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STRUCTURE PLANS

59-61 BEACH BLVD SEPARATION Br No. 55-0303

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

STATE OF CALIFORNIA ACHSNH-P091(135)E
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN ORANGE COUNTY
IN BUENA PARK
FROM BEACH BOULEVARD UNDERCROSSING
TO STANTON AVENUE UNDERCROSSING

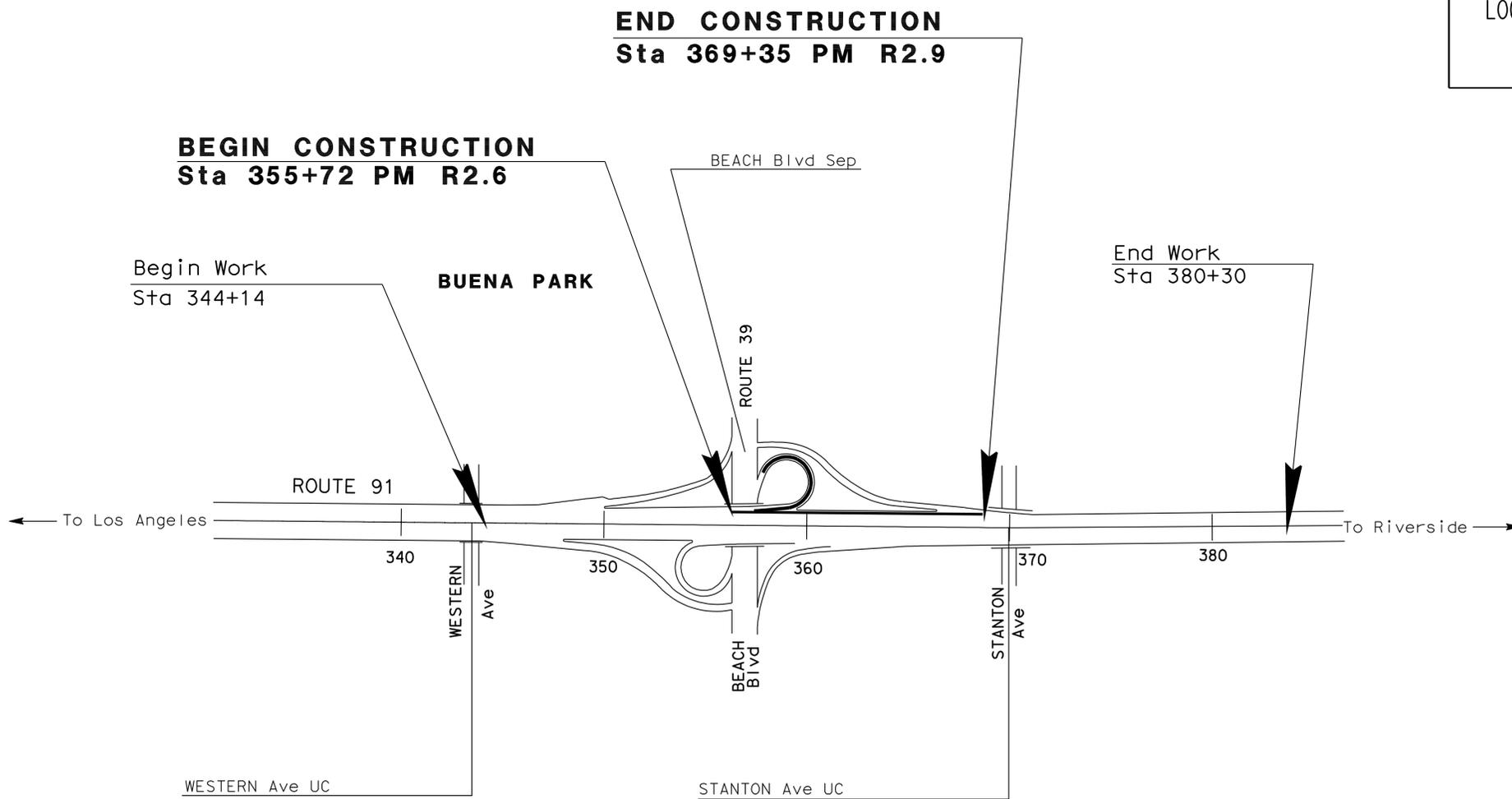
TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	1	61





LOCATION MAP



NO SCALE

PROJECT MANAGER	LEO CHEN
DESIGN ENGINEER	DARREN LEE

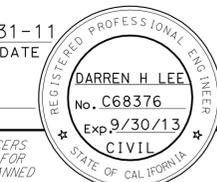
THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

 12-31-11
 PROJECT ENGINEER DATE
 REGISTERED CIVIL ENGINEER
February 21, 2012
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
DARREN H LEE
 No. C68376
 Exp. 9/30/13
 CIVIL
 STATE OF CALIFORNIA

CONTRACT No.	12-OK5204
PROJECT ID	1200000353

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	2	61

	
REGISTERED CIVIL ENGINEER	DATE 12-31-11
PLANS APPROVAL DATE 2-21-12	
	
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>	

NOTES:

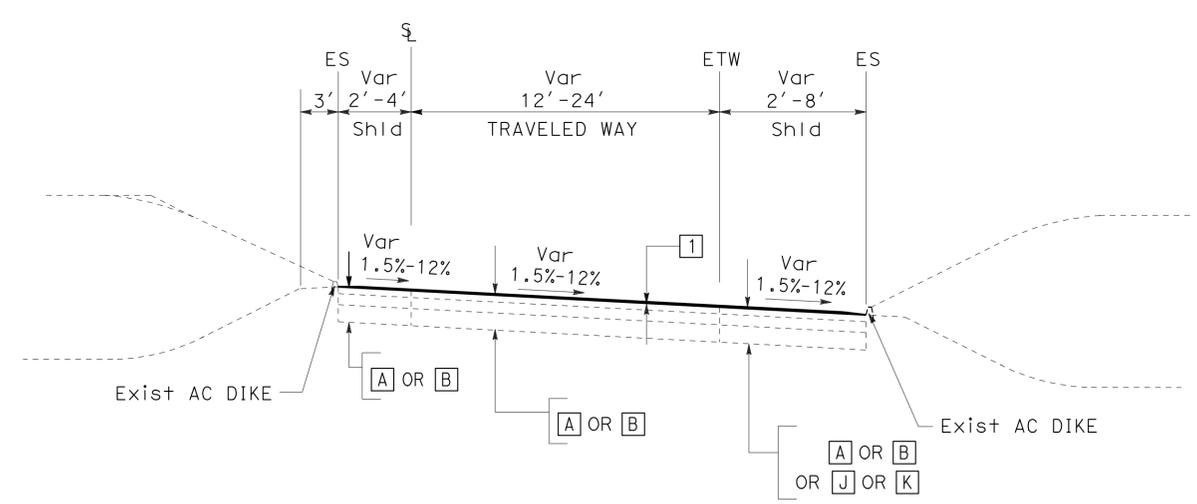
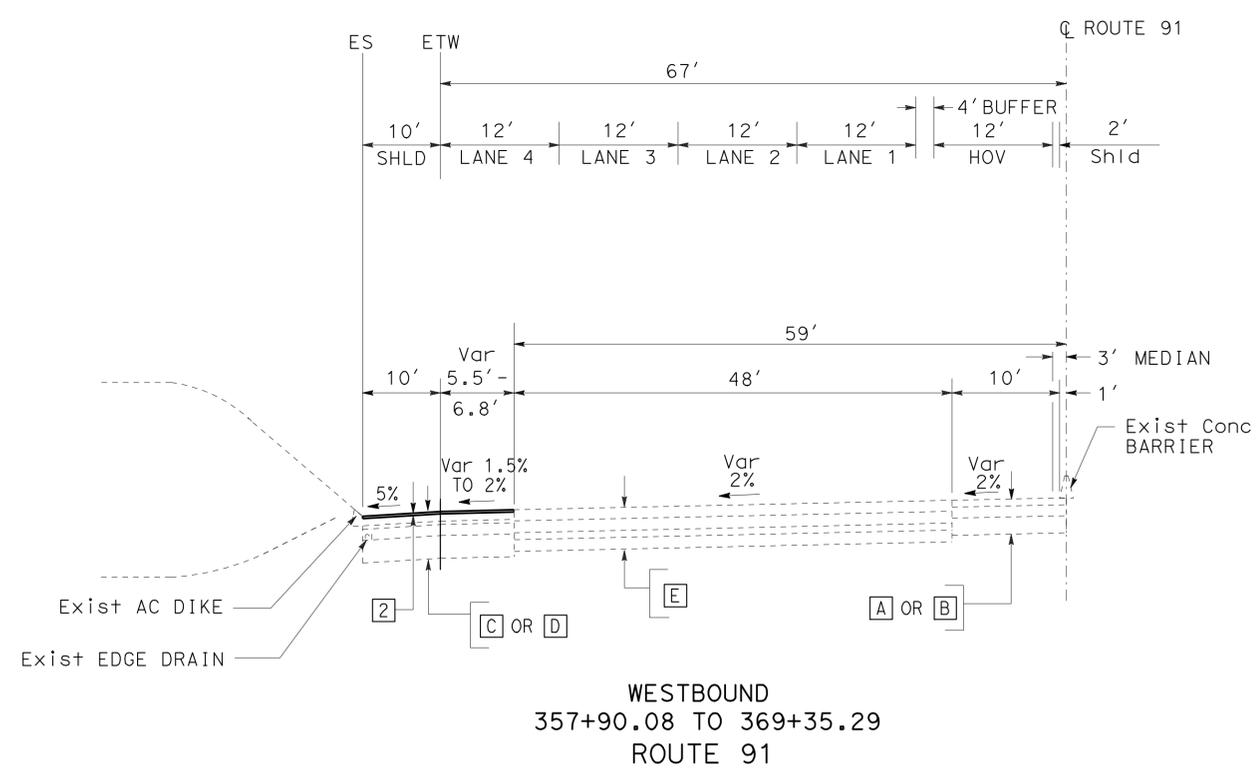
- DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO THE TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS. STRUCTURAL SECTION LIMITS ARE INDICATED ON LAYOUTS.
- SUPERELEVATIONS AS SHOWN OR AS DIRECTED BY THE ENGINEER.
- EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THIS SHEET.

TYPICAL STRUCTURAL SECTIONS:

- 0.10' HOT MIX ASPHALT (OPEN GRADED)
- 0.10' HOT MIX ASPHALT (OPEN GRADED)
0.15' RUBBERIZED HOT MIX ASPHALT (GAP GRADED)
0.25' COLD PLANE AC Pvm+

EXISTING STRUCTURAL SECTIONS:

- | | | |
|--|--|--|
| A 0.50' AC (TYPE B)
0.95' CI 2 AB | D 0.65' AC (TYPE B)
0.25' ATPB
0.95' CI 2 AB
1.50' CI 4 AS | J 0.30' AC (TYPE B)
0.50' CI 2 AB
0.75' CI 4 AS |
| B 0.50' AC (TYPE B)
0.95' CI 2 AB
1.10' CI 4 AS | E 0.67' PCC
0.67' UB
0.33' CTS
0.67' SMT | K 0.30' AC (TYPE B)
0.50' CL 2 AB
0.35' CL 4 AS |
| C 0.65' AC (TYPE B)
0.25' ATPB
0.95' CI 2 AB | | F 0.60' AC (TYPE B)
0.70' LCB
0.35' CI 3 AB |



TYPICAL CROSS SECTIONS

NO SCALE **X-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN BRANCH D
 FUNCTIONAL SUPERVISOR ANDREW OSHRIN
 CALCULATED/DESIGNED BY CHECKED BY
 REVISED BY DATE REVISED
 USERNAME => s128843
 DGN FILE => 1200000353ca001.dgn



LAST REVISION DATE PLOTTED => 22-FEB-2012
 12-20-11 TIME PLOTTED => 1:3:47

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	4	61

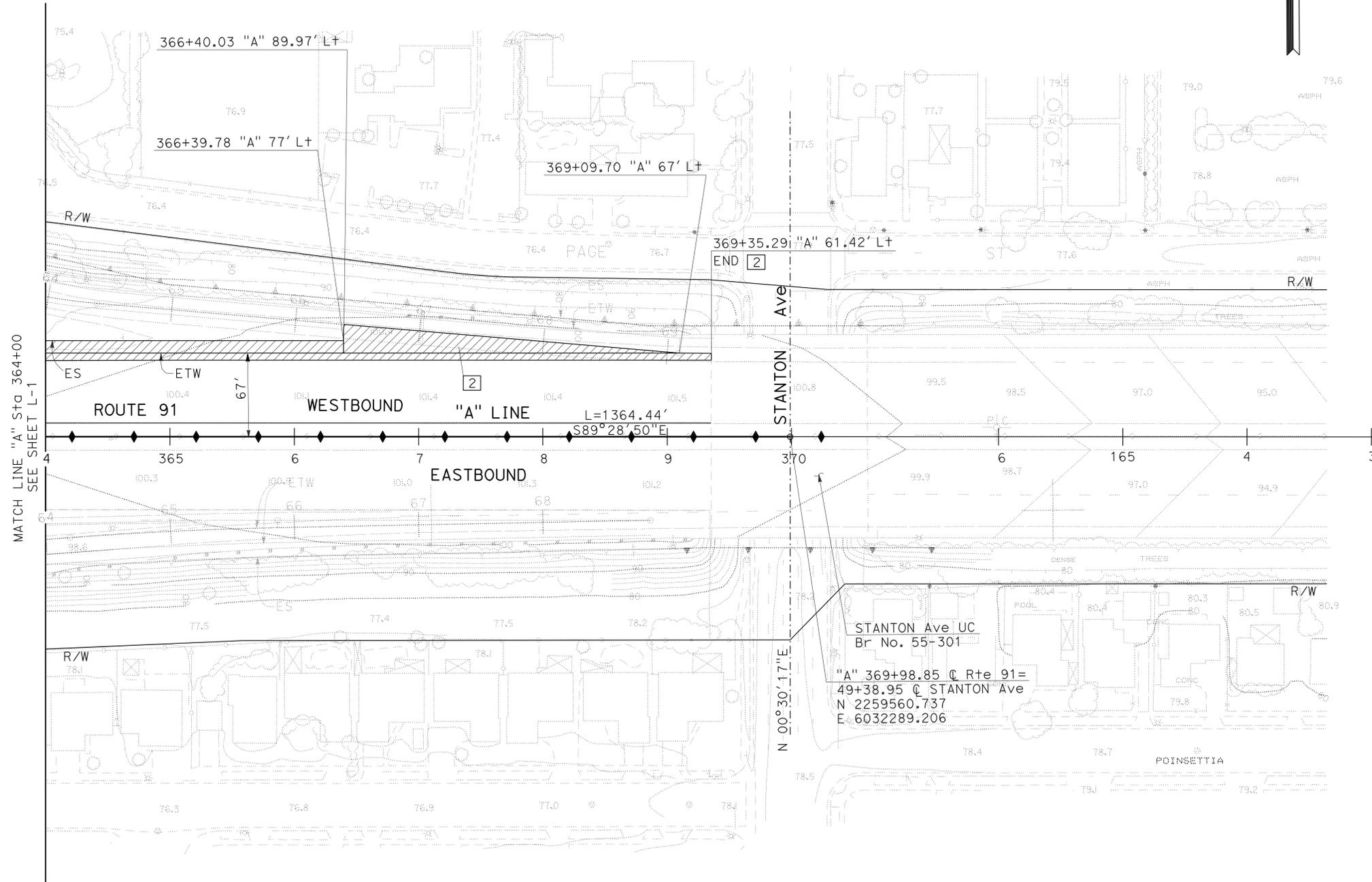
<i>Darrah</i> 12-31-11	REGISTERED CIVIL ENGINEER DATE
2-21-12	PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
DARREN H LEE
No. C68376
Exp. 9/30/13
CIVIL
STATE OF CALIFORNIA

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

NOTE:

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



STANTON Ave UC
Br No. 55-301
"A" 369+98.85 C Rte 91=
49+38.95 C STANTON Ave
N 2259560.737
E 6032289.206

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN BRANCH D
FUNCTIONAL SUPERVISOR ANDREW OSHRIN
CALCULATED/DESIGNED BY CHECKED BY
REVISOR BY DATE REVISED

LAYOUT
SCALE: 1" = 50'
L-2

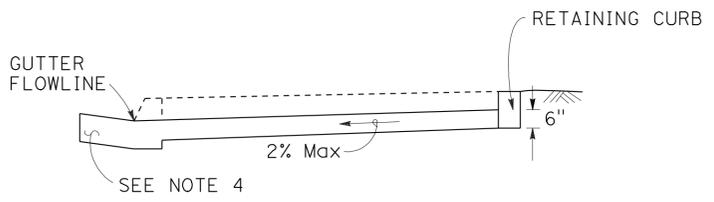
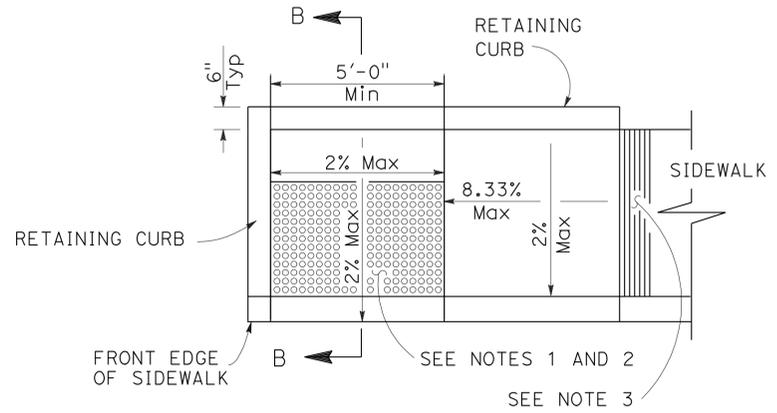
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	5	61

12-31-11
 REGISTERED CIVIL ENGINEER DATE
 2-21-12
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 DARREN H LEE
 No. C68376
 Exp. 9/30/13
 CIVIL
 STATE OF CALIFORNIA

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 OR AGENTS SHALL NOT BE RESPONSIBLE FOR
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 COPIES OF THIS PLAN SHEET.



NOTES:

1. THE EDGE OF THE DETECTABLE WARNING SURFACE NEAREST THE STREET SHALL BE BETWEEN 6" AND 8" FROM THE GUTTER FLOWLINE.
2. CURB RAMP 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.
3. 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 IN STANDARD PLAN RSP A88A.
4. 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.

CONSTRUCTION DETAILS

NO SCALE **C-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN BRANCH D
Caltrans	
FUNCTIONAL SUPERVISOR	ANDREW OSHRIN
CALCULATED/DESIGNED BY	CHECKED BY
REVISOR	DATE
REVISOR	DATE
REVISOR	DATE

LAST REVISION DATE PLOTTED => 22-FEB-2012
 12-20-11 TIME PLOTTED => 13:48

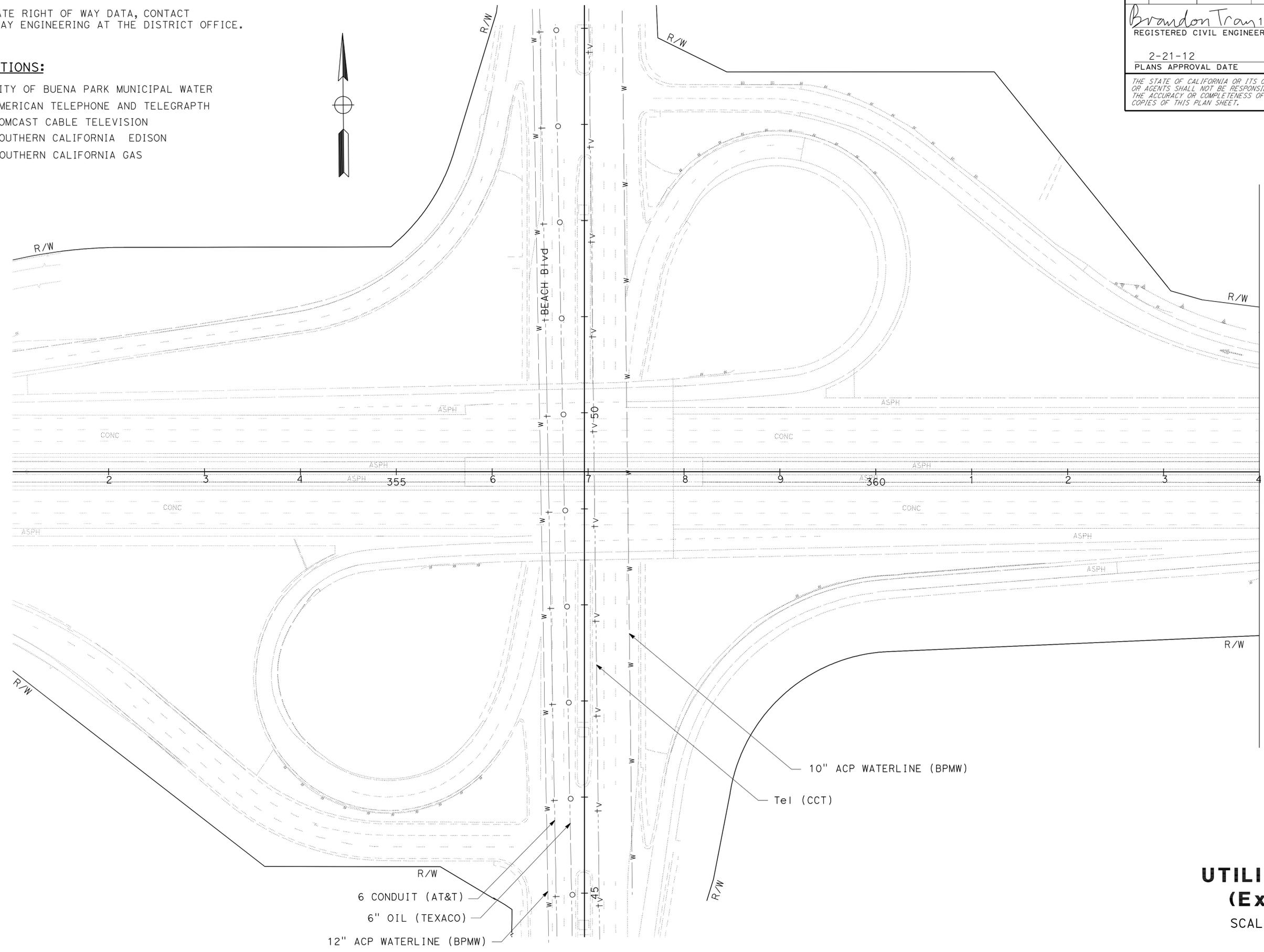
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	6	61

Brandon Tran 12-31-11
 REGISTERED CIVIL ENGINEER DATE
 2-21-12
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
 B. TRAN
 No. C58283
 Exp. 06/30/12
 CIVIL
 STATE OF CALIFORNIA

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

ABBREVIATIONS:
 BPMW CITY OF BUENA PARK MUNICIPAL WATER
 AT&T AMERICAN TELEPHONE AND TELEGRAPH
 CCT COMCAST CABLE TELEVISION
 SCE SOUTHERN CALIFORNIA EDISON
 SCG SOUTHERN CALIFORNIA GAS



MATCH LINE "A" 364+00
 SEE SHEET U-2

**UTILITY PLAN
 (Existing)**
 SCALE: 1" = 50'

APPROVED UTILITY INFORMATION ONLY

U-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN BRANCH B	FUNCTIONAL SUPERVISOR	CHRISTOPHER LE	CALCULATED/DESIGNED BY	CHECKED BY	BRANDON TRAN	CHRISTOPHER LE	REVISOR	DATE
Caltrans									

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	7	61

Brandon Tran 12-31-11
 REGISTERED CIVIL ENGINEER DATE
 2-21-12
 PLANS APPROVAL DATE

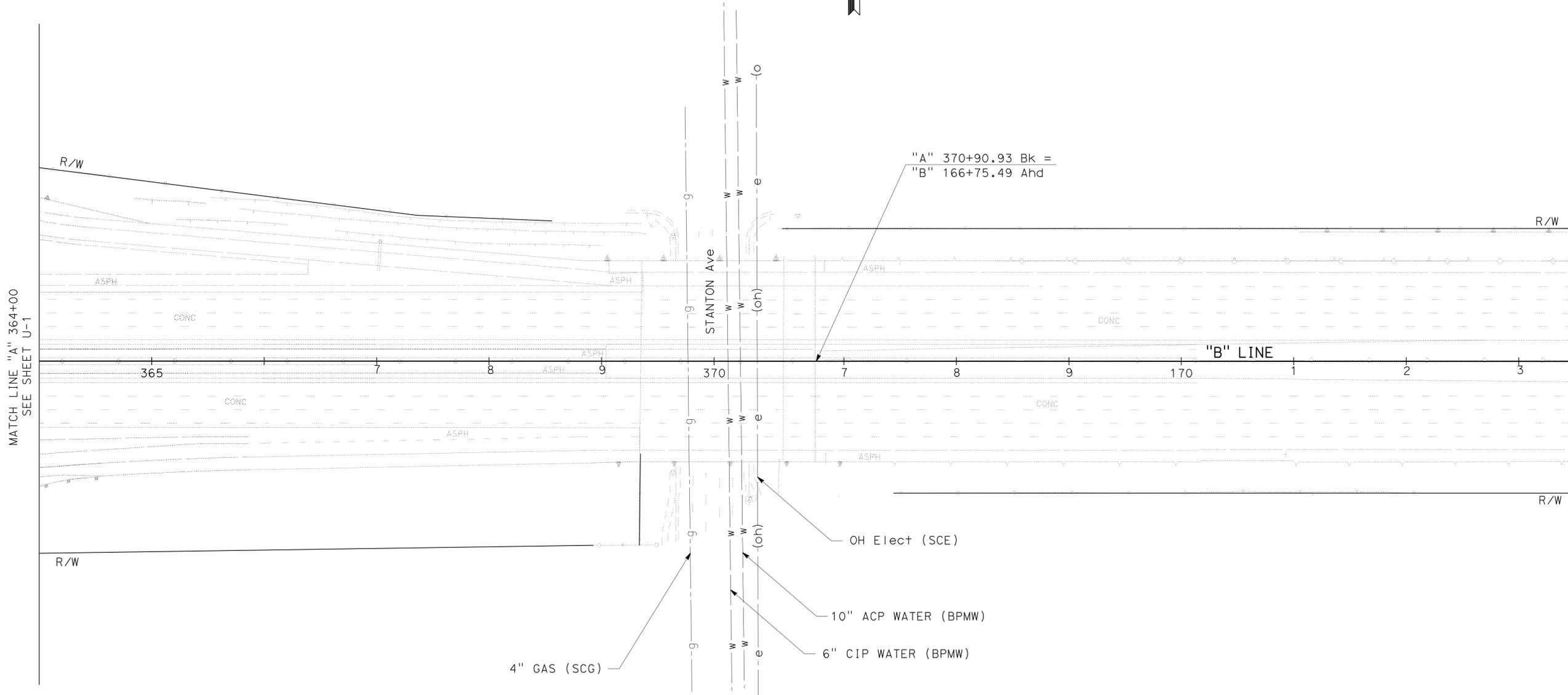
REGISTERED PROFESSIONAL ENGINEER
 B. TRAN
 No. C58283
 Exp. 06/30/12
 CIVIL
 STATE OF CALIFORNIA

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

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



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN BRANCH B	FUNCTIONAL SUPERVISOR	CHRISTOPHER LE	CALCULATED/DESIGNED BY	CHRISTOPHER LE	REVISOR BY	DATE
Caltrans				CHECKED BY		BRANDON TRAN	
						CHRISTOPHER LE	



**UTILITY PLAN
 (Existing)**
 SCALE: 1" = 50'

APPROVED UTILITY INFORMATION ONLY

U-2

LAST REVISION: 12-20-11 DATE PLOTTED => 04-APR-2012 TIME PLOTTED => 05:56

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	8	61

12-31-11
 REGISTERED CIVIL ENGINEER DATE

2-21-12
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 DARREN H LEE
 No. C68376
 Exp. 9/30/13
 CIVIL
 STATE OF CALIFORNIA

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

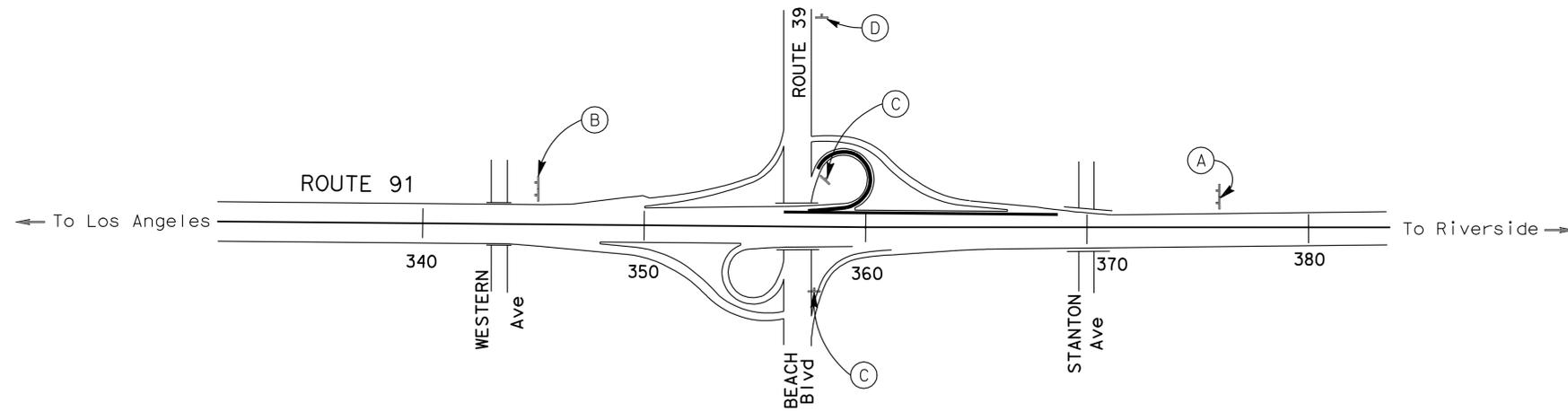
STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

SIGN No.	SIGN CODE	SIGN MESSAGE	PANEL SIZE	No. OF POST AND SIZE	No. OF SIGNS
(A)	W20-1	ROAD CONSTRUCTION AHEAD	72" x 72"	2-6" x 6"	1
(B)	G20-2	END CONSTRUCTION	60" x 24"	2-4" x 4"	1
(C)	W20-1	ROAD WORK AHEAD	48" x 48"	1-4" x 6"	2
(D)	G20-2	END ROAD WORK	36" x 18"	1-4" x 4"	1

NOTE: EXACT SIGN LOCATION TO BE DETERMINED BY THE ENGINEER.

LEGEND:

- (X) CONSTRUCTION AREA SIGN No.
- ↑ CONSTRUCTION AREA SIGN, 1-POST
- ↑↑ CONSTRUCTION AREA SIGN, 2-POST



CONSTRUCTION AREA SIGNS
NO SCALE
CS-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN BRANCH D
 FUNCTIONAL SUPERVISOR ANDREW OSHRIN
 CALCULATED/DESIGNED BY CHECKED BY
 REVISED BY DATE REVISED
 USERNAME => s128843
 DGN FILE => 12000003531a001.dgn

RELATIVE BORDER SCALE IS IN INCHES

UNIT 2995

PROJECT NUMBER & PHASE

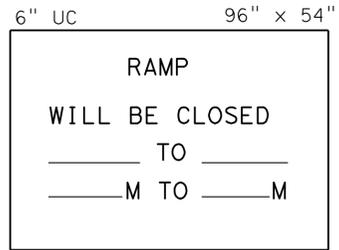
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LAST REVISION DATE PLOTTED => 22-FEB-2012
 12-20-11 TIME PLOTTED => 13:48

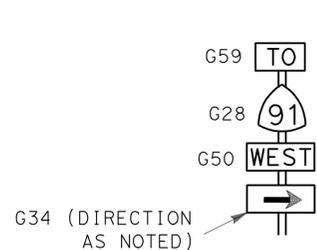
STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

SIGN No.	CODE	SIGN MESSAGE	PANEL SIZE	No. OF POST AND SIZE	No. OF SIGNS
1	SPECIAL	SEE SIGN ON RIGHT	96" x 54"	2-6" x 6"	1
2	G59	SEE SIGN ON RIGHT	18" x 12"	1-4" x 6"	7
	G28	SEE SIGN ON RIGHT	24" x 25"	1-4" x 6"	7
	G50	SEE SIGN ON RIGHT	21" x 9"	1-4" x 6"	7
	G34(*)	SEE SIGN ON RIGHT	21" x 15"	1-4" x 6"	7
3	SPECIAL	SEE SIGN ON RIGHT	72" x 72"	2-4" x 6"	3
	G50	SEE SIGN ON RIGHT	21" x 9"	2-4" x 6"	3

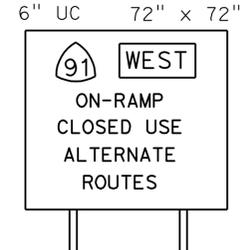
* DIRECTION AS NOTED ON PLAN



SIGN ①



SIGN ②



SIGN ③

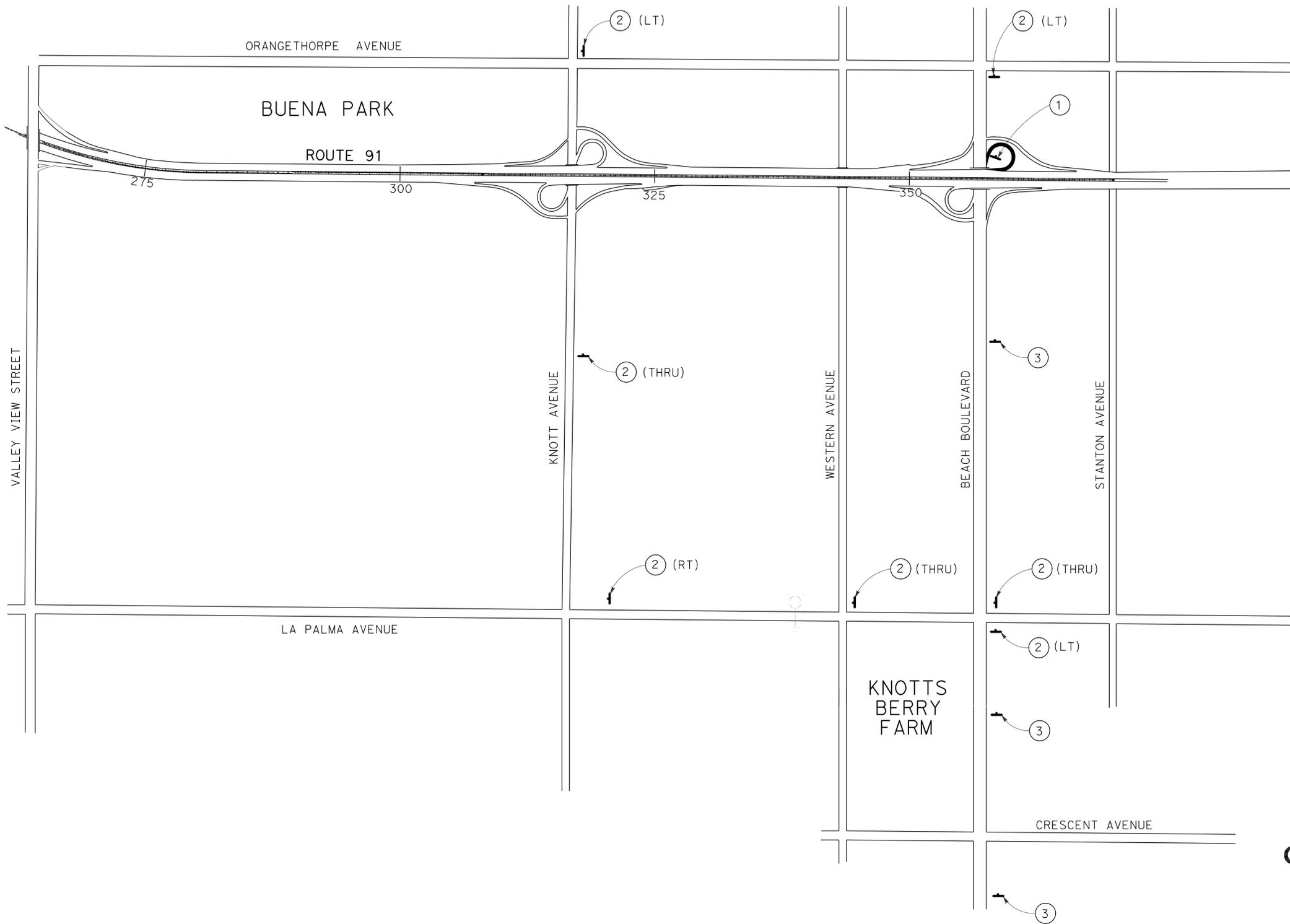
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	9	61

12-31-11
REGISTERED CIVIL ENGINEER DATE

2-21-12
PLANS APPROVAL DATE

DARREN H LEE
No. C68376
Exp. 9/30/13
CIVIL

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



CONSTRUCTION AREA SIGNS
NO SCALE
CS-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN BRANCH D

FUNCTIONAL SUPERVISOR: ANDREW OSHRIN

REVISOR: [blank] DATE: [blank]

CALCULATED/DESIGNED BY: [blank] CHECKED BY: [blank]

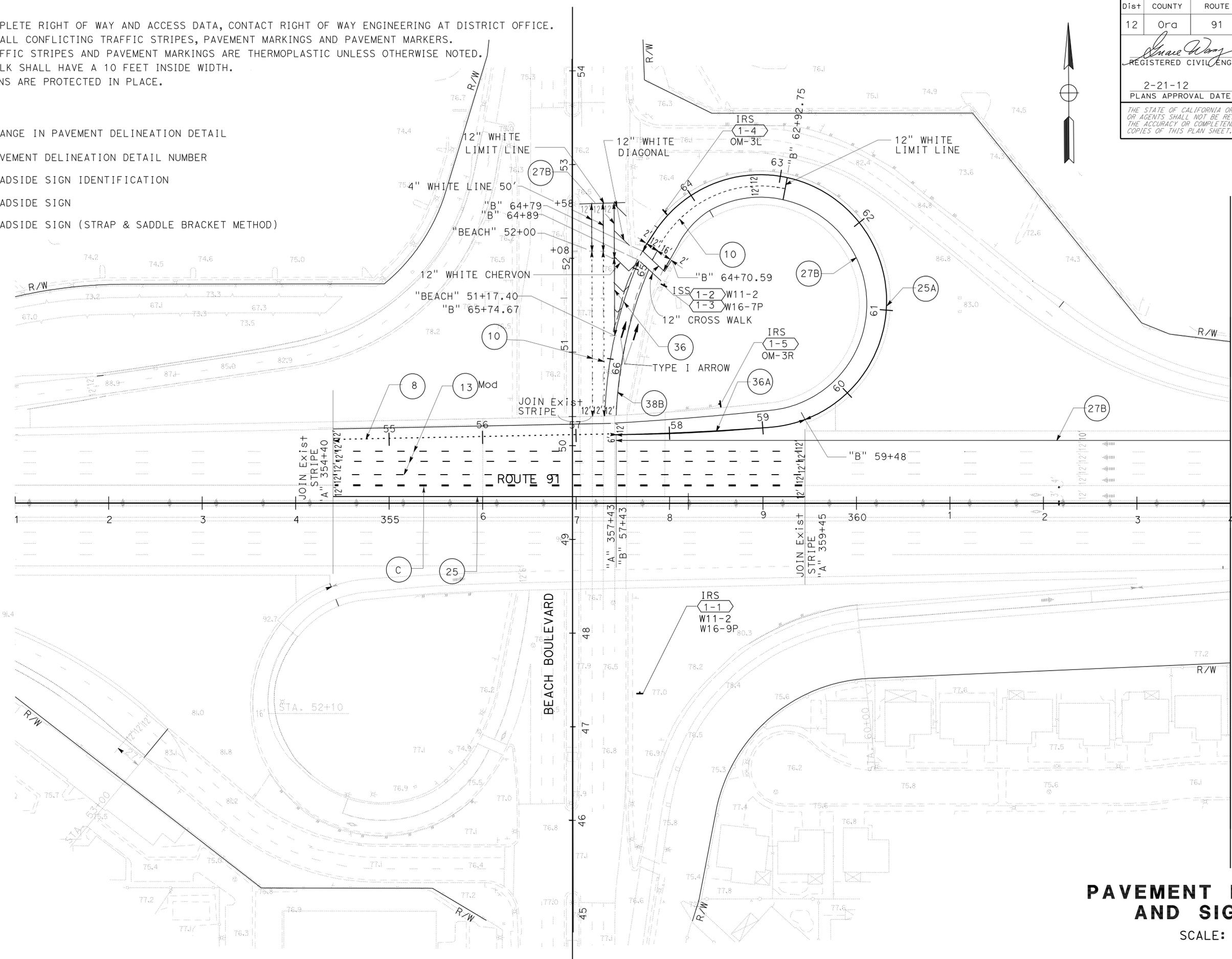
LAST REVISION DATE PLOTTED => 22-FEB-2012 12-20-11 TIME PLOTTED => 13:48

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans TRAFFIC DESIGN

FUNCTIONAL SUPERVISOR: SON NGUYEN
 CALCULATED/DESIGNED BY: SON NGUYEN
 CHECKED BY: SON NGUYEN
 REVISIONS: GRACE WANG, SON NGUYEN

NOTES:
 1. FOR COMPLETE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT DISTRICT OFFICE.
 2. REMOVE ALL CONFLICTING TRAFFIC STRIPES, PAVEMENT MARKINGS AND PAVEMENT MARKERS.
 3. ALL TRAFFIC STRIPES AND PAVEMENT MARKINGS ARE THERMOPLASTIC UNLESS OTHERWISE NOTED.
 4. CROSSWALK SHALL HAVE A 10 FEET INSIDE WIDTH.
 5. ALL SIGNS ARE PROTECTED IN PLACE.

LEGEND:
 CHANGE IN PAVEMENT DELINEATION DETAIL
 PAVEMENT DELINEATION DETAIL NUMBER
 ROADSIDE SIGN IDENTIFICATION
 IRS ROADSIDE SIGN
 ISS ROADSIDE SIGN (STRAP & SADDLE BRACKET METHOD)



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	10	61

REGISTERED CIVIL ENGINEER: GRACE WANG, No. C57003, Exp. 6/30/13
 DATE: 01-31-12
 PLANS APPROVAL DATE: 2-21-12

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



MATCH LINE STA "A" 364+00
 SEE SHEET PD-2

PAVEMENT DELINEATION AND SIGN PLAN

SCALE: 1" = 50'

PD-1

APPROVED FOR PAVEMENT DELINEATION AND SIGN WORK ONLY

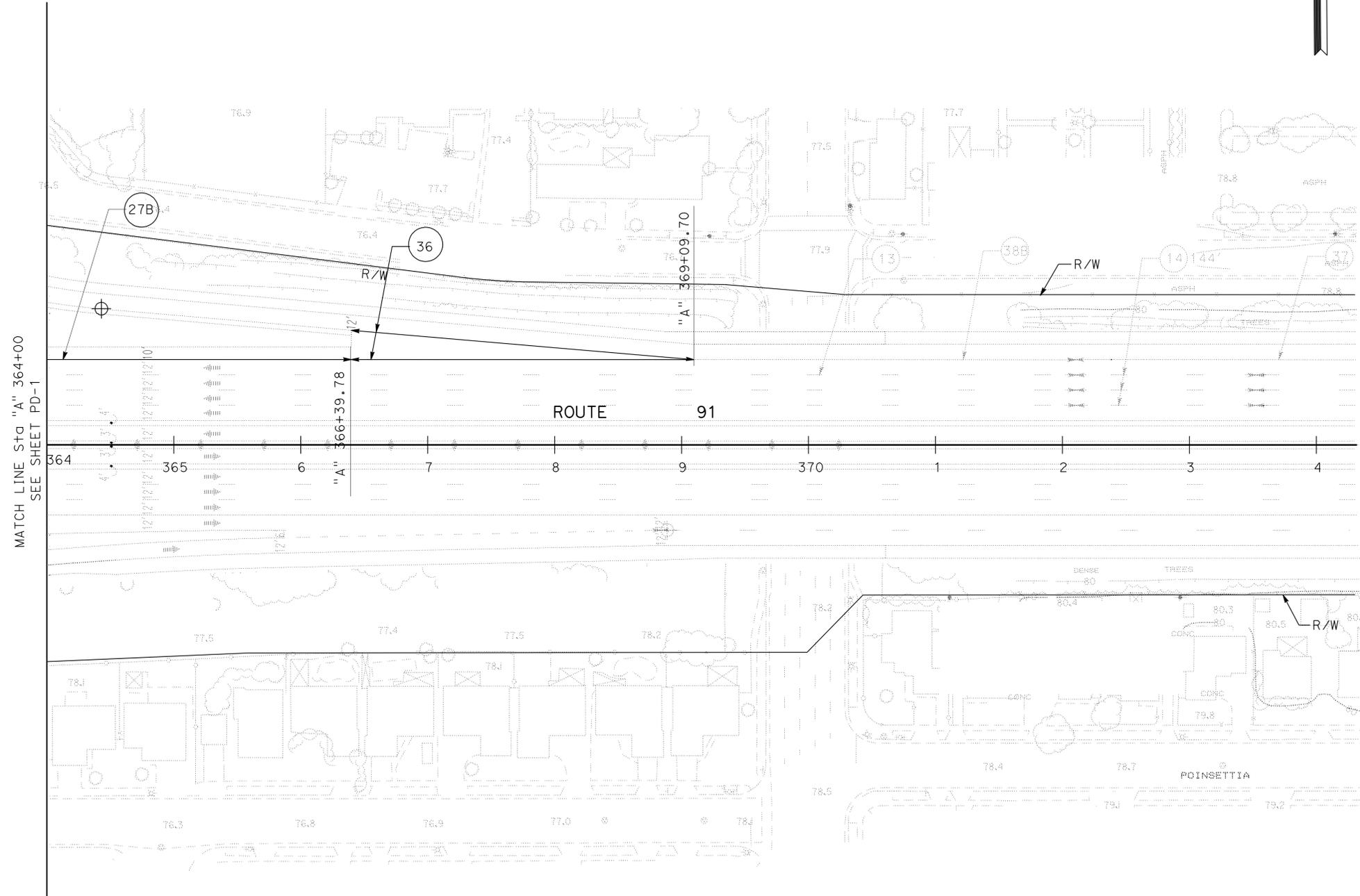
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	91	R2.6/R2.9	11	61

<i>Grace Wang</i>	12-31-11
REGISTERED CIVIL ENGINEER	DATE
2-21-12	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
GRACE WANG
No. C57003
Exp. 6/30/13
CIVIL
STATE OF CALIFORNIA

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



**PAVEMENT DELINEATION
AND SIGN PLAN**

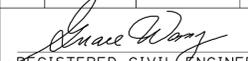
SCALE: 1" = 50'

APPROVED FOR PAVEMENT DELINEATION AND SIGN WORK ONLY

PD-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
Caltrans	SON NGUYEN	GRACE WANG	GRACE WANG
TRAFFIC DESIGN	SON NGUYEN	SON NGUYEN	SON NGUYEN

LAST REVISION | DATE PLOTTED => 22-FEB-2012
00-00-00 | TIME PLOTTED => 13:48

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	91	R2.6/R2.9	12	61
 REGISTERED CIVIL ENGINEER DATE 12-31-11					
2-21-12			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>					

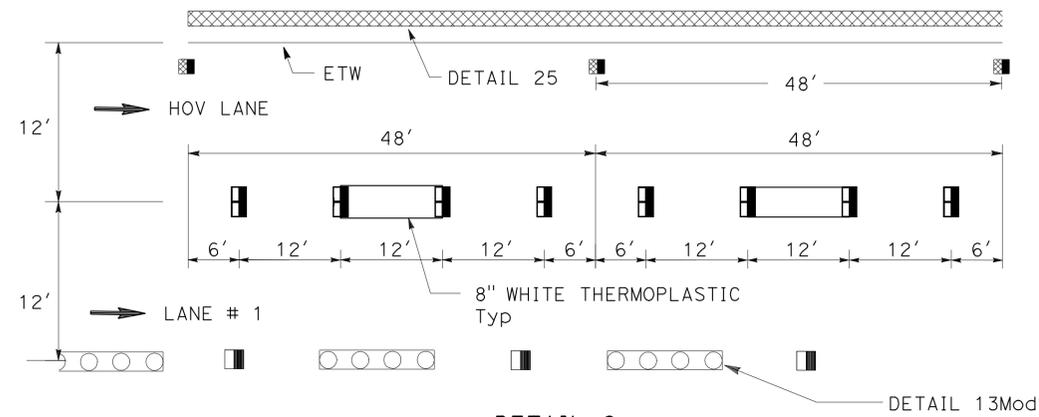
NOTE:

1. SEE STANDARD PLANS FOR PAVEMENT MARKING SYMBOL AND WORD DETAILS.

LEGENDS:

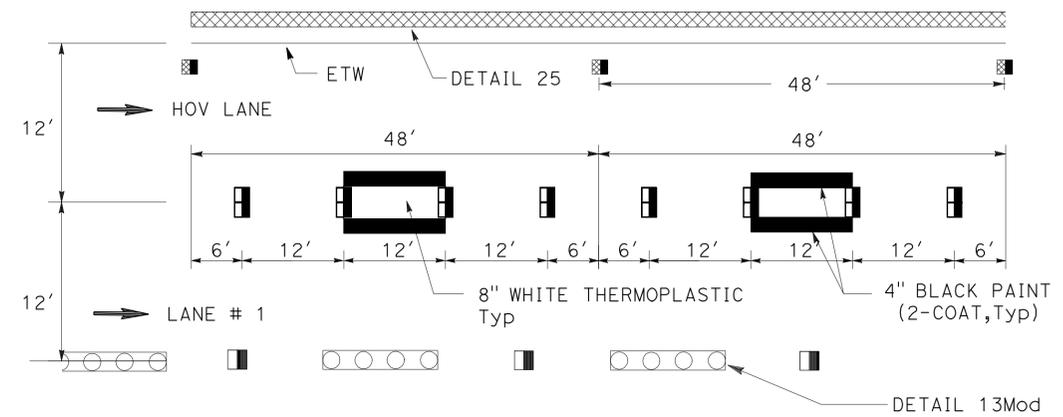
-  TYPE H ONE-WAY YELLOW RETROREFLECTIVE MARKER
-  TYPE G ONE-WAY CLEAR RETROREFLECTIVE MARKER
-  TYPE A WHITE NON-REFLECTIVE MARKER
-  DIRECTION OF TRAFFIC
-  4" BLACK PAINT TRAFFIC STRIPE (2-COAT)
-  4" YELLOW THERMOPLASTIC TRAFFIC STRIPE
-  4" WHITE THERMOPLASTIC TRAFFIC STRIPE

 8" WHITE THERMOPLASTIC TRAFFIC STRIPE



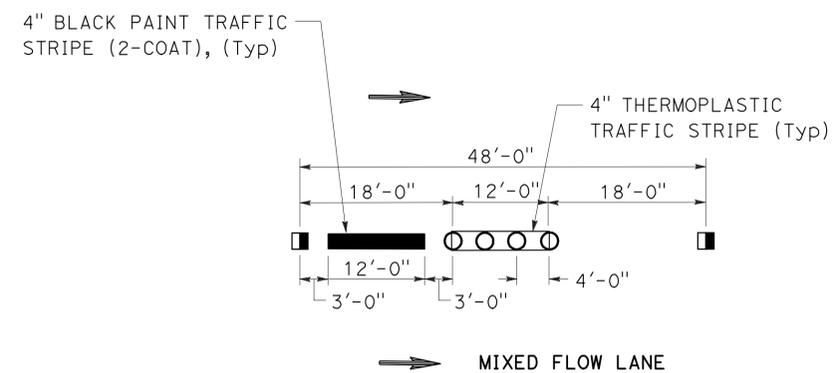
DETAIL C

DETAIL 37C Mod (AC)
 HOV CONTINUOUS STRIPING DETAIL
 TYPE G MARKER TYPICAL.
 SEE STANDARD PLAN A20C FOR MARKER DETAILS



DETAIL C

DETAIL 37C Mod (PCC)
 HOV CONTINUOUS STRIPING DETAIL
 TYPE G MARKER TYPICAL.
 SEE STANDARD PLAN A20C FOR MARKER DETAILS



DETAIL 13 Mod

REVISOR	DATE	REVISION
GRACE WANG		
SON NGUYEN		
CALCULATED/DESIGNED BY	CHECKED BY	
SON NGUYEN		
FUNCTIONAL SUPERVISOR		
SON NGUYEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		
Caltrans		
TRAFFIC DESIGN		

PAVEMENT DELINEATION DETAILS
 NO SCALE
PDD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	13	61

REGISTERED CIVIL ENGINEER DATE 12-31-11
 2-21-12
 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.

PAVEMENT DELINEATION QUANTITIES

SHEET No.	STATIONS	DETAIL 10 (N)	THERMOPLASTIC TRAFFIC STRIPE										PAINT TRAFFIC STRIPE (2-COAT)	THERMOPLASTIC PAVEMENT MARKING					PAVEMENT MARKER			REMOVE			
			DETAIL 13 Mod 4" WHITE BROKEN (36-12)	DETAIL 8 4" WHITE BROKEN (17-7)	DETAIL C(HOV CONTINUOUS) 8" WHITE BROKEN (36-12)	DETAIL 36 8" SOLID WHITE	DETAIL 36A 8" SOLID WHITE	DETAIL 38B 8" SOLID WHITE	DETAIL 27B 4" SOLID WHITE	4" SOLID WHITE	DETAIL 25 4" SOLID YELLOW	DETAIL 25A 4" SOLID YELLOW	DETAIL 13 Mod 4" BLACK BROKEN (36-12)	12" SOLID WHITE LIMIT LINE	12" SOLID WHITE DIAGONAL	12" SOLID WHITE CHERVON	12" SOLID WHITE CROSS WALK	TYPE I ARROW	NON-REFLECTIVE TYPE A	RETROFLECTIVE TYPE H	RETROFLECTIVE TYPE G	THERMOPLASTIC TRAFFIC STRIP	PAINT TRAFFIC STRIP (BLACK)	THERMOPLASTIC PAVEMENT MARKING	PAVEMENT MARKER
		LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	SQFT	SQFT	SQFT	SQFT	SQFT	EA	EA	EA	LF	LF	SQFT	EA
PD-1	RAMP "B" LINE 54+40 TO 66+61	177				86	210	181	1039			544		24			60	50	28	24	32			134	84
	RTE 91 "A" LINE 354+40 TO 364+00		1515	303	505				657		505		1899						144	10	132	972	1899		286
	BEACH BLVD 50+31 TO 52+58	354				83			61	100				49	41	72			50		33	329		162	83
PD-2	RTE 91 "A" LINE 364+00 TO 369+09.7					540			240												24	780			24
SUB TOTAL		531	1515	303		709	210	181	1997	100	505	544	1899	73	41	72	60	50	222	34	221			296	477
SHEET PDQ-1 TOTAL		(531)	1515	303	505	1100			3146			1899	296					222	255		2081	1899	296	477	

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	91	R2.6/R2.9	15	61

 12-31-11
 REGISTERED CIVIL ENGINEER DATE
 2-21-12
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
DARREN H LEE
 No. C68376
 Exp. 9/30/13
 CIVIL
 STATE OF CALIFORNIA

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ROADWAY QUANTITIES

SHEET	STATION/LOCATION	HOT MIX ASPHALT (OPEN GRADED)	RUBBERIZED HOT MIX ASPHALT (GAP GRADED)	COLD PLANE ASPHALT CONCRETE PAVEMENT	ADJUST FRAME AND GRATE TO GRADE
		TON	TON	SQYD	EA
L-1, L-2	"B" 58+20 to "B" 66+61	203			2
	"A" 358+20 to "A" 369+35	131	197	2000	
TOTAL		334	197	2000	2

CONCRETE

SHEET	STATION/LOCATION	MINOR Conc (CURB, SIDEWALK AND CURB RAMP)	REMOVE CONCRETE
		CY	CY
L-1	"B" 64+85, "B" 64+97	3.7	3.7
TOTAL		3.7	3.7

METAL BEAM GUARD RAILING (WOOD POST)

SHEET	STATION/LOCATION	REMOVE MBGR	TRANSITION RAILING (TYPE WB)	MBGR (WOOD POST)	ALTERNATIVE FLARED TERMINAL SYSTEM	END ANCHOR ASSEMBLY (TYPE SFT)	GUARD RAILING DELINEATOR
		LF	EA	LF	EA	EA	EA
L-1	"B" 57+90 to "B" 58+55	62.5	1		1		
	"B" 62+00 to "B" 64+32	232.4					
	"B" 59+48 to "B" 64+32			220	1	1	18
TOTAL		295	1	220	2	1	18

SUMMARY OF QUANTITIES

Q-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI
 CALCULATED/DESIGNED BY: VANESSA TRUONG
 CHECKED BY: VANESSA TRUONG
 REVISIONS: MINA ZOLFAGHARI, VANESSA TRUONG

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

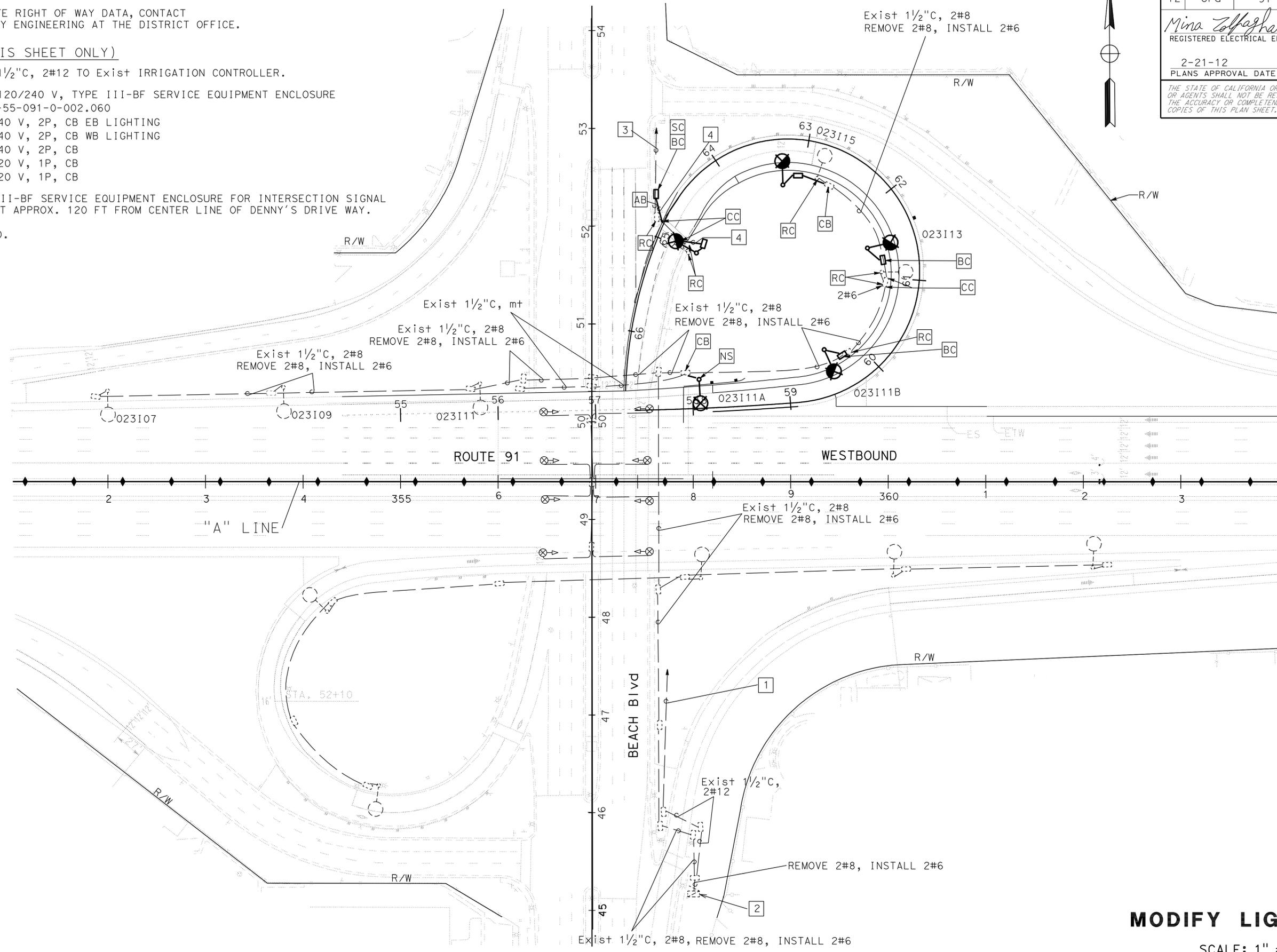
NOTES: (THIS SHEET ONLY)

- 1 EXISTING 1/2"C, 2#12 TO Exist IRRIGATION CONTROLLER.
- 2 EXISTING 120/240 V, TYPE III-BF SERVICE EQUIPMENT ENCLOSURE
 ID No. 12-55-091-0-002.060
 40 A, 240 V, 2P, CB EB LIGHTING
 40 A, 240 V, 2P, CB WB LIGHTING
 20 A, 240 V, 2P, CB
 20 A, 120 V, 1P, CB
 20 A, 120 V, 1P, CB
- 3 TO TYPE III-BF SERVICE EQUIPMENT ENCLOSURE FOR INTERSECTION SIGNAL
 LOCATED AT APPROX. 120 FT FROM CENTER LINE OF DENNY'S DRIVE WAY.
- 4 2"C, 2#10.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	91	R2.6/R2.9	16	61

Mina Zolfaghari 12-20-11
 REGISTERED ELECTRICAL ENGINEER DATE
 2-21-12
 PLANS APPROVAL DATE

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MODIFY LIGHTING

SCALE: 1" = 50'

E-1

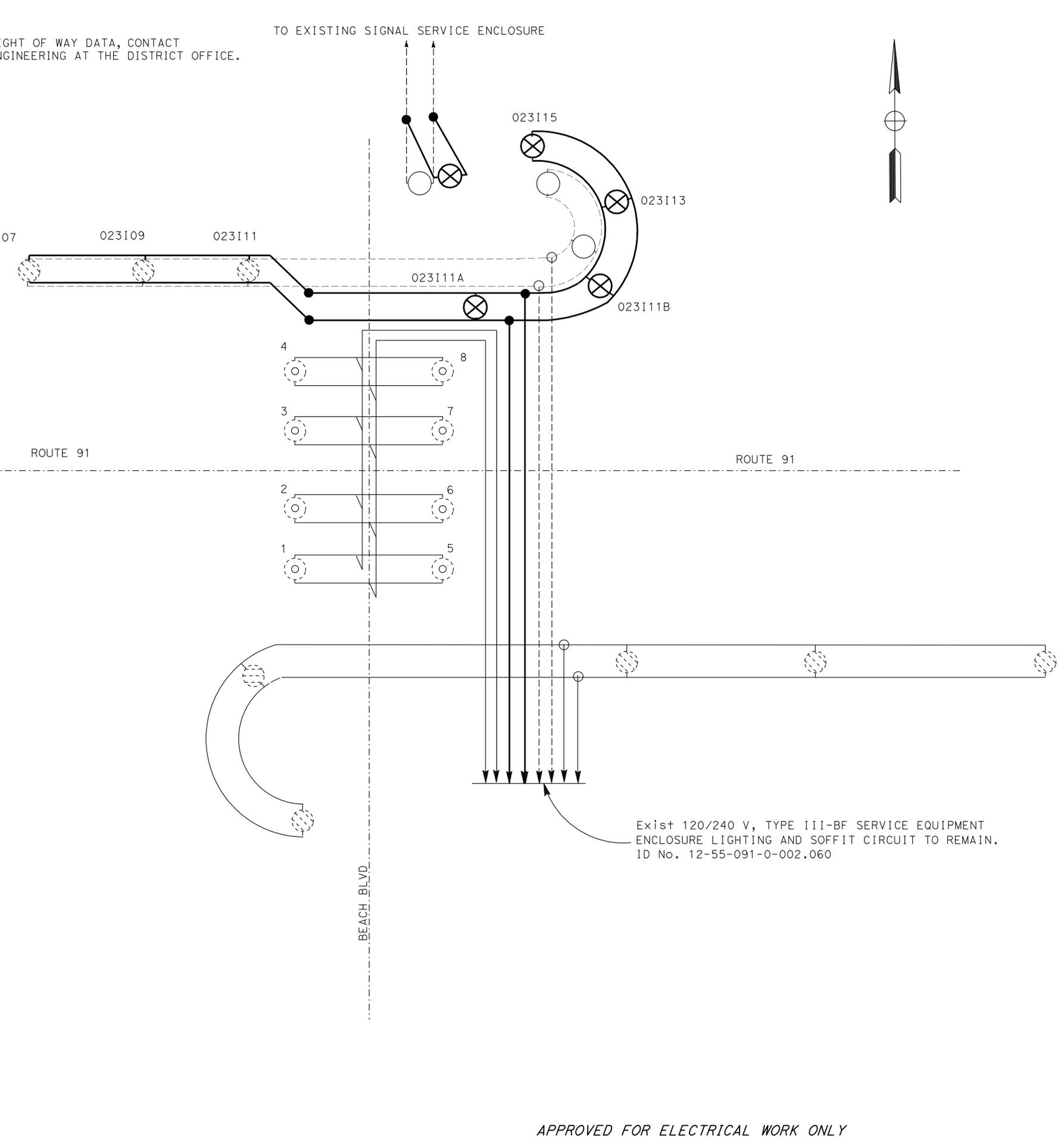
APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION: DATE PLOTTED => 22-FEB-2012 TIME PLOTTED => 13:15

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN

FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI
 DESIGNED BY: VANESSA TRUONG
 CHECKED BY: VANESSA TRUONG
 REVISIONS: (Table with columns for REVISION NO., DATE, BY, DESCRIPTION)

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



- WIRING DIAGRAM LEGEND:
- EXISTING 310 W HPS LAMP TO REMAIN
 - EXISTING 310 W HPS LAMP AND BALLAST
 - NEW 310 W HPS LAMP
 - EXISTING 70 W HPS LAMP TO REMAIN
 - NEW SPLICE
 - EXISTING SPLICE
 - EXISTING No. 8 AWG CONDUCTORS TO BE REMOVED
 - NEW No. 6 AWG CONDUCTORS TO BE INSTALLED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	91	R2.6/R2.9	17	61

Mina Zolfaghari 12-20-11
 REGISTERED ELECTRICAL ENGINEER DATE

2-21-12
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
 MINA ZOLFAGHARI
 No. E 16816
 Exp. 12/31/12
 ELECTRICAL
 STATE OF CALIFORNIA

MODIFY LIGHTING
 NO SCALE
E-2

LAST REVISION: 09-02-11 DATE PLOTTED => 22-FEB-2012 TIME PLOTTED => 1:3:20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Or	91	R2.6/R2.9	18	61

Mina Zolfaghari 12-20-11
REGISTERED ELECTRICAL ENGINEER DATE

2-21-12
PLANS APPROVAL DATE

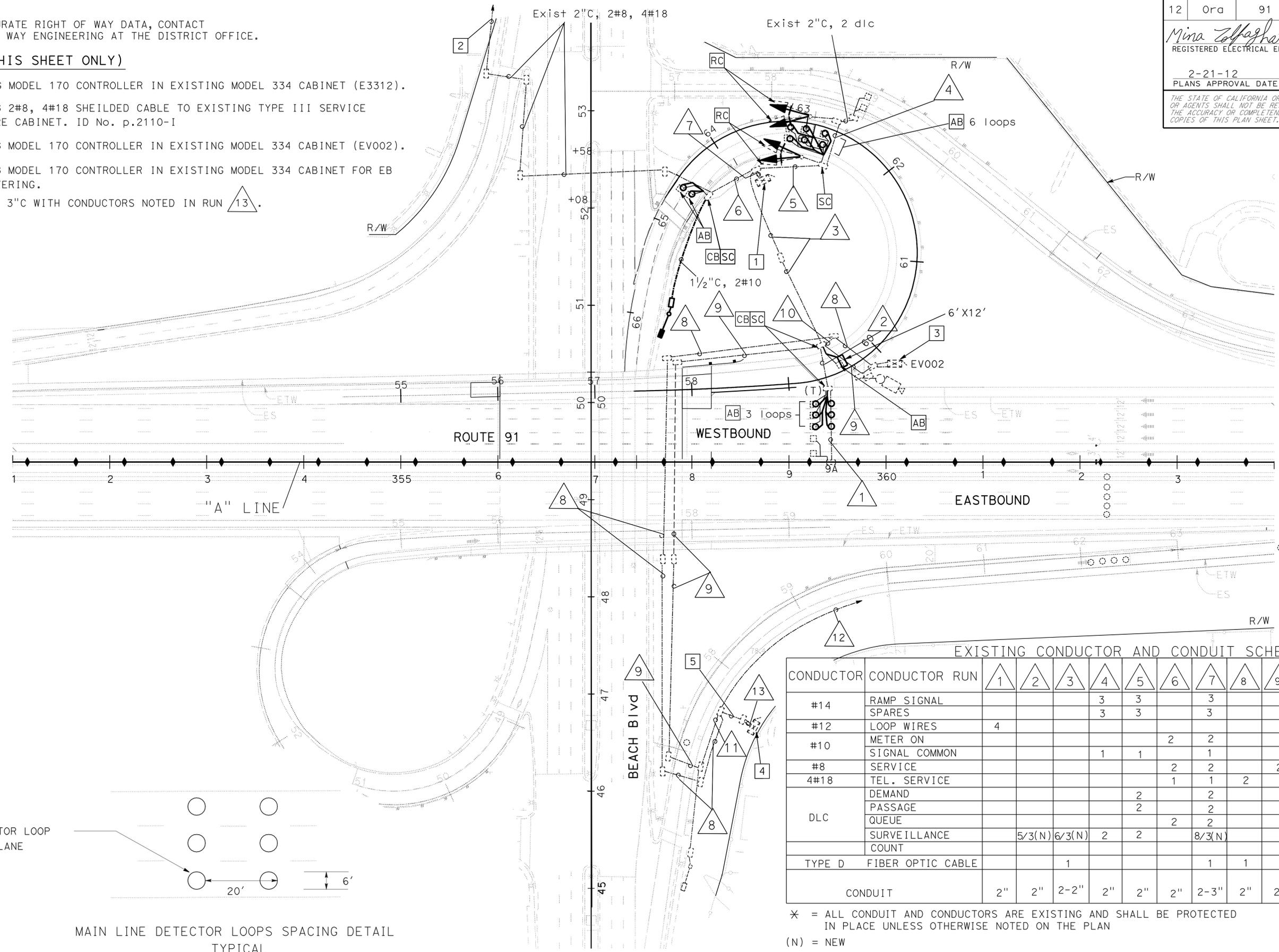
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
MINA ZOLFAGHARI
No. E 16816
Exp. 12/31/12
ELECTRICAL
STATE OF CALIFORNIA

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

NOTES: (THIS SHEET ONLY)

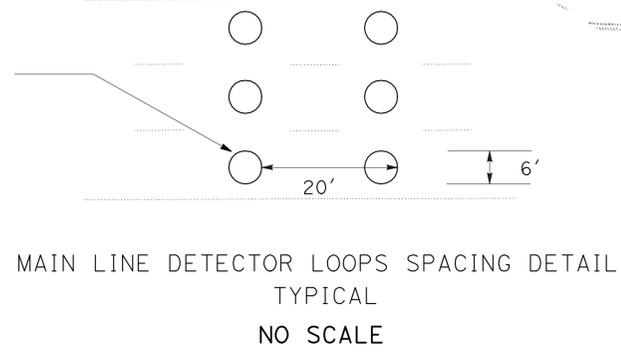
- 1 EXISTING MODEL 170 CONTROLLER IN EXISTING MODEL 334 CABINET (E3312).
- 2 EXISTING 2#8, 4#18 SHEILDED CABLE TO EXISTING TYPE III SERVICE ENCLOSURE CABINET. ID No. p.2110-1
- 3 EXISTING MODEL 170 CONTROLLER IN EXISTING MODEL 334 CABINET (EV002).
- 4 EXISTING MODEL 170 CONTROLLER IN EXISTING MODEL 334 CABINET FOR EB RAMP METERING.
- 5 EXISTING 3"C WITH CONDUCTORS NOTED IN RUN 13.



EXISTING CONDUCTOR AND CONDUIT SCHEDULE *

CONDUCTOR	CONDUCTOR RUN													
#14	RAMP SIGNAL SPARES				3	3		3					3	3
#12	LOOP WIRES	4												
#10	METER ON SIGNAL COMMON				1	1	2	1			2		1	1
#8	SERVICE						2	2		2				2
4#18	TEL. SERVICE						1	1	2					2
DLC	DEMAND					2		2					1	1
	PASSAGE					2		2					1	1
	QUEUE						2	2			1		1	1
	SURVEILLANCE COUNT		5/3(N)	6/3(N)	2	2		8/3(N)					5	5
TYPE D	FIBER OPTIC CABLE			1				1	1		1	1	2	1
	CONDUIT	2"	2"	2-2"	2"	2"	2"	2-3"	2"	2"	2"	2"	2"	2-3"

* = ALL CONDUIT AND CONDUCTORS ARE EXISTING AND SHALL BE PROTECTED IN PLACE UNLESS OTHERWISE NOTED ON THE PLAN
(N) = NEW



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI
 CALCULATED/DESIGNED BY: VANESSA TRUONG
 CHECKED BY: VANESSA TRUONG
 REVISOR: MINA ZOLFAGHARI
 DATE REVISED: 12-20-11

APPROVED FOR ELECTRICAL WORK ONLY

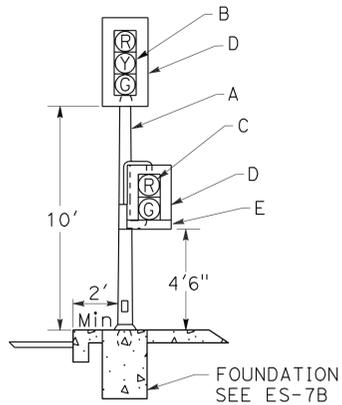
MODIFY RAMP METERING SYSTEM
SCALE: 1" = 50'
E-3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	91	R2.6/R2.9	19	61

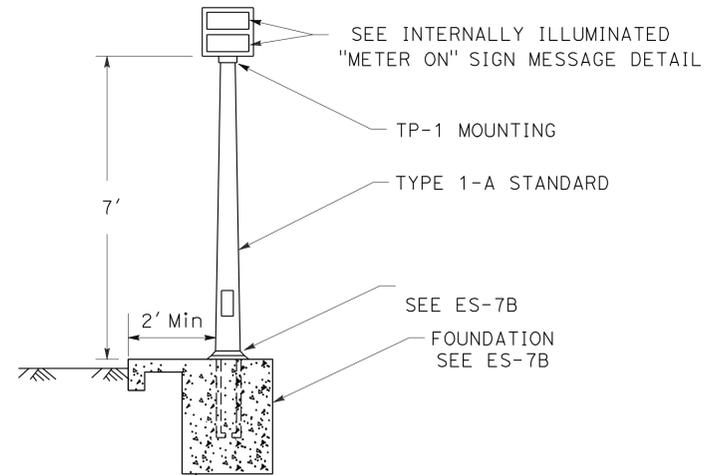
Mina Zolfaghari 12-20-11
 REGISTERED ELECTRICAL ENGINEER DATE
 2-21-12
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES: (RAMP METERING SIGNAL)

- A. TYPE 1-A STANDARD. INSTALL ANCHOR BOLTS WITH SLEEVE NUTS (SEE ES-7B).
- B. 3-SECTION, 12" SIGNAL HEAD (RED, YELLOW, GREEN). 18" X 12" ANGLED VISORS ARE REQUIRED WHERE SHOWN ON THE PLANS. TYPE TV-2-T POST-TOP MOUNTING.
- C. 2-SECTION, 12" SIGNAL HEAD (RED, GREEN), 12" FULL CIRCLE VISORS. TYPE SV-1-T BRACKET MOUNTING ON SIDE OF STANDARD AWAY FROM TRAFFIC.
- D. BACKPLATE.
- E. "ONE CAR PER GREEN THIS LANE" R89-2 SIGN. MOUNTED ON THE BACKPLATE AND CENTER BETWEEN GREEN SECTION AND BOTTOM OF BACK PLATE AND SIDES. ATTACH WITH 1/4 " ALUMINUM BLIND RIVETS OR GALVANIZED 1/4 "X 3/4 " BOLTS, HEX NUTS, PLAIN AND LOCK WASHERS.

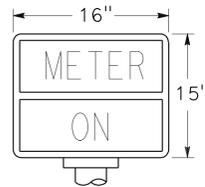


RAMP METERING SIGNAL
DETAIL C

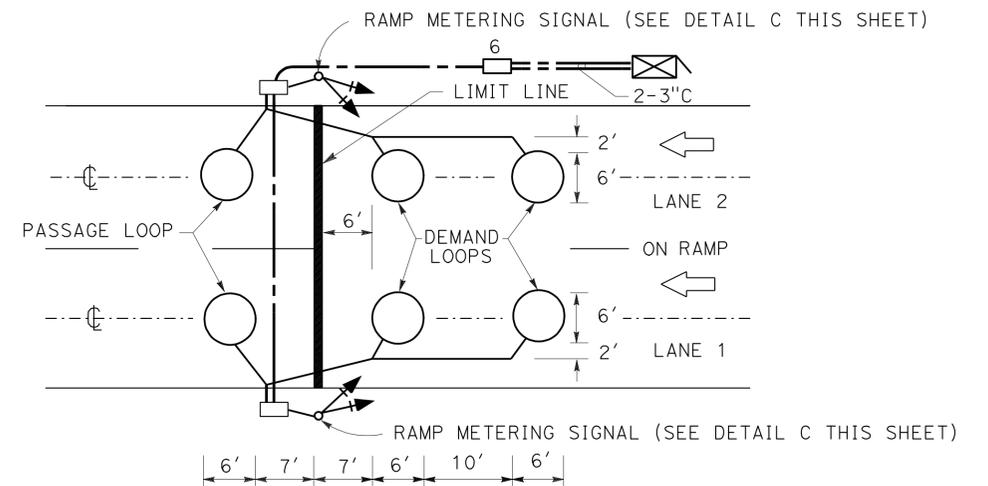


INTERNALLY ILLUMINATED
"METER ON" SIGN MESSAGE DETAIL

"METER" LETTERS 4 1/2" CAPS, 1/2" STROKE
"ON" LETTERS 6" CAPS, 1" STROKE



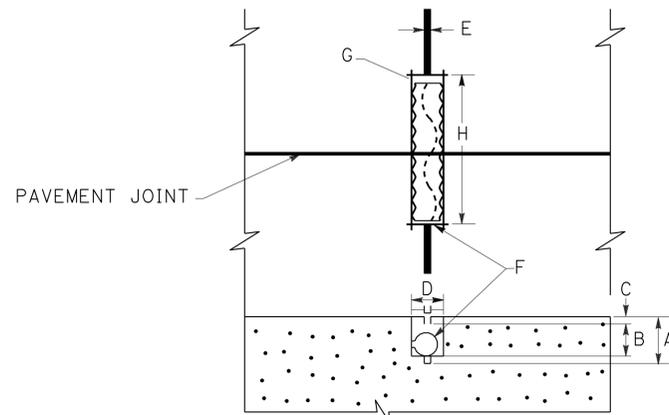
INTERNALLY ILLUMINATED
"METER ON" SIGN MESSAGE DETAIL



TYPICAL 2-LANE RAMP
METERING INSTALLATION
DETAIL B

NOTES: (LOOP DETECTOR)

- A. SAW-CUT DEPTH TO ACCOMMODATE SPECIFIED NUMBER OF CONDUCTORS WITH MINIMUM OF 1/2" FROM TOP OF WIRE TO PAVEMENT SURFACE (3 1/4" Max).
- B. SLOT-SAW CUT DEPTH TO ACCOMMODATE 1" NON-METALLIC CONDUIT WITH 1/2" MINIMUM FROM TOP OF CONDUIT TO PAVEMENT SURFACE.
- C. 1/2" MINIMUM BETWEEN TOP OF CONDUIT AND PAVEMENT SURFACE.
- D. SAW-CUT WIDTH TO ACCOMMODATE 1" NON-METALLIC CONDUIT WITH 1/8" CLEARANCE.
- E. SAW-CUT 3/8" WIDE (Max).
- F. 1" NON-METALLIC CONDUIT, 6" LONG, PLUG BOTH ENDS WITH CAULKING COMPOUND TO KEEP OUT EPOXY.
- G. CONDUCTORS WITH 1/2" MINIMUM SLACK.
- H. SAW-CUT LENGTH OF SLOT 1/8" LONGER THAN CONDUIT.
- I. SEE ES-5A, ES-5B AND ES-5D FOR ADDITIONAL LOOP INSTALLATION PROCEDURE.



TYPICAL LOOP LEAD-IN DETAIL AT PAVEMENT JOINT

LEGEND

- RAMP METERING SIGNAL TO BE INSTALLED (SEE RAMP METERING SIGNAL DETAIL C THIS SHEET).
- METER-ON SIGN TO BE INSTALLED (SEE INTERNALLY ILLUMINATED "METER ON" SIGN DETAIL THIS SHEET).
- STATE-FURNISHED MODEL 170 CONTROLLER ASSEMBLY IN MODEL 334 CABINET TO BE INSTALLED. FOR FOUNDATION DETAILS SEE STANDARD PLANS ES-3C (FRONT DOOR SWING AS SHOWN).

**RAMP METERING SYSTEM
(DETAILS)
NO SCALE**

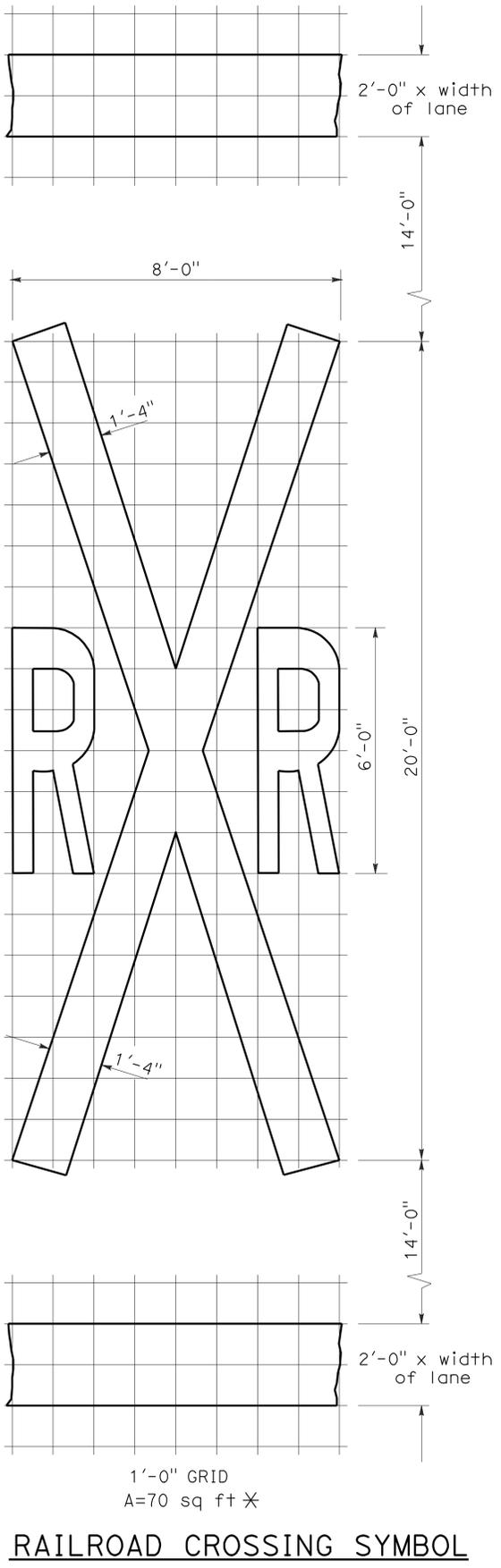
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
Caltrans ELECTRICAL DESIGN	SHAHRAM SHAHRIARI	MINA ZOLFAGHARI	
	CHECKED BY	DATE REVISOR	
	VANESSA TRUONG		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	20	61

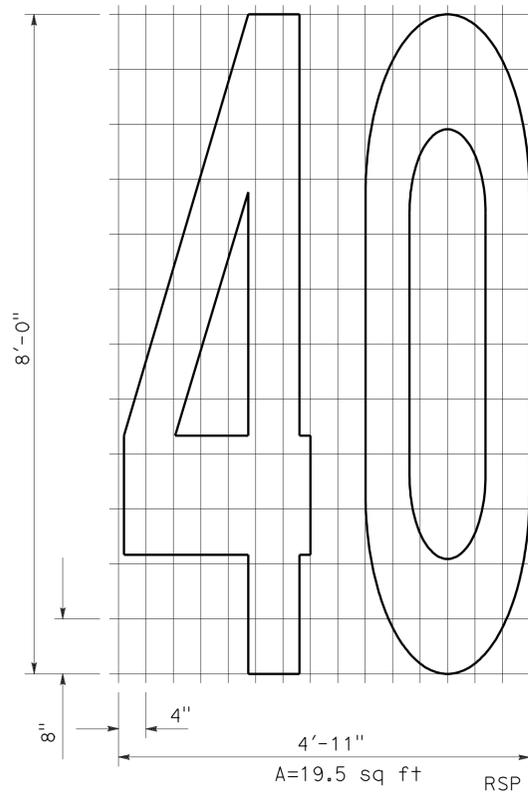
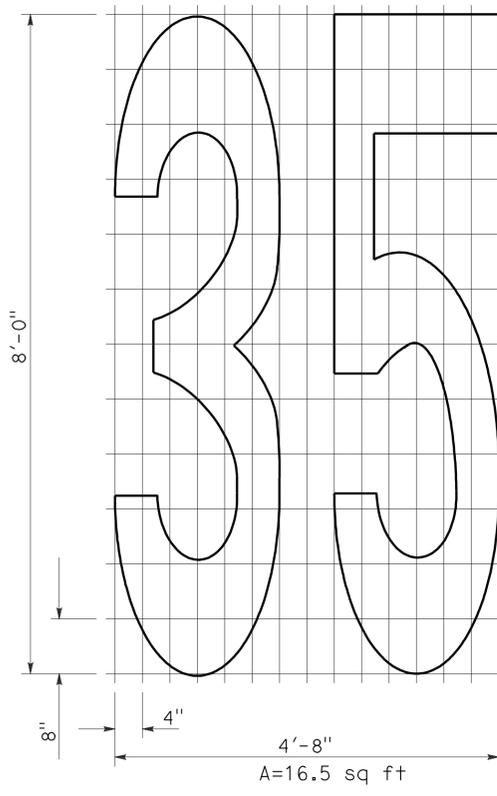
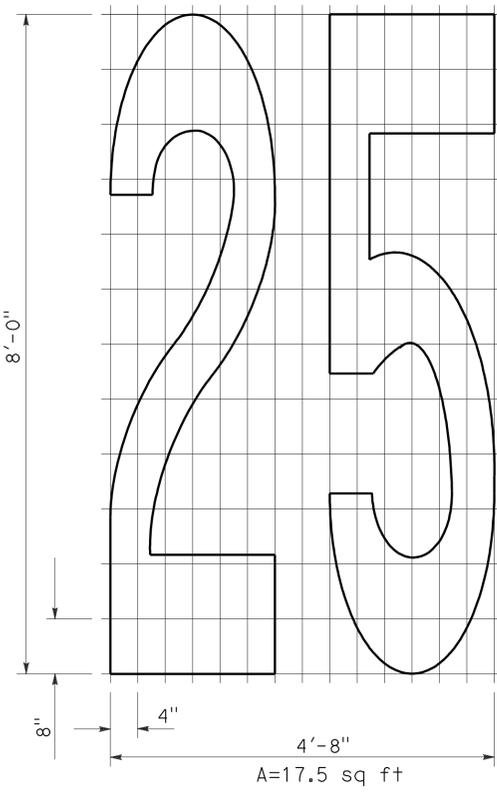
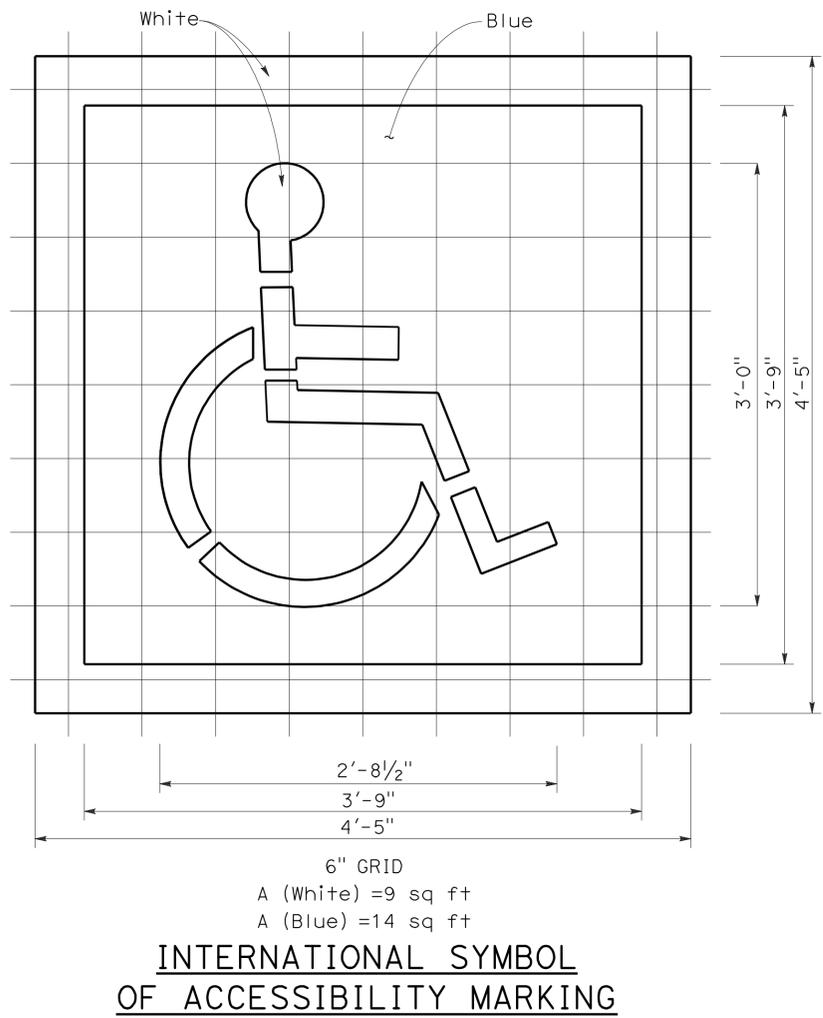
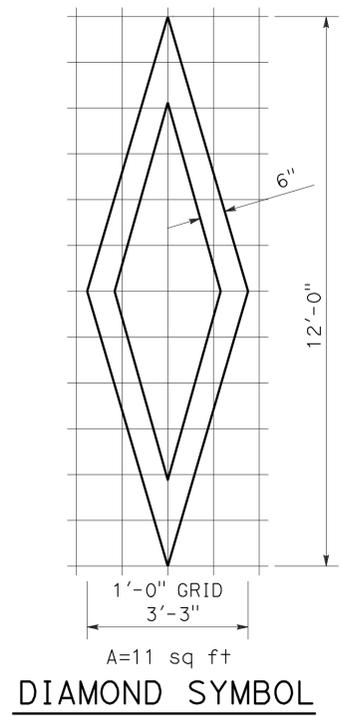
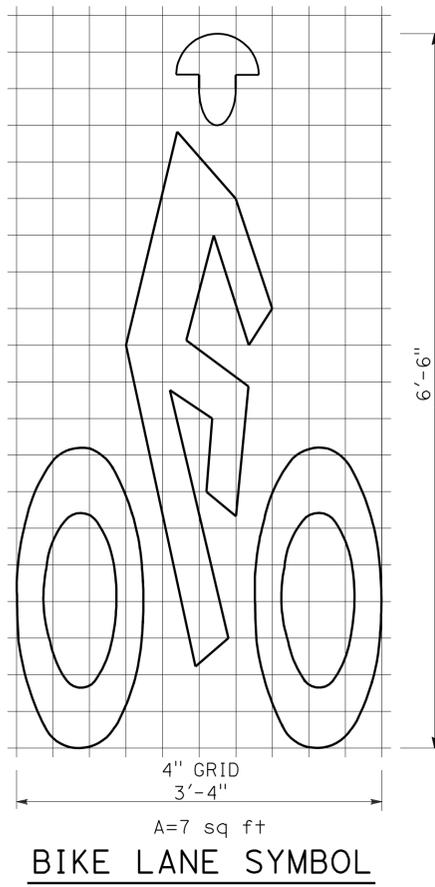
Donald E. Howe
 REGISTERED CIVIL ENGINEER
 June 6, 2008
 PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
 Donald E. Howe
 No. C46402
 Exp. 3-31-09
 CIVIL
 STATE OF CALIFORNIA

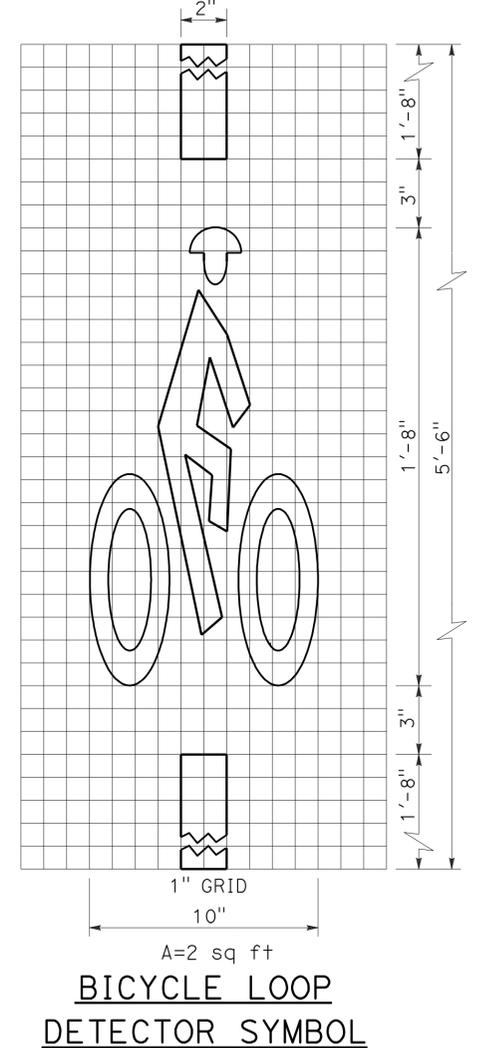
To accompany plans dated 2-21-12



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



NUMERALS



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

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

2006 REVISED STANDARD PLAN RSP A24C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	21	61

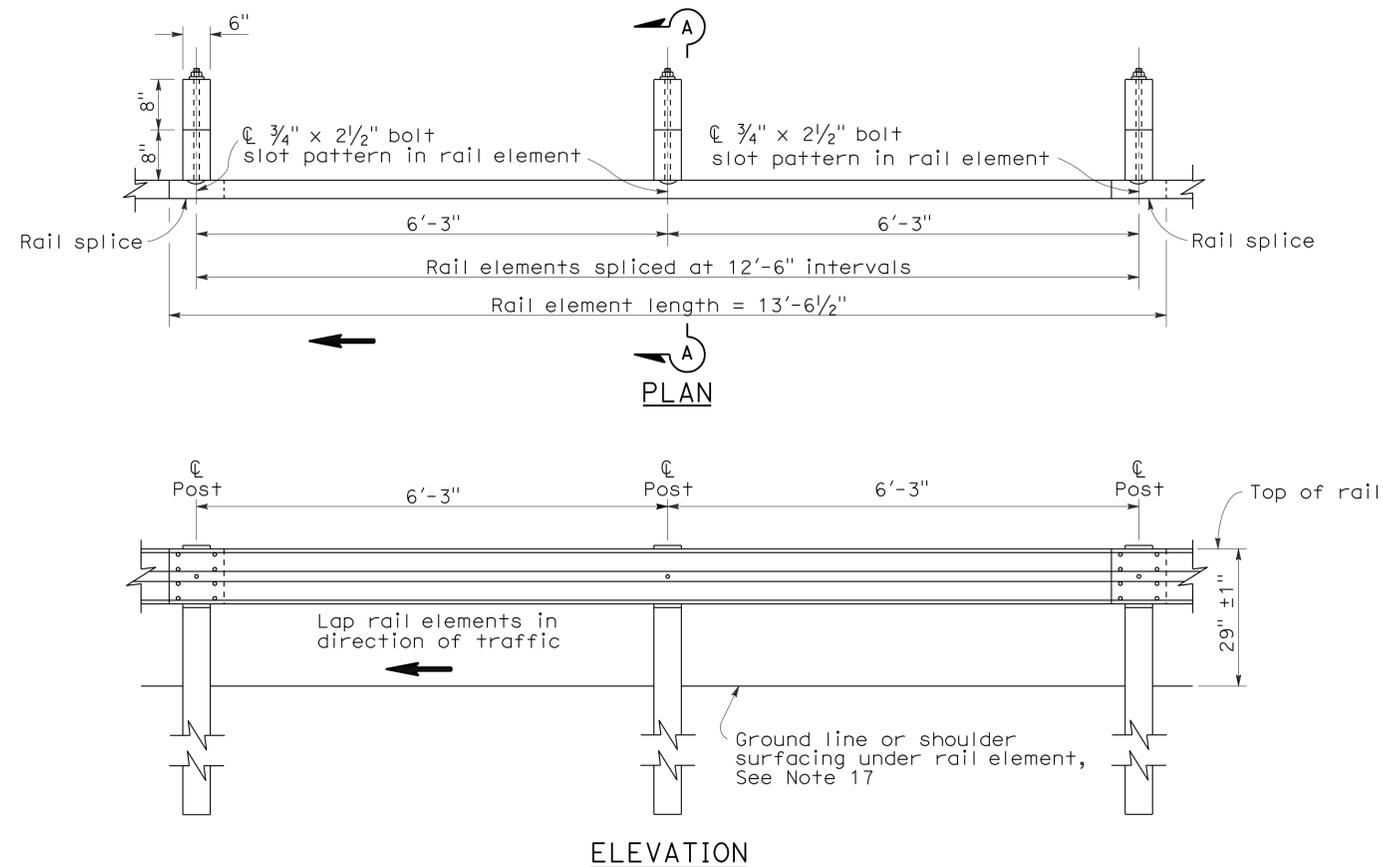
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

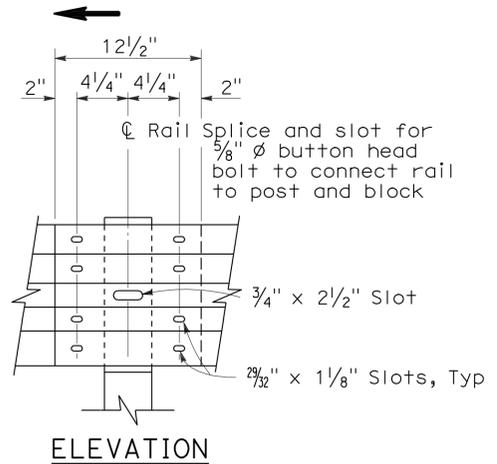
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To accompany plans dated 2-21-12

2006 REVISED STANDARD PLAN RSP A77A1

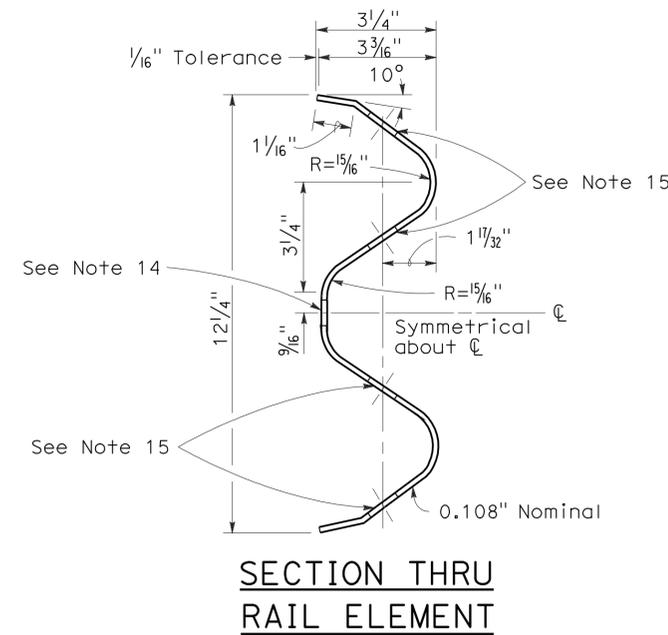


METAL BEAM GUARD RAILING WITH WOOD POST AND BLOCKS

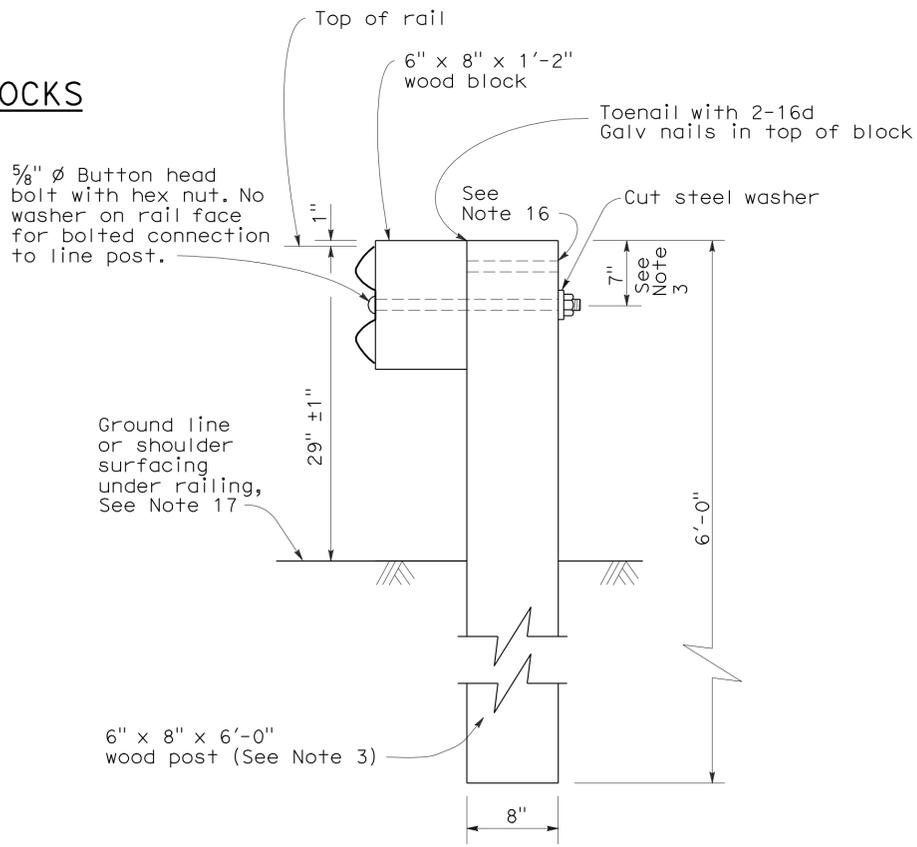


RAIL ELEMENT SPLICE DETAIL

- 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	22	61

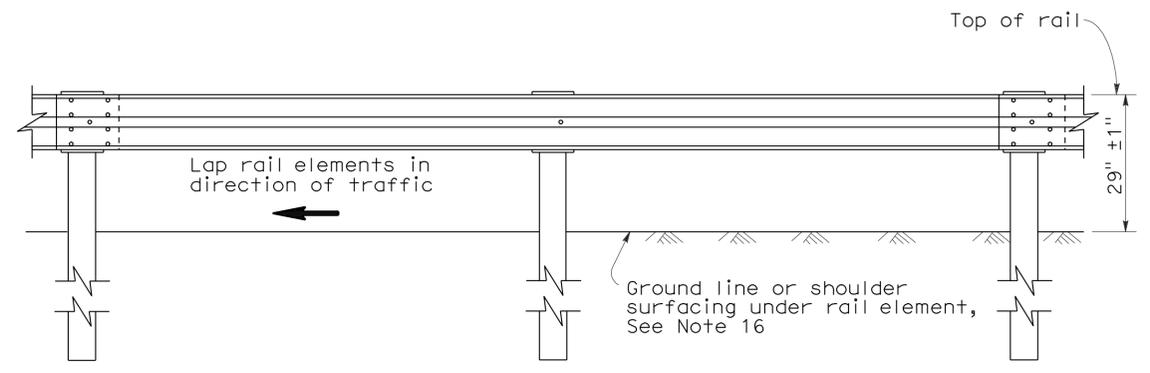
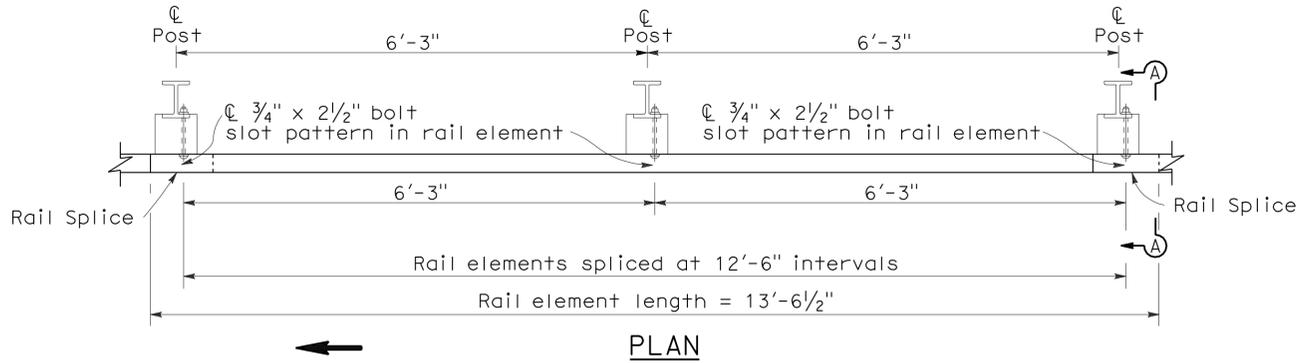
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

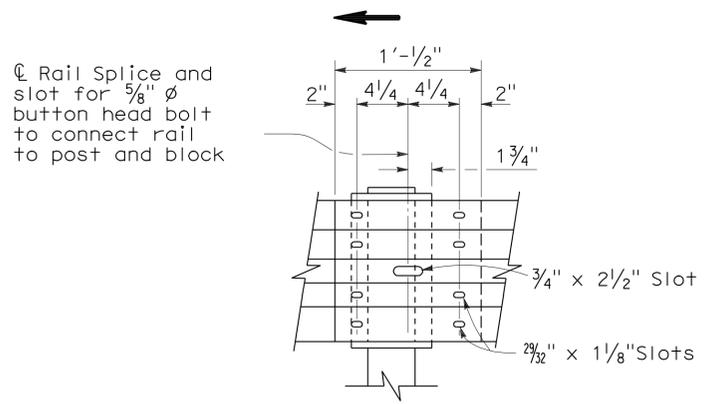
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REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

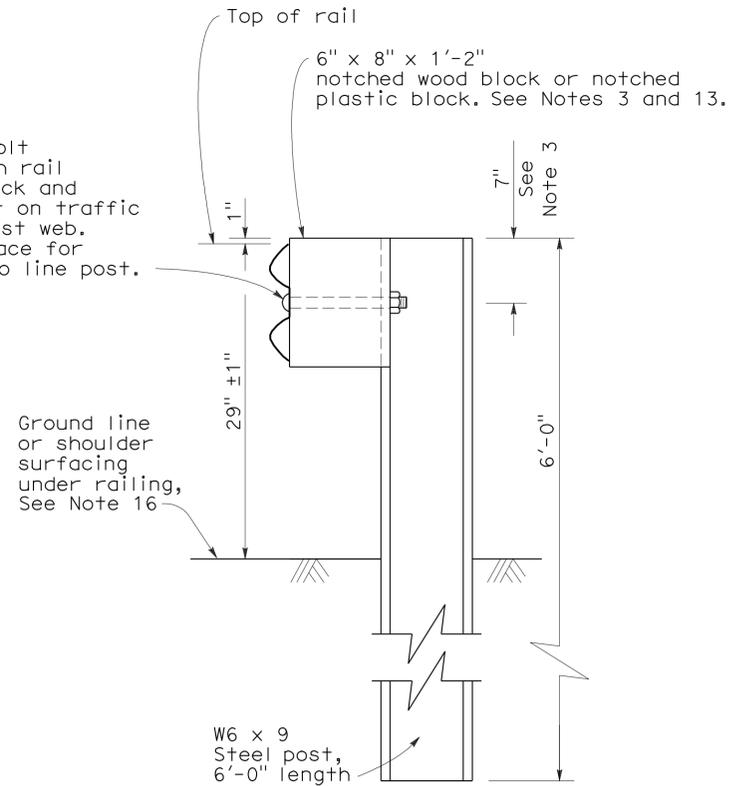
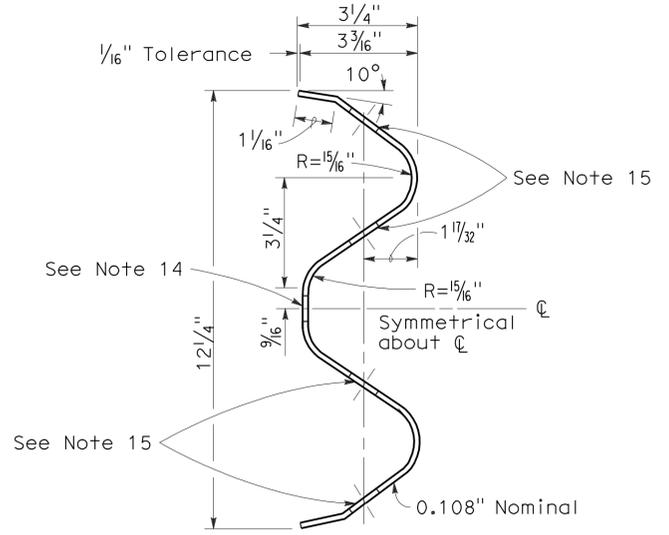
To accompany plans dated 2-21-12



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



- Connect the overlapped 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 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

RSP A77A2 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77A2
DATED MAY 1, 2006 - PAGE 42 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77A2

2006 REVISED STANDARD PLAN RSP A77A2

To accompany plans dated 2-21-12

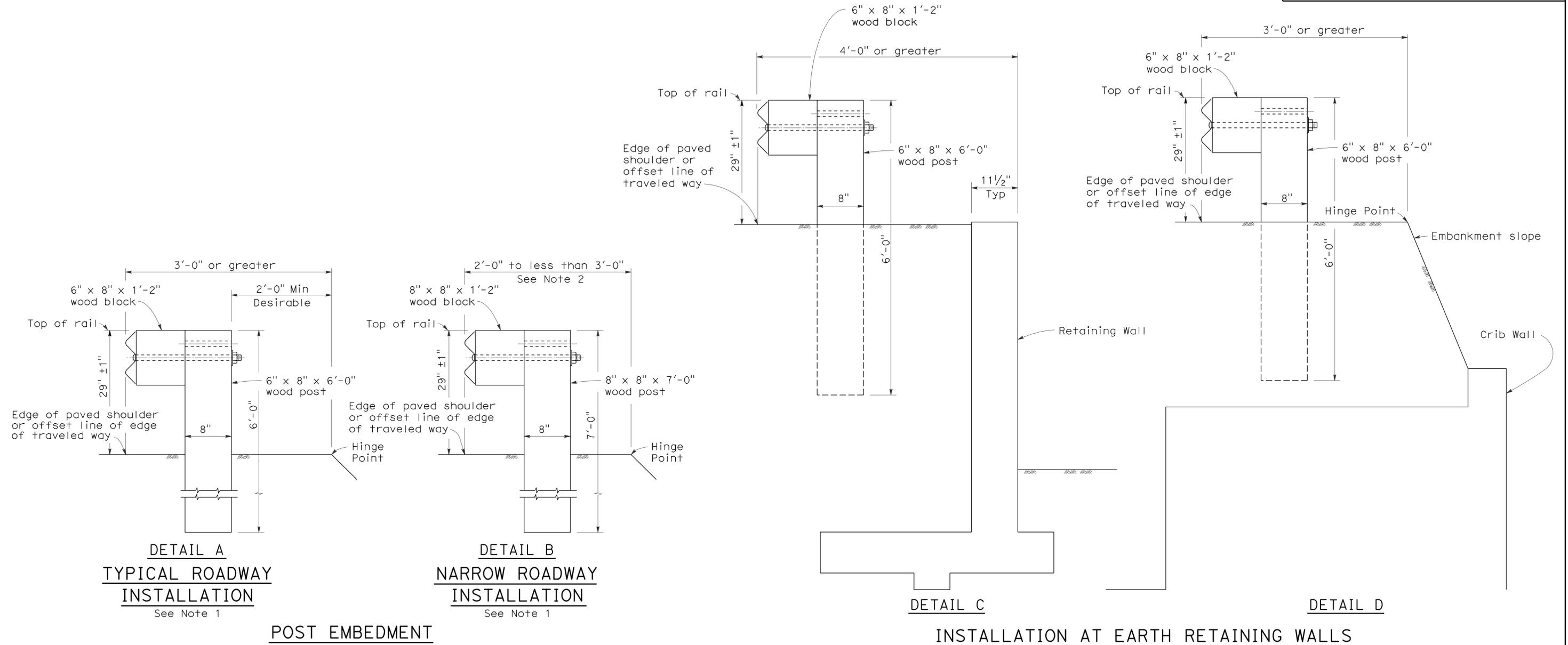
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	23	61

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
12	Ora	91	R2.6/R2.9	24	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

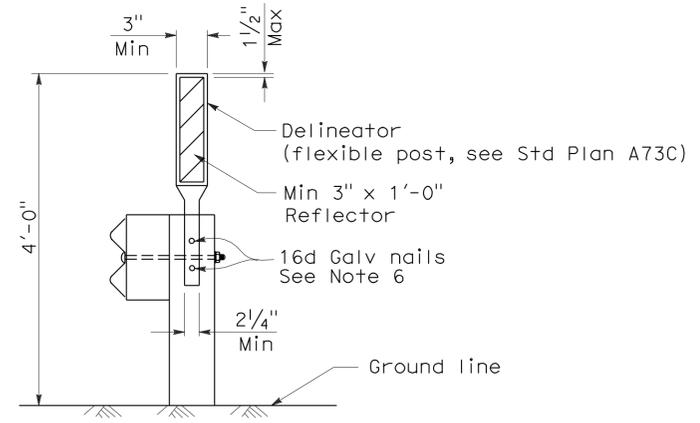
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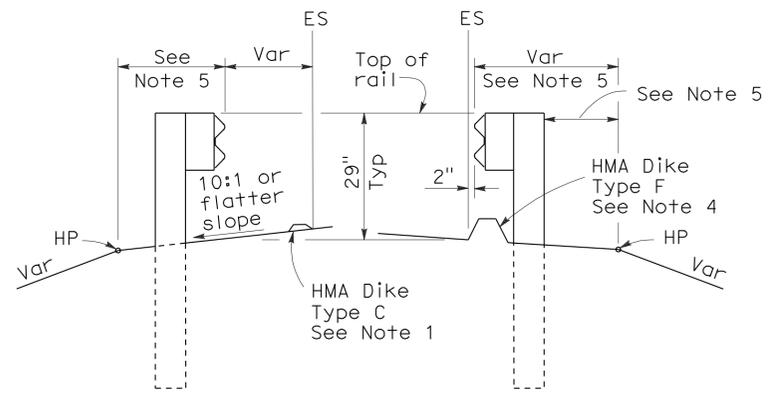
To accompany plans dated 2-21-12

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
12	Ora	91	R2.6/R2.9	25	61

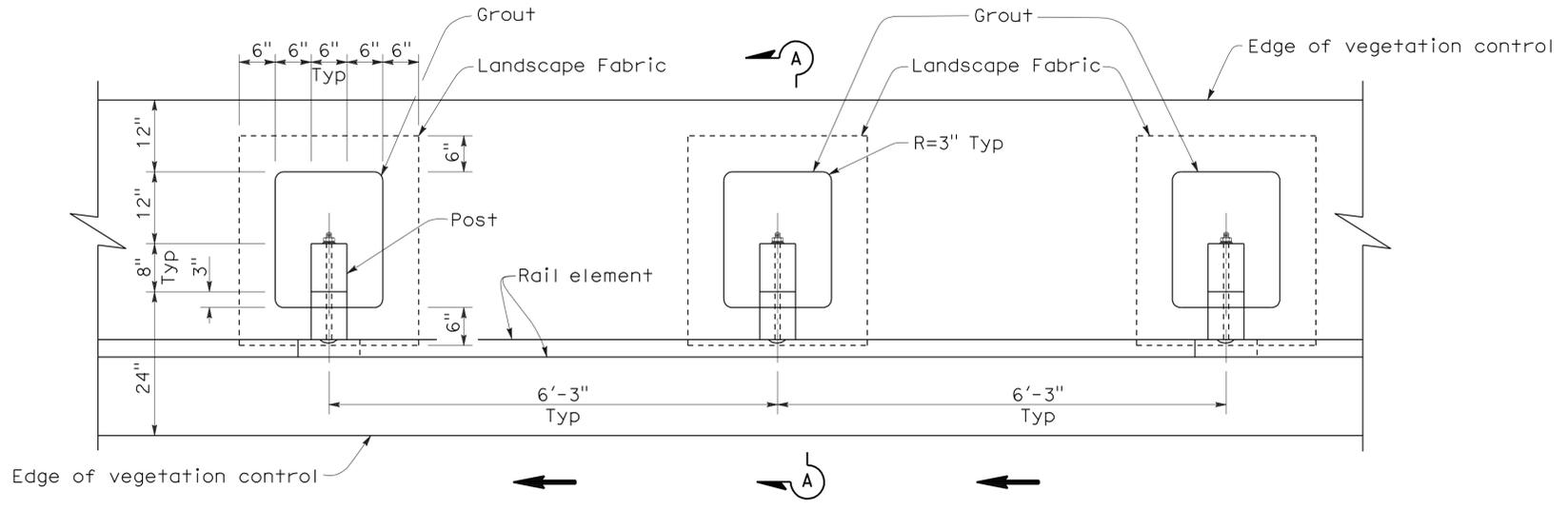
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

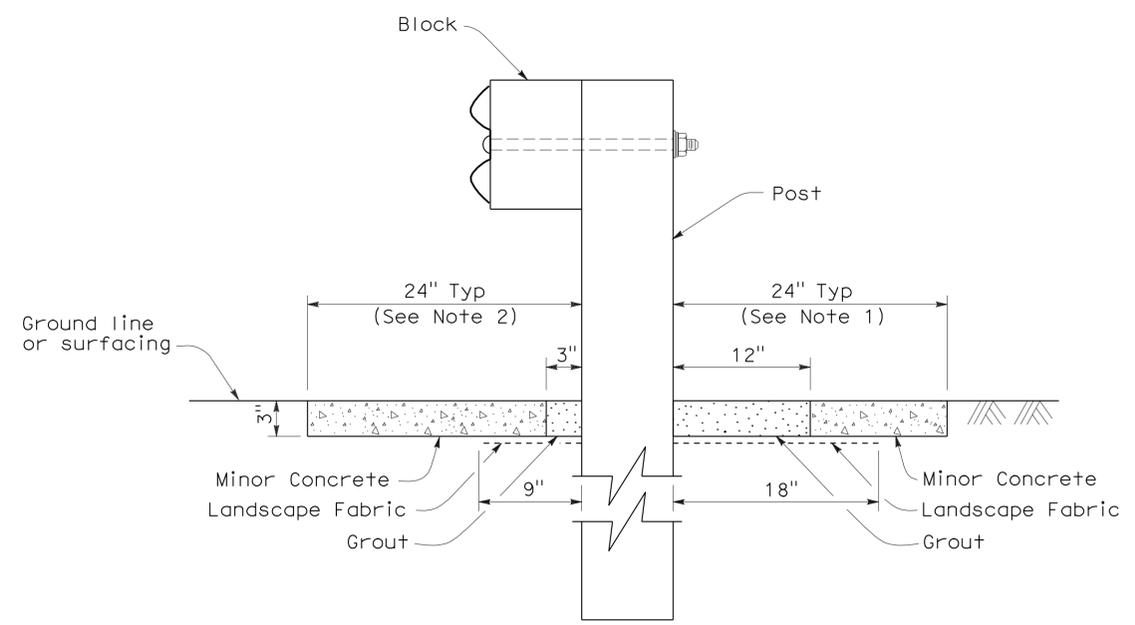
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No. C50200
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

To accompany plans dated 2-21-12



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

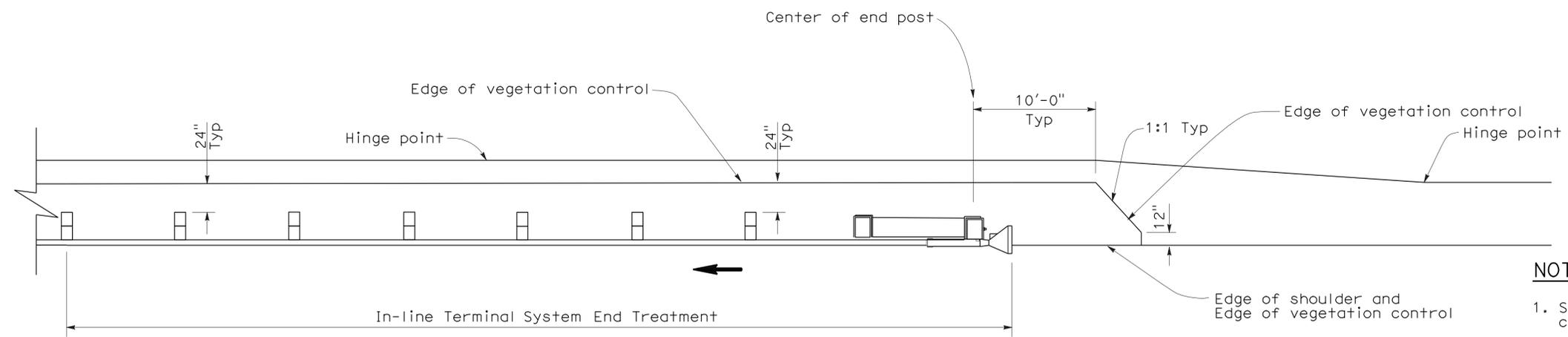
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	26	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

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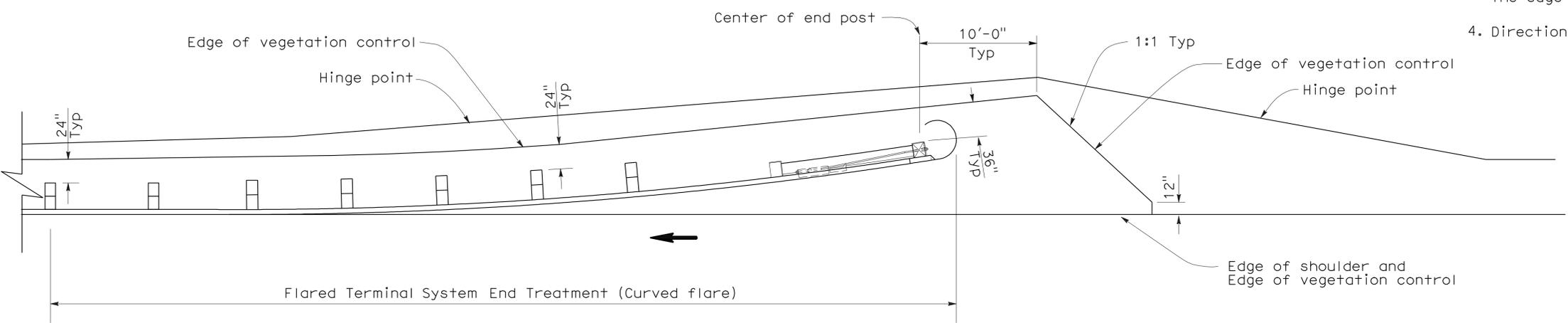
To accompany plans dated 2-21-12



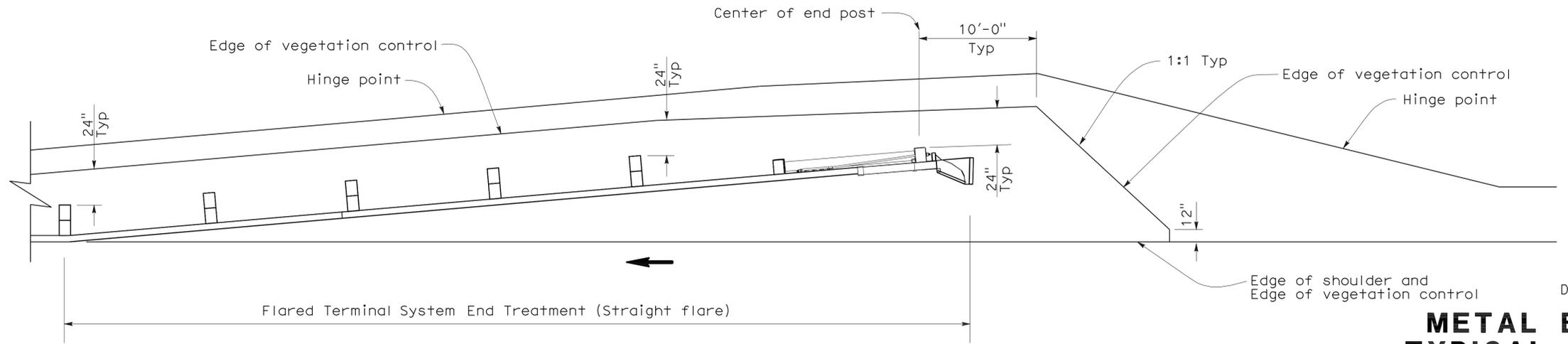
PLAN

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.

2006 NEW STANDARD PLAN NSP A77C6

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	27	61

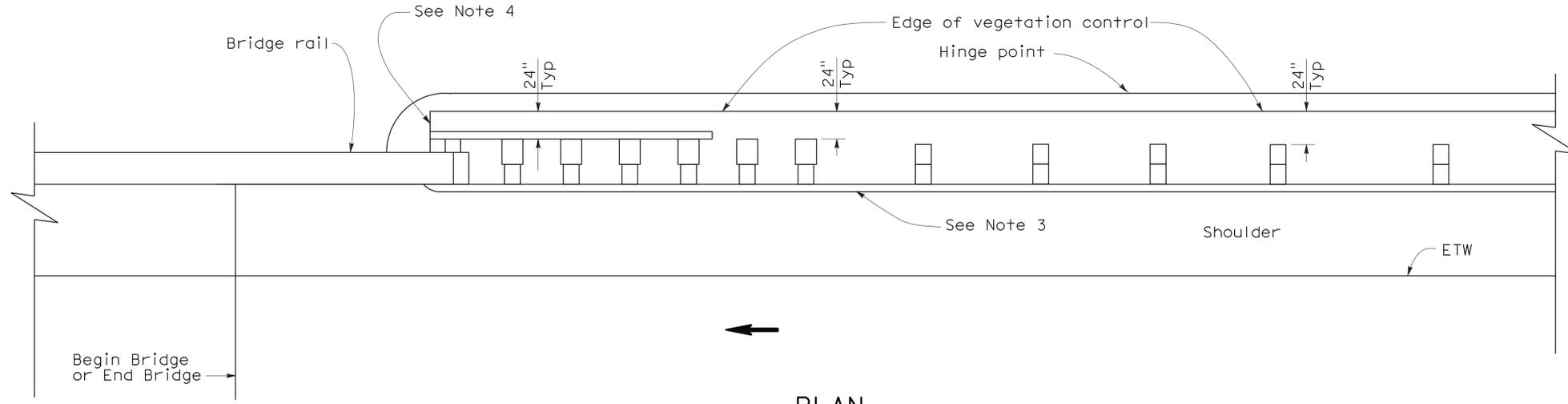
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

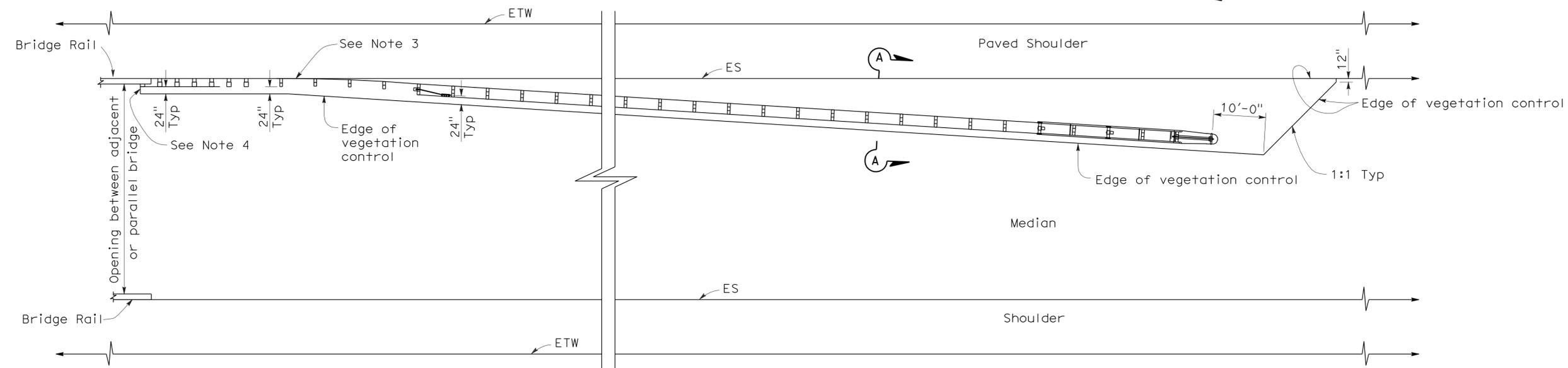
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To accompany plans dated 2-21-12

2006 NEW STANDARD PLAN NSP A77C7



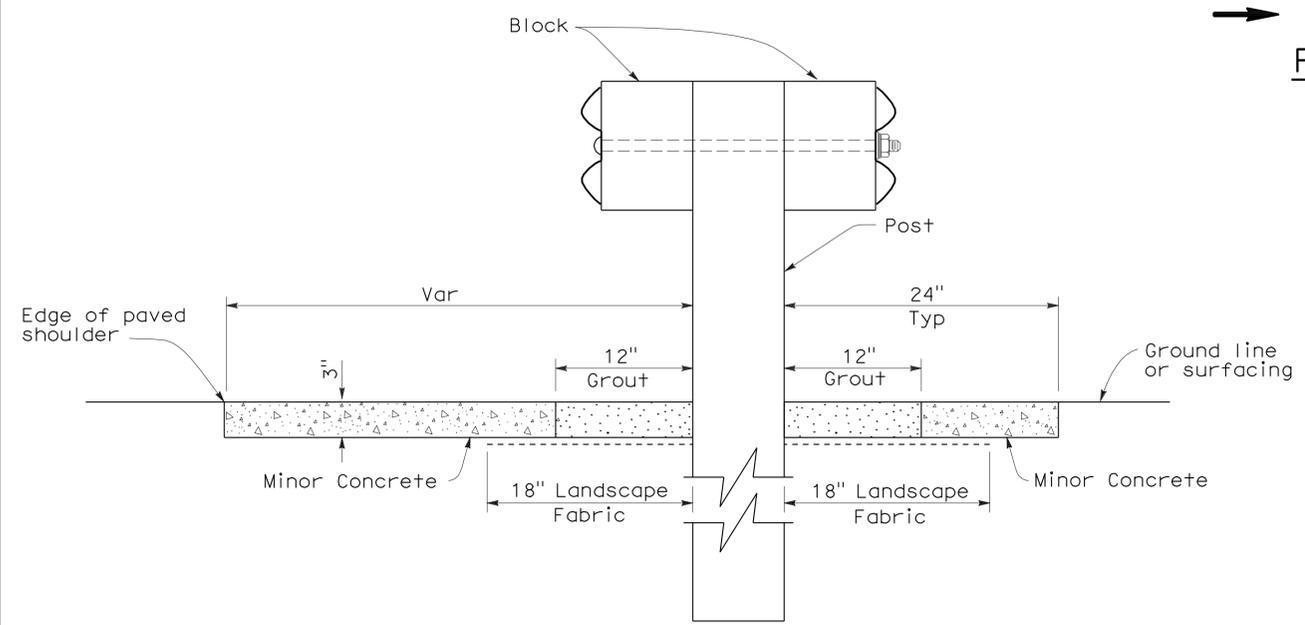
PLAN



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.

NEW STANDARD PLAN NSP A77C7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	28	61

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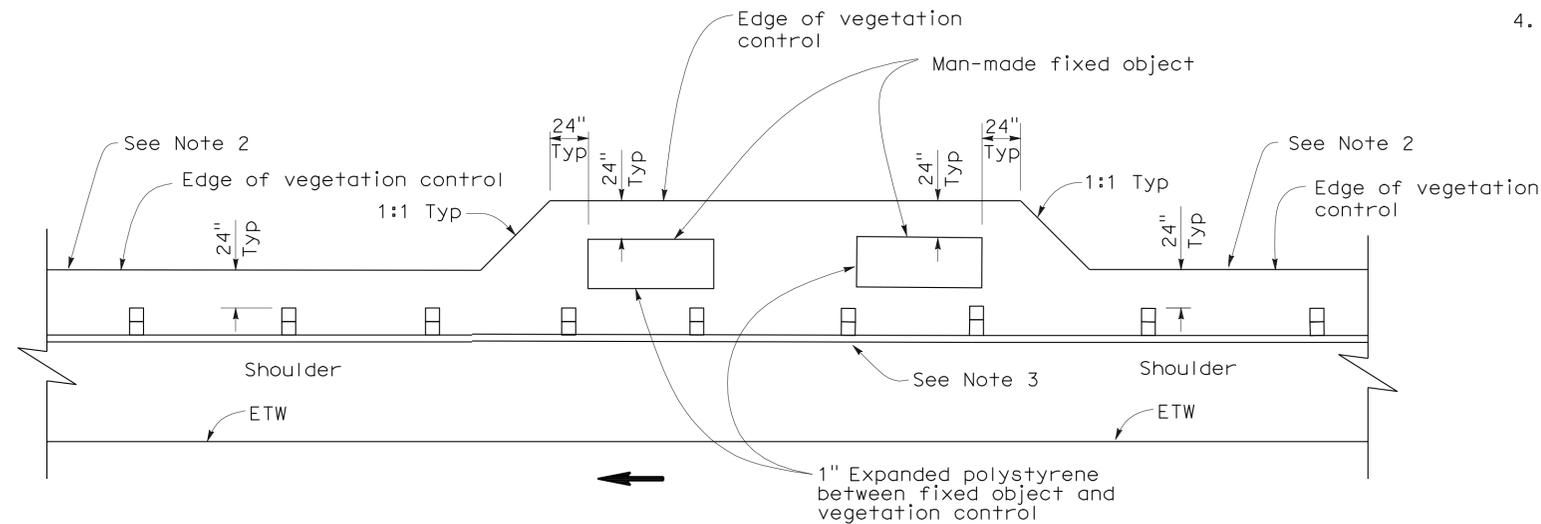
October 20, 2006
PLANS APPROVAL DATE

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To accompany plans dated 2-21-12

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
12	Ora	91	R2.6/R2.9	29	61

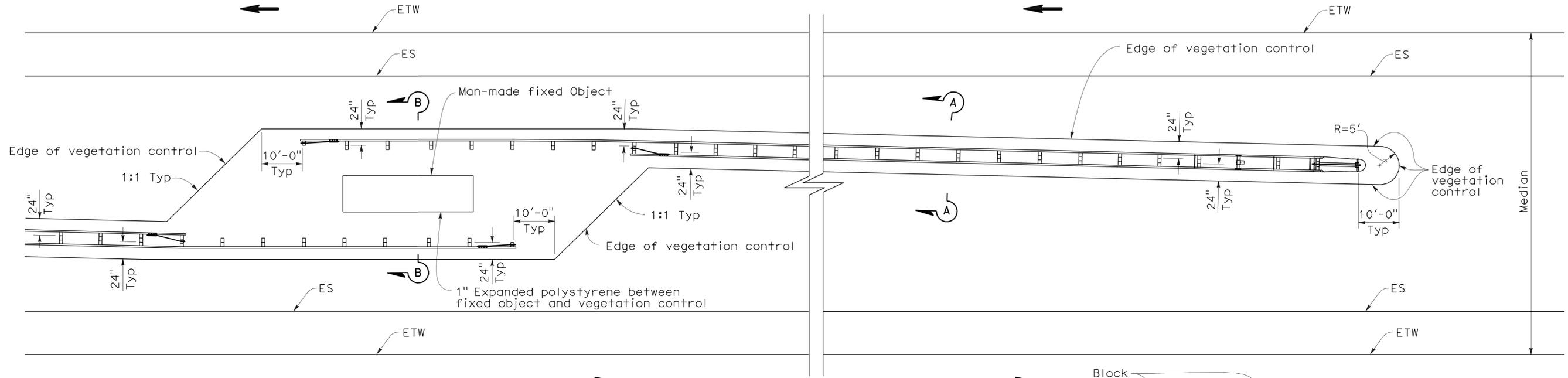
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

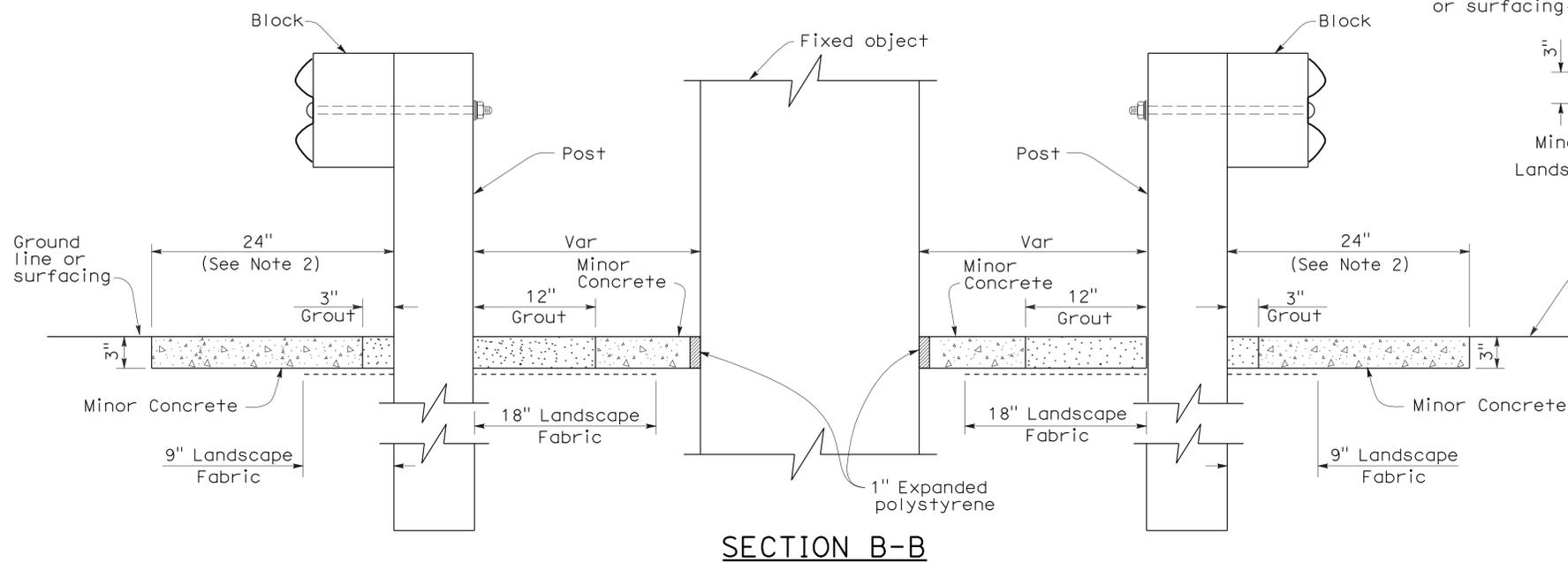
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STATE OF CALIFORNIA

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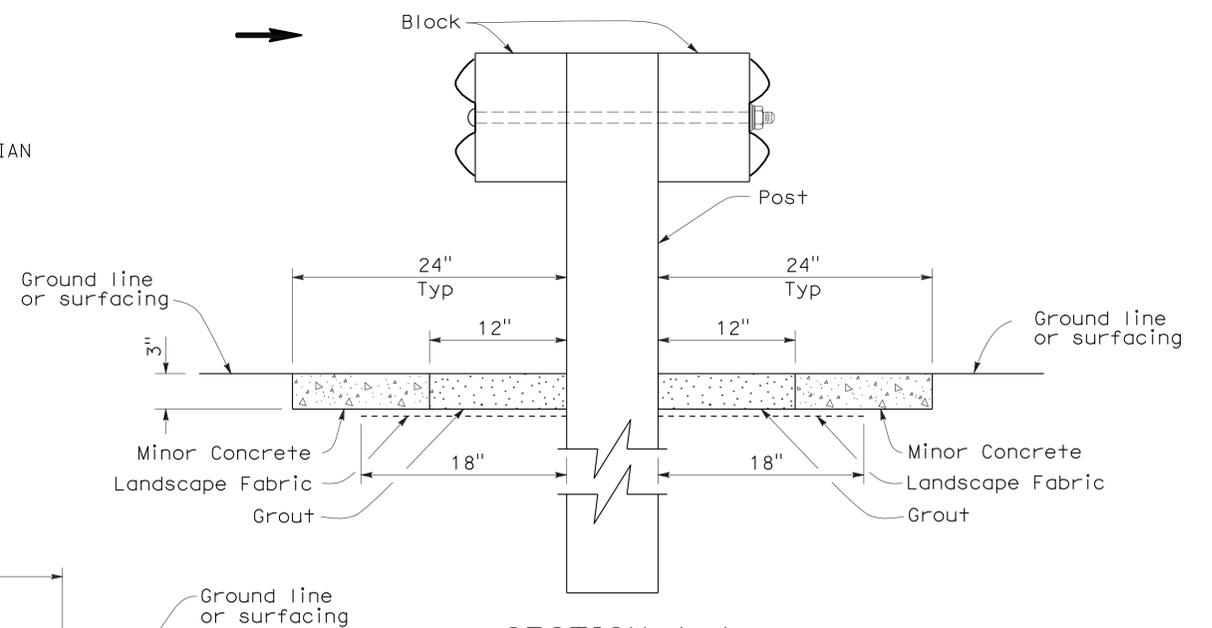
To accompany plans dated 2-21-12



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 ←.

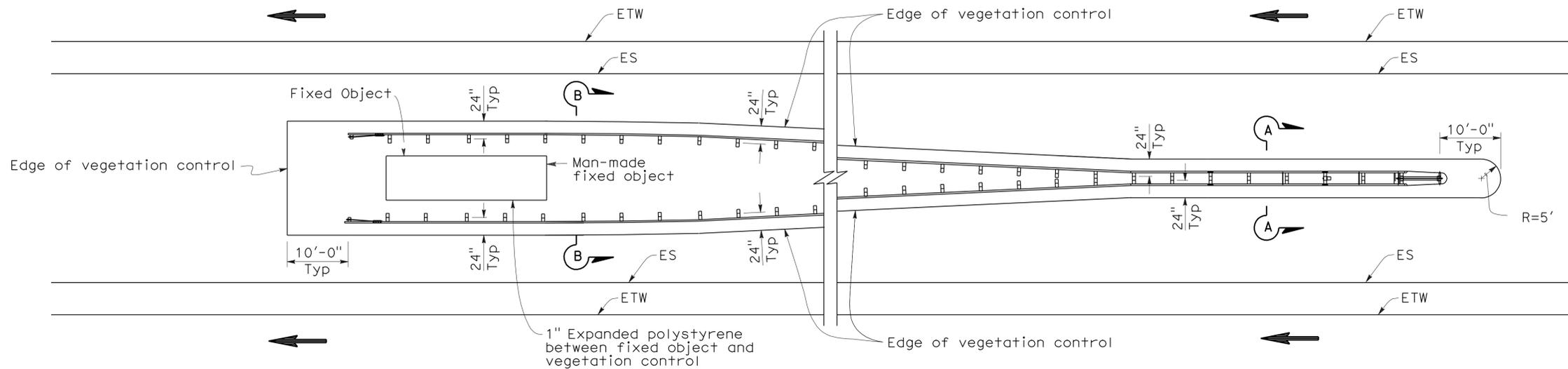
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	30	61

Randell D. Hiatt
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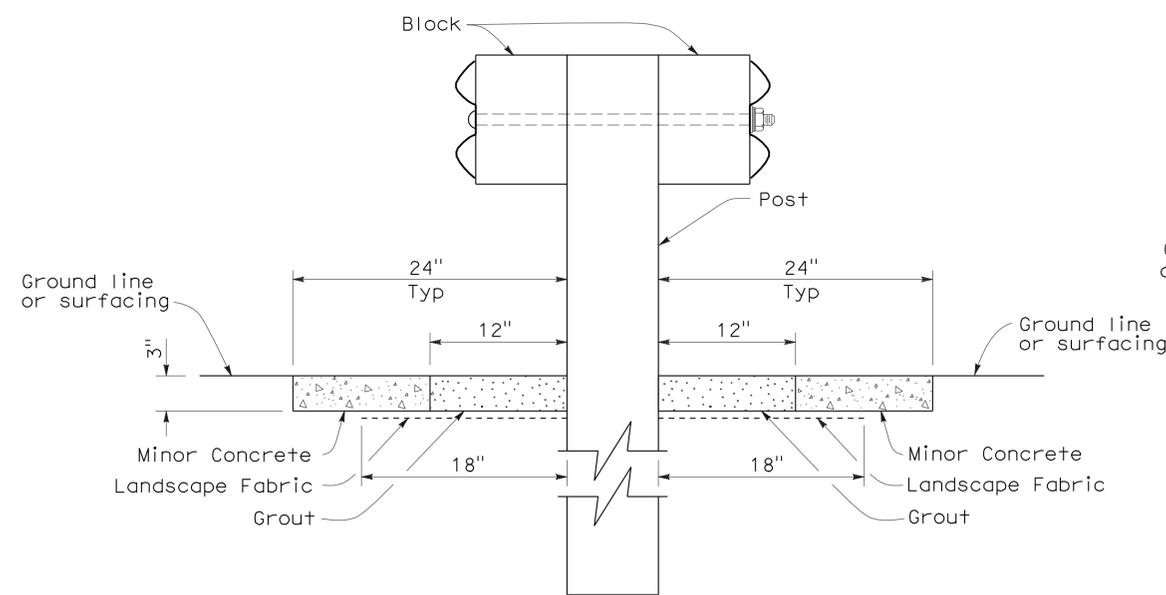
October 20, 2006
PLANS APPROVAL DATE

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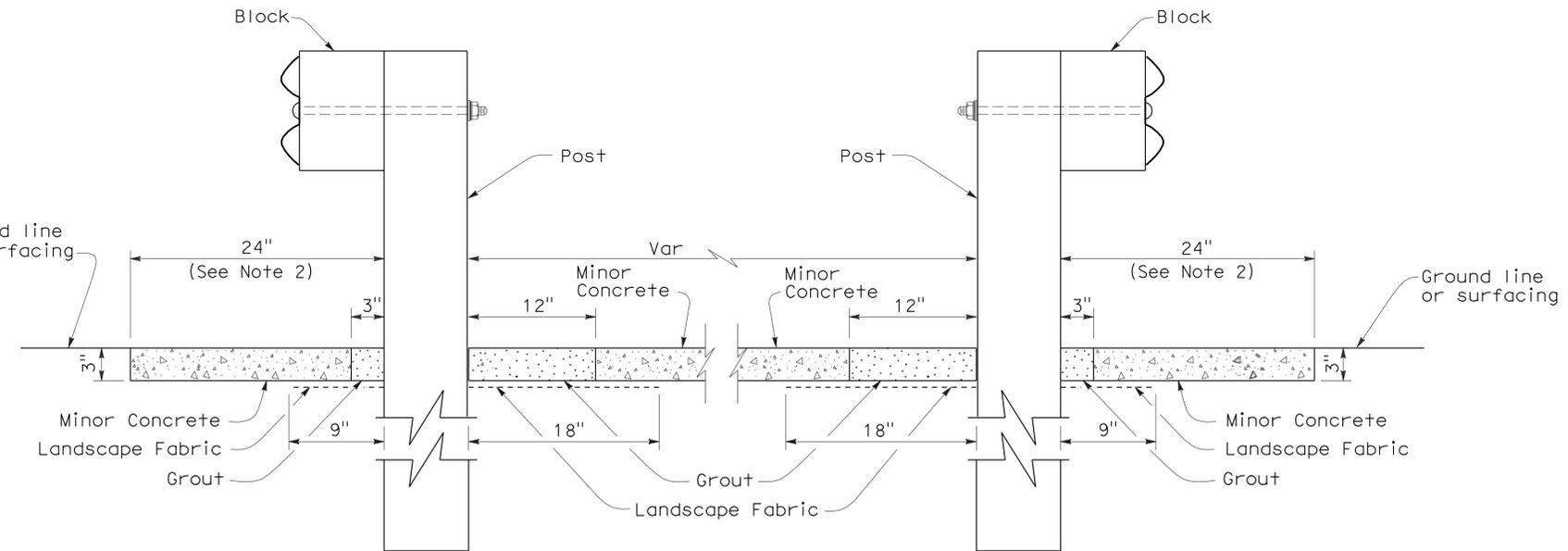
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PLAN
FIXED OBJECT(S) BETWEEN SEPARATE ROADBEDS
(ONE-WAY TRAFFIC)



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

To accompany plans dated 2-21-12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	31	61

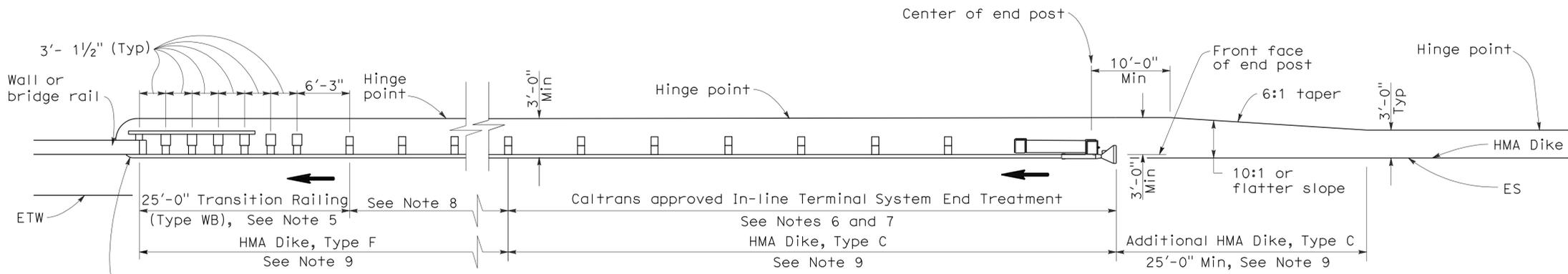
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

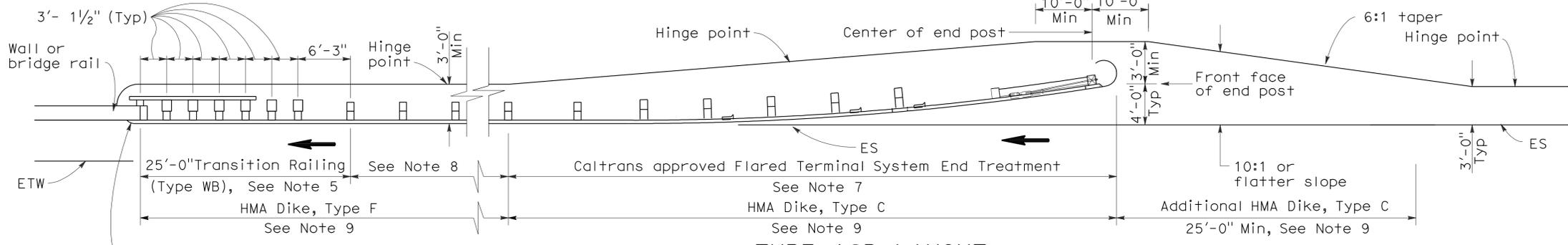
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To accompany plans dated 2-21-12



TYPE 12A LAYOUT

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



TYPE 12B LAYOUT

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

NOTES:

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

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

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

STATE OF CALIFORNIA
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**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

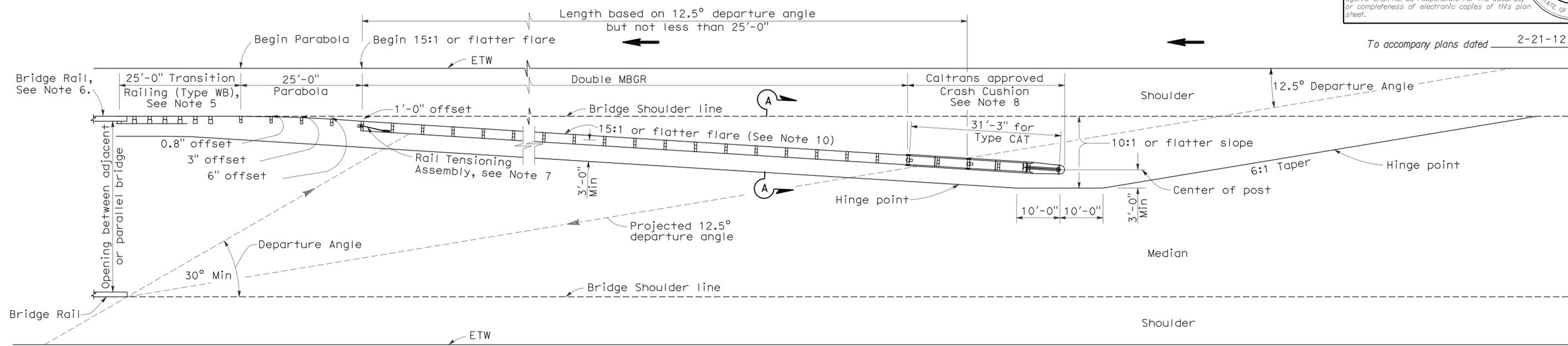
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	32	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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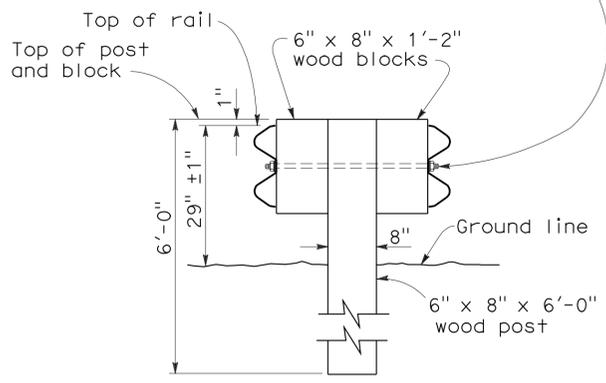
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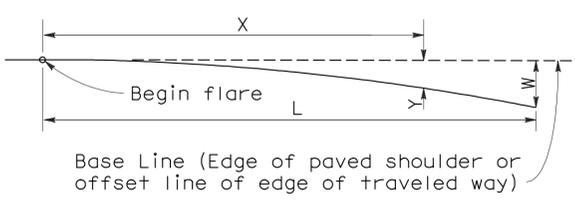
To accompany plans dated 2-21-12

TYPE 12E LAYOUT
See Note 10

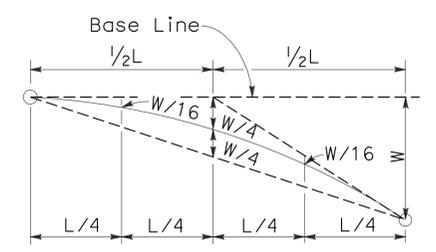
5/8" Ø Button head bolt with hex nut or 5/8" Ø Rod, threaded both ends, with hex nuts. 1/2" Max exposed threads after hex nut(s) tightened. No washer on rail faces for bolted connection to line post.



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
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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
12	Ora	91	R2.6/R2.9	33	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

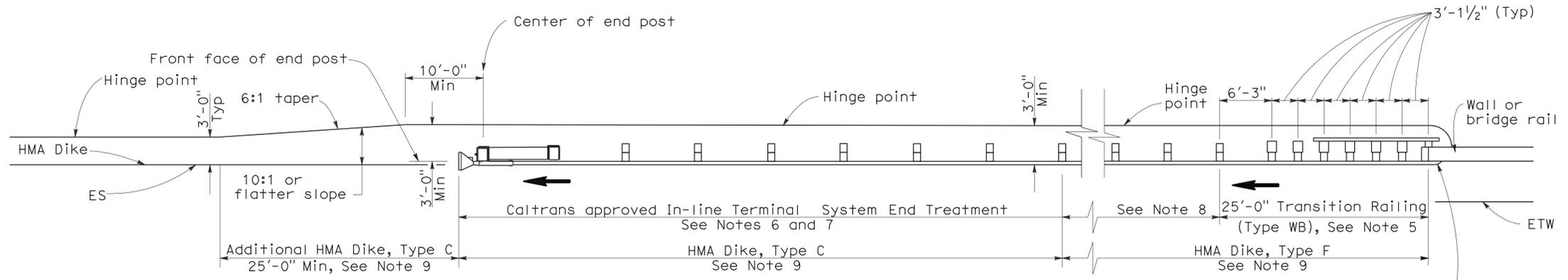
June 6, 2008
PLANS APPROVAL DATE

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

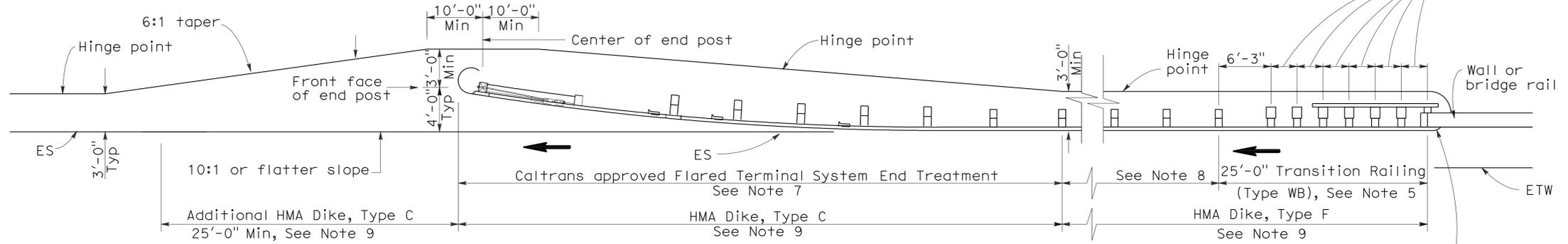
To accompany plans dated 2-21-12

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**

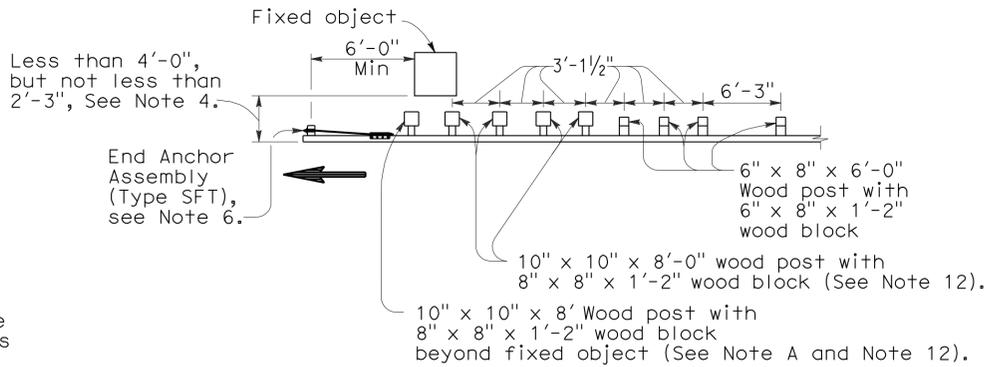
NO SCALE

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

NOTES:

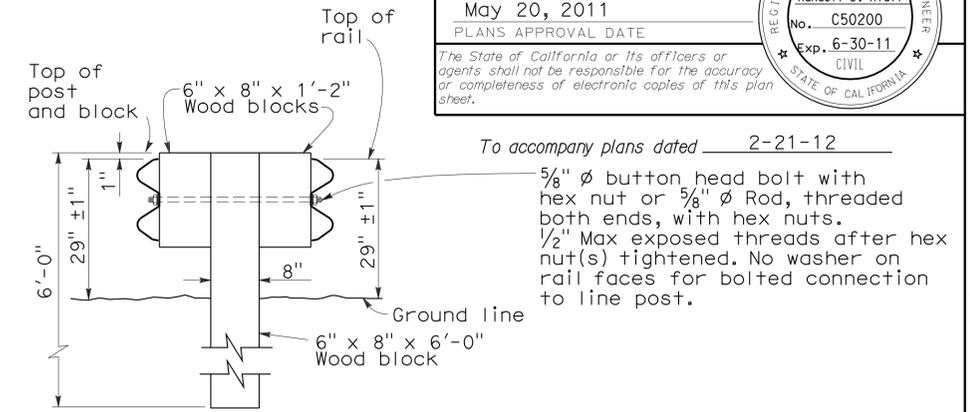
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts,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



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

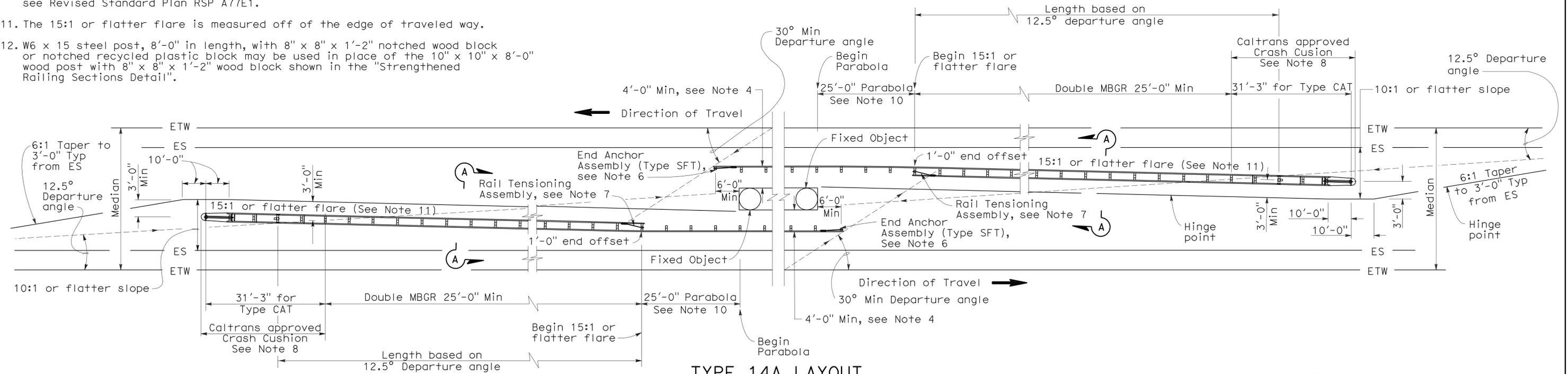
STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

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



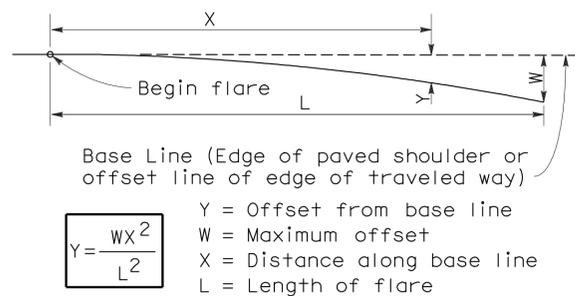
**SECTION A-A
TYPICAL DOUBLE METAL BEAM GUARD RAILING**

To accompany plans dated 2-21-12
 5/8" ϕ button head bolt with hex nut or 5/8" ϕ Rod, threaded both ends, with hex nuts.
 1/2" Max exposed threads after hex nut(s) tightened. No washer on rail faces for bolted connection to line post.

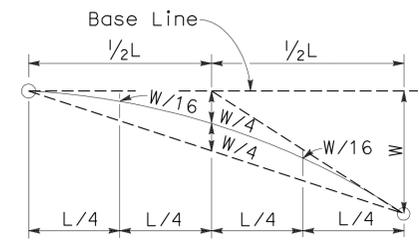


TYPE 14A LAYOUT

See Note 9



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
 TYPICAL LAYOUTS FOR
 FIXED OBJECTS
 BETWEEN SEPARATE ROADBEDS
 (TWO-WAY TRAFFIC)**
 NO SCALE

RSP A77G1 DATED MAY 20, 2011 SUPERSEDES RSP A77G1
 DATED JUNE 6, 2008 AND STANDARD PLAN A77G1
 DATED MAY 1, 2006 - PAGE 59 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	34	61

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

2006 REVISED STANDARD PLAN RSP A77G1

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or 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.
4. 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 section 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).
5. Direction of adjacent traffic indicated by → .

6. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
7. Type of crash cushion to be used will be shown on the Project Plans.
8. Type 15A layout is typically used on multilane freeways or expressways to shield fixed objects in the area between separated one-way roadbeds.
9. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
10. The 15:1 or flatter flare is measured off of the edge of the traveled way.
11. 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".

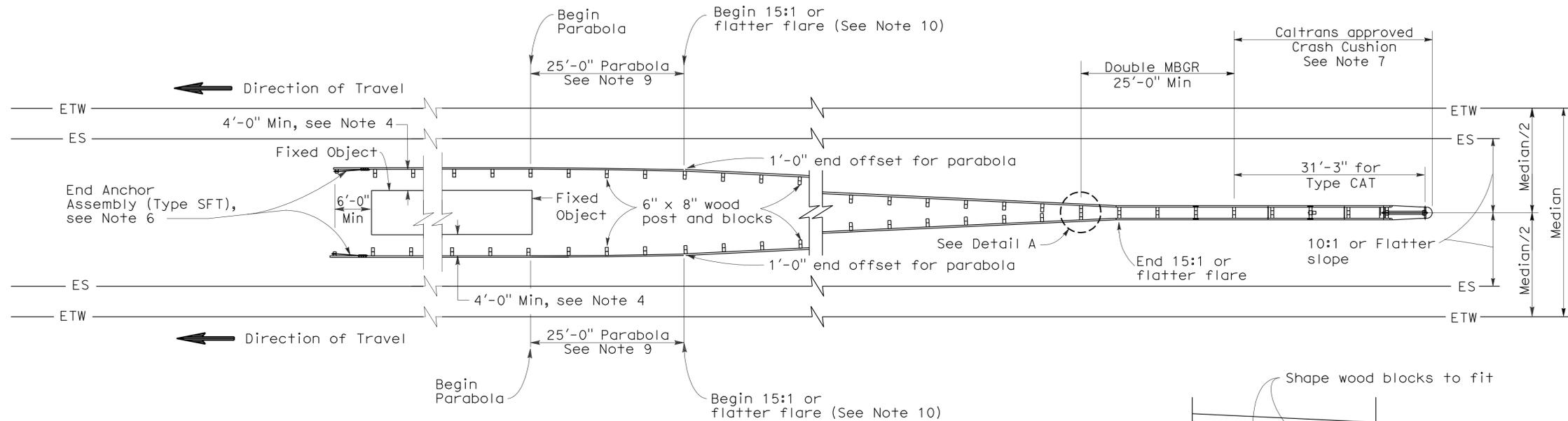
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	35	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

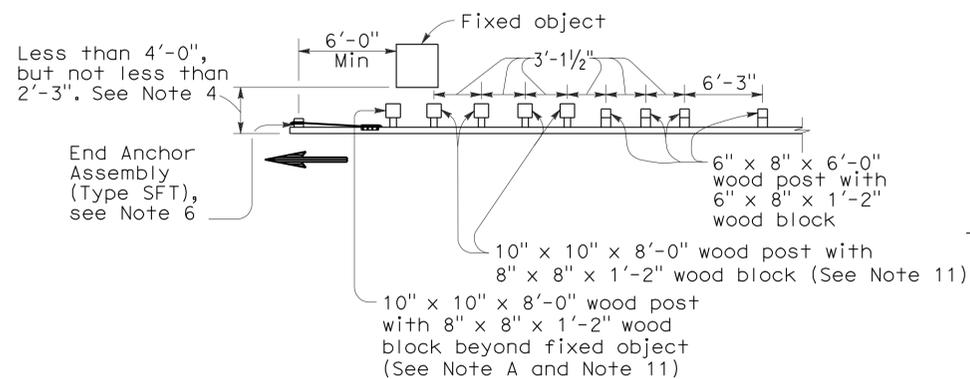
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To accompany plans dated 2-21-12



TYPE 15A LAYOUT

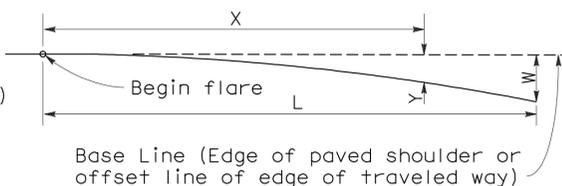
See Note 9



STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

FOR FIXED OBJECT

Use strengthened railing sections with Type 15A layout where minimum clearance between the face of the guard railing and the fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.

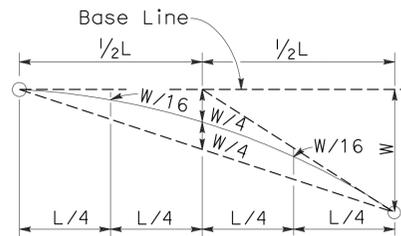


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

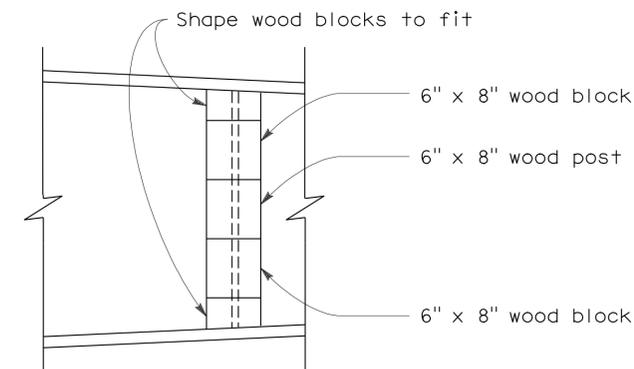
$Y = \frac{WX^2}{L^2}$

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

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT



DETAIL A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77G2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G2
DATED MAY 1, 2006 - PAGE 60 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G2

2006 REVISED STANDARD PLAN RSP A77G2

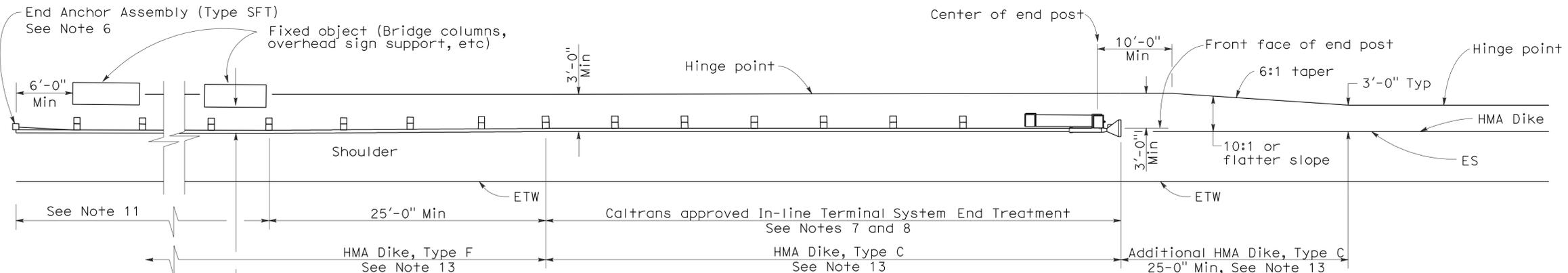
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	36	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

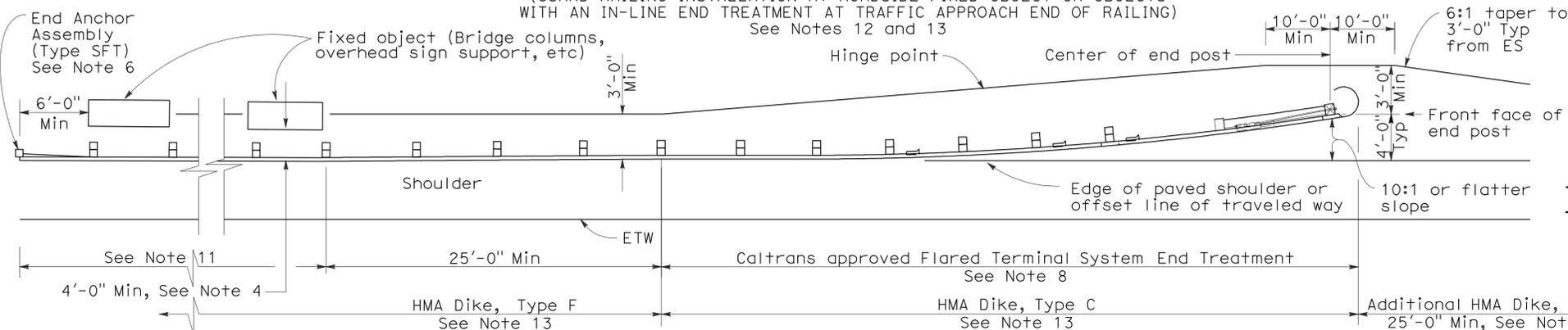
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REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-09
CIVIL
STATE OF CALIFORNIA



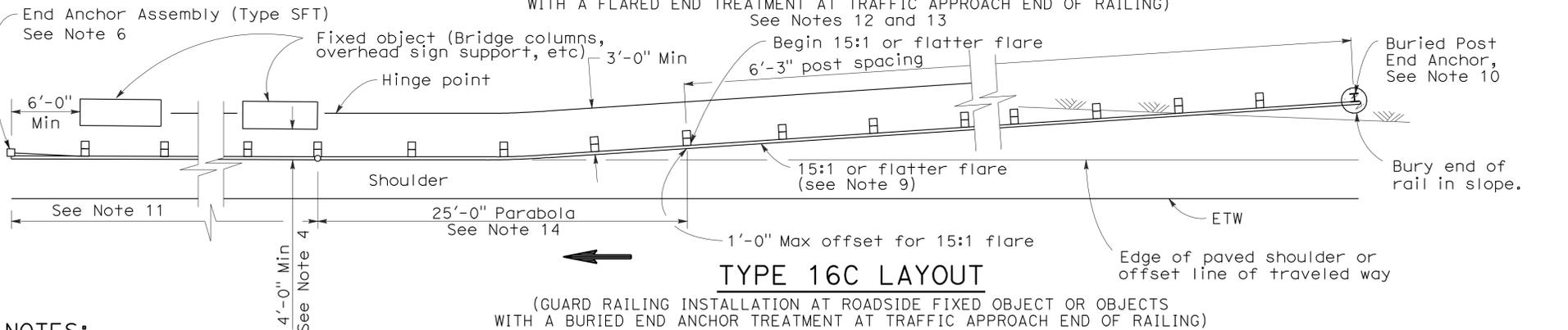
TYPE 16A LAYOUT

(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



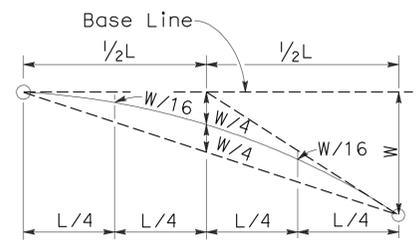
TYPE 16B LAYOUT

(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

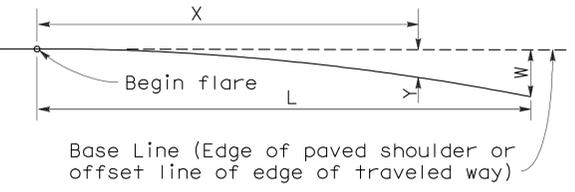


TYPE 16C LAYOUT

(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

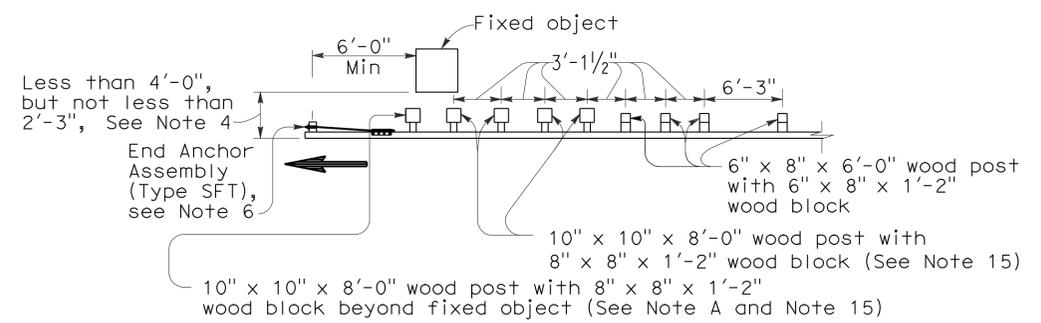


Base Line (Edge of paved shoulder or offset line of edge of traveled way)
Y = Offset from base line
W = Maximum offset
X = Distance along base line
L = Length of flare

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

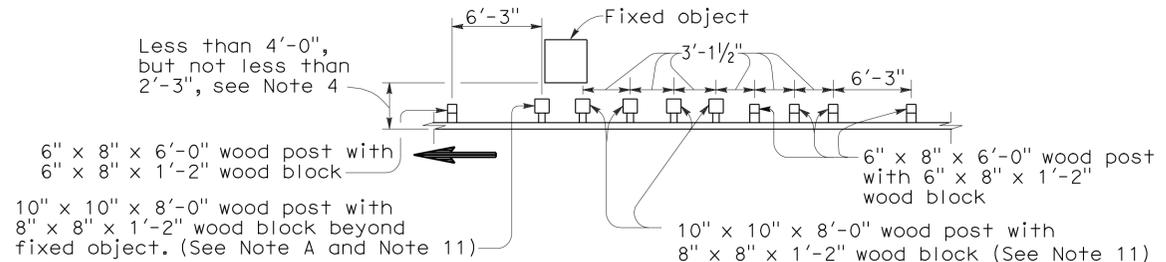
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	37	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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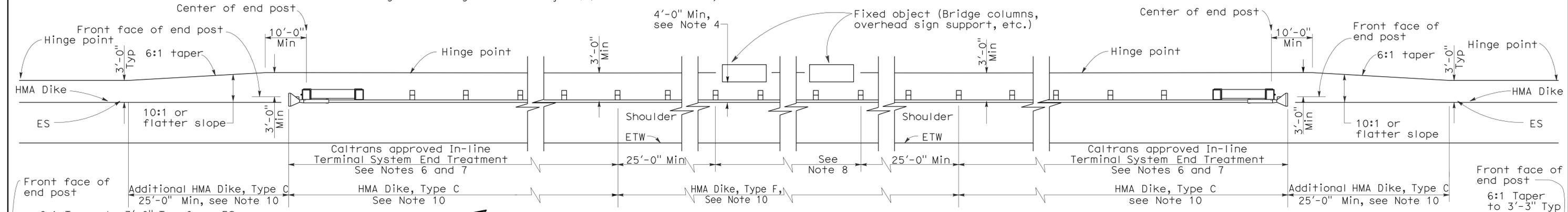
To accompany plans dated 2-21-12



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).

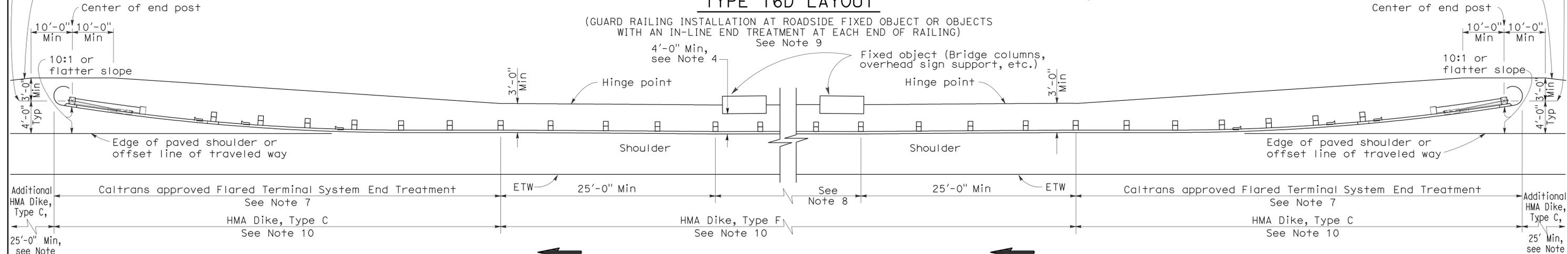
STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

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)



TYPE 16E LAYOUT

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

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

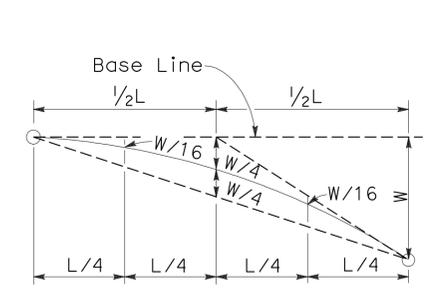
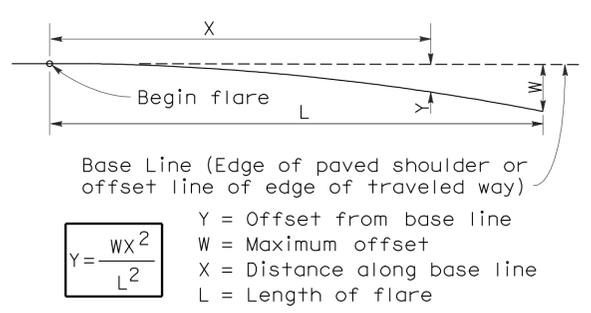
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	38	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

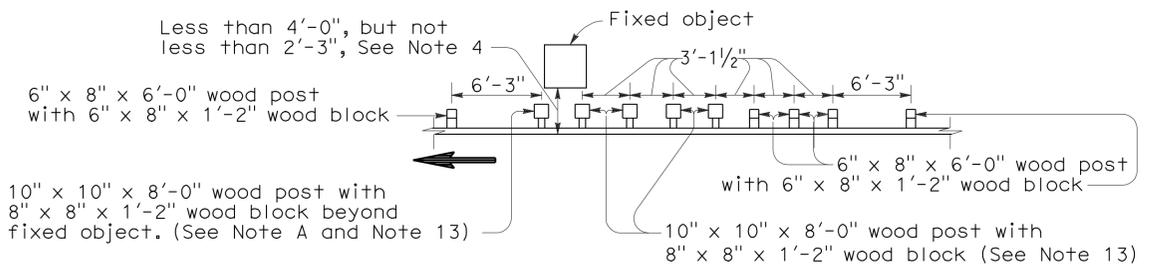
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To accompany plans dated 2-21-12



PARABOLIC FLARE OFFSETS

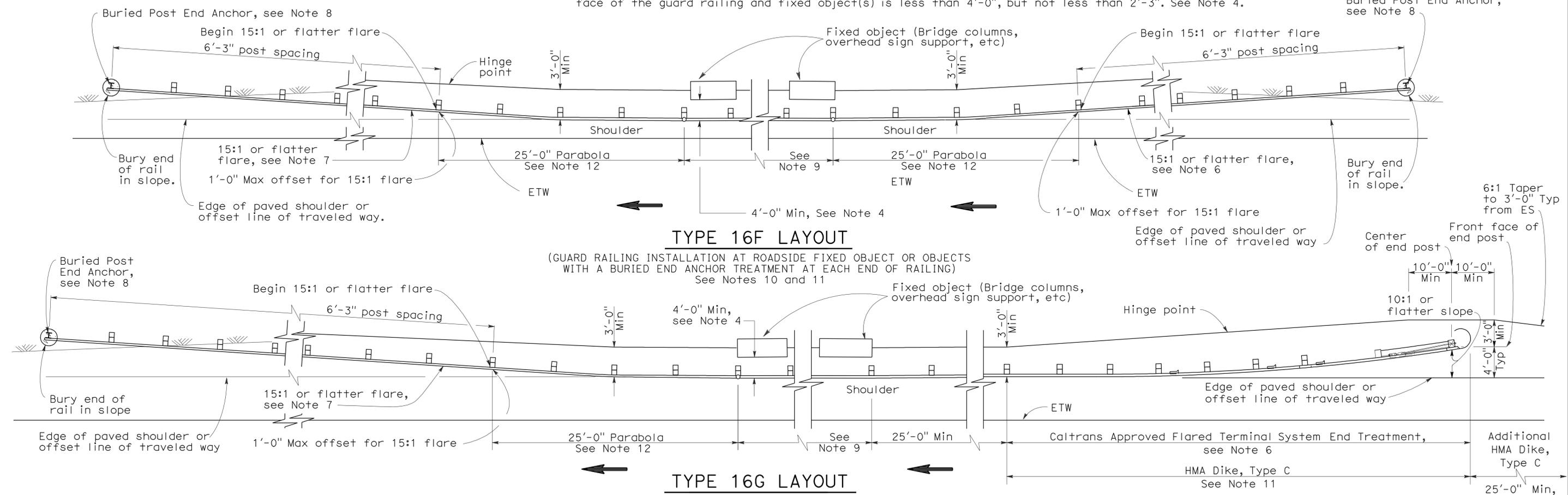
TYPICAL PARABOLIC LAYOUT



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 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.



TYPE 16F LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AT EACH END OF RAILING) See Notes 10 and 11

TYPE 16G LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AND A BURIED END ANCHOR TREATMENT AT THE ENDS OF RAILING) See Notes 10 and 11

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
12	Ora	91	R2.6/R2.9	39	61

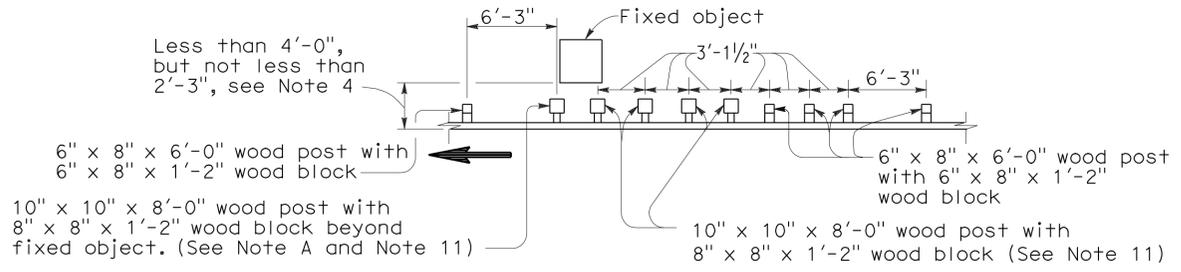
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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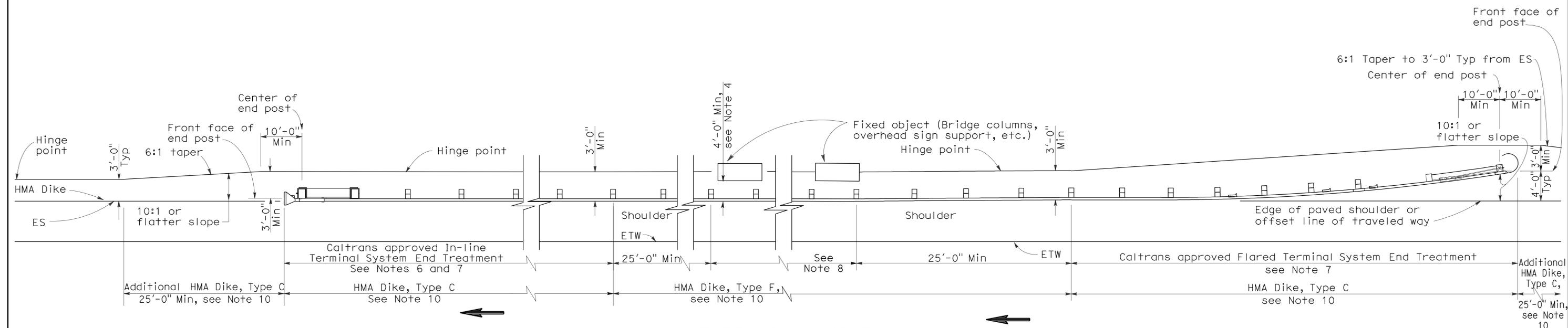
To accompany plans dated 2-21-12



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 →.

- 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.

2006 REVISED STANDARD PLAN RSP A77G6

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	40	61

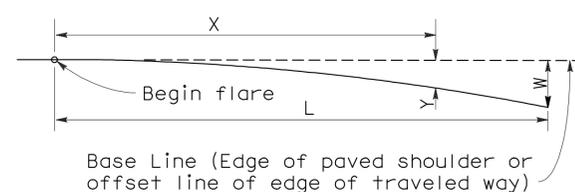
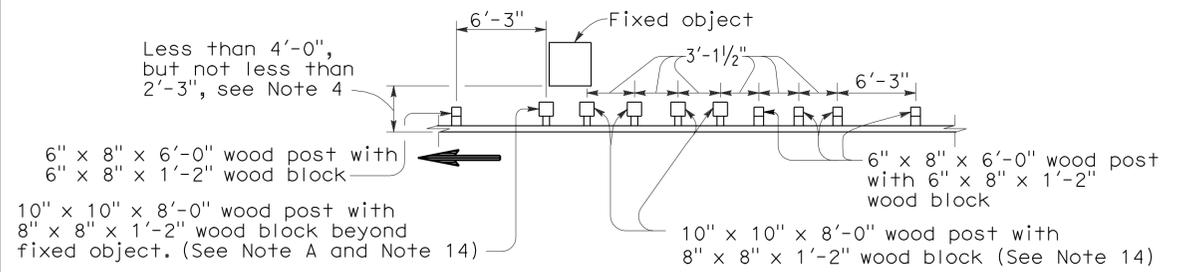
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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To accompany plans dated 2-21-12

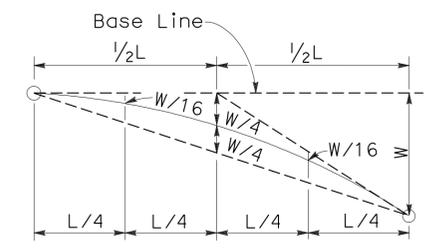
2006 REVISED STANDARD PLAN RSP A77G7



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

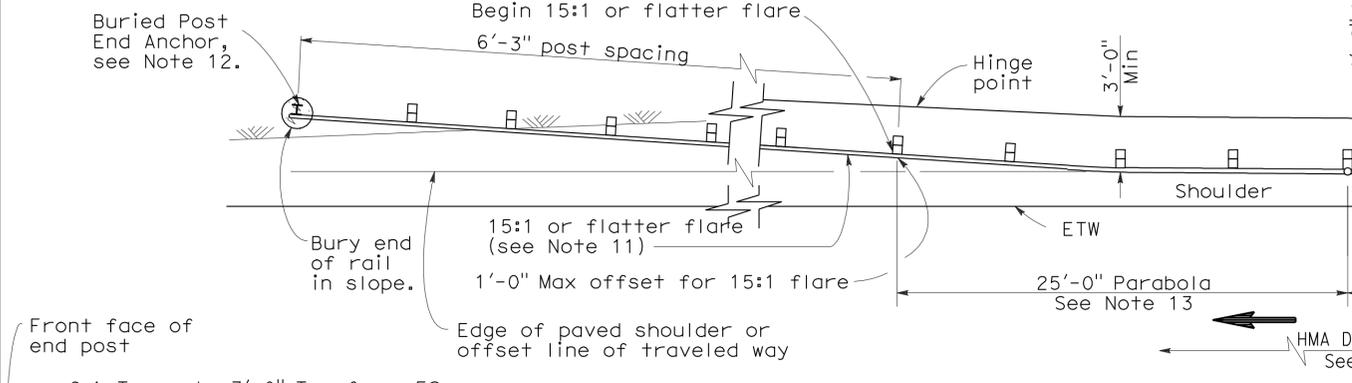


TYPICAL PARABOLIC LAYOUT

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

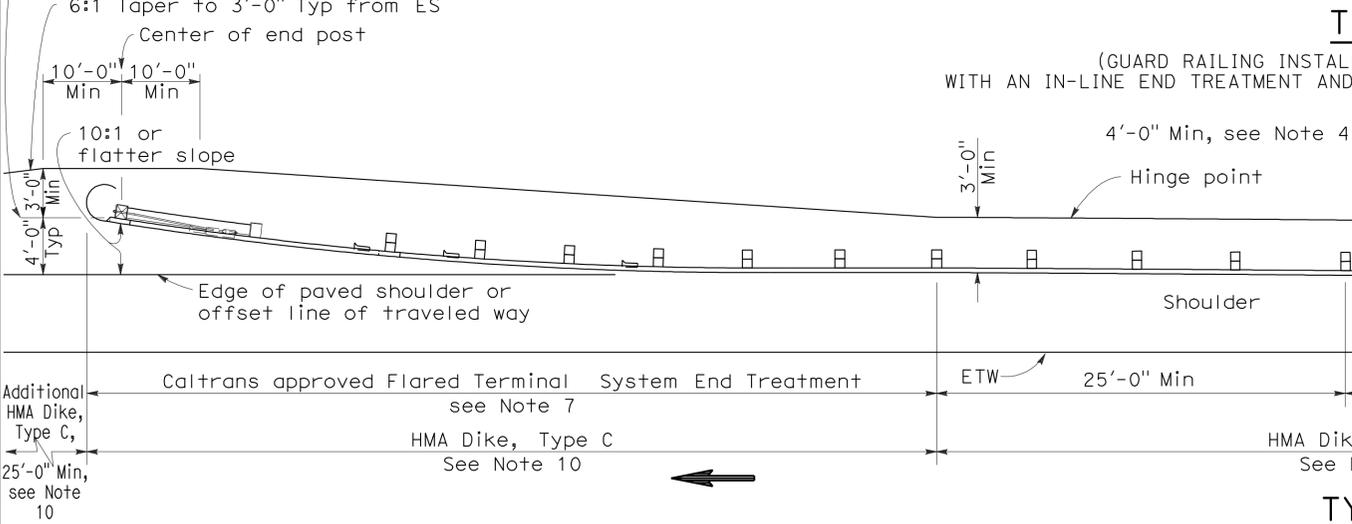
PARABOLIC FLARE OFFSETS

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 →.

- 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".

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

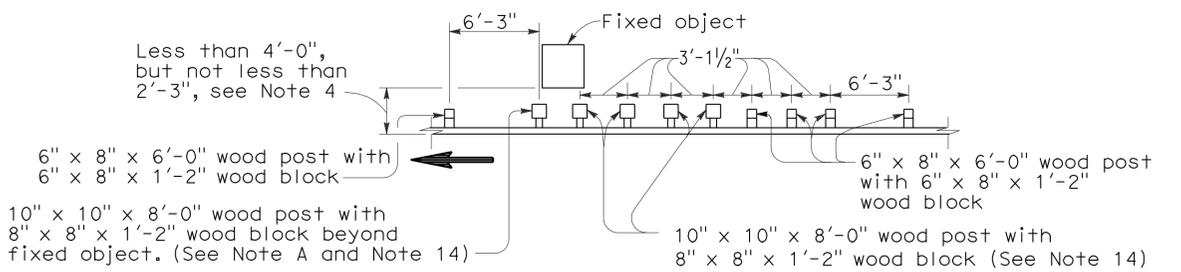
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	41	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

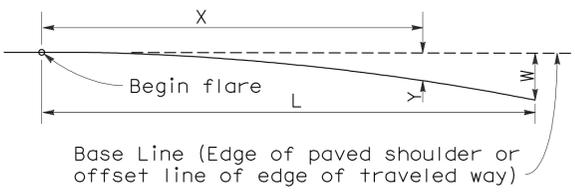
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Note A. For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

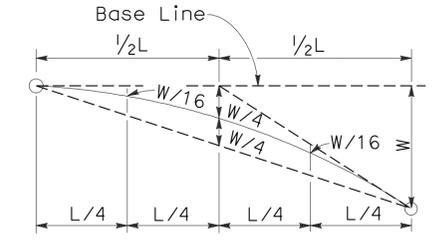
STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT



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

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

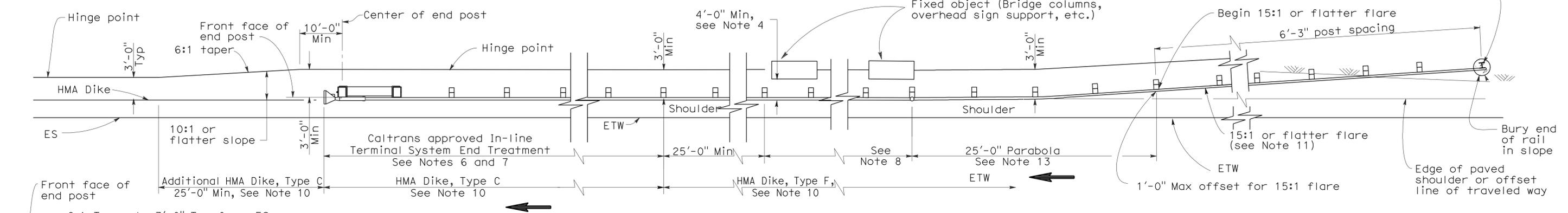
PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

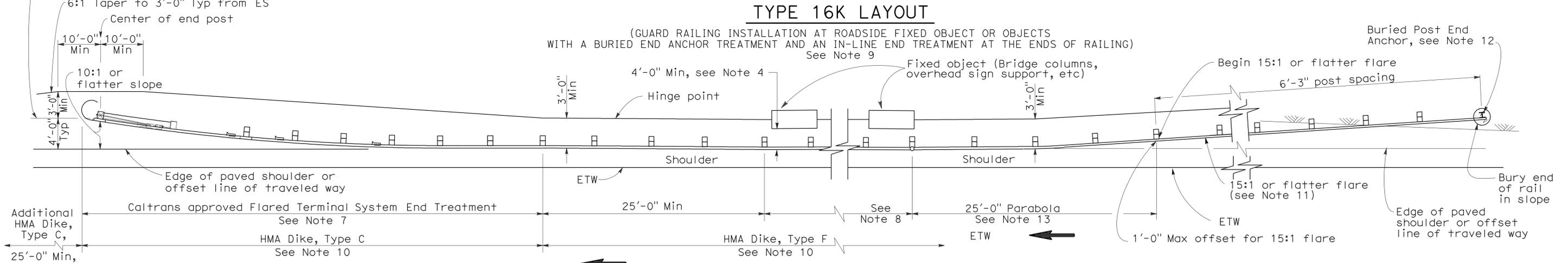
To accompany plans dated 2-21-12

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.



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

2006 REVISED STANDARD PLAN RSP A77G8

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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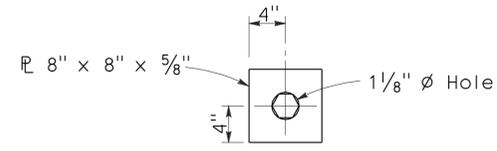
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

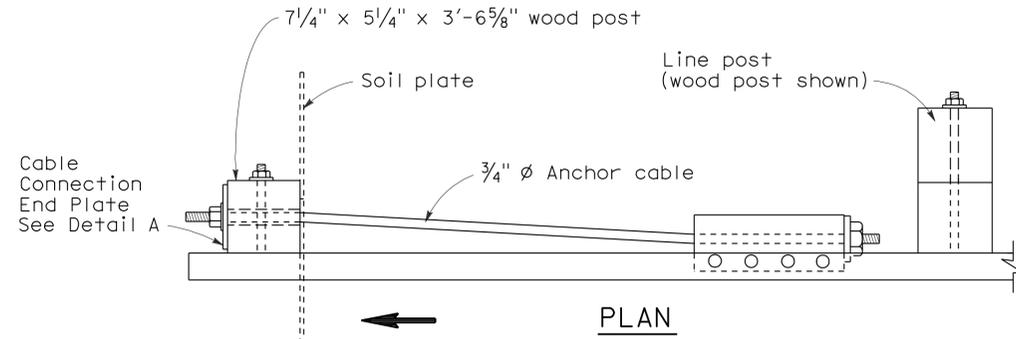
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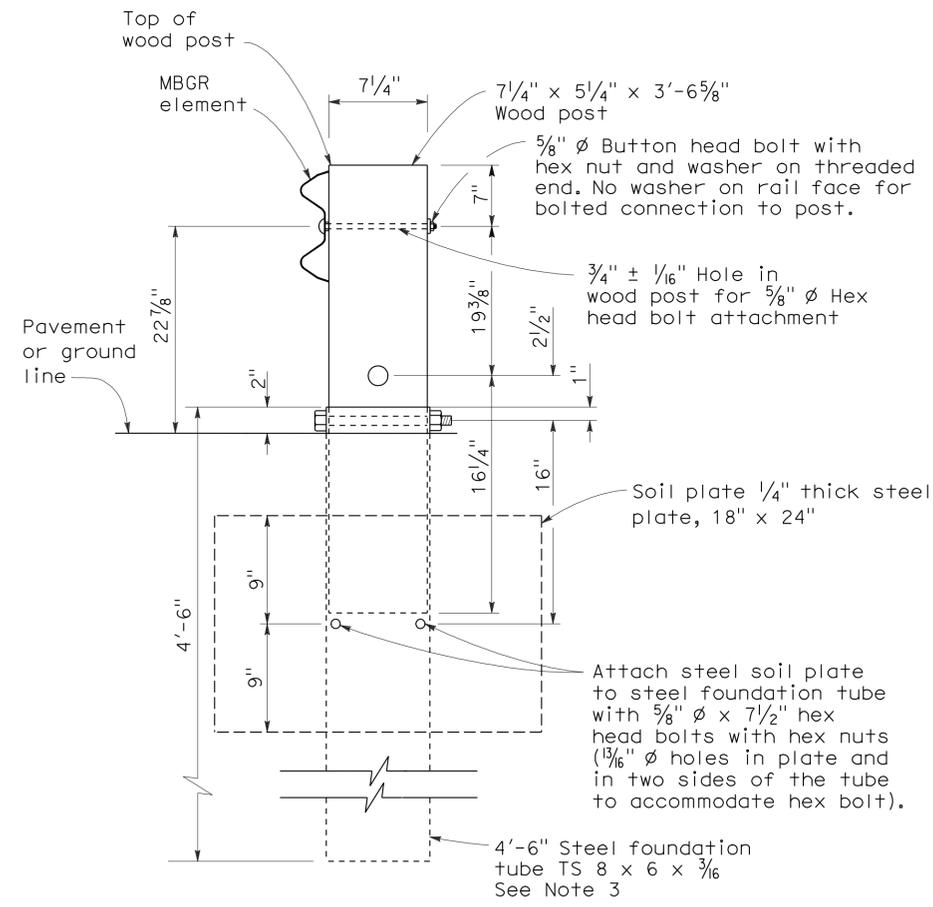
To accompany plans dated 2-21-12



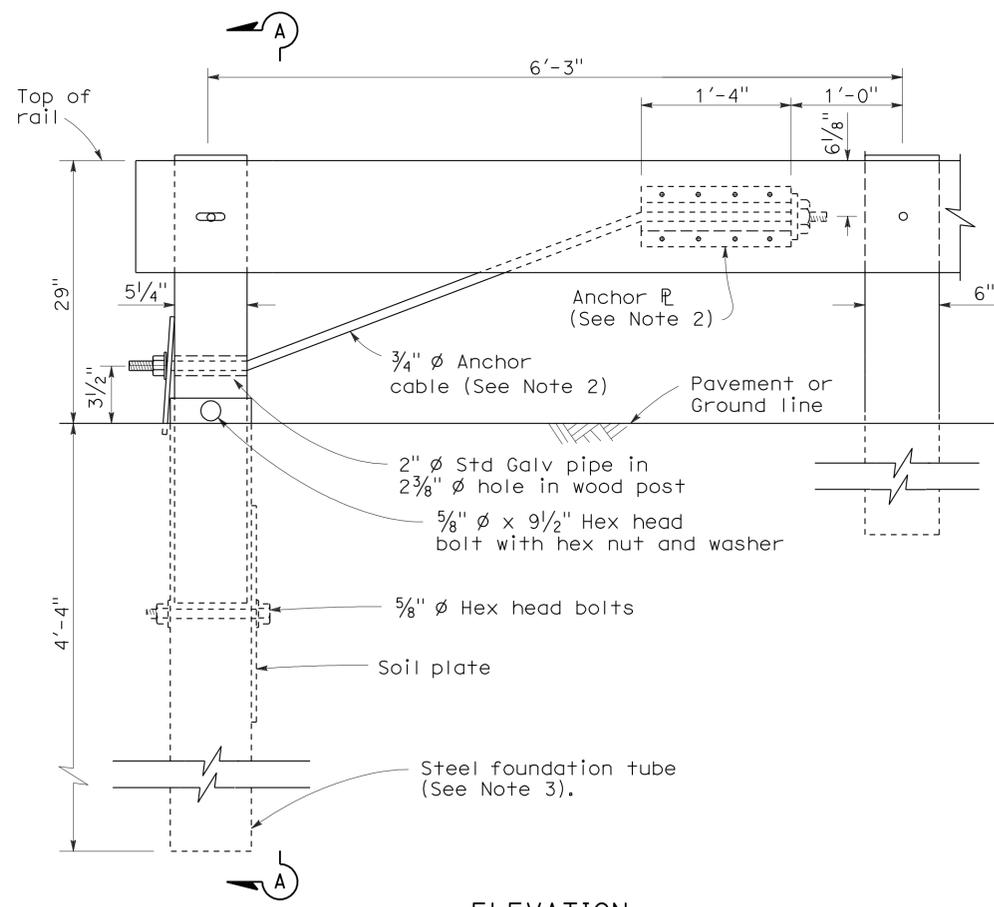
DETAIL A
CABLE CONNECTION
END PLATE



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 \Rightarrow .
5. Install line post, steel foundation tube and soil plate in soil.

STATE OF CALIFORNIA
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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
12	Ora	91	R2.6/R2.9	43	61

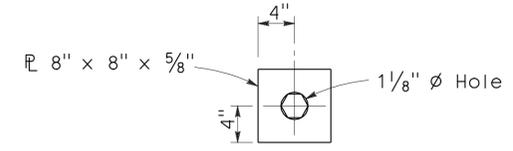
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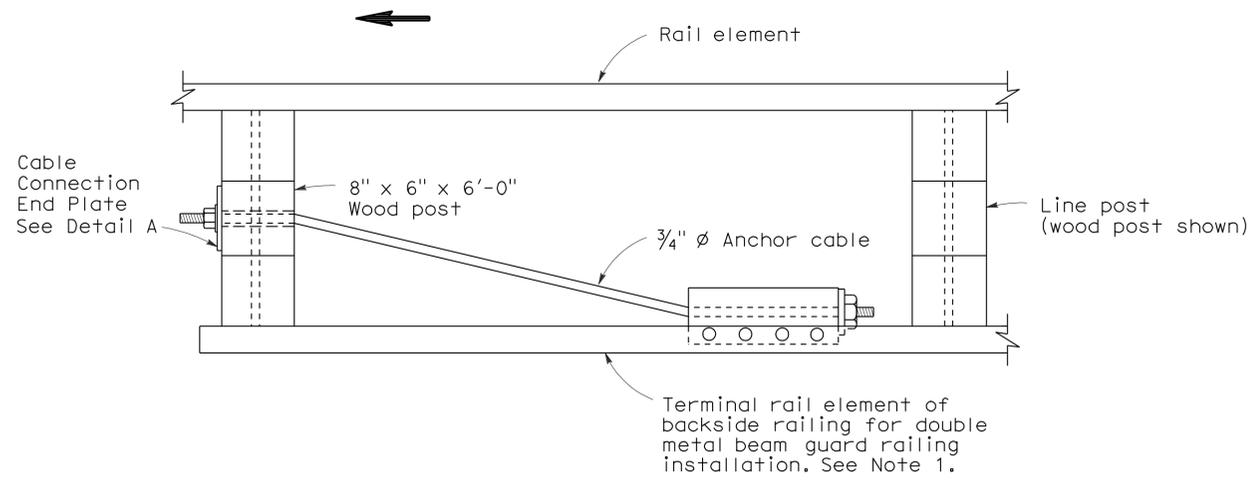
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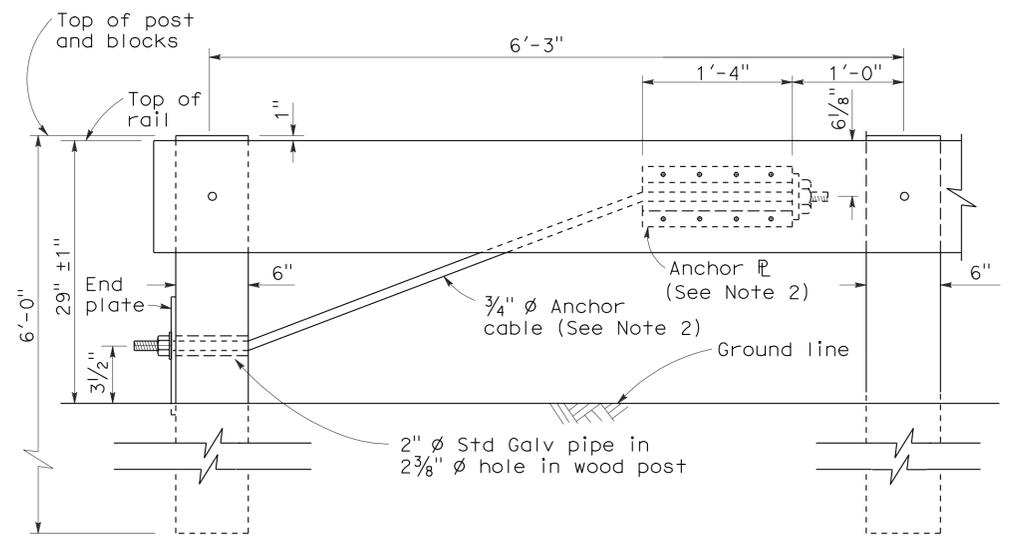
To accompany plans dated 2-21-12



DETAIL A
CABLE CONNECTION
END PLATE



PLAN



ELEVATION
RAIL TENSIONING
ASSEMBLY
See Note 1

NOTES:

1. See Standard Plan A77F3 and Standard Plan A77G1 for typical use of rail tensioning assembly.
2. For details of the anchor plate and 3/4 inch cable, see Standard Plan A77H3.
3. Direction of traffic indicated by →.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL RAILING
RAIL TENSIONING ASSEMBLY

NO SCALE

RSP A77H2 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77H2
DATED MAY 1, 2006 - PAGE 68 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77H2

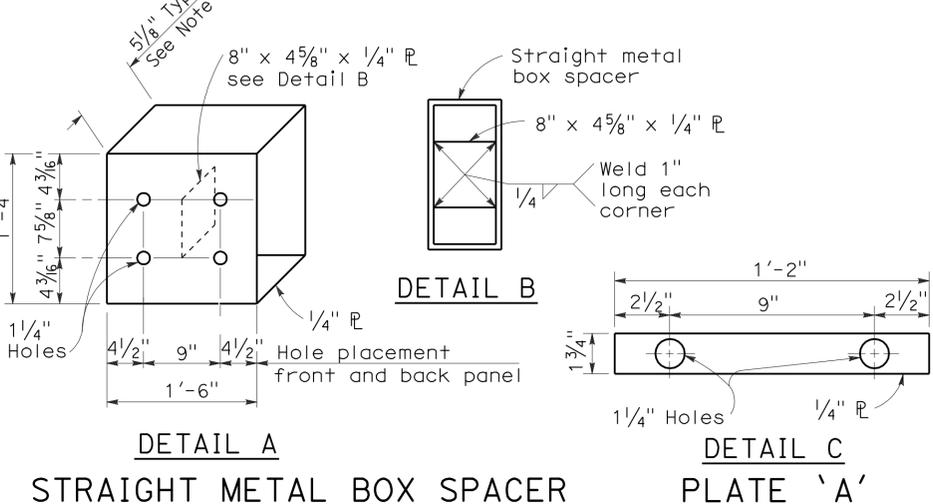
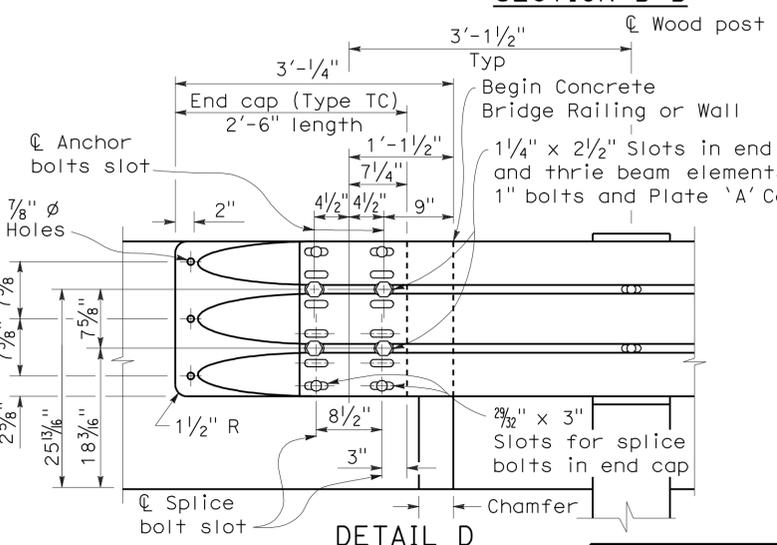
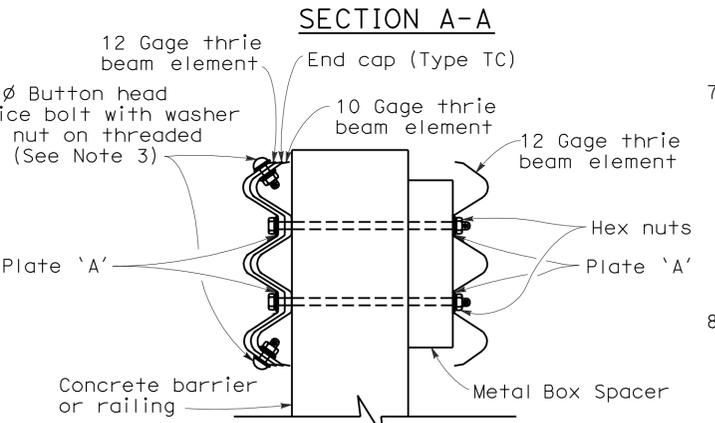
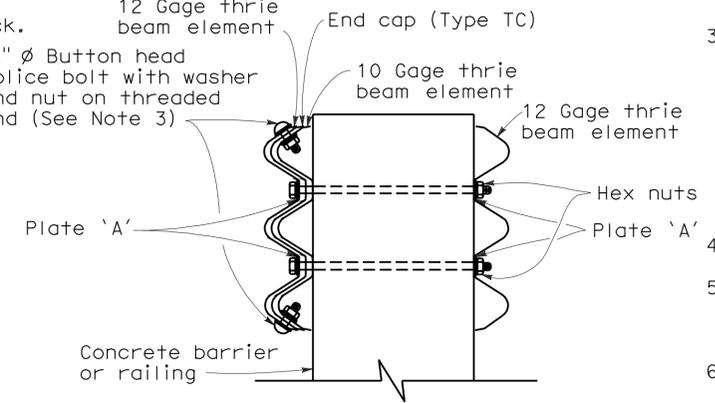
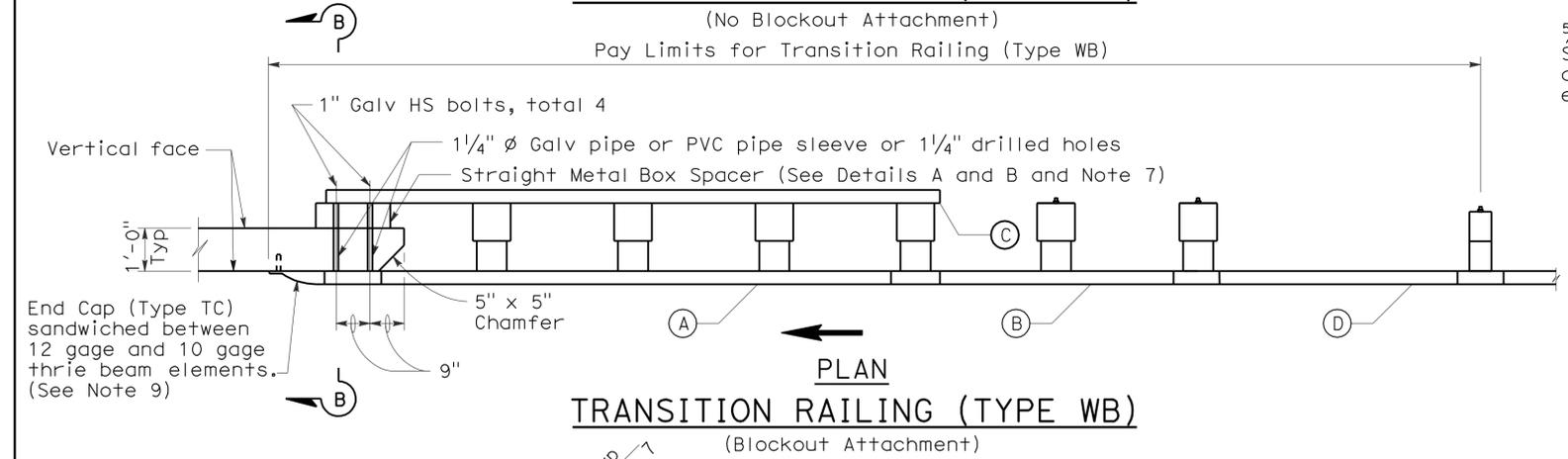
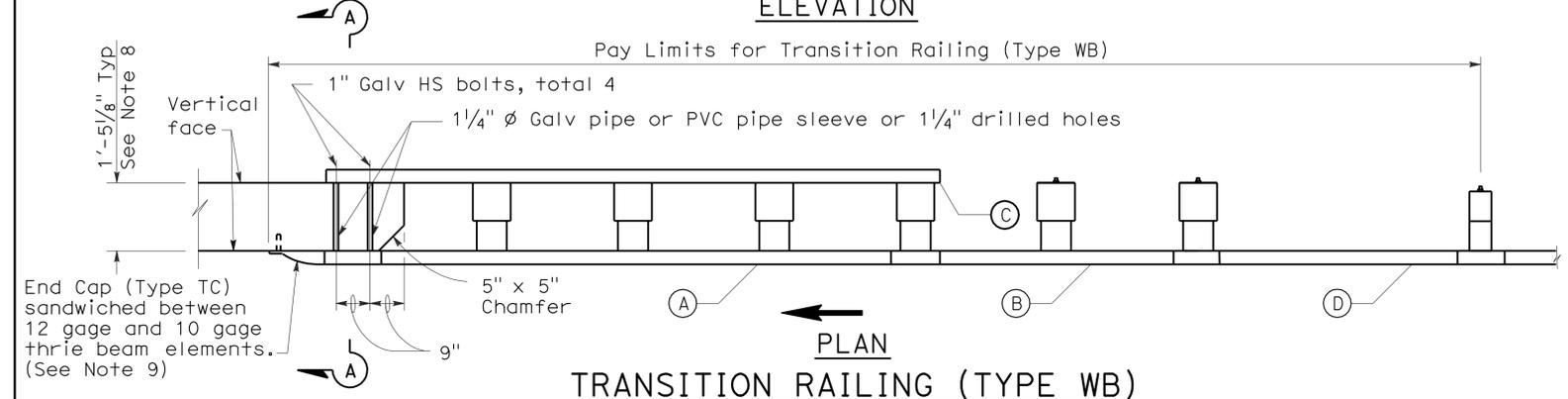
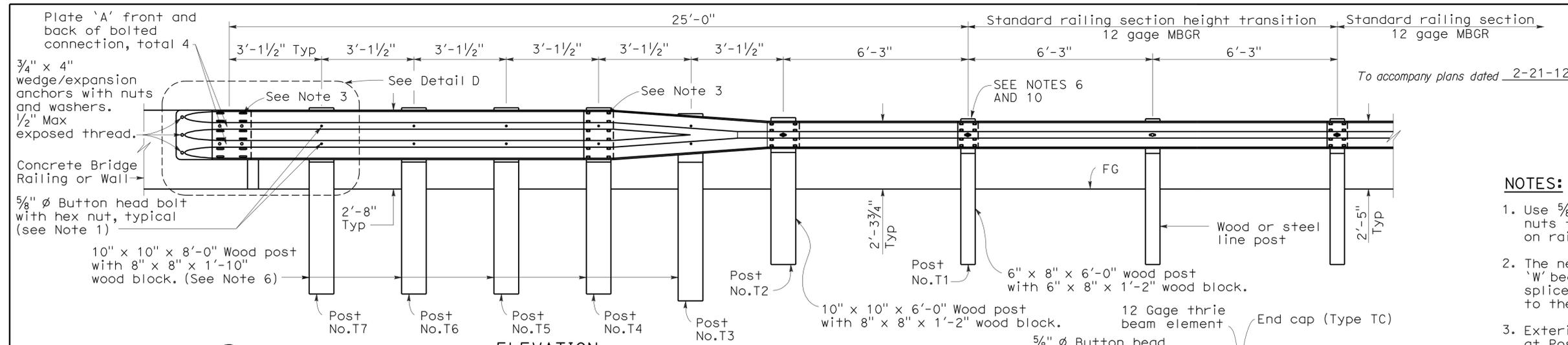
2006 REVISED STANDARD PLAN RSP A77H2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	44	61

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May 20, 2011
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- 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

- NOTES:**
1. Use 5/8" Ø Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
 2. 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.
 3. Exterior splice bolt holes for rail element splices at Post No. T4 and the connection to the concrete barrier or railing shall be the standard 7/32" x 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1/4" Ø. Only the top 2 and the bottom 2 splice bolts with washers and nuts are required for rail splices at Post No. T4 and the connection to the concrete barrier or railing.
 4. Direction of adjacent traffic indicated by →.
 5. The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
 6. 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.
 7. The depth of the metal box spacer varies from the 5/8" to 1 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 17 1/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1 1/2", metal plates similar to Plate 'A' are to be used as spacers.
 8. Where the width of the concrete railing or wall is greater than 17 1/8", wood blocks are to be used to fill the space created between the backside of Posts No. T4 through No. T7 and the rear thrie beam element. These wood blocks shall be 8" in width and 1'-2" in length. The dimension between the front thrie beam element and the rear thrie beam element is to match the width of the concrete railing or wall.
 9. 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.
 10. Conform standard railing section height to 2'-3 3/4" at Post No. T1 using height transition ratio of 120:1.

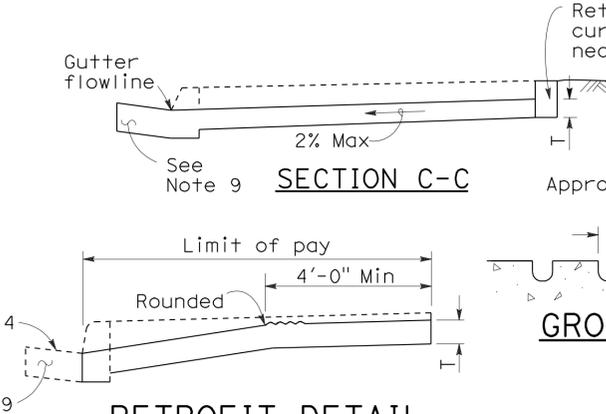
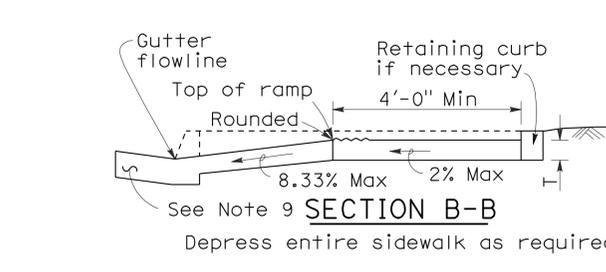
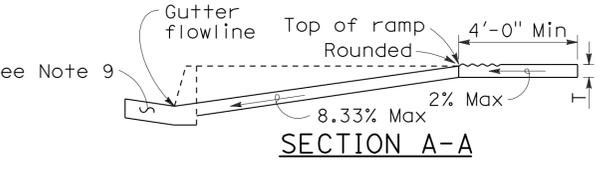
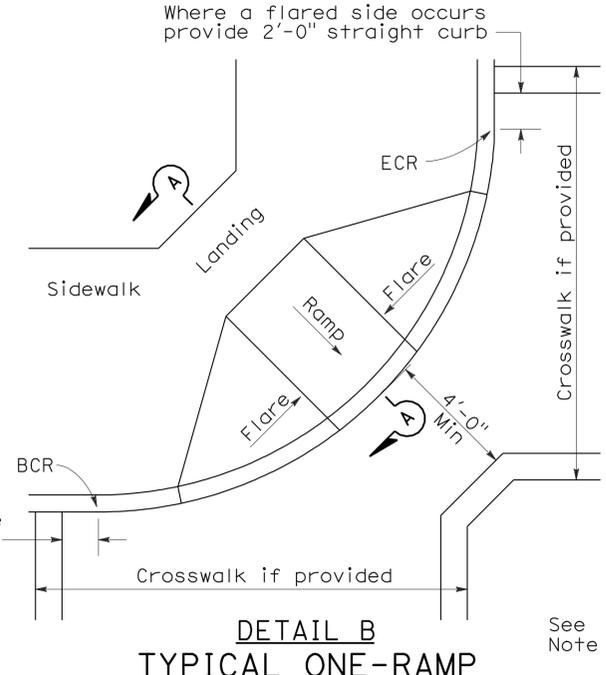
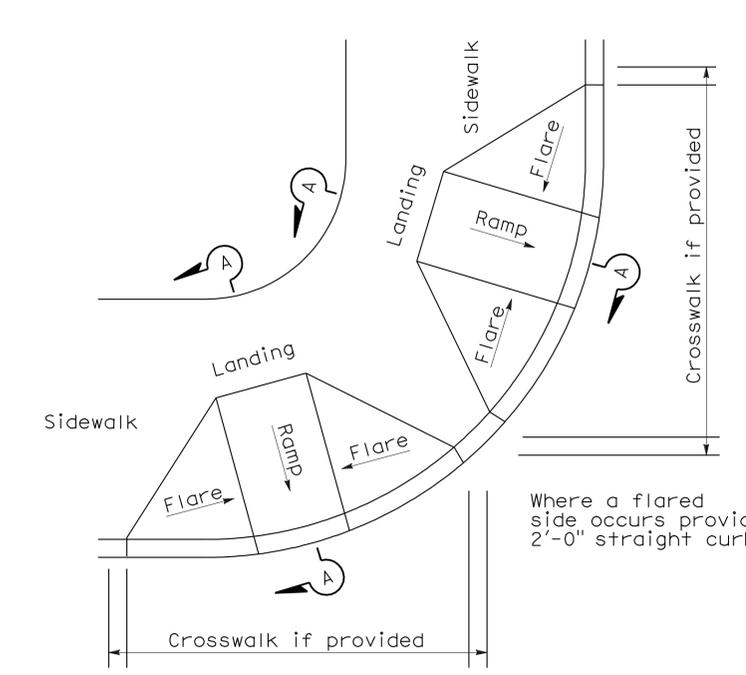
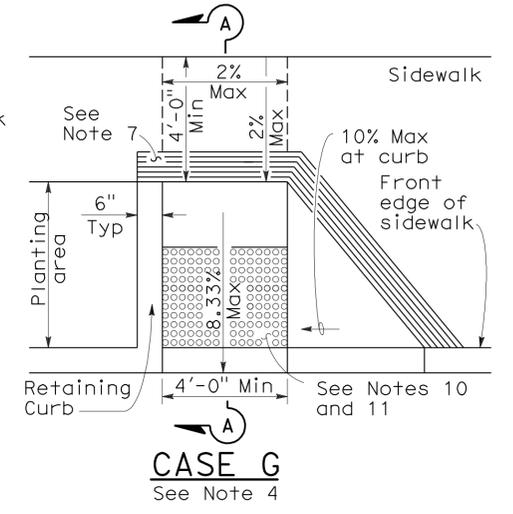
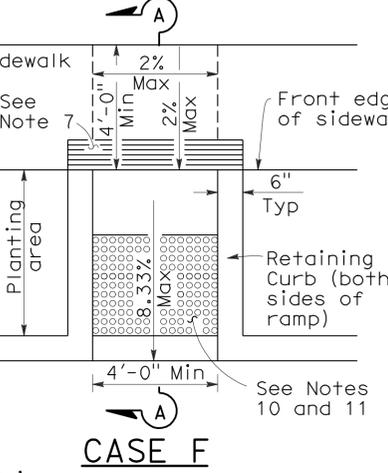
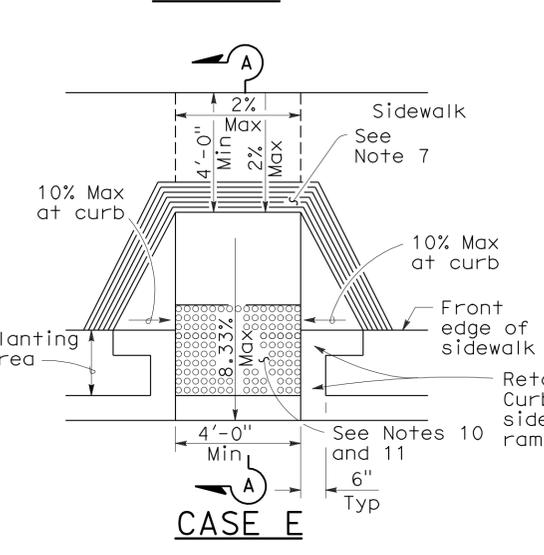
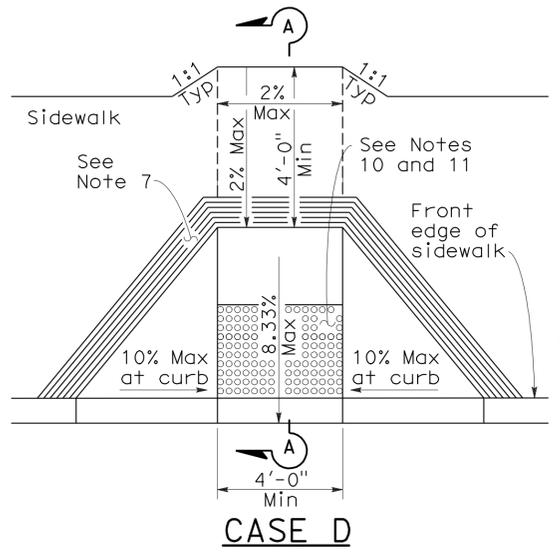
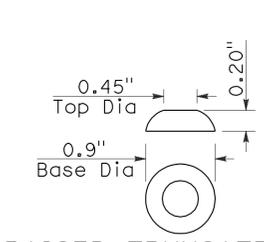
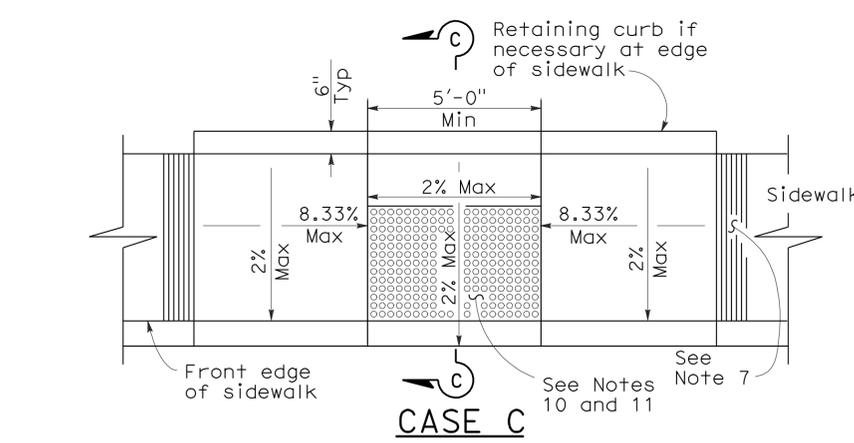
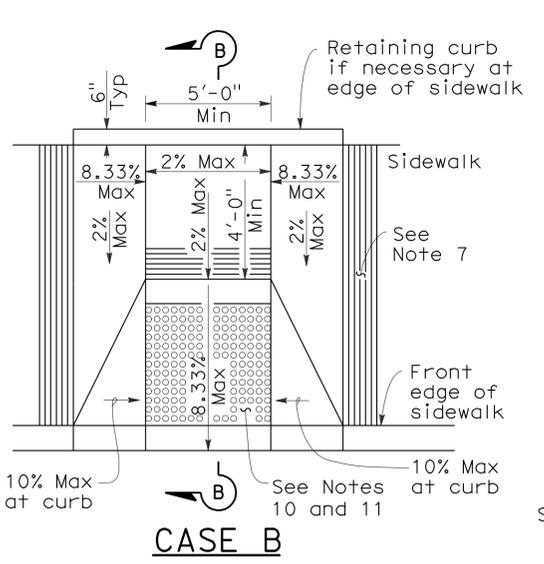
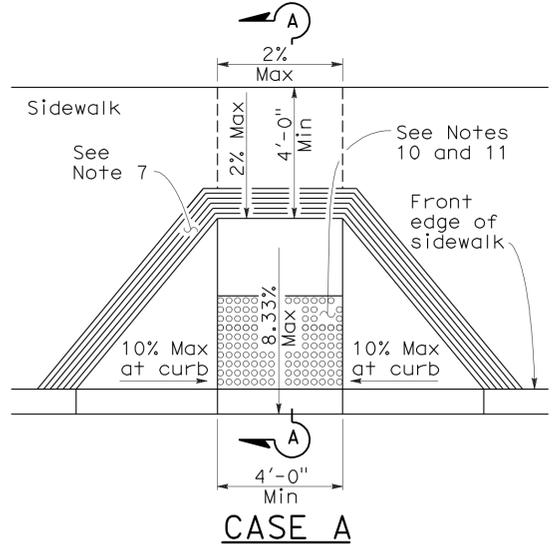
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
 TRANSITION RAILING
 (TYPE WB)**
 NO SCALE
 RSP A77J4 DATED MAY 20, 2011 SUPERSEDES
 RSP A77J4 DATED JUNE 5, 2009, RSP A77J4 DATED JUNE 6, 2008
 AND STANDARD PLAN A77J4 DATED MAY 1, 2006 -
 PAGE 75 OF THE STANDARD PLANS BOOK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

2006 REVISED STANDARD PLAN RSP A77J4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	45	61

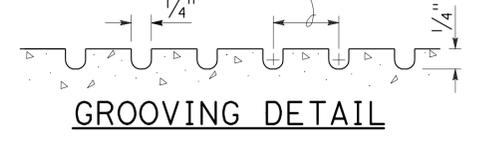
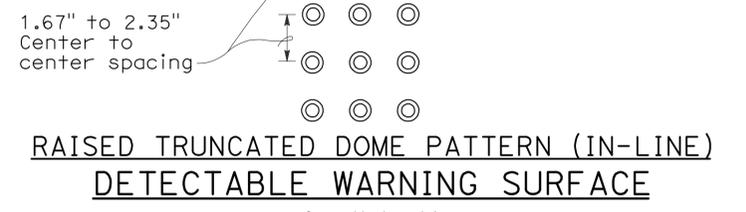
H. David Cordova
 REGISTERED CIVIL ENGINEER
 September 1, 2006
 PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

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.



CURB RAMP DETAILS
NO SCALE

TYPICAL TWO-RAMP CORNER INSTALLATION
See Note 1

TYPICAL ONE-RAMP CORNER INSTALLATION
See Notes 1 and 3

RETROFIT DETAIL
Existing curb and sidewalk

2006 REVISED STANDARD PLAN RSP A88A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	46	61

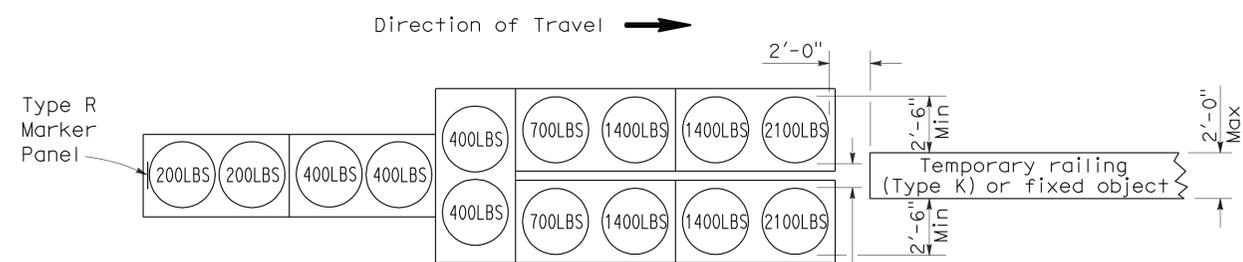
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

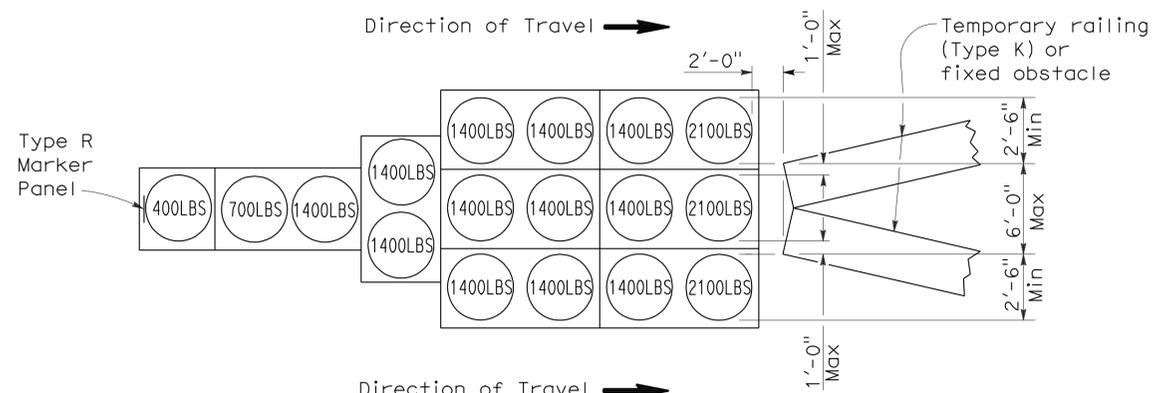
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 2-21-12



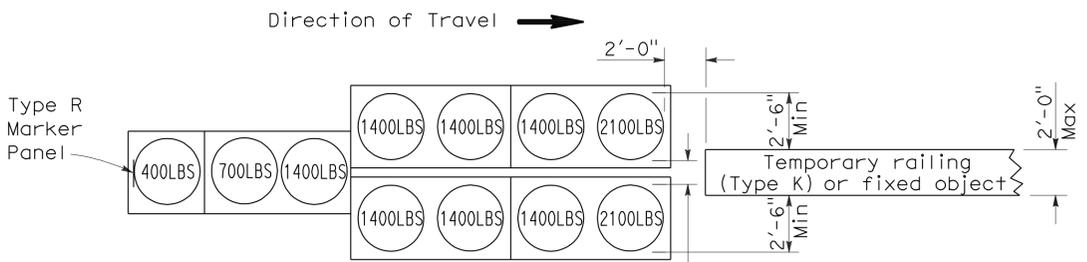
ARRAY 'TU14'

Approach speed 45 mph or more



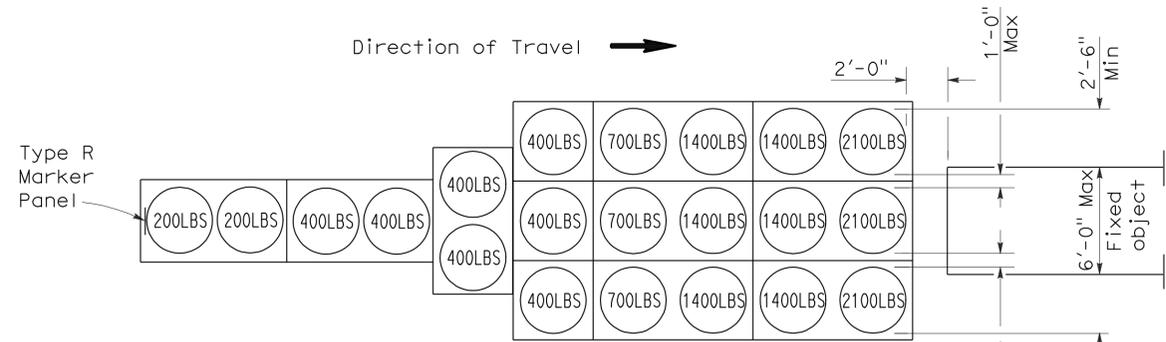
ARRAY 'TU17'

Approach speed less than 45 mph



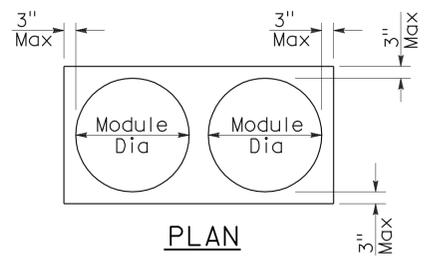
ARRAY 'TU11'

Approach speed less than 45 mph

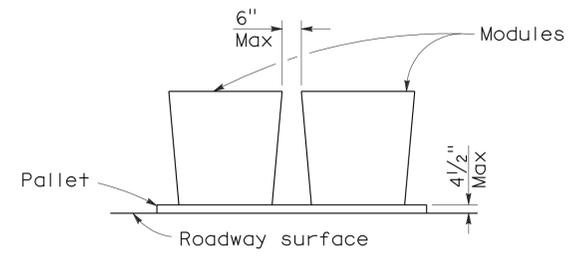


ARRAY 'TU21'

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

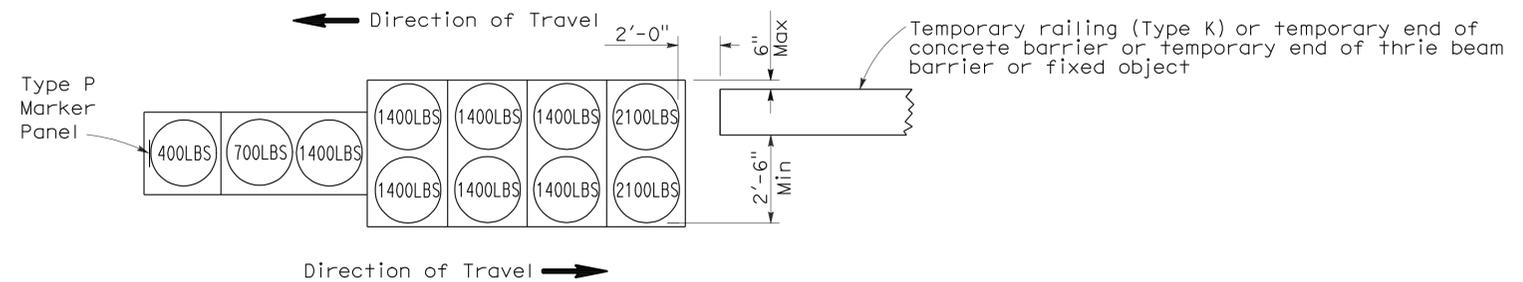
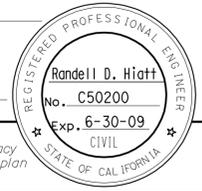
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	47	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

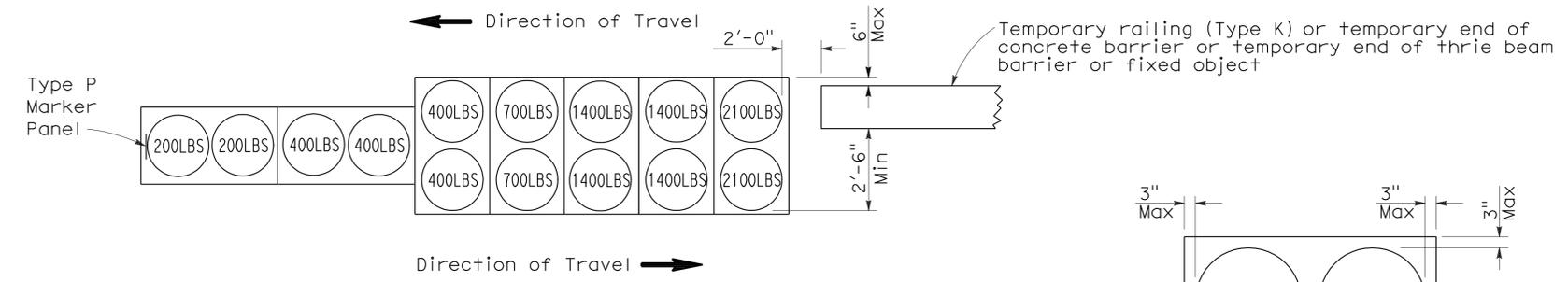
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 2-21-12



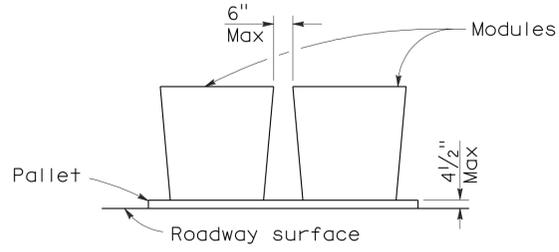
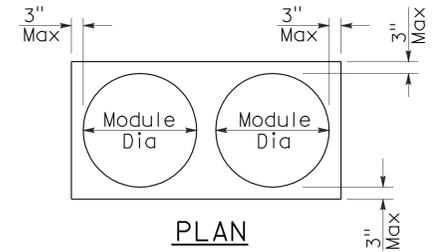
ARRAY 'TB11'

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
12	Ora	91	R2.6/R2.9	48	61

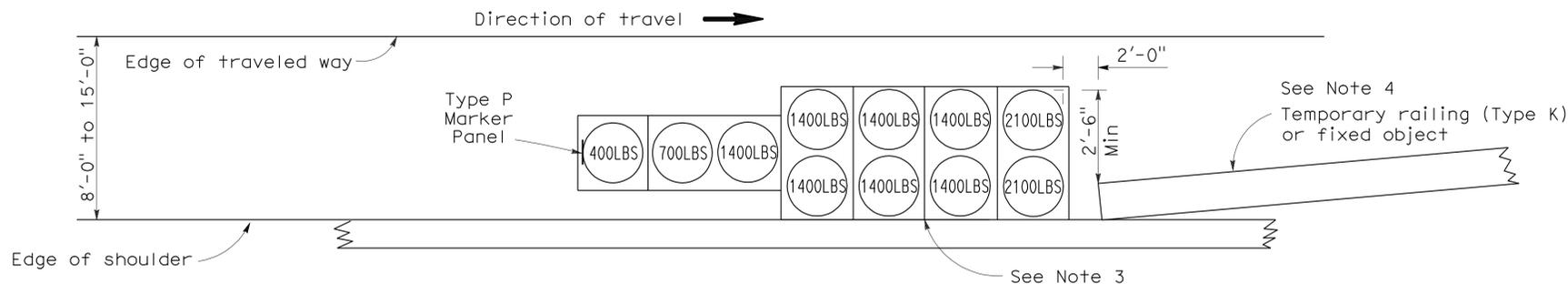
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

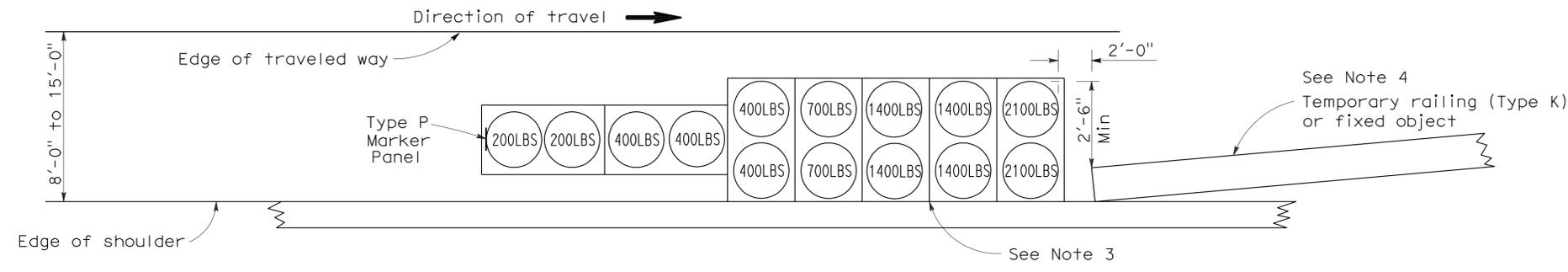
Randell D. Hiatt
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-09
CIVIL
STATE OF CALIFORNIA

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To accompany plans dated 2-21-12



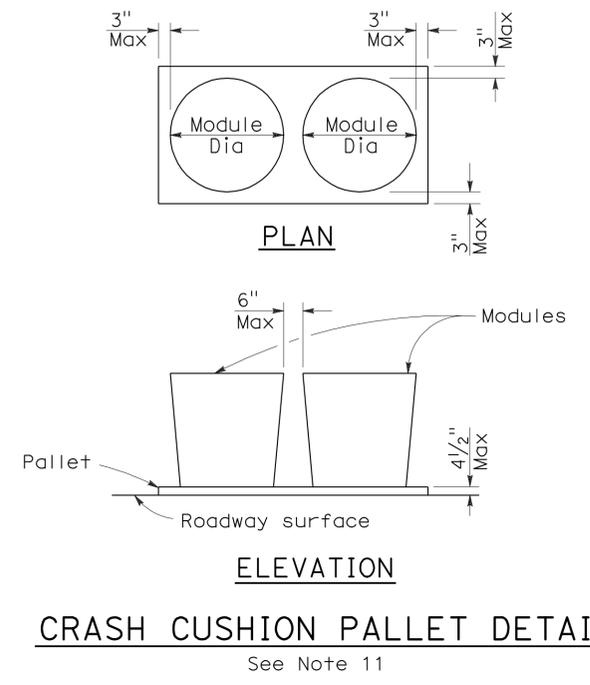
ARRAY 'TS11'
Approach speed less than 45 mph
See Note 9



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

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. 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.
4. 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.
5. Temporary crash cushion arrays shall not encroach on the traveled way.
6. Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
7. Place the Type P marker panel so that the bottom of the panel rests upon the pallet and faces traffic.
8. Refer to Standard Plan A73B for marker details.
9. 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.
10. Approach speeds indicated conform to NCHRP 350 Report criteria.
11. Use of pallets is optional.



CRASH CUSHION PALLET DETAIL
See Note 11

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

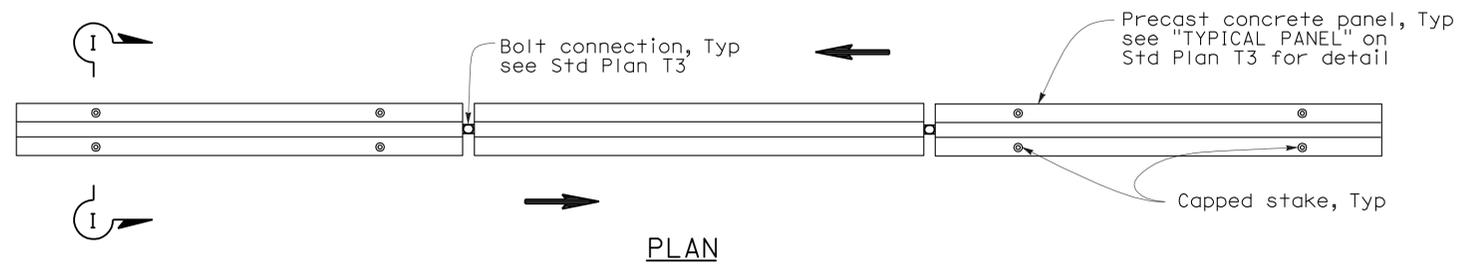
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	49	61

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

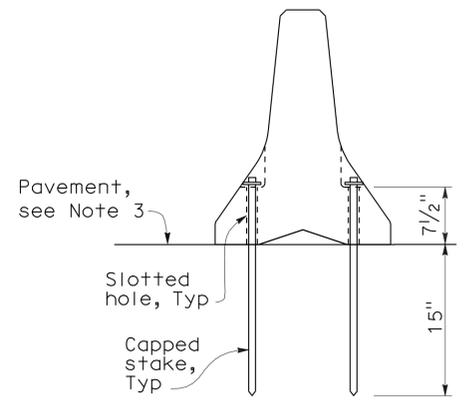
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 2-21-12



RAILING STAKING CONFIGURATION FOR TWO-WAY TRAFFIC

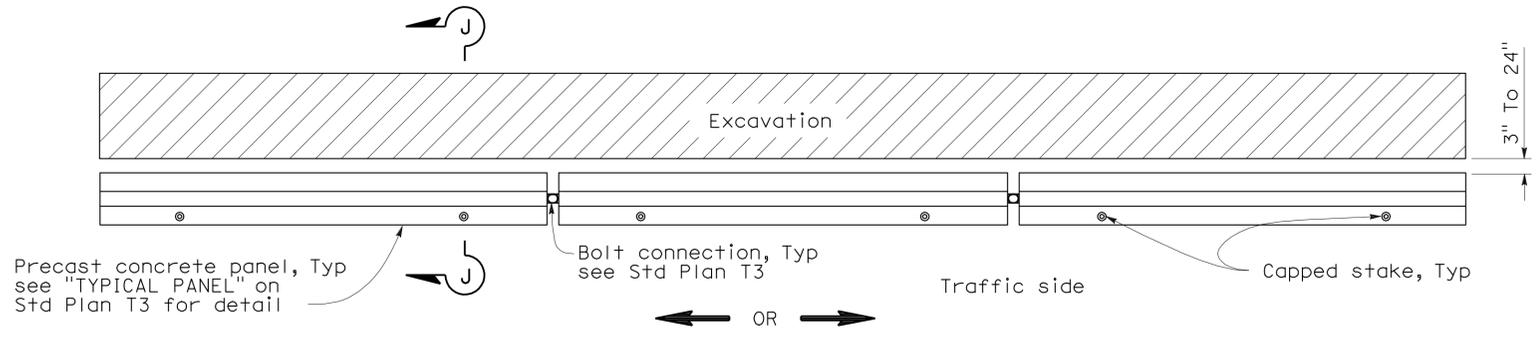
See Note 1



SECTION I-I

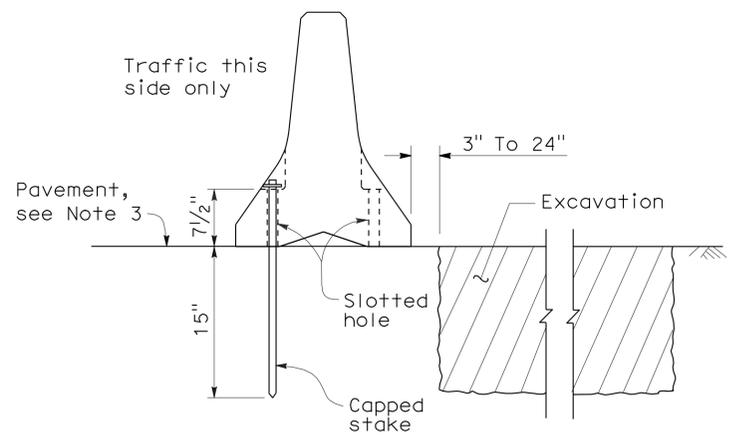
NOTES:

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 .

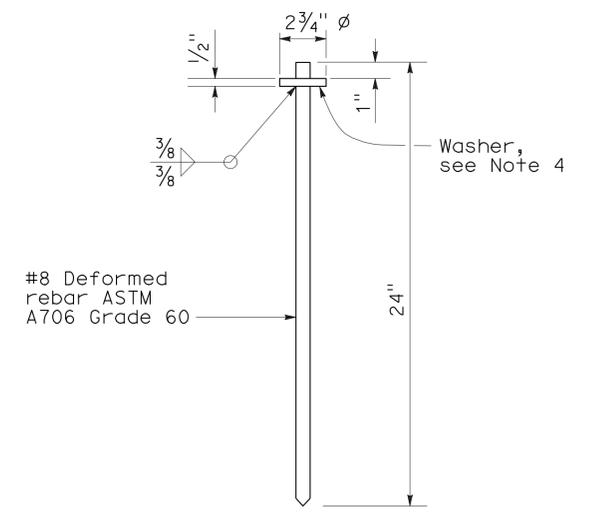


RAILING STAKING CONFIGURATION ADJACENT TO AN EXCAVATION

See Note 2



SECTION J-J



CAPPED STAKE DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

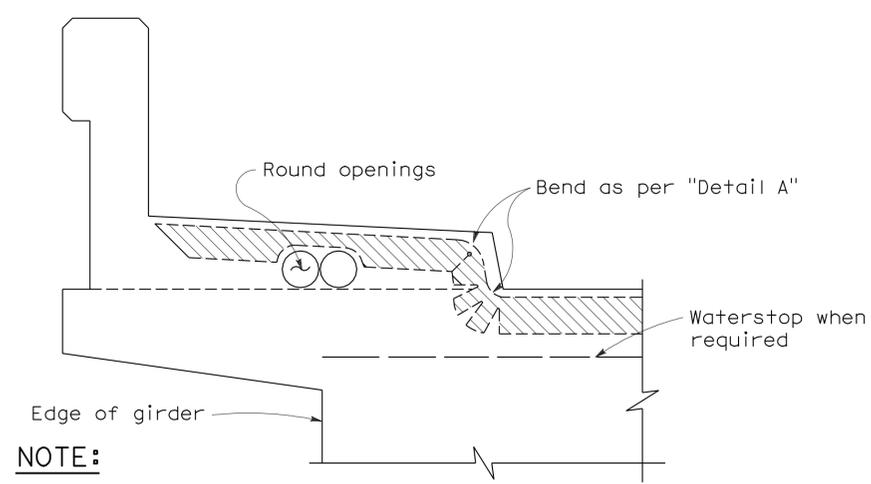
**TEMPORARY RAILING
(TYPE K)**

NO SCALE

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

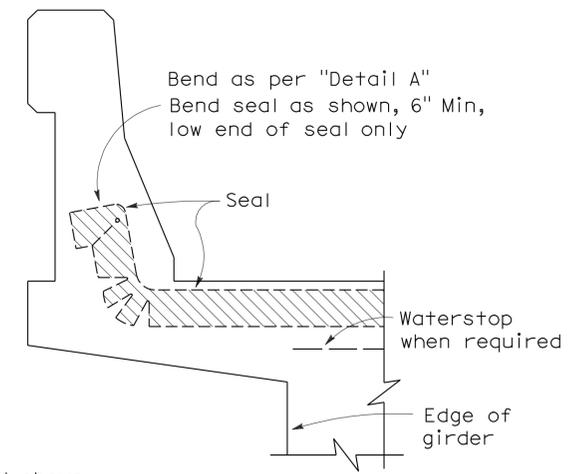
2006 NEW STANDARD PLAN NSP T3A

To accompany plans dated 2-21-12

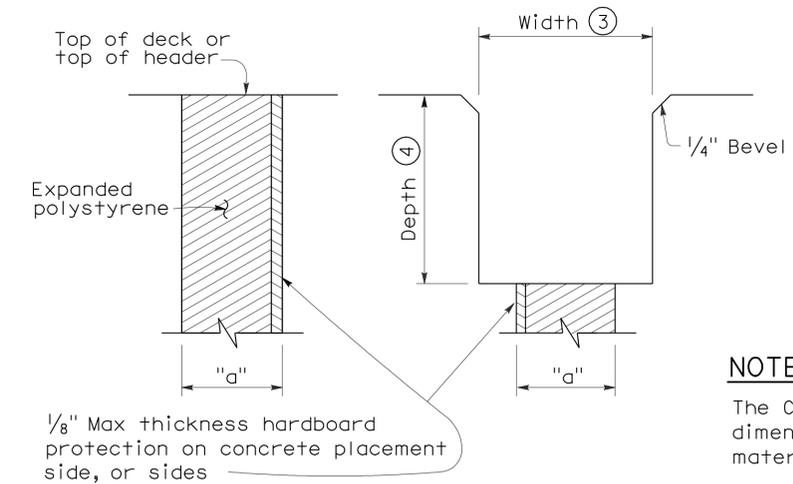


NOTE:
 Type "B" seal shown. Type "A" seals to conform to the general path of seal shown, cuts for bending not required. Bend Type "A" seals 3" up into curb or barrier rail on only the low end of the seal.

CONCRETE BARRIER AND SIDEWALK



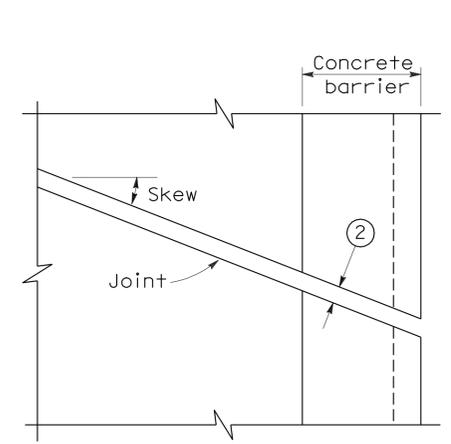
CONCRETE BARRIER



FORMING DETAIL SAWCUT DETAIL

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

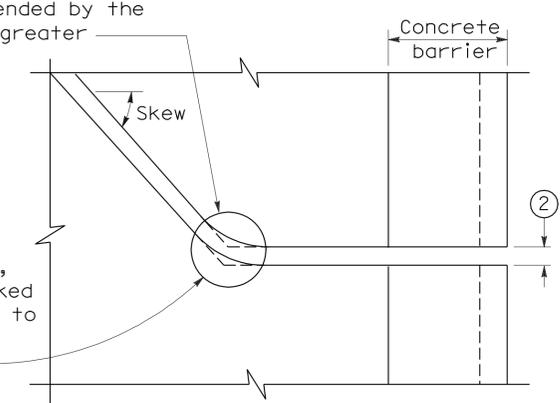
JOINT SEALS DETAILS



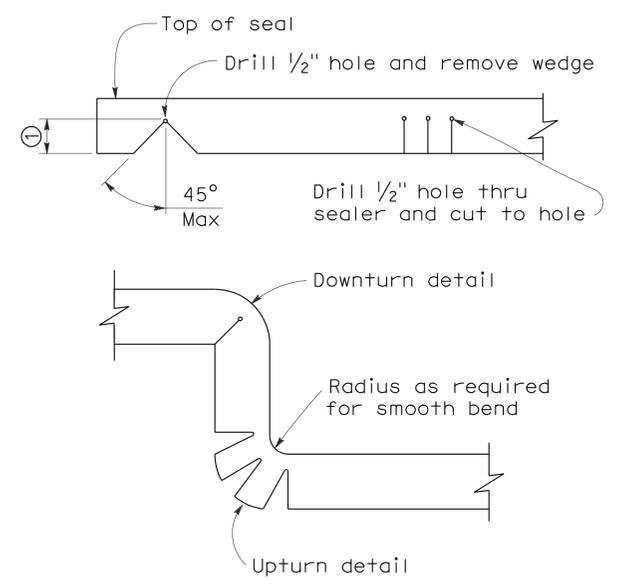
PLAN OF JOINT (SKEW ≤ 20°)

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

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



PLAN OF JOINT (SKEW > 20°)



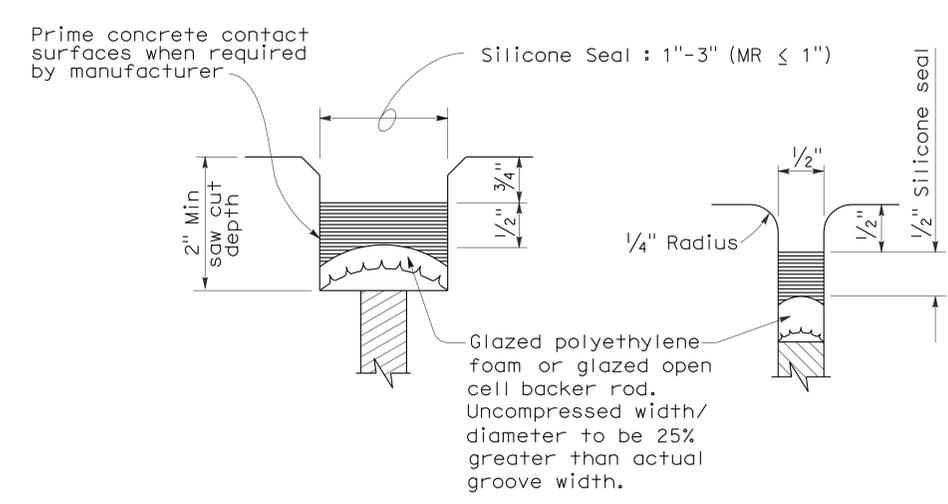
DETAIL A

NOTES:

- Make smooth cuts from the bottom of seal to 1 1/2" clear of top leaving at least one complete cell between the top of the cut and top of the seal. When necessary cut back of seal to clear conduit and round openings.
- Opening in barrier to match width of sawn deck joint.
- Sawcut groove widths shall be as ordered by the Engineer.
- Depth of sawcut: Type A - Depth to be 2" minimum. Type B - Depth to be equal to or greater than the depth of seal measured along the contact surface, when compressed to minimum width position (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"

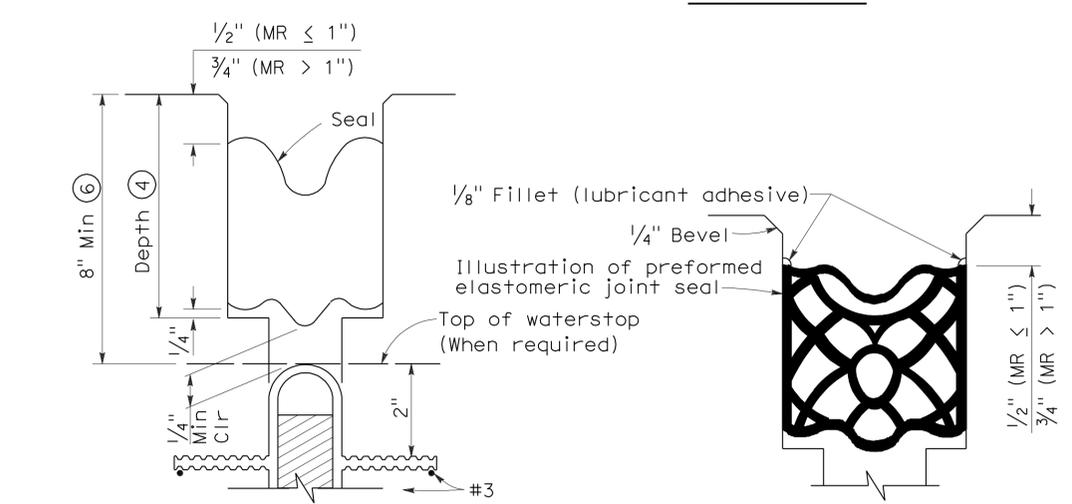


TYPE A SEAL

Movement rating : Silicone = 1" Max

TYPE AL SEAL

Longitudinal joints only



TYPE B JOINT SEAL IN MINIMUM WIDTH POSITION (W₂)

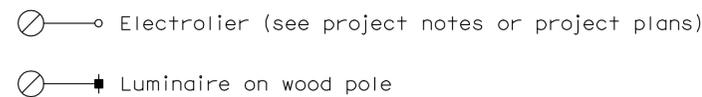
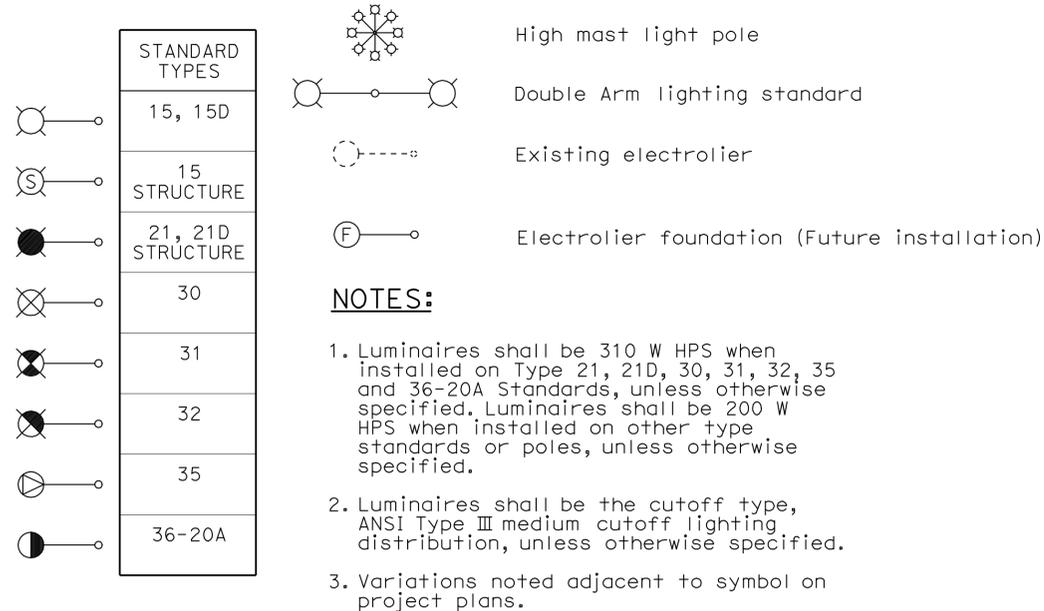
TYPE B SEAL

Movement Rating ≤ 2"

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

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

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, top attachment
MAS-4B	mas-4B	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-4C	mas-4C	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-5A	mas-5A	Mast arm mounting vehicle signal faces, top attachment
MAS-5B	mas-5B	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MC	mc	Mercury contactor
M/M	m/m	Multiple to multiple transformer
MT	mt	Conduit with pull wire or rope only
MTG	mtg	Mounting
N	N	Mercury vapor lighting fixture
NC	NC	Neutral (Grounded Conductor)
NO	NO	Normally closed
PB	pb	Normally open
PEC	pec	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	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
12	Ora	91	R2.6/R2.9	51	61

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

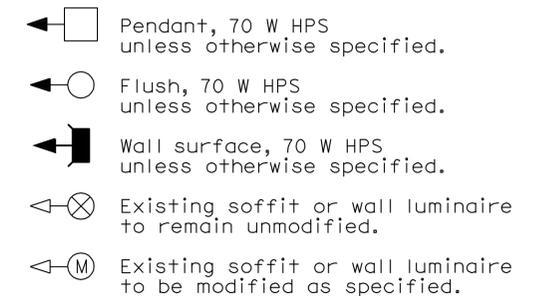
October 5, 2007
PLANS APPROVAL DATE

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 2-21-12

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
12	Ora	91	R2.6/R2.9	52	61

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 2-21-12

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

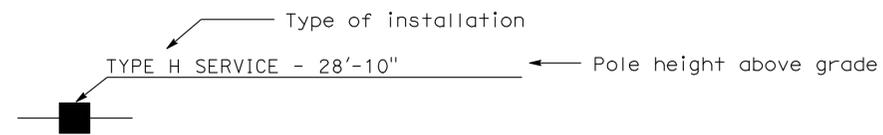
SIGNAL EQUIPMENT

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

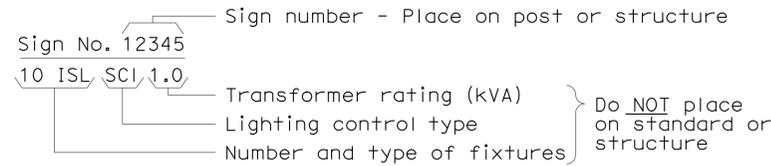
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-1B

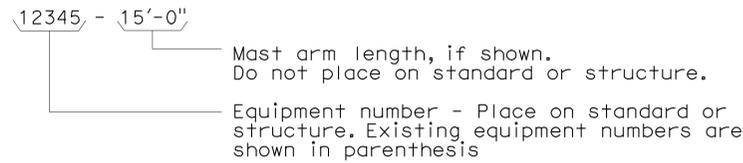
2006 REVISED STANDARD PLAN RSP ES-1B

EQUIPMENT IDENTIFICATION

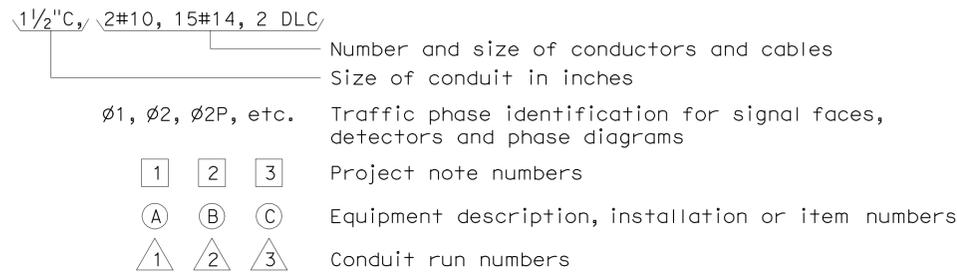
ILLUMINATED SIGN IDENTIFICATION NUMBER:



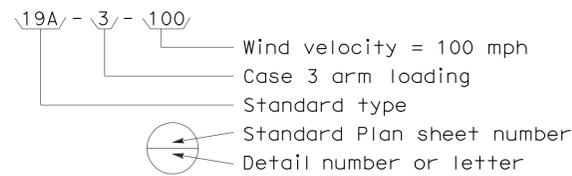
ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



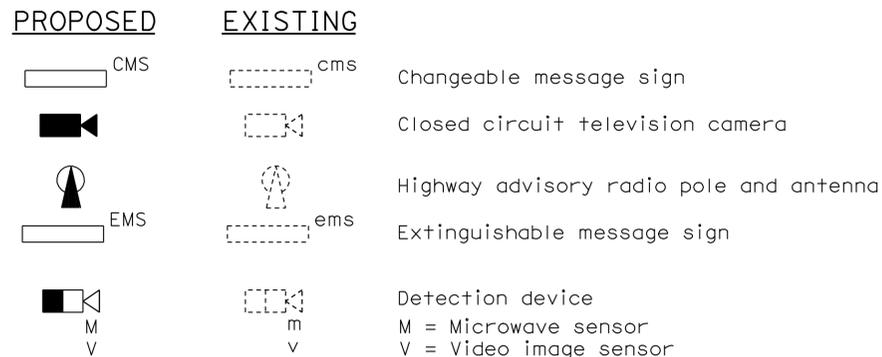
CONDUIT AND CONDUCTOR IDENTIFICATION:



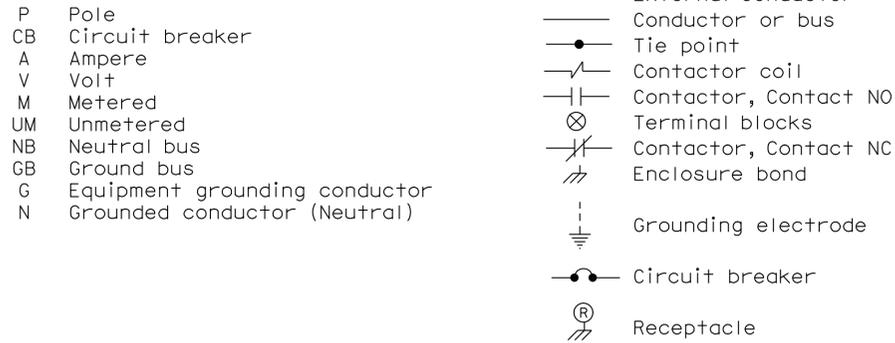
SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



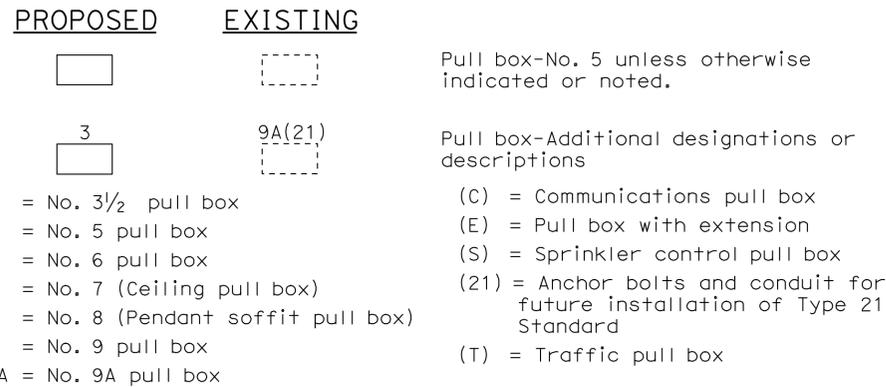
MISCELLANEOUS EQUIPMENT



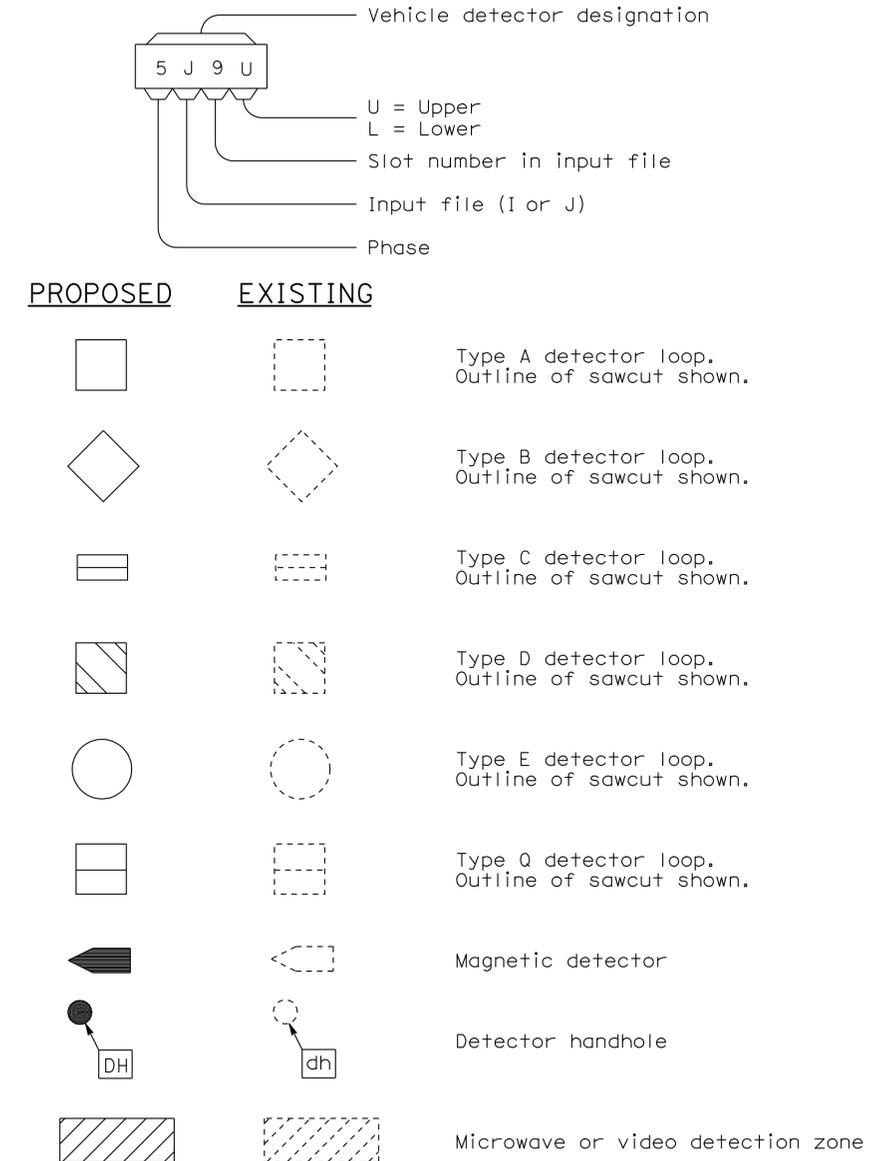
WIRING DIAGRAM LEGEND



PULL BOXES



VEHICLE DETECTORS



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

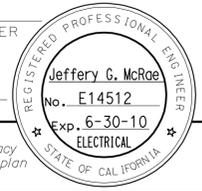
RSP ES-1C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1C
 DATED MAY 1, 2006 - PAGE 402 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-1C

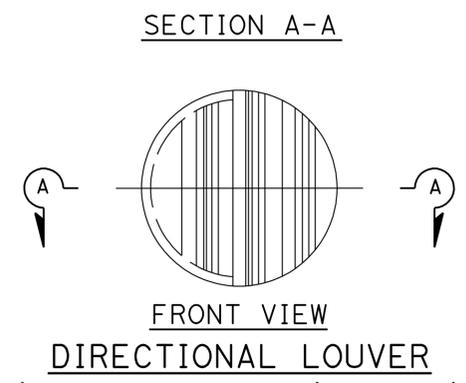
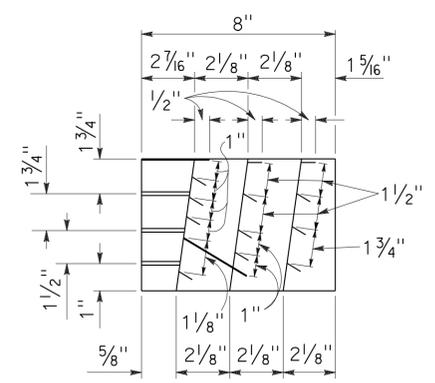
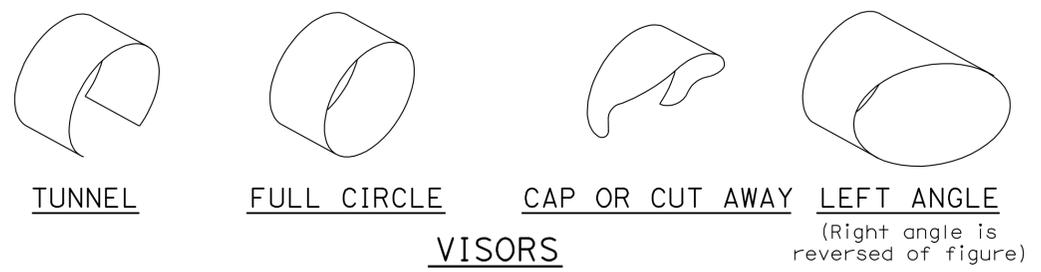
2006 REVISED STANDARD PLAN RSP ES-1C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	54	61

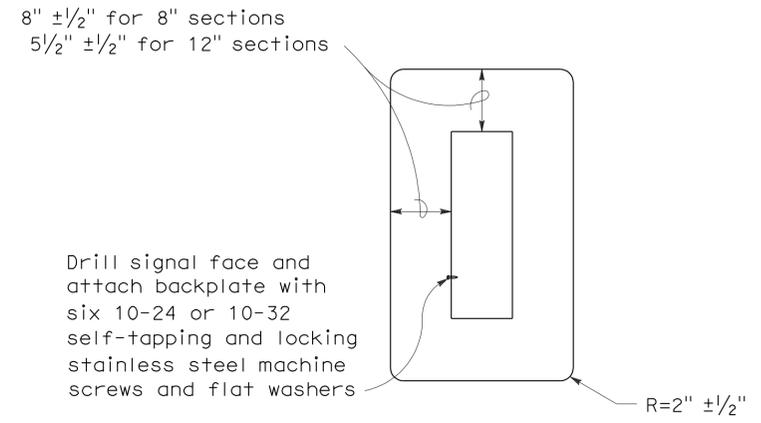
Jeffrey G. McRae
 REGISTERED ELECTRICAL ENGINEER
 June 6, 2008
 PLANS APPROVAL DATE
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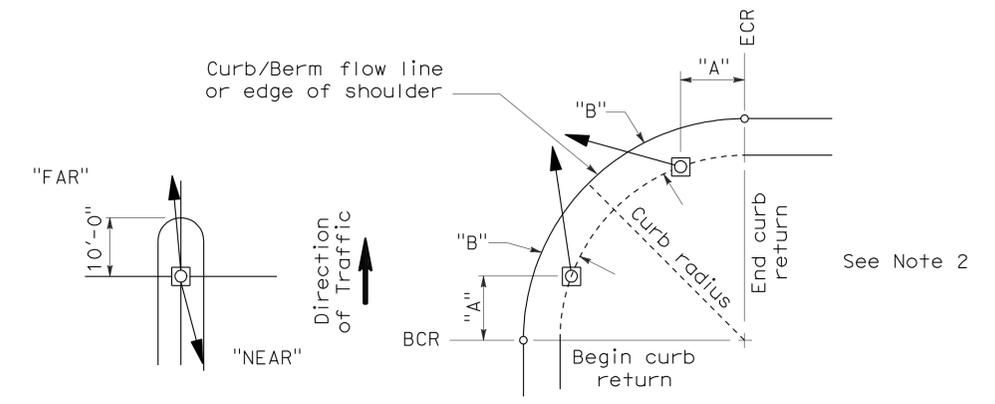
To accompany plans dated 2-21-12



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



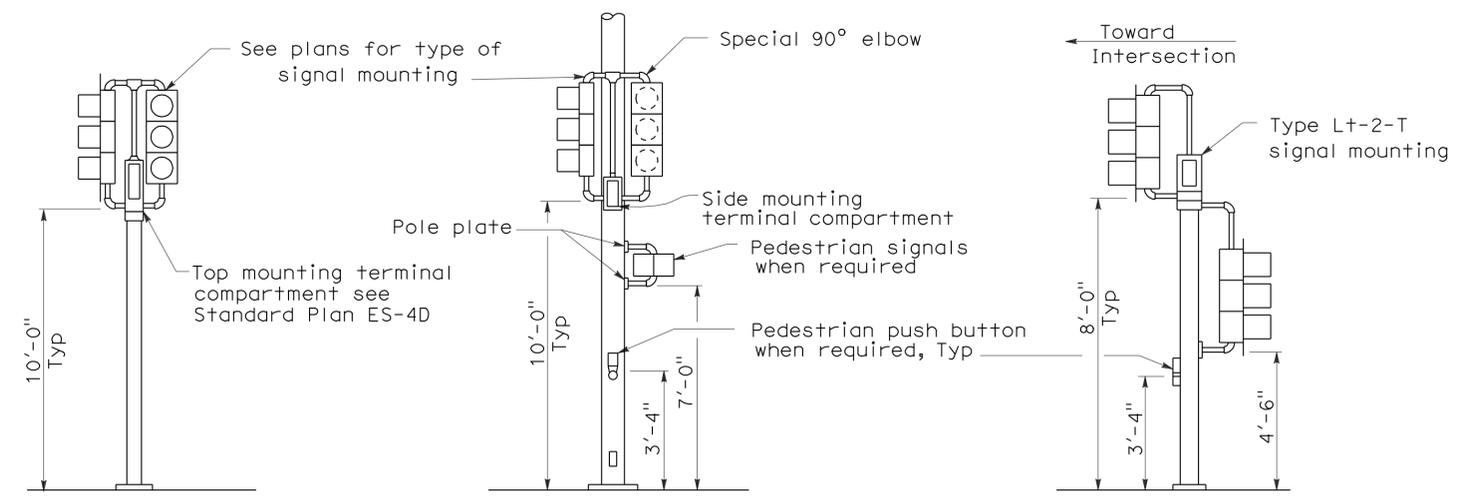
BACKPLATE
 1/16" minimum thickness
 3001-14 aluminum, or plastic when specified



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.

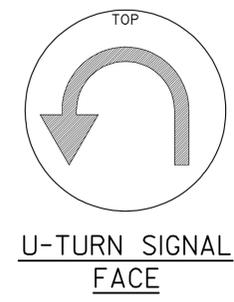
SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS



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



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.

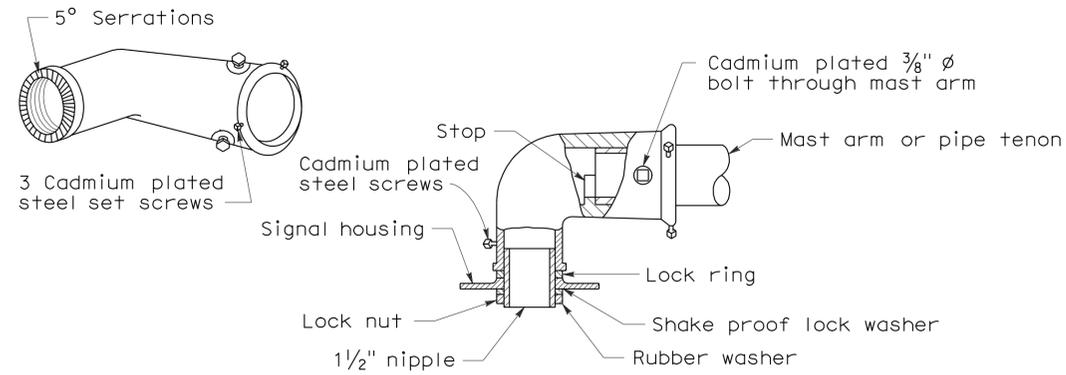
REVISED STANDARD PLAN RSP ES-4C

2006 REVISED STANDARD PLAN RSP ES-4C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	55	61

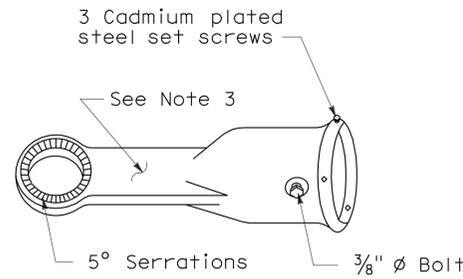
Jeffrey G. McRae
 REGISTERED ELECTRICAL ENGINEER
 June 6, 2008
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
 REGISTERED PROFESSIONAL ENGINEER
 Jeffrey G. McRae
 No. E14512
 Exp.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

To accompany plans dated 2-21-12



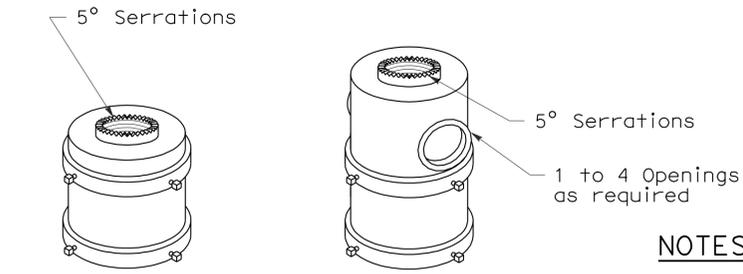
MAST ARM MOUNTING - TYPE "MAT"

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

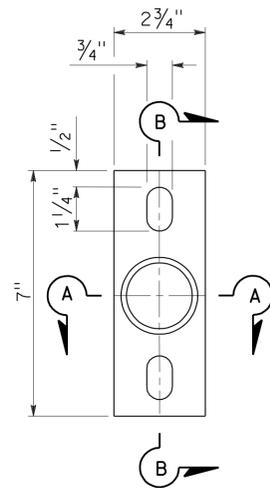
TOP MOUNTINGS

For 4 NPS pipe, see Note 2.

NOTES:

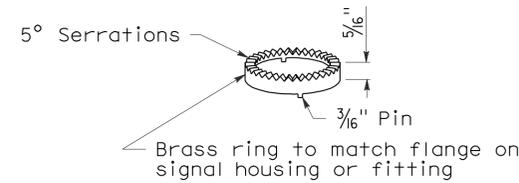
- After mast arm signal has been plumbed and secured, drill 7/16 inch hole through mast arm tenon in line with slip fitter hole. Place a cadmium plated 3/8 inch diameter galvanized bolt with washer under bolt head through hole and secure with washer, nut, and locknut. Seal openings between mast arm mountings and mast arm with mastic.
- (a) Threaded top mounted slip fitter openings shall be 1/2 NPS.
(b) Serrations in fittings shall match those on bottom of signal heads or in lock ring.
(c) Top opening shall be offset when backplate is used.
- Wireway shall have a cross section area of 0.95 square inch minimum. Minimum width of 1/2 inch.

SIGNAL SLIP FITTERS



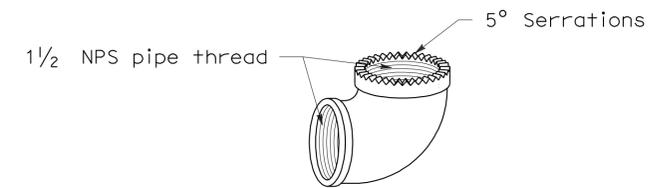
POLE PLATE

For side mountings



LOCK RING

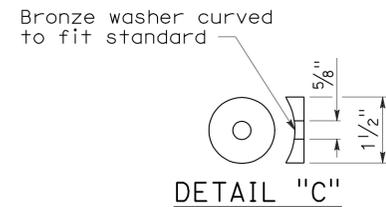
Use where locking ring is not integral with signal housing or fitting.



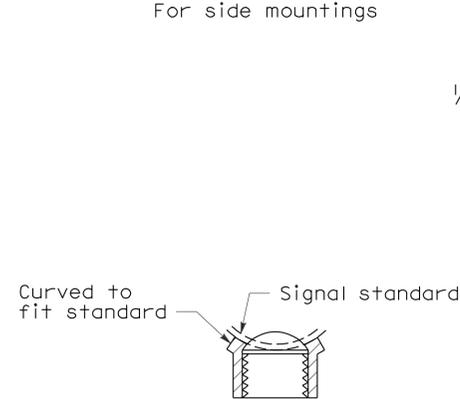
SPECIAL 90° ELBOW

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

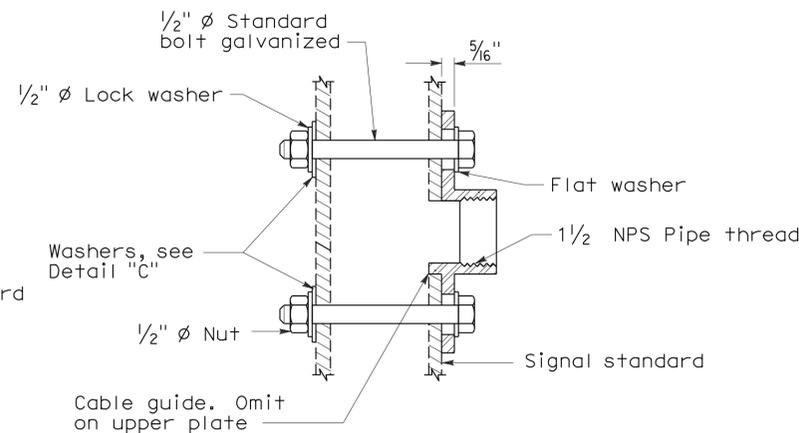
MISCELLANEOUS MOUNTING HARDWARE



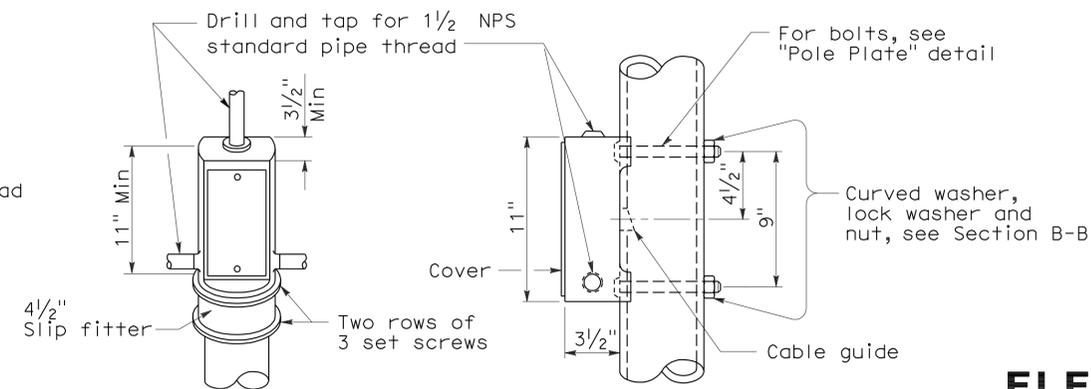
DETAIL "C"



SECTION A-A



SECTION B-B



TOP MOUNTING

SIDE MOUNTING

TERMINAL COMPARTMENTS

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

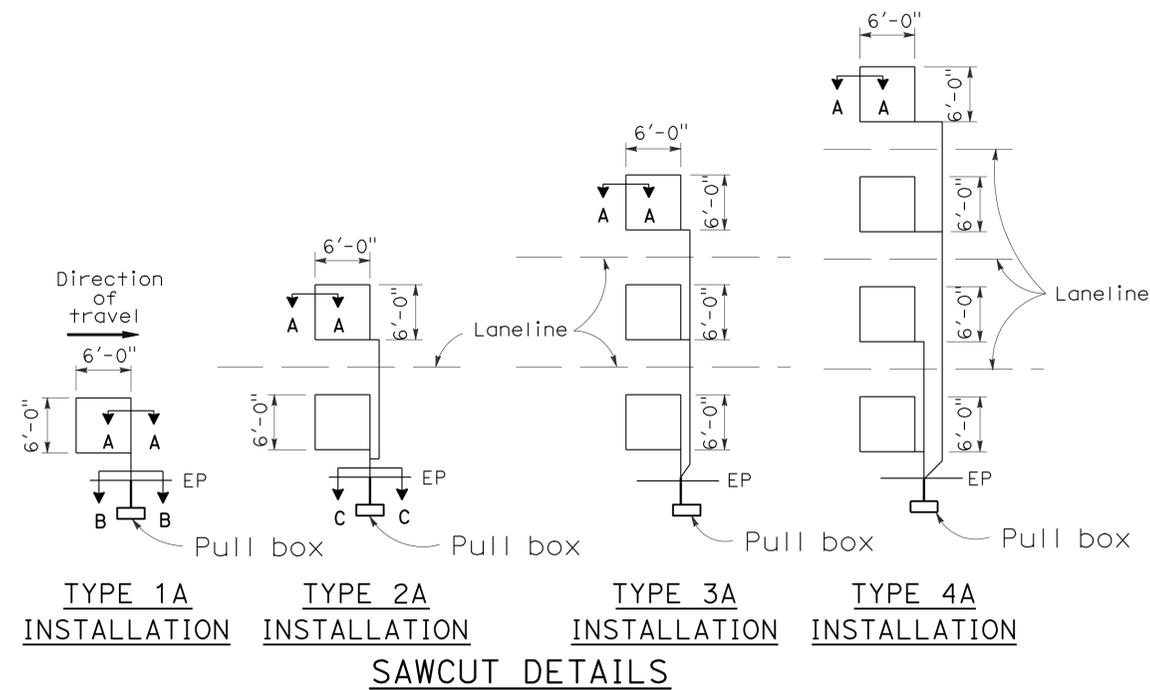
RSP ES-4D DATED June 6, 2008 SUPERSEDES STANDARD PLAN ES-4D DATED MAY 1, 2006 - PAGE 421 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-4D

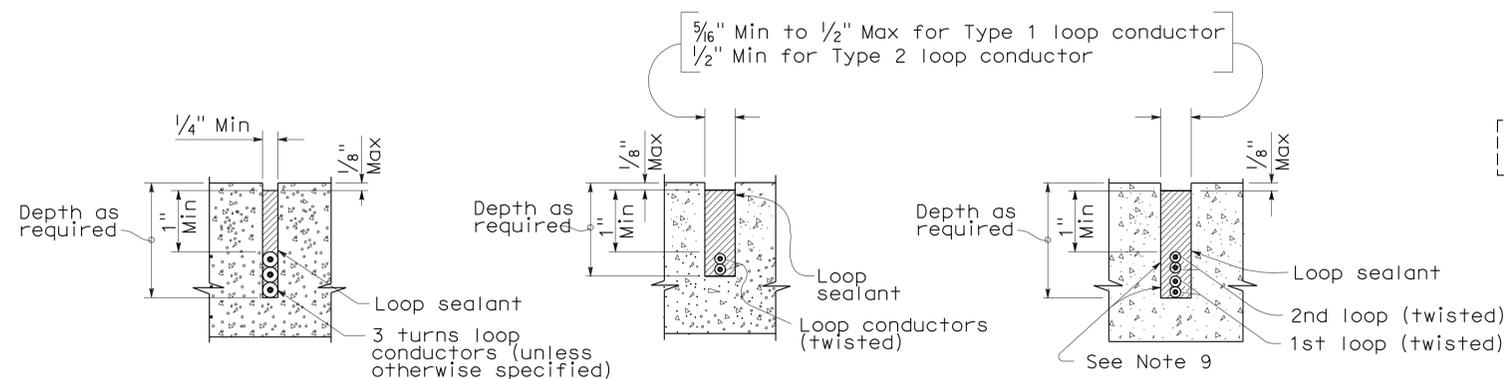
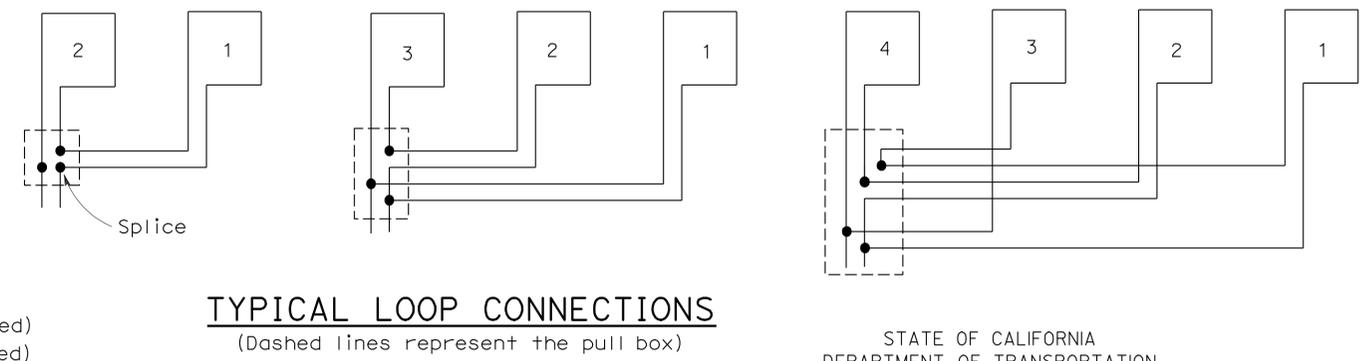
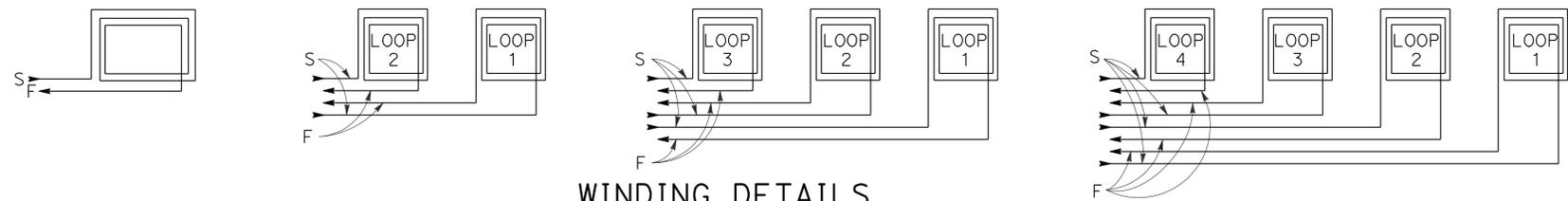
2006 REVISED STANDARD PLAN RSP ES-4D

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.



- 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)



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

ELECTRICAL SYSTEMS (DETECTORS)

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.

REVISED STANDARD PLAN RSP ES-5A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	56	61

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

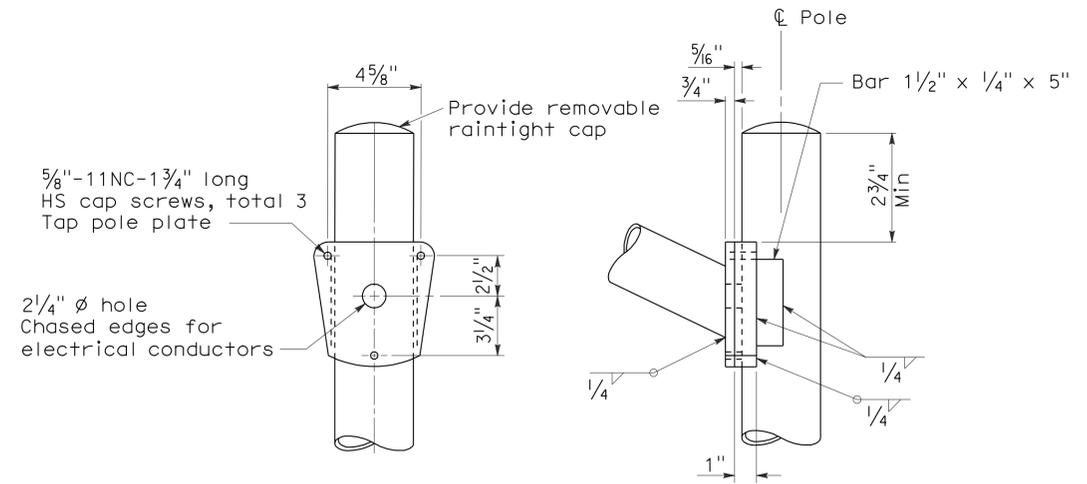
To accompany plans dated 2-21-12

2006 REVISED STANDARD PLAN RSP ES-5A

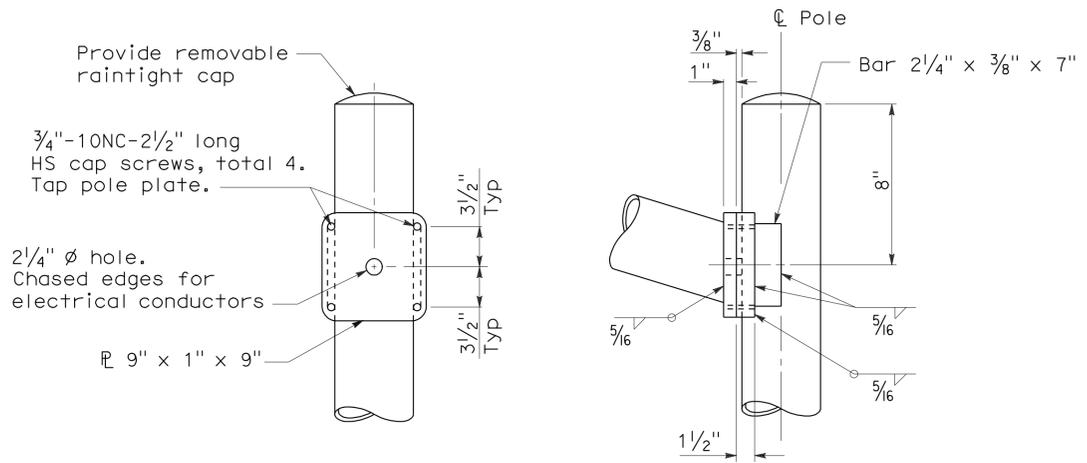
LUMINAIRE ARM DATA

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"±

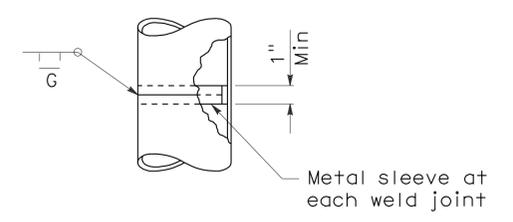
* Type 30 - arm length 6'-0" - 15'-0" maximum
 ** Type 31 - arm lengths 20'-0"



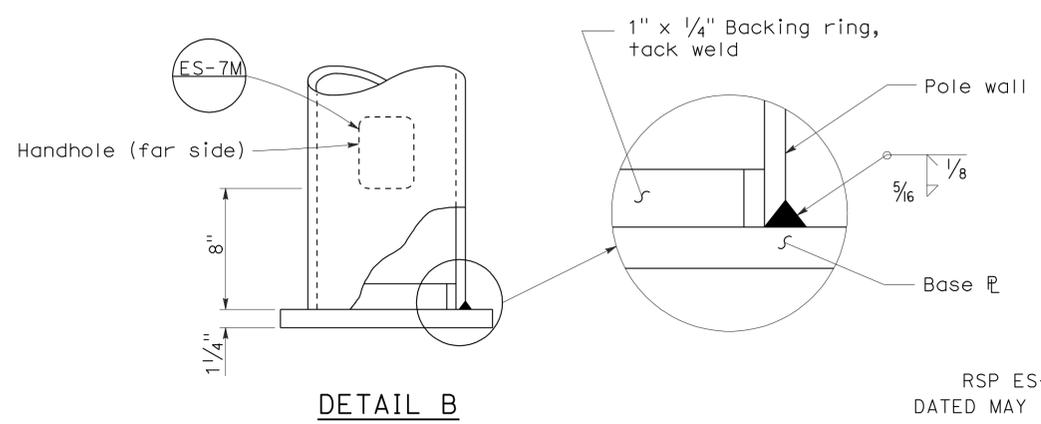
DETAIL A - TYPE 30



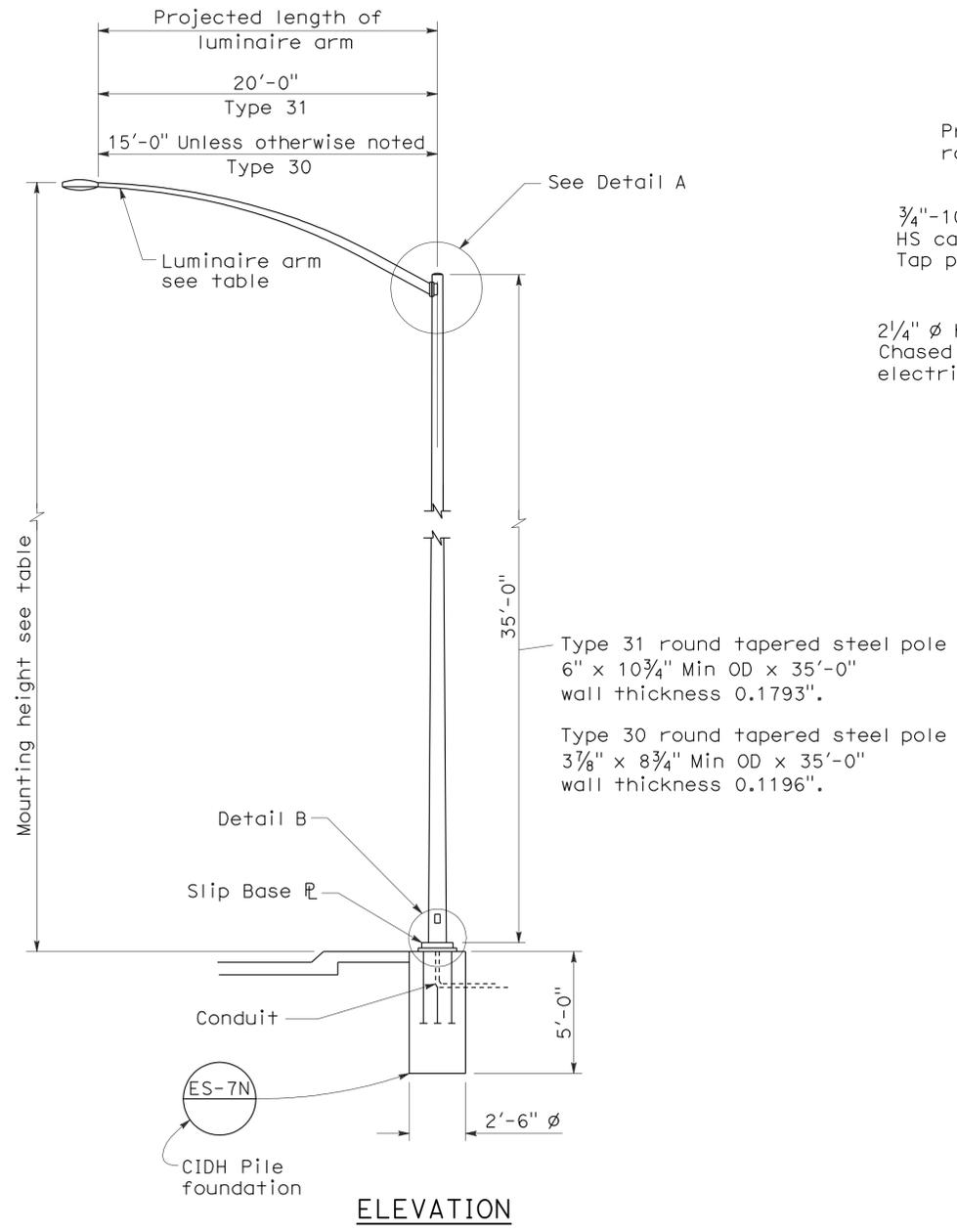
DETAIL A - TYPE 31



POLE SPLICE



DETAIL B



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 inch 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.

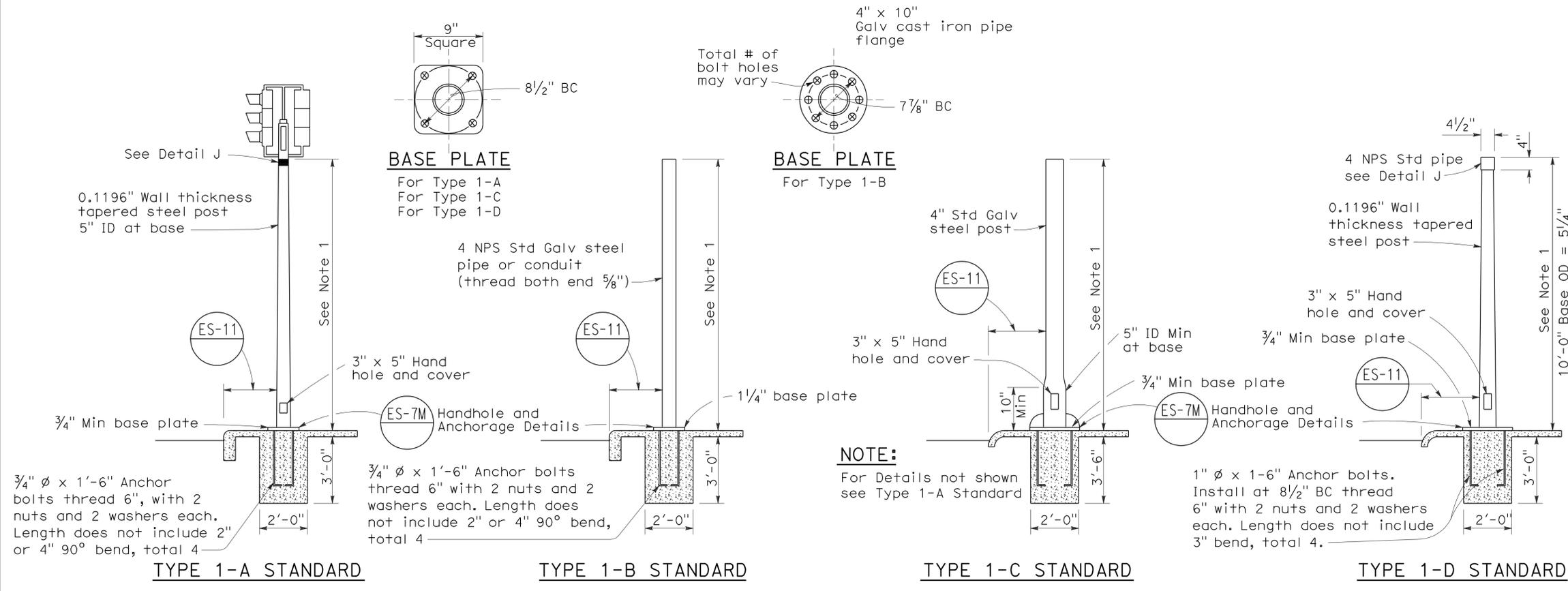
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
 (LIGHTING STANDARD
 TYPES 30 AND 31)**
 NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	58	61

Stanley P. Johnson
 REGISTERED CIVIL 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.

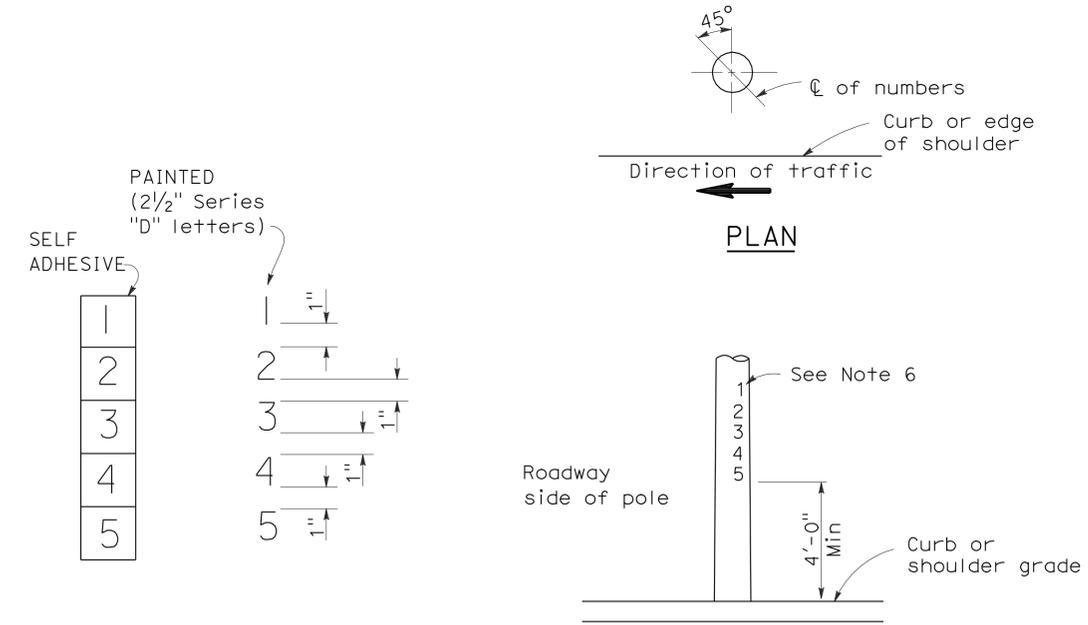
REGISTERED PROFESSIONAL ENGINEER
 Stanley P. Johnson
 No. C57793
 Exp. 3-31-08
 CIVIL
 STATE OF CALIFORNIA

To accompany plans dated 2-21-12

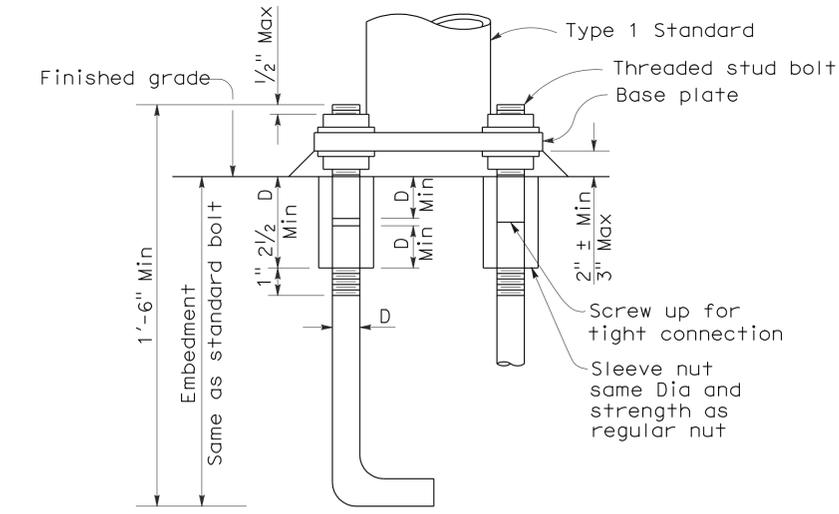


- NOTES:**
- Standards shall be 10'-0" ± 2" for vehicle signals and 7'-0" ± 2" for pedestrian signals unless otherwise noted on plans.
 - Top of standards shall be 4 1/2" OD.
 - Conduits shall extend 2" maximum above finished surface of foundation and for Types 1-A, 1-C and 1-D shall be sloped toward 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.

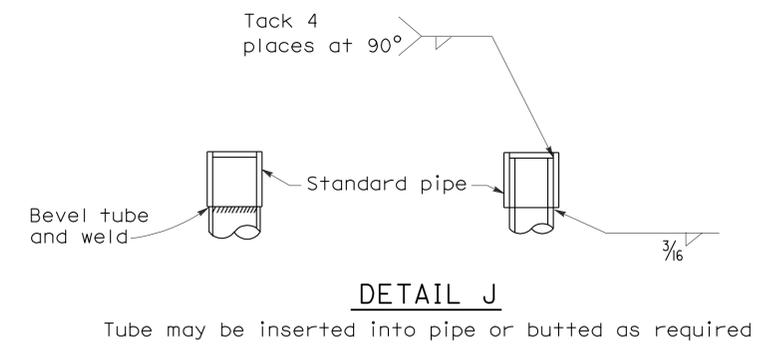
TYPE 1 SIGNAL STANDARDS



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

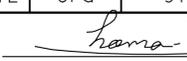


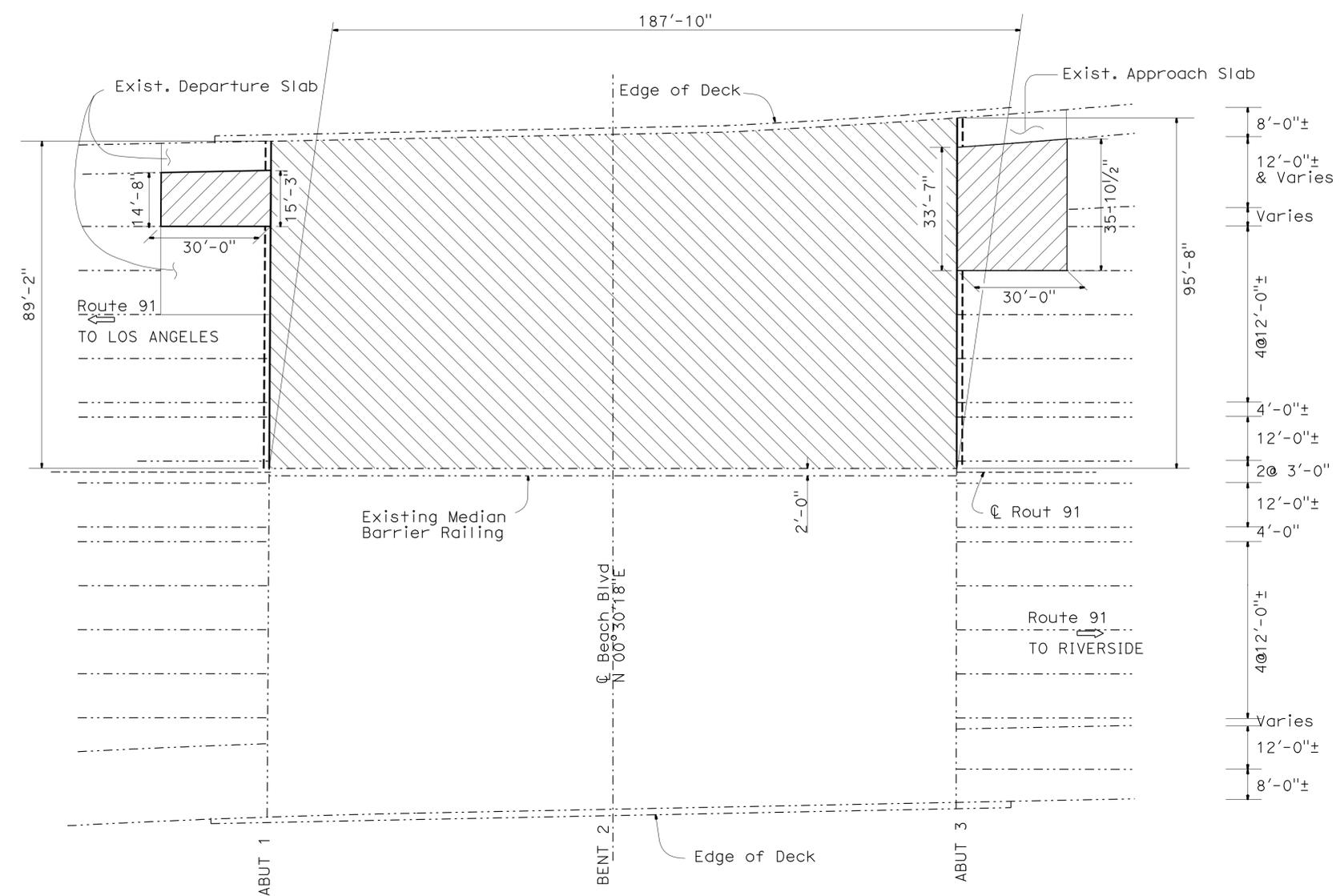
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD TYPE 1 STANDARD AND EQUIPMENT NUMBERING)
 NO SCALE

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

2006 REVISED STANDARD PLAN RSP ES-7B

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	91	R2.6/R2.9	59	61
			12/14/11	DATE	
REGISTERED CIVIL ENGINEER			DATE		
2-21-12			PLANS APPROVAL DATE		
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.					



QUANTITIES

STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R)	55	CY
AGGREGATE BASE (APPROACH SLAB)	6	CY
PAVING NOTCH EXTENSION	37	CF
CLEAN EXPANSION JOINT	136	LF
JOINT SEAL (MR 1")	186	LF
REMOVE UNSOUND CONCRETE	1	CF
RAPID SETTING CONCRETE (PATCH)	1	CF
PREPARE CONCRETE BRIDGE DECK SURFACE	17,359	SQFT
PLACE POLYESTER CONCRETE OVERLAY	17,359	SQFT
FURNISH POLYESTER CONCRETE OVERLAY	1,302	CF

PLAN
1" = 20'

NOTES:

- See DIAPHRAGM ABUTMENT detail for joint seal on "JOINT SEAL DETAILS" sheet
- Saw cut and patch joint spalls with rapid setting concrete at abutment joints prior to joint seal placement
- Remove unsound concrete prior to bridge deck overlay
- Provide paving notch extension at limit of the new structure approach slab Type R(30D)

LEGEND

- Indicates Existing Structure.
- Indicates limits of install new joint seal. For details see "JOINT SEAL DETAILS" sheet.
- Indicates limits of Clean Expansion Joint prior to installing new Joint Seal.
- ▨ Indicates limits of Structure Approach Slab Type R(30D). For details, see "STRUCTURE APPROACH TYPE R(30D)" sheet.
- ▨ Indicates limits of prepare bridge deck surface and Place 3/4" Polyester Concrete overlay with high molecular weight methacrylate resin prime coat
- ⇒ Indicates Direction of Traffic.

HOWARD NG DESIGN ENGINEER	DESIGN	BY HOMA IRANINEJADIAN	CHECKED MOHAMMAD MUQTADIR	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 20	BRIDGE NO.	BEACH BLVD SEPARATION GENERAL PLAN				
	DETAILS	BY KAY FARAHZADI	CHECKED HOMA IRANINEJADIAN	LAYOUT	BY HOMA IRANINEJADIAN			CHECKED MOHAMMAD MUQTADIR				55-0303	
	QUANTITIES	BY HOMA IRANINEJADIAN	CHECKED MOHAMMAD MUQTADIR	SPECIFICATIONS	BY JENNIFER J. RAMIREZ			POST MILE	REVISION DATES 08/23/11 05/28/11 01/18/11 08/22/11				
								R2.6-R2.85				SHEET	OF
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS								UNIT: 3622 PROJECT NUMBER & PHASE: 1200000353-1		CONTRACT NO.: 0K5201		DISREGARD PRINTS BEARING EARLIER REVISION DATES	1 3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	91	R2.6/R2.9	60	61
			12/14/11	DATE	
REGISTERED CIVIL ENGINEER			DATE		
2-21-12			PLANS APPROVAL DATE		
					
<small>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.</small>					

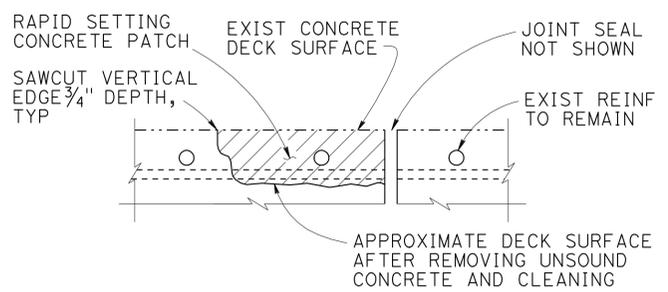
NOTES:

The following notes apply to JOINT SEAL TYPE A:

1. Install Type A joint seal 3" up into barrier rail on the low side of the deck where deck joint aligns with barrier rail joint.
2. See 2006 Revised Standard Plan RSP B6-21 (B6-21) for details of the type of joint seals.

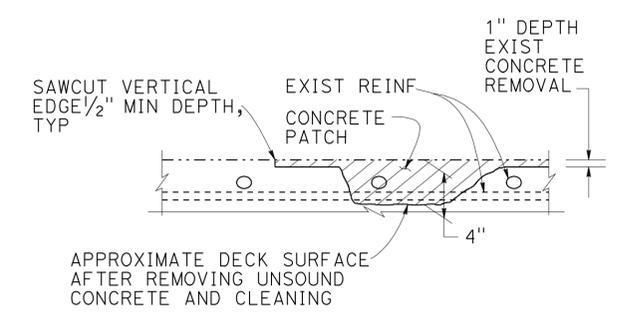
The following notes apply to JOINT SEAL TYPE B:

1. Seal must satisfy both minimum Movement Rating (MR) and minimum W1 requirements.
2. Minimum W1 is the calculated maximum width of the joint based on field measurements. After the joints have been cleaned, minimum W1 is to be recalculated by the Engineer.
3. W1 shall be the smaller of the values determined as follows:
 - A) 0.85 times the manufacturer's designed minimum uncompressed width of the seal.
 - B) The width of the seal on the third successive test cycle of the pressure deflection test when compressed to an average pressure of 3.0 Psi.
4. Bend Type B joint seal 6 inches up into curb or rail on the low side of the deck where deck joint matches curb or rail joint.
5. See 2006 Revised Standard Plan RSP B6-21 (B6-21) for details of the type of joint seals.



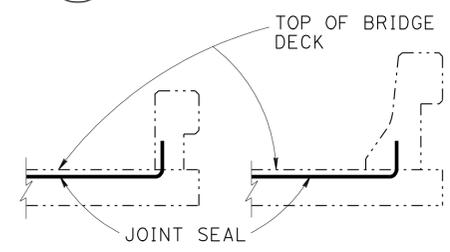
JOINT SPALL REPAIR DETAIL

REINFORCEMENT MAY BE ENCOUNTERED DURING DECK CONCRETE REMOVAL AND IS TO REMAIN UNDAMAGED. LOCATIONS TO BE DETERMINED BY THE ENGINEER.
NO SCALE



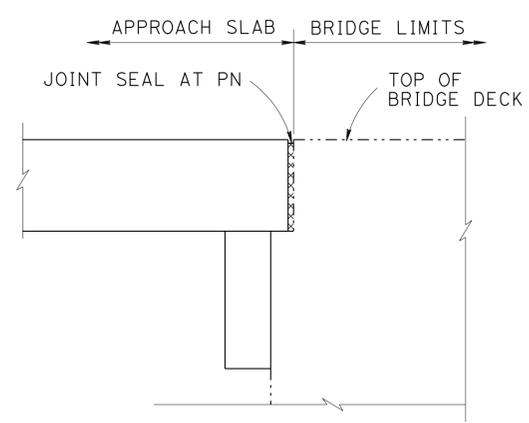
DECK REPAIR DETAIL

REINFORCEMENT MAY BE ENCOUNTERED DURING DECK CONCRETE REMOVAL AND IS TO REMAIN UNDAMAGED. LOCATIONS TO BE DETERMINED BY THE ENGINEER.
NO SCALE



JOINT SEAL AT LOW SIDE OF DECK

DETAILS SHOWN FOR ILLUSTRATION PURPOSE ONLY. FOR USE ONLY WHERE DECK JOINT MATCHES THE SIDEWALK, CURB OR BARRIER RAIL JOINT.
NO SCALE



DIAPHRAGM ABUTMENT JOINT SEAL DETAIL

NO SCALE

JOINT SEAL TABLE

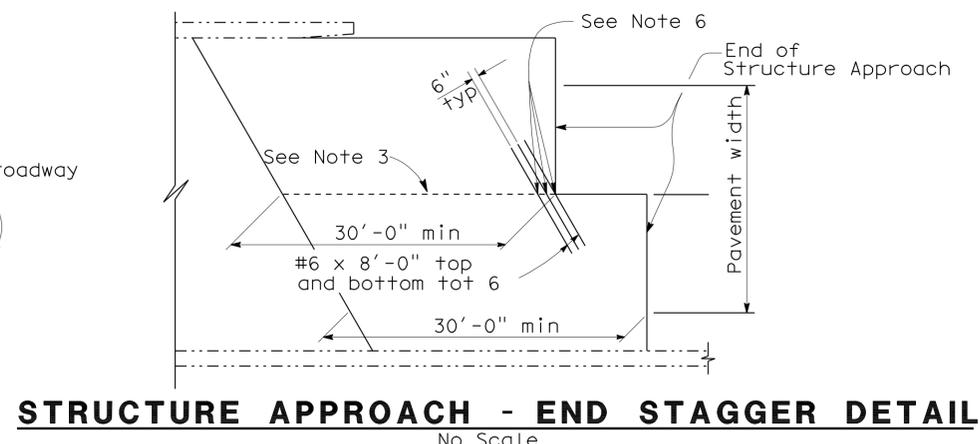
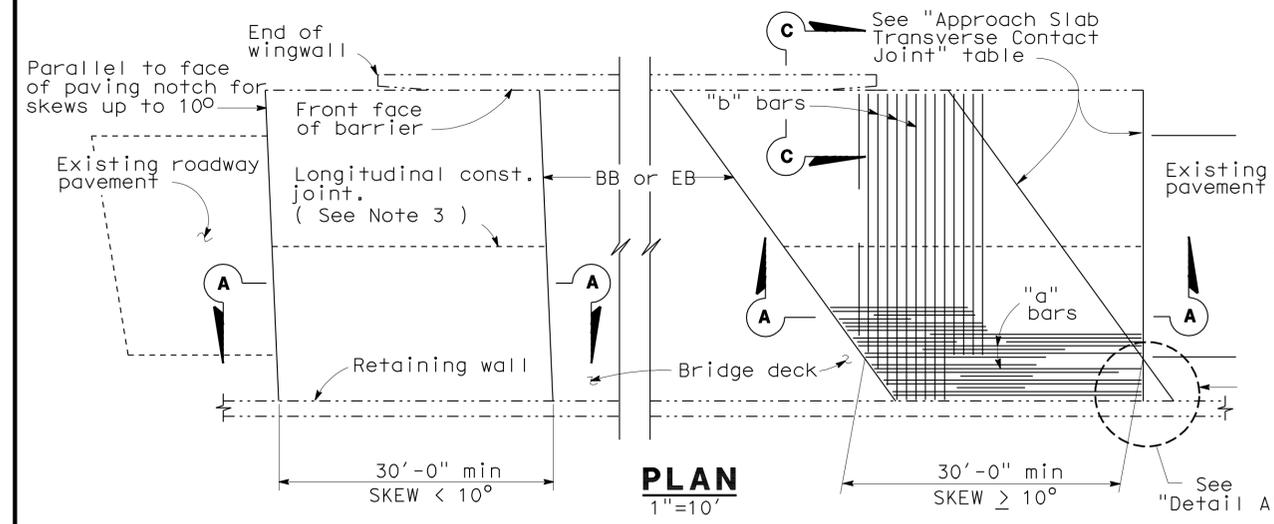
BRIDGE NO. & NAME	LOCATION		CLEAN JOINT LENGTH (Feet)	MINIMUM "MR" (Inch)	APPROX LENGTH (Feet)	EXISTING WATERSTOP (Y/N)	APPROX DEPTH OF EXP JOINT CLEANING (Inch)	APPROX DEPTH OF JOINT SPALLS (Inch)	APPROX WIDTH OF JOINT SPALLS (Inch)	APPROX LENGTH OF JOINT SPALLS (FEET)
BR NO. 55-0303 ROUTE 91/39 SEPERATION	ABUT 1	PN	74	1	90	No	12	3	6	2.50
	ABUT 3	PN	62	1	96	No	12	3	6	2.50

LEGEND

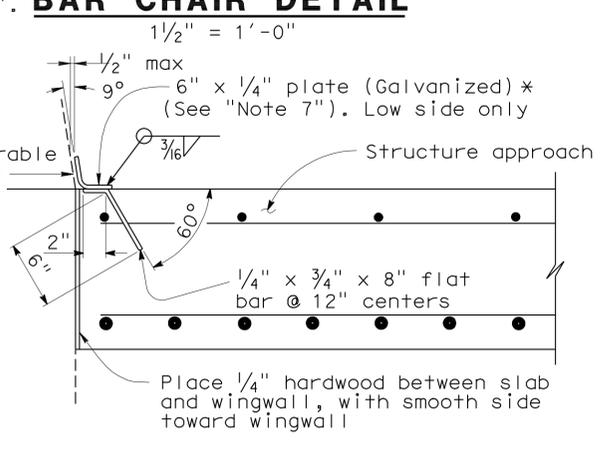
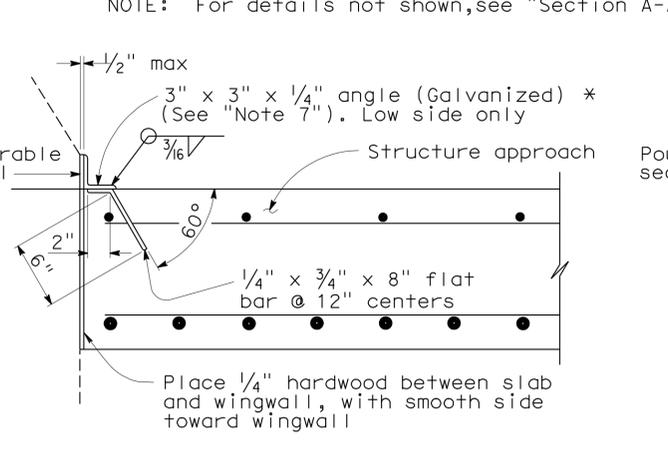
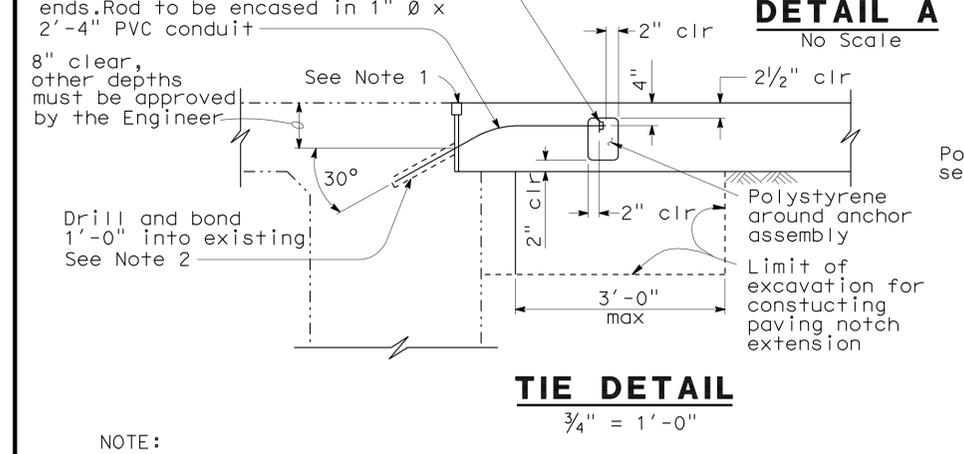
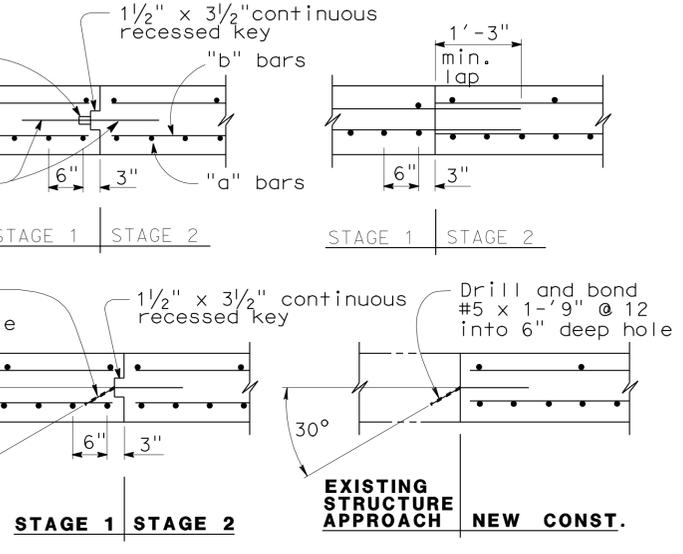
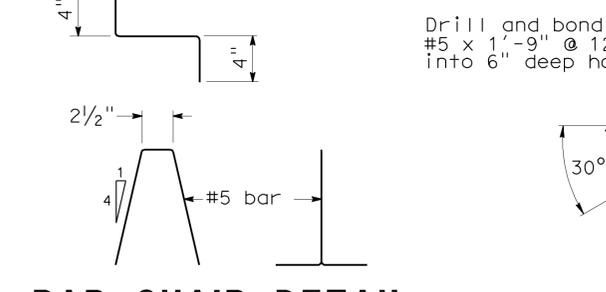
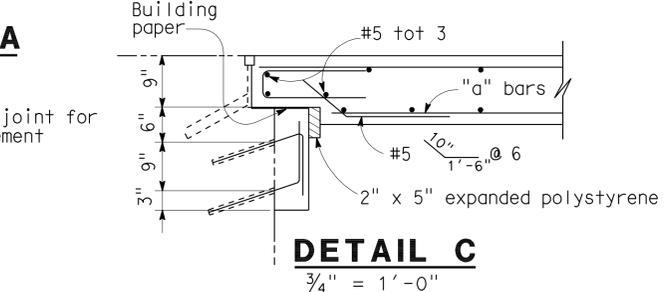
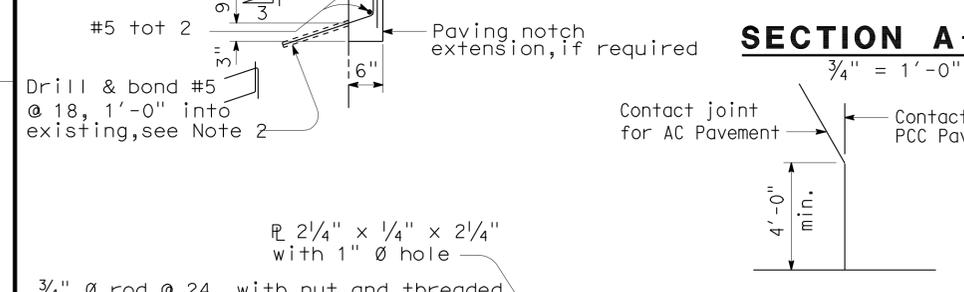
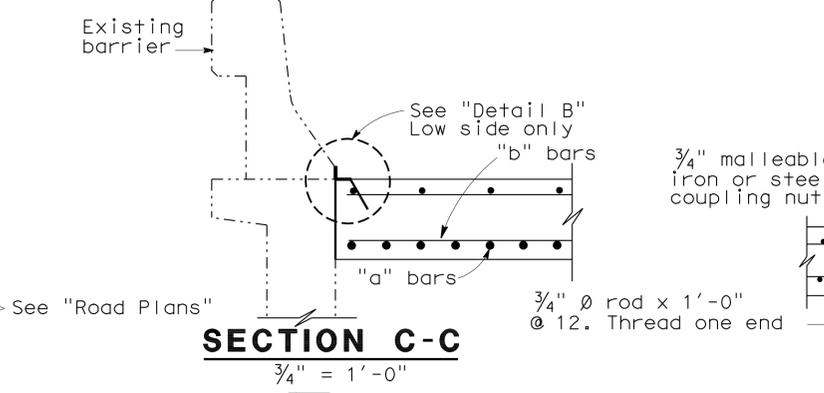
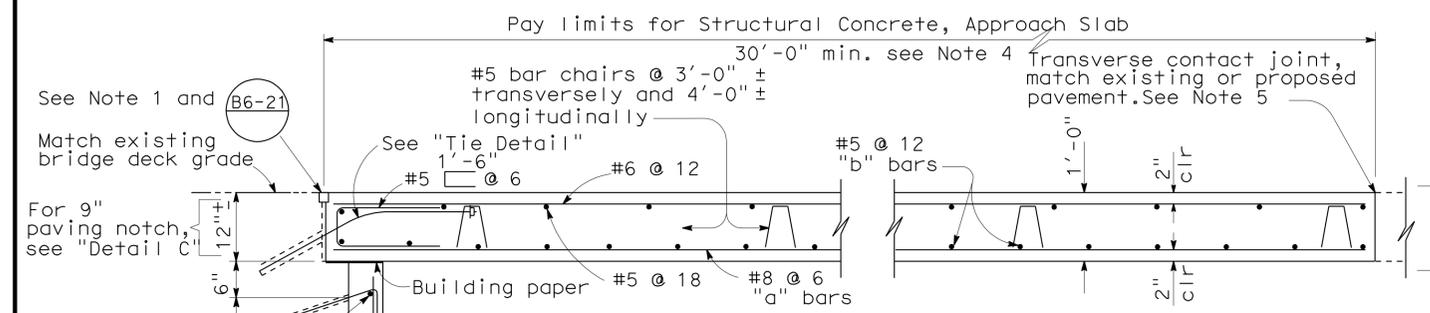
PN Indicates Paving Notch

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

DESIGN	BY HOMA IRANINEJADIAN	CHECKED MOHAMMAD MUQTADIR	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 20	BRIDGE NO.	55-0303	BEACH BLVD SEPARATION JOINT SEAL DETAILS		
DETAILS	BY KAY FARAHZADI	CHECKED HOMA IRANINEJADIAN			POST MILE	R2.6-r2.85			
QUANTITIES	BY HOMA IRANINEJADIAN	CHECKED MOHAMMAD MUQTADIR							
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: 3622	PROJECT NUMBER & PHASE: 1200000353-1	CONTRACT NO.: 0K5201	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 2 OF 3



APPROACH SLAB TRANSVERSE CONTACT JOINT		
APPROACH SKEW	WITH AC ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
< 10°	Parallel to face of paving notch	Parallel to face of paving notch
10° - 45°	Parallel to face of P N use (Detail A)	Stagger lines 24' to 36' apart
> 45°	Parallel to face of P N use (Detail A)	Stagger at each lane line



- NOTES:**
- For details not shown or noted, see Structure Plans. Adjust bar reinforcement to clear a sawcut for sealed joint, when required.
 - Space to avoid existing prestress anchorages and main reinforcement.
 - Longitudinal construction joints, when permitted by the Engineer, shall be located on lane lines.
 - Transverse contact joint shall be a minimum of 5'-0" from an existing or constructed weakened plane joint.
 - For transverse contact joint with new PCC paving, refer to Standard Plan P10.
 - Couplers are required for stage construction.
 - End angle or plate at beginning of barrier transition, end of wingwall or end of structure approach as applicable.

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

STANDARD DRAWING	FILE NO. xs3-140	APPROVAL DATE <u>July 2011</u>
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STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES	BRIDGE NO. 55-303	POST MILE R2.6-R2.8	BEACH BLVD SEPARATION STRUCTURE APPROACH TYPE R(30D)
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