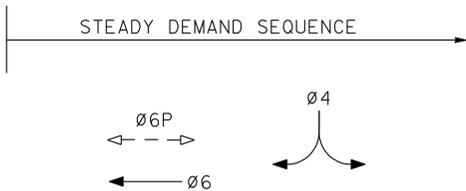


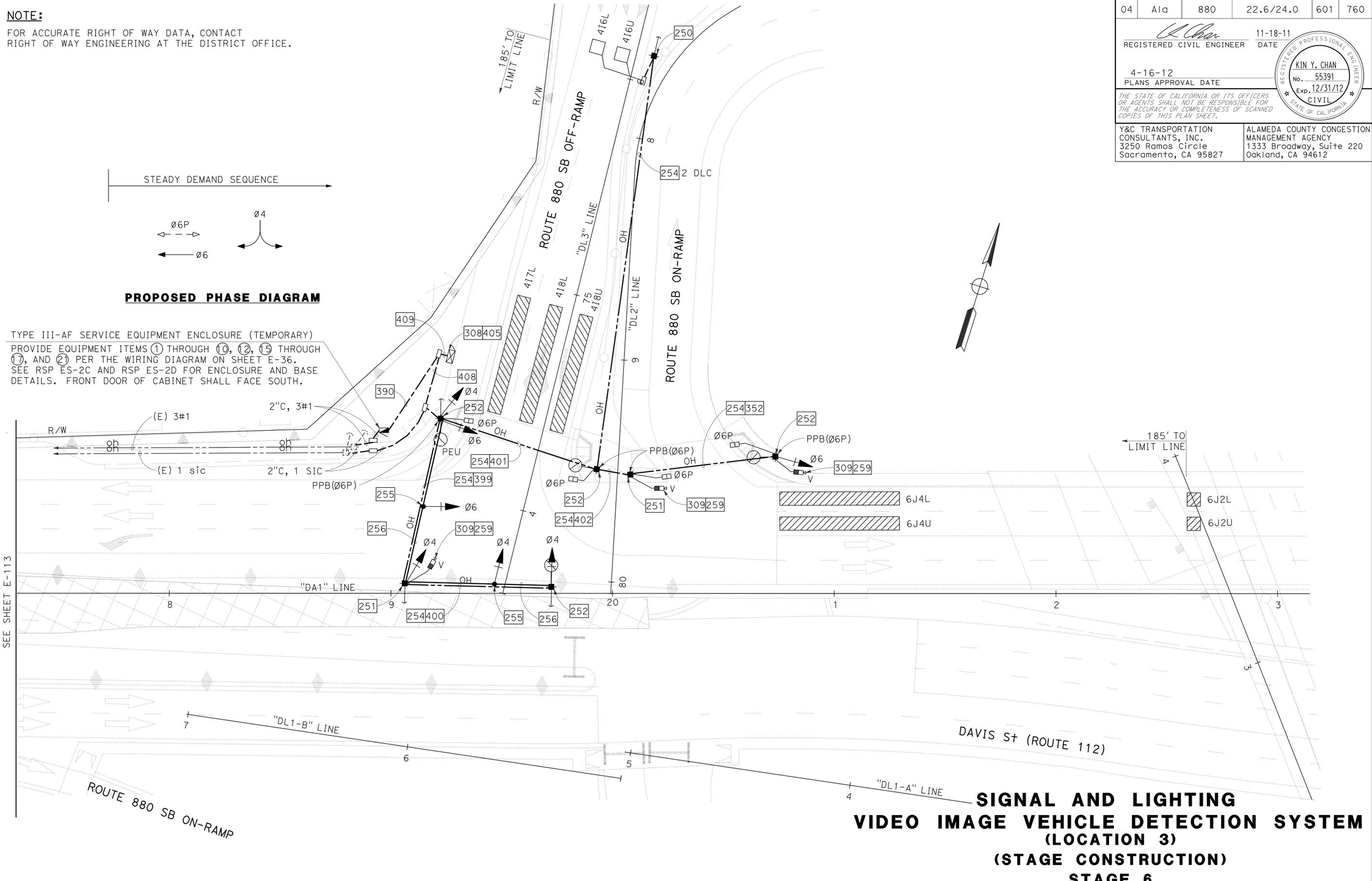
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	601	760
			11-18-11	DATE	
REGISTERED CIVIL ENGINEER			KIN Y. CHAN		
4-16-12			PLANS APPROVAL DATE		
			No. 55391		
			Exp. 12/31/12		
			CIVIL		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827			ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612		

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



PROPOSED PHASE DIAGRAM

TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (TEMPORARY)
PROVIDE EQUIPMENT ITEMS ① THROUGH ⑩, ⑫, ⑮ THROUGH ⑰, AND ⑱ PER THE WIRING DIAGRAM ON SHEET E-36.
SEE RSP ES-2C AND RSP ES-2D FOR ENCLOSURE AND BASE DETAILS. FRONT DOOR OF CABINET SHALL FACE SOUTH.



**SIGNAL AND LIGHTING
VIDEO IMAGE VEHICLE DETECTION SYSTEM
(LOCATION 3)
(STAGE CONSTRUCTION)
STAGE 6
SCALE: 1" = 20'**

E-115

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	REVISOR	DATE
Caltrans	MENG YANG	
	DAN YAU	
CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	CHECKED BY
TIMOTHY J. LEE		
BORDER LAST REVISED 7/2/2010	USERNAME => s121614	DGN FILE => 43a921ua115.dgn

LAST REVISION: DATE PLOTTED => 20-APR-2012
TIME PLOTTED => 07:02

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	602	760

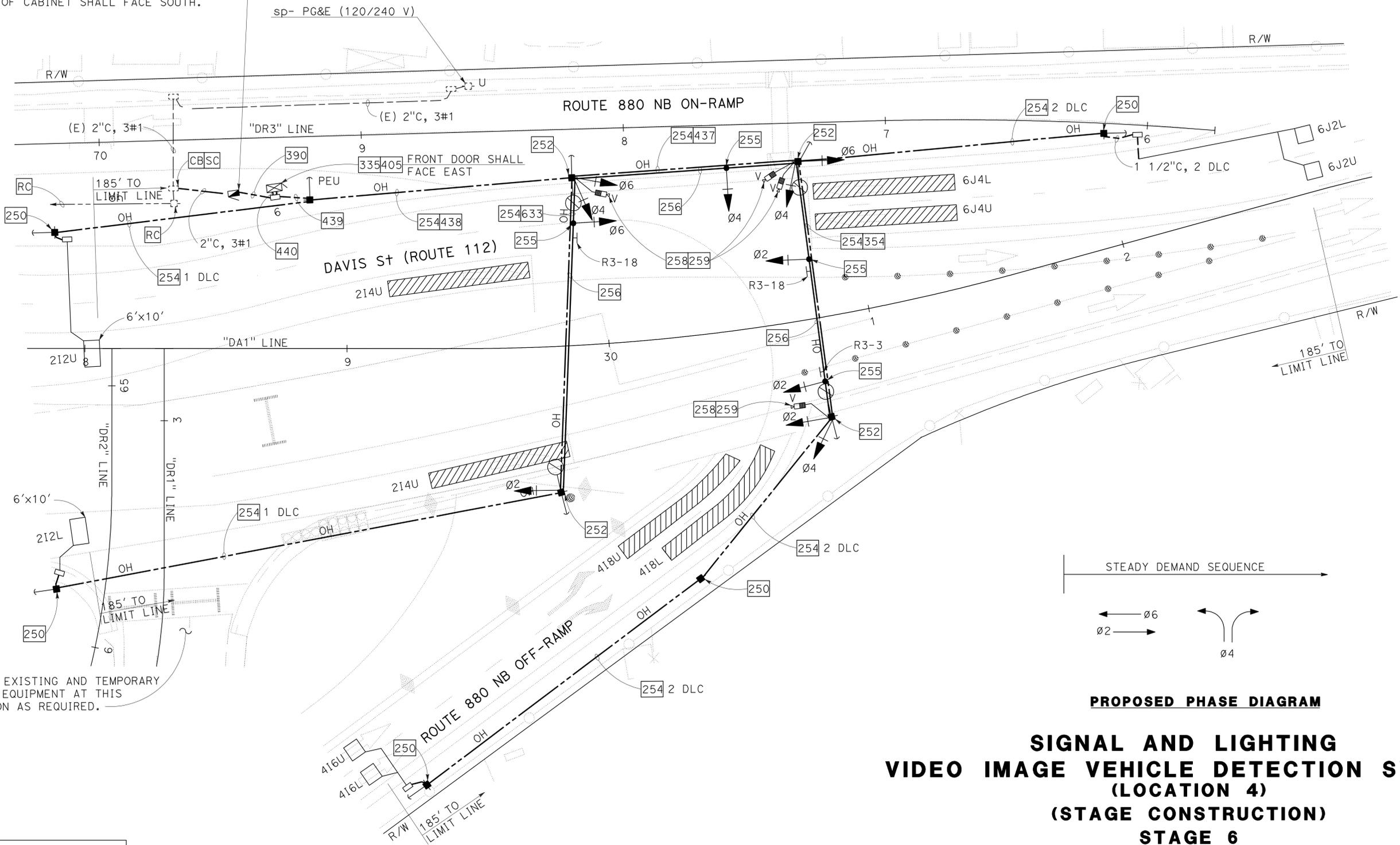
<i>K. Chan</i>	11-18-11
REGISTERED CIVIL ENGINEER	DATE
4-16-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER KIN Y. CHAN No. 55391 Exp. 12/31/12 CIVIL STATE OF CALIFORNIA	
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827	ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612

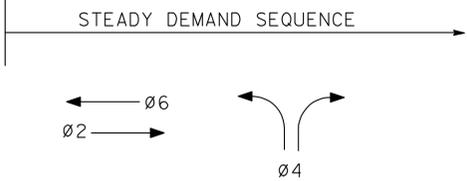
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- TEMPORARY EQUIPMENT SHALL BE REMOVED IN PREVIOUS STAGE UNLESS OTHERWISE NOTED ON THIS PLAN.

TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (TEMPORARY)
 PROVIDE EQUIPMENT ITEMS ① THROUGH ⑩, ⑫, ⑮ THROUGH ⑰, AND ⑱ PER THE WIRING DIAGRAM ON SHEET E-36.
 SEE RSP ES-2C AND RSP ES-2D FOR ENCLOSURE AND BASE DETAILS. FRONT DOOR OF CABINET SHALL FACE SOUTH.



REMOVE EXISTING AND TEMPORARY SIGNAL EQUIPMENT AT THIS LOCATION AS REQUIRED.



PROPOSED PHASE DIAGRAM
SIGNAL AND LIGHTING
VIDEO IMAGE VEHICLE DETECTION SYSTEM
(LOCATION 4)
(STAGE CONSTRUCTION)
STAGE 6
 SCALE: 1" = 20'
E-116

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 CONSULTANT - FUNCTIONAL SUPERVISOR
 CALCULATED/DESIGNED BY
 CHECKED BY
 REVISOR BY
 DATE REVISED
 MENG YANG
 DAN YAU
 TIMOTHY J. LEE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEETS E-51 TO E-55

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	603	760

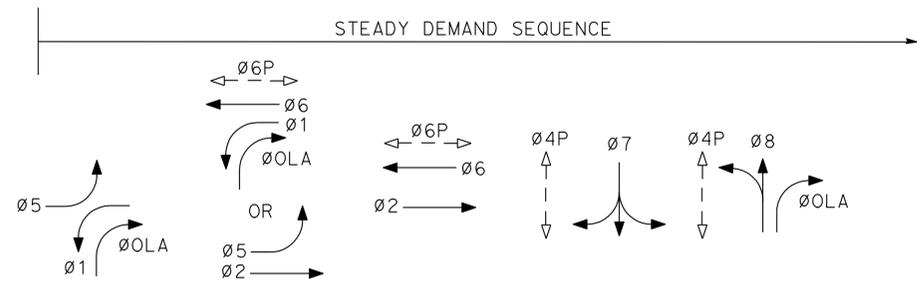
<i>Kin Y. Chan</i>	11-18-11
REGISTERED CIVIL ENGINEER	DATE
4-16-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
KIN Y. CHAN
 No. 55391
 Exp. 12/31/12
 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.

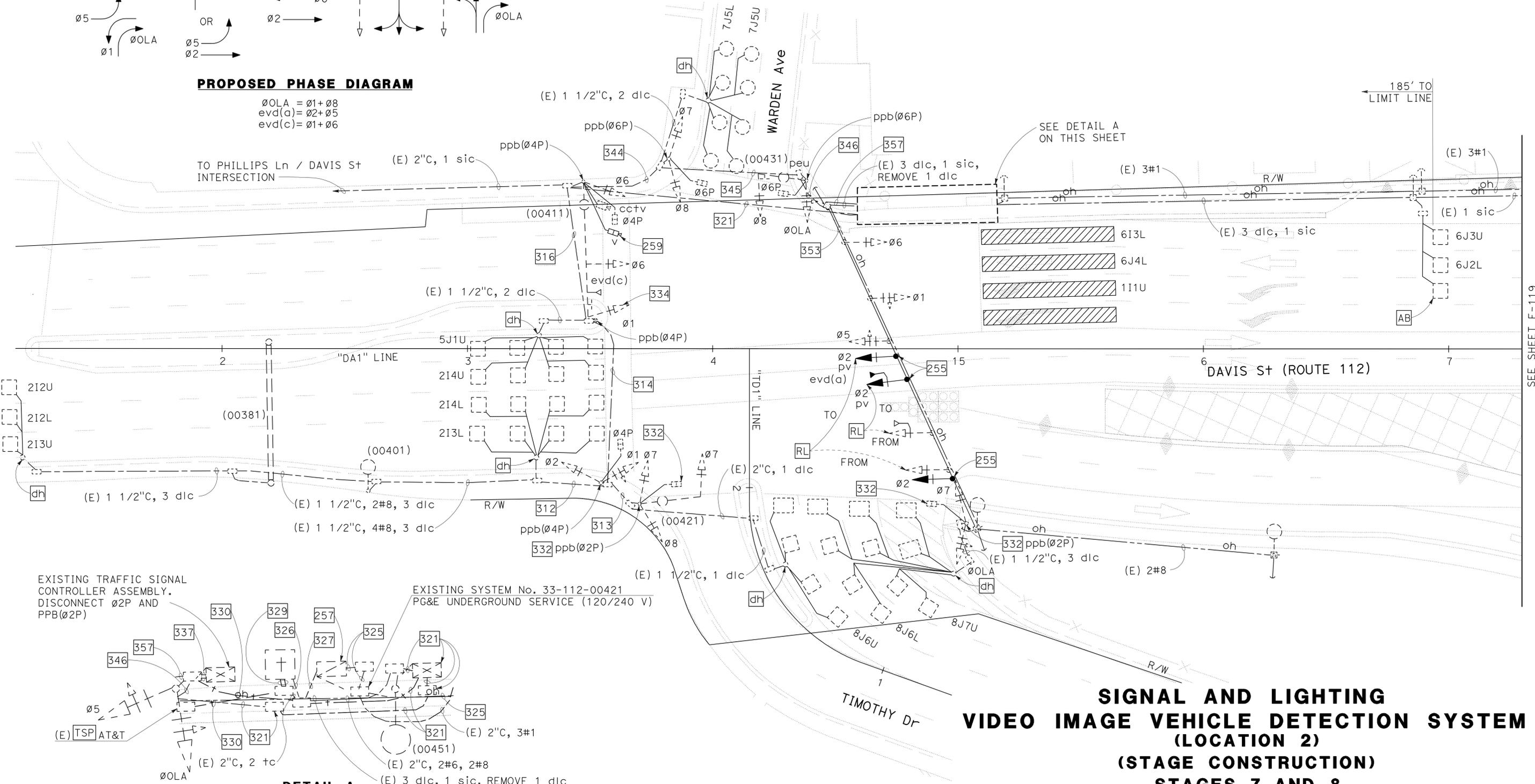
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827	ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612
---	--

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



PROPOSED PHASE DIAGRAM

ØOLA = Ø1+Ø8
evd(a) = Ø2+Ø5
evd(c) = Ø1+Ø6



EXISTING TRAFFIC SIGNAL CONTROLLER ASSEMBLY. DISCONNECT Ø2P AND PPB(Ø2P)

EXISTING SYSTEM No. 33-112-00421 PG&E UNDERGROUND SERVICE (120/240 V)

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEETS E-51 TO E-55

DETAIL A
SCALE: 1" = 10'

APPROVED FOR ELECTRICAL WORK ONLY

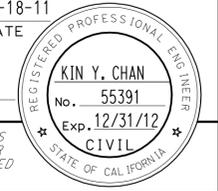
SIGNAL AND LIGHTING VIDEO IMAGE VEHICLE DETECTION SYSTEM (LOCATION 2) (STAGE CONSTRUCTION) STAGES 7 AND 8
SCALE: 1" = 20'

E-117

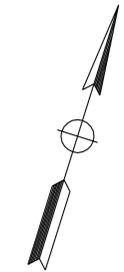
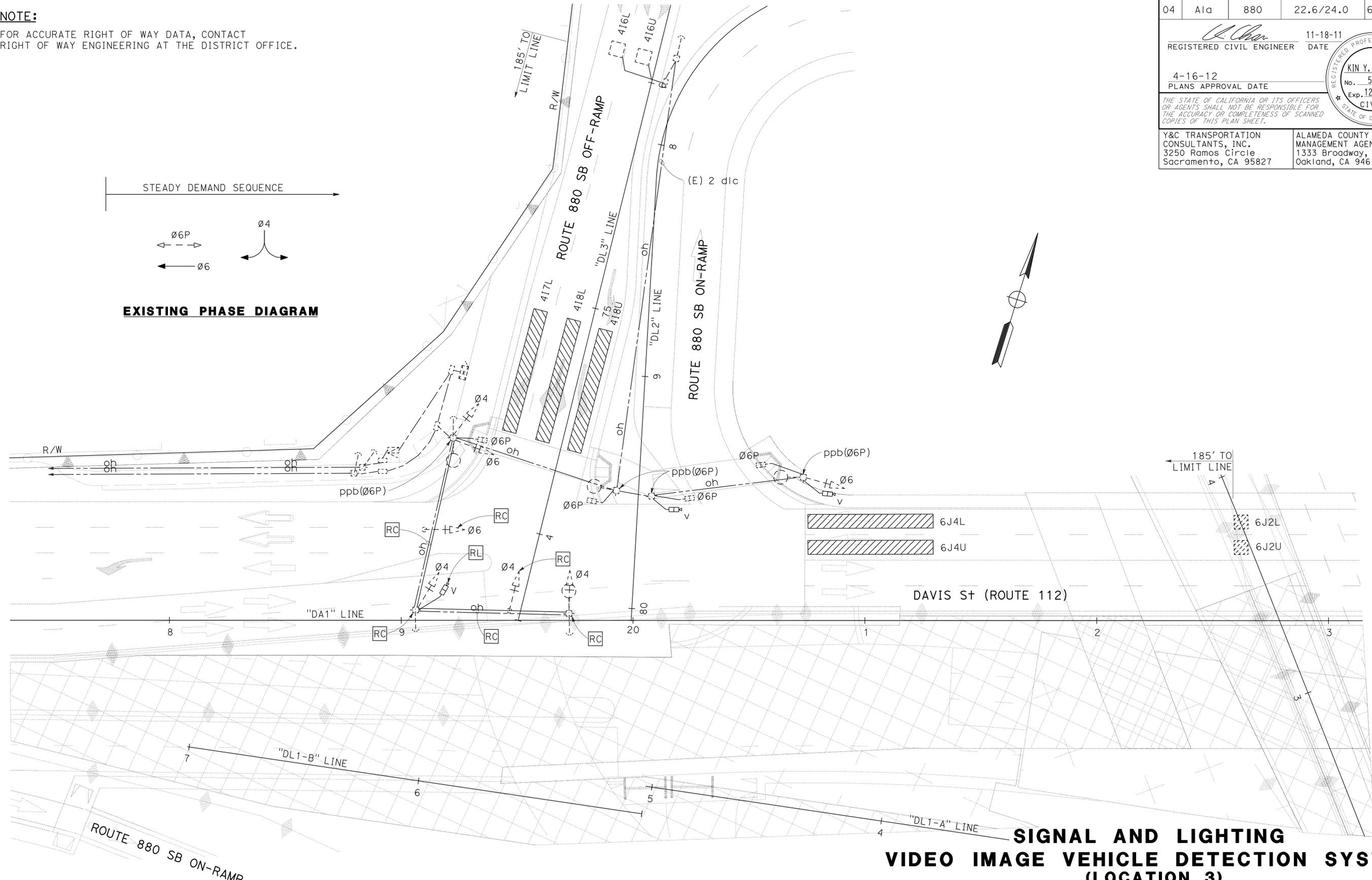
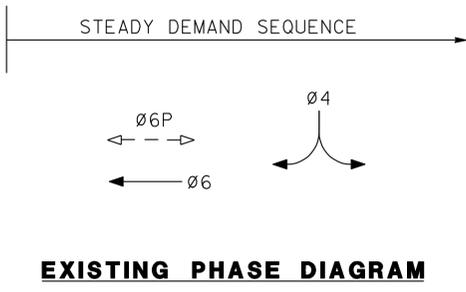
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE
 CALCULATED/DESIGNED BY: MING YANG
 CHECKED BY: DAN YAU
 REVISED BY: DATE REVISION

SEE SHEET E-119
 DATE PLOTTED => 20-APR-2012
 TIME PLOTTED => 07:03

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	604	760
			REGISTERED CIVIL ENGINEER	DATE	
			4-16-12	11-18-11	
			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.					
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827			ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612		



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



**SIGNAL AND LIGHTING
 VIDEO IMAGE VEHICLE DETECTION SYSTEM
 (LOCATION 3)
 (STAGE CONSTRUCTION)
 STAGES 7 AND 8
 SCALE: 1" = 20'**

EXISTING SIGNAL AND LIGHTING

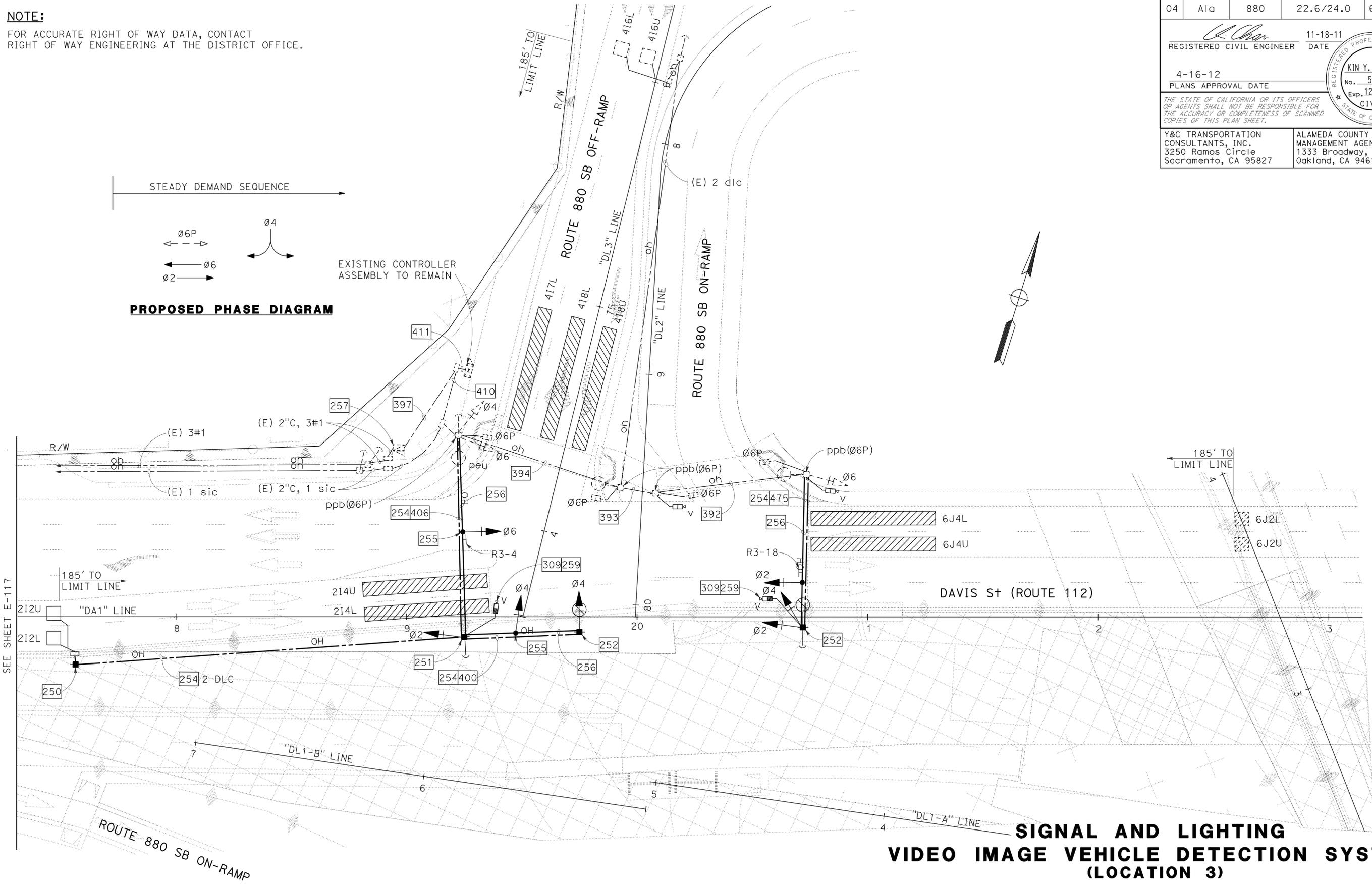
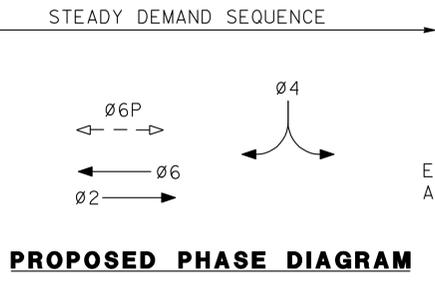
APPROVED FOR ELECTRICAL WORK ONLY

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEETS E-51 TO E-55

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	REVISOR	DATE
Caltrans	MENG YANG	
	DAN YAU	
CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	CHECKED BY
TIMOTHY J. LEE		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	605	760
			11-18-11	DATE	
			4-16-12	PLANS APPROVAL DATE	
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827			ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612		

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



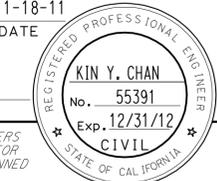
**SIGNAL AND LIGHTING
 VIDEO IMAGE VEHICLE DETECTION SYSTEM
 (LOCATION 3)
 (STAGE CONSTRUCTION)
 STAGES 7 AND 8
 SCALE: 1" = 20'**

FOR NOTES, ABBREVIATIONS AND
 LEGEND, SEE SHEETS E-51 TO E-55

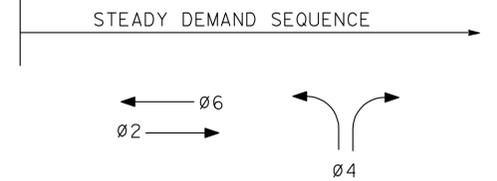
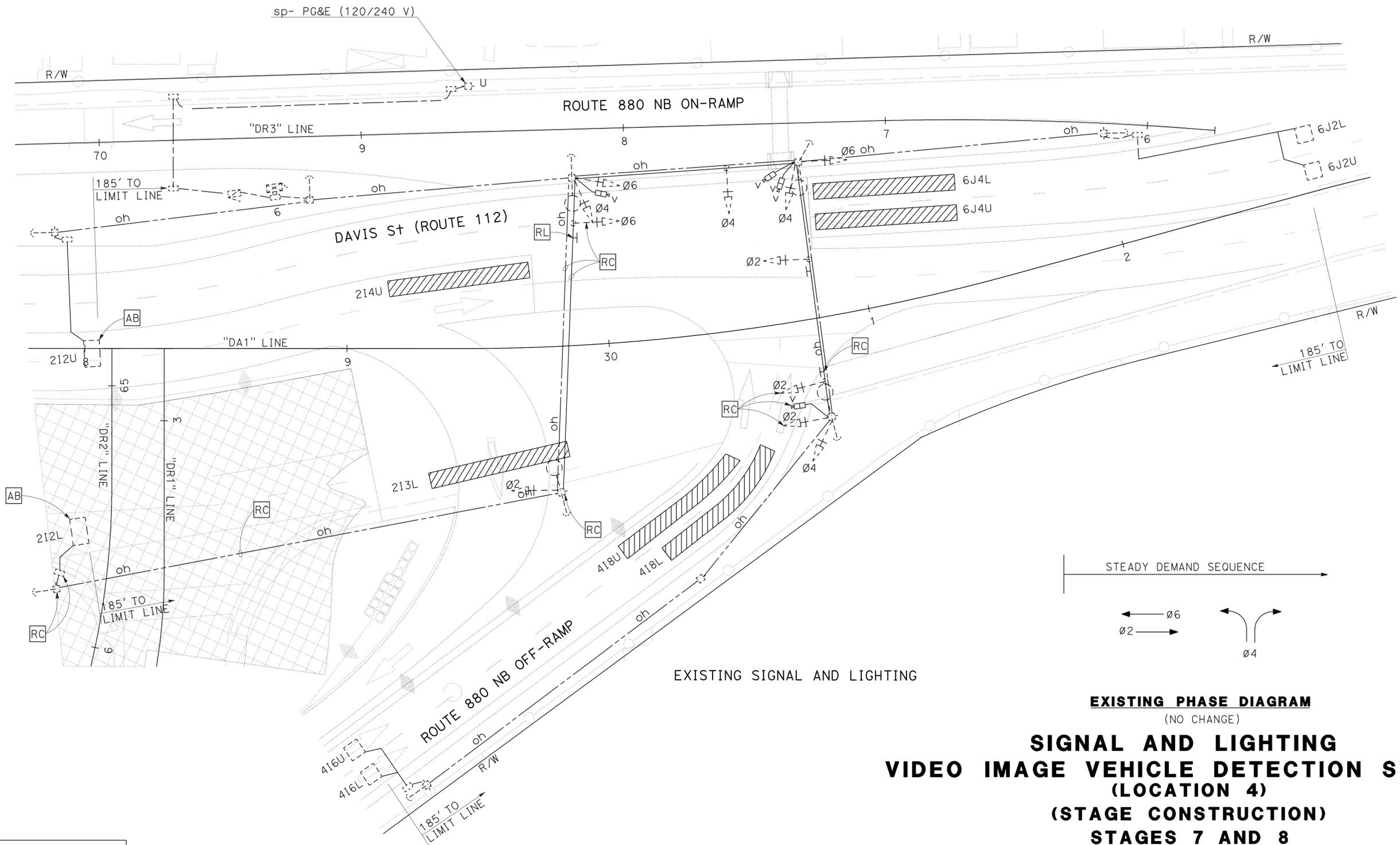
APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
	TIMOTHY J. LEE	CHECKED BY	MENG YANG
			DAN YAU
			DATE REVISED

LAST REVISION: DATE PLOTTED => 20-APR-2012
 11-18-11 TIME PLOTTED => 07:03

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	606	760
 REGISTERED CIVIL ENGINEER			11-18-11 DATE		
4-16-12 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827			ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612		

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



EXISTING PHASE DIAGRAM
 (NO CHANGE)

**SIGNAL AND LIGHTING
 VIDEO IMAGE VEHICLE DETECTION SYSTEM
 (LOCATION 4)
 (STAGE CONSTRUCTION)
 STAGES 7 AND 8
 SCALE: 1" = 20'**

E-120

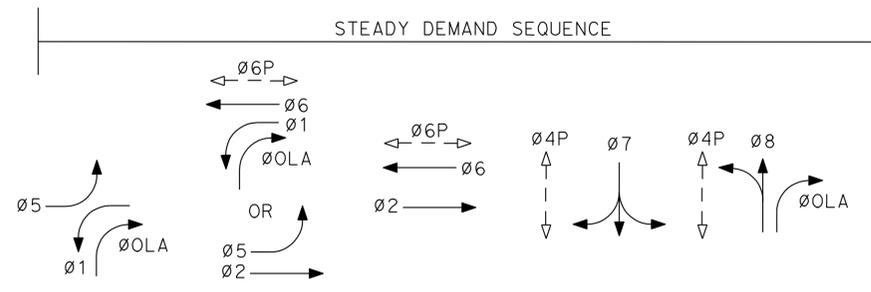
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEETS E-51 TO E-55

APPROVED FOR ELECTRICAL WORK ONLY

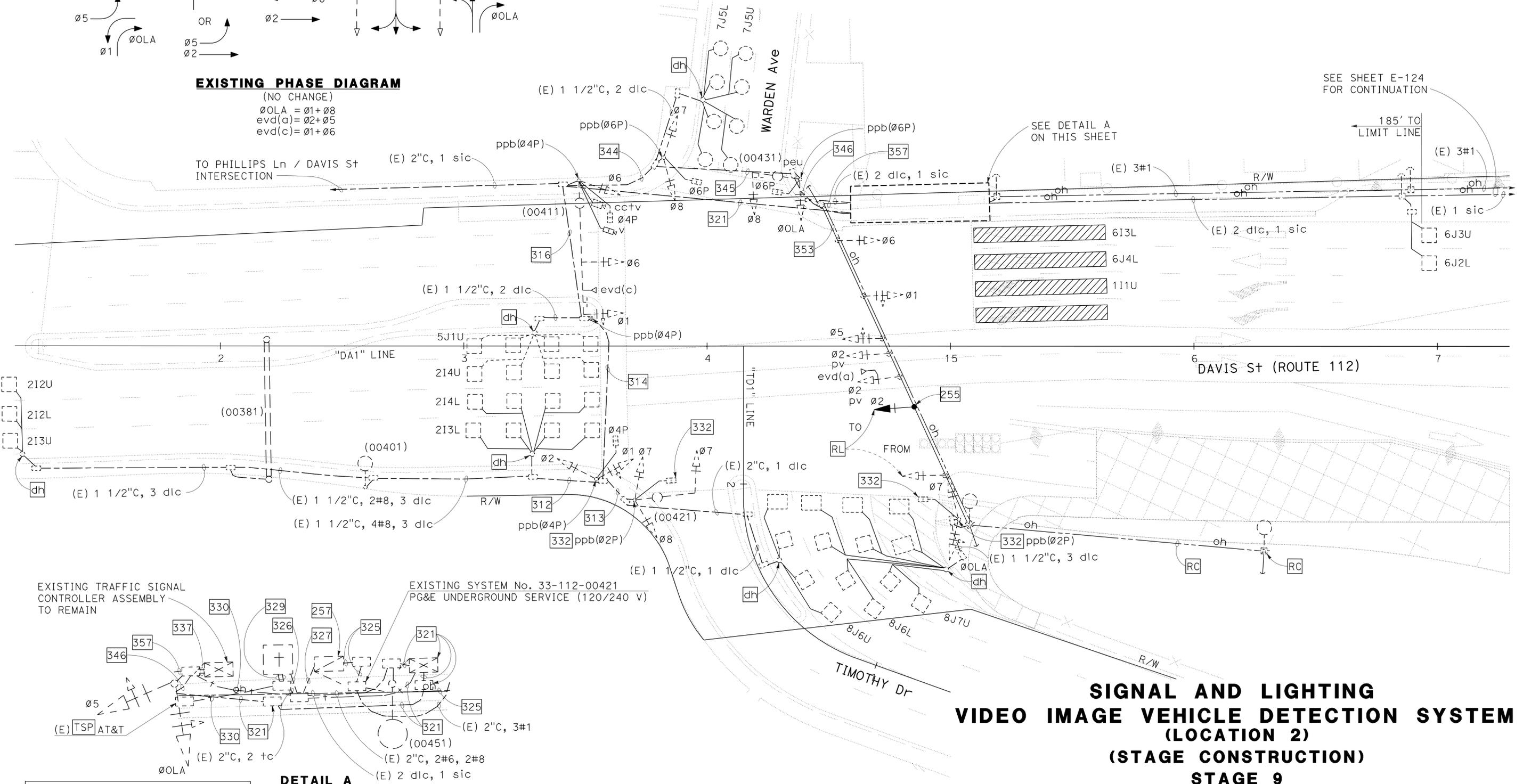
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
	TIMOTHY J. LEE	MENG YANG	DAN YAU
		CHECKED BY	DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	608	760
			11-18-11	DATE	
REGISTERED CIVIL ENGINEER			KIN Y. CHAN		
4-16-12			PLANS APPROVAL DATE		
			No. 55391		
			Exp. 12/31/12		
			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.					
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827			ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612		

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



EXISTING PHASE DIAGRAM
(NO CHANGE)
ØOLA = Ø1+Ø8
evd(a) = Ø2+Ø5
evd(c) = Ø1+Ø6



SEE SHEET E-124 FOR CONTINUATION

SEE DETAIL A ON THIS SHEET

185' TO LIMIT LINE

SIGNAL AND LIGHTING VIDEO IMAGE VEHICLE DETECTION SYSTEM (LOCATION 2) (STAGE CONSTRUCTION) STAGE 9
SCALE: 1" = 20'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEETS E-51 TO E-55

DETAIL A
SCALE: 1" = 10'

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

REVISOR BY DATE

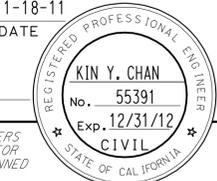
MENG YANG DAN YAU

CALCULATED-DESIGNED BY CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR
TIMOTHY J. LEE

DATE PLOTTED => 20-APR-2012
TIME PLOTTED => 07:03

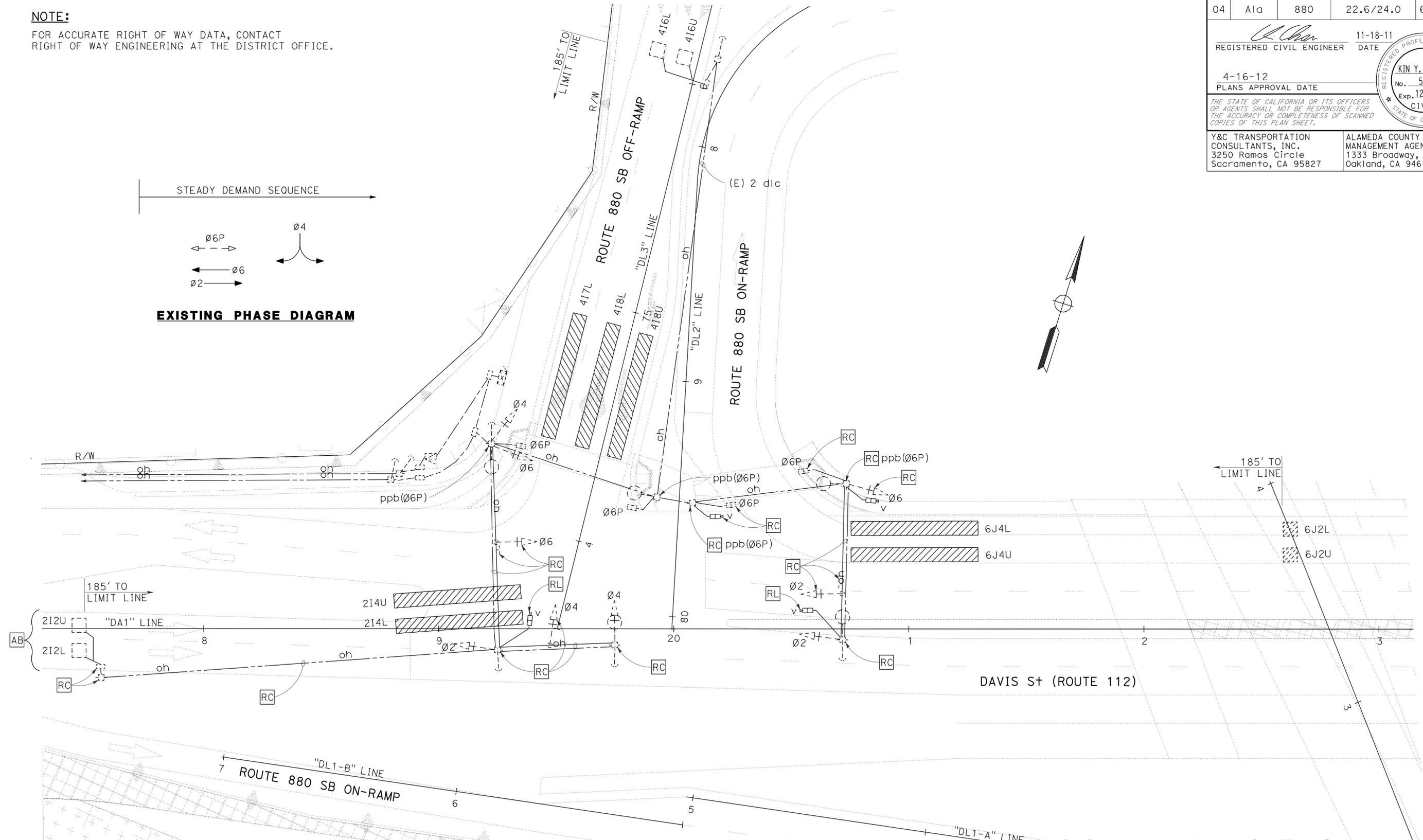
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	609	760

 11-18-11
 REGISTERED CIVIL ENGINEER DATE
 4-16-12
 PLANS APPROVAL DATE


THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.
 Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827
 ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE
 CALCULATED/DESIGNED BY: [Blank]
 CHECKED BY: [Blank]
 MENG YANG
 DAN YAU
 REVISED BY: [Blank]
 DATE REVISED: [Blank]



SIGNAL AND LIGHTING
VIDEO IMAGE VEHICLE DETECTION SYSTEM
(LOCATION 3)
(STAGE CONSTRUCTION)
STAGE 9
 SCALE: 1" = 20'

APPROVED FOR ELECTRICAL WORK ONLY

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEETS E-51 TO E-55

LAST REVISION: 11-18-11 DATE PLOTTED => 20-APR-2012 TIME PLOTTED => 07:03

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	611	760

11-18-11
REGISTERED CIVIL ENGINEER DATE

4-16-12
PLANS APPROVAL DATE

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

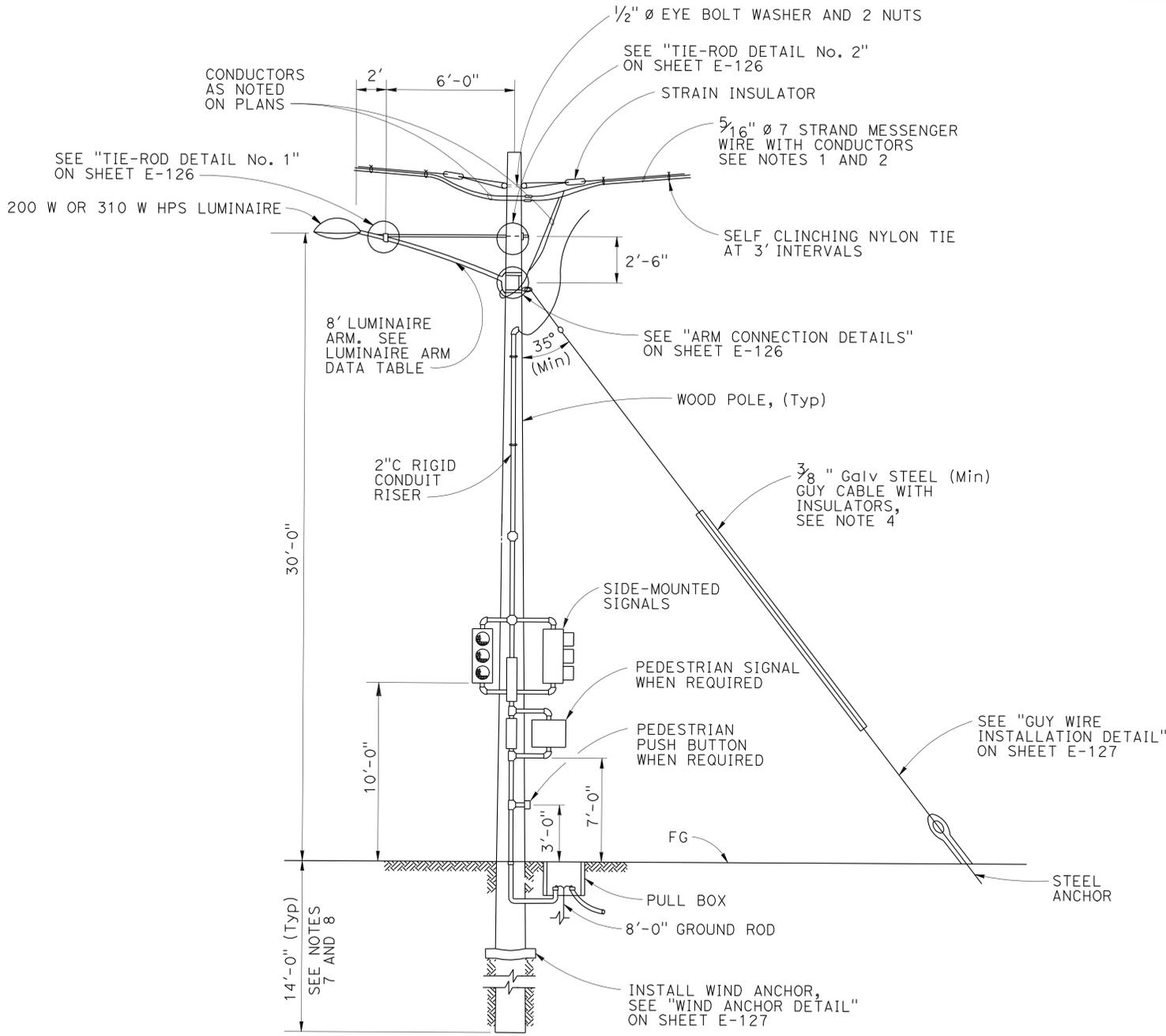
Y&C TRANSPORTATION CONSULTANTS, INC.
3250 Ramos Circle
Sacramento, CA 95827

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
1333 Broadway, Suite 220
Oakland, CA 94612

KIN Y. CHAN
No. 55391
Exp. 12/31/12
CIVIL
STATE OF CALIFORNIA

LUMINAIRE ARM DATA			
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS
8'-0"	2'-6" ±	3/2"	0.1196"

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



TYPICAL WOOD POLE SUPPORT WITH TRAFFIC SIGNAL AND LUMINAIRE MOUNTINGS

GENERAL NOTES:

SPECIFICATIONS

1. AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS DATED 2001.
2. GENERAL ORDER No. 95 OF PUBLIC UTILITIES COMMISSION.
3. NATIONAL ELECTRICAL SAFETY CODE.
4. CALTRANS STANDARD SPECIFICATIONS MAY 2006.

LOADING

WIND LOADINGS: 85 MPH.

UNIT STRESSES

TIMBER POLES: Fb = 1850 psi TAPERED TREATED ROUND POLE
Fv = 110 psi ASTM D2899 STANDARD
E = 1500 x 10³ psi

TREATMENT

TO CONFORM WITH SECTION 86 STANDARD SPECIFICATIONS.

NOTES:

1. ALL OVERHEAD CABLES SHALL BE INSTALLED WITH 20'-0" MINIMUM OVERHEAD CLEARANCE.
2. CONDUCTORS SHALL BE SUSPENDED FROM SPAN-WIRE AS FOLLOWS:
A) MAIN RUN 5/16" SPAN-WIRE WITH A MAXIMUM OF 4.5% SAG.
NO SPARE CONDUCTORS ALLOWED EXCEPT AS NOTED.
3. OVERHEAD LINE CONSTRUCTION NOT SPECIFICALLY COVERED HERE SHALL CONFORM WITH THE PROVISIONS OF GENERAL ORDER No. 95 OF PUBLIC UTILITIES COMMISSION.
4. WOOD POLES SHALL BE STABILIZED USING GUY WIRES, BREAST BLOCKS OR RAKES AT EACH DEAD END, CORNER, OH DROP OR LINE DEVIATION MORE THAN 15° FROM STRAIGHT LINE. THE DIRECTION OF THE GUY SHALL COUNTERACT THE RESULTANT OF UNBALANCED FORCES APPLIED TO POLE. WHERE SPACE OR CONFLICT PREVENT GUY INSTALLATION, A DIAGONAL BRACE SHALL BE USED. THE BRACE SHALL BE WOOD AND SHALL BE CONNECTED TO THE POLE BY MEANS TO SATISFY STRUCTURAL AND ELECTRICAL REQUIREMENTS. THE DIRECTION OF THE BRACE SHALL COUNTERACT THE RESULTANT OF UNBALANCED HORIZONTAL FORCE OF 2000 POUNDS (Min) APPLIED TO THE POLE.
5. GUY SHALL BE ATTACHED TO POLE AS NEARLY AS PRACTICAL TO THE CENTER OF CONDUCTORS LOAD, OR 3'-0" Max FROM THE TOP OF WOOD POLE OTHERWISE, SEE NOTE 4.
6. ALL ATTACHMENTS SHALL BE MOUNTED WITH STAINLESS STEEL STRAPS OR OTHER MANUFACTURERS METHODS WITHOUT DRILLING HOLES IN POLE, EXCEPT AS SHOWN. DRILLING THROUGH POLE WILL REQUIRE THE ENGINEER'S APPROVAL.
7. FOUNDATION DESIGN IS BASED ON AASHTO 2001 ARTICLE 13.6 BROMS' APPROXIMATE PROCEDURE ASSUMING A COHESSIONLESS MATERIAL. THE ANGLE OF INTERNAL FRICTION USED IS 30° AND UNIT WEIGHT OF SOIL USED IS 120 LB/FT³. THE CONTRACTOR TO VERIFY ACTUAL SOIL CONDITION.
8. IF POLE IS LOCATED ON A 2:1 OR STEEPER SLOPE, ADD 2' EXTRA FOR EMBEDMENT.
9. SEE SHEETS E-126 TO E-128 FOR DETAILS.
10. FOR DETAILS NOT SHOWN, SEE "2006 STANDARD PLANS" AND "2006 REVISED STANDARD PLANS".
11. ALL TEMPORARY POLES SUPPORT OH CONDUCTORS. ATTACH LUMINAIRE ARM OR COMBINATION OF ATTACHMENTS AS SPECIFIED AT LOCATIONS WHERE INDICATED ON ELECTRICAL SHEETS.
12. ATTACHMENTS SHOWN ON POLE APPLY AS NOTED ON PLANS.
13. WOOD POLES AND UTILITY GRADE WIRES SHALL CONFORM TO CALTRANS STANDARD SPECIFICATIONS MAY 2006.

ELECTRICAL DETAILS (STAGE CONSTRUCTION)

NO SCALE

E-125

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT SUPERVISOR: TIMOTHY J. LEE

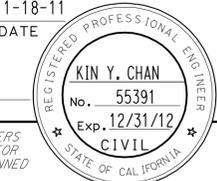
FUNCTIONAL SUPERVISOR: MING YANG

DESIGNED BY: MING YANG

CHECKED BY: DAN YAU

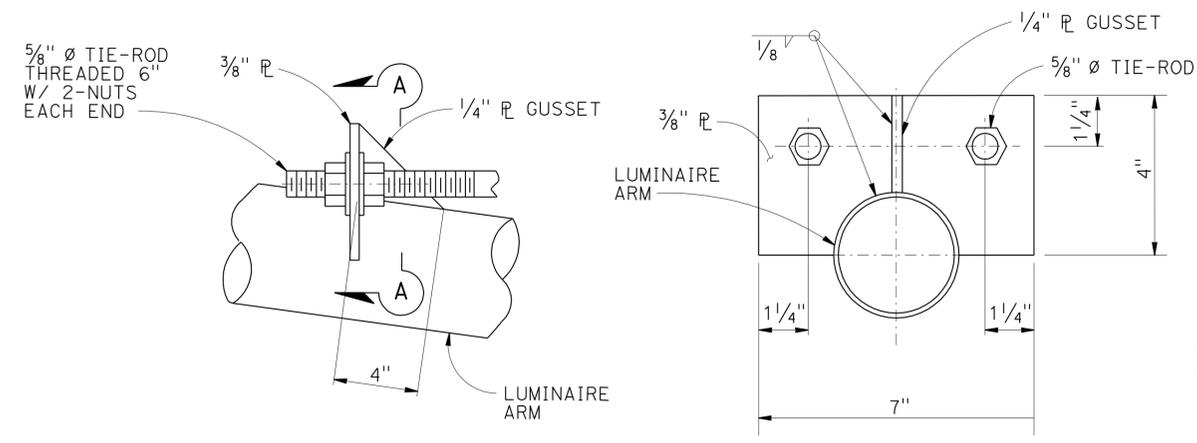
REVISIONS:

NO.	DATE	REVISION

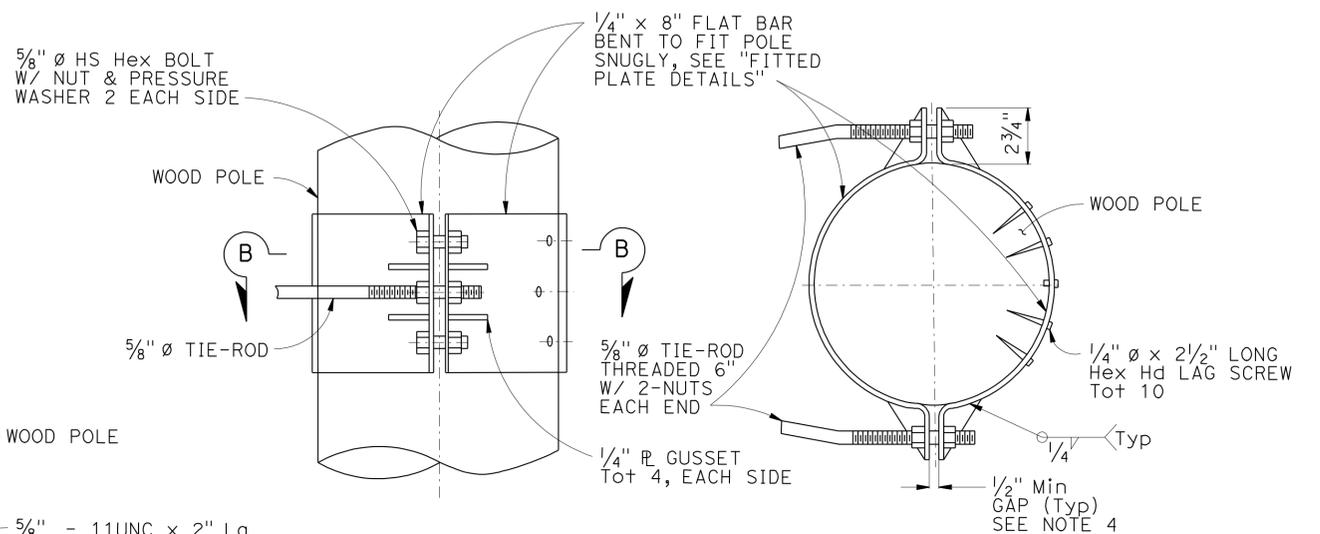
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	612	760
 REGISTERED CIVIL ENGINEER			11-18-11 DATE		
4-16-12 PLANS APPROVAL DATE					
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827			ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612		

NOTES:

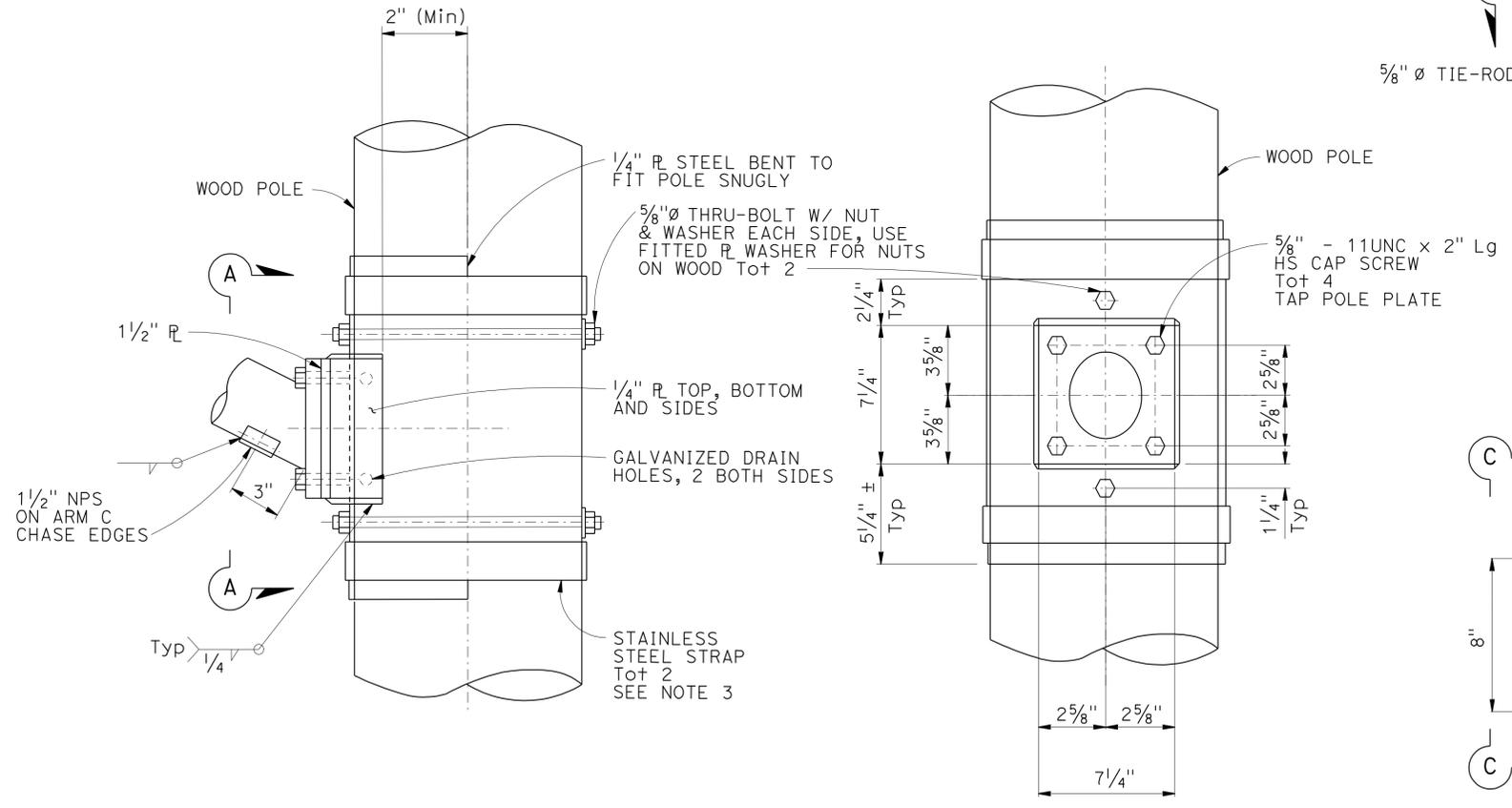
1. ALL HARDWARE AND STEEL SHALL BE GALVANIZED AFTER FABRICATION.
2. ARM BASE CONNECTION DETAILS SHALL BE IN COMPLIANCE WITH STANDARD PLANS DETAIL SHEET ES-6D WITH NOTED MODIFICATIONS.
3. 2000 LB Min CAPACITY STRAP SYSTEM SHALL BE USED FOR TOP AND BOTTOM OF PLATE.
4. THE CONTRACTOR TO VERIFY POLE DIMENSIONS AT TIE-ROD ATTACHMENT HEIGHT. FABRICATE 8" FLAT BAR WITH "L" DIMENSION TO MAINTAIN AN OPEN GAP BETWEEN ENCASEMENT IN FINISHED INSTALLATION.



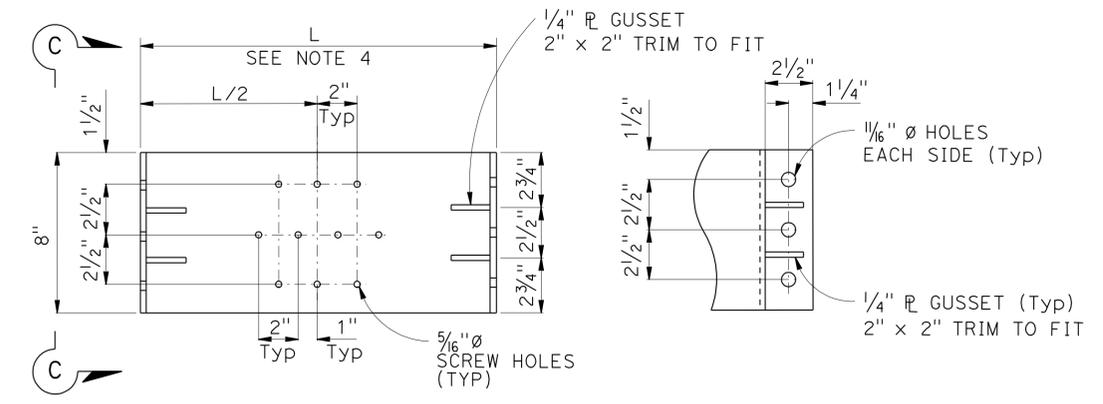
ELEVATION SECTION A-A
TIE-ROD DETAIL No. 1



ELEVATION SECTION B-B
TIE-ROD DETAIL No. 2



ELEVATION VIEW A-A
ARM CONNECTION DETAILS

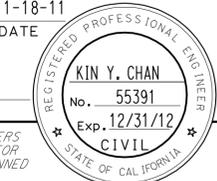


ELEVATION SECTION C-C
FITTED PLATE DETAILS
NOTE: 2 REQUIRED (1 W/ SCREW HOLES, 1 WITHOUT)

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

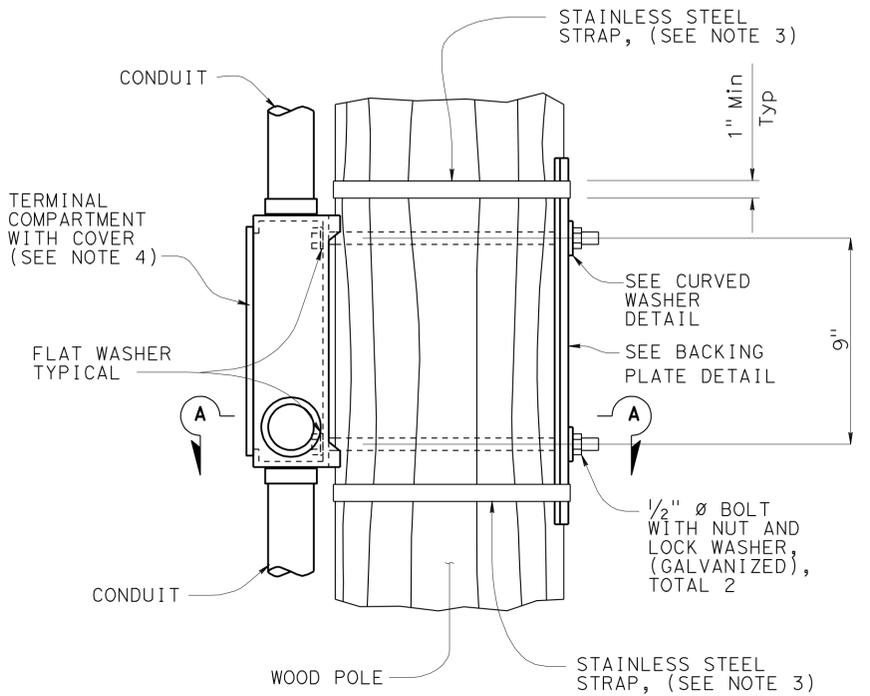
ELECTRICAL DETAILS (STAGE CONSTRUCTION)
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	REVISOR
	TIMOTHY J. LEE	MENG YANG
	CHECKED BY	DATE
	DAN YAU	REVISED BY
		DATE

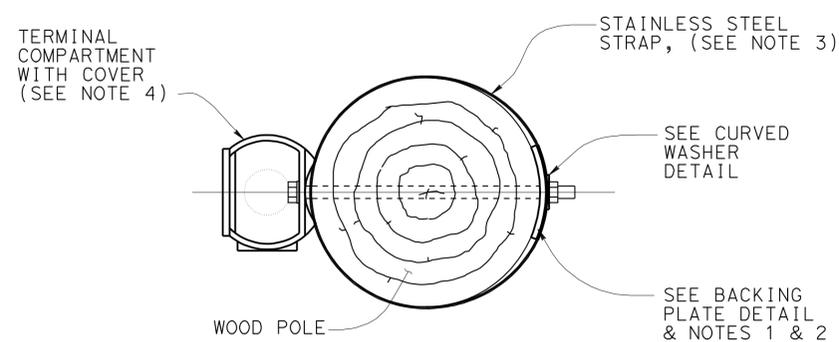
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	614	760
 REGISTERED CIVIL ENGINEER			11-18-11 DATE		
4-16-12 PLANS APPROVAL DATE					
Y&C TRANSPORTATION CONSULTANTS, INC. 3250 Ramos Circle Sacramento, CA 95827			ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY 1333 Broadway, Suite 220 Oakland, CA 94612		

NOTES:

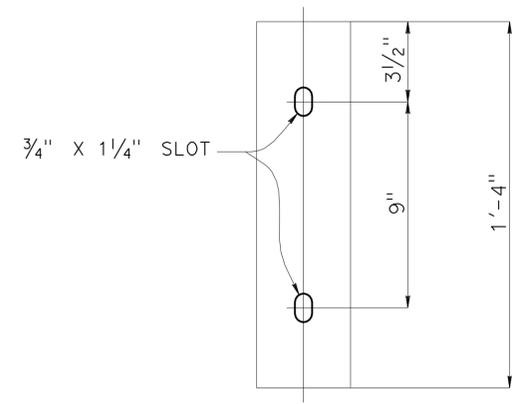
1. THE CONTRACTOR TO VERIFY POLE DIMENSIONS AT TERMINAL COMPARTMENT FOR FABRICATION OF BACKING PLATE AND CURVED WASHER.
2. BACKING PLATE TO BE GALVANIZED AFTER FABRICATION.
3. 3/4" x 0.044" MINIMUM, ROUNDED EDGE STAINLESS STEEL STRAPS, DOUBLE WARPED WITH 2" LONG BEND UNDER STAINLESS STEEL STRAP BUCKLE.
4. FOR DETAILS NOT SHOWN SEE STANDARD PLAN RSP ES-4D.



ELEVATION
3" = 1'-0"



SECTION A-A
3" = 1'-0"

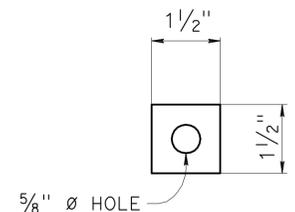


ELEVATION

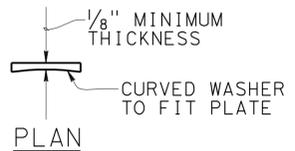


PLAN

BACKING PLATE DETAIL
3" = 1'-0"



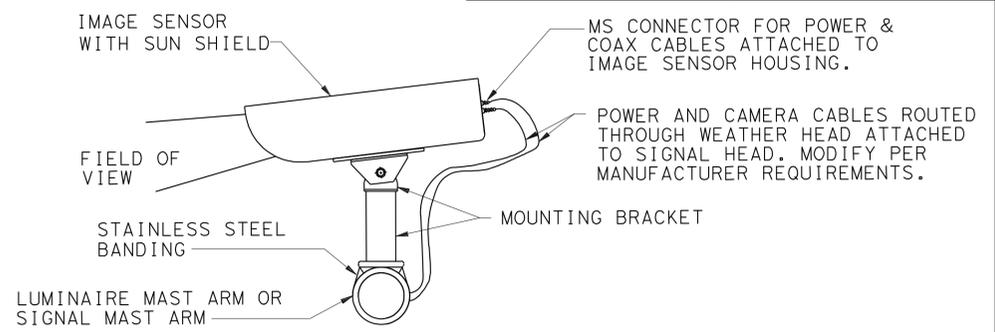
ELEVATION



PLAN

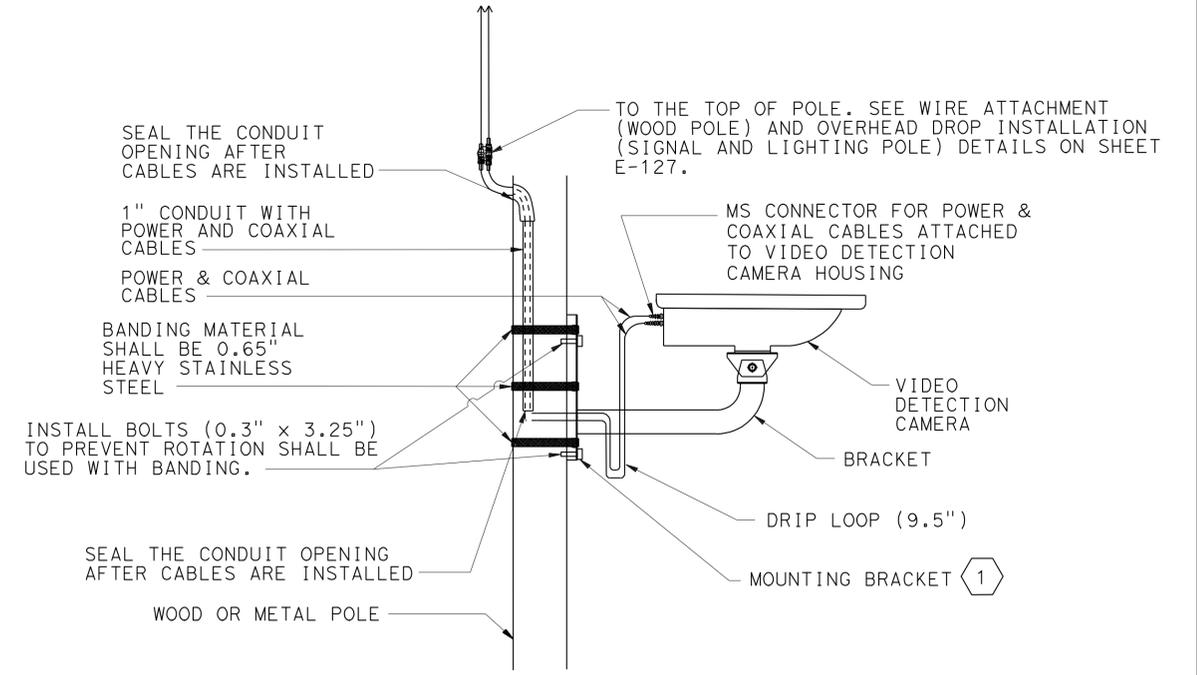
CURVED WASHER DETAIL
6" = 1'-0"

SIDE MOUNTING TERMINAL COMPARTMENT
FOR DETAILS NOT SHOWN SEE STANDARD PLAN RSP ES-4D SHEET



SECTION A-A
VIDEO DETECTION CAMERA TYPICAL IMAGE SENSOR

- NOTES:**
1. EXACT MOUNTING LOCATION OF VIDEO DETECTION CAMERA AND BRACKET SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
 2. CABLES SHALL NOT BE TWISTED BETWEEN VIDEO DETECTION CAMERA AND CONTROLLER CABINET.



1 USE 0.65" STAINLESS STEEL BANDING TO HOLD ALL MOUNTING BRACKETS.

VIDEO DETECTION CAMERA INSTALLATION DETAIL

ELECTRICAL DETAILS (STAGE CONSTRUCTION)
NO SCALE

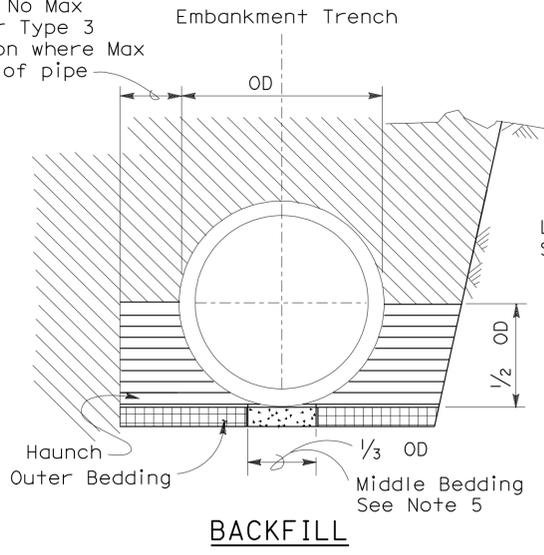
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

REVISOR: MENG YANG, DAN YAU, TIMOTHY J. LEE

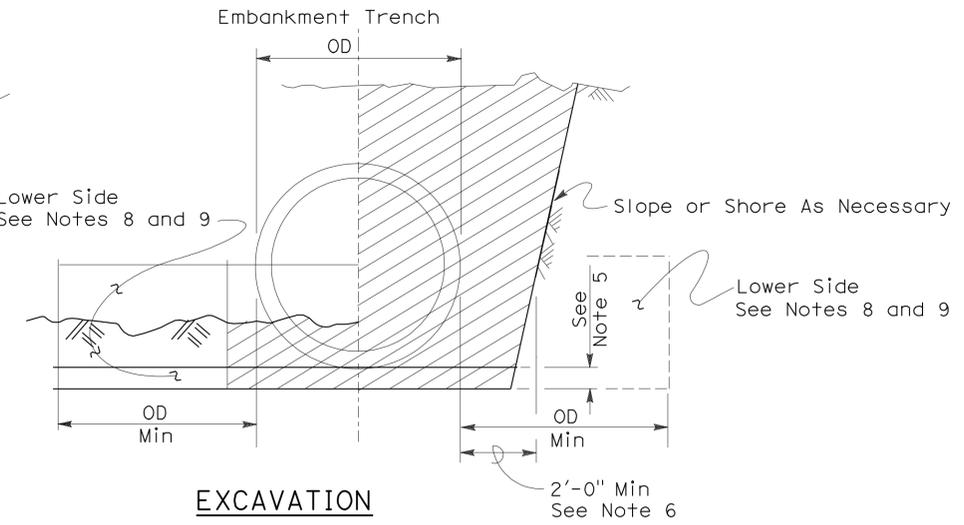
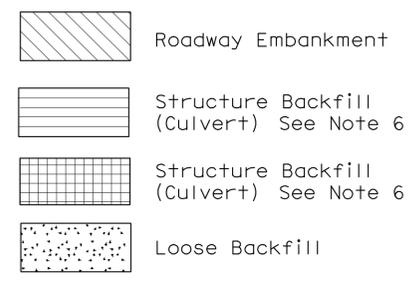
DATE PLOTTED => 20-APR-2012
TIME PLOTTED => 07:04

2006 REVISED STANDARD PLAN RSP A62DA

2'-0" Min; No Max except for Type 3 Installation where Max Equals OD of pipe



BACKFILL



EXCAVATION



TYPE 1 INSTALLATION:

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

TYPE 2 INSTALLATION:

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

TYPE 3 INSTALLATION:

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

NOTES:

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

INSTALLATION TYPE 1

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

INSTALLATION TYPE 2

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

INSTALLATION TYPE 3

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**EXCAVATION AND BACKFILL
CONCRETE PIPE CULVERTS**

NO SCALE

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

REVISED STANDARD PLAN RSP A62DA

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	616	760

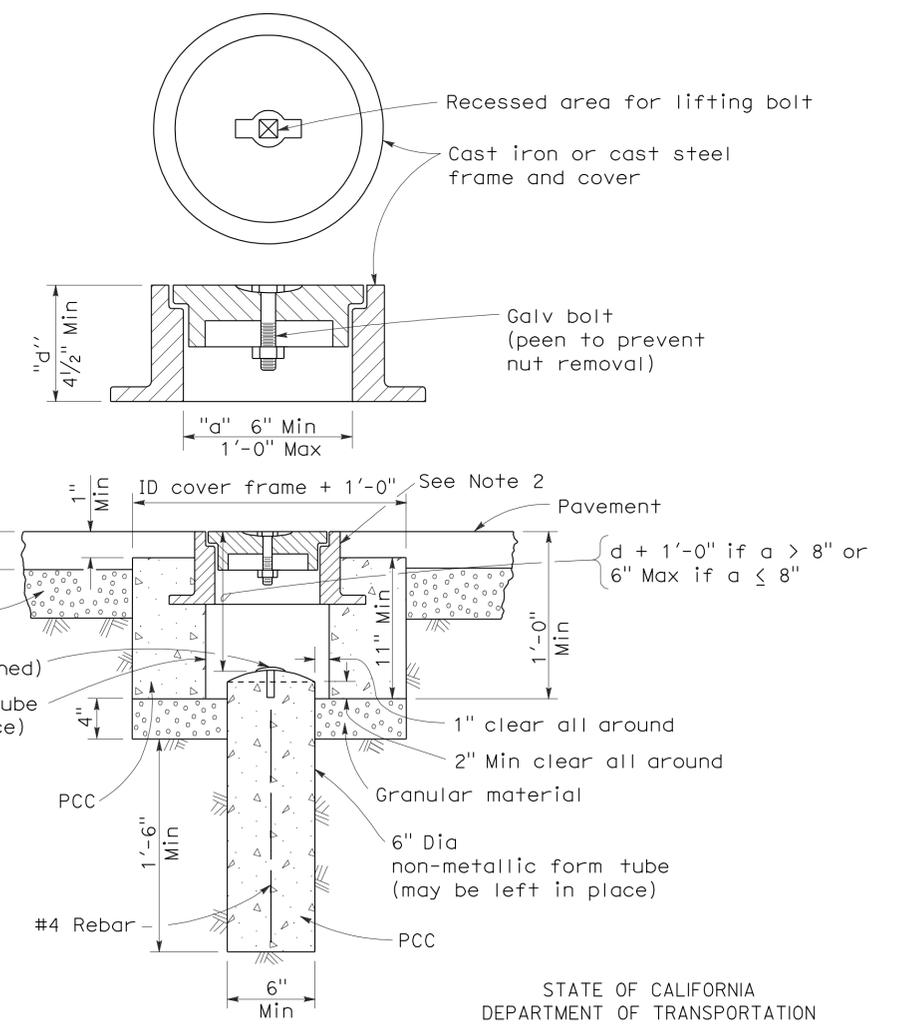
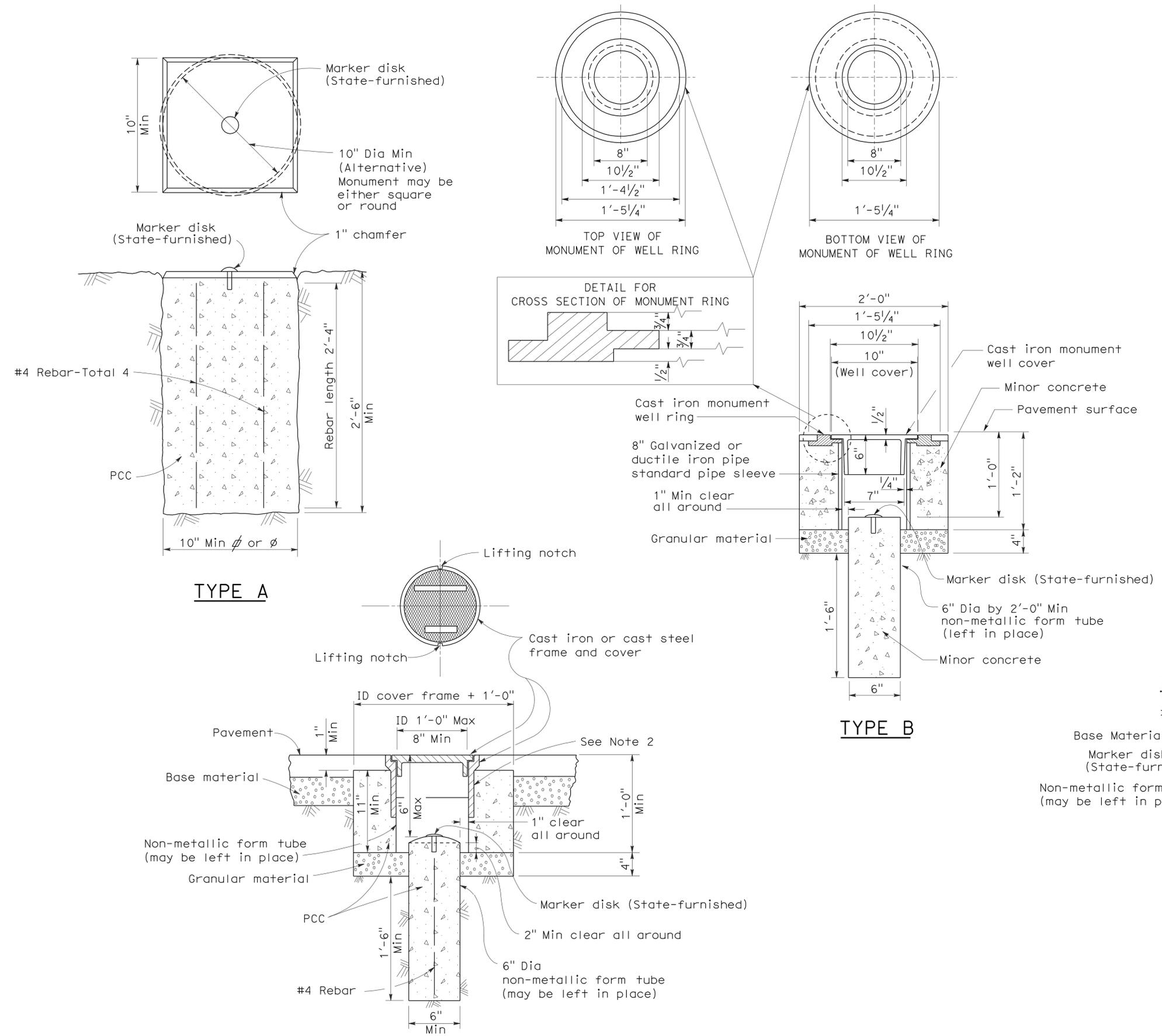
<i>Mark S. Turner</i>	
PROFESSIONAL LAND SURVEYOR	
June 30, 2006	
PLANS APPROVAL DATE	
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.	

LICENSED LAND SURVEYOR
Mark S. Turner
No. 6228
Exp. 3-31-08
STATE OF CALIFORNIA

To accompany plans dated 4-16-12

NOTES:

1. The configuration of the cast iron or cast steel frame and cover may vary from that shown.
2. Frame shall be embedded in the concrete a minimum of 3".
3. Type D monument shall be either Alternative No. 1 or Alternative No. 2 at the contractor's option.
4. All portland cement concrete shall be Class 2 or minor concrete with 1" maximum aggregate.



TYPE D SURVEY MONUMENTS
Alternative No. 2
NO SCALE

RSP A74 DATED JUNE 30, 2006 SUPERSEDES STANDARD PLAN DATED MAY 1, 2006 - PAGE 28 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A74

2006 REVISED STANDARD PLAN RSP A74

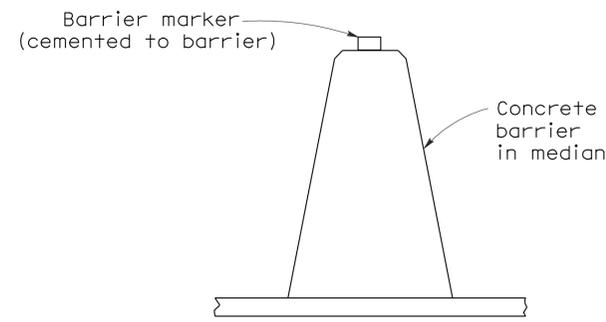
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	617	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

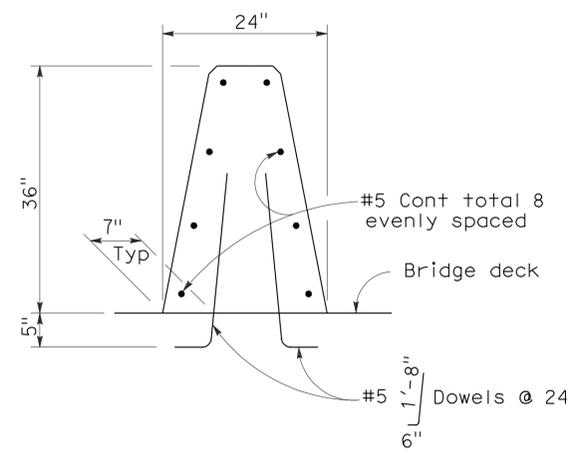
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PLANS APPROVAL DATE

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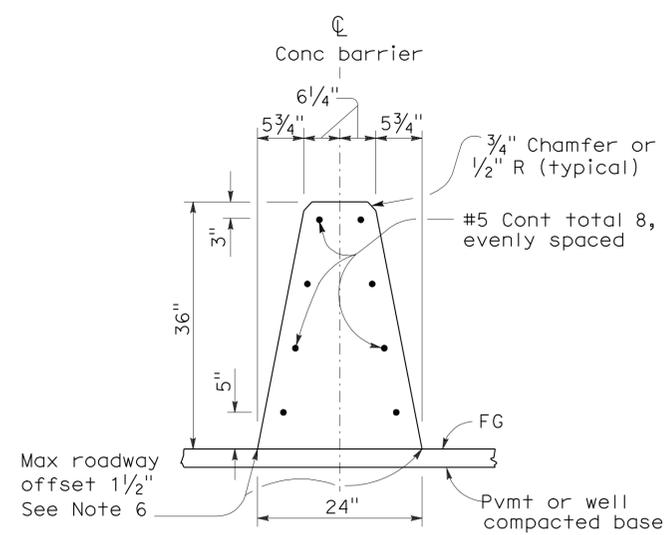
To accompany plans dated 4-16-12



CONCRETE BARRIER TYPE 60 DELINEATION
See Notes 7 and 8



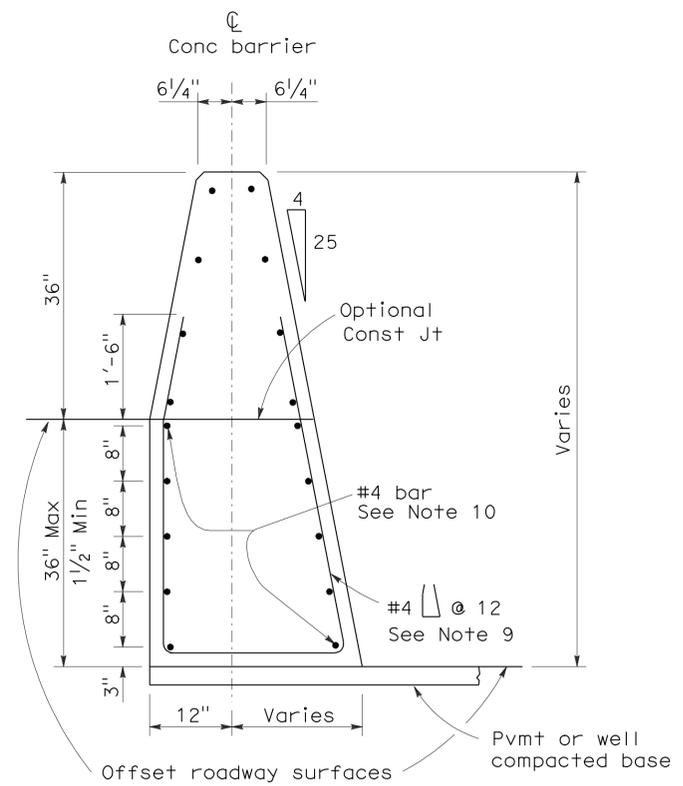
CONCRETE BARRIER TYPE 60A
Details similar to Type 60 except as noted.



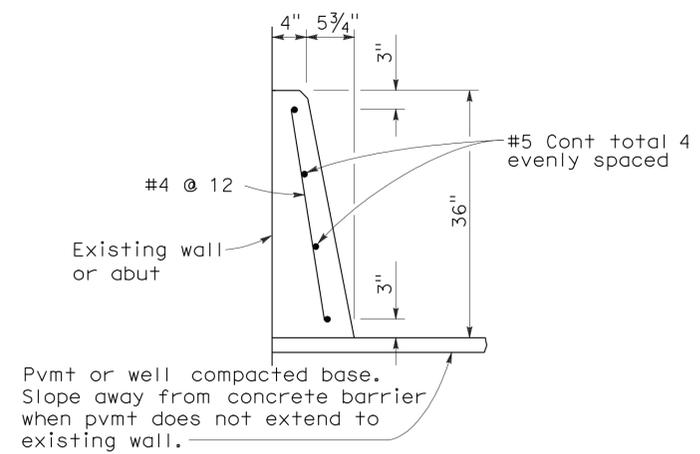
CONCRETE BARRIER TYPE 60

NOTES:

- See Standard Plan A76B for details of Concrete Barrier Type 60 end anchors, connection to structures and transitions to Concrete Barrier Type 50 and Concrete Barrier Type 60S.
- See Standard Plan A76C for Concrete Barrier Type 60 transitions at bridge column and sign pedestals.
- Where glare screen is required on Concrete Barrier Type 60, use Concrete Barrier Type 60G.
- Where the concrete barrier is added to the face of existing concrete structure, match existing weep holes.
- Expansion joints in concrete barrier shall be located at all deck, pavement and principal wall joints. Expansion joint filler material shall be the same size as joint or 1/2" minimum.
- Where roadway offset is greater than 1 1/2", see Concrete Barrier Type 60C.
- Barrier delineation to be used when required by the Special Provisions.
- Spacing of barrier markers to match spacing of raised pavement markers on the adjacent median edgeline pavement delineation.
- Reinforcing stirrup not required for roadway offsets less than 1'-0".
- For roadway surfaces offset greater than 1 1/2" to 3", no rebars required. For roadway surfaces offset greater than 3" to 8" use two #4 rebars at 3" above the lower roadway surface. For roadway surfaces offset greater than 8" to 12", use two #4 rebars at 3" above the lower roadway surface and two #4 rebars at 8" above the lower roadway surface. For roadway surfaces offset greater than 12" to 36", use two #4 rebars at 3" above the lower roadway surface and two #4 rebars at every 8" increment vertical spacing above the first two #4 rebars.



CONCRETE BARRIER TYPE 60C
Details similar to Type 60 except as noted. Concrete barrier end anchor when necessary. 36" roadway surfaces offset shown.



CONCRETE BARRIER TYPE 60D

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONCRETE BARRIER TYPE 60
NO SCALE

2006 REVISED STANDARD PLAN RSP A76A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	618	760

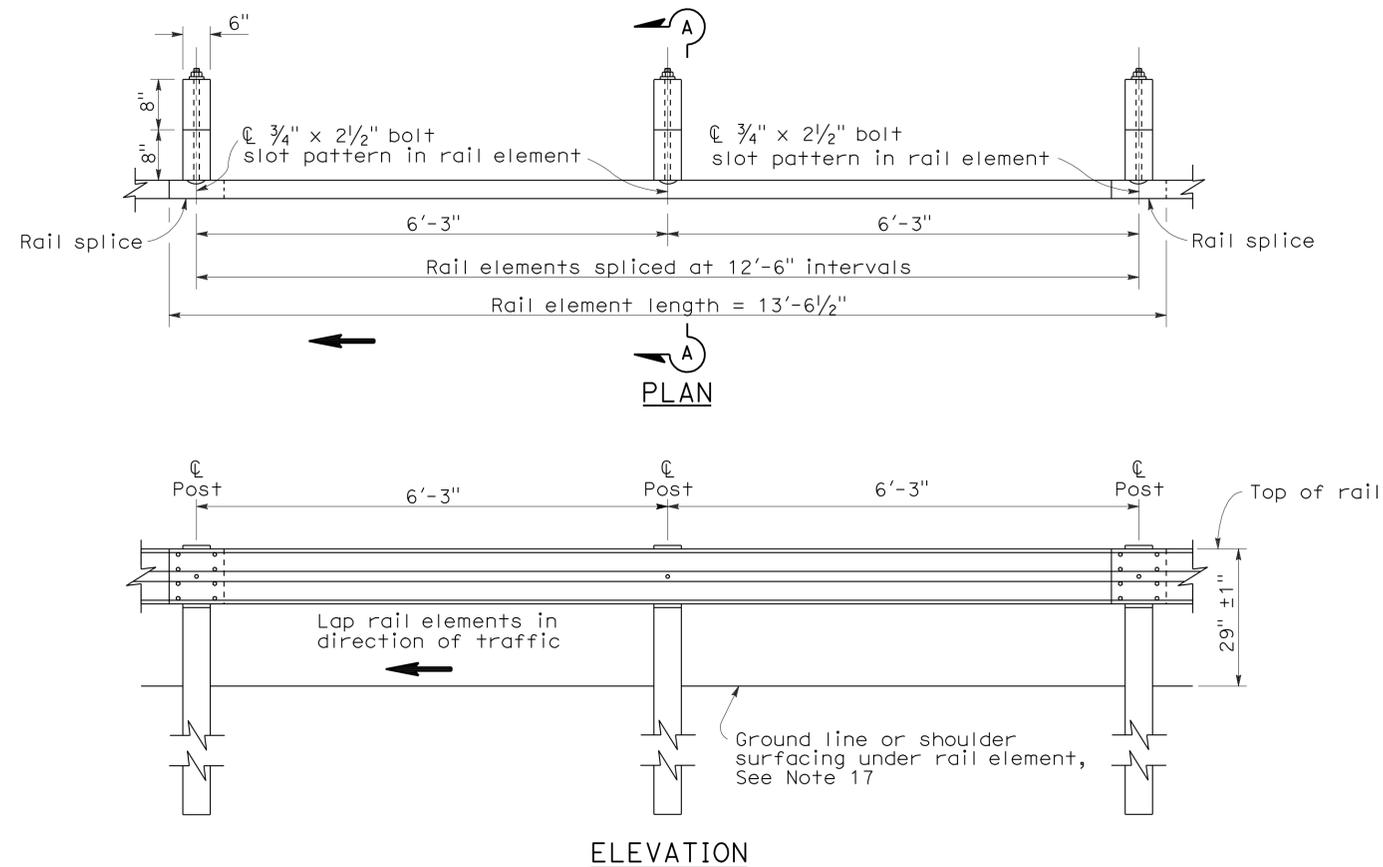
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

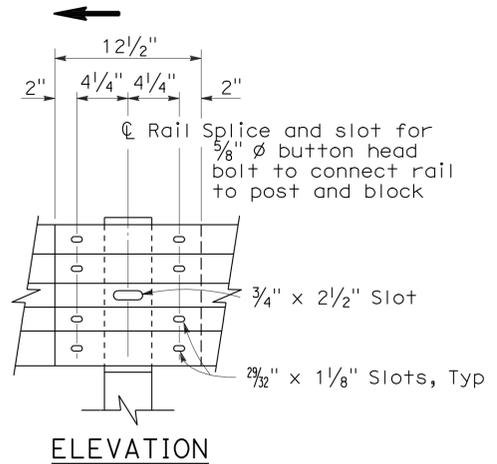
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To accompany plans dated 4-16-12

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

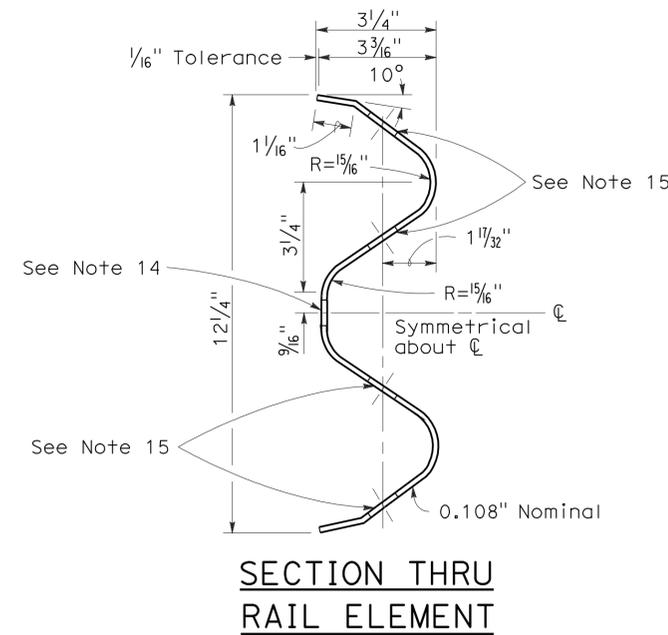


METAL BEAM GUARD RAILING WITH WOOD POST AND BLOCKS

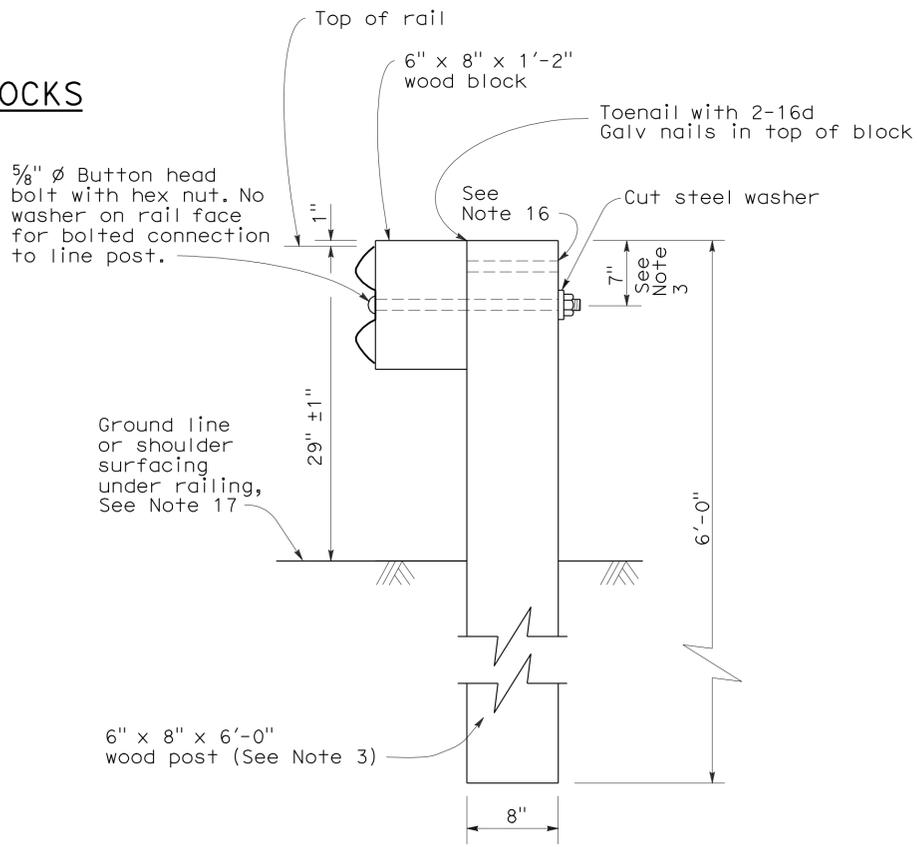


RAIL ELEMENT SPLICE DETAIL

- Connect the over lapped end of the rail elements with 5/8" ϕ x 1 3/8" button head oval shoulder splice bolts inserted into the 2 3/32" x 1 1/8" slots and bolted together with 5/8" ϕ recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



SECTION THRU RAIL ELEMENT



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

See Note 4

NOTES:

- For details of steel post installations, see Standard Plan A77A2.
- For details of standard hardware used to construct guard railing, see Standard Plan A77B1.
- For details of wood posts and wood blocks used to construct guard railing, see Standard Plan A77C1.
- For additional installation details, see Standard Plan A77C3.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- For guard railing typical layouts, see the A77E, A77F and A77G Series of Standard Plans.
- For terminal system end treatment details, see the A77L Series of Standard Plans. To connect railing to terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
- For guard railing end anchor details, see Standard Plans A77H1 and A77I2.
- For details of guard railing transition to bridge railing, see Standard Plan A77J4.
- For additional details of guard railing connection to bridge railings, see Standard Plans A77J1, A77J2 and A77K1.
- For guard railing connection details to abutments and walls, see Standard Plan A77J3.
- Direction of adjacent traffic indicated by \rightarrow .
- For typical guard railing delineation and dike positioning details, see Standard Plan A77C4.
- Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
- Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
- Additional hole in uppermost portion of line post is for potential future adjustments of railing height. See Standard Plan A77C1.
- Install posts in soil.

**METAL BEAM GUARD RAILING
STANDARD RAILING SECTION
(WOOD POST WITH
WOOD BLOCK)**

NO SCALE

RSP A77A1 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77A1
DATED MAY 1, 2006 - PAGE 41 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77A1

2006 REVISED STANDARD PLAN RSP A77A1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	619	760

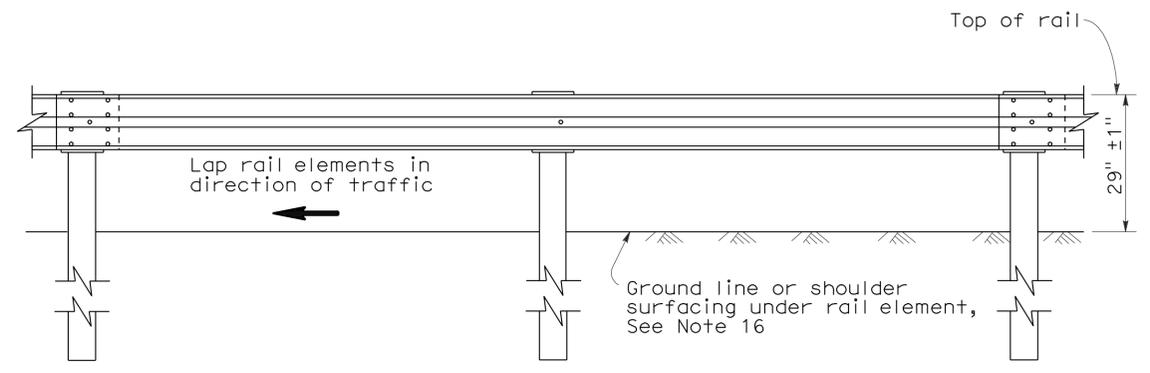
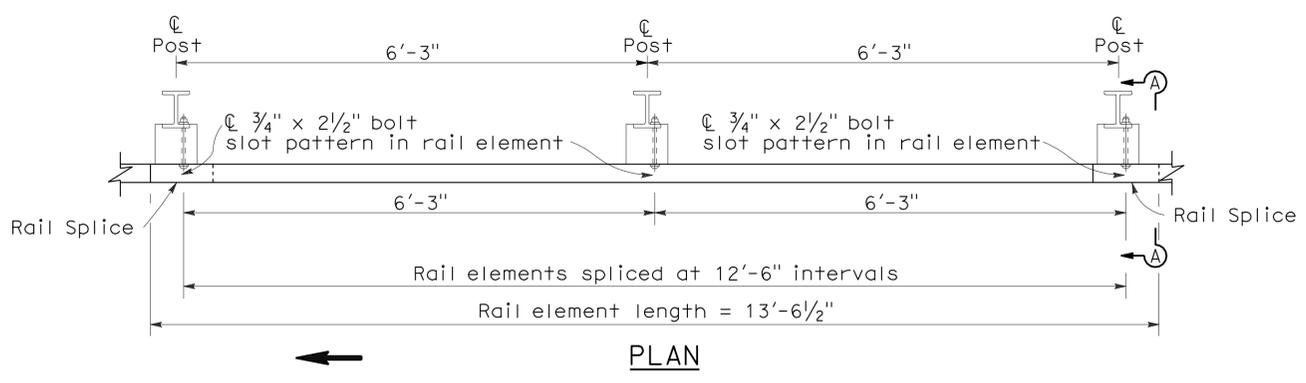
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

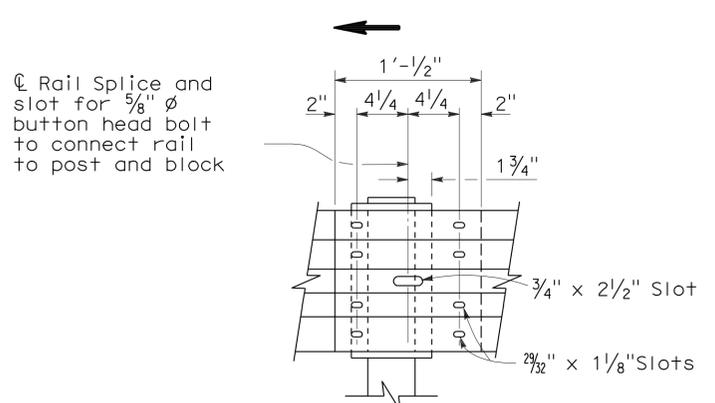
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To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP A77A2

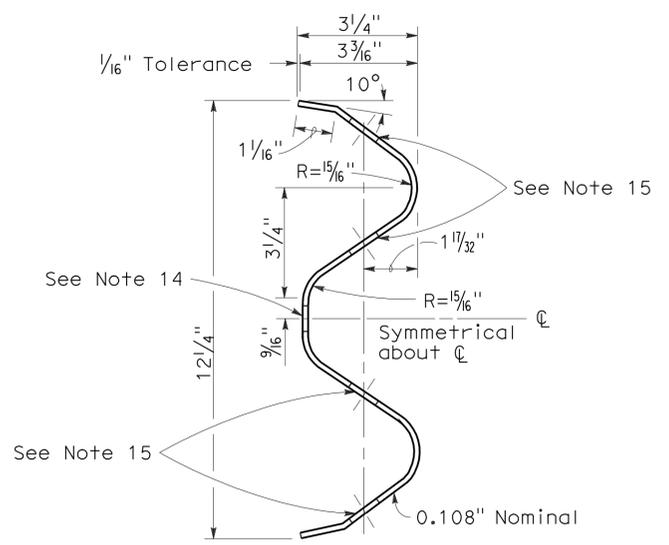


METAL BEAM GUARD RAILING WITH STEEL POSTS AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS

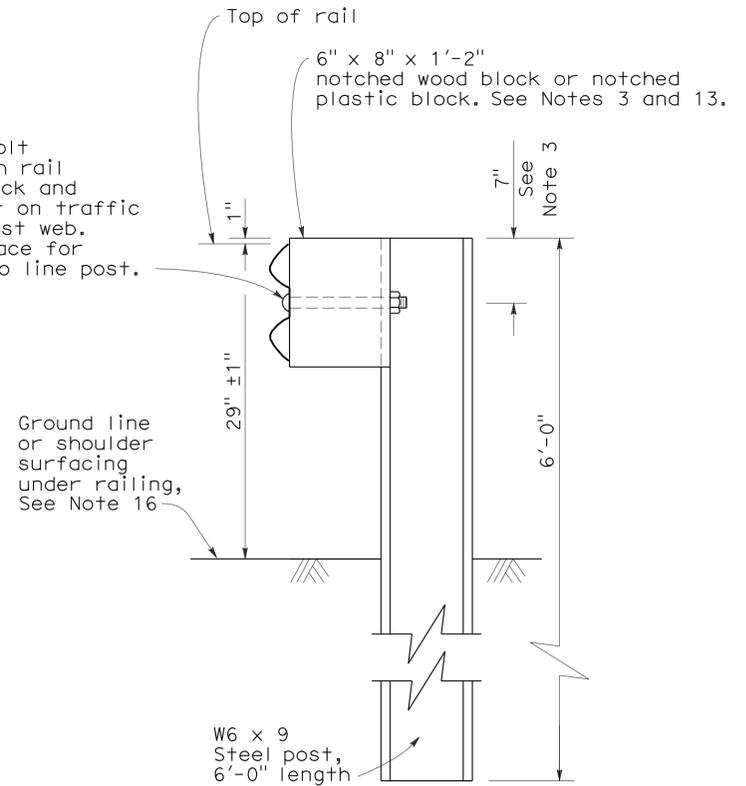


ELEVATION RAIL ELEMENT SPLICE DETAIL

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



SECTION THRU RAIL ELEMENT



SECTION A-A TYPICAL STEEL LINE POST INSTALLATION

See Note 4

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

To accompany plans dated 4-16-12

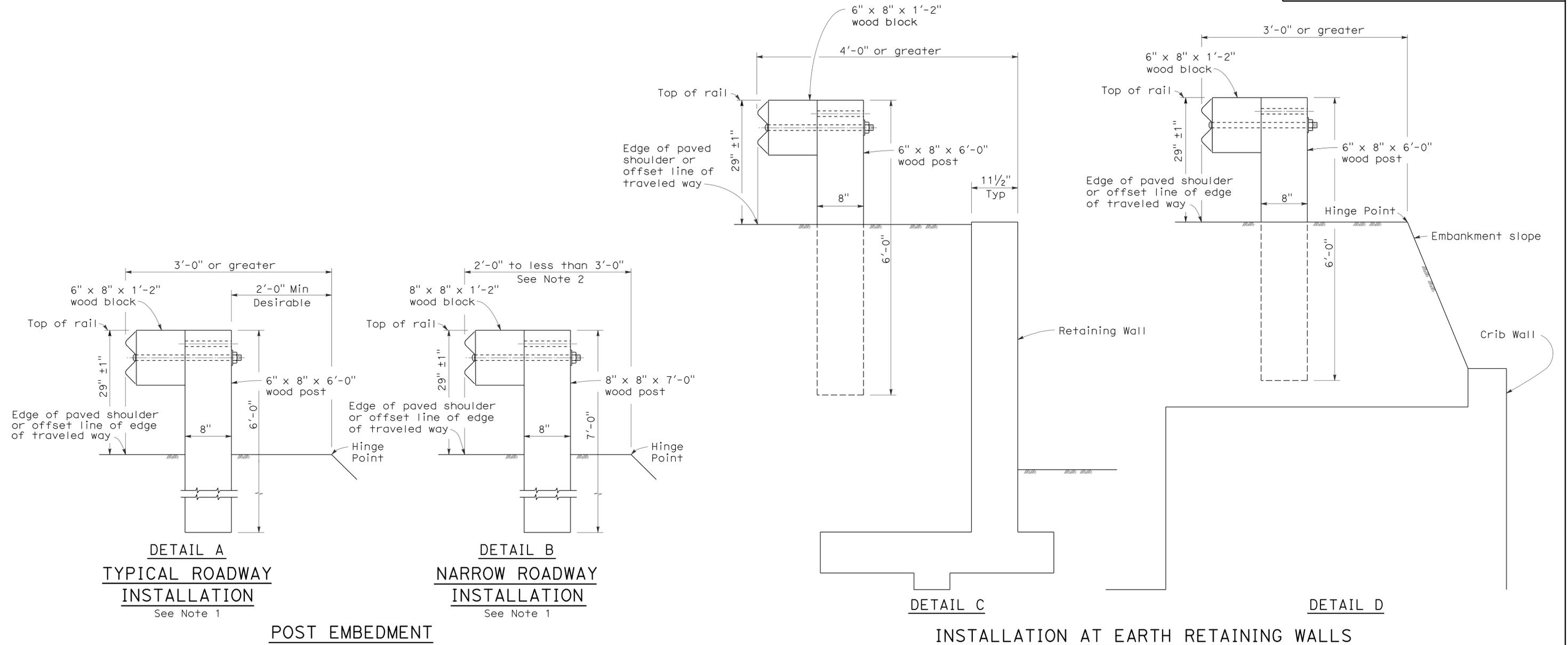
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	620	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77C3

2006 REVISED STANDARD PLAN RSP A77C3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	621	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

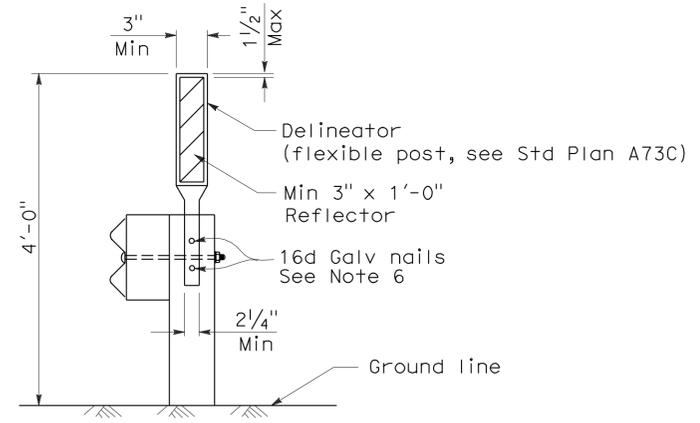
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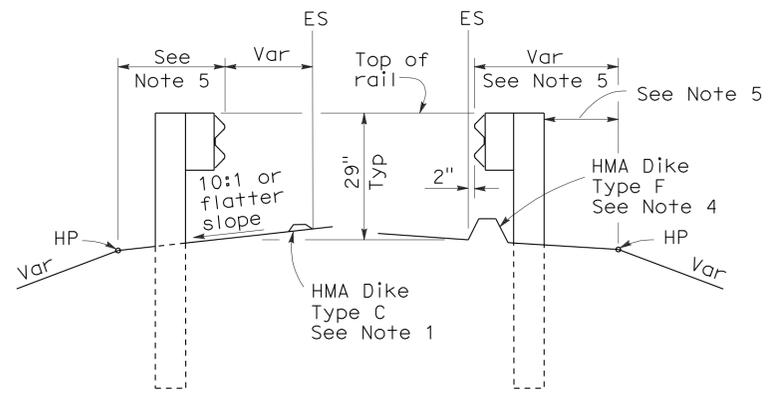
To accompany plans dated 4-16-12

NOTES:

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



GUARD RAILING DELINEATION
See Note 3



DIKE POSITIONING
See Note 1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77C4

2006 REVISED STANDARD PLAN RSP A77C4

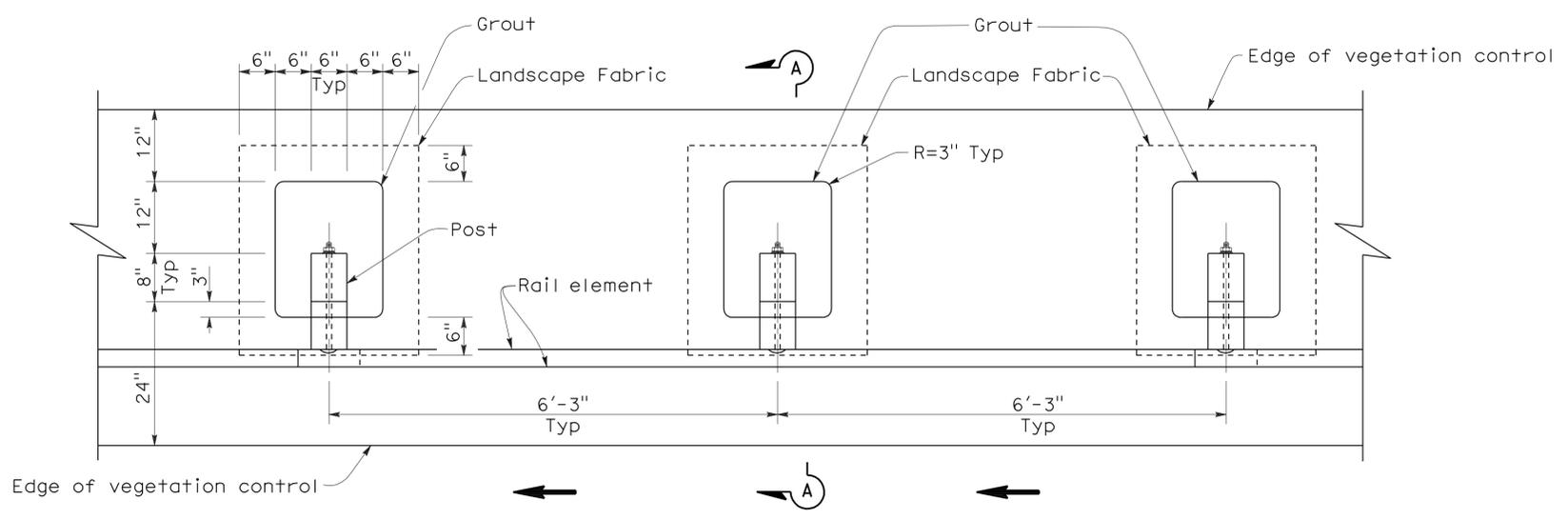
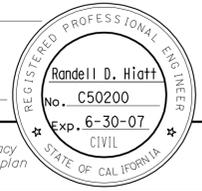
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	622	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

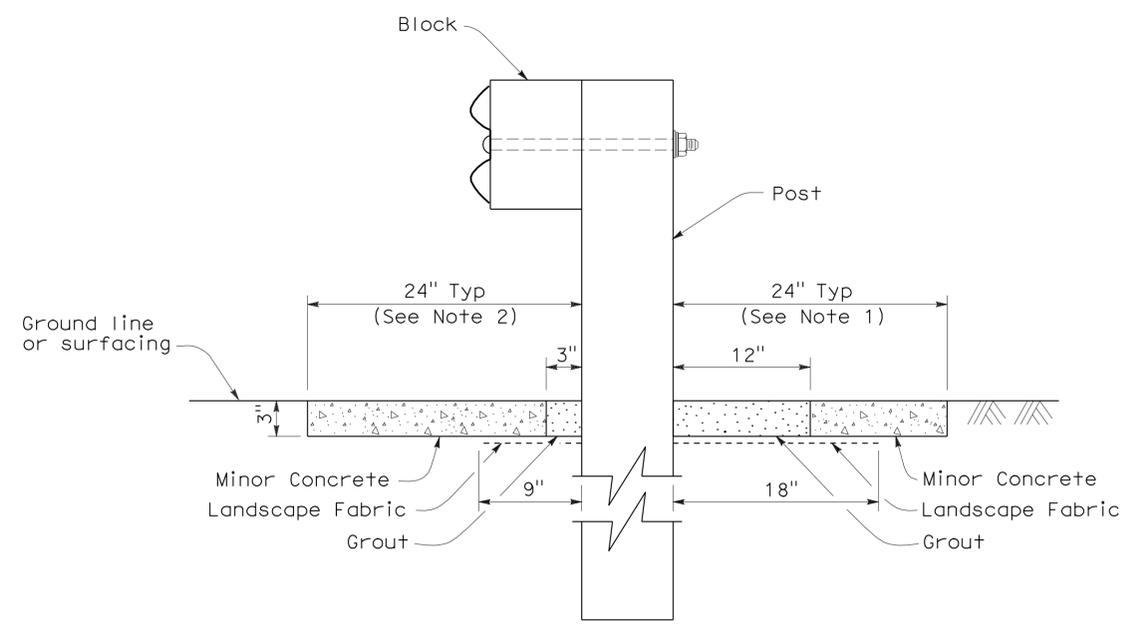
October 20, 2006
PLANS APPROVAL DATE

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To accompany plans dated 4-16-12



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 railing, 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 ←.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
STANDARD RAILING SECTION**

NO SCALE
NSP A77C5 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD
PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A77C5

2006 NEW STANDARD PLAN NSP A77C5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	623	760

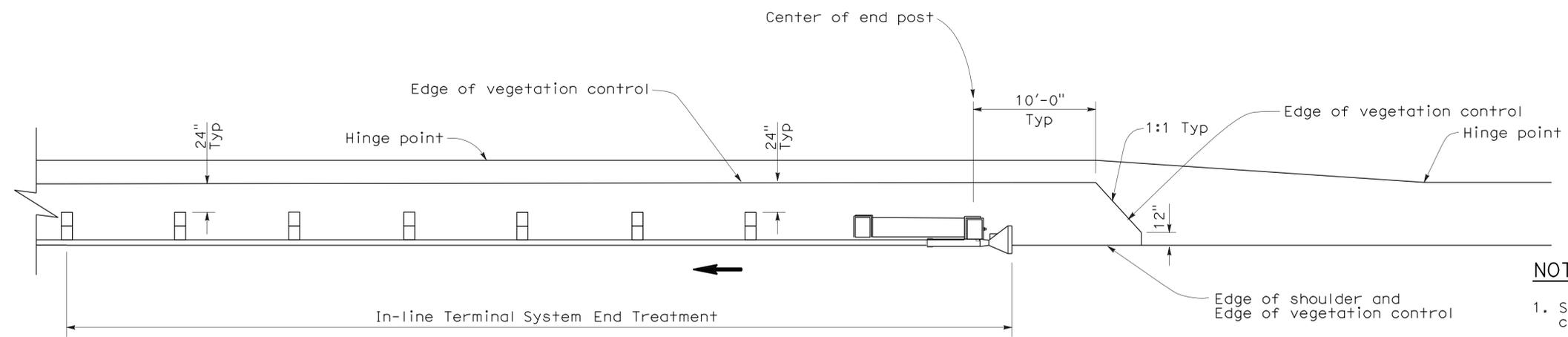
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

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To accompany plans dated 4-16-12

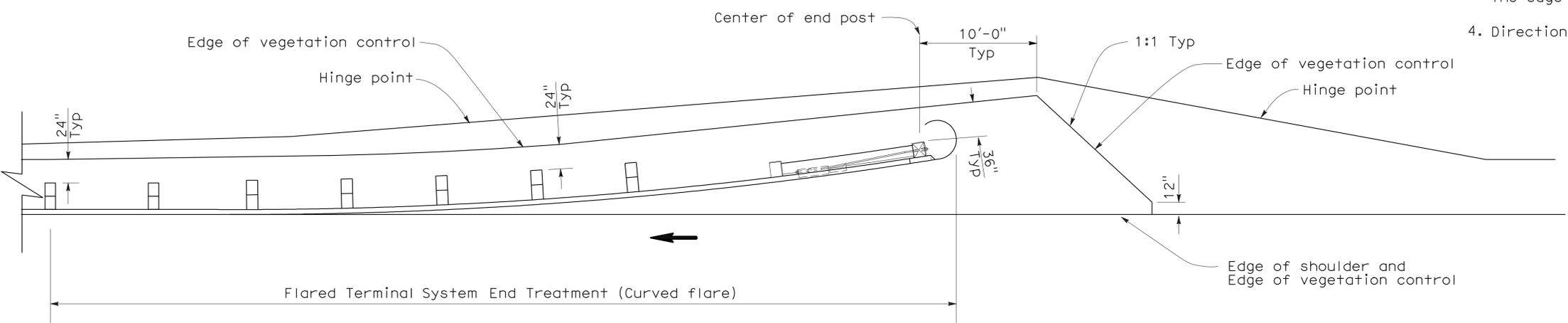
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA



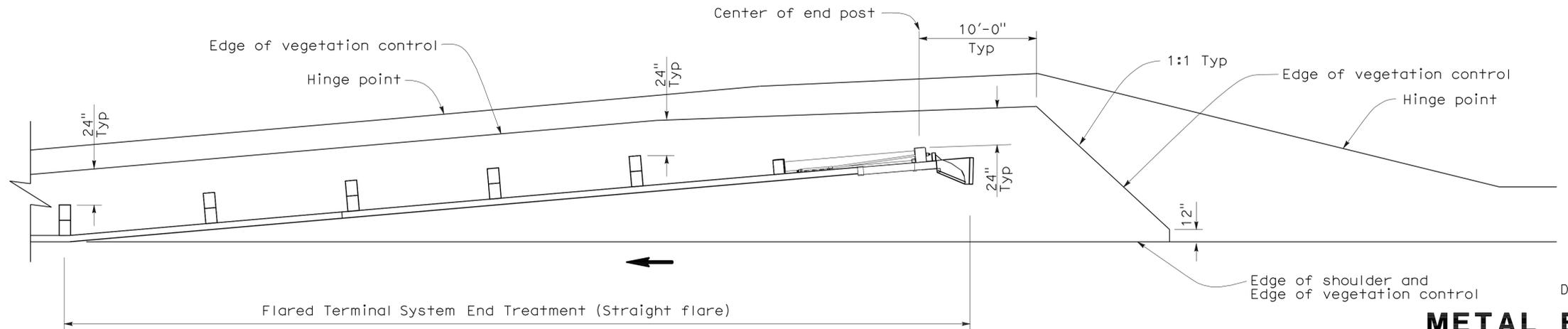
PLAN

NOTES:

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. 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.
3. Where dike is constructed under railing, 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.
4. Direction of adjacent traffic indicated by ←.



PLAN



PLAN

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
FOR TERMINAL SYSTEM END TREATMENTS**

NO SCALE
NSP A77C6 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD
PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A77C6

2006 NEW STANDARD PLAN NSP A77C6

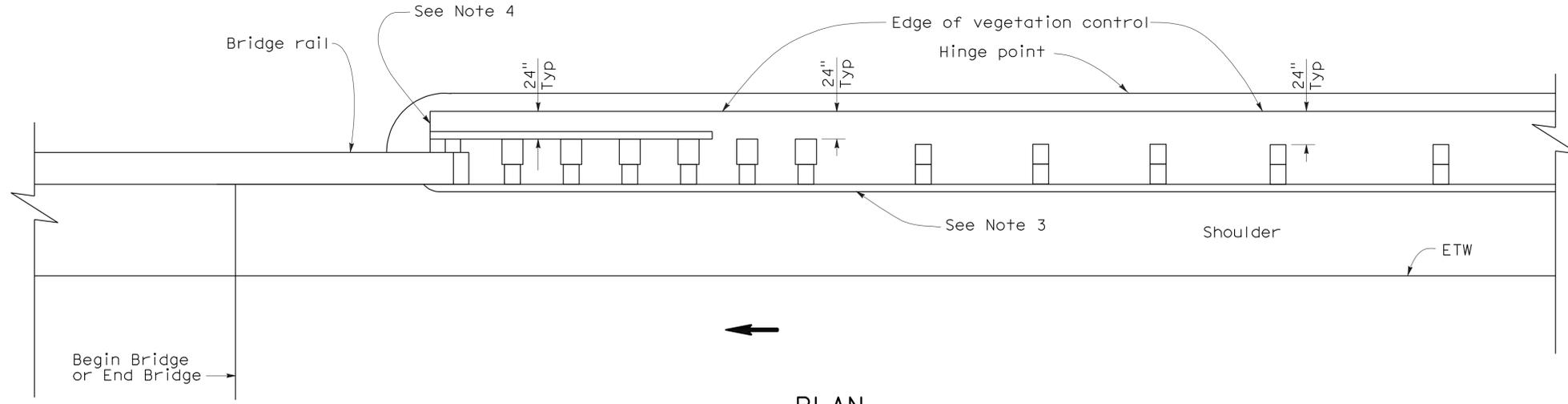
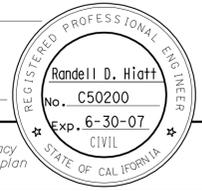
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	624	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

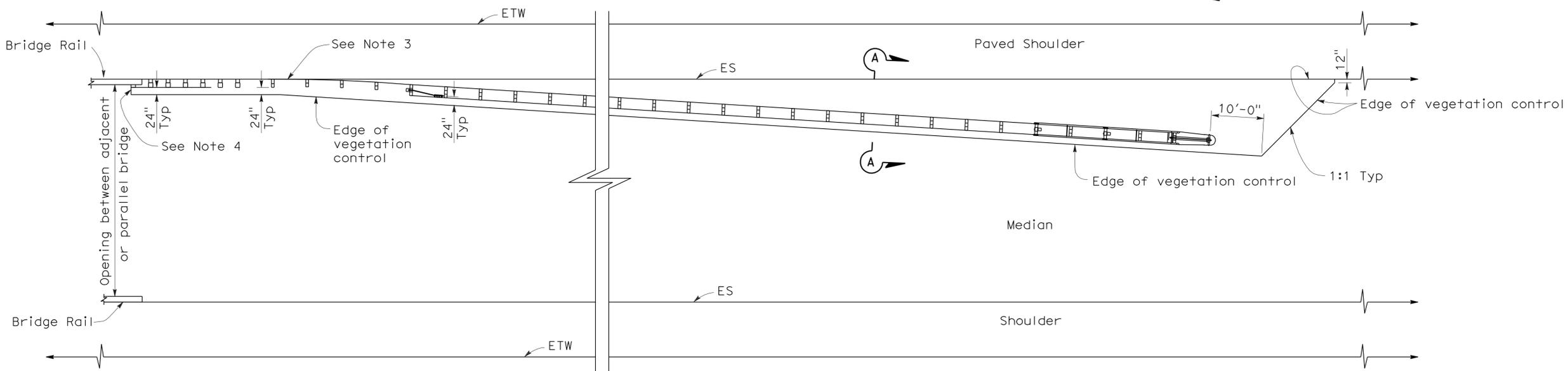
October 20, 2006
PLANS APPROVAL DATE

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To accompany plans dated 4-16-12



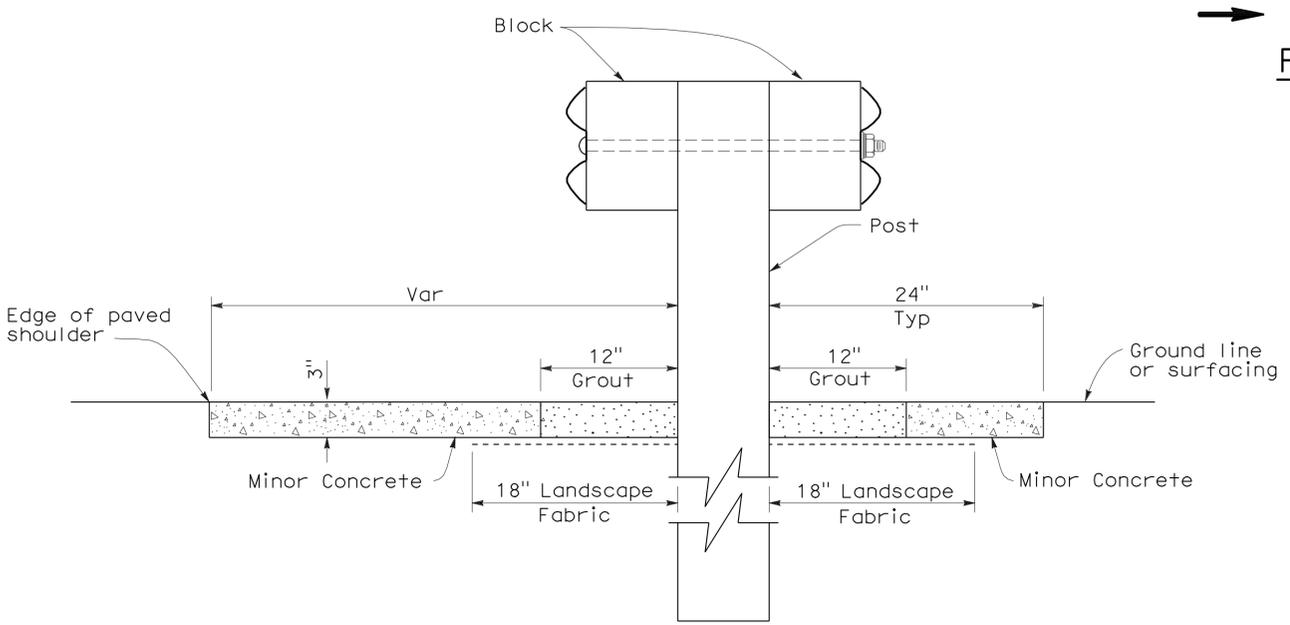
PLAN



PLAN

NOTES:

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. 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.
3. Where dike is constructed under railing, 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.
4. End vegetation control at end of backside rail element.
5. Direction of adjacent traffic indicated by ←.



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
AT STRUCTURE APPROACH
AND DEPARTURE**

NO SCALE
NSP A77C7 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD
PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP A77C7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	625	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

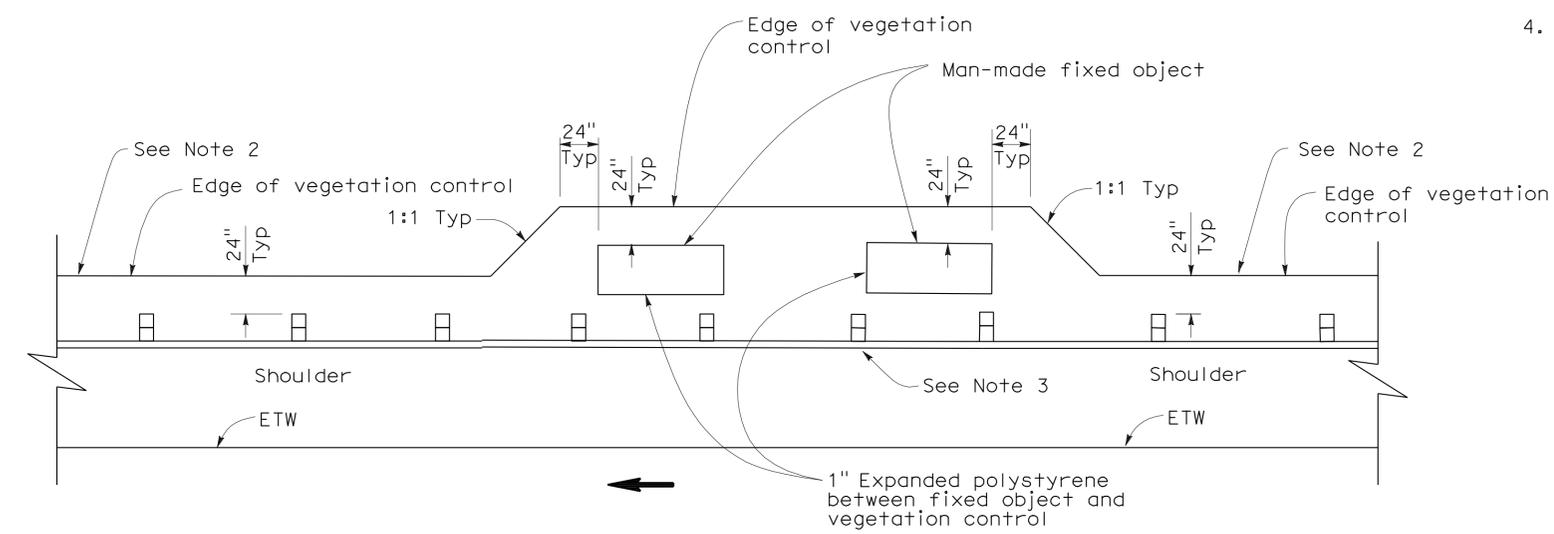
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To accompany plans dated 4-16-12

NOTES:

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. 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.
3. Where dike is constructed under railing, 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.
4. Direction of adjacent traffic indicated by ←.



PLAN
FIXED OBJECT(S) ON SHOULDER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT**

NO SCALE
NSP A77C8 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD
PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A77C8

2006 NEW STANDARD PLAN NSP A77C8

NOTES:

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. Where dike is constructed under railing, 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 ←.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	626	760

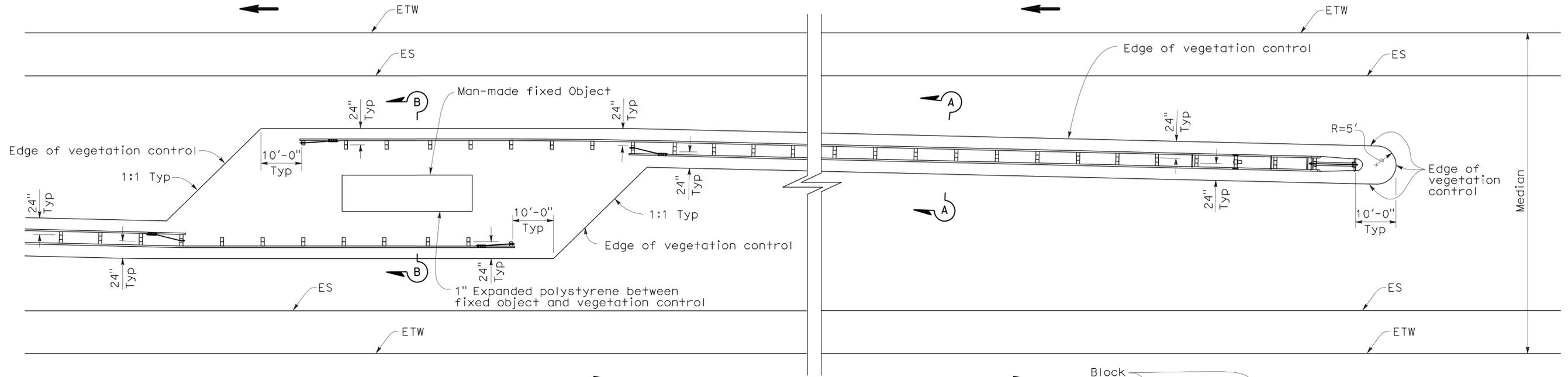
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

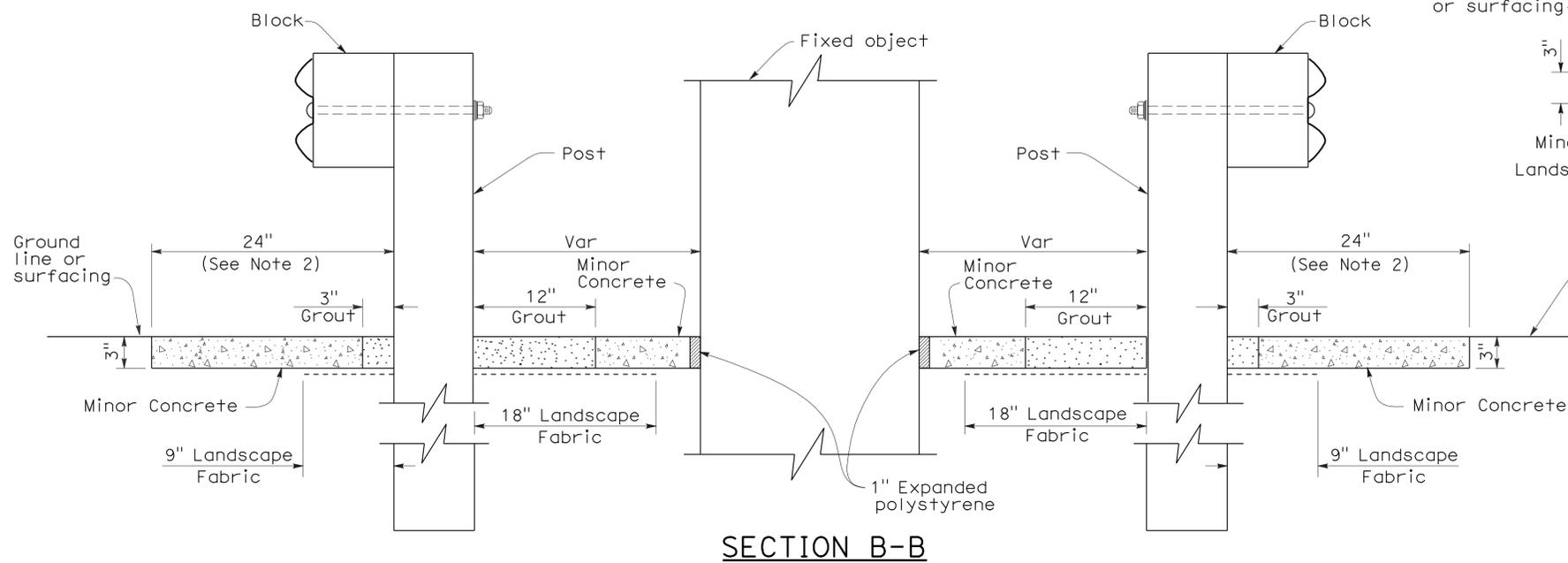
Randell D. Hiatt
No. C50200
Exp. 6-30-07
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STATE OF CALIFORNIA

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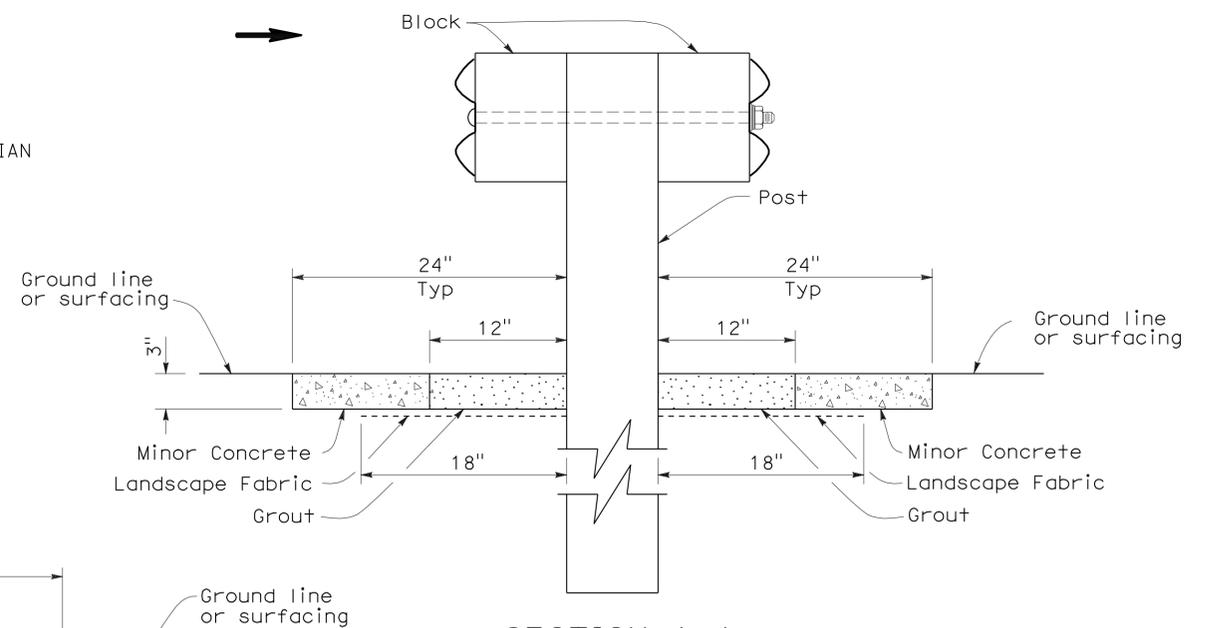
To accompany plans dated 4-16-12



PLAN
FIXED OBJECT(S) IN MEDIAN



SECTION B-B



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT**

NO SCALE
NSP A77C9 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD
PLANS BOOK DATED MAY 2006.

NOTES:

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. Where dike is constructed under railing, 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 ←.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	627	760

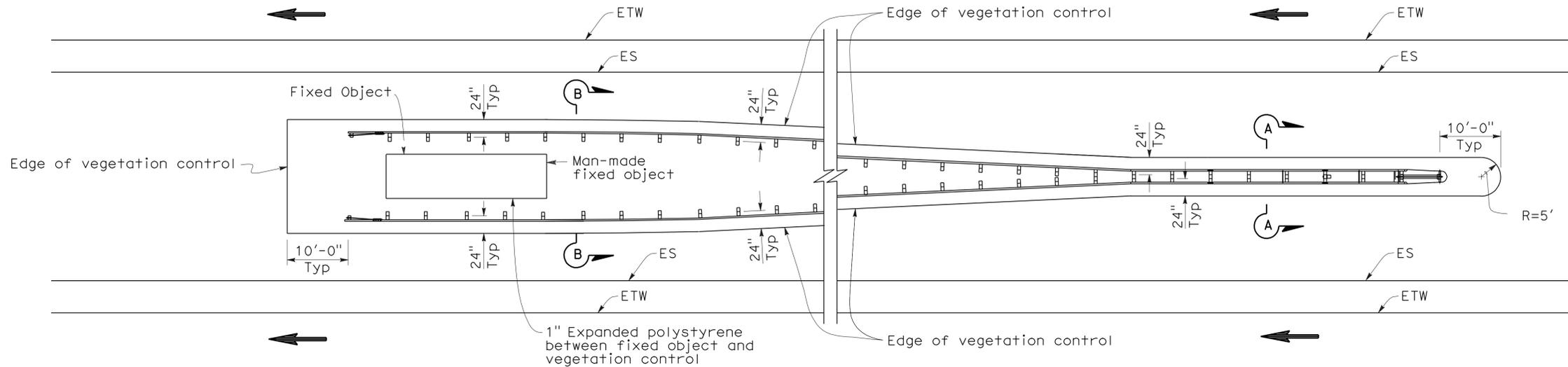
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

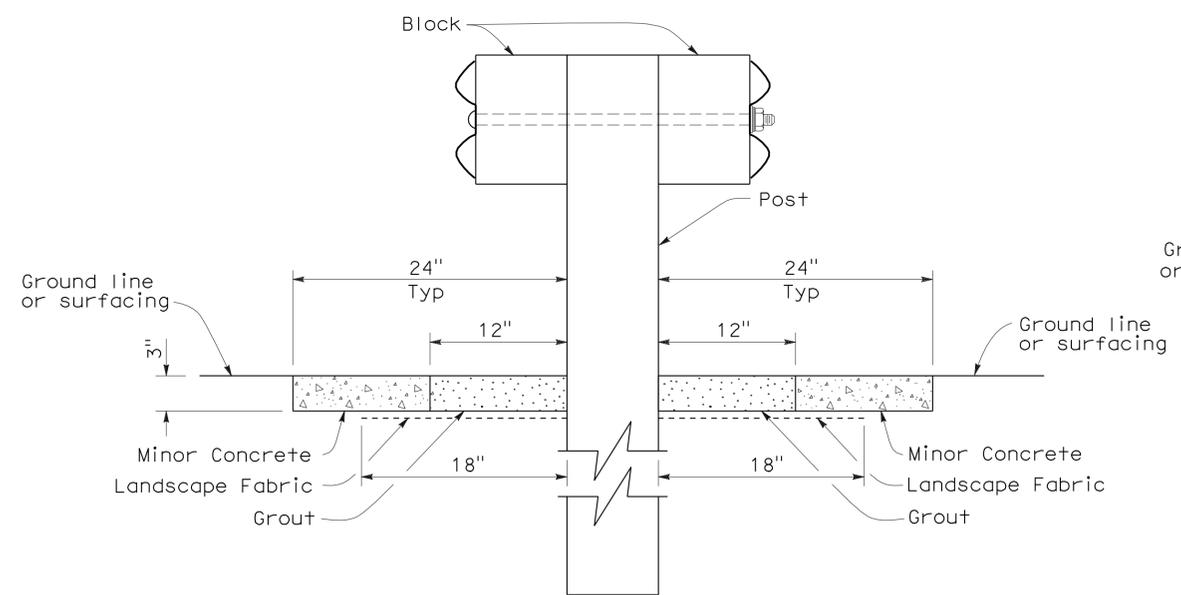
Randell D. Hiatt
No. C50200
Exp. 6-30-07
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STATE OF CALIFORNIA

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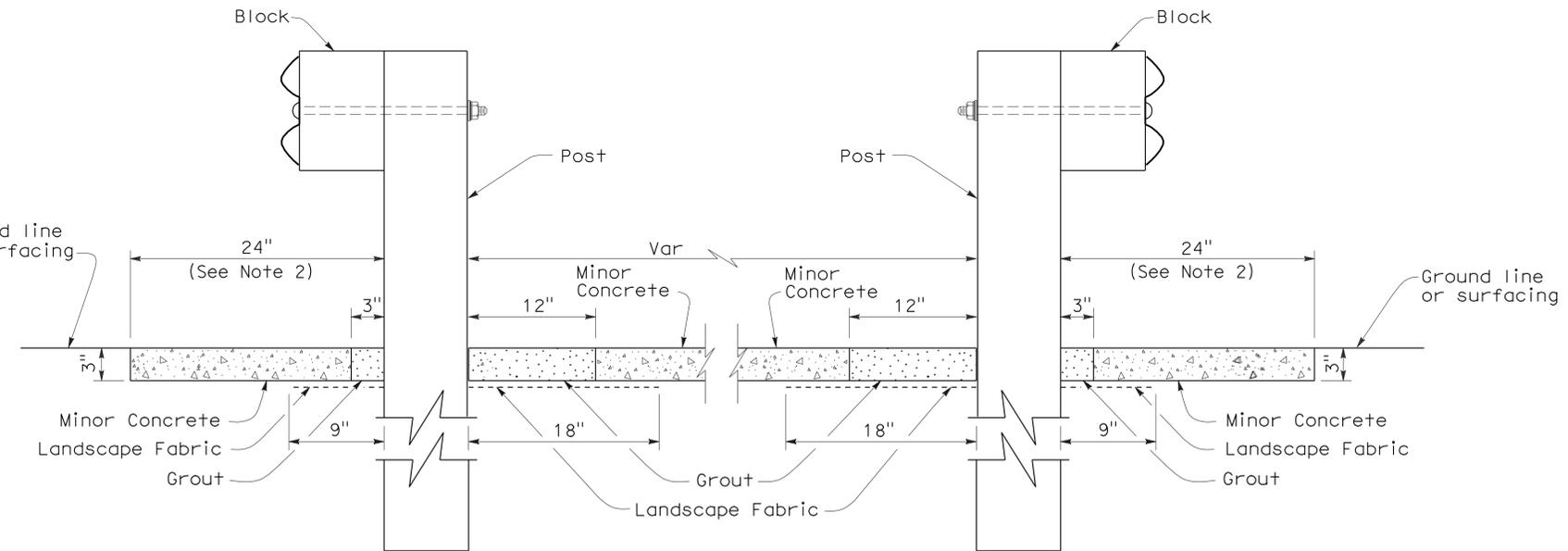
To accompany plans dated 4-16-12



PLAN
FIXED OBJECT(S) BETWEEN SEPARATE ROADBEDS
(ONE-WAY TRAFFIC)



SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT**

NO SCALE

NSP A77C10 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD
PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP A77C10

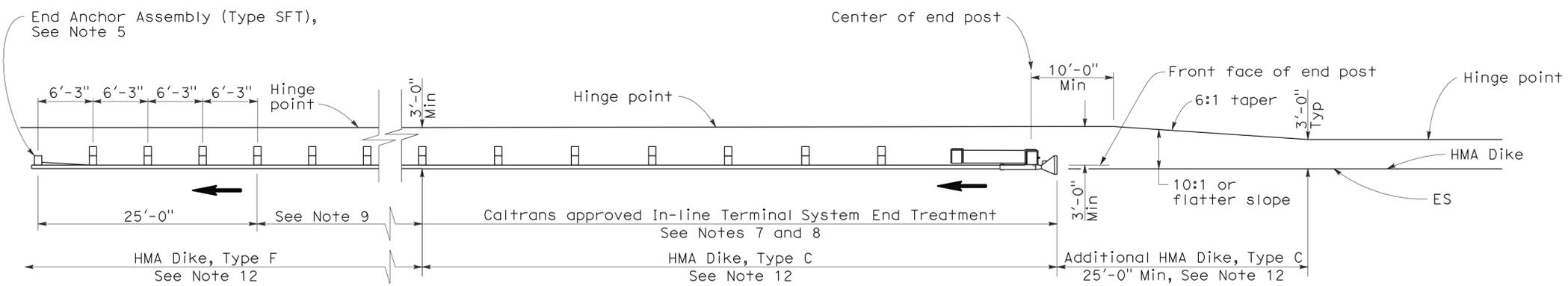
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	628	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

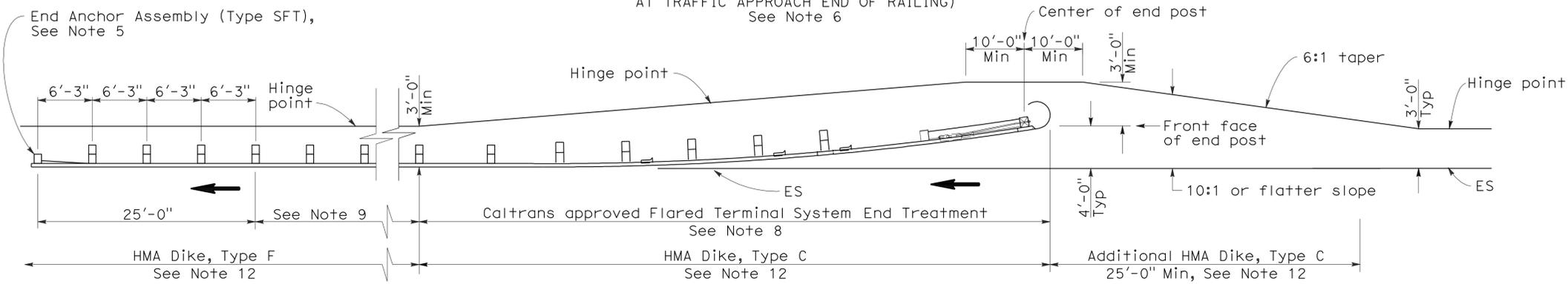
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To accompany plans dated 4-16-12



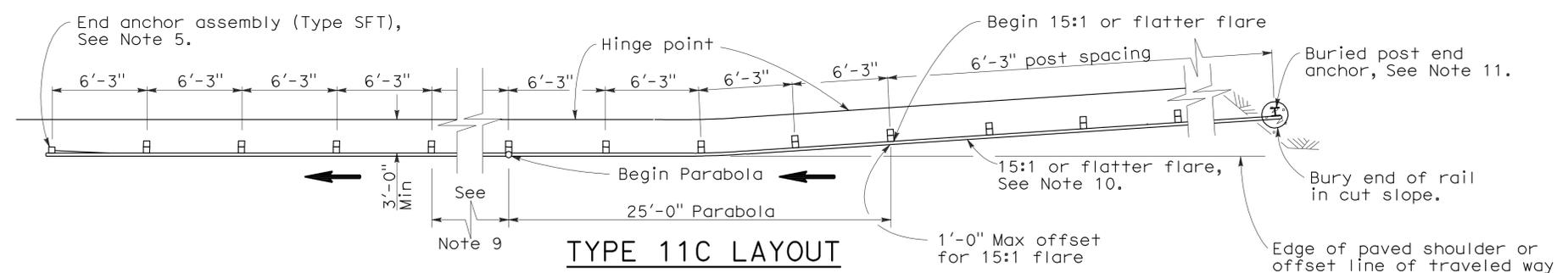
TYPE 11A LAYOUT

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



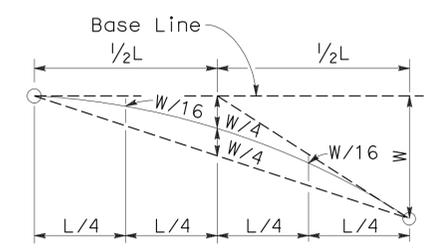
TYPE 11B LAYOUT

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

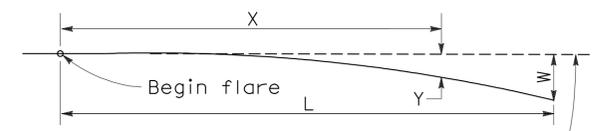


TYPE 11C LAYOUT

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



TYPICAL PARABOLIC LAYOUT

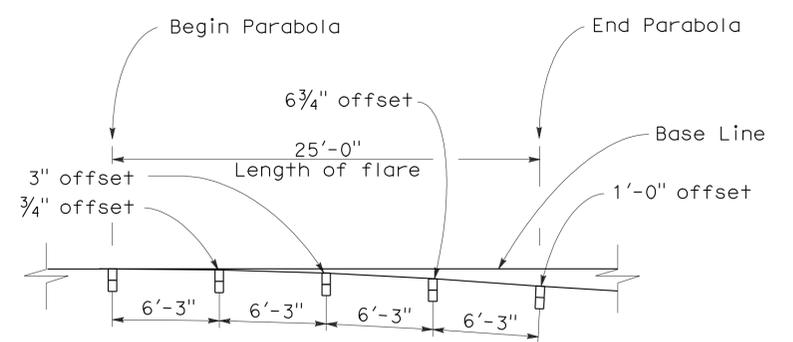


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

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

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

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT MAX END OFFSET

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77E1

2006 REVISED STANDARD PLAN RSP A77E1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	629	760

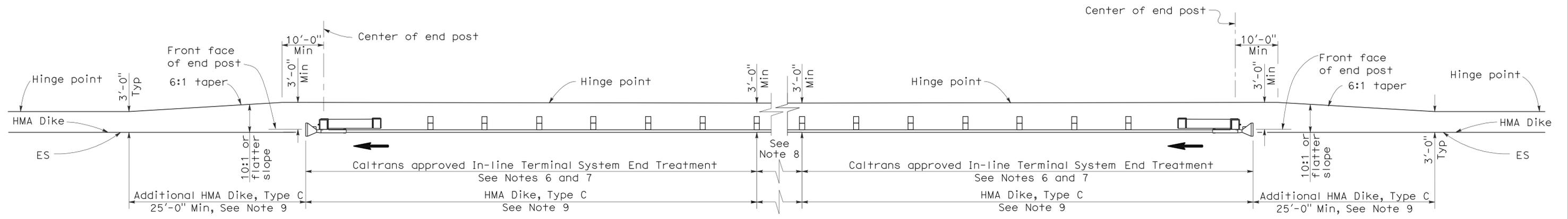
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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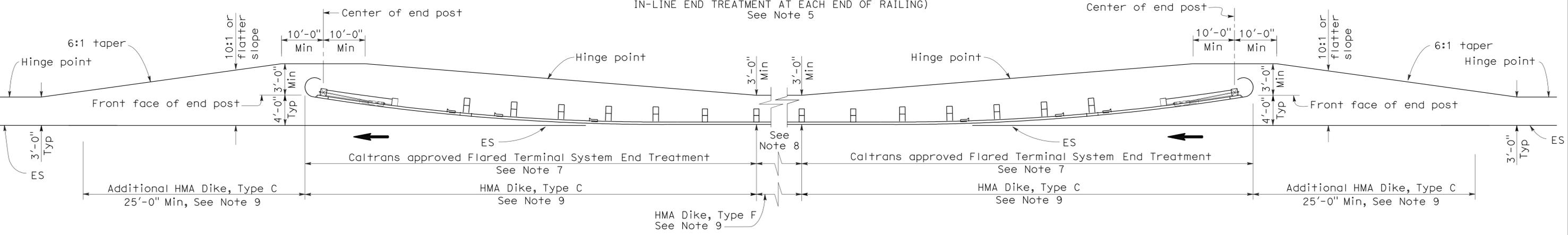
REGISTERED PROFESSIONAL ENGINEER
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Exp. 6-30-09
CIVIL
STATE OF CALIFORNIA

To accompany plans dated 4-16-12



TYPE 11D LAYOUT

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



TYPE 11E LAYOUT

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

NOTES:

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

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

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

2006 REVISED STANDARD PLAN RSP A77E2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	630	760

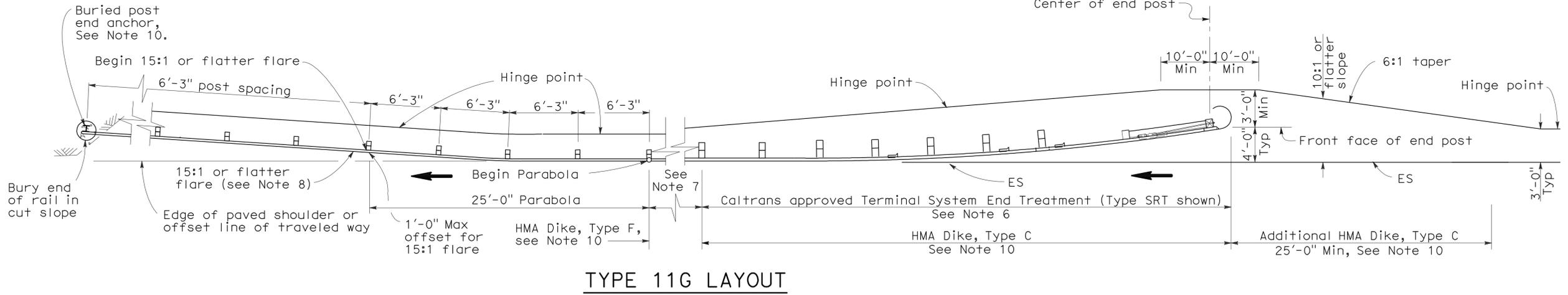
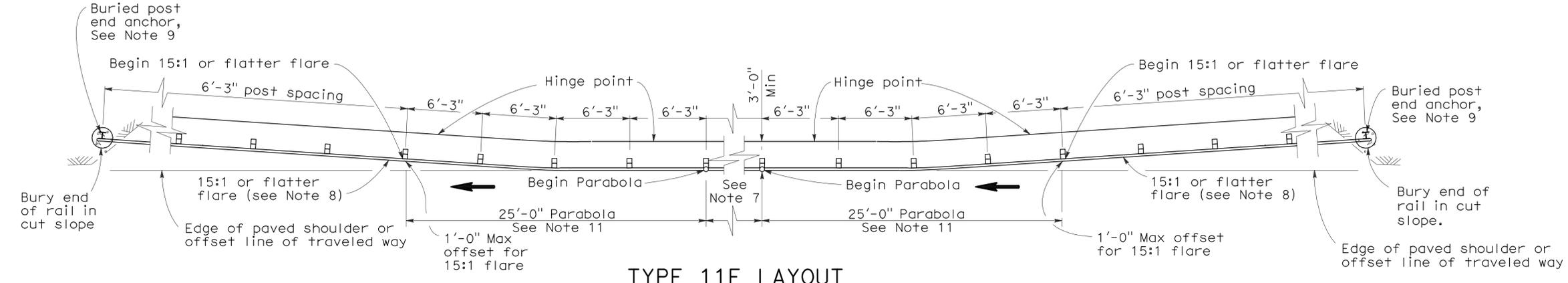
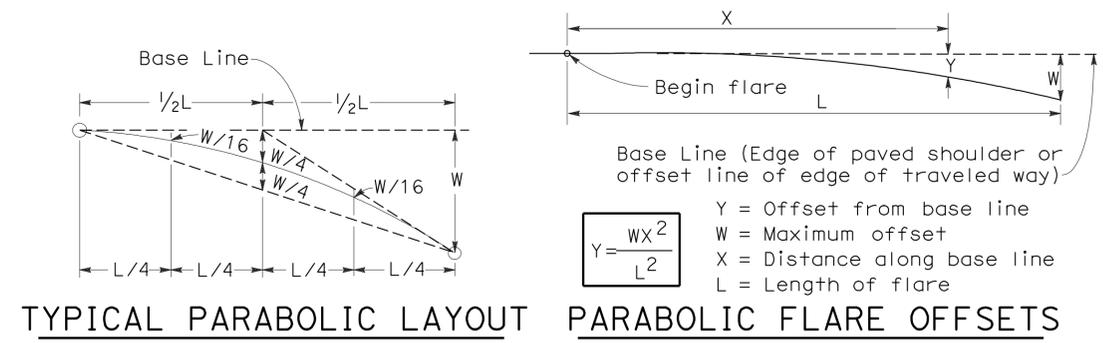
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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 4-16-12



NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77E3

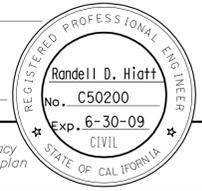
2006 REVISED STANDARD PLAN RSP A77E3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	631	760

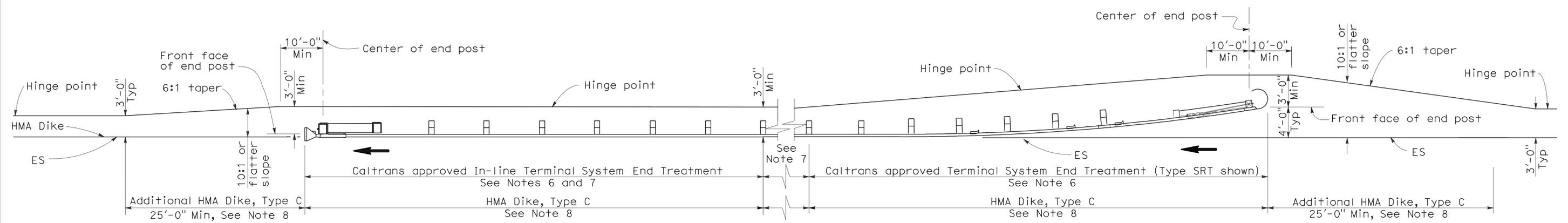
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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To accompany plans dated 4-16-12



TYPE 11H LAYOUT

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

NOTES:

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

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

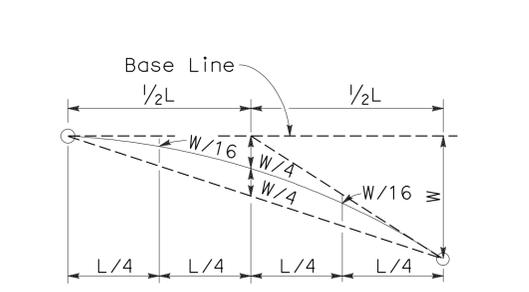
RSP A77E4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E4
DATED MAY 1, 2006 - PAGE 51 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77E4

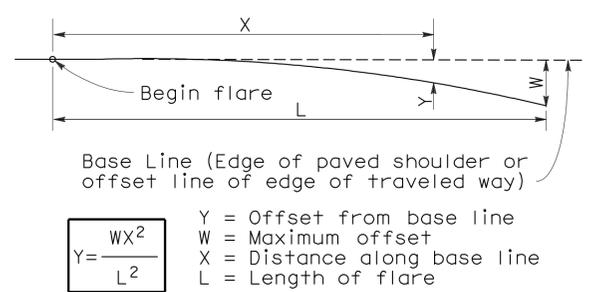
2006 REVISED STANDARD PLAN RSP A77E4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	632	760

RANDALL D. HIATT
 REGISTERED CIVIL ENGINEER
 June 6, 2008
 PLANS APPROVAL DATE
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TYPICAL PARABOLIC LAYOUT

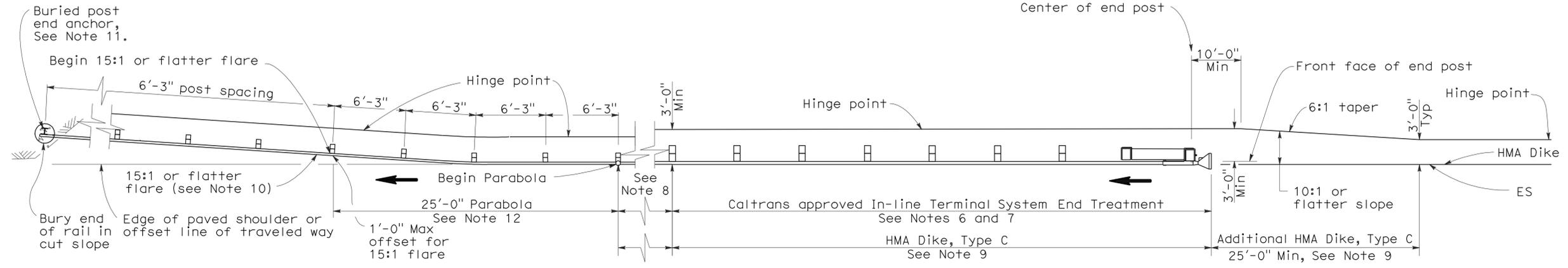


PARABOLIC FLARE OFFSETS

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

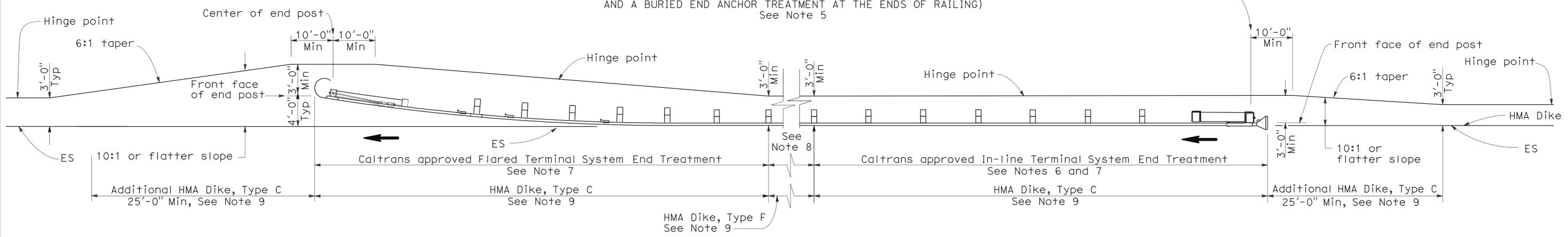
Y = Offset from base line
 W = Maximum offset
 X = Distance along base line
 L = Length of flare

To accompany plans dated 4-16-12



TYPE 11I LAYOUT

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



TYPE 11J LAYOUT

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

NOTES:

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

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

NO SCALE
RSP A77E5 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E5
DATED MAY 1, 2006 - PAGE 52 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77E5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	633	760

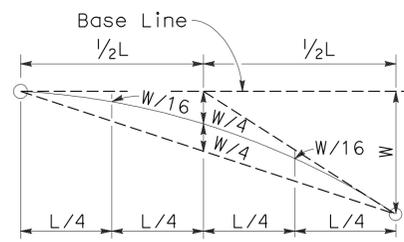
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

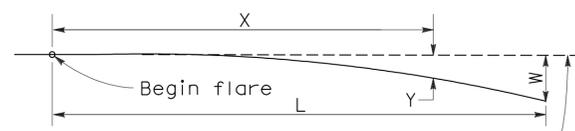
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To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP A77E6



TYPICAL PARABOLIC LAYOUT

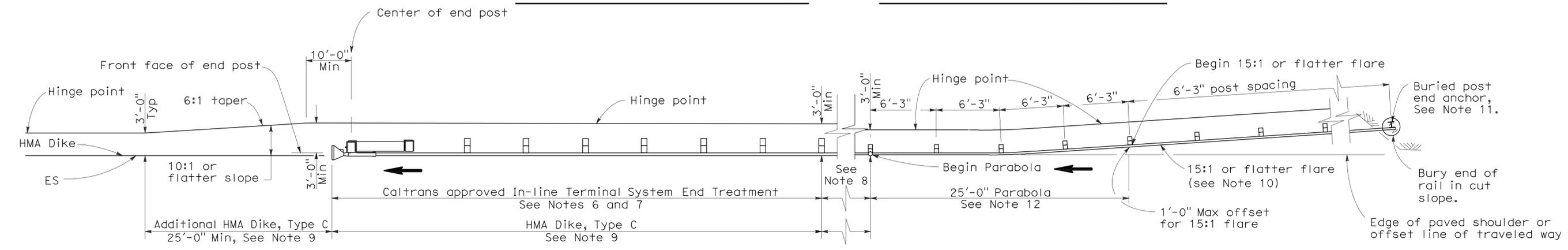


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

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

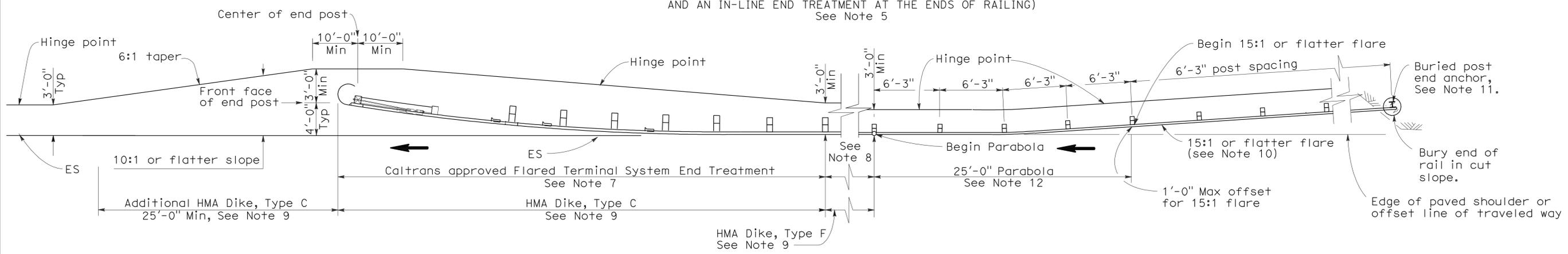
Y = Offset from base line
W = Maximum offset
X = Distance along base line
L = Length of flare

PARABOLIC FLARE OFFSETS



TYPE 11K LAYOUT

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



TYPE 11L LAYOUT

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

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	634	760

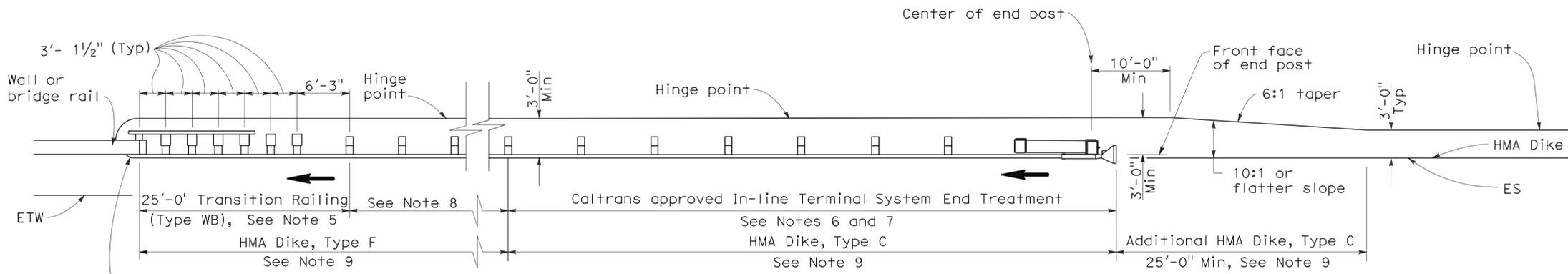
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

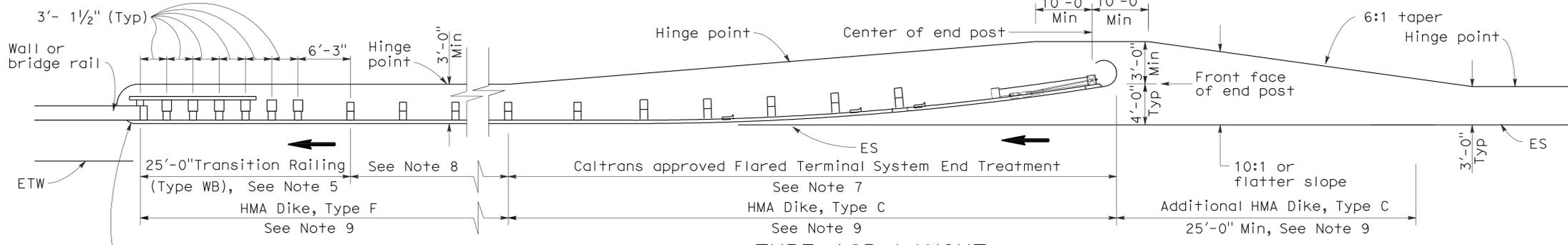
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To accompany plans dated 4-16-12



TYPE 12A LAYOUT

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



TYPE 12B LAYOUT

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

NOTES:

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

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

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

2006 REVISED STANDARD PLAN RSP A77F1

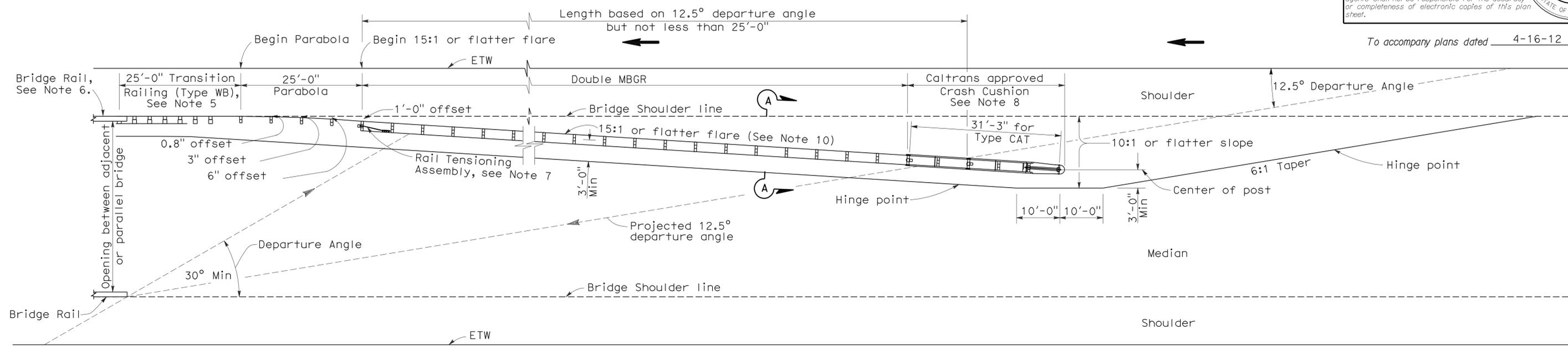
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	635	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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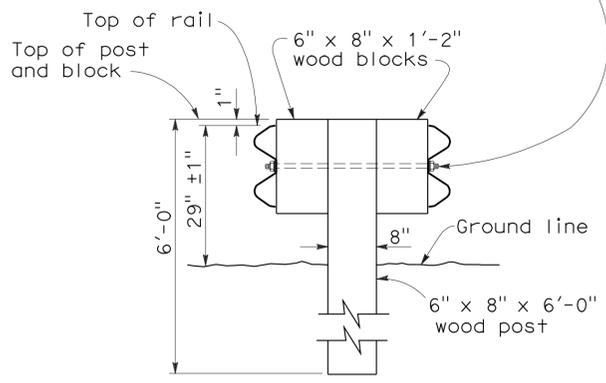
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA



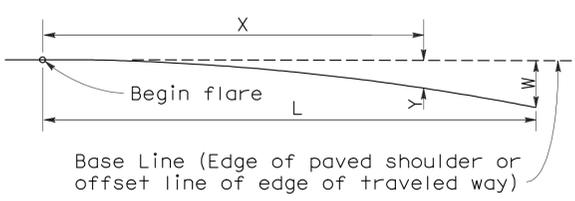
To accompany plans dated 4-16-12

TYPE 12E LAYOUT
See Note 10

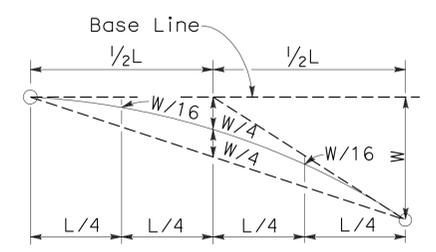
5/8" Ø Button head bolt with hex nut or 5/8" Ø Rod, threaded both ends, with hex nuts. 1/2" Max exposed threads after hex nut(s) tightened. No washer on rail faces for bolted connection to line post.



SECTION A-A
TYPICAL DOUBLE METAL BEAM GUARD RAILING



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

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

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

NO SCALE
RSP A77F3 DATED MAY 20, 2011 SUPERSEDES RSP A77F3 DATED JUNE 6, 2008 AND STANDARD PLAN A77F3 DATED MAY 1, 2006 - PAGE 56 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77F3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	636	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

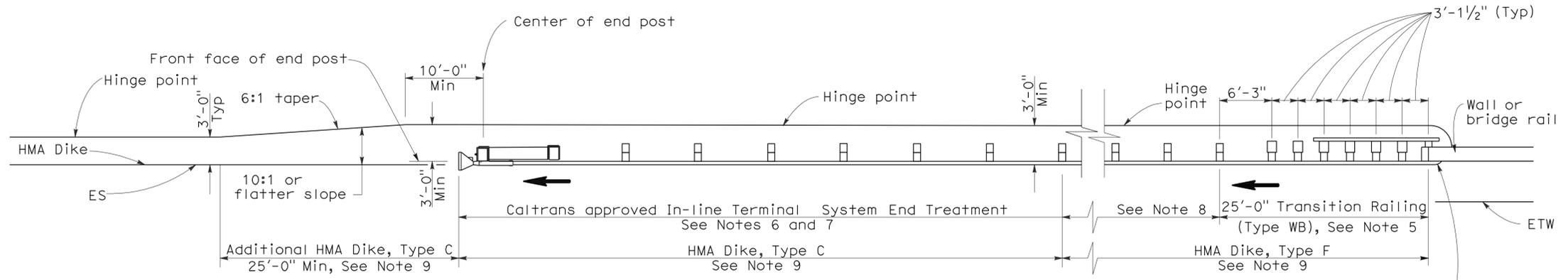
June 6, 2008
PLANS APPROVAL DATE

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

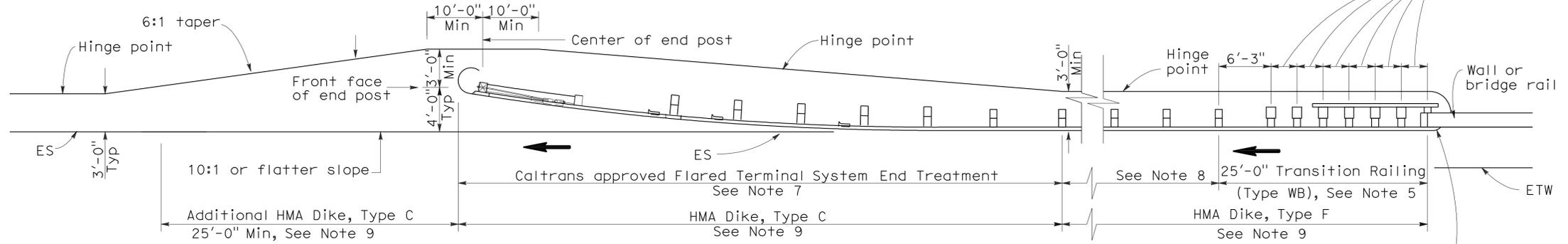
To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP A77F4



TYPE 12AA LAYOUT

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



TYPE 12BB LAYOUT

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

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77F4

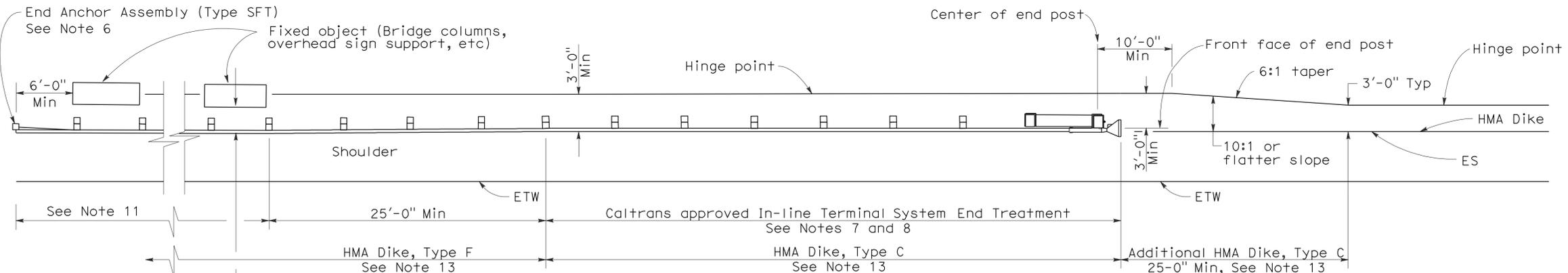
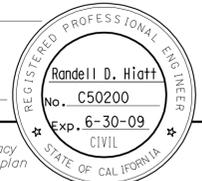
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	637	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

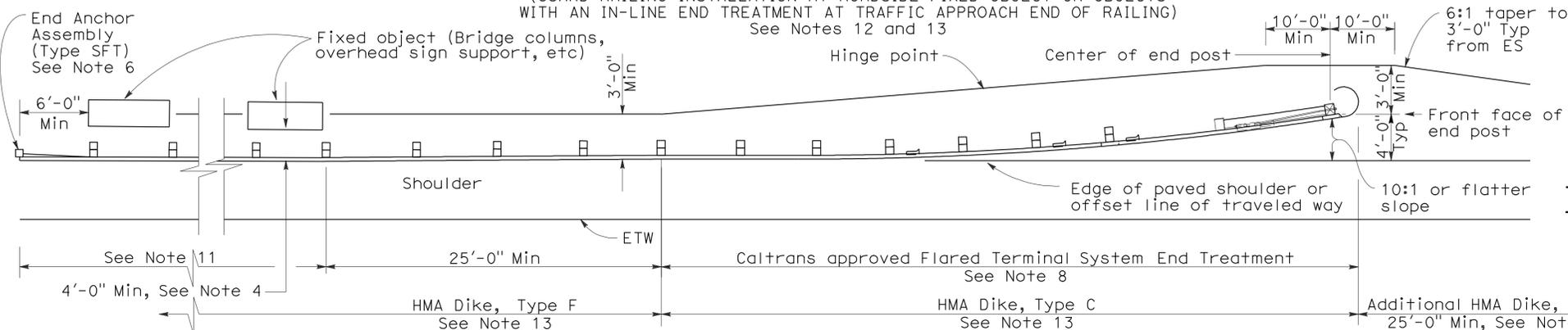
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To accompany plans dated 4-16-12



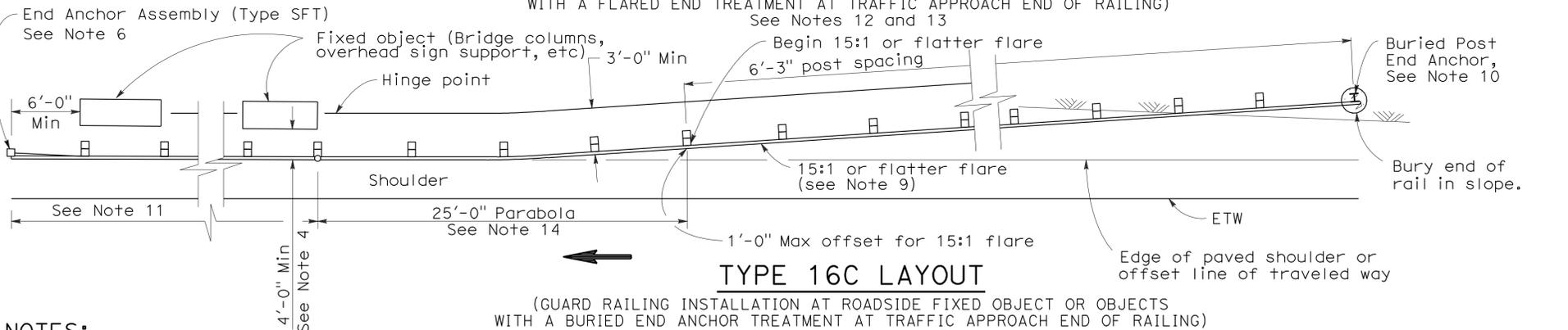
TYPE 16A LAYOUT

(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



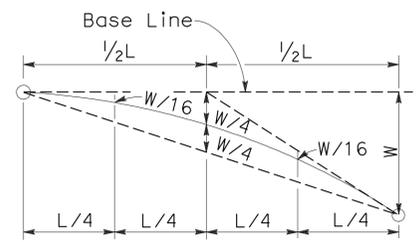
TYPE 16B LAYOUT

(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

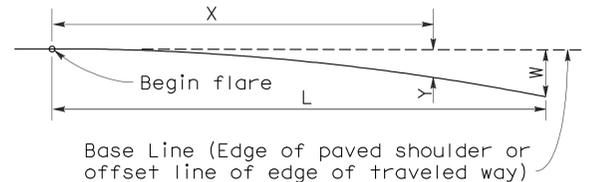


TYPE 16C LAYOUT

(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



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

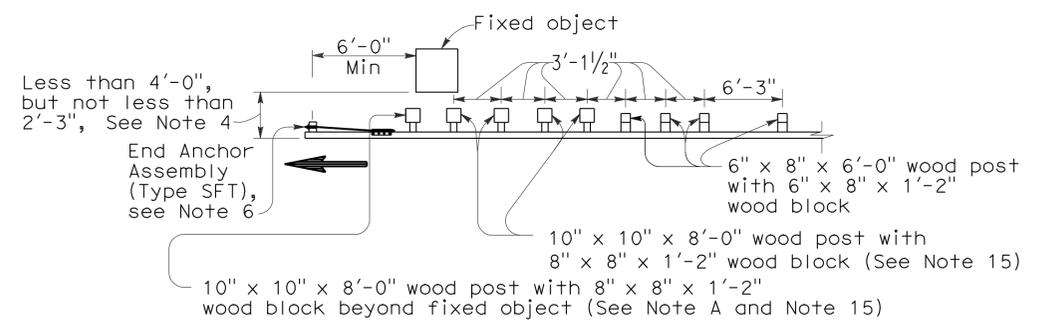
$Y = \frac{WX^2}{L^2}$

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

PARABOLIC FLARE OFFSETS

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

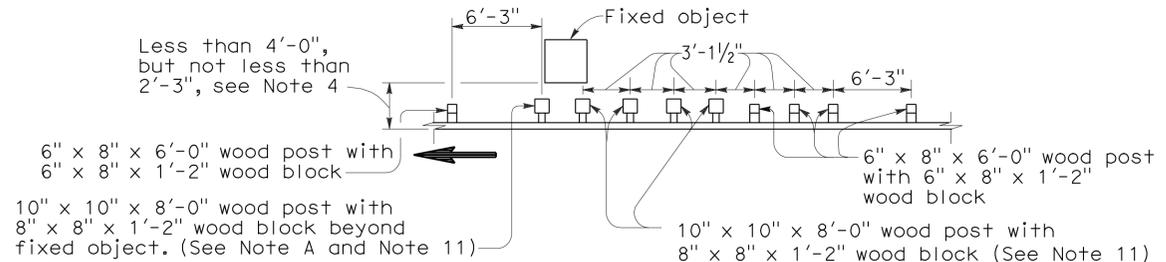
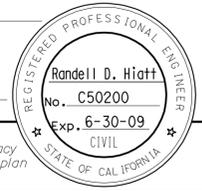
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	638	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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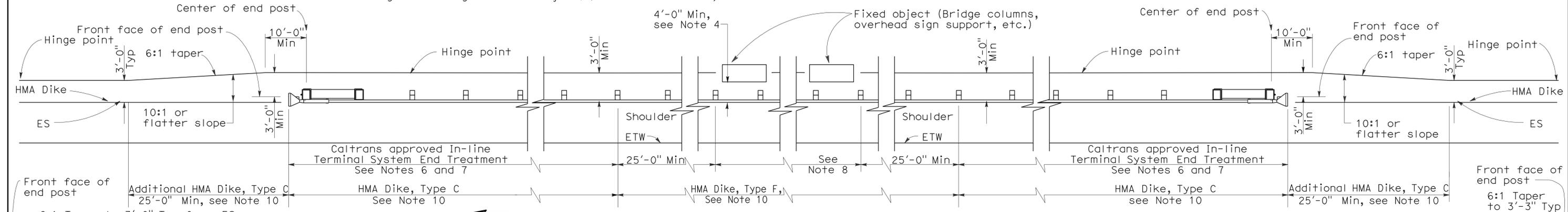
To accompany plans dated 4-16-12



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 object(s).

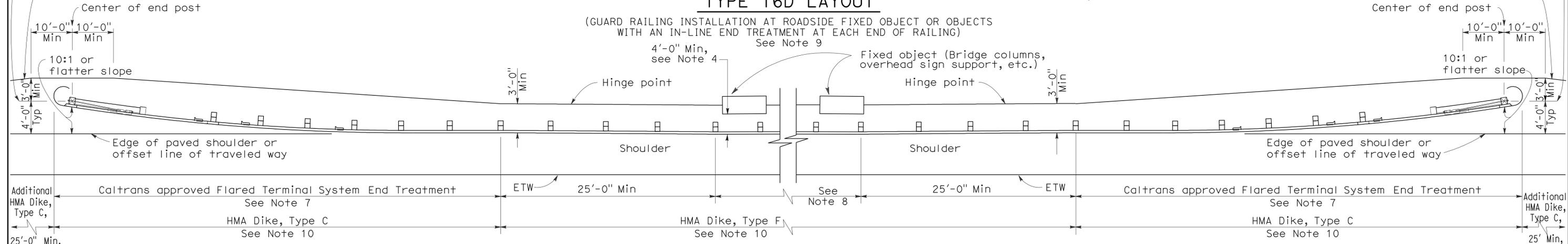
STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

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



TYPE 16D LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AT EACH END OF RAILING) See Note 9



TYPE 16E LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AT EACH END OF RAILING) See Note 9

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", 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 at 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 →.

- 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.
- 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 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.

- 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."

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**
NO SCALE

RSP A77G4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G4
DATED MAY 1, 2006 - PAGE 62 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G4

2006 REVISED STANDARD PLAN RSP A77G4

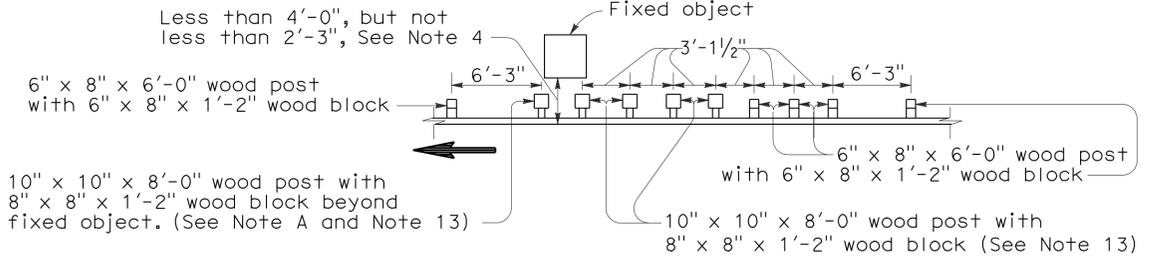
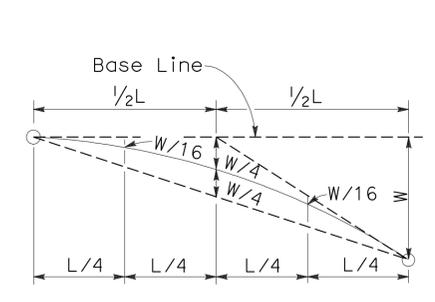
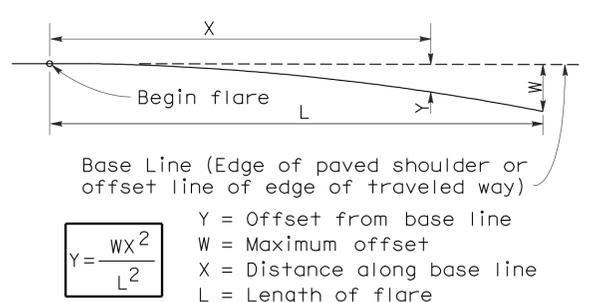
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	639	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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



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 object(s).

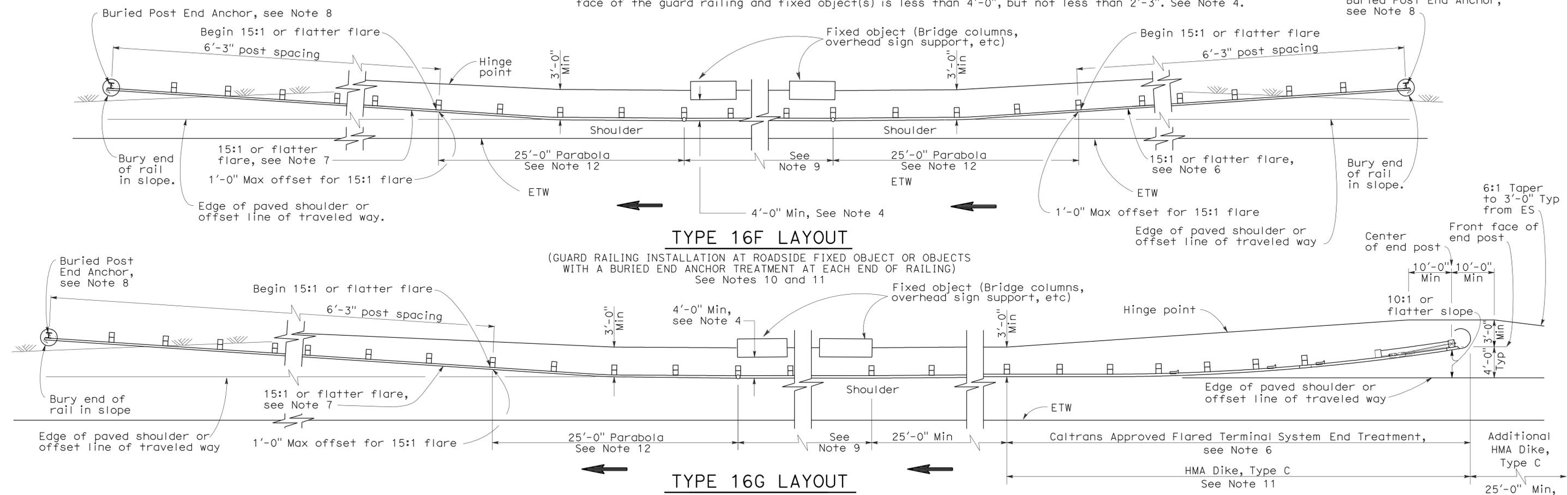
To accompany plans dated 4-16-12

PARABOLIC FLARE OFFSETS

TYPICAL PARABOLIC LAYOUT

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

Use strengthened railing sections with Layout Types 16F or 16G 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.



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 8" 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.
- 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 at 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 →.

- The type of terminal system to be used will be shown on the Project Plans.
- The 15:1 or flatter flare for the buried post anchor 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 details, 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 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used on highways where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions 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".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**

NO SCALE

RSP A77G5 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G5
DATED MAY 1, 2006 - PAGE 63 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G5

2006 REVISED STANDARD PLAN RSP A77G5

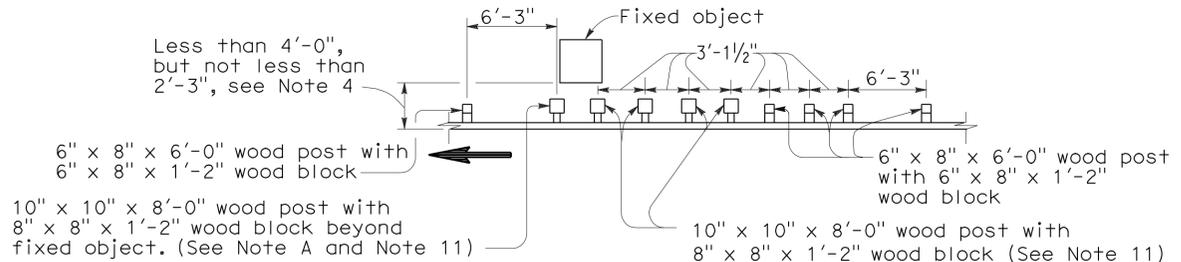
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	640	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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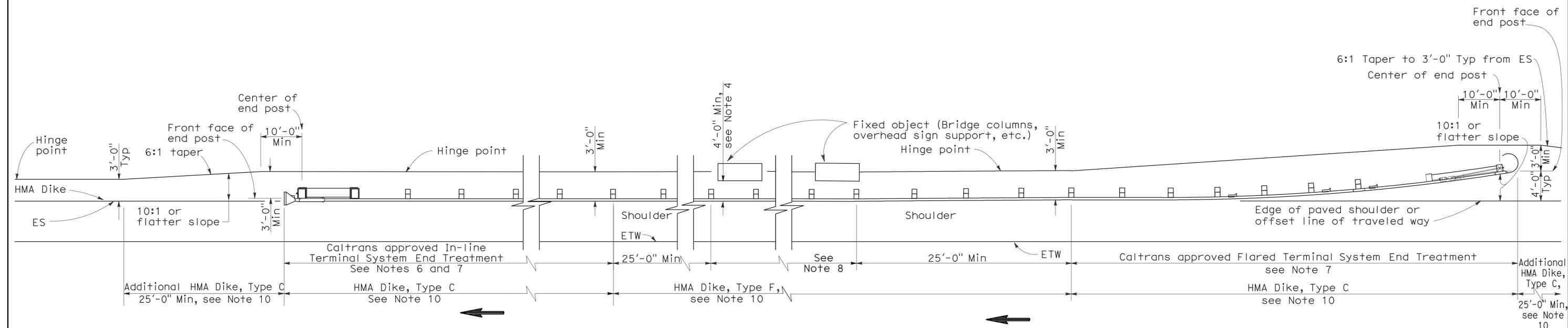
To accompany plans dated 4-16-12



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 object(s).

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

Use strengthened railing sections with Layout Type 16H 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.



TYPE 16H LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AND AN IN-LINE TREATMENT AT THE ENDS OF RAILING) See Note 9

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 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 at 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 .

- 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.
- 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 16D through 16L, shown on the A77G Series of Revised Standard Plans, typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- 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".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE
RSP A77G6 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G6
DATED MAY 1, 2006 - PAGE 64 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G6

2006 REVISED STANDARD PLAN RSP A77G6

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	641	760

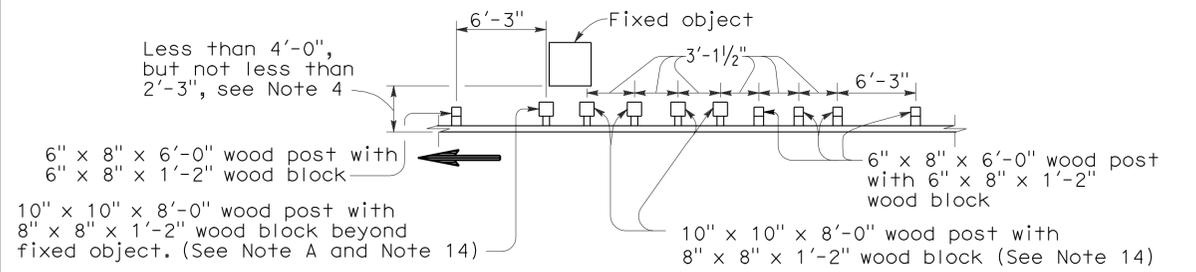
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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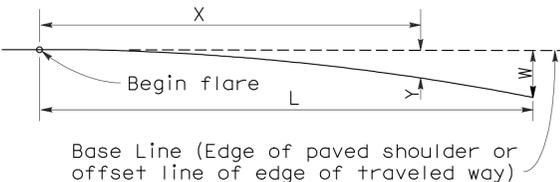
To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP A77G7



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 object(s).

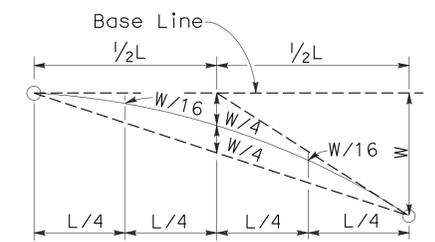
STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT



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

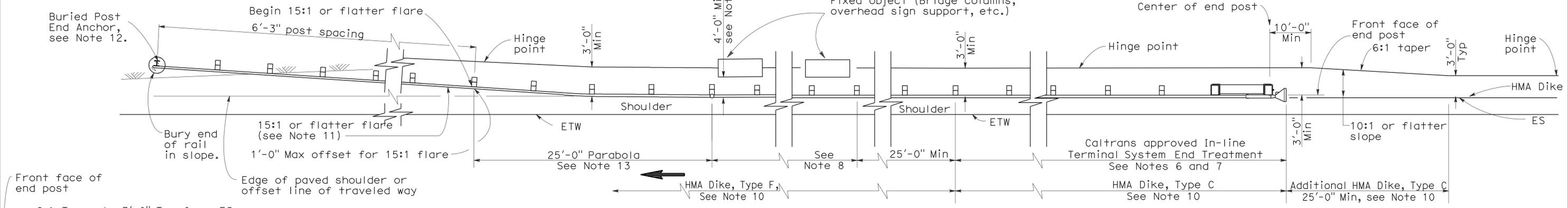
Y = Offset from base line
W = Maximum offset
X = Distance along base line
L = Length of flare

PARABOLIC FLARE OFFSETS



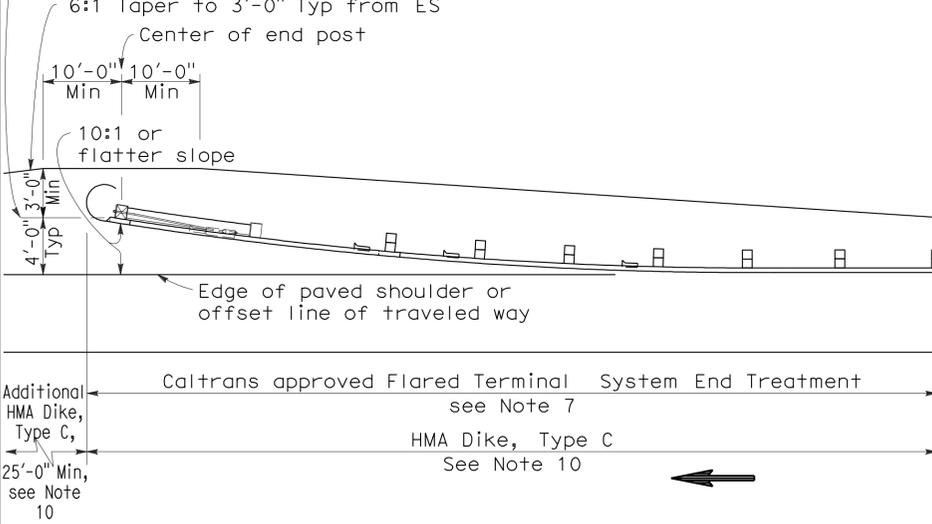
TYPICAL PARABOLIC LAYOUT

Use strengthened railing sections with Layout Types 16I or 16J 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.



TYPE 16I LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AND A BURIED END ANCHOR TREATMENT AT THE ENDS OF RAILING) See Note 9



TYPE 16J LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AND A FLARED END TREATMENT AT THE ENDS OF RAILING) See Note 9

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" 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.
- 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 at 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 .

- 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.
- 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 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- The 15:1 or flatter flare for the buried post anchor 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 Buried Post End Anchor details, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard RSP Plan 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".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS
NO SCALE

RSP A77G7 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G7
DATED MAY 1, 2006 - PAGE 65 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	642	760

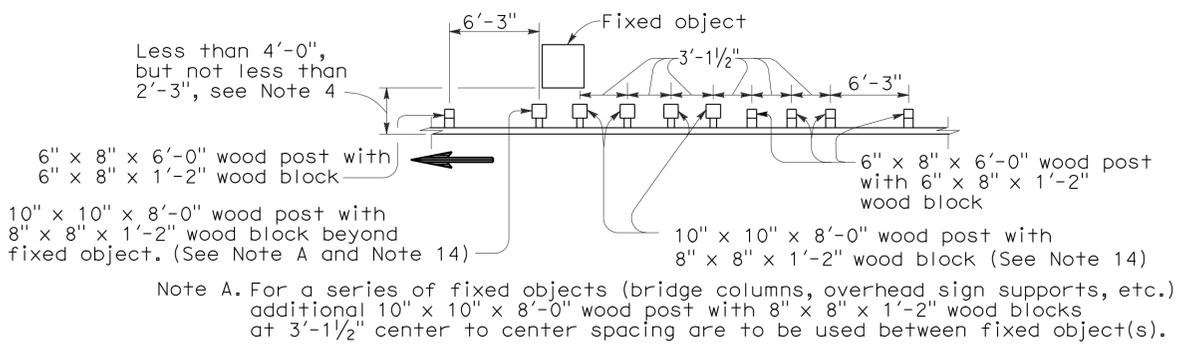
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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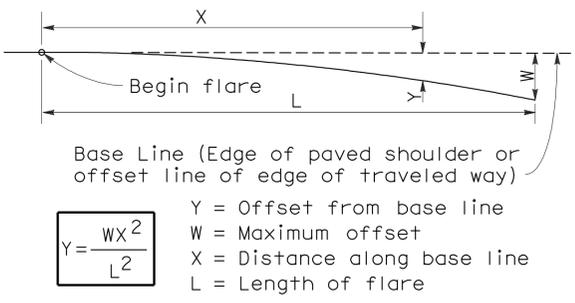
To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP A77G8

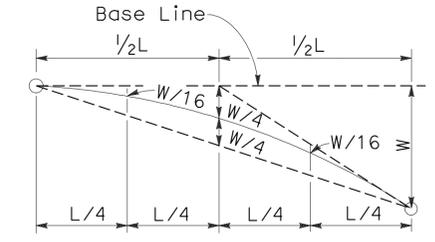


STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

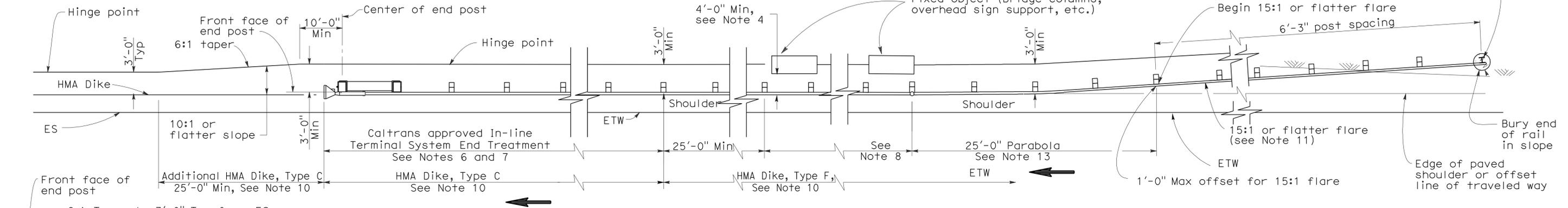
Use strengthened railing sections with Layout Types 16K or 16L Layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



PARABOLIC FLARE OFFSETS

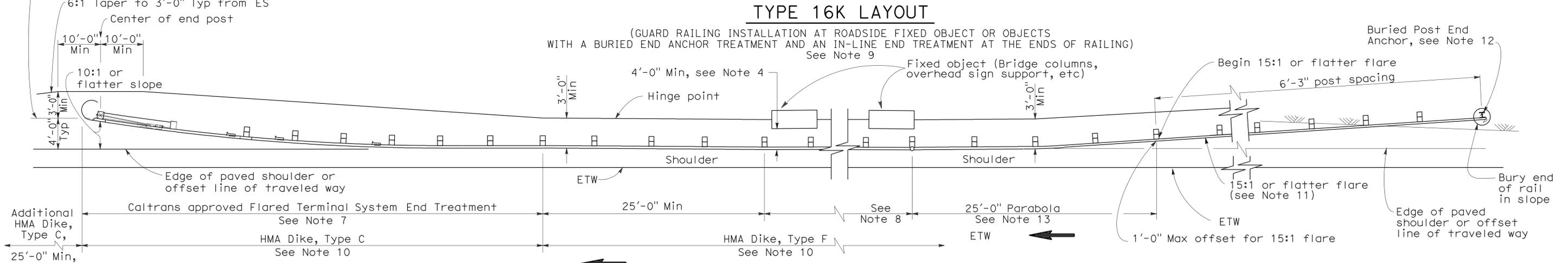


TYPICAL PARABOLIC LAYOUT



TYPE 16K LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AND AN IN-LINE END TREATMENT AT THE ENDS OF RAILING) See Note 9



TYPE 16L LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AND A FLARED END TREATMENT AT THE ENDS OF RAILING) See Note 9

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 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 at 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 →.

- 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.
- 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 16D through 16L, shown on the A77G Series of Revised Standard Plans are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- The 15:1 or flatter flare for the buried post anchor 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 Buried Post End Anchor details, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard RSP Plan 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".

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

NO SCALE
RSP A77G8 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G8
DATED MAY 1, 2006 - PAGE 66 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G8

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	643	760

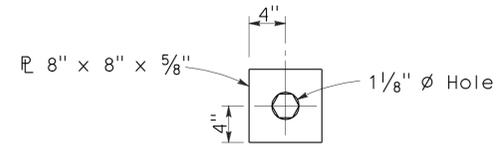
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

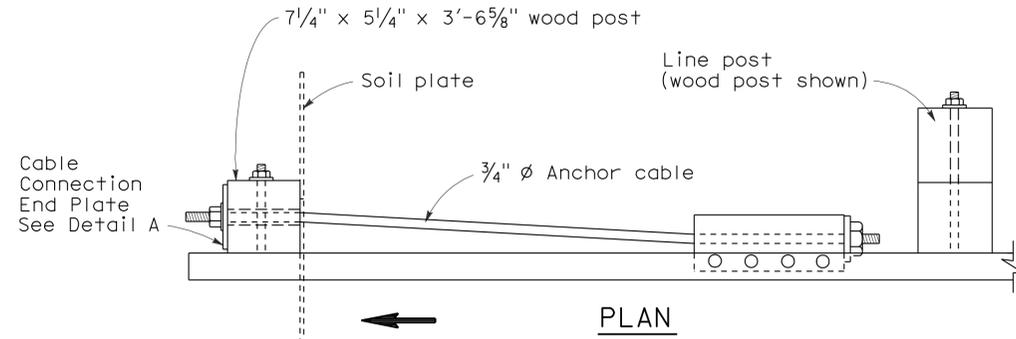
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REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

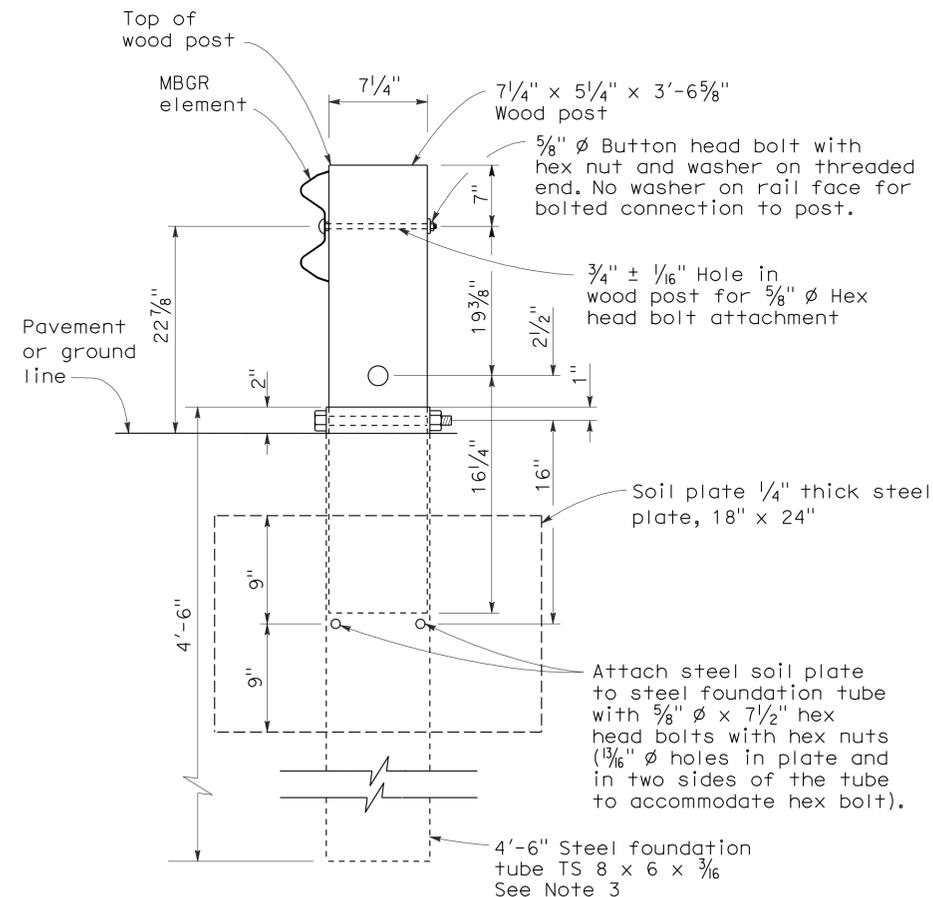
To accompany plans dated 4-16-12



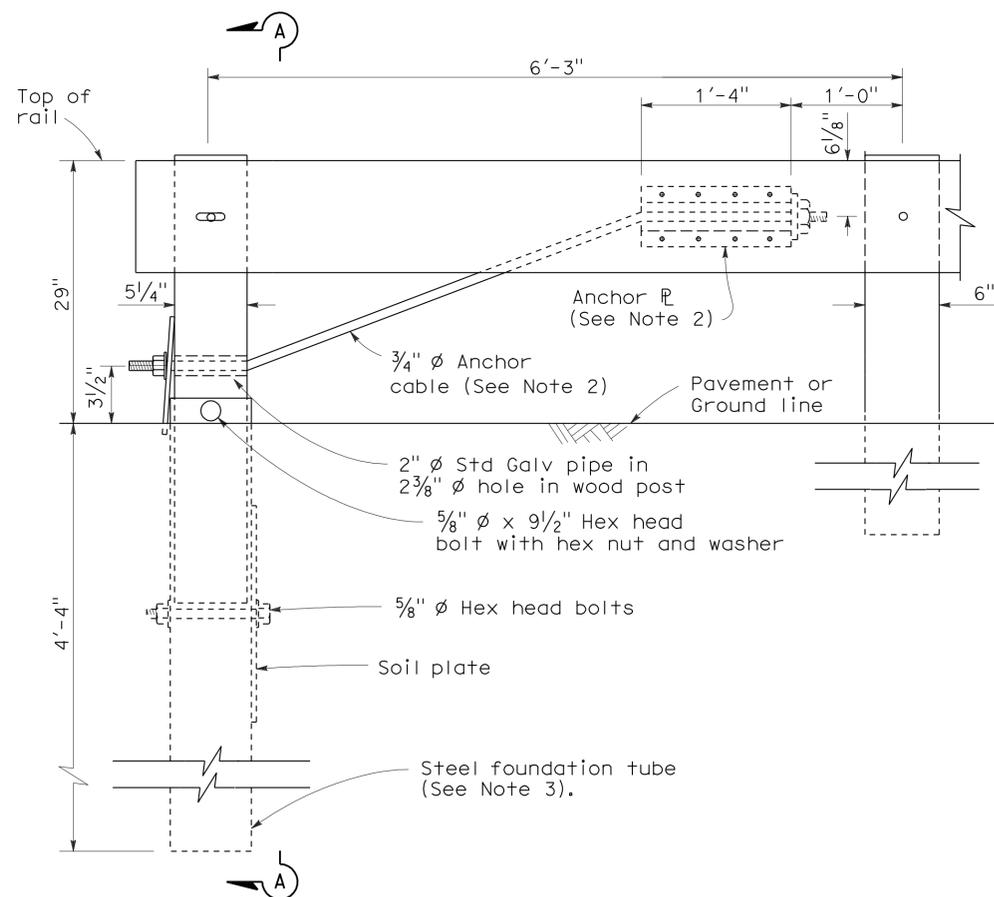
DETAIL A
CABLE CONNECTION
END PLATE



PLAN



SECTION A-A



ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)

See Note 1

NOTES:

1. See the A77E, A77F and A77G series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 3/4" cable, see Standard Plan A77H3.
3. A 6'-0" length steel foundation tube, TS 8 x 6 x 3/16, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" diameter hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. Direction of traffic indicated by →.
5. Install line post, steel foundation tube and soil plate in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL RAILING
END ANCHOR ASSEMBLY
(TYPE SFT)

NO SCALE

RSP A77H1 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77H1
DATED MAY 1, 2006 - PAGE 67 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77H1

2006 REVISED STANDARD PLAN RSP A77H1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	644	760

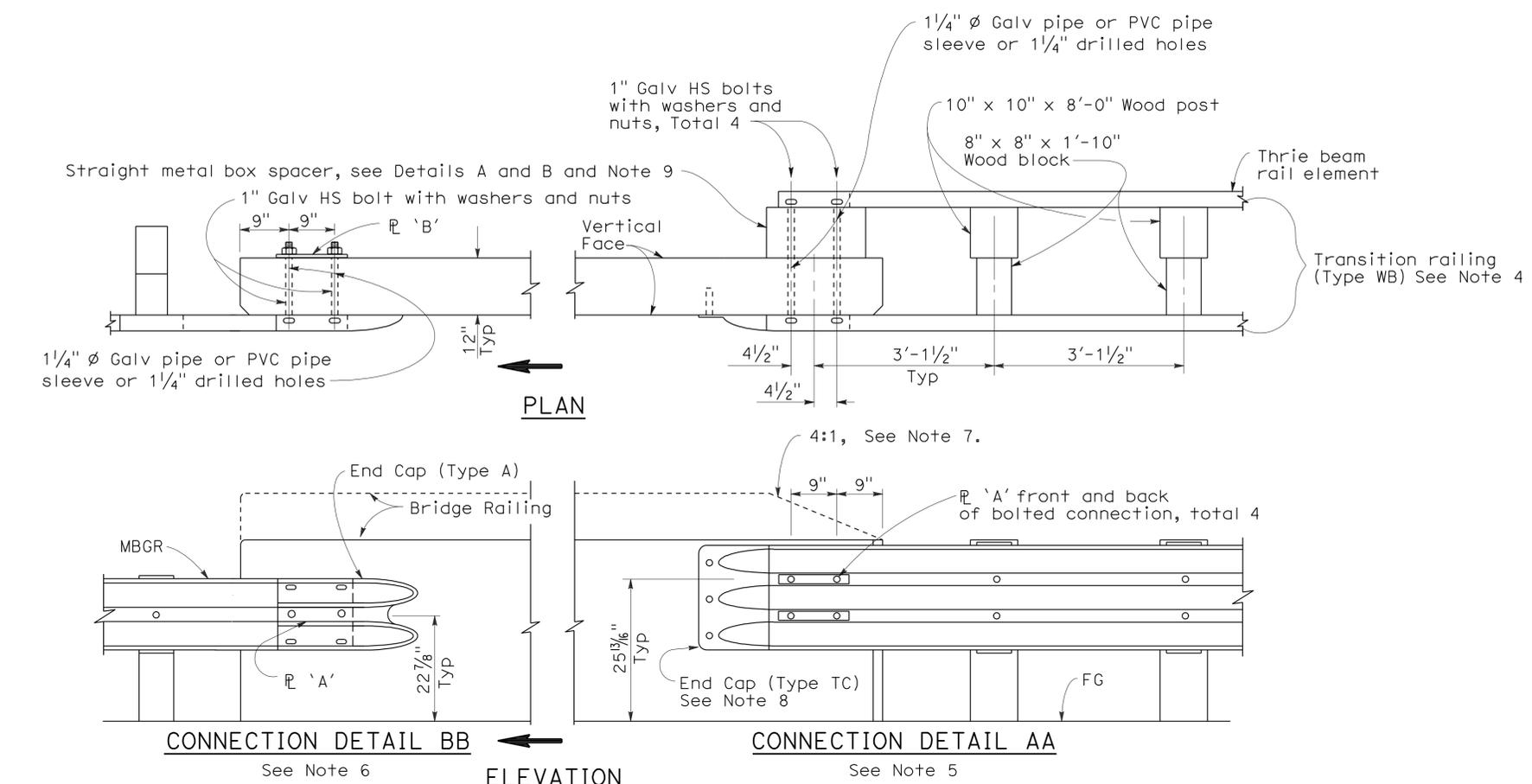
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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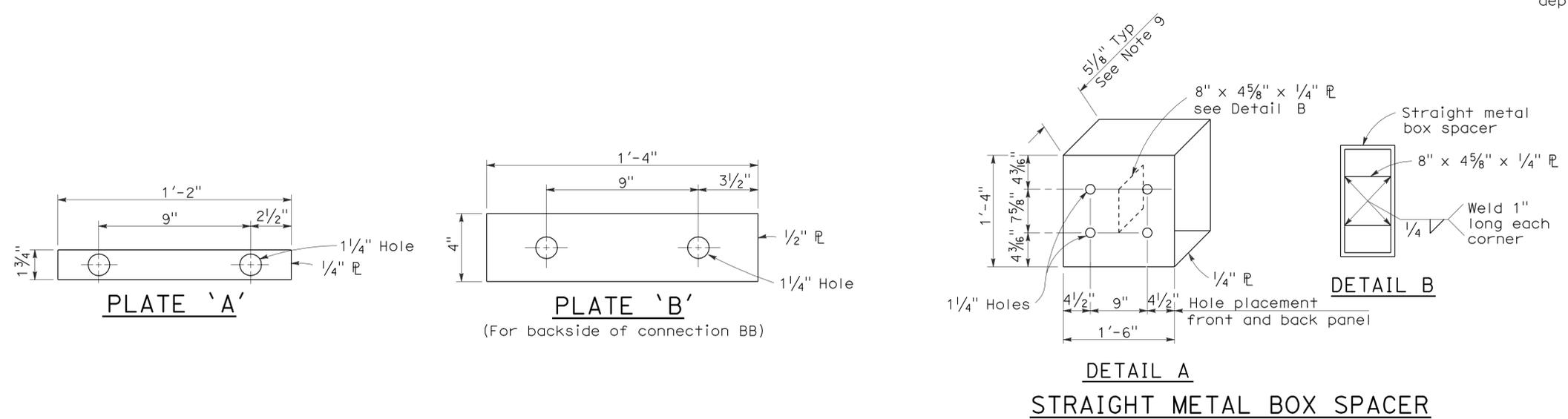
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

To accompany plans dated 4-16-12



- NOTES:**
- See Revised Standard Plan RSP A77J2 for additional connection details to bridges without sidewalks.
 - Additional details of posts, blocks and hardware are shown on Standard Plan A77B1, A77C1 and A77C2.
 - Direction of adjacent traffic indicated by \rightarrow .
 - For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gage w-beam standard railing section of guard railing to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
 - For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A77F1, Layout Types 12C and 12D on Standard Plan A77F2, and Layout Type 12E on Revised Standard Plan RSP A77F3.
 - For typical use of Connection Detail BB, see Layout Type 12D (structure departure railing connection) on Standard Plan A77F2 and Layout Type 12DD on Standard Plan A77F5.
 - Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail.
 - For details of End Cap (Type TC), see Standard Plan A77J4.
 - See Standard Plan A77J4 for additional details regarding depth dimension for straight metal box spacer.

GUARD RAILING CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS DETAILS No.1

NO SCALE
RSP A77J1 DATED MAY 20, 2011 SUPERSEDES RSP A77J1 DATED JUNE 6, 2008 AND STANDARD PLAN A77J1 DATED MAY 1, 2006 - PAGE 72 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77J1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	645	760

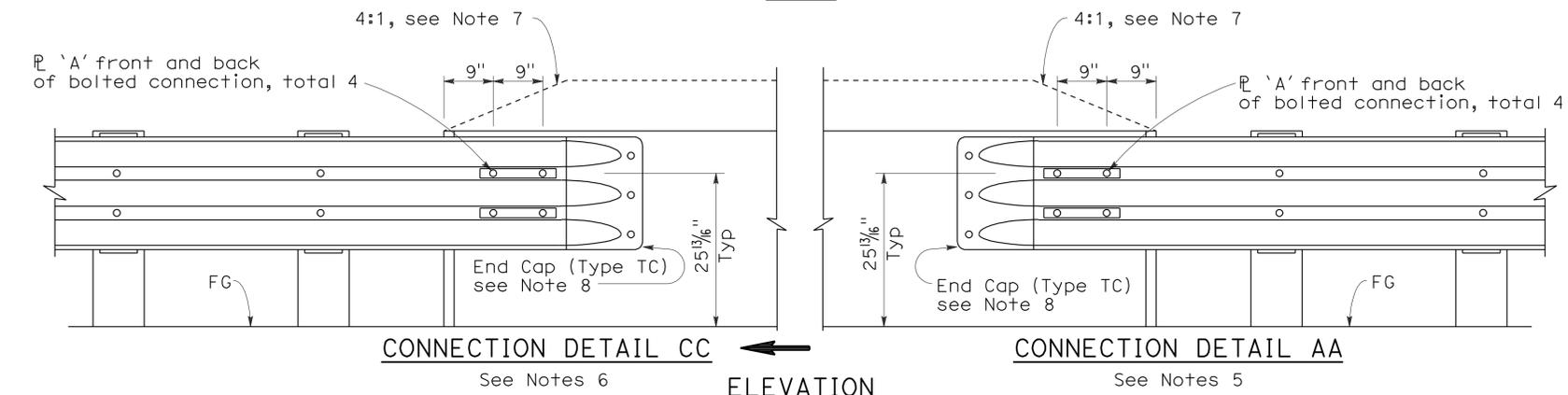
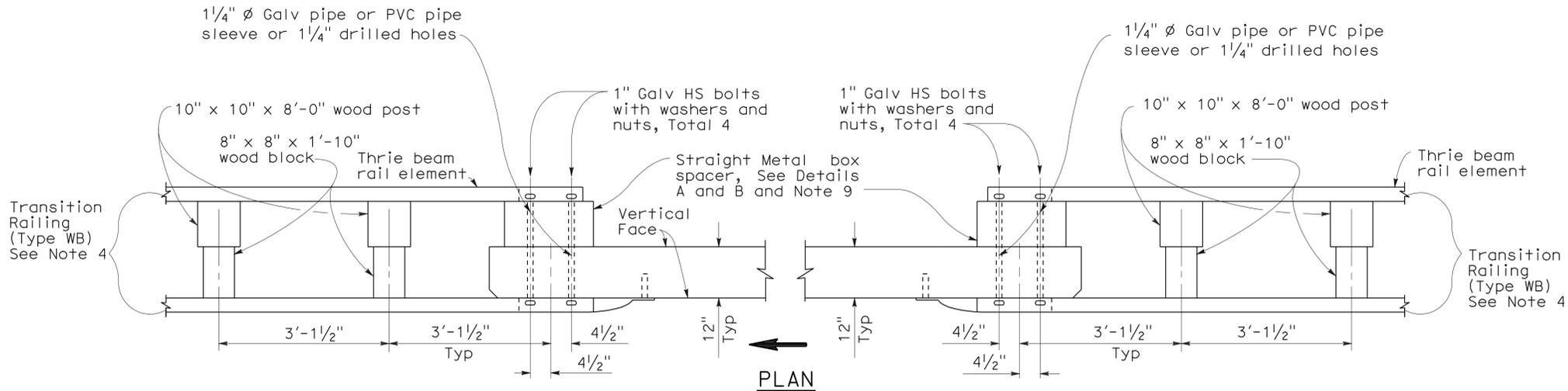
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

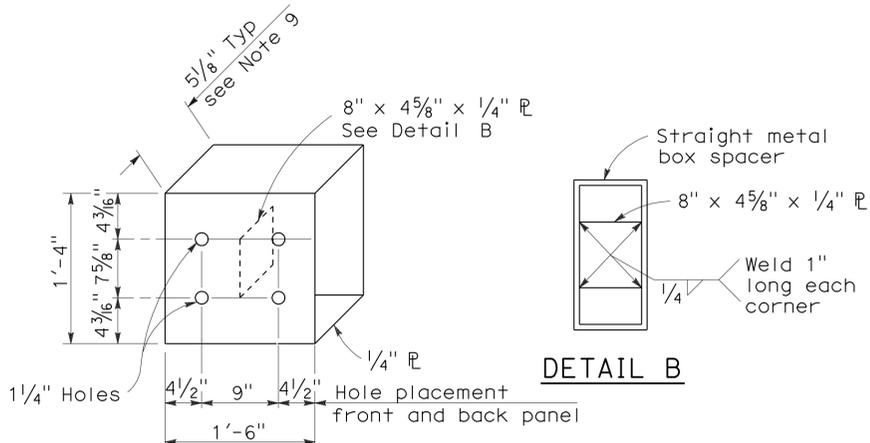
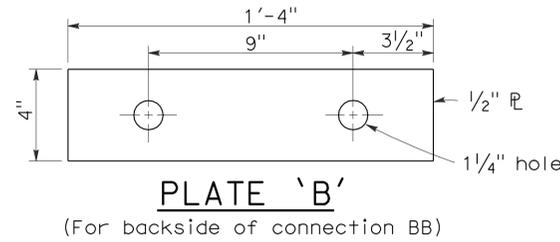
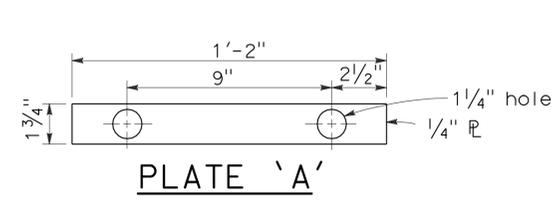
To accompany plans dated 4-16-12



GUARD RAILING CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

- See Revised Standard Plan RSP A77J1 for additional connection details to bridges without sidewalks.
- Additional details of posts, blocks and hardware are shown on Standard Plan A77B1, A77C1 and A77C2.
- Direction of adjacent traffic indicated by →.
- For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gage w-beam standard railing section of guard railing to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
- For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A77F1, Layout Types 12C and 12D on Standard Plan A77F2, and Layout Type 12E on Revised Standard Plan RSP A77F3.
- For typical use of Connection Detail CC, see Layout Types 12AA and 12BB on Standard Plan A77F4 and Layout Type 12CC on Standard Plan A77F5.
- Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA and connection Detail CC, 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 Plans A77J4.
- See Standard Plans A77J4 for additional details regarding depth dimension for straight metal box spacer.



**DETAIL A
STRAIGHT METAL BOX SPACER**

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
CONNECTIONS TO BRIDGE RAILINGS
WITHOUT SIDEWALKS DETAILS No.2**

NO SCALE
RSP A77J2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77J2
DATED MAY 1, 2006 - PAGE 73 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77J2

2006 REVISED STANDARD PLAN RSP A77J2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	646	760

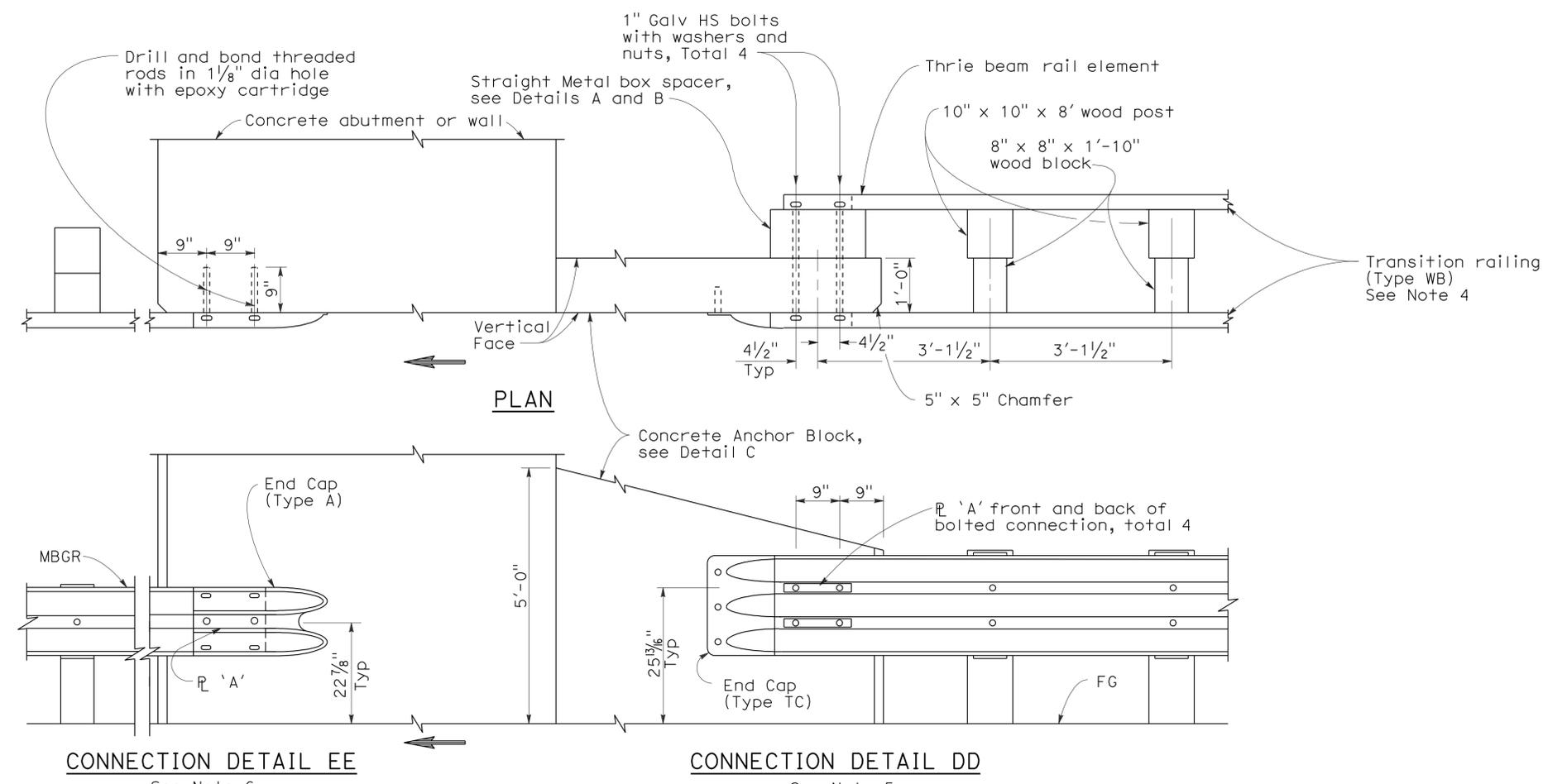
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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To accompany plans dated 4-16-12

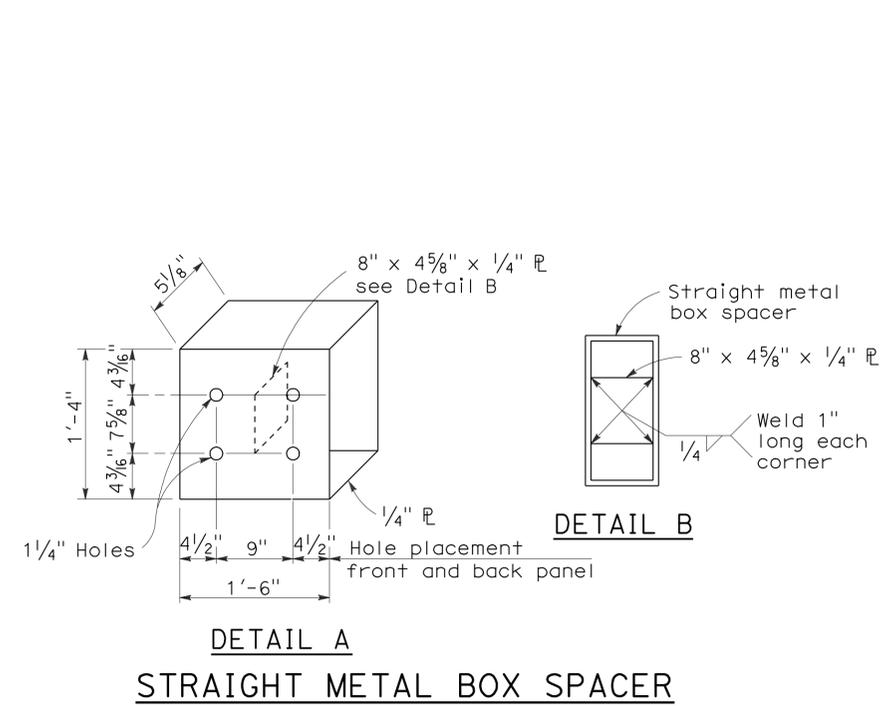


NOTES:

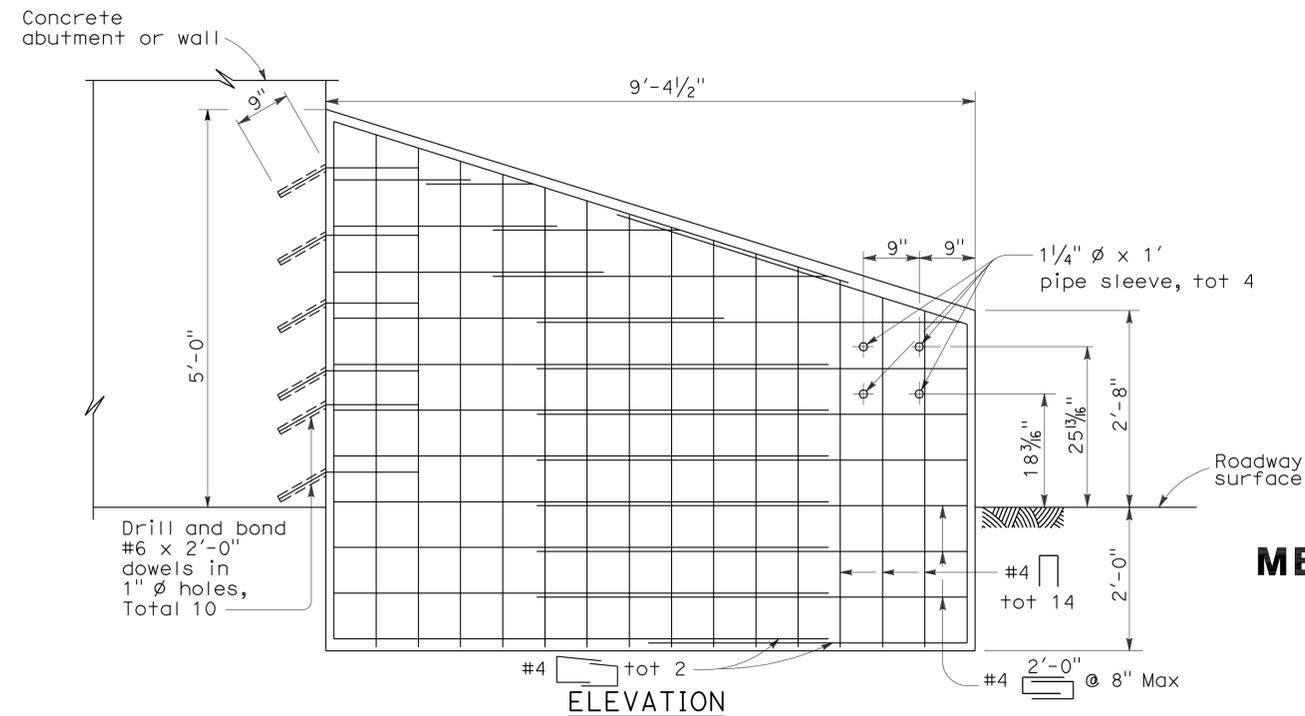
1. These connection details apply to abutments and walls.
2. Additional details of posts, blocks and hardware are shown on Standard Plans A77B1, A77C1 and A77C2.
3. Direction of adjacent traffic indicated by \rightarrow .
4. For additional details of Transition Railing (Type WB), see Standard Plan A77J4 Transition Railing (Type WB) transitions the 12 gage w-beam standard railing section of guard railing to a heavier gage nested thrie beam railing section which is connected to the concrete anchor block.
5. For typical use of Connection Details DD, See Layout Types 12A and 12B on Standard Plan A77F1 and Layout Types 12C and 12D on Standard Plan A77F2.
6. For typical use of Connection Detail EE, see Layout Type 12D on Standard Plan A77F2 and Layout Type 12DD on Standard Plan A77F5.

CONNECTION DETAIL EE See Note 6
CONNECTION DETAIL DD See Note 5

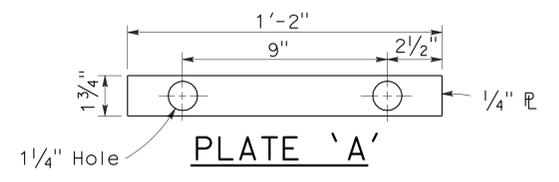
GUARD RAILING CONNECTION TO ABUTMENT OR WALL



STRAIGHT METAL BOX SPACER



ANCHOR BLOCK FOR TRANSITION RAILING CONNECTION



METAL BEAM GUARD RAILING CONNECTIONS TO ABUTMENTS AND WALLS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

NO SCALE

RSP A77J3 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77J3 DATED MAY 1, 2006 - PAGE 74 OF THE STANDARD PLANS BOOK DATED MAY 2006.

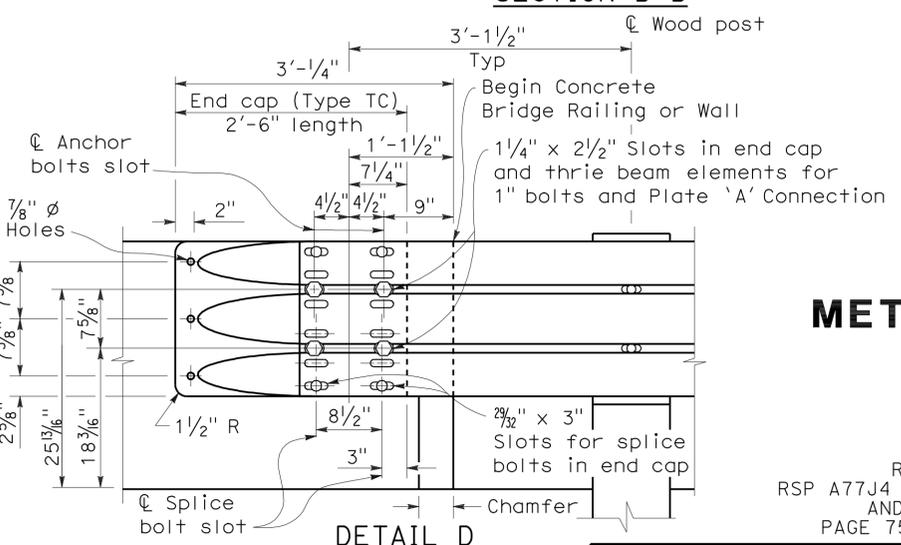
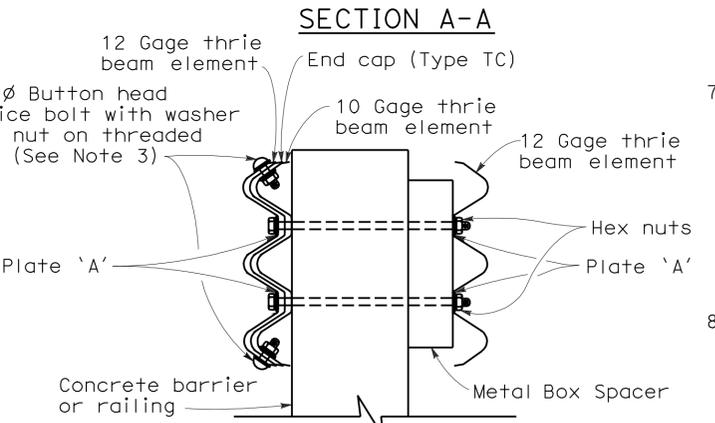
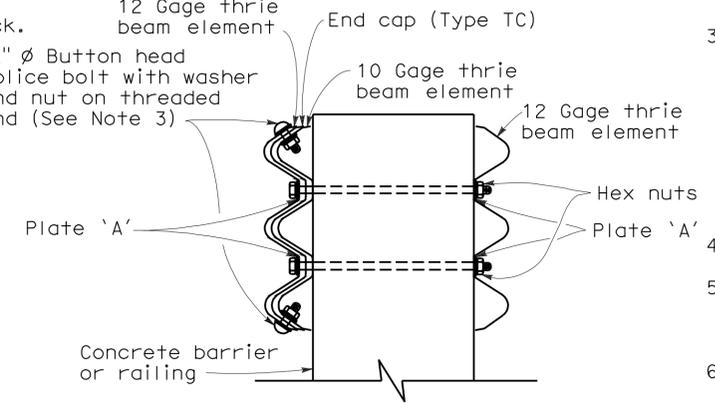
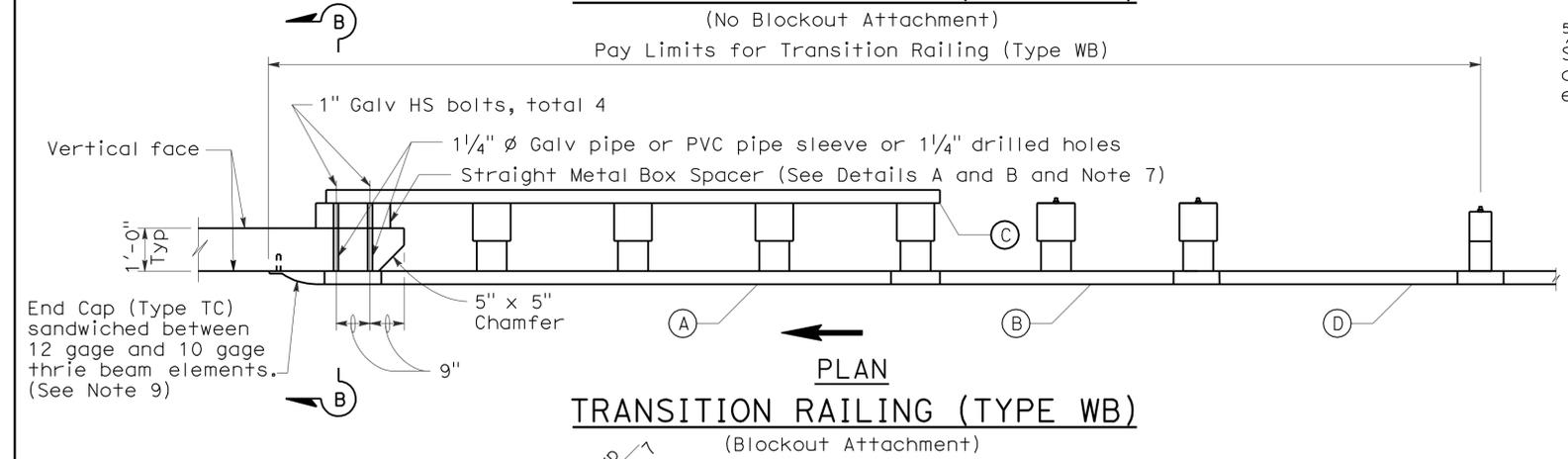
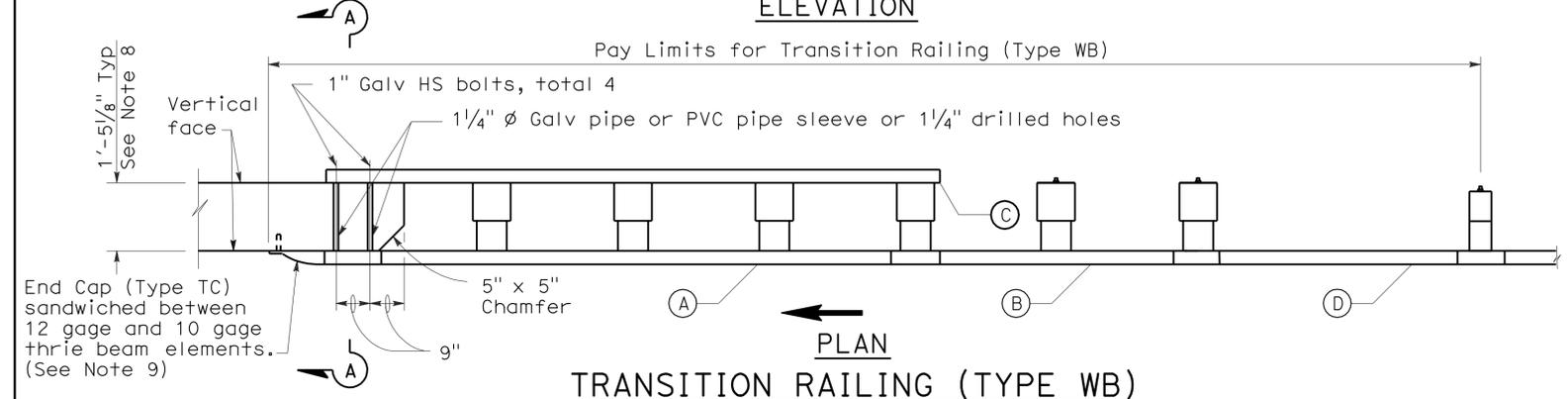
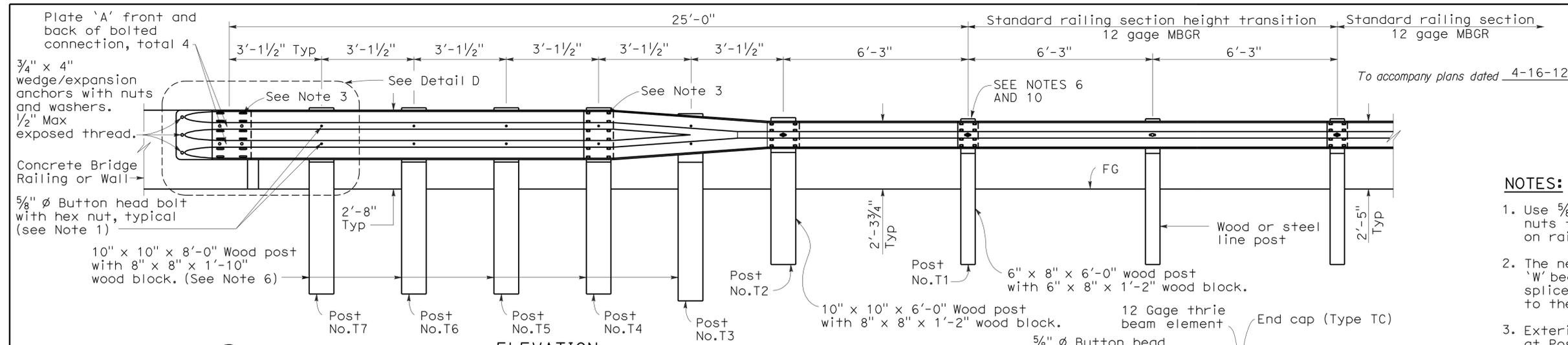
REVISED STANDARD PLAN RSP A77J3

2006 REVISED STANDARD PLAN RSP A77J3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	647	760

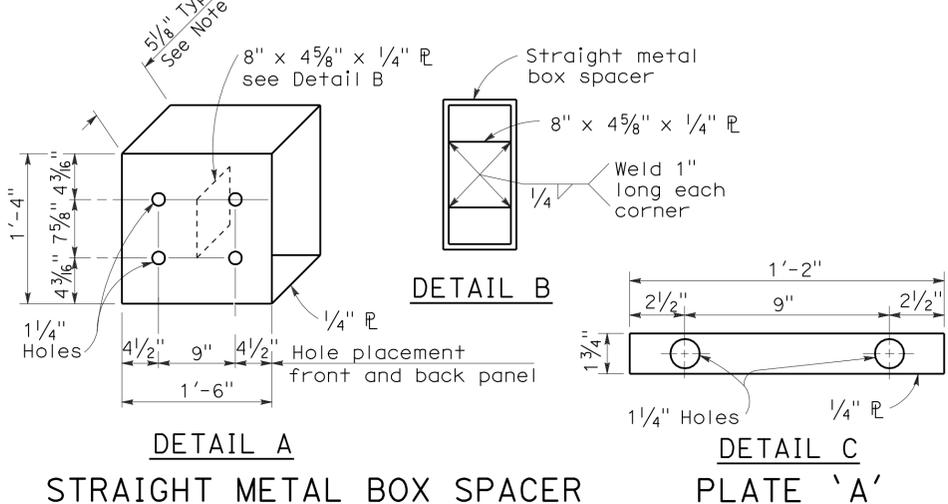
Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. C50200
 Exp. 6-30-11
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE
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- NOTES:**
- Use 5/8" ϕ Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
 - The nested rail elements, end cap, and "W" beam to thrie beam element may be spliced together prior to bolting the elements to the wood post and concrete barrier or railing.
 - Exterior splice bolt holes for rail element splices at Post No. T4 and the connection to the concrete barrier or railing shall be the standard 7/32" x 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1/4" ϕ . Only the top 2 and the bottom 2 splice bolts with washers and nuts are required for rail splices at Post No. T4 and the connection to the concrete barrier or railing.
 - Direction of adjacent traffic indicated by \rightarrow .
 - The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
 - Typically, the railing connected to Transition Railing (Type WB) will be either standard railing section of metal beam guard railing with height transition ratio of 120:1 or an approved Caltrans end treatment attached to Post No. T1.
 - The depth of the metal box spacer varies from the 5/8" to 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 17/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1/2", metal plates similar to Plate 'A' are to be used as spacers.
 - Where the width of the concrete railing or wall is greater than 17/8", wood blocks are to be used to fill the space created between the backside of Posts No. T4 through No. T7 and the rear thrie beam element. These wood blocks shall be 8" in width and 1'-2" in length. The dimension between the front thrie beam element and the rear thrie beam element is to match the width of the concrete railing or wall.
 - End cap may be installed over 12 gage and 10 gage thrie beam elements where transition railing is installed on the departure end of bridge railing.
 - Conform standard railing section height to 2'-3 3/4" at Post No. T1 using height transition ratio of 120:1.

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



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
 TRANSITION RAILING
 (TYPE WB)**
 NO SCALE
 RSP A77J4 DATED MAY 20, 2011 SUPERSEDES
 RSP A77J4 DATED JUNE 5, 2009, RSP A77J4 DATED JUNE 6, 2008
 AND STANDARD PLAN A77J4 DATED MAY 1, 2006 -
 PAGE 75 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77J4

2006 REVISED STANDARD PLAN RSP A77J4

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	648	760

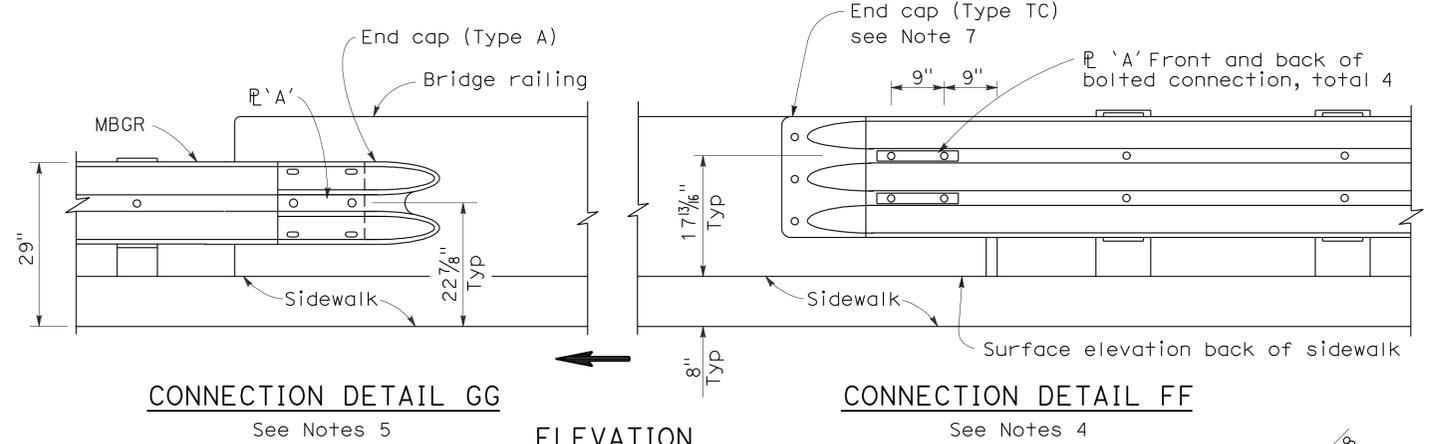
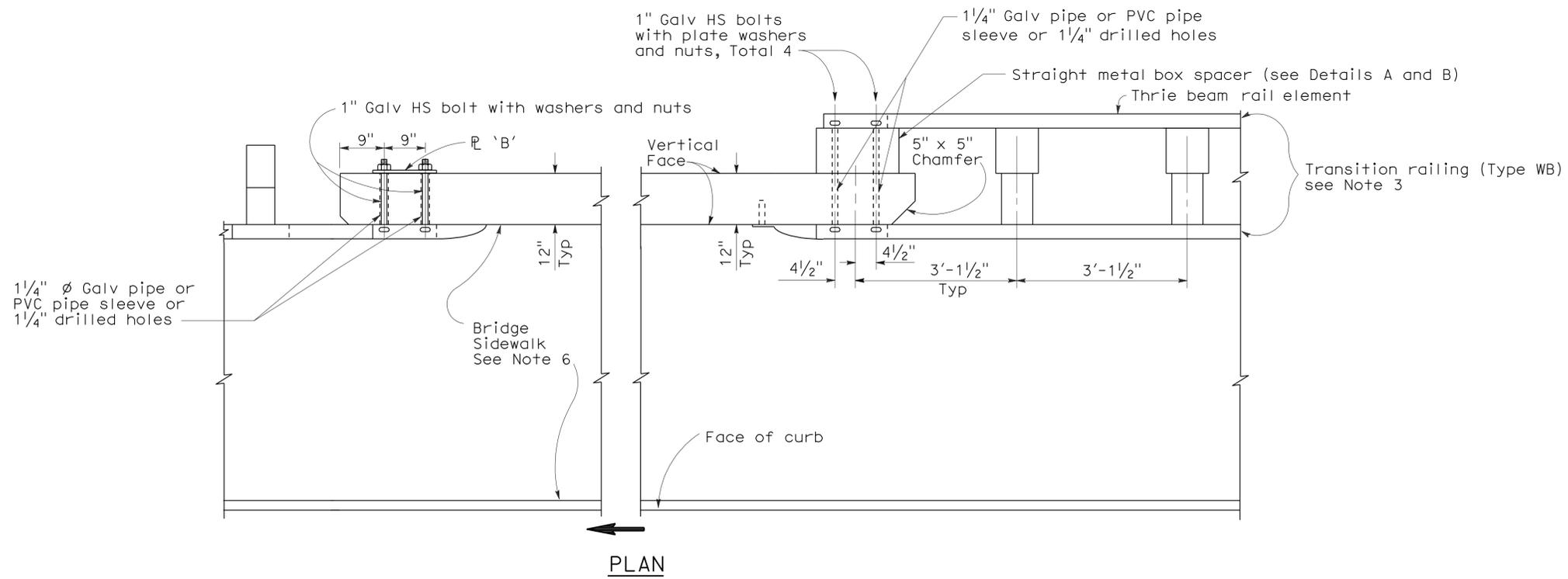
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

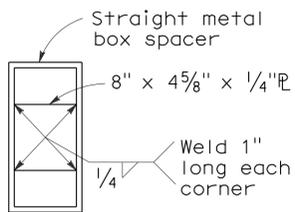
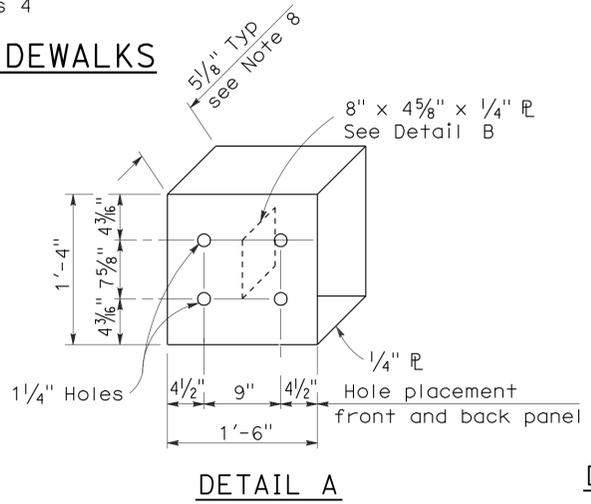
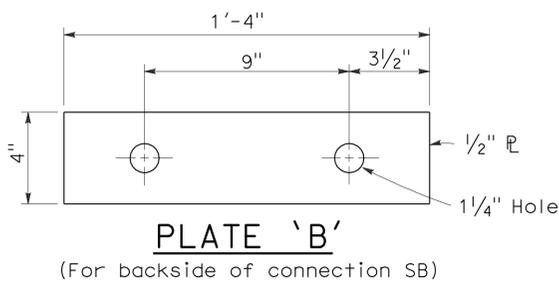
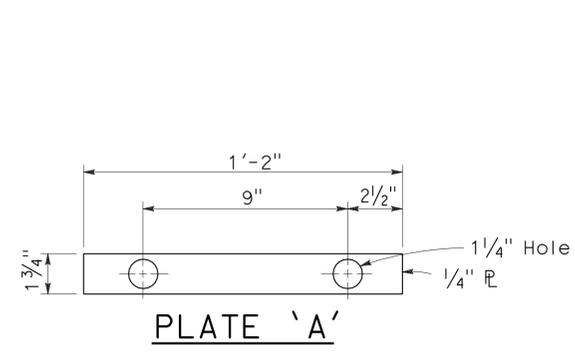
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To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP A77K1



GUARD RAILING CONNECTION TO BRIDGE RAILING WITH SIDEWALKS



METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILINGS WITH SIDEWALKS DETAILS No.1

RSP A77K1 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77K1 DATED MAY 1, 2006 - PAGE 76 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77K1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	649	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

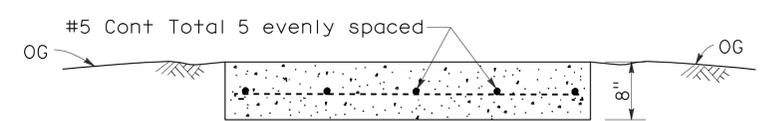
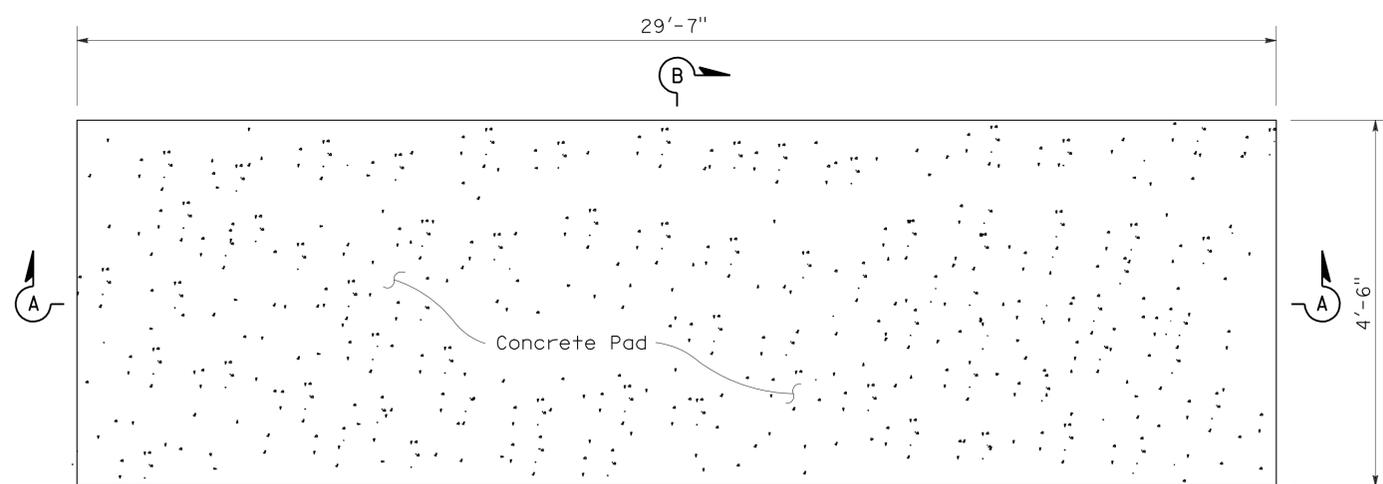
June 6, 2008
PLANS APPROVAL DATE

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

To accompany plans dated 4-16-12

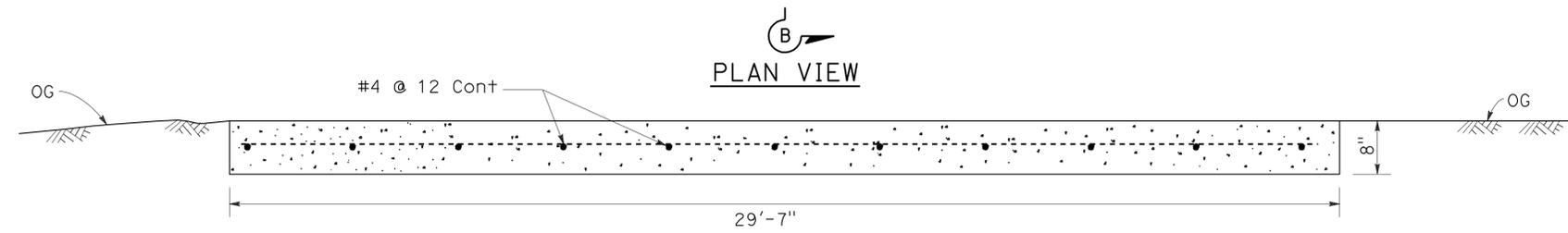
2006 REVISED STANDARD PLAN RSP A82C1



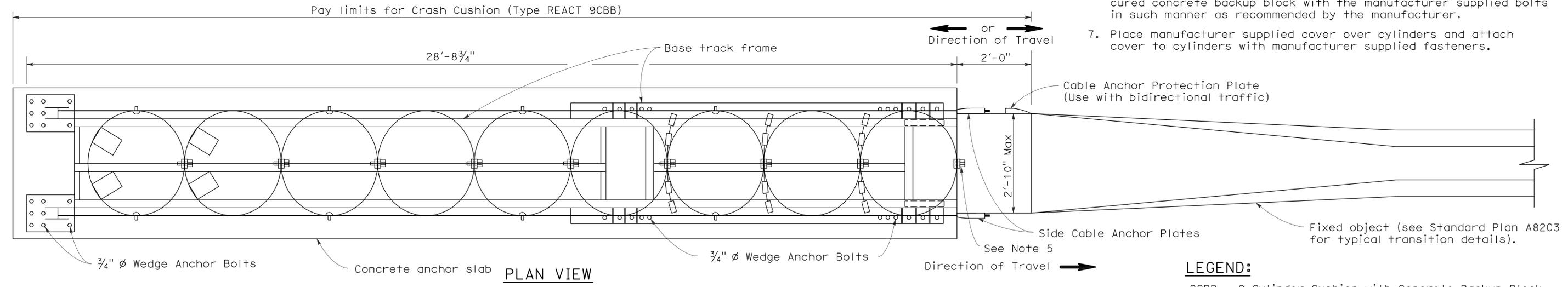
SECTION B-B

NOTES:

1. For additional details of this crash cushion, refer to manufacturer's installation instructions.
2. For details of the REACT Crash Cushion with self contained backup support (no concrete backup block), see Standard Plan A82D1.
3. The base track frame with cylinders attached comes from the manufacturer as a completely pre-assembled unit.
4. Place the crash cushion unit on the cured concrete anchor slab and use the base track frame of the crash cushion as a template for drilling anchor bolt holes. Drill holes in slab and attach crash cushion with wedge anchor bolts supplied by the manufacturer.
5. Attach last cylinder to concrete backup block with manufacturer supplied fastener in such manner as recommended by the manufacturer.
6. Attach the manufacturer supplied side cable anchor plates to the cured concrete backup block with the manufacturer supplied bolts in such manner as recommended by the manufacturer.
7. Place manufacturer supplied cover over cylinders and attach cover to cylinders with manufacturer supplied fasteners.

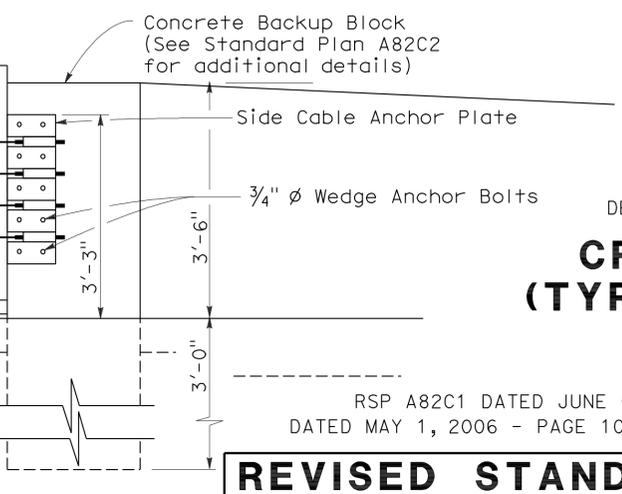
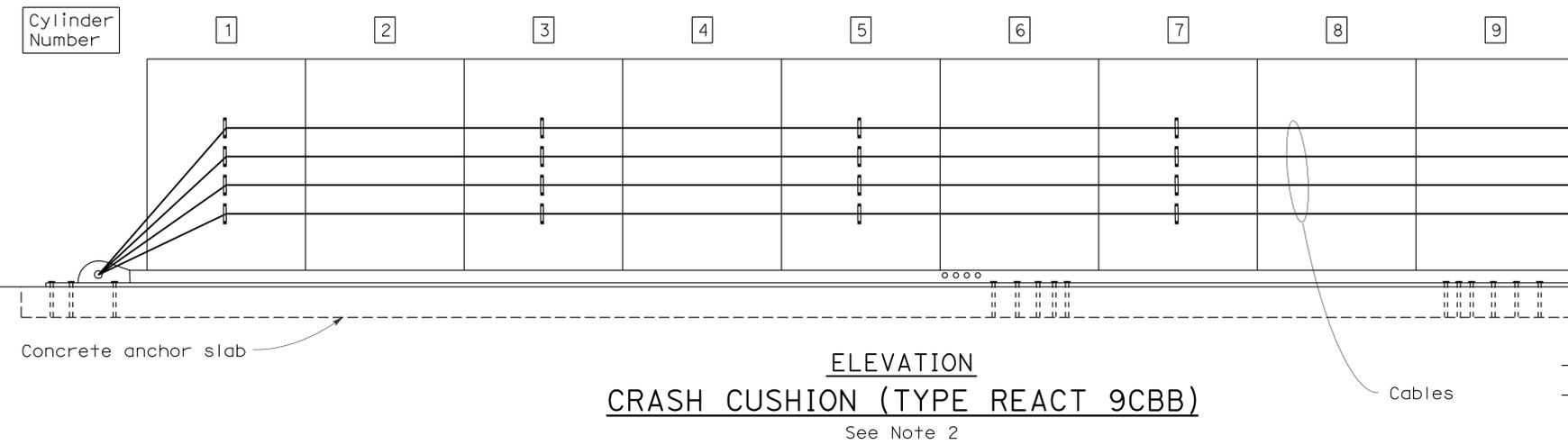


SECTION A-A
CONCRETE ANCHOR SLAB



LEGEND:

9CBB = 9 Cylinder Cushion with Concrete Backup Block



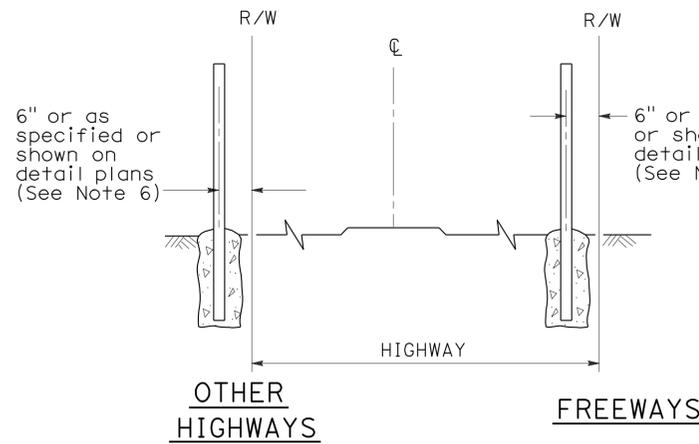
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**CRASH CUSHION
(TYPE REACT 9CBB)**

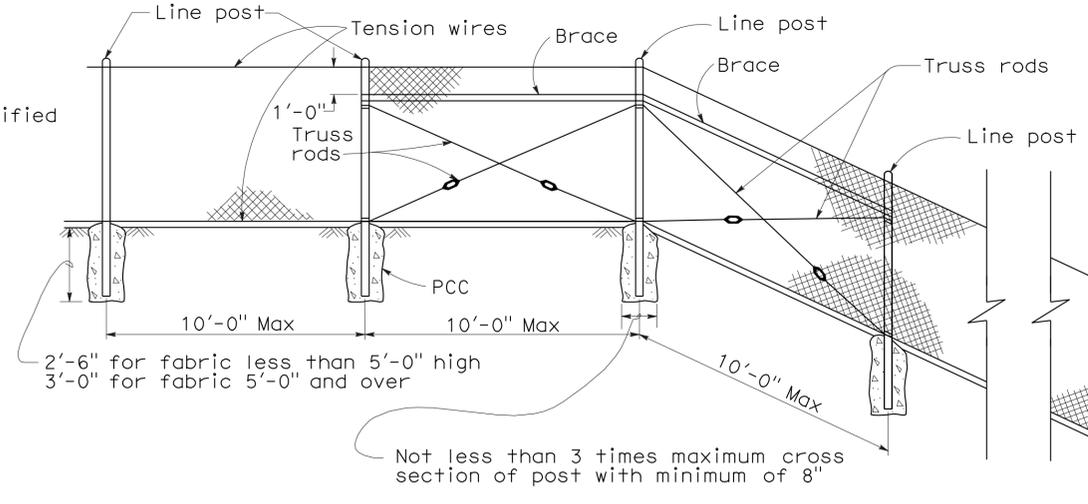
NO SCALE

RSP A82C1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A82C1 DATED MAY 1, 2006 - PAGE 104 OF THE STANDARD PLANS BOOK DATED MAY 2006.

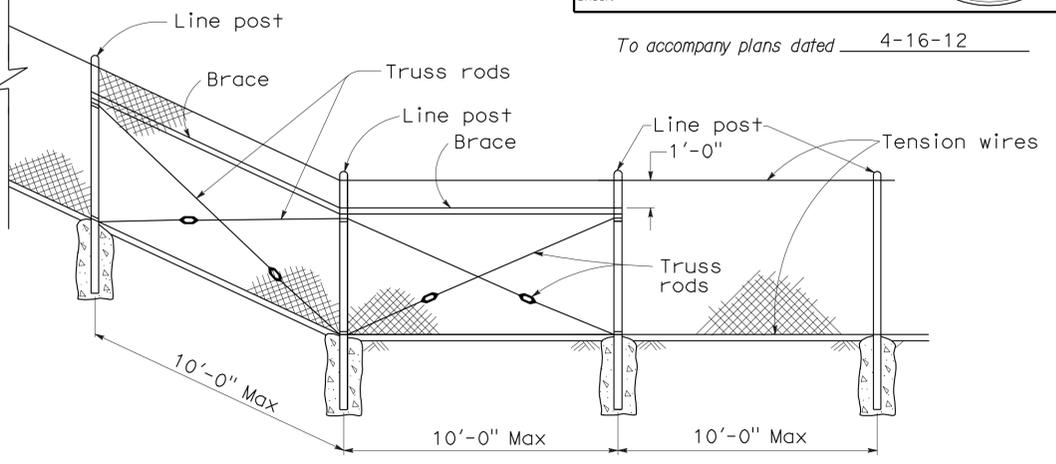
REVISED STANDARD PLAN RSP A82C1



FENCE LOCATION

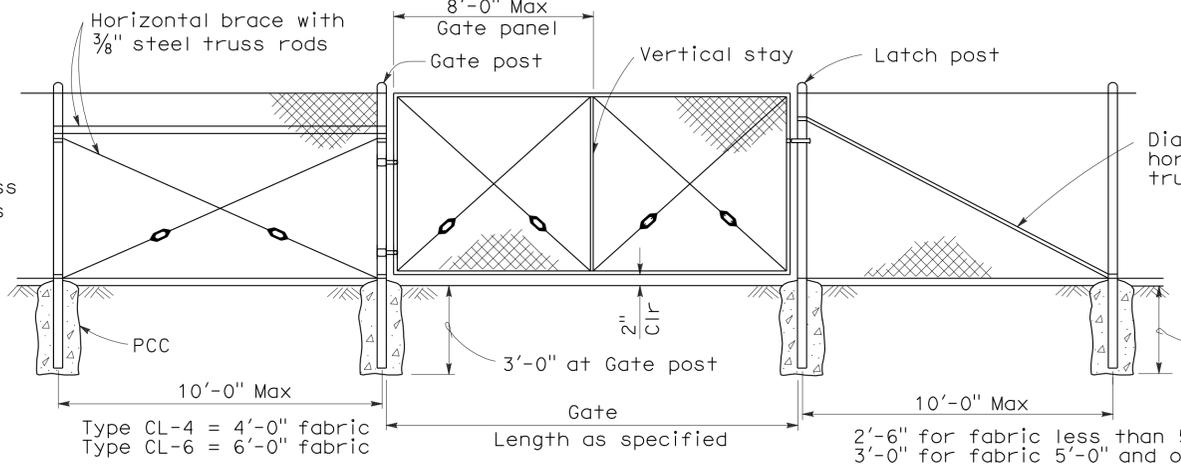
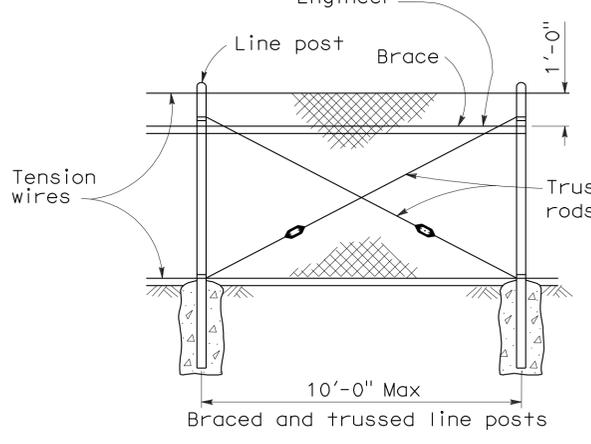


CHAIN LINK FENCE ON SHARP BREAK IN GRADE



To accompany plans dated 4-16-12

Brace to be removed after all other fence construction is completed unless otherwise directed by the Engineer



CHAIN LINK GATE INSTALLATION

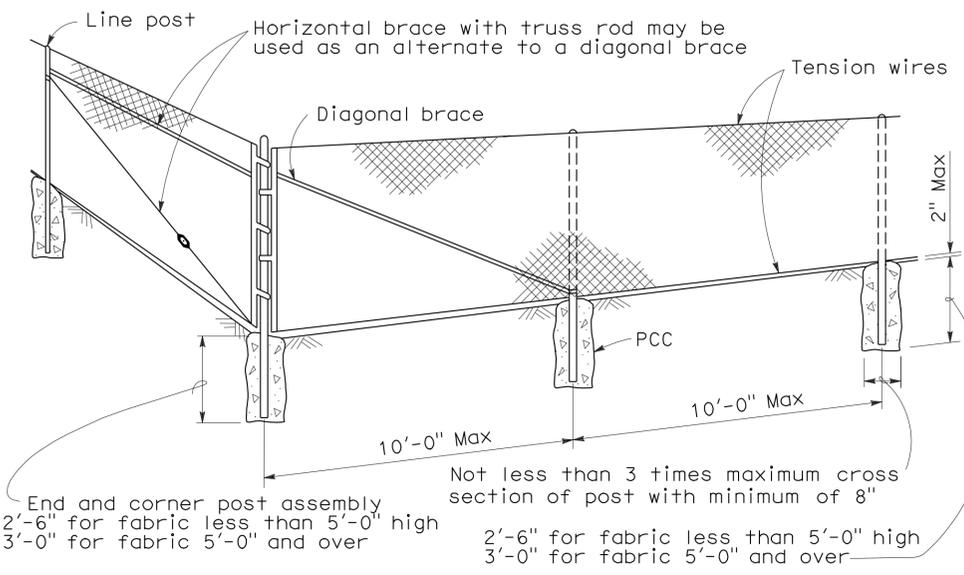
GATE POST			
FENCE HEIGHT	GATE WIDTHS	NOMINAL ID	WEIGHT PER FOOT
6'-0" and Less	Up thru 6'-0"	2 1/2"	4.95 LB
	Over 6'-0" thru 12'-0"	4"	10.79 LB
	Over 12'-0" thru 18'-0"	5"	14.62 LB
	Over 18'-0" to 24'-0" Max	6"	18.97 LB
Over 6'-0"	Up thru 6'-0"	3"	7.58 LB
	Over 6'-0" thru 12'-0"	5"	14.62 LB
	Over 12'-0" thru 18'-0"	6"	18.97 LB
	Over 18'-0" to 24'-0" Max	8"	28.55 LB

Above post dimensions and weights are minimums. Larger sizes may be used on approval of the Engineer.

NOTES:

- The below table shows examples of post and brace sections which may comply with the Specifications.
- Sections shown in the tables must also comply with the strength requirements and other provisions of the Specifications.
- Other sections which comply with the strength requirements and other provisions of the Specifications may be used on approval of the Engineer.
- Options exercised shall be uniform on any one project.
- Dimensions shown are nominal.
- Offset to be 2'-0" at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 20'-0" long.

FENCE HEIGHT	TYPICAL MEMBER DIMENSIONS (See Notes)									
	LINE POSTS			END, LATCH & CORNER POSTS			BRACES			
	ROUND ID	H	ROLL FORMED	ROUND ID	ROLL FORMED		ROUND ID	H	ROLL FORMED	
6' & less	1 1/2"	1 7/8" x 1 5/8"	1 7/8" x 1 5/8"	2"	3 1/2" x 3 1/2"	2" x 1 3/4"	1 1/4"	1 1/2" x 1 5/16"	1 5/8" x 1 1/4"	1 3/4" x 1 1/4"
Over 6'	2"	2 1/4" x 2"	2" x 1 3/4"	2 1/2"	3 1/2" x 3 1/2"	2 1/2" x 2 1/2"	1 1/4"	1 1/2" x 1 5/16"	1 5/8" x 1 1/4"	1 3/4" x 1 1/4"



CORNER POST

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE
 NO SCALE

RSP A85 DATED JUNE 5, 2009 SUPERSEDES STANDARD PLAN A85 DATED MAY 1, 2006 - PAGE 111 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A85

2006 REVISED STANDARD PLAN RSP A85

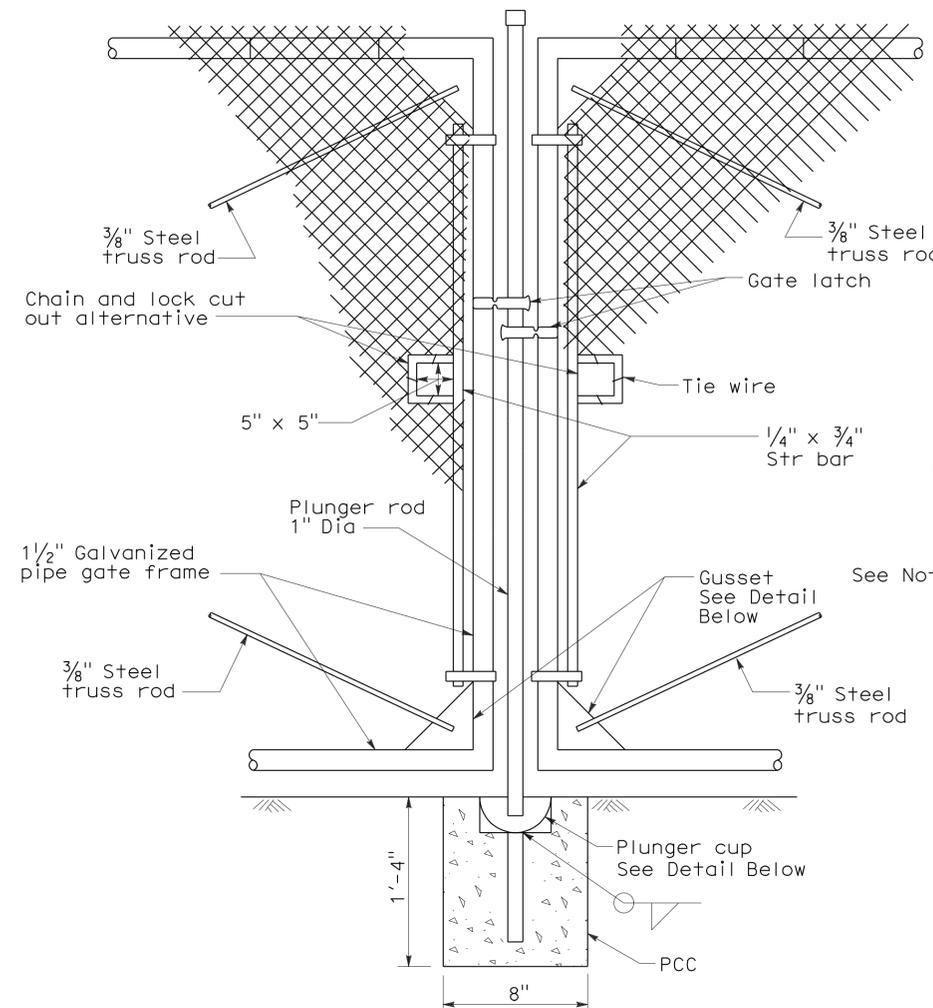
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	651	760

Glenn DeCou
 REGISTERED CIVIL ENGINEER
 June 5, 2009
 PLANS APPROVAL DATE
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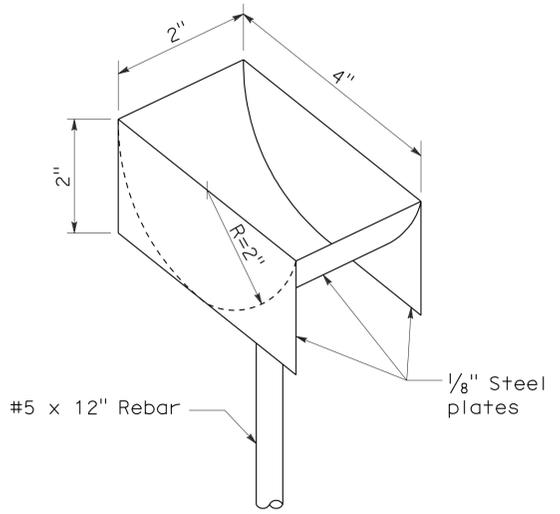
REGISTERED PROFESSIONAL ENGINEER
 Glenn DeCou
 No. C34547
 Exp. 9-30-09
 CIVIL
 STATE OF CALIFORNIA

To accompany plans dated 4-16-12

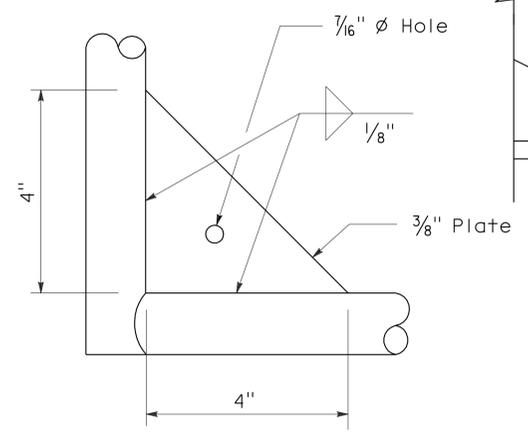
- NOTES:**
- H is 2'-6" for fabric less than 5'-0" high.
H is 3'-0" for fabric 5'-0" and over.
 - T is not less than 3 times maximum cross section of post with minimum of 8".
 - Arms with barbed wire to be used where shown on plans.
 - See Revised Standard Plan RSP A85 for Chain Link Fencing dimensions.
 - Reinforcing must comply with ASTM A 706.
 - See Detail A on New Standard Plan NSP A86B for connection at headwall.



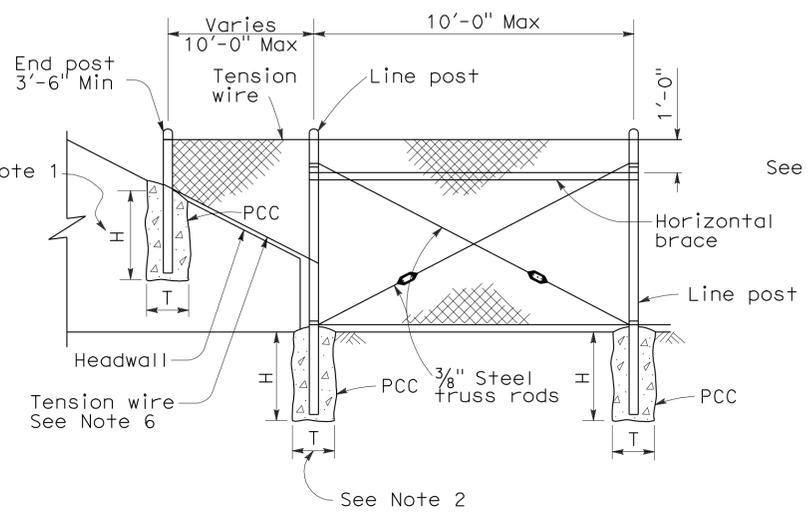
**TYPICAL DOUBLE GATE
REMOVABLE CENTER POST**



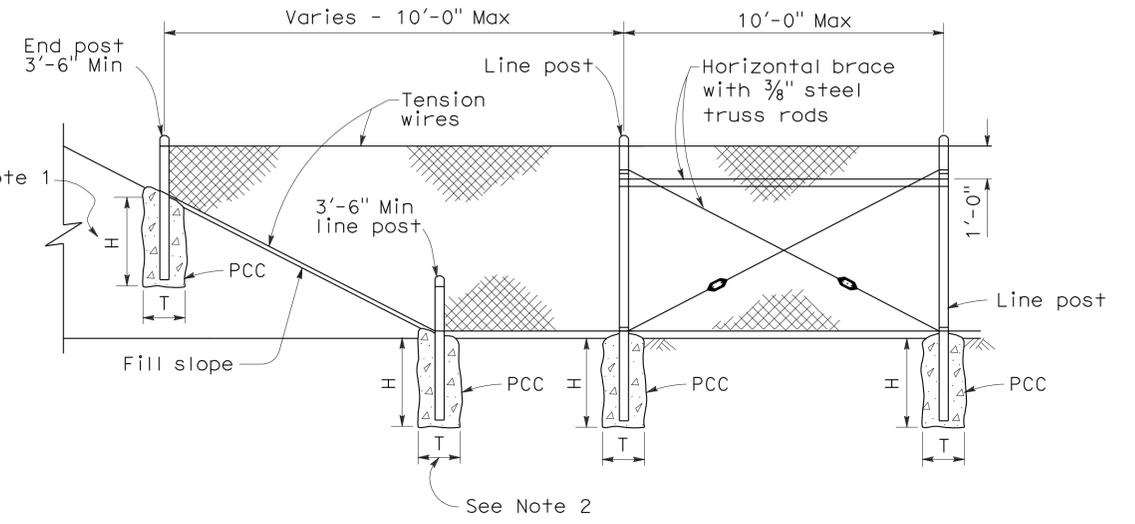
PLUNGER CUP DETAIL



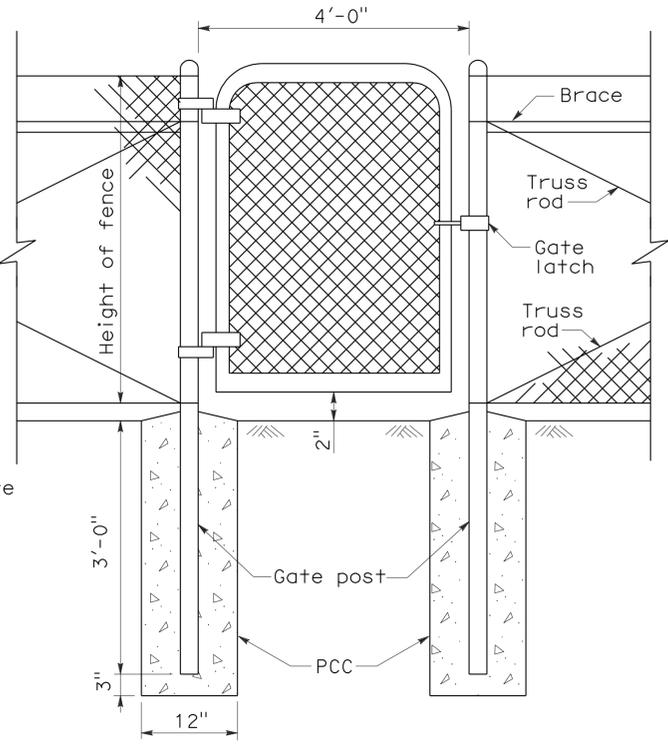
GUSSET DETAIL



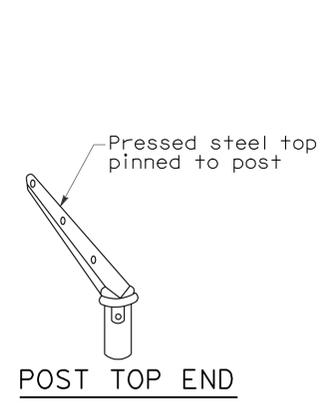
METHOD OF TYING FENCE TO HEADWALL



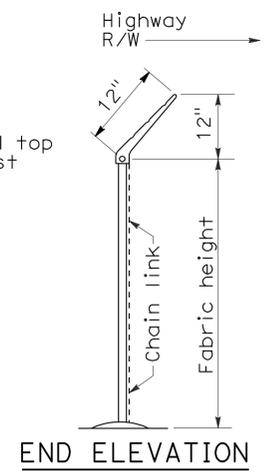
METHOD OF ERECTING FENCE FOR FILL SLOPE



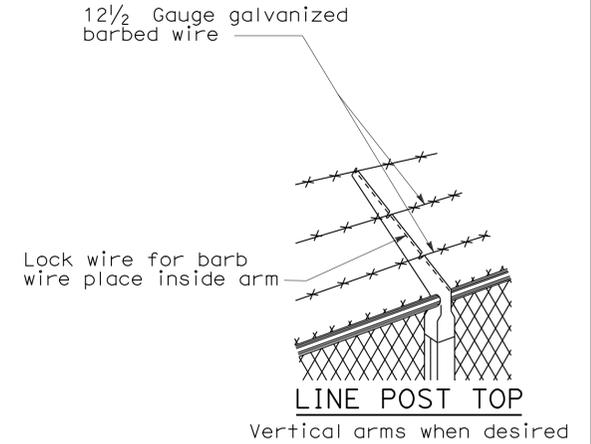
WALK GATE



POST TOP END



BARBED WIRE POST TOP
See Note 3



LINE POST TOP

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE DETAILS
NO SCALE

NSP A85A DATED JUNE 5, 2009 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A85A

2006 NEW STANDARD PLAN NSP A85A

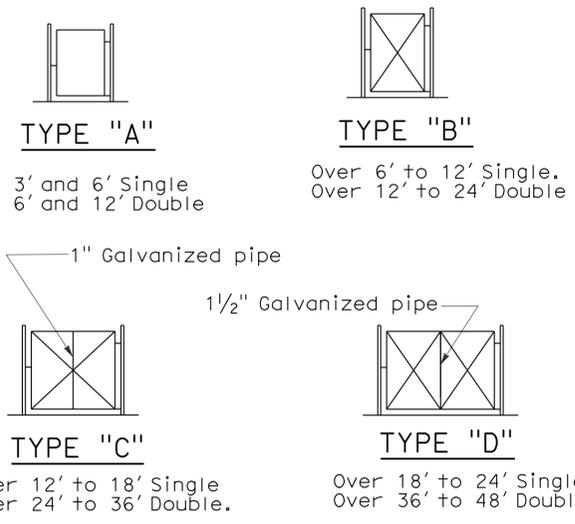
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	652	760

Glenn DeCou
 REGISTERED CIVIL ENGINEER
 No. C34547
 Exp. 9-30-09
 STATE OF CALIFORNIA

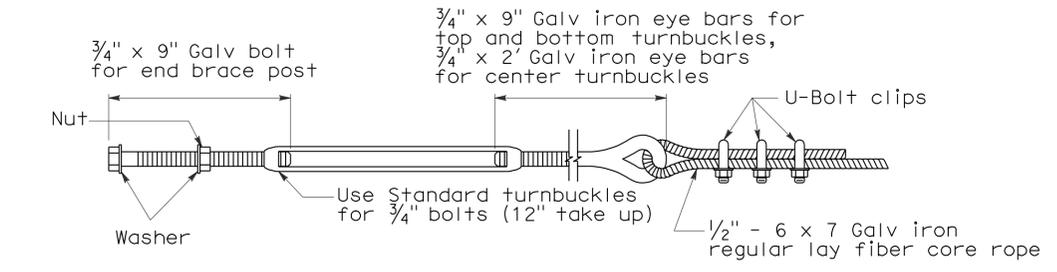
June 5, 2009
 PLANS APPROVAL DATE

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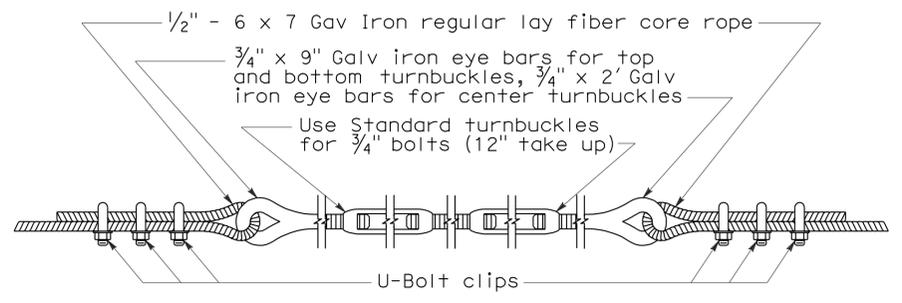
To accompany plans dated 4-16-12



TYPICAL FRAMEWORK SHOWING NUMBER OF BAYS IN GATE



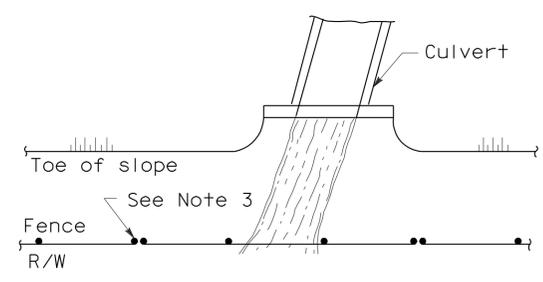
TURNBUCKLE A



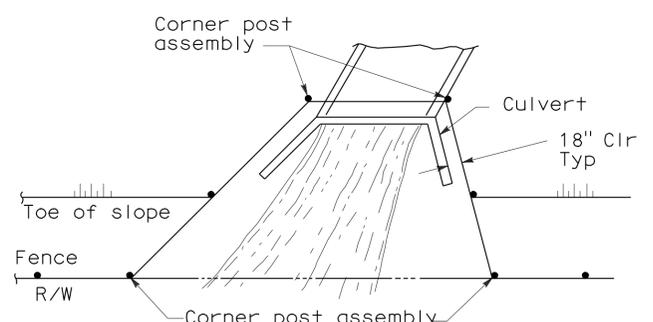
TURNBUCKLE B

NOTES:

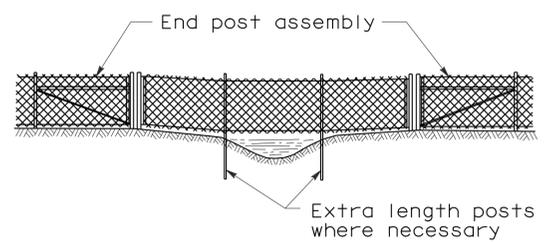
1. All material for abutment connection to be galvanized.
2. The chain link fabric shall be replaced by barbed wire strands at 12" maximum centers between the double posts.
3. When the width of the culvert makes it necessary to anchor a post to the top of the culvert, a cast iron shoe or other device approved by the Engineer shall be used.
4. Fencing over stream and around headwall may also use Barbed Wire or Wire Mesh fencing with either wood post or steel post installation.
5. See Revised Standard Plan RSP A85 for Chain Link fence dimensions. See Standard Plan A86 for Barbed Wire and Wire Mesh fence dimensions and for wood post and steel post installation.



PLAN

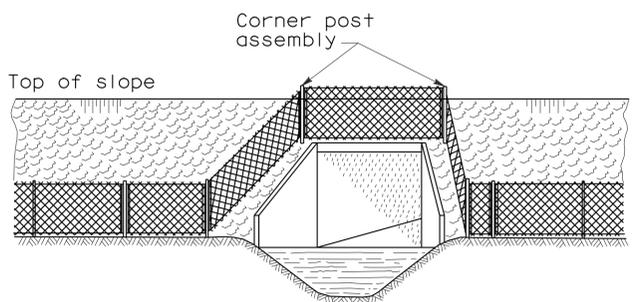


PLAN



ELEVATION

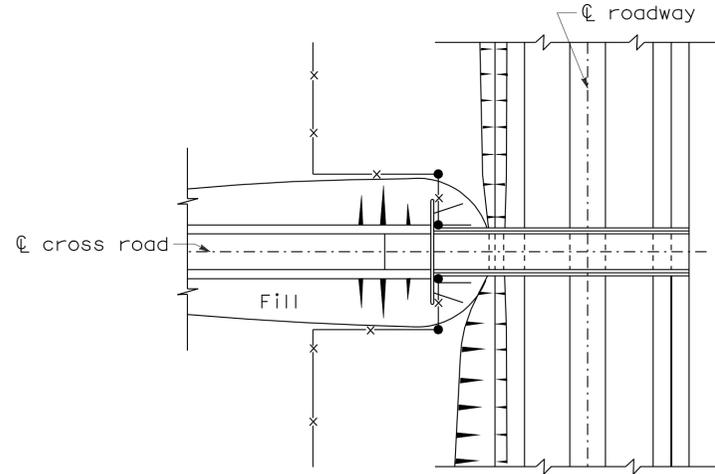
INSTALLATION OVER STREAM



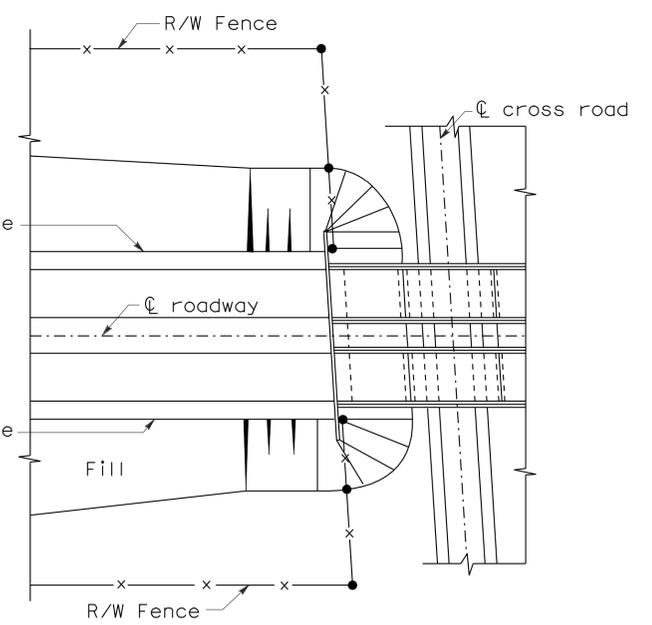
ELEVATION

INSTALLATION AROUND HEADWALL

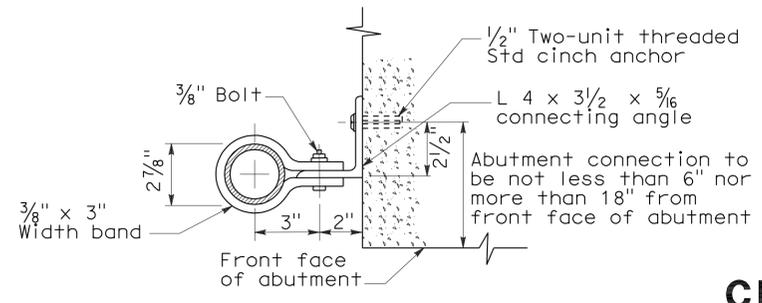
See Note 4



PLAN OF ROADWAY - UNDERPASS



PLAN OF ROADWAY - OVERPASS



ABUTMENT CONNECTION

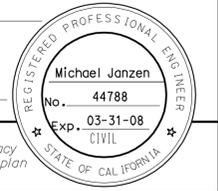
TYPICAL INSTALLATION AT BRIDGES

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE DETAILS
 NO SCALE

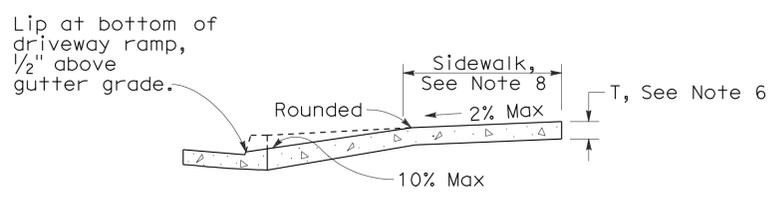
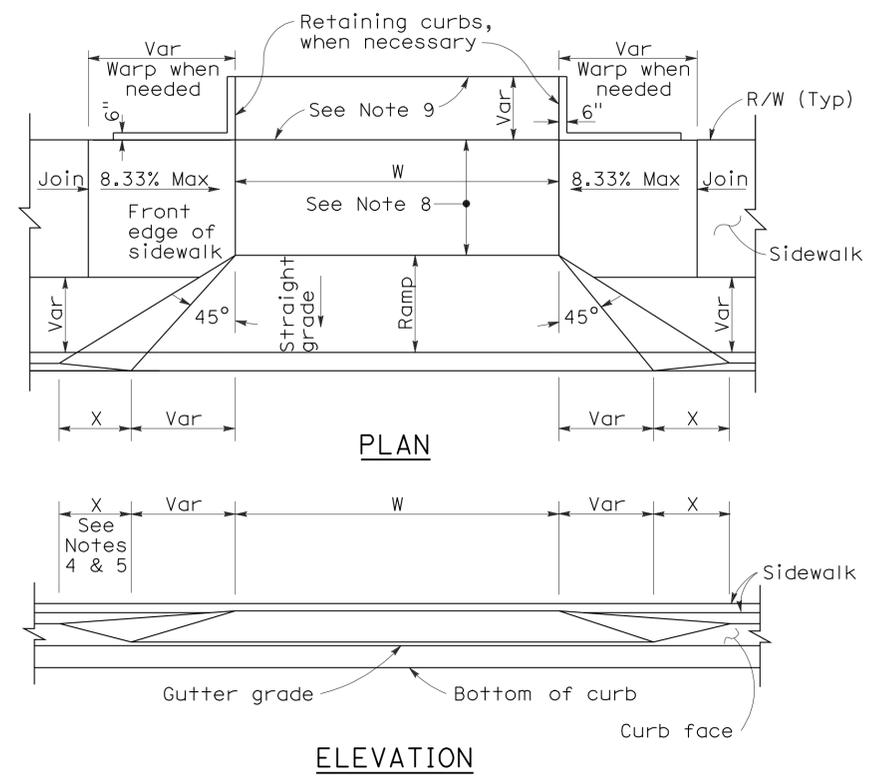
NSP A85B DATED JUNE 5, 2009 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A85B

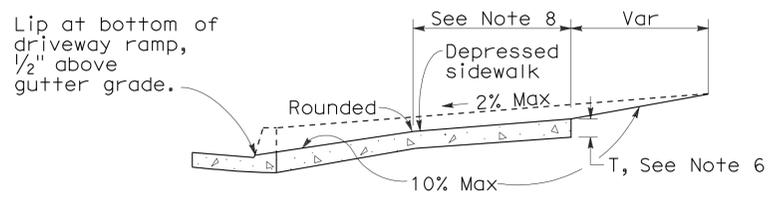
2006 NEW STANDARD PLAN NSP A85B



To accompany plans dated 4-16-12



CASE A
Typical driveway, sidewalk not depressed



CASE B
Driveway with depressed sidewalk

SECTIONS

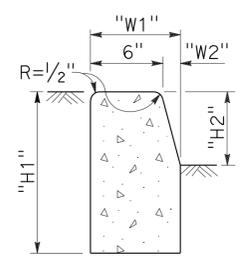
CURB QUANTITIES

TYPE	CUBIC YARDS PER LINEAR FOOT
A1-6	0.02585
A1-8	0.03084
A2-6	0.05903
A2-8	0.06379
A3-6	0.01036
A3-8	0.01435
B1-4	0.02185
B1-6	0.02930
B2-4	0.05515
B2-6	0.06171
B3-4	0.00641
B3-6	0.01074
B4	0.05709
D-4	0.04083
D-6	0.06804
E	0.06661

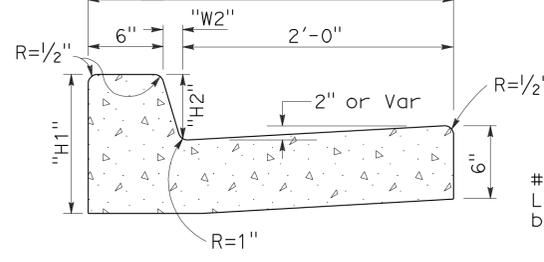
TABLE A

CURB TYPE	DIMENSIONS			
	"H1"	"H2"	"W1"	"W2"
A1-6	1'-2"	6"	7 1/2"	1 1/2"
A1-8	1'-4"	8"	8"	2"
A2-6	1'-0"	6"	2'-7 1/2"	1 1/2"
A2-8	1'-2"	8"	2'-8"	2"
A3-6	6"	5"	7 1/4"	1 1/4"
A3-8	8"	7"	7 3/4"	1 3/4"
B1-4	1'-0"	4"	7 1/2"	2 1/2"
B1-6	1'-2"	6"	9"	4"
B2-4	10"	4"	2'-7 1/2"	2 1/2"
B2-6	1'-0"	6"	2'-9"	4"
B3-4	4"	3"	7"	2"
B3-6	6"	5"	8 1/2"	3 1/2"
D-4	10"	4"	1'-6"	1'-1"
D-6	1'-0"	6"	2'-2"	1'-8"

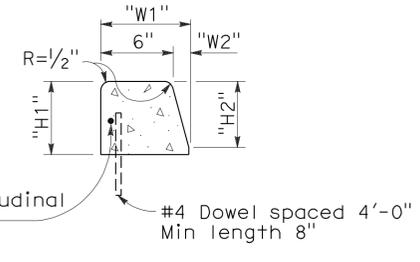
DRIVEWAYS



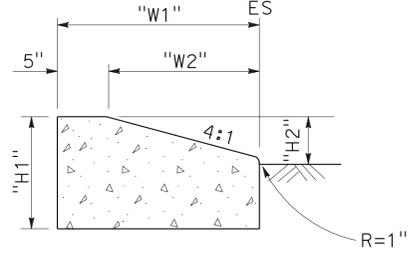
TYPE A1 CURBS
See Table A



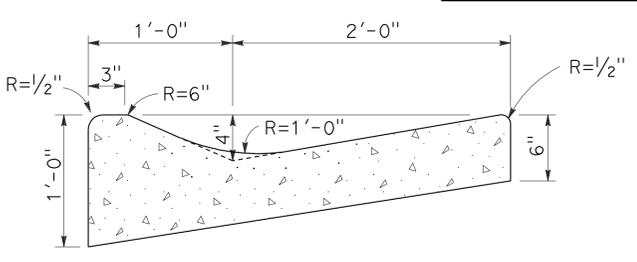
TYPE A2 CURBS
See Table A



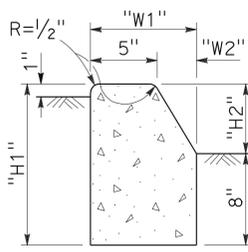
TYPE A3 CURBS
Superimposed on existing pavement
See Table A



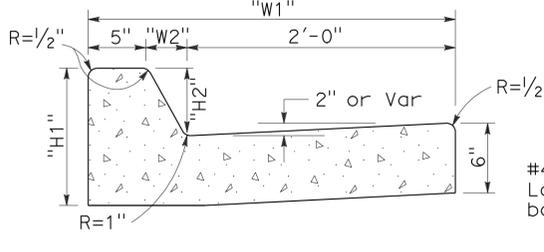
TYPE D CURBS
See Table A



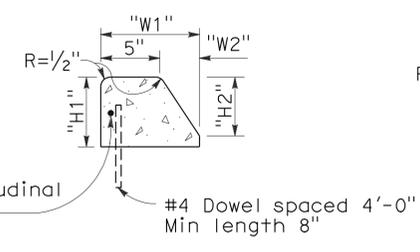
TYPE E CURB



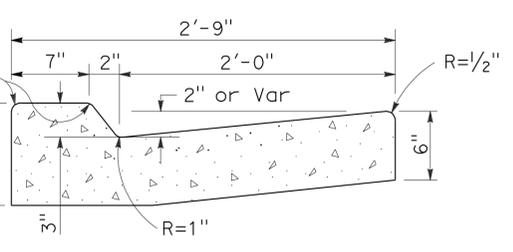
TYPE B1 CURBS
See Table A



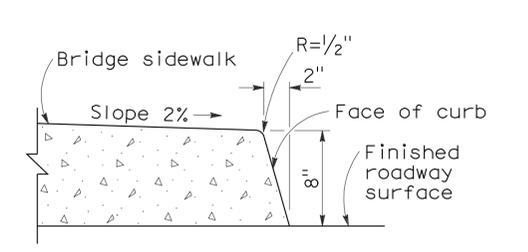
TYPE B2 CURBS
See Table A



TYPE B3 CURBS
Superimposed on existing pavement
See Table A



TYPE B4 CURBS



TYPE H CURB
On Bridges

NOTES:

- Case A driveway section typically applies.
- Use Case B driveway section when ramp slopes would exceed 10% in Case A.
- Use Case B driveway section when sidewalk cross slope would exceed 2% in Case A.
- X=3'-0" except for curb heights over 10" where 4:1 slopes shall be used on curb slope.
- X is a variable when sidewalk is located where wheelchairs may traverse the surface. Slopes shall not exceed 8.33%.
- Sidewalk and ramp thickness "T" at driveway shall be 4" for residential and 6" for commercial.
- Difference in slope of the driveway ramp and the slope of a line between the gutter and a point on the roadway 5'-0" from gutter line shall not exceed 15%. Reduce driveway ramp slope, not gutter slope, where required.
- Minimum width of clear passageway for sidewalk shall be 4'-0".
- Retaining curbs and acquisition of construction easement may be necessary for narrow sidewalks or curb heights in excess of 6".
- Across the pedestrian route at curb ramp locations, the gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.

CURBS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURBS AND DRIVEWAYS

NO SCALE

RSP A87A DATED NOVEMBER 17, 2006 SUPERSEDES STANDARD PLAN A87A
DATED MAY 1, 2006 - PAGE 113 OF THE STANDARD PLANS BOOK DATED MAY 2006.

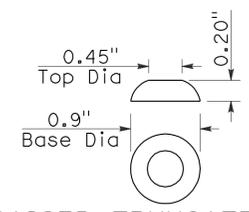
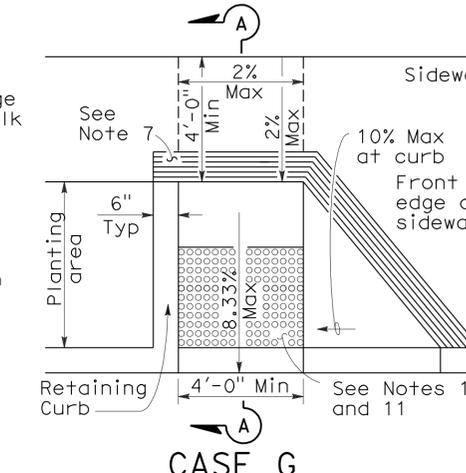
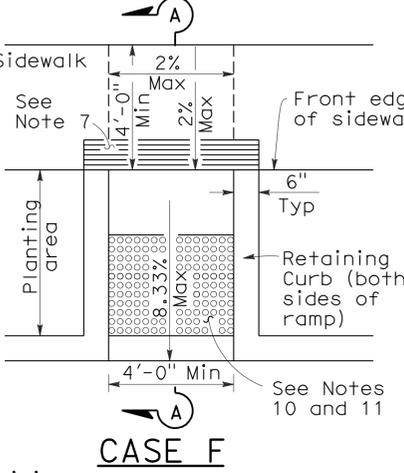
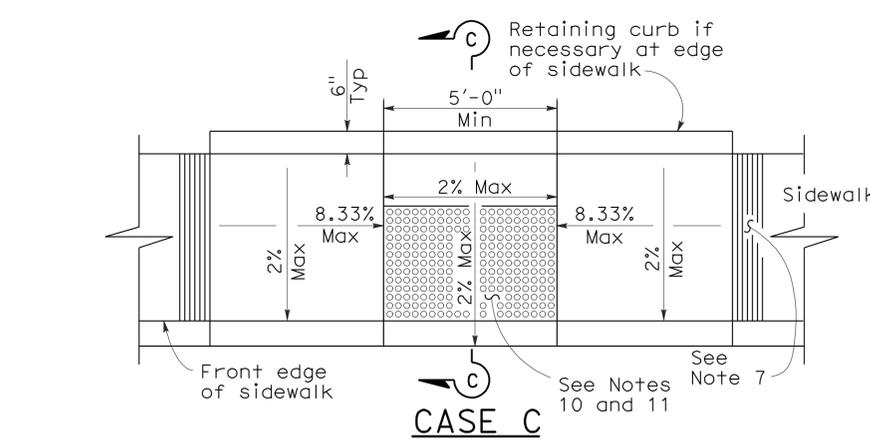
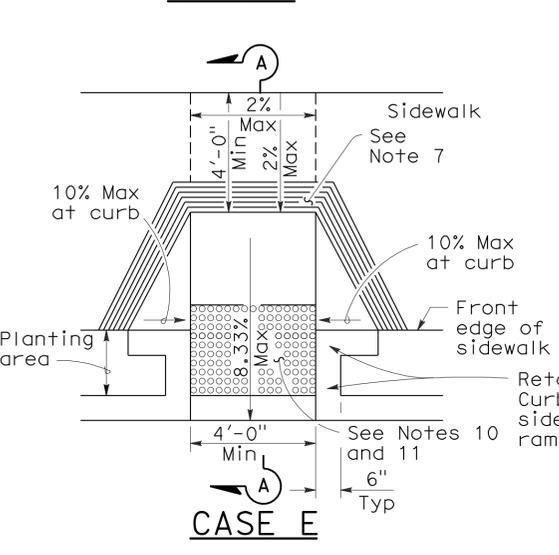
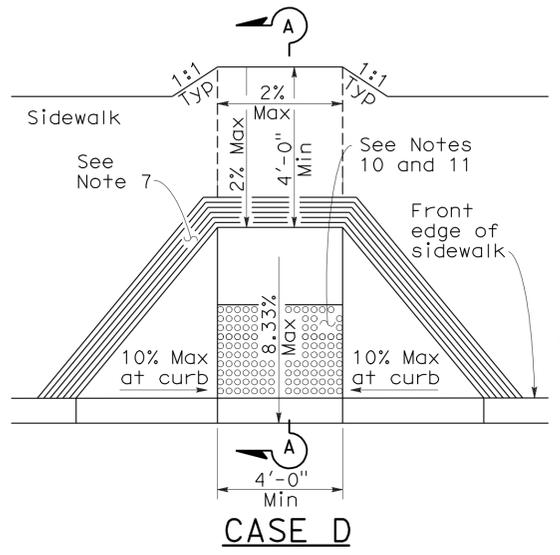
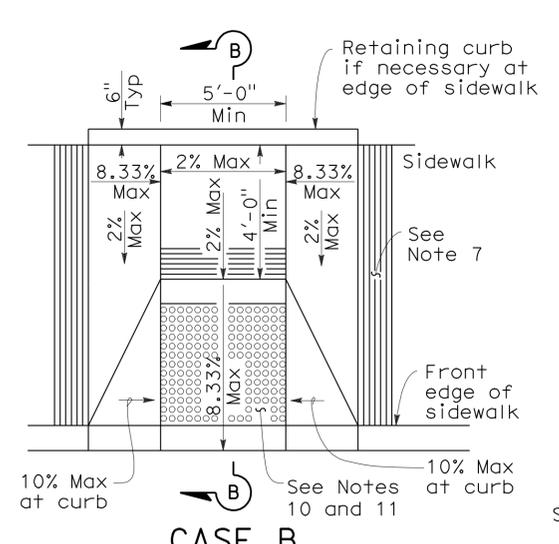
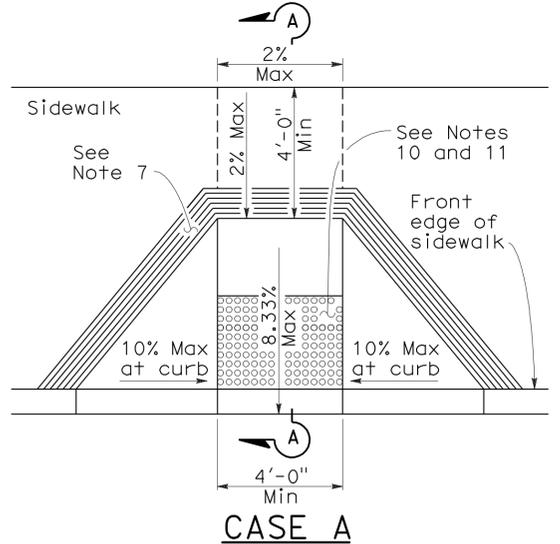
REVISED STANDARD PLAN RSP A87A

2006 REVISED STANDARD PLAN RSP A87A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	654	760

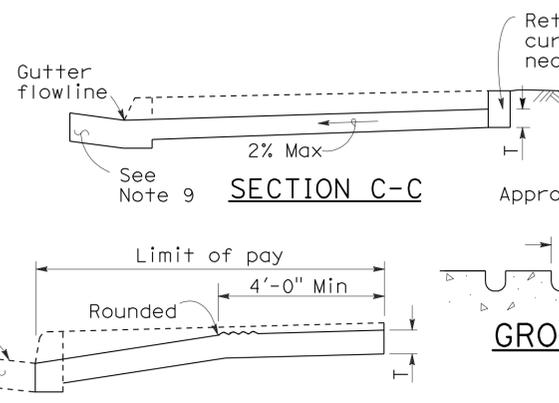
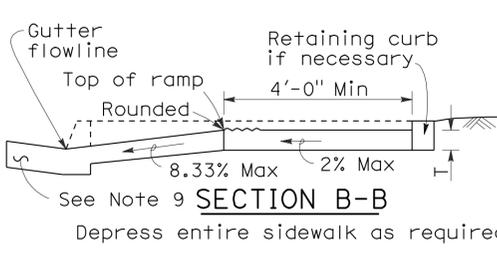
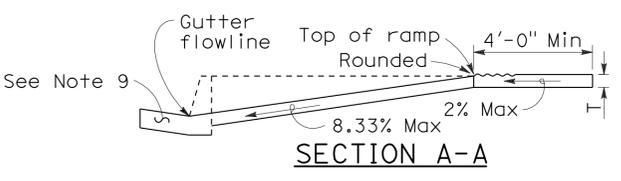
H. David Cordova
 REGISTERED CIVIL ENGINEER
 September 1, 2006
 PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER
Hector David Cordova
 No. C41957
 Exp. 3-31-08
 CIVIL
 STATE OF CALIFORNIA



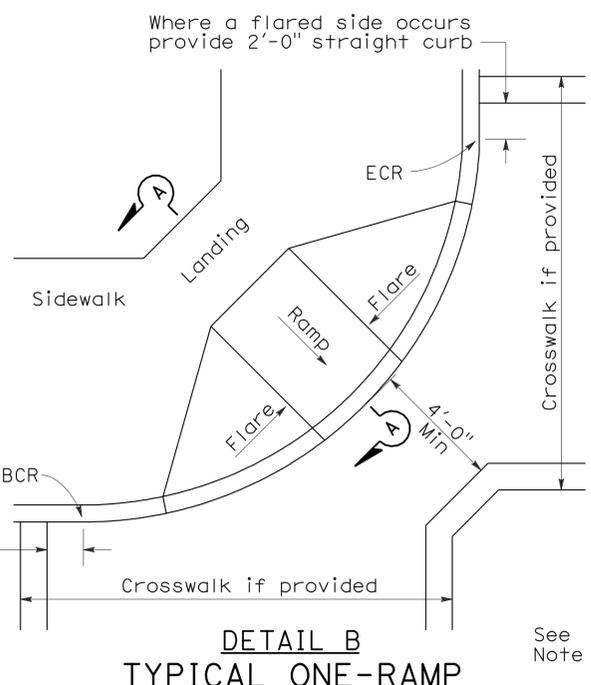
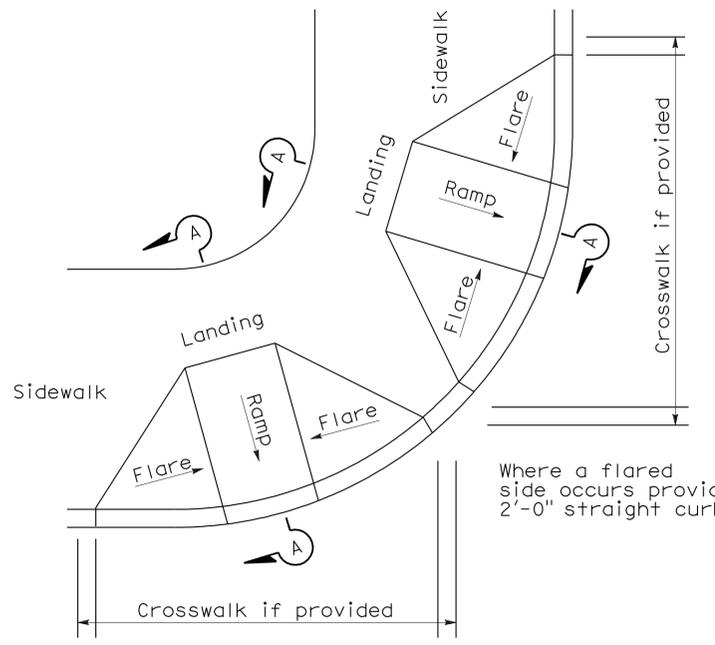
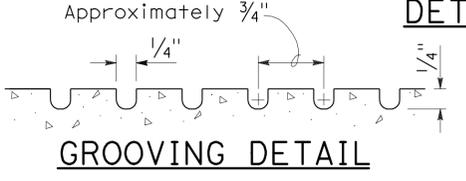
NOTES:

- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
- If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-0" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
- As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
- If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-0".
- Side slope of ramp flares vary uniformly from a maximum of 10% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
- The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
- Transitions from ramps and landing to walks, gutters or streets shall be flush and free of abrupt changes.
- Maximum slopes of adjoining gutters, the road surface immediately adjacent to the curb ramp or accessible route shall not exceed 5 percent within 4'-0" of the top and bottom of the curb ramp.
- Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Special Provisions.
- The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
- Sidewalk and ramp thickness, "T", shall be 3/2" minimum.
- Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
- For retrofit conditions, removal and replacement of curb apron will be at the Contractor's option, unless otherwise shown on project plans.



DETECTABLE WARNING SURFACE

See Note 10
 STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CURB RAMP DETAILS
 NO SCALE



TYPICAL ONE-RAMP CORNER INSTALLATION

TYPICAL TWO-RAMP CORNER INSTALLATION

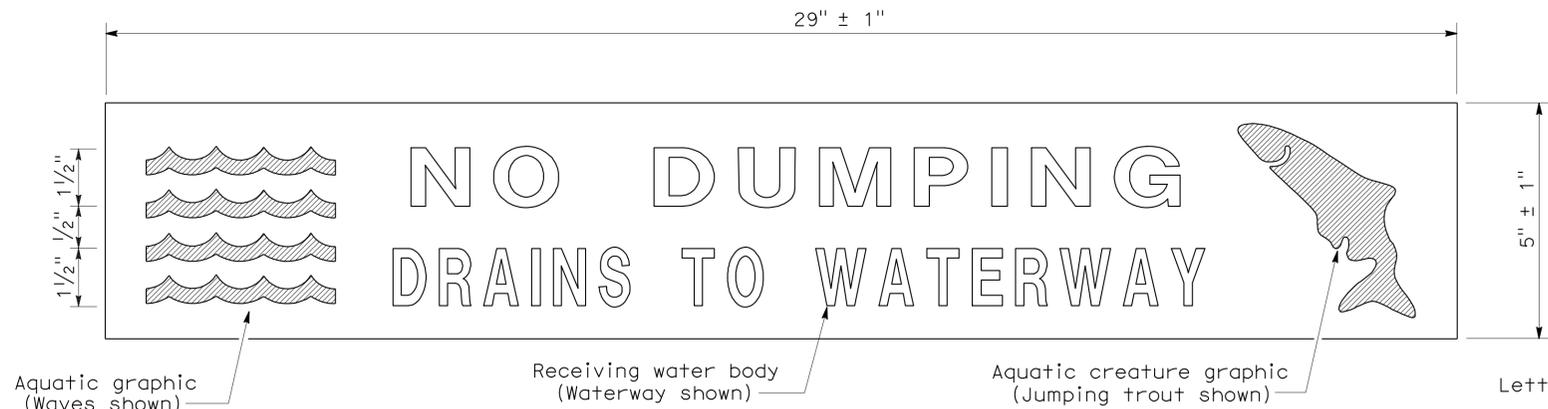
RETROFIT DETAIL

2006 REVISED STANDARD PLAN RSP A88A

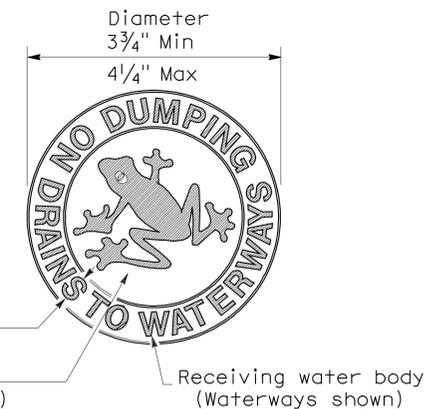
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	655	760

Robert B. Schott
 LICENSED LANDSCAPE ARCHITECT
 April 3, 2009
 PLANS APPROVAL DATE
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To accompany plans dated 4-16-12



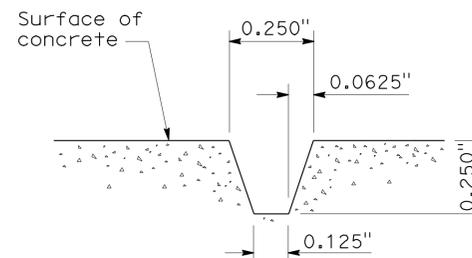
PLAN
 DRAINAGE INLET MARKER
 (PREFABRICATED THERMOPLASTIC)



PLAN
 DRAINAGE INLET MARKER
 (MEDALLION)

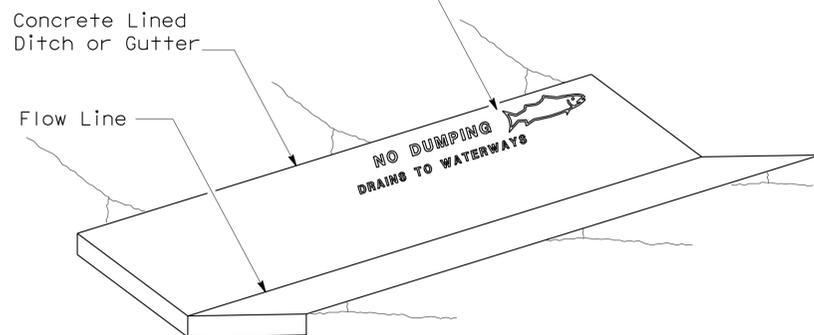


PLAN
 DRAINAGE INLET MARKER
 (STAMPED CONCRETE IMPRINT)

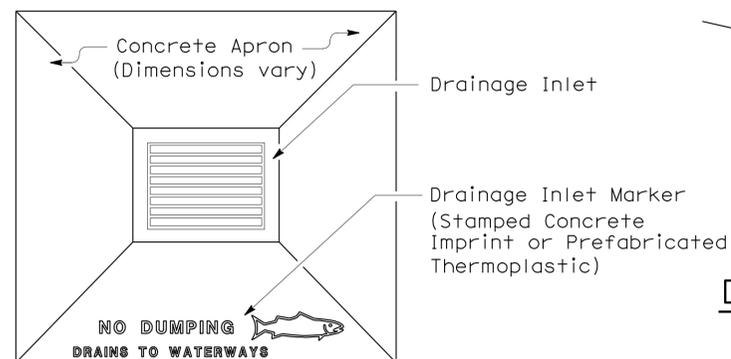


SECTION A-A
 STAMPED CONCRETE
 IMPRINT DETAIL

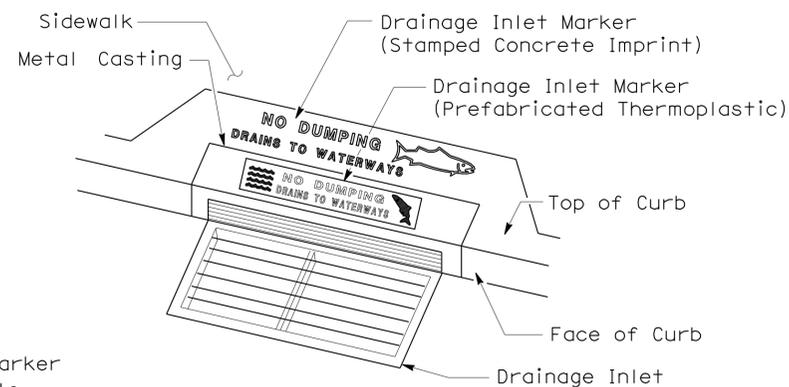
Drainage Inlet Marker
 (Stamped Concrete Imprint or
 Prefabricated Thermoplastic)
 Locations as shown on the
 plans or as directed by the
 Engineer



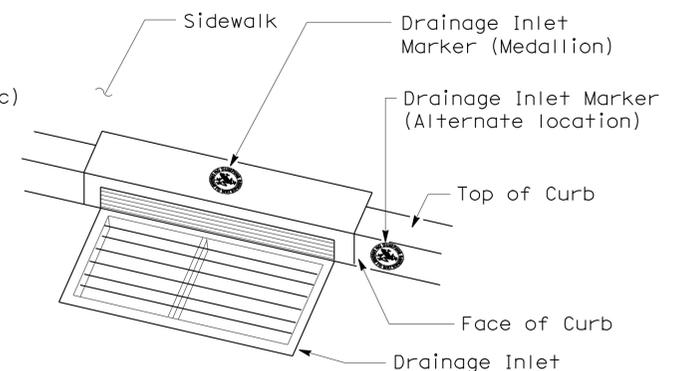
PERSPECTIVE
 DRAINAGE INLET MARKER ON
 CONCRETE LINED DITCH



PLAN
 DRAINAGE INLET MARKER ON
 DRAINAGE INLET APRON



PERSPECTIVE
 DRAINAGE INLET MARKER ON
 DRAINAGE INLET



PERSPECTIVE
 DRAINAGE INLET MARKER (MEDALLION)
 ON DRAINAGE INLET

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
DRAINAGE INLET MARKERS
 NO SCALE

NSP D71 DATED APRIL 3, 2009 SUPPLEMENTS
 THE STANDARD PLANS BOOK DATED MAY 2006.

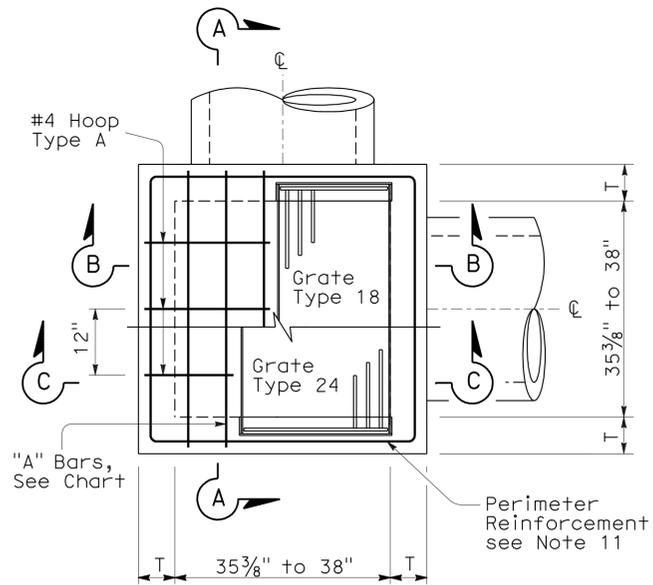
NEW STANDARD PLAN NSP D71

2006 NEW STANDARD PLAN NSP D71

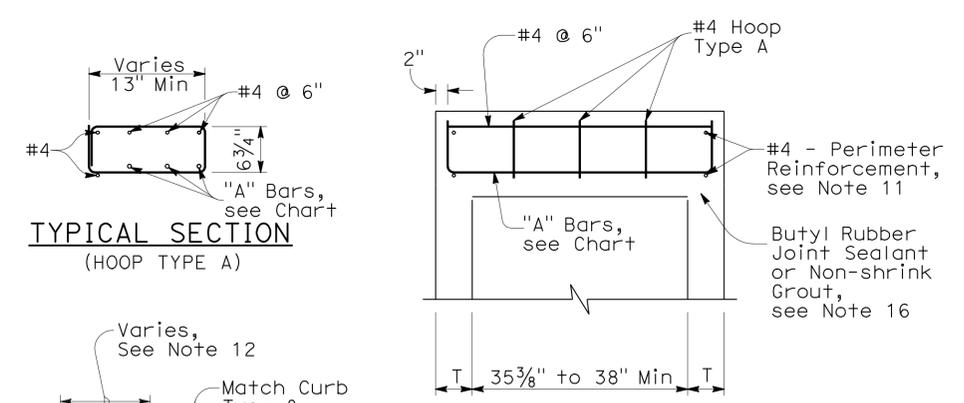
2006 NEW STANDARD PLAN NSP D73A

NOTES:

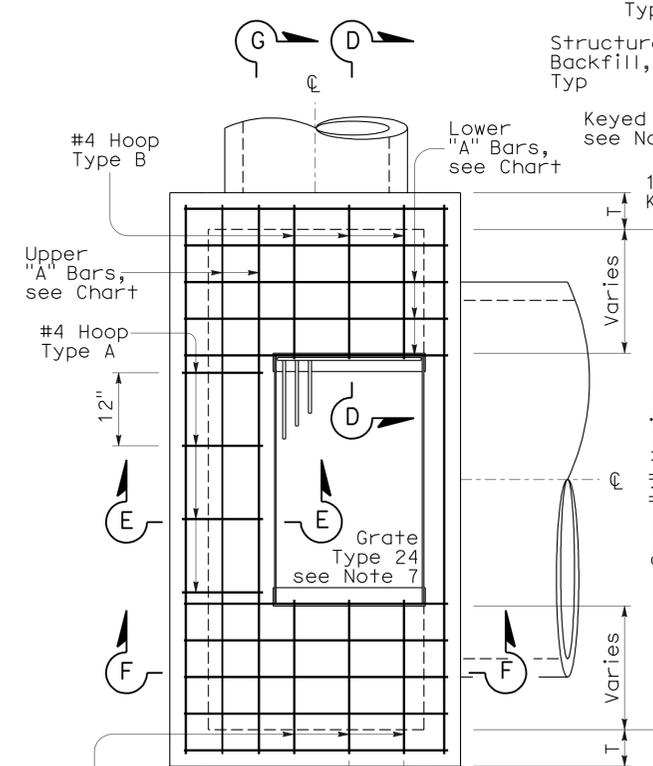
- "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
- For "T" wall thickness: T=6" when "H" is 8' or less. T=8" when "H" is over 8'.
- Wall reinforcing not required when "H" is 8' or less, and the unsupported width or length is 6'-0" or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



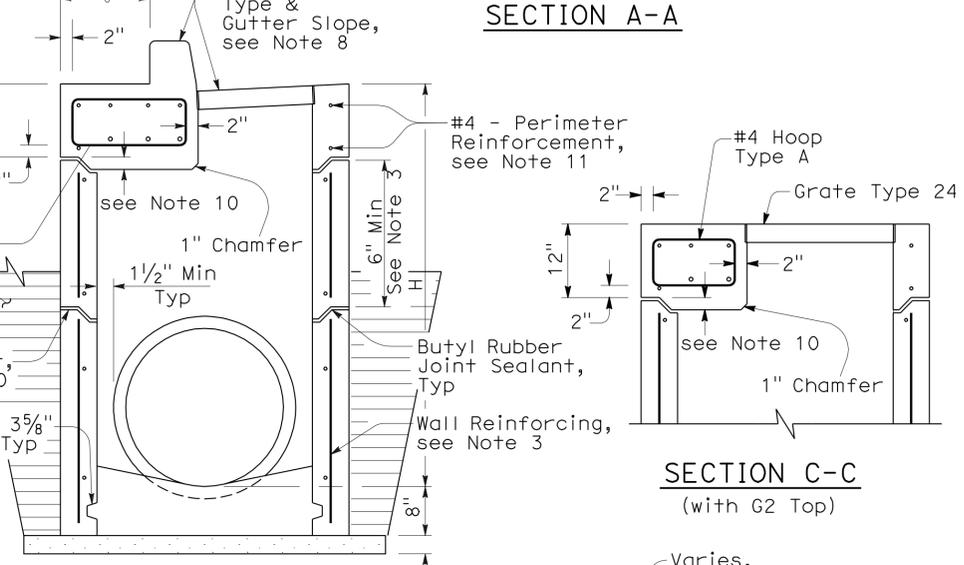
STANDARD TYPE G2 OR G4



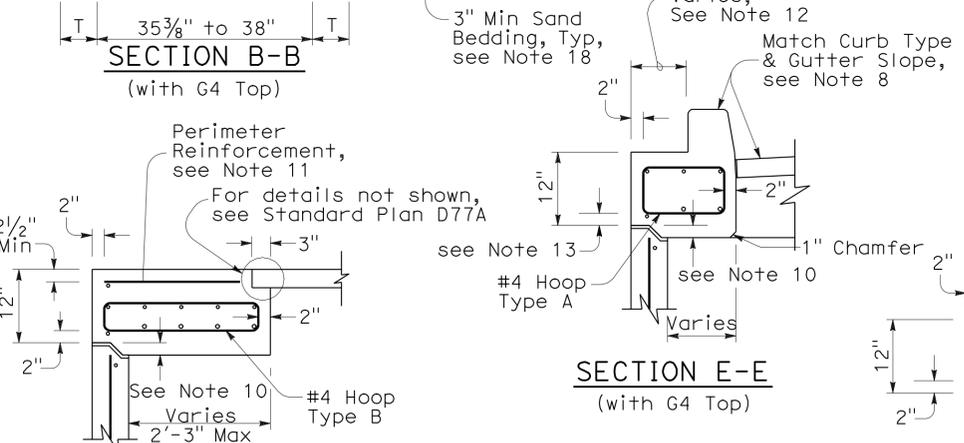
SECTION A-A



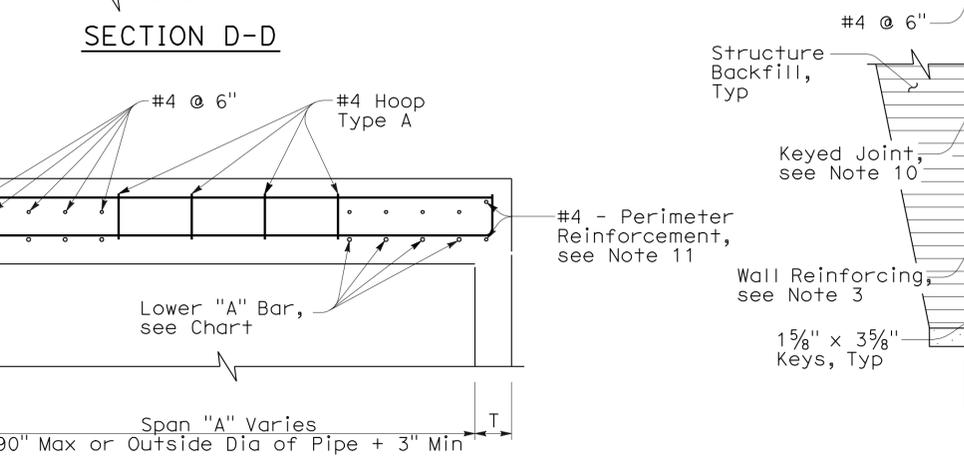
EXPANDED TYPE G2 OR G4
(Top Rebar Not Shown)



SECTION B-B
(with G4 Top)



SECTION C-C
(with G2 Top)



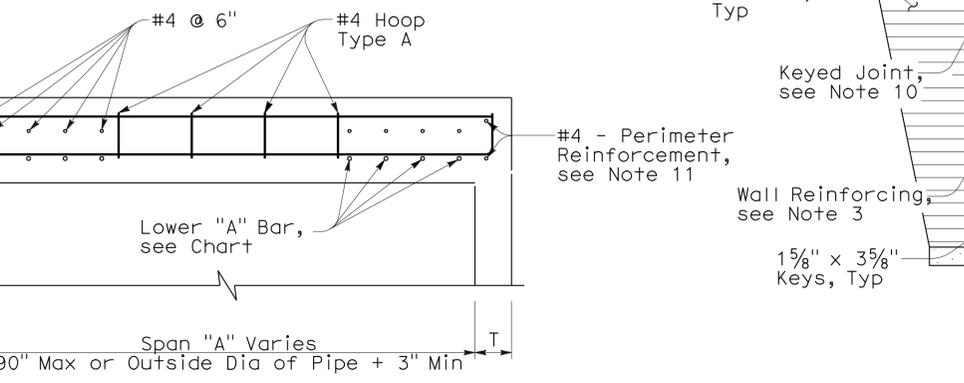
SECTION D-D



SECTION E-E
(with G4 Top)



SECTION F-F
(with G2 Top)



SECTION G-G

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

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
DRAINAGE INLETS
(PRECAST)

NO SCALE

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

NEW STANDARD PLAN NSP D73A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	657	760

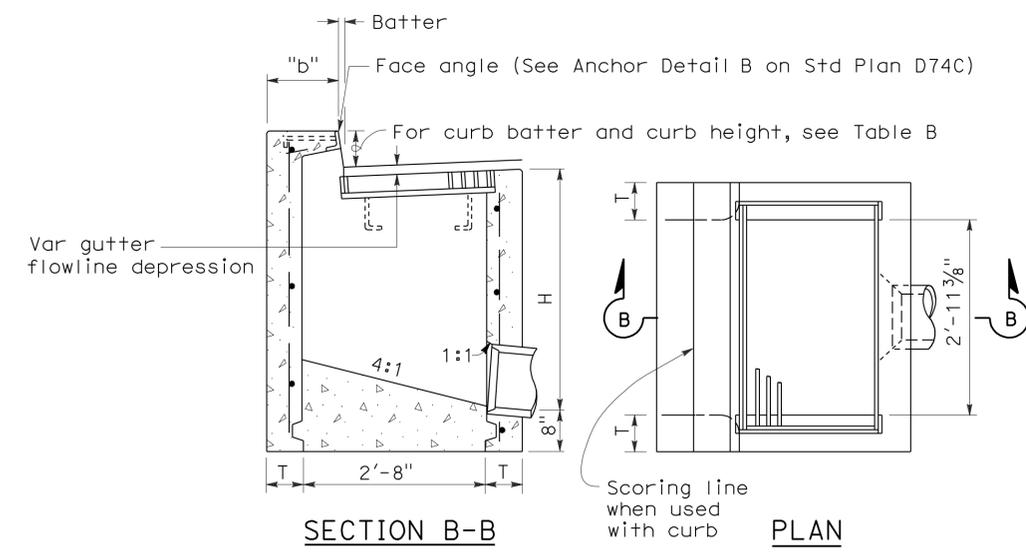
Glenn DeCou
REGISTERED CIVIL ENGINEER

June 15, 2007
PLANS APPROVAL DATE

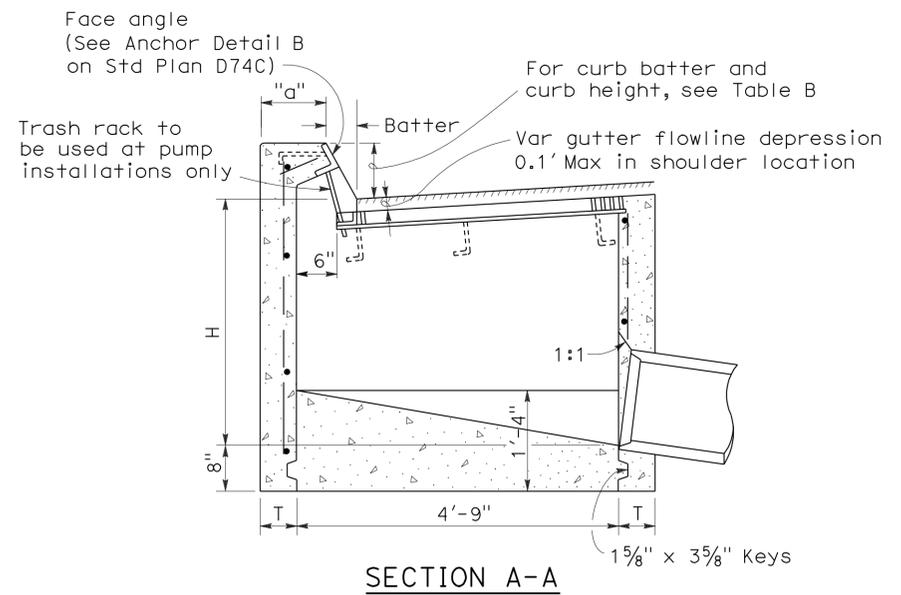
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

Glenn DeCou
REGISTERED PROFESSIONAL ENGINEER
No. C34547
Exp. 9-30-07
CIVIL
STATE OF CALIFORNIA

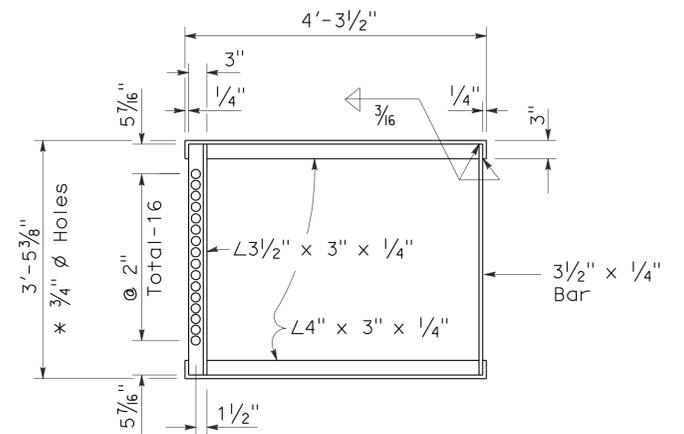
To accompany plans dated 4-16-12



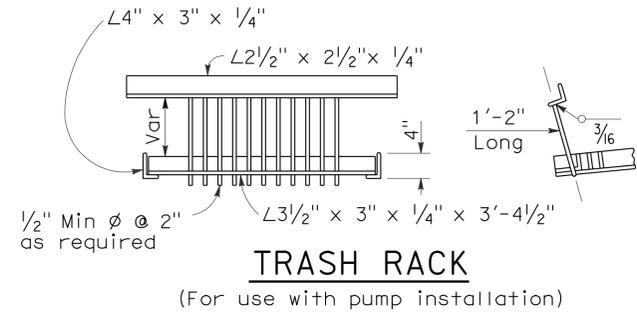
TYPE GO



SECTION A-A



GRATE FRAME FOR TYPE GDO INLET

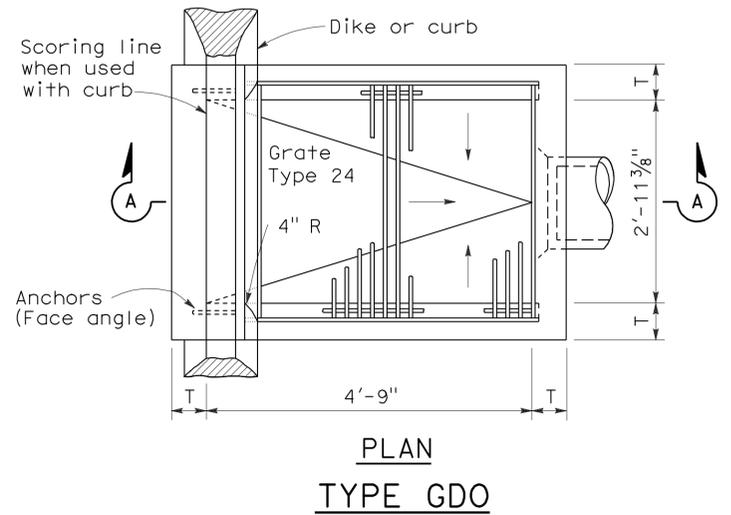


TRASH RACK
(For use with pump installation)

TABLE A
CONCRETE QUANTITIES

TYPE	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
GO	1.24	0.245	3.39	0.346
GDO	1.62	0.322	4.36	0.446

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



PLAN
TYPE GDO

TABLE B

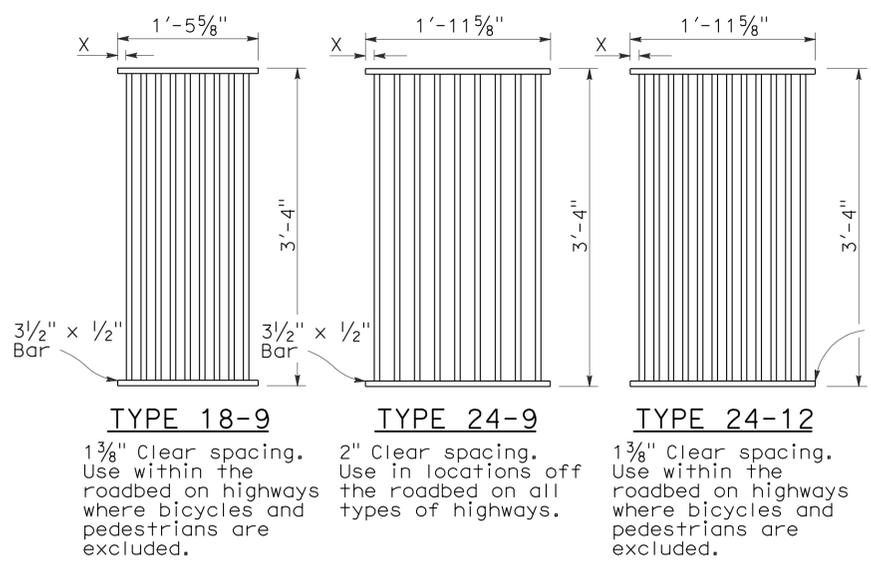
CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION
A1-6	6"	1 1/2"	T+7 1/2"	T+6 1/2"
A1-8	8"	2"	T+7"	T+6"
B1-6	6"	4"	T+5"	T+4"
Type A Dike	6"	3"	T+6"	T+5"

NOTES:

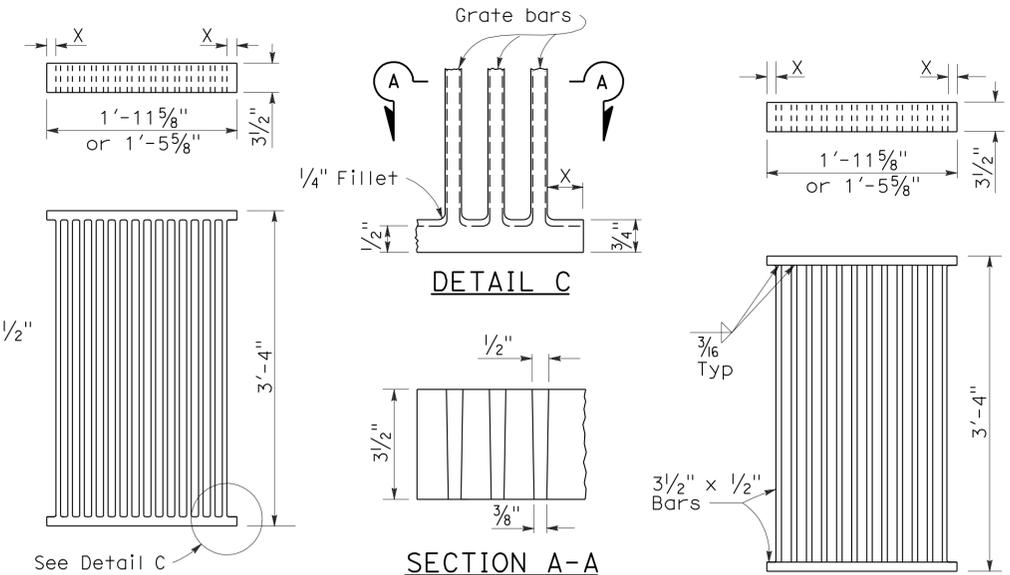
- "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undeepressed.
- For "T" wall thickness, see Table A below.
- Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DRAINAGE INLETS
NO SCALE

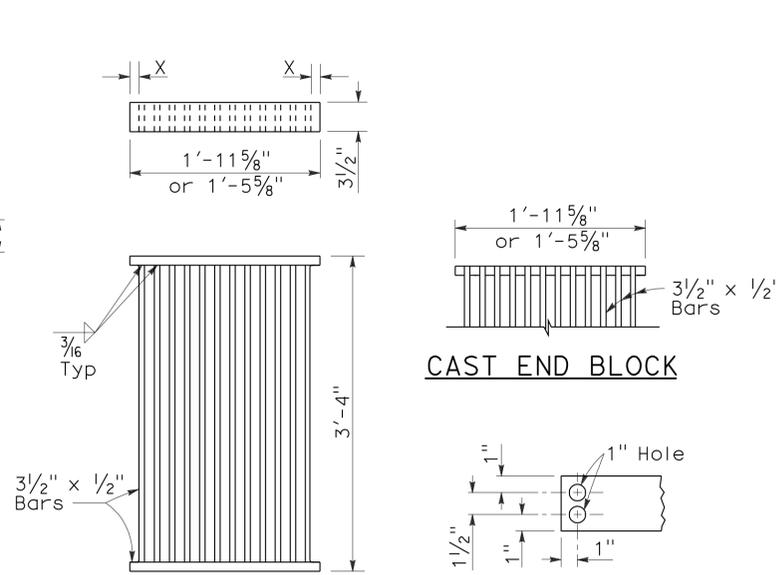
2006 REVISED STANDARD PLAN RSP D74B



RECTANGULAR GRATE DETAILS
(See table below)

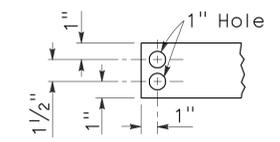


ALTERNATIVE CAST NODULAR IRON GRATE OR CAST STEEL GRATE

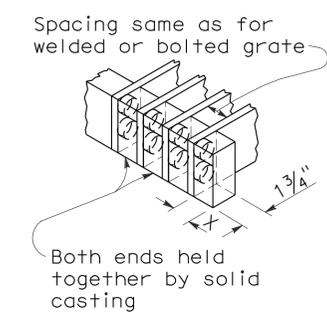


ALTERNATIVE WELDED GRATE

CAST END BLOCK



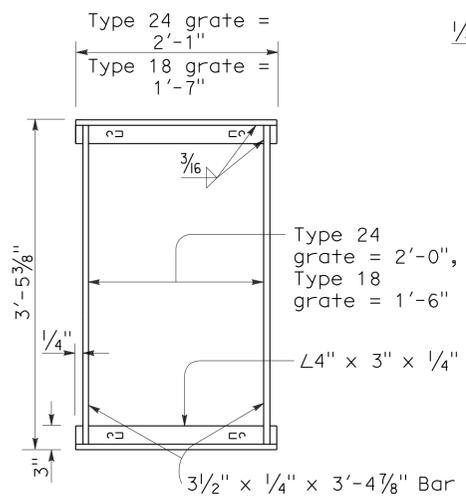
END OF BAR



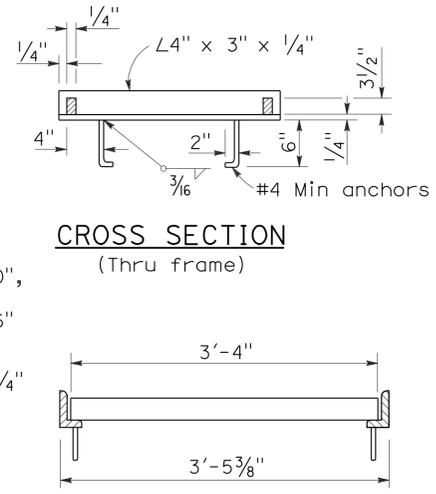
ALTERNATIVE CAST NODULAR IRON OR CAST STEEL END BLOCK GRATE

NOTES:

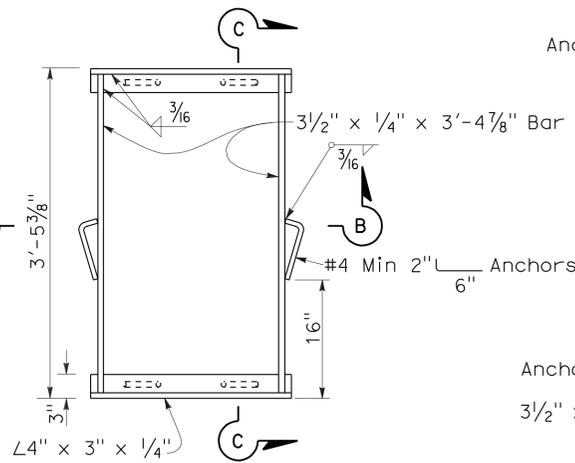
1. Grate type numbers refer to approximate width of grate in inches and number of bars, respectively.
2. Contractor has the option of using cast nodular iron, cast steel, welded, bolted, or cast end block grate.
3. See Special Provisions for requirements pertaining to galvanizing or asphalt dipping of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



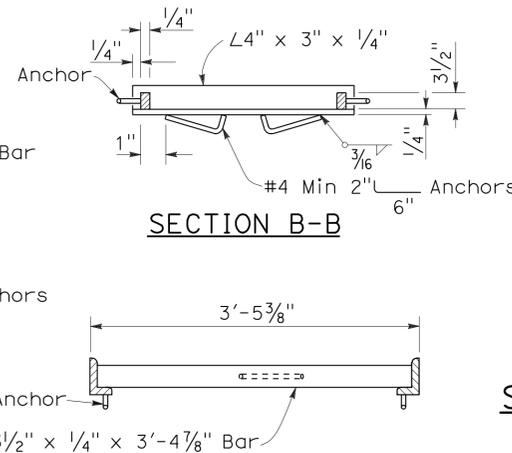
TYPICAL FRAME



LONGITUDINAL SECTION
(Thru frame and grate)



TYPICAL FRAME



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

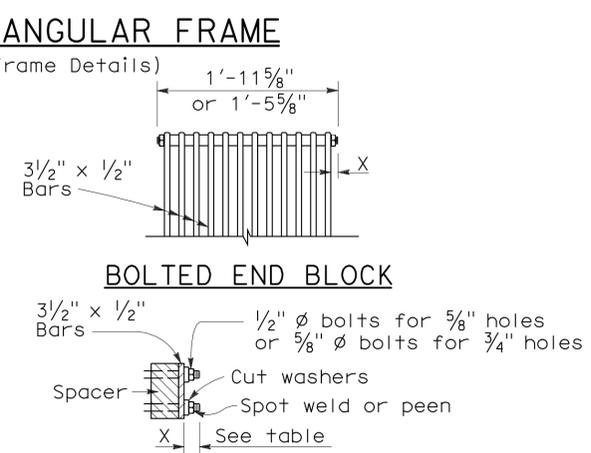
RECTANGULAR FRAME DETAILS
(For all rectangular grates)

GRATE BAR SPACING TABLE

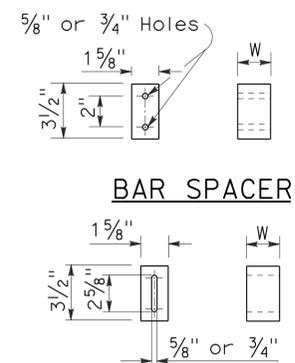
TYPE	NO. OF BARS	CLEAR BAR SPACING	X
18-9	9	1 3/8"	1 1/16"
24-9	9	2"	1 9/16"
24-12	12	1 3/8"	1 1/4"

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

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



BOLTING DETAIL
ALTERNATIVE BOLTED GRATE



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

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

(See General Notes, No 8)

ANNULAR AND HELICAL PROFILE

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

SPIRAL RIB PROFILE

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

* See Note 14.

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

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

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

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

REVISED STANDARD PLAN RSP D97E

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	659	760

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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2006 REVISED STANDARD PLAN RSP D97E

ANNULAR AND HELICAL PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	PIPE WALL THICKNESS				BAND THICKNESS				BAR AND STRAP (CSP ONLY)				ANGLE							
				CSP		CAP		CSP		CAP		STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	DIMENSIONS		BOLTS (No. - Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND	
				CSP	CAP	CSP	CAP	CSP	CAP	CSP	CAP					CSP	CAP	CSP	CAP	CSP			
TWO PIECE INTEGRAL FLANGE	1 1/2" x 1/4"	6"-10"	7"	0.064"-0.079"	0.060"	0.064"	0.060"									2-3/8"	2-3/8"						
UNIVERSAL	2 2/3" x 1/2"	12"-24"	12"		0.060"-0.105"		0.060"										3-1/2"						
ANNULAR	2 2/3" x 1/2"	THROUGH 36"	12"	0.064"-0.138"	0.060"-0.135"	0.064"	0.060"									2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"	
		42"-60"	12"	0.064"-0.079"		0.064"										2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
		42"-60"	12"	0.109"-0.168"	0.135"-0.164"	0.064"	0.075"									2" x 2" x 1/4"	2" x 2" x 1/4"	3-1/2"	3-1/2"	5-3/8"	5-3/8"		
		66"-72"	24"		0.164"		0.105"									2" x 2" x 1/4"		5-1/2"		7-3/8"		5-1/2"	
		66"-84"	24"	0.109"-0.168"		0.064"										2" x 2" x 1/4"		5-1/2"		7-3/8"			
		42"-54"	12"		0.060"-0.105"		0.060"									2" x 2" x 3/16"		3-1/2"		3-3/8"		3-3/8"	
	3" x 1"	48"-60"	14"	0.064"-0.079"		0.064"										2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
		48"-60"	14"	0.109"		0.064"										2" x 2" x 3/16"		3-1/2"		5-3/8"			
		66"-120"	25"	0.064"-0.109"		0.064"										2" x 2" x 3/16"		5-1/2"		9-3/8"			
		42"-60"	14"		0.060"-0.105"		0.060"									2" x 2" x 3/16"		3-1/2"		5-3/8"			
		42"-60"	14"		0.135"		0.075"									2" x 2" x 1/4"		3-1/2"		5-3/8"			
		66"-96"	25"		0.060"-0.135"		0.060"									2" x 2" x 1/4"		5-1/2"		7-3/8"			
	HELICAL	2 2/3" x 1/2"	THROUGH 36"	12"	0.064"-0.138"	0.060"-0.135"	0.064"	0.060"									2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
			42"-54"	12"		0.060"-0.105"		0.060"									2" x 2" x 3/16"		3-1/2"		3-3/8"		3-3/8"
42"-60"			12"	0.064"-0.079"		0.064"										2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
42"-60"			12"	0.109"-0.168"	0.135"-0.164"	0.064"	0.075"									2" x 2" x 1/4"	2" x 2" x 1/4"	3-1/2"	3-1/2"	5-3/8"	5-3/8"		
66"-84"			24"	0.109"-0.168"		0.064"										2" x 2" x 1/4"		5-1/2"		7-3/8"			
66"-72"			24"		0.164"		0.105"									2" x 2" x 1/4"		5-1/2"		7-3/8"		5-3/8"	
3" x 1"		48"-60"	14"	0.064"-0.079"		0.064"										2" x 2" x 3/16"		3-1/2"		3-3/8"		5-1/2"	
		48"-60"	14"	0.109"		0.064"										2" x 2" x 3/16"		3-1/2"		5-3/8"			
		66"-120"	25"	0.064"-0.109"		0.064"										2" x 2" x 3/16"		5-1/2"		9-3/8"			
		42"-60"	14"		0.060"-0.105"		0.060"									2" x 2" x 3/16"		3-1/2"		5-3/8"			
		42"-60"	14"		0.135"		0.075"									2" x 2" x 1/4"		3-1/2"		5-3/8"			
		66"-96"	25"		0.060"-0.135"		0.060"									2" x 2" x 1/4"		5-1/2"		7-3/8"			
		96"-108"	25"		0.135"		0.075"									2" x 2" x 1/4"		5-1/2"		7-3/8"		7-3/8"	
		HUGGER	2 2/3" x 1/2" REROLLED END	THROUGH 48"	10 1/2"	0.109"		0.064"									0.079"	1/2"	7/8"	32 ksi			
54"-66"	10 1/2"			0.109"		0.064"										DOUBLE 0.079"	1/2"	7/8"	32 ksi				
THROUGH 54"	10 1/2"			0.064"-0.079"		0.064"										0.079"	1/2"	7/8"	32 ksi				
THROUGH 60"	10 1/2"			0.138"		0.079"										DOUBLE 0.079"	1/2"	7/8"	32 ksi				
66"-72"	10 1/2"			0.138"		0.109"										DOUBLE 0.079"	1/2"	7/8"	32 ksi				
3" x 1" REROLLED END	THROUGH 72"		10 1/2"	0.168"		0.109"										DOUBLE 0.109"	1/2"	7/8"	45 ksi				
	48"-84"		10 1/2"	0.109"		0.079"										DOUBLE 0.079"	1/2"	7/8"	32 ksi				
	48"-90"		10 1/2"	0.064"-0.079"		0.064"										DOUBLE 0.079"	1/2"	7/8"	32 ksi				
	96"-102"		10 1/2"	0.079"		0.079"										DOUBLE 0.079"	1/2"	7/8"	32 ksi				
	90"-120"		10 1/2"	0.109"		0.109"										DOUBLE 0.109"	1/2"	7/8"	45 ksi				

SPIRAL RIB PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	PIPE WALL THICKNESS				BAND THICKNESS				BAR AND STRAP (SSRP ONLY)				ANGLE										
				SSRP		ASRP		SSRP		ASRP		STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND				
				SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP					SSRP	ASRP	SSRP	ASRP							
ANNULAR	2 2/3" x 1/2" * REROLLED END	24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.064"	0.060"									0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		42"-60"	12"	0.064"-0.079"	0.075"-0.105"	0.064"	0.075"									0.079"	1/2"	7/8"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		42"-60"	12"	0.109"		0.064"										0.079"	1/2"	7/8"	32 ksi	2" x 2" x 1/4"		3-1/2"		5-3/8"		
		66"-84"	24"	0.109"		0.064"										0.079"	1/2"	7/8"	32 ksi	2" x 2" x 1/4"		5-1/2"		7-3/8"		
HUGGER	2 2/3" x 1/2" * REROLLED END	24"-54"	10 1/2"	0.064"-0.079"		0.064"									0.079"	1/2"	7/8"	32 ksi								
		24"-48"	10 1/2"	0.109"		0.064"									0.079"	1/2"	7/8"	32 ksi								
		54"-66"	10 1/2"	0.109"		0.064"										Double 0.079"	1/2"	7/8"	32 ksi							

* See Note 13.

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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	660	760

Raymond Don Tsztso
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

To accompany plans dated 4-16-12

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 6 POSITIVE JOINT

NO SCALE

RSP D97F DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97F
DATED MAY 1, 2006 - PAGE 188 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97F

2006 REVISED STANDARD PLAN RSP D97F

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	661	760

Raymond Don Tsztso
 REGISTERED CIVIL ENGINEER

June 6, 2008
 PLANS APPROVAL DATE

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ANNULAR AND HELICAL PROFILE

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

NOTES:

To accompany plans dated 4-16-12

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

SPIRAL RIB PROFILE

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

* See Note 12.

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP D97G

2006 REVISED STANDARD PLAN RSP D97G

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	662	760

Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 June 5, 2009
 PLANS APPROVAL DATE
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To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP H1

A

AB aggregate base
 ABS acrylonitrile-butadiene-styrene
 AC asphalt concrete
 Adj adjacent/adjustable
 AIC auxiliary irrigation controller
 Alt alternative
 AMEND amendment
 ARV air release valve
 AUTO automatic
 AUX auxiliary
 AVB atmospheric vacuum breaker

B

B&B balled and burlapped
 B/B brass/bronze
 B/B/PL brass/bronze/plastic
 B/PL brass/plastic
 BFM bonded fiber matrix
 Bit C+D bituminous coated
 BP booster pump
 BPA backflow preventer assembly
 BPAE backflow preventer assembly in enclosure
 BPE backflow preventer enclosure
 BV ball valve

C

CAP corrugated aluminum pipe
 CARV combination air release valve
 CCA cam coupler assembly
 CEC controller enclosure cabinet
 CHDPE corrugated high density polyethylene
 CL chain link
 CNC control and neutral conductors
 Conc concrete
 Cond conduit
 CSP corrugated steel pipe
 CST center strip
 CV check valve

D

Dia diameter
 DIP ductile iron pipe
 DN diameter nominal

E

EA each
 Elect electric/electrical
 Elev elevation
 ENCL enclosure
 EP edge of pavement
 ES edge of shoulder
 EST end strip
 ESTB establishment
 ETW edge of traveled way

F

F full circle
 F/P full/part circle
 FAU filter assembly unit
 FCV flow control valve
 FERT fertilizer
 FG finished grade
 FIPT female iron pipe thread
 FIS fertilizer injector system
 FL flow line
 FM flow monitor
 FS flow sensor
 Ft foot/feet
 FV flush valve

G

GAL Gallon(s)
 Galv galvanized
 GARV garden valve
 GPH gallons per hour
 GPM gallons per minute
 GSP galvanized steel pipe
 GV gate valve

H

H half circle
 HB hose bib
 HDPE high density polyethylene
 HP horsepower/hinge point
 HPL high pressure line
 Hwy highway

I

IC irrigation controller
 ICC irrigation controller(s) in controller enclosure cabinet
 ID inside diameter
 In inches
 IFS irrigation filtration system
 IPS iron pipe size
 IPT iron pipe thread
 Irr irrigation

L

L length
 LF linear foot

M

Max maximum
 MBGR metal beam guard railing
 MCV manual control valve
 MIC master irrigation controller
 Min minimum
 MIPT male iron pipe thread
 Misc miscellaneous
 M+I material
 MVP maintenance vehicle pullout

N

NCN no common name
 NL nozzle line
 No. number
 NPT national pipe thread

O

O/C on center
 OD outside diameter
 Oz ounce

P

P part circle
 PB pull box
 PCC portland cement concrete
 PE polyethylene
 PK+ packet
 PL plastic
 PLT plant/planting
 PLT ESTB plant establishment
 PM post mile
 PR pressure rated
 PRLV pressure relief valve
 PSFM polymer stabilized fiber matrix
 PSI pounds per square inch
 PRV pressure reducing valve
 PVC polyvinyl chloride
 Pvmt pavement

Q

Q quarter circle
 QCV quick coupling valve

R

R radius
 RCP reinforced concrete pipe
 RCV remote control valve
 RCVM remote control valve (master)
 RCVMF remote control valve (master) w/ flow meter
 RCW recycled/reclaimed water
 RECP rolled erosion control product
 REQ required
 R/W right of way

S

S slip
 SCC sprinkler control conduit
 SCH schedule
 SF state-furnished
 Shld shoulder
 SQFT square foot/feet
 SQYD square yard(s)
 SST side strip
 Sta station
 Std standard
 SW sidewalk/sound wall

T

T third circle/thread
 TLS truck loading standpipe
 TQ three quarter circle
 TRM turf reinforcement mat
 TRVD traveled
 TT two third circle
 Typ typical

U

UG underground

V

VAU valve assembly unit

W

W width
 W/ with
 WM water meter
 WS wye strainer
 WSP welded steel pipe
 WWM welded wire mesh

NOTE:
 FOR ADDITIONAL ABBREVIATIONS,
 SEE STANDARD PLANS A10A AND A10B.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**PLANTING AND IRRIGATION
 ABBREVIATIONS**

NO SCALE
 RSP H1 DATED JUNE 5, 2009 SUPERSEDES STANDARD PLAN H1
 DATED MAY 1, 2006 - PAGE 201 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP H1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	663	760

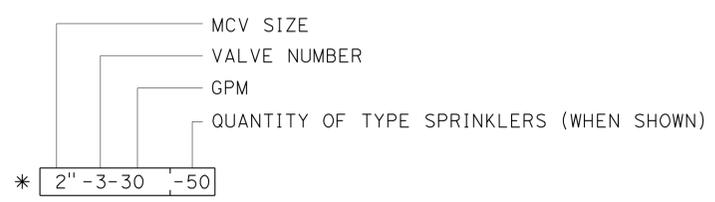
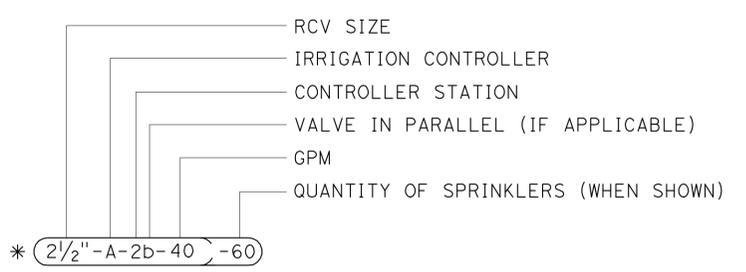
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 June 5, 2009
 PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 4-16-12

EXISTING	PROPOSED	ITEM DESCRIPTION
		WATER METER (WM)
		BACKFLOW PREVENTER ASSEMBLY (BPA)
		BACKFLOW PREVENTER ASSEMBLY IN ENCLOSURE (BPAE)
		BACKFLOW PREVENTER ENCLOSURE (BPE)
		BOOSTER PUMP (BP)
		TRUCK LOADING STANDPIPE (TLS)
		FLOW SENSOR (FS)
		MASTER IRRIGATION CONTROLLER (MIC)
		AUXILIARY IRRIGATION CONTROLLER (AIC)
		IRRIGATION CONTROLLER (IC)/ IRRIGATION CONTROLLER (IC) (BATTERY) IRRIGATION CONTROLLER (IC) (SOLAR)
		IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)
		CONTROL AND NEUTRAL CONDUCTORS (CNC)
		SPRINKLER CONTROL CONDUIT (SCC)
		IRRIGATION CROSSOVER
		EXTEND IRRIGATION CROSSOVER
		IRRIGATION SLEEVE
		DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)
		PLASTIC PIPE (PR 200) (SUPPLY LINE) (MAIN)
		PLASTIC PIPE (PR 200) (SUPPLY LINE) (LATERAL)
		PLASTIC PIPE (IRRIGATION LINE)
		REMOTE CONTROL VALVE (RCV) REMOTE CONTROL VALVE (MASTER) (RCVM) REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)
		MANUAL CONTROL VALVE (MCV)
		VALVE ASSEMBLY UNIT (VAU)
		WYE STRAINER (WS)
		FILTER ASSEMBLY UNIT (FAU)
		GATE VALVE (GV)
		BALL VALVE (BV)

EXISTING	PROPOSED	ITEM DESCRIPTION
		QUICK COUPLING VALVE (QCV)
		CAM COUPLER ASSEMBLY (CCA)
		PRESSURE REDUCING VALVE (PRV)
		PRESSURE RELIEF VALVE (PRLV)
		FLOW CONTROL VALVE (FCV)
		COMBINATION AIR RELEASE VALVE (CARV)
		CHECK VALVE (CV)
		FLUSH VALVE (FV)
		NOZZLE LINE W/TURNING UNION
		IRRIGATION SYSTEM
		IRRIGATION SYSTEM TO BE REMOVED
		CHAIN LINK GATE
		QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
		SPRINKLER W/SPRINKLER PROTECTOR
		CONNECT TO EXISTING SYSTEM
		CAP
		CAP EXISTING

VALVE CODE



* VALVE CODES FOR EXISTING VALVES ARE SHOWN IN A DASHED ENCLOSURE.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PLANTING AND IRRIGATION SYMBOLS
NO SCALE

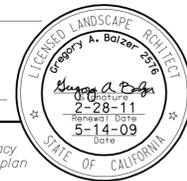
RSP H2 DATED JUNE 5, 2009 SUPERSEDES RSP H2 DATED MARCH 7, 2008 AND STANDARD PLAN H2 DATED MAY 1, 2006 - PAGE 202 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP H2

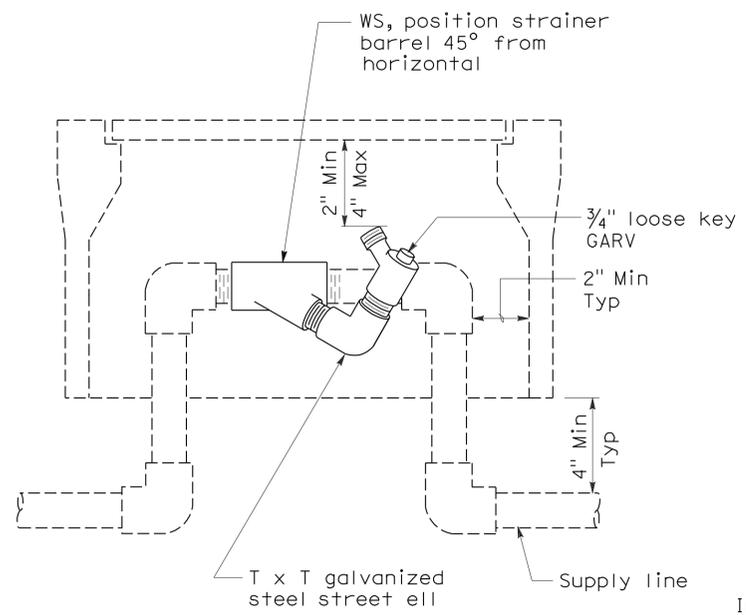
2006 REVISED STANDARD PLAN RSP H2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	664	760

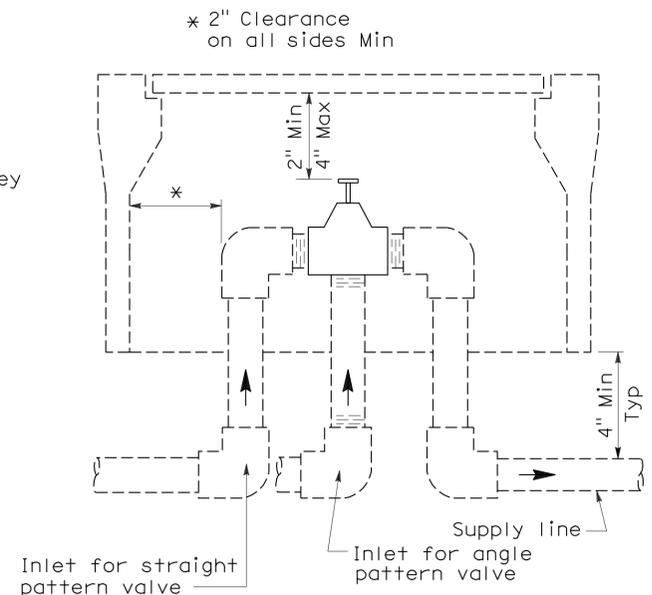
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 June 5, 2009
 PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



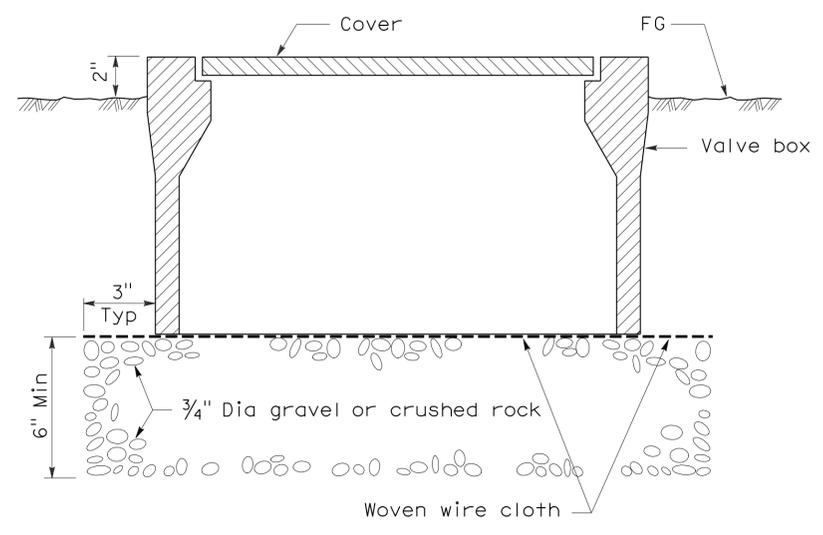
To accompany plans dated 4-16-12



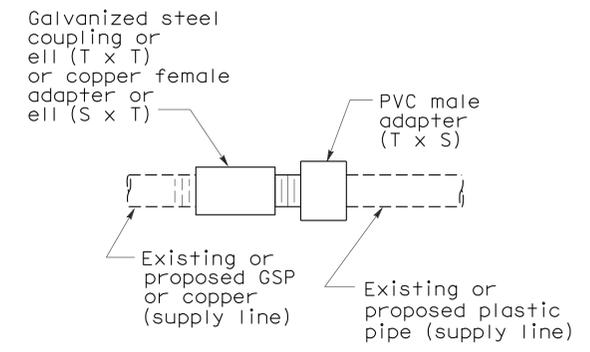
**ELEVATION
WYE STRAINER**



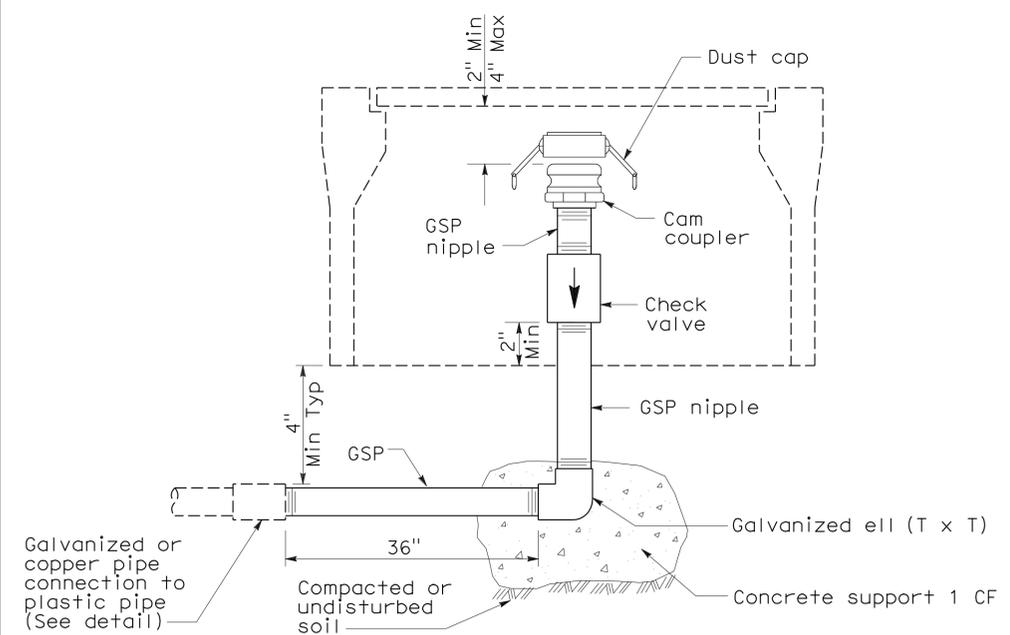
**ELEVATION
VALVE**



**SECTION
VALVE BOX**

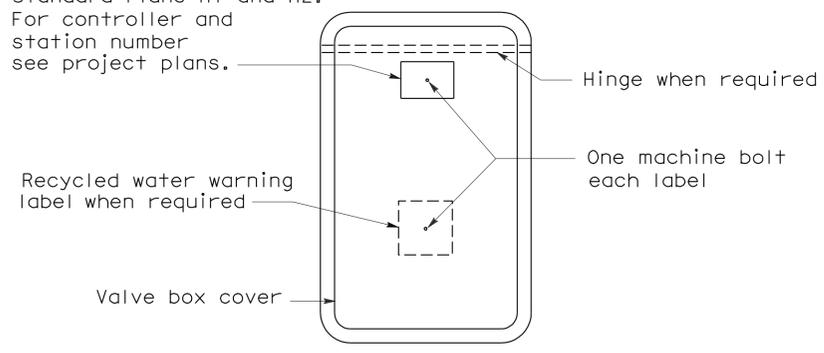


**PLAN
GALVANIZED OR COPPER PIPE
CONNECTION TO PLASTIC PIPE**

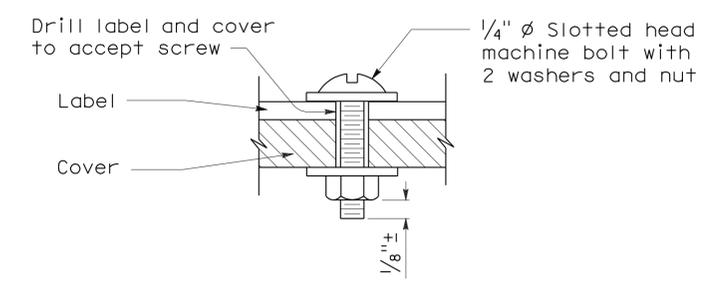


**ELEVATION
CAM COUPLER ASSEMBLY**

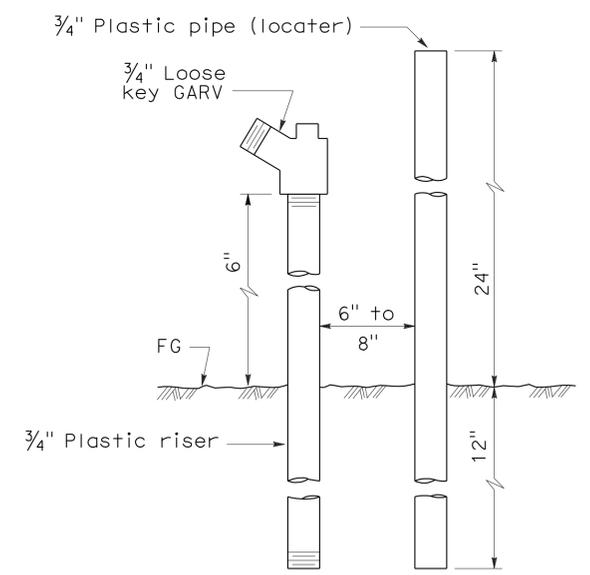
Identification label:
 For abbreviations see Revised Standard Plans H1 and H2.
 For controller and station number see project plans.



PLAN



**SECTION
VALVE BOX IDENTIFICATION**



**ELEVATION
FLUSH VALVE**

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

**PLANTING AND IRRIGATION
 DETAILS**

NO SCALE

RSP H7 DATED JUNE 5, 2009 SUPERSEDES STANDARD PLAN H7
 DATED MAY 1, 2006 - PAGE 207 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP H7

2006 REVISED STANDARD PLAN RSP H7

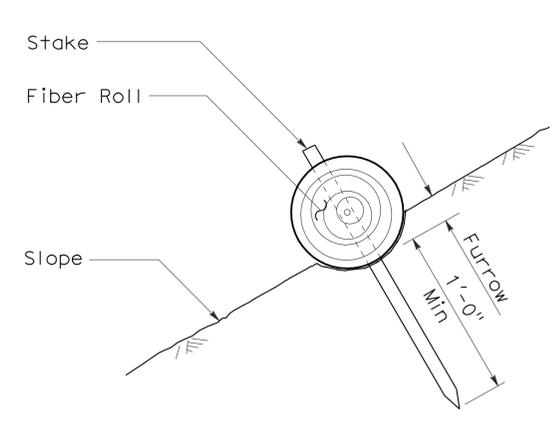
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	665	760

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

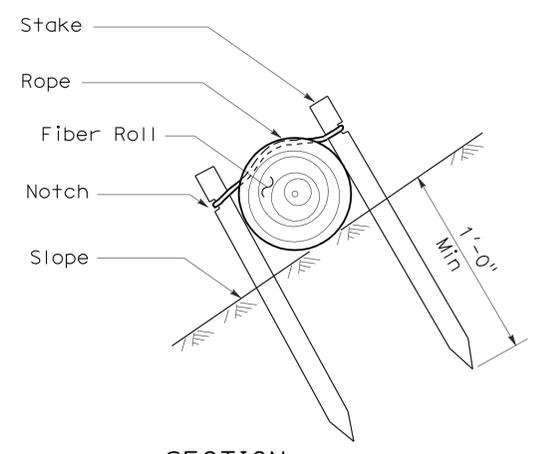
To accompany plans dated 4-16-12

NOTES:

1. Fiber roll spacing varies depending upon slope inclination.
2. Installations shown in the perspectives are for slope inclination of 10:1 and steeper.

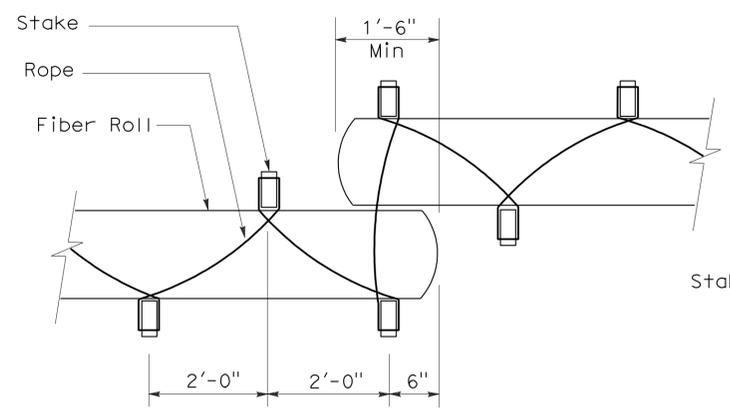


SECTION
FIBER ROLL
(TYPE 1)

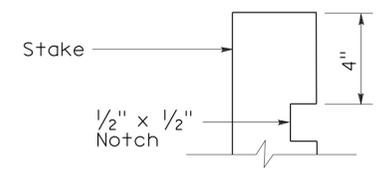


SECTION

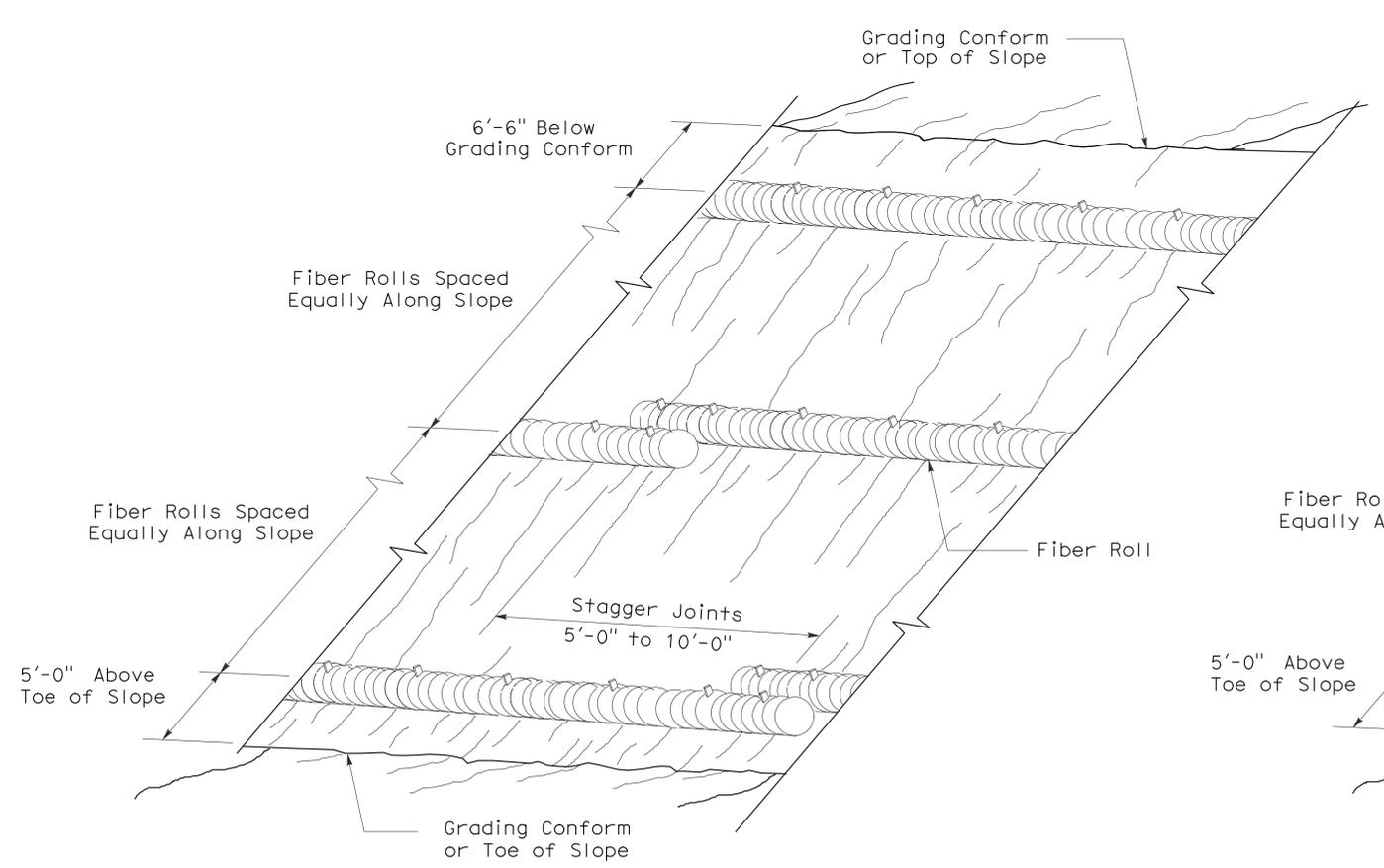
FIBER ROLL
(TYPE 2)



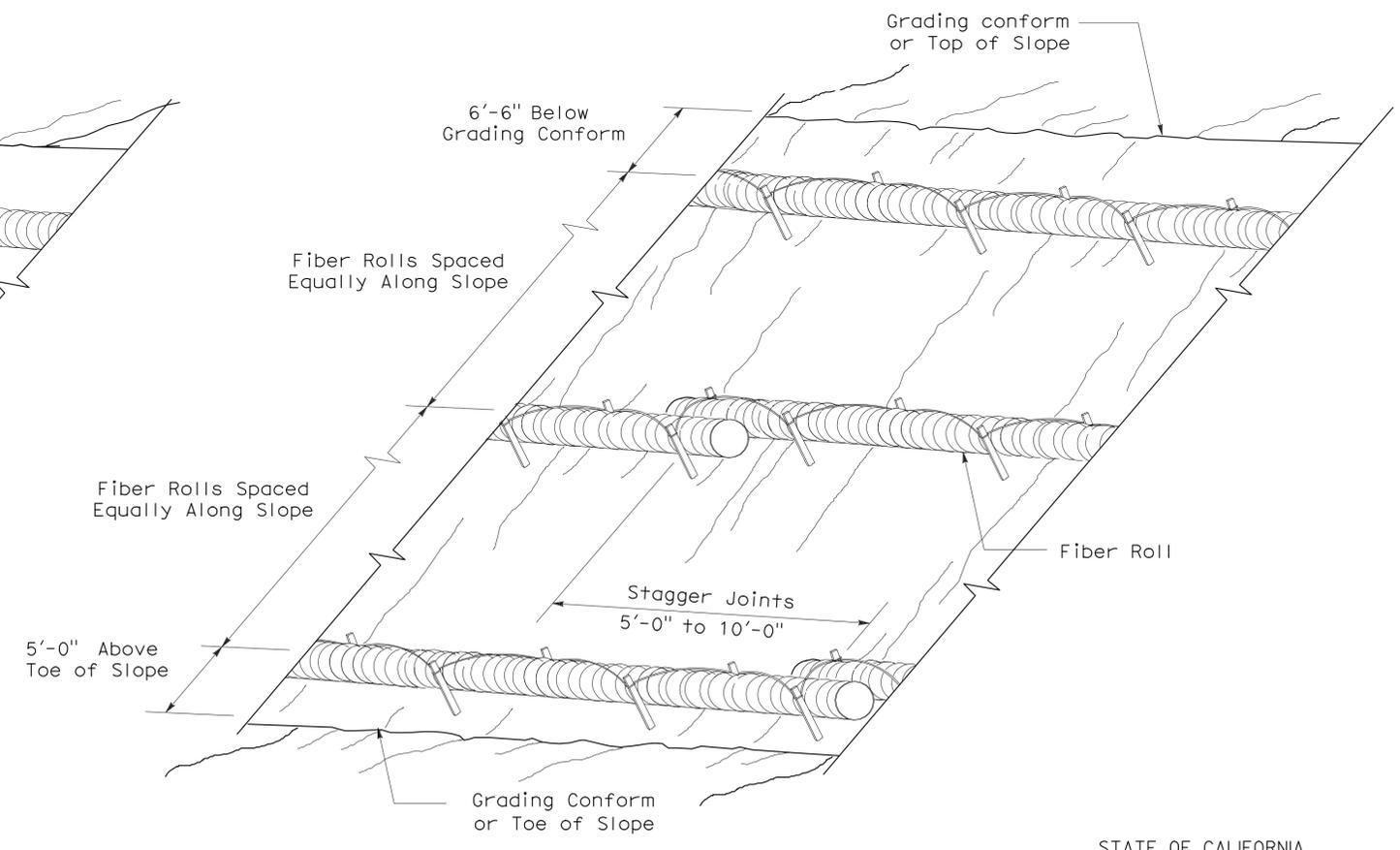
PLAN



ELEVATION
STAKE NOTCH DETAIL



PERSPECTIVE
FIBER ROLL (TYPE 1)



PERSPECTIVE
FIBER ROLL (TYPE 2)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
EROSION CONTROL DETAILS
(FIBER ROLL)

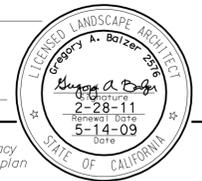
NO SCALE

RNSP H51 DATED APRIL 3, 2009 SUPERSEDES NSP H51 DATED DECEMBER 1, 2006 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED NEW STANDARD PLAN RNSP H51

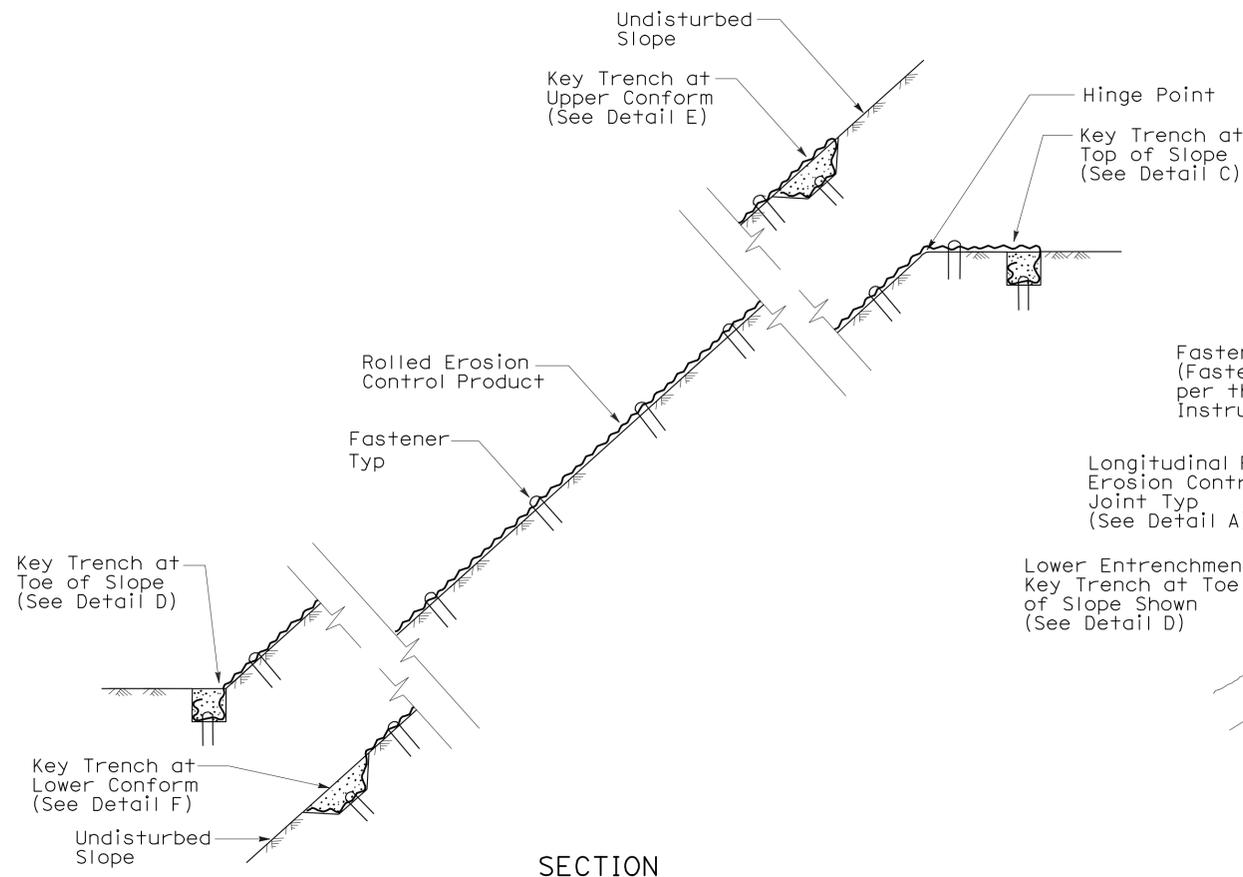
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	666	760

Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 June 5, 2009
 PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

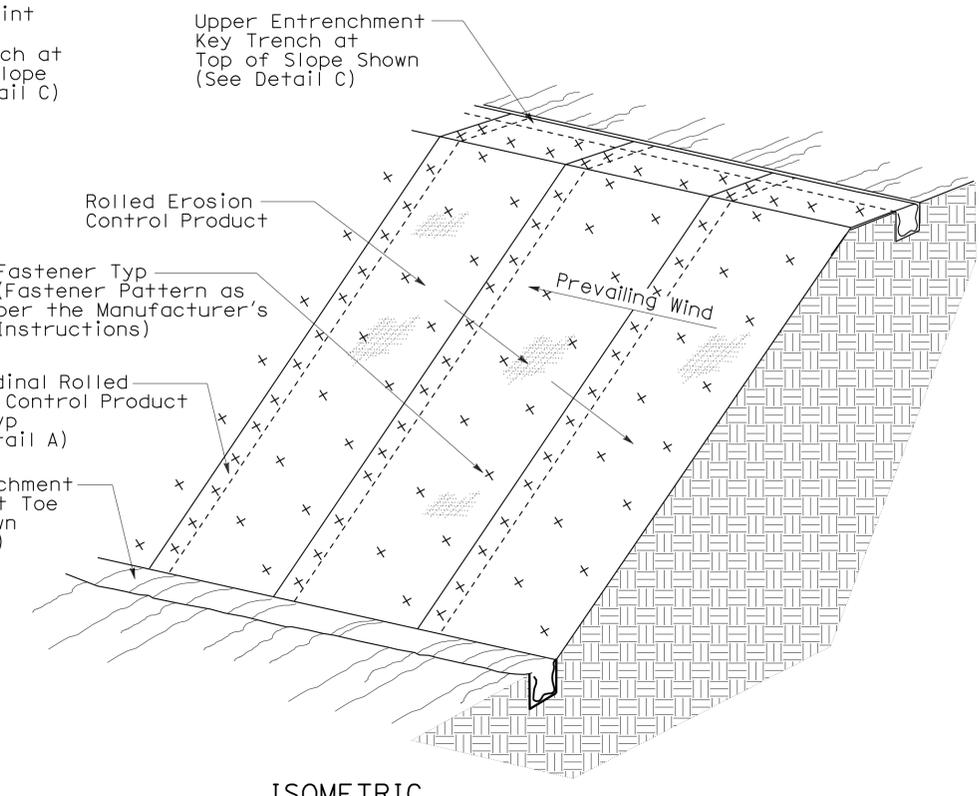


To accompany plans dated 4-16-12

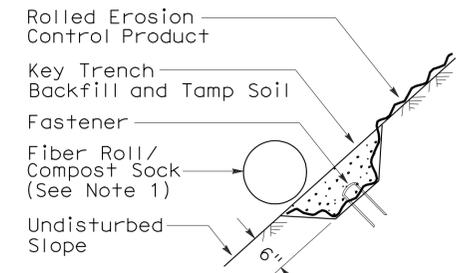
- NOTE:**
1. Fiber Roll/Compost Sock shown for reference purposes only.
 2. If transverse rolled erosion control product joints are required on slopes, see Detail B.



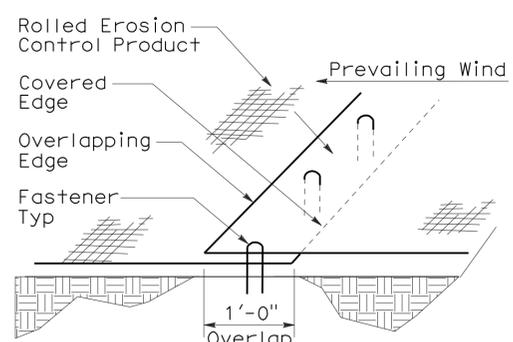
SECTION
ROLLED EROSION CONTROL PRODUCT
ON SLOPE WITH VARIOUS KEY ENTRENCHMENTS



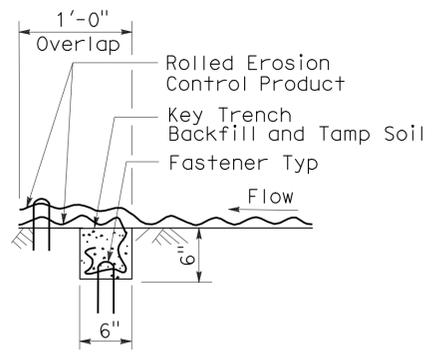
ISOMETRIC
ROLLED EROSION CONTROL PRODUCT
ON SLOPE



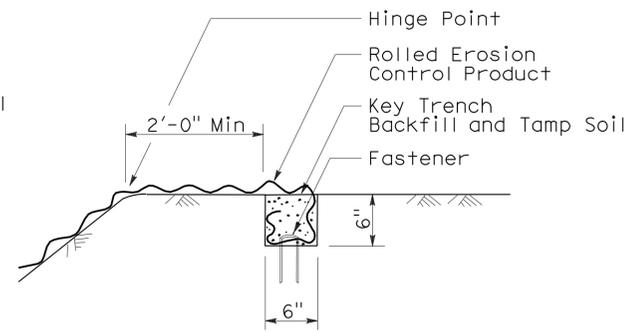
SECTION
DETAIL F
KEY TRENCH AT
LOWER CONFORM



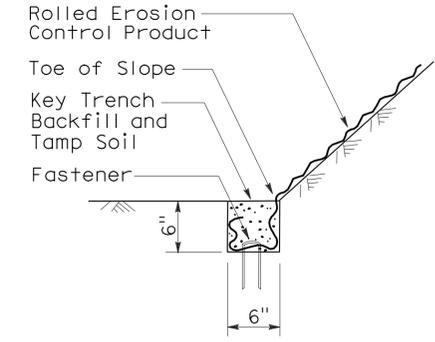
PERSPECTIVE
DETAIL A
LONGITUDINAL ROLLED EROSION
CONTROL PRODUCT JOINT



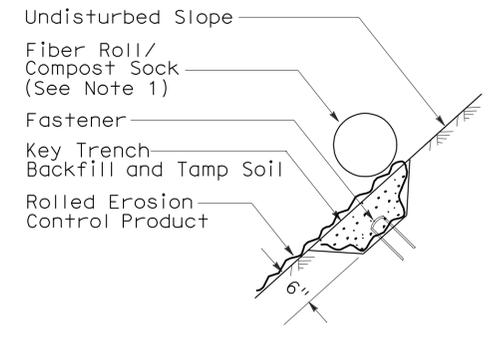
SECTION
DETAIL B
TRANSVERSE ROLLED EROSION
CONTROL PRODUCT JOINT



SECTION
DETAIL C
KEY TRENCH AT
TOP OF SLOPE



SECTION
DETAIL D
KEY TRENCH AT
TOE OF SLOPE



SECTION
DETAIL E
KEY TRENCH AT
UPPER CONFORM

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

ROLLED EROSION CONTROL PRODUCT

NO SCALE

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

2006 NEW STANDARD PLAN NSP H53

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	667	760

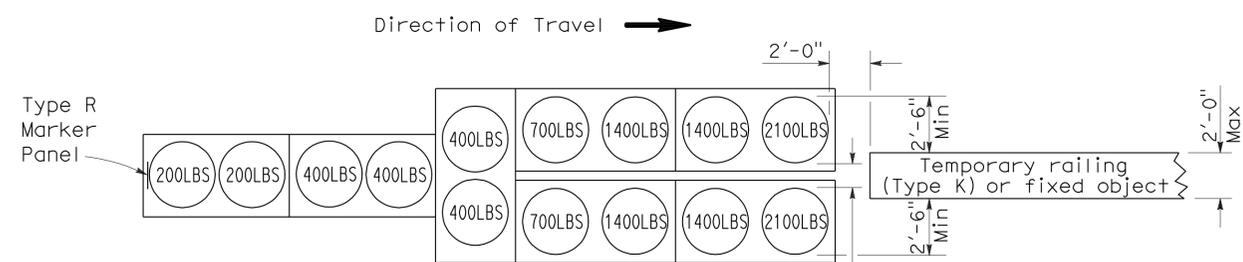
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

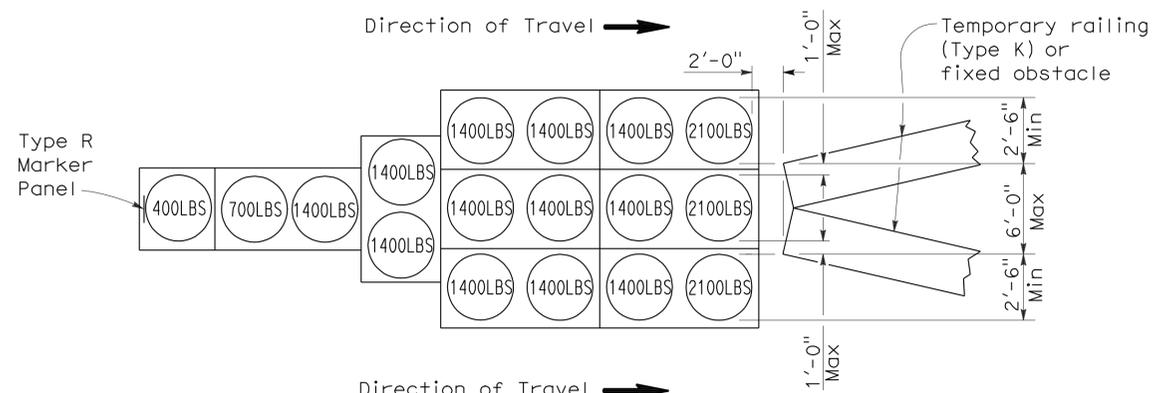
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-09
CIVIL
STATE OF CALIFORNIA

To accompany plans dated 4-16-12



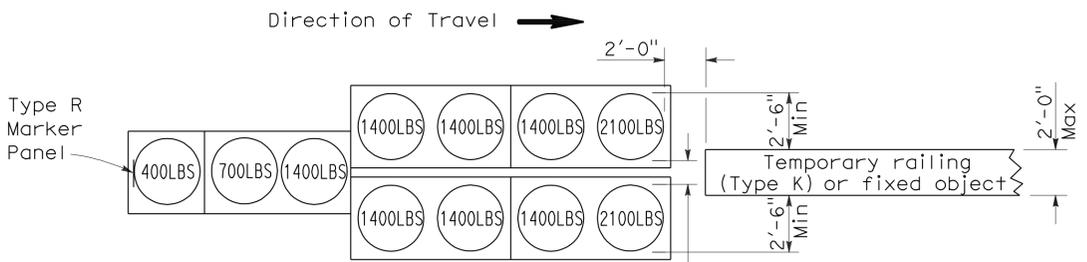
ARRAY 'TU14'

Approach speed 45 mph or more



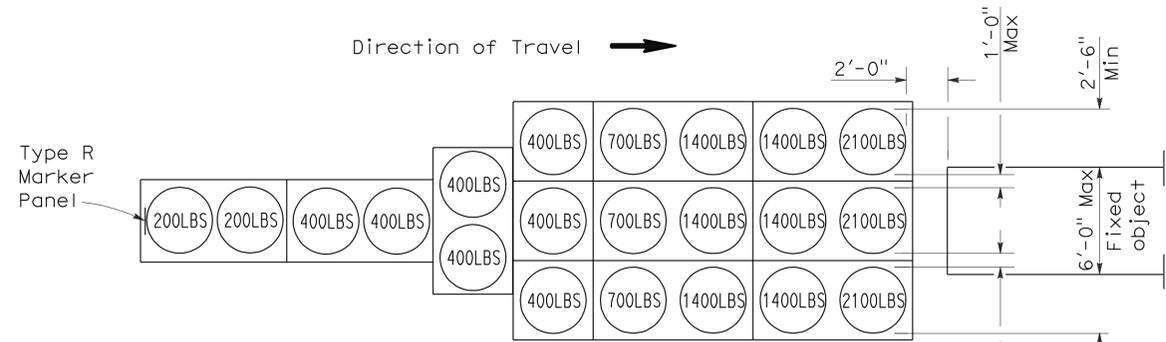
ARRAY 'TU17'

Approach speed less than 45 mph



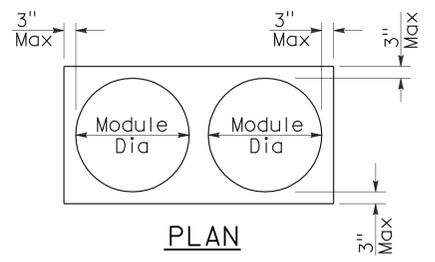
ARRAY 'TU11'

Approach speed less than 45 mph

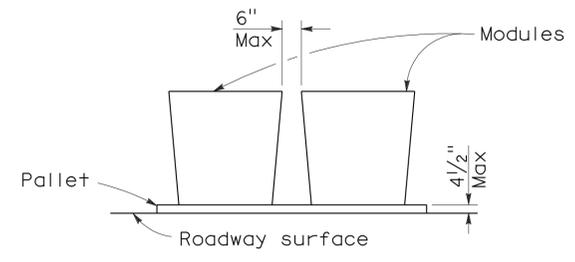


ARRAY 'TU21'

Approach speed 45 mph or more



PLAN



ELEVATION

CRASH CUSHION PALLET DETAIL

See Note 7

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP T1A

2006 REVISED STANDARD PLAN RSP T1A

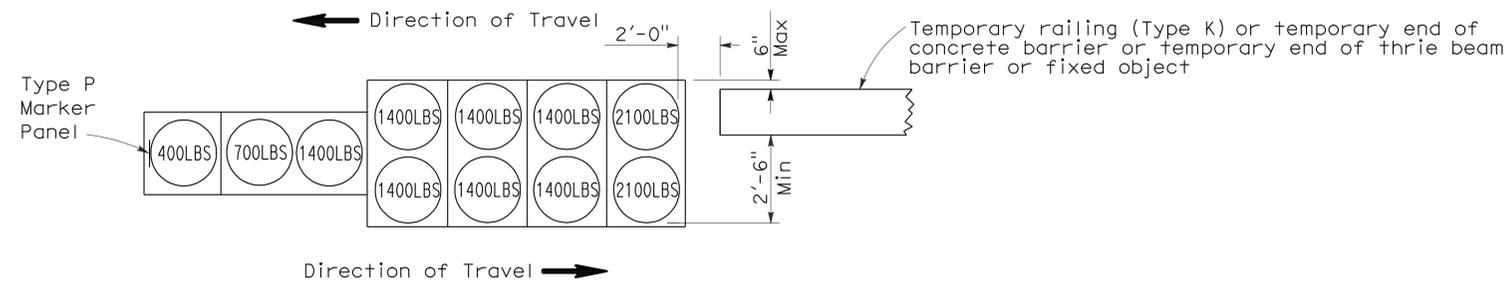
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	668	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

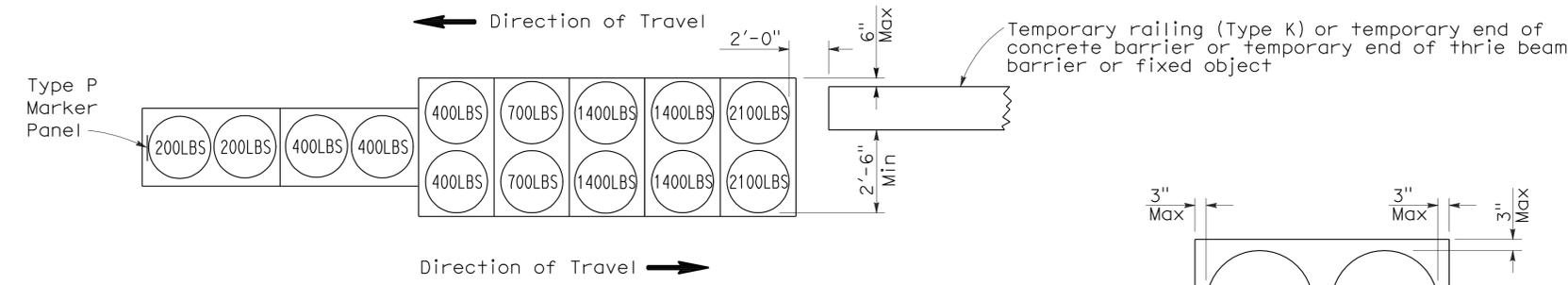
June 6, 2008
PLANS APPROVAL DATE

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

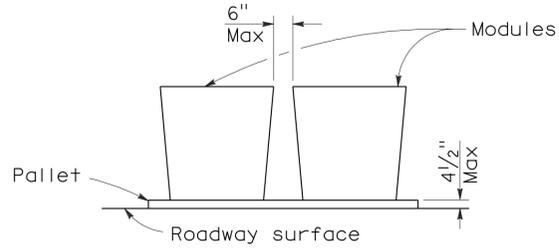
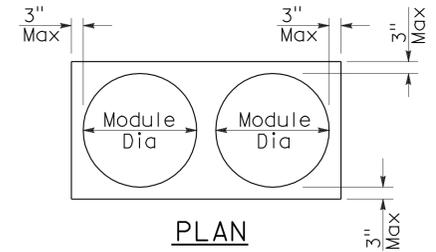
To accompany plans dated 4-16-12



ARRAY 'TB11'
Approach speed less than 45 mph



ARRAY 'TB14'
Approach speed 45 mph or more



CRASH CUSHION PALLET DETAIL
See Note 7

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP T1B

2006 REVISED STANDARD PLAN RSP T1B

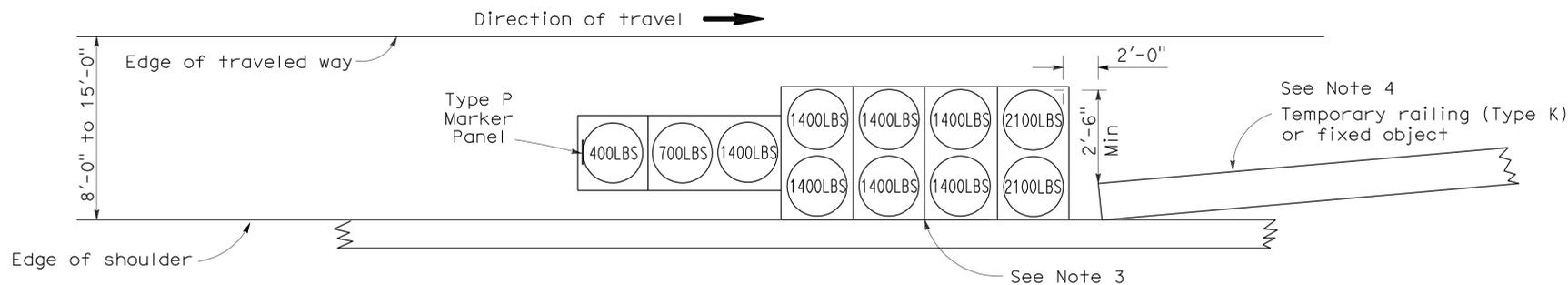
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	669	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

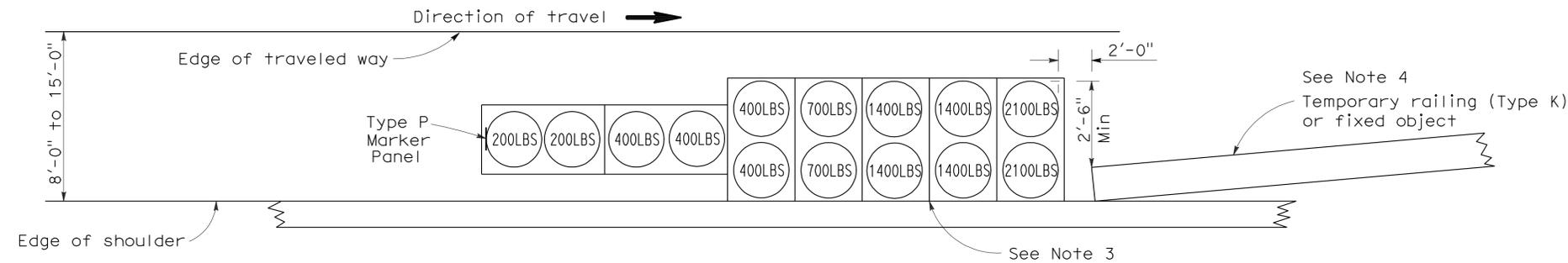
June 6, 2008
PLANS APPROVAL DATE

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

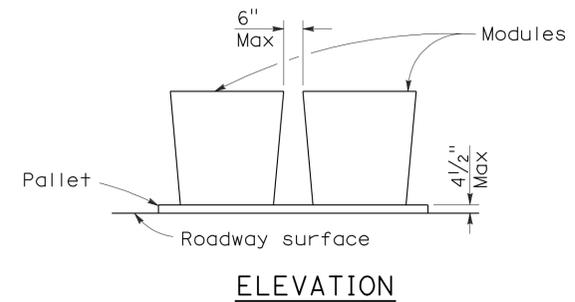
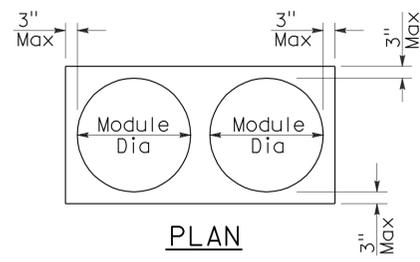
To accompany plans dated 4-16-12



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



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



CRASH CUSHION PALLET DETAIL
See Note 11

NOTES:

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

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

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

REVISED STANDARD PLAN RSP T2

2006 REVISED STANDARD PLAN RSP T2

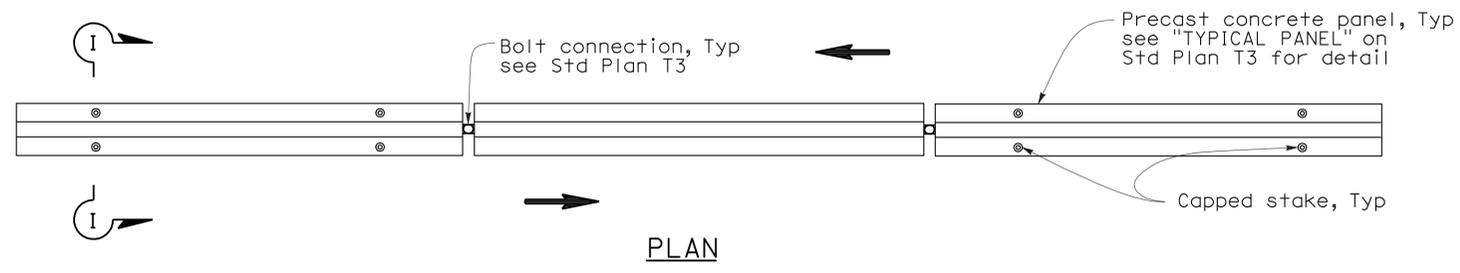
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	880	22.6/24.0	670	760

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

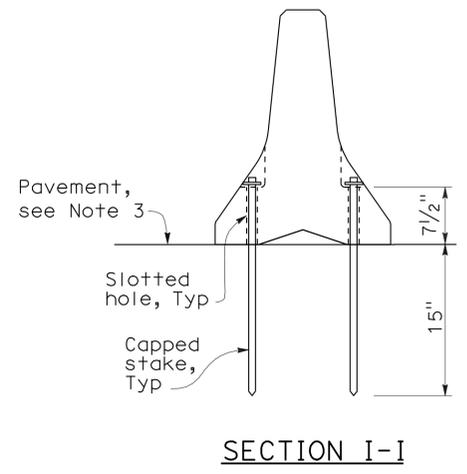
May 20, 2011
PLANS APPROVAL DATE

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

To accompany plans dated 4-16-12

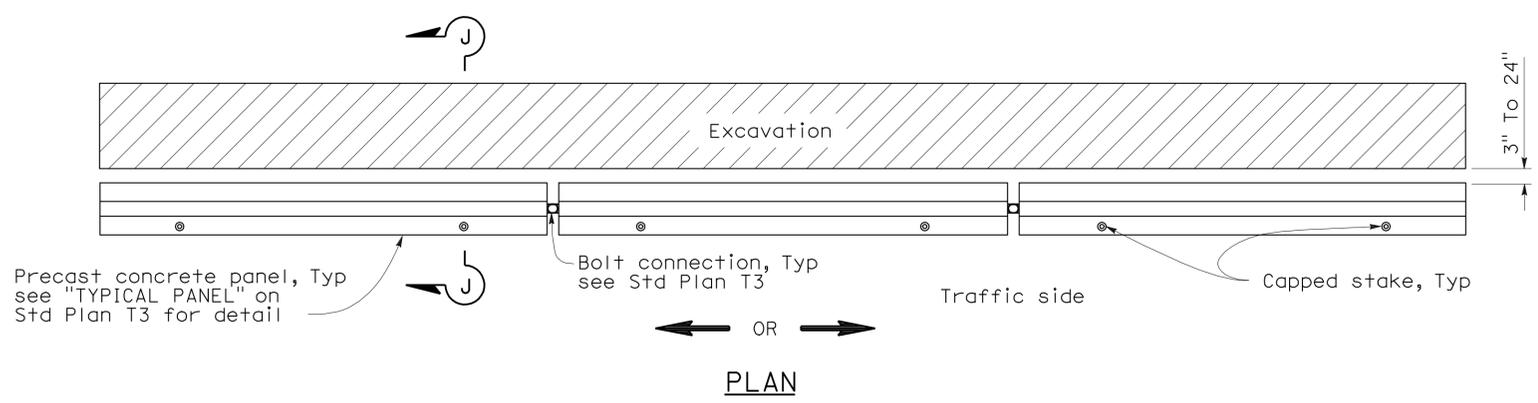


RAILING STAKING CONFIGURATION FOR TWO-WAY TRAFFIC
See Note 1

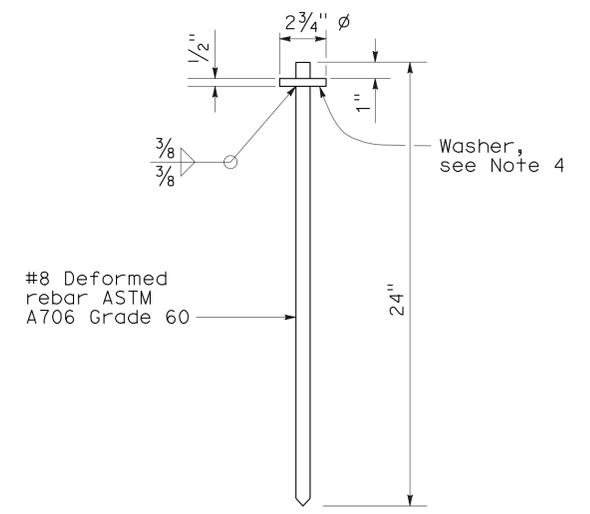
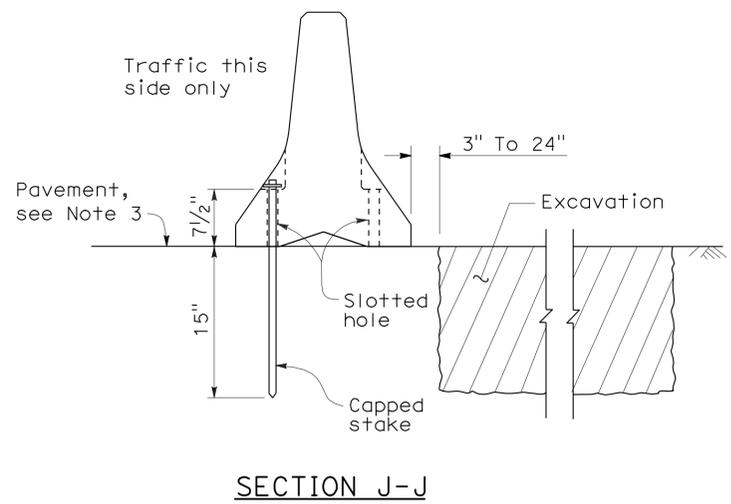


NOTES:

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



RAILING STAKING CONFIGURATION ADJACENT TO AN EXCAVATION
See Note 2



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**TEMPORARY RAILING
(TYPE K)**

NO SCALE

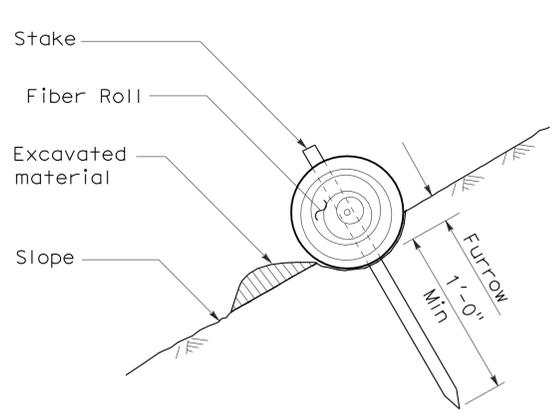
NSP T3A DATED MAY 20, 2011 SUPPLEMENTS
THE STANDARD PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP T3A

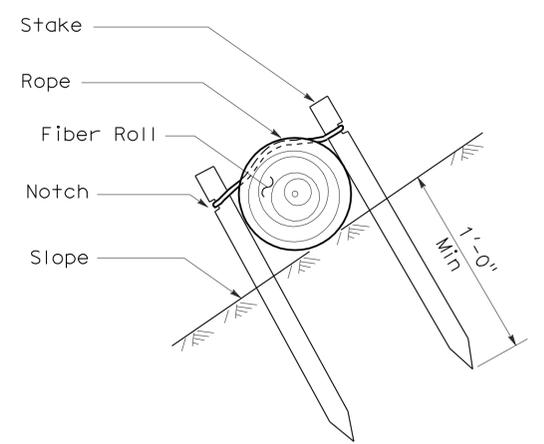
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	672	760

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

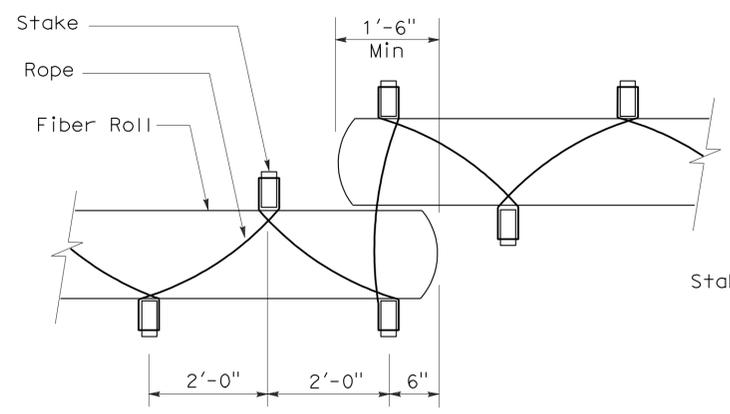
To accompany plans dated 4-16-12



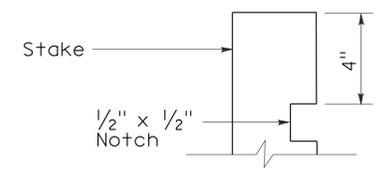
SECTION
TEMPORARY FIBER ROLL
(TYPE 1)



SECTION
TEMPORARY FIBER ROLL
(TYPE 2)

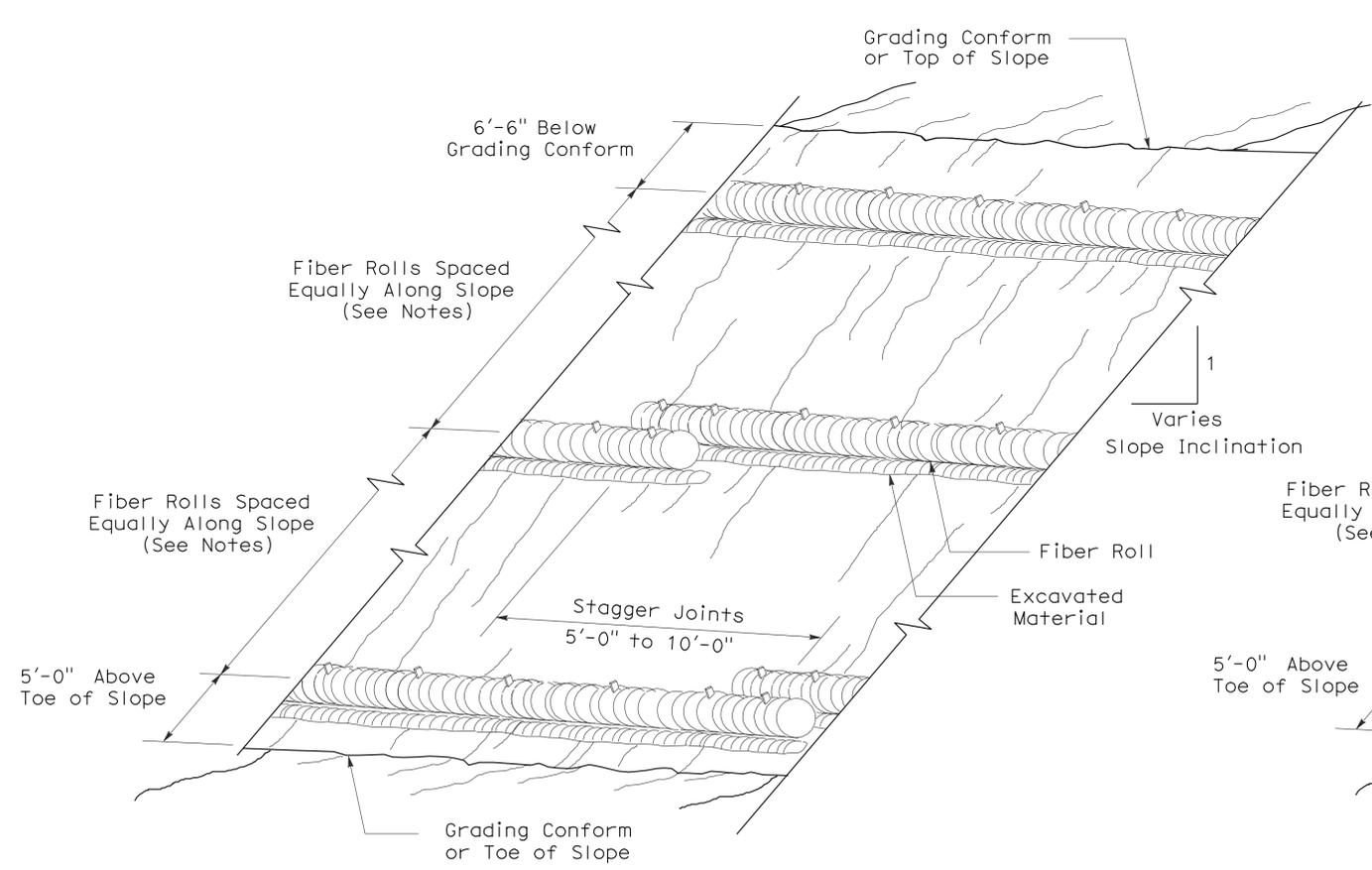


PLAN

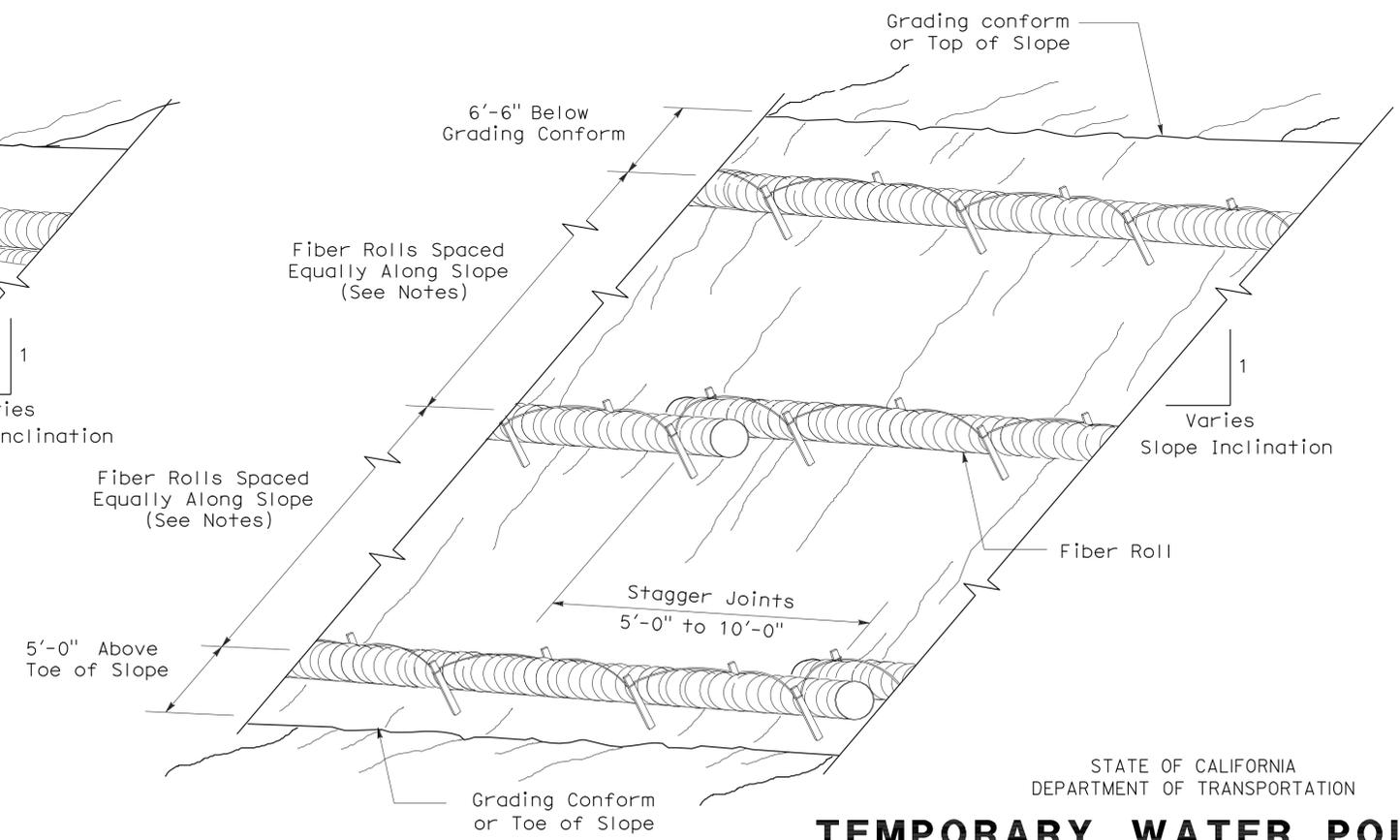


ELEVATION
STAKE NOTCH DETAIL

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



PERSPECTIVE
TEMPORARY FIBER ROLL (TYPE 1)



PERSPECTIVE
TEMPORARY FIBER ROLL (TYPE 2)

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
TEMPORARY WATER POLLUTION CONTROL DETAILS
(TEMPORARY FIBER ROLL)
 NO SCALE

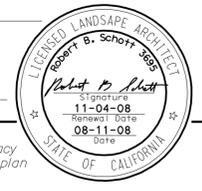
RSP T56 DATED APRIL 3, 2009 SUPERSEDES STANDARD PLAN T56
 DATED MAY 1, 2006 - PAGE 232 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP T56

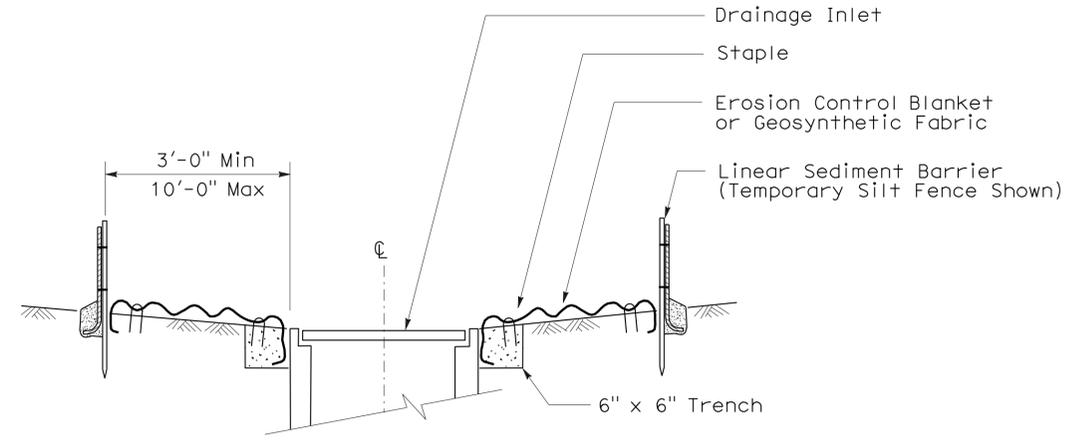
2006 REVISED STANDARD PLAN RSP T56

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	673	760

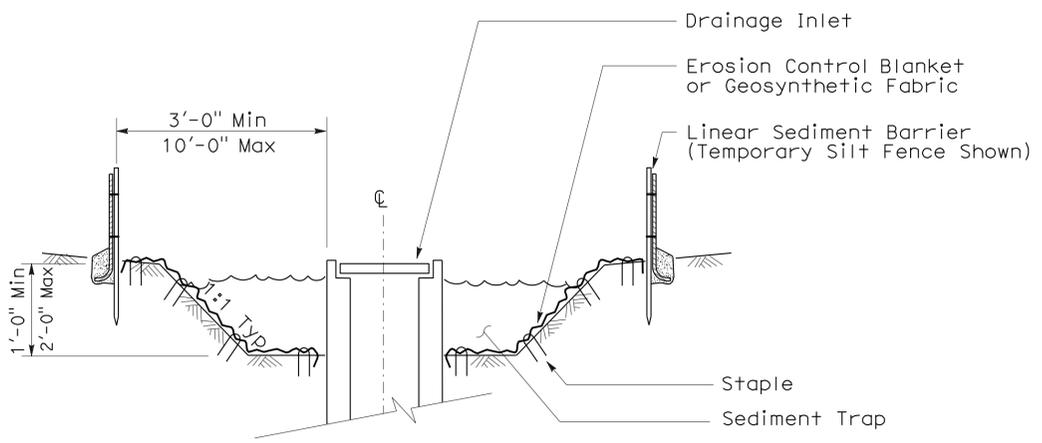
Robert B. Schott
 LICENSED LANDSCAPE ARCHITECT
 August 15, 2008
 PLANS Approval DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



To accompany plans dated 4-16-12



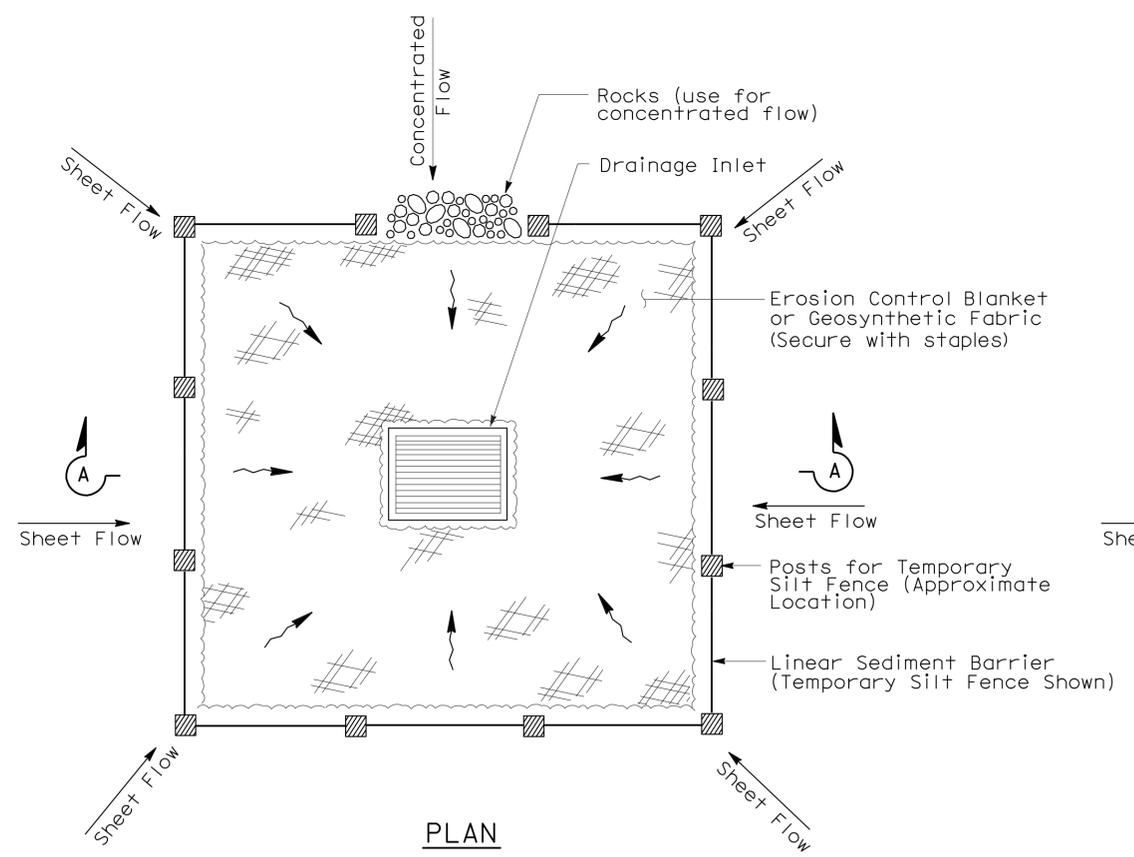
SECTION A-A



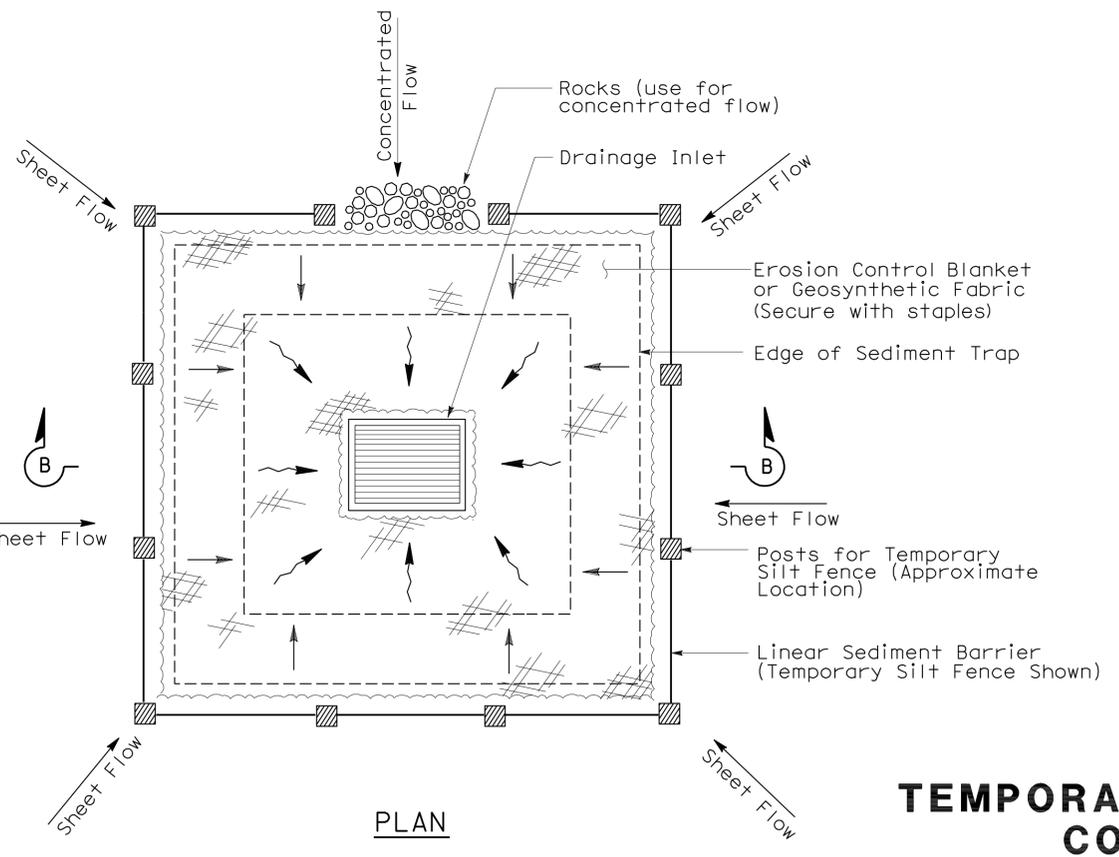
SECTION B-B

NOTES:

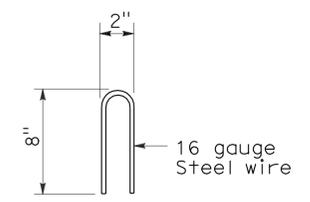
1. See Standard Plan T51 for Temporary Silt Fence.
2. Dimensions may vary to fit field conditions.



TEMPORARY DRAINAGE INLET PROTECTION (TYPE 1)



TEMPORARY DRAINAGE INLET PROTECTION (TYPE 2) (EXCAVATED SEDIMENT TRAP)



STAPLE DETAIL

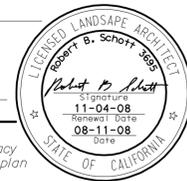
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
TEMPORARY WATER POLLUTION CONTROL DETAILS
(TEMPORARY DRAINAGE INLET PROTECTION)
 NO SCALE

NSP T61 DATED AUGUST 15, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP T61

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	674	760

Robert B. Schott
 LICENSED LANDSCAPE ARCHITECT
 August 15, 2008
 PLANS APPROVAL DATE
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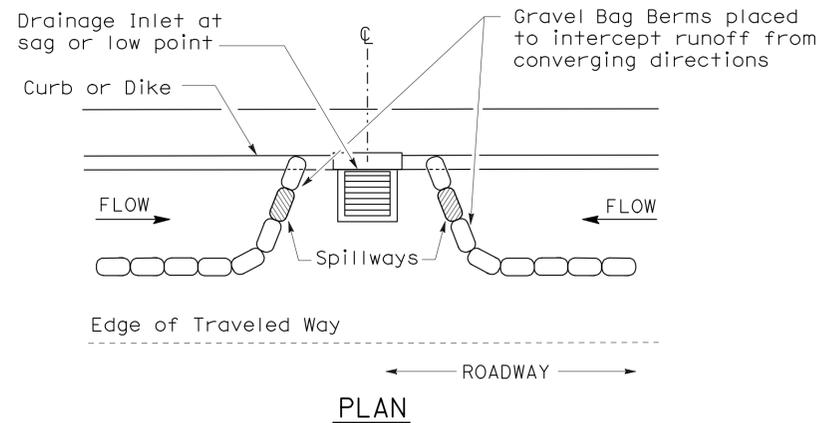


To accompany plans dated 4-16-12

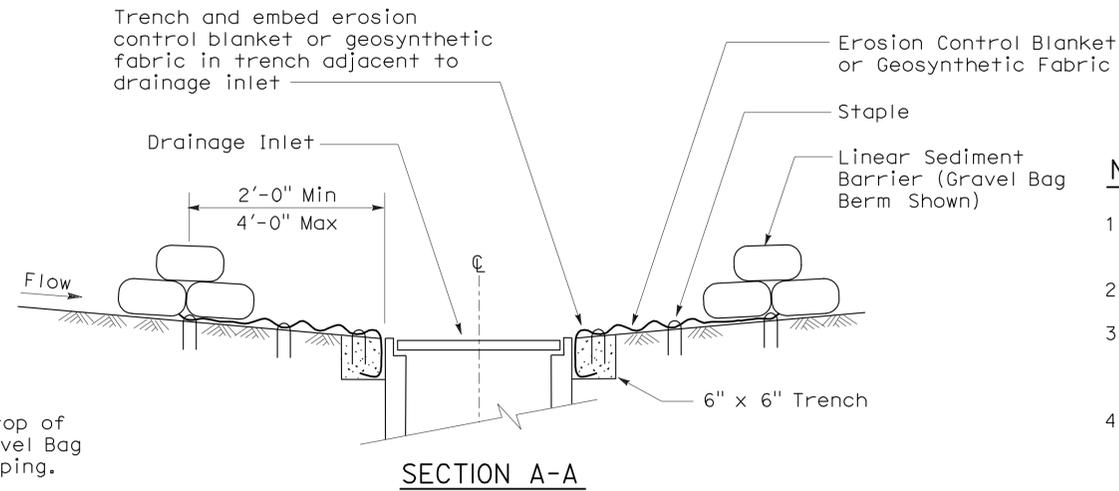
GRAVEL BAG BERM (TYPE 3A) SPACING TABLE

SLOPE OF ROADWAY (PERCENT)	1 to 3.9	4 to 5.9	6 to 7.9	8 to 10	10+
INTERVAL BETWEEN BERM	100'	75'	50'	25'	12'

For slope of less than 1%, install barriers only if erosion/sediment is prevalent



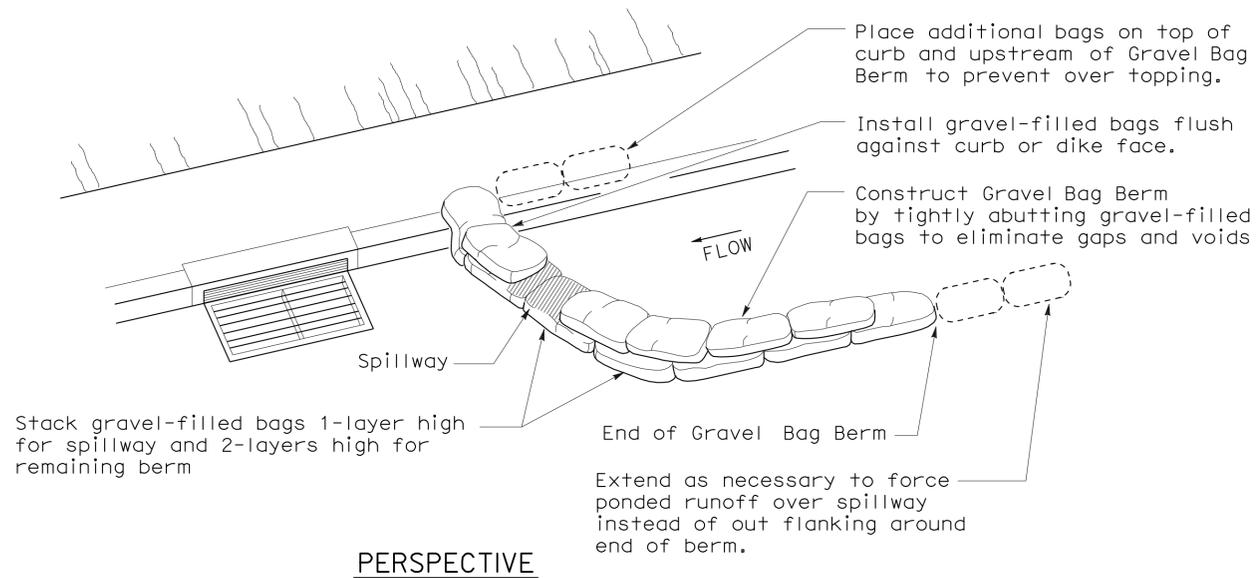
CONFIGURATION FOR SAG POINT INLET (GRAVEL BAG BERM)



SECTION A-A

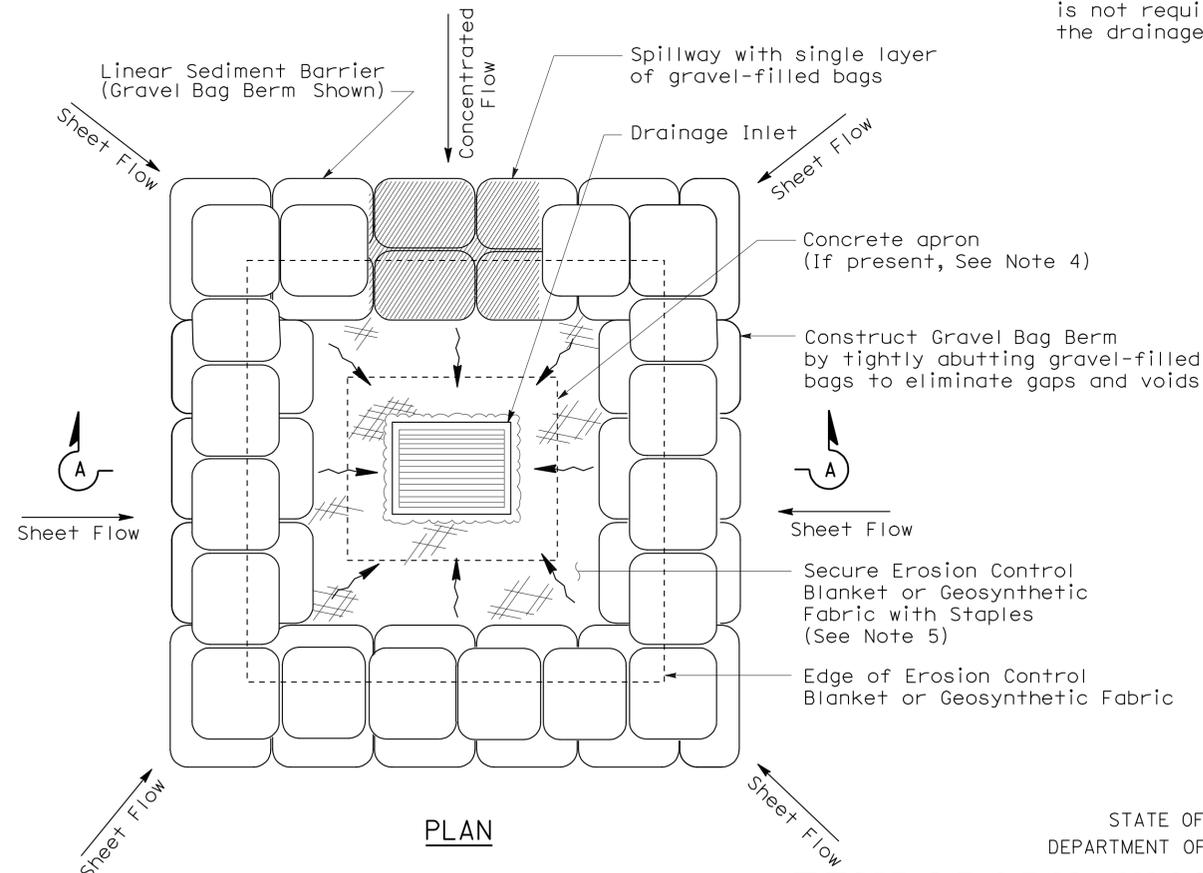
NOTES:

1. Place safety cones adjacent to drainage inlet protection.
2. Dimensions may vary to fit field conditions.
3. Install a minimum of 3 gravel bag berms upstream of each drainage inlet to be protected.
4. Position erosion control blanket or geosynthetic fabric at edge of concrete apron and secure in trench.
5. Erosion control blanket or geosynthetic fabric is not required if the area adjacent to the drainage inlet is vegetated or paved.

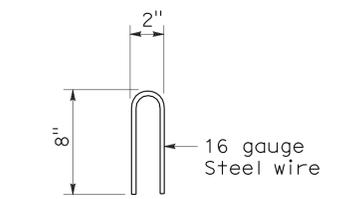


PERSPECTIVE

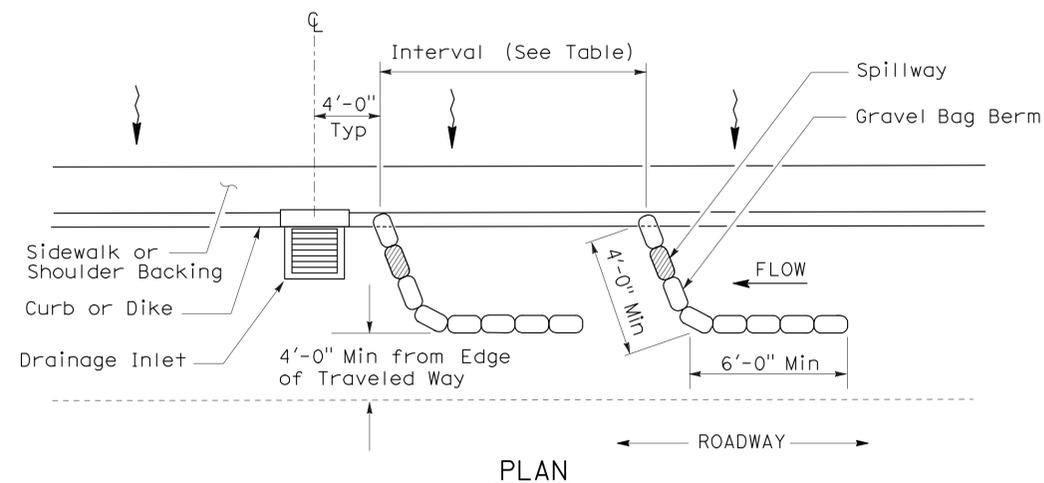
Stack gravel-filled bags 1-layer high for spillway and 2-layers high for remaining berm



TEMPORARY DRAINAGE INLET PROTECTION (TYPE 3B)



STAPLE DETAIL



TEMPORARY DRAINAGE INLET PROTECTION (TYPE 3A) (GRAVEL BAG BERM)

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY DRAINAGE INLET PROTECTION)

NO SCALE
 NSP T62 DATED AUGUST 15, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

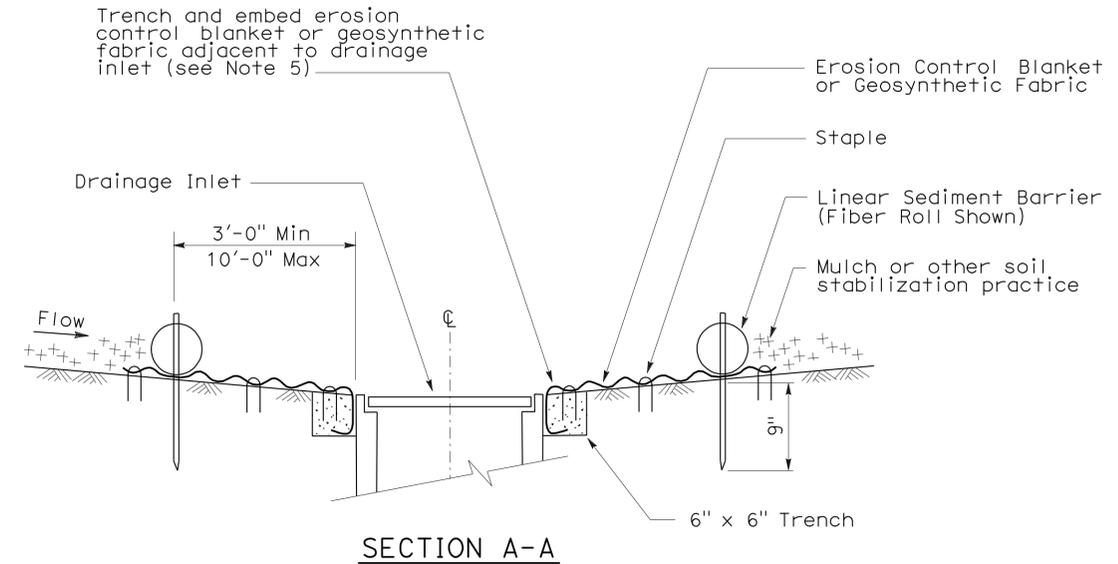
2006 NEW STANDARD PLAN NSP T62

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	675	760

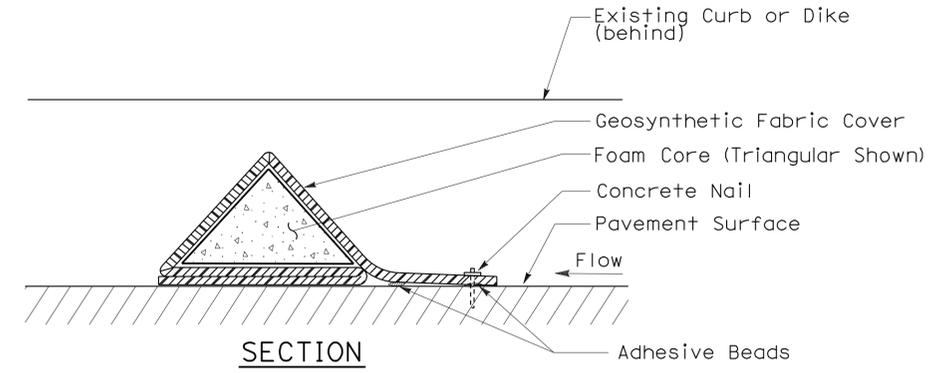
Robert B. Schott
 LICENSED LANDSCAPE ARCHITECT
 August 15, 2008
 PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

FLEXIBLE SEDIMENT BARRIER SPACING TABLE

SLOPE OF ROADWAY (PERCENT)	0 to 0.9	1 to 1.9	2 to 2.9	3 to 4	5+
INTERVAL BETWEEN BARRIERS	50'	35'	30'	25'	20'
ANGLE FROM FACE OF CURB	70°	70°	70°	45°	45°
SUGGESTED BARRIER LENGTH	6'	6'	6'	6'	6'



SECTION A-A

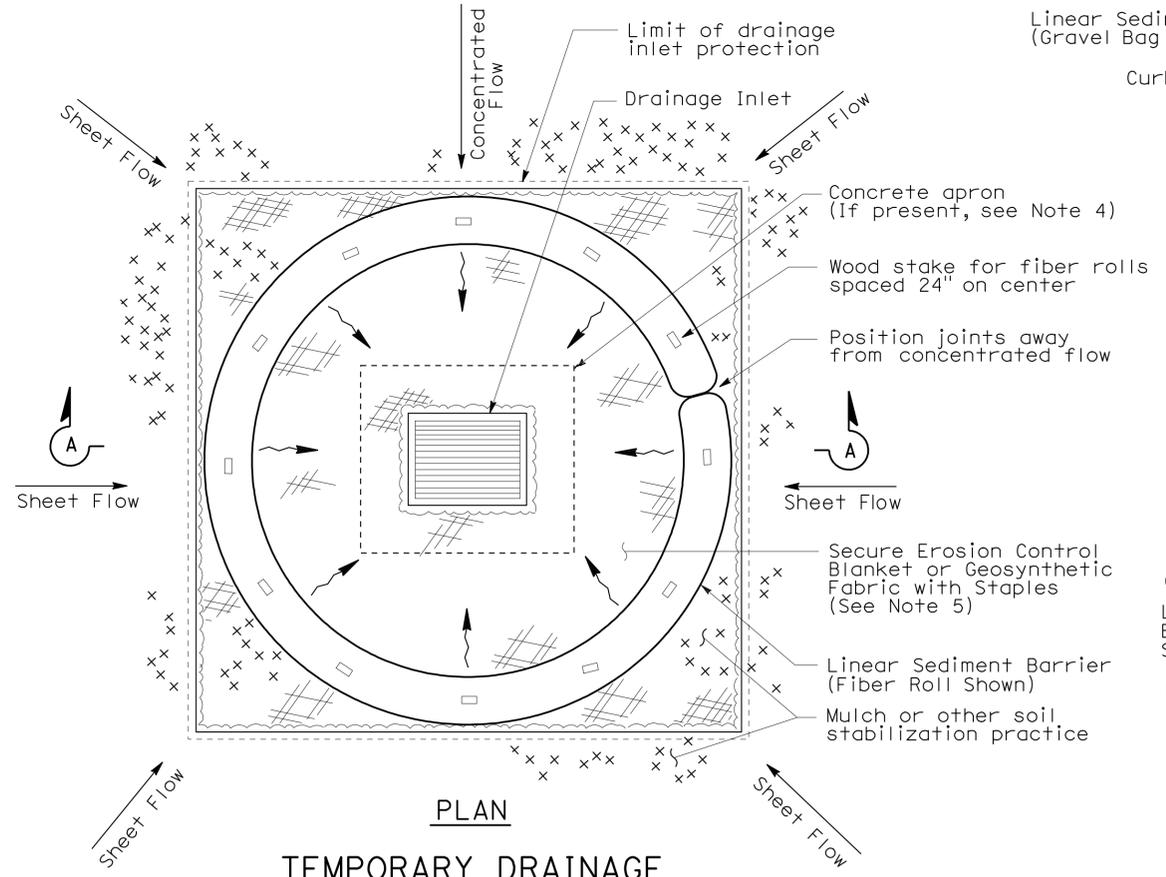


SECTION FLEXIBLE SEDIMENT BARRIER DETAIL (FOAM BARRIER SHOWN)

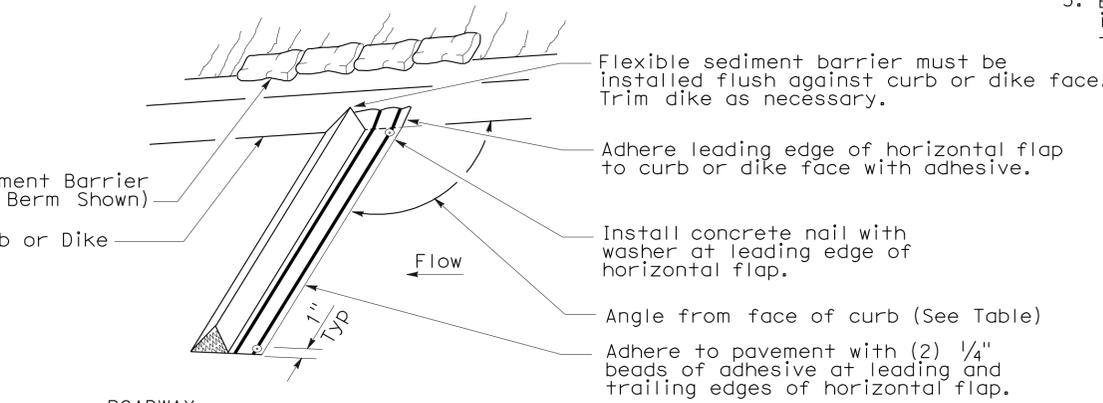
NOTES:

1. See Standard Plan T51 for Temporary Silt Fence.
2. Dimensions may vary to fit field conditions.
3. Install a minimum of 3 flexible sediment barriers upstream of each drainage inlet to be protected.
4. Position erosion control blanket or geosynthetic fabric at edge of concrete apron and secure in trench.
5. Erosion control blanket or geosynthetic fabric is not required if the area adjacent to the drainage inlet is vegetated.

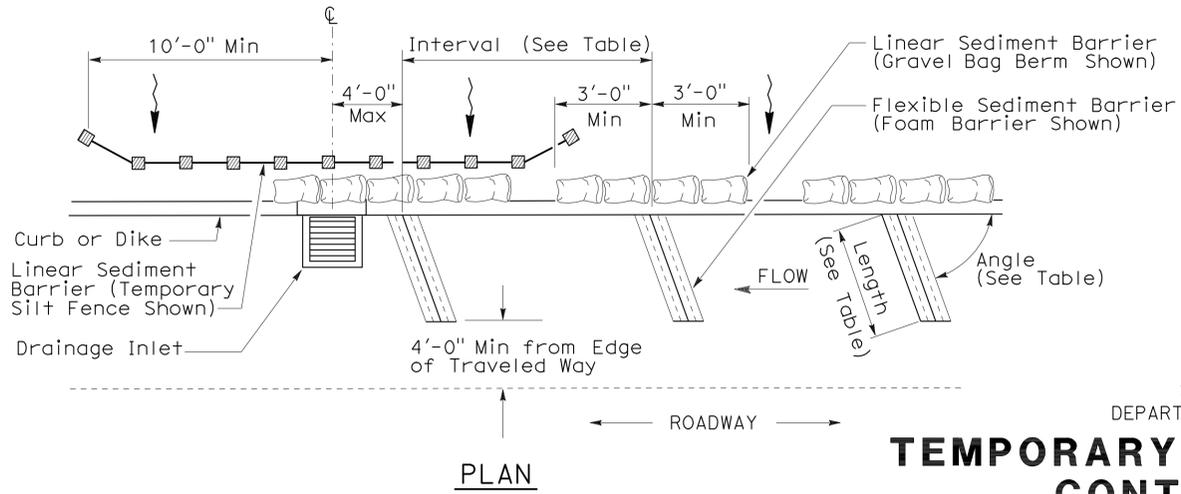
To accompany plans dated 4-16-12



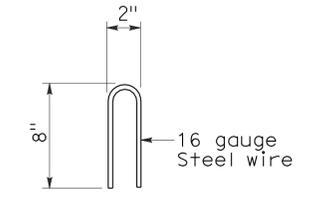
TEMPORARY DRAINAGE INLET PROTECTION (TYPE 4A)



PERSPECTIVE



TEMPORARY DRAINAGE INLET PROTECTION (TYPE 4B) FLEXIBLE SEDIMENT BARRIER



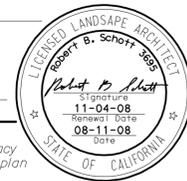
STAPLE DETAIL

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY DRAINAGE INLET PROTECTION)
 NO SCALE
 NSP T63 DATED AUGUST 15, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

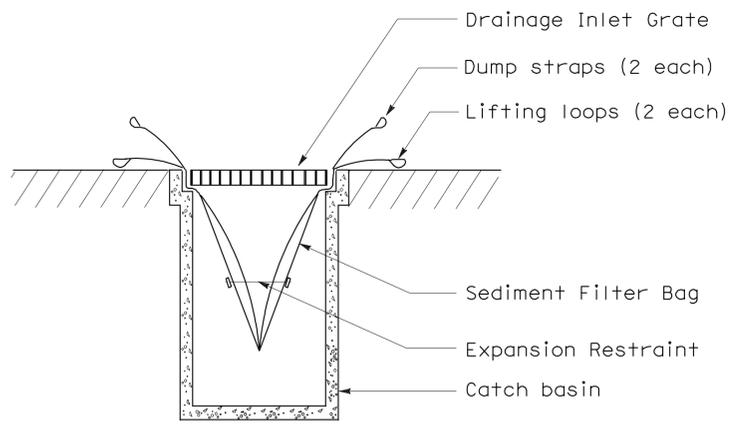
2006 NEW STANDARD PLAN NSP T63

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	676	760

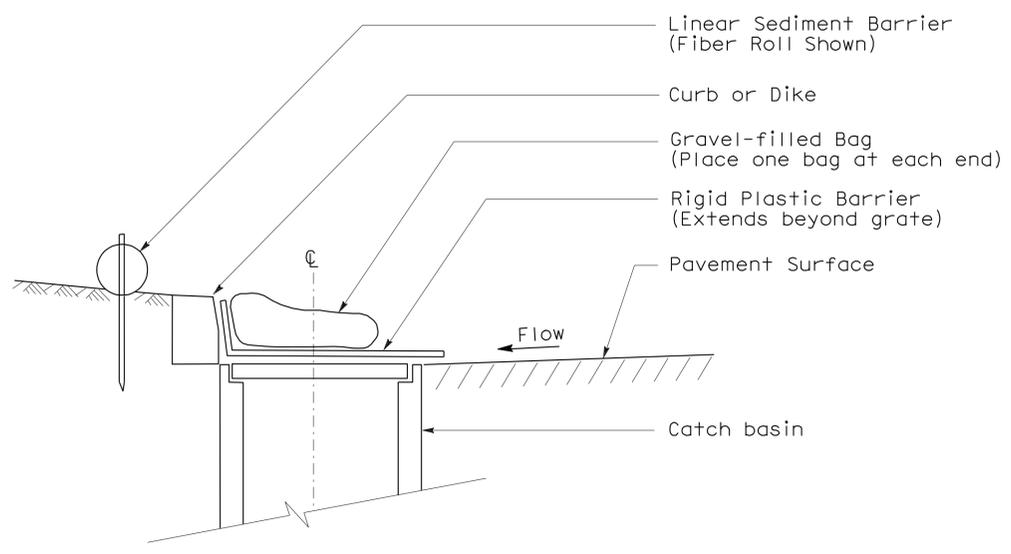
Robert B. Schott
 LICENSED LANDSCAPE ARCHITECT
 August 15, 2008
 PLANS APPROVAL DATE
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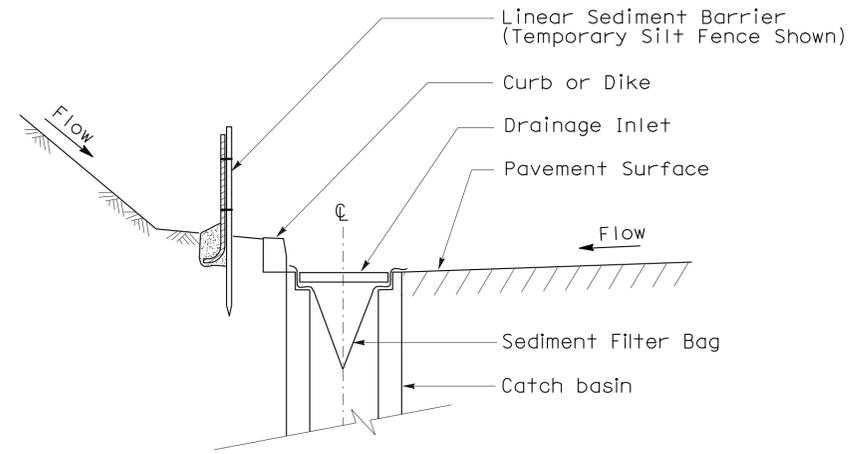
To accompany plans dated 4-16-12



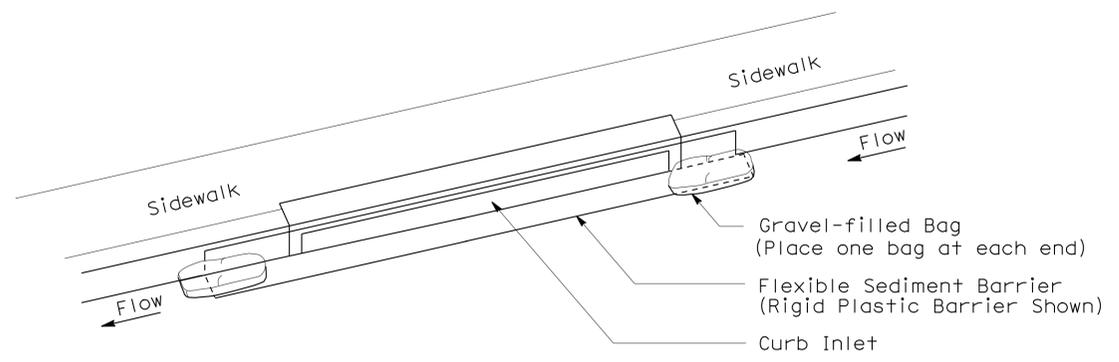
SECTION B-B
SEDIMENT FILTER BAG DETAIL



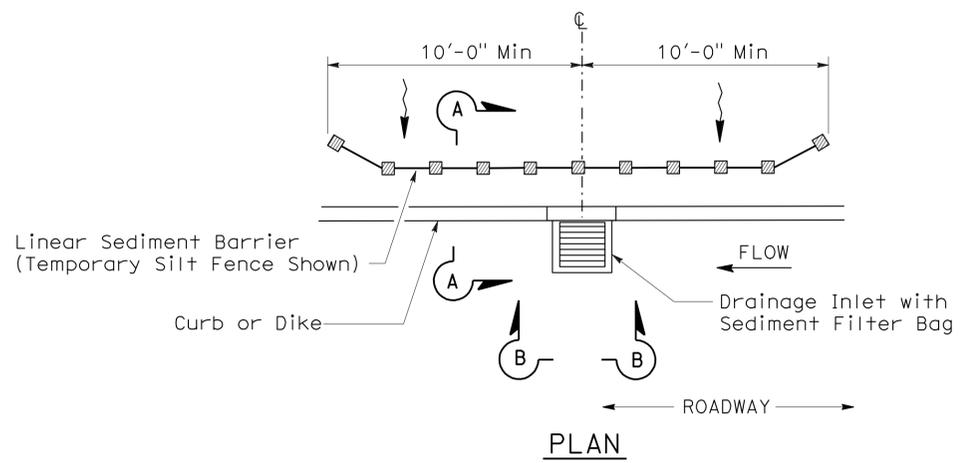
SECTION
TEMPORARY DRAINAGE
INLET PROTECTION (TYPE 6A)
(CATCH BASIN WITH GRATE)



SECTION A-A



PERSPECTIVE
TEMPORARY DRAINAGE
INLET PROTECTION (TYPE 6B)
(CURB INLET WITHOUT GRATE)



PLAN
TEMPORARY DRAINAGE
INLET PROTECTION (TYPE 5)
(SEDIMENT FILTER BAG)

NOTES:

1. See Standard Plan T51 for Temporary Silt Fence.
2. Dimensions may vary to fit field conditions.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY DRAINAGE INLET PROTECTION)

NO SCALE

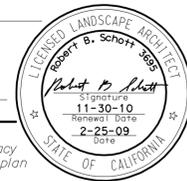
NSP T64 DATED AUGUST 15, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP T64

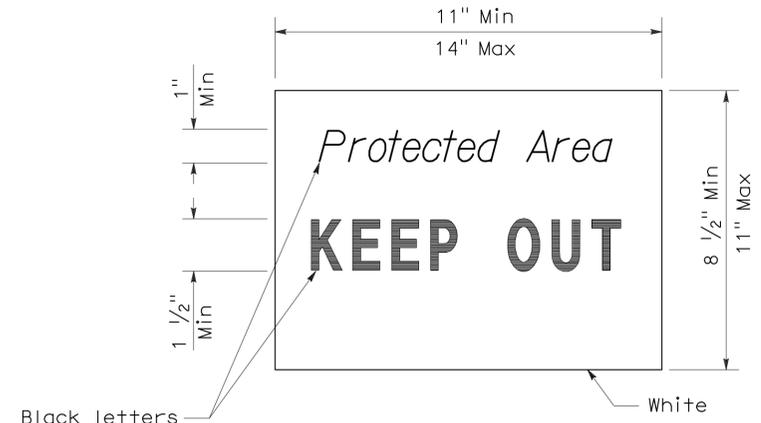
2006 NEW STANDARD PLAN NSP T64

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	677	760

Robert B Schott
 LICENSED LANDSCAPE ARCHITECT
 April 3, 2009
 PLANS APPROVAL DATE
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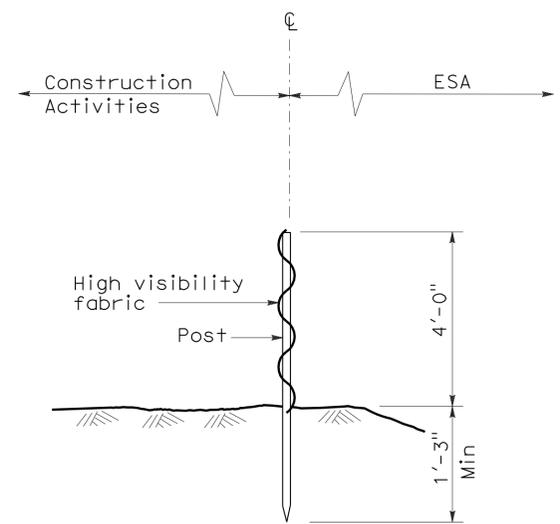
To accompany plans dated 4-16-12



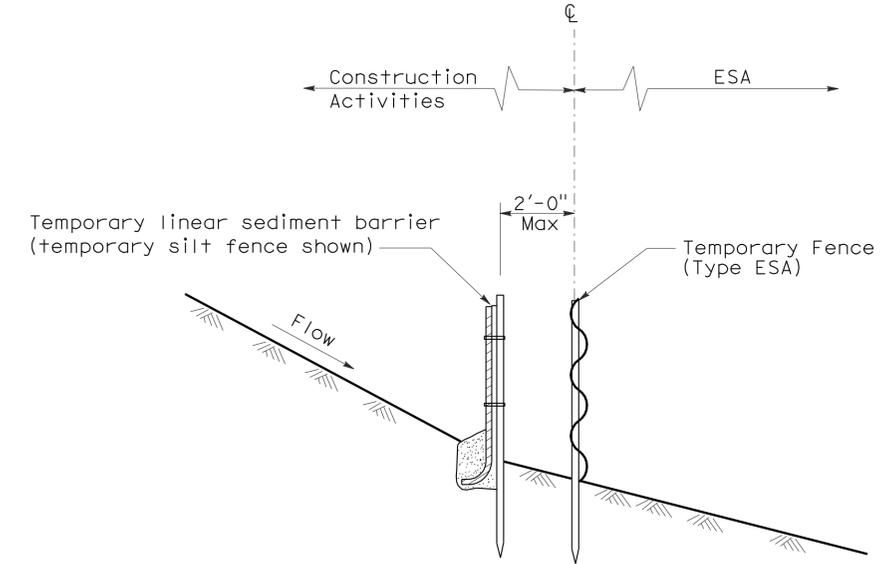
SIGN DETAIL

NOTE:

1. Temporary silt fence and temporary straw bale barrier shown for reference purposes only.

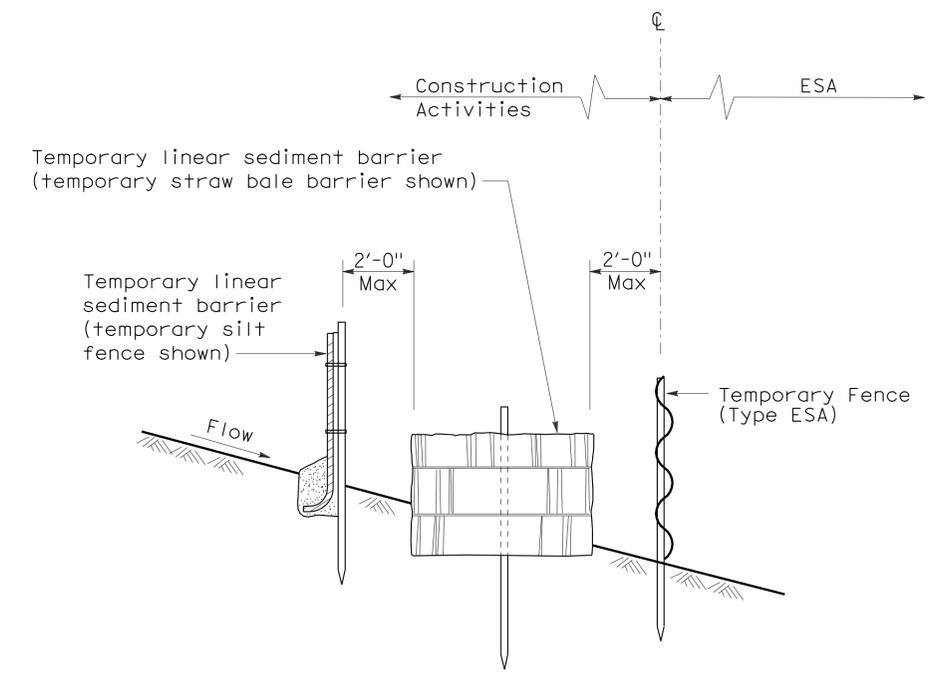


SECTION TEMPORARY FENCE (TYPE ESA)



SECTION PLACEMENT DETAIL FOR TEMPORARY LINEAR SEDIMENT BARRIER USED WITH TEMPORARY FENCE (TYPE ESA)

(See Note 1)



SECTION PLACEMENT DETAIL FOR TEMPORARY SILT FENCE AND TEMPORARY STRAW BALE BARRIER USED WITH TEMPORARY FENCE (TYPE ESA)

(See Note 1)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

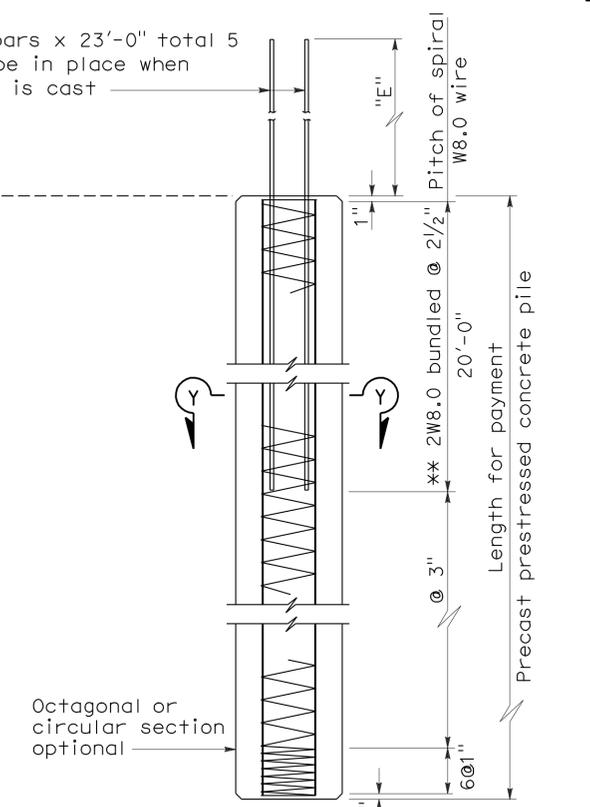
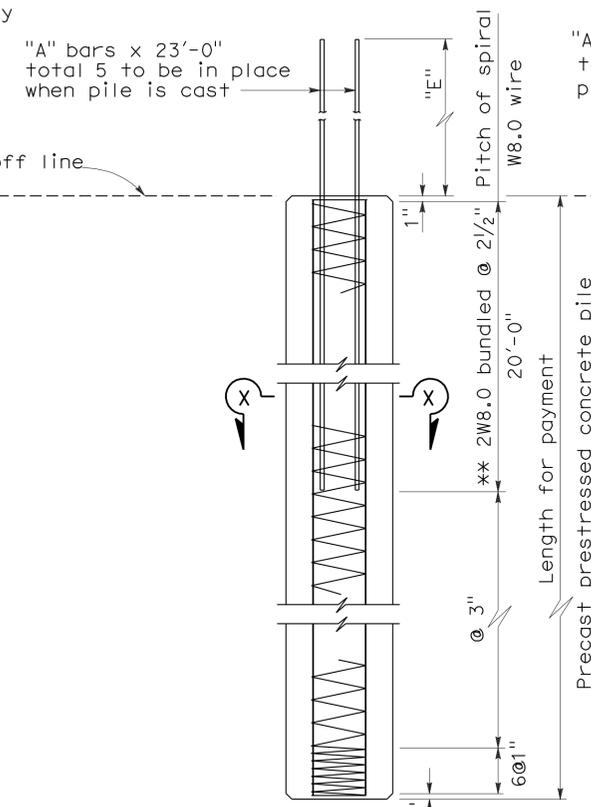
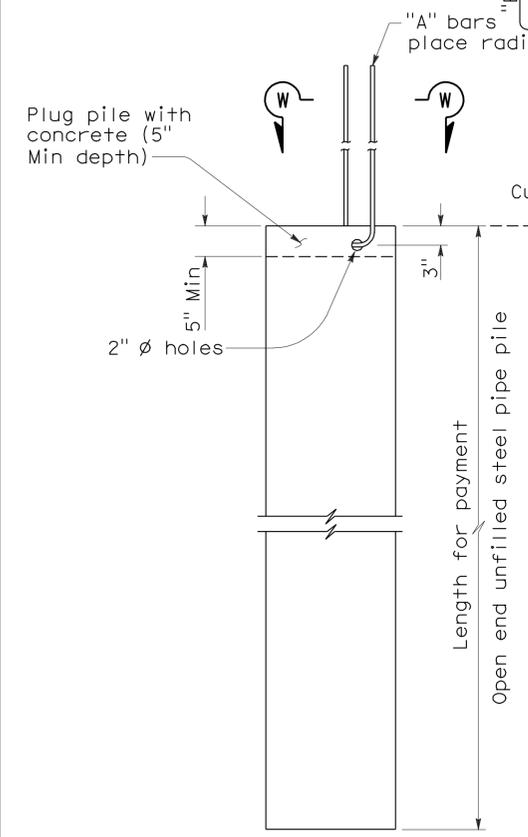
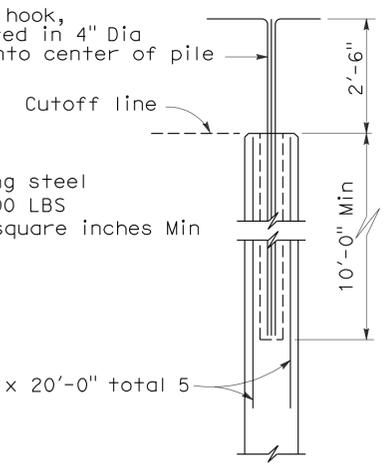
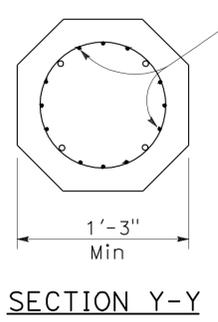
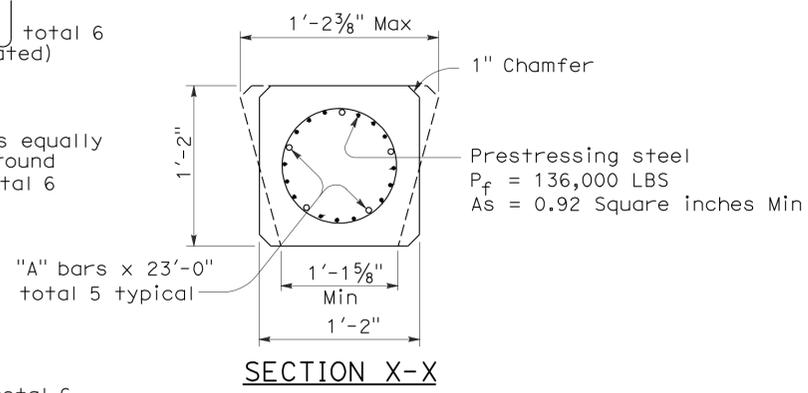
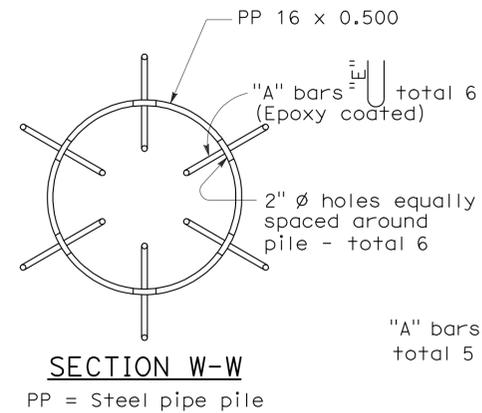
TEMPORARY WATER POLLUTION CONTROL DETAILS [TEMPORARY FENCE (TYPE ESA)]

NO SCALE

NSP T65 DATED APRIL 3, 2009 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

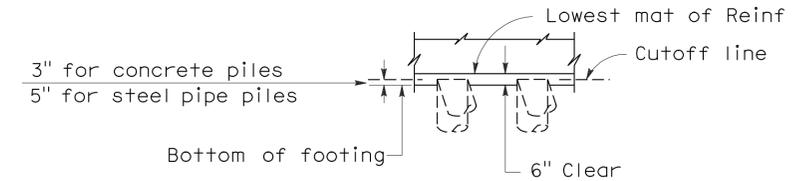
2006 NEW STANDARD PLAN NSP T65

2006 REVISED STANDARD PLAN RSP B2-8



	Nominal Resistance (Tension) *	
	Not Required	Required
"A" bars	#6	#8
"E" Dimension	2'-0"	2'-10"

* See Pile Data Table in the Project Plans for Nominal Resistance (Tension) Requirements



DESIGN NOTES:

DESIGN CAPACITY :

- Compression = 200 kip (Service state)
- = 400 kip (Nominal axial strength)
- Tension = 80 kip (Service state)
- = 200 kip (Nominal axial strength)

REINFORCED CONCRETE

$f'_c = 4,000$ psi
 $f_y = 60,000$ psi

PRECAST PRESTRESSED PILES

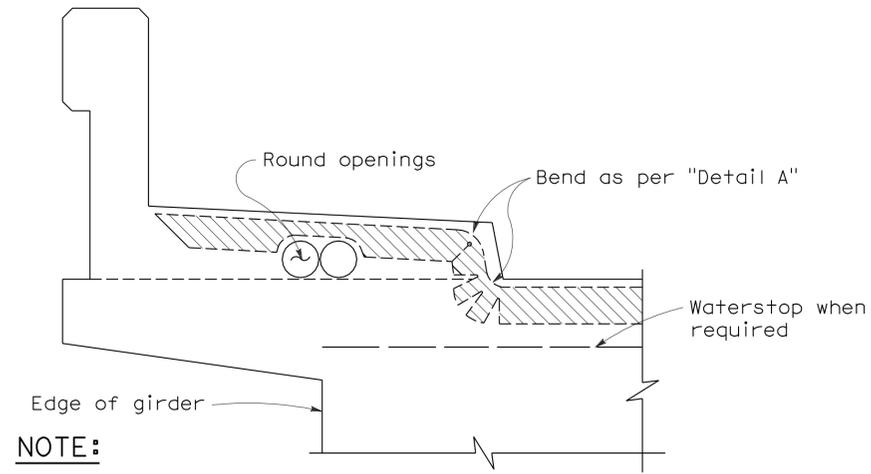
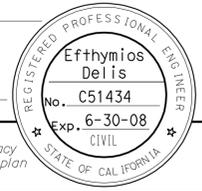
P_f = Prestress Force (After losses)
Concrete Strength f'_c @ 28 days = 7,000 psi
 f'_c @ transfer = 4,000 psi

STEEL PIPE PILE

F_y (minimum yield strength) = 45,000 psi
 F_u (minimum tensile strength) = 66,000 psi

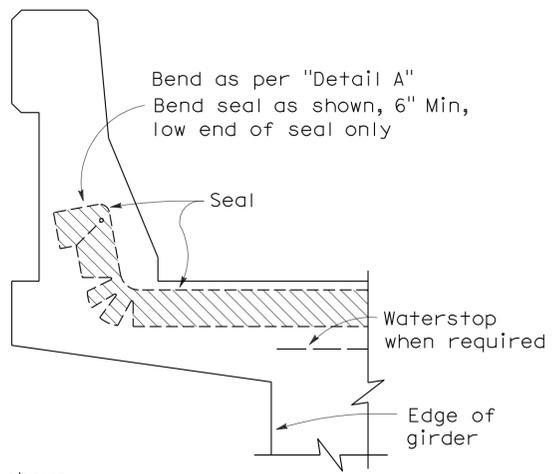
NOTES:

1. Pile reinforcement extending into footing shall be hooked as required to provide clearance to top of footing.
2. Lapped splices in spiral pile reinforcement shall be lapped 80 wire diameters minimum. Spiral pile reinforcement at splices and at ends shall be terminated by a 135° hook with 6" tail hooked around a longitudinal bar or strand.
3. At the Contractor's option, alternative steel pipe with at least the diameter and wall thickness shown on these plans may be used. The diameter shall not exceed 1'-6".
4. Alternative "W" piles shall not be used for corrosive environments.
5. Maximum cut-off length at the top of the Alternative "X" and Alternative "Y" piles is 10'-0".

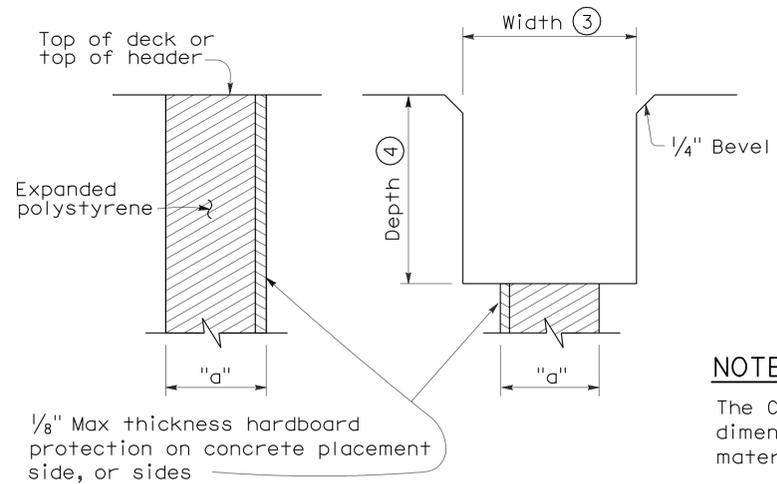


NOTE:
 Type "B" seal shown. Type "A" seals to conform to the general path of seal shown, cuts for bending not required. Bend Type "A" seals 3" up into curb or barrier rail on only the low end of the seal.

CONCRETE BARRIER AND SIDEWALK



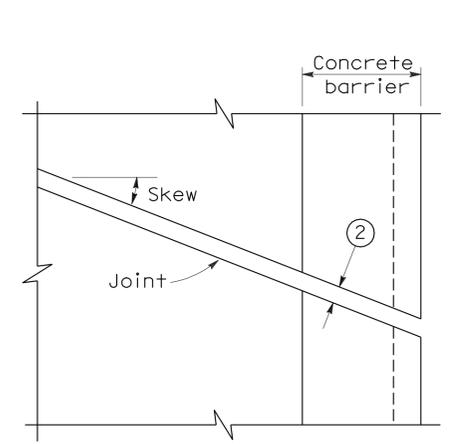
CONCRETE BARRIER



FORMING DETAIL SAWCUT DETAIL

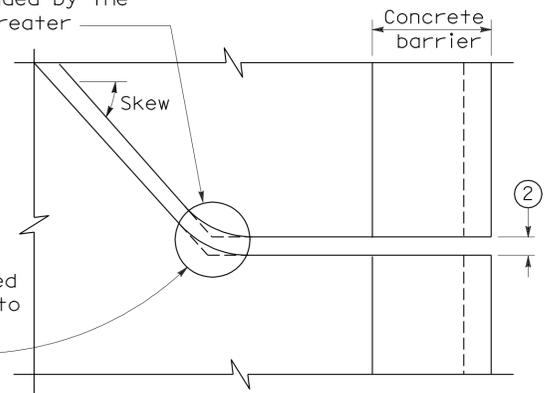
NOTE:
 The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

JOINT SEALS DETAILS



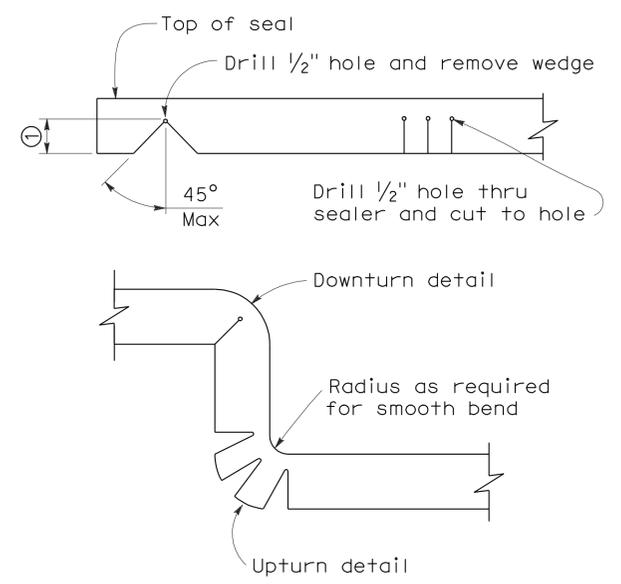
PLAN OF JOINT (SKEW ≤ 20°)

Min ϕ radius to be 4 times uncompressed width of seal or as recommended by the manufacturer, whichever is greater



PLAN OF JOINT (SKEW > 20°)

In lieu of saw cutting, this area may be blocked out and reconstructed to match saw cutting on both sides.



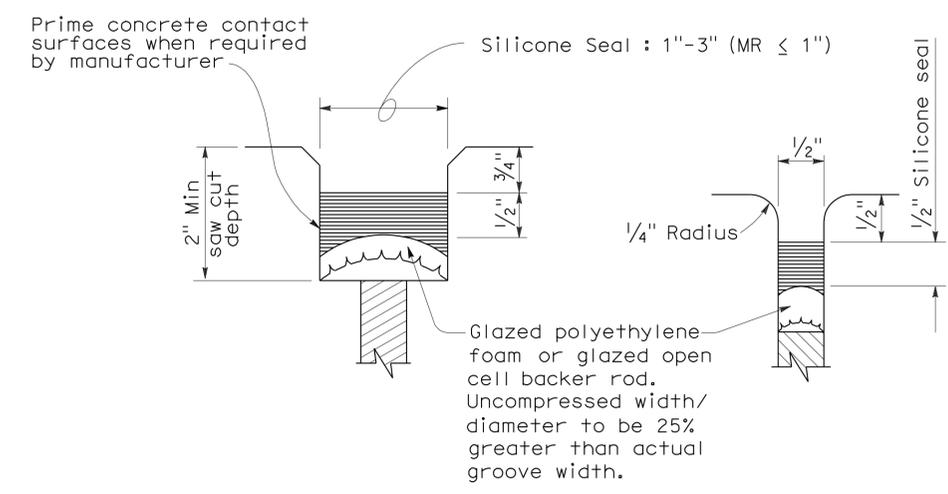
DETAIL A

- NOTES:**
- Make smooth cuts from the bottom of seal to 1 1/2" clear of top leaving at least one complete cell between the top of the cut and top of the seal. When necessary cut back of seal to clear conduit and round openings.
 - Opening in barrier to match width of sawn deck joint.
 - Sawcut groove widths shall be as ordered by the Engineer.
 - Depth of sawcut: Type A - Depth to be 2" minimum.
 Type B - Depth to be equal to or greater than the depth of seal measured along the contact surface, when compressed to minimum width position (W₂) plus dimensions shown.
 - MR (movement rating) as shown on other plan sheets.
 - Other depths must be approved by the Engineer.

DIMENSIONS "a" OF JOINT REQUIRED

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

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

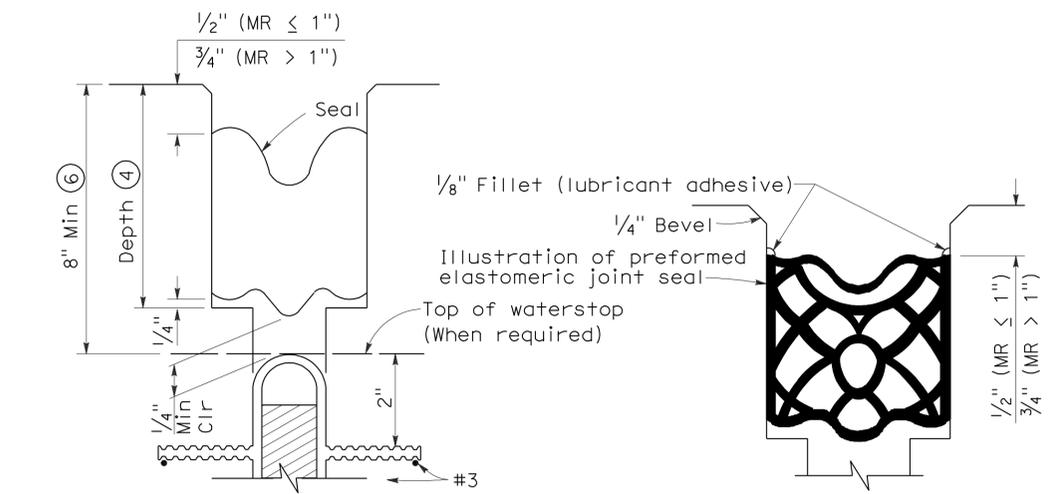


TYPE A SEAL

Movement rating : Silicone = 1" Max

TYPE AL SEAL

Longitudinal joints only



TYPE B JOINT SEAL IN MINIMUM WIDTH POSITION (W₂)

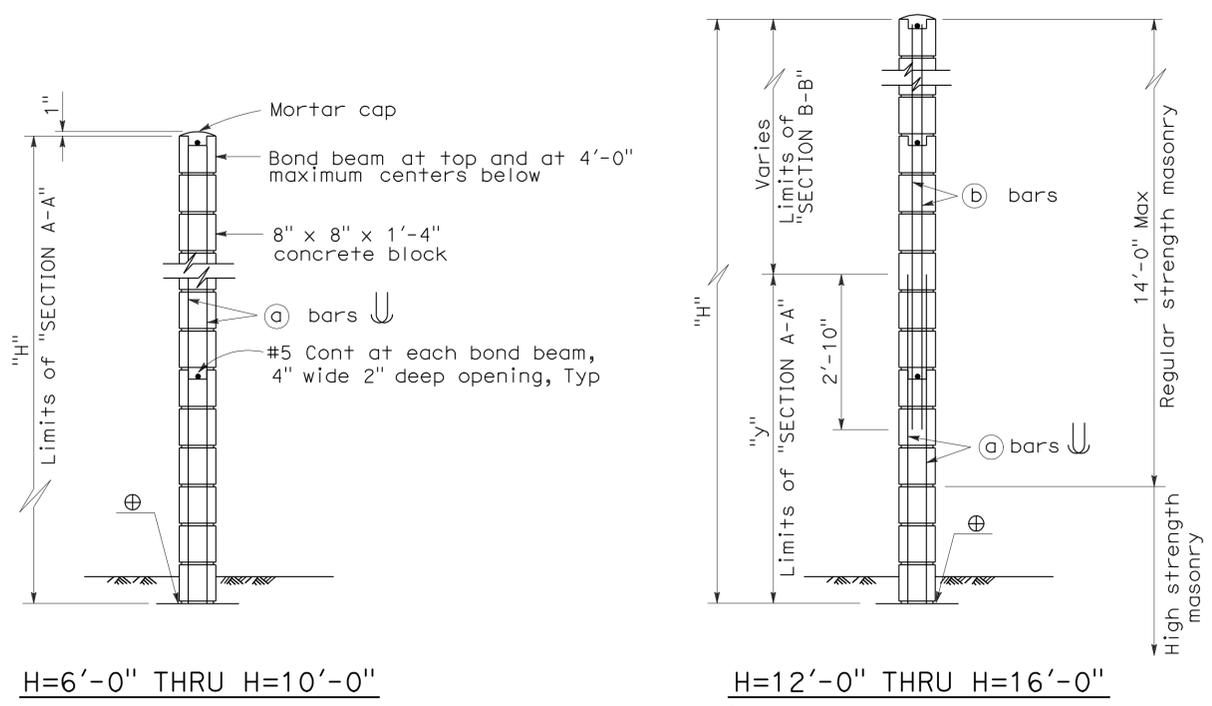
TYPE B SEAL

Movement Rating ≤ 2"

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

REVISED STANDARD PLAN RSP B6-21

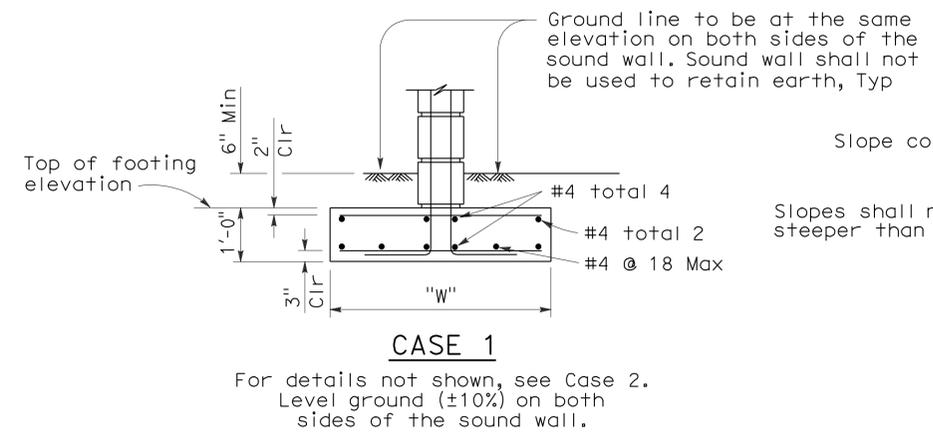
2006 REVISED STANDARD PLAN RSP B6-21



H=6'-0" THRU H=10'-0"
 H=12'-0" THRU H=16'-0"
 For details not shown, see H=6'-0" thru H=10'-0".

TYPICAL SECTION

⊕ Full mortar bed at bottom of wall



SPREAD FOOTING SECTION

TRENCH FOOTING

Maximum H	CASE 1			CASE 2		Maximum H
	φ = 25 Min	φ = 30 Min	φ = 35 Min	φ = 30 Min	φ = 35 Min	
	D	D	D	D	D	
6'-0"	5'-0"	4'-3"	3'-6"	6'-6"	5'-0"	6'-0"
8'-0"	6'-0"	5'-0"	4'-3"	7'-9"	6'-0"	8'-0"
10'-0"	6'-9"	5'-9"	5'-0"	8'-9"	6'-9"	10'-0"
12'-0"	7'-9"	6'-6"	5'-6"	9'-9"	7'-9"	12'-0"
14'-0"	8'-6"	7'-3"	6'-0"	10'-9"	8'-6"	14'-0"
16'-0"	9'-3"	7'-9"	6'-6"	11'-9"	9'-3"	16'-0"

Case 1 - Level ground (±10%) on both sides of the sound wall.
 Case 2 - Level ground (±10%) on traffic side of the sound wall and sloping ground on opposite side.

SOUND WALL REINFORCEMENT TABLE

Maximum H	(a) bars @ 1'-4" Max	(b) bars @ 1'-4" Max	"y"	f'm (psi)	Compressive Strength of CMU (psi)	Maximum H
6'-0"	#4	—	—	1500	1900	6'-0"
8'-0"	#4	—	—	1500	1900	8'-0"
10'-0"	#4	—	—	1500	1900	10'-0"
12'-0"	#5	#4	6'-0"	1500	1900	12'-0"
14'-0"	#6	#4	8'-0"	1500	1900	14'-0"
16'-0"	#6	#4	10'-0"	2000	2800	16'-0"

GENERAL NOTES:

- For type of block and joint finish, see other sheets.
- When blocks are laid in stacked bond, ladder type, galvanized joint reinforcement shall be provided. A minimum of 2-9 gauge wires continuous at 4'-0" maximum to be used. Locate reinforcement in joints that are at the approximate midpoint between bond and beams.
- Horizontal joints shall be tooled concave or may be weathered. Vertical joints shall be tooled concave or may be raked.
- For intermediate wall heights that are between the "H's" given, use the tabular information for the next higher "H".
- Masonry strengths are listed in the "SOUND WALL REINFORCEMENT TABLE".

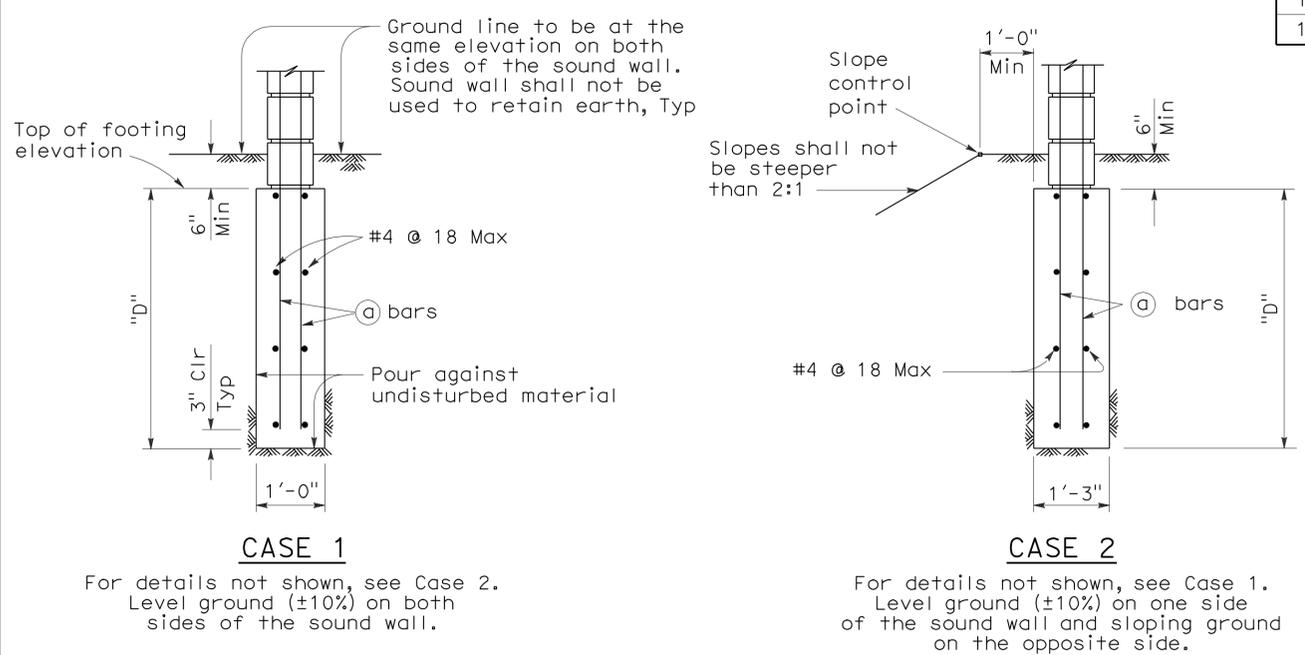
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON FOOTING DETAILS (1)

NO SCALE

RSP B15-1 DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN B15-1 DATED MAY 1, 2006 - PAGE 291 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP B15-1



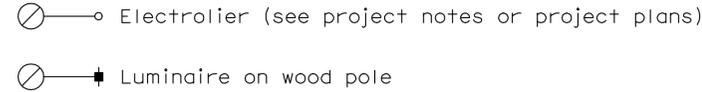
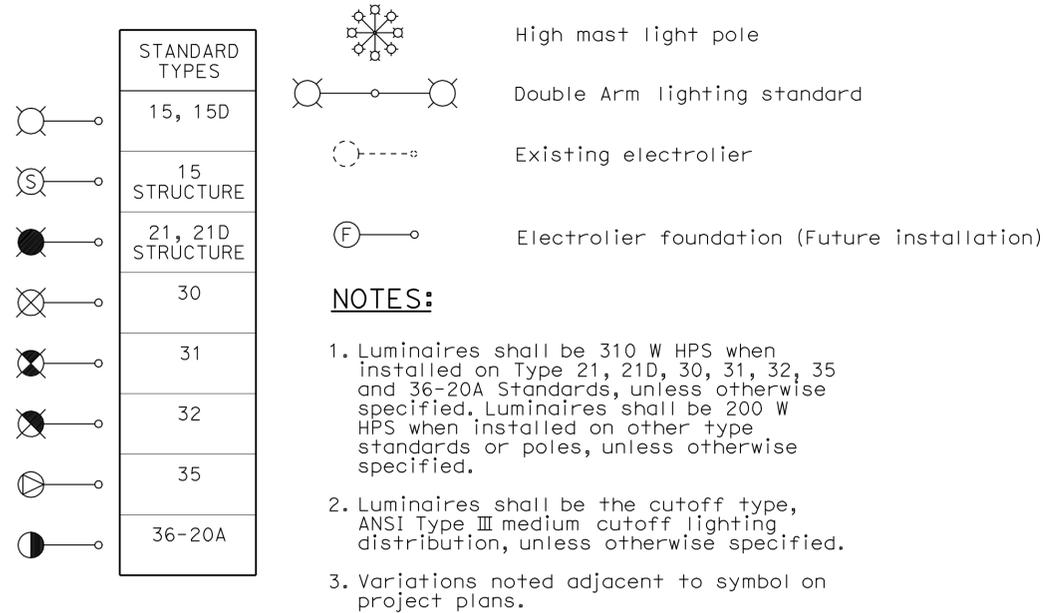
TRENCH FOOTING SECTION

SPREAD FOOTING

Maximum H	W
6'-0"	3'-0"
8'-0"	4'-0"
10'-0"	5'-0"
12'-0"	5'-9"
14'-0"	6'-6"
16'-0"	7'-6"

2006 REVISED STANDARD PLAN RSP B15-1

ELECTROLIERS



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
04	Ala	880	22.6/24.0	681	760

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

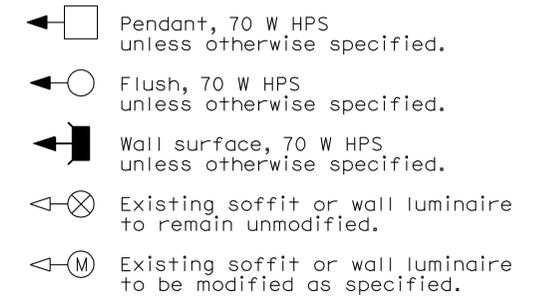
October 5, 2007
PLANS APPROVAL DATE

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

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

To accompany plans dated 4-16-12

SOFFIT AND WALL MOUNTED LUMINAIRES



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
04	Ala	880	22.6/24.0	682	760

Jeffery G. McRae
 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 4-16-12

CONDUIT

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

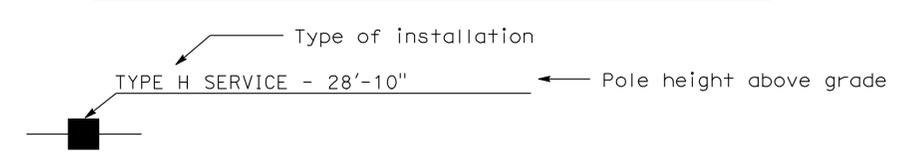
SIGNAL EQUIPMENT

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

SERVICE EQUIPMENT

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

POLE-MOUNTED SERVICE DESIGNATION



ILLUMINATED OVERHEAD SIGN

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

SIGNAL EQUIPMENT Cont

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

NOTES:

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

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

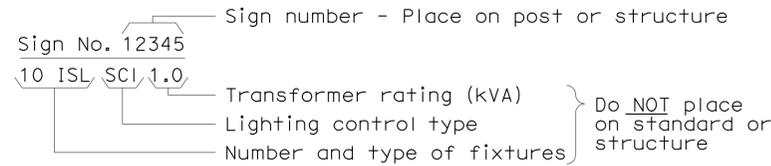
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-1B

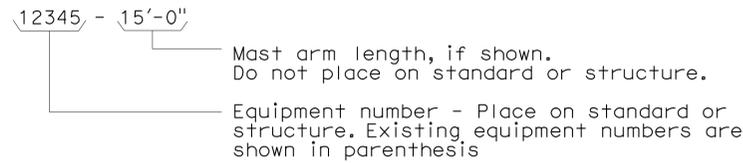
2006 REVISED STANDARD PLAN RSP ES-1B

EQUIPMENT IDENTIFICATION

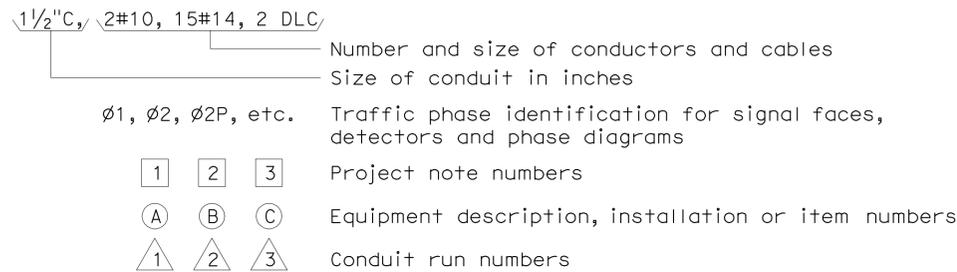
ILLUMINATED SIGN IDENTIFICATION NUMBER:



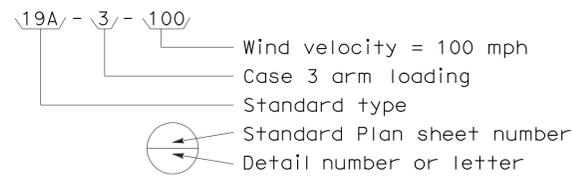
ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



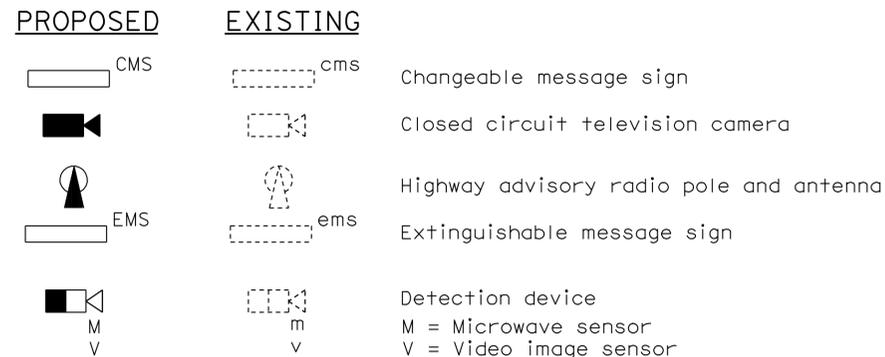
CONDUIT AND CONDUCTOR IDENTIFICATION:



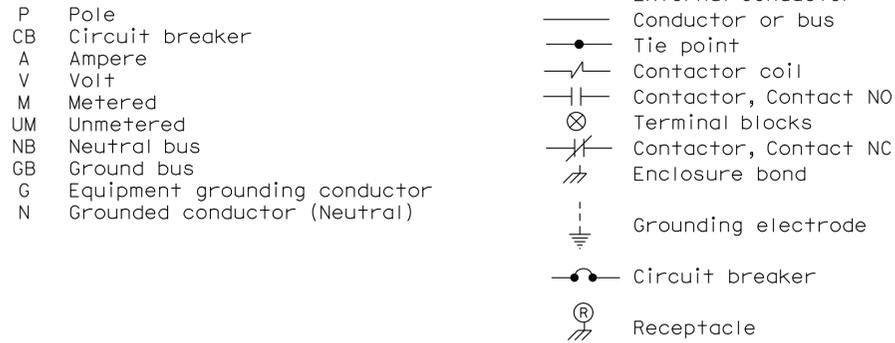
SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



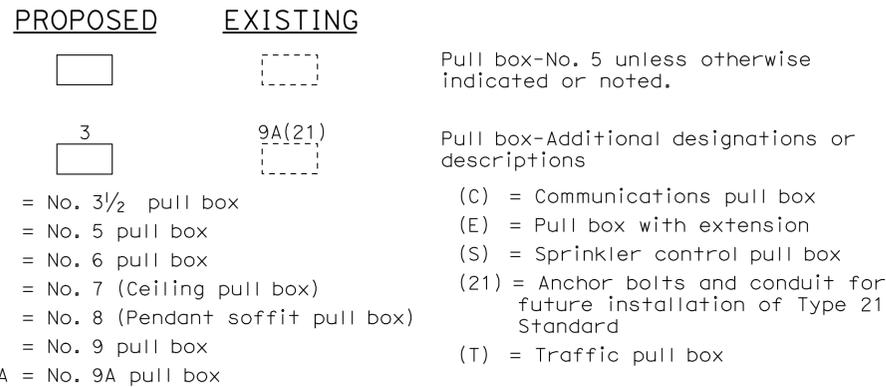
MISCELLANEOUS EQUIPMENT



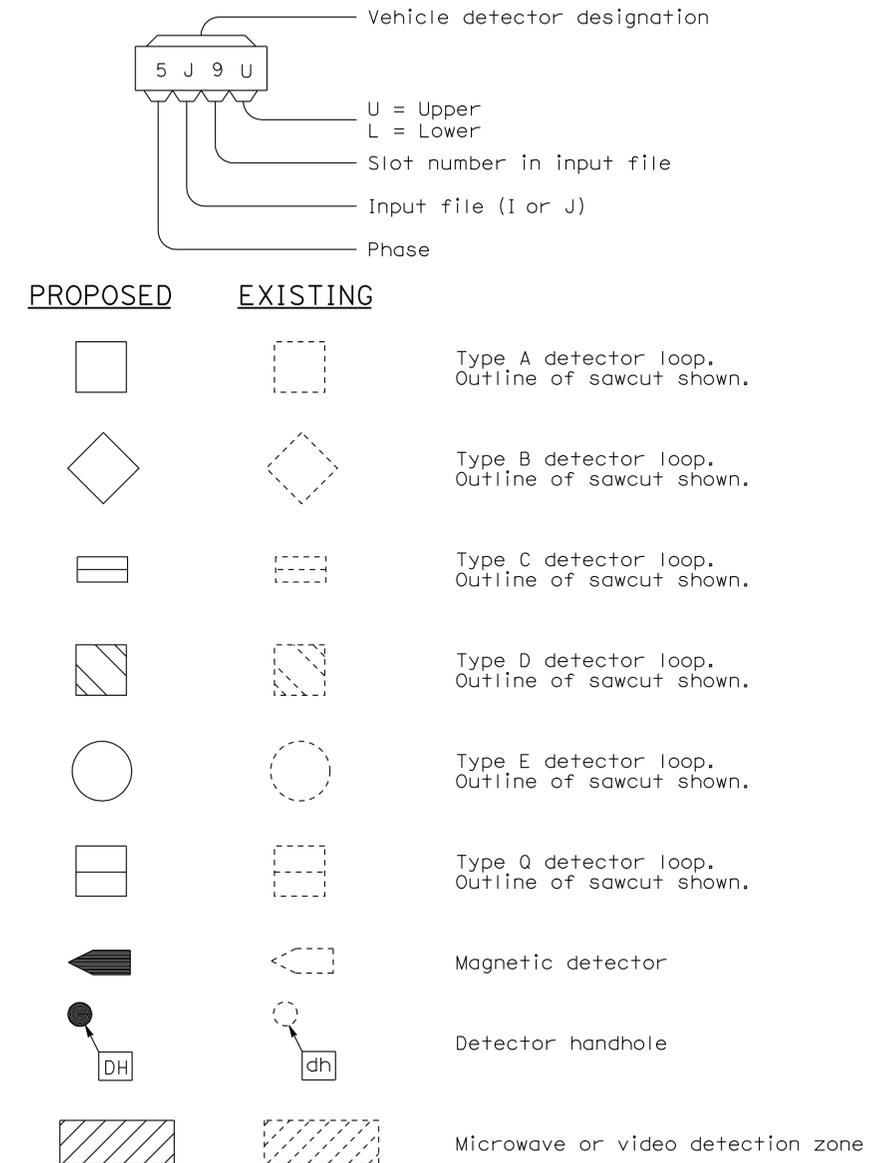
WIRING DIAGRAM LEGEND



PULL BOXES



VEHICLE DETECTORS



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
(SYMBOLS AND ABBREVIATIONS)**

NO SCALE

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

REVISED STANDARD PLAN RSP ES-1C

2006 REVISED STANDARD PLAN RSP ES-1C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	684	760

Jeffery G. McRae
 REGISTERED ELECTRICAL ENGINEER

October 5, 2007
 PLANS APPROVAL DATE

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

NOTES-TYPE III SERVICE EQUIPMENT ENCLOSURES:

1. Service equipment enclosure and metering equipment shall meet the requirements of the service utility. The meter area shall have a sealable, lockable, weathertight cover that can be removed without the use of tools.
2. Service equipment enclosures shall be factory wired and conform to NEMA standards.
3. Dimensions of service equipment enclosures shall meet the requirements of the service utility.
4. The dead front panels on Type III service equipment enclosures shall have a continuous stainless steel or aluminum piano hinge. The panel in front of the breakers shall be secured with a latch or captive screws. No live parts shall be mounted on the dead front panel.
5. The exterior door shall have provisions for padlocking. The padlock hole shall be a minimum diameter of $\frac{1}{16}$ ".
6. Enclosures housing transformers of more than one kVA shall have effective screened ventilation louver of not less than 50 square inches. Screen shall be stainless steel No. 304, with a No. 10 size mesh. Framed screen shall be secured with at least four bolts.
7. Fasteners on the exterior of the enclosure shall be vandal-resistant and shall not be removable from the exterior. Exterior screws, nuts, bolts and washers shall be stainless steel.
8. Landing lugs for incoming service conductors shall be compatible with either copper or aluminum conductors sized to suit the conductors shown on the plan. Landing lugs shall be copper or tin-plated aluminum. Neutral bus shall be rated for 125 A and be suitable for copper or aluminum conductors unless otherwise specified. The terminal shall include but not be limited to:
 - a) Incoming terminals (landing lugs)
 - b) Neutral lugs
 - c) Solid neutral terminal strip
9. At least 6 standard single pole circuit breaker spaces, $\frac{3}{4}$ " nominal, shall be provided for branch circuits. Circuit breaker interiors shall be copper. Interiors of enclosure shall accept plug-in or cable-in/cable-out circuit breakers.
10. Control wiring shall be 600 V, 14 stranded machine tool wire. Where subject to flexing, 19 strand wire shall be used.
11. Main bus shall be rated for 125 A and shall be tin-plated copper.
12. A plastic laminated wiring diagram shall be provided with brass mounting eyelets and attached to the inside of the enclosure and the wiring diagram shall be affixed to the interior with a UL or ETL approved method.

13. An engraved phenolic nameplate on the dead front panel indicating the function of each circuit or device shall be installed with stainless steel rivets or stainless steel screws:
 - a) Adjacent to the breaker or device with character size a minimum of $\frac{1}{8}$ ".
 - b) At the top of the exterior door panel indicating State system number, voltage level and number of phases with character size a minimum of $\frac{3}{16}$ ".
14. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.
15. In unpaved areas a raised portland cement concrete pad 2'-0" x 4" x width of foundation shall be constructed in front of new service equipment enclosure installation. Pad shall be set to elevation of foundation.
16. Foundation shall extend 2" minimum beyond edge of service equipment enclosure.
17. Internal bus, where shown, is typical only. Alternative design of proposed service equipment enclosure shall be submitted to the Engineer for approval.
18. Plug-in circuit breakers may be mounted in the vertical or horizontal position. Cable-in/cable-out circuit breakers shall be mounted in the vertical position.
19. Type III-AF and Type III-BF service equipment enclosures shall have the meter viewing windows located on the front side of the service equipment enclosures.
20. Type III-AR and Type III-BR service equipment enclosures shall be similarly constructed as Type III-AF and Type III-BF respectively, except the meter viewing windows shall be located on the back side of the service equipment enclosures.
21. Minimum clearance shall be required for front and back of service equipment enclosure per National Electrical Code, Article 110.26, "Spaces About Electric Equipment (600 Volts, Nominal, or Less)."

To accompany plans dated 4-16-12

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS
 (SERVICE EQUIPMENT NOTES
 TYPE III SERIES)**

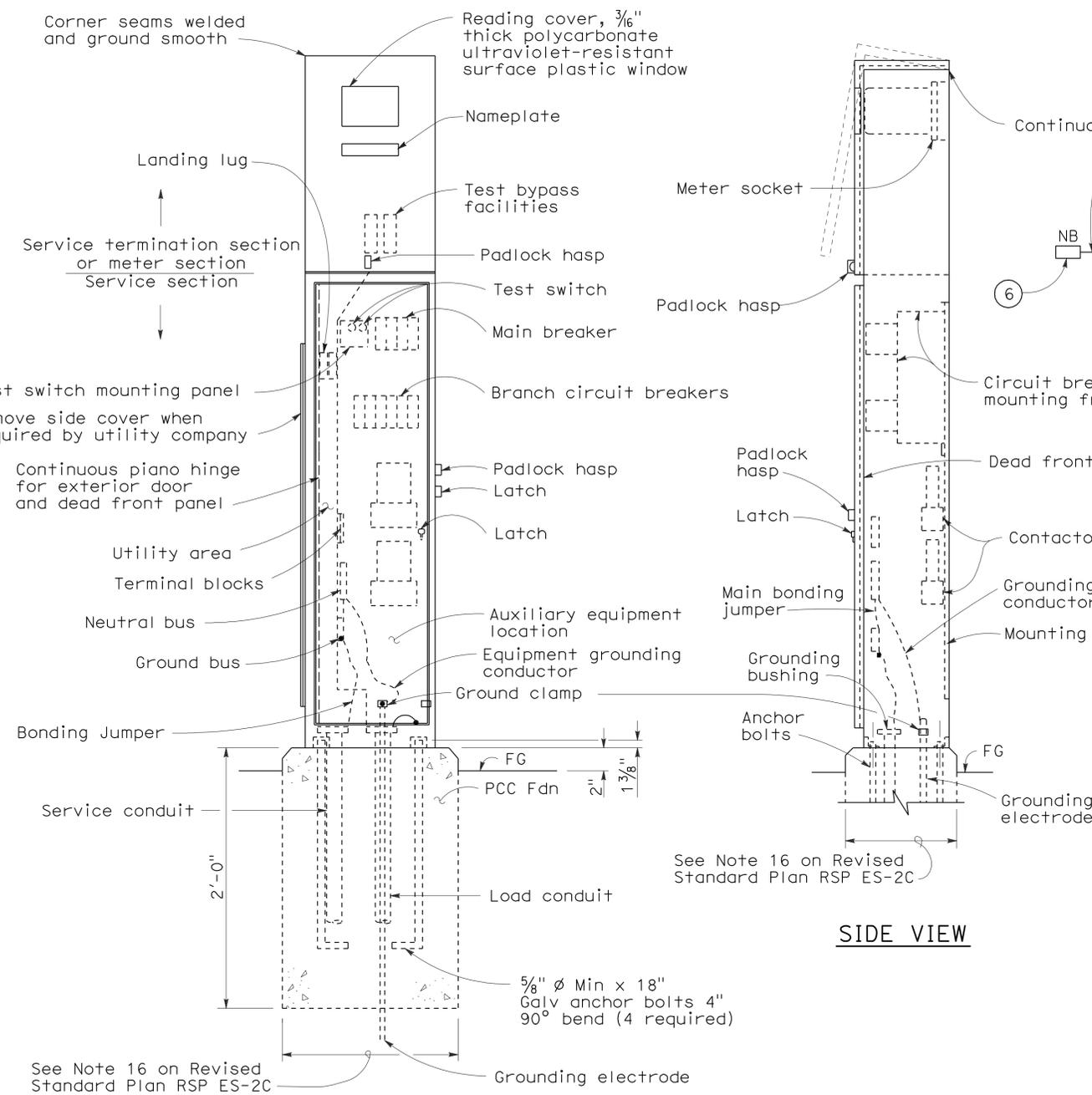
NO SCALE

RSP ES-2C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-2C
 DATED MAY 1, 2006 - PAGE 405 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-2C

2006 REVISED STANDARD PLAN RSP ES-2C

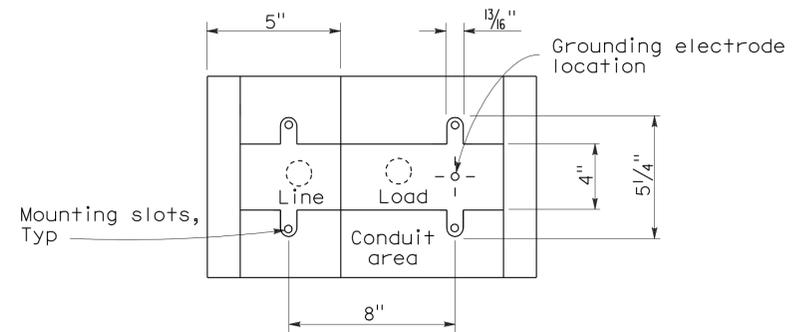
2006 REVISED STANDARD PLAN RSP ES-2D



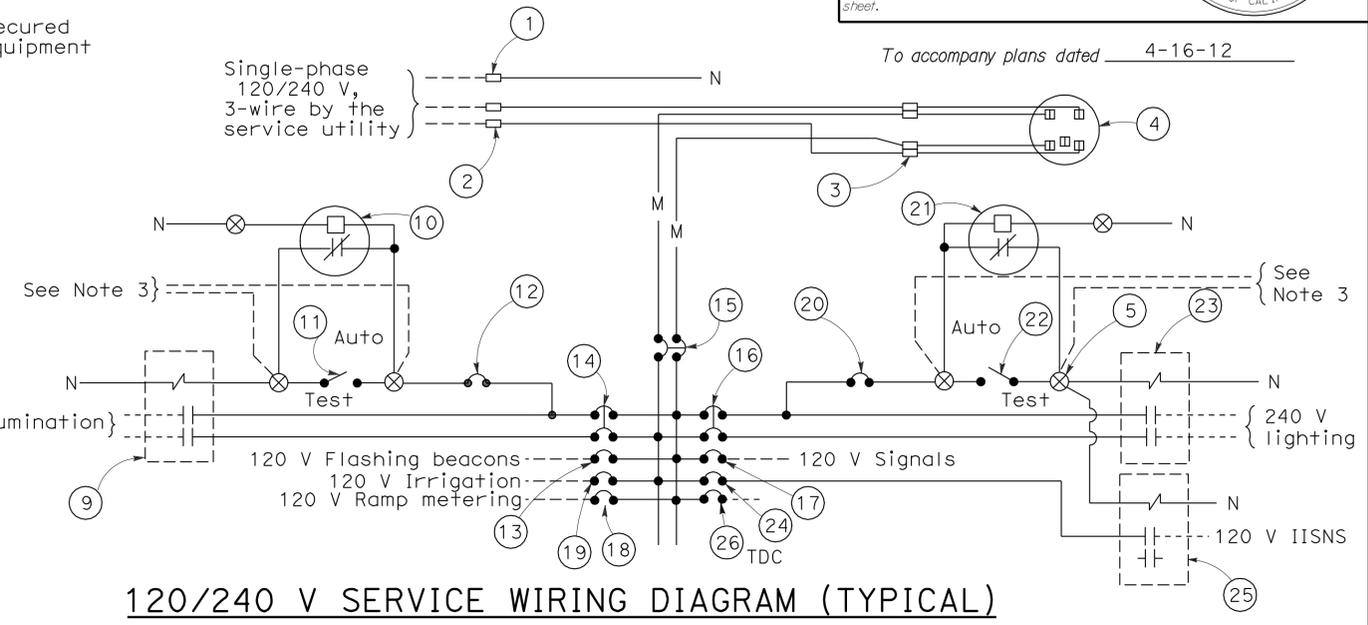
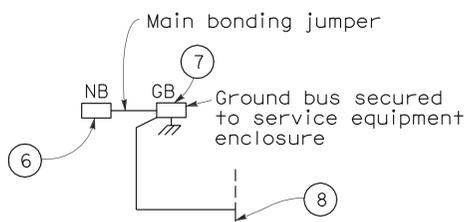
TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

FRONT VIEW

SIDE VIEW



BASE FOR TYPE III-A SERVICE EQUIPMENT ENCLOSURE



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

TYPE III-A SERVICE (120/240 V) EQUIPMENT LEGEND					
ITEM No.	COMPONENT	NAME PLATE DESCRIPTION	ITEM No.	COMPONENT	NAME PLATE DESCRIPTION
1	Neutral lug		14	30 A, 240 V, 2P, CB	Sign Illumination
2	Landing lug (Note 6)		15	100 A, 240 V, 2P, CB	Main Breaker
3	Test bypass facility		16	30 A, 240 V, 2P, CB	Lighting
4	Meter socket and support		17	50 A, 120 V, 1P, CB	Signals
5	Terminal blocks		18	30 A, 120 V, 1P, CB	Ramp Metering
6	Neutral bus		19	20 A, 120 V, 1P, CB	Irrigation
7	Ground bus		20	15 A, 120 V, 1P, CB	Lighting Control
8	Grounding electrode		21	Photoelectric unit (Note 7)	
9	30 A, 2PNO Contactor	Sign Illumination	22	15 A, 1P, Test switch	Lighting Test Switch
10	Photoelectric unit (Note 7)		23	60 A, 2PNO Contactor	Lighting
11	15 A, 1P, Test switch	Sign Illumination Test Switch	24	15 A, 120 V, 1P, CB	IISNS
12	15 A, 120 V, 1P, CB	Sign Illumination Control	25	30 A, 2PNO Contactor	IISNS
13	15 A, 120 V, 1P, CB	Flashing Beacon	26	20 A, 120 V, 1P, CB	Telephone Demarcation Cabinet

NOTES: (FOR SERVICE EQUIPMENT ENCLOSURE)

- Voltage ratings of service equipment shall conform to the service voltages indicated on the plans.
- Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
- Connect to remote test switch mounted on lighting standards, sign post or structure when required.
- Items No. 1 and 6 shall be isolated from the service equipment enclosure.
- Meter sockets shall be 5 clip type.
- The landing lug shall be suitable for multiple conductors.
- Type I photoelectric control shall be used unless otherwise indicated on the plans.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS
(SERVICE EQUIPMENT AND
TYPICAL WIRING DIAGRAM,
TYPE III - A SERIES)**

NO SCALE

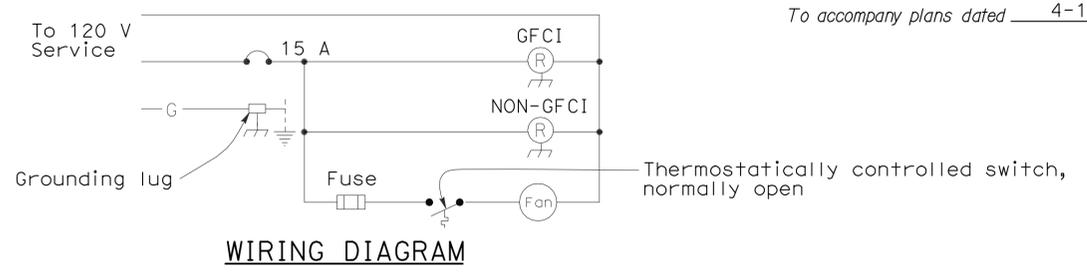
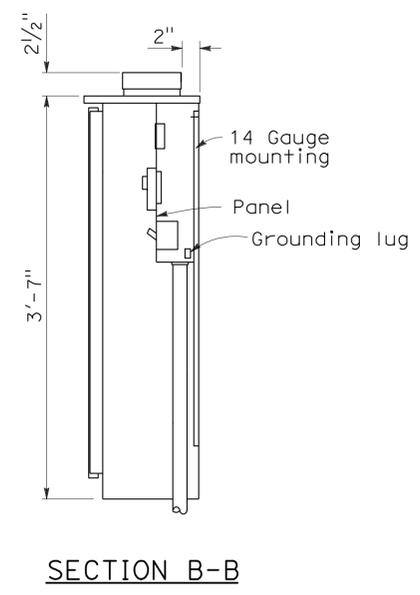
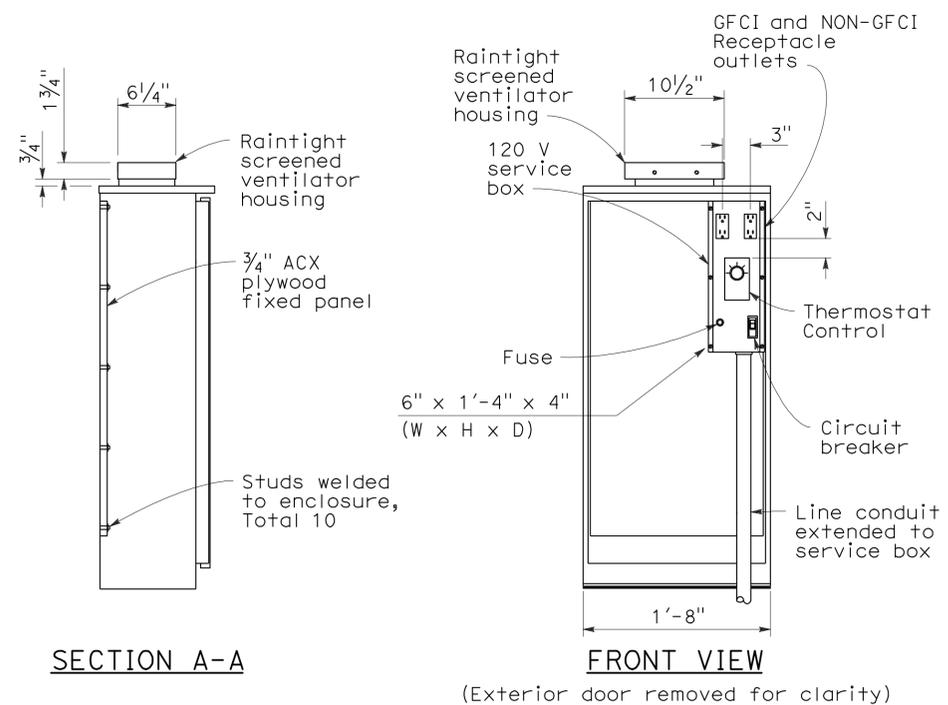
RSP ES-2D DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-2D DATED MAY 1, 2006 - PAGE 406 OF THE STANDARD PLANS BOOK DATED MAY 2006.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	686	760

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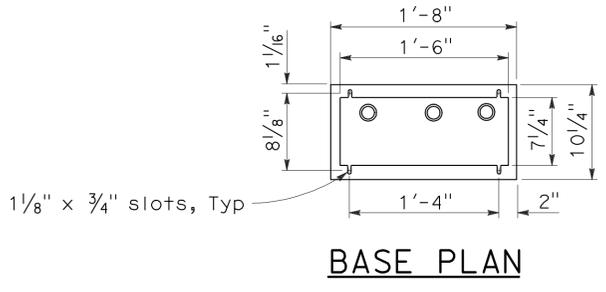
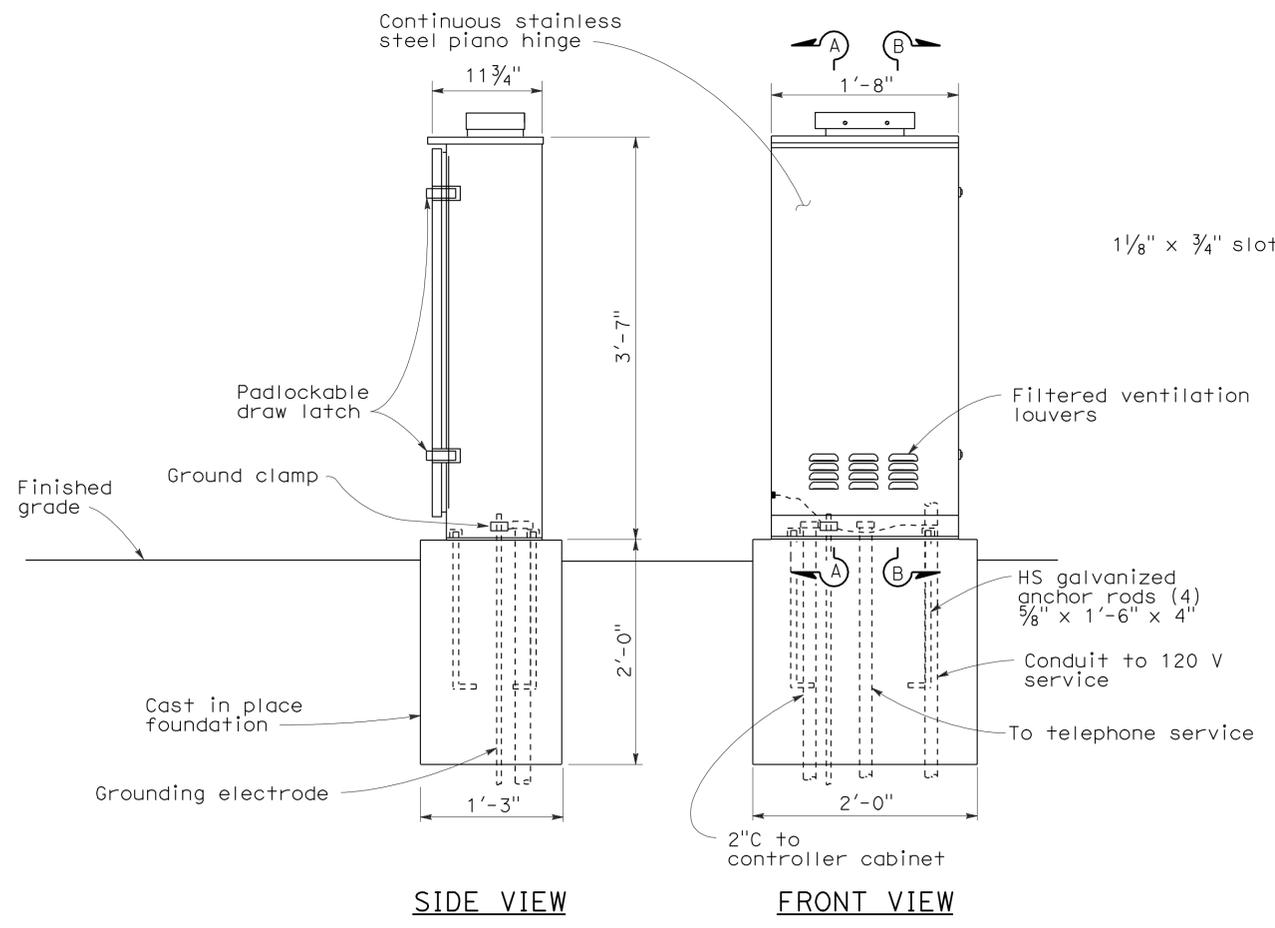
REGISTERED PROFESSIONAL ENGINEER
 Jeffrey G. McRae
 No. E14512
 Exp. 6-30-08
 ELECTRICAL
 STATE OF CALIFORNIA

To accompany plans dated 4-16-12



NOTES:

- Telephone demarcation cabinet shall be furnished with a mounting panel, outlets, circuit breaker and deadfront plates in place. Dimensions are nominal.
- An approved mastic or caulking compound shall be placed on the foundation prior to placing the cabinet to seal openings between the bottom of the cabinet and the foundation.
- In unpaved areas, a raised PCC pad shall be placed in front of the telephone demarcation cabinet. Pad shall be 2'-0" x 1'-10" x 4" thick, with 2" above the finished grade.
- All conduits shall be bonded to the enclosure.
- Telephone demarcation cabinet:
 - Material shall be anodized aluminum (1/8" thick).
 - Fabrication shall conform to the requirements of the Standard Specifications.
 - The exterior door shall be side hung and secured with a padlockable draw latch, the padlock hole shall be a minimum diameter of 1/16" to receive a padlock.
 - Ventilation louvers shall be located on the door.
 - Fan shall be mounted in a ventilator housing.
 - Fan shall be thermostatically controlled and adjustable to turn on between 80°F and 130°F.
 - Fan circuit shall be fused at 175 percent of the fan motor capacity.
 - Fan capacity shall be at least 25 cubic feet per minute.
 - Fasten fixed mounting panels with nuts, lock and flat washers to 3/16" ø x 1" studs welded to enclosure.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS
(TELEPHONE DEMARCATIION
CABINET, TYPE B)**

NO SCALE

RSP ES-3E DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-3E
DATED MAY 1, 2006 - PAGE 414 OF THE STANDARD PLANS BOOK DATED MAY 2006.

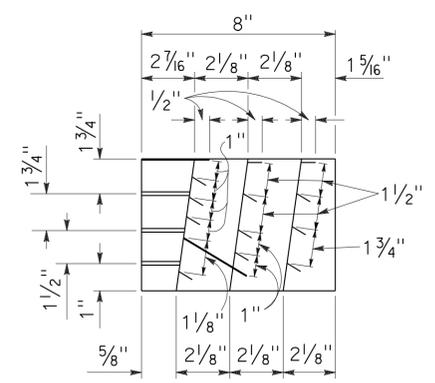
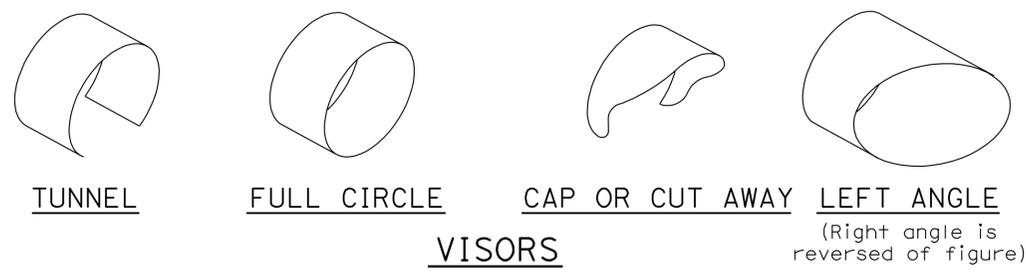
REVISED STANDARD PLAN RSP ES-3E

2006 REVISED STANDARD PLAN RSP ES-3E

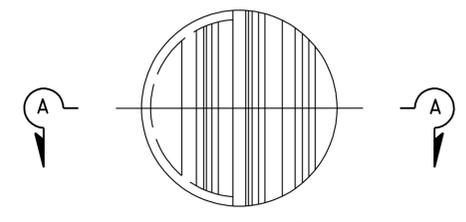
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	687	760

Jeffrey G. McRae
 REGISTERED ELECTRICAL ENGINEER
 June 6, 2008
 PLANS APPROVAL DATE
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 REGISTERED PROFESSIONAL ENGINEER
 Jeffrey G. McRae
 No. E14512
 Exp. 6-30-10
 ELECTRICAL
 STATE OF CALIFORNIA

To accompany plans dated 4-16-12



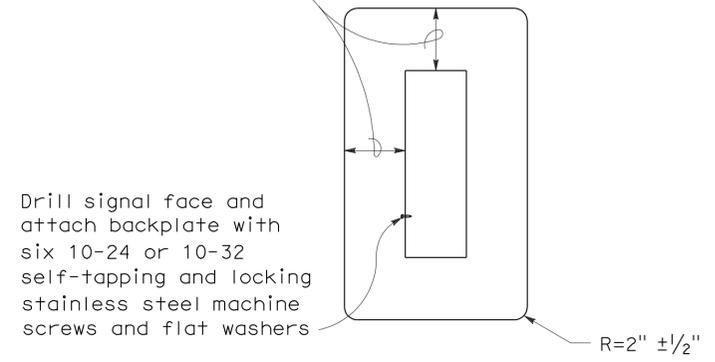
SECTION A-A



FRONT VIEW
DIRECTIONAL LOUVER

Directional louvers shall be oriented as directed by the Engineer and secured in place with one plated brass machine screw and nut.

8" ± 1/2" for 8" sections
 5 1/2" ± 1/2" for 12" sections

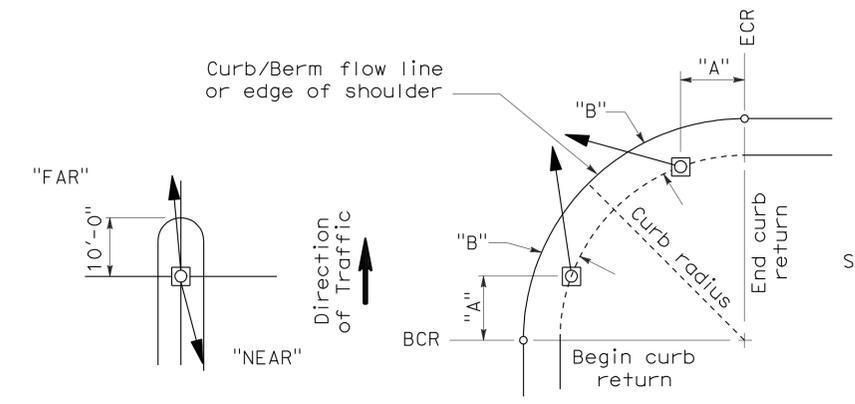


8" AND 12" SECTIONS

BACKPLATE

1/16" minimum thickness
 3001-14 aluminum, or plastic when specified

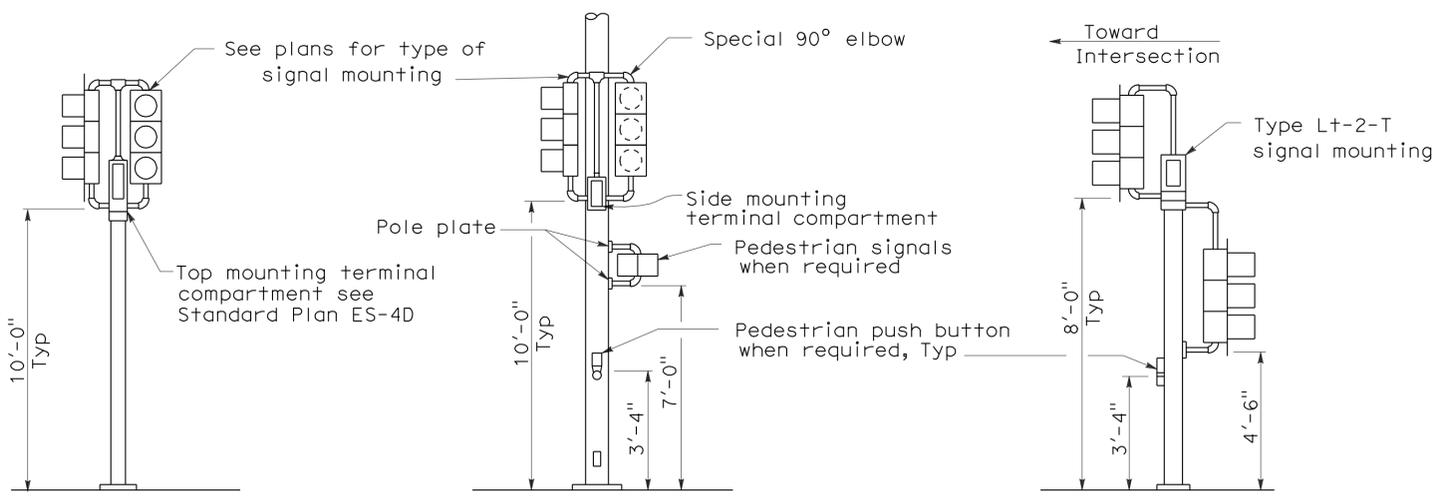
Drill signal face and attach backplate with six 10-24 or 10-32 self-tapping and locking stainless steel machine screws and flat washers



NOTES:

1. Typical signal pole placement unless dimensioned on plans.
2. For "A" and "B" dimensions, see Pole Schedule, or as directed by the Engineer.

SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS



TOP MOUNTED SIGNALS (TV)

Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

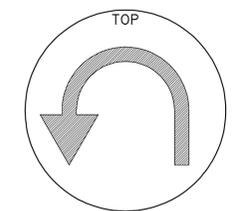
SIDE MOUNTED SIGNALS (SV AND SP)

Normally used on standards with luminaire or signal mast arm

LEFT TURN LANE SIGNAL

Type 1-A, 1-B, 1-C and 1-D standard as indicated on plans

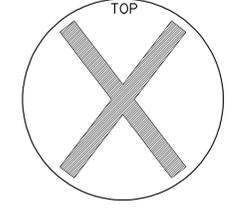
TYPICAL SIGNAL INSTALLATIONS



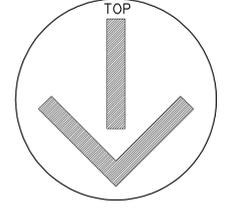
U-TURN SIGNAL FACE



BICYCLE SIGNAL FACE



LANE CONTROL SIGNAL FACE



LANE CONTROL SIGNAL FACE

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4C DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN ES-4C DATED MAY 1, 2006 - PAGE 420 OF THE STANDARD PLANS BOOK DATED MAY 2006.

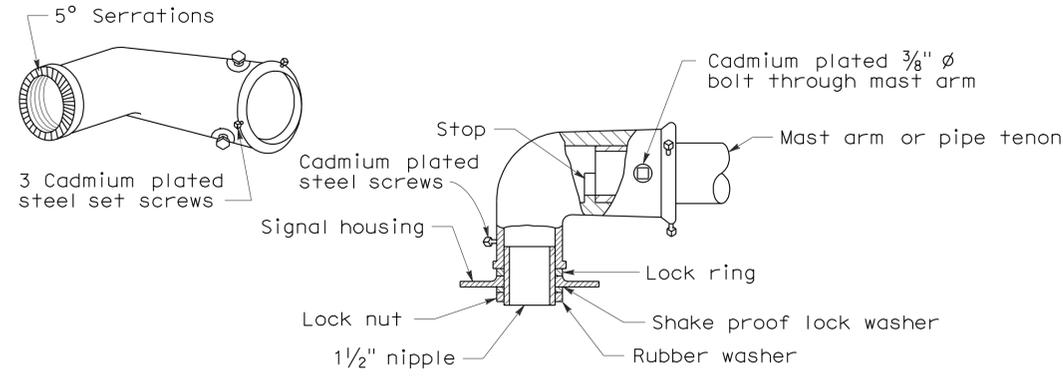
REVISED STANDARD PLAN RSP ES-4C

2006 REVISED STANDARD PLAN RSP ES-4C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	688	760

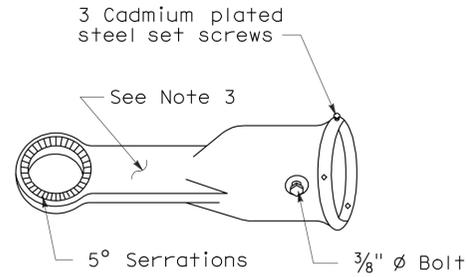
Jeffrey G. McRae
 REGISTERED ELECTRICAL ENGINEER
 June 6, 2008
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
 REGISTERED PROFESSIONAL ENGINEER
 Jeffrey G. McRae
 No. E14512
 Exp. 6-30-10
 ELECTRICAL
 STATE OF CALIFORNIA

To accompany plans dated 4-16-12



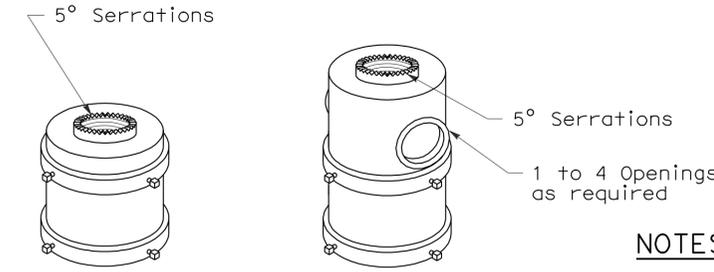
MAST ARM MOUNTING - TYPE "MAT"

For 2 NPS pipe, see Note 1.



MAST ARM MOUNTING - TYPE "MAS"

For 2 NPS pipe. See Note 1.

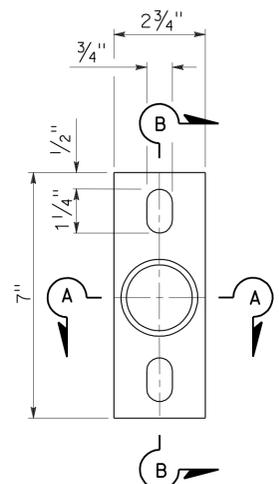


For one mounting For multiple mountings

TOP MOUNTINGS

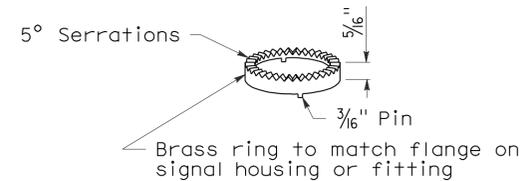
For 4 NPS pipe, see Note 2.

SIGNAL SLIP FITTERS



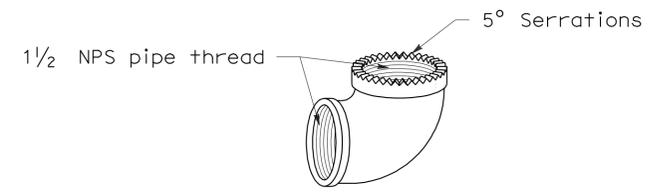
POLE PLATE

For side mountings



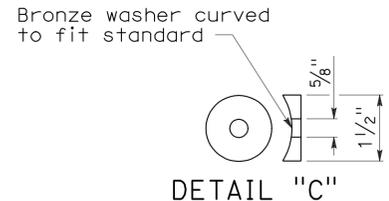
LOCK RING

Use where locking ring is not integral with signal housing or fitting.



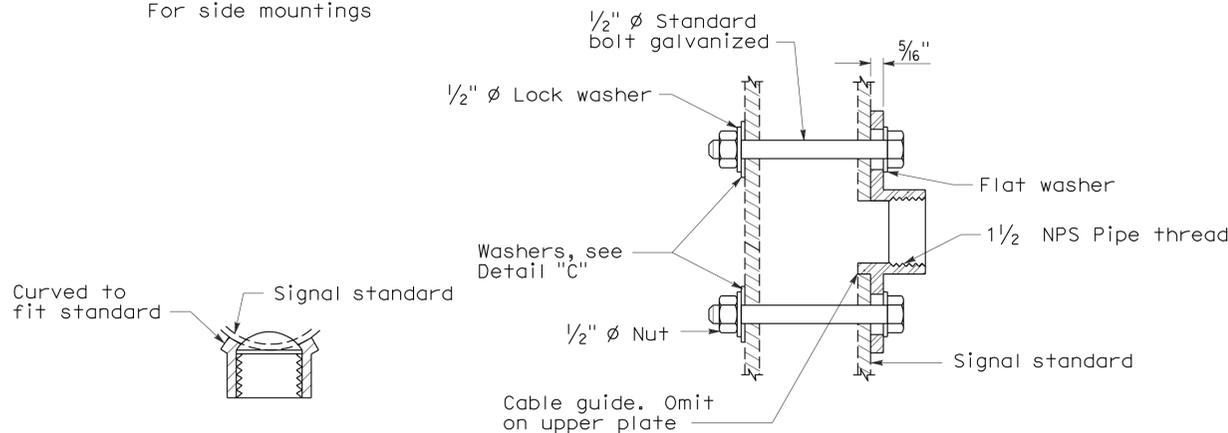
SPECIAL 90° ELBOW

One for each signal head, except those with special slip fitter mounting

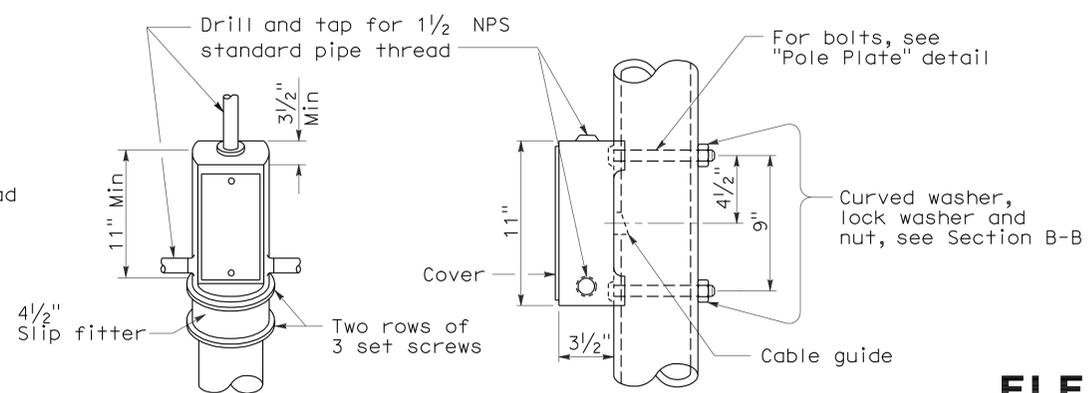


DETAIL "C"

MISCELLANEOUS MOUNTING HARDWARE



SECTION B-B



TOP MOUNTING

SIDE MOUNTING

TERMINAL COMPARTMENTS

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4D DATED June 6, 2008 SUPERSEDES STANDARD PLAN ES-4D DATED MAY 1, 2006 - PAGE 421 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-4D

2006 REVISED STANDARD PLAN RSP ES-4D

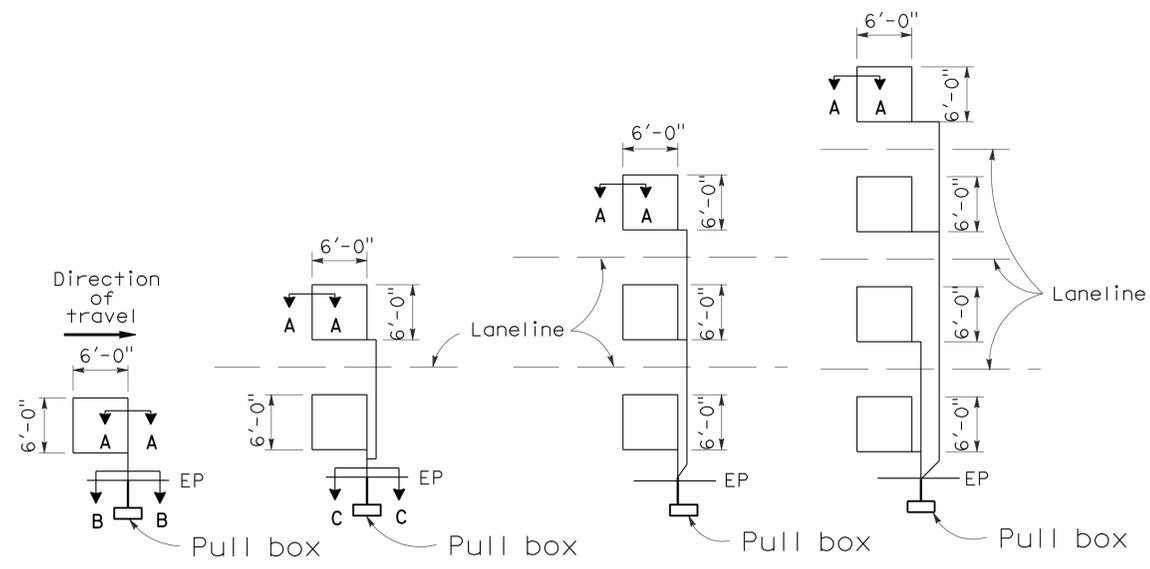
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	689	760

Jeffery G. McRae
 REGISTERED ELECTRICAL ENGINEER
 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.

To accompany plans dated 4-16-12

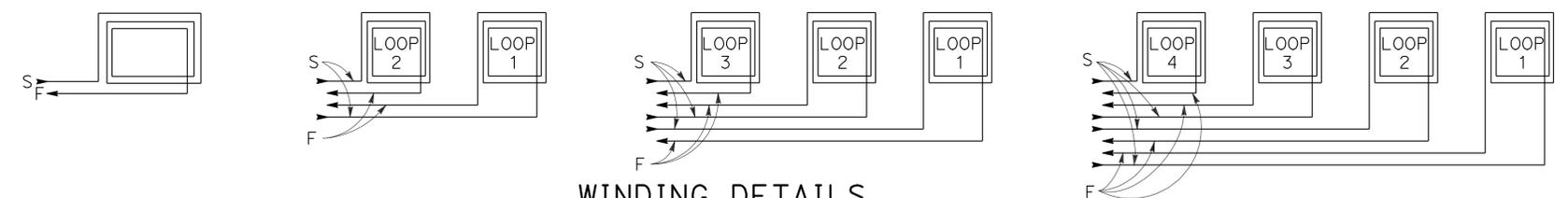
LOOP INSTALLATION PROCEDURE

- 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.



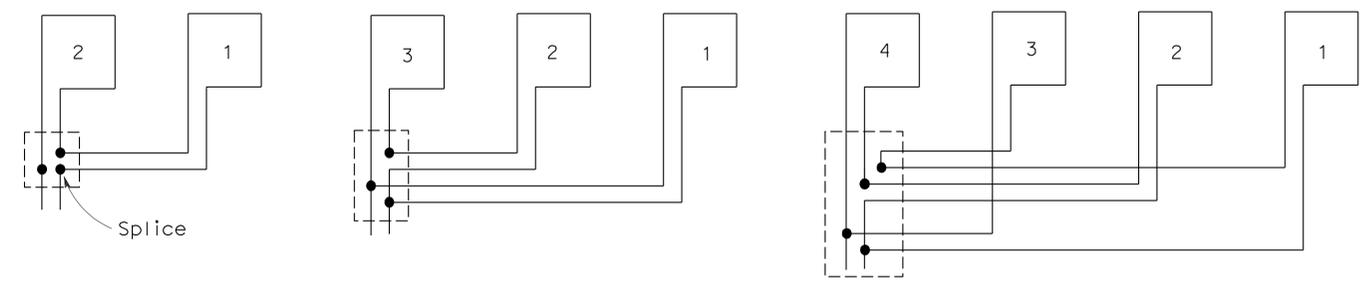
TYPE 1A INSTALLATION **TYPE 2A INSTALLATION** **TYPE 3A INSTALLATION** **TYPE 4A INSTALLATION**
SAWCUT DETAILS

- (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)



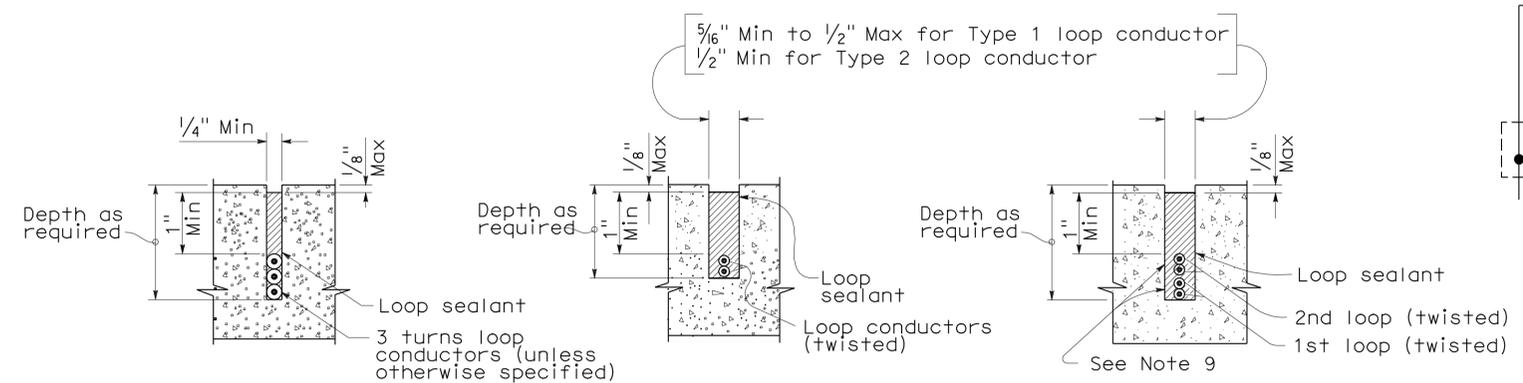
WINDING DETAILS

See Notes 6 and 7



TYPICAL LOOP CONNECTIONS

(Dashed lines represent the pull box)



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

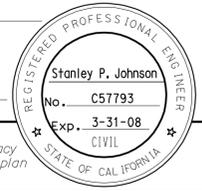
ELECTRICAL SYSTEMS (DETECTORS)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

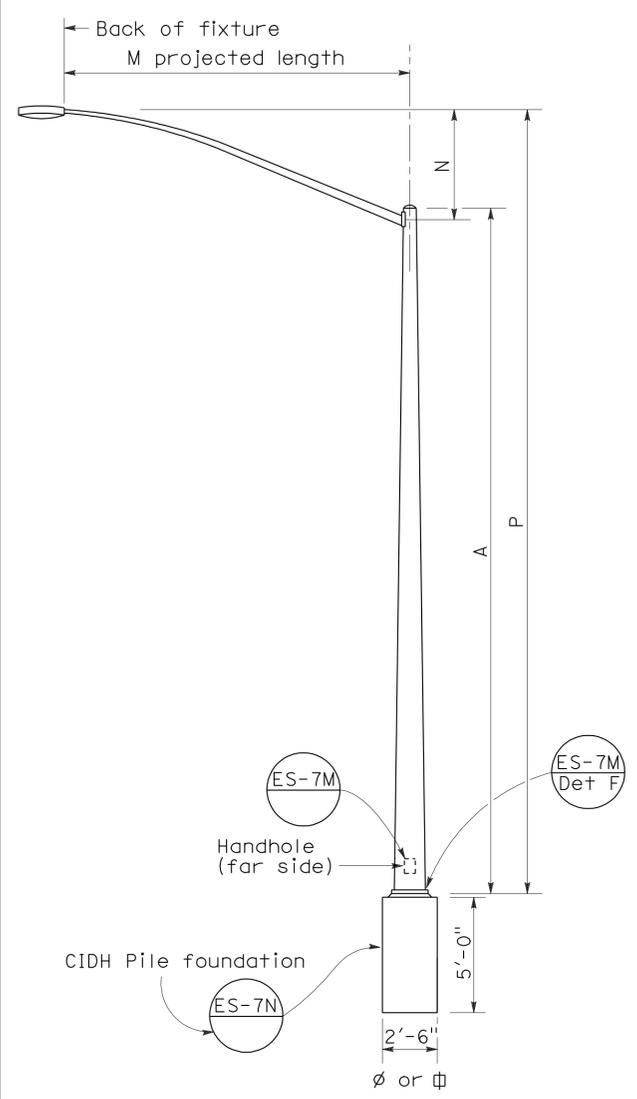
NO SCALE

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

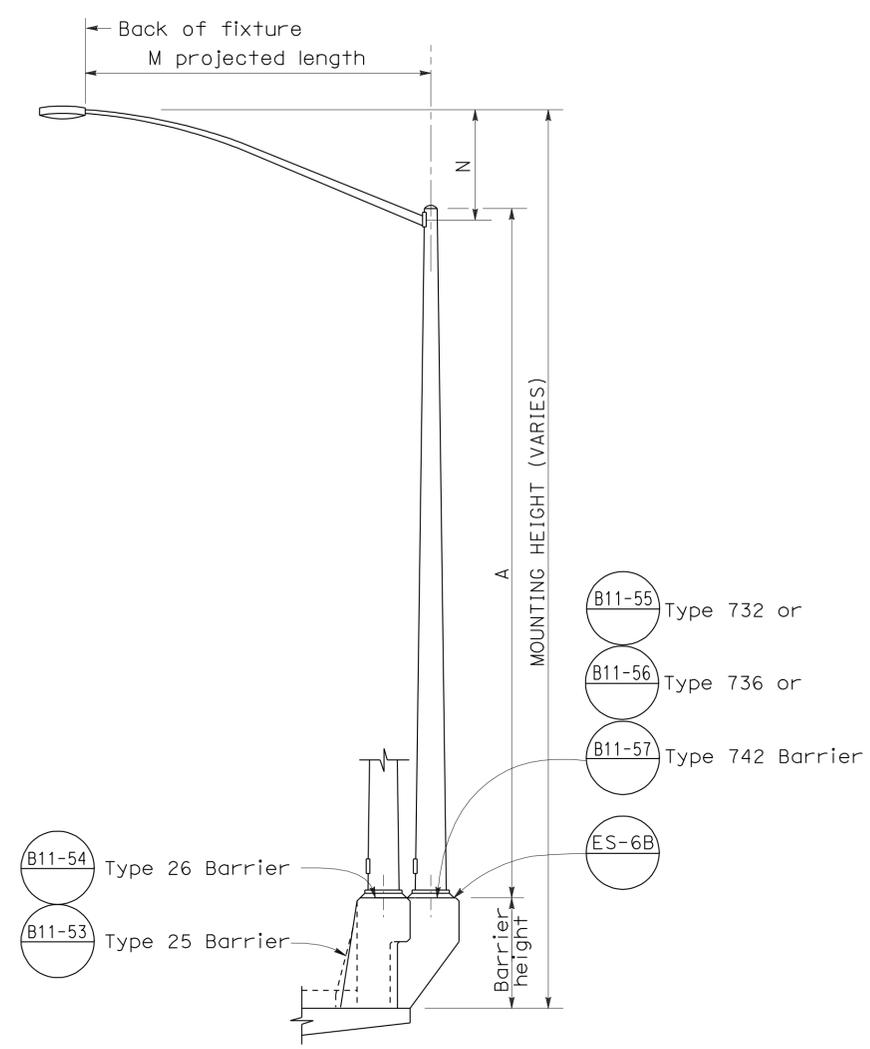
2006 REVISED STANDARD PLAN RSP ES-5A



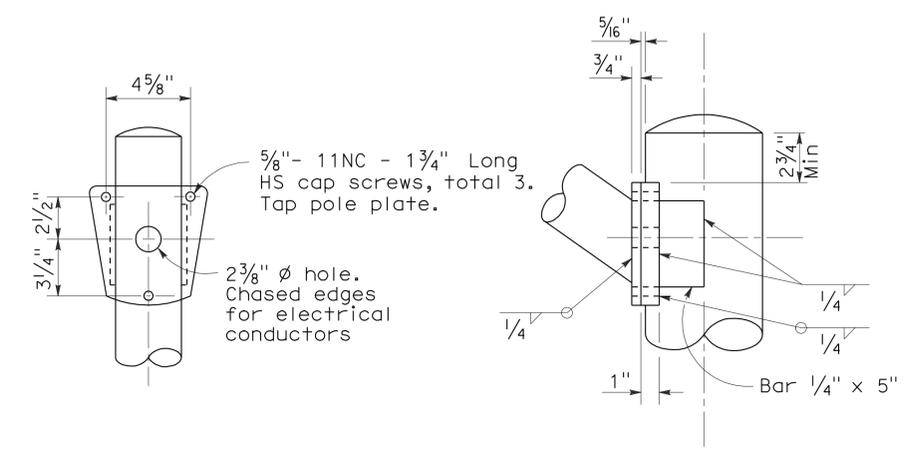
To accompany plans dated 4-16-12



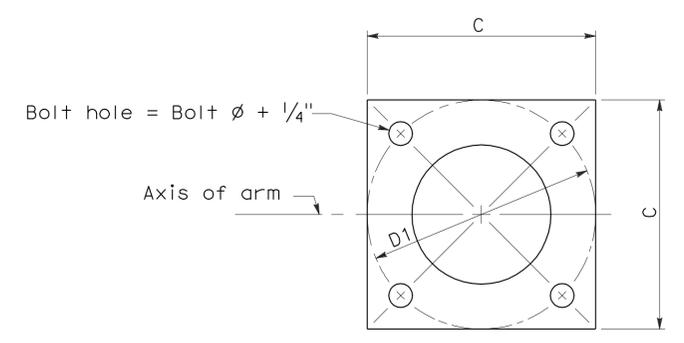
ELEVATION
TYPE 15 AND TYPE 21



ELEVATION
TYPE 15 AND TYPE 21 BARRIER RAIL MOUNTED



DETAIL R
LUMINAIRE ARM CONNECTION



BASE PLATE

POLE TYPE	POLE DATA				BASE PLATE DATA				LUMINAIRE ARM
	A Height	Min OD		Wall Thickness	C	D1 Bolt Circle	Thick-ness	Anchor Bolts Size	
15	30'	8"	3 7/8"	0.1196"	1'-0"	1'-0"	1"	1" ϕ x 3'-0" x 4"*	6' - 15' 12'
21	35'	8 5/8"	3 7/8"	0.1196"	1'-0"	1'-0"	1"	1 1/4" ϕ x 3'-0" x 4"*	6' - 15' 12'

* For barrier rail bolts, see Standard Plan ES-6B.

M Projected Length	N Rise	Min OD At Pole	Nominal Thickness	LUMINAIRE ARM DATA	
				Type 15	Type 21
6'-0"	2'-0"±	3/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3/2"	0.1196"	32'-0"±	37'-0"±
10'-0"	3'-3"±	3 3/8"	0.1196"	32'-9"±	37'-9"±
12'-0"	4'-3"±	3 3/8"	0.1196"	33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"	0.1196"	34'-3"±	39'-3"±

NOTES:

- Indicates arm length to be used unless otherwise noted on the plans.
- For Type 15-SB, use Type 15 standard with Type 30 slip base plate details, see Standard Plan ES-6F.
- For additional notes, see Standard Plan ES-7M and ES-7N.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(LIGHTING STANDARD
TYPES 15 AND 21)

NO SCALE

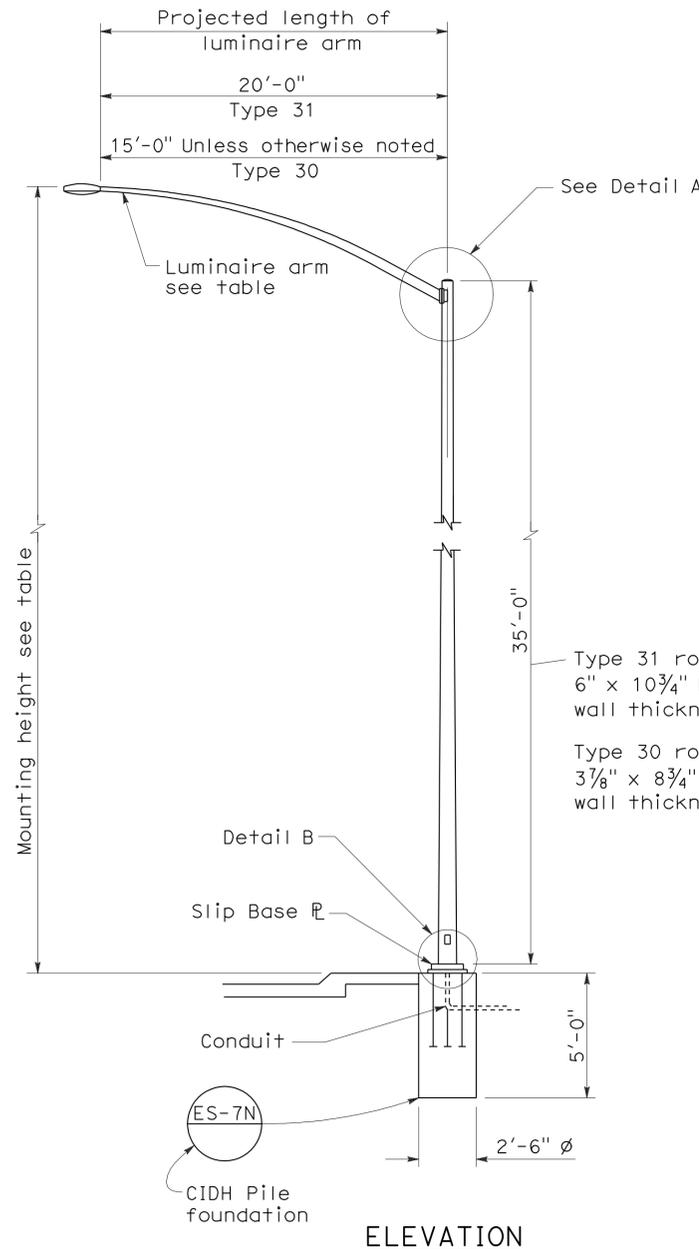
RSP ES-6A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-6A DATED MAY 1, 2006 - PAGE 427 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP ES-6A

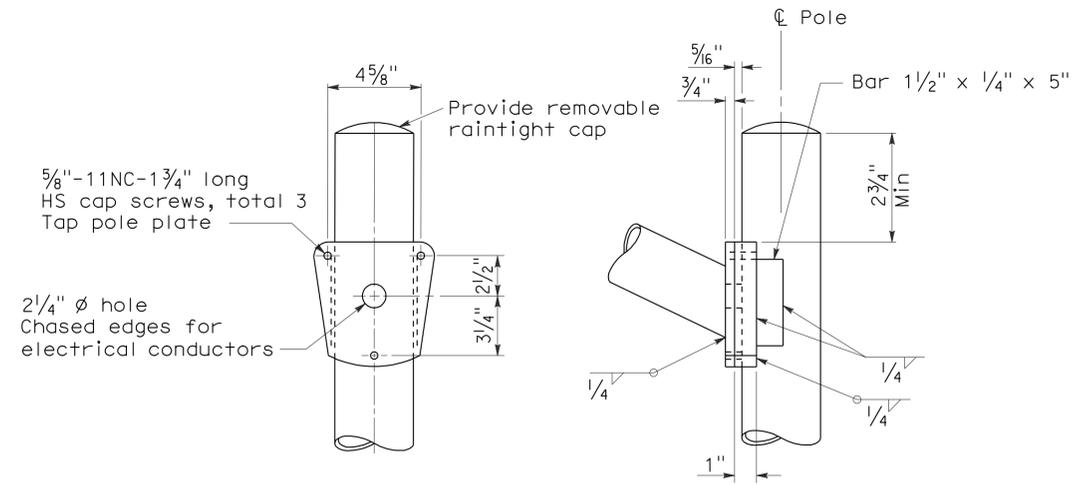
LUMINAIRE ARM DATA

PROJECTED LENGTH	THICKNESS	MINIMUM OD @ POLE	MOUNTING HEIGHT
* 6'-0"	0.1196"	3/4"	36'-9"±
8'-0"		3/2"	37'-3"±
10'-0"		3 3/4"	38'-0"±
12'-0"		3 3/4"	39'-0"±
15'-0"		4 1/4"	39'-6"±
** 20'-0"	0.1793"	5"	37'-0"±

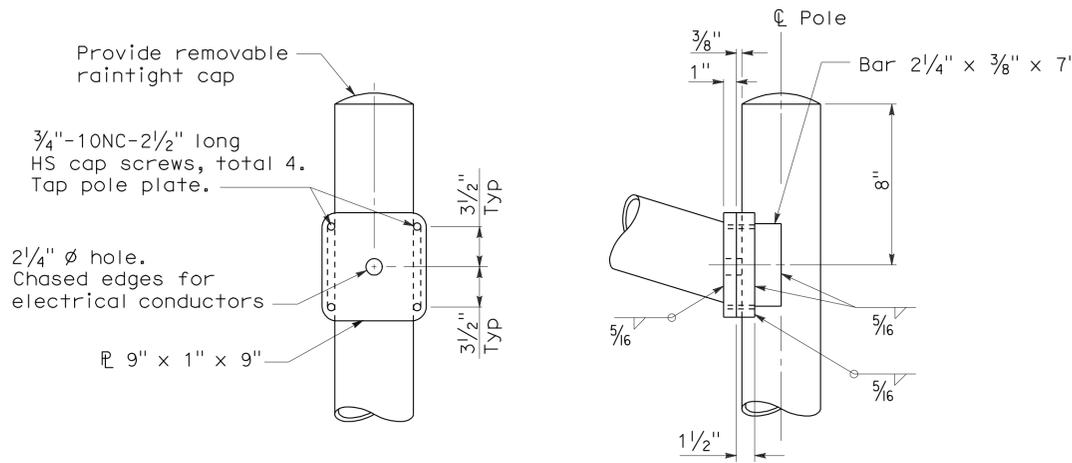
* Type 30 - arm length 6'-0" - 15'-0" maximum
 ** Type 31 - arm lengths 20'-0"



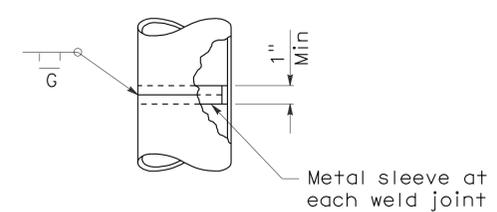
ELEVATION



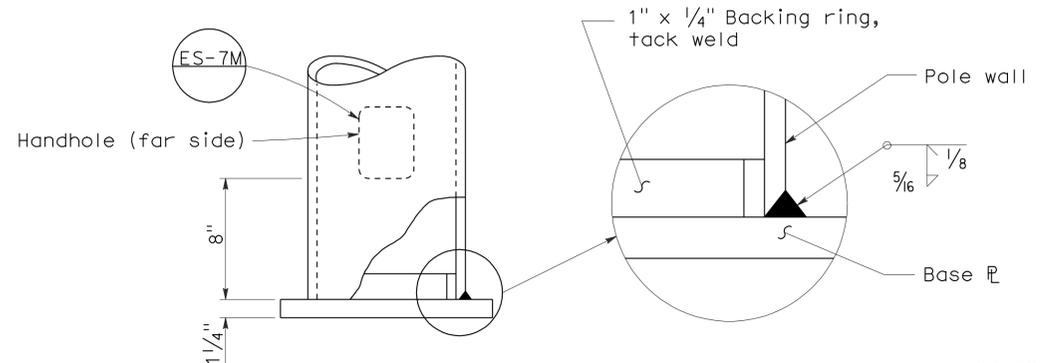
DETAIL A - TYPE 30



DETAIL A - TYPE 31



POLE SPLICE



DETAIL B

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	691	760

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER

January 18, 2008
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
 Stanley P. Johnson
 No. C57793
 Exp. 03-31-08
 CIVIL
 STATE OF CALIFORNIA

To accompany plans dated 4-16-12

NOTES:

- Sheet steel shall have a minimum yield of 48,000 psi.
- For slip base details see Standard Plan ES-6F.
- For Type 30 fixed base use Type 15 base plate, and foundation shown on Revised Standard Plan RSP ES-6A. Use 1 1/4" Dia x 3'-6" x 4" anchor bolts.
- For Type 31 fixed base use Type 32 base plate, anchor bolts and foundation on Standard Plan ES-6G.
- Handhole shall be located on downstream side of traffic unless noted otherwise on plans.
- For additional general notes refer to Standard Plan ES-7M.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS
 (LIGHTING STANDARD
 TYPES 30 AND 31)**

NO SCALE

RSP ES-6E DATED JANUARY 18, 2008 SUPERCEDES STANDARD PLAN ES-6E
 DATED MAY 1, 2006 - PAGE 430 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-6E

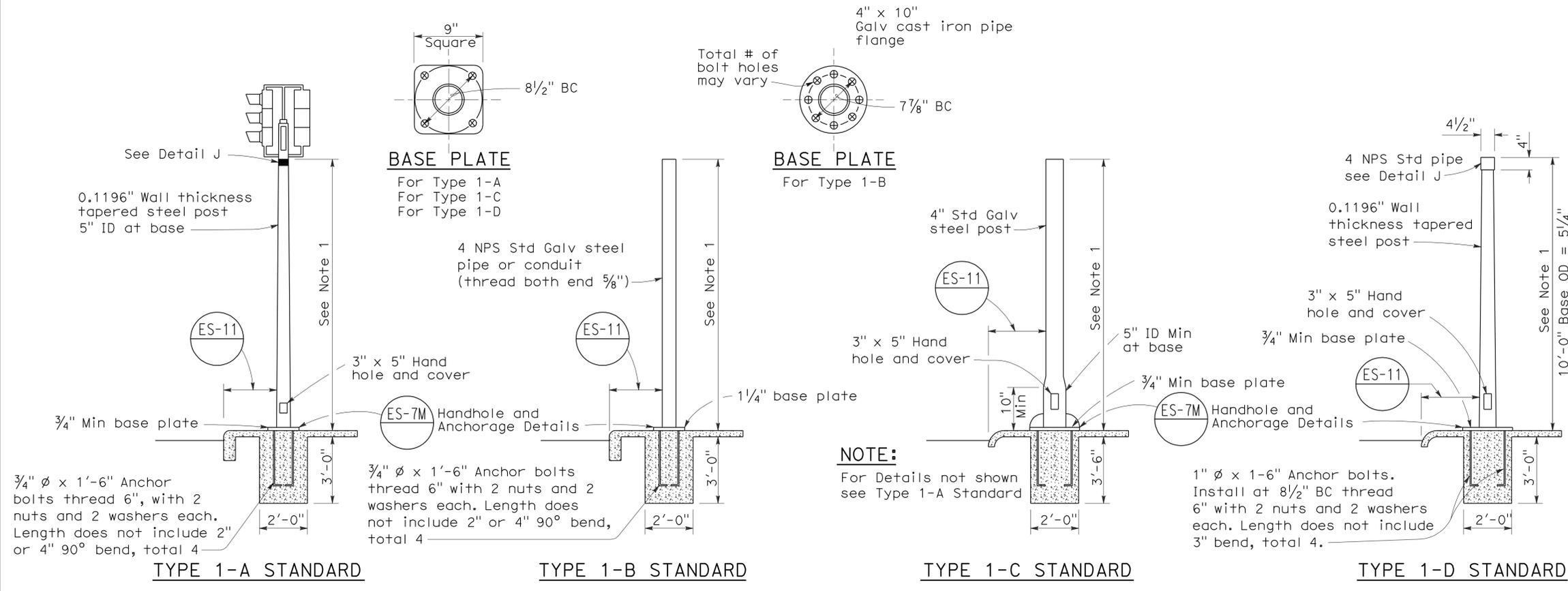
2006 REVISED STANDARD PLAN RSP ES-6E

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	692	760

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 October 5, 2007
 PLANS APPROVAL DATE
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 To accompany plans dated 4-16-12

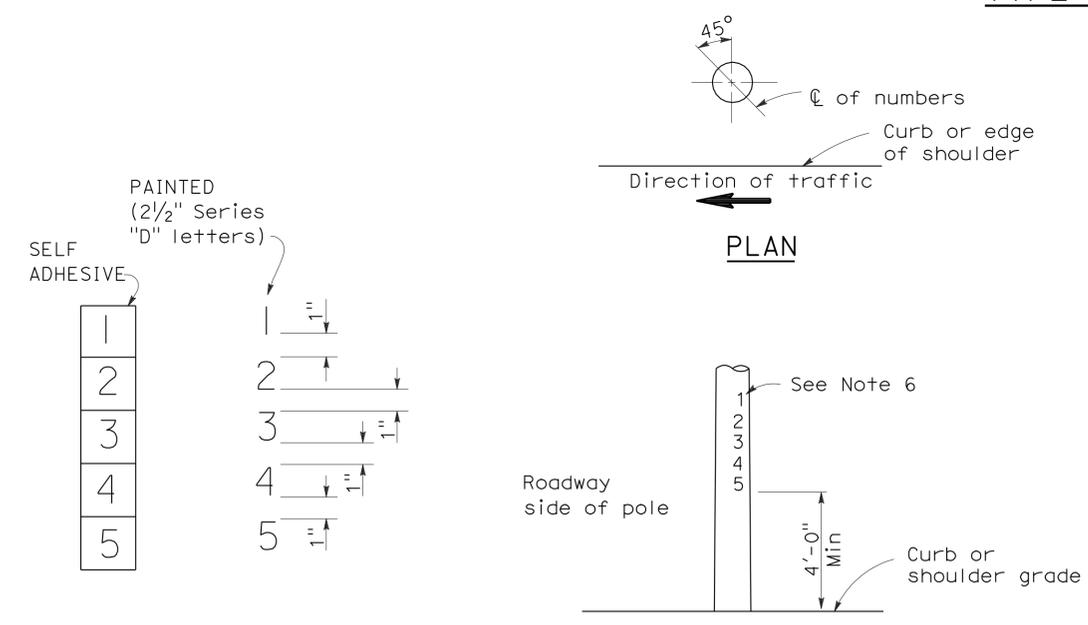
REGISTERED PROFESSIONAL ENGINEER
 Stanley P. Johnson
 No. C57793
 Exp. 3-31-08
 CIVIL
 STATE OF CALIFORNIA

2006 REVISED STANDARD PLAN RSP ES-7B

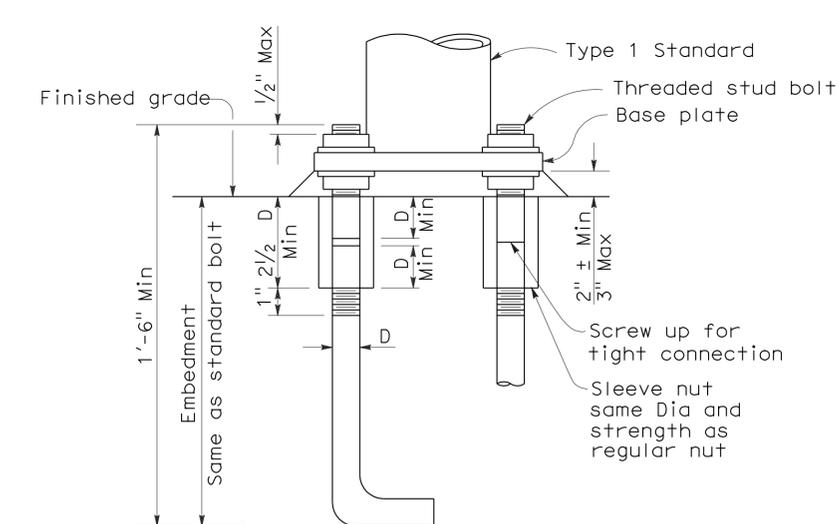


- NOTES:**
- Standards shall be 10'-0" ± 2" for vehicle signals and 7'-0" ± 2" for pedestrian signals unless otherwise noted on plans.
 - Top of standards shall be 4 1/2" OD.
 - Conduits shall extend 2" maximum above finished surface of foundation and for Types 1-A, 1-C and 1-D shall be sloped toward handhole.
 - Anchor bolts shall be bonded to conduit or grounding conductor.
 - Conduit between standard and adjacent pull box shall be 2" minimum.
 - Paint numbers on roadway side facing traffic when electrolier or post is left of direction of traffic.

TYPE 1 SIGNAL STANDARDS

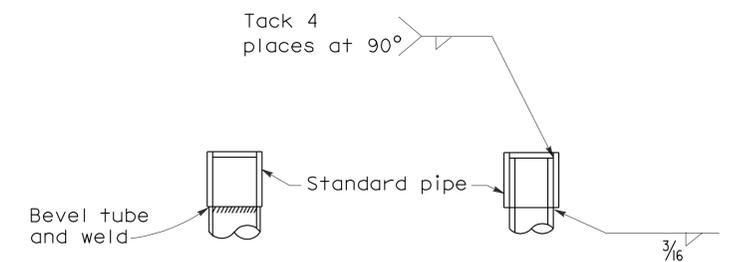


LOCATION OF EQUIPMENT NUMBERS ON STANDARDS AND POSTS



ANCHOR BOLTS WITH SLEEVE NUTS

Sleeve nuts to be used only when shown or specified on Project Plans
 D = Diameter of anchor bolt



DETAIL J

Tube may be inserted into pipe or butted as required

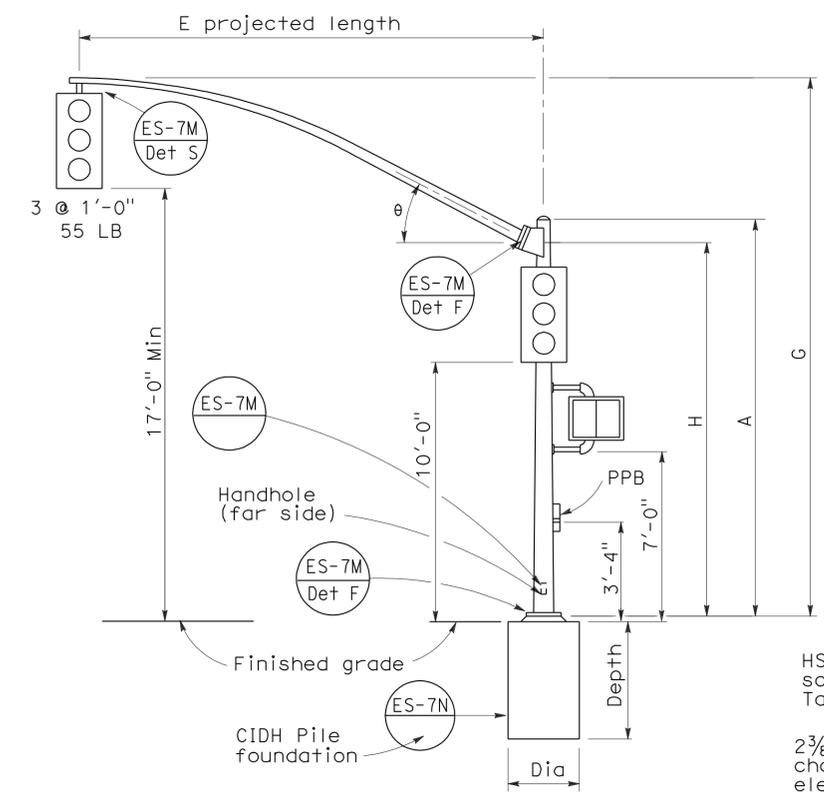
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD TYPE 1 STANDARD AND EQUIPMENT NUMBERING)

NO SCALE

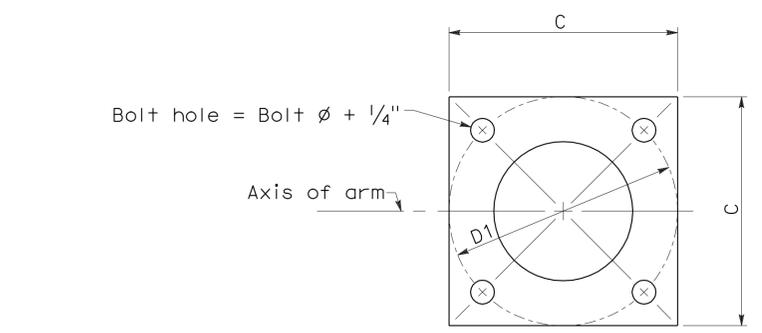
RSP ES-7B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-7B DATED MAY 1, 2006 - PAGE 438 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-7B

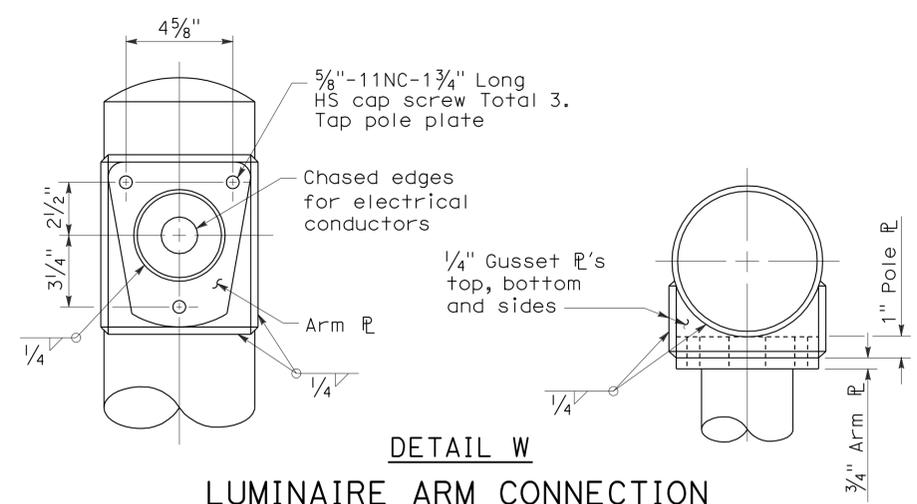
To accompany plans dated 4-16-12



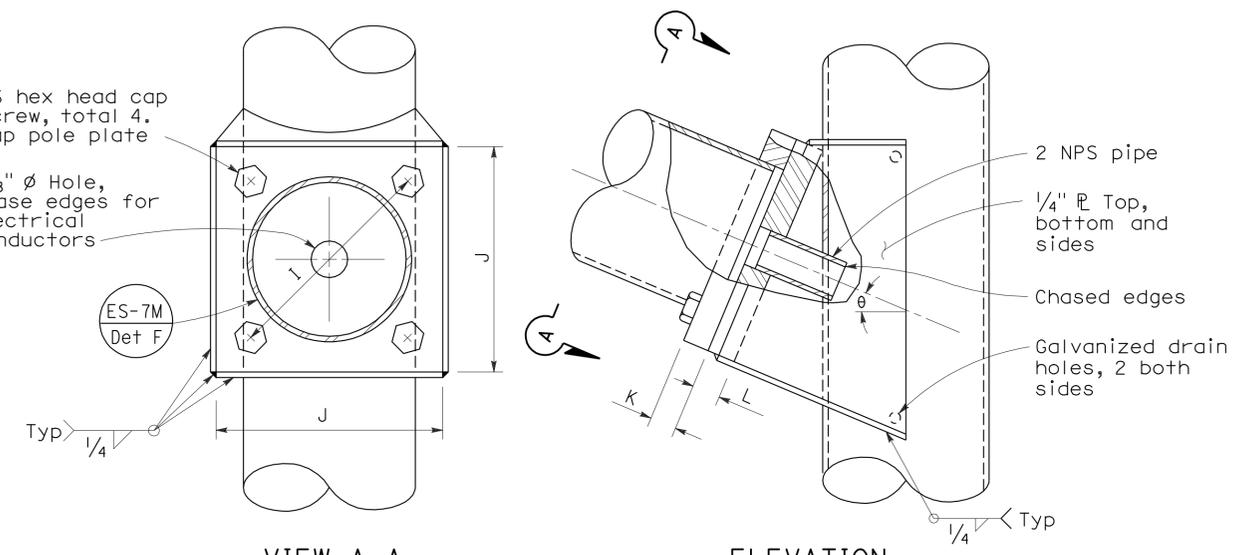
ELEVATION
TYPE 16-1-100, 18-1-100



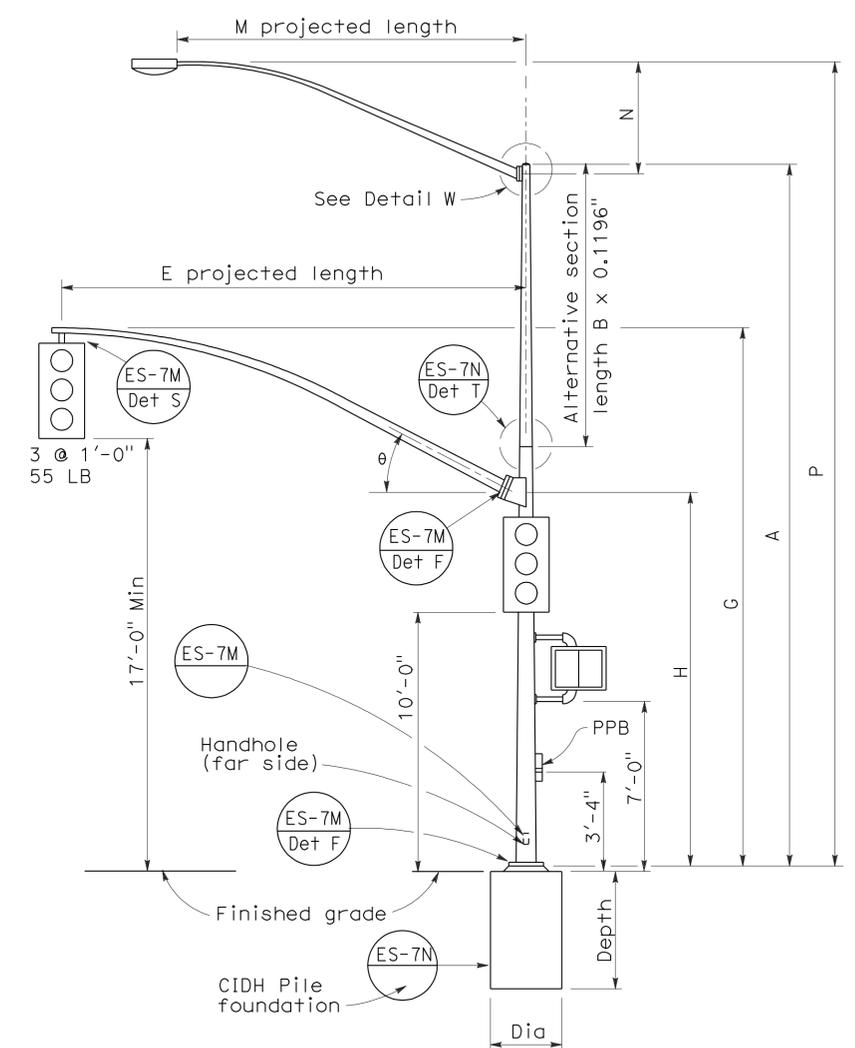
BASE PLATE



DETAIL W
LUMINAIRE ARM CONNECTION



VIEW A-A
SIGNAL ARM CONNECTION DETAILS



ELEVATION
TYPE 19-1-100, 19A-1-100

E Projected Length	G Mounting Height	H	Min OD At Pole	Thickness	I Bolt Circle	HS Cap Screws	J Plate size	K Arm R Thickness	L Pole R Thickness	θ
15'-0"	21'-8"±	17'-6"	7"	0.1196"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°
20'-0"	21'-8"±	7 7/8"								
25'-0"	22'-8"±	7 5/8"								
30'-0"	23'-0"±	8"								

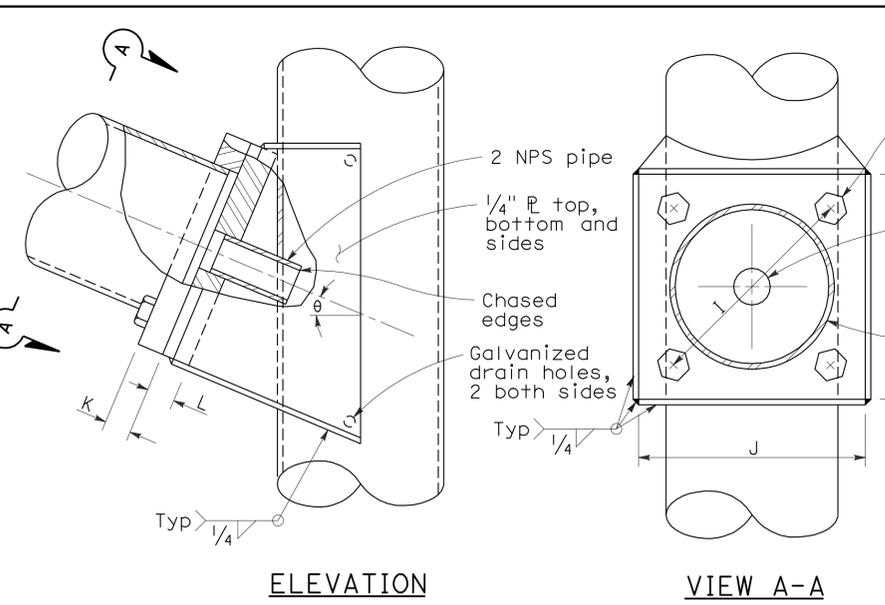
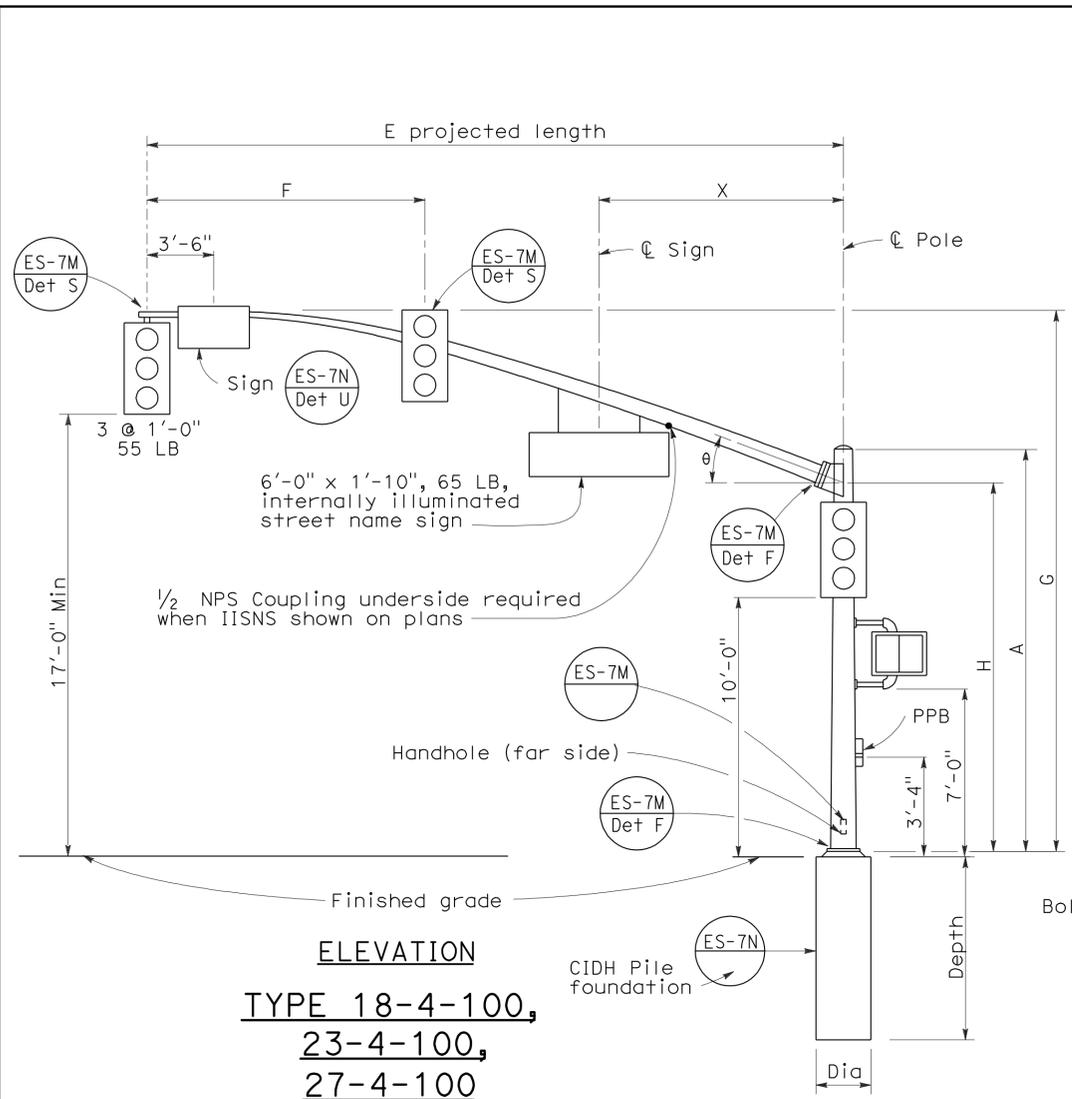
M Projected Length	N Rise	Min OD at Pole	Thickness	P Mounting Height	
				30'-0" Pole	35'-0" Pole
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 3/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±	3 7/8"		33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

Pole Type	Load Case	Wind Velocity mph	POLE DATA					BASE PLATE DATA					CIDH PILE FOUNDATION						
			A Height	Min OD		Thickness	Alternative Section			C	D1 Bolt Circle	Thickness	Anchor Bolts		Luminaire Arm	Signal Arm	Diameter	Depth	Reinforced
				Base	Top		B Length	Bottom	Top				Size						
16-1-100	1	100	18'-6"	8 1/4"	0.1793"	None			1'-6"	1'-5 1/2"	1 1/4"	1 1/2" ø x 42" x 6"		None	15'-0"	2'-6"	7'-2"	Yes	
18-1-100			17'-0"	8 7/16"		None								None	20'-0"				
19-1-100			30'-0"	6 5/8"		10'-0"	8"	6 5/8"						6'-15' [12'-0"]	25'-0"				
19A-1-100			35'-0"	5 1/16"		15'-0"	5 1/16"	6'-15' [15'-0"]						30'-0"					

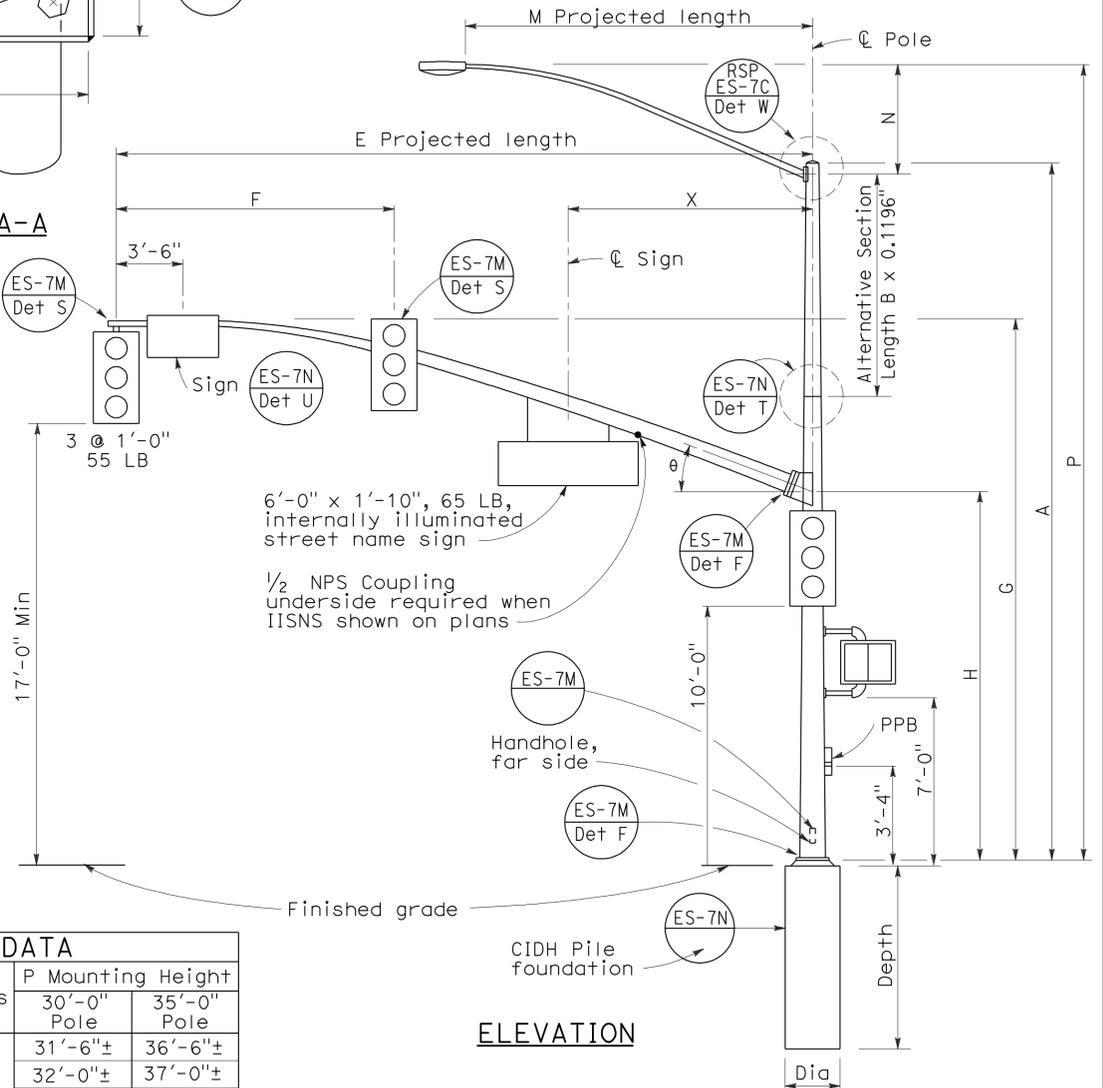
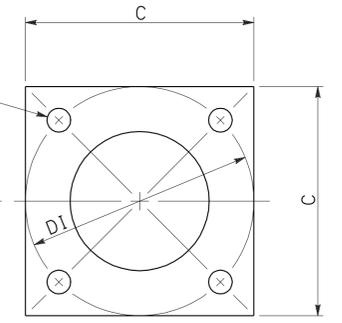
□ Indicates arm length to be used unless otherwise noted on plans.

2006 REVISED STANDARD PLAN RSP ES-7C

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD
CASE 1 ARM LOADING
WIND VELOCITY = 100 MPH
ARM LENGTHS 15' TO 30')
 NO SCALE
 RSP ES-7C DATED JUNE 15, 2007 SUPERSEDES STANDARD PLAN ES-7C
 DATED MAY 1, 2006 - PAGE 439 OF THE STANDARD PLANS BOOK DATED MAY 2006.



SIGNAL ARM CONNECTION DETAILS



TYPE 19-4-100, 19A-4-100,
24-4-100, 24A-4-100,
26-4-100, 26A-4-100

E Projected Length	F Min Spacing	G Mounting Height	H	Min OD at Pole	Thickness	I Bolt Circle	HS Cap Screws	J Plate Size	K Arm Thickness	L Pole Thickness	θ	X Max
25'-0"	10'-0"	22'-8"±	16'-0"	7 5/16"	0.2391"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°	10'-6"
30'-0"	12'-0"	8"										
35'-0"	14'-0"	23'-0"±		8 1/16"		13 1/2"		1'-1 1/2"	1 1/2"	21°		
40'-0"	15'-0"	9 3/8"										
45'-0"		23'-8"±	10 1/4"	15°	13'-0"							

M Projected Length	N Rise	Min OD at Pole	Thickness	P Mounting Height	
				30'-0" Pole	35'-0" Pole
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 7/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±	4"		33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

Pole Type	Load Case	Wind Velocity mph	A Height			Min OD	Thickness	Alternative Section		
			Base	Top	B Length			Bottom	Top	
18-4-100	4	100	17'-0"	9"	12"	0.2391"	None	9 3/8"	8"	
19-4-100			30'-0"	8"			10'-0"		8"	
19A-4-100			35'-0"	7 5/16"			15'-0"		7 5/16"	
23-4-100			17'-0"	9"			None			
24-4-100			30'-0"	8"	10'-0"	8"				
24A-4-100			35'-0"	7 5/16"	15'-0"	7 5/16"				
26-4-100			30'-0"	8"	10'-0"	8 3/8"				
26A-4-100			35'-0"	7 5/16"	15'-0"	9 3/4"				
27-4-100			17'-0"	9 3/4"	None					

C	DI Bolt Circle	Thickness	Anchor Bolts	
			Size	Reinforced
1'-6"	1'-6"	1 1/2"	2" ø x 42" x 6"	Yes

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD
CASE 4 ARM LOADING
WIND VELOCITY=100 MPH
ARM LENGTHS 25' TO 45')
 NO SCALE
 RSP ES-7F DATED OCTOBER 5, 2007 SUPERCEDES RSP ES-7F DATED NOVEMBER 17, 2006 AND STANDARD PLAN ES-7F DATED MAY 1, 2006 - PAGE 442 OF THE STANDARD PLANS BOOK DATED MAY 2006.

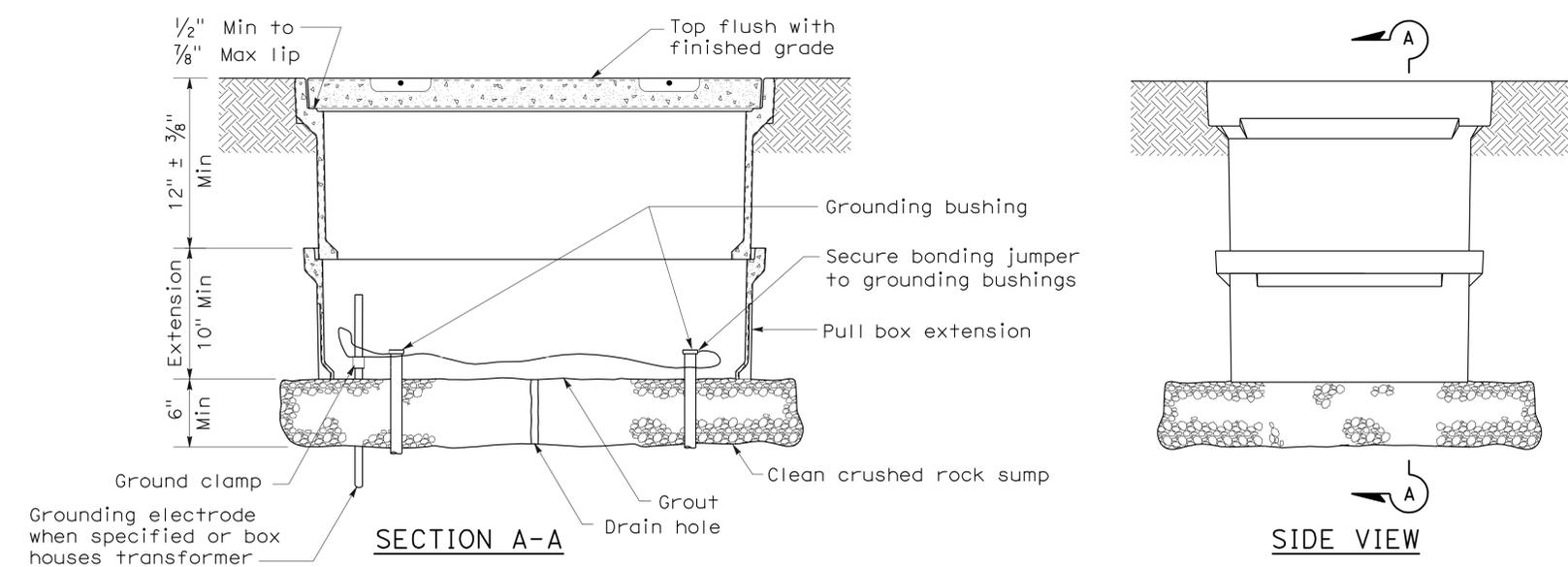
□ Indicates arm length to be used unless otherwise noted on plans.

2006 REVISED STANDARD PLAN RSP ES-7F

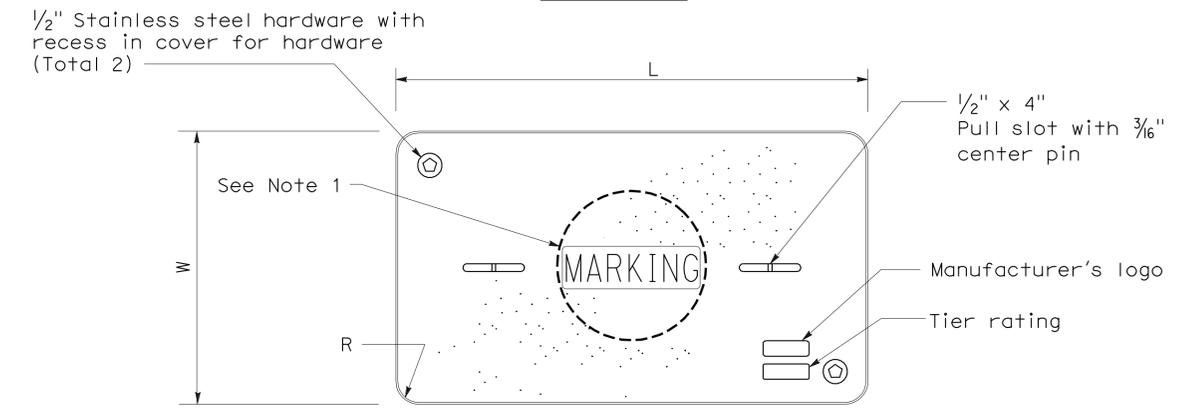
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	695	760

Jeffery G. McRae
 REGISTERED ELECTRICAL ENGINEER
 January 20, 2012
 PLANS APPROVAL DATE
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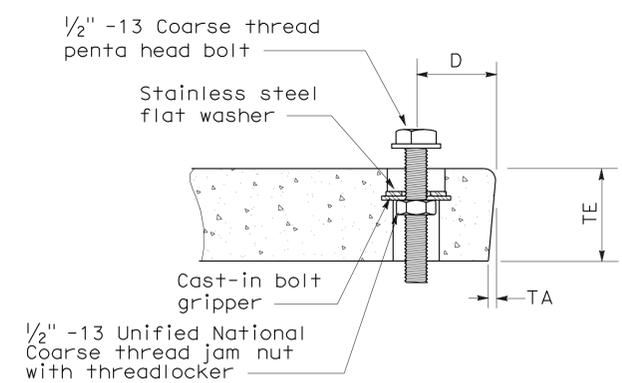
To accompany plans dated 4-16-12



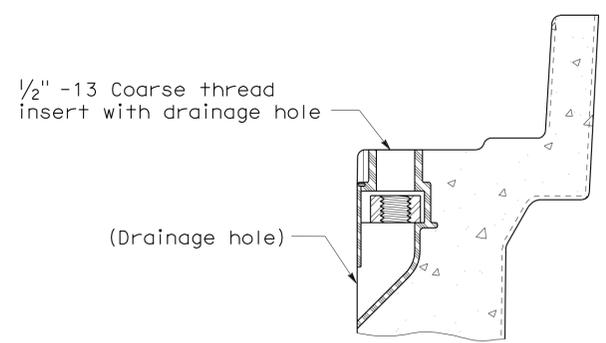
INSTALLATION DETAILS
DETAIL A



COVER TOP VIEW



TYPICAL COVER CAPTIVE BOLT
(Or similar)



TYPICAL THREADED INSERT
(Or similar)

NOTES ON PULL BOXES:

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

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

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

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

2006 NEW STANDARD PLAN NSP ES-8A

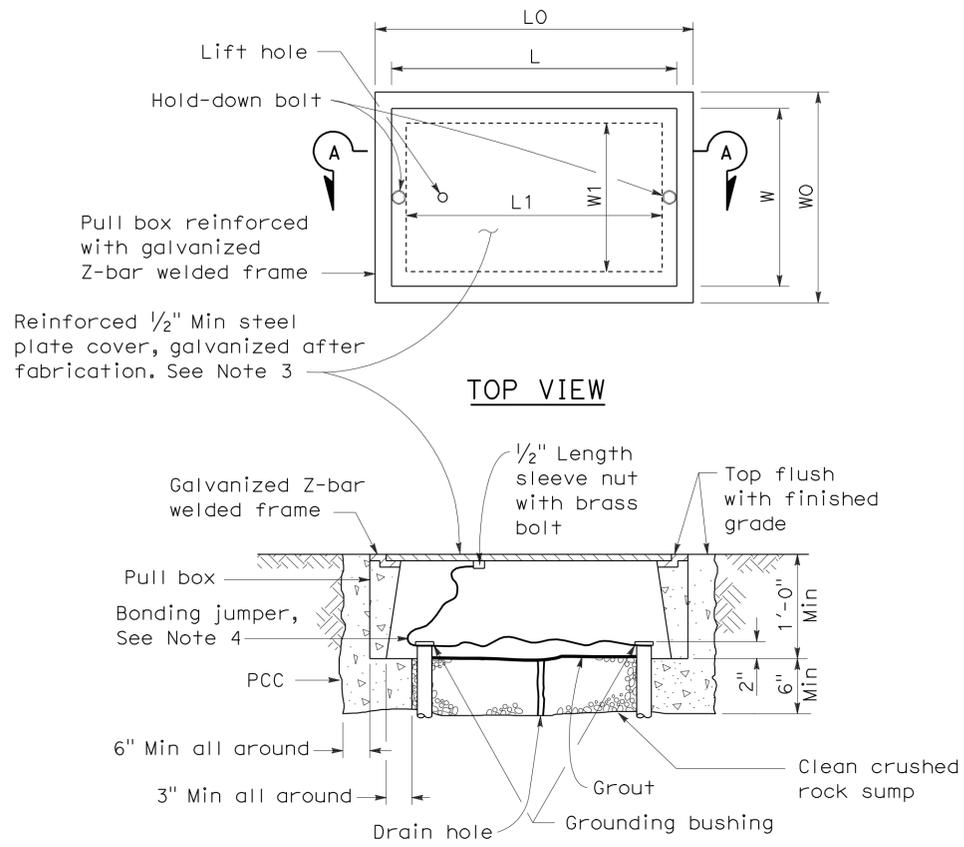
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	696	760

Jeffery G. McRae
 REGISTERED ELECTRICAL ENGINEER
 January 20, 2012
 PLANS APPROVAL DATE

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To accompany plans dated 4-16-12

2006 NEW STANDARD PLAN NSP ES-8B



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

NOTES ON PULL BOXES:

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

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

* Excluding conduit web ** Top dimension

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

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

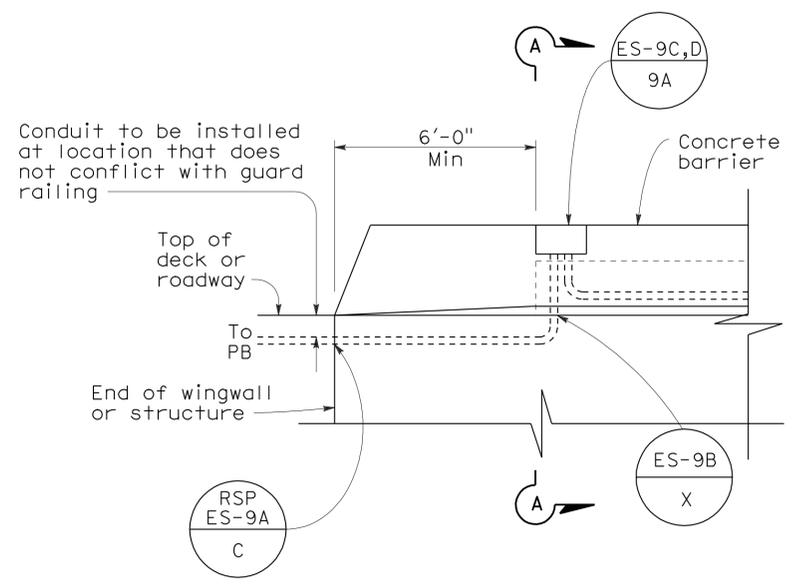
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	697	760

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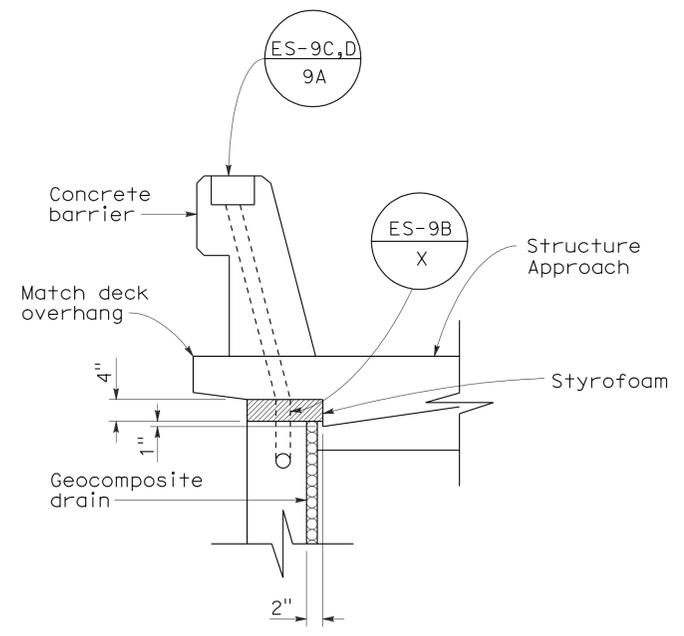
REGISTERED PROFESSIONAL ENGINEER
 Jeffrey G. McRae
 No. E14512
 Exp. 6-30-08
 ELECTRICAL
 STATE OF CALIFORNIA

To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP ES-9A

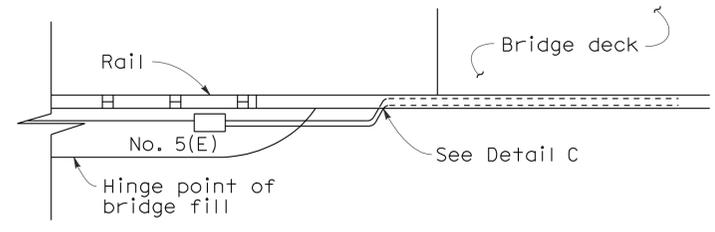


SIDEVIEW

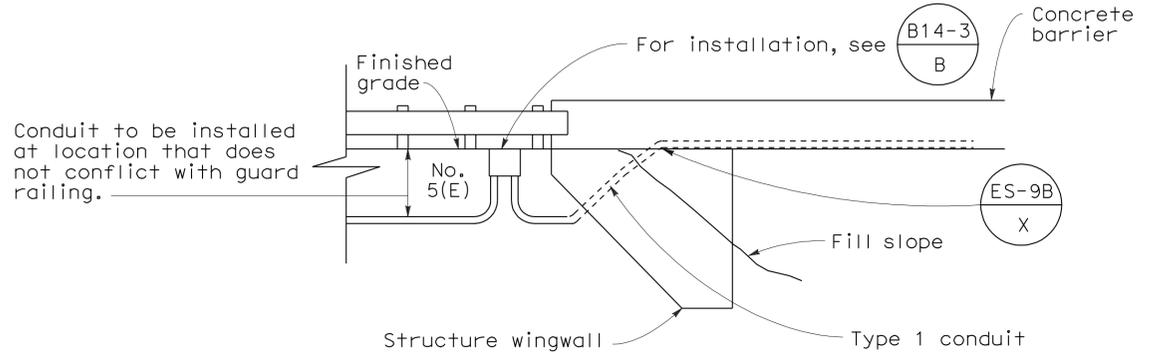


SECTION A-A

**DETAIL A
CONDUIT TERMINATION**

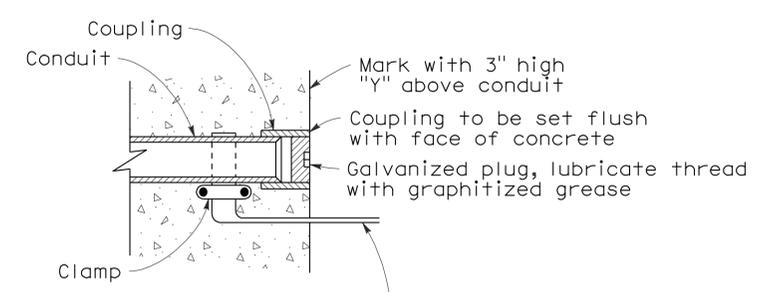


TOP VIEW



**SIDE VIEW
DETAIL I**

CONDUIT TERMINATION



DETAIL C

CONDUIT TERMINATION

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

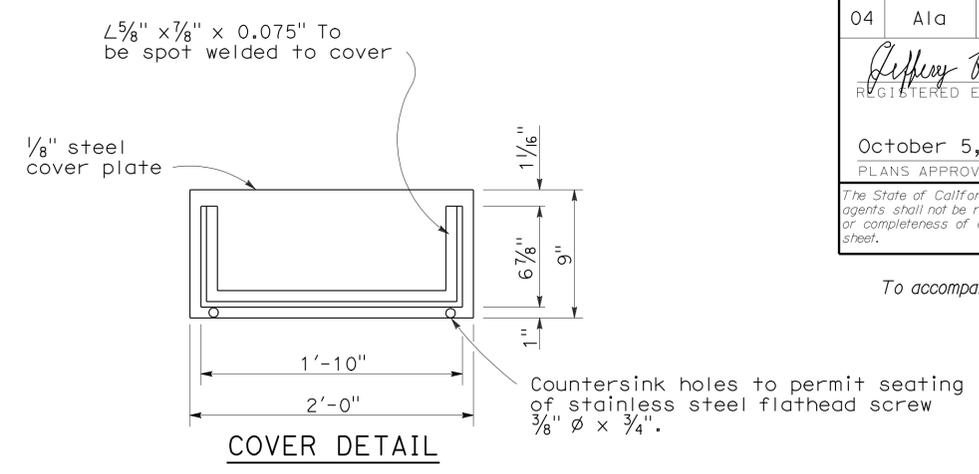
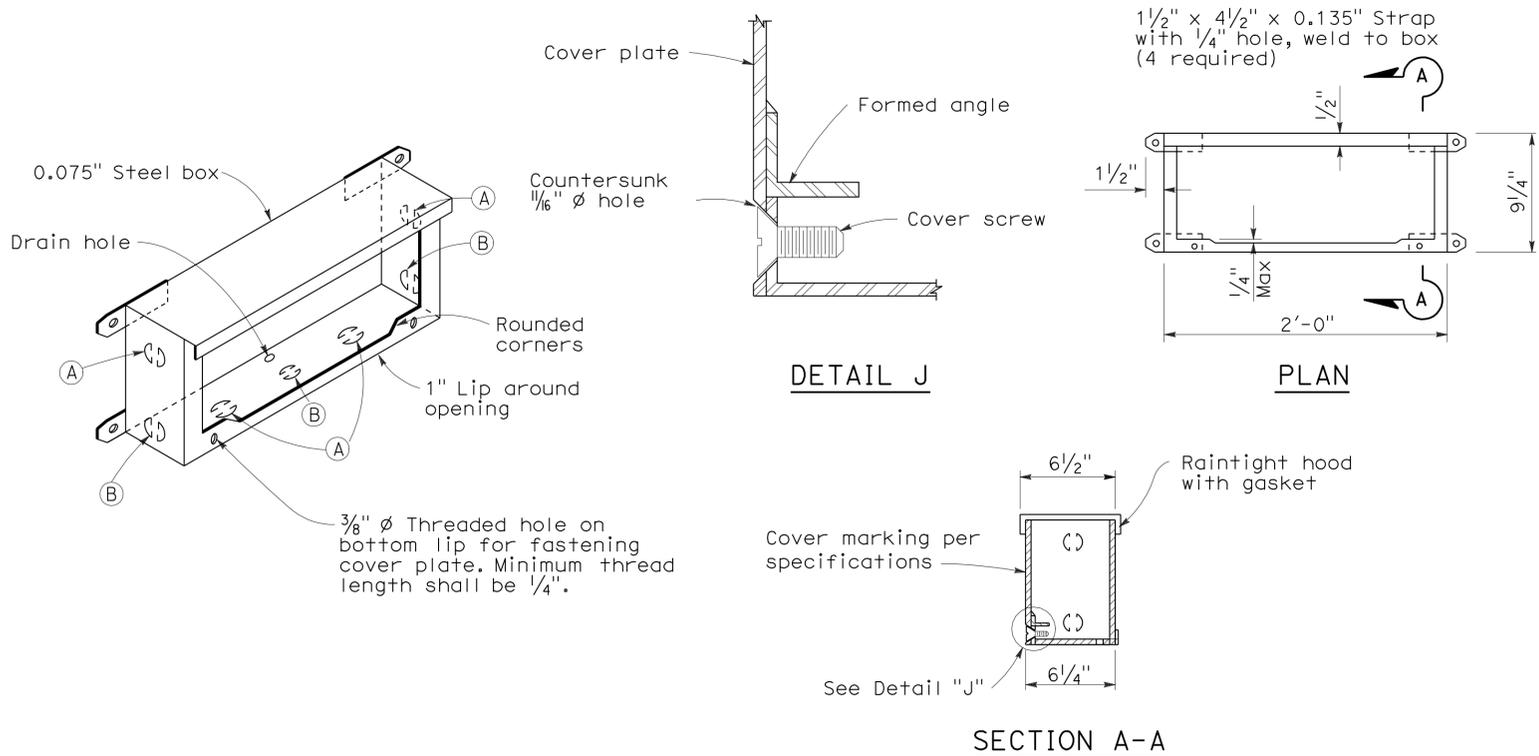
REVISED STANDARD PLAN RSP ES-9A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	698	760

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

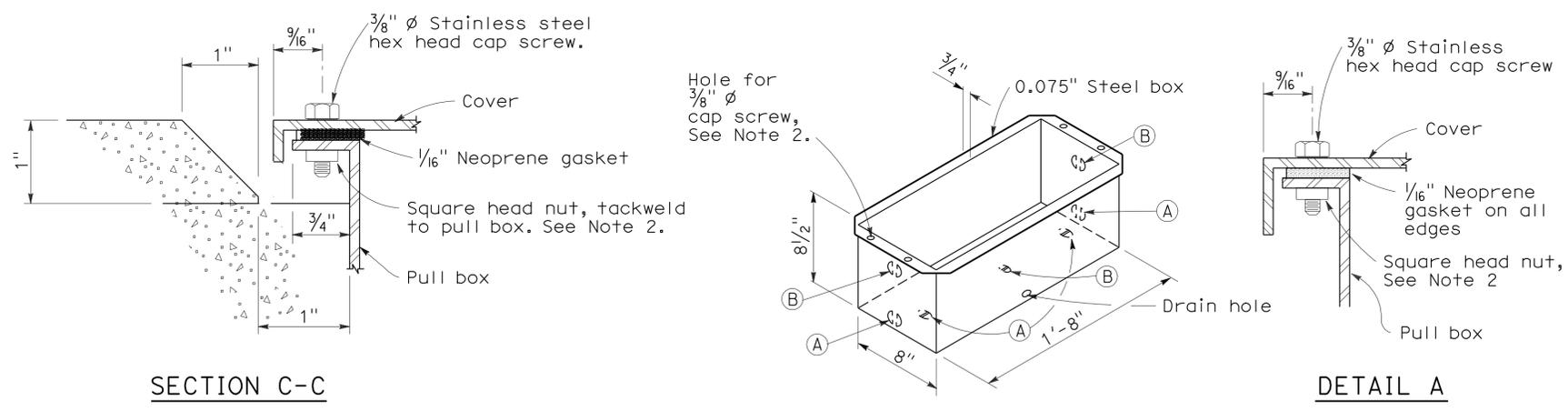
October 5, 2007
 PLANS APPROVAL DATE

To accompany plans dated 4-16-12



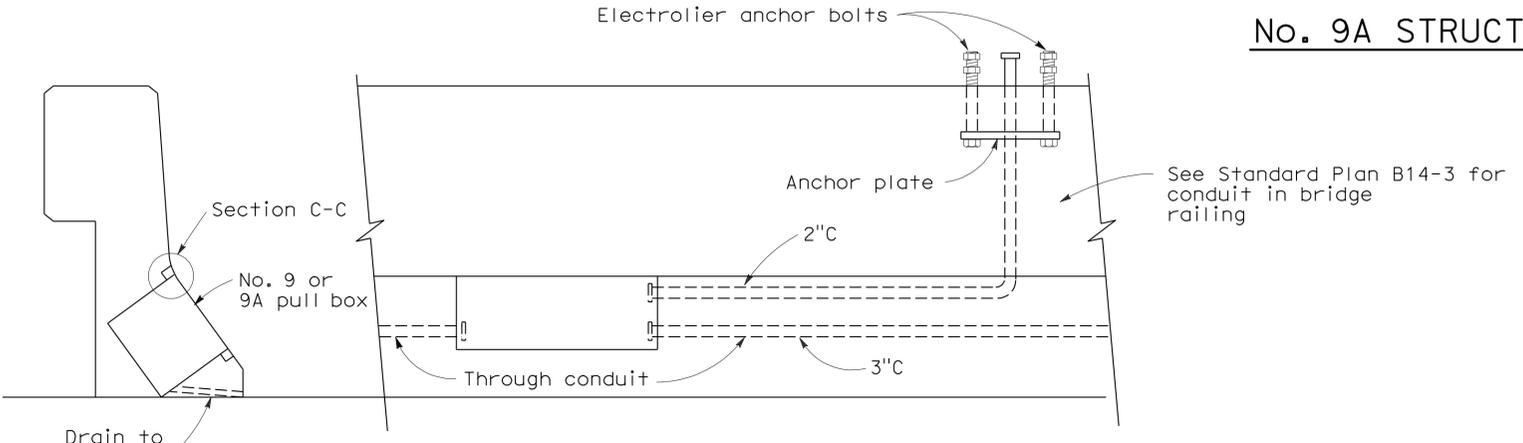
INSTALLATION NOTE:
 Box shall be parallel to top of railing. Close cover box during pouring with 1/4" plywood of sufficient size to provide 1:1 chamfer on 3 sides of cover. Upper edge of plywood shall fit against lower edge of raintight hood.

No. 9 STRUCTURE PULL BOX



- NOTES:** No. 9 and 9A Pull Box
- Corner joints shall be lapped and secured by spot welding or riveting.
 - Where cap screws are used to attach cover to box, either of the following methods of providing adequate threading may be used:
 - Tack weld square nut to bottom of flange (Total 4), or
 - Tack weld a 1/4" x 5/8" x 8" bar beneath flange (Total 2).
 - Pound knockouts flat after punching.
 - Multiple size knockouts shall not be permitted.
 - Pull box covers shall be marked as shown on Standard Plan ES-8.

No. 9A STRUCTURE PULL BOX



INSTALLATION IN SLOPING PARAPETS

For reinforcement in area of electrolier, see railing sheets. For electrolier anchor bolts, see Standard Plan ES-6B.

- KNOCKOUT SCHEDULE**
No. 9 AND 9A PULL BOX
- (A) 2"C, 1 each end, 2 on bottom.
 - (B) 3"C, 1 each end, 1 on bottom.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

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

NO SCALE
 RSP ES-9C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-9C
 DATED MAY 1, 2006 - PAGE 456 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP ES-9C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	22.6/24.0	699	760

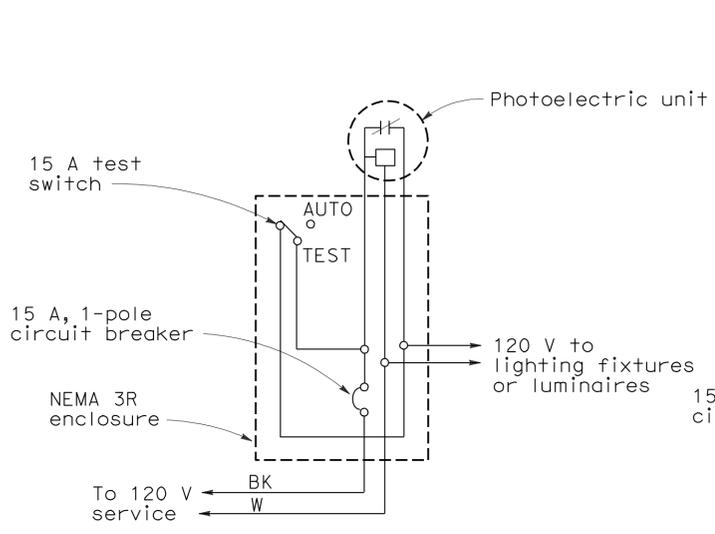
Jeffery G. McRae
 REGISTERED ELECTRICAL ENGINEER
 October 5, 2007
 PLANS APPROVAL DATE
 Jeffery G. McRae
 No. E14512
 Exp. 6-30-08
 ELECTRICAL
 STATE OF CALIFORNIA

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To accompany plans dated 4-16-12

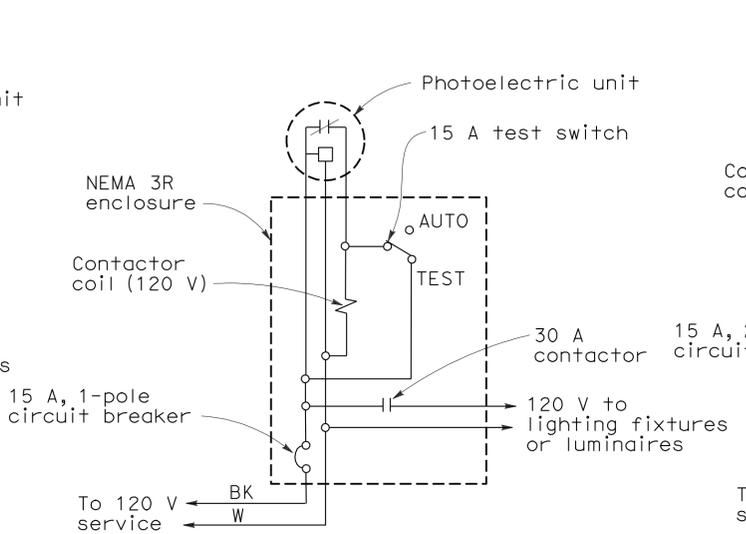
NOTES: (FOR LIGHTING AND SIGN ILLUMINATION CONTROL)

1. The ballast voltages of lighting fixtures and luminaires shall match line service voltages.
2. Voltage rating of photoelectric controls shall conform to the service voltage indicated on the plans.
3. Terminal strip shall be provided for wiring to fixtures.
4. Type SC1A, SC2A, SC3A controls are similar to Types SC1, SC2 and SC3 controls respectively except test switch and wiring are not required.



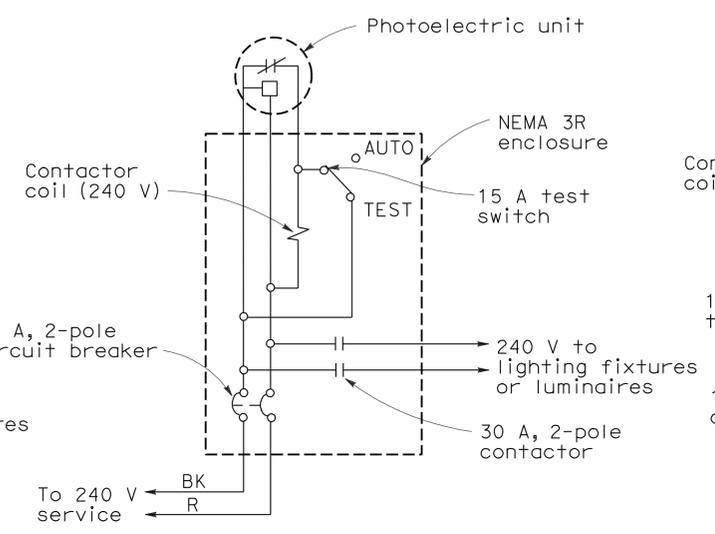
TYPE LC1 CONTROL

For 120 V unswitched circuit with no more than 800 W load.



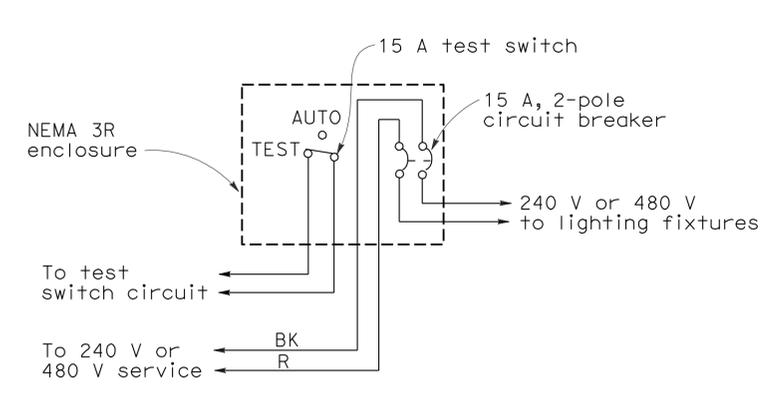
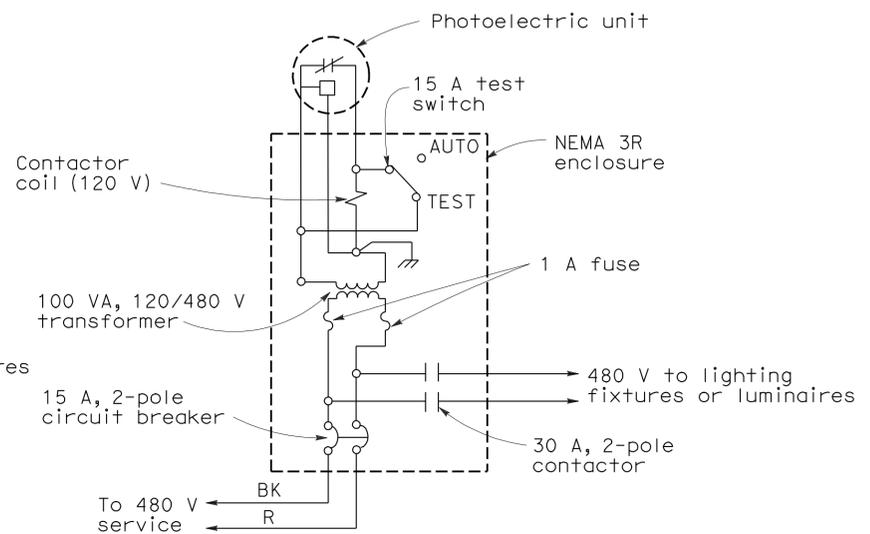
TYPE LC2 CONTROL

For 120 V unswitched circuit



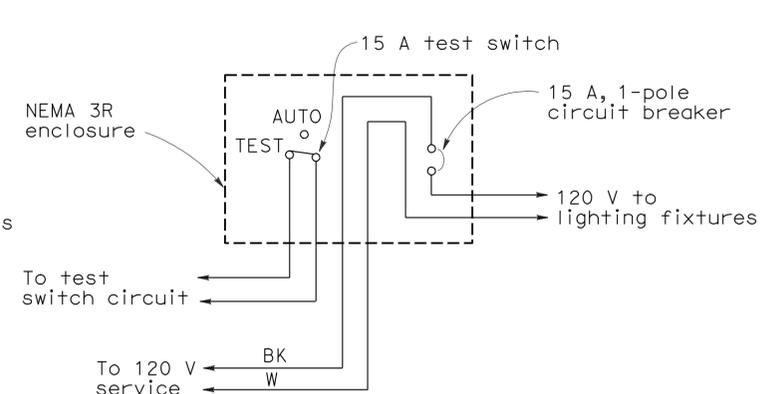
TYPE LC3 CONTROL

For 240 V and 480 V unswitched circuits



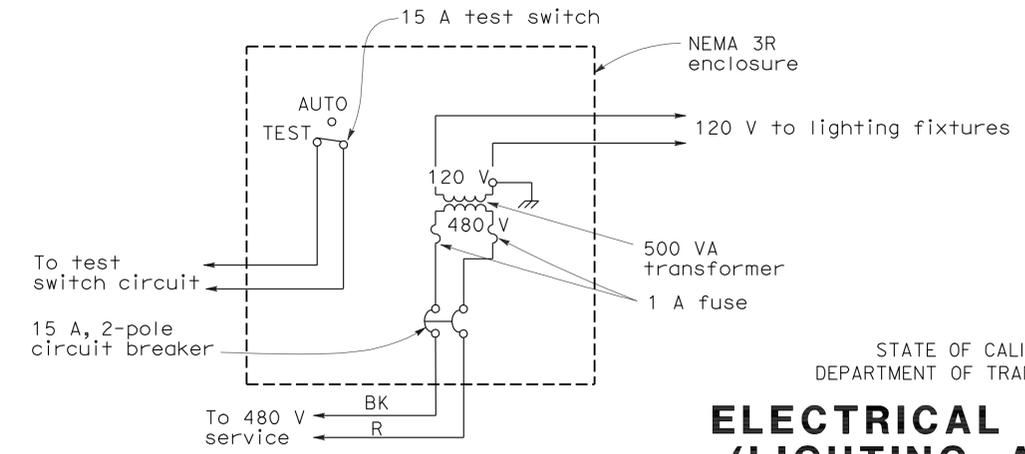
TYPE SC1 CONTROL

For 240 V or 480 V switched circuit, see Note 4 for Type SC1A



TYPE SC2 CONTROL

For 120 V switched circuit, see Note 4 for Type SC2A



TYPE SC3 CONTROL

For 480 V switched sign circuit, see Note 4 for Type SC3A

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
 (LIGHTING AND SIGN
 ILLUMINATION CONTROL)**
 NO SCALE

RSP ES-15D DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-15D DATED MAY 1, 2006 - PAGE 472 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-15D

2006 REVISED STANDARD PLAN RSP ES-15D

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	880	22.6/24.0	700	760

Mahwash Harms 12/1/11
REGISTERED STRUCTURAL ENGINEER DATE

4-16-12
PLANS APPROVAL DATE

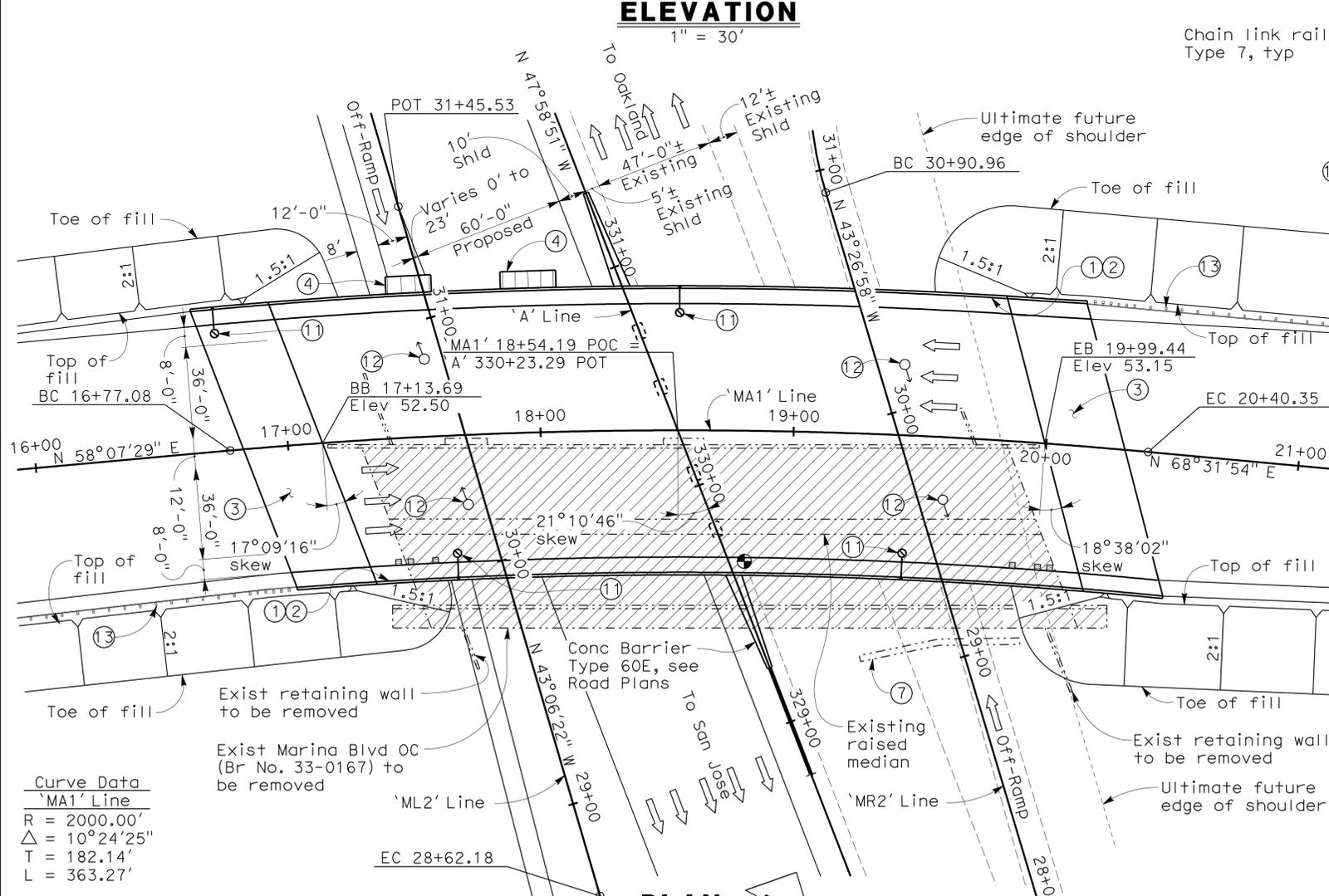
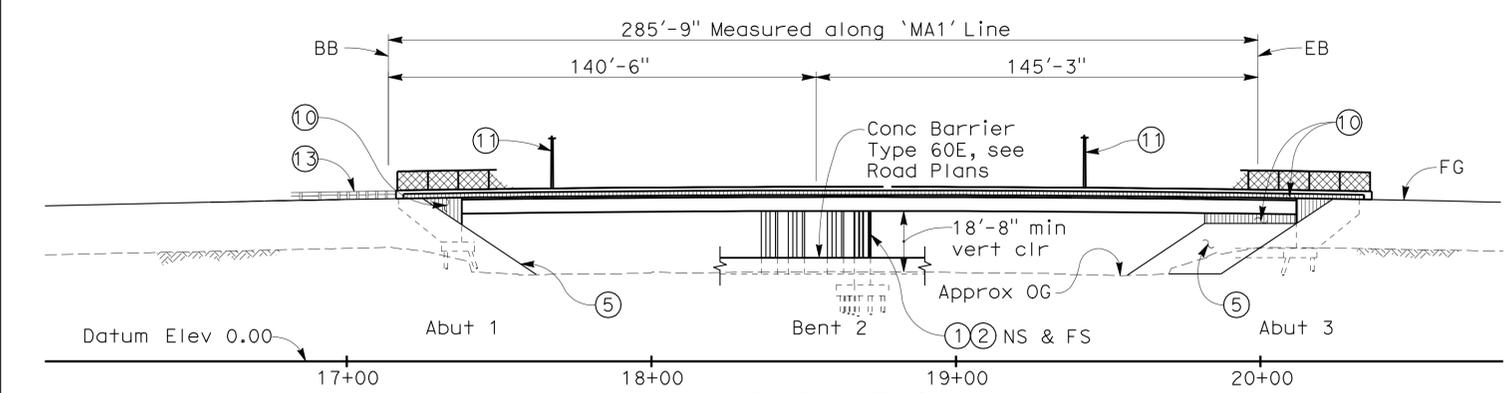
No. 2639
Exp. 12/31/12

REGISTERED PROFESSIONAL ENGINEER
MAHWASH M. HARMS
STRUCTURAL
STATE OF CALIFORNIA

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ALAMEDA COUNTY TRANSPORTATION COMMISSION
1333 BROADWAY, SUITE 220
OAKLAND, CA 94612

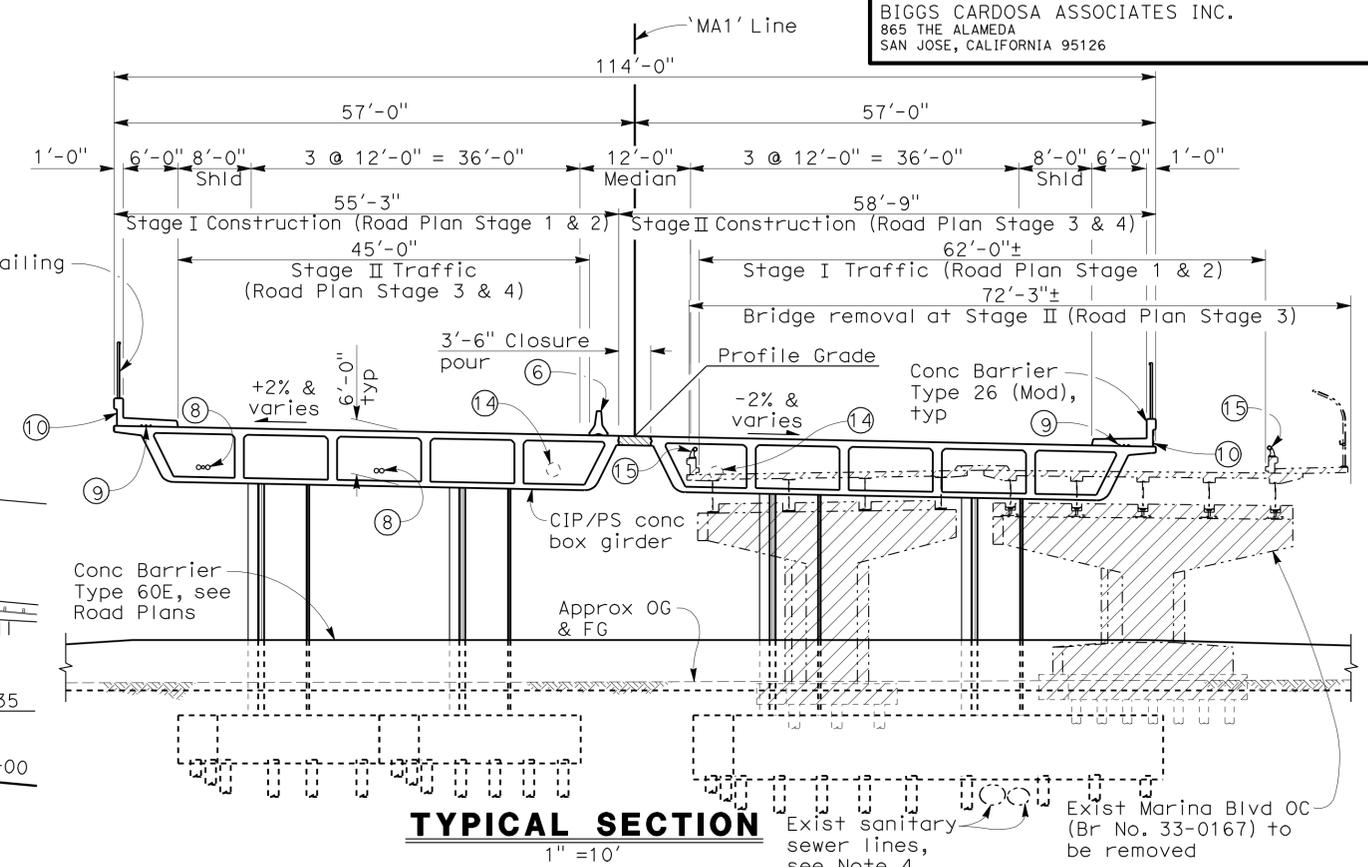
BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126



PLAN
1" = 30'

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

- LEGEND:**
- Indicates Point of Minimum Vertical Clearance
 - Indicates Existing Structure
 - ➔ Indicates direction of travel
 - Indicates Deck Drain Type D-1
 - ▨ Indicates existing structure to be removed
 - ▩ Indicates closure pour



- NOTES:**
- ① Paint Bridge Name 'Marina Blvd OC'
 - ② Paint Bridge Number and Year Completed
 - ③ Approach Slab Type N(30S)
 - ④ Bridge Mounted Sign, see 'SIGN DETAILS No. 1' & 'SIGN DETAILS No. 2' sheets for mounting details and Road Plans for location and Sign Panel.
 - ⑤ Slope Paving
 - ⑥ Temporary Railing Type K (anchored), see Road Plans
 - ⑦ Existing sign structure to remain
 - ⑧ Electrical conduits, see Road Plans
 - ⑨ Lighting and signal cable conduits, see Road Plans
 - ⑩ Fractured Fin Texture
 - ⑪ Electrolier on barrier, see Electrical Plans
 - ⑫ Soffit Lighting, see Electrical Plans
 - ⑬ Metal Beam Guard Railing, see Road Plans
 - ⑭ 18" dia future utility opening
 - ⑮ Salvage metal bridge railing

- NOTES:**
1. For Index to Bridge Plans, Quantities & General Notes, see 'INDEX TO BRIDGE PLANS' sheet.
 2. For Pile Data Table, see 'FOUNDIAON PLAN' sheet.
 3. For Bench Mark & Datum, see 'FOUNDATION PLAN' sheet.
 4. Exist sanitary sewer lines to be protected in place. Portion of exist sanitary sewer lines to be removed and replaced underneath bent ftg, see Road Plans.
 5. For Quantities, see "INDEX TO PLAN" sheet.

DESIGN OVERSIGHT Yiwei Hu 12/29/11 SIGN OFF DATE	DESIGN BY G. KENNING	CHECKED T. SWENSON	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE
DETAILS BY Y. LIN	CHECKED T. SWENSON	LAYOUT BY Y. LIN	CHECKED G. KENNING	PLANS AND SPECS COMPARED T. SWENSON
QUANTITIES BY J. GERLACH	CHECKED J. YIP	SPECIFICATIONS BY J. VISAYA		

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. HARMS
PROJECT ENGINEER

BRIDGE NO.
33-0735

POST MILES
22.84

MARINA BLVD OC (REPLACE)
GENERAL PLAN

UNIT:
PROJECT NUMBER & PHASE:

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

5/2/09	9/23/09	11/16/09	5/24/10	6/11/10	2/1/11	12/1/11
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SHEET 1 OF 30