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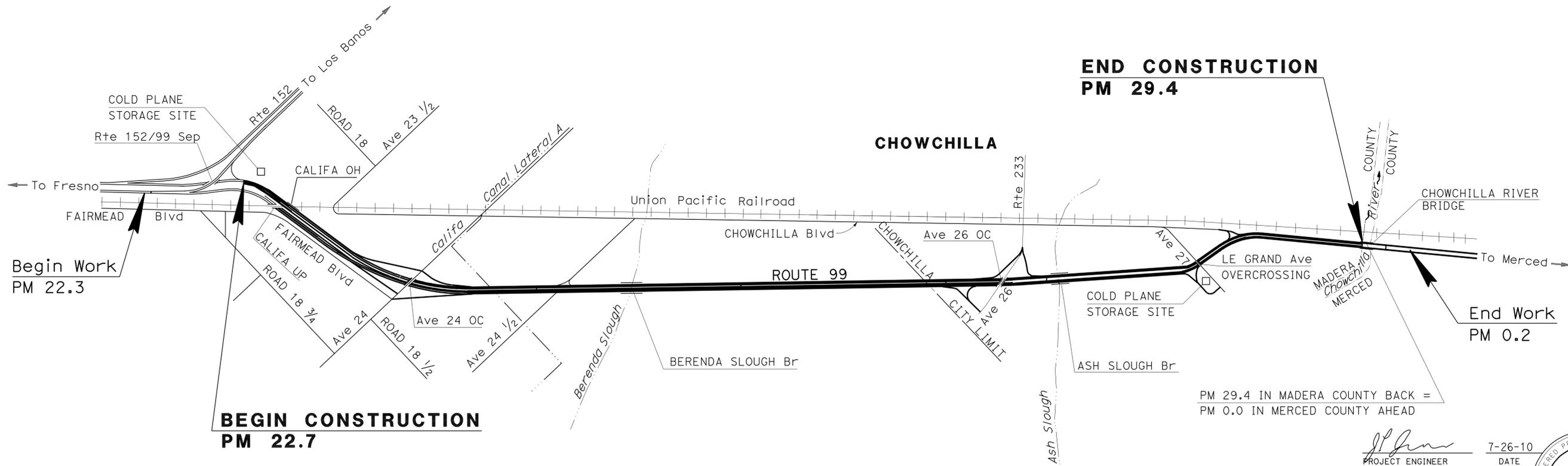
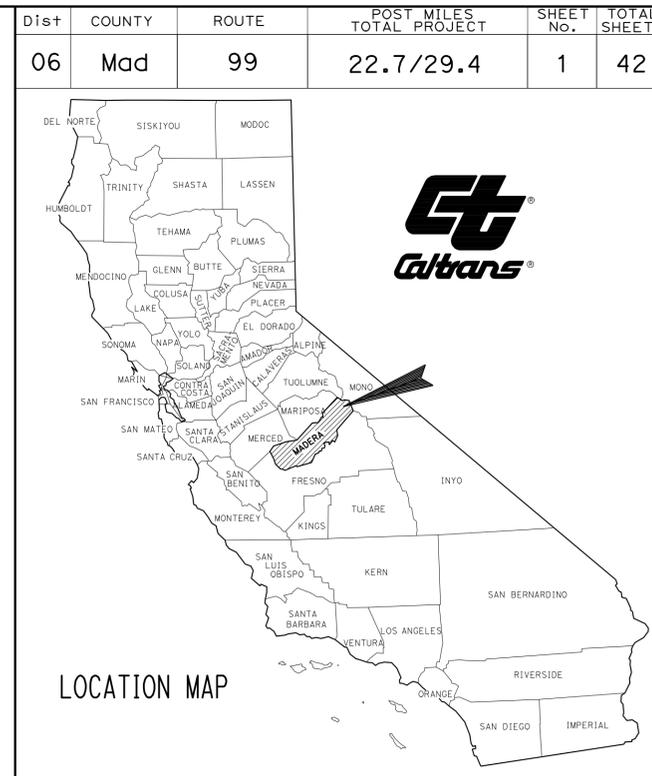
THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

NH-P099(541)E

PROJECT PLANS FOR CONSTRUCTION ON  
STATE HIGHWAY  
IN MADERA COUNTY IN AND NEAR CHOWCHILLA  
FROM 0.2 MILE SOUTH OF CALIFA OVERHEAD  
TO MERCED COUNTY LINE

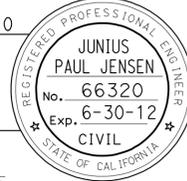
TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



PM 29.4 IN MADERA COUNTY BACK =  
PM 0.0 IN MERCED COUNTY AHEAD

PROJECT ENGINEER  
REGISTERED CIVIL ENGINEER

July 26, 2010  
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.

NO SCALE

PROJECT MANAGER  
ABDUL EL-DAHABI

DESIGN ENGINEER  
GETACHEW ESHETE

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

CONTRACT No.	06-0E2204
PROJECT ID	0600020033

DATE PLOTTED => 29-SEP-2010  
TIME PLOTTED => 13:56  
LAST REVISION 07-26-10

**NOTES:**

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT DISTRICT OFFICE.
3. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
4. SEE SHEET C-3 FOR RHMA (GAP GRADED) OVERLAY LIMITS ADJACENT TO Exist AC DIKE.

**ABBREVIATION:**

RHMA - RUBBERIZED HOT MIX ASPHALT

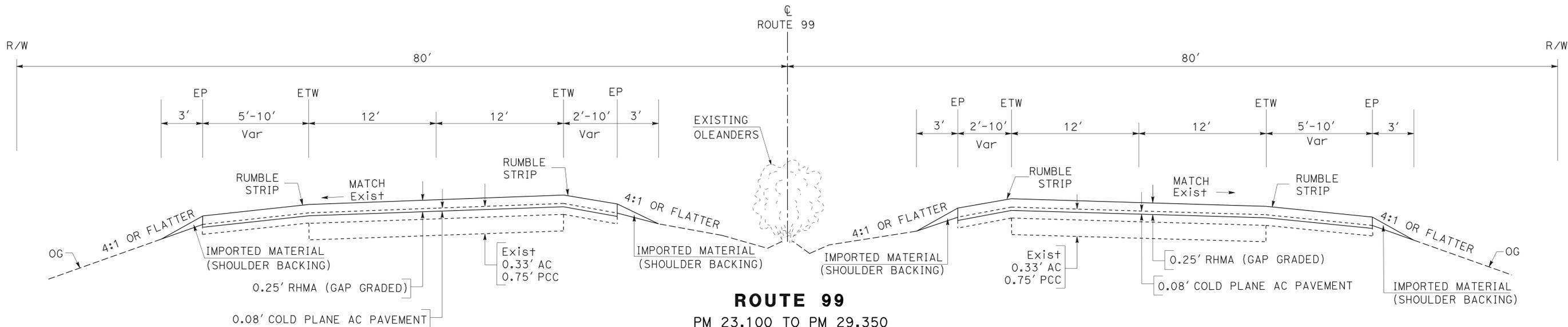
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	2	42

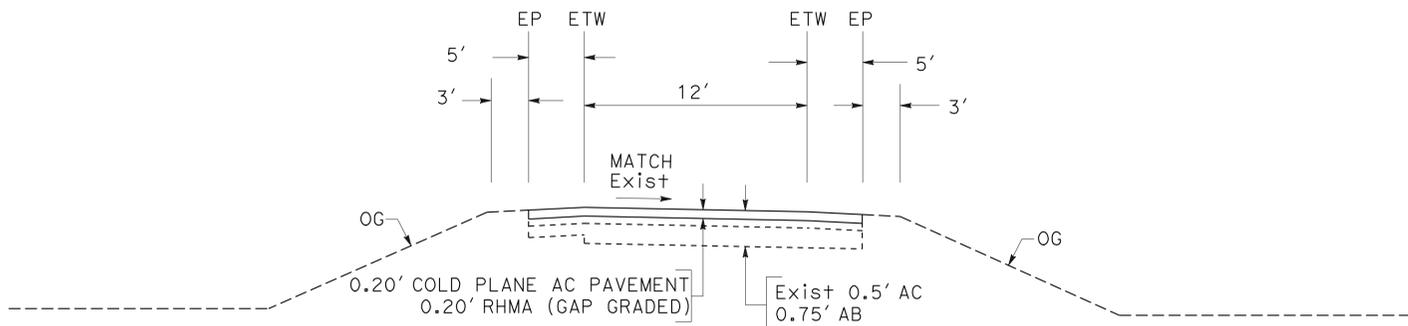
<i>[Signature]</i>	7-26-10
REGISTERED CIVIL ENGINEER	DATE
7-26-10	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER  
**JUNIUS PAUL JENSEN**  
 No. 66320  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

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



**ROUTE 99**  
PM 23.100 TO PM 29.350



**CONNECTION ON/OFF RAMPS**

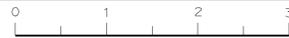
**TYPICAL CROSS SECTIONS**

NO SCALE

**X-1**

EXISTING UTILITY FACILITIES HAVE NOT BEEN SHOWN ON THE PLANS

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 FUNCTIONAL SUPERVISOR: GETACHEW ESHETE  
 CALCULATED/DESIGNED BY: PAUL JENSEN  
 CHECKED BY: KHALID CHAOUTI  
 REVISED BY: PAUL JENSEN  
 DATE: 7-26-10



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	3	42
			7-26-10	DATE	
			7-26-10	PLANS APPROVAL DATE	
REGISTERED CIVIL ENGINEER JUNIUS PAUL JENSEN No. 66320 Exp. 6-30-12 CIVIL STATE OF CALIFORNIA					
<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>					

**NOTES:**

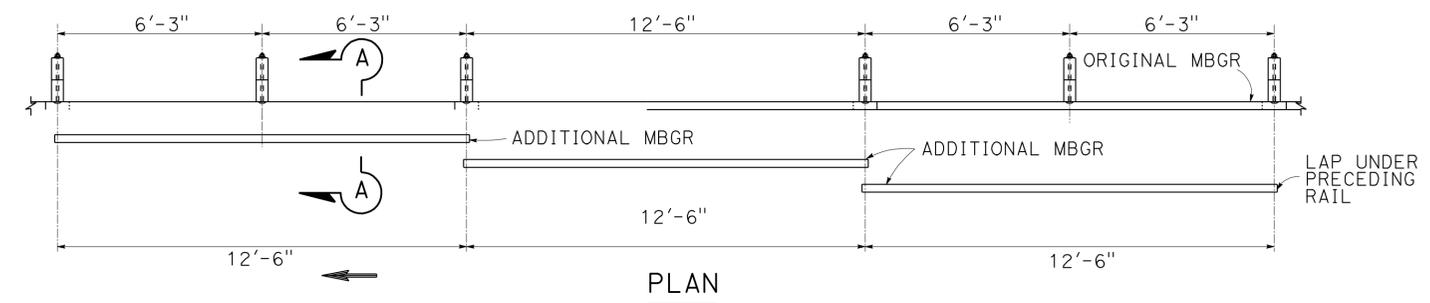
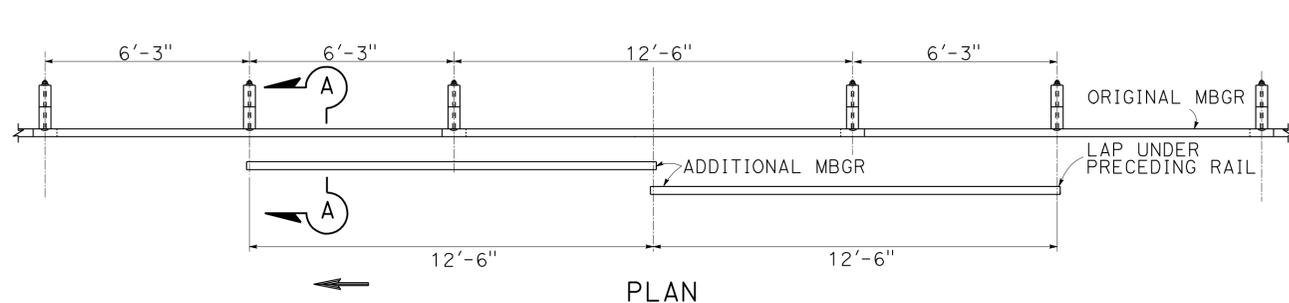
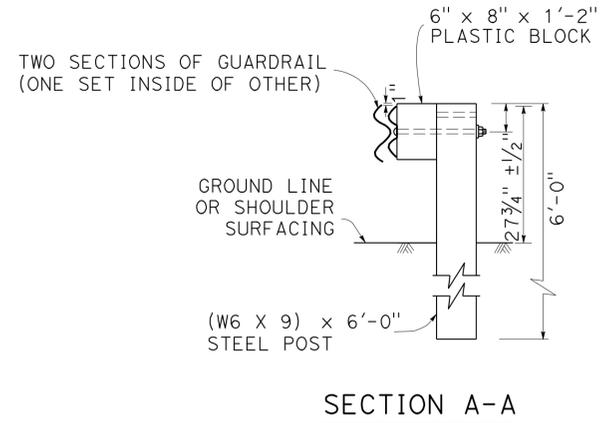
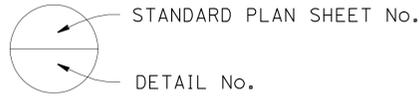
1. VERIFY DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY PARTS TO CONFORM WITH EXISTING PAVED CONDITIONS.
2. LOCATION OF CONCRETE PANELS TO BE REPLACED WILL BE DIRECTED BY THE ENGINEER.
3. CONCRETE PAVEMENT PANELS HAVE VARIABLE LENGTH.
4. FOR REPAIR FAILED AREA LOCATIONS, SEE SUMMARY OF QUANTITIES SHEETS
5. USE NESTED MBGR CONSTRUCTION DETAIL AT UTILITIES AS DIRECTED BY THE ENGINEER.

**ABBREVIATION:**

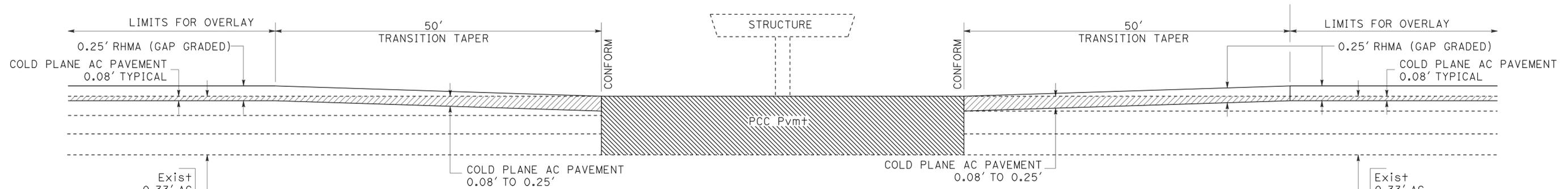
RHMA: RUBBERIZED HOT MIX ASPHALT

**LEGEND**

- Exist PCC Pvmt
- COLD PLANE AC PAVEMENT
- LIMITS OF RAMP WORK
- DIRECTION OF TRAFFIC



**NESTED MBGR WITH STEEL POST AND PLASTIC BLOCKS**



**CONSTRUCTION DETAILS**

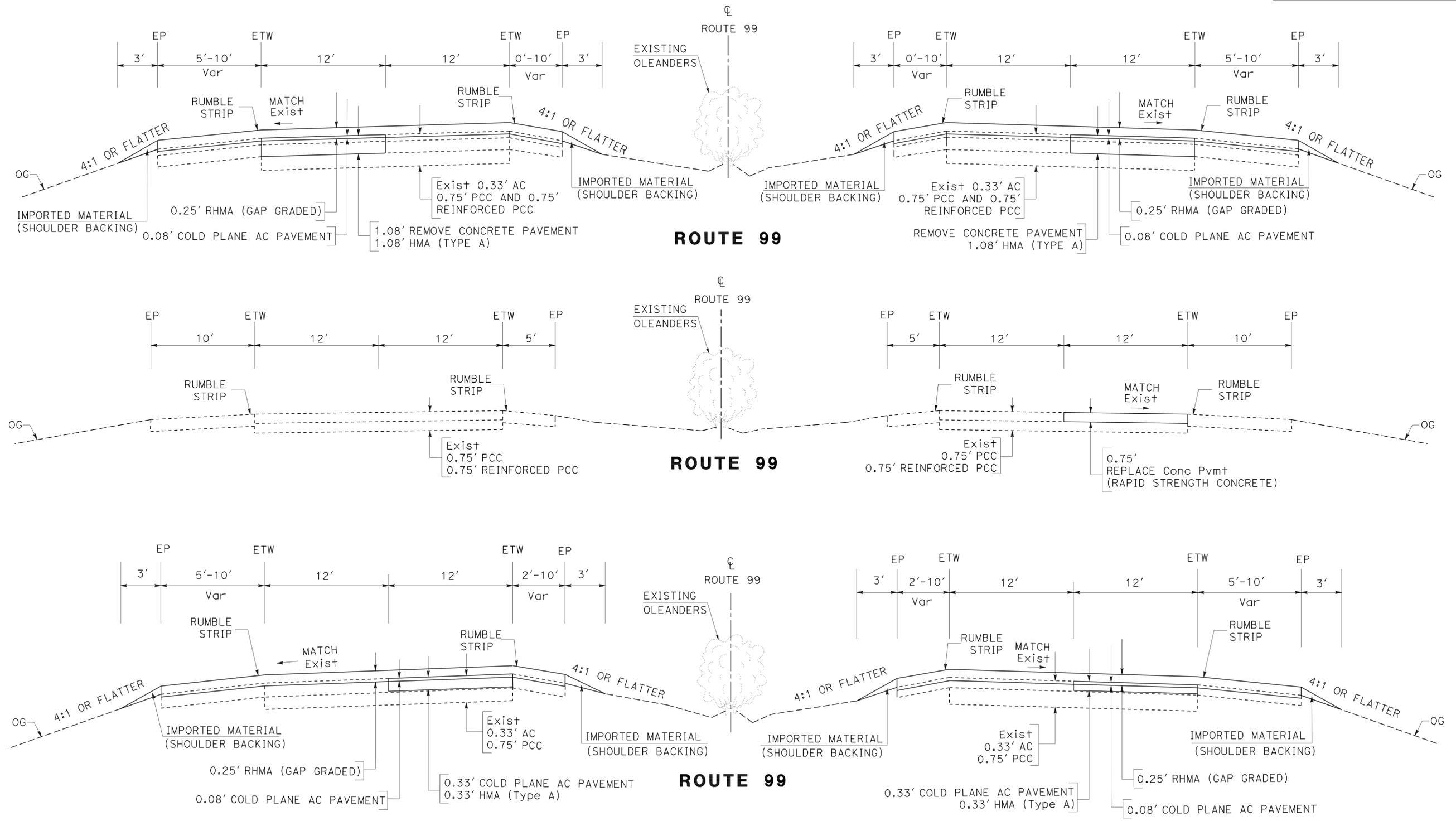
NO SCALE

**C-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 Caltrans  
 FUNCTIONAL SUPERVISOR: GETACHEW ESHETE  
 CALCULATED/DESIGNED BY: PAUL JENSEN  
 CHECKED BY: BILL LEON  
 REVISIONS: PAUL JENSEN, BILL LEON  
 REVISIONS: PAUL JENSEN, BILL LEON

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	4	42
			7-26-10	REGISTERED CIVIL ENGINEER DATE	
			7-26-10	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>					

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 FUNCTIONAL SUPERVISOR: GETACHEW ESHETE  
 CHECKED BY: PAUL JENSEN, BILL LEON  
 REVISIONS: PAUL JENSEN, BILL LEON  
 REVISIONS: PAUL JENSEN, BILL LEON



**TYPICAL REPAIR FAILED AREA CROSS SECTIONS**

**CONSTRUCTION DETAILS**

NO SCALE

**C-2**

LAST REVISION: DATE PLOTTED => 21-SEP-2010  
 07-26-10 TIME PLOTTED => 09:24

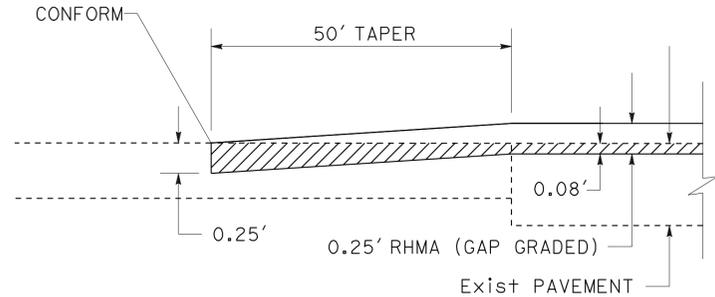
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	5	42

7-26-10  
 REGISTERED CIVIL ENGINEER DATE  
 7-26-10  
 PLANS APPROVAL DATE

JUNIUS PAUL JENSEN  
 No. 66320  
 Exp. 6-30-12  
 CIVIL

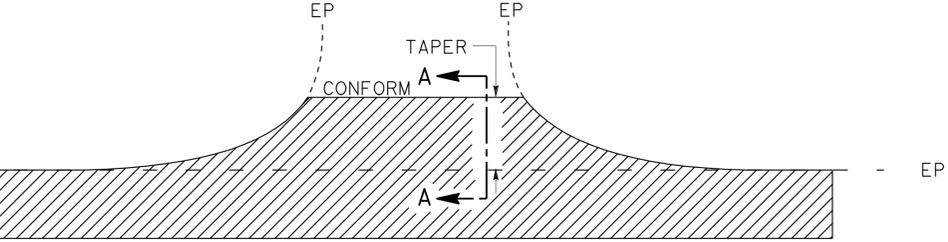
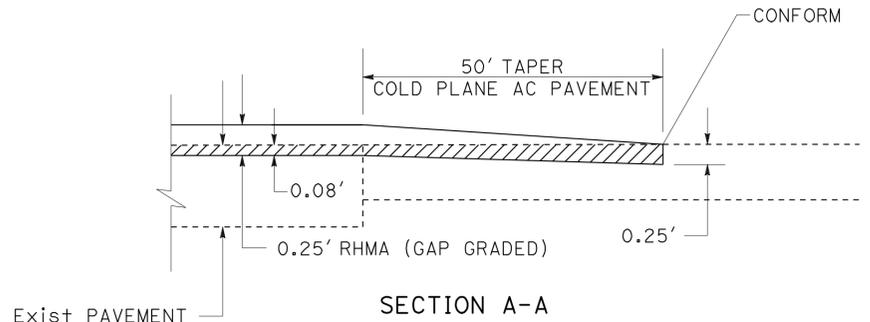
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**LONGITUDINAL TRANSITION TAPER**

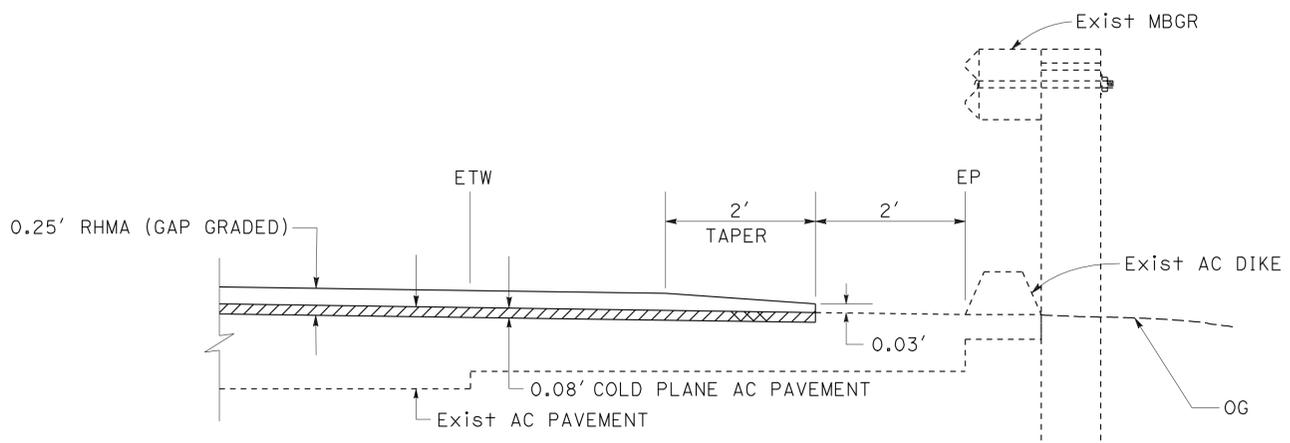


**LONGITUDINAL TRANSITION TAPER (SEE TABLE)**

POST MILE	INTERSECTION
23.100	BEGIN COLD PLANE
23.740	AVENUE 24 OC
23.790	AVENUE 24 OC
24.400	AVENUE 24 1/2
24.460	AVENUE 24 1/2
24.730	BERENDA SLOUGH
24.850	BERENDA SLOUGH
26.323	NB OFF RAMP TO Ave 26
26.463	NB ON RAMP FROM Ave 26
26.474	SB ON RAMP FROM Ave 26
26.728	SB OFF RAMP TO Ave 26
26.800	ASH SLOUGH
26.880	ASH SLOUGH
28.080	LE GRAND Ave OC
28.200	LE GRAND Ave OC
28.680	WEIGH IN MOTION
28.720	WEIGH IN MOTION
29.350	END CONSTRUCTION

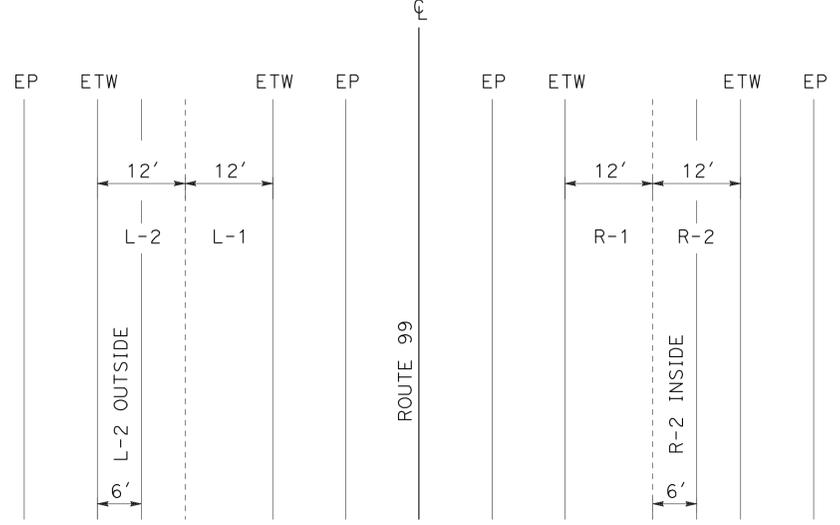


**Ave 24 1/2 AT GRADE INTERSECTION**

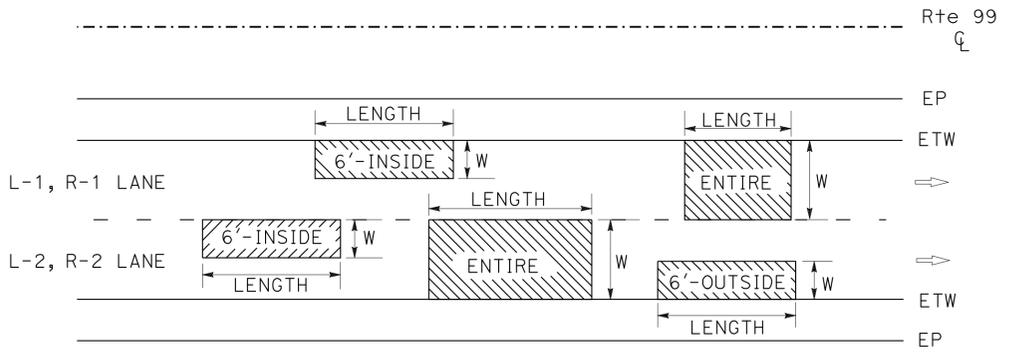


**SHOULDER WITH EXISTING DIKE OR MBGR**

EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS

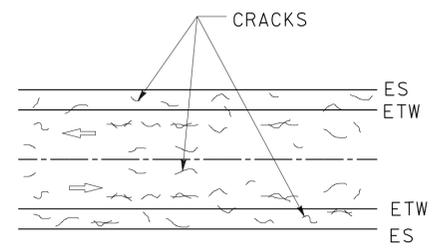


LANE DESCRIPTION CHART



NOTE: EXACT LOCATIONS, WIDTHS, AND LENGTHS TO BE DETERMINED BY THE ENGINEER. SEE SUMMARY OF QUANTITIES FOR LOCATIONS DEPTHS AND WIDTHS.

**COLD PLANE DETAILS FOR REPAIR FAILED AREAS**



**CRACK TREATMENT TYPICAL PLAN VIEW**

**CONSTRUCTION DETAILS**

NO SCALE

**C-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 DESIGN  
 FUNCTIONAL SUPERVISOR: GETACHEW ESHETE  
 CALCULATED/DESIGNED BY: PAUL JENSEN, MAHESH MONGA  
 CHECKED BY: PAUL JENSEN, MAHESH MONGA  
 REVISED BY: PAUL JENSEN, MAHESH MONGA  
 DATE REVISED: PAUL JENSEN, MAHESH MONGA

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	6	42

REGISTERED CIVIL ENGINEER	DATE
<i>Paul Jensen</i>	7-26-10
PLANS APPROVAL DATE	
7-26-10	

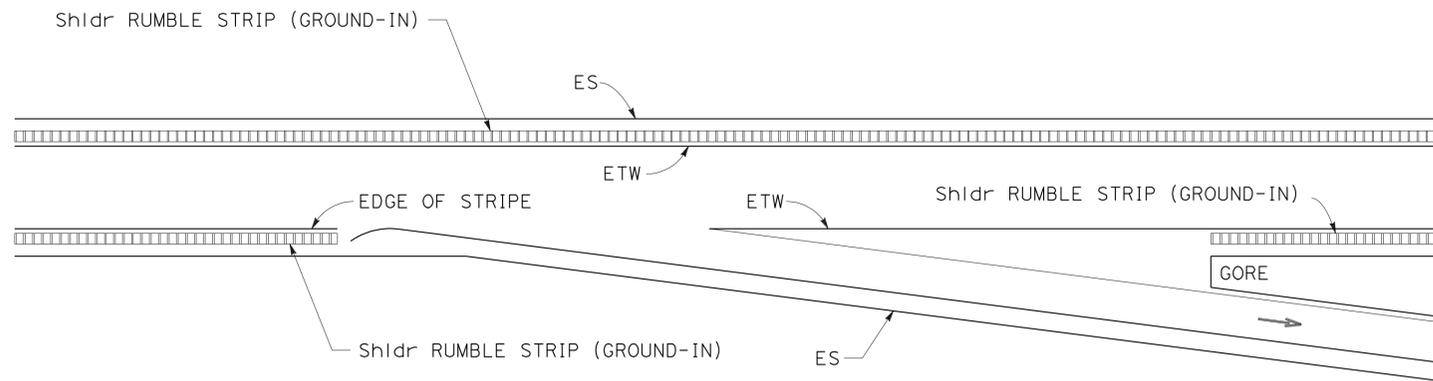
  

REGISTERED PROFESSIONAL ENGINEER
JUNIUS PAUL JENSEN
No. 66320
Exp. 6-30-12
CIVIL
STATE OF CALIFORNIA

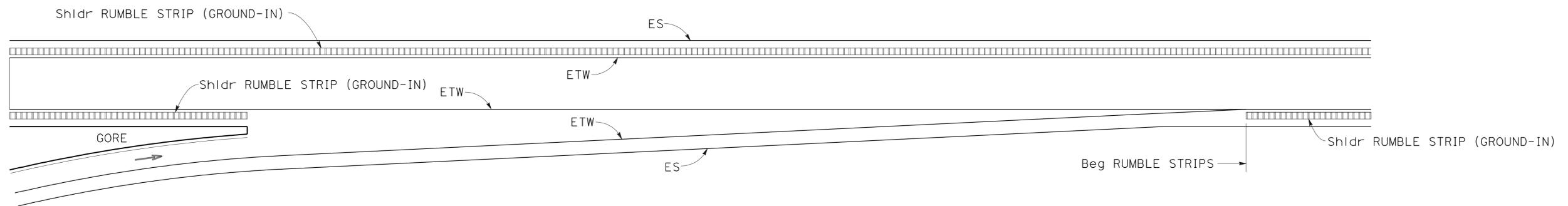
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTES:**

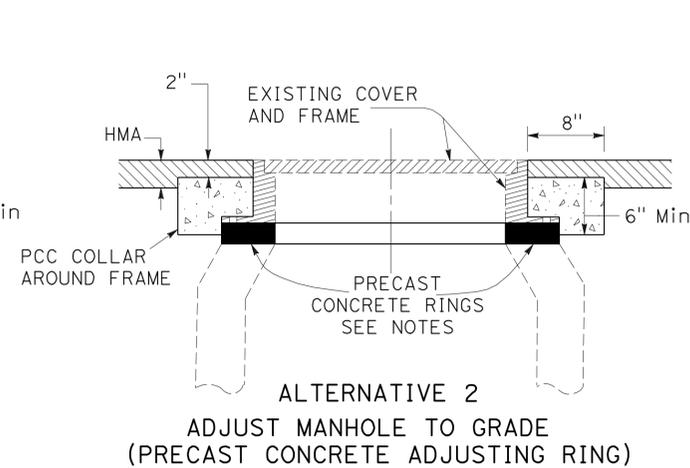
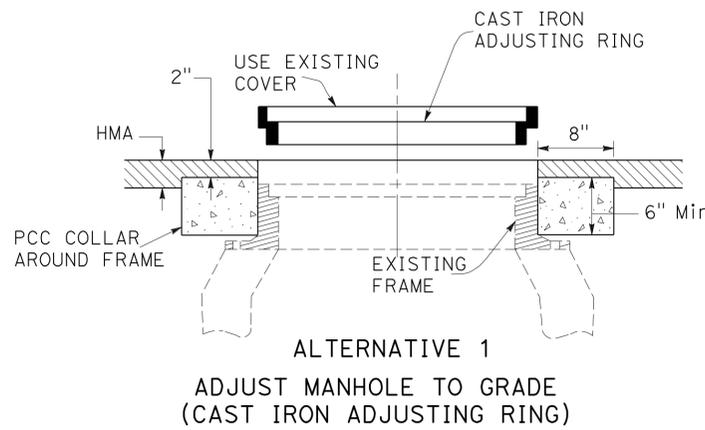
- SEE STANDARD PLAN A40B FOR ADDITIONAL RUMBLE STRIP DETAILS
- CAST IRON ADJUSTING RING THICKNESS VARIES FROM 0.8" TO A Max OF 2.5". FOR ADJUSTMENTS GREATER THAN 2.5" USE CONCRETE ADJUSTING COLLAR.



**TYPICAL OFF-RAMP RUMBLE STRIP**



**TYPICAL ON RAMP RUMBLE STRIP**



**CONSTRUCTION DETAILS**

NO SCALE

**C-4**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	7	42

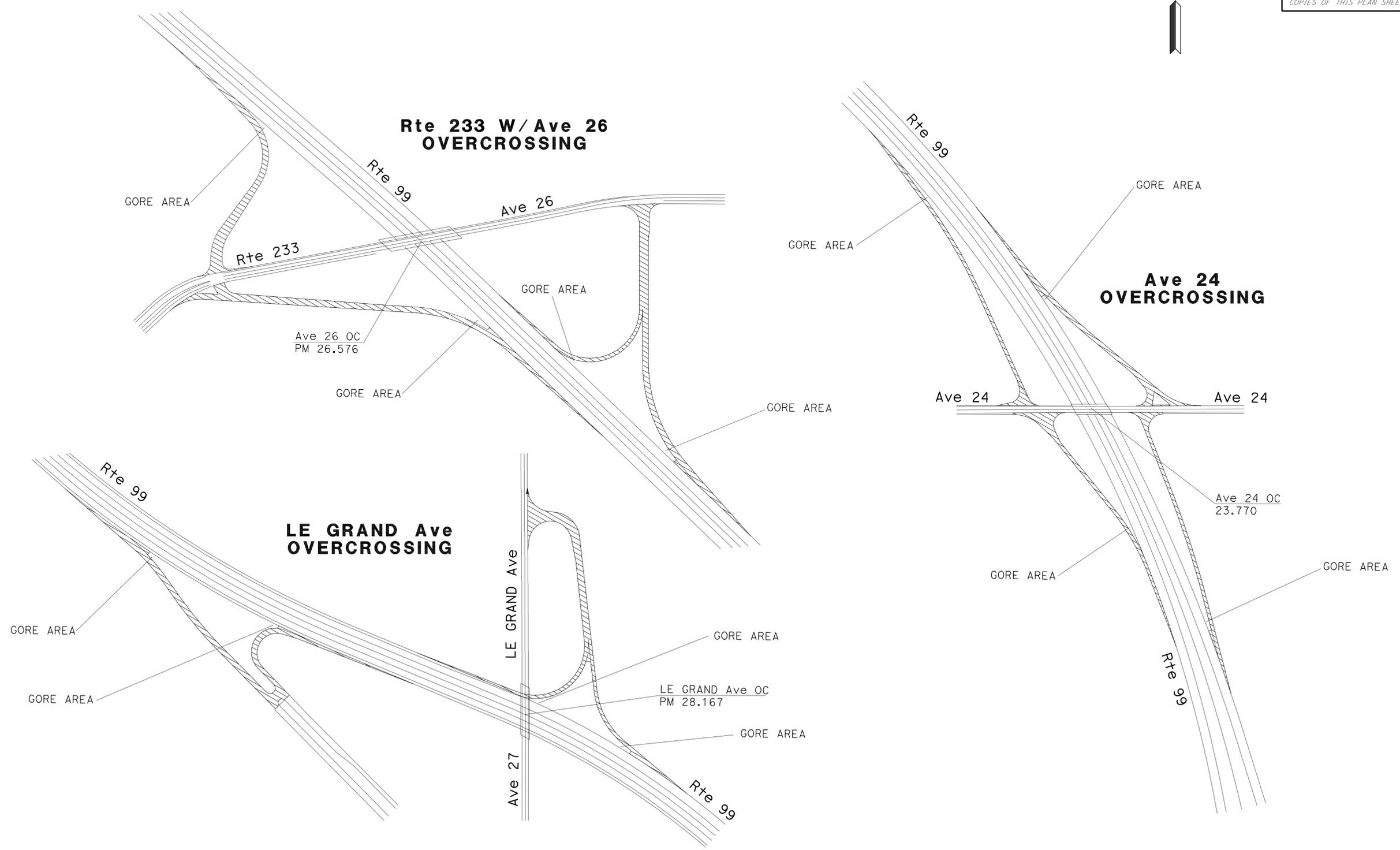
  

<i>[Signature]</i>	DATE
REGISTERED CIVIL ENGINEER	
7-26-10	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
JUNIUS PAUL JENSEN
No. 66320
Exp. 6-30-12
CIVIL
STATE OF CALIFORNIA

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



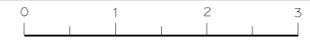
**LIMIT OF RAMP WORK**

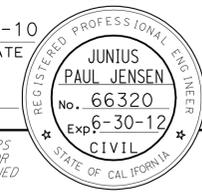
**CONSTRUCTION DETAILS**

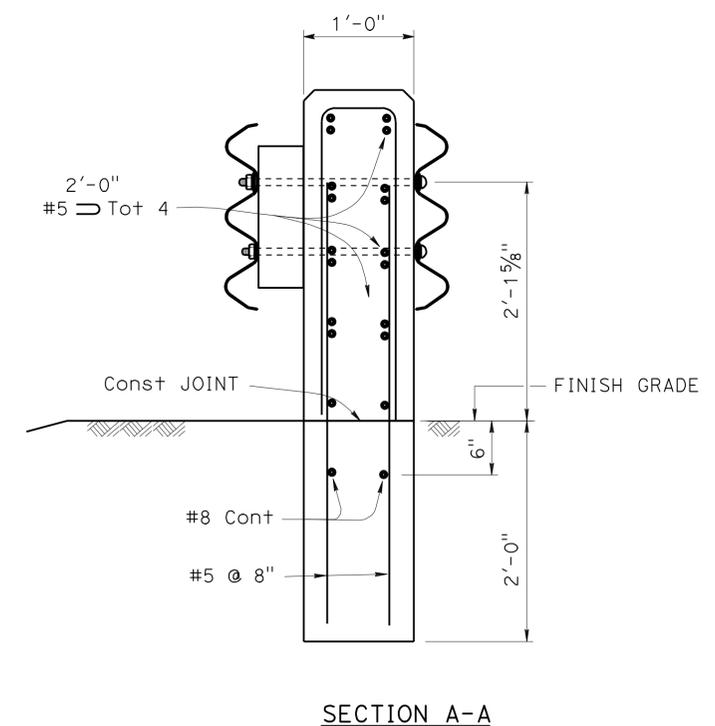
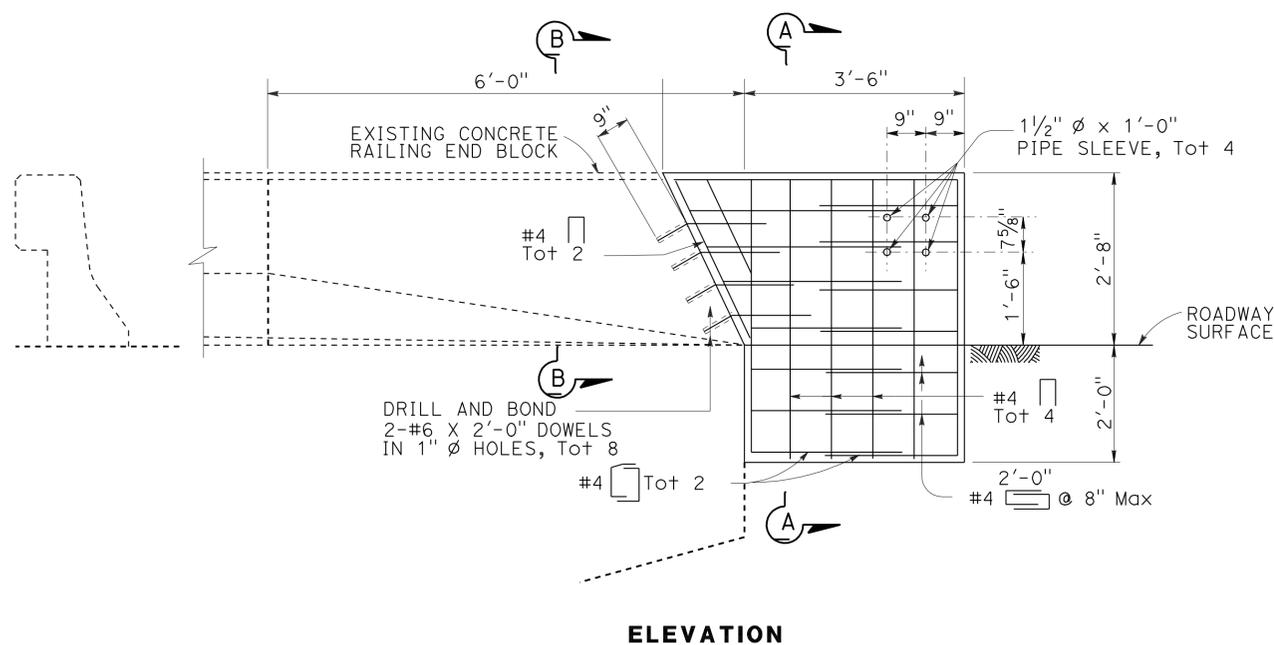
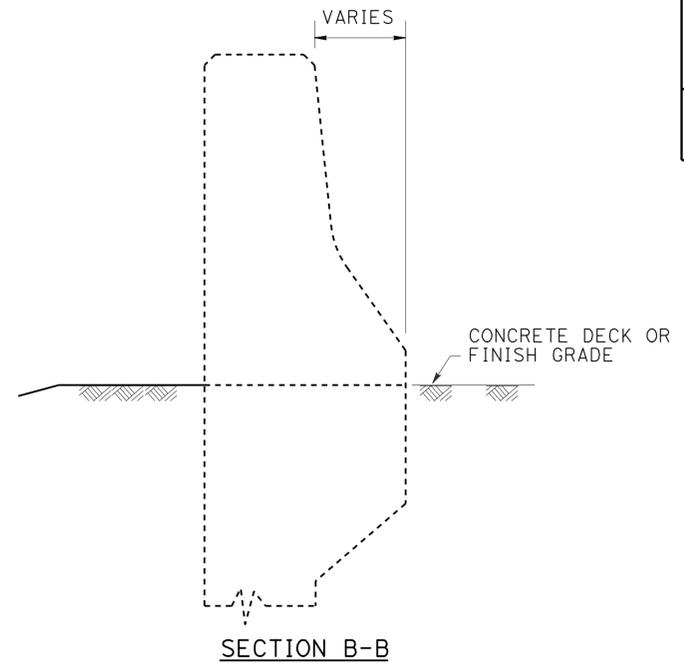
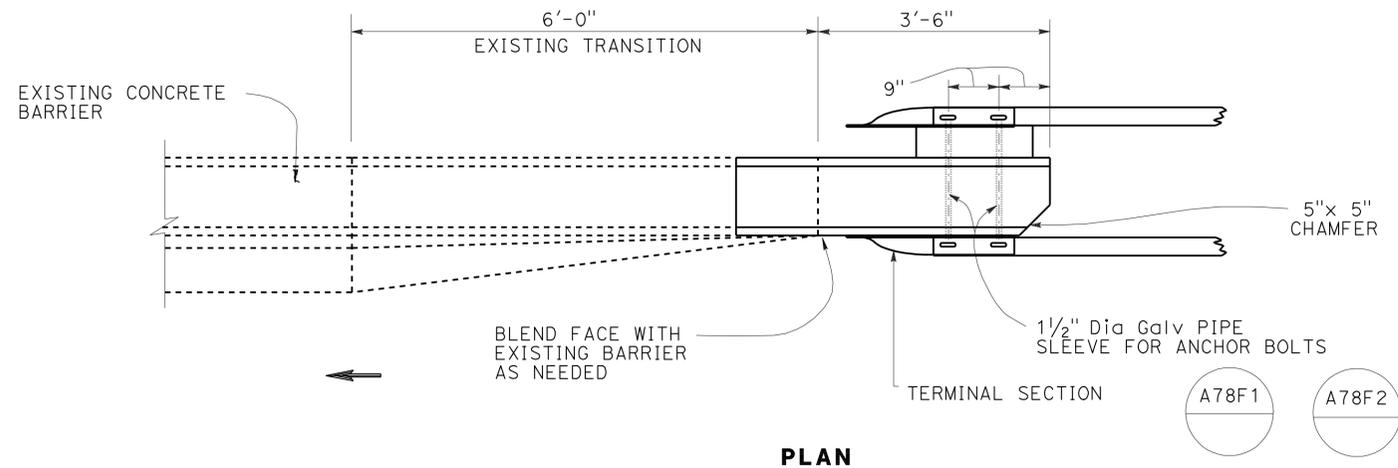
NO SCALE

**C-5**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
FUNCTIONAL SUPERVISOR	GETACHEW ESHETE
CALCULATED/DESIGNED BY	CHECKED BY
PAUL JENSEN	MAHESH MONGA
REVISOR	DATE



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	8	42
			7-26-10	DATE	
REGISTERED CIVIL ENGINEER			7-26-10 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.		



**ANCHOR BLOCK CONNECTION TO BRIDGE RAIL DETAILS**

**CONSTRUCTION DETAILS**

NO SCALE

**C-6**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 FUNCTIONAL SUPERVISOR: GETACHEW ESHETE  
 CHECKED BY: SOFIA LIANG  
 PAUL JENSEN  
 REVISIONS: PAUL JENSEN, SOFIA LIANG, GETACHEW ESHETE  
 REVISIONS: PAUL JENSEN, SOFIA LIANG, GETACHEW ESHETE  
 REVISIONS: PAUL JENSEN, SOFIA LIANG, GETACHEW ESHETE

USERNAME => s118789  
 DGN FILE => 60E220ga006.dgn



UNIT 1475

PROJECT NUMBER & PHASE

06000200331

LAST REVISION: DATE PLOTTED => 21-SEP-2010  
 07-26-10 TIME PLOTTED => 09:25

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	9	42

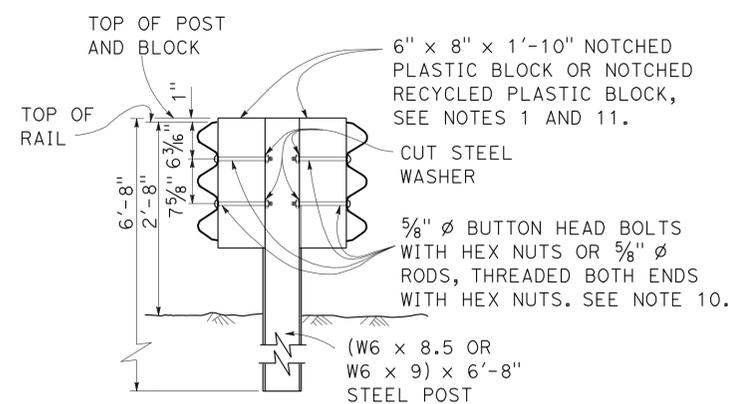
7-26-10	
REGISTERED CIVIL ENGINEER	DATE
7-26-10	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER  
**JUNIUS PAUL JENSEN**  
 No. 66320  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

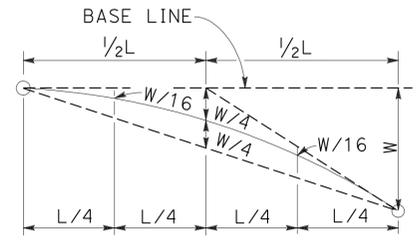
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTES (THIS SHEET):**

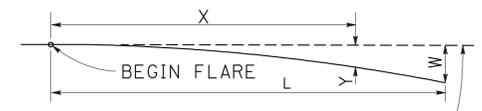
1. LINE POST, BLOCKS AND HARDWARE TO BE USED ARE SHOWN ON STANDARD PLANS A78B, A78C1 AND A78C2
2. POST SPACING TO BE 6'-3" CENTER TO CENTER, EXCEPT AS OTHERWISE NOTED.
3. EXCEPT AS NOTED, LINE POSTS ARE W6 x 9 STEEL POSTS, 6'-8" IN LENGTH, WITH 6" x 8" x 1'-10" NOTCHED RECYCLED PLASTIC BLOCKS.
4. A 4' MINIMUM CLEARANCE IS REQUIRED BETWEEN THE FACE OF THE RAILING AND THE FACE OF A FIXED OBJECT LOCATED DIRECTLY BEHIND STANDARD SECTIONS WITH POST SPACING OF 6'-3".
5. DIRECTION OF ADJACENT TRAFFIC INDICATED BY .
6. FOR TRAFFIC DEPARTURE END OF SINGLE THRIE BEAM BARRIER DETAILS, SEE STANDARD PLAN A78E1
7. FOR DETAILS OF RAIL TENSIONING ASSEMBLY, SEE STANDARD PLAN A77H2.
8. FOR TYPICAL FLARE OFFSETS FOR 25' LENGTH PARABOLA WITH MAXIMUM OFFSET OF 1', SEE REVISED STANDARD PLAN RSP A77E1.
9. THE 15:1 OR FLATTER FLARE IS MEASURED OFF OF THE EDGE OF TRAVELED WAY.
10. ATTACH RAIL ELEMENT TO BLOCK AND STEEL POST WITH 2 BOLTS OR RODS ON APPROACHING TRAFFIC SIDE OF BLOCK AND POST WEB. NO WASHER ON RAIL FACE FOR ROD OR BOLTED CONNECTIONS TO LINE POST.
11. NOTCHED FACE OF BLOCK FACES STEEL POST.



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



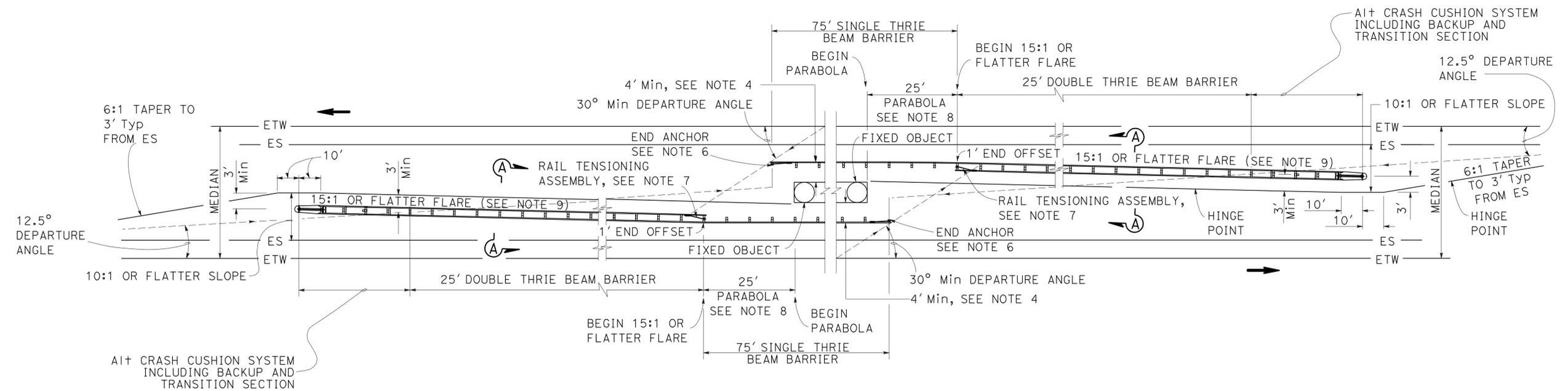
**TYPICAL PARABOLIC LAYOUT**



Y = OFFSET FROM BASE LINE  
 W = MAXIMUM OFFSET  
 X = DISTANCE ALONG BASE LINE  
 L = LENGTH OF FLARE

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

**PARABOLIC FLARE OFFSETS**



**THRIE BEAM BARRIER DETAIL**  
 PM 23.770

**CONSTRUCTION DETAILS**

NO SCALE

**C-7**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 DESIGN  
 SOFIA LIANG  
 PAUL JENSEN  
 GETACHEW ESHETE  
 FUNCTIONAL SUPERVISOR  
 CALCULATED/DESIGNED BY  
 CHECKED BY  
 REVISED BY  
 DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	10	42

<i>[Signature]</i>	7-26-10
REGISTERED CIVIL ENGINEER	DATE
7-26-10	
PLANS APPROVAL DATE	

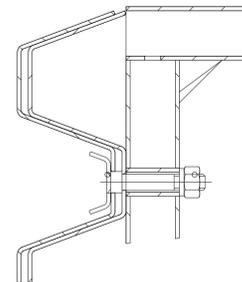
  

REGISTERED PROFESSIONAL ENGINEER
JUNIUS PAUL JENSEN
No. 66320
Exp. 6-30-12
CIVIL
STATE OF CALIFORNIA

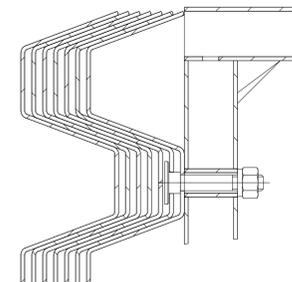
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTES (THIS SHEET):**

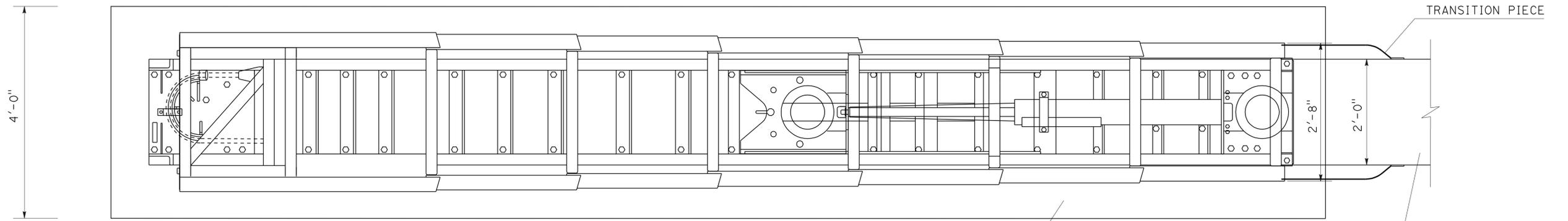
1. FOR TRANSITION PANEL AND REINFORCEMENT DETAILS SEE MANUFACTURER'S DETAILS.
2. FOR ALL ACCESSORIES TO CRASH CUSHION (TYPE SMART SCI100GM) AS WELL AS ADDITIONAL DETAILS SEE MANUFACTURER'S DETAILS.
3. FOR CONCRETE PAD REINFORCEMENTS SEE MANUFACTURER'S DETAILS.
4. CROSS SLOPE AT TOP OF CONCRETE PAD NOT TO EXCEED 1:12, CROSS SLOPE SHOULD NOT VARY MORE THAN 1:48.



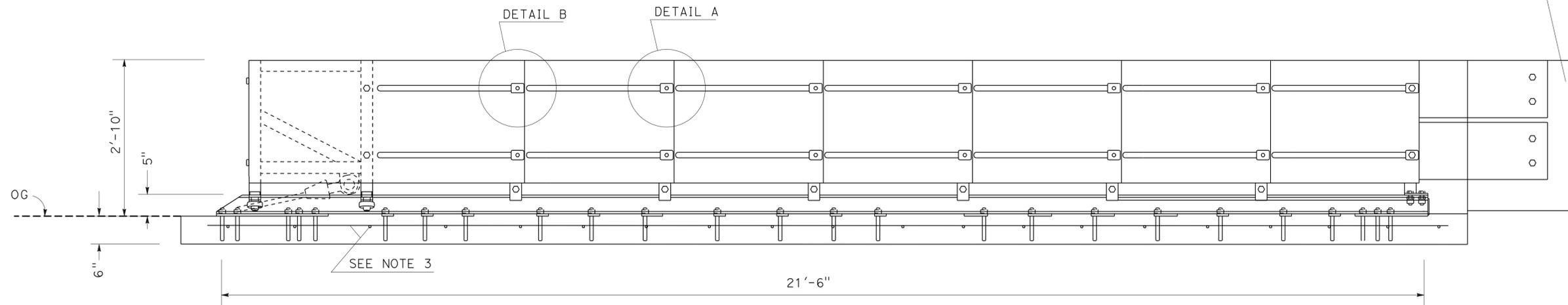
**DETAIL B**



**DETAIL A**



**PLAN VIEW**



**ELEVATION**

**CRASH CUSHION (TYPE SMART SCI100GM)**

**CONSTRUCTION DETAILS**

NO SCALE

**C-8**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 FUNCTIONAL SUPERVISOR: GETACHEW ESHETE  
 CALCULATED/DESIGNED BY: SOFIA LIANG  
 CHECKED BY: PAUL JENSEN  
 REVISED BY: DATE  
 REVISIONS:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	11	42

<i>[Signature]</i>	7-26-10
REGISTERED CIVIL ENGINEER	DATE
7-26-10	
PLANS APPROVAL DATE	

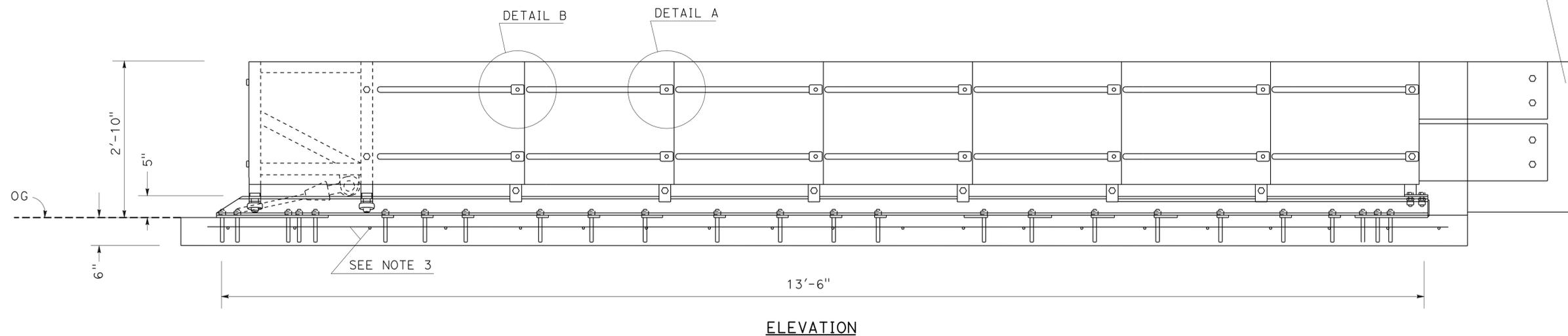
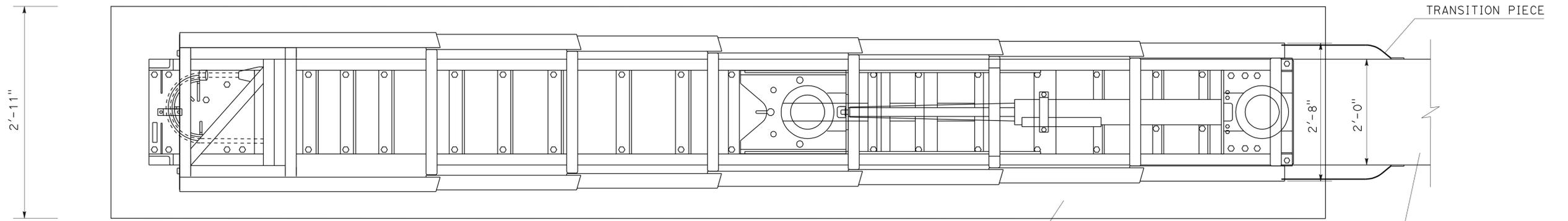
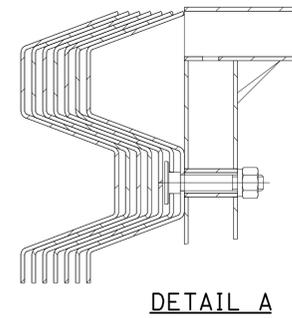
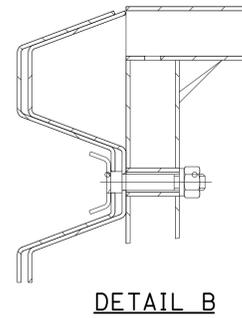
  

REGISTERED PROFESSIONAL ENGINEER
JUNIUS PAUL JENSEN
No. 66320
Exp. 6-30-12
CIVIL
STATE OF CALIFORNIA

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

**NOTES (THIS SHEET):**

1. FOR TRANSITION PANEL AND REINFORCEMENT DETAILS SEE MANUFACTURER'S DETAILS.
2. FOR ALL ACCESSORIES TO CRASH CUSHION (TYPE SMART SCI100GM) AS WELL AS ADDITIONAL DETAILS SEE MANUFACTURER'S DETAILS.
3. FOR CONCRETE PAD REINFORCEMENTS SEE MANUFACTURER'S DETAILS.
4. CROSS SLOPE AT TOP OF CONCRETE PAD NOT TO EXCEED 1:12, CROSS SLOPE SHOULD NOT VARY MORE THAN 1:48.



**CRASH CUSHION (TYPE SMART SCI70GM)**

**CONSTRUCTION DETAILS**

NO SCALE

**C-9**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 FUNCTIONAL SUPERVISOR: GETACHEW ESHETE  
 CALCULATED/DESIGNED BY: SOFIA LIANG  
 CHECKED BY: PAUL JENSEN  
 REVISED BY: DATE  
 REVISIONS:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	12	42

<i>[Signature]</i>	7-26-10
REGISTERED CIVIL ENGINEER	DATE
7-26-10	
PLANS APPROVAL DATE	

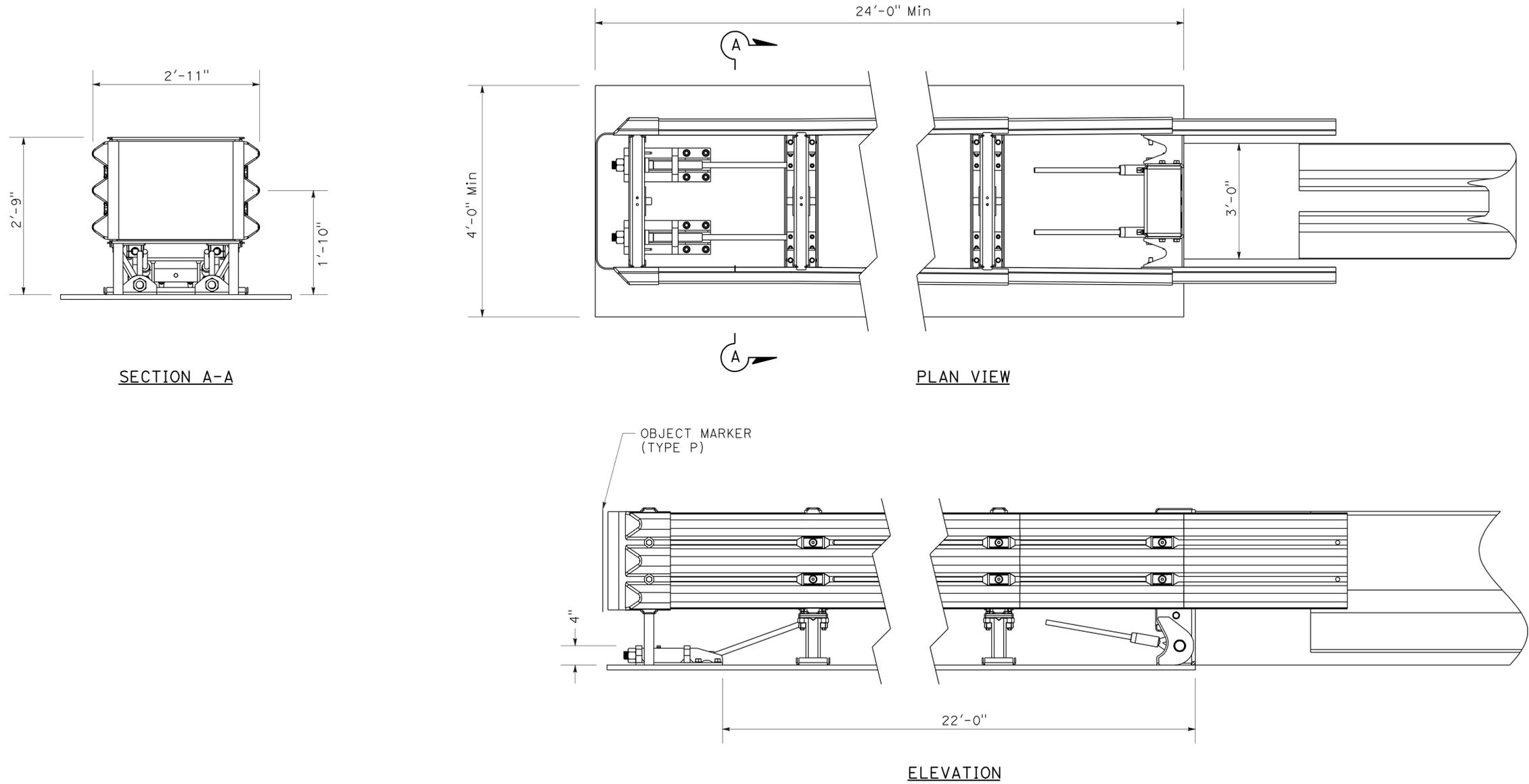
  

REGISTERED PROFESSIONAL ENGINEER
JUNIUS PAUL JENSEN
No. 66320
Exp. 6-30-12
CIVIL
STATE OF CALIFORNIA

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

**NOTE (THIS SHEET):**

INSTALLATION TO COMPLY WITH MANUFACTURER'S INSTRUCTIONS. FOR ADDITIONAL INFORMATION AND ALL ACCESSORIES FOR TAU-II SYSTEM, SEE MANUFACTURER'S DETAILS. TO GET TO THE MANUFACTURER'S WEB SITE, GO TO : [HTTP://BARRIERSYSTEMSINC.COM/](http://BARRIERSYSTEMSINC.COM/).



**CRASH CUSHION (TYPE TAU-II)  
MODEL No. 30T100BC**

**CONSTRUCTION DETAILS**  
NO SCALE  
**C-10**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
FUNCTIONAL SUPERVISOR	GETACHEW ESHETE
CALCULATED, DESIGNED BY	CHECKED BY
SOFTA LIANG	PAUL JENSEN
REVISOR	DATE
REVISOR	DATE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	13	42

<i>[Signature]</i>	7-26-10
REGISTERED CIVIL ENGINEER	DATE
7-26-10	
PLANS APPROVAL DATE	

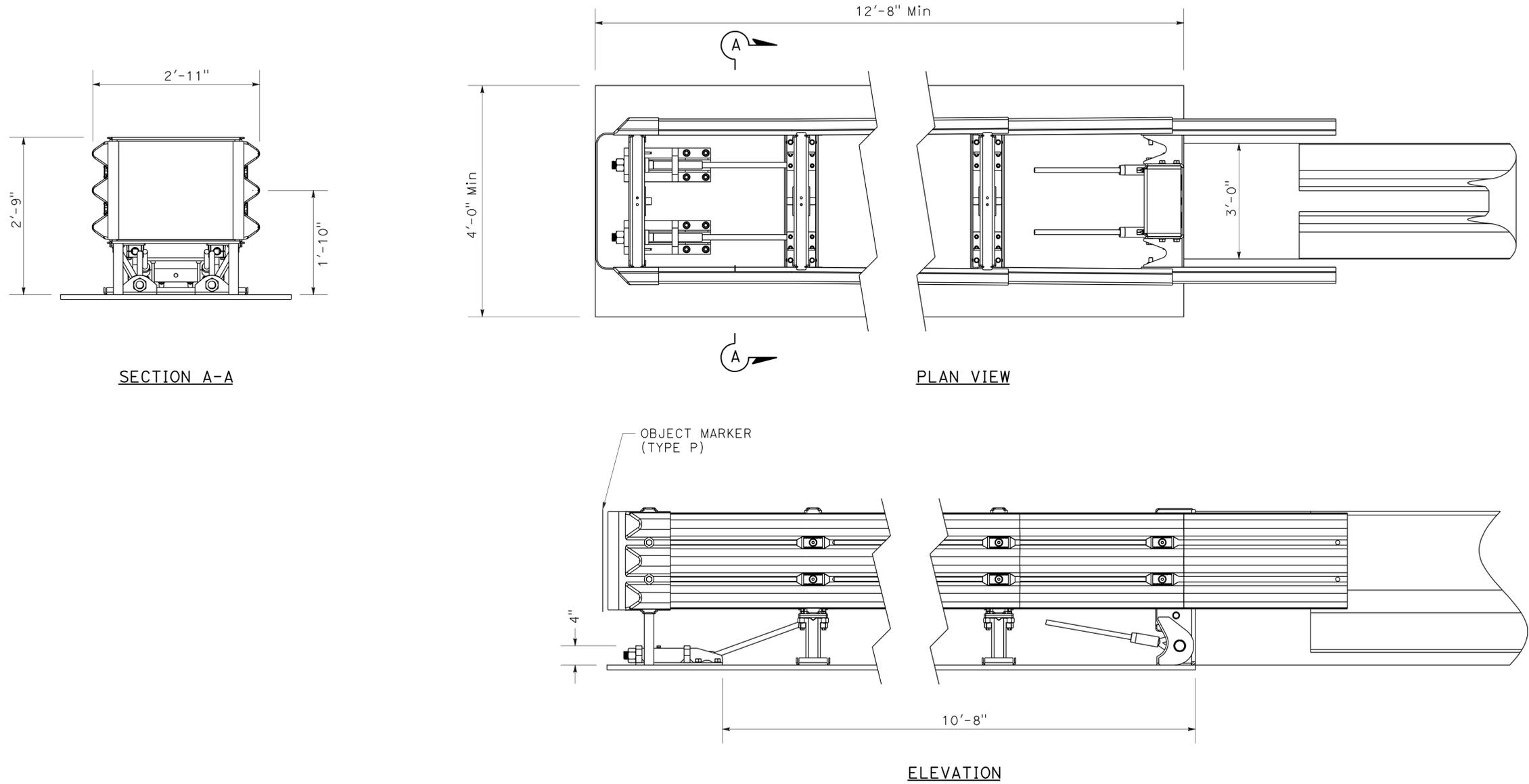
  

REGISTERED PROFESSIONAL ENGINEER
JUNIUS PAUL JENSEN
No. 66320
Exp. 6-30-12
CIVIL
STATE OF CALIFORNIA

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

**NOTE (THIS SHEET):**

INSTALLATION TO COMPLY WITH MANUFACTURER'S INSTRUCTIONS. FOR ADDITIONAL INFORMATION AND ALL ACCESSORIES FOR TAU-II SYSTEM, SEE MANUFACTURER'S DETAILS. TO GET TO THE MANUFACTURER'S WEB SITE, GO TO : [HTTP://BARRIERSYSTEMSINC.COM/](http://BARRIERSYSTEMSINC.COM/).



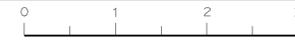
**CRASH CUSHION (TYPE TAU-II)  
MODEL No. 30T70BC**

**CONSTRUCTION DETAILS**

NO SCALE

**C-11**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
FUNCTIONAL SUPERVISOR	GETACHEW ESHETE
CALCULATED, DESIGNED BY	CHECKED BY
SOFTA LIANG	PAUL JENSEN
REVISOR	DATE
REVISOR	DATE



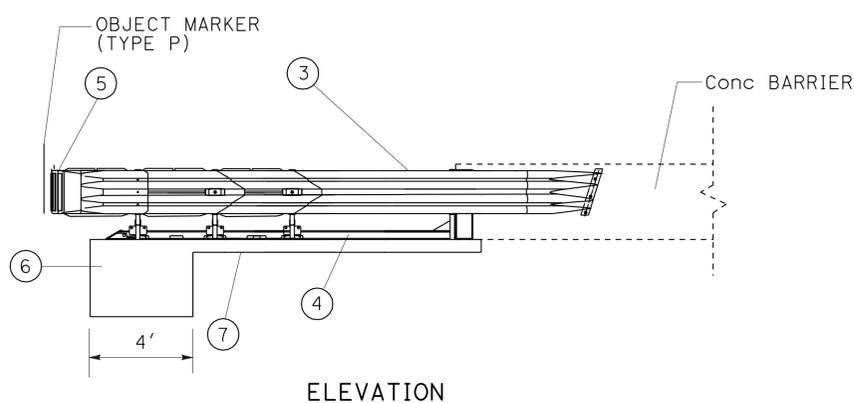
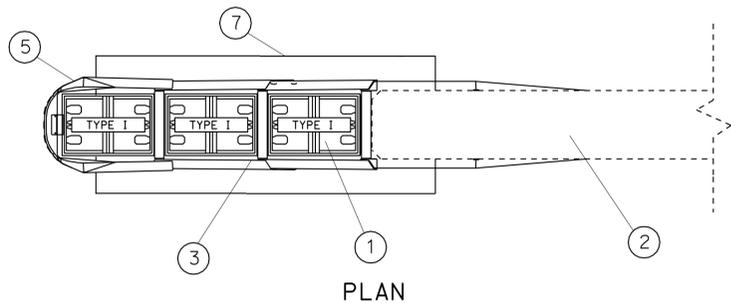
**NOTES:**

- FOR TRANSITION PANEL AND REINFORCEMENT DETAILS SEE MANUFACTURER'S DETAILS.
- FOR ALL ACCESSORIES TO QUADGUARD SYSTEM, AS WELL AS ADDITIONAL DETAILS, SEE MANUFACTURER'S DETAIL
- CROSS SLOPE OF PAD SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.

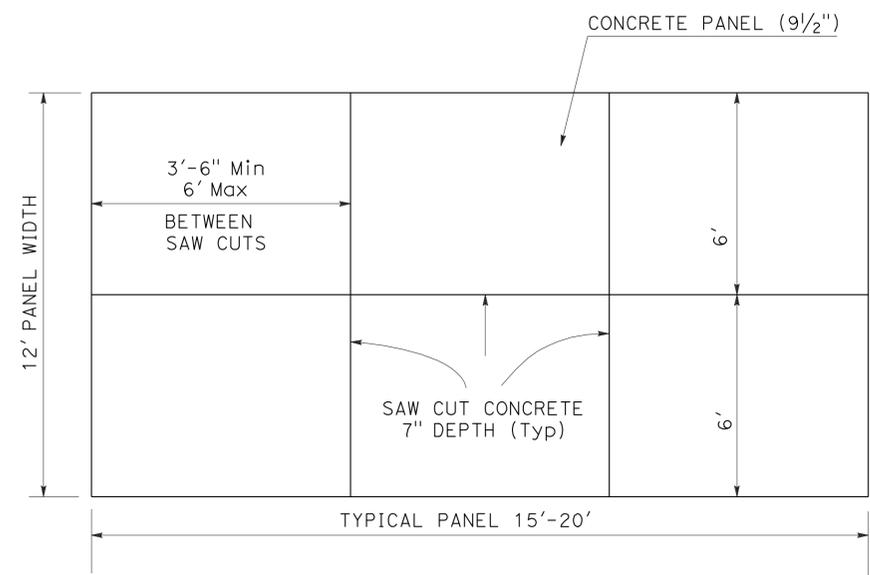
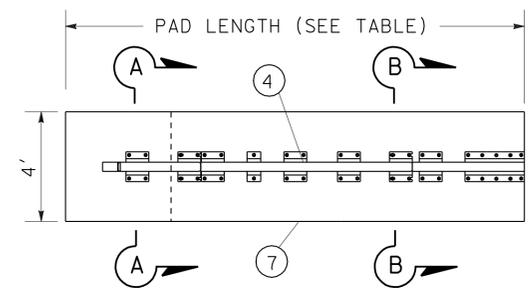
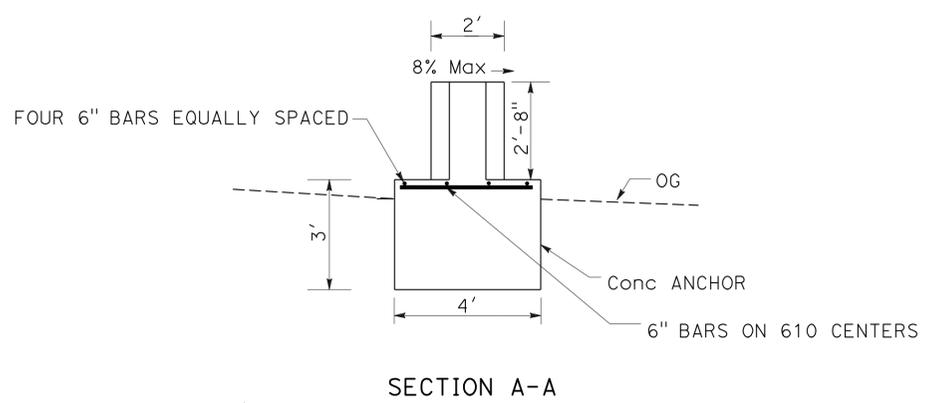
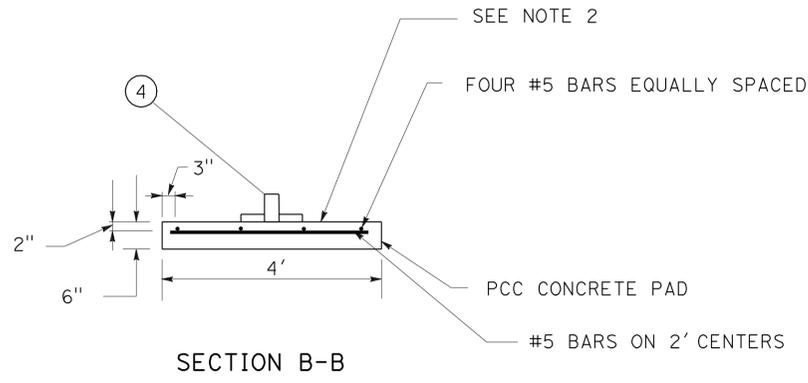
**LEGEND**

- QUADGUARD CARTRIDGE
- DIAPHRAGM
- FENDER PANEL
- MONORAIL
- NOSE ASSEMBLY
- Conc ANCHOR
- Conc PAD

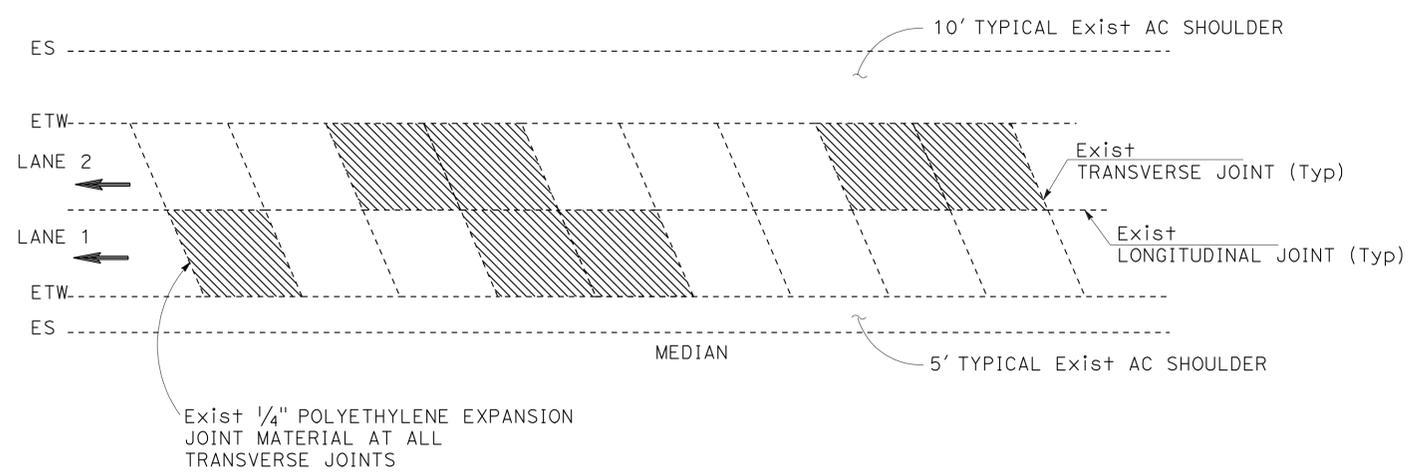
PROPOSED No. BAYS	2' WIDTH MODEL	SYSTEM LENGTH	EFFECTIVE LENGTH	CONCRETE PAD LENGTH
		LF	LF	LF
3	QS2403G	13' 1"	11' 8"	12



**QUADGUARD SYSTEM DETAIL**  
(MODEL No. QS2403G)



**SAW CUT CONCRETE PANEL**



**TYPICAL PCC PANEL REPLACEMENT**

**CONSTRUCTION DETAILS**  
**C-12**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 SOFIA LIANG  
 PAUL JENSEN  
 JUNIUS PAUL JENSEN  
 No. 66320  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	15	42

REGISTERED CIVIL ENGINEER	DATE
<i>Paul Jensen</i>	7-26-10
PLANS APPROVAL DATE	
7-26-10	

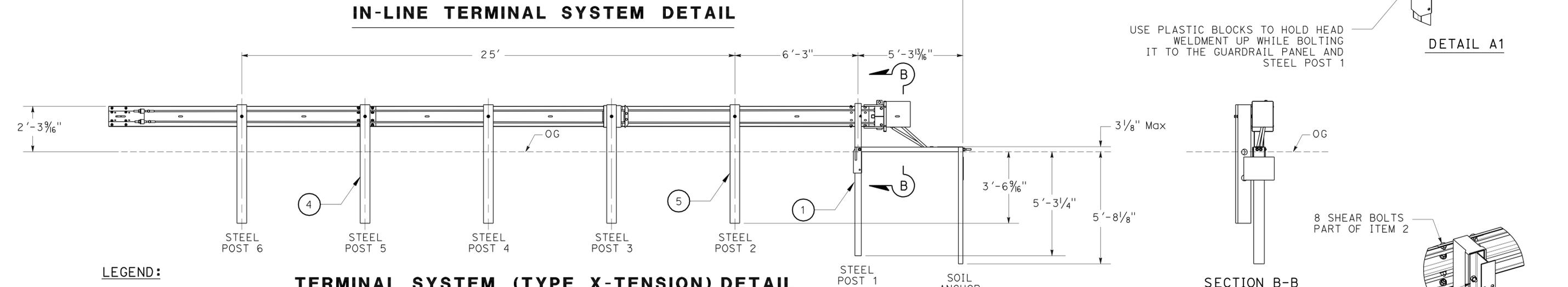
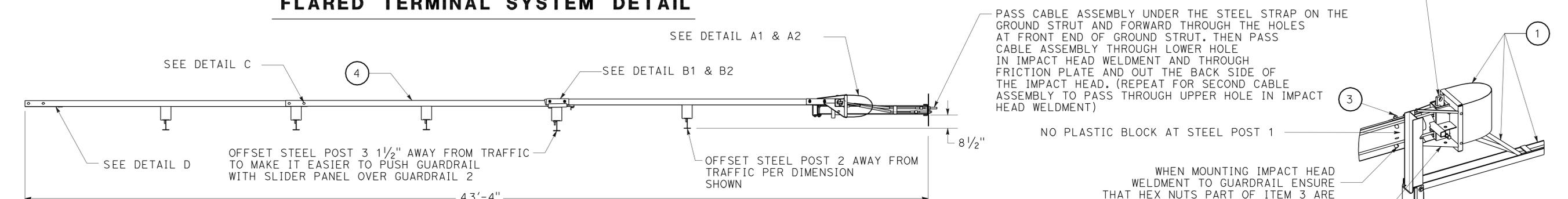
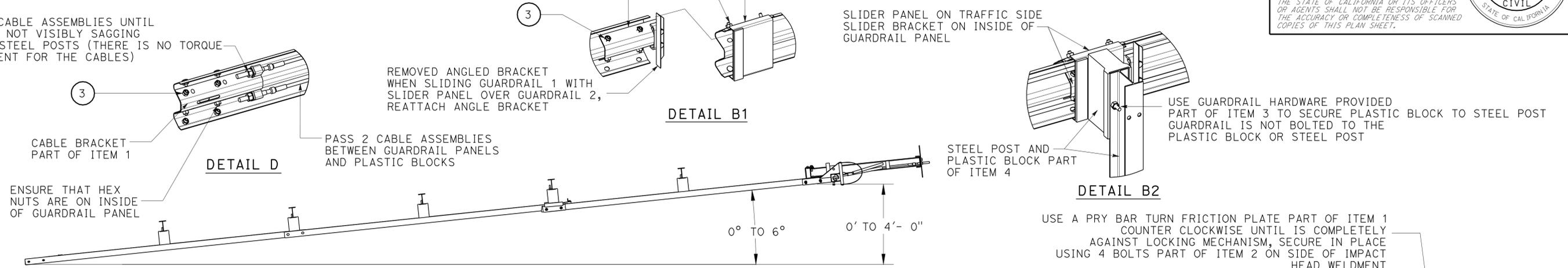
REGISTERED PROFESSIONAL ENGINEER
JUNIUS PAUL JENSEN
No. 66320
Exp. 6-30-12
CIVIL
STATE OF CALIFORNIA

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

**NOTES:**

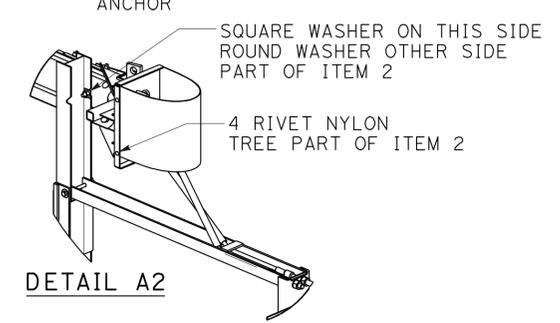
- SEE MANUFACTURER PLANS FOR ADDITIONAL DETAILS AND DIMENSIONS NOT SHOWN.
- SYSTEM TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
- ONLY TIGHTEN THE CABLE ASSEMBLIES USING THE NUTS AT THE CABLE BRACKET (SEE DETAIL D). DO NOT TIGHTEN THE CABLES AT THE FRONT OF THE GROUND ANCHOR.
- WHEN DRIVING STEEL POST, ENSURE THAT A DRIVING CAP WITH TIMBER OR PLASTIC INSERT IS USED TO PREVENT DAMAGE TO THE GALVANIZING TO THE TOP OF THE STEEL POST.

TIGHTEN CABLE ASSEMBLIES UNTIL THEY ARE NOT VISIBLY SAGGING BETWEEN STEEL POSTS (THERE IS NO TORQUE REQUIREMENT FOR THE CABLES)



**LEGEND:**

ITEM	DESCRIPTION
1	TERMINAL SYSTEM (TYPE X-TENSION) COMPONENT KIT
2	TERMINAL SYSTEM (TYPE X-TENSION) HARDWARE KIT
3	TERMINAL SYSTEM (TYPE X-TENSION) SYSTEM HARDWARE KIT
4	TERMINAL SYSTEM (TYPE X-TENSION) GUARDRAIL COMPONENT KIT 3
5	TERMINAL SYSTEM (TYPE X-TENSION) I-BEAM POST



**CONSTRUCTION DETAILS**  
**C-13**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN  
 SOFIA LIANG  
 PAUL JENSEN  
 GETACHEW ESHETE  
 JUNIUS PAUL JENSEN  
 No. 66320  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

LAST REVISION DATE PLOTTED => 29-SEP-2010  
 07-26-10 TIME PLOTTED => 13:57

# STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

SIGN No.	SIGN CODE	PANEL SIZE	SIGN MESSAGE	No. OF POSTS	POST SIZE	No. OF SIGNS
(A)	W20-1	60" x 60"	ROAD WORK AHEAD	2	6" x 6"	2
(B)	G20-2	60" x 24"	END ROAD WORK	2	4" x 4"	2
(C)	W20-1	48" x 48"	ROAD WORK AHEAD	1	6" x 6"	11
(D)	G20-2	48" x 24"	END ROAD WORK	1	4" x 6"	9
(E)	C40	102" x 42"	TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES	2	6" x 6"	2

- NOTES: 1. EXACT SIGN LOCATIONS TO BE DETERMINED BY THE ENGINEER.  
 2. FOR SIGN "C40" (TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES), ALL LETTERS SHALL BE BLACK ON WHITE BACKGROUND.

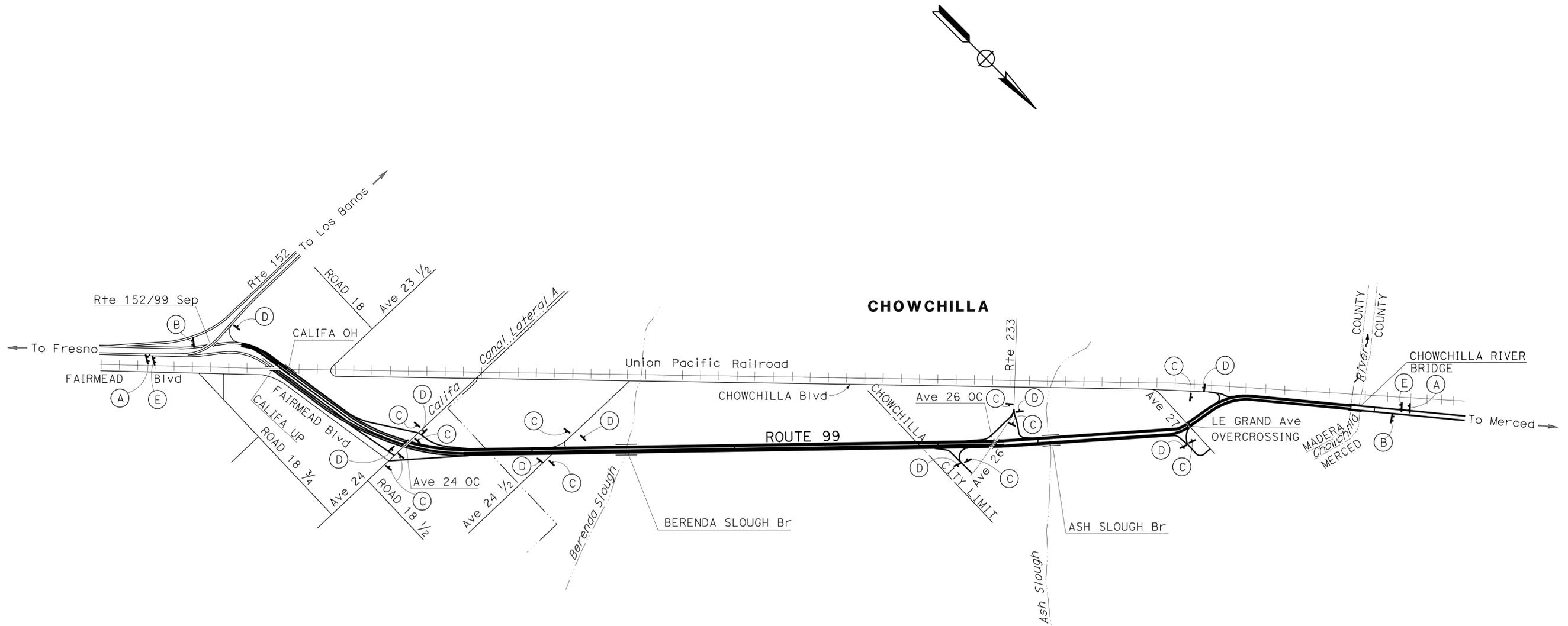
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	16	42

*Hassan Cohe* 7-15-10  
 REGISTERED CIVIL ENGINEER DATE

7-26-10  
 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.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** TRAFFIC DESIGN  
 FUNCTIONAL SUPERVISOR: MOHAMMED QATAMI  
 CALCULATED/DESIGNED BY: [Blank]  
 CHECKED BY: [Blank]  
 REVISIONS BY: ALI SHABAZZ, HASSAN TAHA  
 DATE REVISED: 07-15-10  
 A.S.



THIS PLAN ACCURATE FOR CONSTRUCTION AREA SIGN ONLY.

## CONSTRUCTION AREA SIGNS NO SCALE CS-1

**PAVEMENT DELINEATION QUANTITIES**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	17	42

*Hassan Cohe* 7-15-10  
 REGISTERED CIVIL ENGINEER DATE

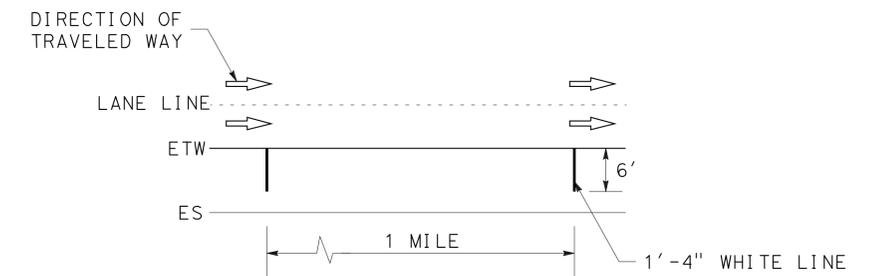
7-26-10  
 PLANS APPROVAL DATE

**HASSAN M. TAHA**  
 No. 60130  
 Exp 06/30/12  
 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.

LOCATION	DIRECTION	DETAIL No.	PAVEMENT MARKER (RETROREFLECTIVE)			REMOVE PAVEMENT MARKER (N)	THERMOPLASTIC TRAFFIC STRIPE				THERMOPLASTIC PAVEMENT MARKING	
			TYPE D	TYPE G	TYPE H		4" SOLID	8" SOLID	4" BROKEN (36-12)	4" BROKEN (17-7)		
			EA	EA	EA		EA	LF	LF	LF		LF
PM 23.10 TO PM 29.40	NB	25			694	694	33,264				11 - STOP	242
PM 23.10 TO PM 29.40	NB	12		694		694					5 - AHEAD	155
PM 23.10 TO PM 29.40	NB	27B					33,264				11 - TYPE I (24')	341
PM 23.56 TO PM 23.60	NB	36		20		20		422			4 - TYPE III	168
PM 23.87 TO PM 23.90	NB	36A		8		8		158			15 - TYPE V	495
PM 23.90 TO PM 23.92	NB	8								106	9 - LIMIT LINE	221
PM 24.42 TO PM 24.46	NB	36		20		20		422			7 - 8" WHITE	409
PM 24.44 TO PM 24.46	NB	36A		5		5		106			8-AERIAL CONTROL MARKER	64
PM 26.30 TO PM 26.36	NB	36		30		30		634				
PM 26.43 TO PM 26.47	NB	36A		10		10		211				
PM 26.47 TO PM 26.50	NB	8								158		
PM 28.06 TO PM 28.10	NB	36		20		20		422				
PM 28.16 TO PM 28.21	NB	36A		12		12		264				
PM 28.21 TO PM 28.25	NB	8								211		
PM 22.70 TO PM 29.40	SB	25			738	738	35,376		33,264			
PM 22.70 TO PM 29.40	SB	12		738		738						
PM 22.70 TO PM 29.40	SB	27B					35,376		35,376			
PM 22.87 TO PM 22.91	SB	36		20		20		422				
PM 23.59 TO PM 23.62	SB	8								158		
PM 23.62 TO PM 23.66	SB	36A		10		10		211				
PM 23.98 TO PM 24.01	SB	36		16		16		317				
PM 24.40 TO PM 24.43	SB	8								158		
PM 24.43 TO PM 24.45	SB	36A		5		5		106				
PM 24.46 TO PM 24.48	SB	36		12		12		211				
PM 26.44 TO PM 26.47	SB	8								158		
PM 26.47 TO PM 26.50	SB	36A		8		8		158				
PM 26.72 TO PM 26.75	SB	36		16		16		317				
PM 28.27 TO PM 28.30	SB	8								158		
PM 28.30 TO PM 28.34	SB	36A		10		10		211				
PM 28.44 TO PM 28.48	SB	36		20		20		422				
Ave 24 OFF-RAMP	NB	27B					898					
		25A			38	38	898					
Ave 24 ON-RAMP	NB	27B					686					
		25A			27	27	634					
Ave 24 1/2 OFF-RAMP	NB	27B					106					
		25A			5	5	106					
Ave 24 1/2 ON-RAMP	NB	27B					106					
		25A			5	5	106					
Ave 26 OFF-RAMP	NB	27B					1056					
		25A			27	27	634					
		22	38			38	845					
Ave 26 ON-RAMP	NB	27B					792					
		25A			16	16	370					
LE GRAND Ave OFF-RAMP	NB	27B					1162					
		25A			19	19	422					
		22	60			60	1373					
LE GRAND Ave ON-RAMP	NB	27B					950					
		25A			14	14	317					
Ave 24 OFF-RAMP	SB	27B					1056					
		25A			45	45	1056					
Ave 24 ON-RAMP	SB	27B					686					
		25A			30	30	686					
Ave 24 1/2 OFF-RAMP	SB	27B					106					
		25A			5	5	106					
Ave 24 1/2 ON-RAMP	SB	27B					158					
		25A			8	8	158					
Ave 26 OFF-RAMP	SB	27B					739					
		25A			32	32	739					
Ave 26 ON-RAMP	SB	27B					1214					
		25A			45	45	1056					
LE GRAND Ave OFF-RAMP	SB	27B					739					
		25A			32	32	739					
LE GRAND Ave ON-RAMP	SB	27B					370					
		25A			16	16	370					
SUB-TOTAL			98	1674	1796	3568	158,719	5014	68,640	1107		2095
TOTAL				3568			158,719	5014	68,640	1107		2095

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.



**AERIAL CONTROL MARKERS**

NO SCALE

**PAVEMENT DELINEATION QUANTITIES AND DETAILS**

**PDQ-1**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	18	42

Hassan M. Taaha 7-15-10  
REGISTERED CIVIL ENGINEER DATE

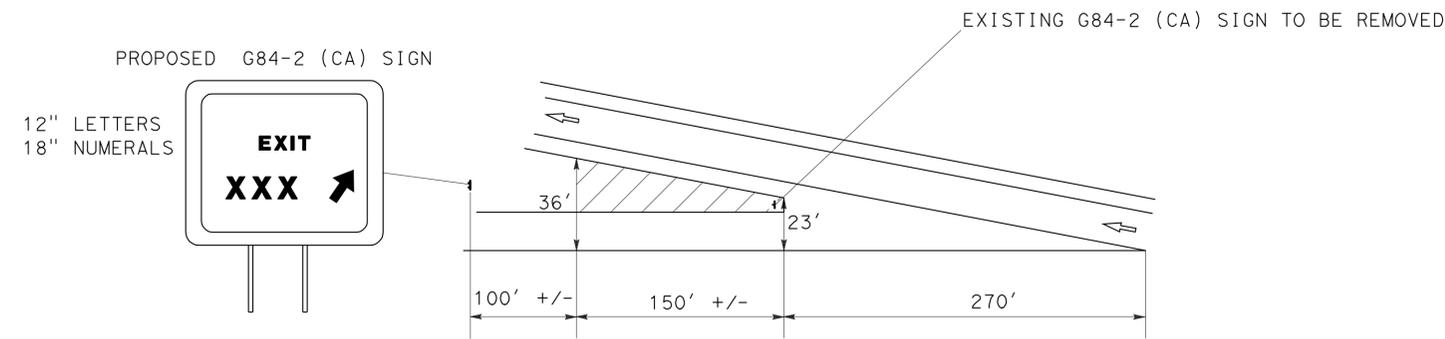
7-26-10  
PLANS APPROVAL DATE

HASSAN M. TAHA  
No. 60130  
Exp 06/30/12  
CIVIL  
STATE OF CALIFORNIA

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

**LEGEND**

← DIRECTION OF TRAFFIC



TYPICAL INSTALLATION DETAIL FOR SIGN G84-2 (CA) AT OFF-RAMP GORE AREA

NTS

**ROADSIDE SIGN QUANTITIES**

SIGN LOCATION	DIRECTION	SIGN CODE	SIGN MESSAGE	No. OF POST AND SIZE	PANEL SIZE	SINGLE FACED	BACKGROUND		LEGEND			GRAFFITI FLOW	FURNISH SINGLE SHEET ALUMINUM SIGN (0.08" FRAMED)	REMOVE ROADSIDE SIGN	ROADSIDE SIGN TWO - POST
							SHEETING COLOR	RETROREFLECTIVITY ASTM TYPE	SHEETING COLOR	RETROREFLECTIVITY ASTM TYPE	PREMIUM				
													SQFT	EA	EA
ROUTE 152 WEST (LEFT OFF-RAMP EXIT)	NB	G84-2(CA)													
		G84-2(CA)	EXIT 166	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
Ave 24 OFF-RAMP	NB	G84-2(CA)													
		G84-2(CA)	EXIT 167	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
Ave 24 1/2 OFF-RAMP	NB	G84-2(CA)													
		G84-2(CA)	EXIT 168	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
Ave 26 OFF-RAMP	NB	G84-2(CA)													
		G84-2(CA)	EXIT 170	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
LE GRAND Ave OFF-RAMP	NB	G84-2(CA)													
		G84-2(CA)	EXIT 171	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
ROUTE 152 WEST OFF-RAMP	SB	G84-2(CA)													
		G84-2(CA)	EXIT 166	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
Ave 24 OFF-RAMP	SB	G84-2(CA)													
		G84-2(CA)	EXIT 167	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
Ave 24 1/2 OFF-RAMP	SB	G84-2(CA)													
		G84-2(CA)	EXIT 168	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
Ave 26 OFF-RAMP	SB	G84-2(CA)													
		G84-2(CA)	EXIT 170	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
LE GRAND Ave OFF-RAMP	SB	G84-2(CA)													
		G84-2(CA)	EXIT 171	2 - 4" x 6"	60" x 90"	X	GREEN	III	WHITE	IV	X		37.5	1	1
TOTAL													375	10	10

**SIGN QUANTITIES AND DETAIL**

**SQ-1**

### ROADWAY QUANTITIES

LOCATION (SB) MAIN LINE	WIDTH	DEPTH	COLD PLANE ASPHALT CONCRETE	TACK COAT	HMA (TYPE A)	RHMA (GAP GRADED)	IMPORTED MATERIAL (SHOULDER BACKING)
	FT	FT	SQYD	TON	TON	TON	TON
PM 23.100 TO PM 23.449 COLD PLANE EP TO EP	34	0.08	6961	4.08		1159	122
PM 23.449 TO PM 24.928 COLD PLANE EP TO EP	37	0.08	32,102	8.05		2285	221
PM 24.928 TO PM 24.997 COLD PLANE EP TO EP	39	0.08	1578	0.28		80	7
PM 24.997 TO PM 29.350 COLD PLANE EP TO EP	37	0.08	93,949	34.85		9891	954
PM 23.449 TO PM 23.847 ENTIRE L-2 LANE	12	0.33	2802	6.71	622	1438	139
PM 23.866 TO PM 24.059 ENTIRE L-2 LANE	12	0.33	1359	3.25	302	698	67
PM 24.079 TO PM 24.132 ENTIRE L-2 LANE	12	0.33	373	0.89	83	192	18
PM 24.146 TO PM 24.164 ENTIRE L-2 LANE	12	0.33	127	0.30	28	65	6
PM 24.473 TO PM 24.499 ENTIRE L-2 LANE	12	0.33	183	0.44	41	94	9
PM 24.554 TO PM 24.583 OUTSIDE 6' OF L-2 LANE	6	0.33	102	0.43	23	105	10
PM 24.637 TO PM 24.767 ENTIRE L-2 LANE	12	0.33	915	2.19	203	470	45
PM 24.928 TO PM 24.976 ENTIRE L-2 LANE	12	0.33	338	0.84	75	183	17
PM 24.997 TO PM 25.013 ENTIRE L-2 LANE	12	0.33	113	0.27	25	58	6
PM 25.054 TO PM 25.243 OUTSIDE 6' OF L-2 LANE	6	0.33	665	2.80	148	683	66
PM 25.470 TO PM 25.544 ENTIRE L-2 LANE	12	0.33	521	1.25	116	267	26
PM 25.682 TO PM 25.728 ENTIRE L-2 LANE	12	0.33	324	0.78	72	166	16
PM 25.867 TO PM 25.916 ENTIRE L-2 LANE	12	0.33	345	0.83	77	177	17
PM 25.916 TO PM 25.966 OUTSIDE 6' OF L-2 LANE	6	0.33	176	0.74	39	181	17
PM 26.010 TO PM 26.029 ENTIRE L-2 LANE	12	0.33	134	0.32	30	69	7
PM 26.083 TO PM 26.446 ENTIRE L-2 LANE	12	0.33	2556	6.12	567	1312	126
PM 26.446 TO PM 26.502 OUTSIDE 6' OF L-2 LANE	6	0.33	197	0.83	44	202	20
PM 26.542 TO PM 26.765 ENTIRE L-2 LANE	12	0.33	1570	3.76	349	806	78
PM 26.765 TO PM 26.800 BOTH L-1 and L-2 LANES	12	0.33	493	0.74	109	126	12
PM 27.129 TO PM 27.154 ENTIRE L-2 LANE	12	0.33	176	0.42	39	90	9
PM 27.590 TO PM 27.605 ENTIRE L-2 LANE	12	0.33	106	0.25	23	54	5
PM 28.844 TO PM 28.927 OUTSIDE 6' OF L-2 LANE	6	0.33	292	1.23	65	300	29
PM 28.927 TO PM 28.954 ENTIRE L-2 LANE	12	0.33	190	0.46	42	98	9
PM 28.954 TO PM 28.985 OUTSIDE 6' OF L-2 LANE	6	0.33	109	0.46	24	112	11
PM 28.985 TO PM 29.054 ENTIRE L-2 LANE	12	0.33	486	1.16	108	249	24
PM 29.054 TO PM 29.075 OUTSIDE 6' OF L-2 LANE	6	0.33	74	0.31	16	76	7
PM 29.075 TO PM 29.145 ENTIRE L-2 LANE	12	0.33	493	1.18	109	253	24
PM 29.145 TO PM 29.186 OUTSIDE 6' OF L-2 LANE	6	0.33	144	0.61	32	148	14
PM 29.211 TO PM 29.325 ENTIRE L-2 LANE	12	0.33	803	1.92	178	412	40
<b>SUBTOTAL (1)</b>			150,756	88.75	3589	22,499	2178
<b>LOCATION (NB) MAIN LINE</b>							
PM 23.100 TO PM 23.626 1" COLD PLANE EP TO EP	39	0.08	12,035	7.572		2004	170
PM 23.626 TO PM 24.581 1" COLD PLANE EP TO EP	37	0.08	20,731	1.7690		502	49
PM 24.581 TO PM 26.600 1" COLD PLANE EP TO EP	39	0.08	46,195	23.499		6670	610
PM 26.600 TO PM 29.350 1" COLD PLANE EP TO EP	37	0.08	57,088	31.016		8804	849
PM 23.100 TO PM 23.626 INSIDE 6' OF R-2 LANE	6	0.33	130	0.573	411	141	13
PM 23.626 TO PM 24.052 R-2 LANE	12	0.33	2999	7.183	666	1540	148
PM 24.077 TO PM 24.190 R-2 LANE	12	0.33	796	1.905	177	408	39
PM 24.252 TO PM 24.358 INSIDE 6' OF R-2 LANE	6	0.33	373	1.568	83	383	37
PM 24.410 TO PM 24.581 R-2 LANE	12	0.33	1204	2.883	267	618	60
PM 24.853 TO PM 24.964 BOTH R-1 and R-2 LANES	24	0.33	1563	2.406	347	423	39
PM 26.390 TO PM 26.547 R-2 LANE	12	0.33	1105	2.755	245	598	55
PM 26.600 TO PM 26.794 R-2 LANE	12	0.33	1366	3.271	303	701	68
<b>SUBTOTAL (2)</b>			145,585	86.40	2499	22,792	2137
<b>LOCATION (NB AND SB) RAMPS</b>							
ON AND OFF RAMPS AT THE Ave 24 OC	Var	0.20	7158	4.20		953	
ON AND OFF RAMPS AT THE Ave 26 OC	Var	0.20	11,437	6.71		1523	
ON AND OFF RAMPS AT THE LE GRAND OC	Var	0.20	6442	3.78		858	
FROM REMOVE CONCRETE PAVEMENT TABLE					1395		
<b>TOTAL</b>			321,378	189.84	7483	48,625	4315

(N) NOT A SEPARATE PAY ITEM FOR INFORMATION ONLY.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	19	42

7-26-10  
 REGISTERED CIVIL ENGINEER DATE

7-26-10  
 PLANS APPROVAL DATE

**JUNIUS PAUL JENSEN**  
 No. 66320  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

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

## SUMMARY OF QUANTITIES

### Q-1



**REPLACE Conc Pvmt (RAPID STRENGTH CONCRETE)**

LOCATION PM *	LANE No. (N)	LENGTH (N) FT	WIDTH (N) FT	REPLACE PAVEMENT (RAPID STRENGTH CONC) CY
<b>NORTHBOUND</b>				
26.557	L-2	15	12	5.6
26.559	L-2	15	12	5.6
26.579	L-2	15	12	5.6
26.582	L-2	15	12	5.6
<b>TOTAL</b>				22.4

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY  
 \* EXACT LOCATIONS TO BE DETERMINED BY ENGINEER.

**REMOVE CONCRETE PAVEMENT**

LOCATION PM *	LANE No. (N)	LENGTH (N)	WIDTH (N)	HMA (TYPE A) **	REMOVE CONCRETE PAVEMENT	LOCATION PM *	LANE No. (N)	LENGTH (N)	WIDTH (N)	HMA (TYPE A) **	REMOVE CONCRETE PAVEMENT	
<b>SOUTHBOUND</b>						<b>SOUTHBOUND Cont</b>						
		FT	FT	TON	CY			FT	FT	TON	CY	
22.688	L-2	15	12	15	7.22	25.752	L-2	15	12	15	7.22	
23.289	L-2	15	12	15	7.22	25.837	L-2	15	12	15	7.22	
23.151	L-2	15	12	15	7.22	26.274	L-2	15	12	15	7.22	
23.657	L-2	15	12	15	7.22	26.593	L-2	15	12	15	7.22	
23.713	L-2	15	12	15	7.22	26.596	L-2	15	12	15	7.22	
23.751	L-2	15	12	15	7.22	28.135	L-2	15	12	15	7.22	
23.755	L-2	15	12	15	7.22	28.138	L-2	15	12	15	7.22	
23.779	L-2	15	12	15	7.22	28.142	L-2	15	12	15	7.22	
23.861	L-2	15	12	15	7.22	28.161	L-2	15	12	15	7.22	
23.883	L-2	15	12	15	7.22	28.166	L-2	15	12	15	7.22	
23.885	L-2	15	12	15	7.22	28.168	L-2	15	12	15	7.22	
23.890	L-2	15	12	15	7.22	28.172	L-2	15	12	15	7.22	
23.917	L-2	15	12	15	7.22	28.176	L-2	15	12	15	7.22	
23.921	L-2	15	12	15	7.22	28.179	L-1,2	15	12	30	14.44	
23.938	L-2	15	12	15	7.22	29.278	L-2	15	12	15	7.22	
23.942	L-2	15	12	15	7.22	29.282	L-2	15	12	15	7.22	
23.945	L-2	15	12	15	7.22	29.285	L-2	15	12	15	7.22	
23.948	L-2	15	12	15	7.22	29.294	L-2	15	12	15	7.22	
24.025	L-2	15	12	15	7.22	29.290	L-2	15	12	15	7.22	
24.078	L-2	15	12	15	7.22	29.297	L-2	15	12	15	7.22	
24.082	L-2	15	12	15	7.22	29.318	L-2	15	12	15	7.22	
24.093	L-2	15	12	15	7.22	29.323	L-2	15	12	15	7.22	
24.097	L-2	15	12	15	7.22	<b>NORTHBOUND</b>						
24.100	L-2	15	12	15	7.22	23.725	L-2	15	12	15	7.22	
24.108	L-2	15	12	15	7.22	23.739	L-2	15	12	15	7.22	
24.110	L-2	15	12	15	7.22	23.801	L-2	15	12	15	7.22	
24.706	L-2	15	12	15	7.22	23.869	L-2	15	12	15	7.22	
24.709	L-2	15	12	15	7.22	23.875	L-2	15	12	15	7.22	
24.712	L-2	15	12	15	7.22	23.870	L-2	15	12	15	7.22	
24.761	L-2	15	12	15	7.22	23.963	L-2	15	12	15	7.22	
24.765	L-2	15	12	15	7.22	23.965	L-2	15	12	15	7.22	
24.966	L-2	15	12	15	7.22	23.944	L-2	15	12	15	7.22	
25.043	L-2	15	12	15	7.22	24.118	L-2	15	12	15	7.22	
25.071	L-2	15	12	15	7.22	24.121	L-2	15	12	15	7.22	
25.082	L-2	15	12	15	7.22	24.431	L-2	15	12	15	7.22	
25.093	L-2	15	12	15	7.22	25.142	L-2	15	12	15	7.22	
25.097	L-2	15	12	15	7.22	25.457	L-2	15	12	15	7.22	
25.100	L-2	15	12	15	7.22	25.526	L-2	15	12	15	7.22	
25.091	L-2	15	12	15	7.22	27.718	L-2	15	12	15	7.22	
25.104	L-2	15	12	15	7.22	28.150	L-2	15	12	15	7.22	
25.105	L-2	15	12	15	7.22	28.151	L-2	15	12	15	7.22	
25.109	L-2	15	12	15	7.22	28.155	L-2	15	12	15	7.22	
25.114	L-2	15	12	15	7.22	28.191	L-2	15	12	15	7.22	
25.137	L-2	15	12	15	7.22	28.194	L-2	15	12	15	7.22	
25.562	L-2	15	12	15	7.22	29.317	L-2	15	12	15	7.22	
25.565	L-2	15	12	15	7.22	29.319	L-2	15	12	15	7.22	
25.570	L-2	15	12	15	7.22	<b>SUBTOTAL</b>					690	332.12
<b>SUBTOTAL</b>				705	339.34	<b>TOTAL</b>					1395	671.46

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY  
 \* EXACT LOCATIONS TO BE DETERMINED BY ENGINEER.  
 \*\* HMA QUANTITIES INCLUDED IN ROADWAY QUANTITIES TABLE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	20	42
			7-26-10	DATE	
			7-26-10	PLANS APPROVAL DATE	
REGISTERED CIVIL ENGINEER JUNIUS PAUL JENSEN No. 66320 Exp. 6-30-12 CIVIL STATE OF CALIFORNIA					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

**CRACK TREATMENT**

LOCATION	LANE MILE
NORTHBOUND PM 23.1 - 29.35	12.5
SOUTHBOUND PM 23.1 - 29.35	12.5
<b>TOTAL</b>	25.0

**RUMBLE STRIP**

(HMA, GROUND-IN INDENTATIONS)	STATION
INSIDE SHOULDER	660
OUTSIDE SHOULDER	660
<b>TOTAL</b>	1320

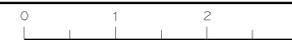
**ADJUST MANHOLE TO GRADE**

LOCATION PM *	ADJUST MANHOLE TO GRADE
	EA
<b>SOUTHBOUND</b>	
28.2	1
28.5	1
28.8	1
29.1	1
29.3	1
<b>TOTAL</b>	5

\* ALL LOCATED WITHIN THE SHOULDER. EXACT LOCATIONS TO BE DETERMINED BY ENGINEER.

**SUMMARY OF QUANTITIES**

**Q-2**



## METAL BEAM GUARD RAILING QUANTITIES

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Mad	99	22.7/29.4	21	42

REGISTERED CIVIL ENGINEER DATE 7-26-10	JUNIUS PAUL JENSEN No. 66320 Exp. 7-30-12 CIVIL STATE OF CALIFORNIA
7-26-10 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.

PM	LOCATION *	LAYOUT TYPE (N)	REMOVE MBGR	RECONSTRUCT MBGR	BURIED POST END ANCHOR (N)	MBGR (STEEL POST)	DOUBLE THREE BEAM BARRIER	SINGLE THREE BEAM BARRIER	ALTERNATIVE IN-LINE TERMINAL SYSTEM	ALTERNATIVE FLARED TERMINAL SYSTEM	END ANCHOR ASSEMBLY (Type SFT)	REMOVE CRASH CUSHION	ALTERNATIVE CRASH CUSHION SYSTEM		MINOR CONCRETE (MINOR STRUCTURE)	TRANSITION RAILING (Type WB)	
			LF	LF	EA	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	CY	EA
			TYPE A	TYPE B													
22.727	Jct 99/152 (SB) Rt	12C	75		1	50									0.69	1	
22.727	Jct 99/152 (SB) Lt	16C	212.5		1						1						
23.065	CALIFA UP 41-0014R (NB) Lt	12C	62.5		1	37.5									0.69	1	
23.065	CALIFA UP 41-0014R (NB) Rt	12C	62.5		1	37.5									0.69	1	
23.092	CALIFA OH 41-0014L (SB) Rt	12A		800		25			1						0.69	1	
23.092	CALIFA OH 41-0014L (NB) Rt	12DD		837.5							1						
23.092	CALIFA OH 41-0014L (SB) Lt	12A		862.5		25			1						0.69	1	
23.092	CALIFA OH 41-0014L (NB) Lt	12DD		775							1						
23.770	Ave 24 OC 41-0054 ON 99 MEDIAN		225				50	150			2	1		2			
23.770	Ave 24 OC ON 99-NB AND SB (Rt) NB	12C	50		1	37.5									0.69	1	
23.770	Ave 24 OC ON 99-NB AND SB (Rt) SB	12C	100		1	75									0.69	1	
23.770	Ave 24 OC ON Ave 24 - EB APROACH		62.5										1				
23.770	Ave 24 OC ON Ave 24 - WB APROACH	12A	62.5						1						0.69	1	
23.770	Ave 24 OC ON Ave 24 - EB DEPARTURE												1				
23.770	Ave 24 OC ON Ave 24 - WB DEPARTURE												1				
24.776	BRENDA SLOUGH 41-0044 Rt, NB	12B	25							1					0.67	1	
24.776	BRENDA SLOUGH 41-0044 Rt, SB	12B	25							1					0.67	1	
24.940	ROUTE 99-NB (Rt)	16B		50							1						
24.940	ROUTE 99-SB (Rt)	16B		50							1						
26.576	Jct 99/233/Ave 26 NB AND SB (Rt)	12B	62.5							1					0.69	1	
26.576	Jct 99/233/Ave 26 NB AND SB (Rt)	12B	62.5							1					0.69	1	
26.576	Jct 99/233 OC EB APROACH	12B	62.5							1					0.69	1	
26.576	Jct 99/233 OC EB DEPARTURE	12BB	62.5							1					0.69	1	
26.576	Jct 99/233 OC WB APROACH	12B	62.5							1					0.69	1	
26.576	Jct 99/233 OC WB DEPARTURE	12BB	62.5							1					0.69	1	
26.801	ASH SLOUGH 41-0045 NB	12B	75			12.5				1					0.67	1	
26.801	ASH SLOUGH 41-0045 SB	12B	75			12.5				1					0.67	1	
28.167	LE GRAND Ave OC 41-0057 ON 99 SB	12B	112.5			75				1					0.69	1	
28.167	LE GRAND Ave OC ON LE GRAND NB APROACH	12A	75						1						0.69	1	
28.167	LE GRAND Ave OC ON LE GRAND NB DEPARTURE	12AA	75						1						0.69	1	
28.167	LE GRAND Ave OC ON LE GRAND SB APROACH	12A	75						1						0.69	1	
28.167	LE GRAND Ave OC ON LE GRAND SB DEPARTURE	12AA	75						1						0.69	1	
29.260	ROUTE 99 SB	16B		50		25				1							
29.333	CHOWCHILLA RIVER BRIDGE 41-001 Rt, NB	12B	62.5							1					0.67	1	
<b>TOTAL</b>			1963	3425		412.5	50	150	7	13	7	1		5	16.46	24	

\* EXACT LOCATION TO BE DETERMINED BY THE ENGINEER  
(N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

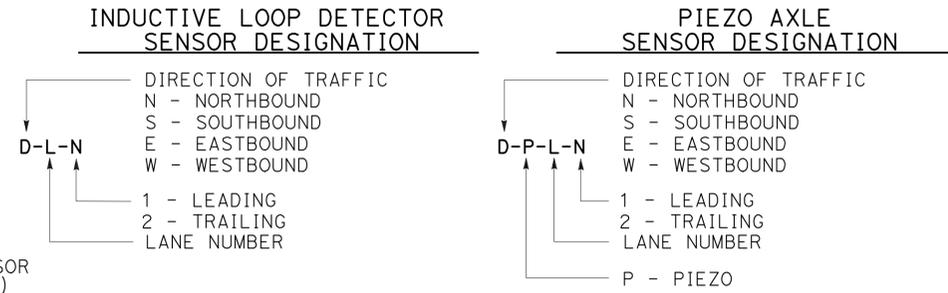
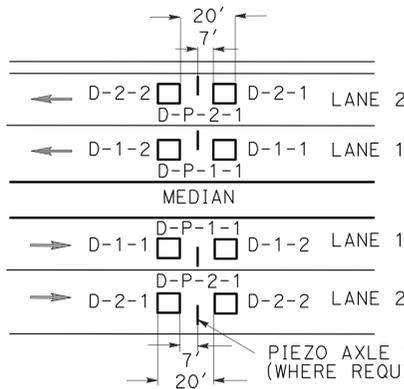
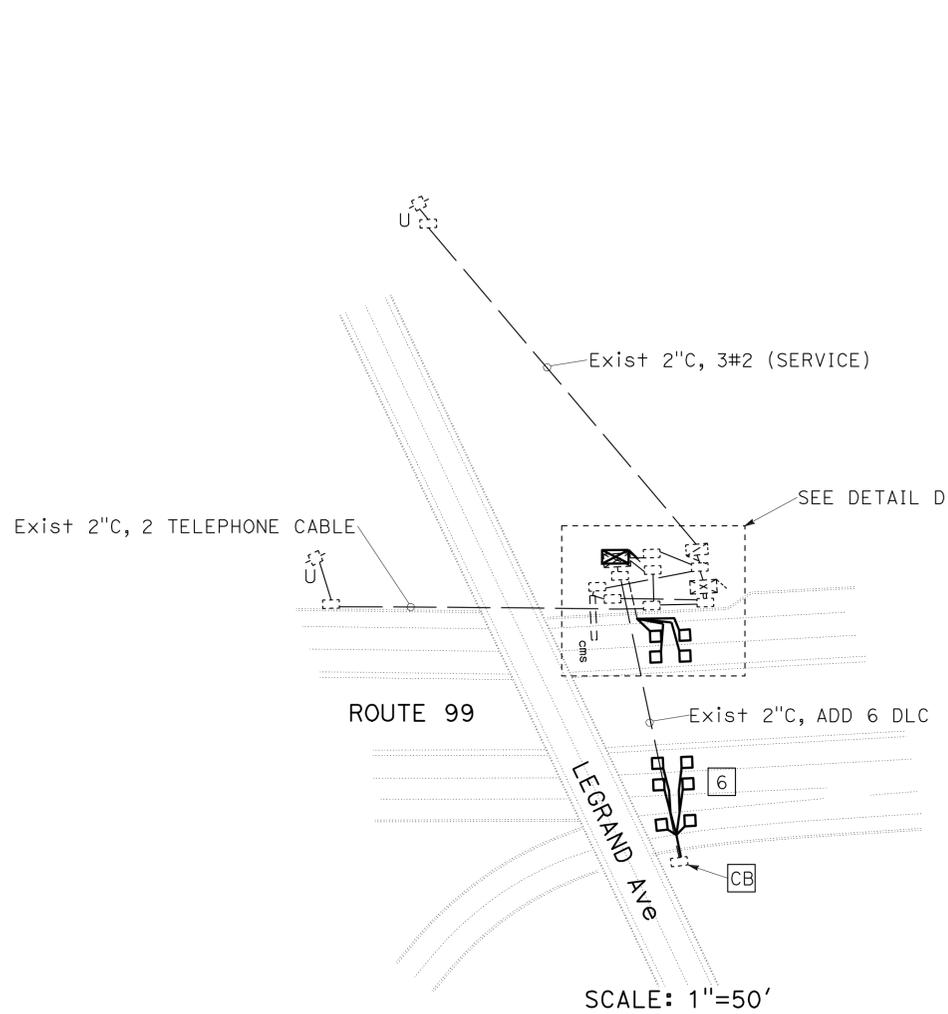
## SUMMARY OF QUANTITIES Q-3



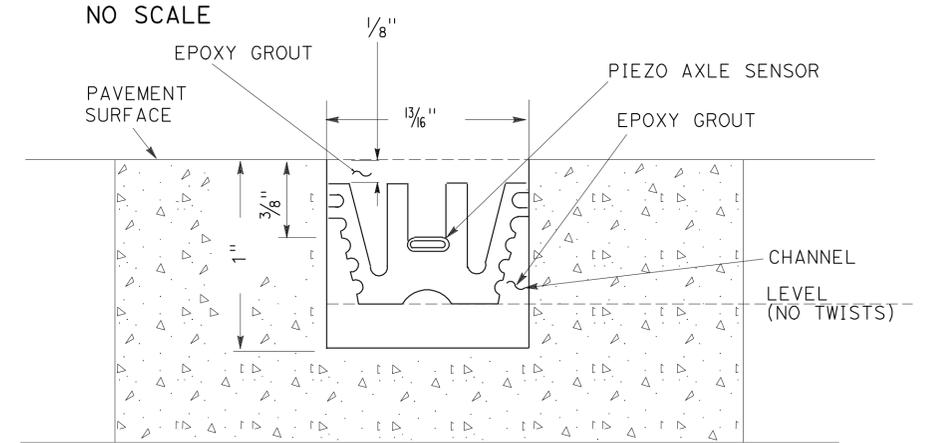
**NOTES:**

- FOR NOTES AND SCHEDULES, SEE SHEET E-1.
- FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

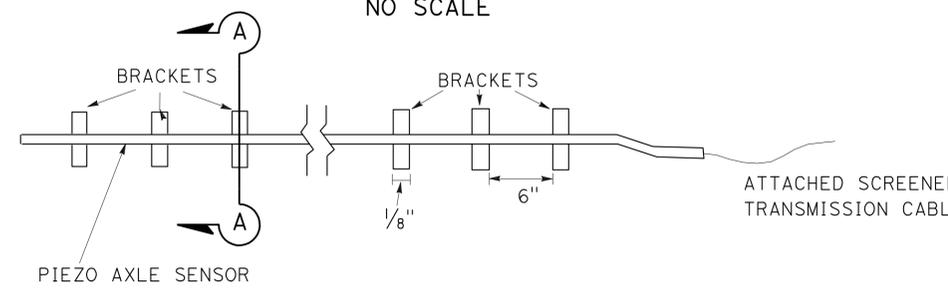
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: ALI BAKHOUD  
 CALCULATED/DESIGNED BY: PAUL MATOS  
 CHECKED BY: OMAR MENDOZA  
 REVISED BY: PAUL MATOS  
 DATE REVISED:



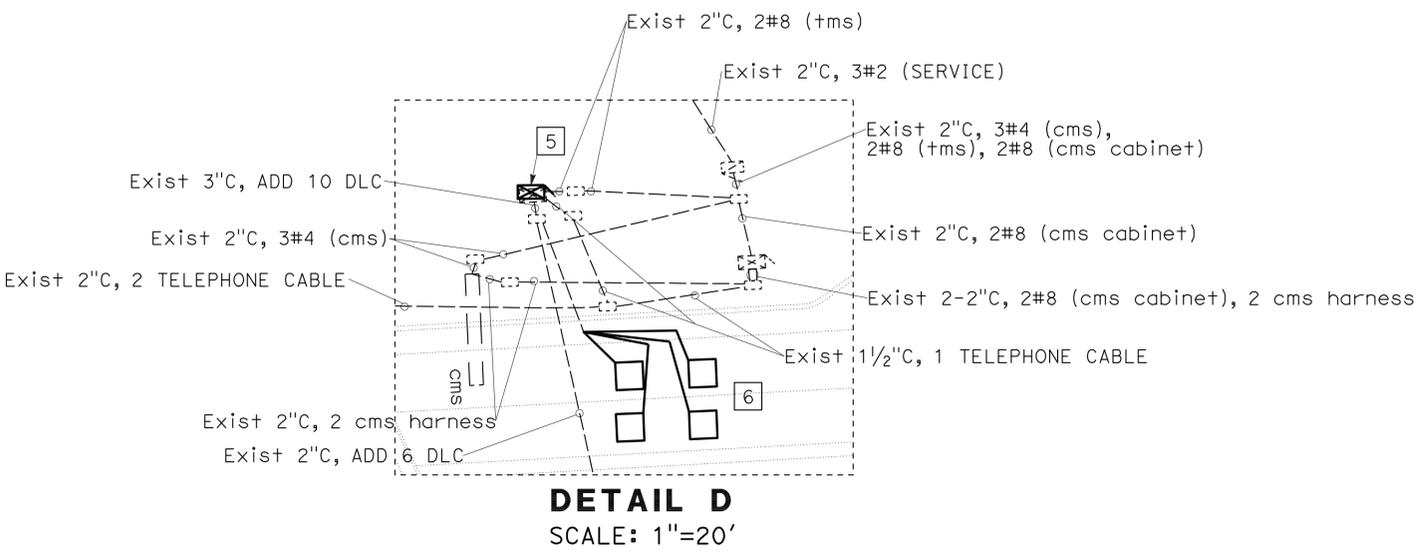
**TYPICAL INDUCTIVE LOOP DETECTOR SENSOR AND PIEZO AXLE SENSOR DESIGNATION  
DETAIL A**



**SECTION A-A  
PIEZO AXLE SENSOR INSTALLATION  
DETAIL B**



**PIEZO AXLE SENSOR INSTALLATION  
DETAIL C**



**DETAIL D  
SCALE: 1\"/>**

**MODIFY VEHICLE CLASSIFICATION STATION  
MODIFY TRAFFIC MONITORING STATION  
E-2**

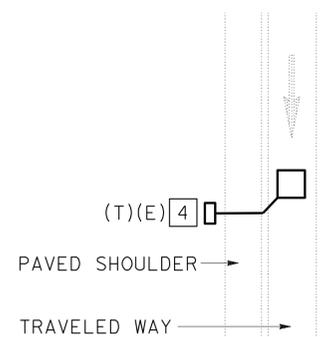
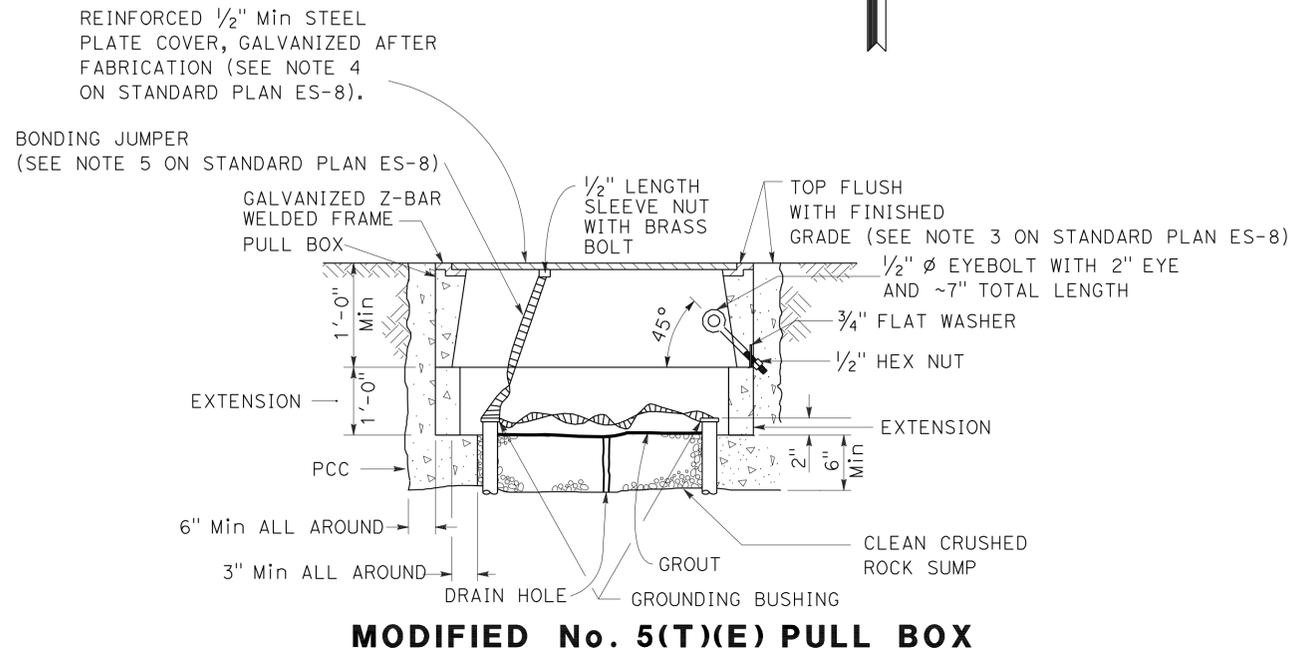
THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

SCALE AS SHOWN

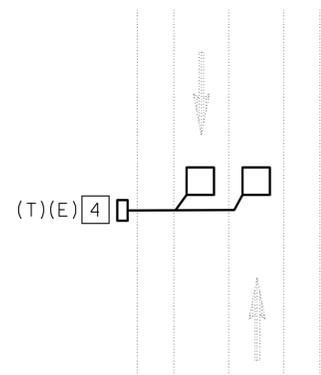
**NOTES:**

- 1 REFER TO DETAIL B FOR DETECTOR LOOP INSTALLATION DETAIL.
- 2 REFER TO DETAIL C FOR DETECTOR LOOP INSTALLATION DETAIL.
- 3 REFER TO DETAIL D FOR DETECTOR LOOP INSTALLATION DETAIL.
- 4 REFER TO DETAIL A FOR PULL BOX INSTALLATION DETAIL.
5. EXACT LOCATIONS OF ALL DETECTOR LOOPS AND PULL BOXES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

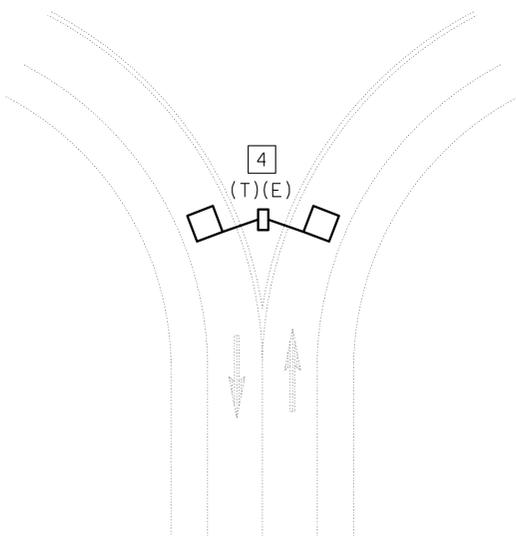
LOCATIONS OF CONSTRUCTION				
No.	POST MILE	BRIDGE/LOCAL STREET	RAMP LOCATION	NOTES
1	23.586	AVENUE 24	NORTHBOUND OFF RAMP	1
2	23.892	AVENUE 24	NORTHBOUND ON RAMP	1
3	23.983	AVENUE 24	SOUTHBOUND OFF RAMP	1
4	23.642	AVENUE 24	SOUTHBOUND ON RAMP	1
5	24.414	AVENUE 24 1/2	NORTHBOUND OFF/ON RAMP	3
6	24.478	AVENUE 24 1/2	SOUTHBOUND OFF/ON RAMP	3
7	26.323	ROUTE 233/ROBERTSON Blvd	NORTHBOUND OFF/ON RAMP	2
8	26.728	ROUTE 233/ROBERTSON Blvd	SOUTHBOUND OFF RAMP	1
9	26.474	ROUTE 233/ROBERTSON Blvd	SOUTHBOUND ON RAMP	1
10	28.079	Le GRAND Ave	NORTHBOUND OFF/ON RAMP	2
11	28.468	Le GRAND Ave	SOUTHBOUND OFF/ON RAMP	3



**DETECTOR LOOP INSTALLATION - RAMP DETAIL (1 LANE)**  
 DETAIL B  
 SCALE: 1"=20'



**DETECTOR LOOP INSTALLATION - RAMP DETAIL (2 LANES)**  
 DETAIL C  
 SCALE: 1"=20'



**DETECTOR LOOP INSTALLATION - RAMP DETAIL (2 LANES)**  
 DETAIL D  
 SCALE: 1"=20'

**DETECTOR LOOP E-3**  
 SCALE AS SHOWN

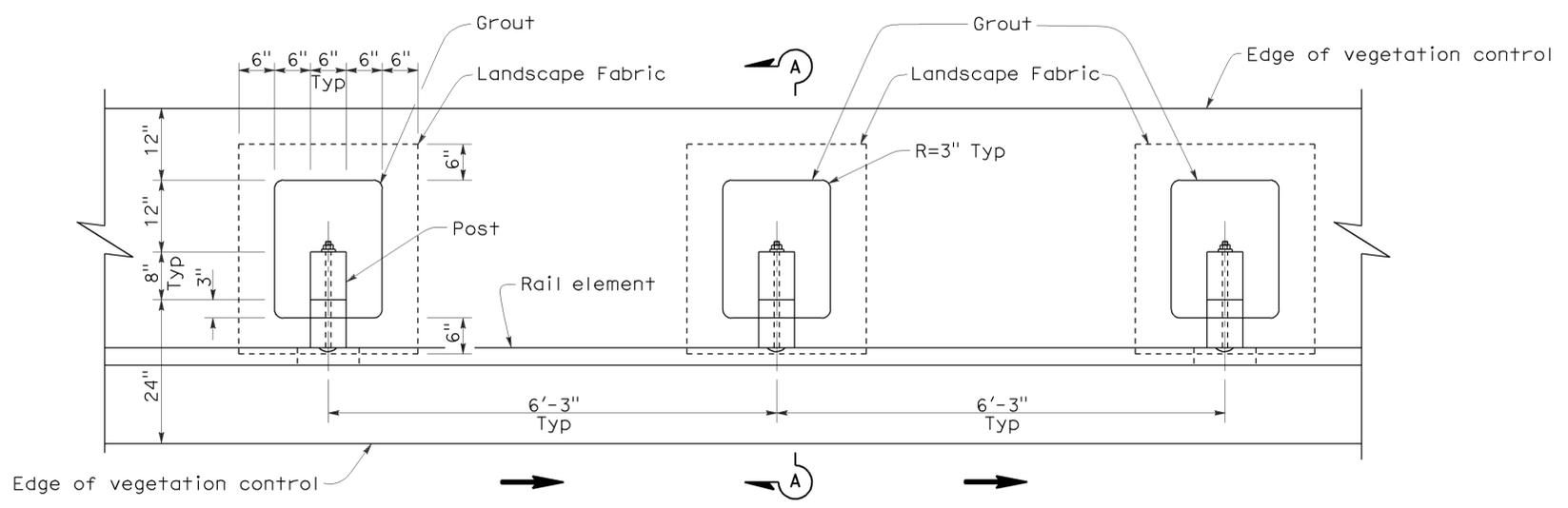
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	25	42

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

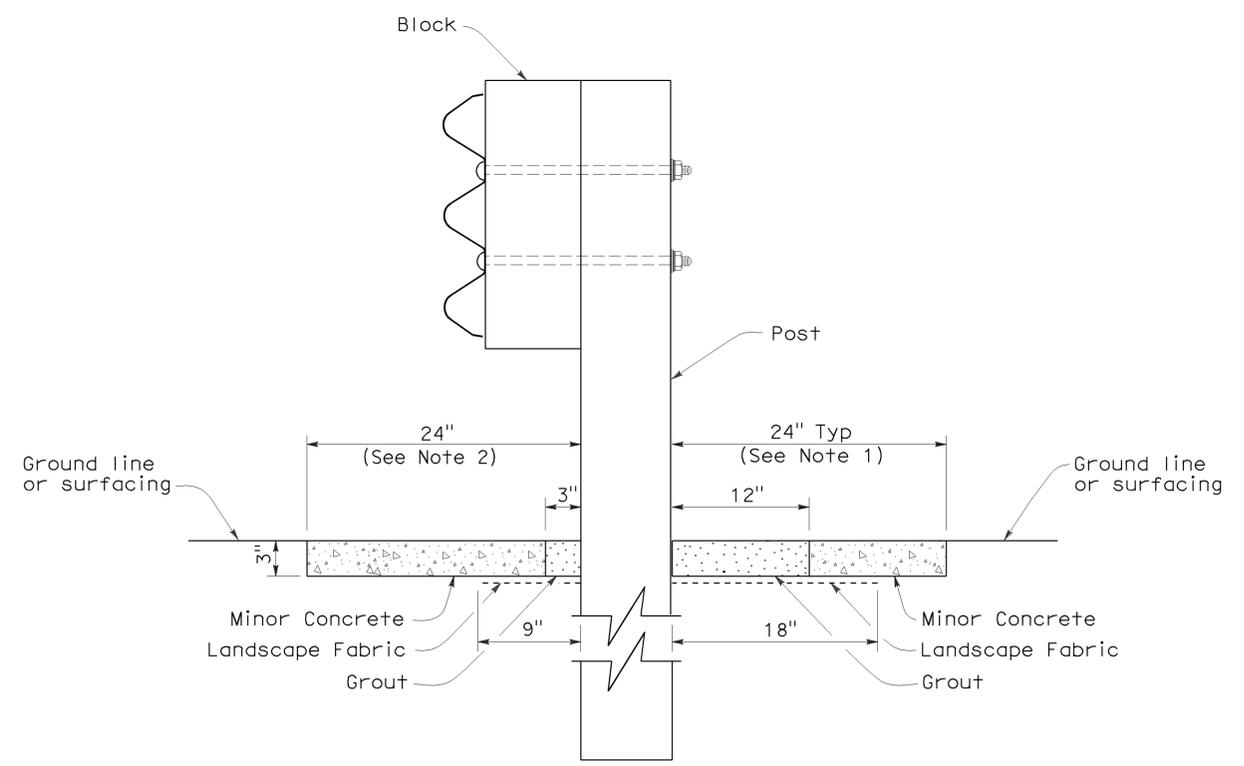
October 20, 2006  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-07  
CIVIL  
STATE OF CALIFORNIA

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**PLAN**



**SECTION A-A**

**NOTES:**

1. Where the distance between back of post and hinge point is less than 24", vegetation control to be constructed flush with the back edge of the post.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" in front of the post, construct vegetation control to the edge of paved shoulder.
3. Direction of adjacent traffic indicated by → .

To accompany plans dated 7-26-10

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**SINGLE THRIE BEAM BARRIER  
TYPICAL VEGETATION CONTROL  
STANDARD BARRIER RAILING SECTION**

NO SCALE  
NSP A78C3 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

**NEW STANDARD PLAN NSP A78C3**

2006 NEW STANDARD PLAN NSP A78C3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	26	42

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

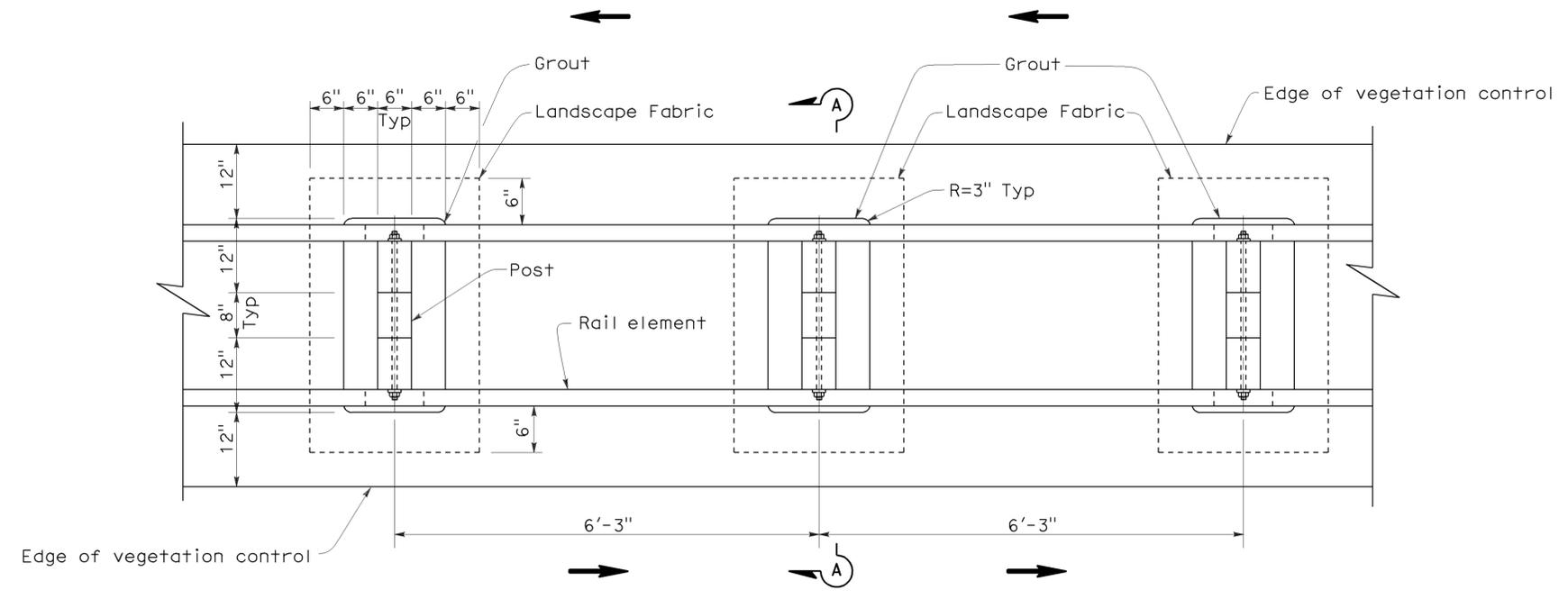
October 20, 2006  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-07  
CIVIL  
STATE OF CALIFORNIA

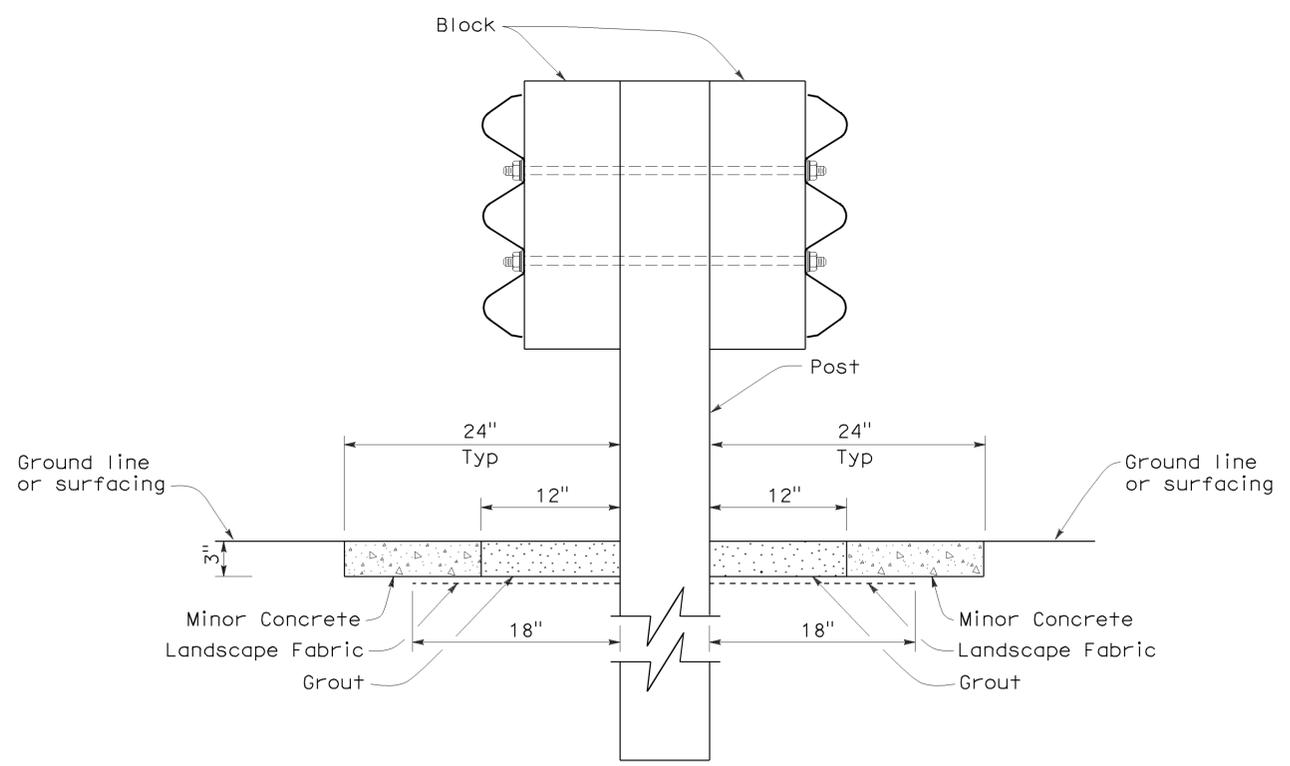
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To accompany plans dated 7-26-10

2006 NEW STANDARD PLAN NSP A78C4



PLAN



SECTION A-A

**NOTE:**

1. Direction of adjacent traffic indicated by →.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**DOUBLE THRIE BEAM BARRIER  
TYPICAL VEGETATION CONTROL  
STANDARD BARRIER RAILING SECTION**

NO SCALE  
NSP A78C4 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

**NEW STANDARD PLAN NSP A78C4**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	27	42

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

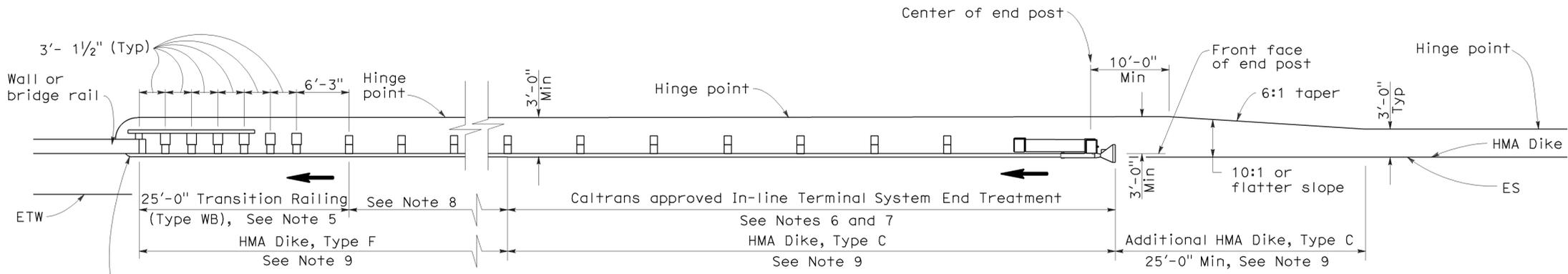
June 6, 2008  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-09  
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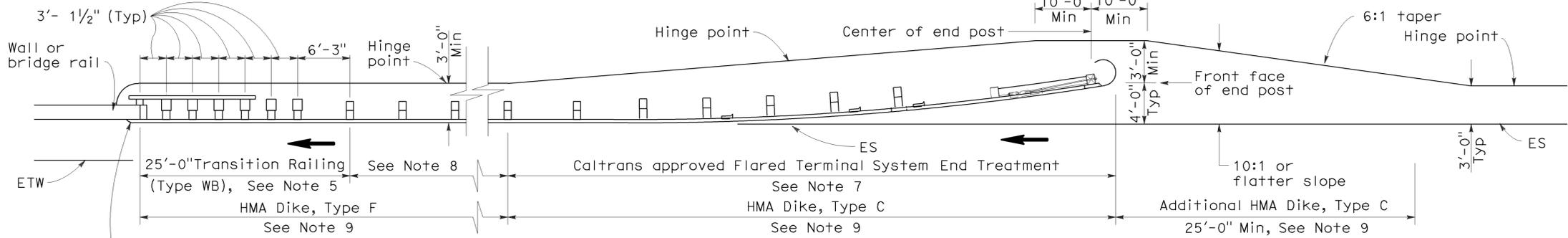
To accompany plans dated 7-26-10

2006 REVISED STANDARD PLAN RSP A77F1



**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.

**REVISED STANDARD PLAN RSP A77F1**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	28	42

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

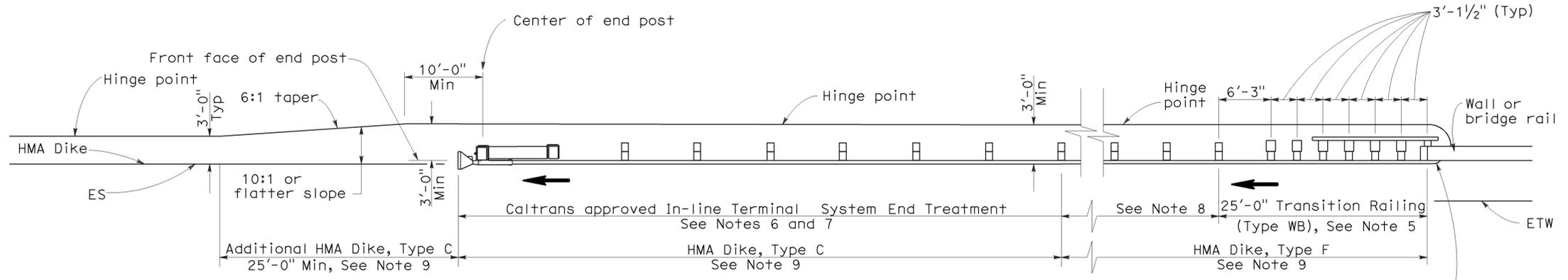
June 6, 2008  
PLANS APPROVAL DATE

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

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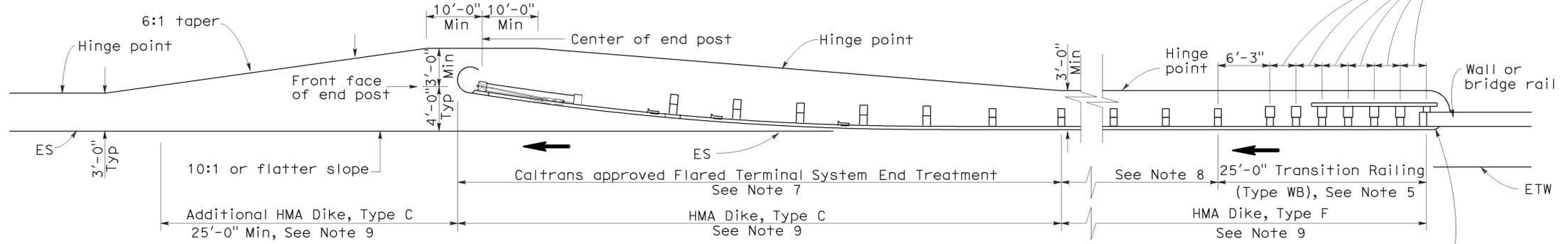
To accompany plans dated 7-26-10

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.

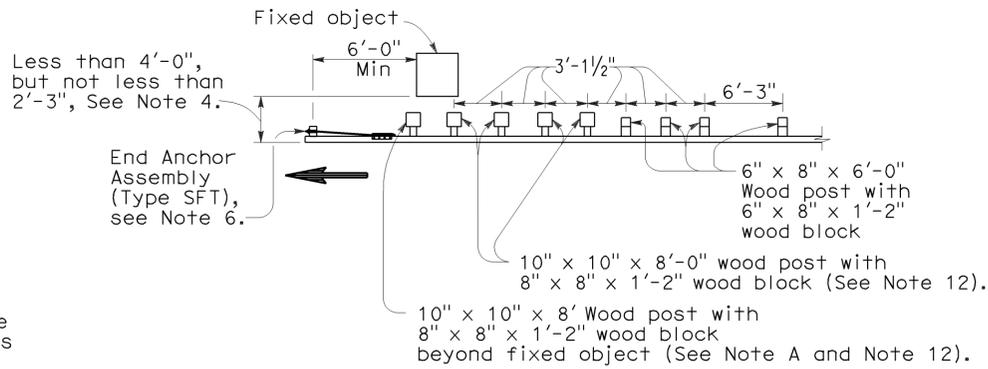
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
STRUCTURE DEPARTURE**  
NO SCALE

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**

**NOTES:**

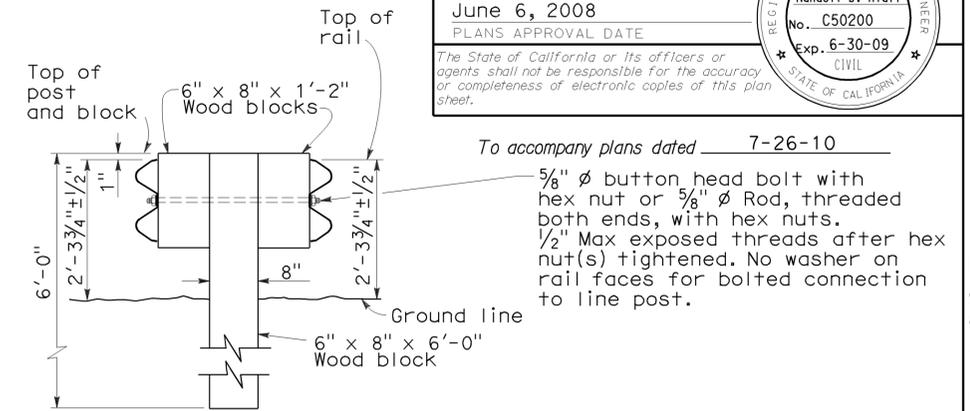
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 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.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- For details of Rail Tensioning Assembly, see Standard Plan A77H2.
- The type of crash cushion to be used will be shown on the Project Plans.
- Type 14A layout is typically used on multilane freeways or expressways to shield fixed objects where a median type barrier is not constructed between the separated roadbeds.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
- The 15:1 or flatter flare is measured off of the edge of traveled way.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic block may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".



**NOTE A:** For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

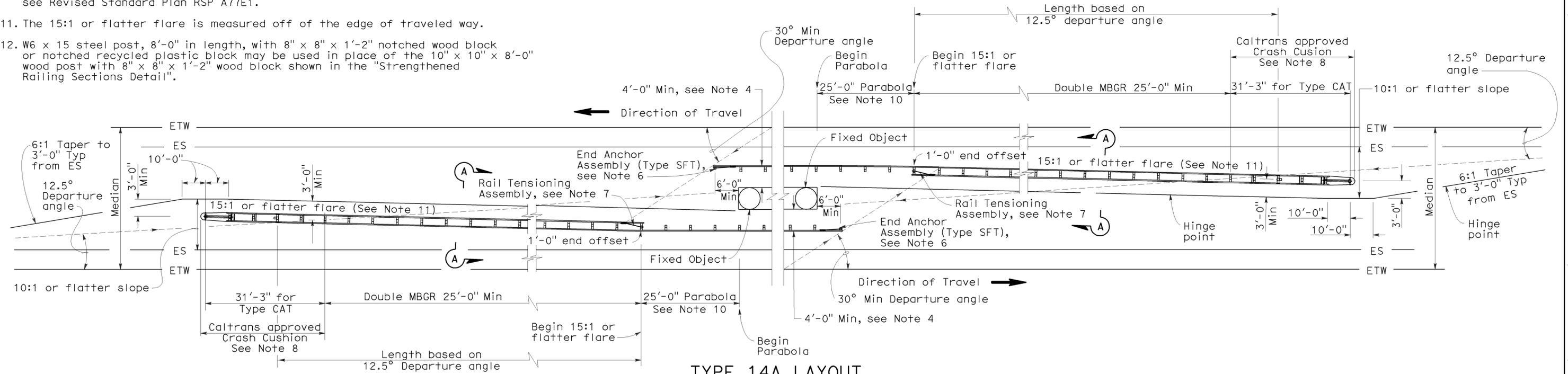
**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

Use strengthened railing sections with Type 14A layout where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3", See Note 4.



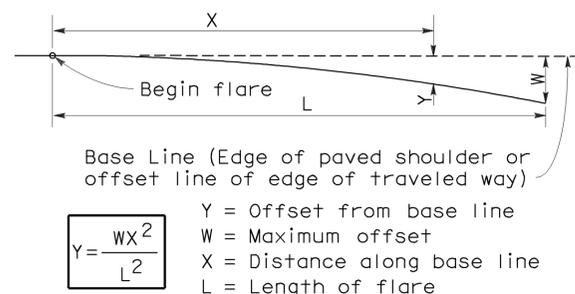
**SECTION A-A TYPICAL DOUBLE METAL BEAM GUARD RAILING**

To accompany plans dated 7-26-10  
 5/8"  $\phi$  button head bolt with hex nut or 5/8"  $\phi$  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.

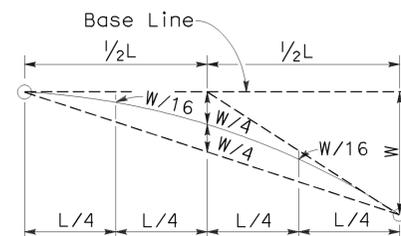


**TYPE 14A LAYOUT**

See Note 9



**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**

**METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR FIXED OBJECTS BETWEEN SEPARATE ROADBEDS (TWO-WAY TRAFFIC)**

NO SCALE

RSP A77G1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G1 DATED MAY 1, 2006 - PAGE 59 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77G1**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	29	42

Randell D. Hiatt  
 REGISTERED CIVIL ENGINEER  
 June 6, 2008  
 PLANS APPROVAL DATE  
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2006 REVISED STANDARD PLAN RSP A77G1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	30	42

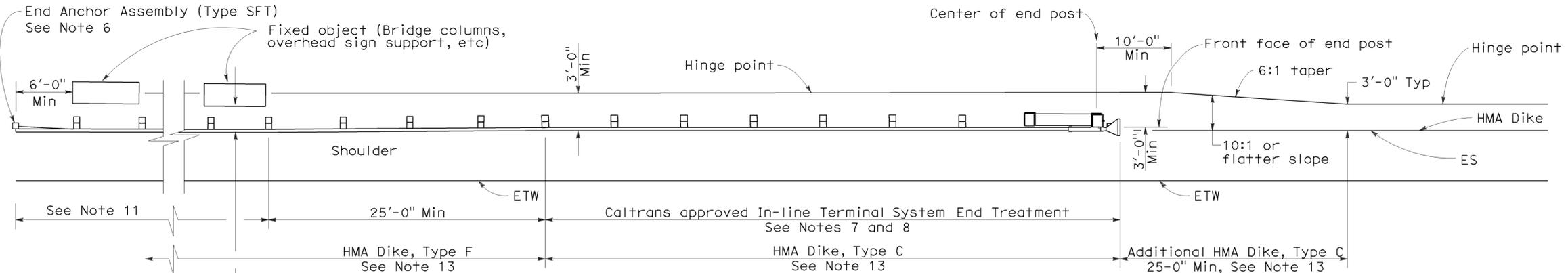
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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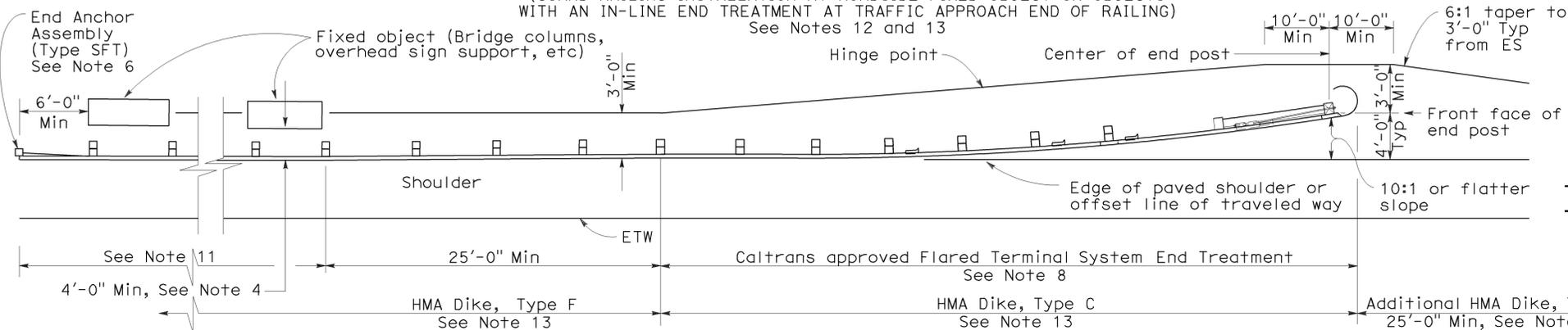
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 7-26-10



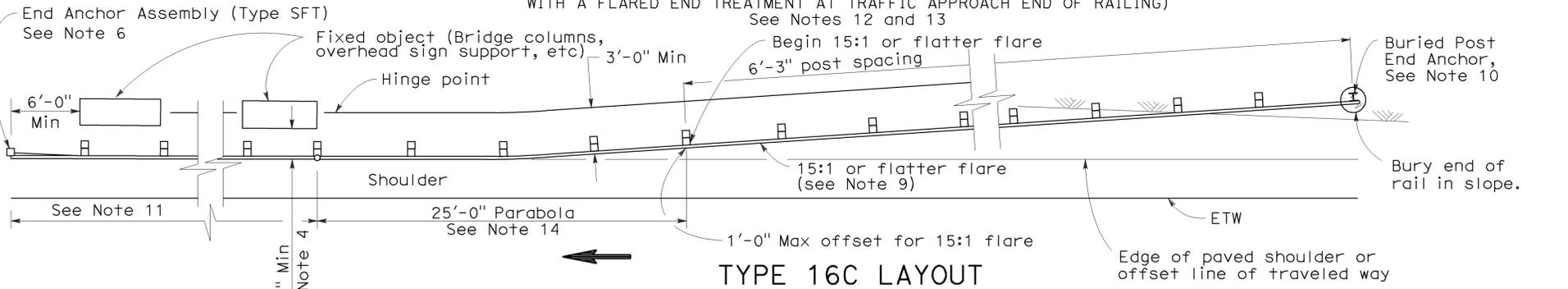
**TYPE 16A LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 7 and 8



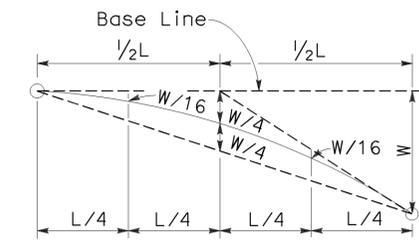
**TYPE 16B LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 12 and 13

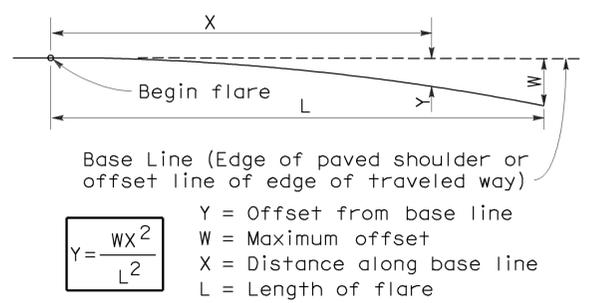


**TYPE 16C LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 12 and 13



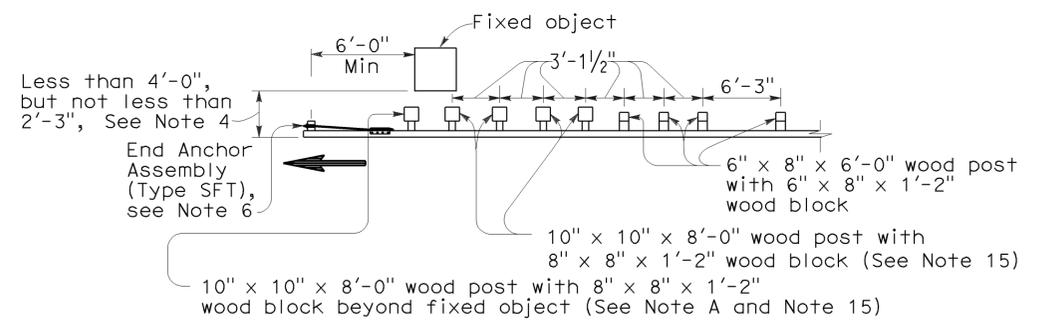
**TYPICAL PARABOLIC LAYOUT**



**PARABOLIC FLARE OFFSETS**

**NOTES:**

- Line post, blocks and hardware to be used are shown on Revised 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.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- In-line Terminal System End 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.
- The 15:1 or flatter flare used with Type 16C Layout 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 16C Layout, see Standard Plan A77I2.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
- Layout Types 16A, 16B or 16C are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for only one direction of traffic.
- Where placement of dike is required with guard railing, 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.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".



**NOTE A:** For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

Use strengthened railing sections with Types 16A, 16B or 16C Layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS**

NO SCALE

RSP A77G3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G3  
DATED MAY 1, 2006 - PAGE 61 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77G3**

2006 REVISED STANDARD PLAN RSP A77G3



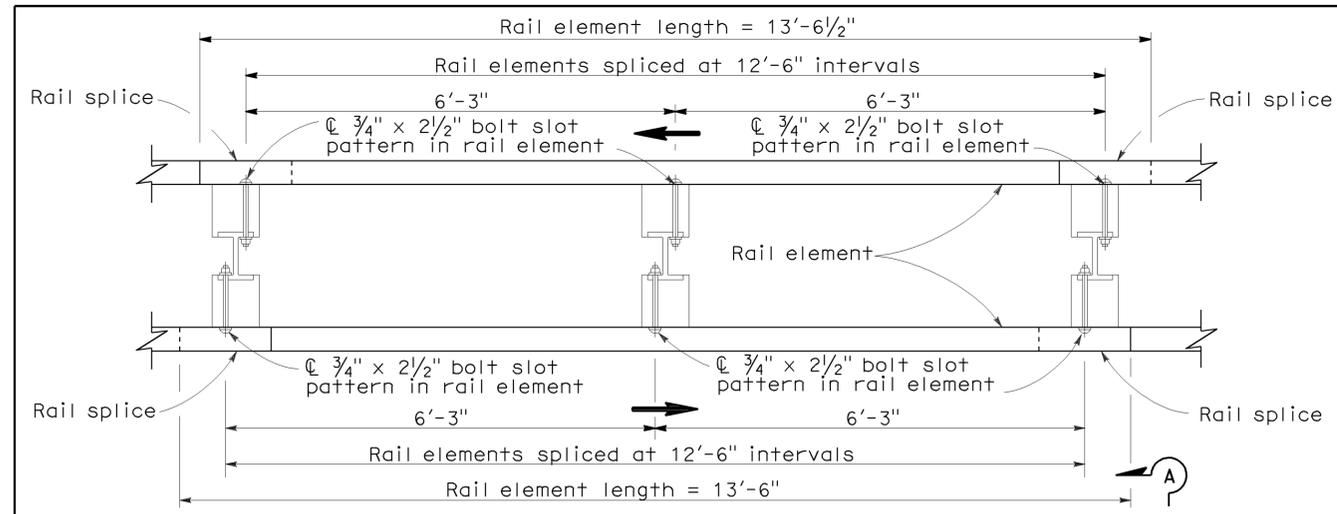
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	32	42

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

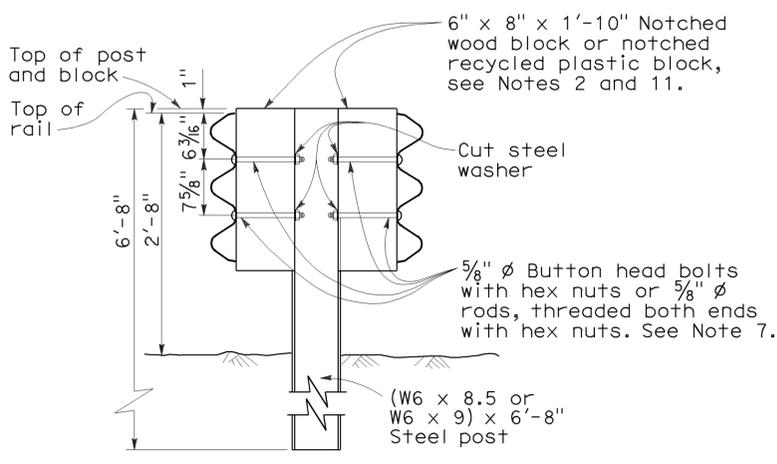
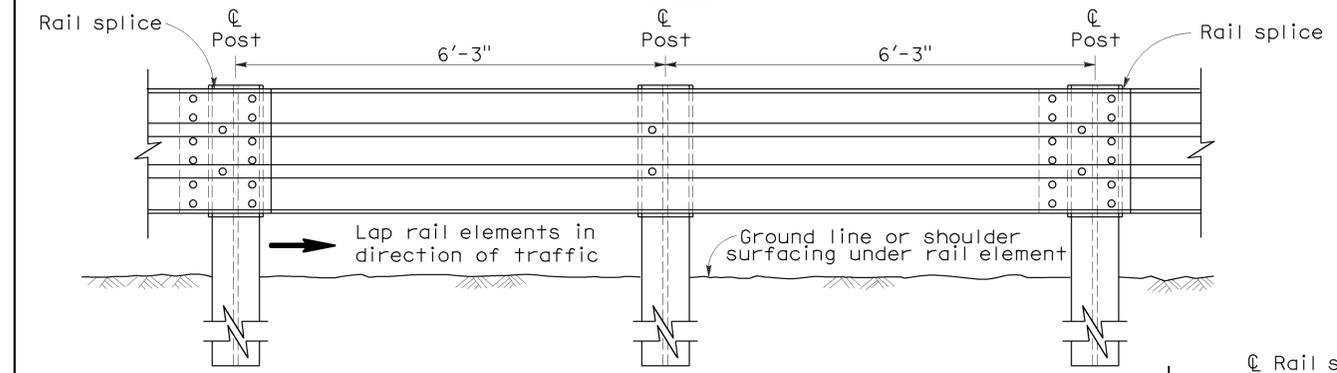
June 6, 2008  
PLANS APPROVAL DATE

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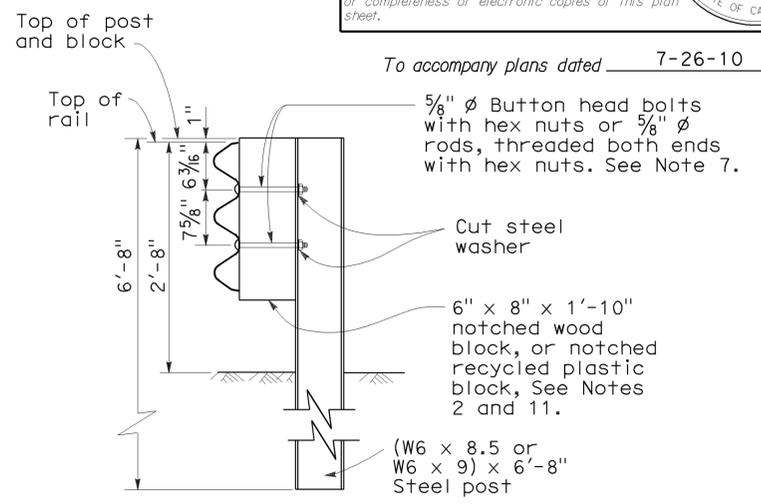
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA



**DOUBLE THRIE BEAM BARRIER**  
(Steel post with notched wood or notched plastic blocks)  
See Note 1

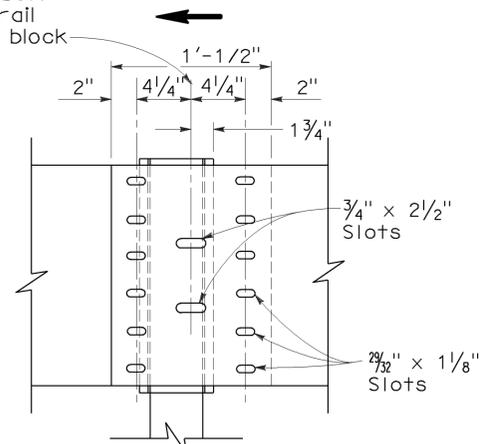


**SECTION A-A**  
**TYPICAL STEEL LINE POST INSTALLATION**



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

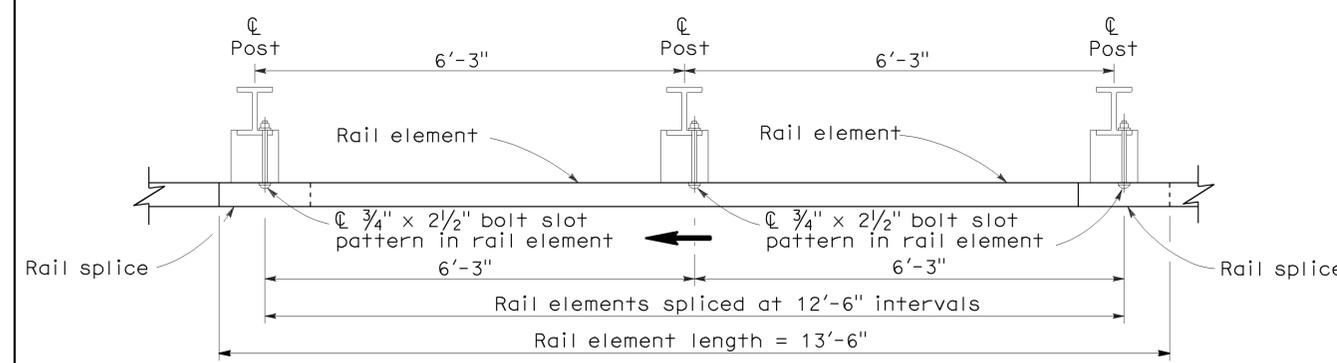
⊙ Rail splice and slots for 5/8" ⌀ button head bolt to connect rail to post and block



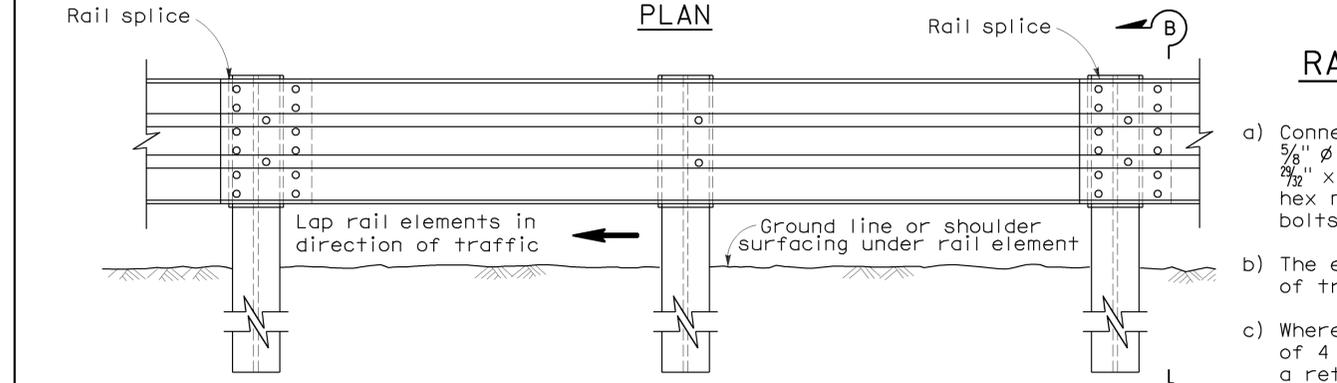
**ELEVATION**  
**RAIL ELEMENT SPLICE DETAIL**

**NOTES:**

- For details of the cross section of the thrie beam rail element and details for wood post with wood block installations, see Standard Plan A78A.
- For details of standard hardware, posts and blocks used to construct thrie beam barrier, see Revised Standard Plan RSP A78C1 and Standard Plan A78C2.
- Thrie beam barrier post spacing to be 6'-3" center to center, except as otherwise noted.
- Top of barrier rail to be 2'-8" above ground line or shoulder surfacing under the rail element.
- For barrier end treatments and barrier connections, see Standard Plans A78E1, A78E2 and A78E3, Revised Standard Plans RSPs A78F1 and A78F2, Standard Plan A78G and Revised Standard Plan RSP A78H.
- For connection to Concrete Barrier, see Revised Standard Plan RSP A78I.
- Attach rail element to block and steel post with 2 bolts or rods on approaching traffic side of block and post web. No washer on rail face for rod or bolted connections to line post.
- For details of thrie beam barrier on bridges, see Standard Plan A78D2. For details of thrie beam barrier at fixed objects, see Standard Plan A78D1.
- Direction of traffic indicated by →.
- Notched face of block faces steel post.



**SINGLE THRIE BEAM BARRIER**  
(Steel post with notched wood or notched plastic blocks)  
See Note 1



- Connect the overlapped ends of the thrie beam rail elements with 5/8" ⌀ x 1 1/8" button head oval shoulder bolts inserted into the 29/32" x 1 1/8" slots and bolted together with 5/8" ⌀ x 1 1/8" recessed hex nuts. Recess of hex nut points toward rail element. A total of 12 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. Where a return cap is to be attached to the ends of rail elements, a total of 8 of the above described splice bolts and nuts are to be used.

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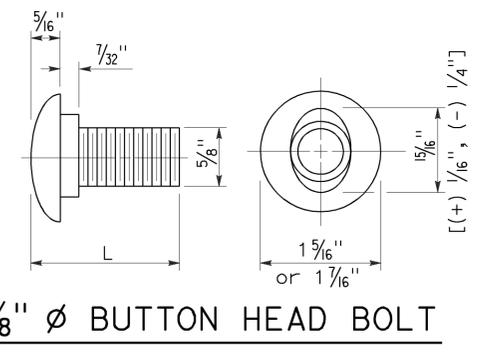
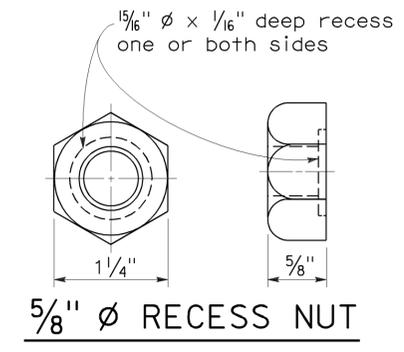
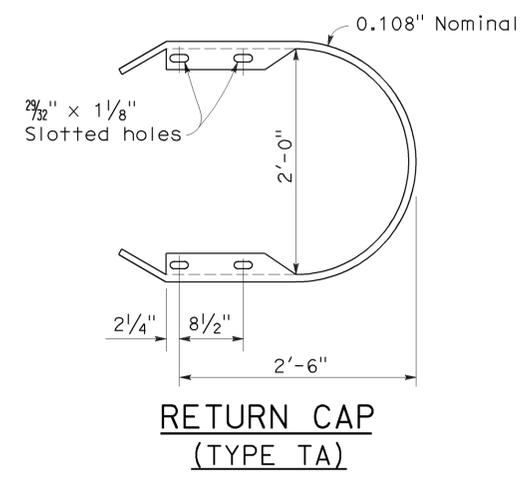
**THRIE BEAM BARRIER**  
**STANDARD BARRIER RAILING**  
**SECTION (STEEL POST**  
**WITH NOTCHED WOOD BLOCK**  
**OR NOTCHED RECYCLED**  
**PLASTIC BLOCK)**  
NO SCALE

RSP A78B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78B  
DATED MAY 1, 2006 - PAGE 84 OF THE STANDARD PLANS BOOK DATED MAY 2006.

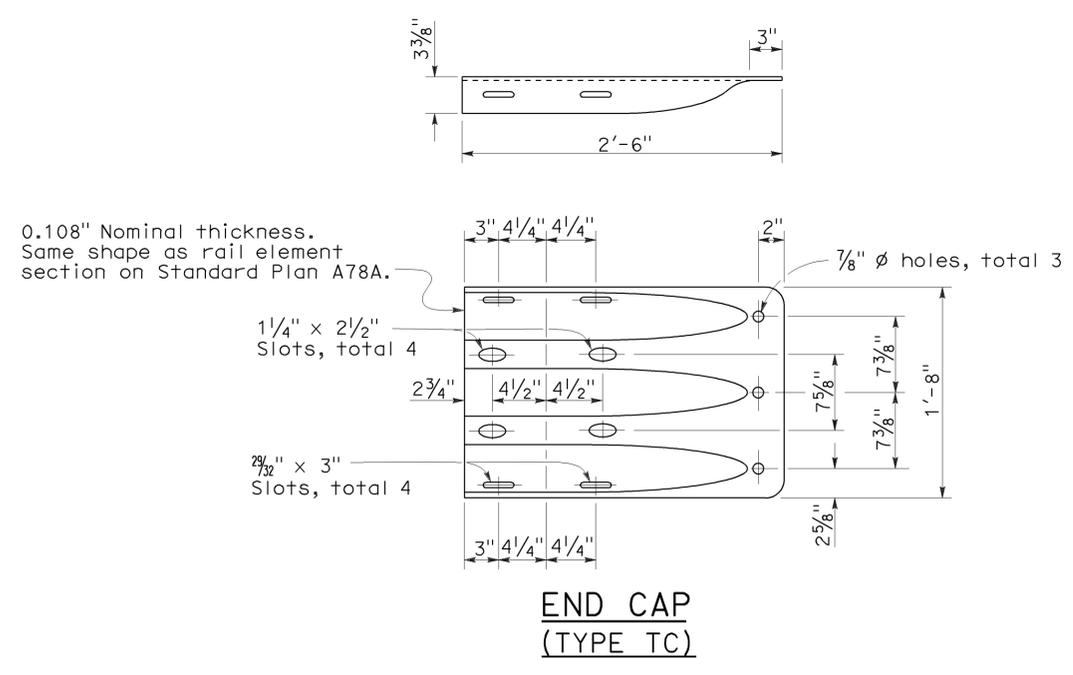
**REVISED STANDARD PLAN RSP A78B**

2006 REVISED STANDARD PLAN RSP A78B

To accompany plans dated 7-26-10



L	THREAD LENGTH
1 1/4"	full thread length
2"	full thread length
9/2"	4" Min thread length
18"	4" Min thread length



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**THRIE BEAM BARRIER  
STANDARD HARDWARE DETAILS**

NO SCALE

RSP A78C1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78C1  
DATED MAY 1, 2006 - PAGE 85 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A78C1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	34	42

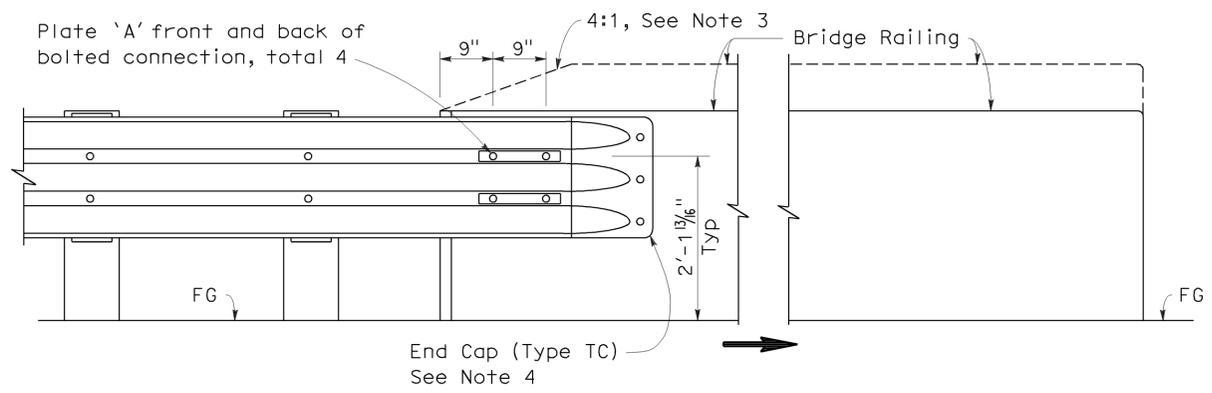
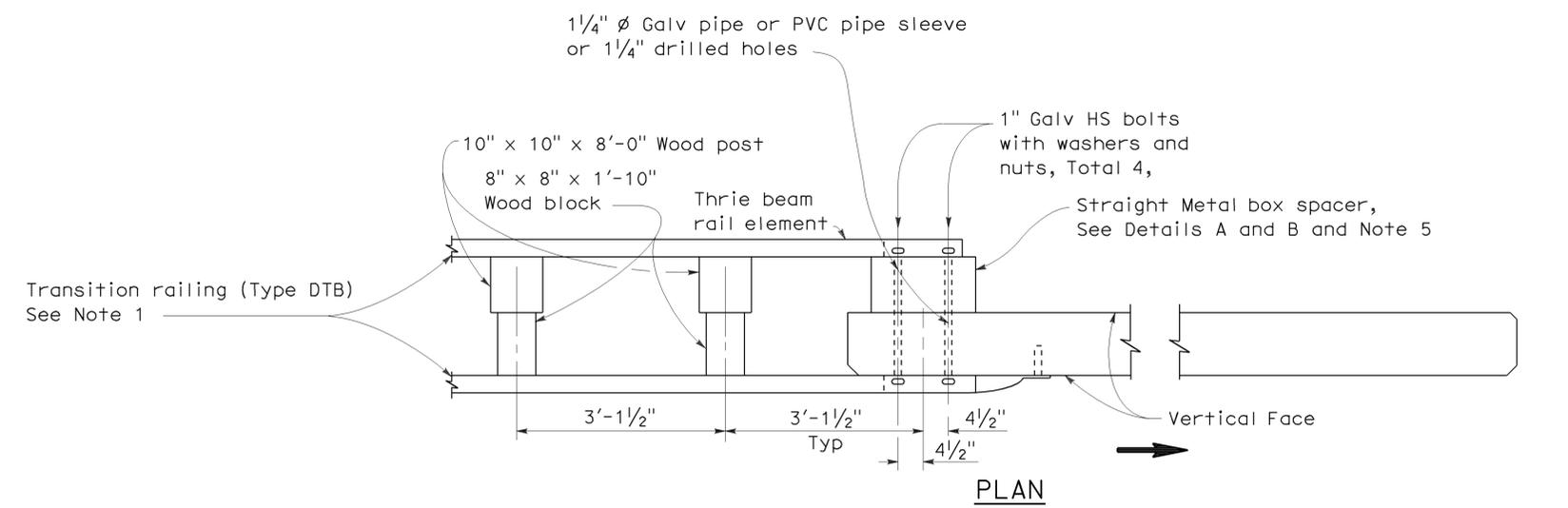
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

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 7-26-10

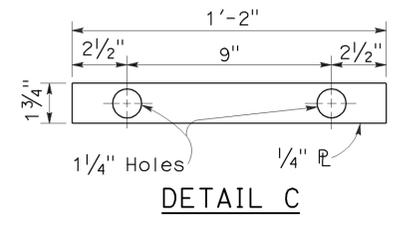
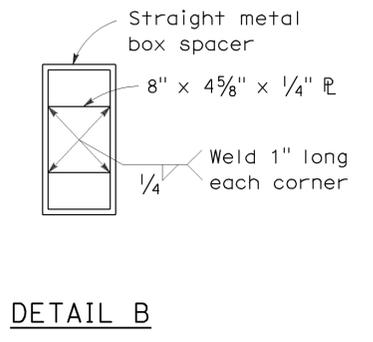
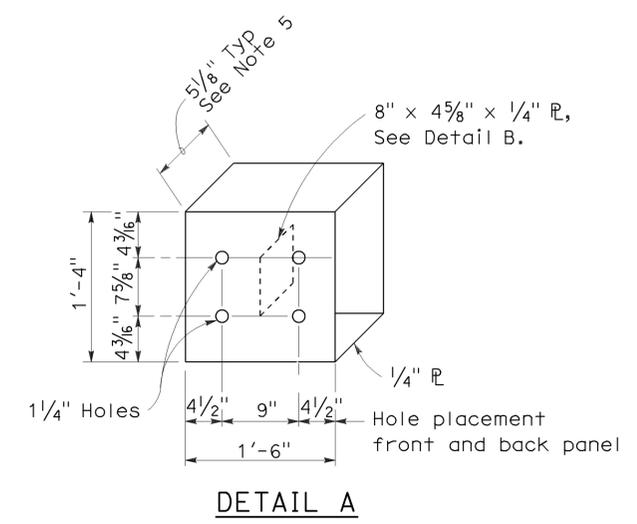


**CONNECTION DETAIL 1A**  
See Note 2

**NOTES:**

- For additional details of Transition Railing (Type DTB), see Standard Plans A78K. Transition Railing (Type DTB) transitions the standard 12 gage double thrie beam barrier to a heavier gage double thrie beam railing section then to a heavier gage nested double thrie beam barrier section which then is connected to the concrete bridge railing.
- For typical use of Connection Detail 1A, see Type 25A Connection Layout on Revised Standard Plan RSP A78H.
- Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail 1A, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
- For details of End Cap (Type TC), see Standard Plan A78C1.
- See Standard Plan A78K for additional details regarding depth dimension for straight metal box spacer.
- Direction of adjacent traffic indicated by ➡.

**DOUBLE THRIE BEAM BARRIER CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK**



**STRAIGHT METAL BOX SPACER**

**PLATE 'A'**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**DOUBLE THRIE BEAM BARRIER CONNECTION TO BRIDGE RAILINGS WITHOUT SIDEWALKS**

NO SCALE

RSP A78F1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78F1 DATED MAY 1, 2006 - PAGE 92 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A78F1**

2006 REVISED STANDARD PLAN RSP A78F1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Mad	99	22.7/29.4	35	42

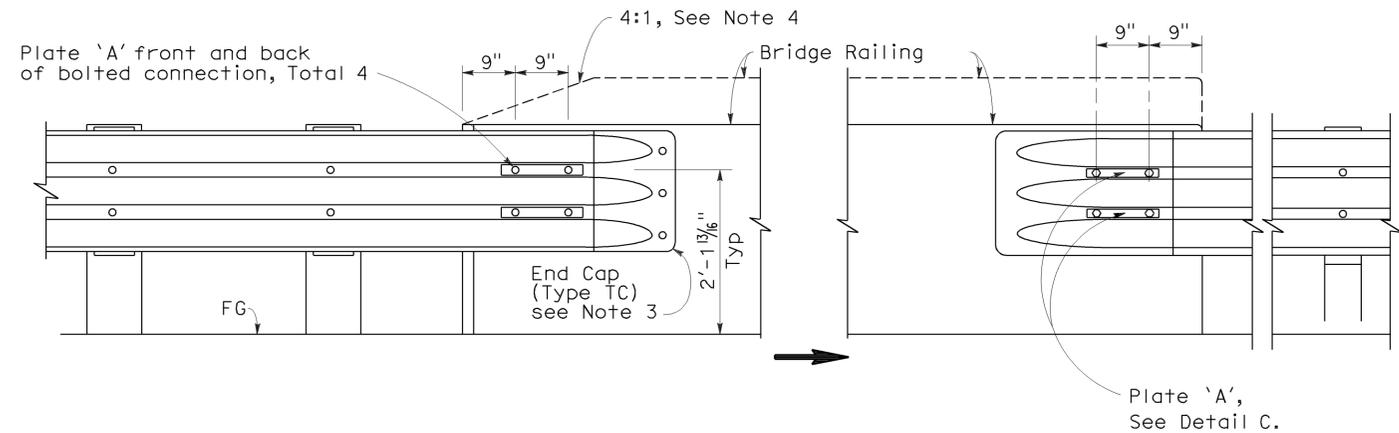
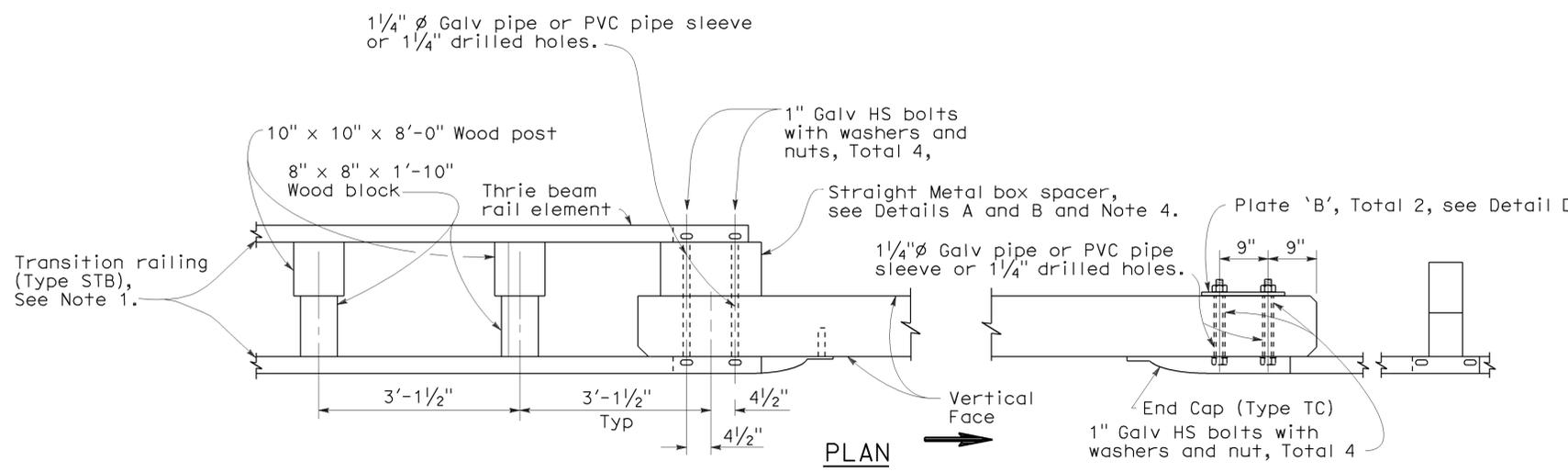
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

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 7-26-10



CONNECTION DETAIL 2A

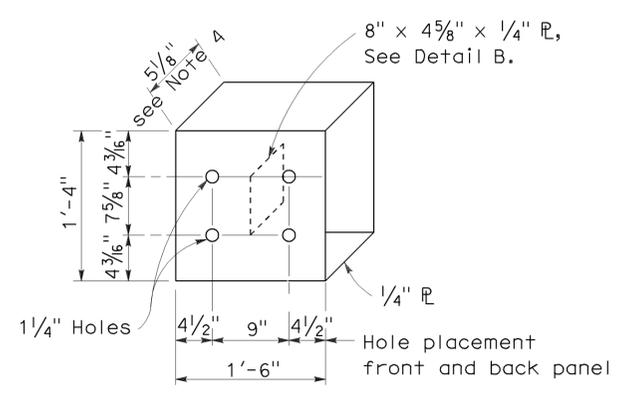
CONNECTION DETAIL 3A

ELEVATION

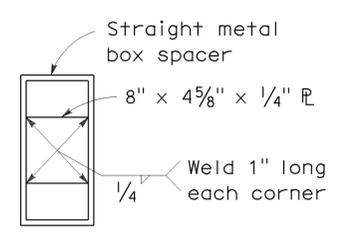
SINGLE THRIE BEAM BARRIER CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

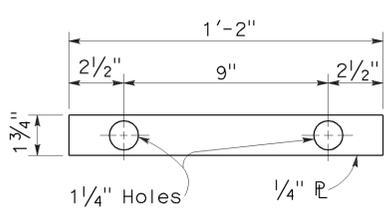
1. For additional details of Transition Railing (Type STB), see Standard Plans A78J. Transition Railing (Type STB) transitions the standard 12 gage single thrie beam barrier to a heavier gage single thrie beam railing section then to a heavier gage nested double thrie beam barrier section which then is connected to the concrete bridge railing.
2. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail 2A, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
3. For details of End Cap (Type TC), see Standard Plan A78C1.
4. See Standard Plan A78J for additional details regarding depth dimension for straight metal box spacer.
5. Direction of adjacent traffic indicated by  $\Rightarrow$ .



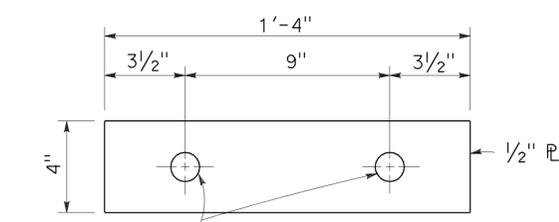
DETAIL A  
STRAIGHT METAL BOX SPACER



DETAIL B



DETAIL C  
PLATE 'A'



DETAIL D  
PLATE 'B'

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**SINGLE THRIE BEAM BARRIER CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS**

NO SCALE

RSP A78F2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78F2 DATED MAY 1, 2006 - PAGE 93 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A78F2**

2006 REVISED STANDARD PLAN RSP A78F2

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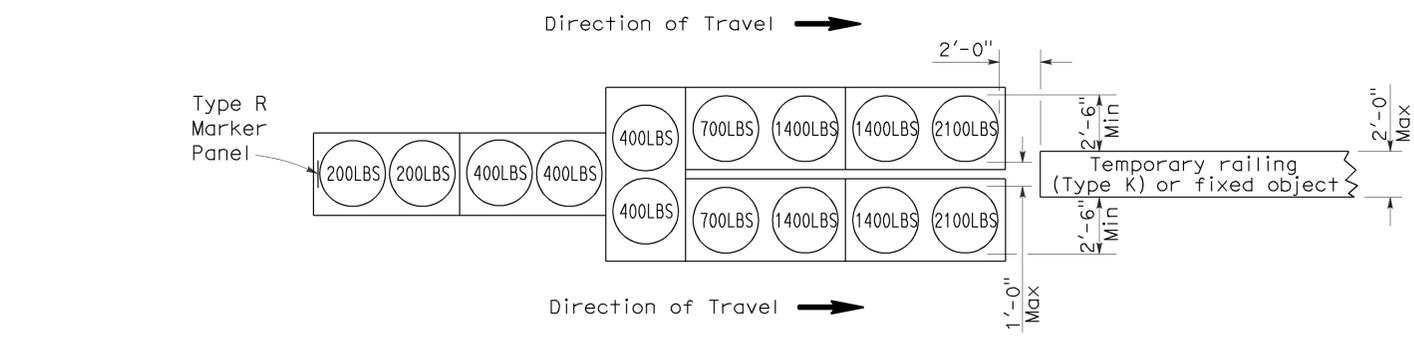
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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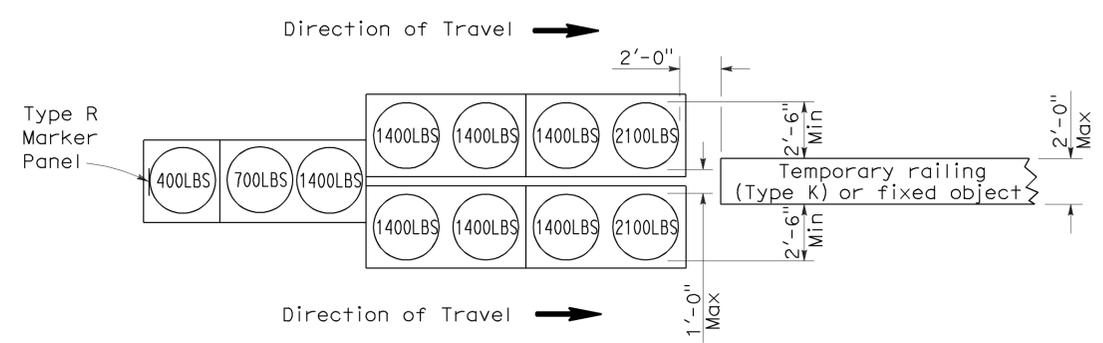
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 7-26-10



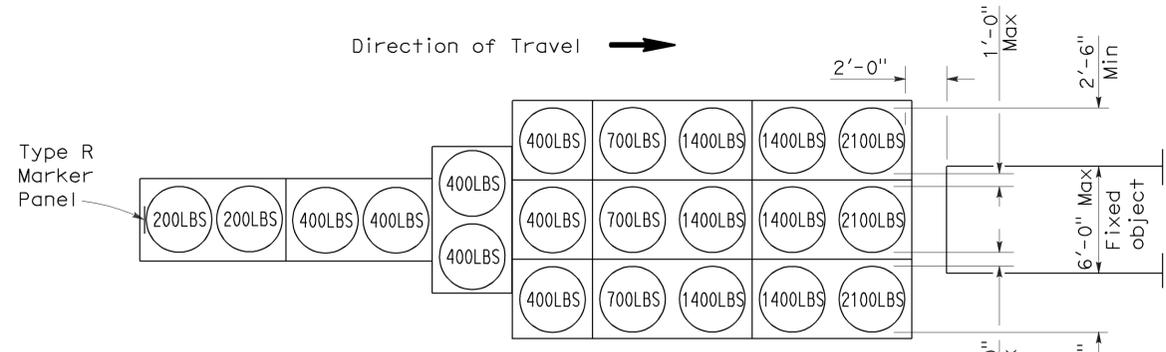
**ARRAY 'TU14'**

Approach speed 45 mph or more



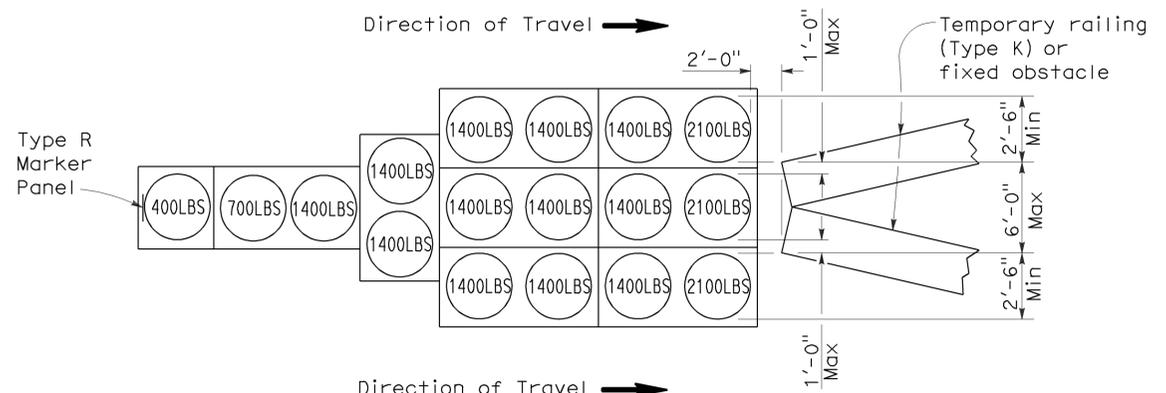
**ARRAY 'TU11'**

Approach speed less than 45 mph



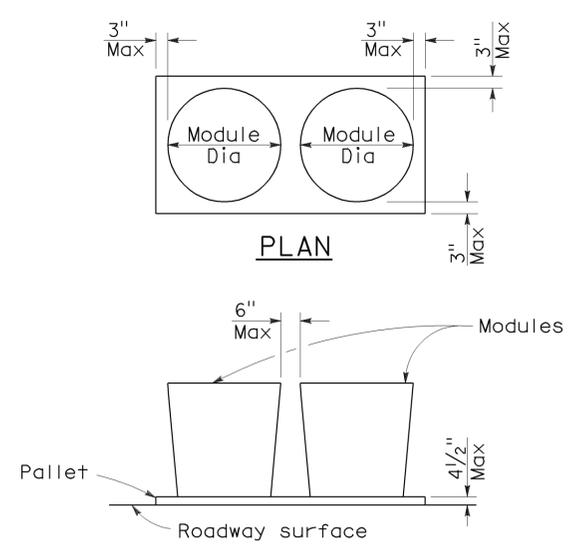
**ARRAY 'TU21'**

Approach speed 45 mph or more



**ARRAY 'TU17'**

Approach speed less than 45 mph



**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	Mad	99	22.7/29.4	37	42

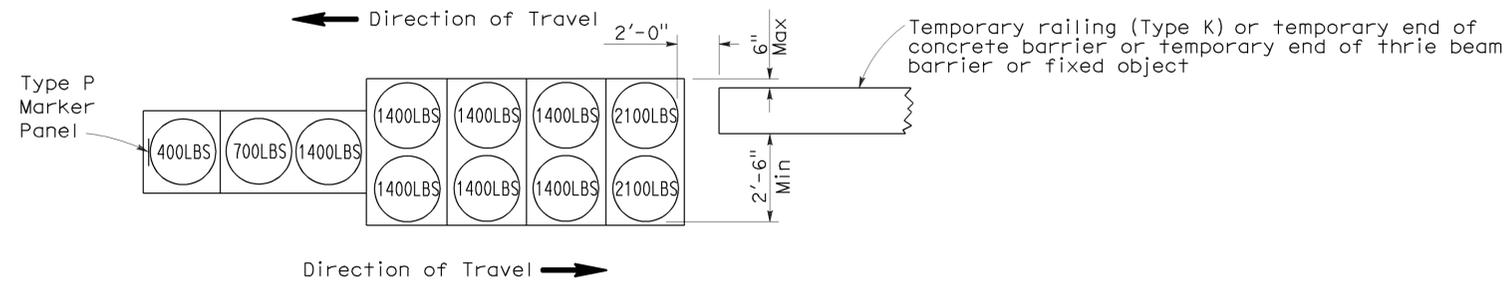
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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

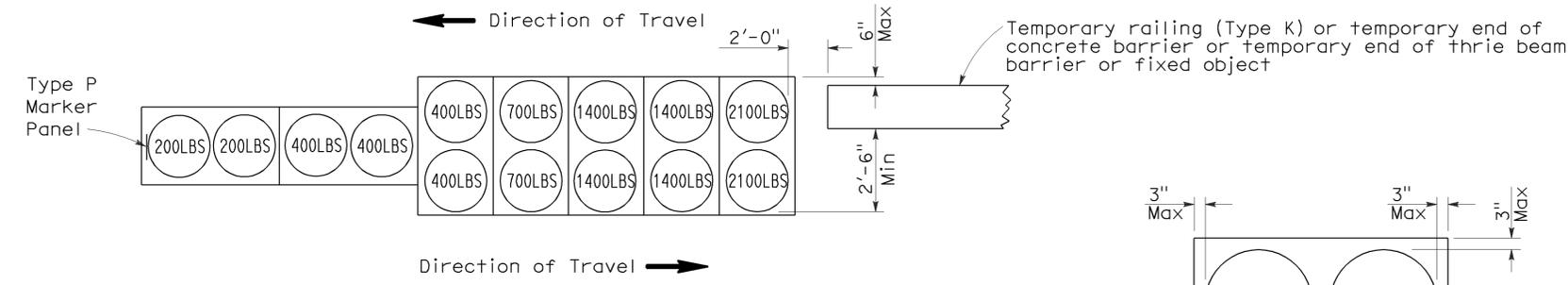
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To accompany plans dated 7-26-10



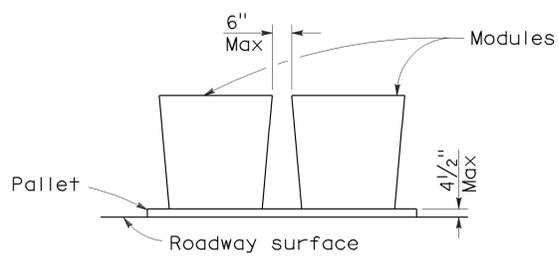
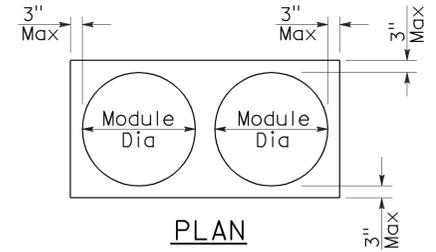
**ARRAY 'TB11'**

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	Mad	99	22.7/29.4	38	42

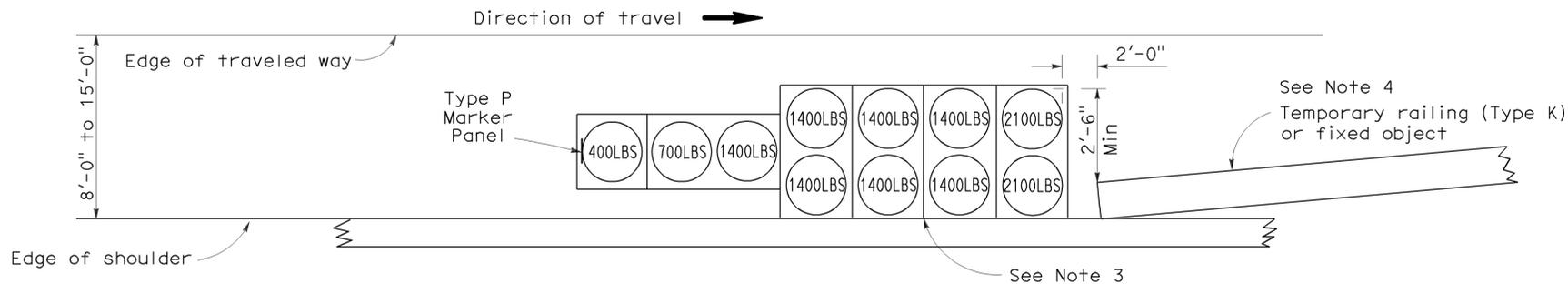
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

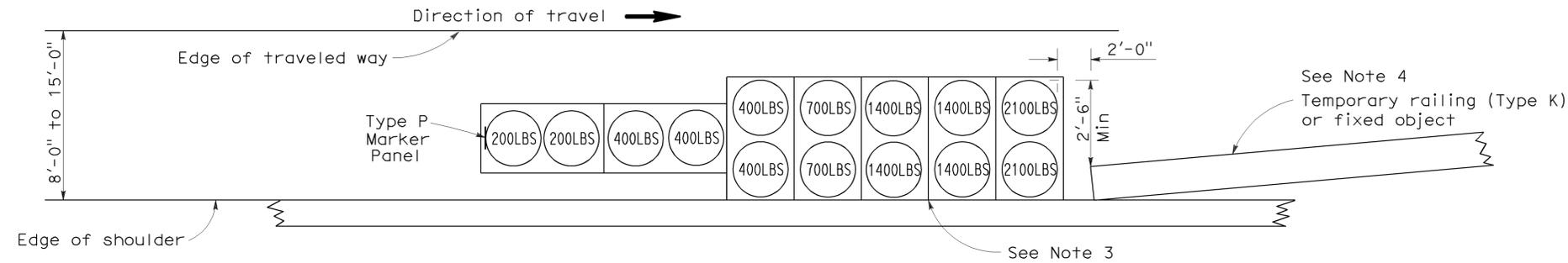
*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

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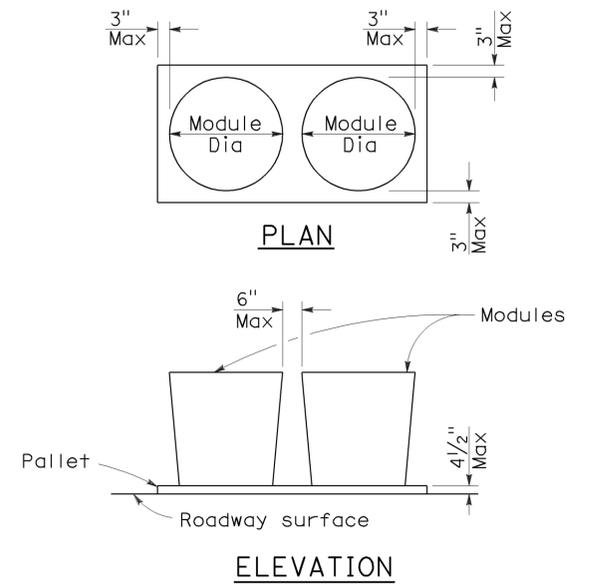
To accompany plans dated 7-26-10



**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

# 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	
MAS-4C	mas-4C	
MAS-5A	mas-5A	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MAS-5B	mas-5B	
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	Mad	99	22.7/29.4	39	42

REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

October 5, 2007  
PLANS APPROVAL DATE

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To accompany plans dated 7-26-10

## 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	Mad	99	22.7/29.4	40	42

Jeffrey 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

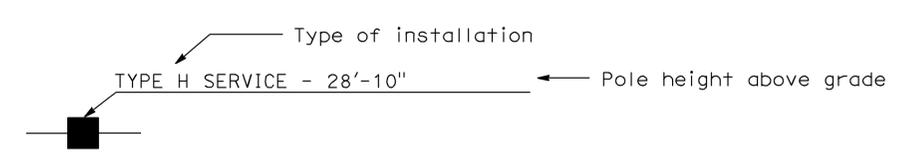
### SIGNAL EQUIPMENT

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.

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 NO SCALE

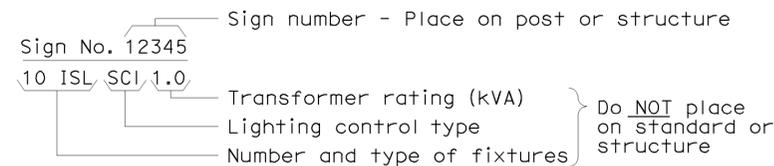
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B  
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

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

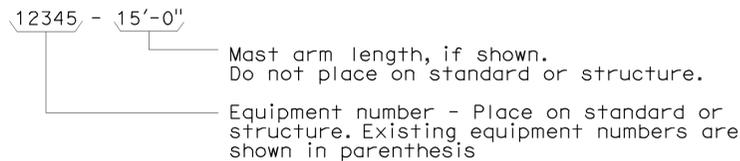
2006 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

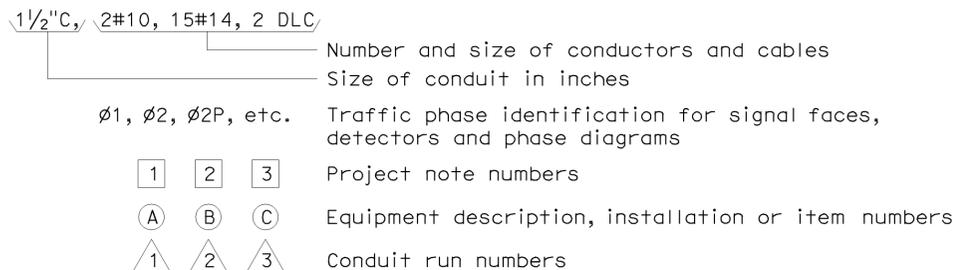
#### ILLUMINATED SIGN IDENTIFICATION NUMBER:



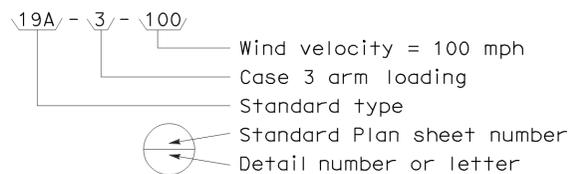
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



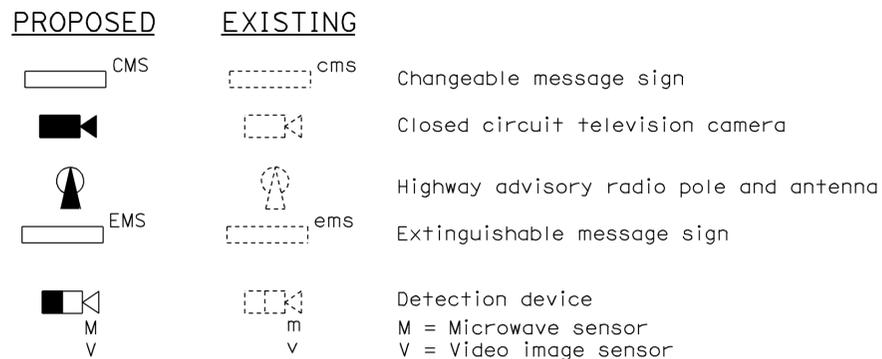
#### CONDUIT AND CONDUCTOR IDENTIFICATION:



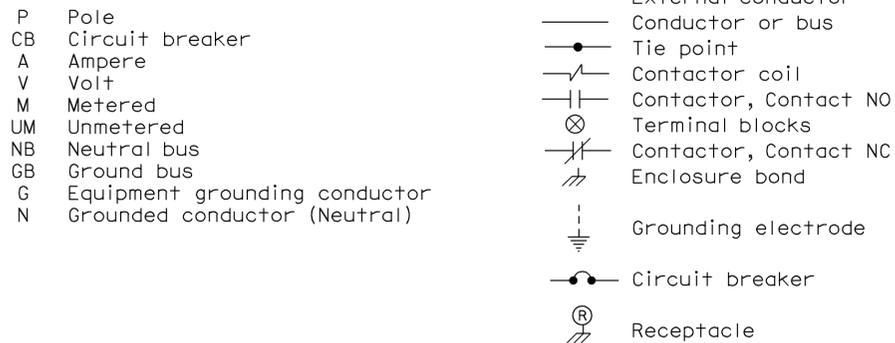
#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



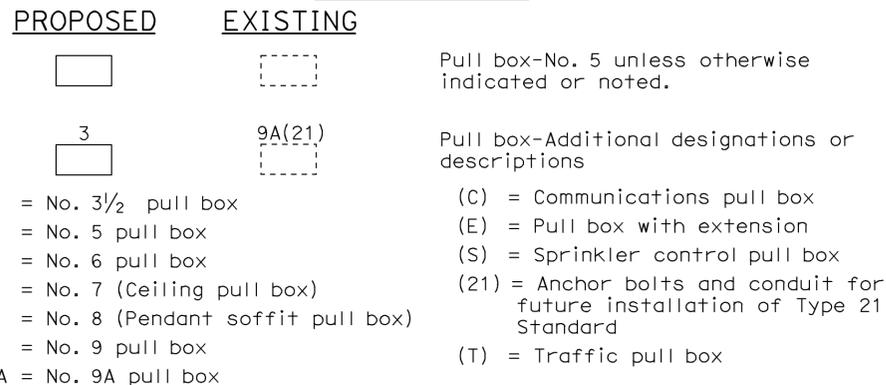
### MISCELLANEOUS EQUIPMENT



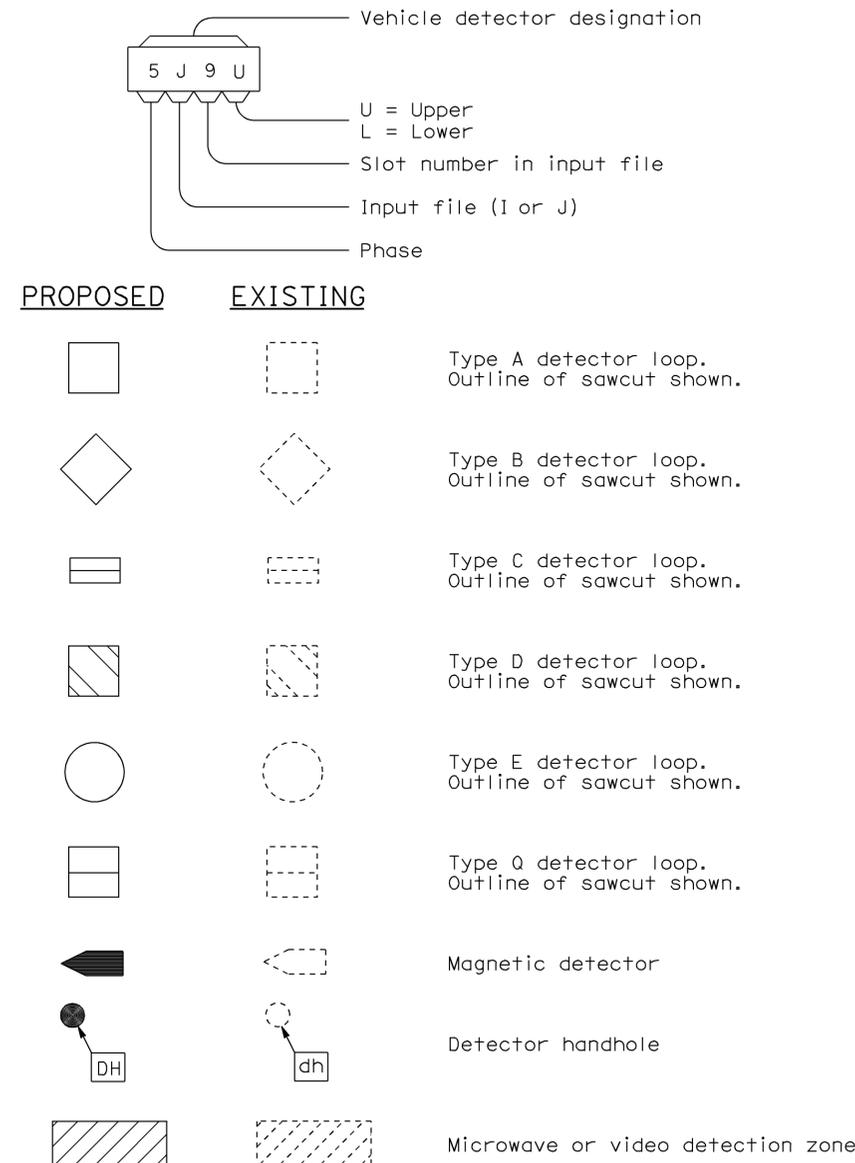
### WIRING DIAGRAM LEGEND



### PULL BOXES



### VEHICLE DETECTORS



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**(SYMBOLS AND ABBREVIATIONS)**  
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 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	Mad	99	22.7/29.4	42	42

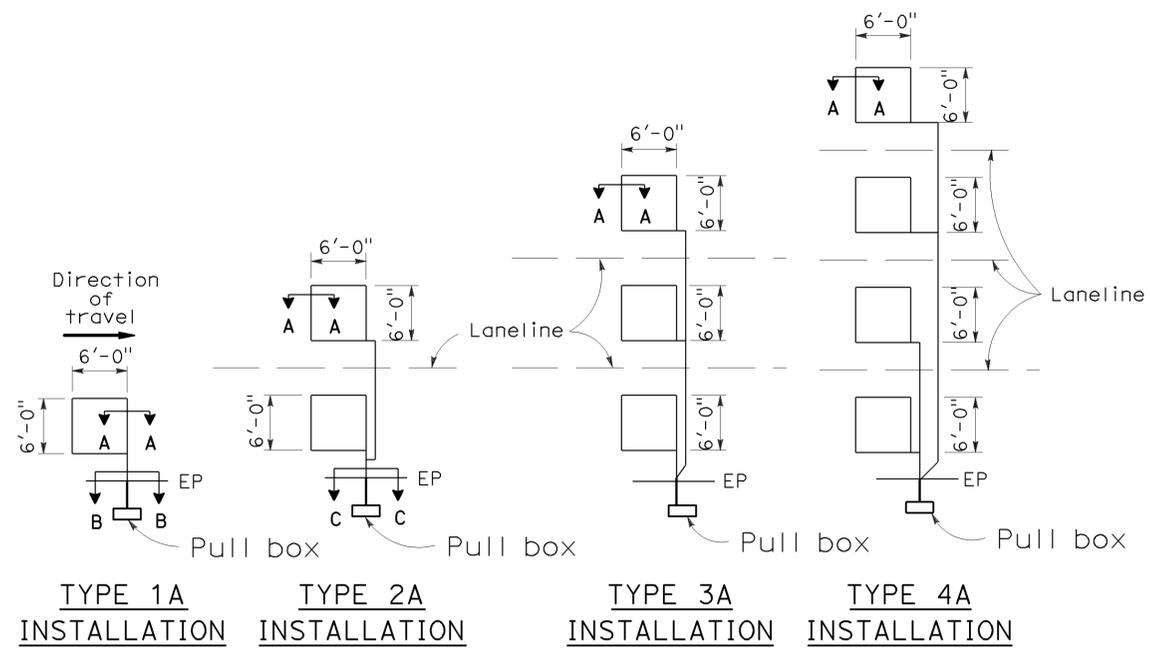
Jeffrey G. McRae  
 REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

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.



TYPE 1A INSTALLATION    TYPE 2A INSTALLATION    TYPE 3A INSTALLATION    TYPE 4A INSTALLATION

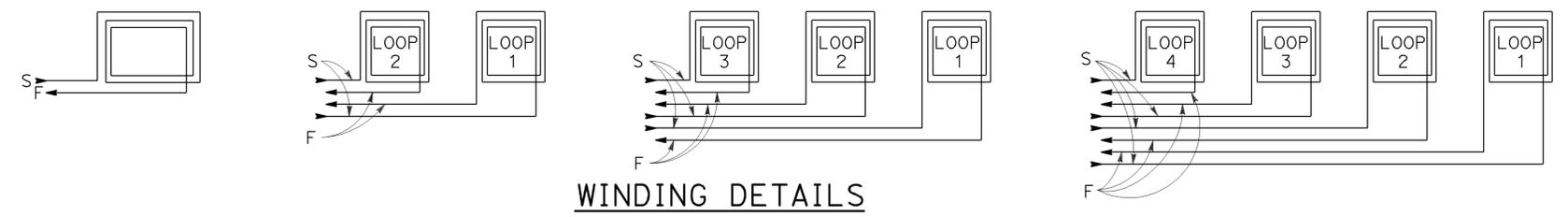
### SAWCUT DETAILS

(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)

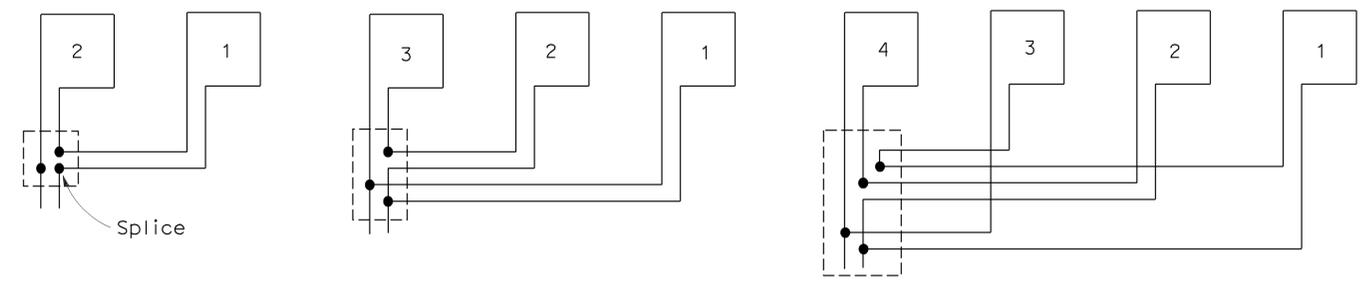
To accompany plans dated 7-26-10

2006 REVISED STANDARD PLAN RSP ES-5A



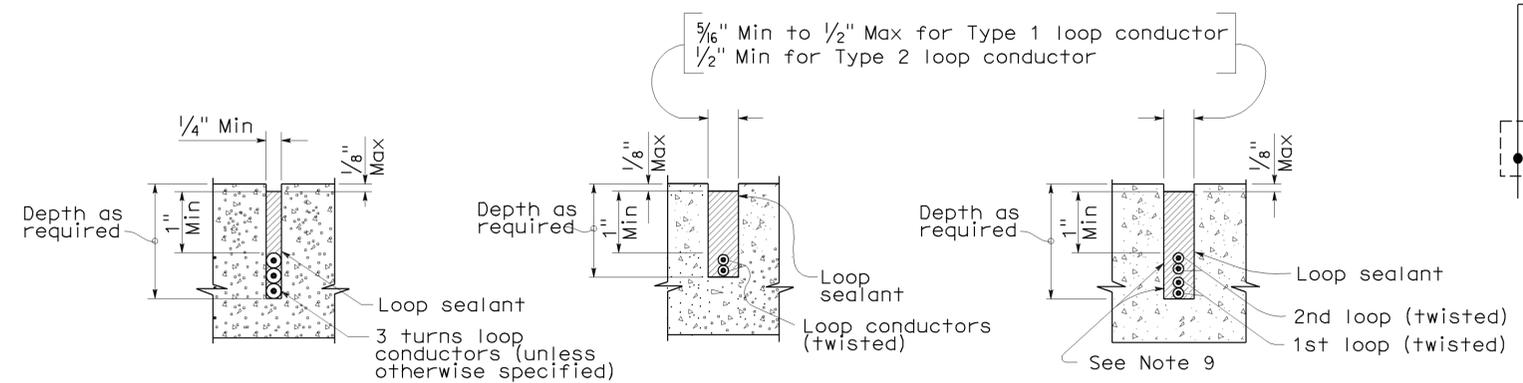
### WINDING DETAILS

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)

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NO SCALE

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**REVISED STANDARD PLAN RSP ES-5A**