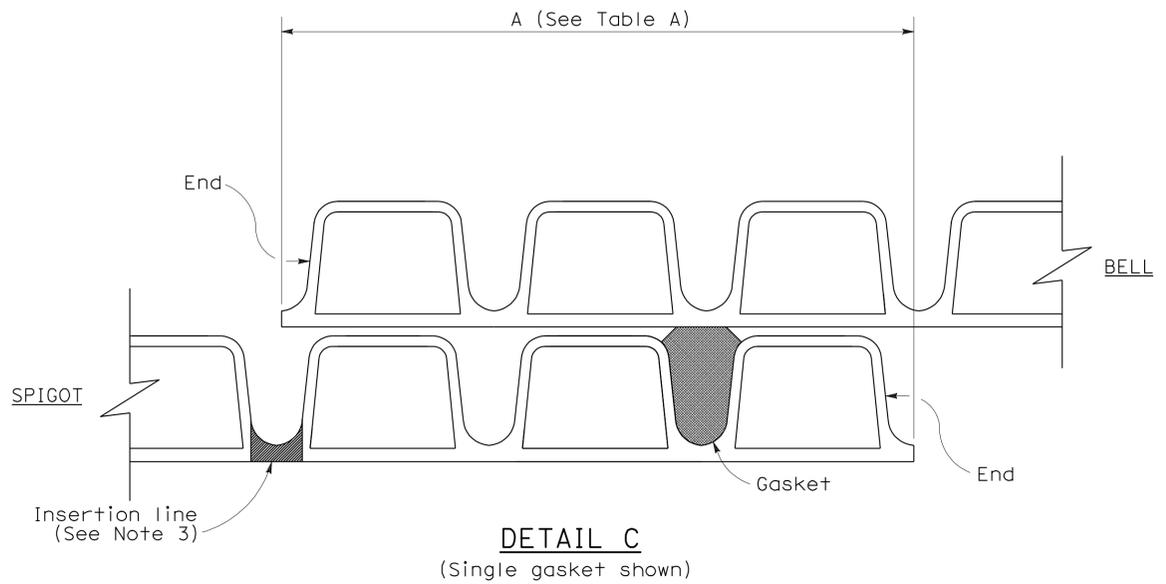
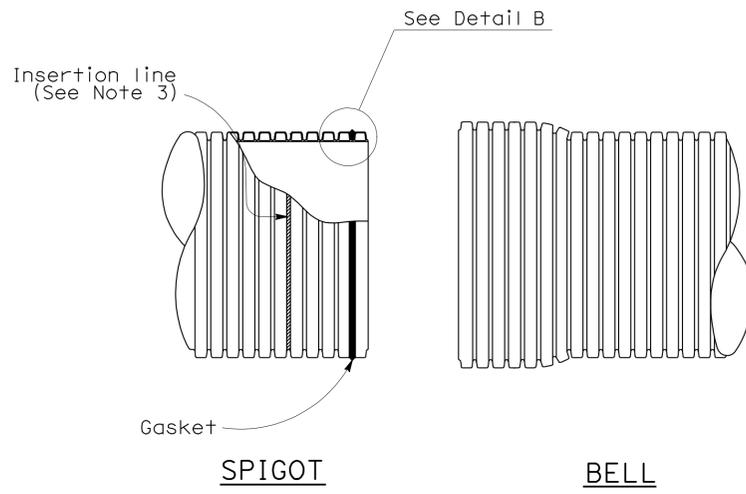
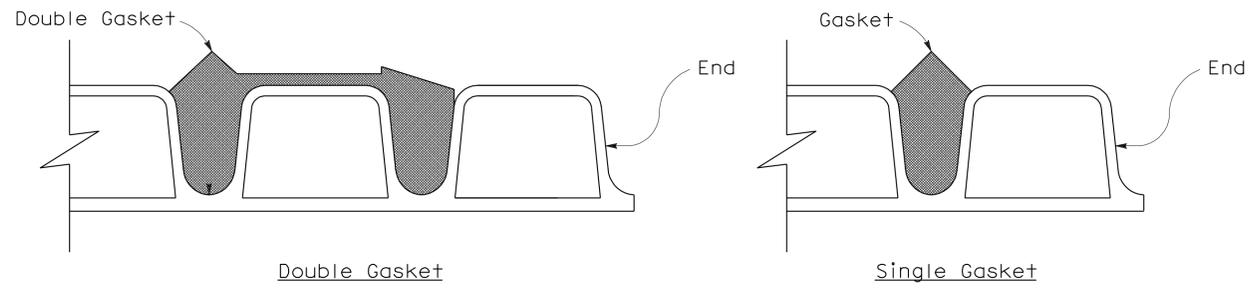
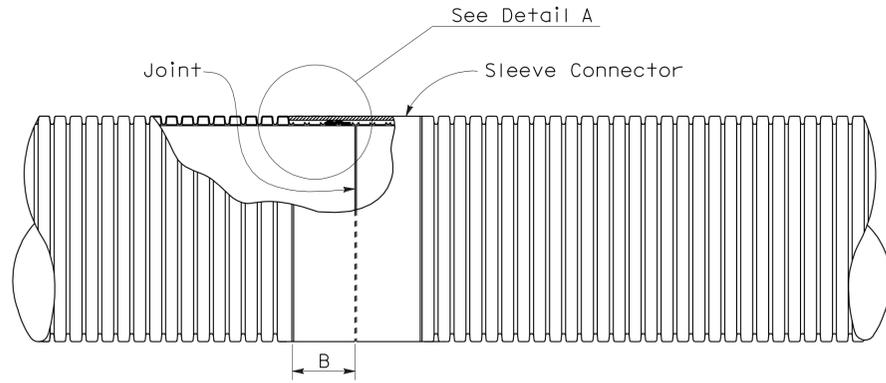
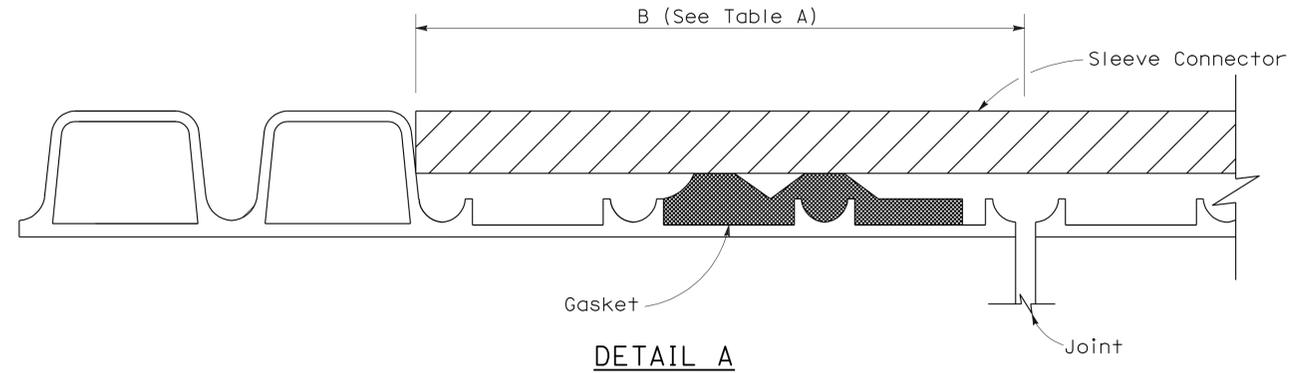
NO SCALE

RSP D97G DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97G  
DATED MAY 1, 2006 - PAGE 189 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP D97G**

**2006 REVISED STANDARD PLAN RSP D97G**

To accompany plans dated 6-18-12



**NOTES:**

- For pipe sections installed on straight alignment, the pipe sections shall be joined to achieve maximum joint overlap at all points on the periphery as indicated in Table A where the plans call for positive or watertight joints. Maximum joint overlap is recommended where the plans call for standard joints, but in no case shall the joint overlap be less than 3/2".
- For pipe sections installed on curved alignment, the maximum angle of deflection from straight alignment at any joint shall not exceed two degrees. Where the plans call for watertightness, field testing for compliance is required. Where plans call for positive joints, the pipe sections shall be joined to achieve Table A Dimensions on one side of the joint. Joints classified as standard shall have no less than 3/2" joint overlap at any point on the periphery.
- Factory applied insertion line limit shall be placed on spigot.
- Liner insert to be used inside of existing pipe.

**TABLE A**

JOINT OVERLAP DIMENSIONS		
PIPE Dia (NOMINAL)	A	B
12"	5 3/4"	4 1/4"
15"	6 3/4"	5 5/8"
18"	6 3/4"	5 5/8"
21"	8 1/2"	5 5/8"
24"	8 1/2"	6 1/8"
30"	8 1/2"	7 1/8"
36"	8 1/2"	8 1/8"

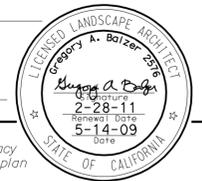
STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**CORRUGATED POLYVINYL CHLORIDE PIPE  
 WITH SMOOTH INTERIOR  
 STANDARD AND POSITIVE JOINTS**

NO SCALE  
 NSP D97I DATED MARCH 7, 2008 SUPPLEMENTS THE STANDARD  
 PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP D97I

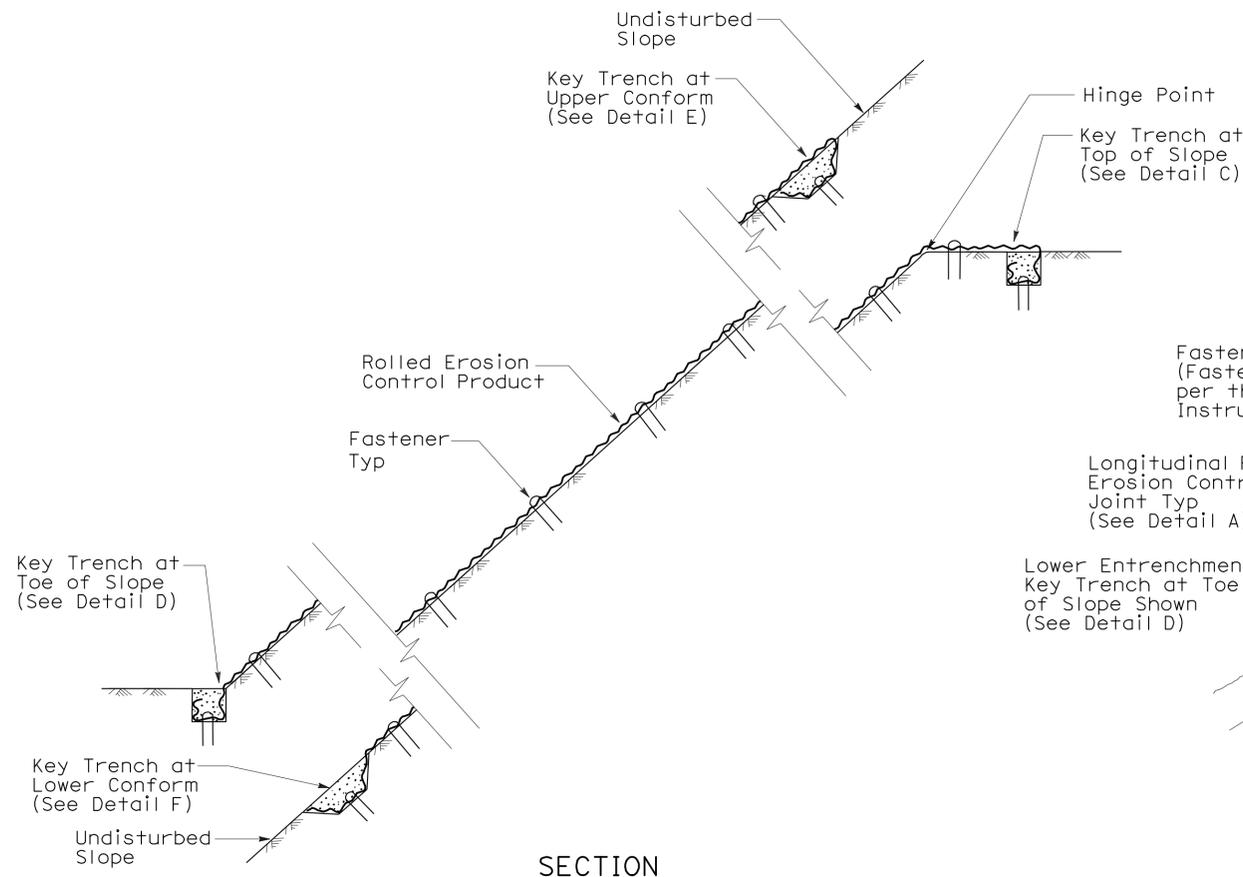
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	65	96

*Suzanne A. Balzer*  
 LICENSED LANDSCAPE ARCHITECT  
 June 5, 2009  
 PLANS APPROVAL DATE  
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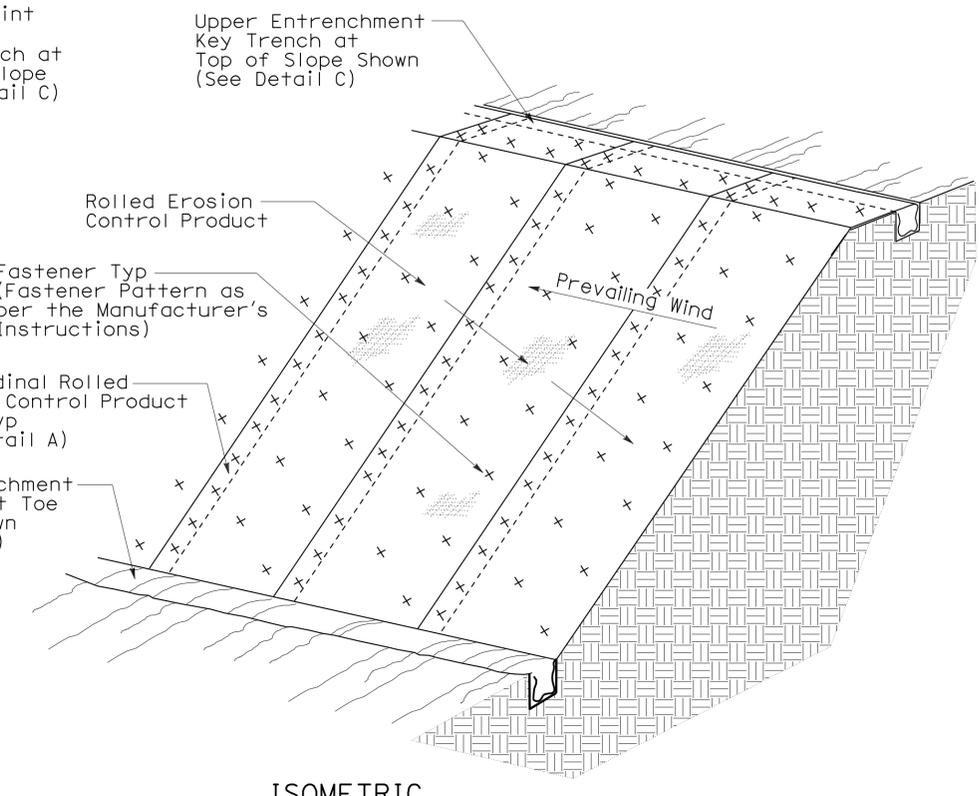


To accompany plans dated 6-18-12

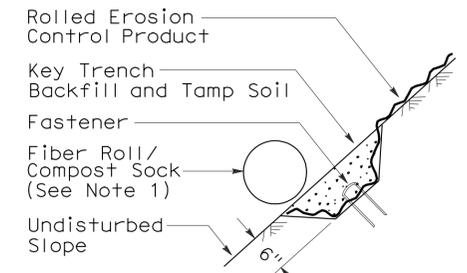
- NOTE:**
1. Fiber Roll/Compost Sock shown for reference purposes only.
  2. If transverse rolled erosion control product joints are required on slopes, see Detail B.



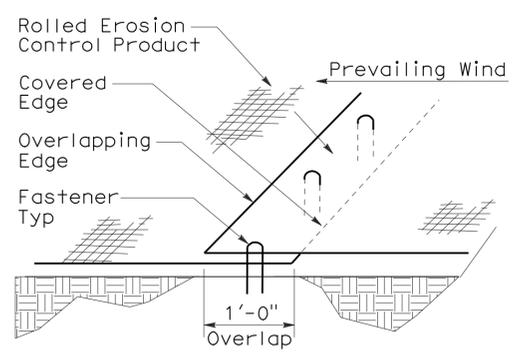
**SECTION**  
**ROLLED EROSION CONTROL PRODUCT**  
**ON SLOPE WITH VARIOUS KEY ENTRENCHMENTS**



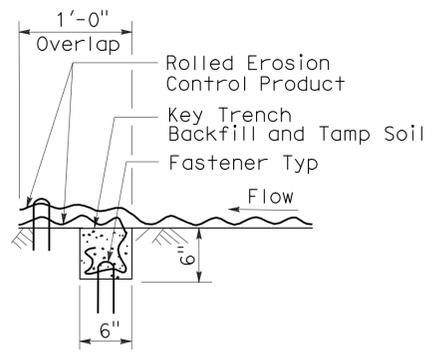
**ISOMETRIC**  
**ROLLED EROSION CONTROL PRODUCT**  
**ON SLOPE**



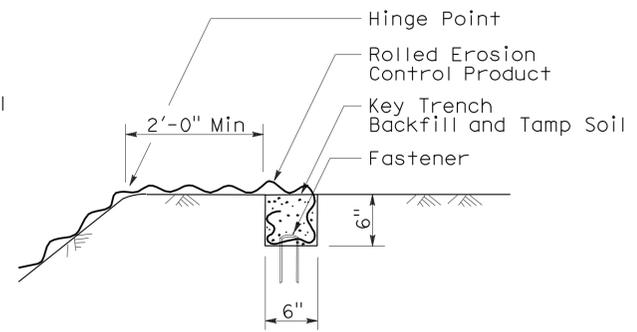
**SECTION**  
**DETAIL F**  
**KEY TRENCH AT**  
**LOWER CONFORM**



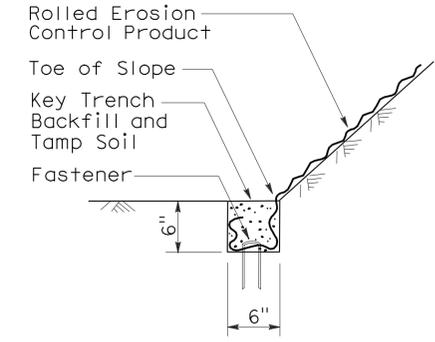
**PERSPECTIVE**  
**DETAIL A**  
**LONGITUDINAL ROLLED EROSION**  
**CONTROL PRODUCT JOINT**



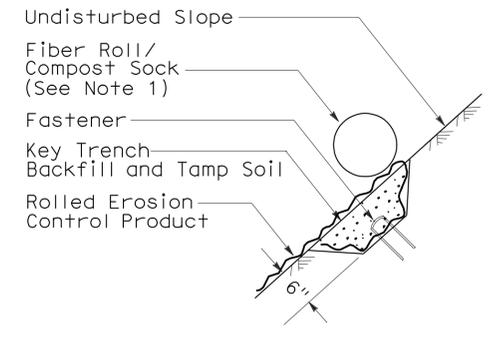
**SECTION**  
**DETAIL B**  
**TRANSVERSE ROLLED EROSION**  
**CONTROL PRODUCT JOINT**



**SECTION**  
**DETAIL C**  
**KEY TRENCH AT**  
**TOP OF SLOPE**



**SECTION**  
**DETAIL D**  
**KEY TRENCH AT**  
**TOE OF SLOPE**



**SECTION**  
**DETAIL E**  
**KEY TRENCH AT**  
**UPPER CONFORM**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

**ROLLED EROSION CONTROL PRODUCT**

NO SCALE

NSP H53 DATED JUNE 5, 2009 SUPPLEMENTS  
 THE STANDARD PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP H53

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	66	96

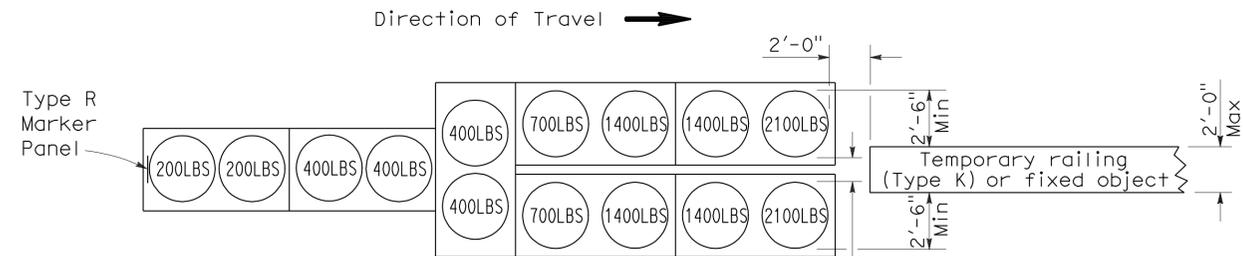
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

*The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.*

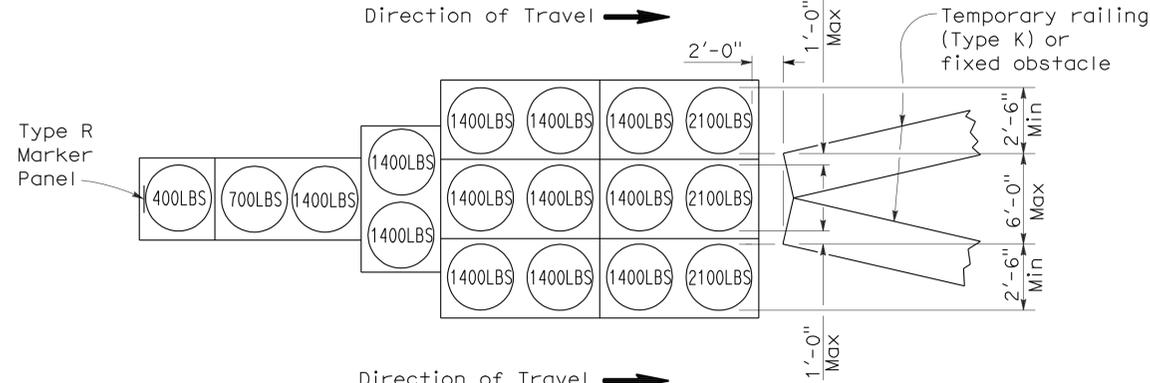
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 6-18-12



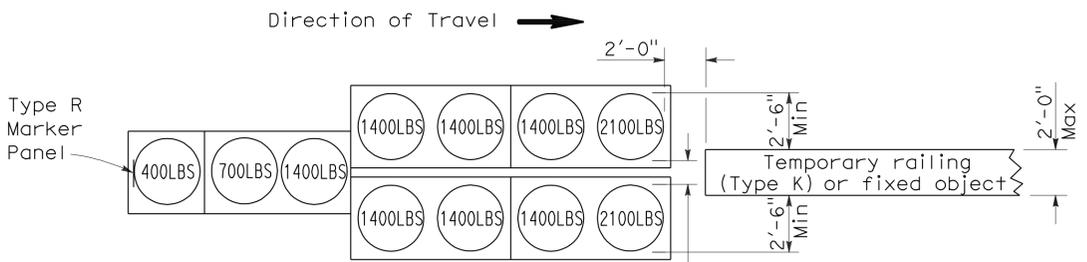
**ARRAY 'TU14'**

Approach speed 45 mph or more



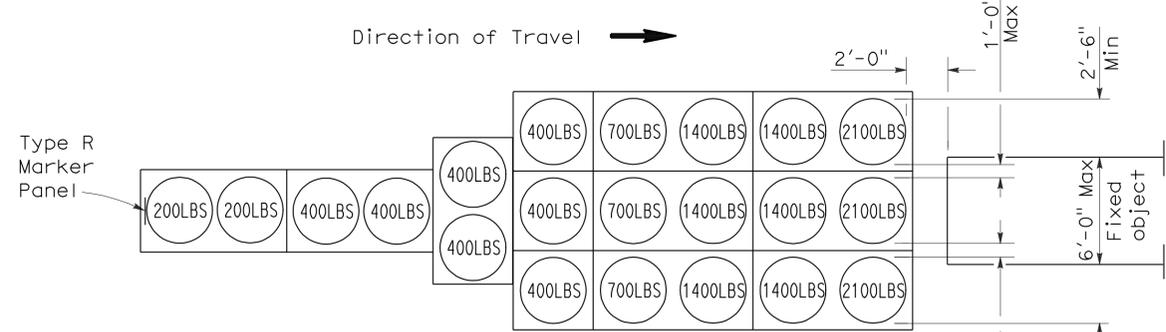
**ARRAY 'TU17'**

Approach speed less than 45 mph



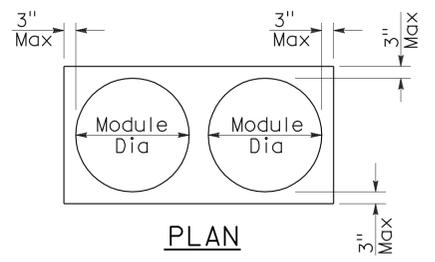
**ARRAY 'TU11'**

Approach speed less than 45 mph

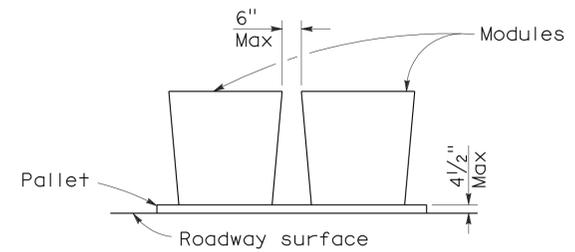


**ARRAY 'TU21'**

Approach speed 45 mph or more



**PLAN**



**ELEVATION**

**CRASH CUSHION PALLET DETAIL**

See Note 7

**NOTES:**

1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
2. All sand weights are nominal.
3. Temporary crash cushion arrays shall not encroach on the traveled way.
4. Place the top of Type R marker panel 1" below the module lid.
5. Refer to Standard Plan A73B for marker details.
6. Approach speeds indicated conform to NCHRP 350 Report criteria.
7. Use of pallets is optional.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(UNIDIRECTIONAL)**

NO SCALE

RSP T1A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T1A  
DATED MAY 1, 2006 - PAGE 211 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T1A**

2006 REVISED STANDARD PLAN RSP T1A

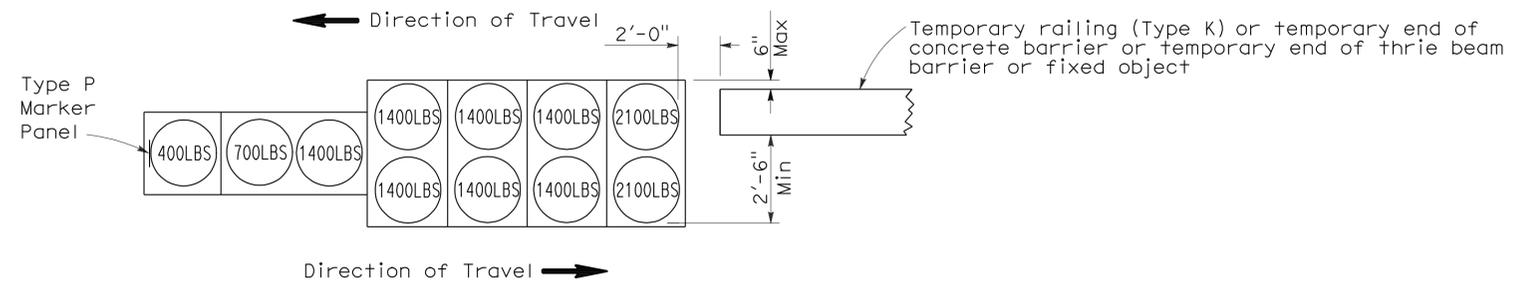
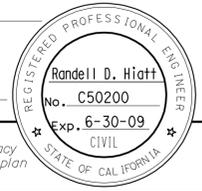
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	67	96

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

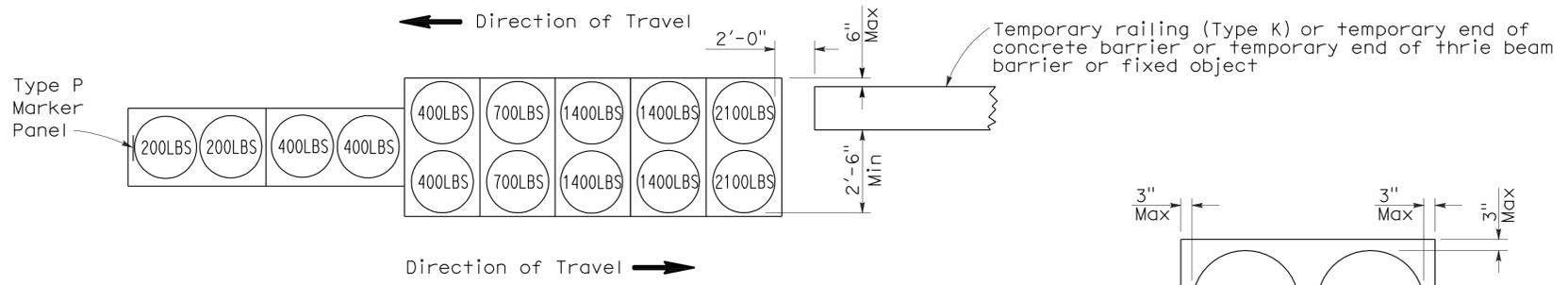
*The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.*

To accompany plans dated 6-18-12



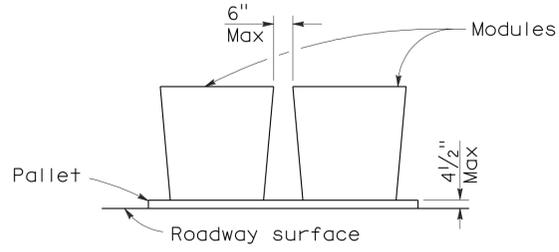
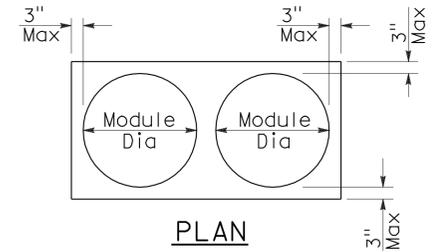
**ARRAY 'TB11'**

Approach speed less than 45 mph



**ARRAY 'TB14'**

Approach speed 45 mph or more



**CRASH CUSHION PALLET DETAIL**  
See Note 7

**NOTES:**

1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
2. All sand weights are nominal.
3. Temporary crash cushion arrays shall not encroach on the traveled way.
4. Place the Type P marker panel so that the bottom of the panel rests upon the pallet.
5. Refer to Standard Plan A73B for marker details.
6. Approach speeds indicated conform to NCHRP 350 Report criteria.
7. Use of pallets is optional.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(BIDIRECTIONAL)**  
NO SCALE

RSP T1B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T1B  
DATED MAY 1, 2006 - PAGE 212 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T1B**

2006 REVISED STANDARD PLAN RSP T1B

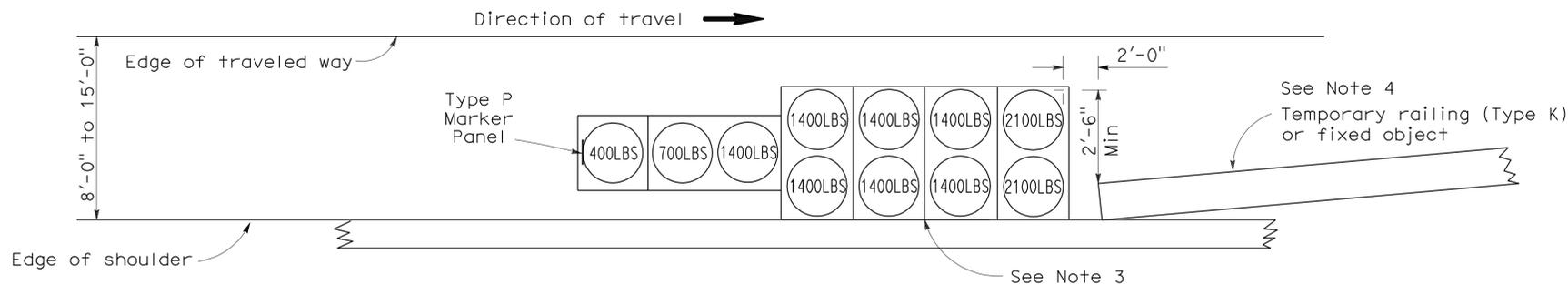
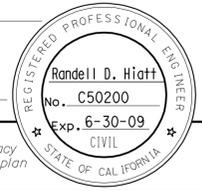
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	68	96

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

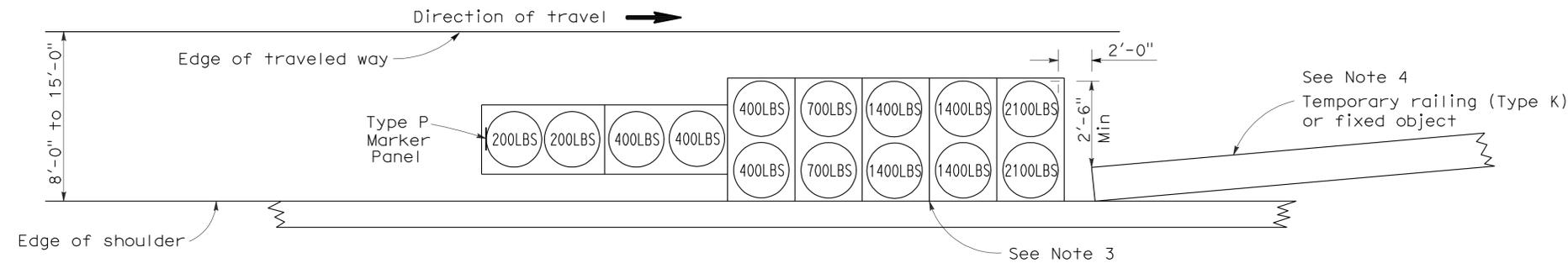
June 6, 2008  
PLANS APPROVAL DATE

*The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.*

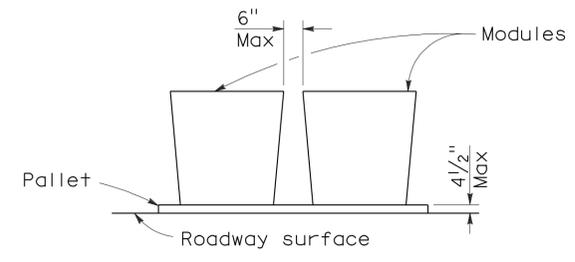
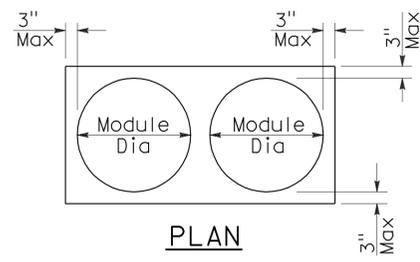
To accompany plans dated 6-18-12



**ARRAY 'TS11'**  
Approach speed less than 45 mph  
See Note 9



**ARRAY 'TS14'**  
Approach speed 45 mph or more  
See Note 9



**CRASH CUSHION PALLET DETAIL**  
See Note 11

**NOTES:**

- (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
- All sand weights are nominal.
- The temporary crash cushion arrays shown on this plan shall be used only in locations where there will be traffic on one side of the temporary crash cushion array.
- If the fixed object or approach end of the temporary railing is less than 15'-0" from the edge of traveled way, a temporary crash cushion is required in a construction or work zone.
- Temporary crash cushion arrays shall not encroach on the traveled way.
- Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
- Place the Type P marker panel so that the bottom of the panel rests upon the pallet and faces traffic.
- Refer to Standard Plan A73B for marker details.
- For shoulder widths less than 8'-0", appropriate approved crash cushion protection, other than sand filled modules, shall be provided at fixed objects and at approach ends of temporary railing. The specific type of crash cushion shall be as shown on the project plans or as specified in the Special Provisions, or if not shown on the project plans or specified in the Special Provisions, shall be as approved by the Engineer.
- Approach speeds indicated conform to NCHRP 350 Report criteria.
- Use of pallets is optional.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(SHOULDER INSTALLATIONS)**

NO SCALE  
RSP T2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T2  
DATED MAY 1, 2006 - PAGE 213 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T2**

2006 REVISED STANDARD PLAN RSP T2

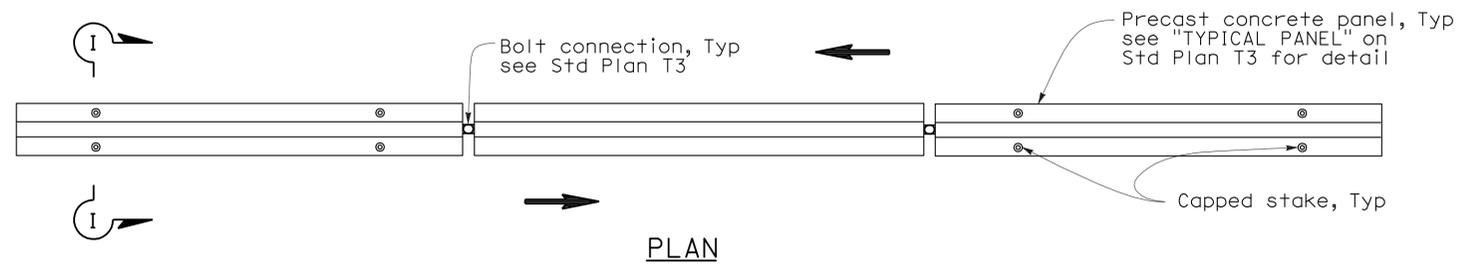
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	69	96

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

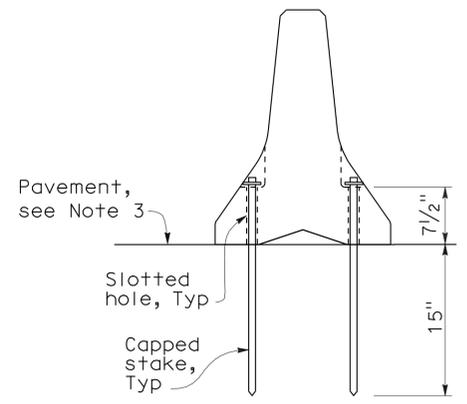
May 20, 2011  
PLANS APPROVAL DATE

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To accompany plans dated 6-18-12

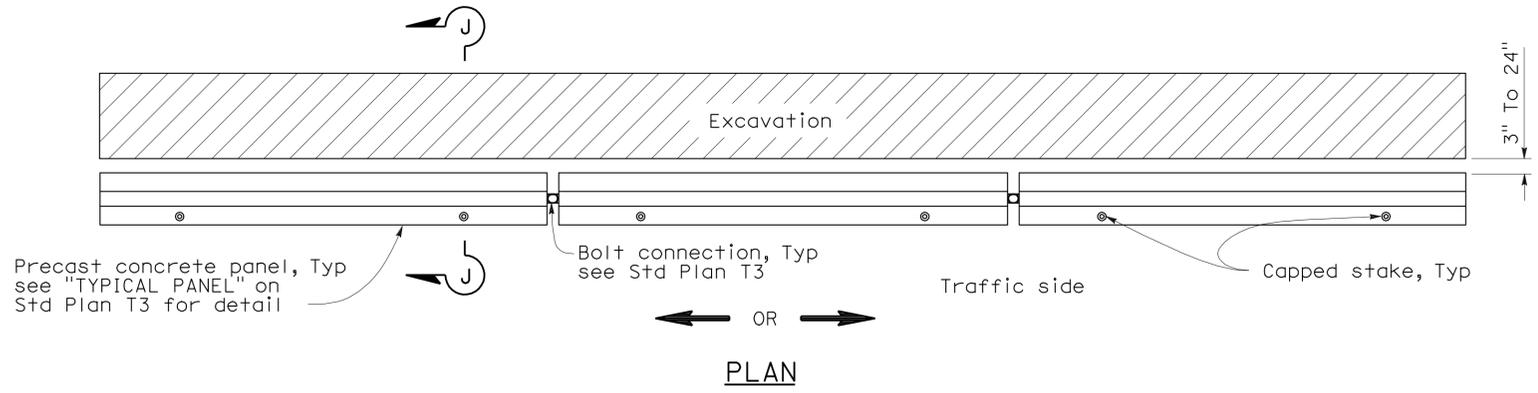


**RAILING STAKING CONFIGURATION FOR TWO-WAY TRAFFIC**  
See Note 1

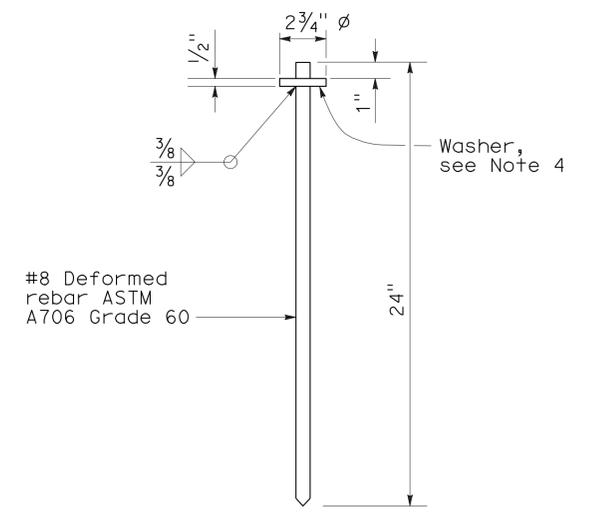
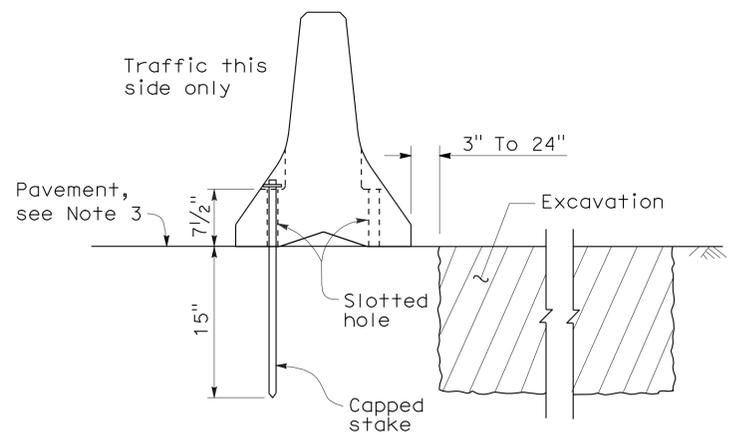


**NOTES:**

1. Where Type K Temporary Railing is placed as a temporary or long term barrier in two-way traffic on highways with less than 24" from the edge of traveled way, use four capped stakes per every other panel with end panels staked.
2. Where Type K Temporary Railing is placed 3" to 24" from the edge of an excavation on highways, use two capped stakes per panel along the traffic side.
3. Staked Type K Temporary Railing must be supported by at least 4" thick concrete, hot mix asphalt or existing asphalt concrete pavement.
4. The minimum yield strength for the washer must be 60,000 psi.
5. Direction of adjacent traffic indicated by  $\Rightarrow$ .



**RAILING STAKING CONFIGURATION ADJACENT TO AN EXCAVATION**  
See Note 2



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY RAILING  
(TYPE K)**

NO SCALE

NSP T3A DATED MAY 20, 2011 SUPPLEMENTS  
THE STANDARD PLANS BOOK DATED MAY 2006.

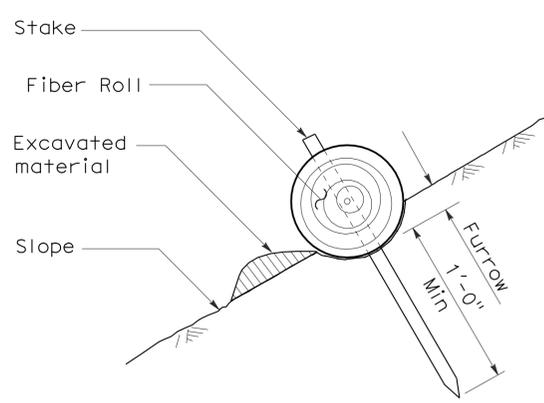
2006 NEW STANDARD PLAN NSP T3A



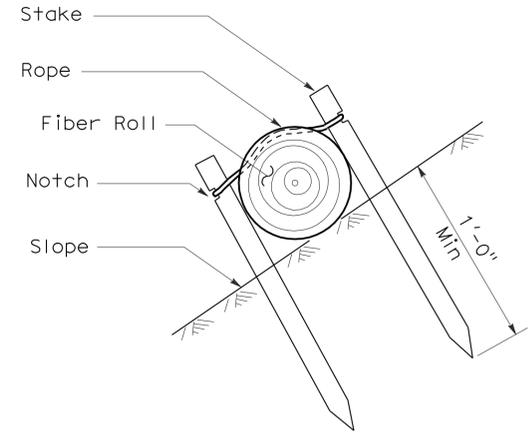
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	71	96

*Robert B. Schott*  
 LICENSED LANDSCAPE ARCHITECT  
 April 3, 2009  
 PLANS APPROVAL DATE  
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

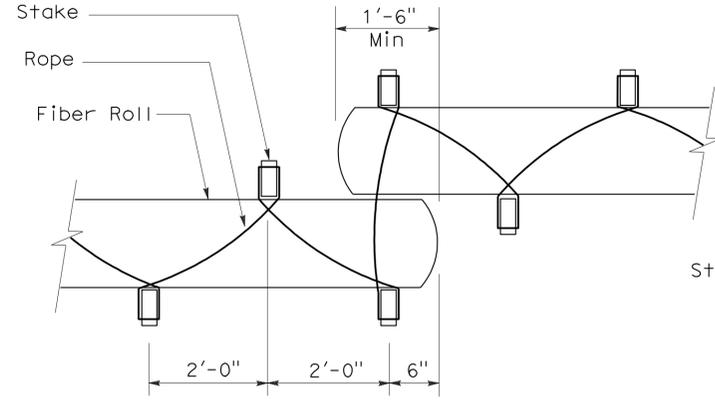
To accompany plans dated 6-18-12



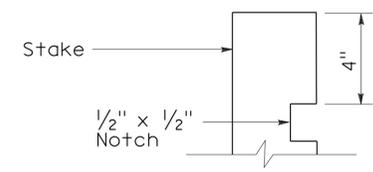
**SECTION**  
**TEMPORARY FIBER ROLL**  
**(TYPE 1)**



**SECTION**  
**TEMPORARY FIBER ROLL**  
**(TYPE 2)**

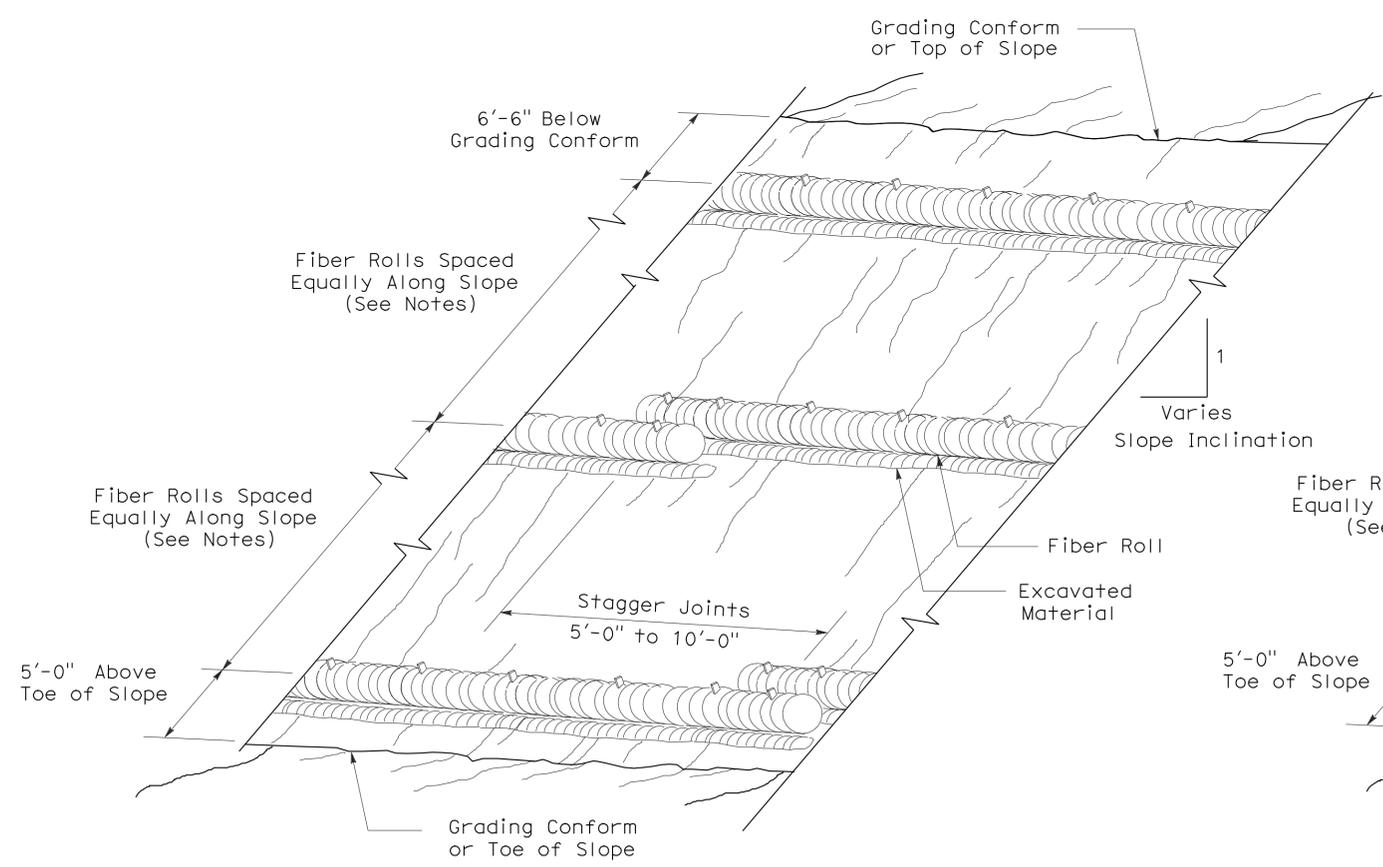


**PLAN**  
**TEMPORARY FIBER ROLL**  
**(TYPE 2)**

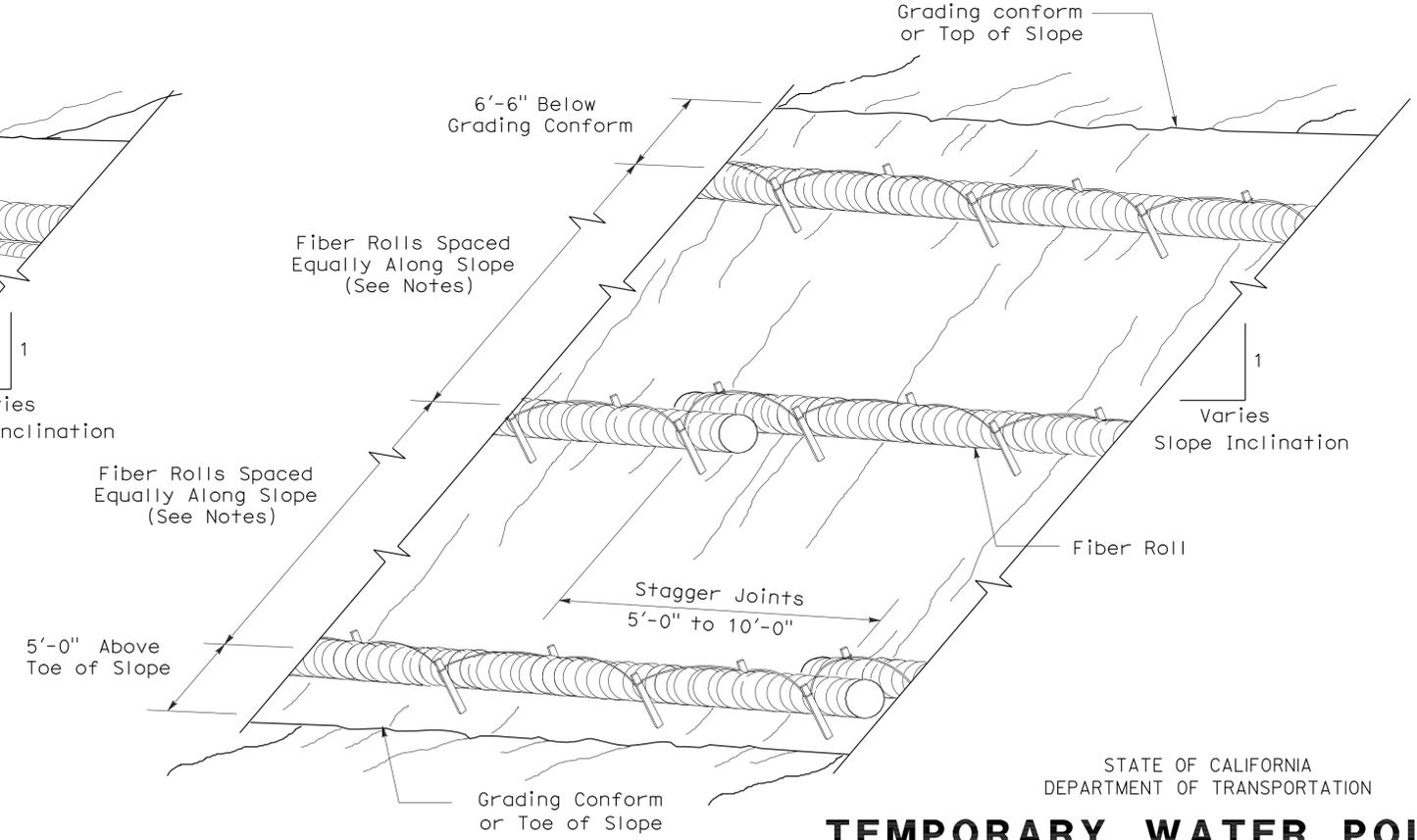


**ELEVATION**  
**STAKE NOTCH DETAIL**

- NOTES:**
1. Temporary fiber roll spacing varies depending upon slope inclination.
  2. Installations shown in the perspectives are for slope inclination of 10:1 and steeper.



**PERSPECTIVE**  
**TEMPORARY FIBER ROLL (TYPE 1)**



**PERSPECTIVE**  
**TEMPORARY FIBER ROLL (TYPE 2)**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

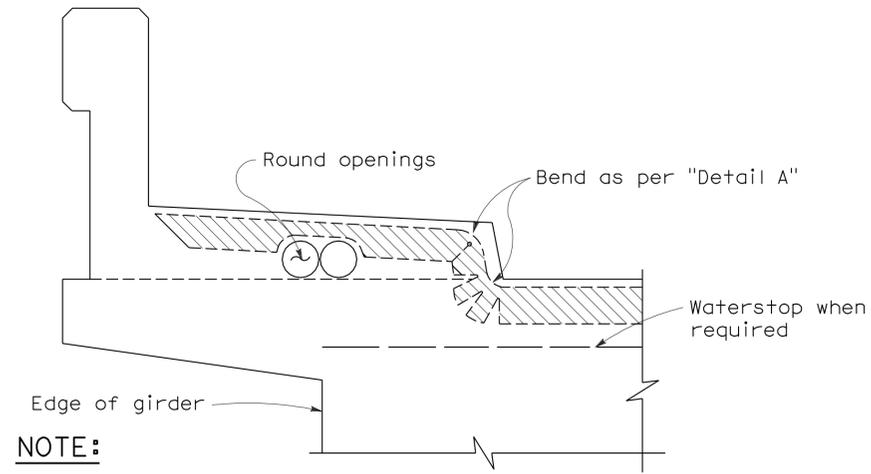
**TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY FIBER ROLL)**

NO SCALE

RSP T56 DATED APRIL 3, 2009 SUPERSEDES STANDARD PLAN T56 DATED MAY 1, 2006 - PAGE 232 OF THE STANDARD PLANS BOOK DATED MAY 2006.

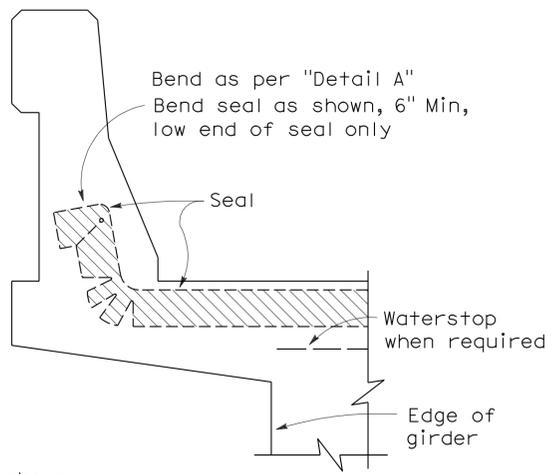
**REVISED STANDARD PLAN RSP T56**

2006 REVISED STANDARD PLAN RSP T56

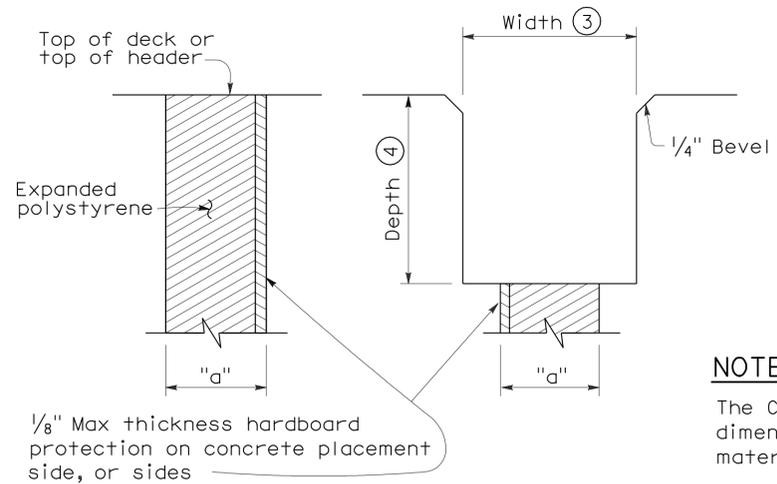


**NOTE:**  
 Type "B" seal shown. Type "A" seals to conform to the general path of seal shown, cuts for bending not required. Bend Type "A" seals 3" up into curb or barrier rail on only the low end of the seal.

**CONCRETE BARRIER AND SIDEWALK**



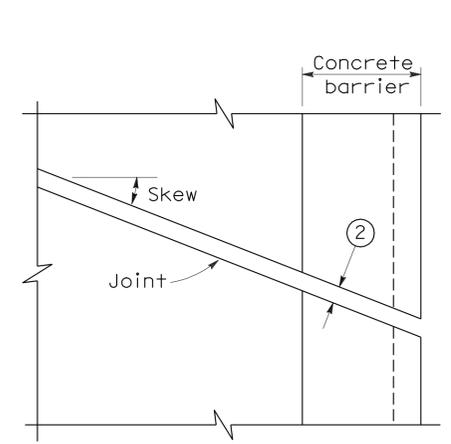
**CONCRETE BARRIER**



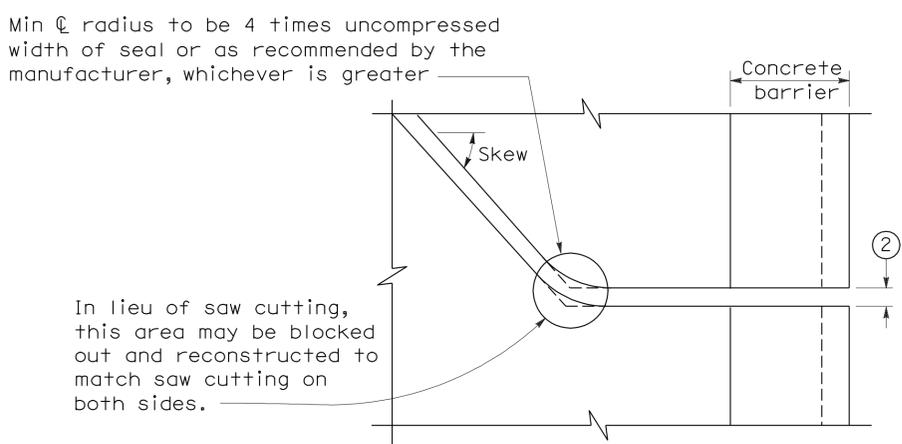
**FORMING DETAIL SAWCUT DETAIL**

**NOTE:**  
 The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

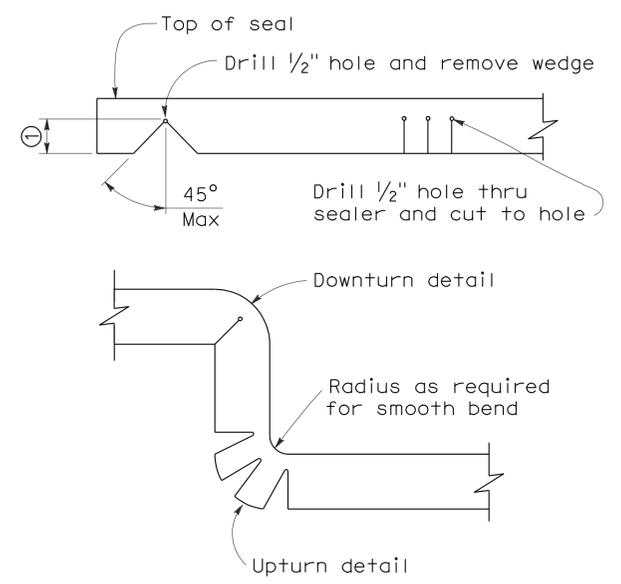
**JOINT SEALS DETAILS**



**PLAN OF JOINT (SKEW ≤ 20°)**



**PLAN OF JOINT (SKEW > 20°)**

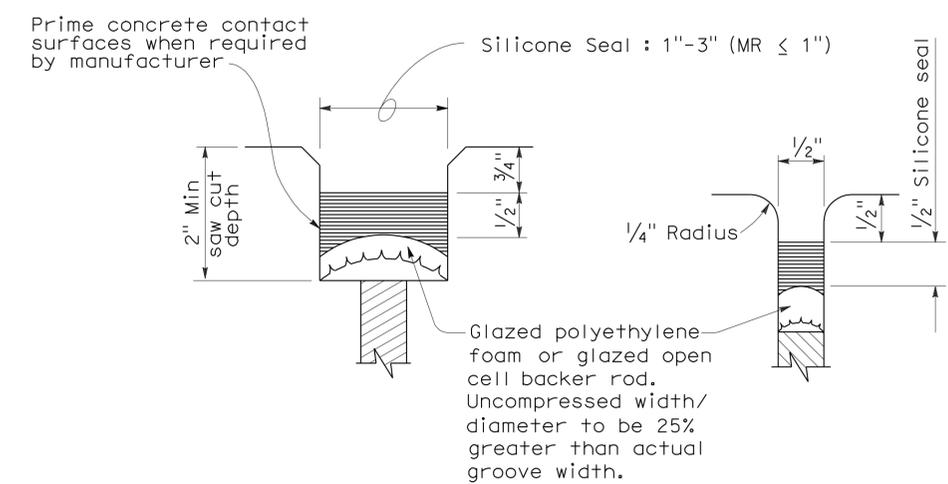


**DETAIL A**

- NOTES:**
- Make smooth cuts from the bottom of seal to 1 1/2" clear of top leaving at least one complete cell between the top of the cut and top of the seal. When necessary cut back of seal to clear conduit and round openings.
  - Opening in barrier to match width of sawn deck joint.
  - Sawcut groove widths shall be as ordered by the Engineer.
  - Depth of sawcut: Type A - Depth to be 2" minimum.  
 Type B - Depth to be equal to or greater than the depth of seal measured along the contact surface, when compressed to minimum width position (W<sub>2</sub>) plus dimensions shown.
  - MR (movement rating) as shown on other plan sheets.
  - Other depths must be approved by the Engineer.

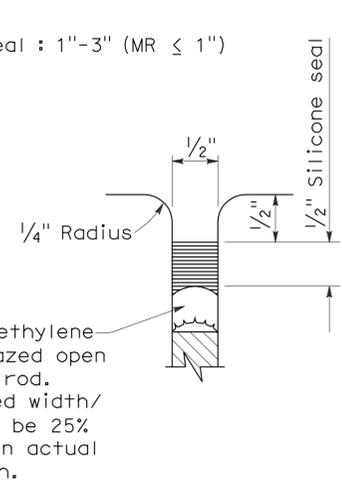
**DIMENSIONS "a" OF JOINT REQUIRED**

Movement Rating (MR) ⑤	Bridge Type	"a" Dimension		
		Deck Concrete Placed		
		Winter	Fall-Spring	Summer
2"	All except CIP/PS	1 1/2"	1 1/4"	3/4"
	CIP/PS	1 1/4"	1"	1/2"
1 1/2"	All except CIP/PS	1 1/4"	1"	1/2"
	CIP/PS	1"	3/4"	1/2"
1"	All except CIP/PS	1"	3/4"	1/2"
	CIP/PS	3/4"	1/2"	1/2"
1/2"	All except CIP/PS	3/4"	3/4"	1/2"
	CIP/PS	1/2"	1/2"	1/2"



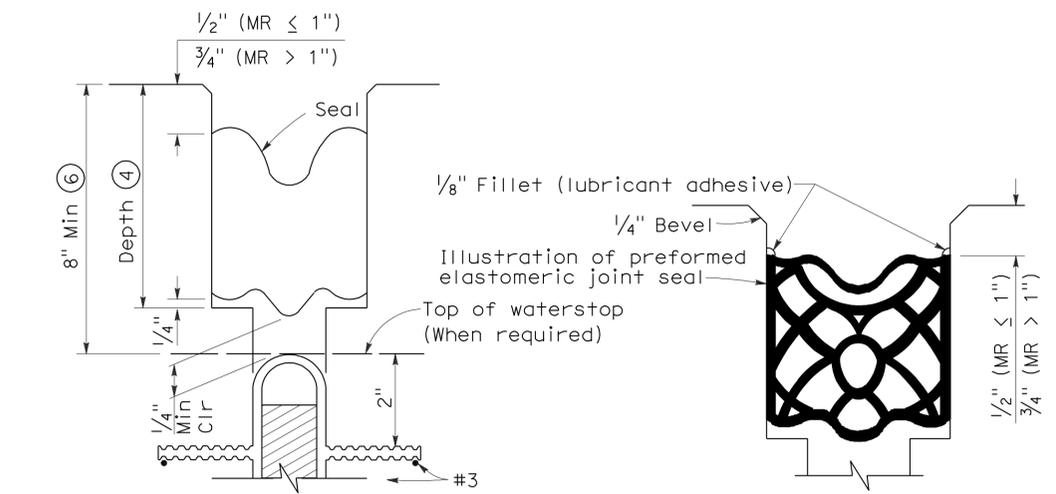
**TYPE A SEAL**

Movement rating : Silicone = 1" Max



**TYPE AL SEAL**

Longitudinal joints only



**TYPE B JOINT SEAL IN MINIMUM WIDTH POSITION (W<sub>2</sub>)**

**TYPE B SEAL**

Movement Rating ≤ 2"

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**JOINT SEALS**  
**(MAXIMUM MOVEMENT RATING = 2")**  
 NO SCALE

RSP B6-21 DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN B6-21 DATED MAY 1, 2006 - PAGE 258 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP B6-21**

2006 REVISED STANDARD PLAN RSP B6-21

# ELECTROLIERS

STANDARD TYPES		
15, 15D		High mast light pole
15 STRUCTURE		Double Arm lighting standard
21, 21D STRUCTURE		Existing electrolier
30		Electrolier foundation (Future installation)
31		
32		
35		
36-20A		

**NOTES:**

- Luminaires shall be 310 W HPS when installed on Type 21, 21D, 30, 31, 32, 35 and 36-20A Standards, unless otherwise specified. Luminaires shall be 200 W HPS when installed on other type standards or poles, unless otherwise specified.
- Luminaires shall be the cutoff type, ANSI Type III medium cutoff lighting distribution, unless otherwise specified.
- Variations noted adjacent to symbol on project plans.

- Electrolier (see project notes or project plans)
- Luminaire on wood pole

## STANDARD NOTES:

- AB** Abandon. If applied to conduit, remove conductors.
- BC** Install pull box in existing conduit run.
- BP** Pedestrian barricade, type as indicated on plan.
- CB** Install conduit into existing pull box.
- CC** Connect new and existing conduit. Remove existing conductors and install conductors as indicated.
- CF** Conduit to remain for future use. Remove conductors. Install pull wire or rope.
- DH** Detector handhole.
- FA** Foundation to be abandoned.
- IS** Install sign on signal mast arm.
- NS** No slip base on standard.
- PEC** Photoelectric control.
- PEU** Photoelectric unit.
- RC** Equipment or material to be removed and become the property of the Contractor.
- RE** Remove electrolier, fuses and ballast. Tape ends of conductors.
- RL** Relocate equipment.
- RR** Remove and reuse equipment.
- RS** Remove and salvage equipment.
- SC** Splice new to existing conductors.
- SD** Service disconnect.
- SF** Standard to remain for future use. Remove luminaire, pole conductors, fuses and ballast.
- TSP** Telephone service point.

# ABBREVIATIONS AND EQUIPMENT DESIGNATIONS

## PROPOSED EXISTING

BBS	bbs	Battery backup system
BC	bc	Bolt circle
C	C	Conduit
CCTV	cctv	Closed circuit television
CKT	ckt	Circuit
CMS	cms	Changeable message sign
DLC	dlc	Loop detector lead-in cable
EMS	ems	Extinguishable message sign
EVC	evc	Emergency vehicle cable
EVD	evd	Emergency vehicle detector
FB	fb	Flashing beacon
FBCA	fbca	Flashing beacon control assembly
FBS	fbs	Flashing beacon with slip base
FO	fo	Fiber optic
G	G	Ground (Equipment Grounding Conductor)
GFCI	GFCI	Ground fault circuit interrupt
HAR	har	Highway advisory radio
HEX	hex	Hexagonal
HPS	hps	High pressure sodium
IISNS	iisns	Internally illuminated street name sign
ISL	isl	Induction sign lighting
LED	led	Light emitting diode
LMA	lma	Luminaire mast arm
LPS	lps	Low pressure sodium
LTG	ltg	Lighting
LUM	lum	Luminaire
MAT	mat	Mast arm mounting vehicle signal faces, top attachment
MAS	mas	Mast arm mounting vehicle signal faces, side attachment
MAS-4A	mas-4A	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-4B	mas-4B	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-4C	mas-4C	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-5A	mas-5A	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MAS-5B	mas-5B	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MC	mc	Mercury contactor
M/M	m/m	Multiple to multiple transformer
MT	mt	Conduit with pull wire or rope only
MTG	mtg	Mounting
	mv	Mercury vapor lighting fixture
N	N	Neutral (Grounded Conductor)
NC	NC	Normally closed
NO	NO	Normally open
PB	pb	Pull box
PEC	pec	Photoelectric control (Type I, II, III, IV or V as shown)
PED	ped	Pedestrian
PEU	peu	Photoelectric unit
PPB	ppb	Pedestrian push button
RL		Relocated equipment
RM	rm	Ramp metering
SB	sb	Slip base
SIC	sic	Signal interconnect cable
SIG	sig	Signal
SMA	sma	Signal mast arm
SNS	sns	Street name sign
SP	sp	Service point
TDC	tdc	Telephone demarcation cabinet
TMS	tms	Traffic monitoring station
TOS	tos	Traffic Operations System
VEH	veh	Vehicle
XFMR	xfmr	Transformer
COMM	comm	Communication
RWIS	rwis	Roadway weather information system

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	73	96

*Jeffery G. McRae*  
REGISTERED ELECTRICAL ENGINEER

October 5, 2007  
PLANS APPROVAL DATE

Jeffery G. McRae  
No. E14512  
Exp. 6-30-08  
ELECTRICAL  
STATE OF CALIFORNIA

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To accompany plans dated 6-18-12

## SOFFIT AND WALL MOUNTED LUMINAIRES

- Pendant, 70 W HPS unless otherwise specified.
- Flush, 70 W HPS unless otherwise specified.
- Wall surface, 70 W HPS unless otherwise specified.
- Existing soffit or wall luminaire to remain unmodified.
- Existing soffit or wall luminaire to be modified as specified.

### NOTE:

Arrow indicates "street side" of luminaire.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

RSP ES-1A DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-1A DATED MAY 1, 2006 - PAGE 400 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1A**

2006 REVISED STANDARD PLAN RSP ES-1A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	74	96

*Jeffery G. McRae*  
 REGISTERED ELECTRICAL ENGINEER  
 October 5, 2007  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 Jeffrey G. McRae  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

### CONDUIT

PROPOSED	EXISTING	
		Lighting Conduit, unless otherwise indicated or noted
		Traffic signal conduit
		Communication conduit
		Telephone conduit
		Fire alarm conduit
		Fiber optic conduit
		Conduit termination
		Conduit riser in/on structure or service pole

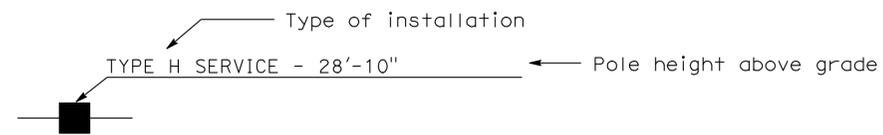
### SIGNAL EQUIPMENT

PROPOSED	EXISTING	
		Pedestrian signal face
		Pedestrian push button post
		Pedestrian barricade
		Vehicle signal face (with backplate, 3-Section: red, yellow and green)
		Vehicle signal face with angle visors
		Modifications of basic symbols: "L" indicates all non-arrow sections louvered "LG" indicates louvered green section only "PV" indicates 12" programmed visibility sections "8" indicates all 8" sections (only when specified)
		Type 15TS and Vehicle signal face
		Vehicle signal face with red, yellow and green left arrow sections
		Vehicle signal face with red and yellow sections and up green arrow
		Vehicle signal face (5 Section) with red, yellow and green sections and yellow and green right arrows
		Type 1 Standard and attached vehicle signal faces
		Standard with signal mast arm only and attached vehicle signal faces and internally illuminated street name sign
		Type 33 Standard, Left-turn vehicle signal face and sign
		Standard with luminaire and signal mast arms and attached vehicle signal faces
		Cantilever flashing beacon Type 9 Frame, with a sign unless otherwise specified or indicated
		Type 15-FBS Standard with two vehicle signal face sections with lens, backplate and visor with a sign
		Flashing beacon. One vehicle signal face section with lens, backplate and visor. "R" indicates red indication, "Y" indicates yellow indication
		Controller assembly. Door indicates front of cabinet

### SERVICE EQUIPMENT

PROPOSED	EXISTING	
		Overhead lines
		Wood pole "U" indicates utility owned
		Pole guy with anchor
		Utility transformer - ground mounted
		Service equipment enclosure type
		Service equipment enclosure door indicates front of enclosure
		Telephone demarcation cabinet

### POLE-MOUNTED SERVICE DESIGNATION



### ILLUMINATED OVERHEAD SIGN

PROPOSED	EXISTING	
		Overhead sign - Single post
		Overhead sign - Two post
		Overhead sign - Mounted on structure
		Overhead sign with electrolier

### SIGNAL EQUIPMENT Cont

PROPOSED	EXISTING	
		Guard post
		Type 1 Standard with "Meter On" sign
		Emergency Vehicle detector

### NOTES:

- All signal sections shall be 12" unless shown otherwise.
- Signal heads shall be provided with backplates unless shown otherwise.
- Signal indication shall be LED.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
 (SYMBOLS AND ABBREVIATIONS)**  
 NO SCALE

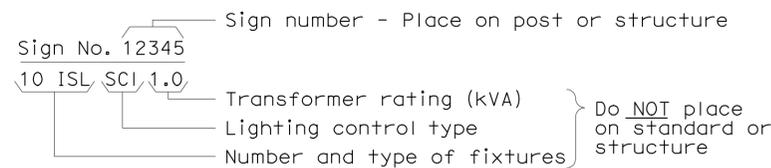
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B  
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1B**

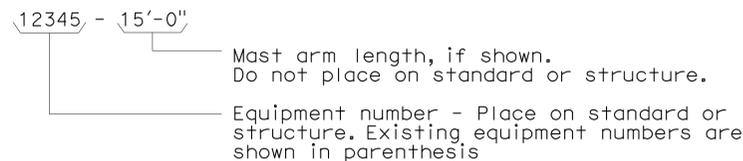
2006 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

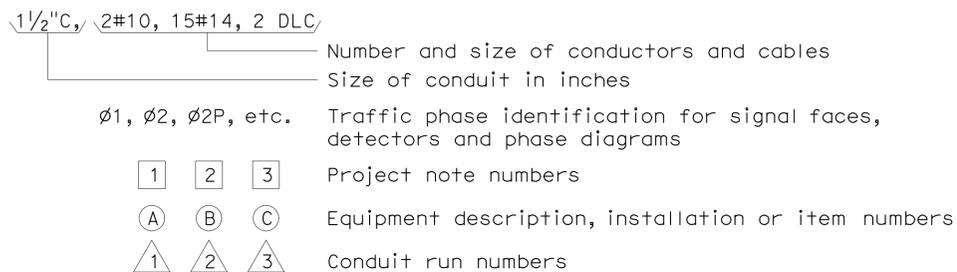
#### ILLUMINATED SIGN IDENTIFICATION NUMBER:



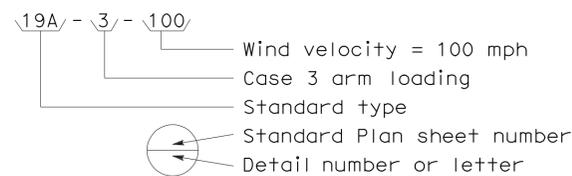
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



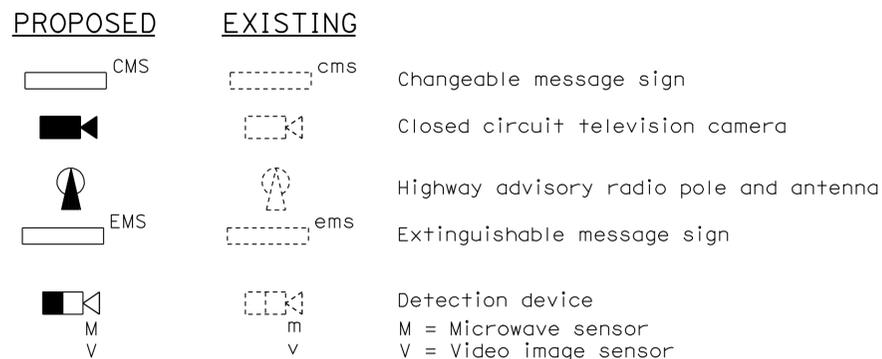
#### CONDUIT AND CONDUCTOR IDENTIFICATION:



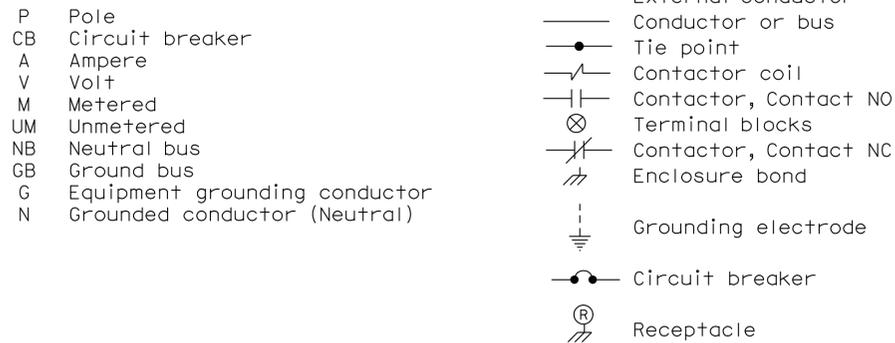
#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



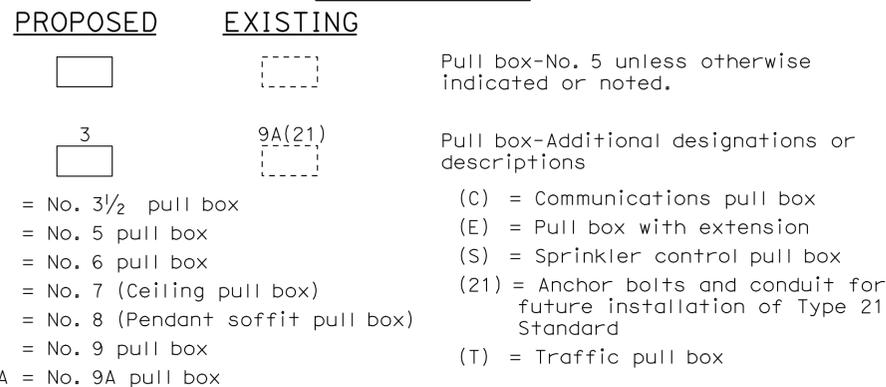
### MISCELLANEOUS EQUIPMENT



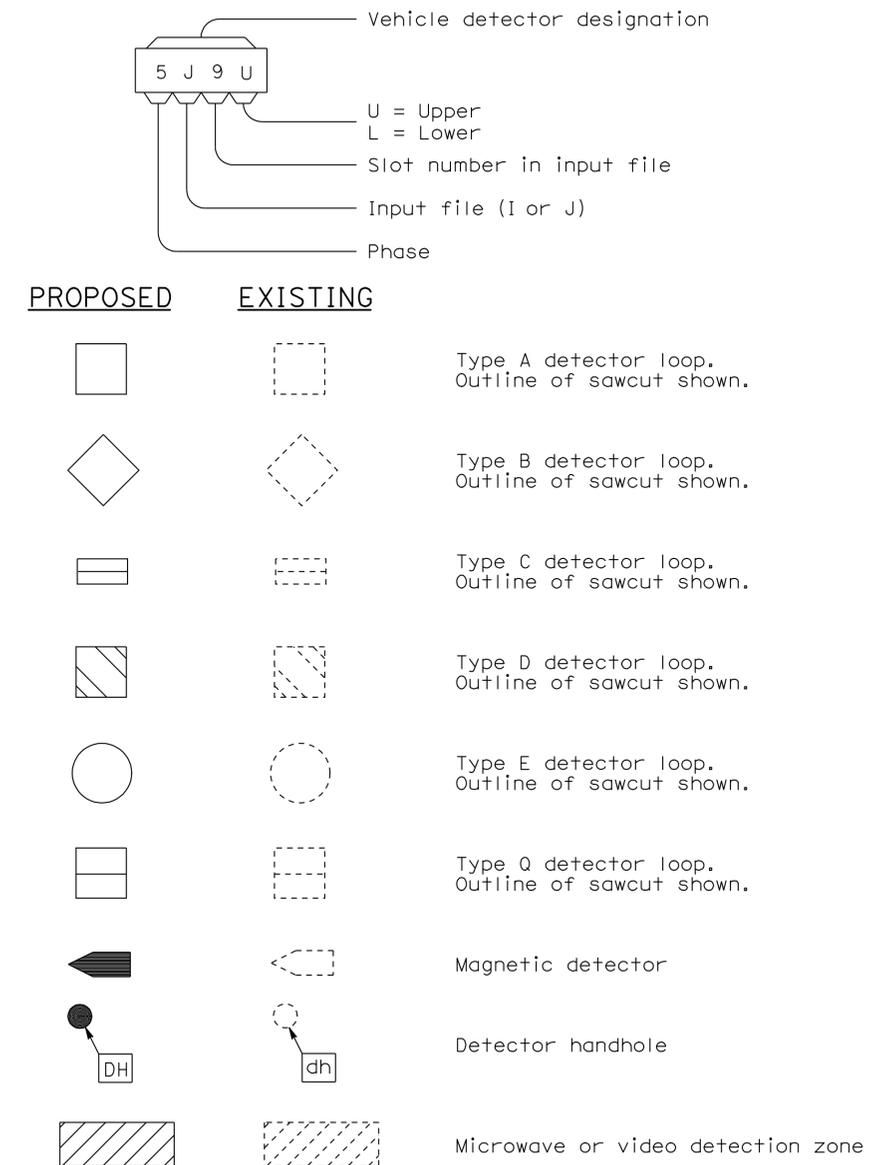
### WIRING DIAGRAM LEGEND



### PULL BOXES



### VEHICLE DETECTORS



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

RSP ES-1C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1C  
 DATED MAY 1, 2006 - PAGE 402 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1C**

2006 REVISED STANDARD PLAN RSP ES-1C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	76	96

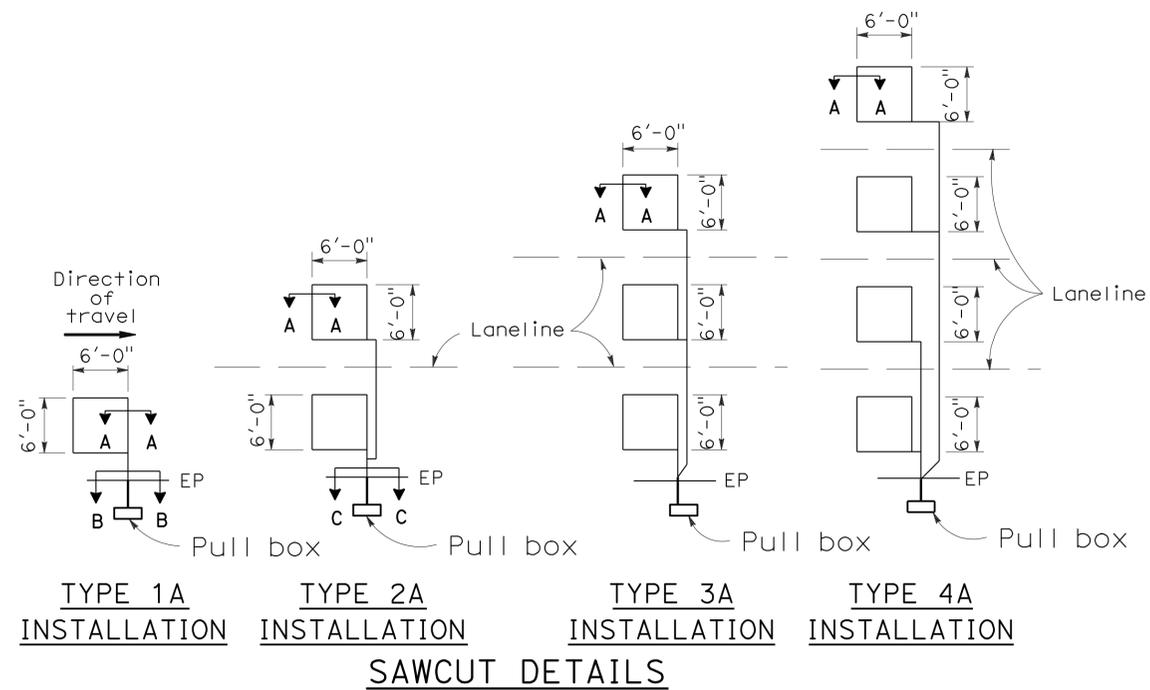
*Jeffery G. McRae*  
 REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

October 5, 2007  
 PLANS APPROVAL DATE

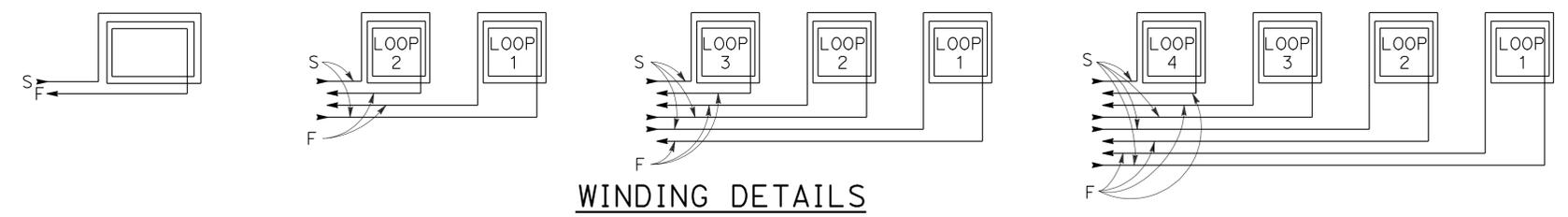
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

## LOOP INSTALLATION PROCEDURE

- Loops shall be centered in lanes.
- Saw slots in pavement for loop conductors as shown in details.
- Distance between side of loop and a lead-in saw cut from adjacent detectors shall be 2'-0" minimum. Distance between lead-in saw cuts shall be 6" minimum.
- Bottom of saw slot shall be smooth with no sharp edges.
- Slots shall be washed until clean, blown out and thoroughly dried before installing loop conductors.
- Adjacent loops on the same sensor unit channel shall be wound in opposite directions.
- Identify and tag loop circuit pairs in the pull box with loop number, start (S) and finish (F) of conductor. Identify and tag lead-in-cable with sensor number and phase.
- Install loop conductor in slot using a 3/16" to 1/4" thick wood paddle. Hold loop conductors with wood paddles (at the bottom of the sawed slot) during sealant placement.
- No more than 2 twisted pairs shall be installed in one sawed slot.
- Allow additional 5'-0" of slack length of conductor for the lead-in run to pull box.
- The additional length of each conductor for each loop shall be twisted together into a pair (6 turns per 3'-4" minimum) before being placed in the slot and conduit leading to pull box.
- Test each loop circuit for continuity, circuit resistance and insulation resistance at the pull box before filling slots.
- Fill slots as shown in details.
- Splice loop conductors to lead-in-cable. Splices shall be soldered.
- End of lead-in-cable and Type 2 loop conductor shall be waterproofed prior to installing in conduit to prevent moisture from entering the cable.
- Lead-in-cable shall not be spliced between the pull box and the controller cabinet terminals.
- Test each loop circuit for continuity, circuit resistance and insulation resistance at the controller cabinet location.
- Where loop conductors are not to be spliced to a lead-in-cable, the ends of the conductors shall be taped and waterproofed with electrical insulating coating.

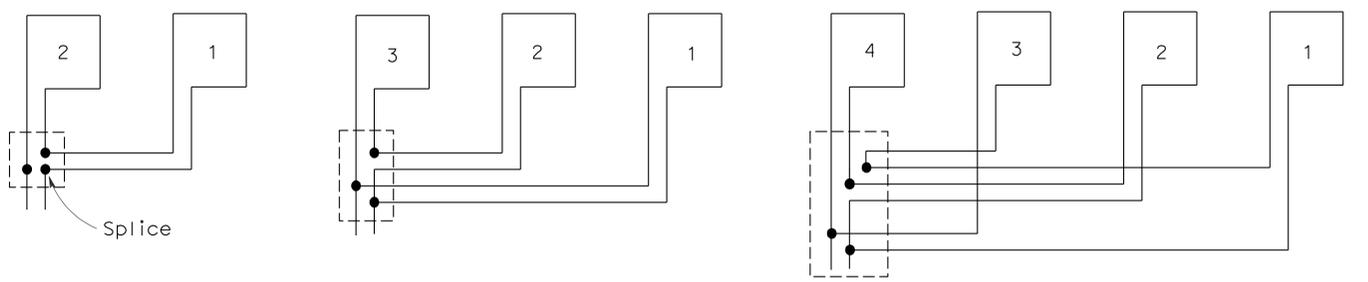


- SAWCUT DETAILS**  
(Type A loop detector configurations illustrated)
- 1A thru 4A = 1 Type A loop configuration in each lane.
  - 1B thru 4B = 1 Type B loop configuration in each lane.
  - 1C = 1 Type C loop configuration entering lanes as required.
  - 1D thru 4D = 1 Type D loop configuration in each lane.
  - 1E thru 4E = 1 Type E loop configuration in each lane.
  - 1Q thru 4Q = 1 Type Q loop configuration in each lane.  
(Use Type A, B, C, D, E or Q loop detector configurations only when specified or shown on plans)



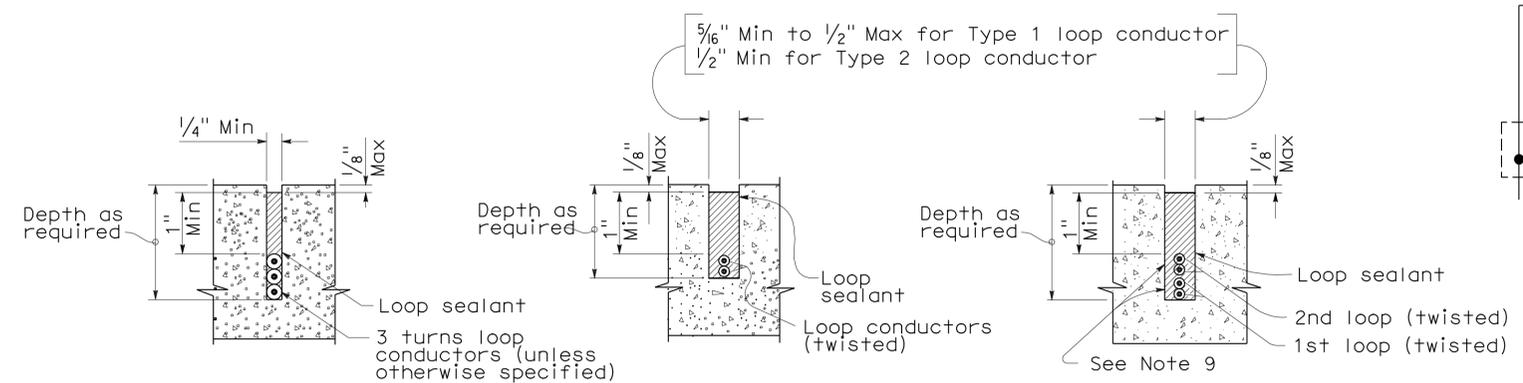
## WINDING DETAILS

See Notes 6 and 7



## TYPICAL LOOP CONNECTIONS

(Dashed lines represent the pull box)



SECTION A-A SECTION B-B SECTION C-C  
SLOT DETAILS - TYPE 1 AND TYPE 2 LOOP CONDUCTOR

## ELECTRICAL SYSTEMS (DETECTORS)

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

NO SCALE

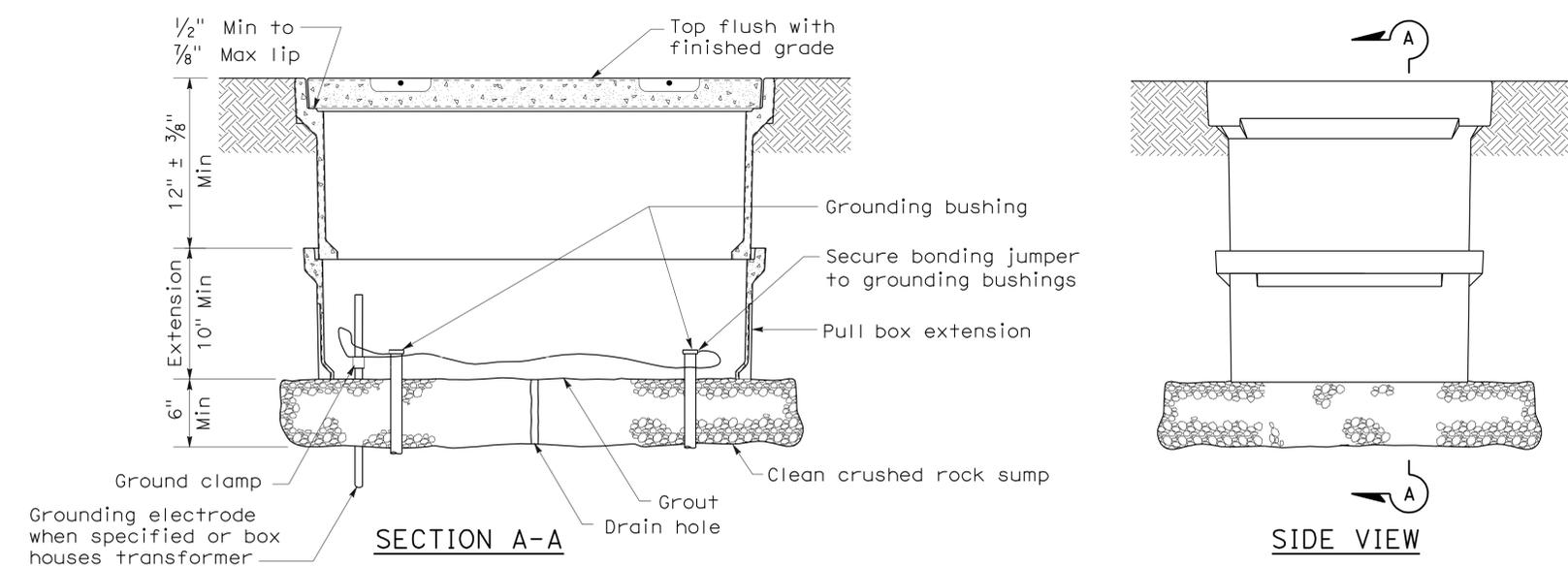
RSP ES-5A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-5A DATED MAY 1, 2006 - PAGE 423 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP ES-5A

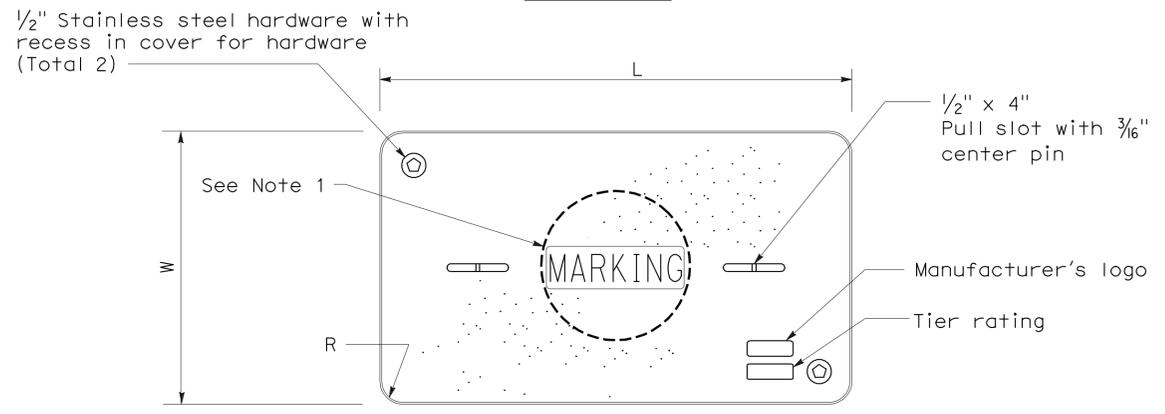
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	77	96

*Jeffery G. McRae*  
 REGISTERED ELECTRICAL ENGINEER  
 January 20, 2012  
 PLANS APPROVAL DATE  
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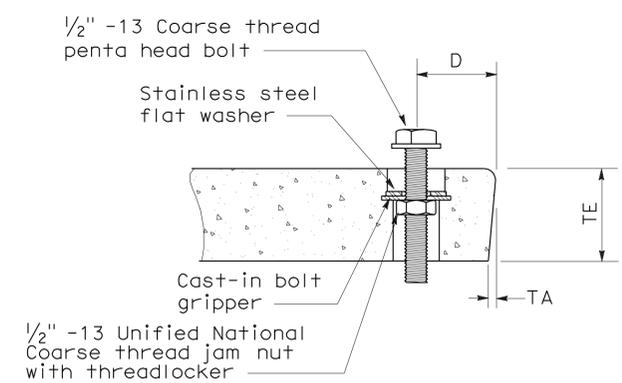
To accompany plans dated 6-18-12



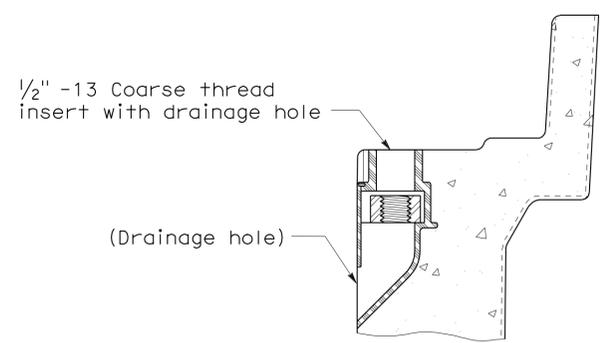
**INSTALLATION DETAILS**  
**DETAIL A**



**COVER TOP VIEW**



**TYPICAL COVER CAPTIVE BOLT**  
(Or similar)



**TYPICAL THREADED INSERT**  
(Or similar)

**NOTES ON PULL BOXES:**

- Pull box covers must be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" sprinkler control circuits, 50 V or less; "CALTRANS" on all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service;
  - No. 3/2 pull box.
    - "SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
    - "ST LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.
  - No. 5, 6, 9 or 9A pull box.
    - "TRAFFIC SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
    - "STREET LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.
    - "STREET LIGHTING-HIGH VOLTAGE" - Street or sign lighting circuits where voltage is above 600 V.
    - "IRRIGATION" - Circuits to irrigation controller 120 V or more.
    - "RAMP METER" - Ramp meter circuits.
    - "COUNT STATION" - Count or speed monitor circuits.
    - "COMMUNICATIONS" - Communication circuits.
    - "TOS COMMUNICATIONS" - TOS communication line.
    - "TOS POWER" - TOS power.
    - "TDC POWER" - Telephone demarcation cabinet power.
    - "CCTV" - Closed circuit television circuits.
    - "TMS" - Traffic monitoring station circuits.
    - "CMS" - Changeable message sign circuits.
    - "HAR" - Highway advisory radio circuits.
- The nominal dimensions of the opening in which the cover sets must be the same as the cover dimensions (L and W) plus 1/8" or greater.
- Covers and boxes must be interchangeable with California Standard. When interchanged with a standard, the top surfaces must be flush within 1/8". Top outside radius of covers and pull boxes must have a 1/8" radius.
- Pull box extension may be another pull box as long as the bottom edge of the pull box can fit into the cover opening.

DIMENSION TABLE										
PULL BOX	PULL BOX			COVER						
	Minimum Depth Box	Minimum Depth Extension	Maximum Weight	L	W	R	TE	TA	D	Maximum Weight
No. 3/2	12"	N/A	40 lb	1' - 3 3/8"	10 1/8"	1 3/8"	2"	1/8"	1 3/4"	30 lb
No. 5	12"	10"	55 lb	1' - 11 1/4"	1' - 1 3/4"	1 3/8"	2"	1/8"	1 3/4"	60 lb
No. 6	12"	10"	70 lb	2' - 6 1/2"	1' - 5 1/2"	1 3/8"	2"	1/8"	2"	85 lb

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS**  
**(PULL BOX)**  
NO SCALE

NSP ES-8A DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP ES-8A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	78	96

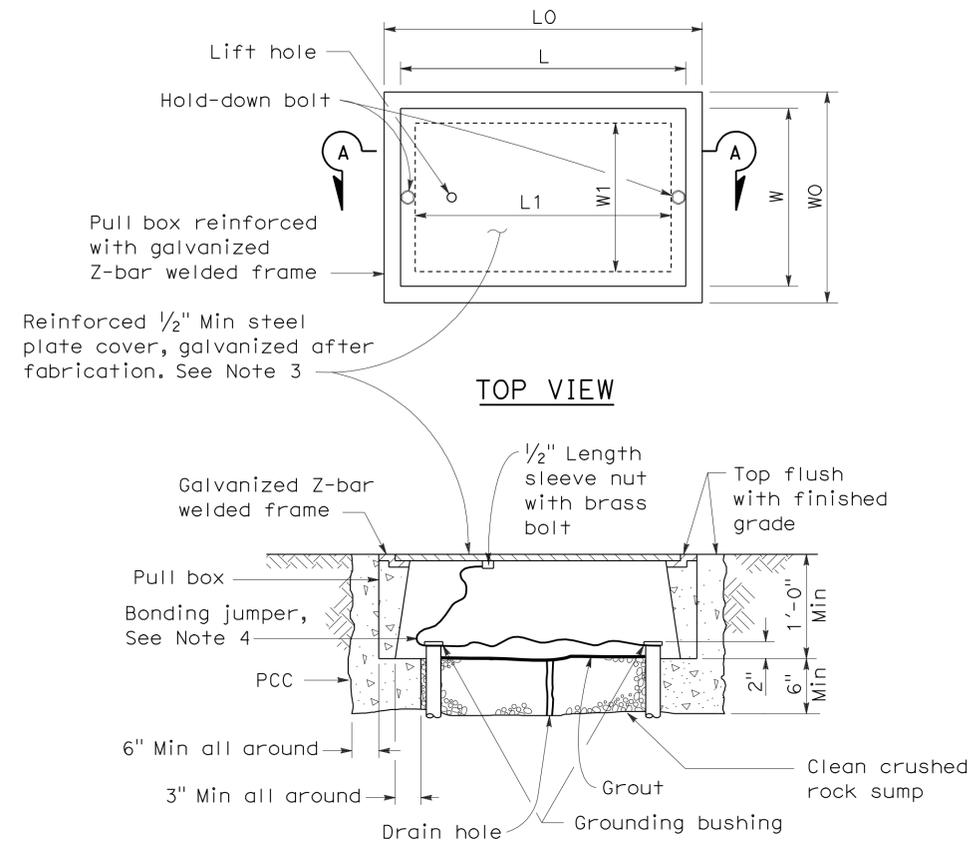
*Jeffrey G. McRae*  
 REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-12  
 ELECTRICAL  
 STATE OF CALIFORNIA

January 20, 2012  
 PLANS APPROVAL DATE

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To accompany plans dated 6-18-12

2006 NEW STANDARD PLAN NSP ES-8B



**No. 3 1/2(T), No. 5(T) AND No. 6(T) TRAFFIC PULL BOX**

**NOTES ON PULL BOXES:**

- Traffic pull box shall be provided with steel cover and special concrete footing. Steel cover shall have embossed non-skid pattern.
- Steel reinforcing shall be as regularly used in the standard products of the respective manufacturer.
- Pull box covers must be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" Sprinkler control circuits, 50 V or less; "CALTRANS" On all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service.
  - No. 3 1/2(T) pull box.
    - "SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
    - "ST LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.
  - No. 5(T) or 6(T) pull box.
    - "TRAFFIC SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
    - "STREET LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.
    - "STREET LIGHTING-HIGH VOLTAGE" - Street or sign lighting circuits where voltage is above 600 V.
    - "IRRIGATION" - Circuits to irrigation controller 120 V or more.
    - "RAMP METER" - Ramp meter circuits.
    - "COUNT STATION" - Count or speed monitor circuits.
    - "COMMUNICATION" - Communication circuits.
    - "TOS COMMUNICATIONS" - TOS communications line.
    - "TOS POWER" - TOS power.
    - "TDC POWER" - Telephone demarcation cabinet power.
    - "CCTV" - Closed circuit television circuits.
    - "TMS" - Traffic monitoring station circuits.
    - "CMS" - Changeable message sign circuits.
    - "HAR" - Highway advisory radio circuits.
- Bonding jumper for metal covers shall be 3' long, minimum.
- The nominal dimensions of the opening in which the cover sets must be the same as the cover dimensions except the length and width dimensions shall be 1/8" greater.
- Covers and boxes must be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces must be flush within 1/8".

**DIMENSION TABLE**

PULL BOX	BOX						COVER					
	Minimum * Thickness	Minimum Depth Box and Extension	W0	L0	L1	W1	L **	W **	R	Edge Thickness	Edge Taper	
No. 3 1/2(T)	1 1/2"	1'-0"	1'-5" ± 1"	1'-8 7/8" ±	1'-2 1/2" ±	10 5/8" ± 1"	1'-8" ±	1'-1 3/4" ±	0"	1/2"	None	
No. 5(T)	1 3/4"	1'-0"	1'-11 1/2" ± 1"	2'-5 1/2" ±	1'-7" ±	1'-1" ± 1"	2'-3" ±	1'-4" ±	0"	1/2"	None	
No. 6(T)	2"	1'-0"	2'-6" ± 1"	2'-11 1/2" ±	1'-11 1/2" ±	1'-5" ± 1"	2'-9" ±	1'-8" ±	0"	1/2"	None	

\* Excluding conduit web      \*\* Top dimension

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
 (TRAFFIC RATED PULL BOX)**  
 NO SCALE

NSP ES-8B DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

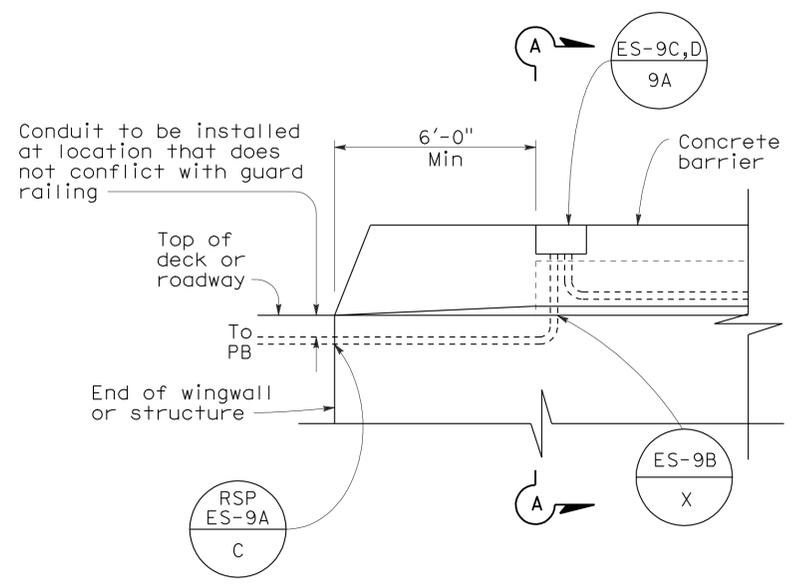
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	79	96

*Jeffery G. McRae*  
 REGISTERED ELECTRICAL ENGINEER  
 October 5, 2007  
 PLANS APPROVAL DATE  
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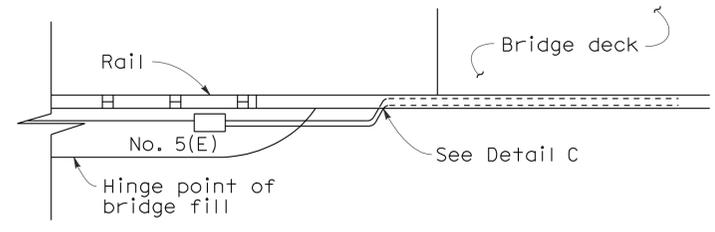
REGISTERED PROFESSIONAL ENGINEER  
 Jeffery G. McRae  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

To accompany plans dated 6-18-12

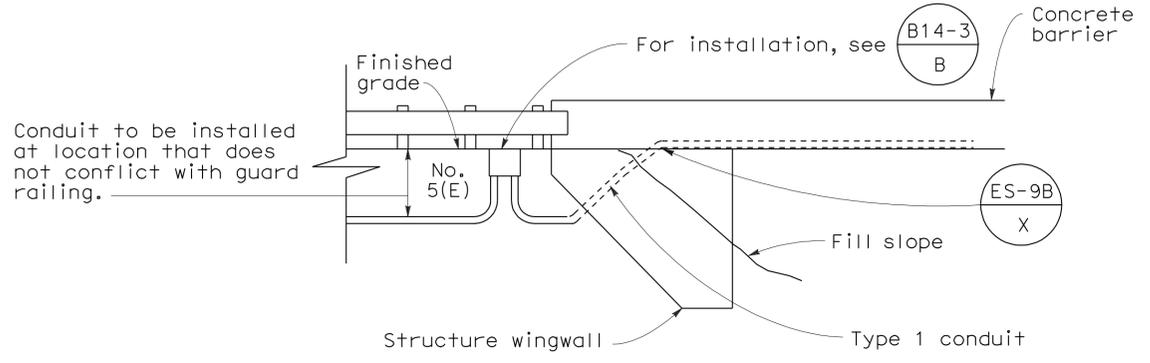
2006 REVISED STANDARD PLAN RSP ES-9A



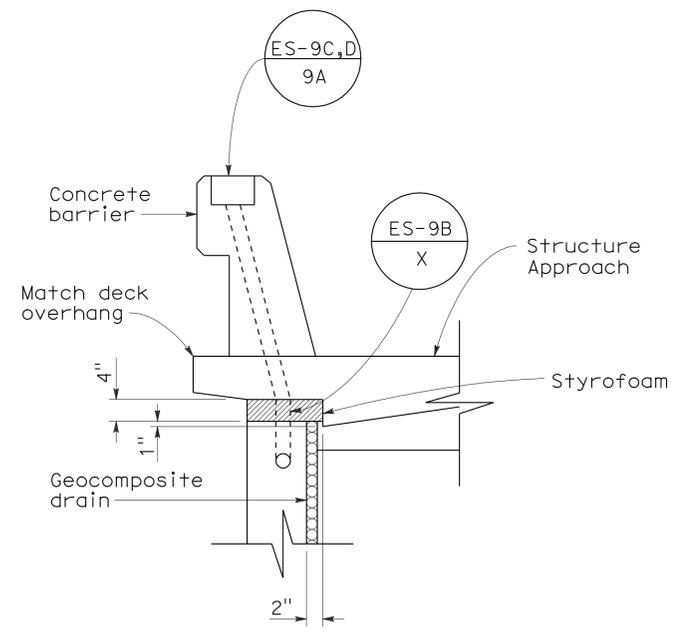
**SIDEVIEW**



**TOP VIEW**

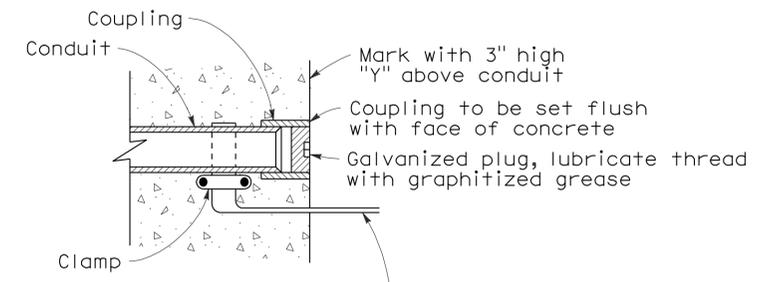


**SIDE VIEW  
DETAIL I  
CONDUIT TERMINATION**



**SECTION A-A**

**DETAIL A  
CONDUIT TERMINATION**



**DETAIL C  
CONDUIT TERMINATION**

Copper bonding strap install only at structure construction joint, extend at least 6" from face of concrete

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS  
(ELECTRICAL DETAILS  
STRUCTURE INSTALLATIONS)**

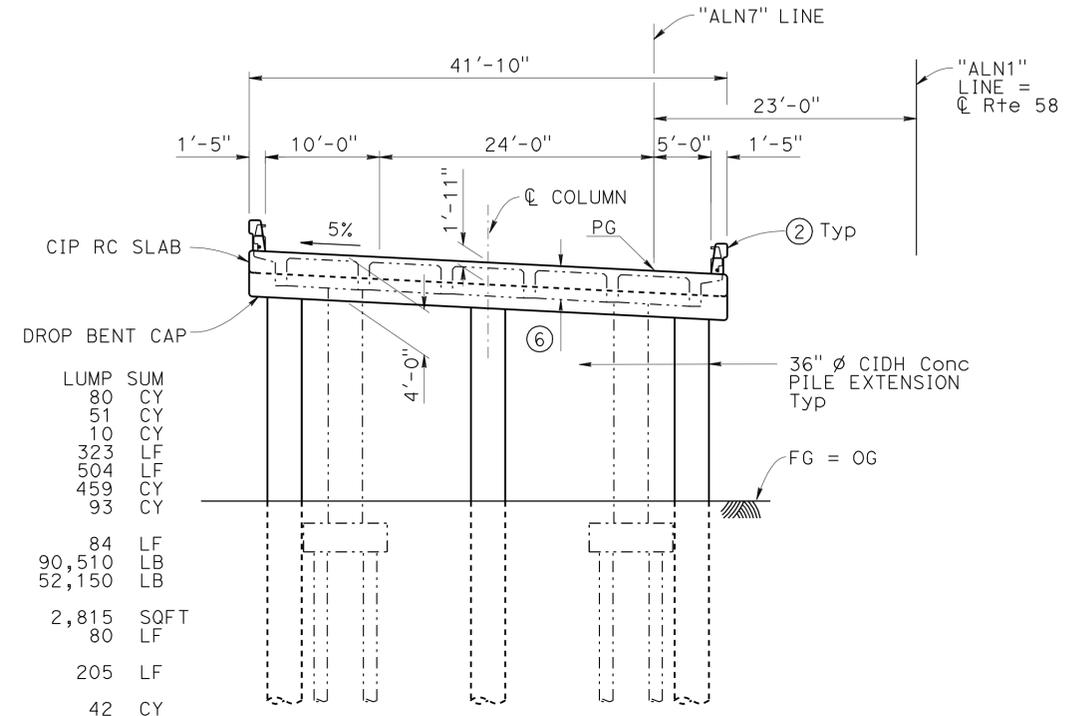
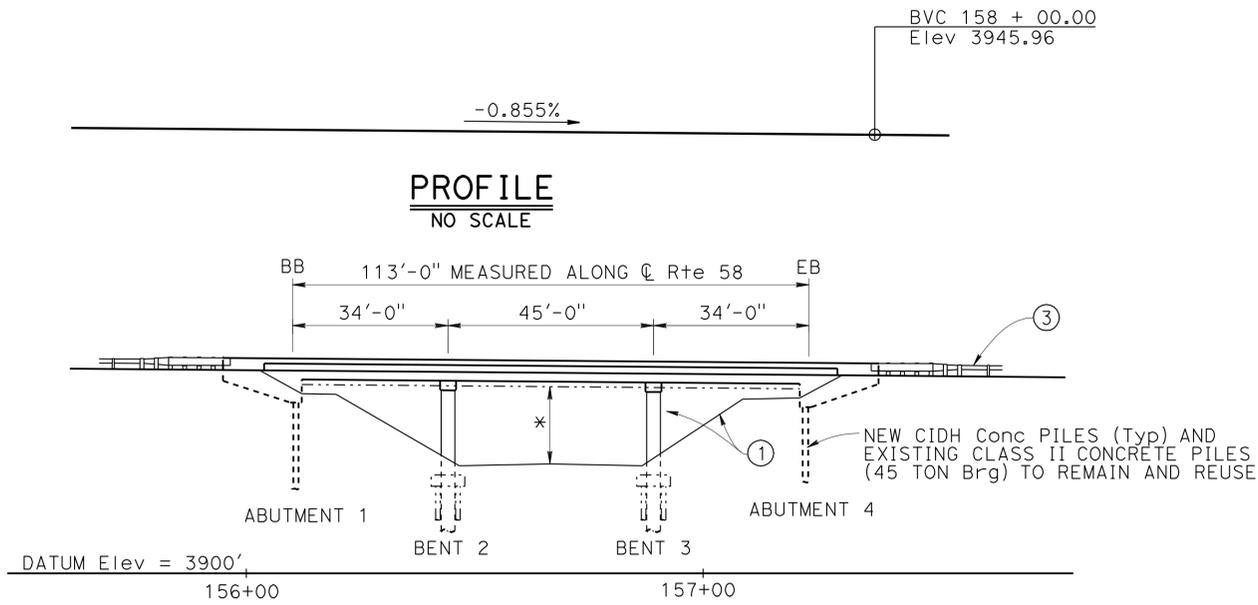
NO SCALE

RSP ES-9A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-9A  
DATED MAY 1, 2006 - PAGE 454 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-9A**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	80	96

REGISTERED CIVIL ENGINEER DATE 05-25-12  
 6-18-12 PLANS APPROVAL DATE  
 Grant Schuster No. C63897 Exp. 09-30-12 CIVIL  
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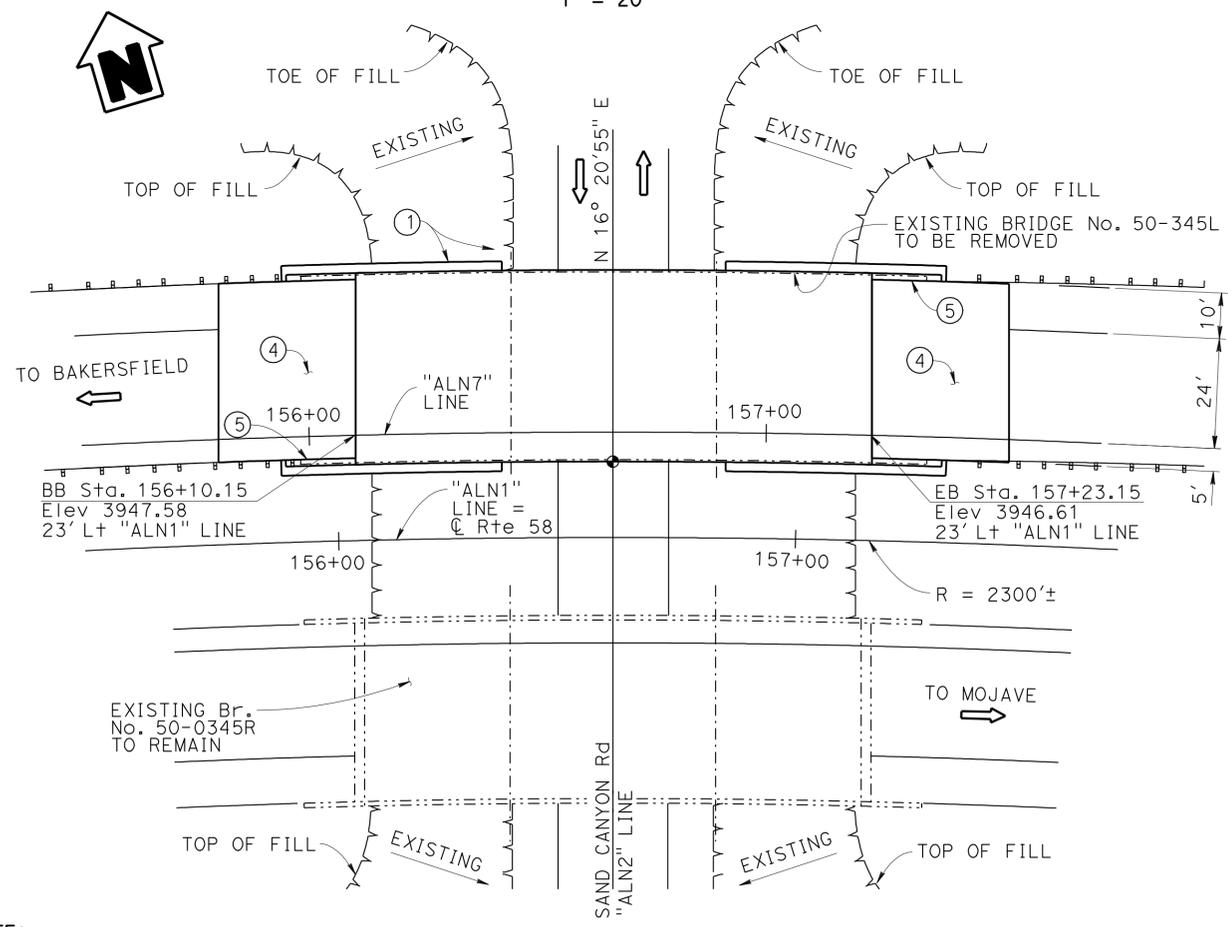
**QUANTITIES**

BRIDGE REMOVAL		
STRUCTURE EXCAVATION (BRIDGE)	80	CY
STRUCTURE BACKFILL (BRIDGE)	51	CY
AGGREGATE BASE (APPROACH SLAB)	10	CY
24" CAST-IN-DRILLED-HOLE CONCRETE PILING	323	LF
36" CAST-IN-DRILLED-HOLE CONCRETE PILING	504	LF
STRUCTURAL CONCRETE, BRIDGE	459	CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N MODIFIED)	93	CY
JOINT SEAL (MR 1)	84	LF
BAR REINFORCING STEEL (BRIDGE)	90,510	LB
BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	52,150	LB
CONCRETE STAINING	2,815	SQFT
8" PERFORATED STEEL PIPE UNDERDRAIN (.064" THICK)	80	LF
8" CORRUGATED STEEL PIPE DOWNDRAIN (.064" THICK)	205	LF
SLOPE PAVING (CONCRETE)	42	CY
CONCRETE BARRIER (TYPE 732)	292	LF

**NOTES:**

- Abutments to be constructed on existing driven piles and new CIDH piles.
  - Complete removal of both abutments required.
  - Complete removal of all 4 wingwalls required
  - Epoxy coated reinforcement required see plan sheets for locations.
  - Sand Canyon Rd at UC closed during bridge removal and construction.
  - Use West Bound off ramp and on ramp to detour West Bound traffic.
  - East Bound on and off ramps closed during demo and construction.
- (1) Slope paving (Concrete)  
 (2) Concrete Barrier Type 732 Place one 2" communication conduit in each barrier, see "Road Plans"  
 (3) Metal Beam Guard Rail, see "Road Plans"  
 (4) Structure Approach Type N Mod (30D). All Reinforcement shall be epoxy coated.  
 (5) Paint "Sand Canyon Road UC" and "Bridge No. 50-0345L"  
 (6) Existing Structure 3'-0" deep RC T-Girder
- - - - - Indicates existing structure  
 ——— Indicates new construction  
 ● Point of minimum vertical clearance

**ELEVATION**  
1" = 20'



**PLAN**  
1" = 20'

**NOTE:**  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

**TYPICAL SECTION**  
1/8" = 1'-0"

For "General Notes", "Index to Plans", "Standard Plans List", and "Quantities", See "Index to Plan" sheet.

**CURVE DATA**

"ALN1" LINE	"ALN7" LINE
R = 2300.00'	R = 2323.00'
Δ = 39°25'13"	Δ = 39°25'13"
T = 823.98'	T = 832.22'
L = 1582.43'	L = 1598.26'

DESIGN ENGINEER Gudmund Setberg	DESIGN	BY Grant Schuster	CHECKED P. Hong	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 5	BRIDGE NO.	50-0345L	<b>SAND CANYON ROAD UC LT BR (REPLACE)</b> <b>GENERAL PLAN</b>
	DETAILS	BY Shumei Jiang/T. Cotton	CHECKED P. Hong	LAYOUT	BY Grant Schuster			CHECKED P. Hong	POST MILE	
	QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster	SPECIFICATIONS	BY Mary Kopsa					

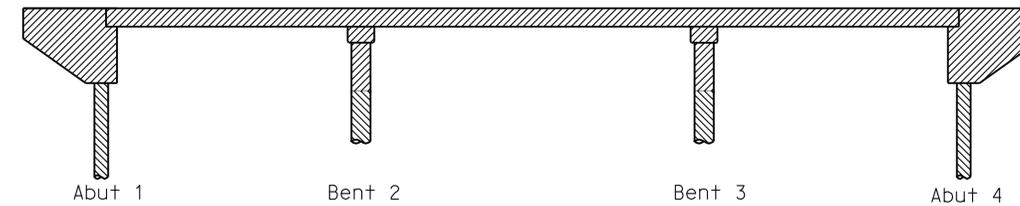
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 UNIT: 3577  
 PROJECT NUMBER & PHASE: 0600000241-1  
 CONTRACT NO.: 06-0K3901  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES: 05-25-12  
 SHEET 1 OF 17

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	81	96

REGISTERED CIVIL ENGINEER DATE 05-25-12  
 Grant Schuster  
 No. C63897  
 Exp. 09-30-12  
 CIVIL  
 STATE OF CALIFORNIA  
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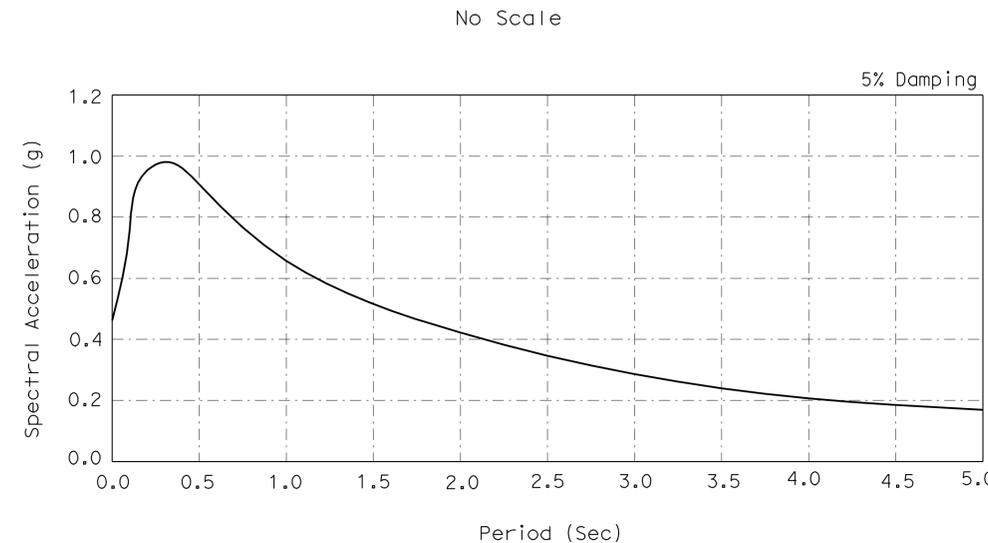
## GENERAL NOTES LOAD AND RESISTANCE FACTOR DESIGN

**DESIGN:** AASHTO LRFD Bridge Design Specifications, Fourth Edition with 2005 & 2006 Interim Revisions and Caltrans Amendments 03.06.01  
**SEISMIC DESIGN:** Caltrans Seismic Design Criteria (SDC) Version 1.6, June, 2006  
**DEAD LOAD:** Includes 35 Psf for future wearing surface.  
**LIVE LOADING:** HL93 Alternative loading and "Low-Boy" permit design vehicle  
**SEISMIC LOADING:** Caltrans SDC ARS curve for soil profile type D (M Max = 7.8), (Peak Rock Acceleration = 0.46g), ( $V_{s30} = 236$  m/s)  
**REINFORCED CONCRETE:**  $f_y = 60$  ksi  
 $f'_c = 3.6$  ksi  
 $n = 8$



Structural Concrete, Bridge  
 CIDH Concrete piling (4000 PSI)

### CONCRETE STRENGTH AND TYPE LIMITS



### SOIL PROFILE TYPE D: Mw = 7.8, PBA = 0.46g

No Scale

### INDEX TO PLANS

Sheet No.	Title
1.	GENERAL PLAN
2.	INDEX TO PLANS
3.	DECK CONTOURS
4.	FOUNDATION PLAN
5.	ABUTMENT LAYOUT
6.	BENT DETAILS
7.	TYPICAL SECTION
8.	SLAB REINFORCEMENT DETAILS
9.	STRUCTURE APPROACH TYPE N MODIFIED (30D)
10.	STRUCTURE APPROACH DRAINAGE DETAILS
11.	SLOPE PAVING - FULL SLOPE
12.	LOG OF TEST BORINGS 1 OF 6
13.	LOG OF TEST BORINGS 2 OF 6
14.	LOG OF TEST BORINGS 3 OF 6
15.	LOG OF TEST BORINGS 4 OF 6
16.	LOG OF TEST BORINGS 5 OF 6
17.	LOG OF TEST BORINGS 6 OF 6

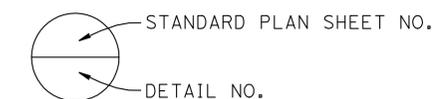
### PILE DATA TABLE B2-5

Support Location	Pile Type	Nominal Resistance (kips)		Design Tip Elevations (ft)	Specified Tip Elevations (ft)
		Compression	Tension		
Abut 1	24" CIDH	180	N/A	3886 (1) 3901 (2)	3886
Bent 2	36" CIDH	969	0	3835 (1) 3859 (2)	3835
Bent 3	36" CIDH	969	0	3835 (1) 3859 (2)	3835
Abut 4	24" CIDH	180	N/A	3886 (1) 3901 (2)	3886

NOTE: Design tip elevations are controlled by the following demands: (1) Compression, (2) Lateral.

### STANDARD PLANS DATED MAY 2006

A10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
A10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
A10C	SYMBOLS (SHEET 1 OF 2)
A10D	SYMBOLS (SHEET 2 OF 2)
A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL-BRIDGE
B0-1	BRIDGE DETAILS
B2-5	PILE DETAILS CLASS 90 AND CLASS 140
RSP B6-21	JOINT SEALS (MAXIMUM MOVEMENT RATING = 2")
B11-55	CONCRETE BARRIER TYPE 732
B14-3	COMMUNICATION AND SPRINKLER CONTROL CONDUITS (CONDUIT LESS THAN 4")

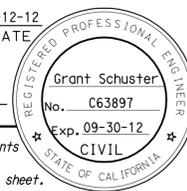


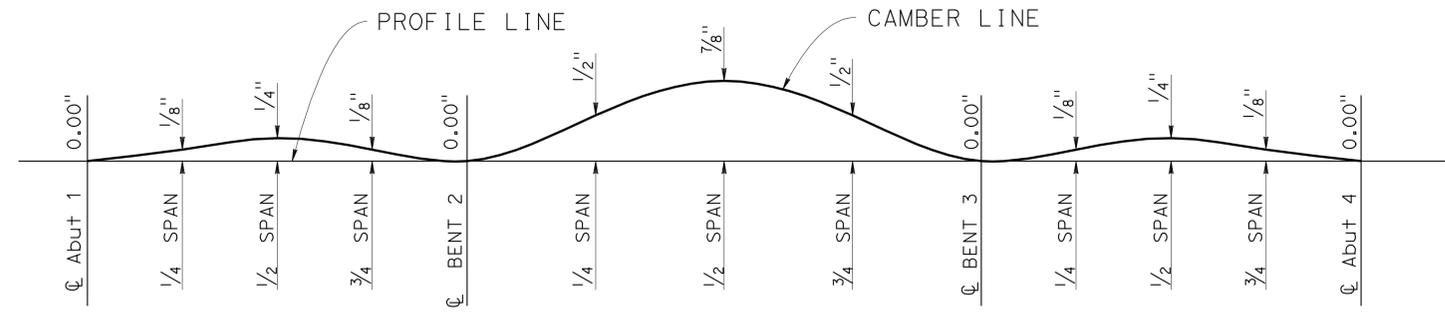
NOTE: THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">DESIGN</td> <td style="width: 30%;">BY Grant Schuster</td> <td style="width: 30%;">CHECKED P. Hong</td> </tr> <tr> <td>DETAILS</td> <td>BY Shumei Jiang/T. Cotton</td> <td>CHECKED P. Hong</td> </tr> <tr> <td>QUANTITIES</td> <td>BY M. Kodsuntie</td> <td>CHECKED G. Schuster</td> </tr> </table>	DESIGN	BY Grant Schuster	CHECKED P. Hong	DETAILS	BY Shumei Jiang/T. Cotton	CHECKED P. Hong	QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 5</b>	BRIDGE NO. 50-0345L POST MILE R99.5	<b>SAND CANYON ROAD UC LT BR (REPLACE)</b> <b>INDEX TO PLANS</b>
DESIGN	BY Grant Schuster	CHECKED P. Hong											
DETAILS	BY Shumei Jiang/T. Cotton	CHECKED P. Hong											
QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster											
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: 3577	PROJECT NUMBER & PHASE: 0600000241-1	CONTRACT NO.: 06-0K3901	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 2 OF 17					

USERNAME => s124496 DATE PLOTTED => 19-JUN-2012 TIME PLOTTED => 1:31:10

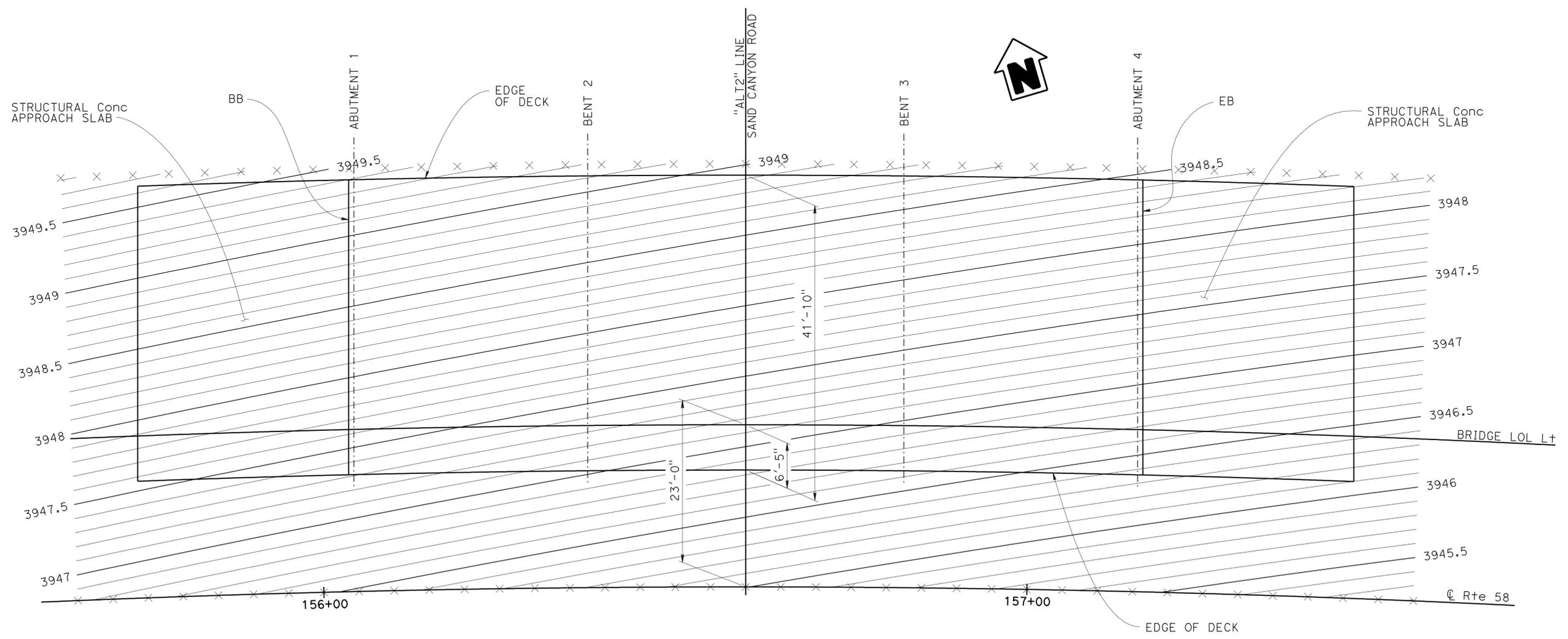
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	82	96

  
 REGISTERED CIVIL ENGINEER DATE 03-12-12  
 6-18-12  
 PLANS APPROVAL DATE  
  
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Note:  
Does not include allowance for falsework settlement.

**CAMBER DIAGRAM**  
NO SCALE



**DECK CONTOURS**  
1/8" = 1'-0"

NOTE:  
X = 5' internal along station line.  
Contours do not include camber.  
Contours interval = 0.10'

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)	DESIGN	BY Grant Schuster	CHECKED P. Hong	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 5	BRIDGE NO.	SAND CANYON ROAD UC LT BR (REPLACE)				
	DETAILS	BY Shumei Jiang	CHECKED P. Hong			50-0345L					
	QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster			POST MILE R99.5					
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS					UNIT: 3577	PROJECT NUMBER & PHASE: 0600000241-1		CONTRACT NO.: 06-0K3901	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 3 OF 17

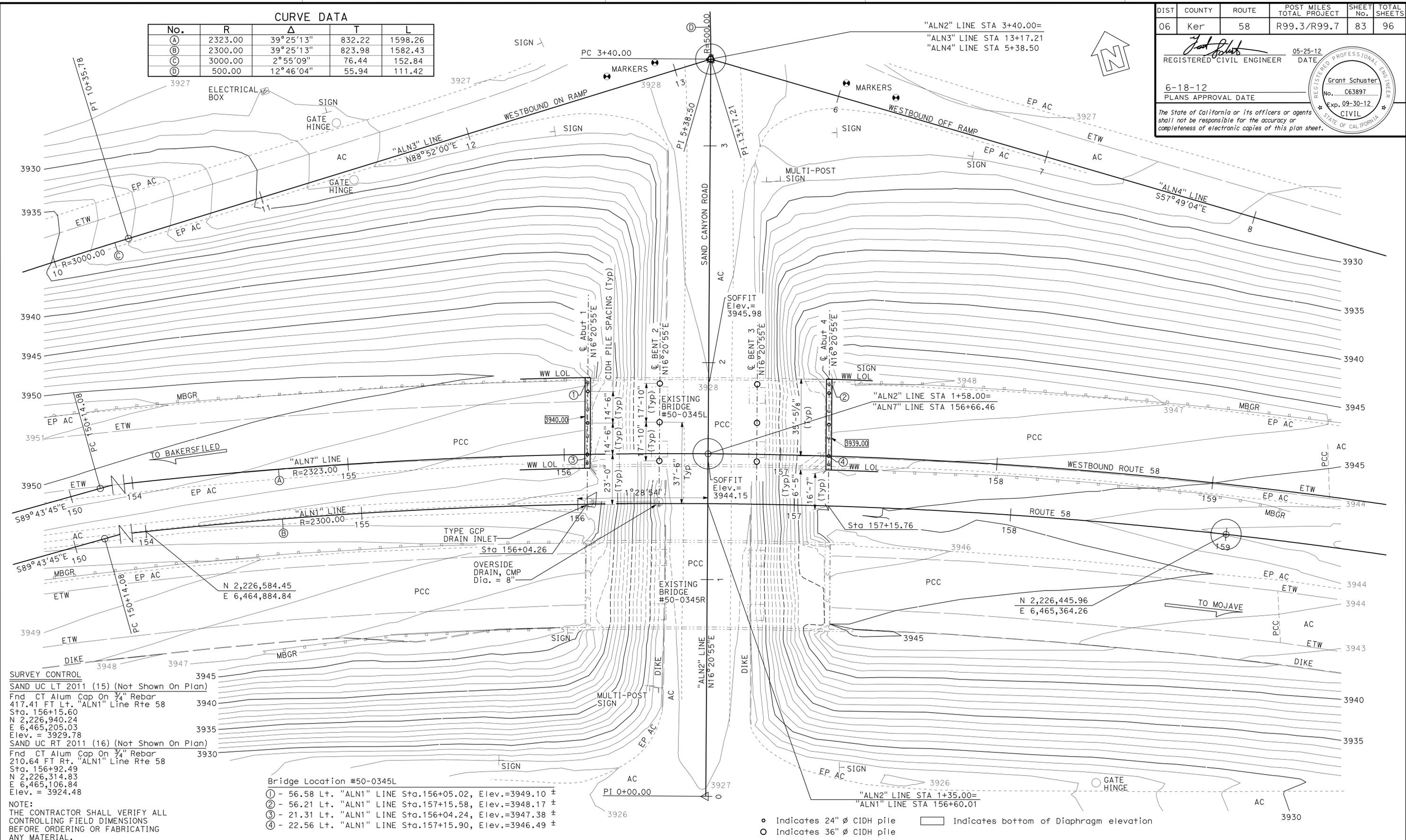
CURVE DATA				
No.	R	Δ	T	L
(A)	2323.00	39°25'13"	832.22	1598.26
(B)	2300.00	39°25'13"	823.98	1582.43
(C)	3000.00	2°55'09"	76.44	152.84
(D)	500.00	12°46'04"	55.94	111.42

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	83	96

05-25-12  
 REGISTERED CIVIL ENGINEER DATE  
 6-18-12  
 PLANS APPROVAL DATE

Grant Schuster  
 No. C63897  
 Exp. 09-30-12  
 CIVIL  
 STATE OF CALIFORNIA

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PRELIMINARY INVESTIGATION SECTION			DESIGN	By Grant Schuster	CHECKED	P. Hong	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 5</b>	BRIDGE NO.	50-0345L	<b>SAND CANYON ROAD UC LT BR (REPLACE)</b> <b>FOUNDATION PLAN</b>
SCALE	VERT. DATUM	NAV D88	DETAILS	By Shumei Jiang/T. Cotton	CHECKED	P. Hong			POST MILE	R99.5	
1"=20'	HORIZ. DATUM	NAD83 (1991.35)	QUANTITIES	By M. Kodsuntie	CHECKED	G. Schuster					
ALIGNMENT TIES Dist. Traverse Sheet			SURVEYED		By District		PROJECT NUMBER & PHASE: 0600000241-1		CONTRACT NO.: 06-0K3901	DISREGARD PRINTS BEARING EARLIER REVISION DATES	
STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 09-01-10)			DRAFTED		By T. Zolnikov	06/2011	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		UNIT: 3577	REVISION DATES	
			CHECKED		By L. Lew	06/2011	PROJECT NUMBER & PHASE: 0600000241-1		CONTRACT NO.: 06-0K3901	SHEET 4 OF 17	

FILE => 50-03451-e-fpi01.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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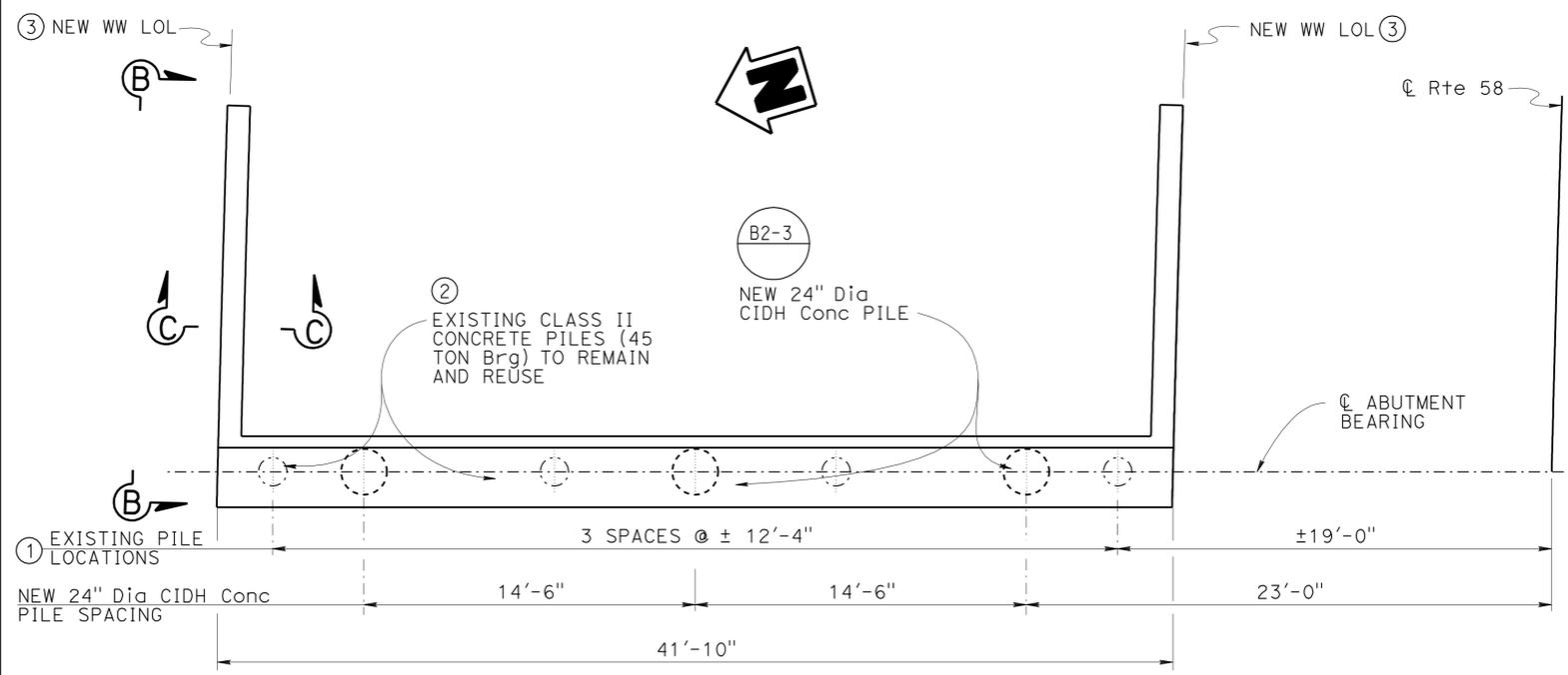
  

REGISTERED CIVIL ENGINEER	DATE
6-18-12	05-25-12
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
Grant Schuster
No. C63897
Exp. 09-30-12
CIVIL

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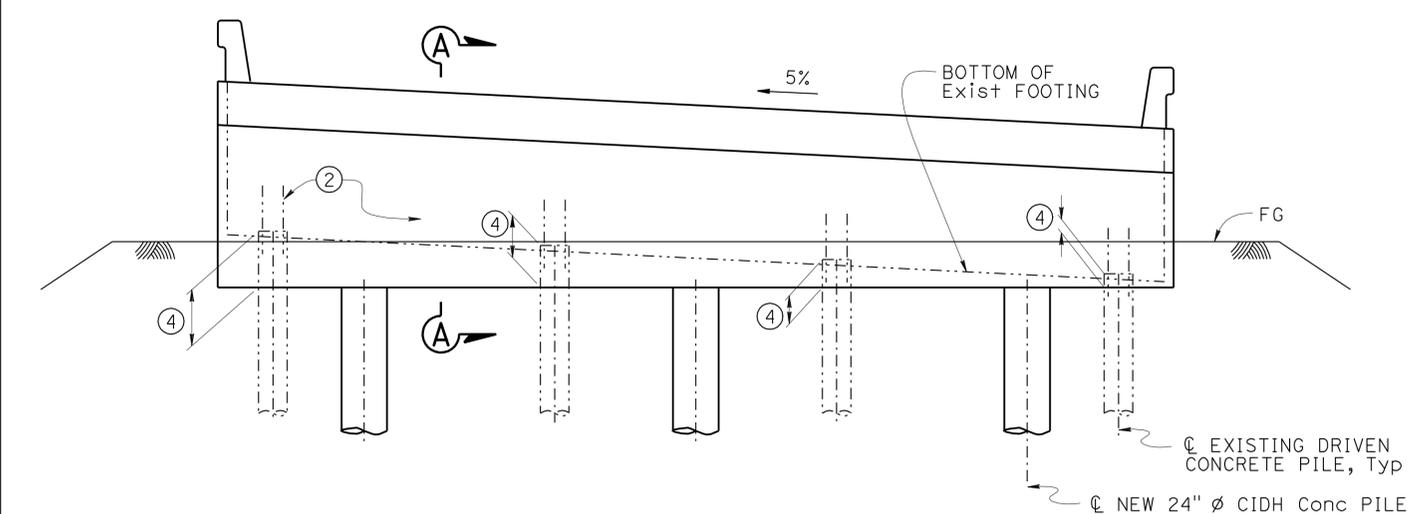


**ABUTMENT 4 PLAN**  
 1/4" = 1'-0"  
 Abutment 1 Similar, slope paving not shown

**LEGEND:**

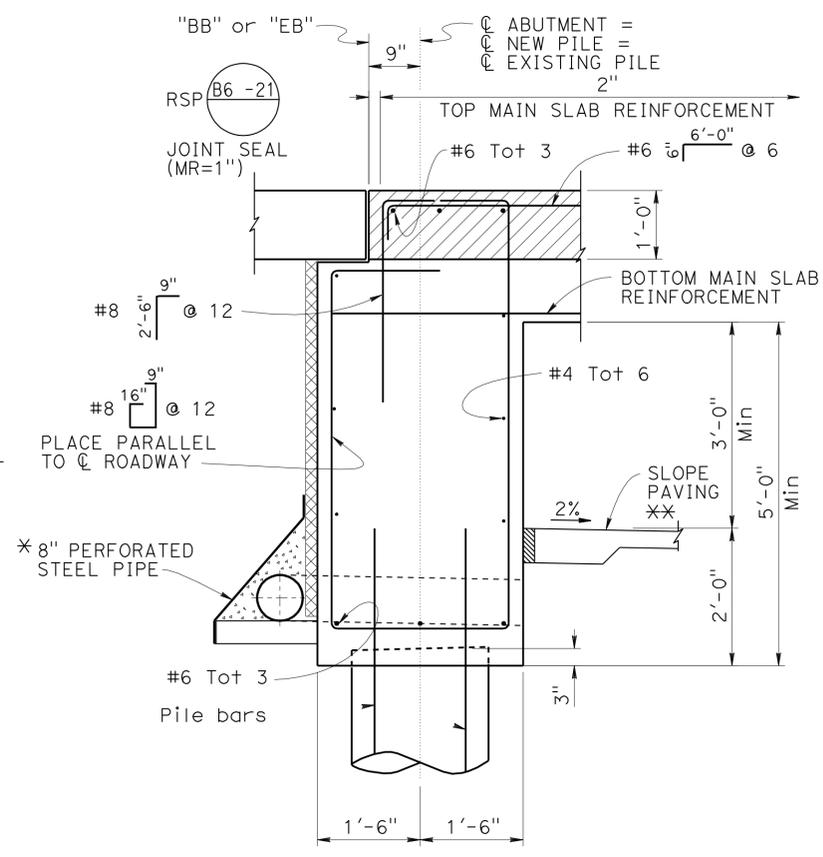
- ① Actual dimensions may be different, Contractor to verify. If one or more dimensions differs from the actual dimension by more than 6" consult field engineer before installing new pile.
- ② Existing piles, pile reinforcements, and pile dowels shall not be damaged during abutment removal and construction.
- ③ WW LOL to be parallel to  $\text{C}$  Rte 58.
- ④ Embed existing pile into new Abut

- Reinforcement in this region shall be epoxy coated. If a portion of an reinforcing bar is in this region then the entire bar shall be epoxy coated
- \* See "Structure Approach Drainage Details" sheet
- \*\* See "Slope Paving Full Slope" sheet
- Expanded Polystyrene see "Approach Slab Type N Mod (30D)" and "Slope Paving - Full Slope" sheets

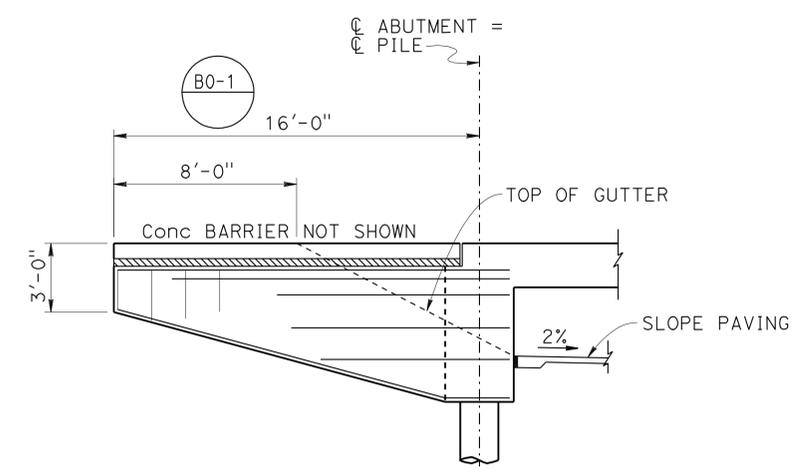


**ABUTMENT 4 ELEVATION**  
 1/4" = 1'-0"  
 Abutment 1 Similar, slope paving not shown

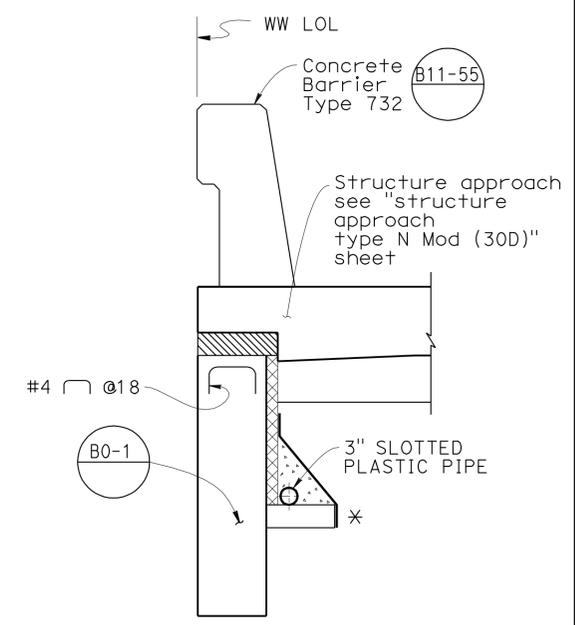
**NOTE:**  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.



**SECTION A-A**  
 3/4" = 1'-0"



**VIEW B-B**  
 1/4" = 1'-0"



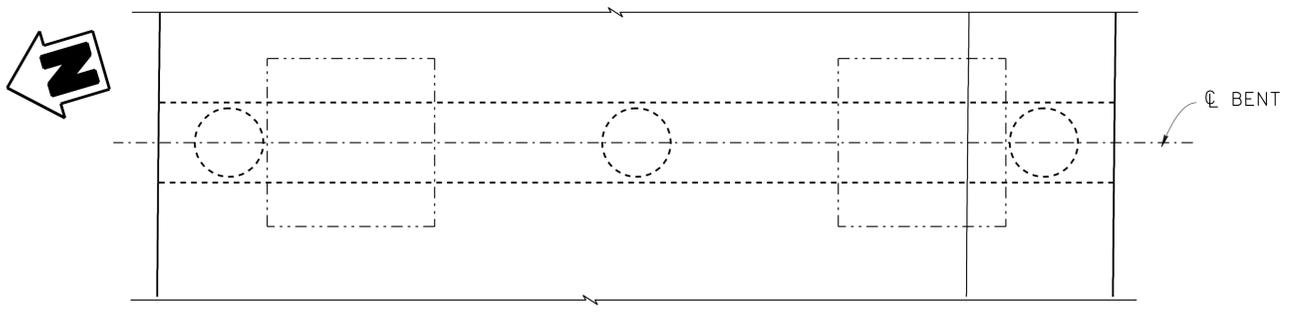
**SECTION C-C**  
 3/4" = 1'-0"

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)	DESIGN	BY Grant Schuster	CHECKED P. Hong	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 5	BRIDGE NO.	SAND CANYON ROAD UC LT BR (REPLACE) ABUTMENT LAYOUT
	DETAILS	BY Shumei Jiang/T. Cotton	CHECKED P. Hong			50-0345L	
	QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster			R99.5	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS					UNIT: 3577	PROJECT NUMBER & PHASE: 0600000241-1	CONTRACT NO.: 06-0K3901
					DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES
							09-28-11 05-25-12 07-24-12
							SHEET 5 OF 17

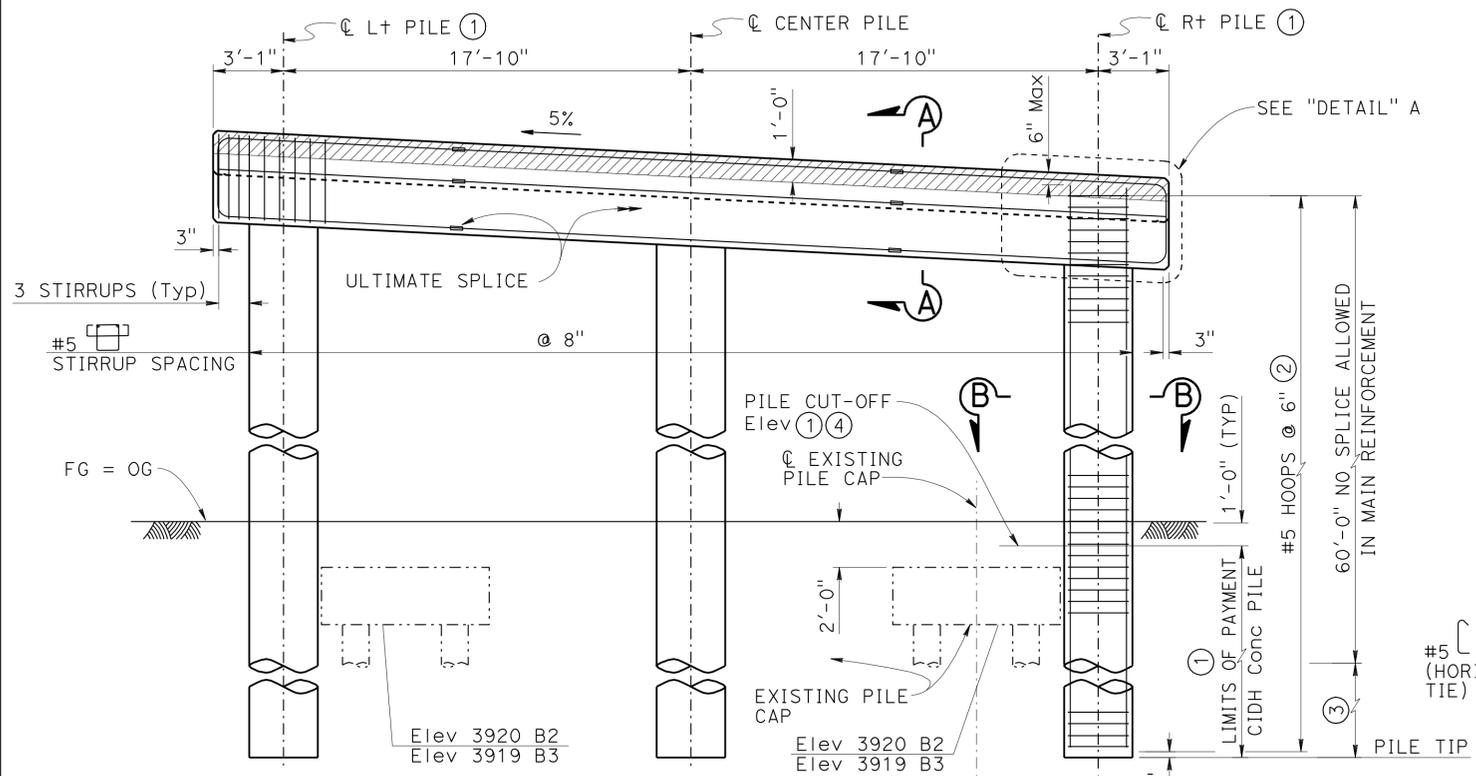
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	85	96

REGISTERED CIVIL ENGINEER  
 DATE 05-25-12  
 PLANS APPROVAL DATE 6-18-12  
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 CIVIL  
 STATE OF CALIFORNIA



**PLAN**  
1/4" = 1'-0"

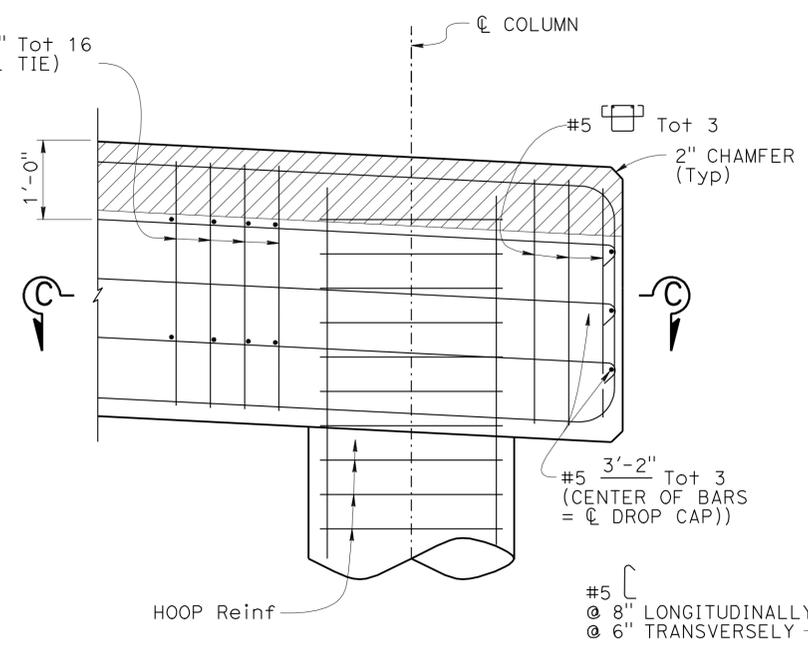


**ELEVATION**  
1/4" = 1'-0"  
Bent 2 shown, Bent 3 similar

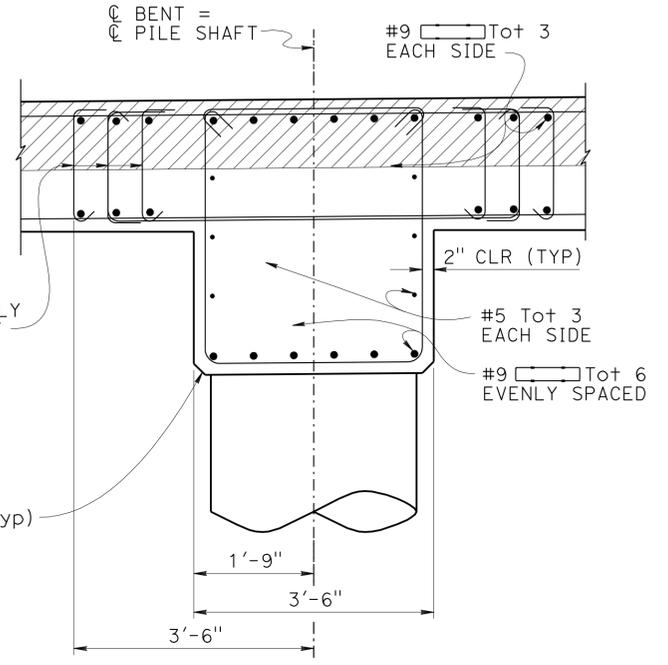
- NOTES:
- Location of CIDH Conc pile may not be altered. If existing pile caps conflict with CIDH piles partial removal of existing pile caps will be required.
  - All hoops shall be "ultimate" butt spliced.
  - Main bars shall use "ultimate" splice.
  - Location of optional construction joint.

Reinforcement in this region shall be epoxy coated. If a portion of an reinforcing bar is in this region then the entire bar shall be epoxy coated. (Does not apply to main column bars)

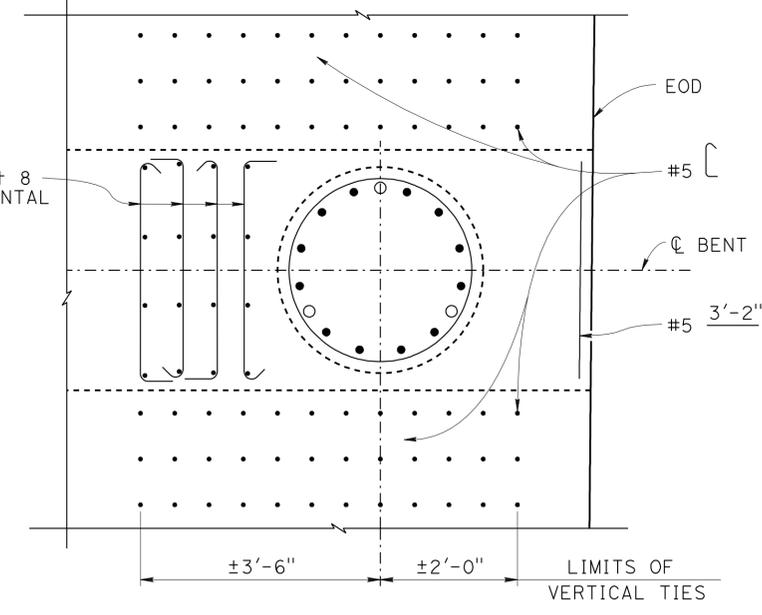
NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.



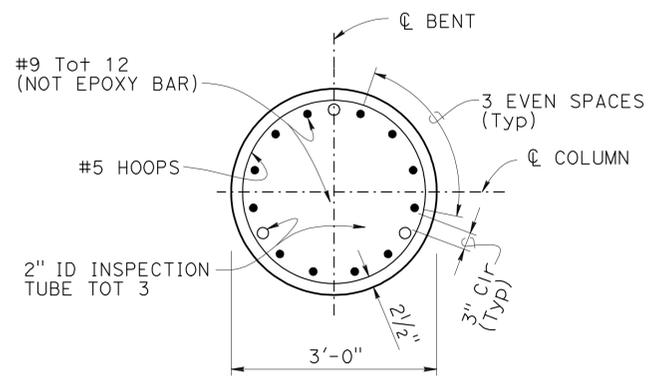
**DETAIL A**  
3/4" = 1'-0"  
Right column shown left column similar



**SECTION A-A**  
3/4" = 1'-0"



**SECTION C-C**  
3/4" = 1'-0"

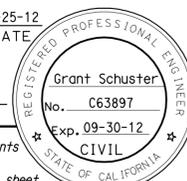


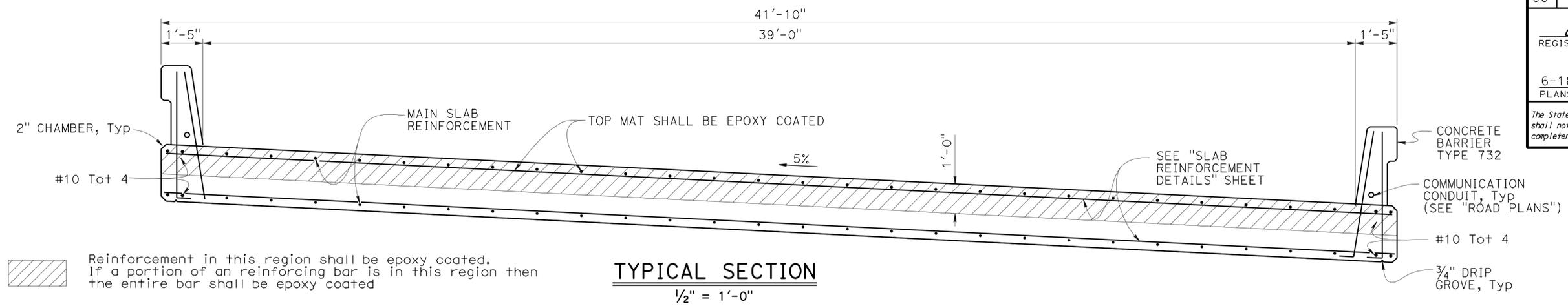
**SECTION B-B**  
3/4" = 1'-0"

DESIGN	BY	Grant Schuster	CHECKED	P. Hong	BRIDGE NO. 50-0345L	<b>SAND CANYON ROAD UC LT BR (REPLACE)</b>
	DETAILS	Shumei Jiang/T. Cotton	CHECKED	P. Hong		
	QUANTITIES	M. Kodsuntie	CHECKED	G. Schuster		

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF ENGINEERING SERVICES  
 STRUCTURE DESIGN  
**DESIGN BRANCH 5**  
 POST MILE R99.5  
**BENT DETAILS**

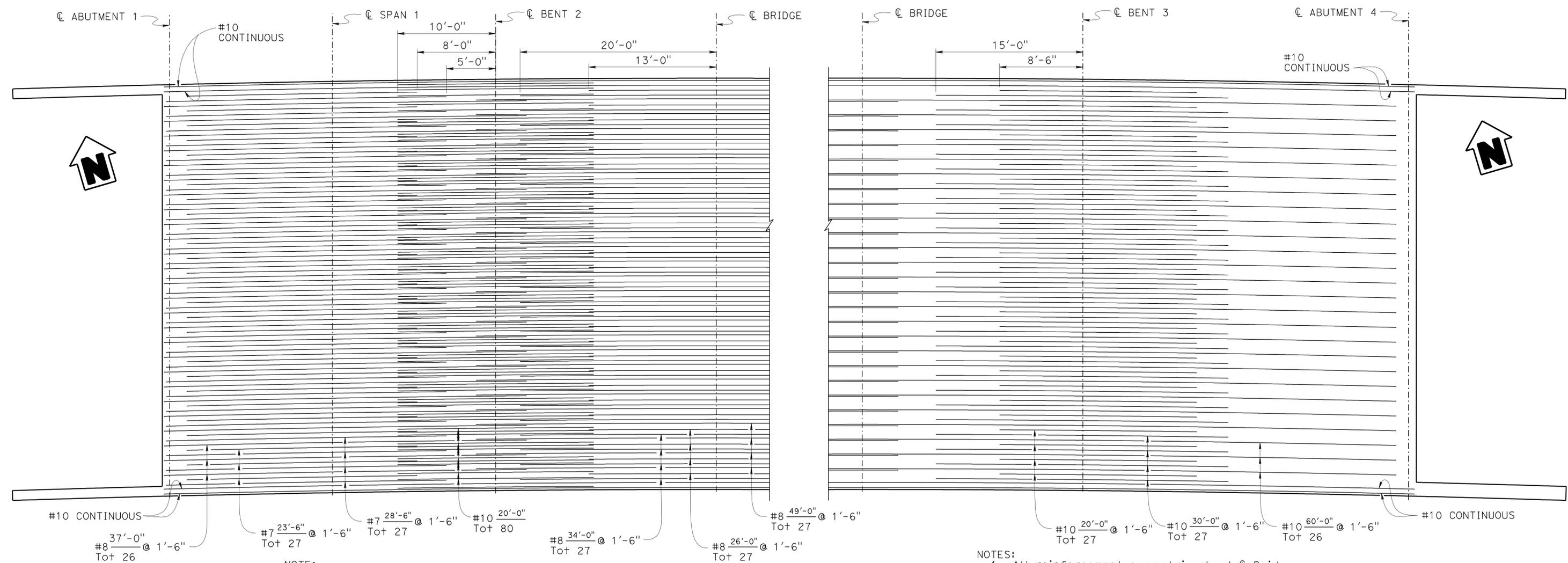
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	86	96


 05-25-12  
 REGISTERED CIVIL ENGINEER DATE  
 6-18-12  
 PLANS APPROVAL DATE  
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 Reinforcement in this region shall be epoxy coated. If a portion of an reinforcing bar is in this region then the entire bar shall be epoxy coated.

**TYPICAL SECTION**  
 1/2" = 1'-0"



NOTE:  
 All reinforcement symmetric about  $\text{C}$  Bridge

**BOTTOM SLAB REINFORCEMENT**  
 1" = 5'-0"

NOTES:  
 1. All reinforcement symmetric about  $\text{C}$  Bridge  
 2. All reinforcement in top of slab shall be epoxy coated

**TOP SLAB REINFORCEMENT**  
 1" = 5'-0"

NOTE:  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

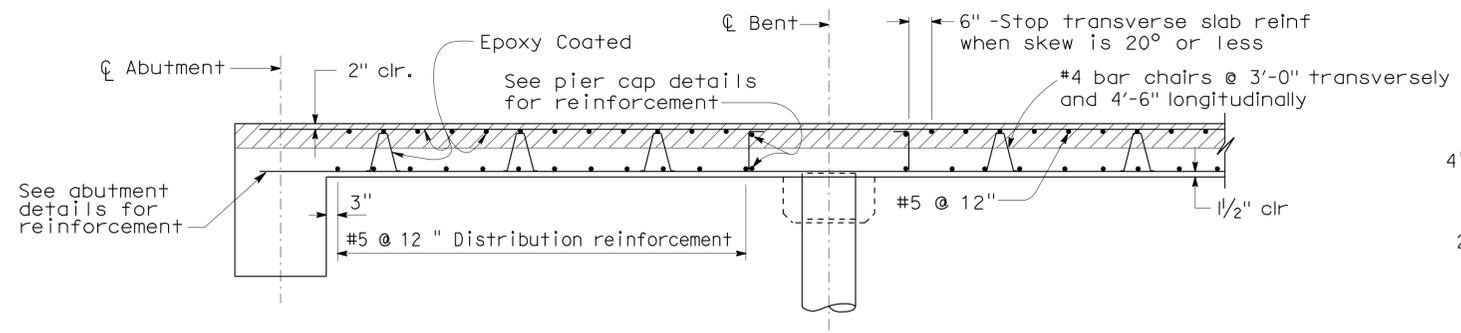
DESIGN	BY Grant Schuster	CHECKED P. Hong
DETAILS	BY Shumei Jiang/T. Cotton	CHECKED P. Hong
QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

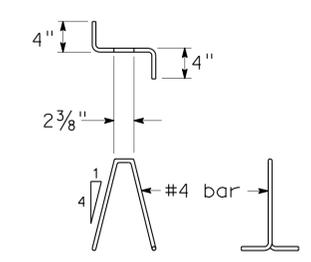
DIVISION OF ENGINEERING SERVICES  
 STRUCTURE DESIGN  
**DESIGN BRANCH 5**

BRIDGE NO.	50-0345L
POST MILE	R99.5

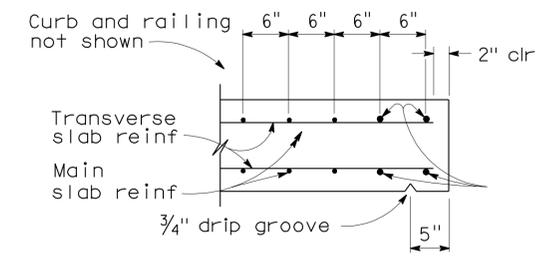
**SAND CANYON ROAD UC LT BR (REPLACE)**  
**TYPICAL SECTION**



**LONGITUDINAL SECTION**



**BAR CHAIR DETAIL**



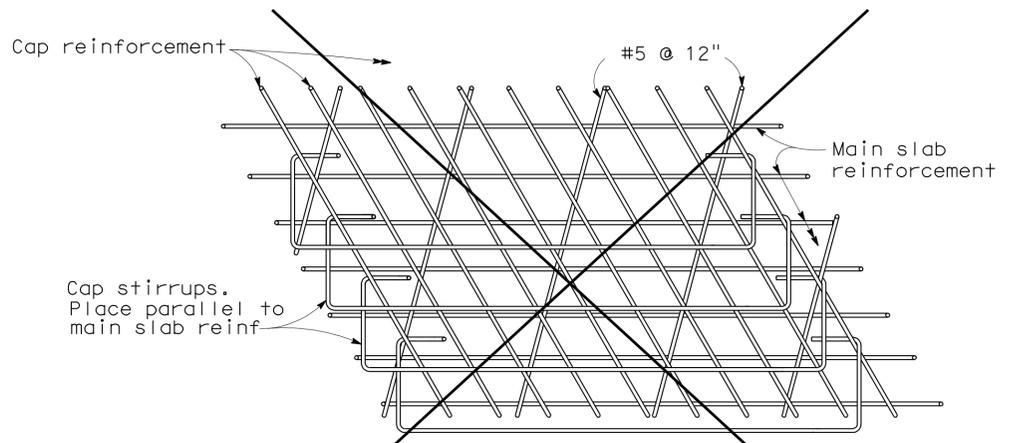
**EDGE OF SLAB DETAILS**

Reinforcement in this region shall be epoxy coated. If a portion of an reinforcing bar is in this region then the entire bar shall be epoxy coated

BAR SPLICE LENGTH (Inch)								
Bar size	#4	#5	#6	#7	#8	#9	#10	#11
All bars, except top bars in spans over 23'	23	28	34	39	45	68	76	85
Top bars in spans over 23'	23	28	34	53	60	77	97	120

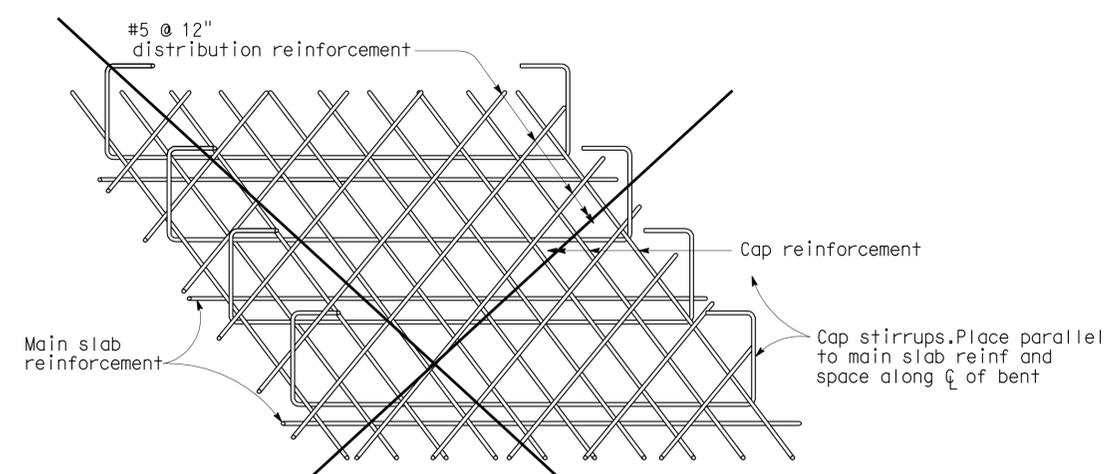
**REINFORCEMENT NOTES:**

Splices in top main bars to be located near center of span.  
 Splices in bottom main bars to be located near pier.  
 Spacing of all transverse bars is measured along  $\phi$  roadway.  
 Skew 0° to 20°: Place all transverse bars parallel to pier.  
 Skew over 20°: Place transverse slab bars perpendicular to  $\phi$  bridge. See details at right and below.



**TOP SLAB REINFORCEMENT AT PIER**

Note: View for main span over 23'. Bar placement similar for spans under 23'.



**FLUSH CAP**  
**BOTTOM SLAB REINFORCEMENT AT PIER**

NOTE: THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

(Type E-1 to be used, unless otherwise shown on plans)

**GENERAL NOTES**  
**LOAD AND RESISTANCE FACTOR DESIGN**

DESIGN: AASHTO LRFD Bridge Design Specifications, Third Edition with 2005 & 2006 Interim Revisions and Caltrans Amendments 03.06.01  
 DEAD LOAD: Includes 35 Psf for future wearing surface.  
 LIVE LOADING: HL93 Alternative loading and "Low-Boy" permit design vehicle  
 REINFORCED CONCRETE:  $f_y = 60$  ksi,  $f'_c = 3.6$  ksi,  $n = 8$   
 REINFORCEMENT: Transverse bars in top of deck and bar chairs shall be epoxy coated

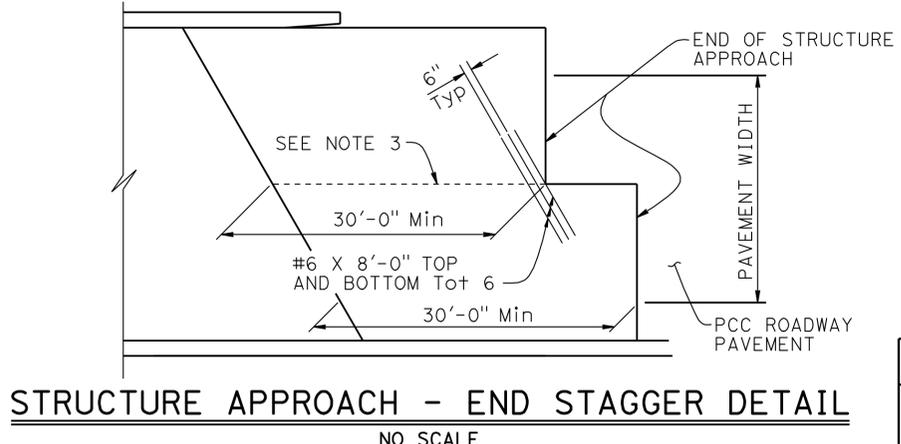
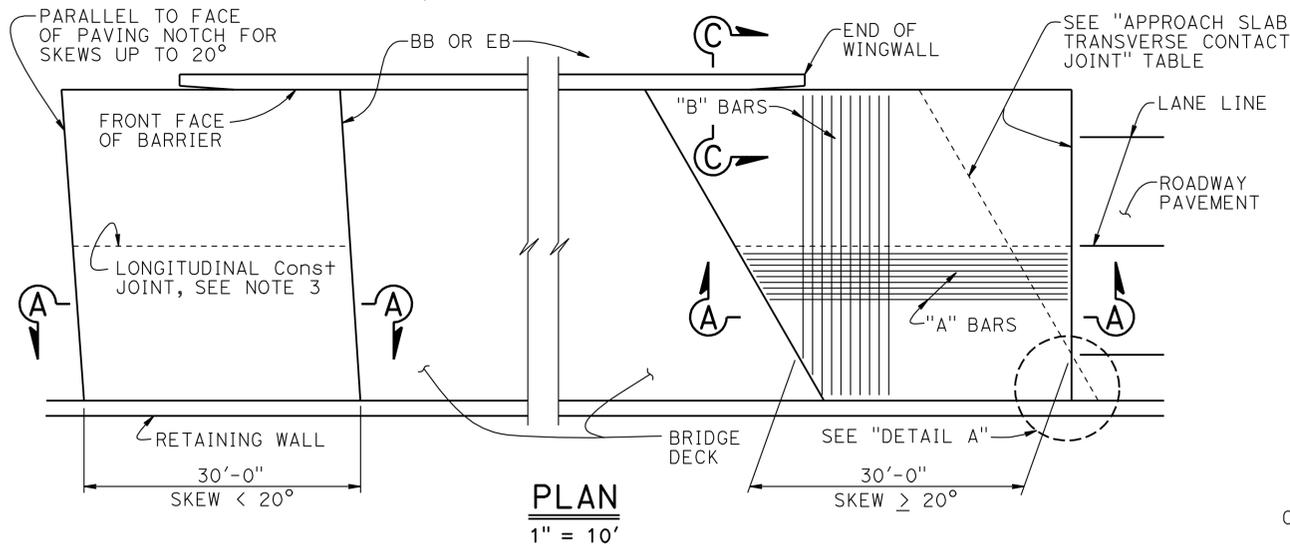
**SPECIAL DETAILS**  
**NO SCALE**

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)	DESIGN	BY Grant Schuster	CHECKED P. Hong	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 5	BRIDGE NO.	50-0345L	SAND CANYON ROAD UC LT BR (REPLACE) SLAB REINFORCEMENT DETAILS	
	DETAILS	BY T. Cotton	CHECKED P. Hong			POST MILE	R99.5		
	QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster			REVISION DATES	11-28-11 05-25-12		
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS					UNIT: 3577	PROJECT NUMBER & PHASE: 0600000241-1		CONTRACT NO.: 06-0K3901	SHEET 8 OF 17

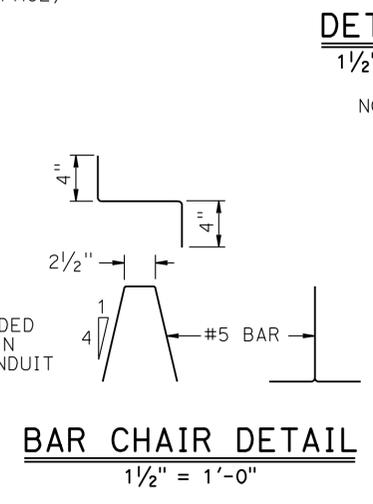
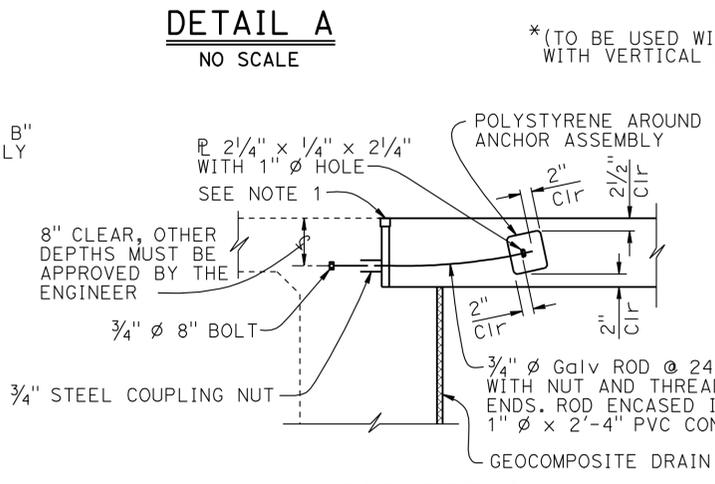
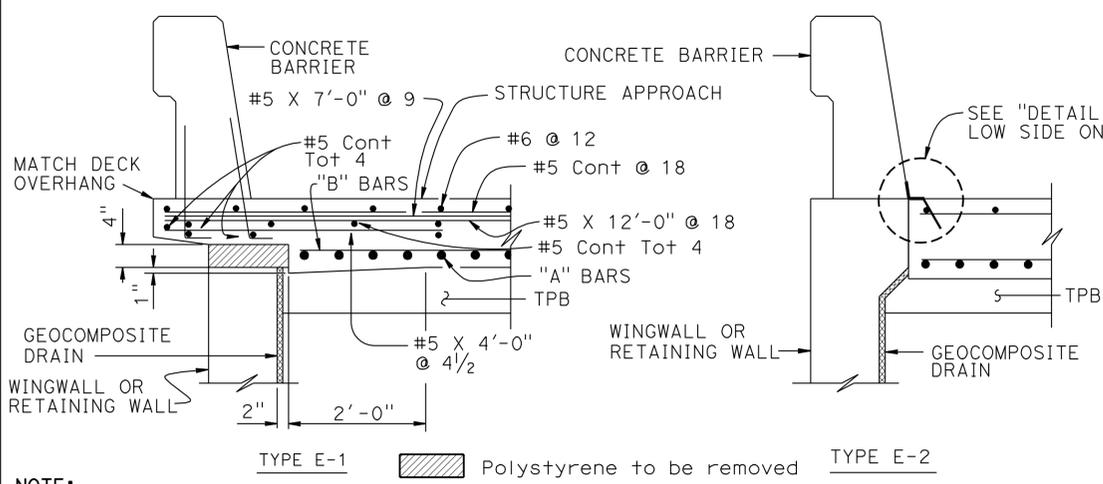
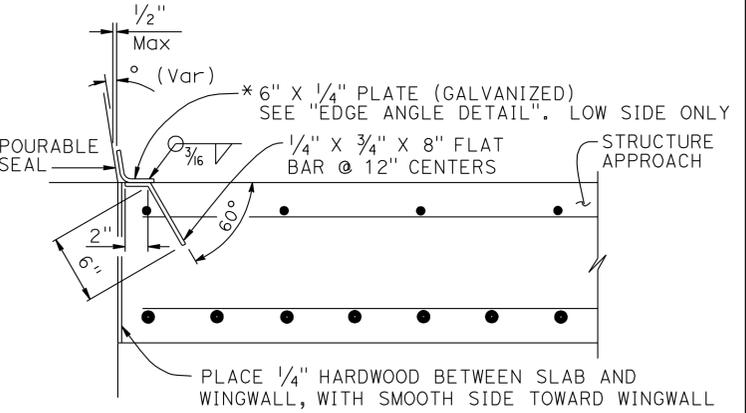
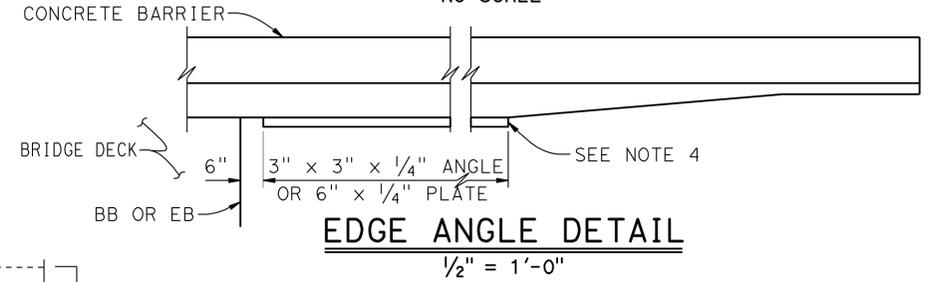
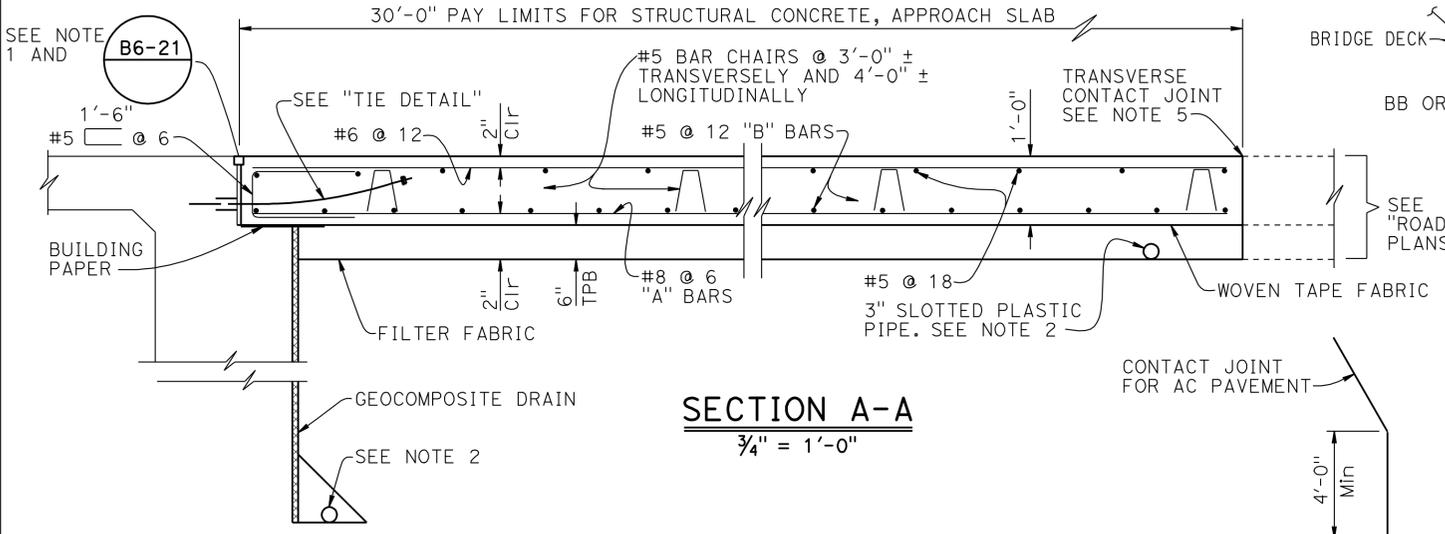
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	88	96

03-12-12  
 REGISTERED CIVIL ENGINEER  
 Grant Schuster  
 No. C63897  
 Exp. 09-30-12  
 CIVIL  
 STATE OF CALIFORNIA

6-18-12  
 PLANS APPROVAL DATE  
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



APPROACH SLAB TRANSVERSE CONTACT JOINT		
APPROACH SKEW	WITH AC ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
< 20°	PARALLEL TO FACE OF PN	PARALLEL TO FACE OF PN
20° - 45°	PARALLEL TO FACE OF PN USE "DETAIL A"	STAGGER LINES 24' TO 36' APART
> 45°	PARALLEL TO FACE OF PN USE "DETAIL A"	STAGGER AT EACH LANE LINE



**DETAIL B**  
1/2" = 1'-0"

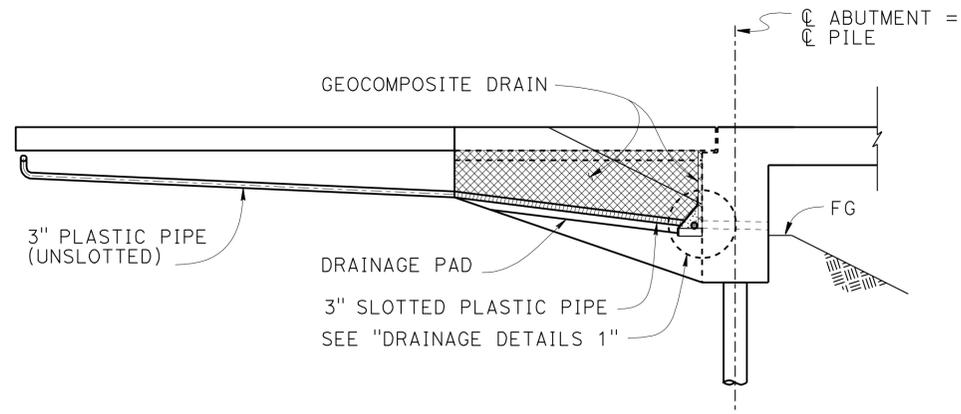
- NOTES:
- All reinforcement shall be epoxy coated.
  - For details not noted or shown, see Structure Plans
  - For drainage details, see "STRUCTURE APPROACH DRAINAGE DETAILS" sheet
  - Longitudinal construction joints, when permitted by the Engineer, shall be located on lane lines
  - End angle or plate at beginning of barrier transition, end of wingwall or end of structure approach, as applicable
  - For transverse contact joint with new PCC paving, refer to Standard Plan P10
  - At the contractor's option, approach slab transverse reinforcement may be placed parallel to paving notch. Spacing of transverse reinforcement is measured along roadway

NOTE: THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.  
(Type E-1 to be used, unless otherwise shown on plans)

STANDARD DRAWING		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF ENGINEERING SERVICES		BRIDGE NO. 50-0345L POST MILE R99.5		<b>SAND CANYON ROAD UC LT BR (REPLACE)</b> <b>STRUCTURE APPROACH TYPE N MODIFIED (30D)</b>	
FILE NO. <b>xs3-140</b>	APPROVAL DATE July 2011	UNIT: 3577 PROJECT NUMBER & PHASE: 0600000241-1		CONTRACT NO.: 06-0K3901		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES	SHEET 9 OF 17

D5 OSD 2147A (ENGLISH STANDARD DRAWING "XS" BORDER REV. (02-02-11))  
 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 FILE => 50-03451-s-osd.dgn

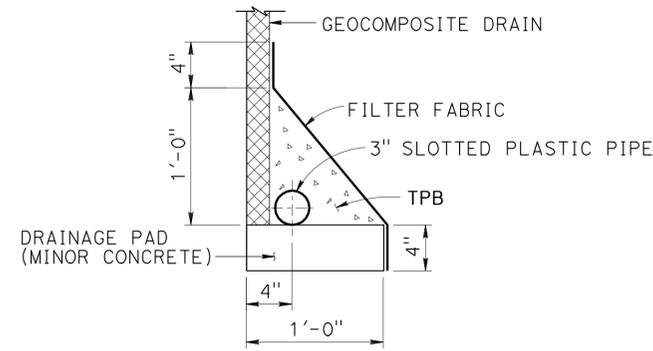
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	89	96
			05-25-12	DATE	
			6-18-12	PLANS APPROVAL DATE	
REGISTERED CIVIL ENGINEER Grant Schuster No. C63897 Exp. 09-30-12 CIVIL STATE OF CALIFORNIA					
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.					



**CANTILEVER WINGWALL**

**SECTION F-F**

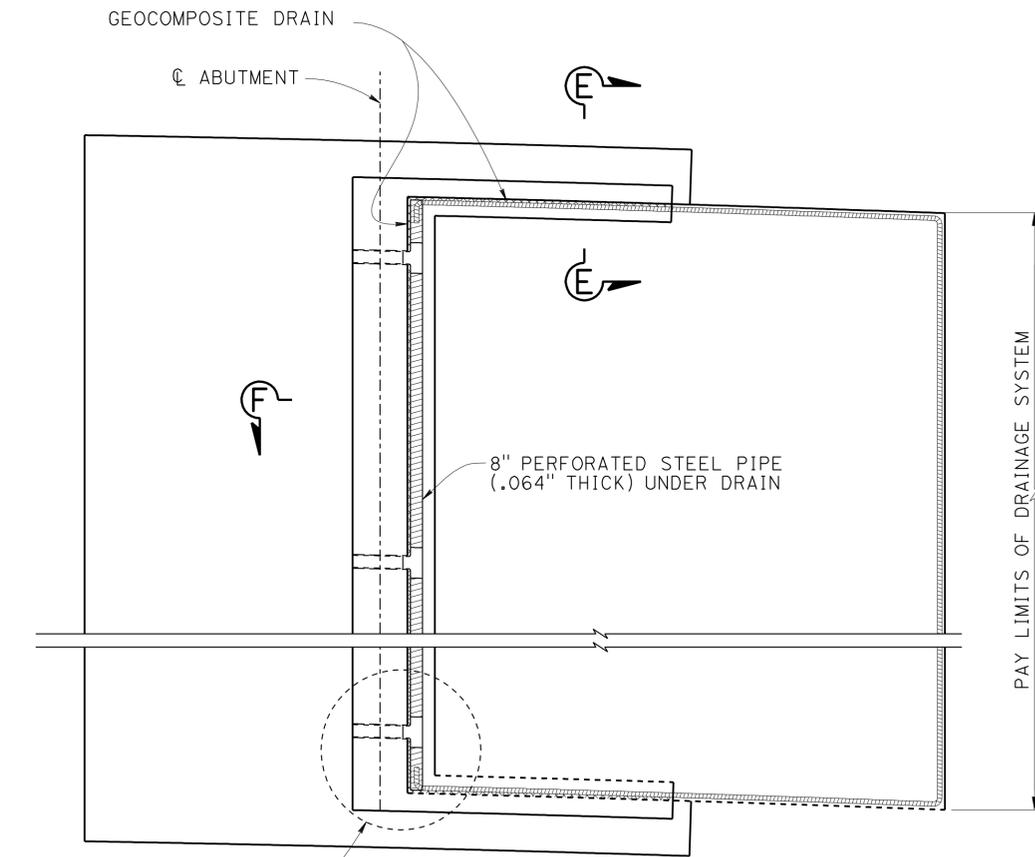
1/4" = 1'-0"



**WITH FOOTING**

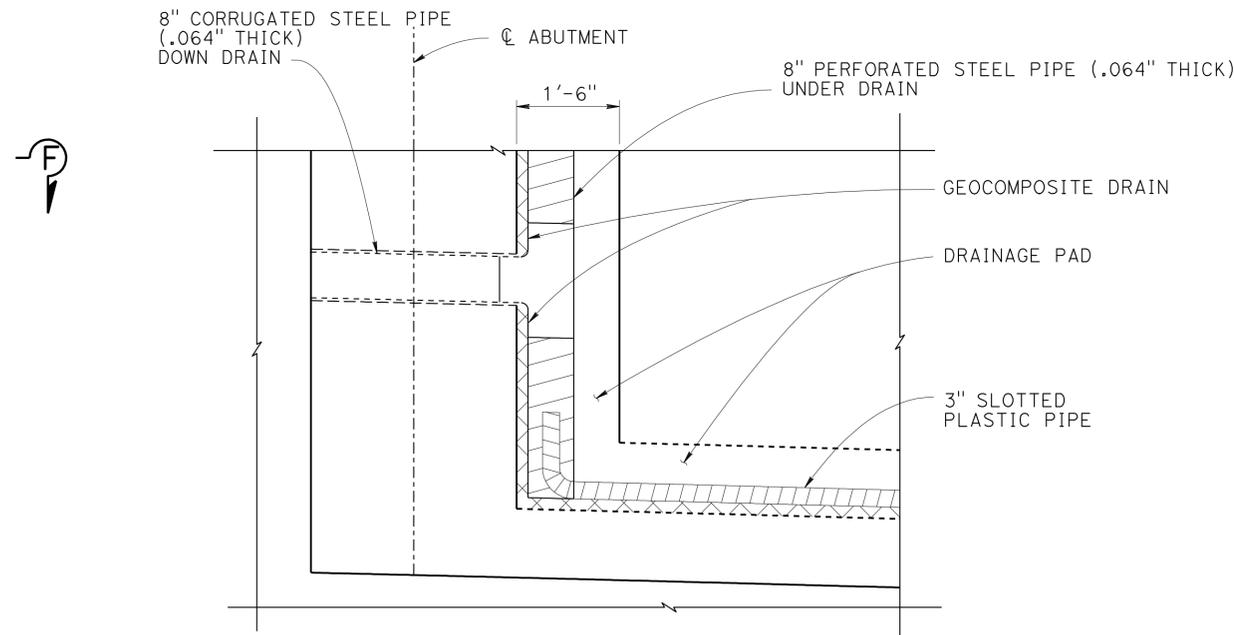
**DRAINAGE DETAIL 1**

1 1/2" = 1'-0"



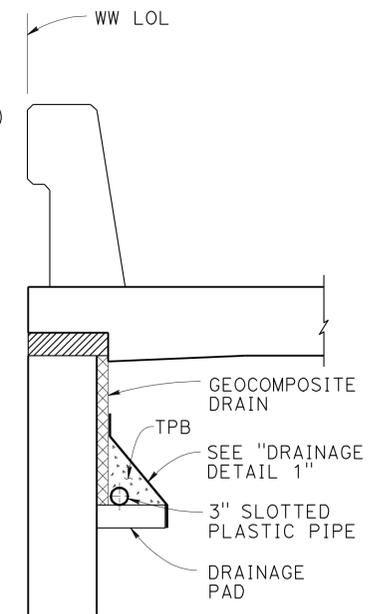
**TYPICAL PLAN**

1" = 5'-0"



**DRAINAGE DETAIL 2**

3/4" = 1'-0"



**SECTION E-E**

3/4" = 1'-0"

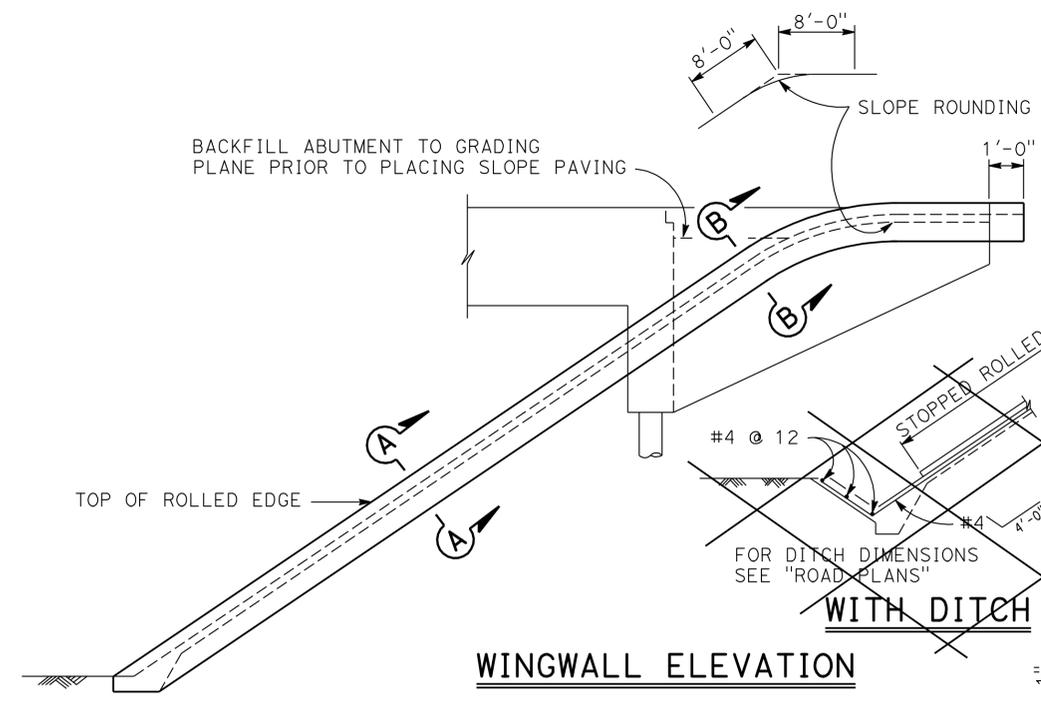
NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)	DESIGN	BY Grant Schuster	CHECKED P. Hong	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 5</b>	BRIDGE NO.	<b>SAND CANYON ROAD UC LT BR (REPLACE)</b> <b>STRUCTURE APPROACH DRAINAGE DETAILS</b>
	DETAILS	BY Shumei Jiang	CHECKED P. Hong			50-0345L	
	QUANTITIES	BY M. Kodsuntie	CHECKED G. Schuster			R99.5	
				UNIT: 3577	PROJECT NUMBER & PHASE: 0600000241-1	CONTRACT NO.: 06-0K3901	DISREGARD PRINTS BEARING EARLIER REVISION DATES
				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	REVISION DATES	SHEET 10 OF 17

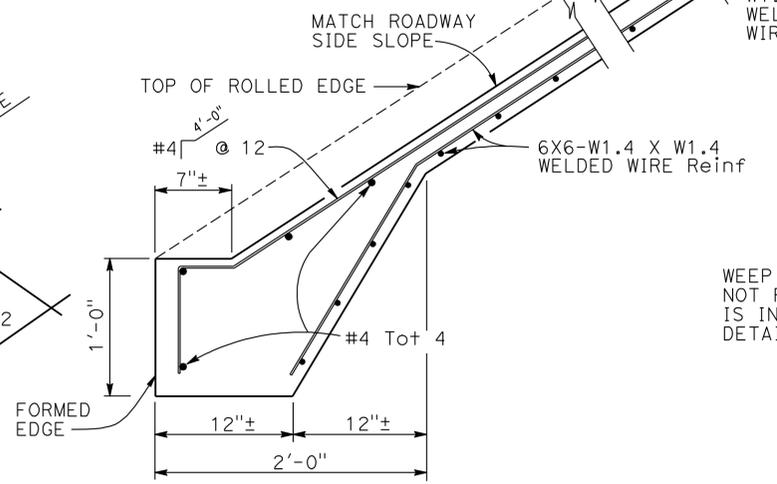
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	90	96

05-25-12  
 REGISTERED CIVIL ENGINEER  
 Grant Schuster  
 No. C63897  
 Exp. 09-30-12  
 CIVIL  
 STATE OF CALIFORNIA

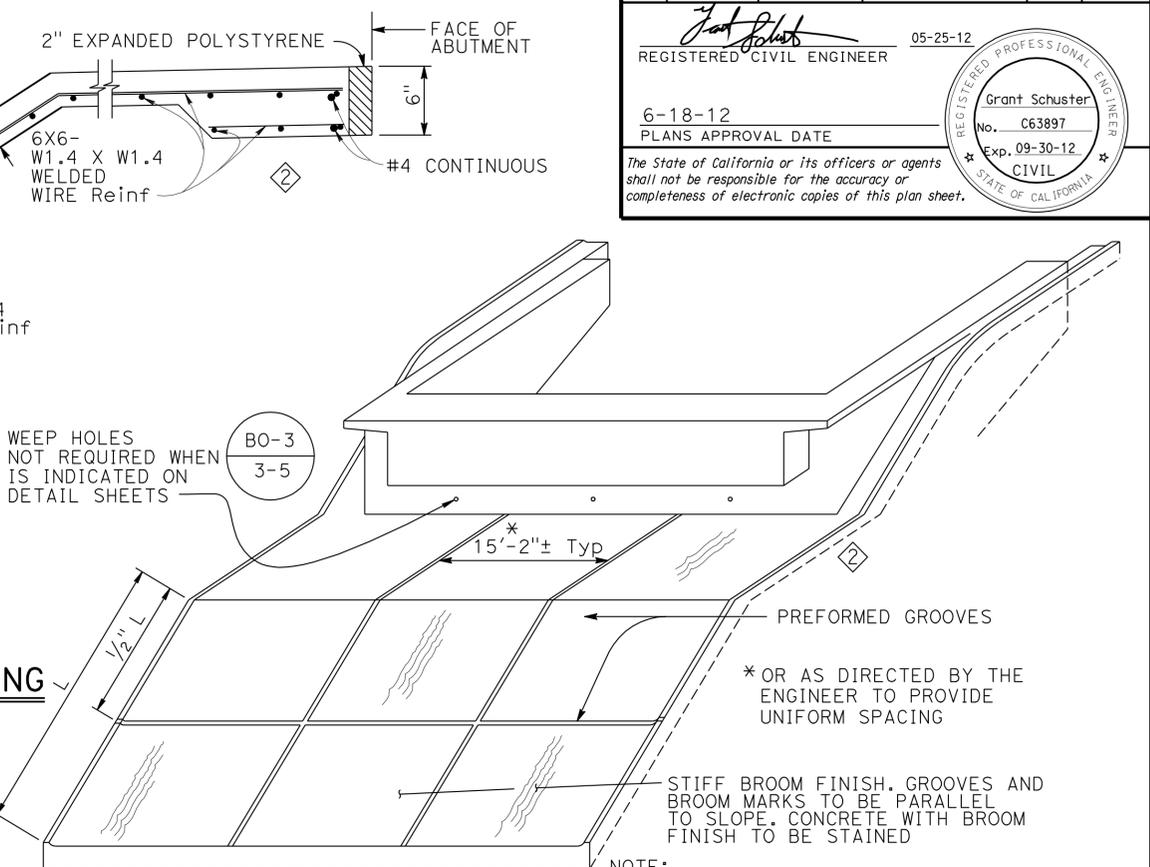
6-18-12  
 PLANS APPROVAL DATE  
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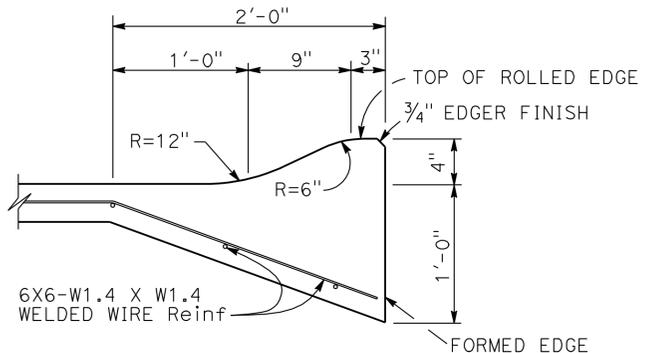
**WINGWALL ELEVATION**



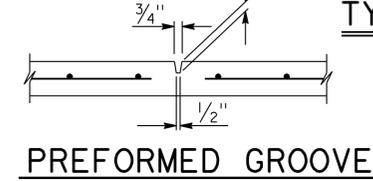
**TYPICAL SECTION - CONCRETE PAVING**



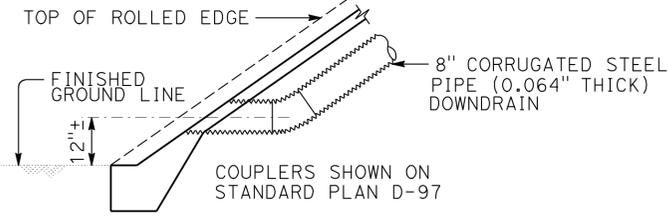
**PICTORIAL VIEW OF TYPICAL INSTALLATION**



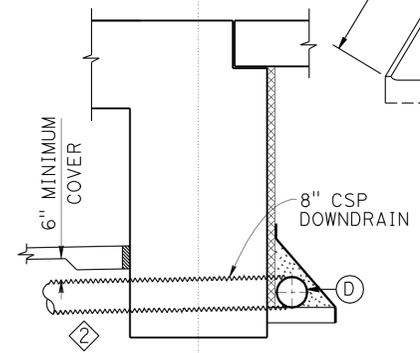
**SECTION A-A**



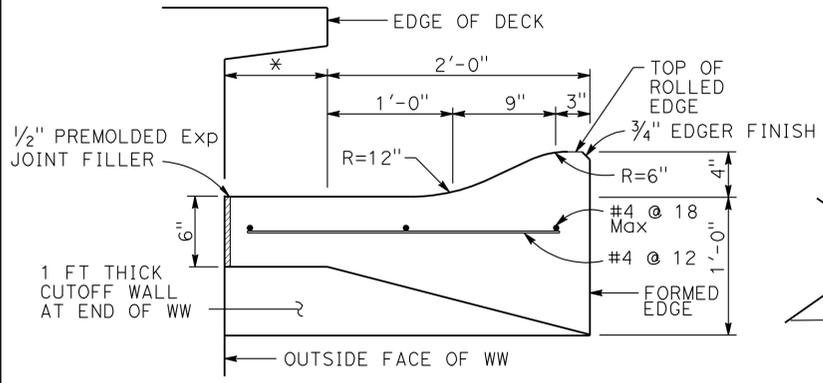
**PREFORMED GROOVE**



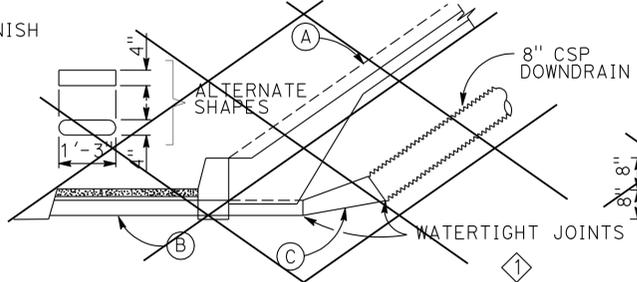
**TYPICAL - NO CURB**



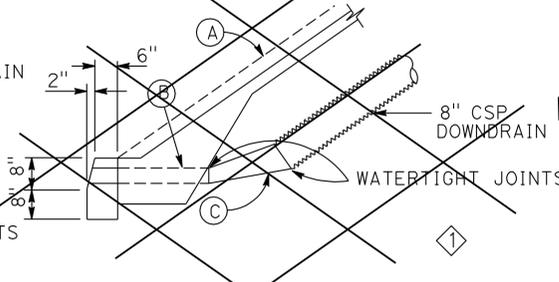
**TYPICAL - DRAIN CONNECTION**



**SECTION B-B**



**TYPICAL - WITH SIDEWALK**



**TYPICAL - WITH CURB**

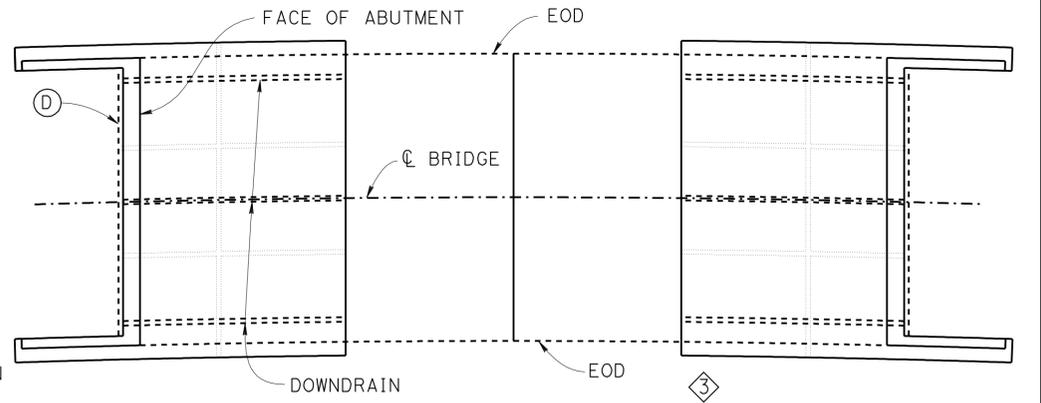
**DRAINAGE DETAILS**

NOTE:  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

\* THIS DIMENSION BECOMES ZERO WHEN EDGE OF DECK IS AT OUTSIDE FACE OF WW

NOTE:  
 Drainage details are only applicable when is indicated on detail sheets.

BO-3  
 3-5



**LIMITS OF SLOPE PAVING & DRAINAGE LAYOUT**

- (A) Top of rolled edge
- (B) Conduit:  
0.064" galv corrugated steel or 0.109" smooth galv steel
- (C) Taper: { 0.064" galv corrugated steel or 0.109" smooth galv steel
- (D) 8" perforated steel pipe ( 0.064" thick ) underdrain behind abutment. Connect to down drain as shown on limits of Slope Paving & Drainage layout.

NO SCALE

REVISED STANDARD DRAWING	
FILE NO. <b>xs4-210</b>	APPROVAL DATE July 2011

- 1 Does Not Apply
- 2 Revised Details
- 3 Add Details

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO. 50-0345L  
 POST MILE R99.5

**SAND CANYON ROAD UC LT BR (REPLACE)**  
**SLOPE PAVING-FULL SLOPE**



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	92	96

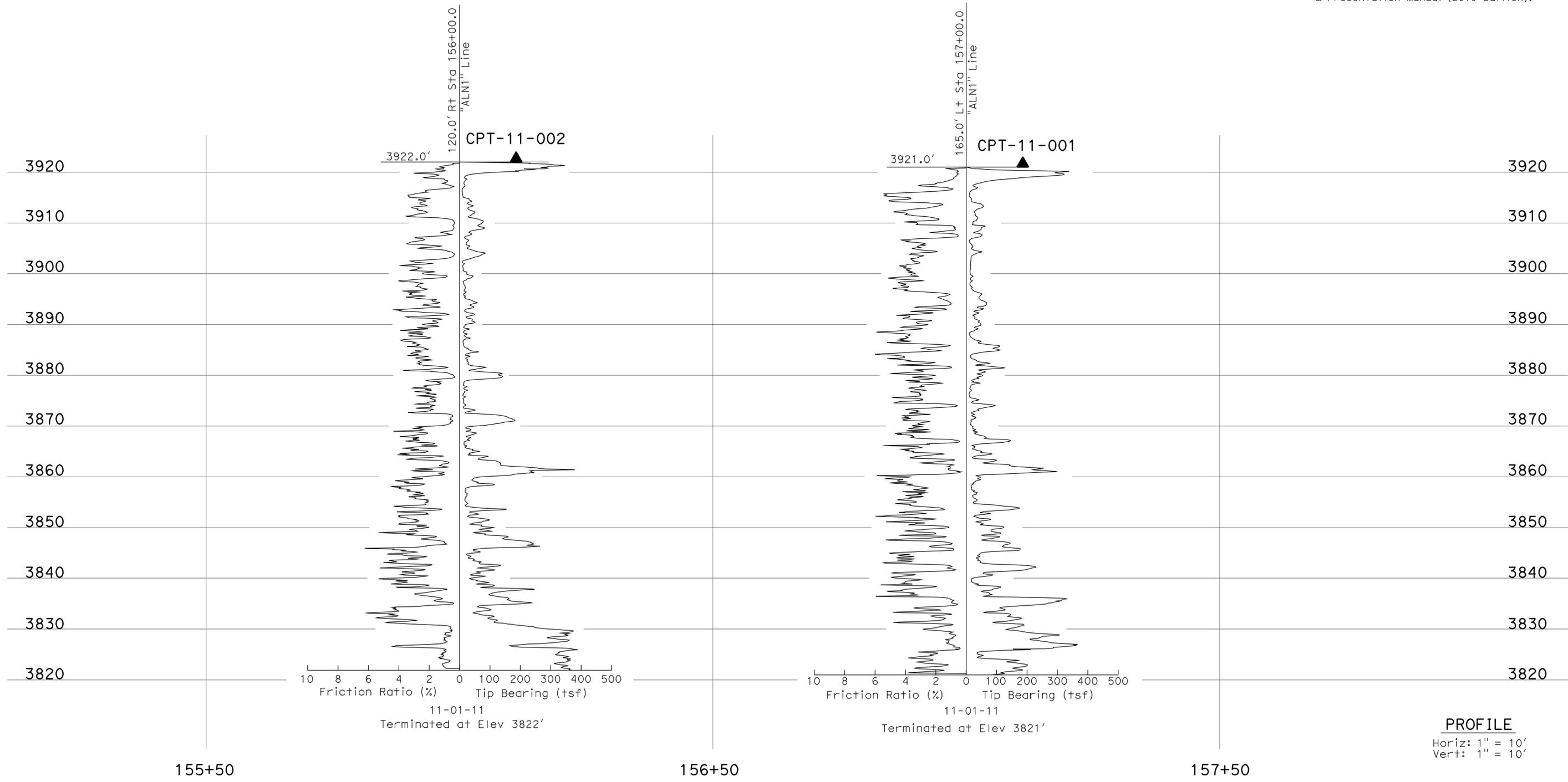
*Benjamin Barnes* 01-20-12  
 REGISTERED CIVIL ENGINEER

6-18-12  
 PLANS APPROVAL DATE

*Benjamin Barnes*  
 REGISTERED PROFESSIONAL ENGINEER  
 No. C66090  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

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FOR PLAN VIEW, SEE  
 "LOG OF TEST BORINGS 1 OF 6"



**PROFILE**  
 Horiz: 1" = 10'  
 Vert: 1" = 10'

<b>ENGINEERING SERVICES</b>		<b>MATERIALS AND GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>		<b>BRIDGE NO.</b>		<b>SAND CANYON ROAD UC LT BR (REPLACE)</b>	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		50-0345L		<b>LOG OF TEST BORINGS 2 OF 6</b>	
NAME: J. Huang		CHECKED BY: T. Song		FIELD INVESTIGATION BY: B. Barnes		DESIGN BRANCH		POST MILE			
								R99.5			
OGS CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		UNIT: 3577		PROJECT NUMBER & PHASE: 0600000241-1		CONTRACT NO.: 06-0K3901		DISREGARD PRINTS BEARING EARLIER REVISION DATES	
				0 1 2 3		FILE => 50-03451-z-1otb2of6.dgn				REVISION DATES	
										SHEET OF	
										12-02-11 01-20-12 13 17	

USERNAME => s124496 DATE PLOTTED => 19-JUN-2012 TIME PLOTTED => 13:11



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
06	Ker	58	R99.3/R99.7	94	96

*Benjamin Barnes* 01-20-12  
 REGISTERED CIVIL ENGINEER

6-18-12  
 PLANS APPROVAL DATE

*Benjamin Barnes*  
 No. C66090  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

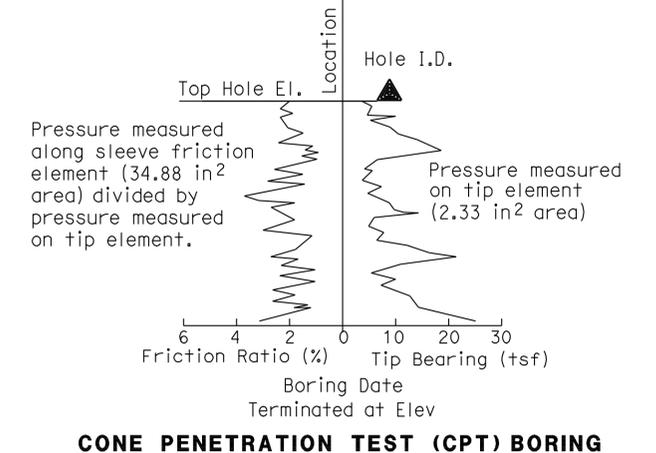
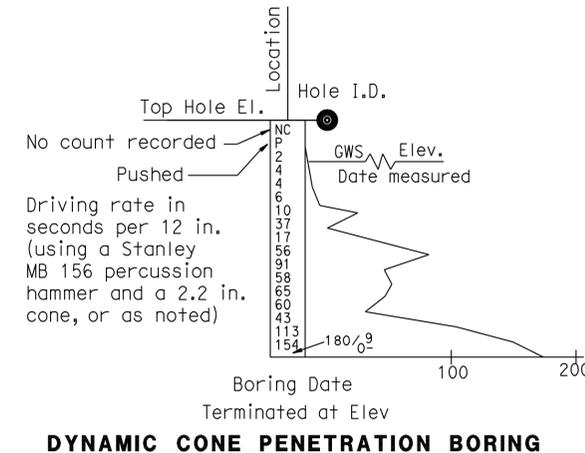
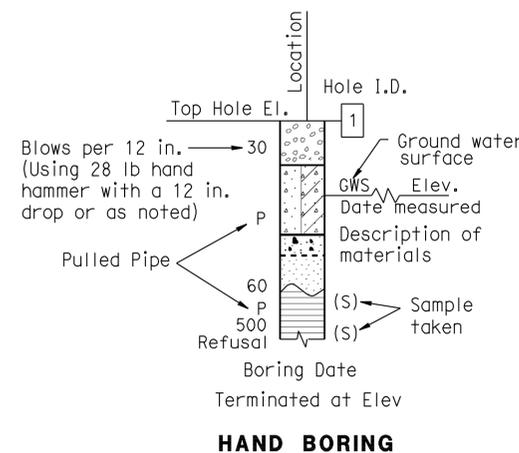
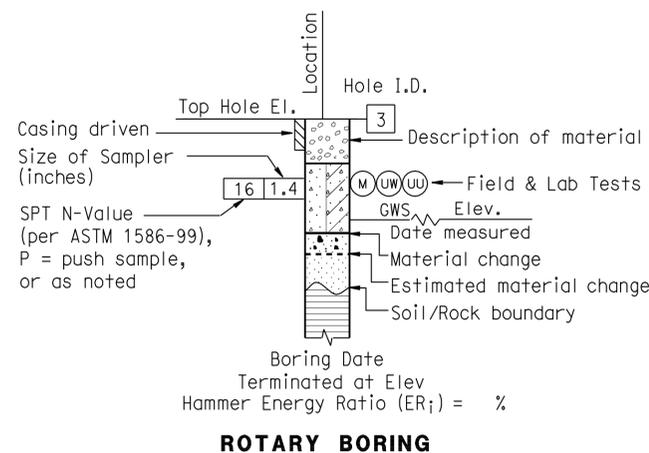
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CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring (hollow or solid stem bucket)
	R	Rotary drilled boring (conventional)
	RW	Rotary drilled with self-casing wire-line
	RC	Rotary core with continuously-sampled, self-casing wire-line
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	RC	Rotary drilled rock core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778)
	O	Other (note on LOTB)

Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



*Benjamin Barnes* 01-20-12  
 REGISTERED CIVIL ENGINEER  
 No. C66090  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA  
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GROUP SYMBOLS AND NAMES			
Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
	Well-graded GRAVEL		Lean CLAY
	Well-graded GRAVEL with SAND		Lean CLAY with SAND
	Poorly-graded GRAVEL		Lean CLAY with GRAVEL
	Poorly-graded GRAVEL with SAND		SANDY lean CLAY
	Well-graded GRAVEL with SILT		SANDY lean CLAY with GRAVEL
	Well-graded GRAVEL with SILT and SAND		GRAVELLY lean CLAY
	Well-graded GRAVEL with CLAY (or SILTY CLAY)		GRAVELLY lean CLAY with SAND
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SILTY CLAY
	Poorly-graded GRAVEL with SILT		SILTY CLAY with SAND
	Poorly-graded GRAVEL with SILT and SAND		SILTY CLAY with GRAVEL
	Poorly-graded GRAVEL with CLAY (or SILTY CLAY)		SANDY SILTY CLAY
	Poorly-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SANDY SILTY CLAY with GRAVEL
	SILTY GRAVEL		GRAVELLY SILTY CLAY
	SILTY GRAVEL with SAND		GRAVELLY SILTY CLAY with SAND
	CLAYEY GRAVEL		SILT
	CLAYEY GRAVEL with SAND		SILT with SAND
	SILTY, CLAYEY GRAVEL		SILT with GRAVEL
	SILTY, CLAYEY GRAVEL with SAND		SANDY SILT
	Well-graded SAND		SANDY SILT with GRAVEL
	Well-graded SAND with GRAVEL		GRAVELLY SILT
	Poorly-graded SAND		GRAVELLY SILT with SAND
	Poorly-graded SAND with GRAVEL		ORGANIC lean CLAY
	Well-graded SAND with SILT		ORGANIC lean CLAY with SAND
	Well-graded SAND with SILT and GRAVEL		ORGANIC lean CLAY with GRAVEL
	Well-graded SAND with CLAY (or SILTY CLAY)		SANDY ORGANIC lean CLAY
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		GRAVELLY ORGANIC lean CLAY
	Poorly-graded SAND with SILT		GRAVELLY ORGANIC lean CLAY with SAND
	Poorly-graded SAND with SILT and GRAVEL		ORGANIC fat CLAY
	Poorly-graded SAND with CLAY (or SILTY CLAY)		ORGANIC fat CLAY with SAND
	Poorly-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC fat CLAY with GRAVEL
	SILTY SAND		SANDY ORGANIC fat CLAY
	SILTY SAND with GRAVEL		SANDY ORGANIC fat CLAY with GRAVEL
	CLAYEY SAND		GRAVELLY ORGANIC fat CLAY
	CLAYEY SAND with GRAVEL		GRAVELLY ORGANIC fat CLAY with SAND
	SILTY, CLAYEY SAND		ORGANIC elastic SILT
	SILTY, CLAYEY SAND with GRAVEL		ORGANIC elastic SILT with SAND
	PEAT		ORGANIC elastic SILT with GRAVEL
	COBBLES		SANDY ORGANIC elastic SILT
	COBBLES and BOULDERS		GRAVELLY ORGANIC elastic SILT
			GRAVELLY ORGANIC elastic SILT with SAND

FIELD AND LABORATORY TESTING	
(C)	Consolidation (ASTM D 2435)
(CL)	Collapse Potential (ASTM D 5333)
(CP)	Compaction Curve (CTM 216)
(CR)	Corrosivity Testing (CTM 643, CTM 422, CTM 417)
(CU)	Consolidated Undrained Triaxial (ASTM D 4767)
(DS)	Direct Shear (ASTM D 3080)
(EI)	Expansion Index (ASTM D 4829)
(M)	Moisture Content (ASTM D 2216)
(OC)	Organic Content-% (ASTM D 2974)
(P)	Permeability (CTM 220)
(PA)	Particle Size Analysis (ASTM D 422)
(PI)	Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
(PL)	Point Load Index (ASTM D 5731)
(PM)	Pressure Meter
(R)	R-Value (CTM 301)
(SE)	Sand Equivalent (CTM 217)
(SG)	Specific Gravity (AASHTO T 100)
(SL)	Shrinkage Limit (ASTM D 427)
(SW)	Swell Potential (ASTM D 4546)
(UC)	Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N <sub>60</sub> (Blows / 12 in.)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

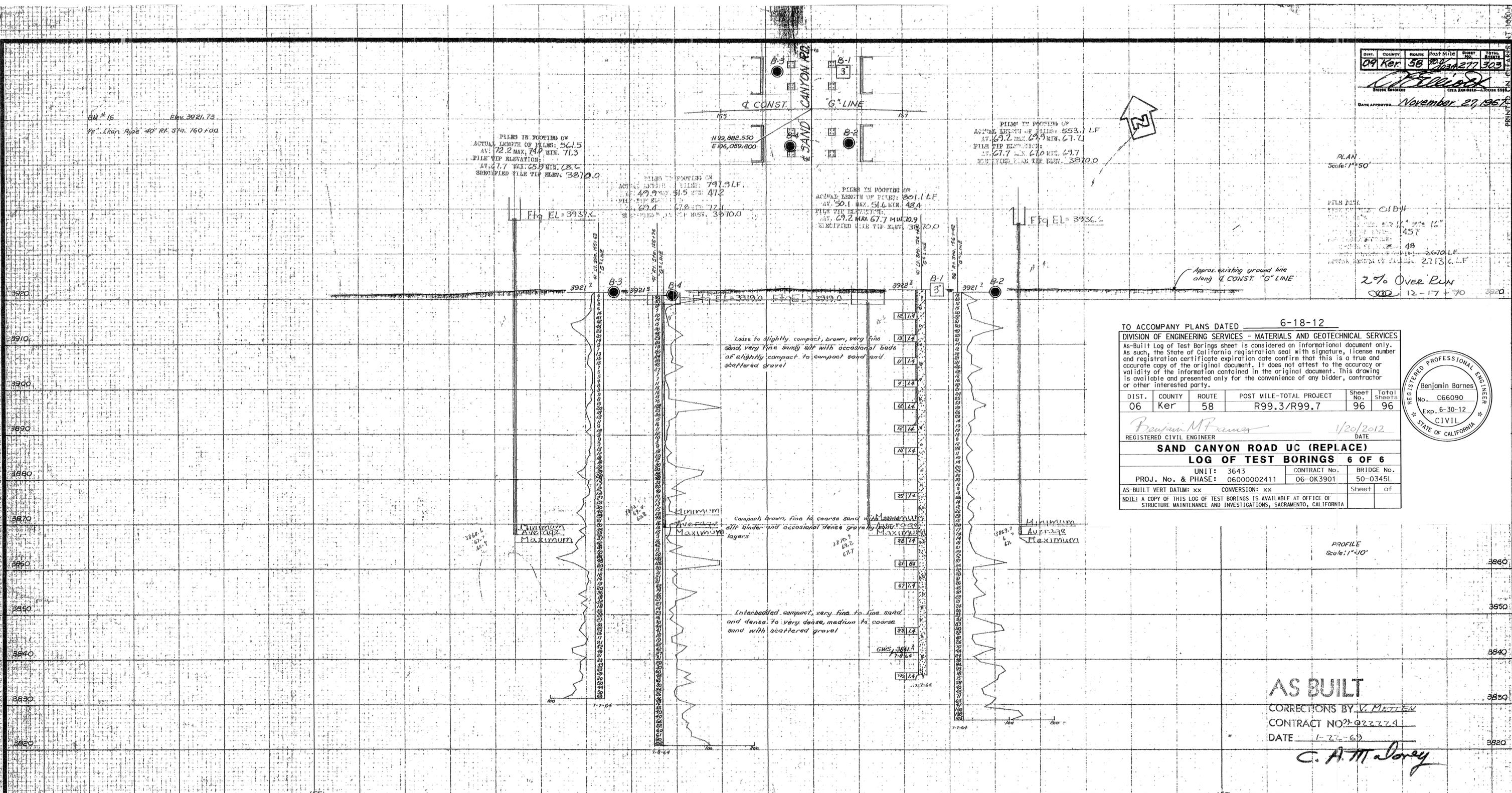
PERCENT OR PROPORTION OF SOILS	
Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5% - 10%
Little	15% - 25%
Some	30% - 45%
Mostly	50% - 100%

PARTICLE SIZE		
Description	Size (in.)	
Boulder	Greater than 12	
Cobble	3 - 12	
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay	Less than 1/300	

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 5	BRIDGE NO. 50-0345L	SAND CANYON ROAD UC LT BR (REPLACE) LOG OF TEST BORINGS 5 OF 6
				POST MILE R99.5	
PREPARED BY: F. Nguyen	UNIT: 3577 PROJECT NUMBER & PHASE: 0600000241-1	CONTRACT NO.: 06-0K3901	REVISION DATES 12-02-11 01-20-12	SHEET 16 OF 17	

GS LOTB SOIL LEGEND ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

FILE => 50-03451-z-10tb50f6.dgn



TO ACCOMPANY PLANS DATED 6-18-12

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the information contained in the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	POST MILE-TOTAL PROJECT	Sheet No.	Total Sheets
06	Ker	58	R99.3/R99.7	96	96

Benjamin M. Premeaux  
REGISTERED CIVIL ENGINEER

1/20/2012  
DATE

**SAND CANYON ROAD UC (REPLACE)**  
**LOG OF TEST BORINGS 6 OF 6**

UNIT: 3643	CONTRACT NO: 06000002411	BRIDGE No. 50-0345L
PROJ. No. & PHASE: 06000002411	06-OK3901	50-0345L

AS-BUILT VERT DATUM: xx CONVERSION: xx

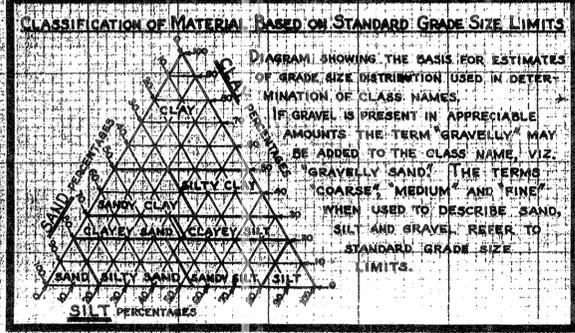
NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA



PROFILE  
Scale: 1"=30'

**AS BUILT**  
CORRECTIONS BY: V. METTEN  
CONTRACT NO: 022274  
DATE: 1-22-69

C. A. M. Joray



**LEGEND OF EARTH MATERIALS**

GRAVEL	SILTY CLAY OR CLAYEY SILT
SAND	PEAT AND/OR ORGANIC MATTER
SILT	FILL MATERIAL
CLAY	IGNEOUS ROCK
SANDY CLAY OR CLAYEY SAND	SEDIMENTARY ROCK
SANDY SILT OR SILTY SAND	METAMORPHIC ROCK

**LEGEND OF BORING OPERATIONS**

**NOTE**

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS

SHEET 17 OF 17

**SAND CANYON ROAD UNDERCROSSING**  
**LOG OF TEST BORINGS**

SCALE: As Noted | BRIDGE 50-345 1/2 | FILE | DRAWING 50345-B