INDEX OF PLANS

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15	PAVEMENT DELINEATION DETAILS AND QUANTITIES
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THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN SAN LUIS OBISPO COUNTY
NEAR SAN LUIS OBISPO
FROM SAN LUIS OBISPO CREEK BRIDGE TO
0.3 MILE SOUTH OF SANTA FE UNDERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

ACNHP-Q101(244)E

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	1	67

LOCATION MAP

NO SCALE

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

PROJECT MANAGER: AMY DONATELLO

DESIGN ENGINEER: RON KRAEMER

Mark S. Leichtfuss 1-27-14
PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

January 27, 2014
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.

CONTRACT No.	05-0S7904
PROJECT ID	0512000017

LAST REVISION 01-27-14
DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	2	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — MARK S. LEICHTFUSS No. 69124 Exp.6-30-14 CIVIL — STATE OF CALIFORNIA

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NOTES:

1. DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
3. SEE SHEET Q-3 FOR MIDWEST GUARDRAIL SYSTEMS AND BARRIERS.
4. SEE SHEET Q-4 FOR DIKE LOCATIONS AND TYPE.
5. SEE SHEET Q-6 FOR RUMBLE STRIP LOCATIONS.
6. SEE SHEET Q-6 FOR SAFETY EDGE LOCATIONS.

ABBREVIATIONS:

HMA-SP (TYPE A) HOT MIX ASPHALT, SUPERPAVE (TYPE A)
RHMA-SP-G RUBBERIZED HOT MIX ASPHALT, SUPERPAVE (GAP GRADED)

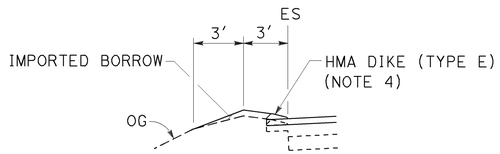
PAVEMENT CLIMATE REGION

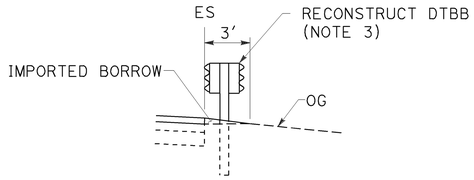
CENTRAL COAST

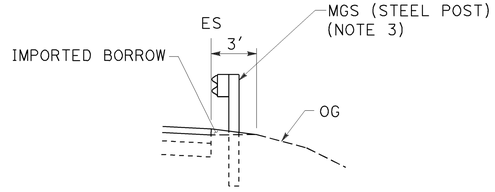
Exist STRUCTURAL SECTION

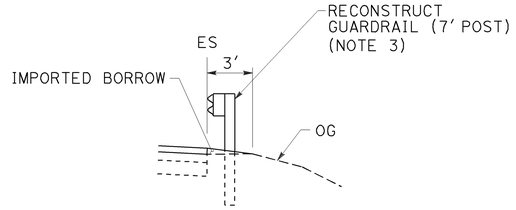
[1]
0.30′ AC (TYPE B)
0.15′ AC (TYPE B)
0.33′ AC (TYPE A)
0.67′ CI B CTB
1.0′ CI 2 AS

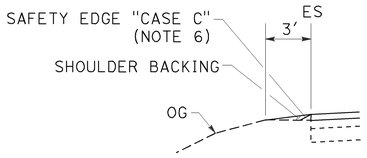
[2]
0.08′ AC
0.25′ AC (TYPE A)
0.5′ CL B CTB
0.5′-0.75′ CI 2 AS

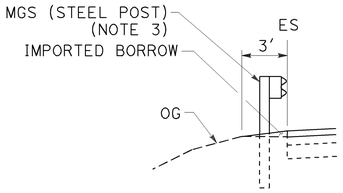


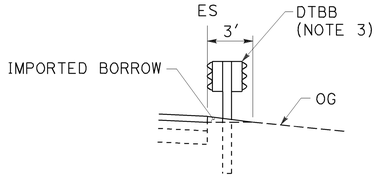


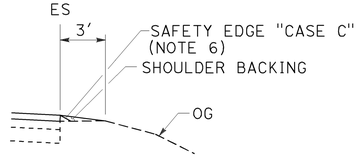


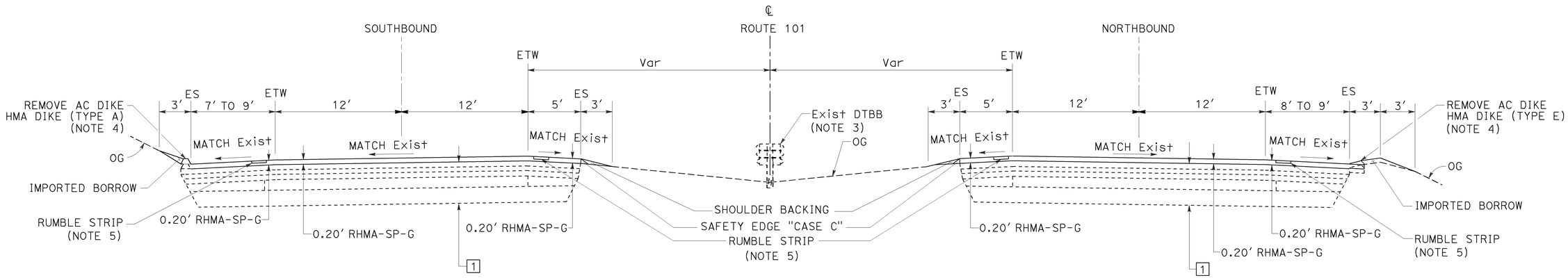












ROUTE 101 MAINLINE

SOUTHBOUND
PM R21.56 TO R23.82

NORTHBOUND
PM R21.56 TO R23.97

TYPICAL CROSS SECTIONS

NO SCALE

X-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
Caltrans®

FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY: MARK S. LEICHTFUSS
CHECKED BY: AMJED HETTINI
REVISED BY
DATE REVISED

LAST REVISION DATE PLOTTED => 25-MAR-2014
01-27-14 TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017ca001.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	3	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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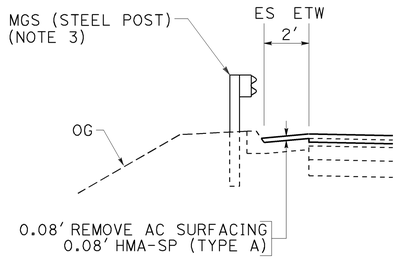
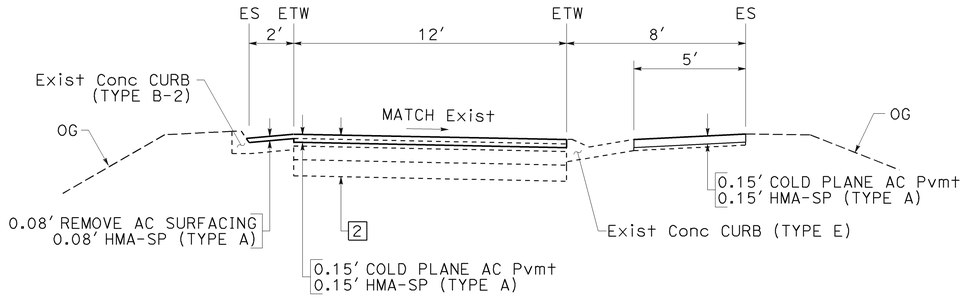
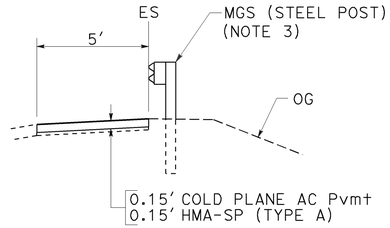


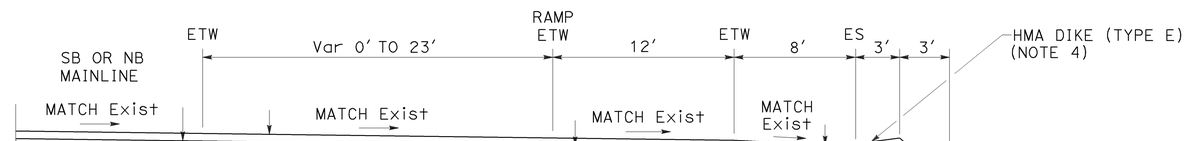




TYPICAL RAMP CROSS SECTION

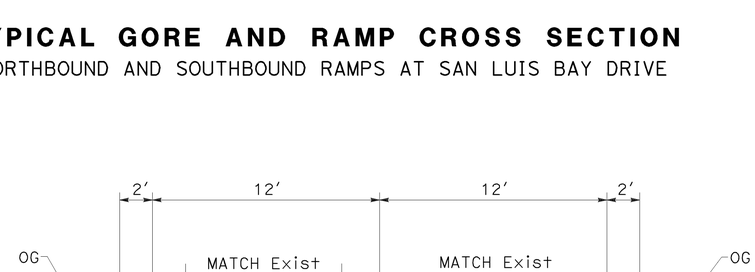
AT SAN LUIS BAY DRIVE

NB OFF RAMP PM R22.18 TO R22.30
NB ON RAMP PM R22.33 TO R22.38
SB OFF RAMP PM R22.29 TO R22.44
SB ON RAMP PM R22.12 TO R22.27



TYPICAL GORE AND RAMP CROSS SECTION

NORTHBOUND AND SOUTHBOUND RAMPS AT SAN LUIS BAY DRIVE



SAN LUIS BAY DRIVE

TYPICAL CROSS SECTIONS

NO SCALE

X-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY: MARK S. LEICHTFUSS
CHECKED BY: AMJED HETTINI
REVISED BY
DATE REVISED

LAST REVISION 01-27-14
DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017ca002.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	4	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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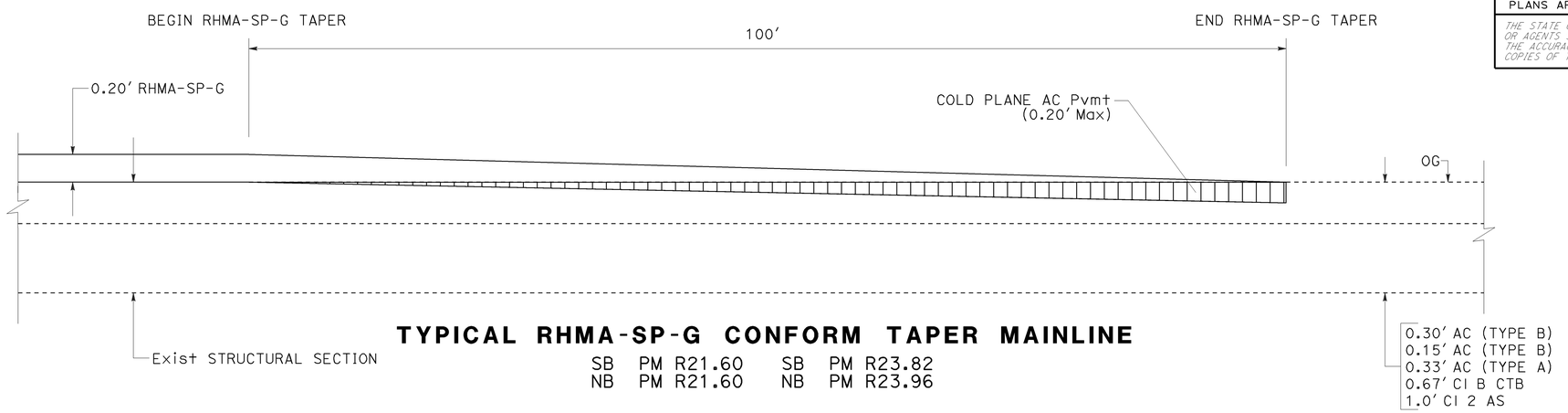
LEGEND:

COLD PLANE AC PAVEMENT

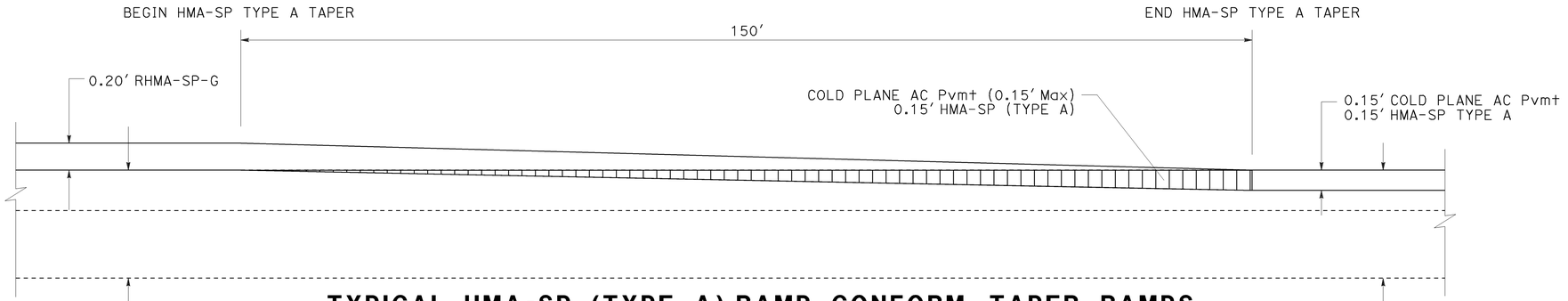
ABBREVIATIONS:

HMA-SP TYPE A	HOT MIX ASPHALT, SUPERPAVE (TYPE A)
RHMA-SP-G	RUBBERIZED HOT MIX ASPHALT, SUPERPAVE (GAP GRADED)



TYPICAL RHMA-SP-G CONFORM TAPER MAINLINE

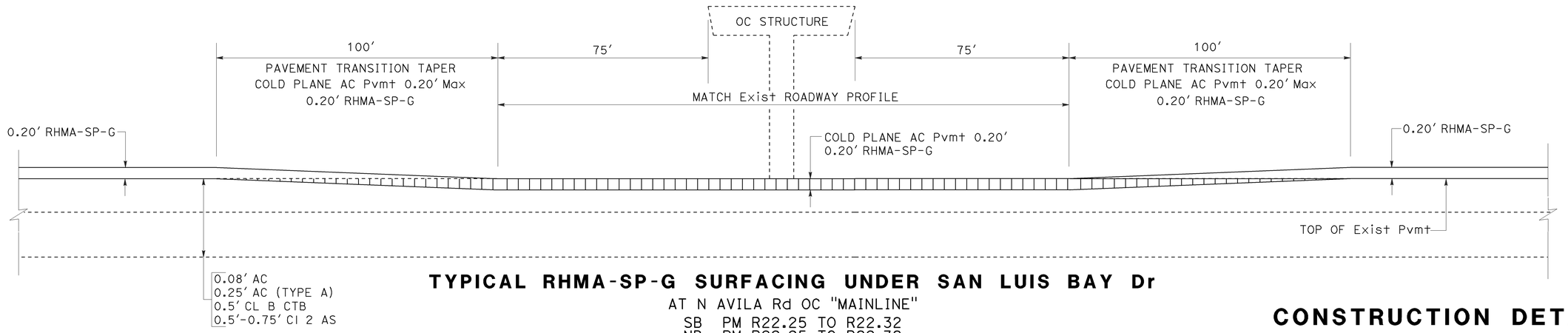
SB PM R21.60 SB PM R23.82
NB PM R21.60 NB PM R23.96



TYPICAL HMA-SP (TYPE A) RAMP CONFORM TAPER RAMPS

AT SAN LUIS BAY DRIVE

SB OFF-RAMP PM R22.43 NB OFF-RAMP PM R22.18
SB ON-RAMP PM R22.12 NB ON-RAMP PM R22.38



TYPICAL RHMA-SP-G SURFACING UNDER SAN LUIS BAY Dr

AT N AVILA Rd OC "MAINLINE"

SB PM R22.25 TO R22.32
NB PM R22.25 TO R22.32

CONSTRUCTION DETAILS

NO SCALE

C-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY
CHECKED BY: MARK S. LEICHTFUSS
REVISED BY
DATE REVISED
RON KRAEMER

LAST REVISION DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02
01-27-14

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	5	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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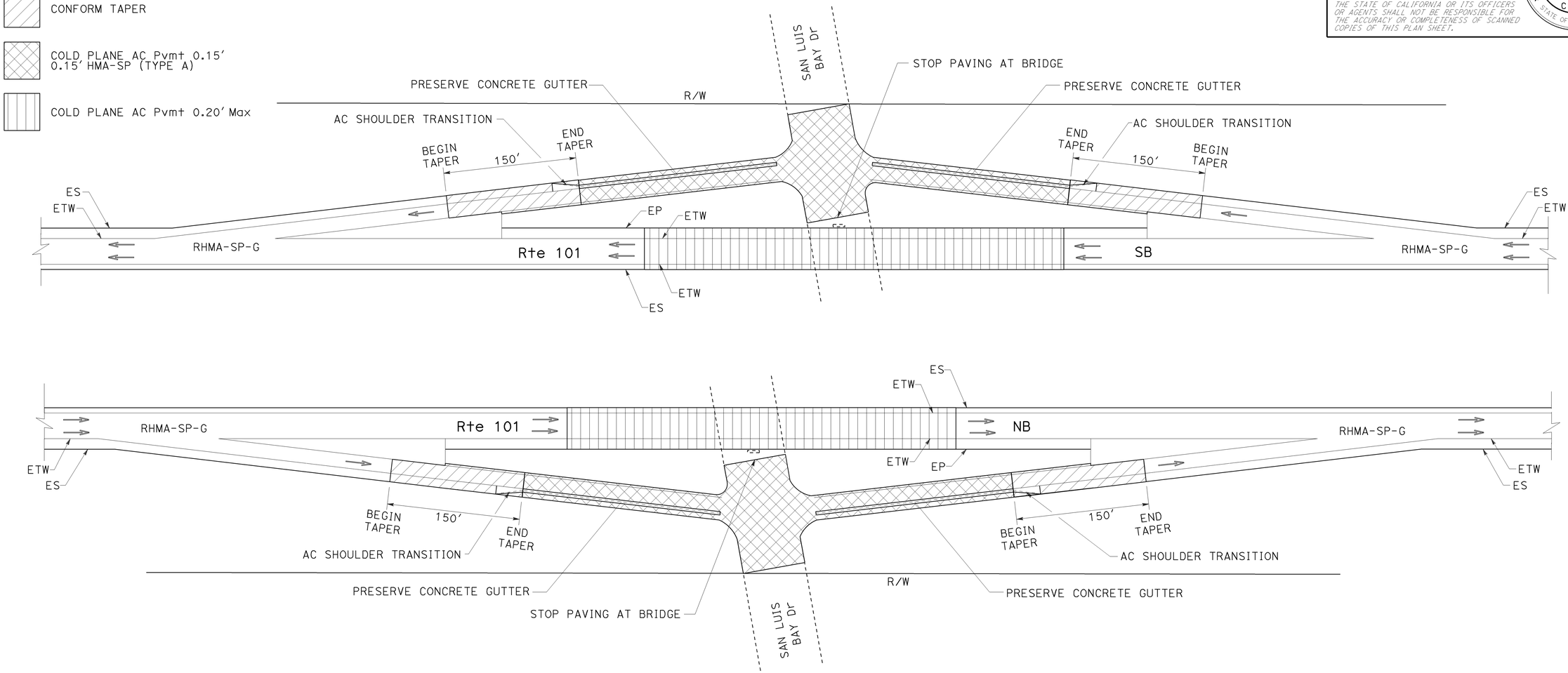
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND:

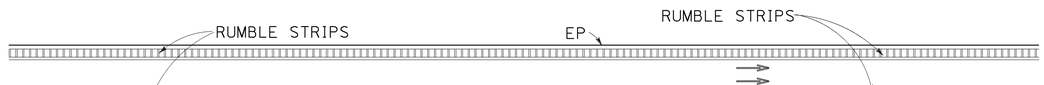
CONFORM TAPER

COLD PLANE AC Pvmt 0.15′ 0.15′ HMA-SP (TYPE A)

COLD PLANE AC Pvmt 0.20′ Max



HMA-SP (TYPE A) PAVING LIMITS AT RAMPS



RUMBLE STRIP PLACEMENT RAMPS

CONSTRUCTION DETAILS
C-2

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
Caltrans®

FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY: AMJED HETTINI
CHECKED BY: MARK S. LEICHTFUSS
REVISED BY
DATE REVISED

LAST REVISION | DATE PLOTTED => 25-MAR-2014
01-27-14 | TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 05120000017ga002.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	6	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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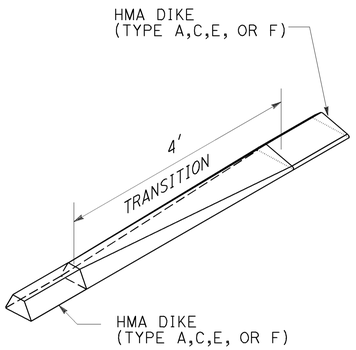
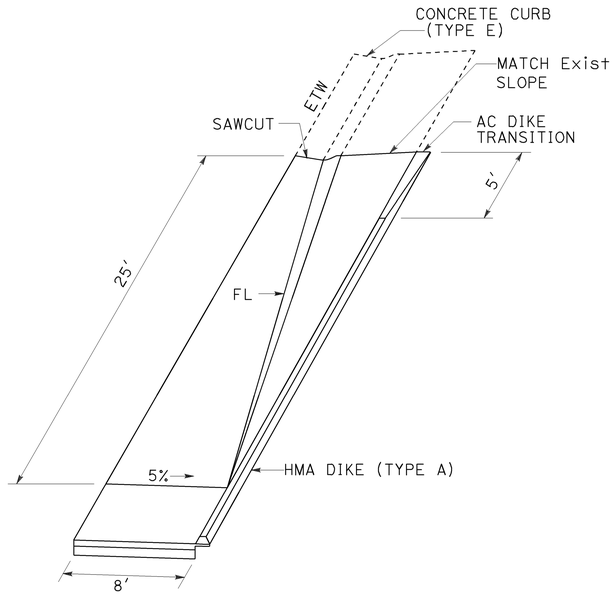
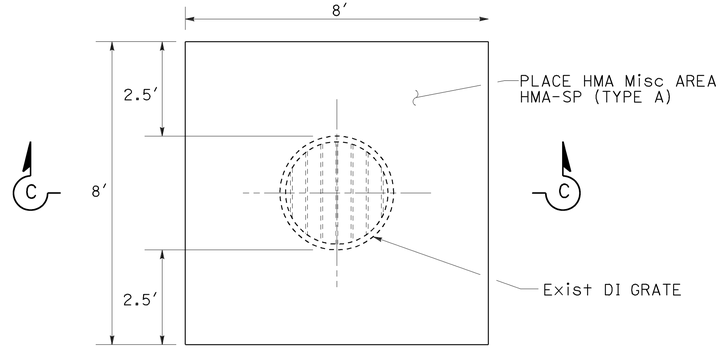


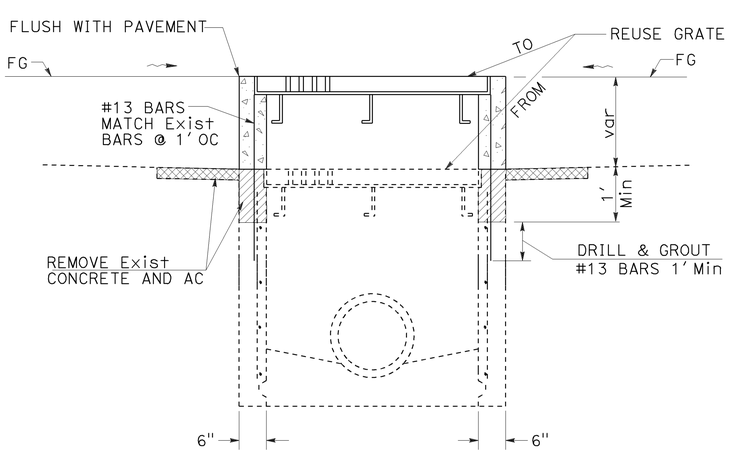
TYPICAL HMA DIKE TRANSITION



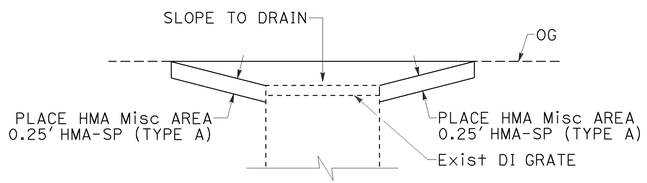
AC SHOULDER TRANSITION



AC APRON FOR DRAINAGE INLET
Rte 101 MEDIAN



ADJUST INLET



SECTION C-C

NOTES: (ADJUST INLET)

1. INLETS AT EDGES OF SHOULDER (TYPE G1 & G2) ARE TIED TO THE INSIDE FACE OF FAR SIDE WALL OF THE INLET.
2. G1 D1 SHOWN. SEE Std PLANS FOR TYPE GO AND GDO INLETS CURB OPENING ADJUSTMENT.

CONSTRUCTION DETAILS
C-3

NO SCALE

CALCULATED-DESIGNED BY
CHECKED BY
REVISED BY
DATE REVISED
MARK S. LEICHTFUSS
AMJED HETTINI
FUNCTIONAL SUPERVISOR
RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
Caltrans

LAST REVISION 01-27-14
DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017ga003.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	7	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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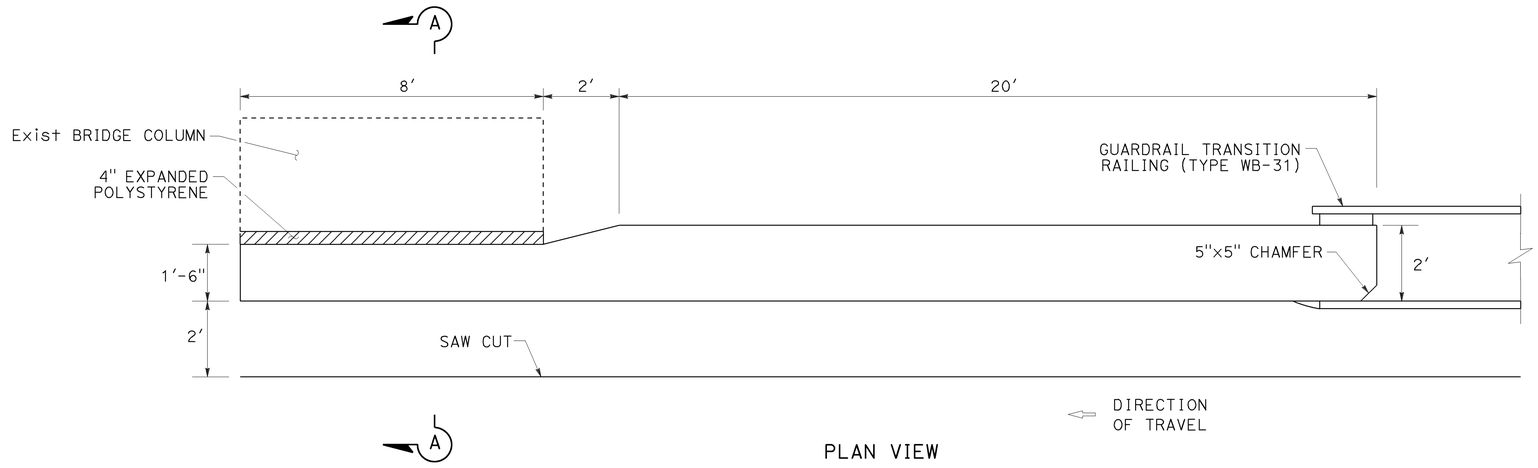
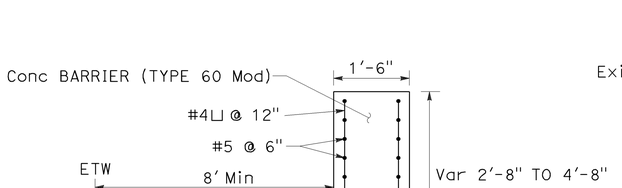
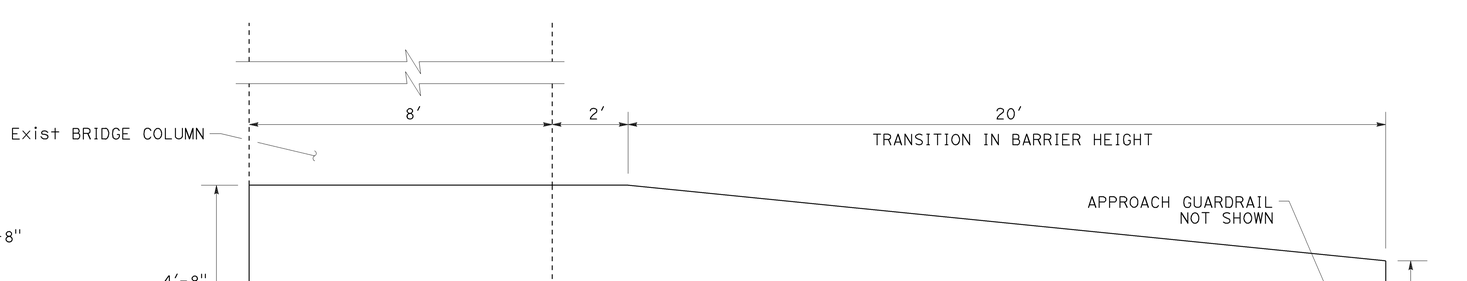


PLAN VIEW



A-A SECTION



ELEVATION VIEW

CONCRETE BARRIER (TYPE 60 MODIFIED) VERTICAL FACE FOR SIDE OF ROAD

NORTH AVILA Rd OC PM R22.30 NB & SB OUTSIDE SHOULDER

CONSTRUCTION DETAILS C-4

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY: RON KRAEMER
CHECKED BY: MARK S. LEICHTFUSS
REVISED BY
DATE REVISED

LAST REVISION 01-27-14
DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017ga004.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	8	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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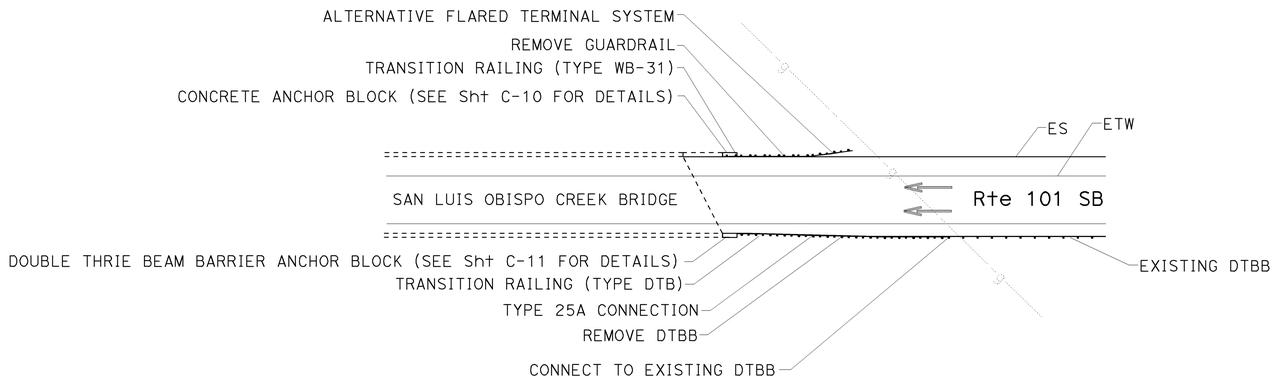
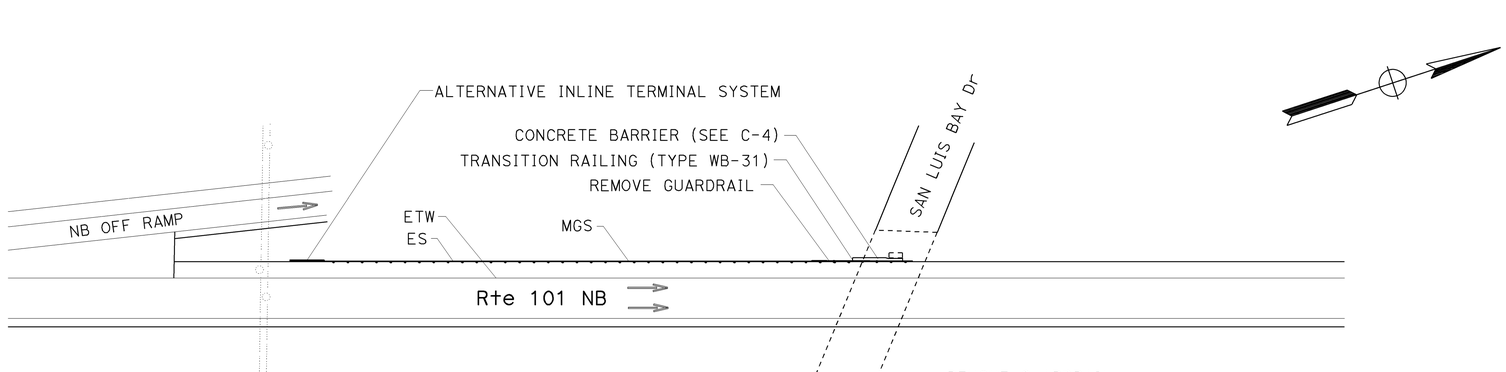
NOTES:

1. DEPENDENT DIMENSIONS WILL BE VERIFIED IN THE FIELD BEFORE FABRICATING ANY END CONNECTION TO CONFORM WITH EXISTING PAVED CONDITIONS.
2. ALL PLATES AND BOLTS ARE GALVANIZED.



SAN LUIS OBISPO CREEK SB BRIDGE MGS CONNECTION



NORTH AVILA Rd OC MGS CONNECTION

CONSTRUCTION DETAILS C-5

NO SCALE

REVISED BY | DATE REVISED
MARK S. LEICHTFUSS | AMJED HETTINI
CALCULATED-DESIGNED BY | CHECKED BY
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
Caltrans

LAST REVISION: DATE PLOTTED => 25-MAR-2014
01-27-14 TIME PLOTTED => 13:02

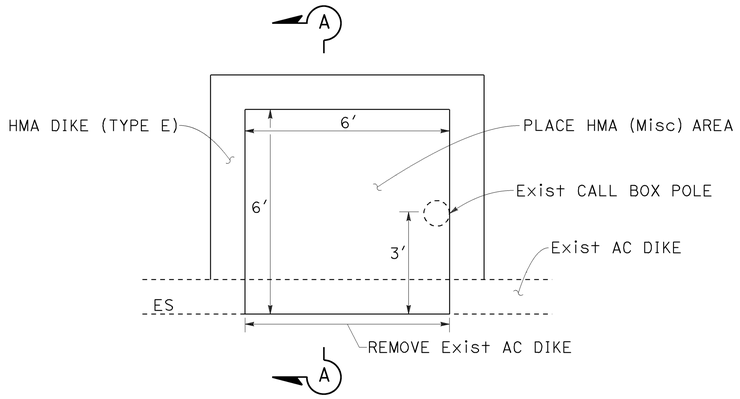
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	9	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — MARK S. LEICHTFUSS No. 69124 Exp.6-30-14 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.



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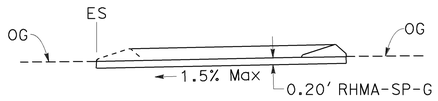
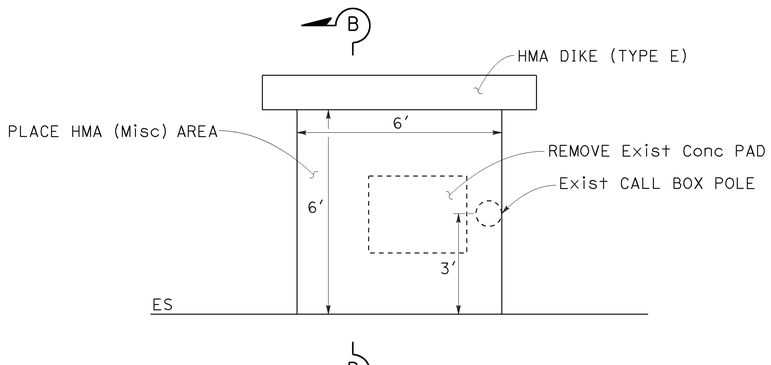
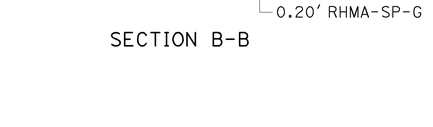
NB PM 21.90



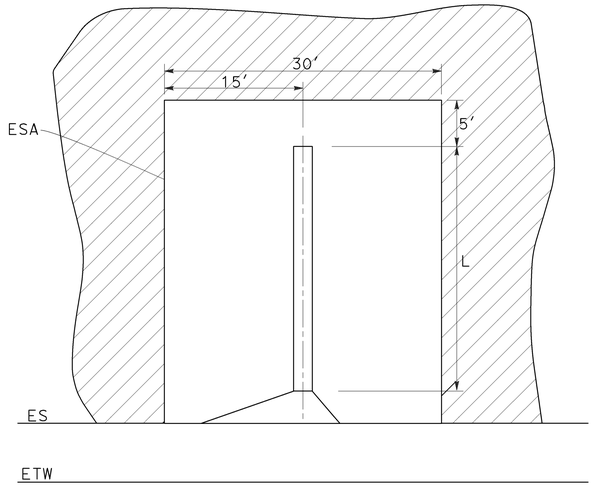
SECTION A-A



CALL BOX PAD
SB PM 21.98



SECTION B-B

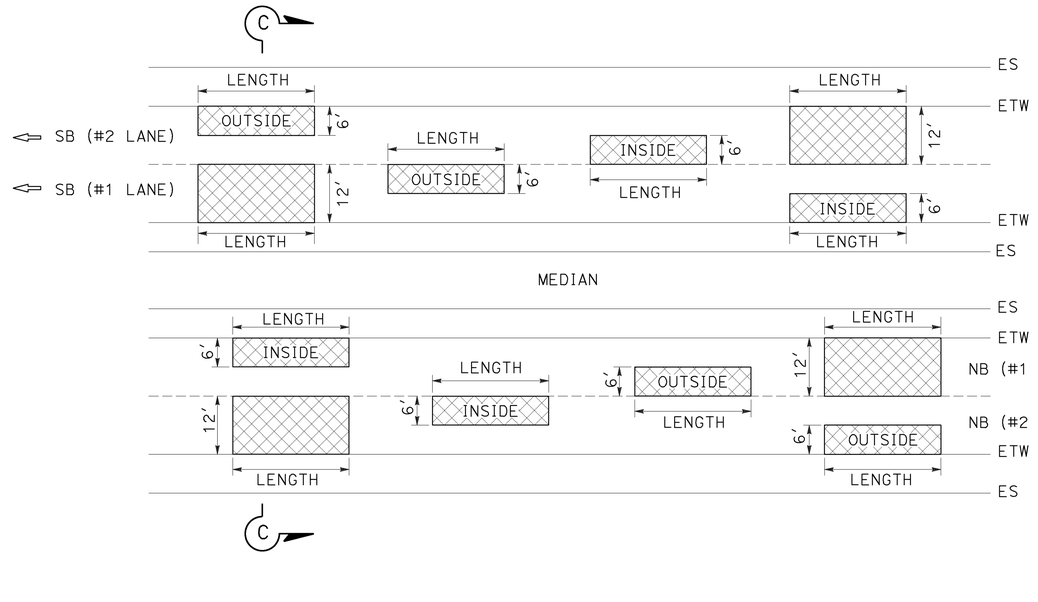


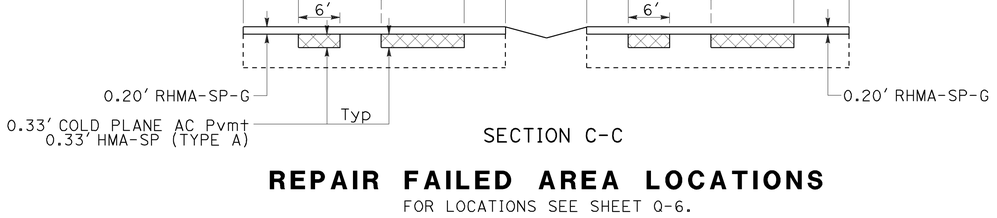
ESA FOR DOWNDRAINS AND OVERSIDE DRAINS

LEGEND:

ENVIRONMENTALLY SENSITIVE AREA

COLD PLANE AC Pvmt





SECTION C-C

REPAIR FAILED AREA LOCATIONS
FOR LOCATIONS SEE SHEET Q-6.

CONSTRUCTION DETAILS
NO SCALE

C-6

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY: MARK S. LEICHTFUSS
CHECKED BY: STEVEN GIOVANNETTI
REVISED BY
DATE REVISED

LAST REVISION DATE PLOTTED => 25-MAR-2014
01-27-14 TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 05120000017ga006.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	10	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

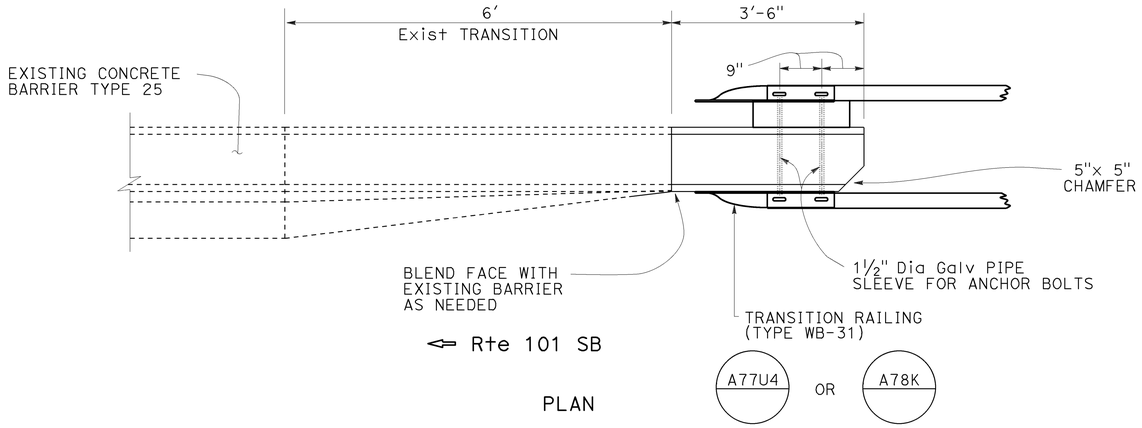
1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

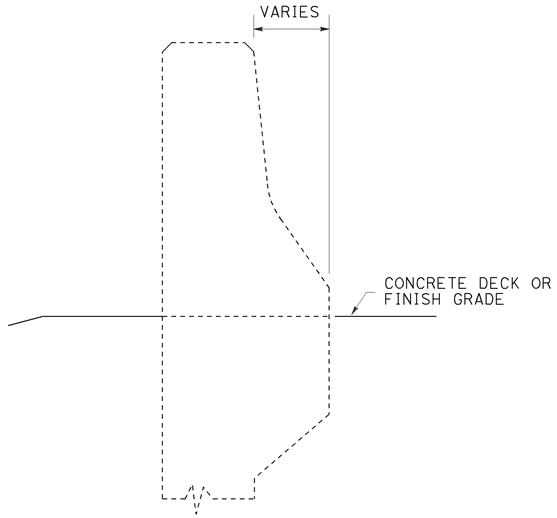
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

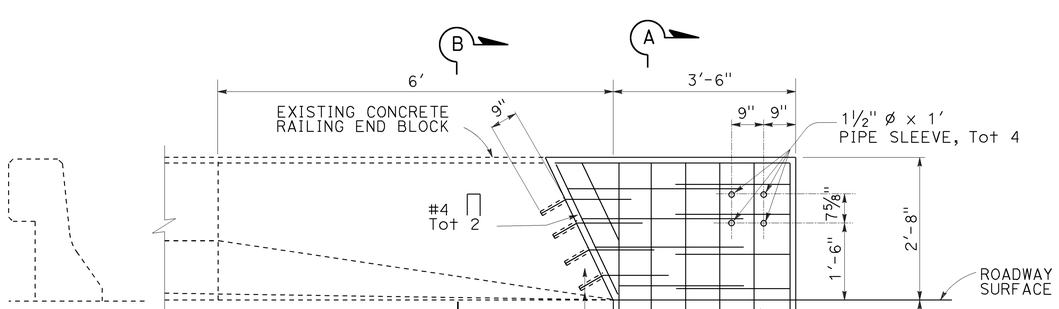
1. DEPENDENT DIMENSIONS WILL BE VERIFIED IN THE FIELD BEFORE FABRICATING ANY END CONNECTION TO CONFORM WITH EXISTING PAVED CONDITIONS.
2. ALL PLATES AND BOLTS ARE GALVANIZED.



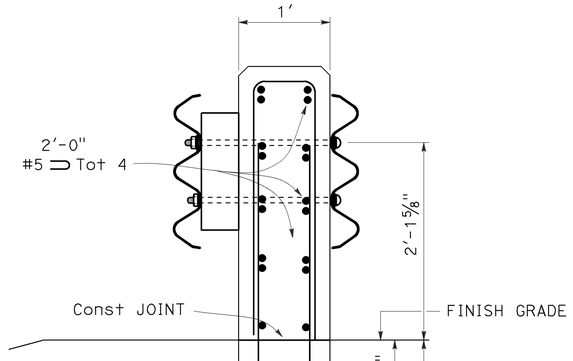
PLAN



SECTION B-B



ELEVATION



SECTION A-A

DOUBLE THRIE BEAM BARRIER ANCHOR BLOCK AND TRANSITION RAILING CONNECTION DETAILS

SAN LUIS OBISPO CREEK BRIDGE
SB INSIDE OR OUTSIDE SHOULDER PM R21.55

CONSTRUCTION DETAILS

NO SCALE

C-7

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY: MARK LEITCHFUSS
CHECKED BY: AMJED HETTINI
REVISED BY
DATE REVISED

LAST REVISION 01-27-14
DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017ga007.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

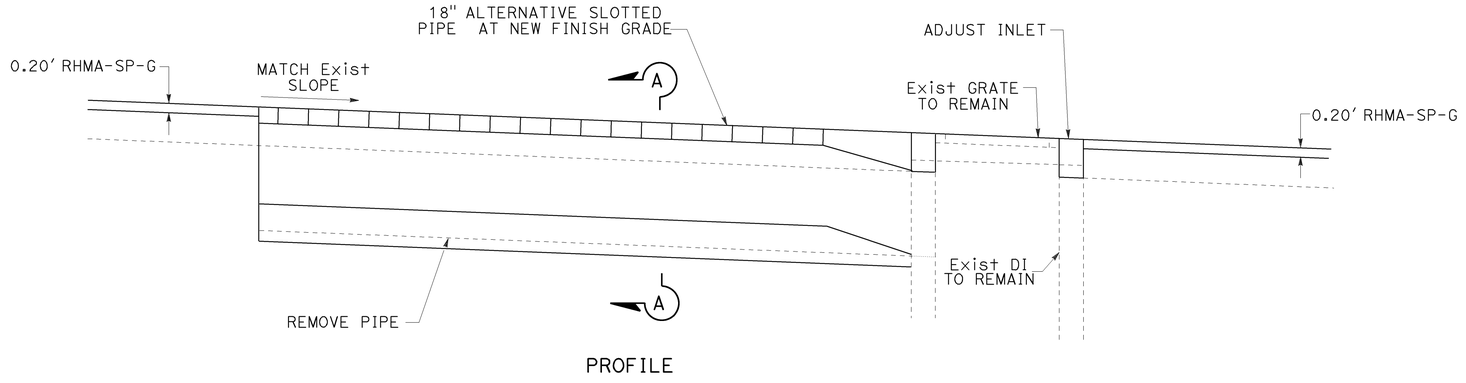
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	11	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

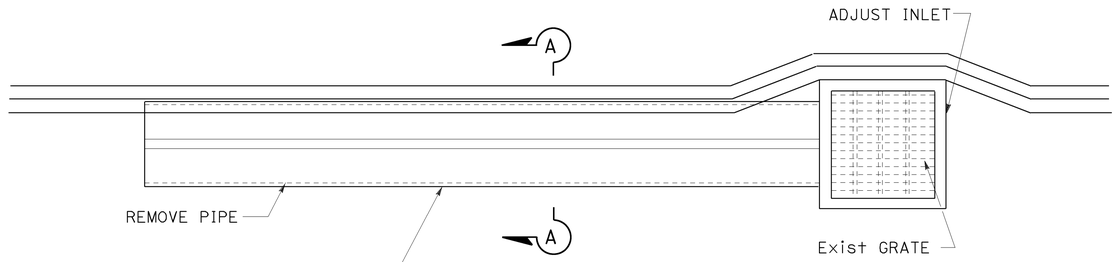
1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
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.

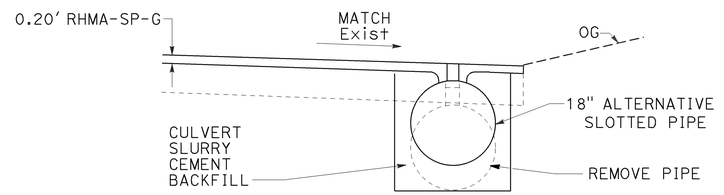


PROFILE



PLAN

SB PM 23.81



SECTION A-A

ALTERNATIVE PIPE ALLOWABLE MATERIAL

DESCRIPTION	TYPE	
	SLOTTED CORRUGATED STEEL	SLOTTED PLASTIC PIPE TYPE S (SMOOTH INTERIOR)
	SIZE	SIZE
18" DIAMETER SLOTTED	18"	18"

CONSTRUCTION DETAILS

NO SCALE

C-8

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY
CHECKED BY
AMJED HETTINI
STEVEN GIOVANNETTI
REVISED BY
DATE REVISED

LAST REVISION 01-27-14
DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017ga008.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	12	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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

NOTES:

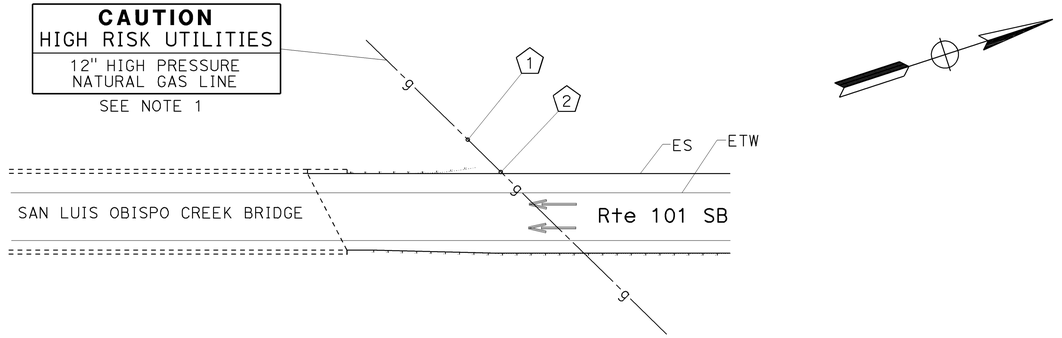
1. HIGH RISK UTILITIES. CALL DIG ALERT PRIOR TO WORKING IN VICINITY OF UTILITIES.

2. UTILITY OWNERSHIP:

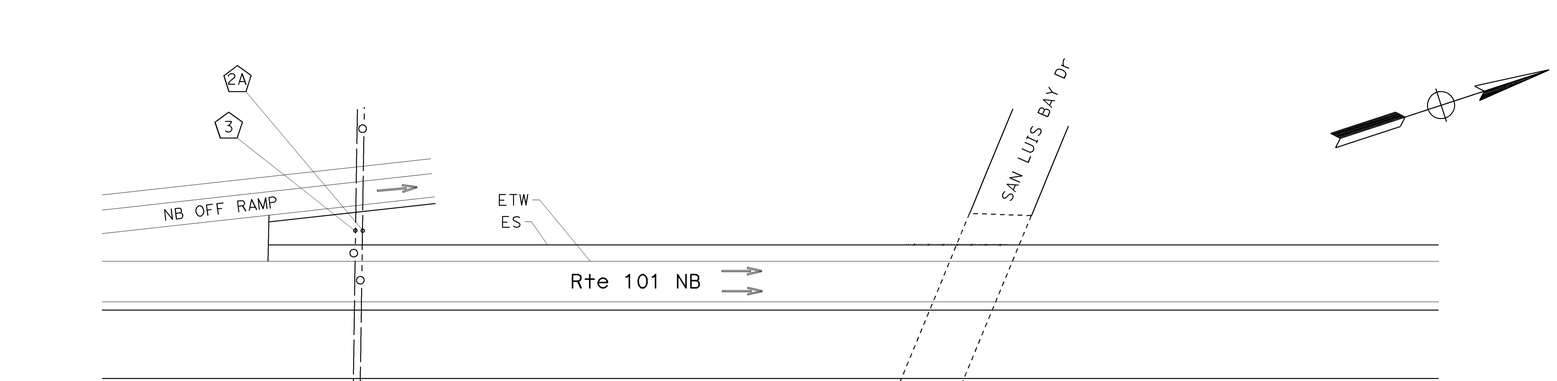
   OIL - PHILLIPS 66 PETROLEUM
   NATURAL GAS - SOUTHERN CALIFORNIA GAS COMPANY

POSITIVE LOCATION INFORMATION

No. ⬠	LOCATION/POSTMILE	DEPTH	ELEVATION	METHOD
1	SB OUTSIDE SHOULDER PM R21.57	5.75′	30.42′	POT HOLE
2	SB OUTSIDE SHOULDER PM R21.57	4.75′	31.85′	POT HOLE
2A	NB OUTSIDE SHOULDER PM R22.16	14′	32.26′	POT HOLE
3	NB OUTSIDE SHOULDER PM R22.16	14′	32.09′	POT HOLE



SAN LUIS OBISPO CREEK SB BRIDGE



NORTH AVILA Rd OC

UTILITY PLAN
U-1

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: RON KRAEMER
CALCULATED-DESIGNED BY
CHECKED BY
MARK S. LEICHTFUSS
STEVEN GIOVANNETTI
REVISED BY
DATE REVISED

LAST REVISION
DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017ka001.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	13	67

REGISTERED CIVIL ENGINEER — 1-27-14 DATE

1-27-14
PLANS APPROVAL DATE

FAWZI YAGHMOUR No. C-54750 Exp. 12-31-15 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

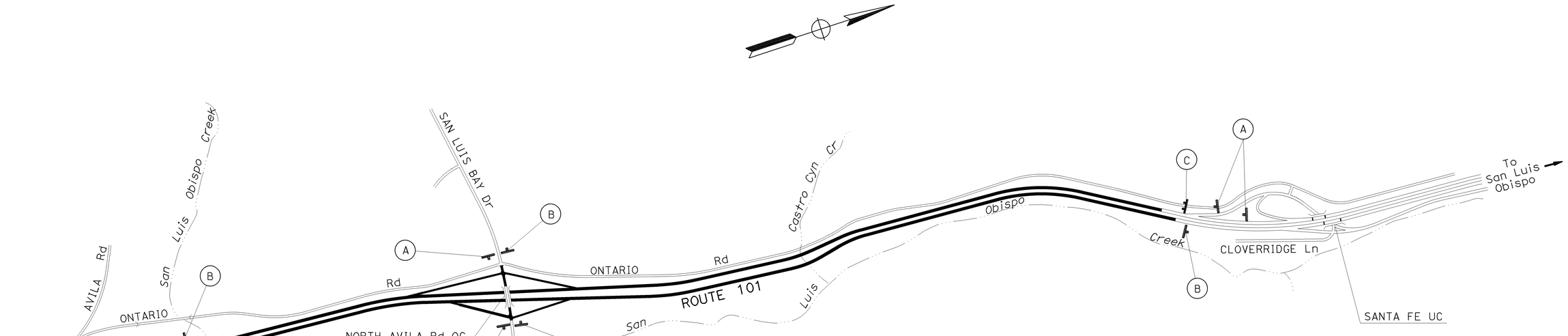
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

SIGN No. (X)	SIGN CODE		PANEL SIZE	SIGN MESSAGE	NUMBER OF POSTS AND SIZE	NUMBER OF SIGNS
	FEDERAL	CALIFORNIA				
A	W20-1		48" x 48"	ROAD WORK AHEAD	1-6" x 6"	5
B	G20-2		24" x 36"	END ROAD WORK	1-4" x 4"	4
C		C40(CA)	108" x 42"	TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES	2-4" x 6"	2

NOTES:

1. EXACT LOCATION AND POSITION OF CONSTRUCTION AREA SIGNS TO BE DETERMINED BY THE ENGINEER.
2. FOR ADDITIONAL CONSTRUCTION AREA SIGNS, REFER TO PLAN SHEET TH-1.
3. EXISTING UTILITIES NOT SHOWN ON THIS SHEET.



CONSTRUCTION AREA SIGNS

APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY

NO SCALE

CS-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® TRAFFIC DESIGN
FUNCTIONAL SUPERVISOR: MOHAMMED OATAMI
CALCULATED-DESIGNED BY: DAVID BLACK
CHECKED BY: FAWZI YAGHMOUR
REVISED BY
DATE REVISED

LAST REVISION — DATE PLOTTED => 25-MAR-2014 — TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010 | USERNAME => s109144 | DGN FILE => 05120000171a001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 1512 | PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	14	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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

NOTES:

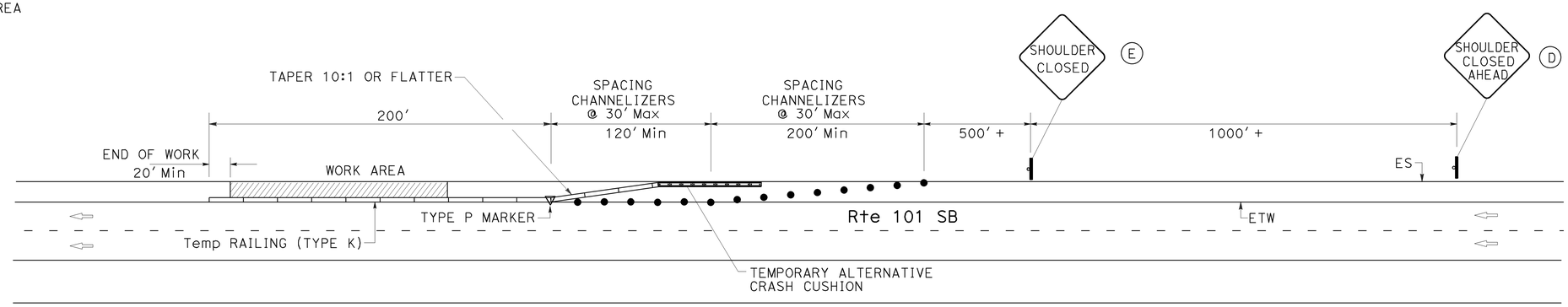
1. MEDIAN SHOULDER CLOSURE SHALL CONFORM TO THE DETAILS FOR OUTSIDE SHOULDER CLOSURE.
2. CHANNELIZERS (SURFACE MOUNTED) SHALL BE MAINTAINED THROUGHOUT THE ENTIRE CLOSURE PERIOD.

LEGEND:

- ● CHANNELIZER (SURFACE MOUNTED)
- Temp ALTERNATIVE CRASH CUSHION
- Temp RAILING (TYPE K)
- WORK AREA

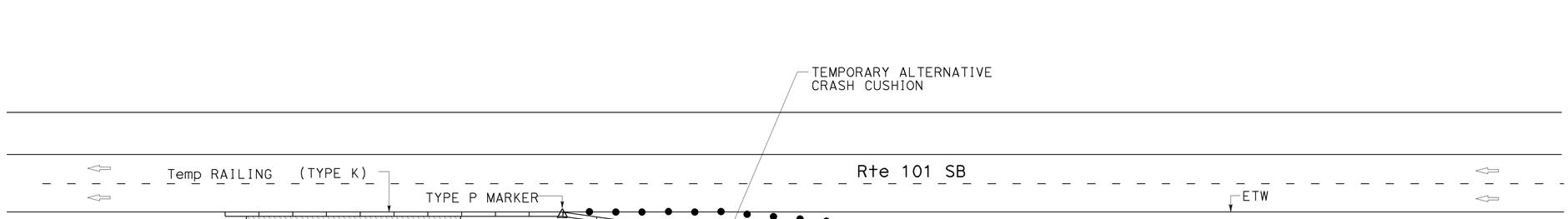
STATIONARY MOUNTED CONSTRUCTION AREA SIGNS (TRAFFIC HANDLING)

SIGN No. (X)	SIGN CODE		PANEL SIZE	SIGN MESSAGE	NUMBER OF POSTS AND SIZE	NUMBER OF SIGNS
	FEDERAL	CALIFORNIA				
D		C30A(CA)	48" x 48"	SHOULDER CLOSED AHEAD	1-4" x 6"	2
E		C24(CA)(MOD)	48" X 48"	SHOULDER CLOSED	1-4" X 6"	2



SHOULDER CLOSURES WITH TEMPORARY RAILING (TYPE K) AT 8' SHOULDERS

SAN LUIS BAY Dr OVERCROSSING NB AND SB
SAN LUIS OBISPO CREEK Br SB OUTSIDE SHOULDER



SHOULDER CLOSURES WITH TEMPORARY RAILING (TYPE K) AT 5' SHOULDERS

SAN LUIS OBISPO CREEK BRIDGE SB INSIDE SHOULDER

APPROVED FOR TRAFFIC HANDLING WORK ONLY

TRAFFIC HANDLING PLAN

NO SCALE

TH-1

REVISED BY | DATE REVISED
MARK S. LEICHTFUSS | AMJED HETTINI
CALCULATED-DESIGNED BY | CHECKED BY
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
Caltrans

LAST REVISION 01-27-14 | DATE PLOTTED => 25-MAR-2014 | TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017md001.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	15	67

1-27-14
REGISTERED CIVIL ENGINEER DATE

FAWZI YAGHMOUR No. C-54750 Exp. 12-31-15 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

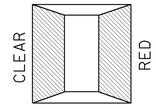
1-27-14
PLANS APPROVAL DATE

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

LEGEND:

RETROREFLECTIVE FACE

DIRECTION OF TRAVEL



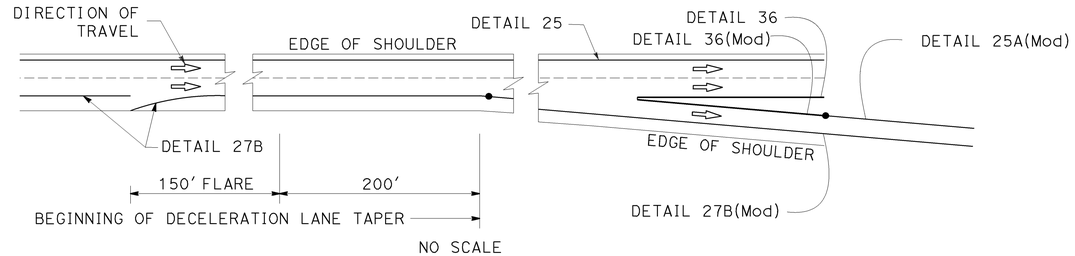
TYPE C

27B(Mod) @ 48' OC

PLACE FULL LENGTH OF SB OFF-RAMP

PAVEMENT DELINEATION QUANTITIES

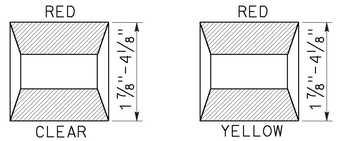
LOCATION	DETAIL No.	PAVEMENT MARKER (RETROREFLECTIVE) TYPE G	TYPE H	TYPE C	TYPE H (MOD)	PAVEMENT MARKER (NON-REFLECTIVE) TYPE A	THERMOPLASTIC TRAFFIC STRIPE (SPRAYABLE) 8" SOLID	4" SOLID	4" BROKEN	REMOVE THERMOPLASTIC TRAFFIC STRIPE	REMOVE PAVEMENT MARKER	DELINEATOR (CLASS 1) TYPE F	TYPE G	THERMOPLASTIC PAVEMENT MARKING DESCRIPTION	PLACE SQFT
		EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA		
MAINLINE SLO 101 R21.6/R23.9	25		268					12,789		12,789	268				
	11/13	258				1,036			12,357	3,089	1,294				
	11/14			9		36			432	108	45				
	27B							12,219		12,219		7			
MAINLINE SLO 101 R21.6/R23.9	25		278					13,285		13,285	278		7		
	11/13	266				1,060			12,709	3,178	1,326				
	11/14			12		48			576	144	60				
	27B							11,802		11,802					
SAN LUIS BAY Dr NB OFF-RAMP	25A		33					755					8	TYPE V ARROW 2 EA	66
	27B							1,349				14		STOP 1EA	22
	36	38					864							LIMIT LINE 51'	51
SAN LUIS BAY Dr NB ON-RAMP	8								150					TYPE I ARROW 1 EA	25
	25A		30					673					7		
	27B							1,279				13			
	36A	10					200								
SAN LUIS BAY Dr SB OFF-RAMP	25A(Mod)				40			914					10	TYPE V ARROW 1 EA	33
	27B(Mod)			29				1,328				14		STOP 2 EA	44
	36(Mod)	10		10			458							LIMIT LINE 61'	61
														TYPE IV ARROW 1 EA	15
														TYPE VII ARROW 1 EA	27
SAN LUIS BAY Dr SB ON-RAMP	8								115					TYPE I ARROW 1 EA	25
	25A		40					917					10		
	27B							1,240				13			
	36A	8					168								
SUBTOTAL		590	649	60	40	2,180	1,690	58,550	26,339			61	42		
TOTAL		1,339				2,180		86,579		56,614	3,271	103			369

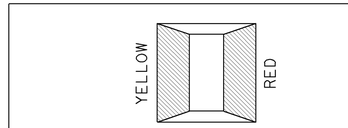


NO SCALE

RIGHT EDGELINE FLARE DETAIL

FOR USE ON SAN LUIS BAY SB OFF-RAMP ONLY





TYPE H(MOD)

DIRECTION OF TRAVEL

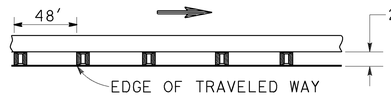
25A(Mod) @ 24' OC

TYPE C

DIRECTION OF TRAVEL

36(Mod) @ 24' OC

SB OFF-RAMP SIDE ONLY



DETAIL 27B(Mod)

PAVEMENT DELINEATION DETAILS AND QUANTITIES

NO SCALE

PDD-1

LAST REVISION | DATE PLOTTED => 25-MAR-2014
12-23-13 | TIME PLOTTED => 13:02

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
05-TRAFFIC DESIGN
FUNCTIONAL SUPERVISOR: MOHAMMED QATAMI
CALCULATED-DESIGNED BY: FAWZI YAGHMOUR
CHECKED BY: DAVID BLACK
REVISED BY
DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	16	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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PAVEMENT STRUCTURE

LOCATION/POSTMILE SOUTHBOUND	SIDE	IMPORTED BORROW	SHOULDER BACKING	COLD PLANE AC PAVEMENT			TACK COAT	HOT MIX ASPHALT, SUPERPAVE (TYPE A)	RUBBERIZED HOT MIX ASPHALT, SUPERPAVE (GAP GRADED)	ROADWAY EXCAVATION	PLACE HMA (MISC AREA)	REMARKS
				0.15'	0.20'	0.33'						
		CY	TON	SQYD	SQYD	SQYD	TON	TON	TON	CY	SQYD	
R21.56 TO R21.96	Rt	117.3										SB MAINLINE INSIDE SHOULDER UNDER THRIEBEAM BARRIER
R21.58 TO R21.63	Lt		59.4									SB MAINLINE OUTSIDE SHOULDER
R21.60 TO R21.62	Lt	5.9										SB MAINLINE OUTSIDE SHOULDER UNDER METAL BEAM GUARDRAIL
R21.60 TO R23.82					2,491		10.9		6,803.2			SB MAINLINE
R21.63 TO R21.95	Lt	93.9										PLACE BEHIND DIKE
R21.96 TO R22.02	Lt		14.3									SB MAINLINE OUTSIDE SHOULDER
R21.98 TO R23.82	Rt		437.2									SB MAINLINE INSIDE SHOULDER
R22.02 TO R22.23	Lt	61.6										SB MAINLINE OUTSIDE SHOULDER BEHIND DIKE
R22.09 TO R22.12				400			0.1	40.5				150' HMA-SP TYPE A CONFORM TAPER ON SB ON RAMP
R22.12 TO R22.46	Lt	99.7										SB MAINLINE OUTSIDE SHOULDER BEHIND DIKE
R22.12 TO R22.28				2,364			0.5	232.7				SB SAN LUIS BAY Dr ON RAMP
R22.23 TO R22.26	Lt		28.5									SB ON RAMP OUTSIDE SHOULDER
R22.28 TO R22.33	Lt		47.5									SB OFF RAMP OUTSIDE SHOULDER
R22.29 TO R22.46	Rt	49.9										SB OFF RAMP INSIDE SHOULDER BEHIND CURB
R22.29				527			0.1	53.4				SAN LUIS BAY Dr (WEST SIDE OF OC)
R22.29								3.8		1.9	6.7	MODIFIED CONCRETE BARRIER AT N AVILA Rd OC
R22.29 TO R22.44				2,163			0.5	200.5				SB SAN LUIS BAY Dr OFF RAMP
R22.43 TO R22.54	Lt	32.3										SB OFF RAMP OUTSIDE SHOULDER BEHIND DIKE
R22.44 TO R22.46				400			0.1	40.5				150' HMA-SP TYPE A CONFORM TAPER ON SB OFF RAMP
R22.54 TO R22.71	Lt		134.6									SB MAINLINE OUTSIDE SHOULDER
R22.71 TO R23.13	Lt	123.2										SB MAINLINE OUTSIDE SHOULDER BEHIND DIKE
R23.12 TO R23.23			34.8									SB MAINLINE OUTSIDE SHOULDER
R23.23 TO R23.46	Lt	67.5										SB MAINLINE OUTSIDE SHOULDER BEHIND DIKE
R23.46 TO R23.81			184.8									SB MAINLINE OUTSIDE SHOULDER
R23.81 TO R23.82	Lt	2.9										SB MAINLINE OUTSIDE SHOULDER BEHIND DIKE
PLACE HOT MIX ASPHALT DIKE							1.0	472.6				SB AND NB MAINLINE AND RAMPS
HMA (MISCELLANEOUS AREAS)							0.1	56.6			335.4	SB AND NB MAINLINE AND MEDIAN
DOWNDRAIN							0.1	23.1			94.5	NB MAINLINE
OVERSIDE DRAIN							0.1	7.0			41.6	SB AND NB MAINLINE
REPAIR FAILED AREAS						1,082	0.3	243.5				SB AND NB MAINLINE
RHMA-SP-G SAFETY EDGE "CASE C"							0.3		210.8			SB AND NB MAINLINE
SB SUBTOTAL		654.2	941.1	5,855	2,491	1,082	14.1	1,374.2	7,014	1.9	478.2	

SUMMARY OF QUANTITIES
Q-1

AMJED HETTINI — REVISED BY
RAHIM IBRAHIMI — DATE REVISED
CALCULATED-DESIGNED BY
CHECKED BY
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

LAST REVISION: DATE PLOTTED => 25-MAR-2014, TIME PLOTTED => 13:02
01-27-14

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017pa001.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	17	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
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.

PAVEMENT STRUCTURE

LOCATION/POSTMILE NORTHBOUND	SIDE	IMPORTED BORROW	SHOULDER BACKING	COLD PLANE AC PAVEMENT			TACK COAT	HOT MIX ASPHALT, SUPERPAVE (TYPE A)	RUBBERIZED HOT MIX ASPHALT, SUPERPAVE (GAP GRADED)	ROADWAY EXCAVATION	PLACE HMA (MISC AREA)	REMARKS
				0.15'	0.20'	0.33'						
		CY	TON	SQYD	SQYD	SQYD	TON	TON	TON	CY	SQYD	
R21.56 TO R23.96	L†		570.2									NB MAINLINE INSIDE SHOULDER
R21.56 TO R23.96					2,491		12.0		7,353.9			NB MAINLINE
R21.57 TO R21.67	R†		158.4									NB MAINLINE OUTSIDE SHOULDER
R21.67 TO R22.30	R†	184.8										NB MAINLINE AND OFF RAMP OUTSIDE SHOULDER BEHIND DIKE
R22.15 TO R22.16	R†		2.4									NB MAINLINE OUTSIDE SHOULDER
R22.15 TO R22.18				400			0.1	40.5				NB 150' HMA-SP TYPE A CONFORM TAPER ON OFF RAMP
R22.15 TO R22.29	L†	41.1										NB OFF RAMP INSIDE SHOULDER BEHIND CURB
R22.16 TO R22.40	R†	70.4										NB MAINLINE OUTSIDE SHOULDER
R22.18 TO R22.31				1,781			0.4	160.9				NB SAN LUIS BAY Dr OFF RAMP INCLUDING SHOULDERS
R22.29								3.7		1.9	6.7	FOR MODIFIED CONCRETE BARRIER AT NB N AVILA Rd OC
R22.29				1,033			0.2	104.6				SAN LUIS BAY Dr (EAST SIDE OF OC)
R22.30 TO R22.40	L†	29.3										NB ON RAMP INSIDE SHOULDER BEHIND CURB
R22.32 TO R23.83	R†	440.0										NB MAINLINE AND ON RAMP OUTSIDE SHOULDER
R22.32 TO R22.38				1,210			0.3	104.5				NB SAN LUIS BAY Dr ON RAMP INCLUDING SHOULDERS
R22.38 TO R22.40				400			0.1	40.5				NB 150' HMA-SP-TYPE A CONFORM TAPER ON ON RAMP
R23.81 TO R23.96			35.6									NB MAINLINE OUTSIDE SHOULDER
NB SUBTOTAL		765.6	766.6	4,824	2,491	0	13.1	454.7	7,353.9	1.9	6.7	
SB SUBTOTAL		654.2	941.1	5,855	2,491	1,082	14.1	1,374.2	7,014	1.9	478.2	
TOTAL		1,419.8	1,707.7		16,742		27.2	1,828.9	14,367.9	3.8	484.9	

REVISED BY | DATE REVISED
AMJED HETTINI | RAHIM IBRAHIMI
CALCULATED-DESIGNED BY | CHECKED BY
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

SUMMARY OF QUANTITIES
Q-2

LAST REVISION DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	18	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — MARK S. LEICHTFUSS No. 69124 Exp.6-30-14 CIVIL — STATE OF CALIFORNIA

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MIDWEST GUARDRAIL SYSTEMS, END TREATMENTS, AND BARRIERS

LOCATION/POSTMILE	DIRECTION	SIDE	MIDWEST GUARDRAIL SYSTEM (STEEL POST)	MIDWEST GUARDRAIL SYSTEM (8' POST)	RECONSTRUCT DOUBLE THRIE BEAM BARRIER	DOUBLE THRIE BEAM BARRIER (WOOD POST)	REMOVE GUARDRAIL	TREATED WOOD WASTE	ALTERNATIVE FLARED TERMINAL SYSTEM	ALTERNATIVE IN-LINE TERMINAL SYSTEM	(N) BURIED POST END ANCHOR	END ANCHOR ASSEMBLY (TYPE SFT)	TRANSITION RAILING (TYPE WB-31)	TRANSITION RAILING (TYPE DTB)	MINOR CONCRETE	MISCELLANEOUS IRON AND STEEL	CONCRETE BARRIER (TYPE 60 MODIFIED)	OBJECT MARKER (TYPE L)	REMARKS
			LF	LF	LF	LF	LF	LB	EA	EA	EA	EA	EA	EA	CY	LB	LF	EA	
PM R21.55	SB	R†													2.5	413			ANCHOR BLOCK AT SAN LUIS CREEK BRIDGE WALL SB OUTSIDE SHOULDER
PM R21.55	SB	R†											1						SAN LUIS CREEK BRIDGE WALL SB OUTSIDE SHOULDER
PM R21.56	SB	R†							1									1	SAN LUIS CREEK BRIDGE WALL SB OUTSIDE SHOULDER
PM R21.56 TO R21.59	SB	L†				158												1	Rte 101 MAINLINE INSIDE SHOULDER
PM R21.56 TO R21.58	SB	R†	106				106	969											SAN LUIS CREEK BRIDGE WALL SB OUTSIDE SHOULDER
PM R21.56 TO R21.59	SB	L†					158	1,444											SAN LUIS CREEK BRIDGE WALL SB INSIDE SHOULDER
PM R21.56	SB	L†													2.5	413			ANCHOR BLOCK AT SAN LUIS CREEK BRIDGE WALL SB INSIDE SHOULDER
PM R21.56	SB	L†												1					SAN LUIS CREEK BRIDGE WALL SB INSIDE SHOULDER
PM R21.62 TO R22.00	SB	L†			2,006			2,914										1	SB MAINLINE INSIDE SHOULDER (RAISE DTBB TO 32")
PM R22.26	SB	L†										1							SAN LUIS BAY Dr SB ON RAMP INSIDE SHOULDER
PM R22.28 TO R22.30	SB	L†					106	969											SAN LUIS BAY Dr OC WALL SB OUTSIDE SHOULDER
PM R22.29	SB	R†															30	1	N AVILA Rd OC BRIDGE COLUMN SB OUTSIDE SHOULDER
PM R22.29	SB	R†											1						N AVILA Rd OC BRIDGE COLUMN SB OUTSIDE SHOULDER
PM R22.30 TO R22.32	SB	R†	106															1	SAN LUIS CREEK BRIDGE WALL SB OUTSIDE SHOULDER
PM R22.32	SB	R†									1								SAN LUIS CREEK BRIDGE WALL SB OUTSIDE SHOULDER
PM R22.16 TO R22.28	NB	R†		634															NB MAINLINE OUTSIDE SHOULDER AT SAN LUIS BAY Dr OC
PM R22.16	NB	R†								1								1	Rte 101 MAINLINE OUTSIDE SHOULDER
PM R22.24	NB	R†								1								1	SAN LUIS BAY Dr OC NB OFF RAMP OUTSIDE SHOULDER
PM R22.24 TO 22.31	NB	R†		370			370	3,383											NB OFF RAMP OUTSIDE SHOULDER AT SAN LUIS BAY Dr OC
PM R22.25 TO 22.28	NB	R†		158			158	1,444										1	NB ON RAMP INSIDE SHOULDER AT SAN LUIS BAY Dr OC
PM R22.27 TO R22.29	NB	R†					106	969											SAN LUIS CREEK BRIDGE WALL NB OUTSIDE SHOULDER
PM R22.28	NB	R†											1						N AVILA Rd OC BRIDGE COLUMN NB OUTSIDE SHOULDER
PM R22.29	EB	R†											1						SAN LUIS BAY Dr OC AT EAST BRIDGE RAIL
PM R22.29	WB	R†											1						SAN LUIS BAY Dr OC AT WEST BRIDGE RAIL
PM R22.29	NB	R†															30	1	N AVILA Rd OC BRIDGE COLUMN NB OUTSIDE SHOULDER
PM R22.29 TO 22.33	NB	R†		211			211	1,929										1	NB ON RAMP INSIDE SHOULDER AT SAN LUIS BAY Dr OC
PM R22.30 TO 22.38	NB	R†		422			423	3,867											NB ON RAMP OUTSIDE SHOULDER AT SAN LUIS BAY Dr OC
PM R22.34	NB	L†										1							SAN LUIS BAY Dr NB ON RAMP INSIDE SHOULDER
PM R22.56 TO R22.75	NB	R†		1,003			1,003	9,170											NB MAINLINE OUTSIDE SHOULDER
PM R22.57	NB	R†								1								1	NB MAINLINE OUTSIDE SHOULDER
PM R22.75	NB	R†										1							NB MAINLINE OUTSIDE SHOULDER
PM R22.90 TO R23.04	NB	R†		739			792	7,241											NB MAINLINE OUTSIDE SHOULDER
PM R22.91	NB	R†								1								1	NB MAINLINE OUTSIDE SHOULDER
PM R23.04	NB	R†										1							NB MAINLINE OUTSIDE SHOULDER
TOTAL			212	3,537	2,006	158	3,433	34,299	1	4		4	5	1	5.0	826	60	12*	

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

* OBJECT MARKER QUANTITY INCLUDED IN OBJECT MARKER SUMMARY TABLE.

SUMMARY OF QUANTITIES
Q-3

CALCULATED-DESIGNED BY: AMJED HETTINI
CHECKED BY: MARK S. LEICHTFUSS
REVISED BY
DATE REVISED
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

LAST REVISION DATE PLOTTED => 25-MAR-2014
TIME PLOTTED => 13:02
01-27-14

BORDER LAST REVISED 7/2/2010
USERNAME => s109144
DGN FILE => 0512000017pa003.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1451
PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	19	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
MARK S. LEICHTFUSS
No. 69124
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

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NOTES:

1. BEGINNING POSTMILE AND DIKE LENGTH SHOWN ARE APPROXIMATE. THE ACTUAL LOCATION AND LENGTH MAY VARY.
2. FOR QUANTITIES OF HMA AND TACK COAT USED FOR DIKE, SEE PAVEMENT STRUCTURE TABLE (SOUTHBOUND) ON SHEET Q-1.

PLACE HOT MIX ASPHALT DIKE

LOCATION	POSTMILE SB	SIDE	(TYPE A) LF	(TYPE C) LF	(TYPE E) LF	(TYPE F) LF	HOT MIX ASPHALT, SUPERPAVE (TYPE A) TON	LOCATION	POSTMILE NB	SIDE	(TYPE A) LF	(TYPE C) LF	(TYPE E) LF	(TYPE F) LF	HOT MIX ASPHALT, SUPERPAVE (TYPE A) TON
ROUTE 101 MAINLINE	R21.63 TO R21.85	Lt	1,162				31.76	ROUTE 101 OFF RAMP	R21.67 TO R22.18	Rt			2,672		70.33
ROUTE 101 MAINLINE	R21.85 TO R21.87	Lt			106		2.78	ROUTE 101 MAINLINE	R22.16 TO R22.17	Rt		53			0.41
ROUTE 101 MAINLINE	R21.87 TO R21.95	Lt	422				11.55	ROUTE 101 MAINLINE	R22.17 TO R22.29	Rt				634	8.47
ROUTE 101 MAINLINE	R22.02 TO R22.12	Lt			528		13.90	ROUTE 101 MAINLINE	R22.30 TO R22.31	Rt	72				1.97
ROUTE 101 MAINLINE	R22.12 TO R22.28	Lt	845				23.09	NB OFF RAMP	R22.30 TO R22.31	Rt				53	0.71
ROUTE 101 AT BRIDGE	R22.28 TO R22.29					32	0.43	NB ON RAMP	R22.31 TO R22.33	Rt				106	1.41
ROUTE 101 MAINLINE	R22.29 TO R22.30	Lt		53			0.41	ROUTE 101 MAINLINE	R22.31 TO R22.40	Rt			475		12.51
ROUTE 101 MAINLINE	R22.31 TO R22.46	Lt	792				21.65	NB ON RAMP	R22.38 TO R22.56				950		25.02
SB OFF RAMP	R22.43 TO R22.54		581				15.88	ROUTE 101 MAINLINE	R22.56 TO R22.57	Rt		53			0.41
ROUTE 101 MAINLINE	R22.71 TO R23.13	Lt	2,218				60.62	ROUTE 101 MAINLINE	R22.57 TO R22.64	Rt				370	4.94
ROUTE 101 MAINLINE	R23.23 TO R23.45	Lt	1,214				33.20	ROUTE 101 MAINLINE	R22.75 TO R22.90	Rt			792		20.85
ROUTE 101 MAINLINE	R23.81 TO R23.82	Lt	26				0.72	ROUTE 101 MAINLINE	R22.90 TO R22.91	Rt		53			0.41
								ROUTE 101 MAINLINE	R22.91 TO R22.92	Rt				53	0.71
								ROUTE 101 MAINLINE	R23.04 TO R23.82	Rt			4,118		108.42
SB SUBTOTAL			7,260	53	634	32	215.99	NB SUBTOTAL			72	159	9,007	1,216	256.57
								TOTAL			7,332	212	9,641	1,248	472.56*

* QUANTITY INCLUDED IN PAVEMENT STRUCTURE TABLE (SOUTHBOUND), SEE SHEET Q-1.

REMOVE ASPHALT CONCRETE DIKE

LOCATION	POSTMILE SB	SIDE	LF	LOCATION	POSTMILE NB	SIDE	LF
ROUTE 101 ON RAMP	R22.02 TO R22.12	Lt	528	ROUTE 101 OFF RAMP	R21.70 TO R22.18	Rt	2,534
ROUTE 101 MAINLINE	R22.12 TO R22.46	Lt	1,795	ROUTE 101 MAINLINE	R22.16 TO R22.40	Rt	1,267
OFF RAMP	R22.44 TO R22.55	Lt	581	ROUTE 101 OFF RAMP	R22.30 TO R22.32	Rt	106
ROUTE 101 MAINLINE	R22.71 TO R23.12	Lt	2,165	ROUTE 101 ON RAMP	R22.31 TO R22.33	Rt	106
ROUTE 101 MAINLINE	R23.23 TO R23.46	Lt	1,214	ROUTE 101 ON RAMP	R22.37 TO R22.64	Rt	1,426
ROUTE 101 MAINLINE	R23.81 TO R23.82	Lt	53	ROUTE 101 MAINLINE	R22.75 TO R22.92	Rt	898
				ROUTE 101 MAINLINE	R23.04 TO R23.82	Rt	4,118
SB SUBTOTAL			6,336	NB SUBTOTAL			10,455
				TOTAL			16,791

SUMMARY OF QUANTITIES
Q-4

REVISED BY | DATE REVISED
AMJED HETTINI | RAHIM IBRAHIMI
CALCULATED-DESIGNED BY | CHECKED BY
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
Caltrans

LAST REVISION | DATE PLOTTED => 25-MAR-2014
01-27-14 | TIME PLOTTED => 13:02

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	20	67

Mark S. Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — MARK S. LEICHTFUSS No. 69124 Exp.6-30-14 CIVIL — STATE OF CALIFORNIA

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

NOTES:
1. RUMBLE STRIP QUANTITY EXCLUDES LEFT TURN LANES AND ON/OFF-RAMPS.
2. PLACEMENT OF RUMBLE STRIP AS DIRECTED BY ENGINEER.

HMA (MISCELLANEOUS AREA)

LOCATION/POSTMILE	PLACE HMA (Misc AREA)	REMOVE ASPHALT CONCRETE SURFACING	HOT MIX ASPHALT, SUPERPAVE (TYPE A)	REMARKS
	SQYD	SQFT	TON	
SB R21.62 LEFT SIDE	8.2	73.8	1.39	DRAINAGE INLET APRON
R21.63 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R21.74 LEFT SIDE	3.8	34.2	0.64	DRAINAGE INLET APRON
R21.74 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R21.86 LEFT SIDE	8.2	73.8	1.39	DRAINAGE INLET APRON
R21.87 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
NB R21.90 CALL BOX HMA APRON	25	0	4.22	CALL BOX
SB R21.98 CALL BOX HMA APRON	25	0	4.22	CALL BOX
SB R22.08 LEFT SIDE	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R22.09 ON RAMP GORE AREA	6.4	57.6	1.09	DRAINAGE INLET APRON
R22.13 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
R22.30 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R22.31 LEFT SIDE	2.7	24.3	0.45	DRAINAGE INLET APRON
R22.40 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R22.41 LEFT SIDE	2.7	24.3	0.45	DRAINAGE INLET APRON
R22.47 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
R22.57 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R22.58 LEFT SIDE	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R22.69 LEFT SIDE	10.4	93.6	1.76	DRAINAGE INLET APRON
R22.69 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R22.76 LEFT SIDE	6.0	54.0	1.01	DRAINAGE INLET APRON
SB R22.84 LEFT SIDE	6.0	54.0	1.01	DRAINAGE INLET APRON
R22.91 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
R22.96 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R22.92 LEFT SIDE	7.7	69.3	1.29	DRAINAGE INLET APRON
SB R23.03 LEFT SIDE	4.7	42.3	0.79	DRAINAGE INLET APRON
R23.03 MEDIAN	34.2	307.8	5.78	DRAINAGE INLET APRON
SB R23.11 LEFT SIDE	17.1	153.9	2.89	DRAINAGE INLET APRON
R23.11 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
R23.29 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R23.34 LEFT SIDE	2.9	26.1	0.49	DRAINAGE INLET APRON
R23.49 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
R23.72 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
SB R23.73 LEFT SIDE	8.2	73.8	1.39	DRAINAGE INLET APRON
R23.79 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
R23.97 MEDIAN	8.2	73.8	1.39	DRAINAGE INLET APRON
TOTAL	335.4*	3,018.6	56.6*	

* QUANTITY INCLUDED IN PAVEMENT STRUCTURE TABLE (SOUTHBOUND), SEE SHEET Q-1.

ADJUST INLET

POSTMILE/LOCATION	EA
SB R21.74 LEFT SIDE	1
SB R22.08 LEFT SIDE	3
SB R22.31 LEFT SIDE	1
SB R22.41 LEFT SIDE	1
SB R22.69 LEFT SIDE	1
SB R22.76 LEFT SIDE	1
SB R22.84 LEFT SIDE	1
SB R22.92 LEFT SIDE	1
SB R23.03 LEFT SIDE	1
SB R23.34 LEFT SIDE	1
SB R23.80 LEFT SIDE	1
R22.14 NB OFF RAMP Rt SIDE	1
R22.46 SB OFF RAMP Rt SIDE	1
TOTAL	15

OBJECT MARKER (TYPE L)

LOCATION	EA
OVERSIDE DRAIN	9
DOWNDRAIN	21
MSG AND END TREATMENTS	12
TOTAL	42

SLOTTED DRAIN

POSTMILE/LOCATION	REMOVE PIPE (LF)	18" ALTERNATIVE SLOTTED PIPE
	LF	LF
SB R23.81 RIGHT SIDE	20	20
TOTAL	20	20

DOWNDRAIN

POSTMILE/LOCATION	12" ENTRANCE TAPER	12" CSP DOWNDRAIN	PLACE HMA (Misc AREA)	HOT MIX ASPHALT, SUPERPAVE (TYPE A)	OBJECT MARKER (TYPE L)	REMOVE DOWNDRAIN (EA)	
	EA	LF	SQYD	TON	EA	EA	LF(N)
NB R22.06 RIGHT SIDE	1	16	4.5	1.10	1	1	16
NB R22.20 RIGHT SIDE	1	14	4.5	1.10	1	1	14
NB R22.24 RIGHT SIDE	1	19	4.5	1.10	1	1	19
NB R22.31 RIGHT SIDE	1	15	4.5	1.10	1	1	15
NB R22.35 RIGHT SIDE	1	14	4.5	1.10	1	1	14
NB R22.37 RIGHT SIDE	1	8	4.5	1.10	1	1	8
NB R22.78 RIGHT SIDE	1	15	4.5	1.10	1	1	15
NB R22.80 RIGHT SIDE	1	15	4.5	1.10	1	1	15
NB R22.84 RIGHT SIDE	1	12	4.5	1.10	1	1	12
NB R23.07 RIGHT SIDE	1	14	4.5	1.10	1	1	14
NB R23.13 RIGHT SIDE	1	15	4.5	1.10	1	1	15
NB R23.14 RIGHT SIDE	1	13	4.5	1.10	1	1	13
NB R23.21 RIGHT SIDE	1	14	4.5	1.10	1	1	14
NB R23.27 RIGHT SIDE	1	14	4.5	1.10	1	1	14
NB R23.31 RIGHT SIDE	1	12	4.5	1.10	1	1	12
NB R23.41 RIGHT SIDE	1	12	4.5	1.10	1	1	12
NB R23.45 RIGHT SIDE	1	14	4.5	1.10	1	1	14
NB R23.53 RIGHT SIDE	1	15	4.5	1.10	1	1	15
NB R23.61 RIGHT SIDE	1	15	4.5	1.10	1	1	15
NB R23.75 RIGHT SIDE	1	15	4.5	1.10	1	1	15
NB R23.82 RIGHT SIDE	1	23	4.5	1.10	1	1	23
TOTAL	21	304	94.5*	23.1*	21**	21	

* QUANTITY INCLUDED IN PAVEMENT STRUCTURE TABLE (SOUTHBOUND), SEE SHEET Q-1.

** QUANTITY INCLUDED IN OBJECT MARKER SUMMARY TABLE.

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

OVERSIDE DRAIN

POSTMILE/LOCATION	PLACE HMA (Misc AREA)	HOT MIX ASPHALT, SUPERPAVE (TYPE A)	LEGNTH	OBJECT MARKER (TYPE L)	(N) REMOVE OVERSIDE DRAIN	
	SQYD	TON	LF	EA	EA	LF(N)
SB R21.62 LEFT SIDE	2.17	0.37	6	1	1	6
SB R21.85 LEFT SIDE	5.43	0.92	15	1	0	0
SB R21.87 LEFT SIDE	5.43	0.92	15	1	0	0
SB R23.26 LEFT SIDE	4.34	0.73	12	1	1	12
NB R21.78 RIGHT SIDE	3.62	0.61	10	1	1	10
NB R21.95 RIGHT SIDE	9.77	1.65	27	1	1	27
NB R22.28 RIGHT SIDE	3.62	0.61	10	1	1	10
NB R22.54 RIGHT SIDE	3.62	0.61	10	1	1	10
NB R23.60 RIGHT SIDE	3.62	0.61	10	1	1	10
TOTAL	41.6*	7.02*		9**	7	

* QUANTITY INCLUDED IN PAVEMENT STRUCTURE TABLE (SOUTHBOUND), SEE SHEET Q-1.

** QUANTITY INCLUDED IN OBJECT MARKER SUMMARY TABLE.

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

SUMMARY OF QUANTITIES
Q-5

REVISED BY: AMJED HETTINI | DATE REVISED:
CALCULATED-DESIGNED BY: RAHIM IBRAHIMI | CHECKED BY:
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

LAST REVISION | DATE PLOTTED => 25-MAR-2014
01-27-14 | TIME PLOTTED => 13:02

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	21	67

Mark S Leichtfuss 1-27-14
REGISTERED CIVIL ENGINEER DATE

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — MARK S. LEICHTFUSS No. 69124 Exp.6-30-14 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.

ABBREVIATIONS:

HMA-SP TYPE A HOT MIX ASPHALT, SUPERPAVE (TYPE A)
RHMA-SP-G RUBBERIZED HOT MIX ASPHALT, SUPERPAVE (GAP GRADED)

REPAIR FAILED AREAS

SB - COLD PLANE ASPHALT CONCRETE PAVEMENT (0.33' Max)									NB - COLD PLANE ASPHALT CONCRETE PAVEMENT (0.33' Max)								
SB BEGIN PM	LENGTH	#1 LANE 12' SQYD	#2 LANE 12' SQYD	#2 LANE 6' SQYD	#2 LANE INSIDE	#2 LANE OUTSIDE	HMA-SP (TYPE A) TON	TACK COAT TON	NB BEGIN PM	LENGTH	#1 LANE 12' SQYD	#2 LANE 12' SQYD	#2 LANE 6' SQYD	#2 LANE INSIDE	#2 LANE OUTSIDE	HMA-SP (TYPE A) TON	TACK COAT TON
21.69	20			13		X	3.00	0.01	21.58	40	53					11.99	0.01
21.70	30			20	X		4.50	0.01	21.61	15			10			2.25	0.01
21.73	30			20		X	4.50	0.01	21.63	80			53		X	11.99	0.01
22.18	10			7		X	1.50	0.01	21.66	80			53	X		11.99	0.01
23.13	20		27				5.99	0.01	21.76	20			13	X		3.00	0.01
23.38	15			10		X	2.25	0.01	21.80	40			27		X	5.99	0.01
23.70	30	40					8.99	0.01	21.82	50			33	X		7.49	0.01
23.71	25			17		X	3.75	0.01	21.84	40			27	X		5.99	0.01
									21.89	50			33	X		7.49	0.01
									22.00	60			40	X		8.99	0.01
									22.02	170		227				50.95	0.03
									22.09	20			13		X	3.00	0.01
									22.11	120			80		X	17.98	0.01
									22.16	40			27		X	5.99	0.01
									22.18	80			53	X		11.99	0.01
									22.25	60			40	X		8.99	0.01
									22.37	20			13	X		3.00	0.01
									22.78	120			80		X	17.98	0.01
									22.80	10			7	X		1.50	0.01
									22.88	50			33	X		7.49	0.01
									22.99	20			13		X	3.00	0.01
SB SUBTOTAL		40	114				34.48	0.08	NB SUBTOTAL		53	928				209.04	0.23
									TOTAL			1,082*				243.52*	0.31*

NOTE: SEE SHEET C-6 FOR REPAIR FAILED AREA LOCATIONS DETAIL.
* QUANTITIY INCLUDED IN PAVEMENT STRUCTURE TABLE (SOUTHBOUND), SEE SHEET Q-1

SHOULDER RUMBLE STRIP (HMA, GROUND-IN INDENTATIONS)

POSTMILE/LOCATION	SIDE	Sta
SB R22.58 TO R23.80	Rt	62.5
SB R21.55 TO R23.80	Lt	118.8
SB R22.12 TO R22.47	Rt	18.5
SB R21.60 TO R22.90	Rt	15.8
NB R21.56 TO R24.00	Lt	128.8
NB R21.56 TO R21.95	Rt	20.6
NB R22.15 TO R22.40	Rt	13.2
NB R22.54 TO R24.00	Rt	77.1
TOTAL		455.3

RHMA-SP-G SAFETY EDGE "CASE C"

POSTMILE/LOCATION	SIDE	(N) SAFETY EDGE LF	RHMA TON	TACK COAT TON
SB R21.58 TO R21.63	Lt	264	2.0	
SB R21.96 TO R22.02	Lt	317	2.4	
SB R21.98 TO R23.82	Lt	9,715	72.9	
SB R22.23 TO R22.26	Lt	158	1.2	
SB R22.28 TO R22.33	Lt	264	2.0	
SB R22.54 TO R22.71	Lt	898	6.7	
SB R23.12 TO R23.23	Lt	581	4.4	
SB R23.46 TO R23.81	Lt	1,848	13.9	
NB R21.57 TO R21.67	Rt	528	4.0	
NB R21.56 TO R23.96	Lt	12,672	95.0	
NB R22.15 TO R22.16	Rt	53	0.4	
NB R23.81 TO R23.96	Rt	792	5.9	
TOTAL			210.8*	0.3*

(N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY
* QUANTITY INCLUDED IN PAVEMENT STRUCTURE TABLE (SOUTHBOUND), SEE SHEET Q-1

TRAFFIC HANDLING

LOCATION	CHANNELIZERS (SURFACE MOUNTED) EA	TEMPORARY ALTERNATIVE CRASH CUSHION EA	TEMPORARY RAILING (TYPE K) LF
SAN LUIS BAY Dr OC SB	14	1	260
SAN LUIS BAY Dr OC NB	14	1	260
SAN LUIS OBISPO Cr Br SB OUTSIDE Shld	14	1	260
SAN LUIS OBISPO Cr Br SB INSIDE Shld	14	1	260
TOTAL	56	4	1,040

SUMMARY OF QUANTITIES
Q-6

REVISED BY | DATE REVISED
AMJED HETTINI | KIAN HEMMATI
CALCULATED-DESIGNED BY | CHECKED BY
FUNCTIONAL SUPERVISOR: RON KRAEMER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — DESIGN — Caltrans

LAST REVISION | DATE PLOTTED => 25-MAR-2014
01-27-14 | TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010 | USERNAME => s109144 | DGN FILE => 0512000017pa006.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 1451 | PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	22	67

Xavier Alfaro 7-11-13
REGISTERED ELECTRICAL ENGINEER

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
XAVIER I. ALFARO
No. E17488
Exp. 6-30-15
ELECTRICAL
STATE OF CALIFORNIA

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

LEGEND:

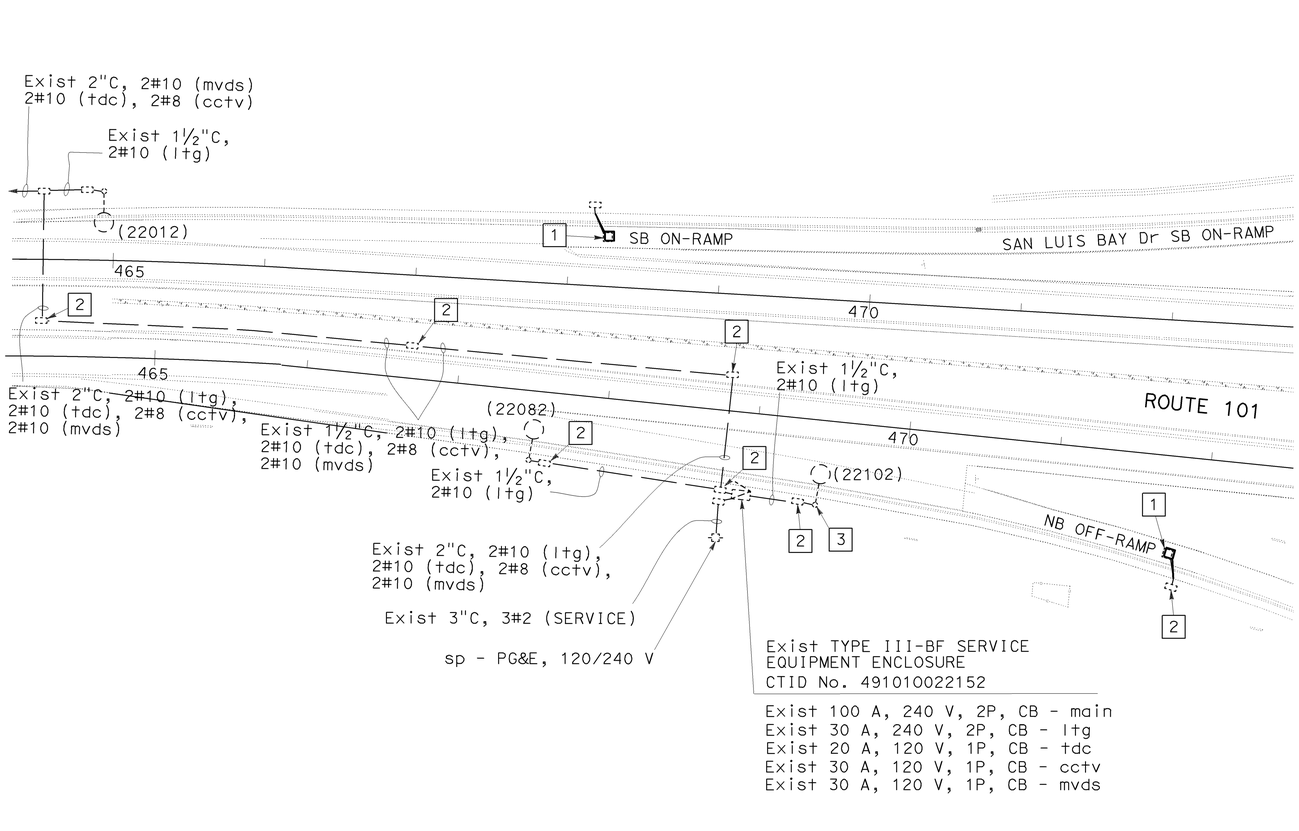
1 AB Exist LOOP DETECTOR.

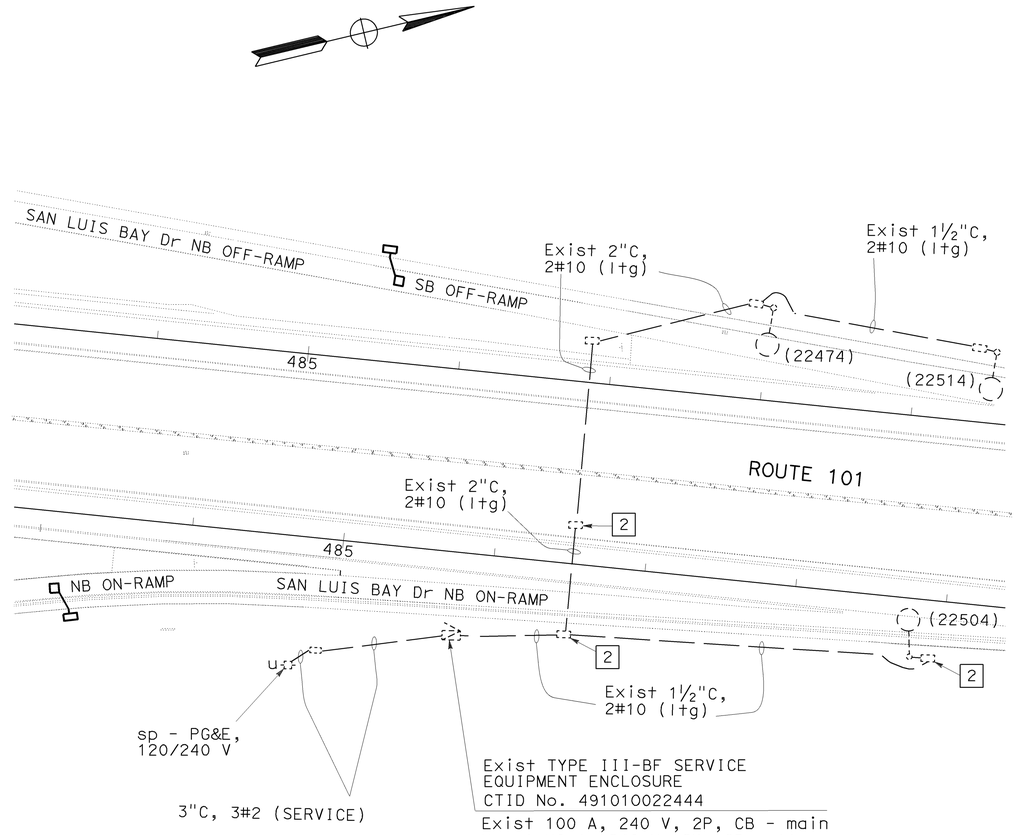
2 RESET PULL BOX TO FG.

3 REGROUT ELECTROLIER BASE.

NOTE:

2. EXACT LOCATION OF LOOP DETECTORS SHALL BE DETERMINED BY ENGINEER.





APPROVED FOR ELECTRICAL WORK ONLY

INDUCTIVE LOOP DETECTOR
E-1

SCALE: 1"=50'

REVISED BY | DATE REVISED

XAVIER ALFARO | RAJPREET SINGH

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR: ALI BAKHDOUD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
ELECTRICAL DESIGN

LAST REVISION | DATE PLOTTED => 25-MAR-2014
12-07-12 | TIME PLOTTED => 13:02

BORDER LAST REVISED 7/2/2010 | USERNAME => s109144 | DGN FILE => 0512000017ua001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 1515 | PROJECT NUMBER & PHASE 05120000171

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	23	67

Xavier Alfaro 7-11-13
REGISTERED ELECTRICAL ENGINEER

1-27-14
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
XAVIER I. ALFARO
No. E17488
Exp. 6-30-15
ELECTRICAL
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.

ELECTRICAL QUANTITIES
INDUCTIVE LOOP DETECTOR

SHEET No.	(N) 1½" CONDUIT	(N) TYPE A LOOP	(N) No. 5 PULL BOX	(N) AB Exist LOOP	(N) RESET PB TO FG
	FT	EA	EA	EA	EA
E-1	20	4	2	2	10

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

ELECTRICAL QUANTITIES
E-2

NO SCALE

CALCULATED-DESIGNED BY	REVISED BY
CHECKED BY	DATE REVISED
XAVIER ALFARO	
RAJPREET SINGH	
FUNCTIONAL SUPERVISOR	
ALI BAKHDOUD	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
ELECTRICAL DESIGN

LAST REVISION | DATE PLOTTED => 25-MAR-2014
12-07-12 | TIME PLOTTED => 13:02

M

Maint	MAINTENANCE
Max	MAXIMUM
MB	METAL BEAM
MBB	METAL BEAM BARRIER
MBGR	METAL BEAM GUARD RAILING
Med	MEDIAN
MGS	MIDWEST GUARDRAIL SYSTEM
MH	MANHOLE
Min	MINIMUM
Misc	MISCELLANEOUS
Misc I & S	MISCELLANEOUS IRON AND STEEL
Mkr	MARKER
Mod	MODIFIED, MODIFY
Mon	MONUMENT
MP	METAL PLATE
MPGR	METAL PLATE GUARD RAILING
MR	MOVEMENT RATING
MSE	MECHANICALLY STABILIZED EMBANKMENT
Mt	MOUNTAIN, MOUNT
Mtl	MATERIAL
MVP	MAINTENANCE VEHICLE PULLOUT

N

N	NORTH
NB	NORTHBOUND
No.	NUMBER (MUST HAVE PERIOD)
Nos.	NUMBERS (MUST HAVE PERIOD)
NPS	NOMINAL PIPE SIZE
NS	NEAR SIDE
NSP	NEW STANDARD PLAN
NTS	NOT TO SCALE

O

Oblr	OBLITERATE
OC	OVERCROSSING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OG	ORIGINAL GROUND
OGAC	OPEN GRADED ASPHALT CONCRETE
OGFC	OPEN GRADED FRICTION COURSE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
O-O	OUT TO OUT
Opp	OPPOSITE
OSD	OVERSIDE DRAIN

P

P	PAGE
PAP	PERFORATED ALUMINUM PIPE
PB	PULL BOX
PC	POINT OF CURVATURE, PRECAST
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN
PCP	PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PEC	PERMIT TO ENTER AND CONSTRUCT
Ped	PEDESTRIAN
Ped OC	PEDESTRIAN OVERCROSSING
Ped UC	PEDESTRIAN UNDERCROSSING
Perm Mtl	PERMEABLE MATERIAL

P continued

PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
Pkwy	PARKWAY
℄,PL	PLATE
P/L	PROPERTY LINE
PM	POST MILE, TIME FROM NOON TO MIDNIGHT
PN	PAVING NOTCH
POC	POINT OF HORIZONTAL CURVE
POT	POINT OF TANGENT
POVC	POINT OF VERTICAL CURVE
PP	PIPE PILE, PLASTIC PIPE, POWER POLE
PPL	PREFORMED PERMEABLE LINER
PPP	PERFORATED PLASTIC PIPE
PRC	POINT OF REVERSE CURVE
PRF	PAVEMENT REINFORCING FABRIC
PRVC	POINT OF REVERSE VERTICAL CURVE
PS&E	PLANS, SPECIFICATIONS AND ESTIMATES
PS, P/S	PRESTRESSED
PSP	PERFORATED STEEL PIPE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
Pvmt	PAVEMENT

Q

Qty	QUANTITY

R

R	RADIUS
R & D	REMOVE AND DISPOSE
R & S	REMOVE AND SALVAGE
R/C	RATE OF CHANGE
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCPA	REINFORCED CONCRETE PIPE ARCH
Rd	ROAD
Reinf	REINFORCED, REINFORCEMENT, REINFORCING
Rel	RELOCATE
Repl	REPLACEMENT
Ret	RETAINING
Rev	REVISED, REVISION
Rdwy	ROADWAY
RHMA	RUBBERIZED HOT MIX ASPHALT
Riv	RIVER
RM	ROAD-MIXED
RP	RADIUS POINT, REFERENCE POINT
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION, REVISED STANDARD PLAN
Rt	RIGHT
Rte	ROUTE
RW	REDWOOD, RETAINING WALL
R/W	RIGHT OF WAY
Rwy	RAILWAY

S

S	SOUTH, SUPPLEMENT
SAE	STRUCTURE APPROACH EMBANKMENT
Salv	SALVAGE
SAPP	STRUCTURAL ALUMINUM PLATE PIPE
SB	SOUTHBOUND
SC	SAND CUSHION
SCSP	SLOTTED CORRUGATED STEEL PIPE
SD	STORM DRAIN
Sec	SECOND, SECTION
Sep	SEPARATION
SG	SUBGRADE
Shld	SHOULDER
Sht	SHEET
Sim	SIMILAR
℄	STATION LINE
SM	SELECTED MATERIAL
Spec	SPECIAL, SPECIFICATIONS
SPP	SLOTTED PLASTIC PIPE
SS	SLOPE STAKE
SSBM	STRAP AND SADDLE BRACKET METHOD
SSD	STRUCTURAL SECTION DRAIN
SSPA	STRUCTURAL STEEL PLATE ARCH
SSPP	STRUCTURAL STEEL PLATE PIPE
SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH
SSRP	STEEL SPIRAL RIB PIPE
St	STREET
Sta	STATION
STBB	SINGLE THRIE BEAM BARRIER
Std	STANDARD
Str	STRUCTURE
Surf	SURFACING
SW	SIDEWALK, SOUND WALL
Swr	SEWER
Sym	SYMMETRICAL
S4S	SURFACE 4 SIDES

T

T	SEMI-TANGENT
Tan	TANGENT
TBB	THRIE BEAM BARRIER
Tbr	TIMBER
TC	TOP OF CURB
TCB	TRAFFIC CONTROL BOX
TCE	TEMPORARY CONSTRUCTION EASEMENT
Tel	TELEPHONE
Temp	TEMPORARY
TG	TOP OF GRADE
Tot	TOTAL
TP	TELEPHONE POLE
TPB	TREATED PERMEABLE BASE
TPM	TREATED PERMEABLE MATERIAL
Trans	TRANSITION

T continued

TS	TRANSVERSE, TRAFFIC SIGNAL, TUBULAR STEEL
Typ	TYPICAL

U

UC	UNDERCROSSING
UD	UNDERDRAIN
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UP	UNDERPASS

V

V	VALVE, DESIGN SPEED
Var	VARIABLE, VARIES
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
Vert	VERTICAL
Via	VIADUCT
Vol	VOLUME

W

W	WEST, WIDTH
WB	WESTBOUND
WH	WEEP HOLE
WM	WIRE MESH
WS	WATER SURFACE
WSP	WELDED STEEL PIPE
Wt	WEIGHT
WV	WATER VALVE
WW	WINGWALL
WWLOL	WINGWALL LAYOUT LINE

X

X Sec	CROSS SECTION
Xing	CROSSING

Y

Yr	YEAR
Yrs	YEARS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	24	67

Grace M. Tsushima
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

Grace M. Tsushima No. C49814 Exp. 9-30-14 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 1-27-14

UNIT OF MEASUREMENT SYMBOLS:

Some of the symbols used in the project plan quantity tables and in the Bid Item List are:

TABLE A

SYMBOL USED	DEFINITIONS
ACRE	ACRE
CF	CUBIC FOOT
CY	CUBIC YARD
EA	EACH
GAL	GALLON
LB	POUND
LF	LINEAR FOOT
SQFT	SQUARE FOOT
SQYD	SQUARE YARD
STA	100 FEET
TAB	TABLET
TON	2,000 POUNDS

Some of the symbols used in the plans other than in the project plan quantity tables are:

TABLE B

SYMBOL USED	DEFINITIONS
ksi	KIPS PER SQUARE INCH
ksf	KIPS PER SQUARE FOOT
psi	POUNDS PER SQUARE INCH
psf	POUNDS PER SQUARE FOOT
lb/ft^3, pcf	POUNDS PER CUBIC FOOT
tsf	TONS PER SQUARE FOOT
mph, MPH *	MILES PER HOUR
ø	NOMINAL DIAMETER
oz	OUNCE
lb	POUND
kip	1,000 POUNDS
cal	CALORIE
ft	FOOT OR FEET
gal	GALLON

* For use on a sign panel only

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ABBREVIATIONS (SHEET 2 OF 2)

NO SCALE

RSP A10B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A10B DATED MAY 20, 2011 - PAGE 2 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A10B

2010 REVISED STANDARD PLAN RSP A10B

6-7-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	25	67

Roberta L. McLaughlin
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Roberta L. McLaughlin
No. C40375
Exp. 3-31-15
CIVIL
STATE OF CALIFORNIA

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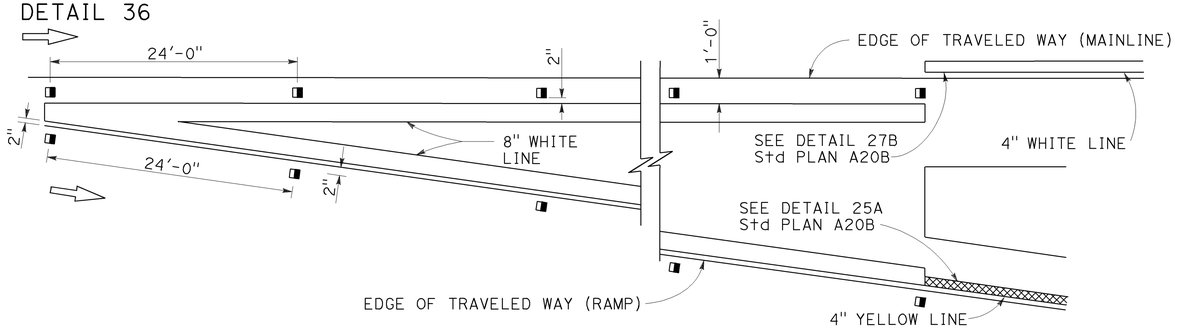
TO ACCOMPANY PLANS DATED 1-27-14

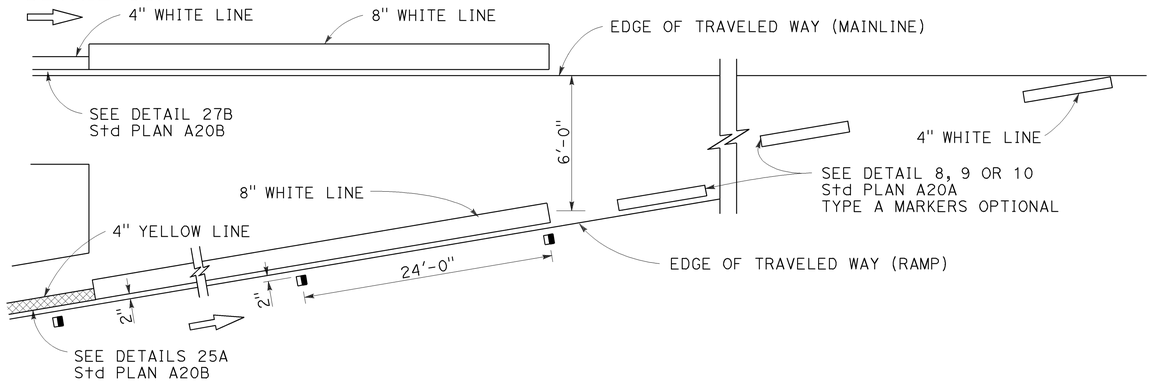
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT

DETAIL 36



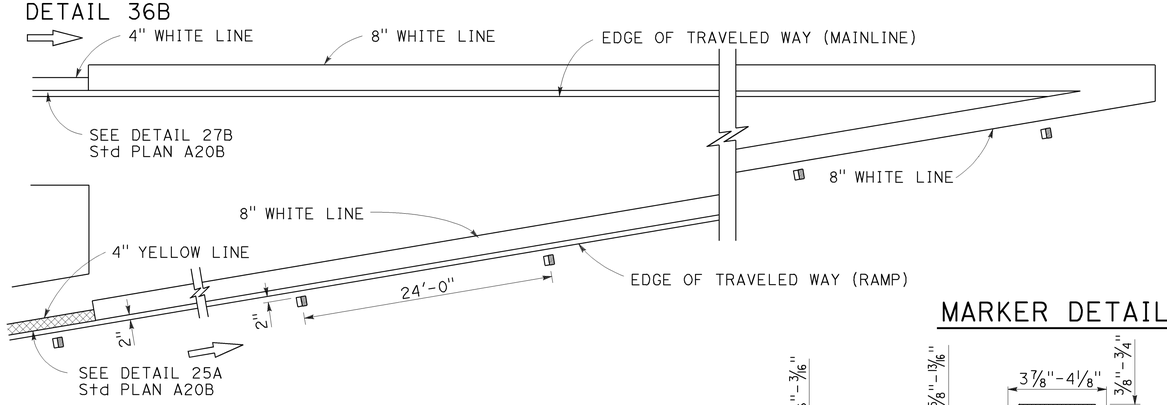
ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT

DETAIL 36A



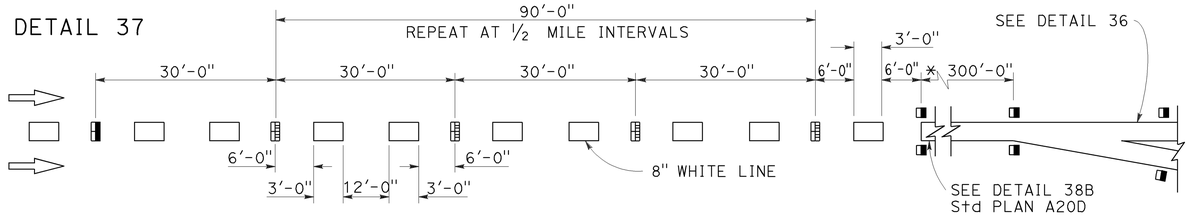
ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

DETAIL 36B

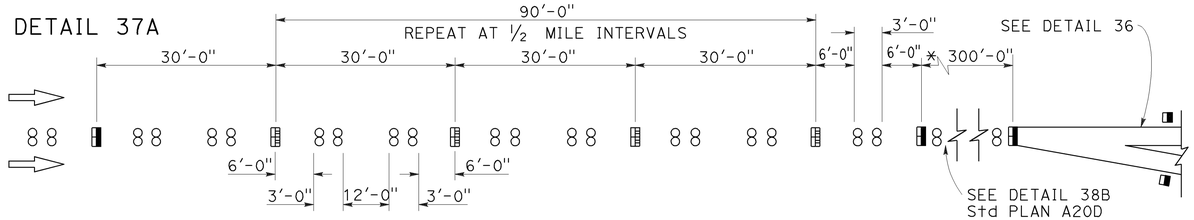


LANE DROP AT EXIT RAMPS

DETAIL 37



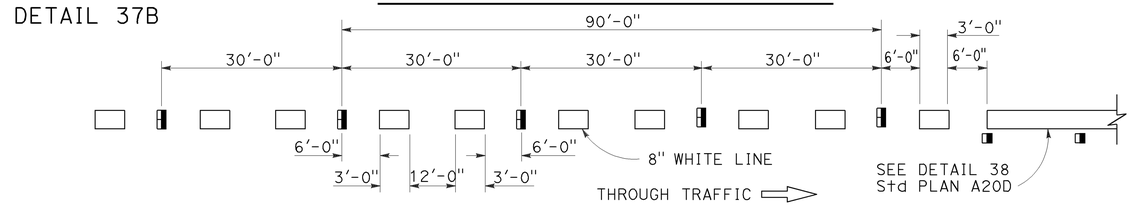
DETAIL 37A



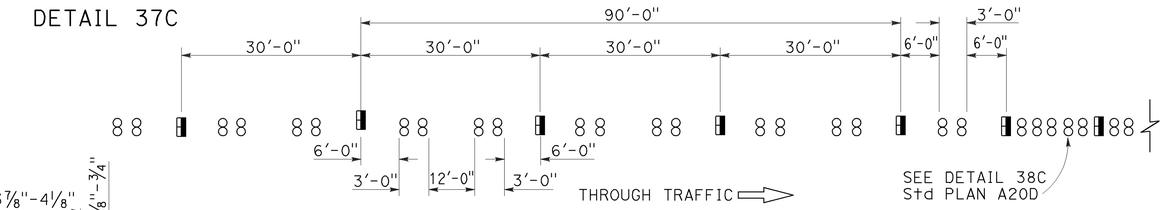
* The solid channelizing line shown may be omitted on short auxiliary lanes where weaving length is critical.

LANE DROP AT INTERSECTIONS

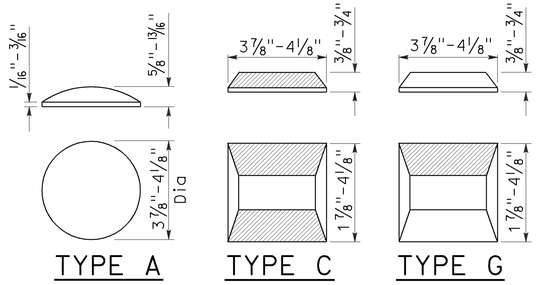
DETAIL 37B



DETAIL 37C



MARKER DETAILS



LEGEND:

MARKERS

- ○ TYPE A WHITE NON-REFLECTIVE
- ▣ TYPE C RED-CLEAR RETROREFLECTIVE
- ◨ TYPE G ONE-WAY CLEAR RETROREFLECTIVE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINE TYPICAL DETAILS

NO SCALE

RSP A20C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A20C DATED MAY 20, 2011 - PAGE 11 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A20C

2010 REVISED STANDARD PLAN RSP A20C

4-29-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	26	67

Roberta L. McLaughlin
REGISTERED CIVIL ENGINEER

April 20, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Roberta L. McLaughlin — No. C40375 — Exp. 3-31-13 — CIVIL — STATE OF CALIFORNIA

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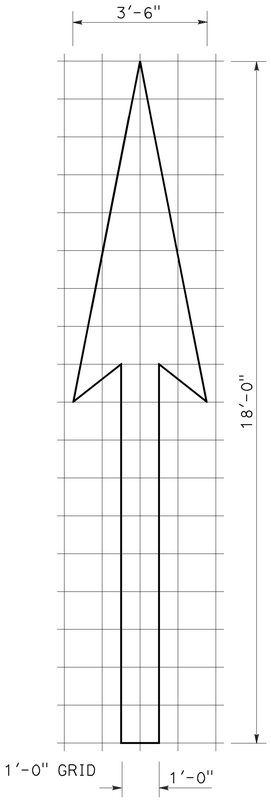
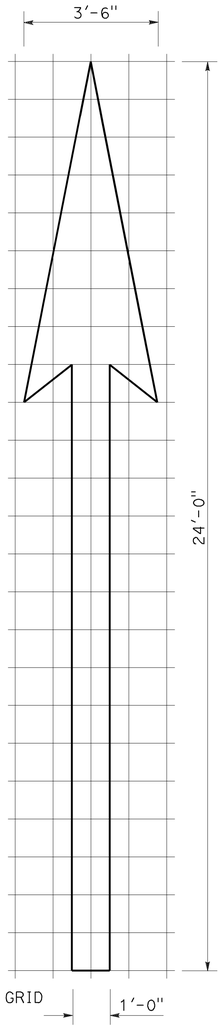
TO ACCOMPANY PLANS DATED 1-27-14

2010 REVISED STANDARD PLAN RSP A24A



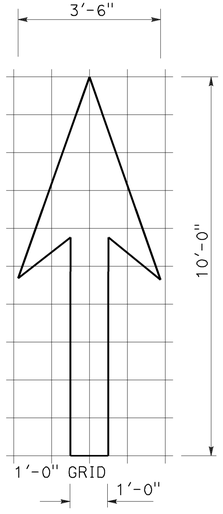
A=25 ft²

TYPE I 18'-0" ARROW



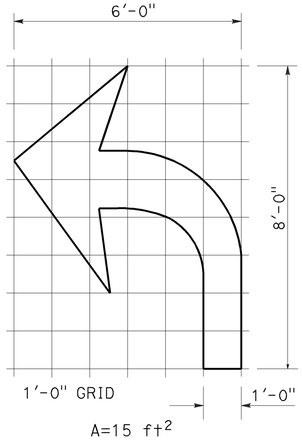
A=31 ft²

TYPE I 24'-0" ARROW



A=14 ft²

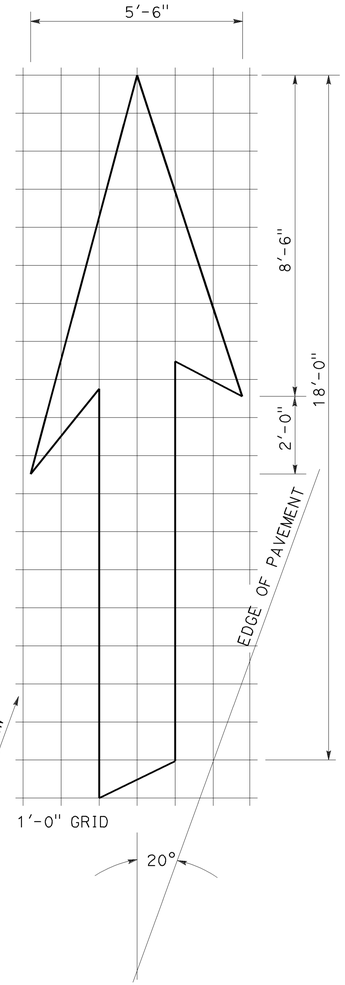
TYPE I 10'-0" ARROW



A=15 ft²

TYPE IV (L) ARROW

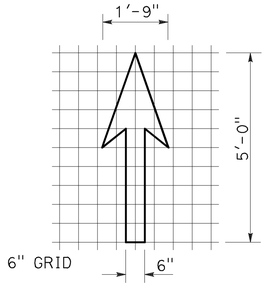
(For Type IV (R) arrow, use mirror image)



A=42 ft²

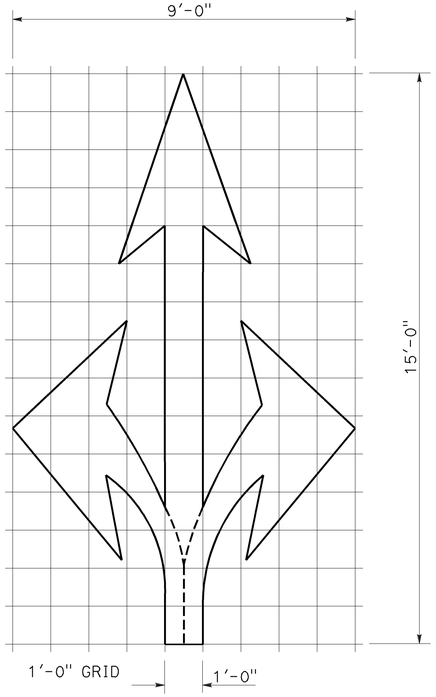
TYPE VI ARROW

Right lane drop arrow (For left lane, use mirror image)



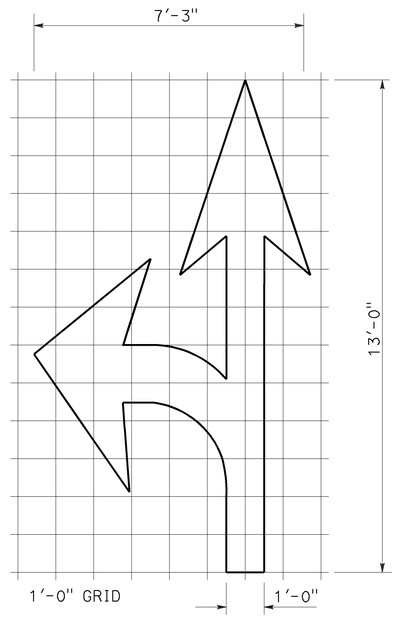
A=3.5 ft²

BIKE LANE ARROW



A=36 ft²

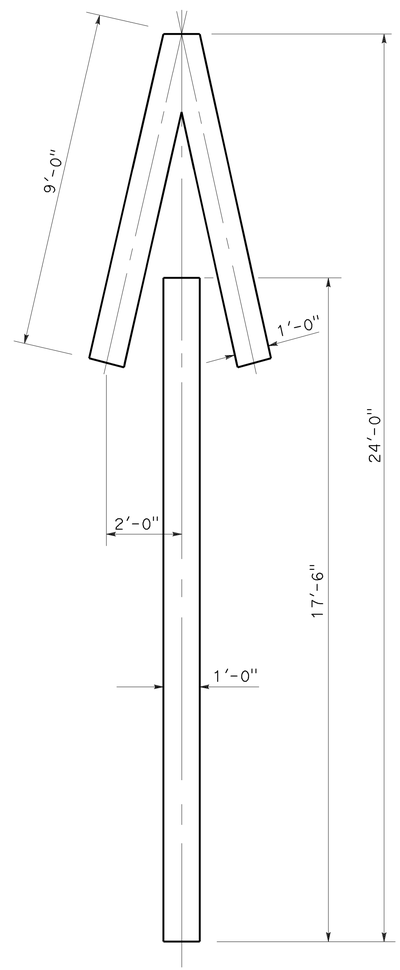
TYPE VIII ARROW



A=27 ft²

TYPE VII (L) ARROW

(For Type VII (R) arrow, use mirror image)



A=33 ft²

TYPE V ARROW

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

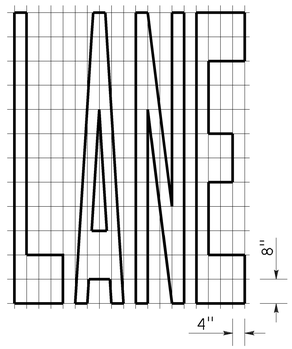
PAVEMENT MARKINGS ARROWS

NO SCALE

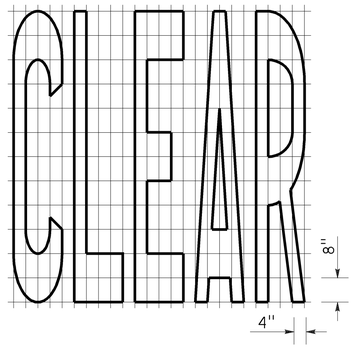
RSP A24A DATED APRIL 20, 2012 SUPERSEDES STANDARD PLAN A24A DATED MAY 20, 2011 - PAGE 13 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A24A

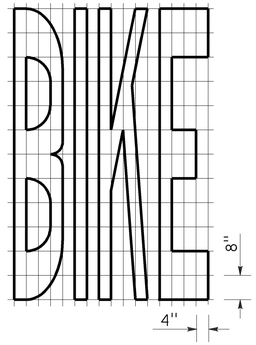
3-14-12



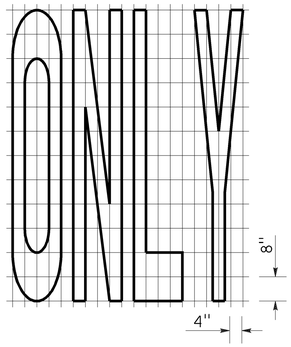
A=24 ft²



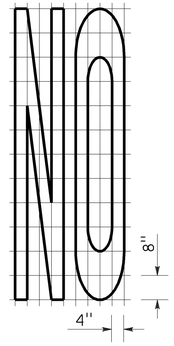
A=27 ft²



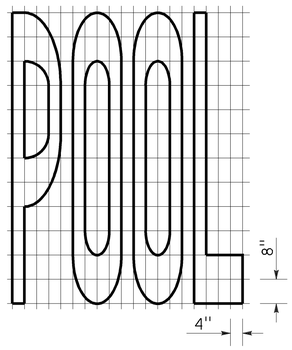
A=21 ft²



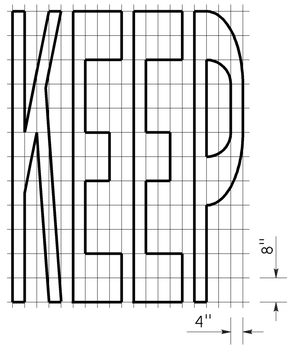
A=22 ft²



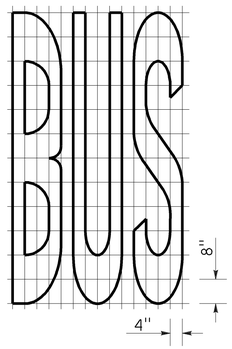
A=14 ft²



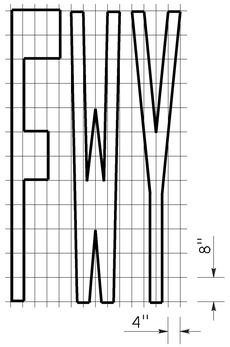
A=23 ft²



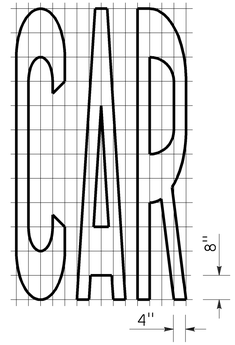
A=24 ft²



A=20 ft²



A=16 ft²



A=17 ft²

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	27	67

Roberta L. McLaughlin
REGISTERED CIVIL ENGINEER

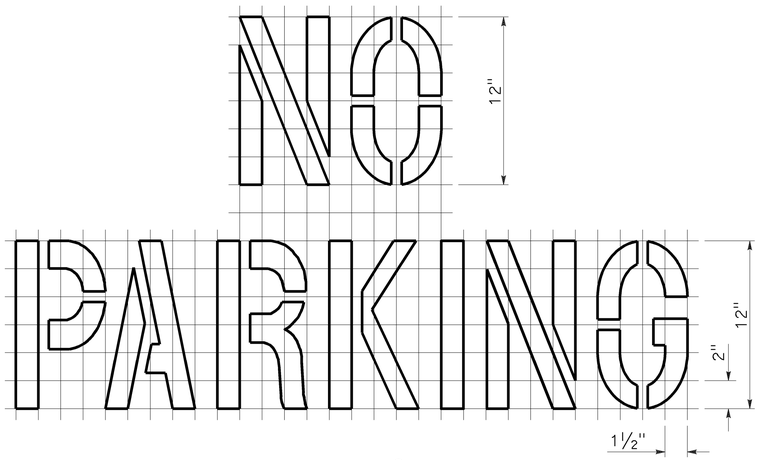
July 20, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Roberta L. McLaughlin
No. C40375
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

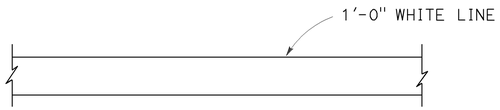
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 1-27-14

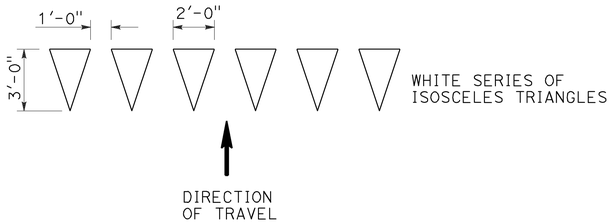
WORD MARKINGS			
ITEM	ft²	ITEM	ft²
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16



A=2 ft²
See Notes 6 and 7



LIMIT LINE (STOP LINE)



YIELD LINE

NOTES:

1. If a message consists of more than one word, it should read "UP", i.e., the first word should be nearest the driver.
2. The space between words should be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.
5. The words "NO PARKING" pavement marking is to be used for parking facilities. For typical locations of markings, see Standard Plans A90A and A90B.
6. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS
WORDS, LIMIT AND YIELD LINES

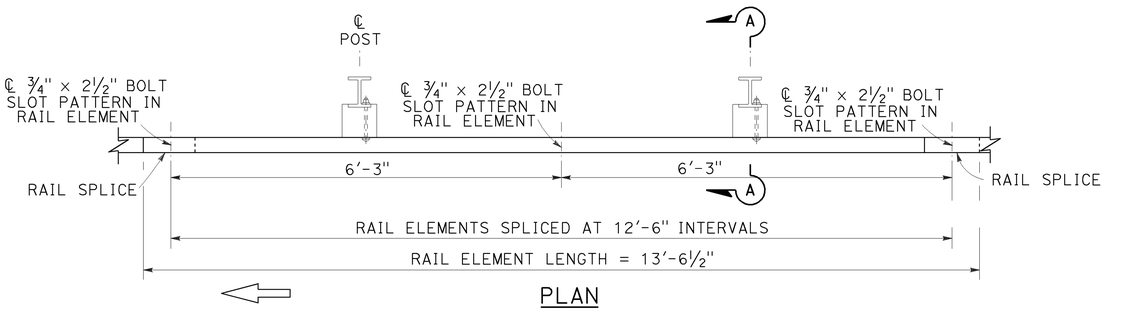
NO SCALE

RSP A24E DATED JULY 20, 2012 SUPERSEDES STANDARD PLAN A24E
DATED MAY 20, 2011 - PAGE 17 OF THE STANDARD PLANS BOOK DATED 2010.

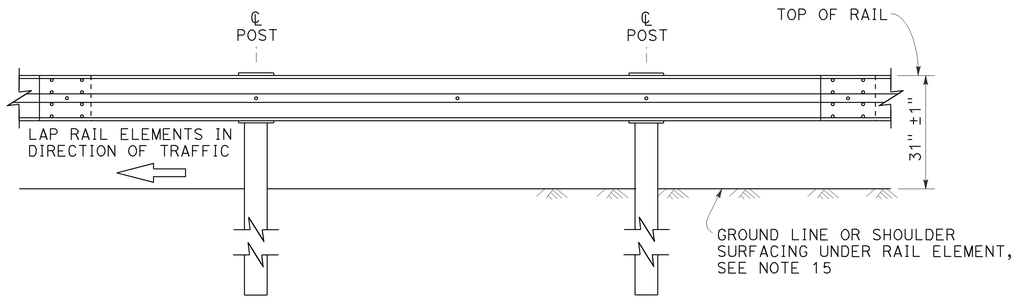
REVISED STANDARD PLAN RSP A24E

2010 REVISED STANDARD PLAN RSP A24E

6-12-12

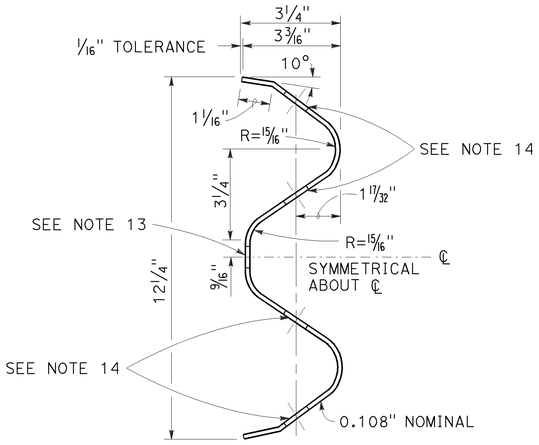


PLAN

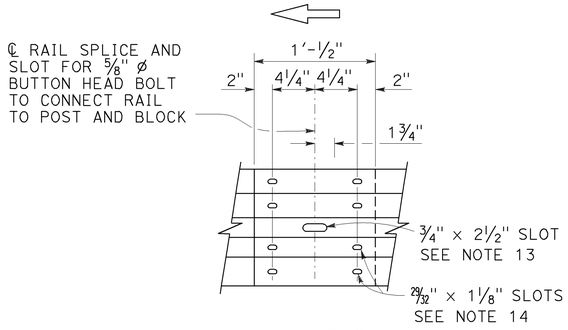


ELEVATION

MIDWEST GUARDRAIL SYSTEM WITH STEEL POSTS AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS



SECTION THRU RAIL ELEMENT



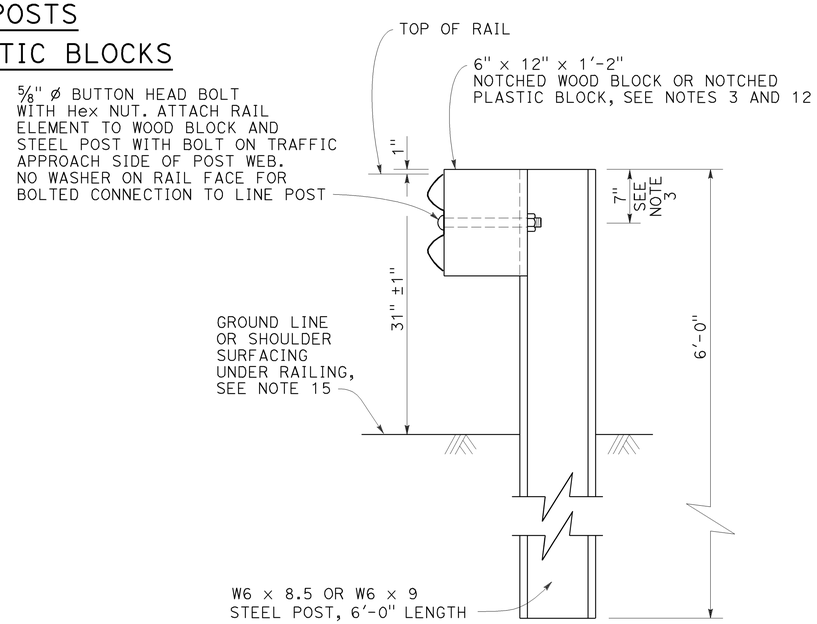
ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the over lapped end of the rail elements with ⅝" ø × 1⅜" button head oval shoulder splice bolts inserted into the 29/32" × 1⅛" slots and bolted together with ⅝" ø 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.

b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

c) 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	28	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — 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.

TO ACCOMPANY PLANS DATED 1-27-14

NOTES:

1. For details of wood post installations, see Revised Standard Plan RSP A77L1.
2. For details of standard hardware used to construct MGS, see Revised Standard Plan RSP A77M1.
3. For details of steel posts and notched wood blocks used to construct MGS, see Revised Standard Plan RSP A77N2.
4. For additional installation details, see Revised Standard Plan RSP A77N3.
5. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
6. For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
7. If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
8. For MGS end anchor details, see Revised Standard Plans RSP A77S1 and RSP A77T2.
9. For details of MGS transition to bridge railing, see Revised Standard Plan RSP A77U4.
10. For additional details of MGS connection to bridge railings, see Revised Standard Plans RSP A77U1, RSP A77U2 and RSP A77V1.
11. For dike positioning and MGS delineation details, see Revised Standard Plan RSP A77N4.
12. Notched face of block faces steel post.
13. Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
14. Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
15. Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD RAILING SECTION (STEEL POST WITH NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCK)

NO SCALE

RSP A77L2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77L2

2010 REVISED STANDARD PLAN RSP A77L2

7-3-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	29	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

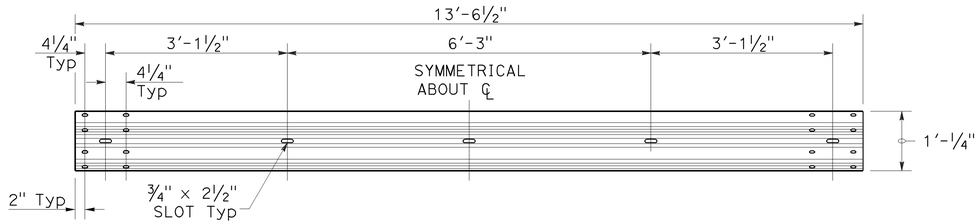
July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
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.

TO ACCOMPANY PLANS DATED 1-27-14

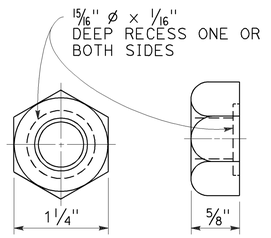
2010 REVISED STANDARD PLAN RSP A77M1



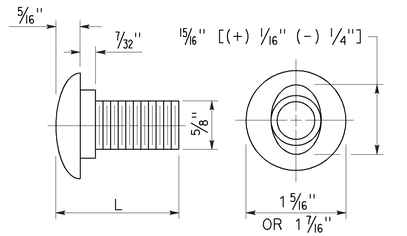
TYPICAL RAIL ELEMENT

NOTE:

1. Slotted holes for splice bolts to overlap ends of rail element.



⅝" ø RECESS NUT

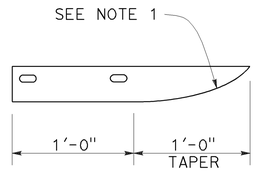


⅝" ø BUTTON HEAD BOLT

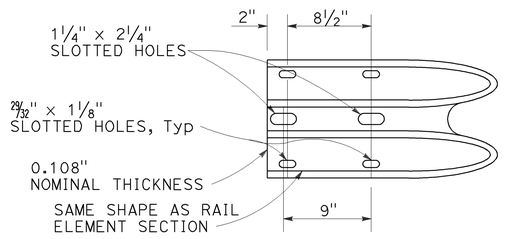
BUTTON HEAD BOLT

L	THREAD LENGTH
1⅜"	FULL THREAD LENGTH
2"	FULL THREAD LENGTH
10"	4" Min THREAD LENGTH
18"	4" Min THREAD LENGTH
20"	4" Min THREAD LENGTH
22"	4" Min THREAD LENGTH
26"	4" Min THREAD LENGTH
36"	4" Min THREAD LENGTH
** 2¾"	2" Min THREAD LENGTH
** 19"	4" Min THREAD LENGTH

** For nested rail applications.



PLAN



ELEVATION

END CAP (TYPE A)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD HARDWARE

NO SCALE

RSP A77M1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77M1

7-3-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	30	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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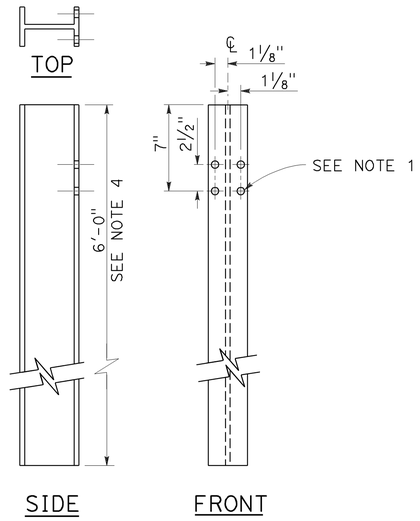
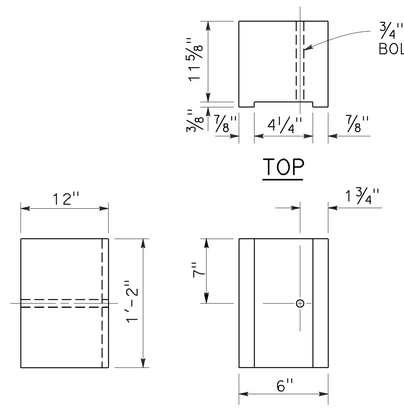
TO ACCOMPANY PLANS DATED 1-27-14



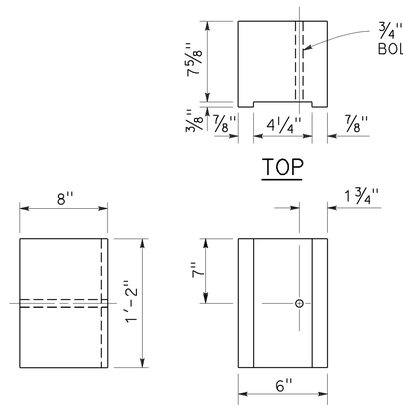
W6 x 9 OR W6 x 8.5 STEEL POST

See Note 4



6" x 12" NOTCHED WOOD BLOCK

See Notes 2 and 3

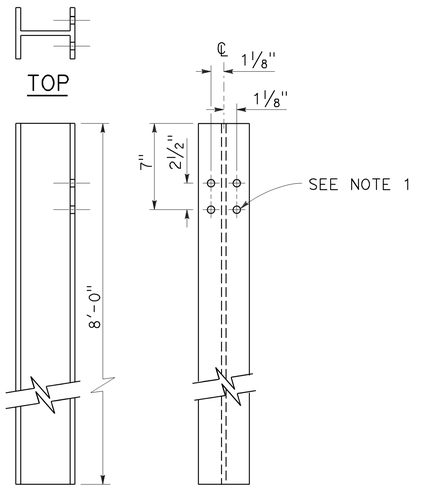


6" x 8" NOTCHED WOOD BLOCK

Only for use with metal beam guard railing. See Note 5

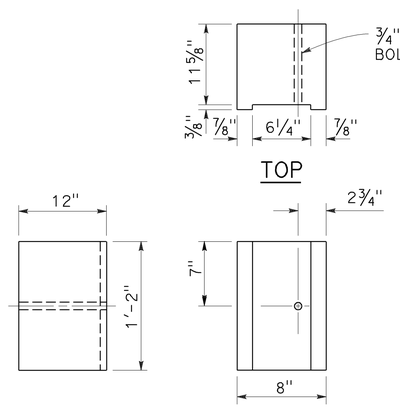
NOTES:

1. All holes in steel post shall be 13/16" Dia maximum.
2. Dimensions shown for wood block are nominal.
3. Notched face of block faces steel post.
4. 6'-0" length posts to be used for typical roadway installation. See Revised Standard Plan RSP A77N3.
5. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" notched wood blocks.
6. This post and 8" x 12" block combination to be used for line post sections of MGS on narrow roadways and where strengthened line post sections of MGS are warranted to shield fixed objects.



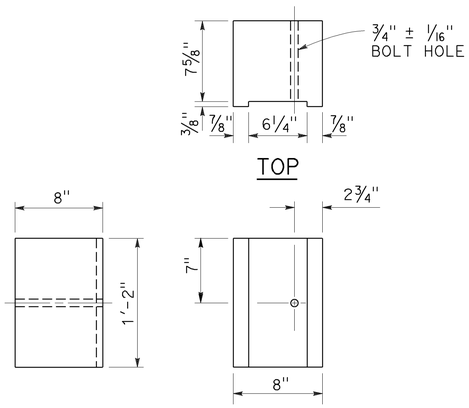
W6 x 15 STEEL POST

See Note 6



8" x 12" NOTCHED WOOD BLOCK

See Notes 2 and 3



8" x 8" NOTCHED WOOD BLOCK

Only for use with metal beam guard railing. See Note 5

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STEEL POST AND NOTCHED WOOD BLOCK DETAILS

NO SCALE

RSP A77N2 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77N2
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N2

2010 REVISED STANDARD PLAN RSP A77N2

10-29-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	31	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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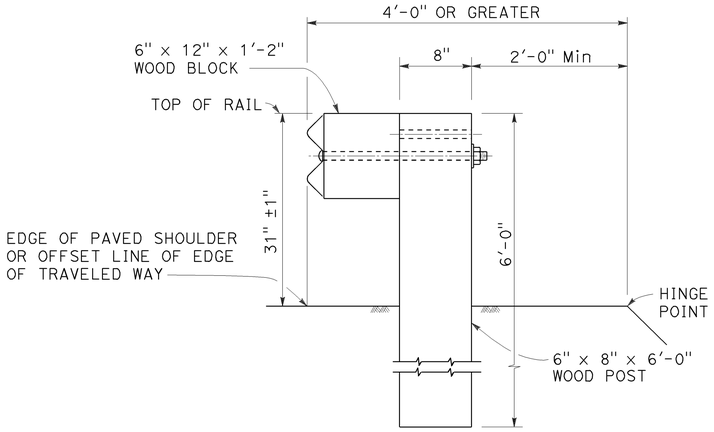
TO ACCOMPANY PLANS DATED 1-27-14

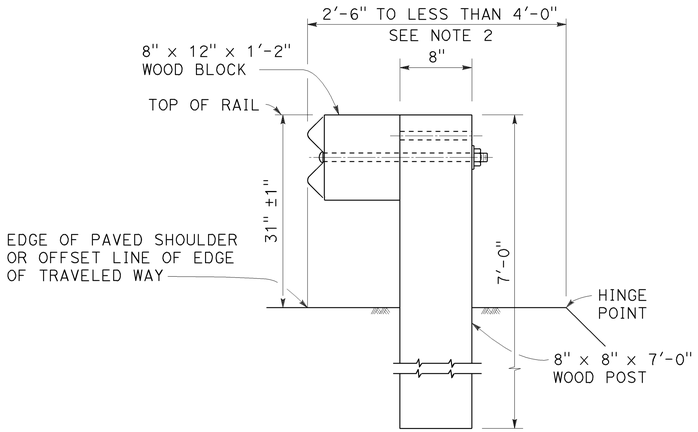
2010 REVISED STANDARD PLAN RSP A77N3



DETAIL A

TYPICAL ROADWAY INSTALLATION

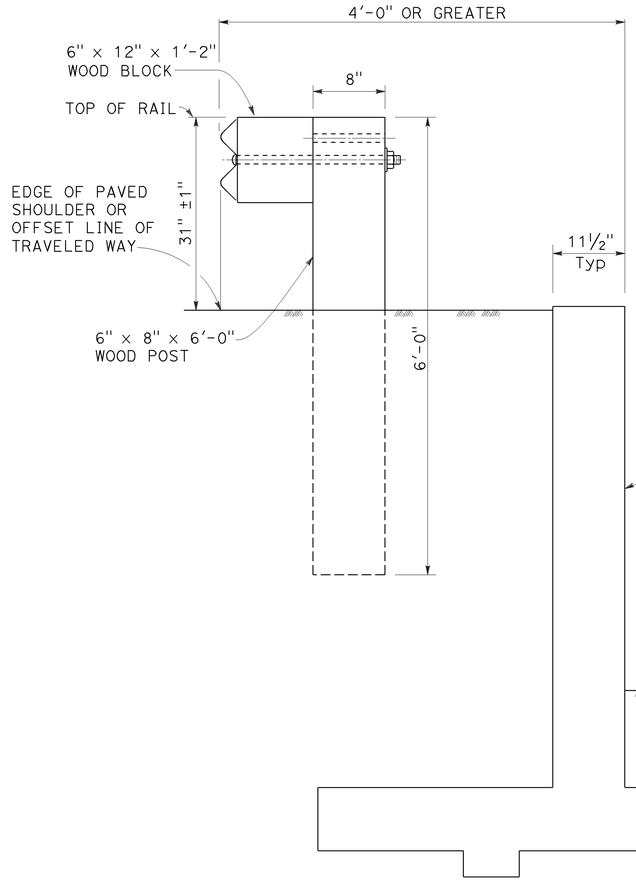
See Note 1



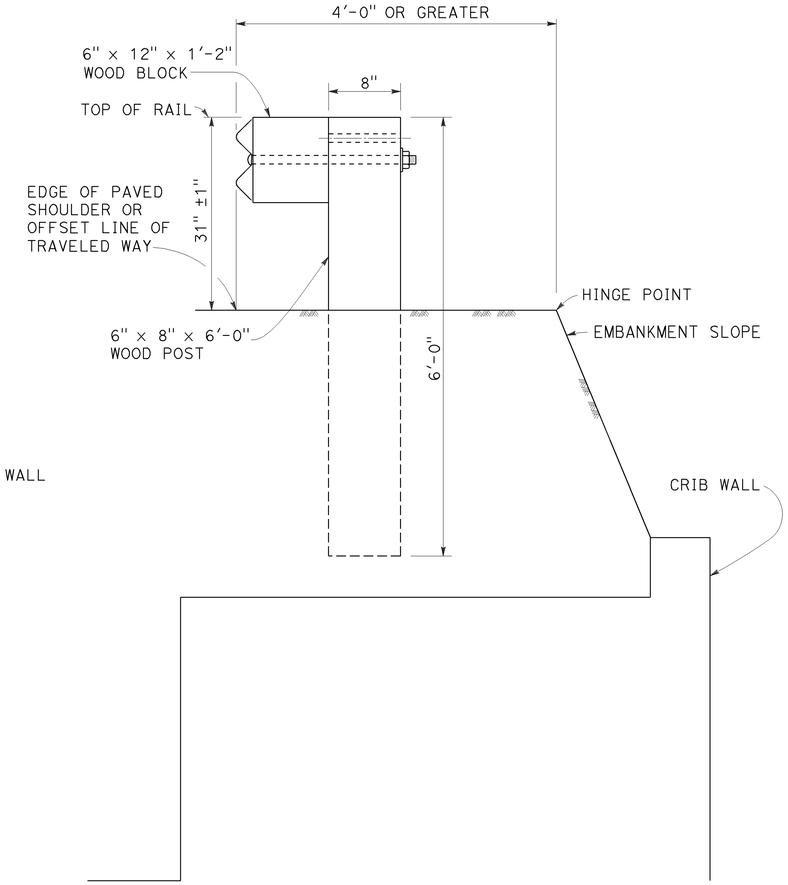
DETAIL B

NARROW ROADWAY INSTALLATION

See Note 1



DETAIL C



DETAIL D

POST EMBEDMENT

INSTALLATION AT EARTH RETAINING WALLS

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 8.5 or W6 x 9 steel post, 6'-0" in length, with 6" x 12" 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 15 steel post, 8'-0" in length, with 8" x 12" 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 Revised Standard Plan RSP A77L1 and RSP A77L2.
2. Where the distance between the face of the rail and the hinge point is less than 2'-6", see the Project Plans for special details.
3. For dike positioning with MGS installations, see Revised Standard Plan RSP A77N4.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LINE POST EMBEDMENT AND HINGE POINT OFFSET DETAILS

NO SCALE

RSP A77N3 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77N3 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N3

10-29-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	32	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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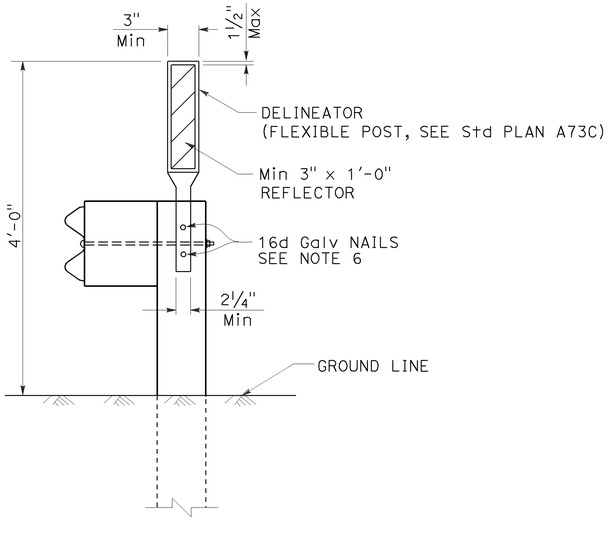
TO ACCOMPANY PLANS DATED 1-27-14

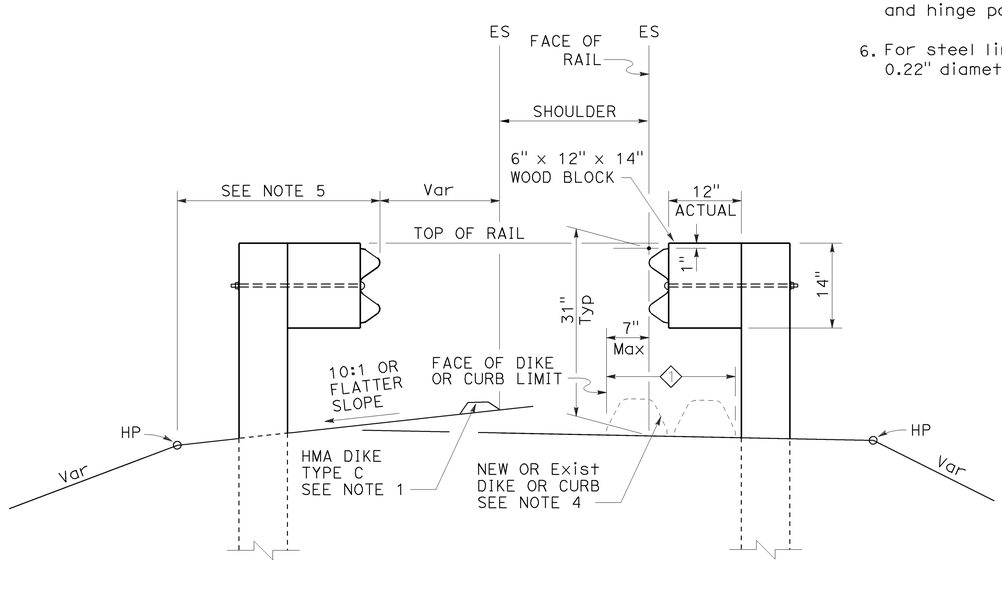
NOTES:

1. When necessary to place dike more than 7" in front of face of MGS, only Type C dike may be used. For dike details, see Revised Standard Plan RSP A87B.
2. For standard railing post embedment, see Revised Standard Plan RSP A77N3.
3. MGS delineation to be used where shown on the Project Plans.
4. When dike or curb is placed under MGS, the maximum height of the dike or curb shall be 6". Mountable dike should not be used. For dike and curb details, see Revised Standard Plans RSP A87A and RSP A87B.
5. For details of typical distance between the face of rail and hinge point, see Revised Standard Plan RSP A77N3.
6. For steel line posts, use 1/4 - 20 self-tapping screws in 0.22" diameter holes or 1/4" bolts in 9/32" diameter holes.



MGS DELINEATION

See Note 3



DIKE POSITIONING

See Note 1

1 PERMISSIBLE DIKE OR CURB PLACEMENT AREA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL RAILING DELINEATION AND DIKE POSITIONING DETAILS

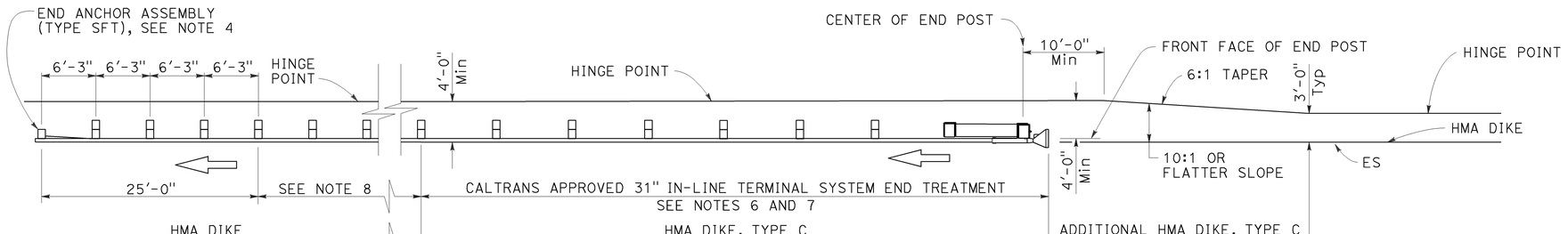
NO SCALE

RSP A77N4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N4

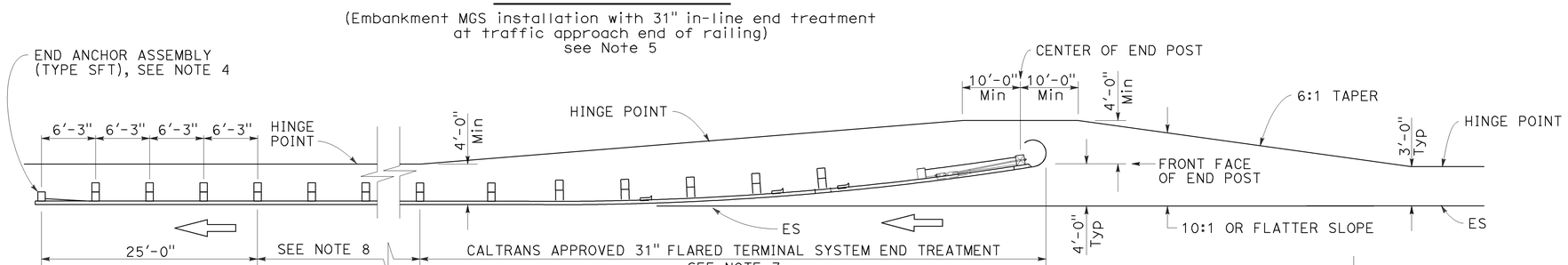
2010 REVISED STANDARD PLAN RSP A77N4

7-10-13



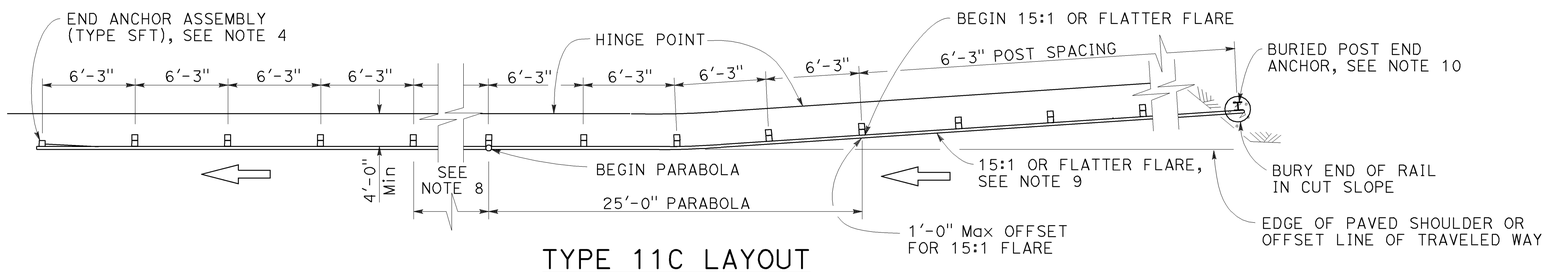
TYPE 11A LAYOUT

(Embankment MGS installation with 31" in-line end treatment at traffic approach end of railing) see Note 5



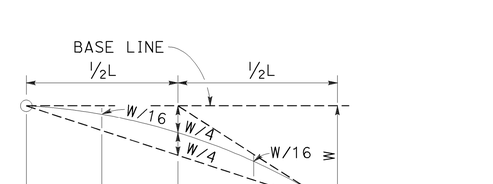
TYPE 11B LAYOUT

(Embankment MGS installation with 31" flared end treatment at traffic approach end of railing) see Note 5

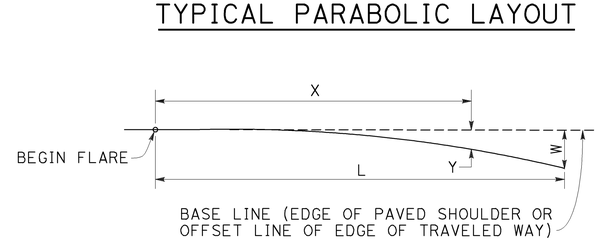


TYPE 11C LAYOUT

(Embankment MGS installation with buried end anchor treatment at traffic approach end of railing) see Notes 5 and 11



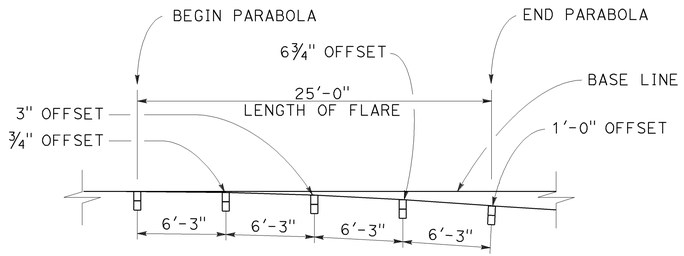
TYPICAL PARABOLIC LAYOUT



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

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

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT Max END OFFSET

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
4. For End Anchor Assembly (Type SFT) details, see Revised Standard Plan RSP A77S1.
5. Layout Types 11A, 11B or 11C are typically used where MGS is recommended to shield embankment slopes and a crashworthy end treatment is required for only one direction of traffic.
6. 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
7. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
8. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
9. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
10. For details of the buried post end anchor used with Type 11C Layout, see Revised Standard Plan RSP A77T2.
11. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	33	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 1-27-14

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P1 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77P1 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P1

2010 REVISED STANDARD PLAN RSP A77P1

10-4-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	34	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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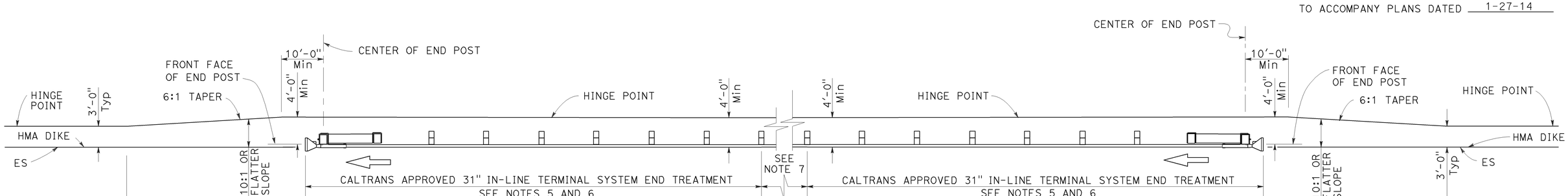
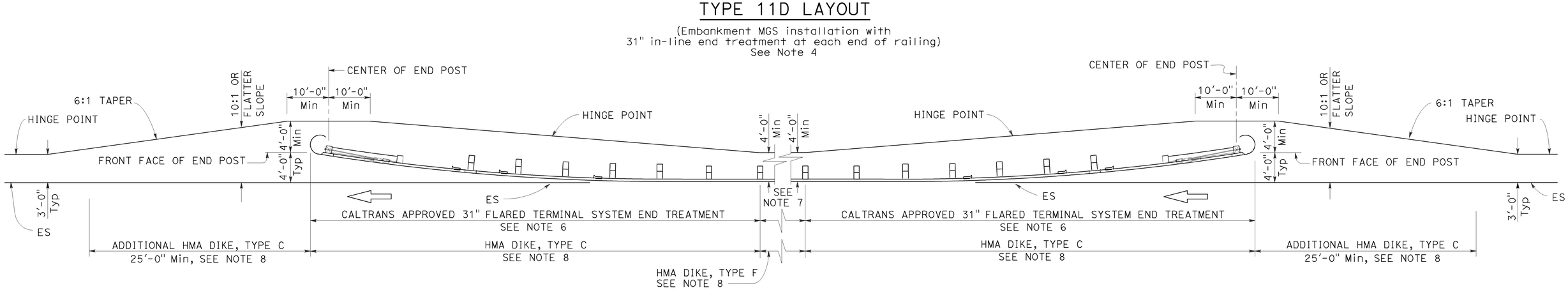
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 1-27-14



TYPE 11D LAYOUT

(Embankment MGS installation with
31" in-line end treatment at each end of railing)
See Note 4



TYPE 11E LAYOUT

(Embankment MGS installation with
31" flared end treatment at each end of railing)
See Note 4

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embankment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
6. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P2

2010 REVISED STANDARD PLAN RSP A77P2

6-19-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	35	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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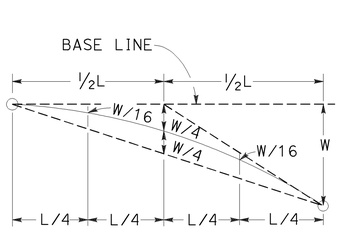
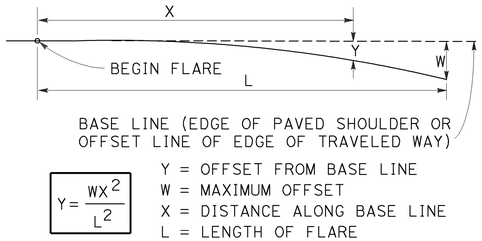
TO ACCOMPANY PLANS DATED 1-27-14



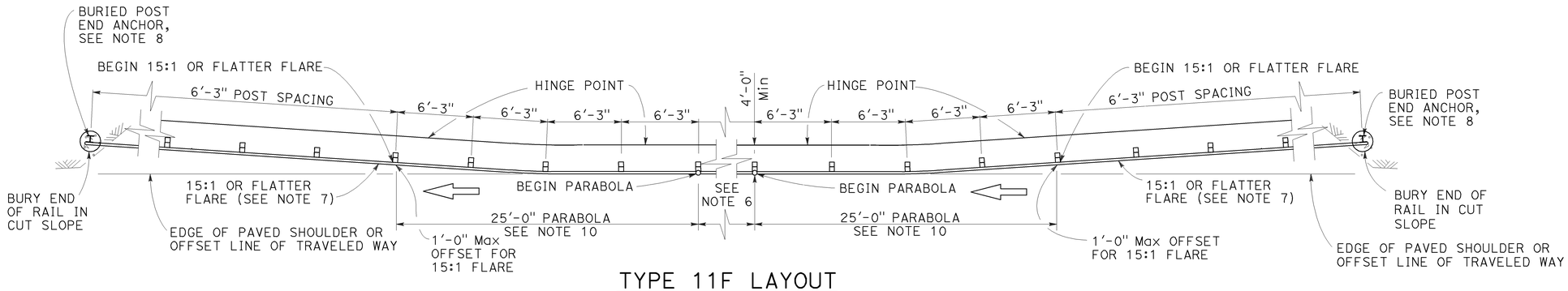
TYPICAL PARABOLIC LAYOUT



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

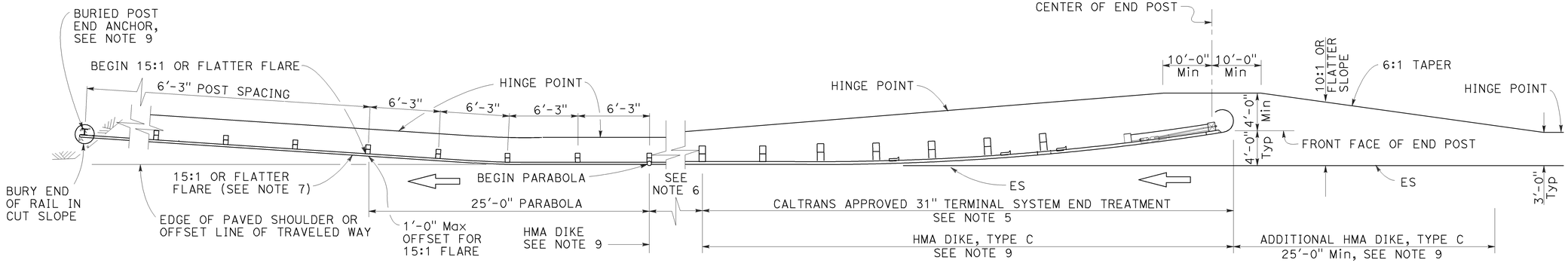
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 11F LAYOUT

(Embankment MGS installation with a buried end anchor treatment at each end of railing)
See Notes 4 and 9



TYPE 11G LAYOUT

(Embankment MGS installation with 31" flared end treatment and a buried end anchor treatment at the ends of railing)
See Notes 4 and 9

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embankment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
6. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
7. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
8. For details of the buried post end anchor used with Type 11F and 11G Layouts, see Revised Standard Plan RSP A77T2.
9. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
10. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P3

2010 REVISED STANDARD PLAN RSP A77P3

6-19-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	36	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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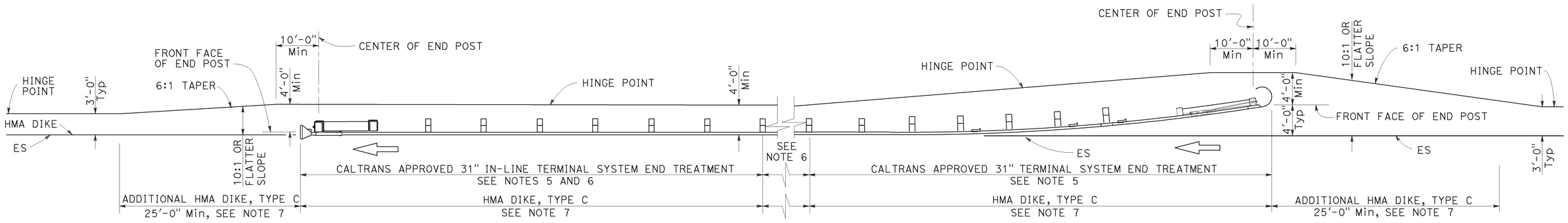
TO ACCOMPANY PLANS DATED 1-27-14



TYPE 11H LAYOUT

(Embankment MGS installation with 31" flared end treatment and 31" in-line treatment at the ends of railing)
See Notes 4 and 7

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embankment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
6. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
7. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P4

2010 REVISED STANDARD PLAN RSP A77P4

6-19-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	37	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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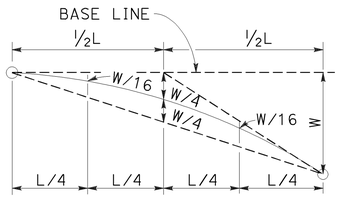
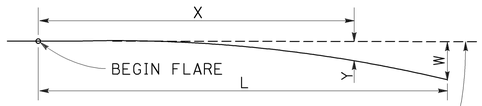
TO ACCOMPANY PLANS DATED 1-27-14



TYPICAL PARABOLIC LAYOUT

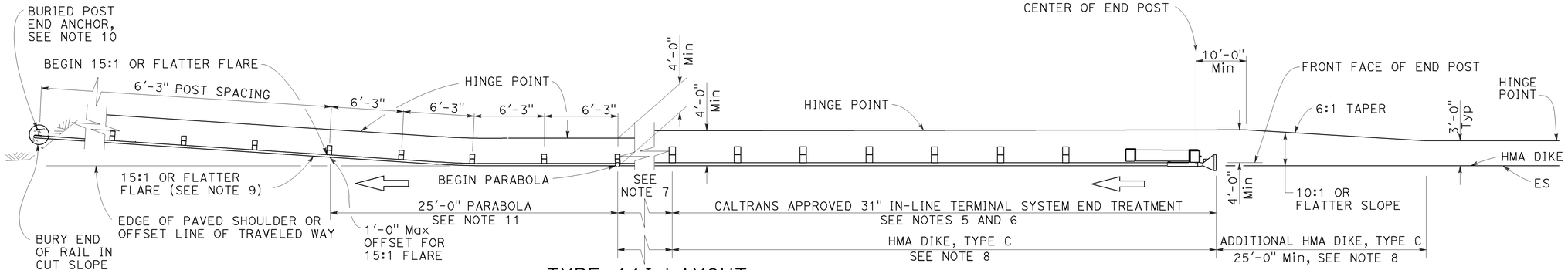


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

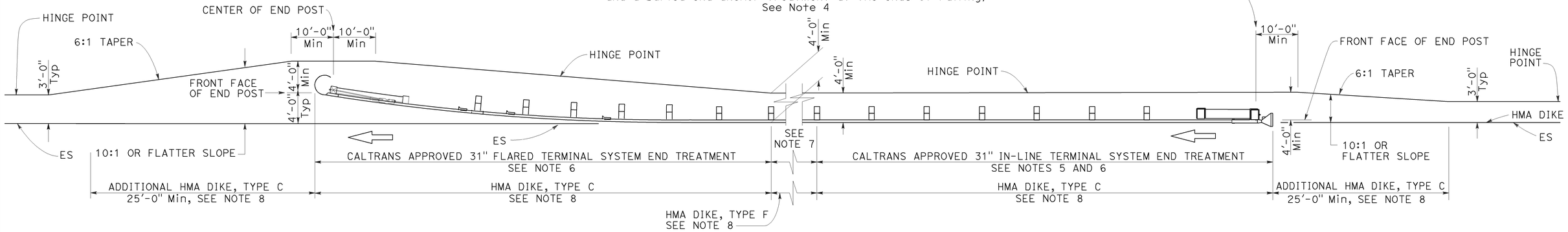
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 11I LAYOUT

(Embankment MGS installation with 31" in-line end treatment and a buried end anchor treatment at the ends of railing)
See Note 4



TYPE 11J LAYOUT

(Embankment MGS installation with 31" in-line end treatment and 31" flared end treatment at the ends of railing)
See Note 4

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embamkment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
9. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
10. For details of the buried post end anchor used with Type 11I Layout, see Revised Standard Plan RSP A77T2.
11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P5

2010 REVISED STANDARD PLAN RSP A77P5

6-19-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	38	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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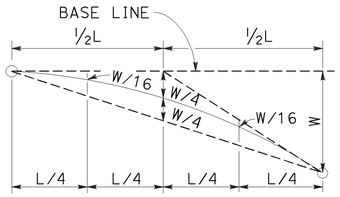
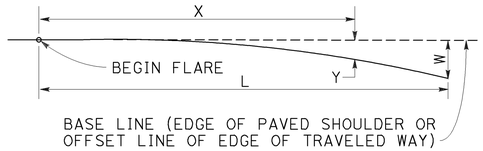
TO ACCOMPANY PLANS DATED 1-27-14



TYPICAL PARABOLIC LAYOUT

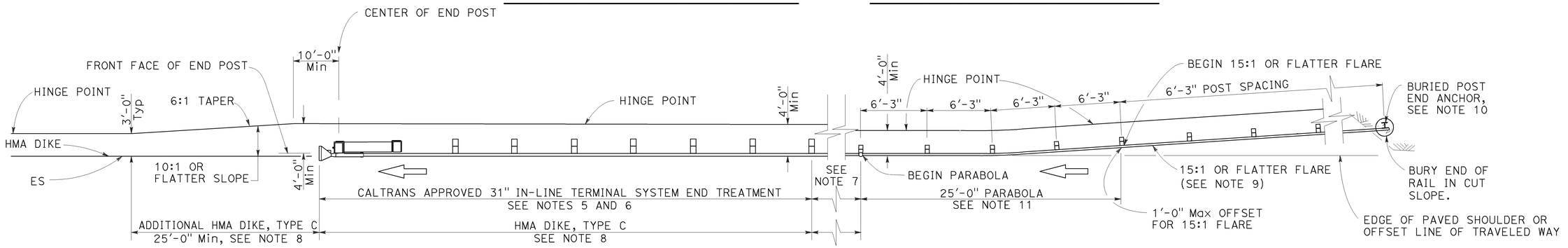


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

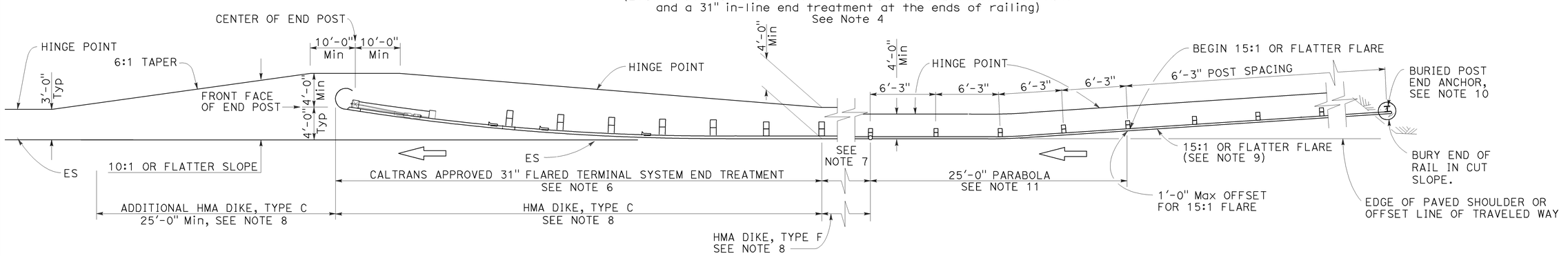
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 11K LAYOUT

(Embankment MGS installation with a buried end anchor treatment and a 31" in-line end treatment at the ends of railing)
See Note 4



TYPE 11L LAYOUT

(Embankment MGS installation with a buried end anchor treatment and a 31" flared end treatment at the ends of railing)
See Note 4

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embamkment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
9. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
10. For details of the buried post end anchor used with Type 11K and 11L Layouts, see Revised Standard Plan RSP A77T2.
11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P6 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P6

2010 REVISED STANDARD PLAN RSP A77P6

6-19-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	39	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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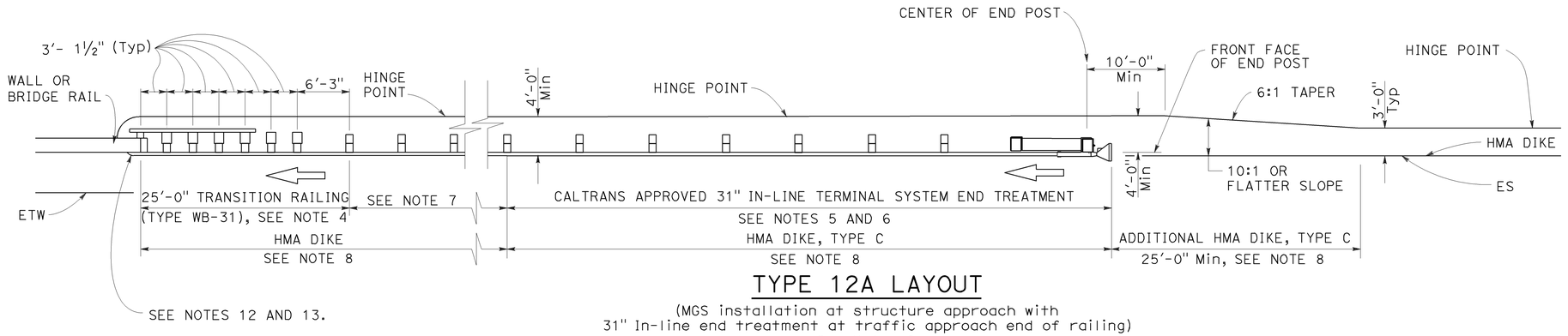
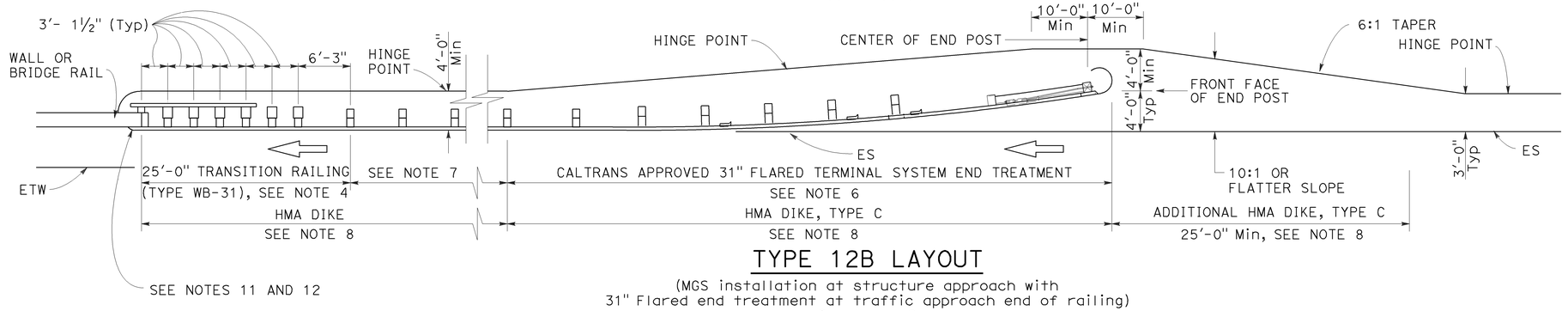
TO ACCOMPANY PLANS DATED 1-27-14



TYPE 12A LAYOUT

(MGS installation at structure approach with
31" In-line end treatment at traffic approach end of railing)
See Notes 9



TYPE 12B LAYOUT

(MGS installation at structure approach with
31" Flared end treatment at traffic approach end of railing)
See Notes 9

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
4. For Transition Railing (Type WB-31) details for Types 12A and 12B Layouts, see Revised Standard Plan RSP A77U4.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type 31" of terminal system end treatment to be used will be shown on the Project Plans.
7. 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. A 12.5 degree angle of departure can be drawn on the Project Plans from the edge of traveled way through the outer most point of the fixed object to determine the additional length of railing needed.
8. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
9. Type 12A or Type 12B Layouts are typically used:
   a. 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.
   b. 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.
   c. To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
   d. To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
10. See Revised Standard Plan RSP A77Q3 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.
11. For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77U1 and RSP A77U2 and Connection Detail FF on Revised Standard Plans RSP A77V1 and RSP A77V2.
12. For additional details of a typical connection to walls or abutments, see Revised Standard Plan RSP A77U3.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

RSP A77Q1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q1

2010 REVISED STANDARD PLAN RSP A77Q1

6-19-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	40	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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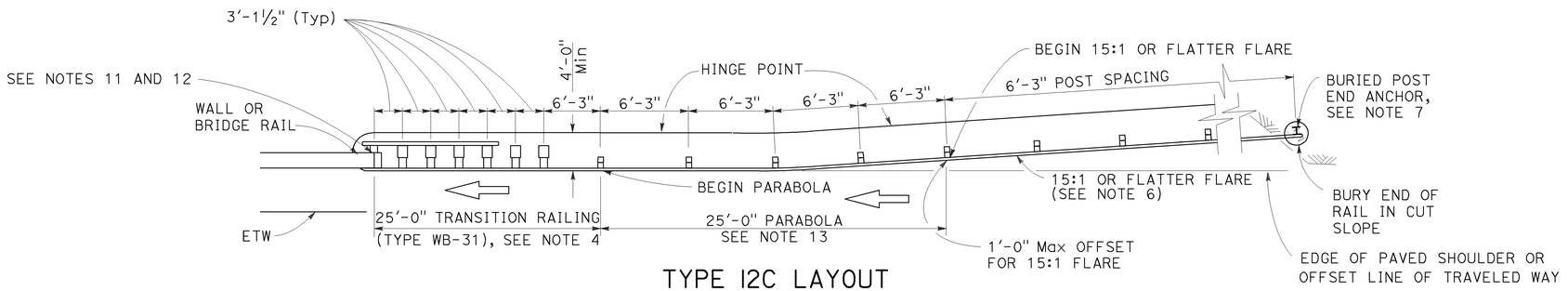
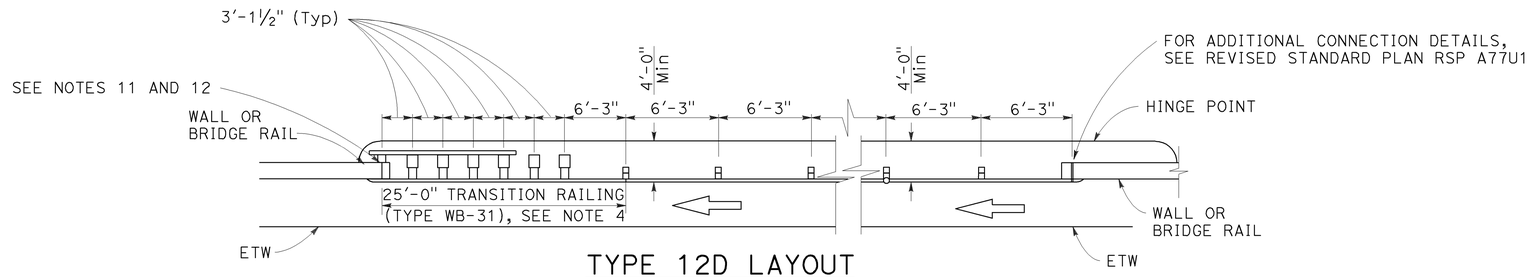
TO ACCOMPANY PLANS DATED 1-27-14



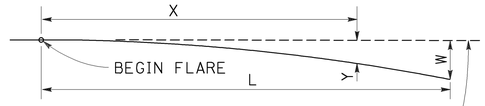
TYPE 12C LAYOUT

(MGS installation at structure approach with a
Buried end anchor treatment at traffic approach end of railing)
See Notes 8 and 9



TYPE 12D LAYOUT

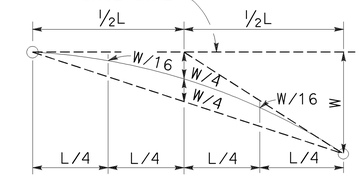
(Continuous MGS installation between structures)
See Notes 5 and 9



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

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

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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" m wood with 6" x 12" x 1′-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6′-0" in length, with 6" x 12" x 1′-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6′-0" wood posts with 6" x 12" x 1′-2" wood blocks where applicable and when specified.
4. For Transition Railing (Type WB-31) details for Types 12C and 12D Layouts, see Revised Standard Plan RSP A77U4.
5. Type 12D layout is typically used where continous MGS is recommended between structures.
6. The 15:1 or flatter flare for Type 12C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS with the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12′-6".
7. For details of the buried post end anchor used with Type 12C Layout, see Revised Standard Plan RSP A77T2.
8. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
9. Type 12C Layout is typically used:
   a. To the right of approaching traffic, at the end of the structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
   b. To the left of approaching traffic, at each of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
   c. To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
   d. To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
10. See Revised Standard Plan RSP A77Q3 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.
11. For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77U1 and RSP A77U2 and Connection Detail FF on Revised Standard Plans RSP A77V1 and RSP A77V2.
12. For additional details of a typical connection to walls or abutments, see Revised Standard Plan RSP A77U3.
13. For typical flare offsets for 25′-0" length parabola with maximum offset of 1′-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH AND BETWEEN STRUCTURES

NO SCALE

RSP A77Q2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q2

2010 REVISED STANDARD PLAN RSP A77Q2

7-8-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	41	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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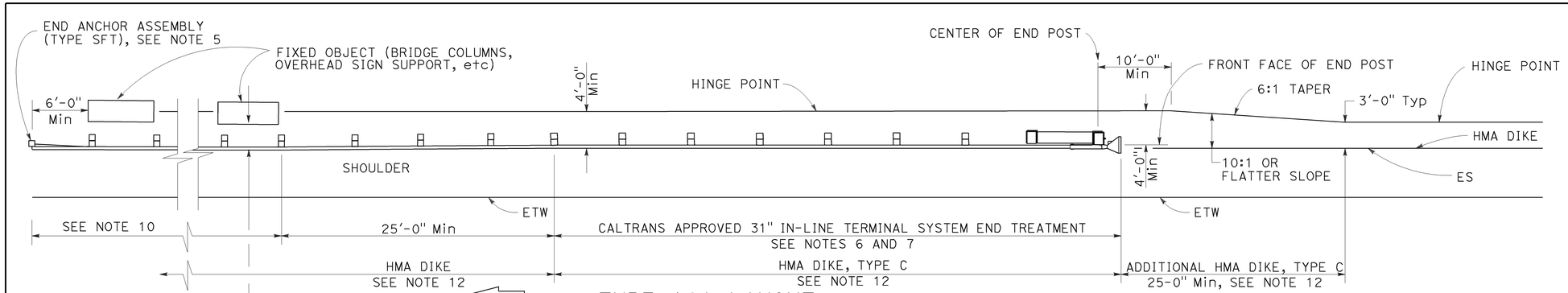
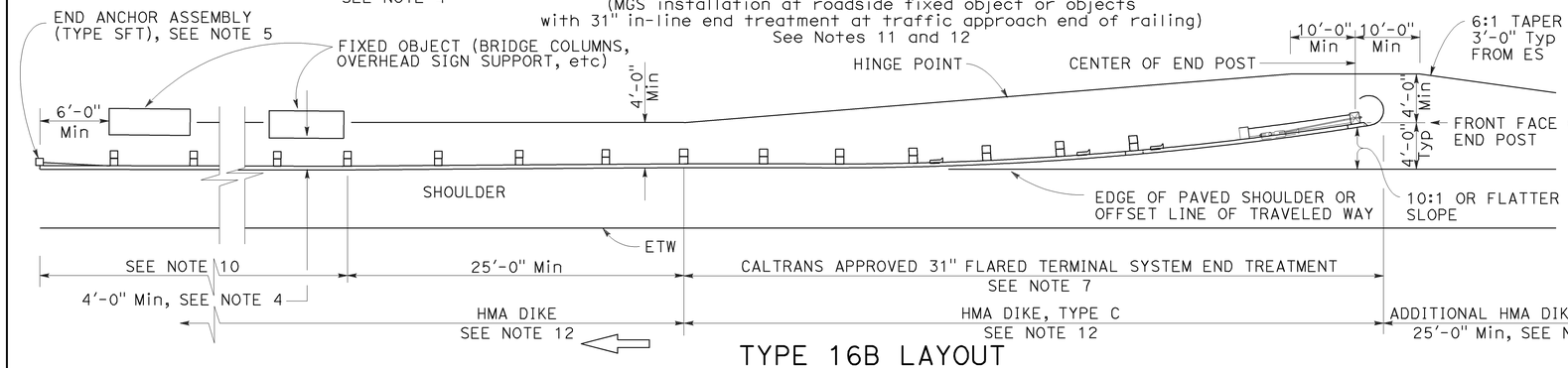
TO ACCOMPANY PLANS DATED 1-27-14

2010 REVISED STANDARD PLAN RSP A77R3



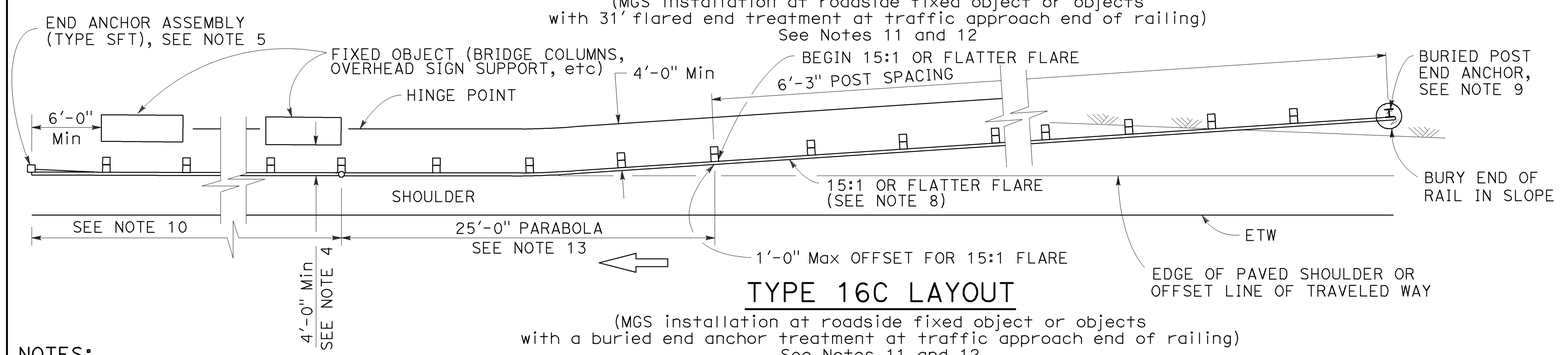
TYPE 16A LAYOUT

(MGS installation at roadside fixed object or objects with 31" in-line end treatment at traffic approach end of railing)
See Notes 11 and 12



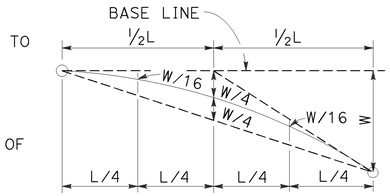
TYPE 16B LAYOUT

(MGS installation at roadside fixed object or objects with 31' flared end treatment at traffic approach end of railing)
See Notes 11 and 12

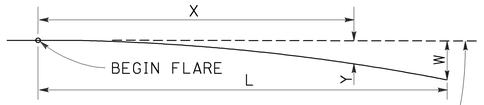


TYPE 16C LAYOUT

(MGS installation at roadside fixed object or objects with a buried end anchor treatment at traffic approach end of railing)
See Notes 11 and 12



TYPICAL PARABOLIC LAYOUT

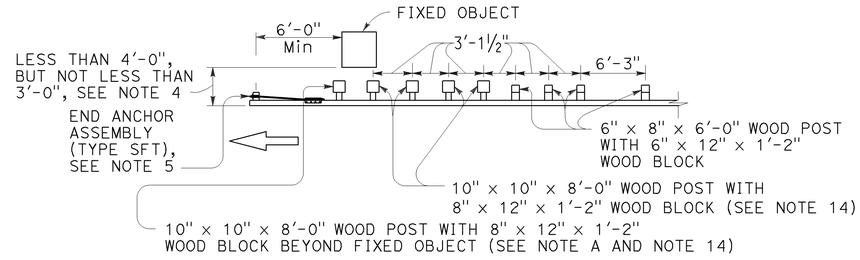


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

PARABOLIC FLARE OFFSETS



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 12" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed objects.

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
2. MGS 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" 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 12" 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 MGS sections with post spacing of 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object" 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 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. For End Anchor Assembly (Type SFT) details, see Revised Standard Plan RSP A77S1.
6. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
7. The type of 31" terminal system to be used will be shown on the Project Plans.
8. 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 MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
9. For details of the Buried Post End Anchor used with Type 16C Layout, see Revised Standard Plan RSP A77T2.
10. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
11. Layout Types 16A, 16B or 16C are typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for only one direction of traffic.
12. Where placement of dike is required with MGS, see Revised Standard Plan RSP A77N4 for dike positioning details.
13. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
14. W6 x 15 steel post, 8'-0" in length, with 8" x 12" 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 12" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77R3

6-20-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	42	67

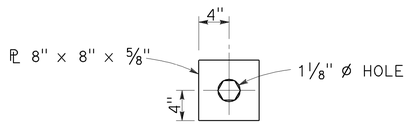
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

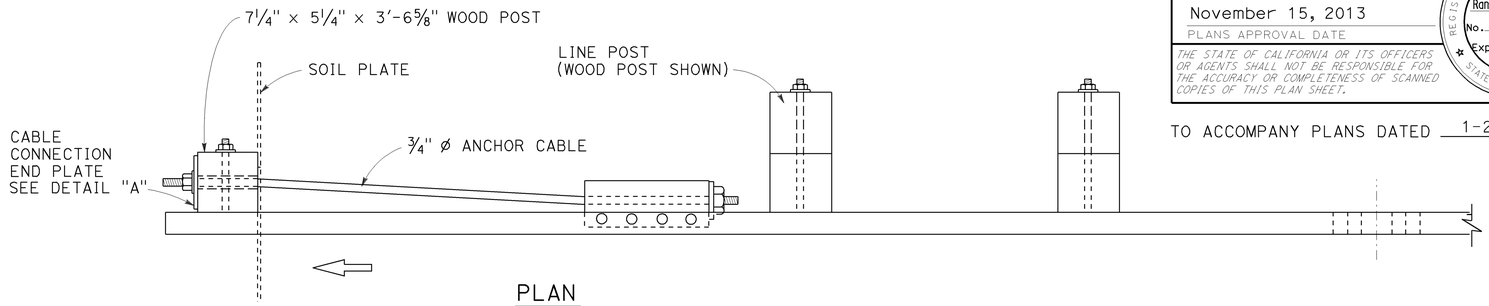
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

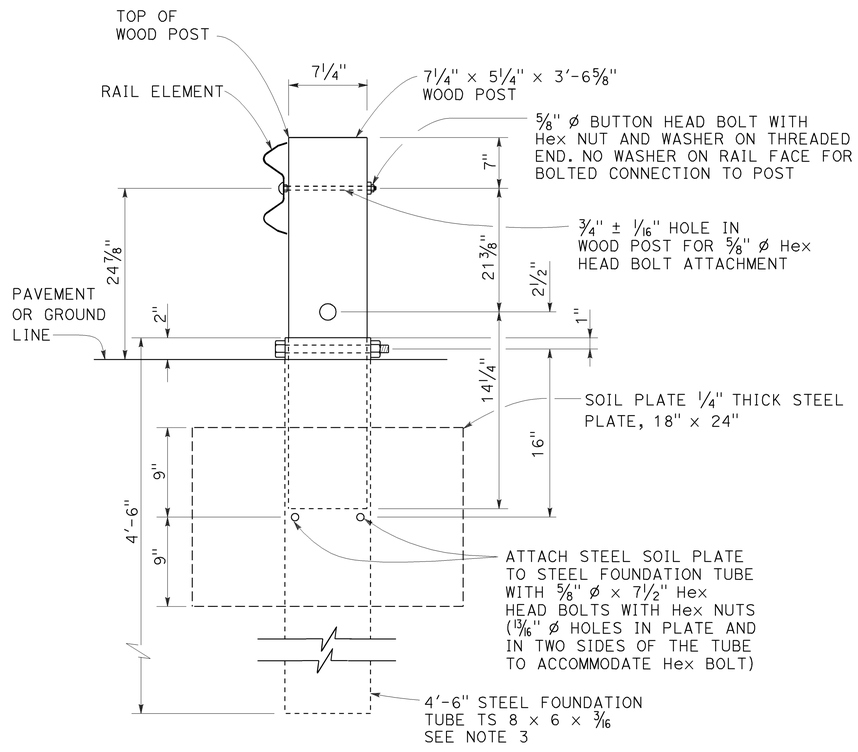
TO ACCOMPANY PLANS DATED 1-27-14



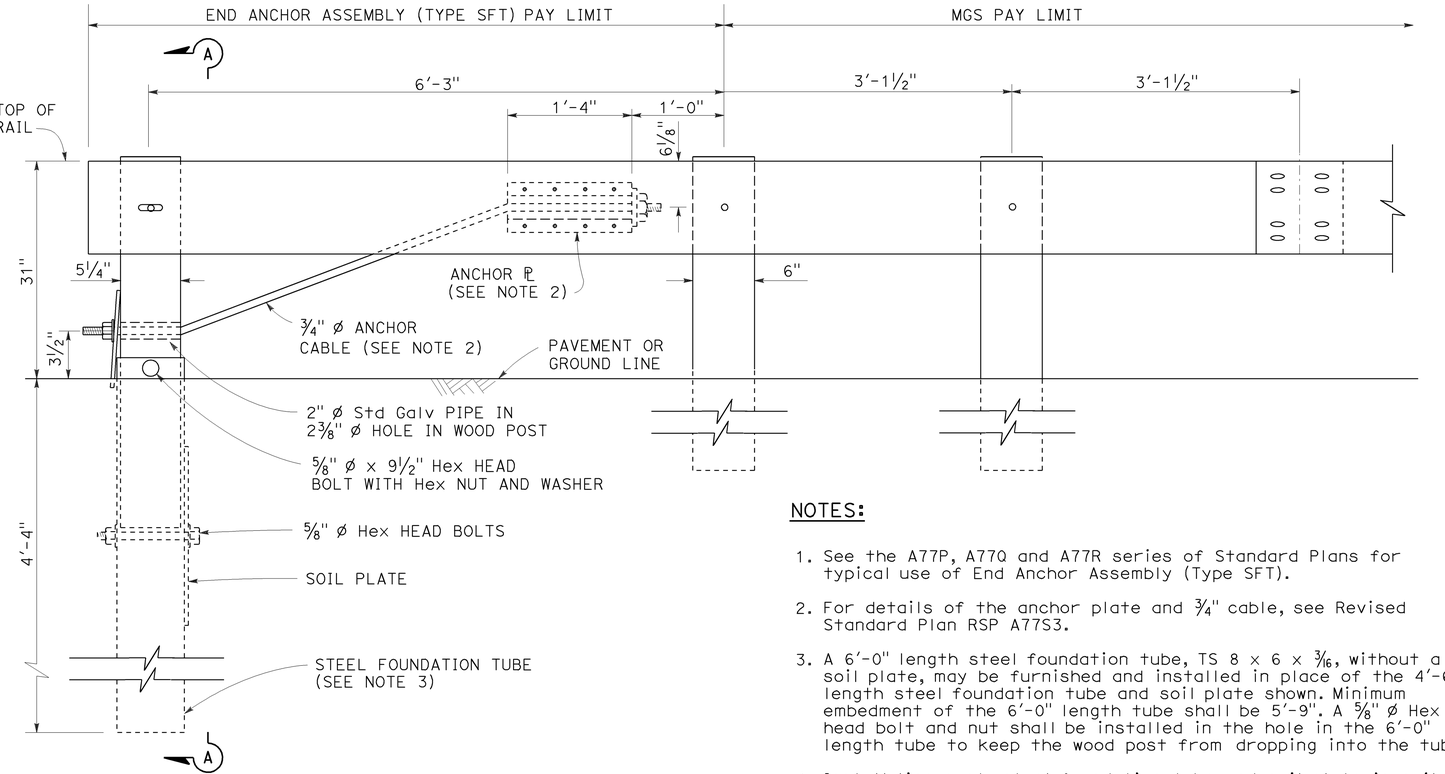
DETAIL "A"
CABLE CONNECTION
END PLATE



PLAN



SECTION A-A



ELEVATION

END ANCHOR
ASSEMBLY (TYPE SFT)
See Note 1

NOTES:

1. See the A77P, A77Q and A77R 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 Revised Standard Plan RSP A77S3.
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" ø 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. Install line post, steel foundation tube and soil plate in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM END ANCHOR ASSEMBLY (TYPE SFT)

NO SCALE

RSP A77S1 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77S1
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77S1

2010 REVISED STANDARD PLAN RSP A77S1

10-4-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	43	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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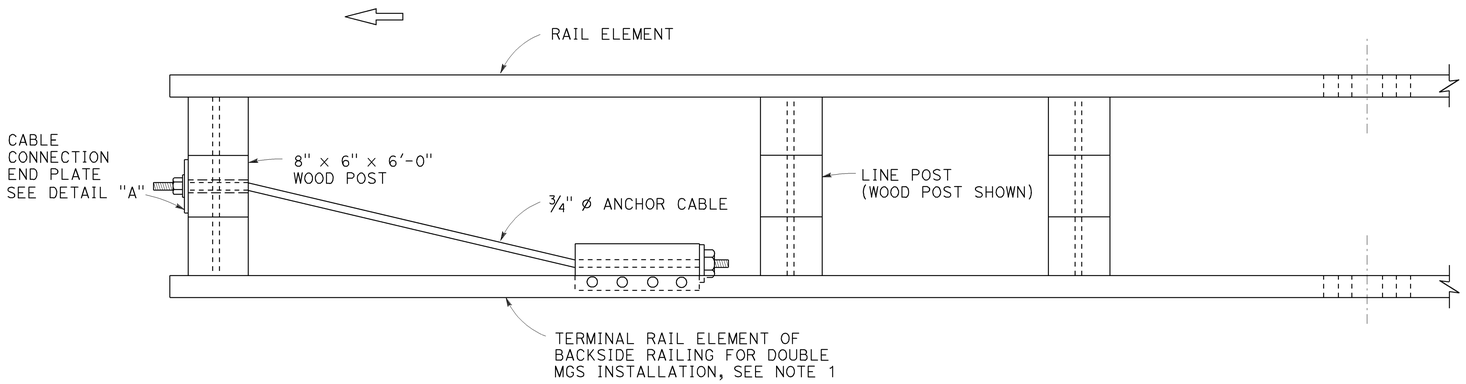
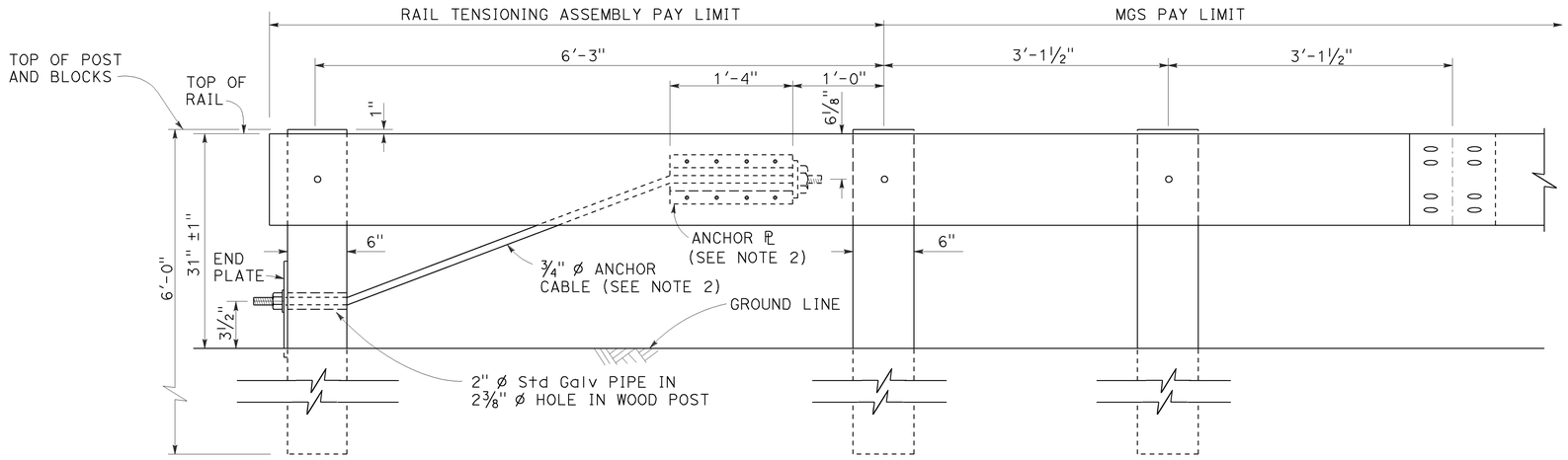
TO ACCOMPANY PLANS DATED 1-27-14



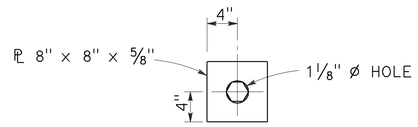
PLAN



ELEVATION
RAIL TENSIONING ASSEMBLY
See Note 1

NOTES:

1. See Revised Standard Plans RSP A77Q3 and RSP A77R1 for typical use of rail tensioning assembly.
2. For details of the anchor plate and ¾" cable, see Revised Standard Plan RSP A77S3.



DETAIL "A"
CABLE CONNECTION END PLATE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
RAIL TENSIONING ASSEMBLY

NO SCALE

RSP A77S2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77S2

2010 REVISED STANDARD PLAN RSP A77S2

7-3-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	44	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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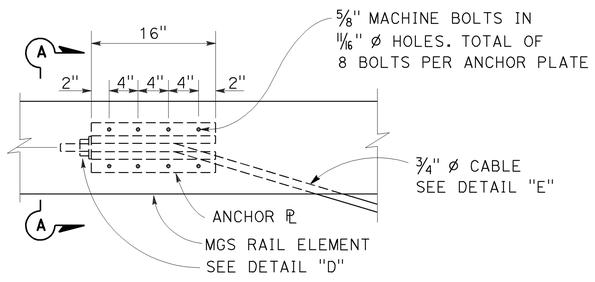
TO ACCOMPANY PLANS DATED 1-27-14

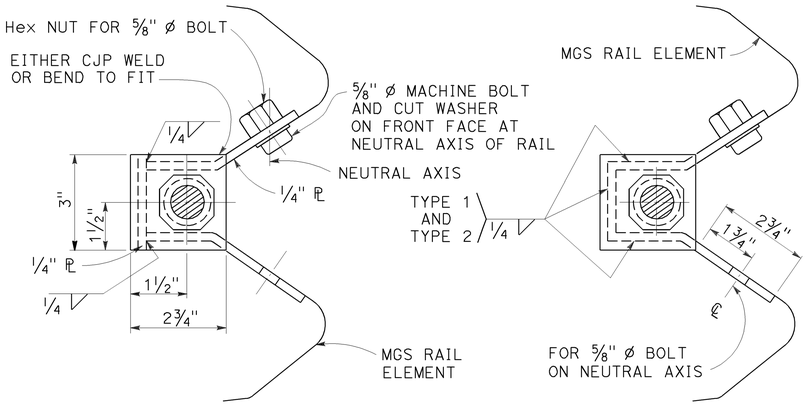
NOTE:

See Revised Standard Plans RSP A77S1, RSP A77S2 and RSP A77T1 for typical use of anchor cable and anchor plate.



ANCHOR PLATE DETAIL

(MGS shown, TBB similar)

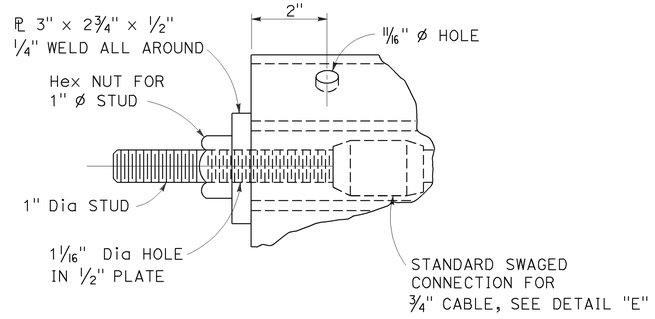


NOTE:

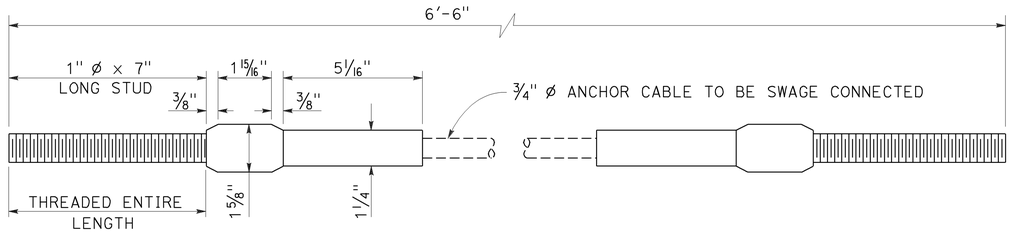
Dimensioning applies to both types.

SECTION A-A
(ALTERNATIVE TYPE 1)

SECTION A-A
(ALTERNATIVE TYPE 2)



DETAIL "D"



ANCHOR CABLE WITH SWAGED FITTING AND STUD
DETAIL "E"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL RAILING ANCHOR CABLE AND ANCHOR PLATE DETAILS

NO SCALE

RSP A77S3 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77S3
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77S3

2010 REVISED STANDARD PLAN RSP A77S3

10-4-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	45	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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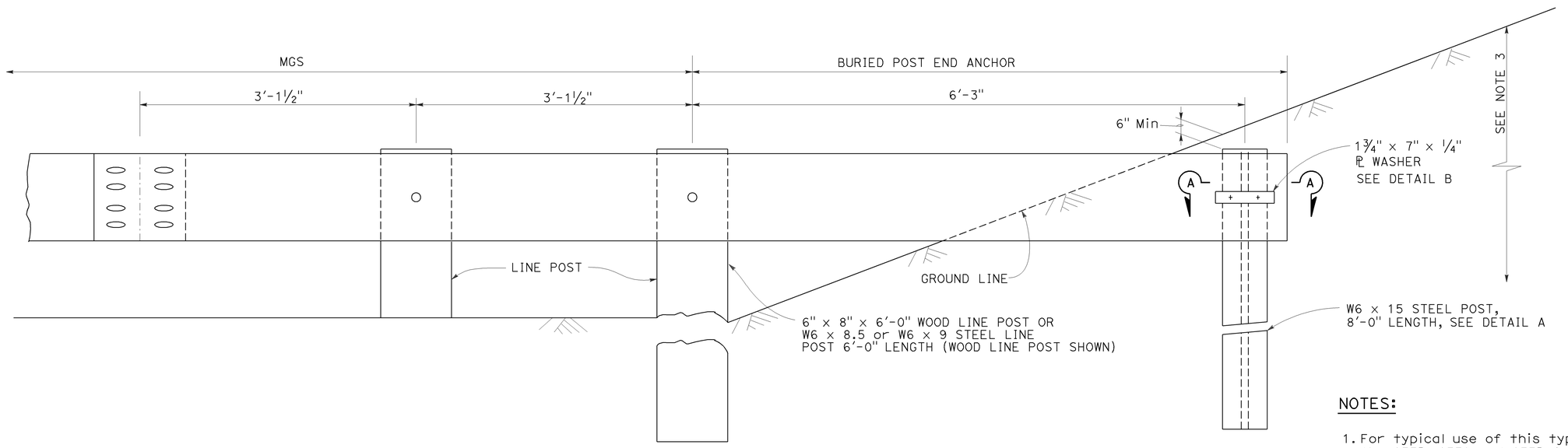
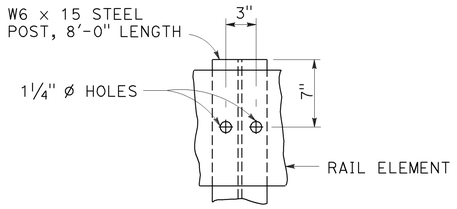
TO ACCOMPANY PLANS DATED 1-27-14

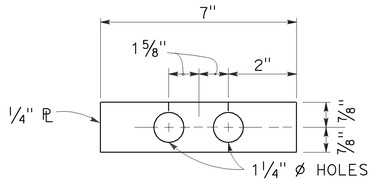


BURIED POST END ANCHOR

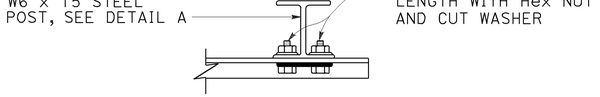
See Note 3



DETAIL A



DETAIL B



SECTION A-A

NOTES:

1. For typical use of this type of end anchor with MGS see the A77P, A77Q and A77R Series of the Standard Plans.
2. Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers approximately 1'-0" thick. Each layer shall be moistened and thoroughly compacted.
3. The buried post end anchor shall only be constructed at those locations where the slope perpendicular to the roadway is non-traversable.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM BURIED POST END ANCHOR

NO SCALE

RSP A77T2 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77T2
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77T2

2010 REVISED STANDARD PLAN RSP A77T2

10-4-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	46	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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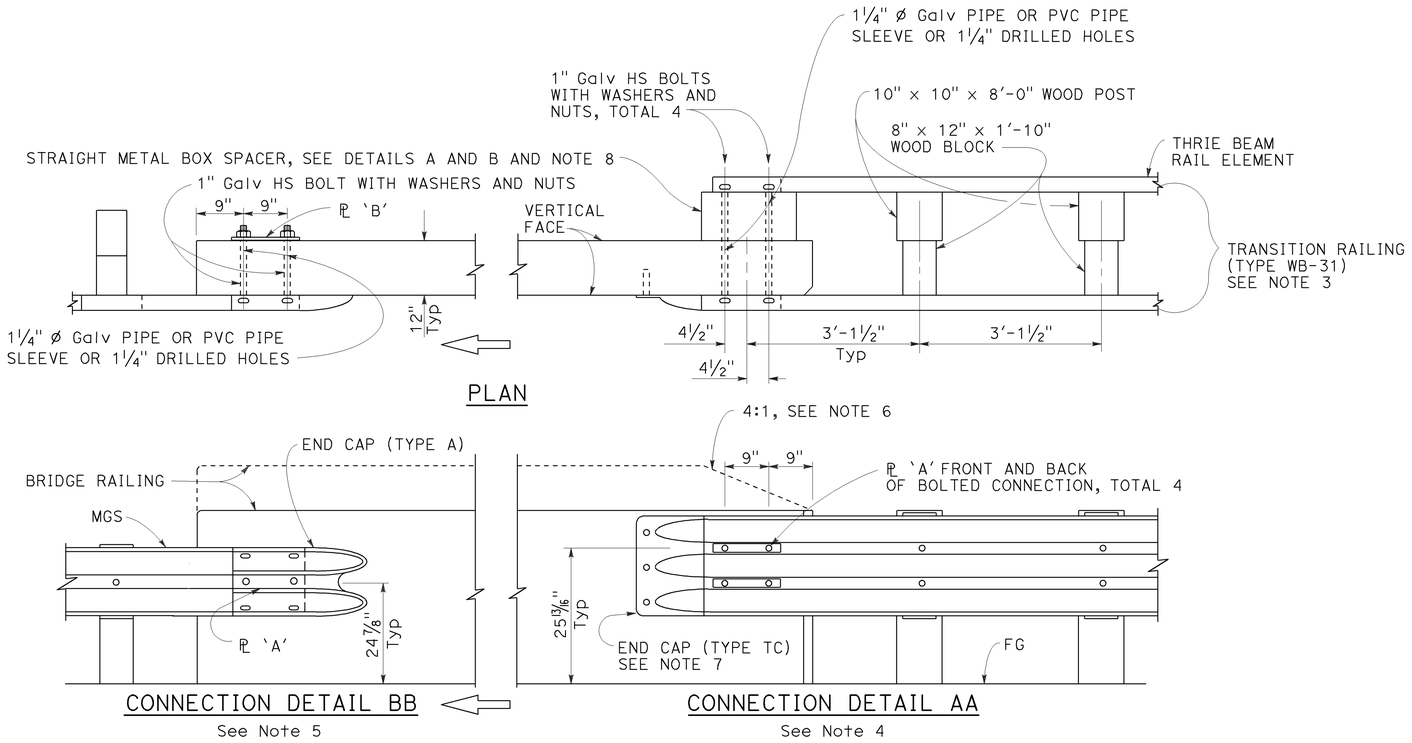
TO ACCOMPANY PLANS DATED 1-27-14



MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

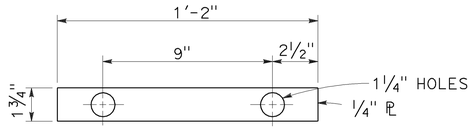


PLATE 'A'

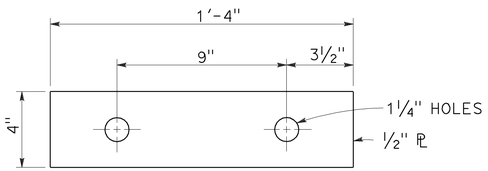
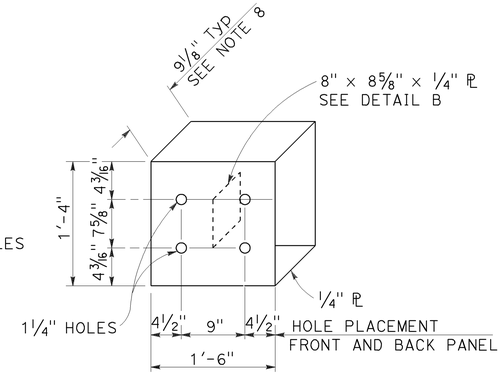
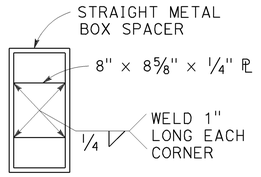


PLATE 'B'
(For backside of connection BB)



DETAIL A



DETAIL B

STRAIGHT METAL BOX SPACER

NOTES:

1. See Revised Standard Plan RSP A77U2 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
4. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1, Layout Types 12C and 12D on Revised Standard Plan RSP A77Q2, and Layout Type 12E on Revised Standard Plan RSP A77Q3.
5. For typical use of Connection Detail BB, see Layout Type 12D (structure departure railing connection) on Revised Standard Plan RSP A77Q2 and Layout Type 12DD on Revised Standard Plan RSP A77Q5.
6. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail.
7. For details of End Cap (Type TC), see Revised Standard Plan RSP A77U4.
8. See Revised Standard Plan RSP A77U4 for additional details regarding depth dimension for straight metal box spacer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS DETAILS No. 1

NO SCALE

RSP A77U1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U1

2010 REVISED STANDARD PLAN RSP A77U1

7-8-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	47	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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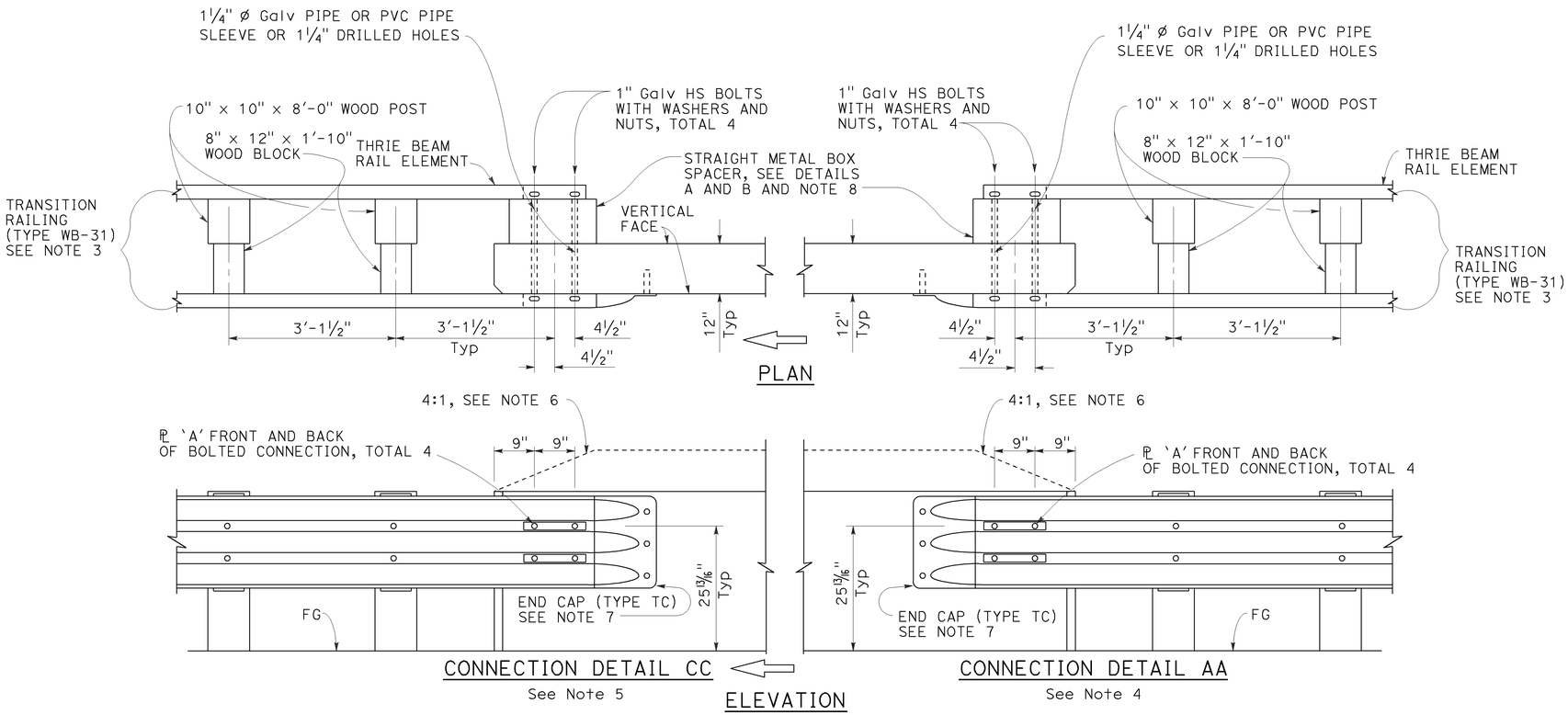
TO ACCOMPANY PLANS DATED 1-27-14



MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

1. See Revised Standard Plan RSP A77U1 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
4. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1, Layout Types 12C and 12D on Revised Standard Plan RSP A77Q2, and Layout Type 12E on Revised Standard Plan RSP A77Q3.
5. For typical use of Connection Detail CC, see Layout Types 12AA and 12BB on Revised Standard Plan RSP A77Q4 and Layout Type 12CC on Revised Standard Plan RSP A77Q5.
6. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA and connection Detail CC, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
7. For details of End Cap (Type TC), see Revised Standard Plan RSP A77U4.
8. See Revised Standard Plan RSP A77U4 for additional details regarding depth dimension for straight metal box spacer.

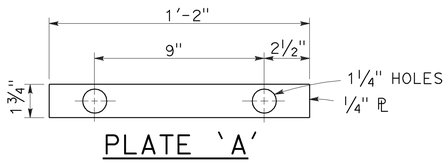


PLATE 'A'

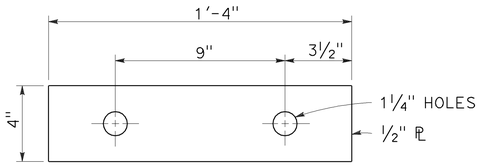
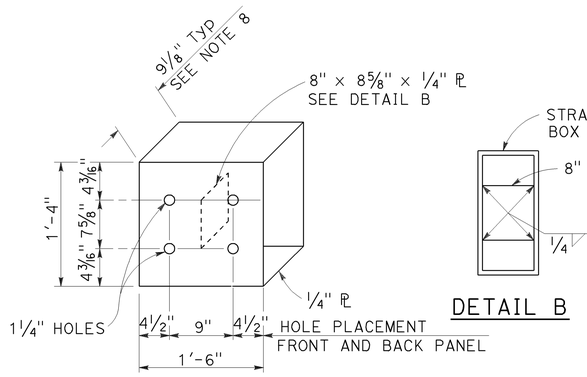
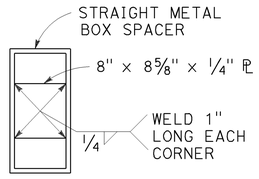


PLATE 'B'
(For backside of connection BB)



DETAIL A

STRAIGHT METAL BOX SPACER



DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS DETAILS No. 2

NO SCALE

RSP A77U2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U2

2010 REVISED STANDARD PLAN RSP A77U2

6-20-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	48	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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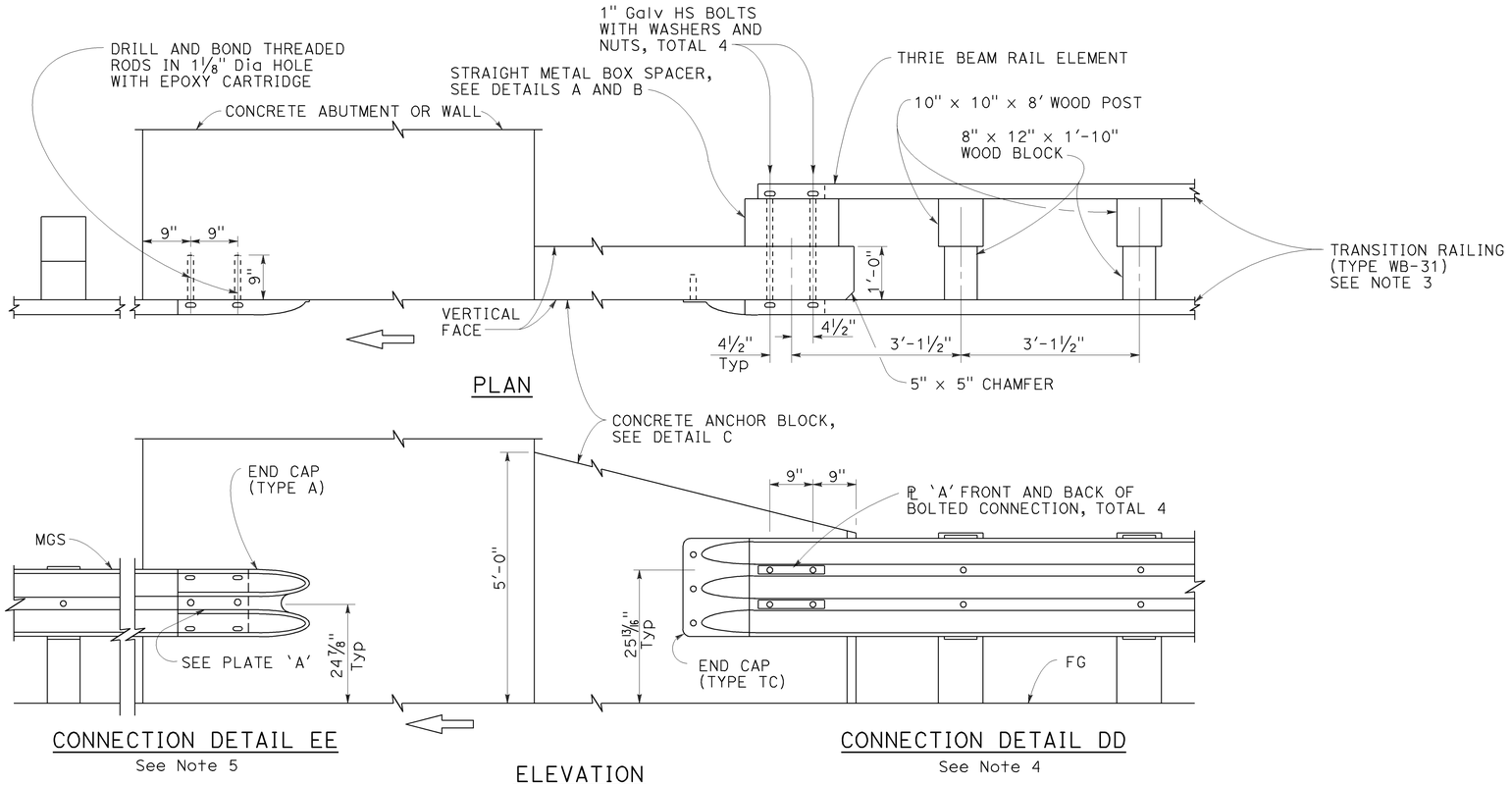
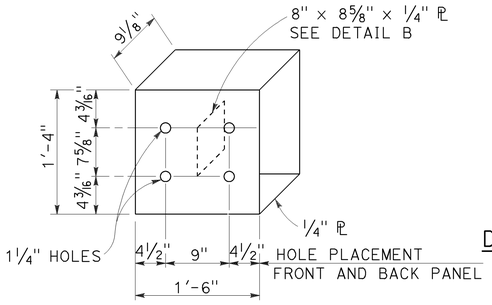
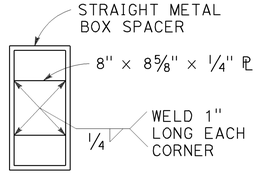
TO ACCOMPANY PLANS DATED 1-27-14



MIDWEST GUARDRAIL SYSTEM CONNECTION TO ABUTMENT OR WALL

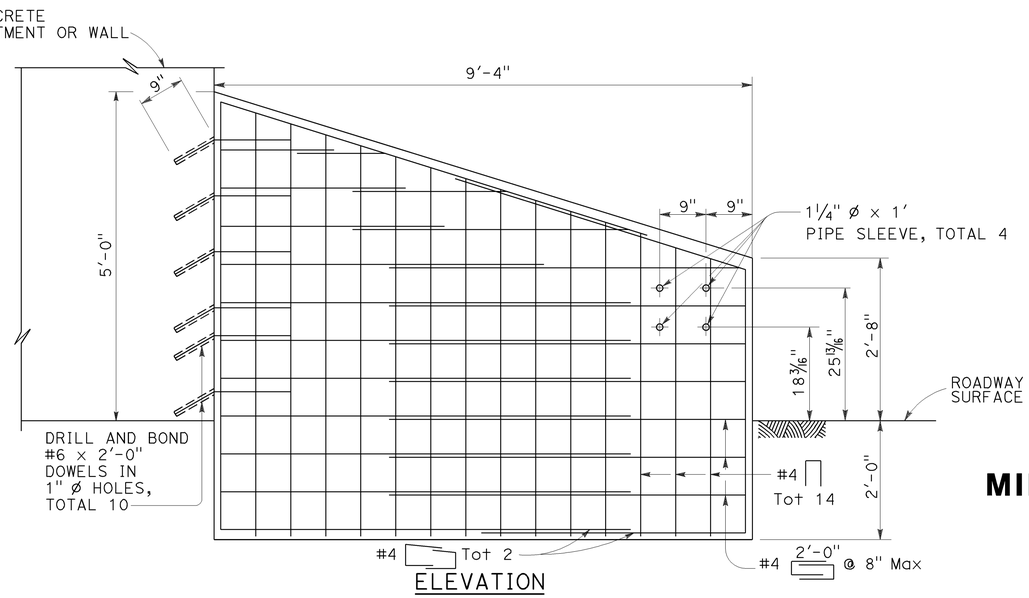


DETAIL A



DETAIL B

STRAIGHT METAL BOX SPACER



ELEVATION

ANCHOR BLOCK FOR TRANSITION RAILING CONNECTION

DETAIL C

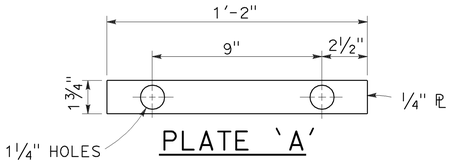


PLATE 'A'

NOTES:

1. These connection details apply to abutments and walls.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railingsection which is connected to the concrete anchor block.
4. For typical use of Connection Details DD, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1 and Layout Types 12C and 12D on Revised Standard Plan RSP A77Q2.
5. For typical use of Connection Detail EE, see Layout Type 12D on Revised Standard Plan RSP A77Q2 and Layout Type 12DD on Revised Standard Plan RSP A77Q5.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO ABUTMENTS AND WALLS

NO SCALE

RSP A77U3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U3

2010 REVISED STANDARD PLAN RSP A77U3

7-8-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	49	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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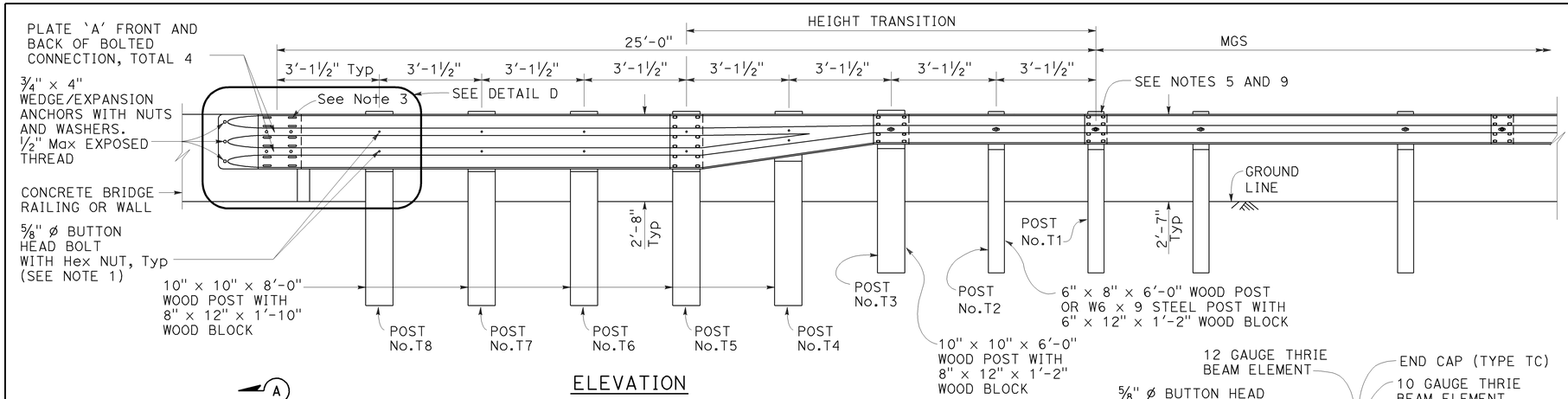
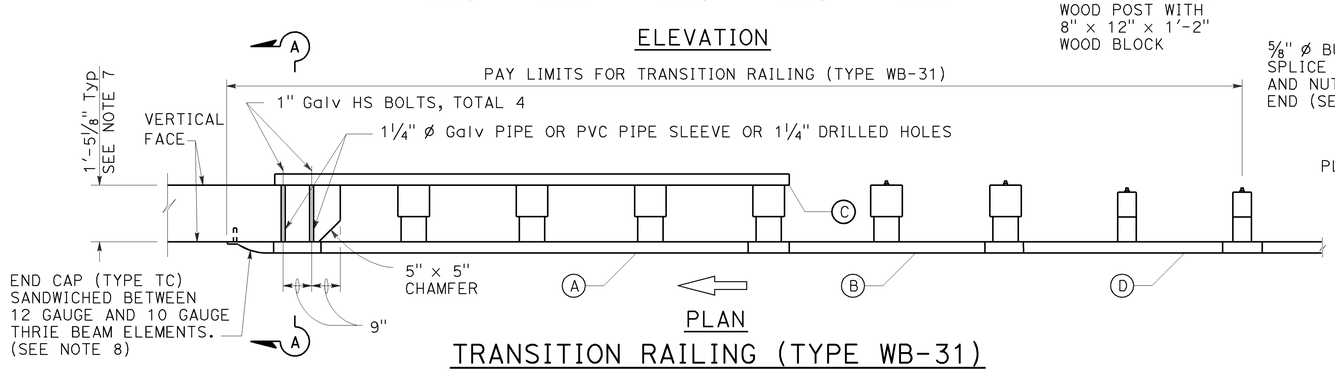


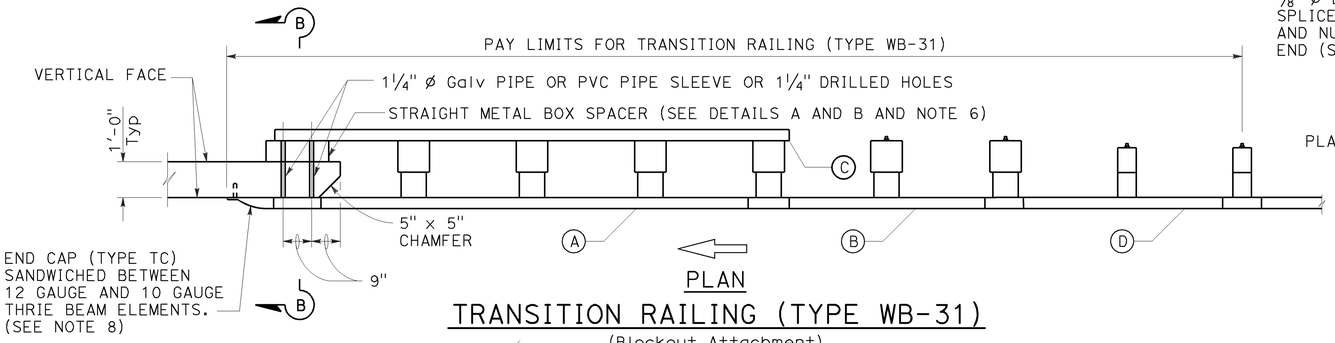
ELEVATION



PLAN

TRANSITION RAILING (TYPE WB-31)

(No Blockout Attachment)



PLAN

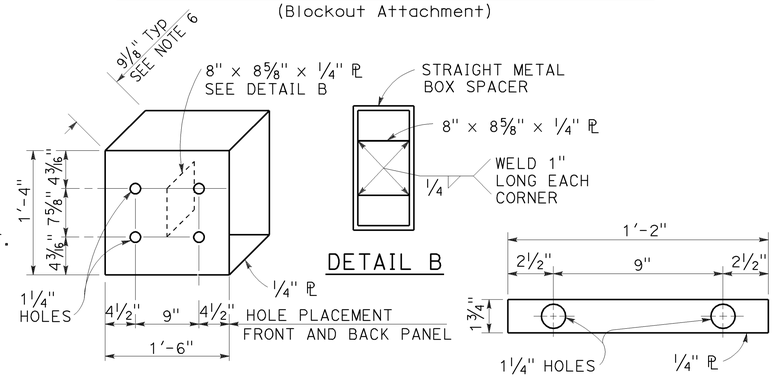
TRANSITION RAILING (TYPE WB-31)

(Blockout Attachment)

LEGEND:

- (A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT).
- (B) ONE ASYMMETRICAL 10 GAUGE "W" BEAM TO THRIE BEAM ELEMENT.
- (C) ONE 12 GAUGE THRIE BEAM ELEMENT.
- (D) ONE 10 GAUGE "W" BEAM RAIL ELEMENT (7'-3½"LENGTH)

10 GAUGE = 0.138" THICK
12 GAUGE = 0.108" THICK



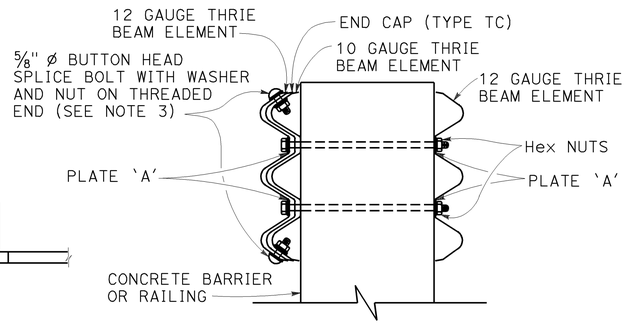
DETAIL A

DETAIL B

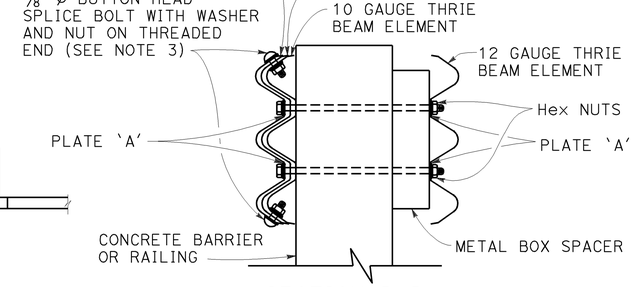
DETAIL C

STRAIGHT METAL BOX SPACER

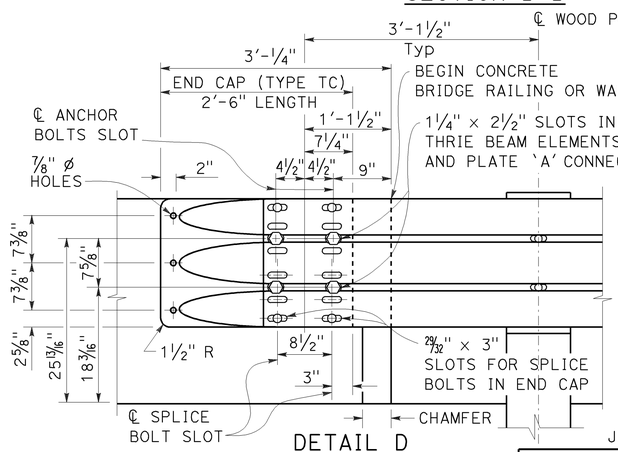
PLATE 'A'



SECTION A-A



SECTION B-B



DETAIL D

NOTES: TO ACCOMPANY PLANS DATED 1-27-14

1. Use ⅝" 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. T5 and the connection to the concrete barrier or railing shall be the standard 29/32" x 1⅛" slot size. Interior splice bolt holes at these locations may be increased up to 1¼" ø. Only the top 4 and the bottom 4 splice bolts with washers and nuts are required for rail splices at Post No. T5 and the connection to the concrete barrier or railing.
4. The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
5. Typically, the railing connected to Transition Railing (Type WB-31) will be either standard railing section of MGS with height transition ratio of 150:1 or a Caltrans approved 31" end treatment attached to Post No. T1.
6. The depth of the metal box spacer varies from the 9⅛" to 1½" 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 21⅛". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1½", metal plates similar to Plate 'A' are to be used as spacers.
7. Where the width of the concrete railing or wall is greater than 17⅛", wood blocks are to be used to fill the space created between the backside of Posts No. T5 through No. T8 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.
8. End cap may be installed over 12 gauge and 10 gauge thrie beam elements where transition railing is installed on the departure end of bridge railing.
9. Conform standard railing section height to 31" at Post No. T1 using height transition ratio of 150:1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TRANSITION RAILING (TYPE WB-31)

NO SCALE

RSP A77U4 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77U4 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U4

2010 REVISED STANDARD PLAN RSP A77U4

10-4-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	50	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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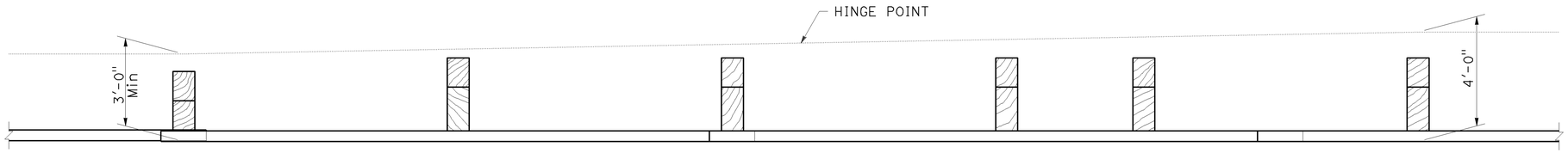
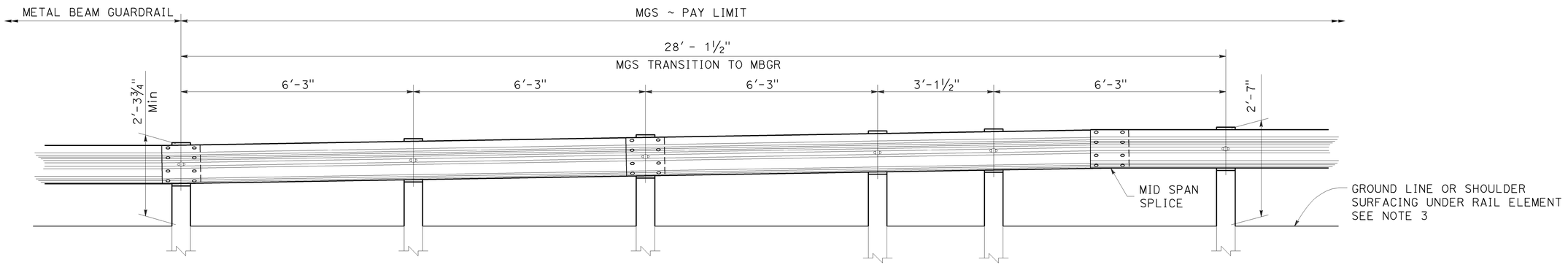
TO ACCOMPANY PLANS DATED 1-27-14

NOTES:

1. Refer to Revised Standard Plans RSP A77L1 and RSP A77L2 for component details for MGS not shown on this plan.
2. All posts for any standard barrier run shall be of the same type: Wood or Steel.
3. Install posts in soil.



PLAN



ELEVATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TRANSITION TO METAL BEAM GUARDRAIL

NO SCALE

RSP A77U5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U5

2010 REVISED STANDARD PLAN RSP A77U5

6-20-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	51	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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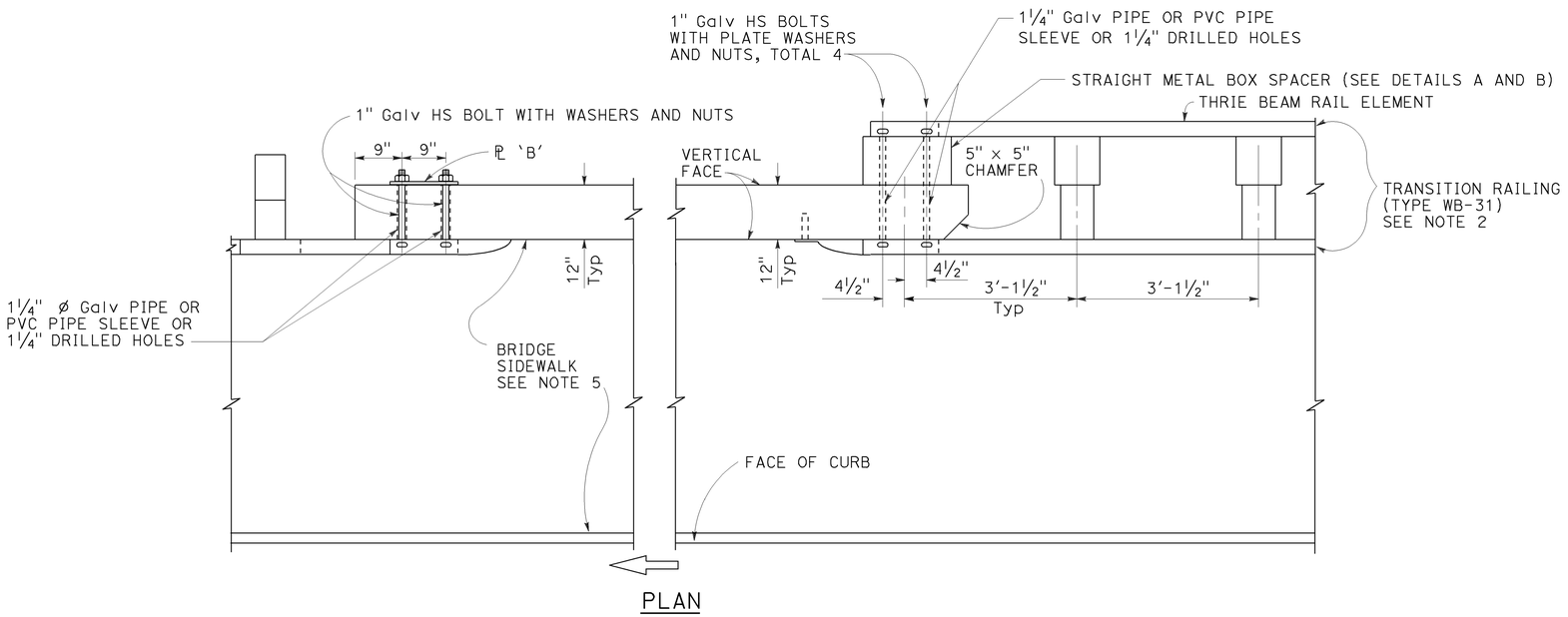
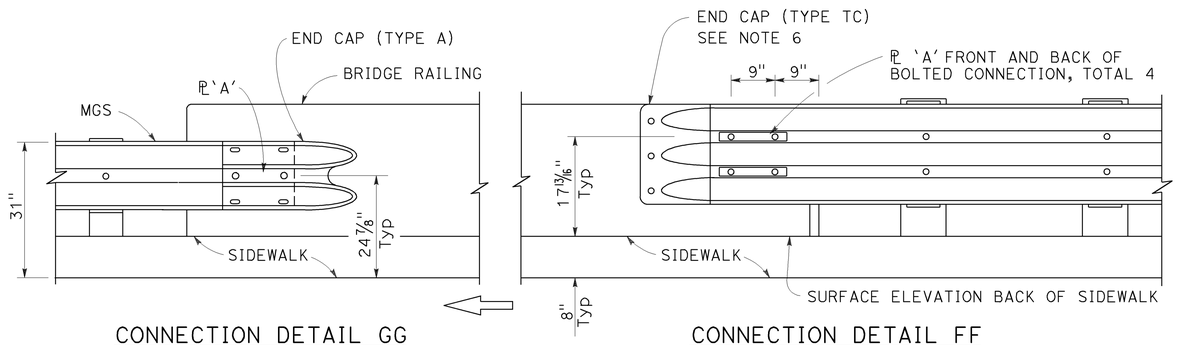
TO ACCOMPANY PLANS DATED 1-27-14



PLAN



CONNECTION DETAIL GG
See Notes 4

ELEVATION

CONNECTION DETAIL FF
See Notes 3

MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITH SIDEWALKS

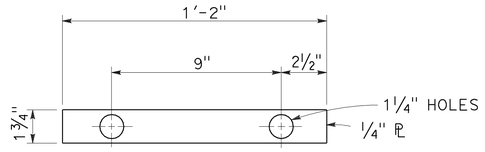


PLATE 'A'

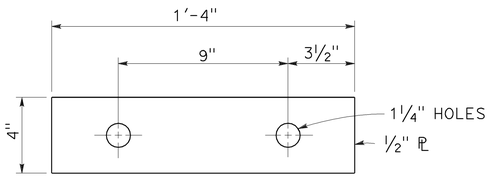
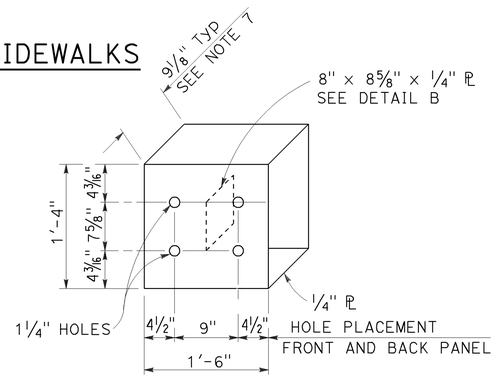
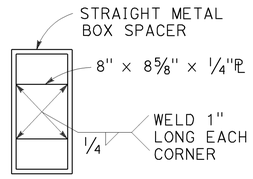


PLATE 'B'
(For backside of connection SB)



DETAIL A



DETAIL B

STRAIGHT METAL BOX SPACER

NOTES:

1. See Revised Standard Plan RSP A77V2 for additional connection details to bridges with sidewalks.
2. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
3. For typical use of Connection Detail FF, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1.
4. For typical use of Connection Detail GG, see Layout Type 12D on Revised Standard Plan RSP A77Q2 and Layout Type 12DD on Revised Standard Plan RSP A77Q5.
5. Where the bridge sidewalk is not continued beyond the end of the bridge railing, the portion of the sidewalk beyond each end of the bridge railing shall be transitioned down from the top elevation of the sidewalk, for its entire width, to the finished grade of the adjacent roadbed. The longitudinal slope of each sidewalk elevation transition shall not exceed 8.33 percent.
6. For details of End Cap (Type TC), see Revised Standard Plan RSP A77U4.
7. See Revised Standard Plan RSP A77U4 for additional details regarding depth dimension for straight metal box spacer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO BRIDGE RAILINGS WITH SIDEWALKS DETAILS No. 1

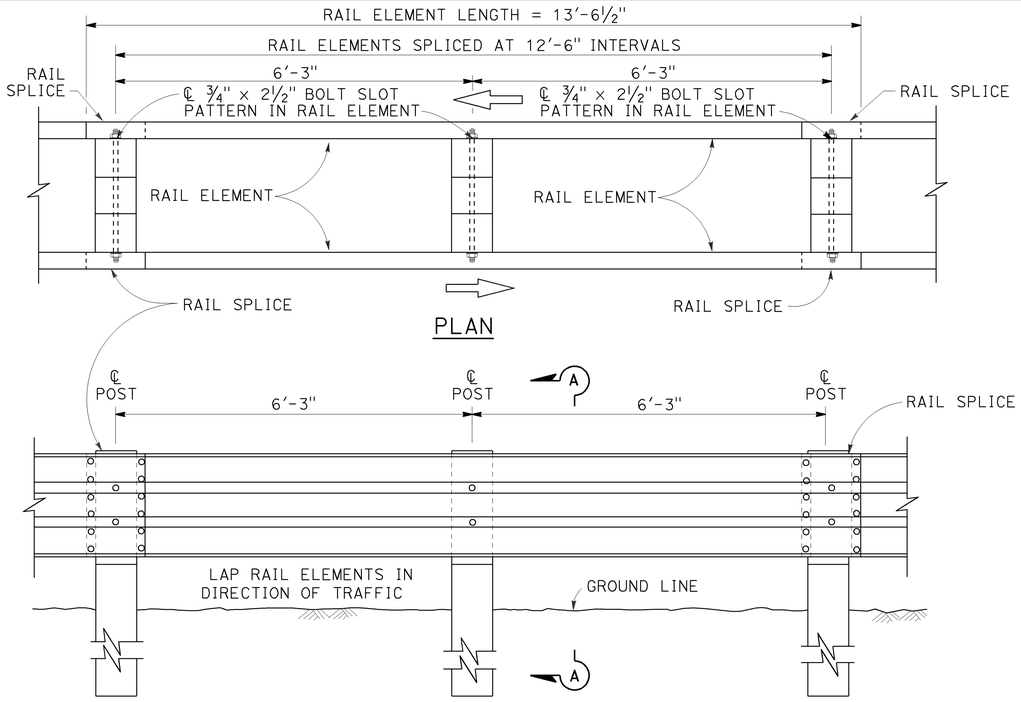
NO SCALE

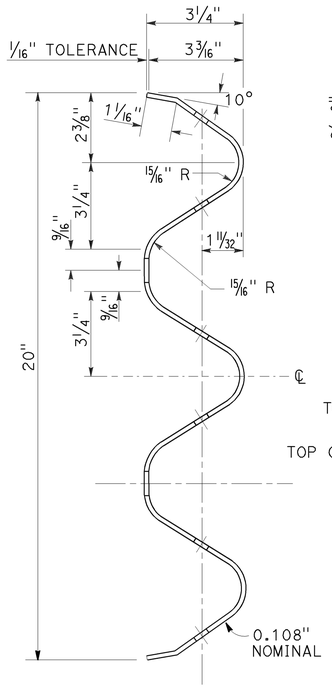
RSP A77V1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

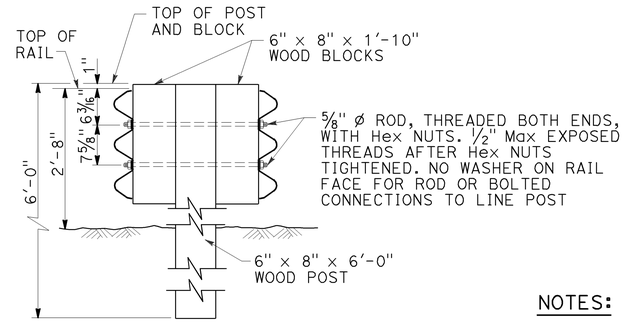
REVISED STANDARD PLAN RSP A77V1

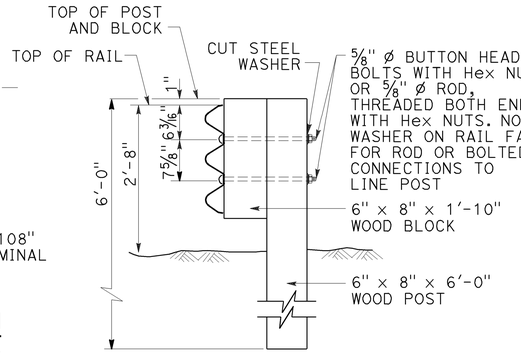
2010 REVISED STANDARD PLAN RSP A77V1

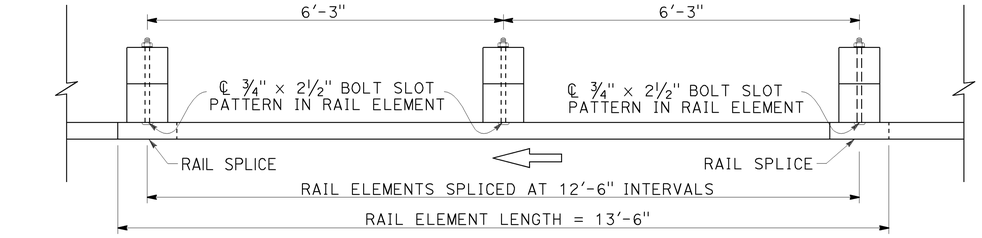
7-8-13

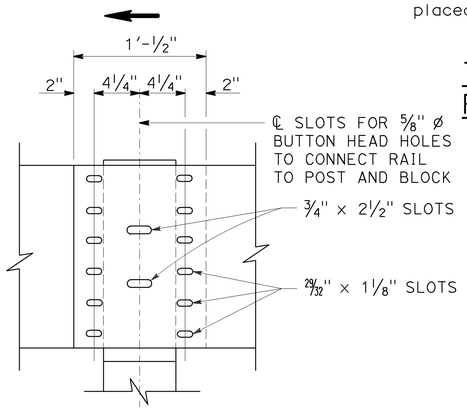








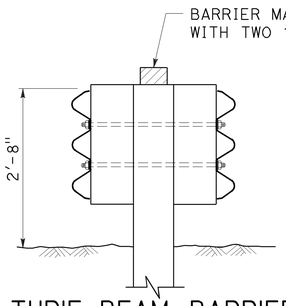




a) Connect the overlapped ends of the thrie beam rail elements with ⅝" ø x 1¼" button head oval shoulder bolts inserted into the 29/32" x 1⅛" slots and bolted together with ⅝" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 12 bolts and nuts are to be used at each rail splice connection.

b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used. Where a return cap is to be attached to the ends of rail elements, a total of 8 of the above described splice bolts and nuts are to be used.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	52	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 1-27-14

NOTES:

1. For details of steel post thrie beam barrier, see Standard Plan A78B.
2. For details of standard hardware, posts and blocks used to construct thrie beam barrier, see Standard Plan A78C1 and Revised Standard Plan RSP A78C2.
3. Thrie beam barrier post spacing to be 6'-3" center to center, except as otherwise noted.
4. Top of barrier rail to be 2'-8" above ground line or shoulder surfacing under the rail element.
5. For barrier end treatments and barrier connections, see Standard Plans A78E3 and A78G, and Revised Standard Plans RSP A78E1, RSP A78E2 RSP A77Q1, RSP A77Q2 and RSP A78H.
6. For connection to Concrete Barrier (Type 60), see Standard Plans A78I.
7. For details of thrie beam barrier on bridge see Standard Plan A78D2. For details of thrie beam barrier at fixed object, see Revised Standard Plan RSP A78D1.
8. Median barrier delineation to be used when required by the Special Provisions. Spacing of barrier markers to match spacing of raised pavement markers on adjacent median edgeline pavement delineation.
9. Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER STANDARD BARRIER RAILING SECTION (WOOD POST WITH WOOD BLOCK)

NO SCALE

RSP A78A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78A DATED MAY 20, 2011 - PAGE 89 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A78A

2010 REVISED STANDARD PLAN RSP A78A

6-27-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	53	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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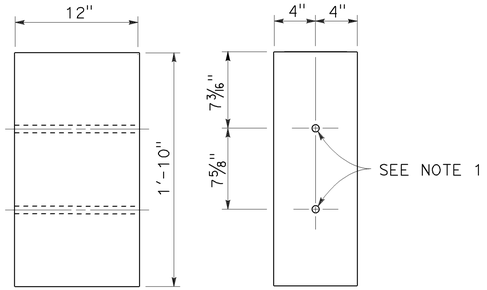
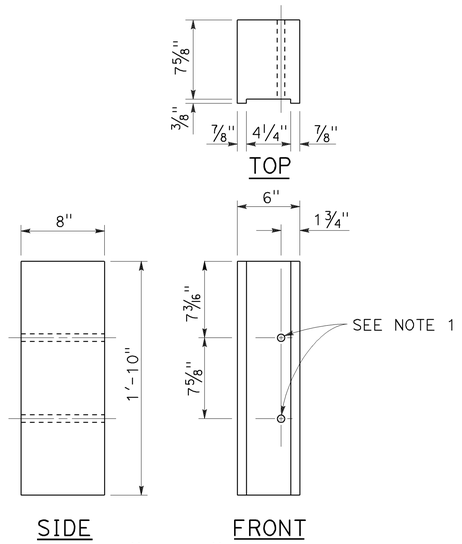
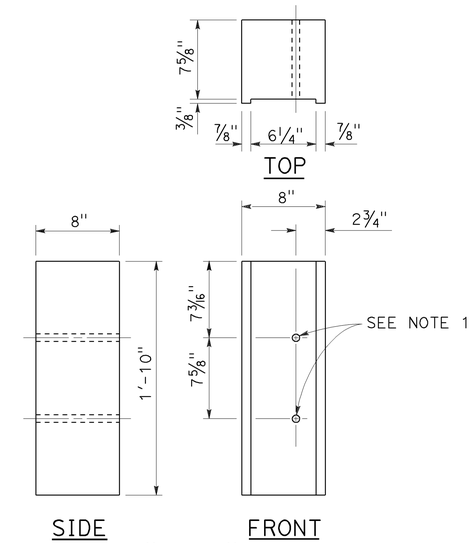
TO ACCOMPANY PLANS DATED 1-27-14



8" x 12"
WOOD BLOCK



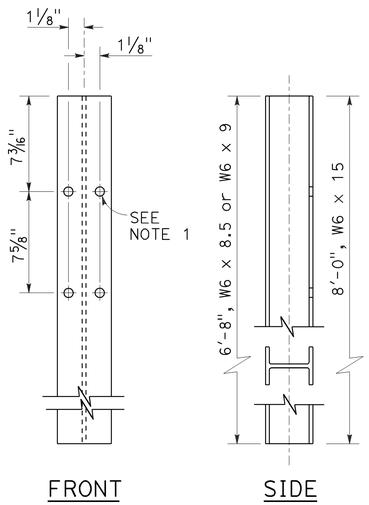
6" x 8"
NOTCHED WOOD BLOCK
See Notes 3 and 5



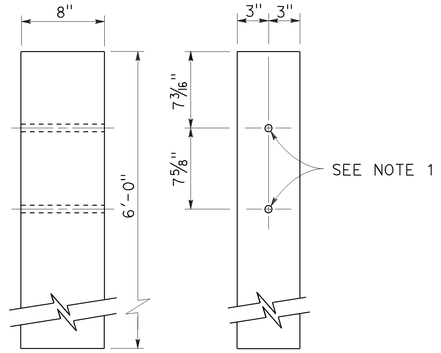
8" x 8"
NOTCHED WOOD BLOCK
See Notes 4 and 5

NOTES:

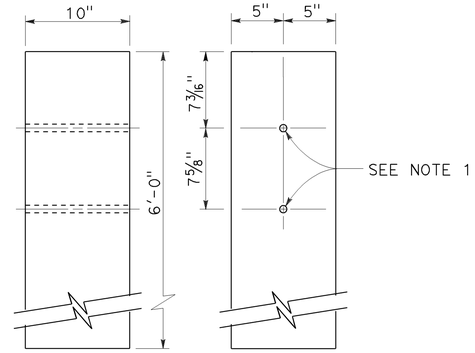
1. All holes in steel post to be 13/16" Dia maximum. Holes in wood posts and wood blocks to be 3/4" Dia ±1/16".
2. Dimensions shown for wood post are nominal.
3. For use with W6 x 8.5 or W6 x 9 steel post.
4. For use with W6 x 15 steel post.
5. Notched face of block faces steel post.



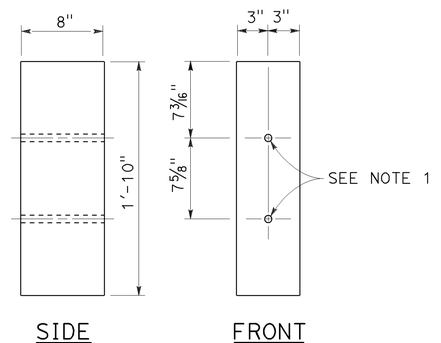
STEEL POST
W6 x 9 or W6 x 8.5 and W6 x 15



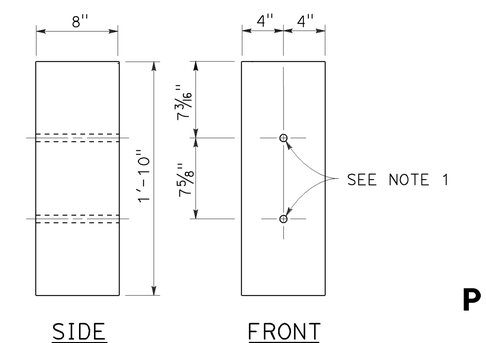
6" x 8"
WOOD POST



10" x 10"
WOOD POST



6" x 8"
WOOD BLOCK



8" x 8"
WOOD BLOCK

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER POST AND BLOCK DETAILS

NO SCALE

RSP A78C2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78C2 DATED MAY 20, 2011 - PAGE 92 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A78C2

2010 REVISED STANDARD PLAN RSP A78C2

7-3-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	54	67

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

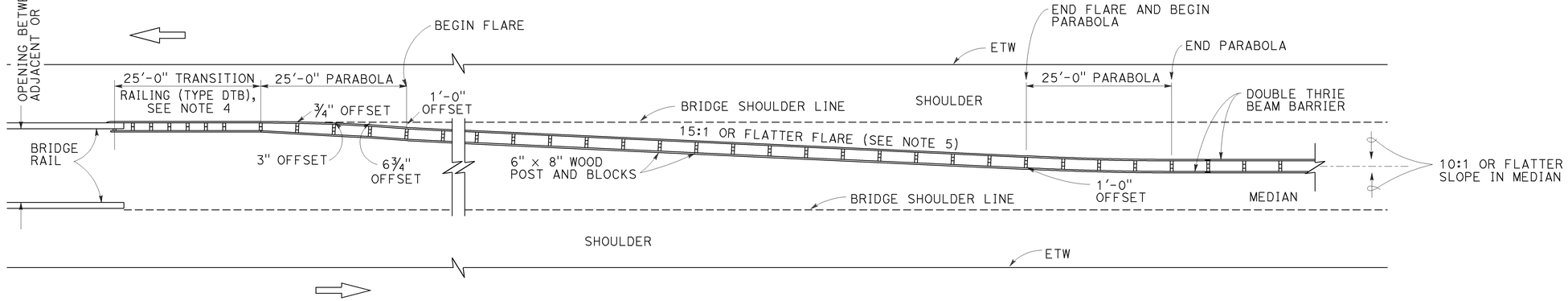
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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.

TO ACCOMPANY PLANS DATED 1-27-14

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A78A, A78B and A78C1 and Revised Standard Plan RSP A78C2.
2. 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'-10" wood blocks. (W6 x 8.5 or W6 x 9) steel posts, 6'-8" in length, with 6" x 8" x 1'-10" 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'-10" wood blocks where applicable and when specified.
4. For Transition Railing (Type DTB) details, see Standard Plan A78K.
5. The 15:1 or flatter flare is measured off of the edge of traveled way.



TYPE 25A CONNECTION LAYOUT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER TYPICAL LAYOUT FOR CONNECTION TO BRIDGE RAILING

NO SCALE

RSP A78H DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78H DATED MAY 20, 2011 - PAGE 105 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A78H

2010 REVISED STANDARD PLAN RSP A78H

6-12-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	55	67

REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Michael Janzen
No. 44788
Exp. 03-31-14
CIVIL
STATE OF CALIFORNIA

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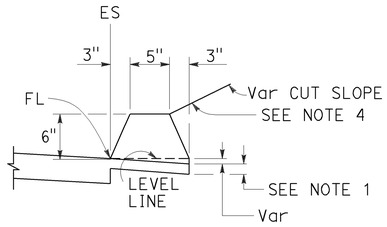
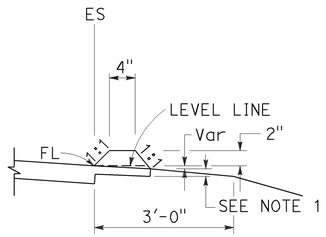
TO ACCOMPANY PLANS DATED 1-27-14



TYPE A
See Note 3



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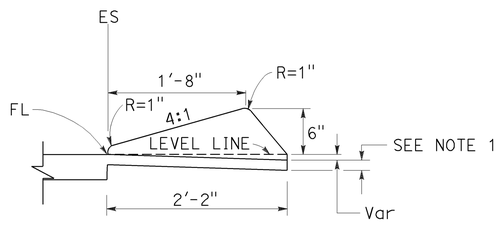
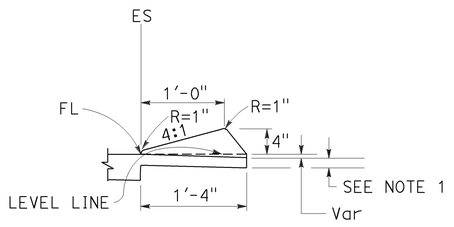
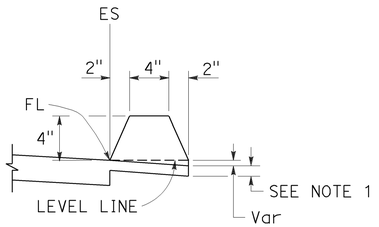


TYPE D

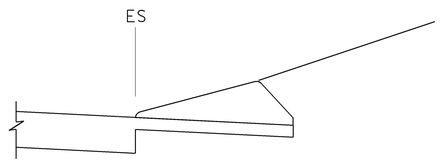


TYPE E

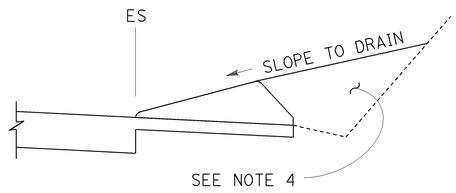


TYPE F
See Note 5

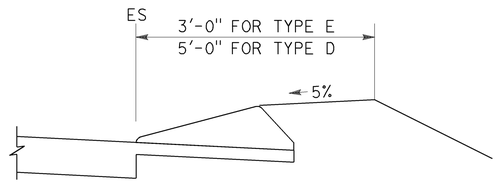
DIKES



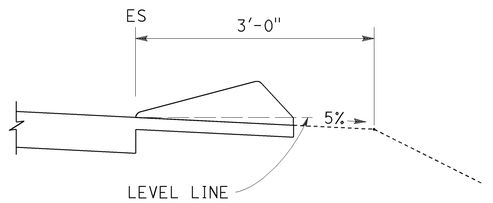
CASE C-1
Cut Slope



CASE C-2
Cut Slope



CASE F



CASE R
See Note 2

TYPE D AND E BACKFILL DETAILS

NOTES:

1. For HMA shoulders only, extend top layer of HMA placed on the shoulder under dike with no joint at the ES. For projects with OGFC shoulders, do not extend OGFC under dike. See project plans for modified dike detail.
2. Case R applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
3. Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
4. Fill and compact with excavated material to top of dike.
5. Use Type F dike, where dike is required with guard railing installations. See Revised Standard Plan RSP A77N4 for dike positioning details.

DIKE QUANTITIES

TYPE	CUBIC YARDS PER LINEAR FOOT
A	0.0135
C	0.0038
D	0.0293
E	0.0130
F	0.0066

Quantities based on 5% cross slope.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

HOT MIX ASPHALT DIKES

NO SCALE

RSP A87B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A87B
DATED MAY 20, 2011 - PAGE 120 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A87B

2010 REVISED STANDARD PLAN RSP A87B

6-27-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	56	67

REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gurinderpal Bhullar
No. C48815
Exp. 9-30-14
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 1-27-14

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING

SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
					X	Y	Z **
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	TAPER	TANGENT	CONFLICT
mph	ft	ft	ft	ft	ft	ft	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	55	110	27
60	1440	720	360	240	60	120	30
65	1560	780	390	260	65	130	32
70	1680	840	420	280	70	140	35

* - For other offsets, use the following merging taper length formula for L:
For speed of 40 mph or less, $L = WS^2/60$
For speed of 45 mph or more, $L = WS$

Where: L = Taper length in feet
W = Width of offset in feet
S = Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Use for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers (CA).

TABLE 2

LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING

SPEED *	Min D **	DOWNGRADE Min D ***		
		-3%	-6%	-9%
mph	ft	ft	ft	ft
20	115	116	120	126
25	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785
70	730	771	825	891

* - Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Longitudinal buffer space or flagger station spacing

*** - Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

TABLE 3

ADVANCE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS *		
	A	B	C
	ft	ft	ft
URBAN - 25 mph OR LESS	100	100	100
URBAN - MORE THAN 25 mph TO 40 mph	250	250	250
URBAN - MORE THAN 40 mph	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1500	2640

* - The distances are approximate, are intended for guidance purposes only, and should be applied with engineering judgment. These distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommmended distances.

2010 REVISED STANDARD PLAN RSP T9

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM TABLES FOR LANE AND RAMP CLOSURES

NO SCALE

RSP T9 DATED JULY 19, 2013 SUPERSEDES RSP T9 DATED APRIL 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T9

4-30-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	57	67

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

Gurinderpal Bhullar
No. C48815
Exp. 9-30-14
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 1-27-14

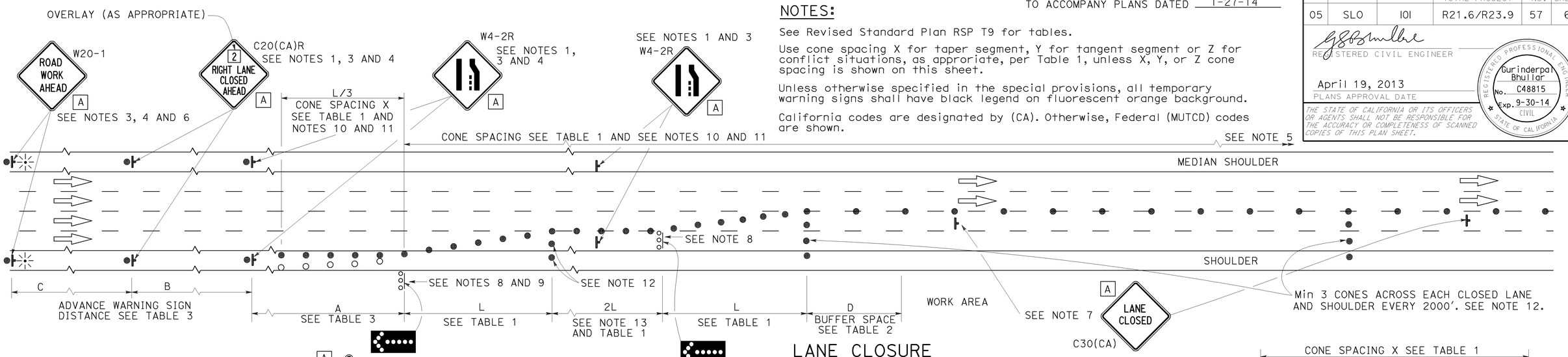
NOTES:

See Revised Standard Plan RSP T9 for tables.

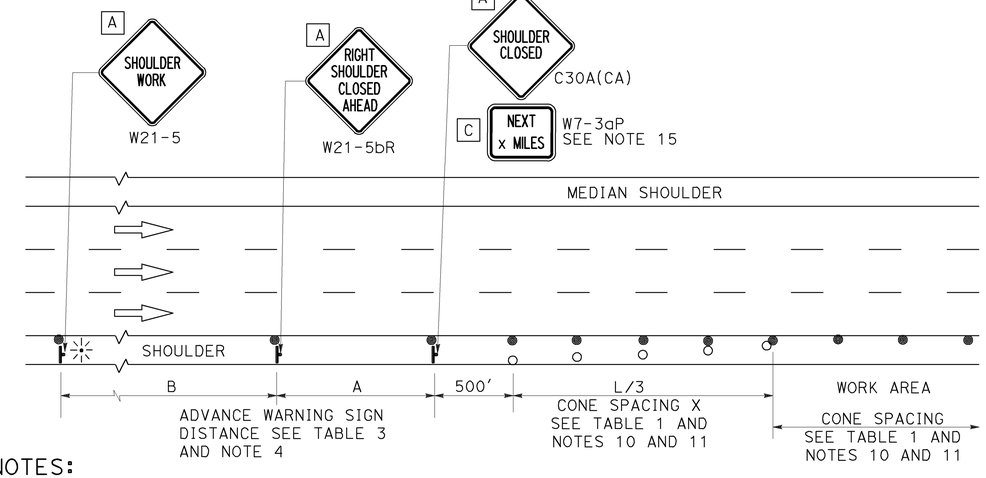
Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as approriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

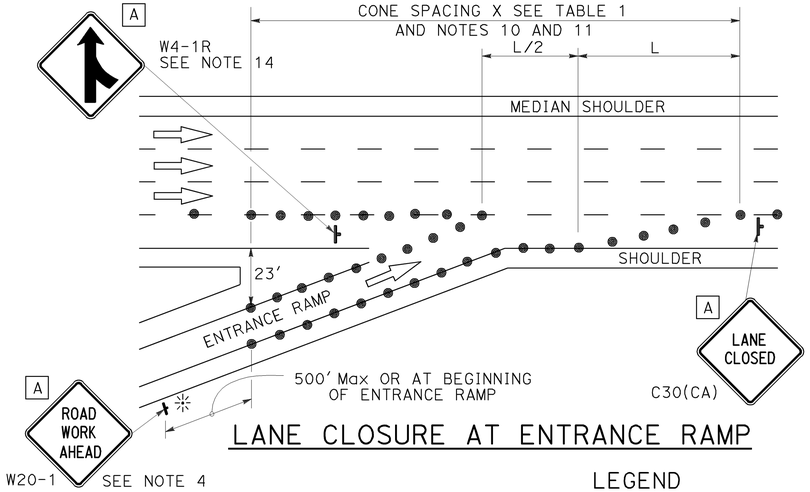
Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.

California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

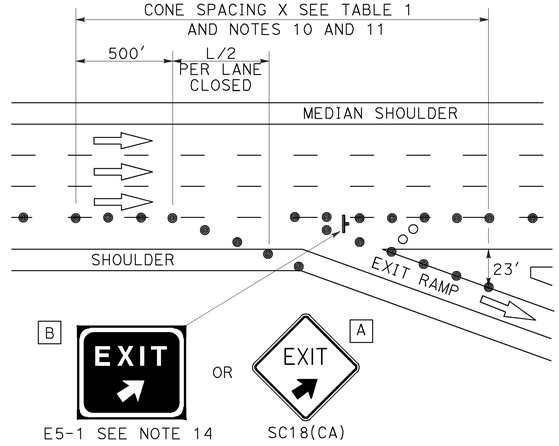


LANE CLOSURE





LANE CLOSURE AT ENTRANCE RAMP



LANE CLOSURE AT EXIT RAMP

NOTES:

1. Median lane closures shall conform to the details as shown except that C20(CA)L and W4-2L signs shall be used.
2. At least one person shall be assigned to provide full time maintenance of traffic control devices for lane closures.
3. Duplicate sign installations are not required:
   a) On opposite shoulder if at least one-half of the available lanes remain open to traffic.
   b) In the median if the width of the median shoulder is less than 8' and the outside lanes are to be closed.
4. Each advance warning sign on each side of the roadway shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
5. A G20-2 "END ROAD WORK" sign, with minimum size of 48" x 24" as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious or ends within a larger project's limits.

SHOULDER CLOSURE

6. If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT _____ MILES", use a C20(CA) sign for the first advance warning sign.
7. Place a C30(CA) sign every 2000' throughout length of lane closure.
8. One flashing arrow sign for each lane closed. The flashing arrow signs shall be Type I.
9. A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at top of crest vertical curve or on a horizontal curve.
10. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
11. Portable delineators, placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
12. Unless otherwise specified in the special provisions, a minimum of 3 cones shall be placed transversely across each closed lane and shoulder at each location where a taper across a traffic lane ends and every 2000' as shown on the "Lane Closure" detail. Two Type II barricades may be used instead of the 3 cones. The transverse alignment of the cones or barricades on the closed shoulder may be shifted from the transverse alignment to provide access to the work.
13. Unless otherwise specified in the special provisions, the 2L tangent shown along lane lines shall be used between the L tapers required for each closed traffic lane.
14. Unless otherwise specified in the special provisions, the E5-1 or SC18(CA) and W4-1 signs shall be used as shown.
15. A W7-3aP "NEXT___MILES" plaque must be used if theshoulder closure extends beyond the distance that can be perceived by road users.

LEGEND

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON

SIGN PANEL SIZE (Min)

A	48" x 48"
B	72" x 60"
C	36" x 30"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON FREEWAYS AND EXPRESSWAYS

NO SCALE

RSP T10 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T10 DATED MAY 20, 2011 - PAGE 237 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T10

2010 REVISED STANDARD PLAN RSP T10

12-18-12

TO ACCOMPANY PLANS DATED 1-27-14

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	58	67

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gurinderpal Bhullar
No. C48815
Exp. 9-30-14
CIVIL
STATE OF CALIFORNIA

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

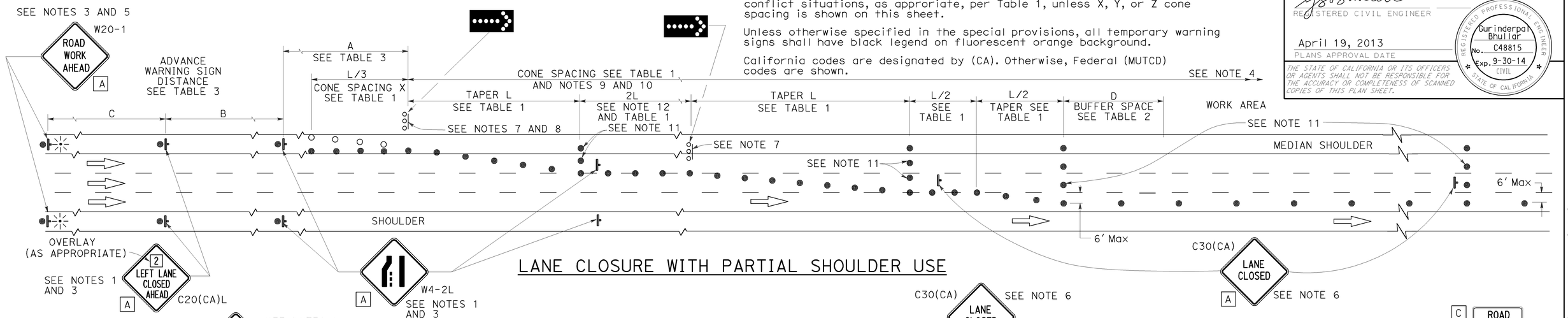
NOTES:

See Revised Standard Plan RSP T9 for tables.

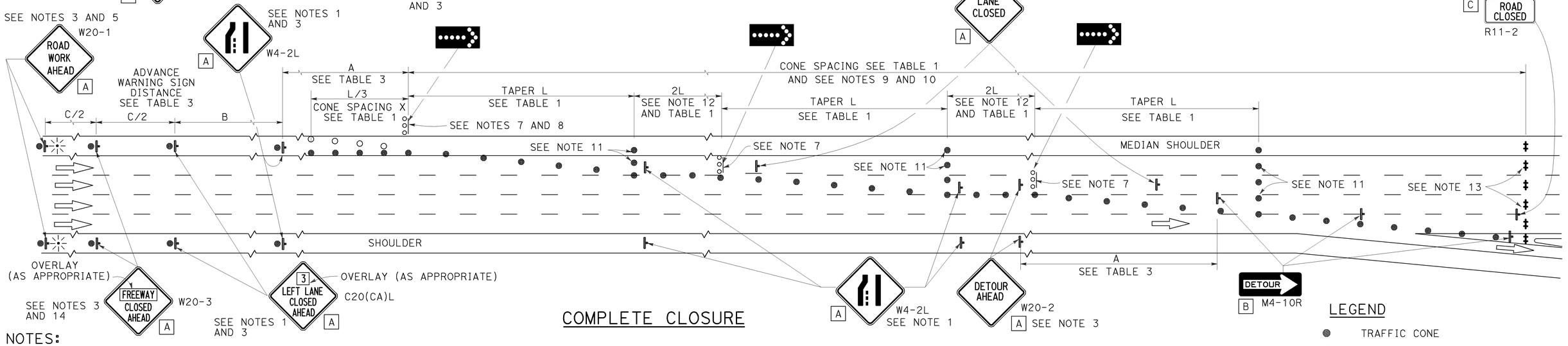
Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as approriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.

California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.



LANE CLOSURE WITH PARTIAL SHOULDER USE



COMPLETE CLOSURE

NOTES:

1. Lane closures on the right side using partial median shoulder as a traffic lane shall conform to the details as shown except that C20(CA)R and W4-2R signs shall be used.
2. At least one person shall be assigned to provide full time maintenance of traffic control devices for lane closures.
3. Each advance warning sign on each side of the roadway shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" X 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
4. A G20-2 "END ROAD WORK" sign, with minimum size of 48" x 24" as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious or ends within a larger project's limits.
5. If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT ___ MILES", use a C20(CA) sign for the first advance warning sign.
6. Place a C30(CA) sign every 2000' throughout length of lane closure.
7. One flashing arrow sign for each lane closed. The flashing arrow signs shall be Type I.
8. A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of crest vertical curve or on a horizontal curve.
9. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
10. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime closures only.
11. Unless otherwise specified in the special provisions, a minimum of 3 cones shall be placed transversely across each closed lane and shoulder at each location where a taper across a traffic lane ends and every 2000' as shown on the "Lane Closure With Partial Shoulder Use" detail. Two Type II barricades may be used instead of the 3 cones. The transverse alignment of the cones or barricades on the closed shoulder may be shifted from the transverse alignment to provide access to the work.
12. Unless otherwise specified in the special provisions, the 2L tangent shown along lane lines shall be used between the L tapers required for each closed traffic lane.
13. A minimum of Two Type II or III barricades shall be placed across each closed lane and shoulder at the location shown and every 2000' within the complete closure area. Within the complete closure area, the transverse alignment of the barricades on the closed shoulder may be shifted from the transverse alignment to provide access to the work.
14. When specified in the special provisions, a W20-2 "DETOUR AHEAD" sign is to be used in place of the W20-3 "FREEWAY CLOSED AHEAD" sign.

SIGN PANEL SIZE (Min)

- A 48" x 48"
- B 48" x 18"
- C 48" x 30"

LEGEND

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURES ON FREEWAYS AND EXPRESSWAYS

NO SCALE

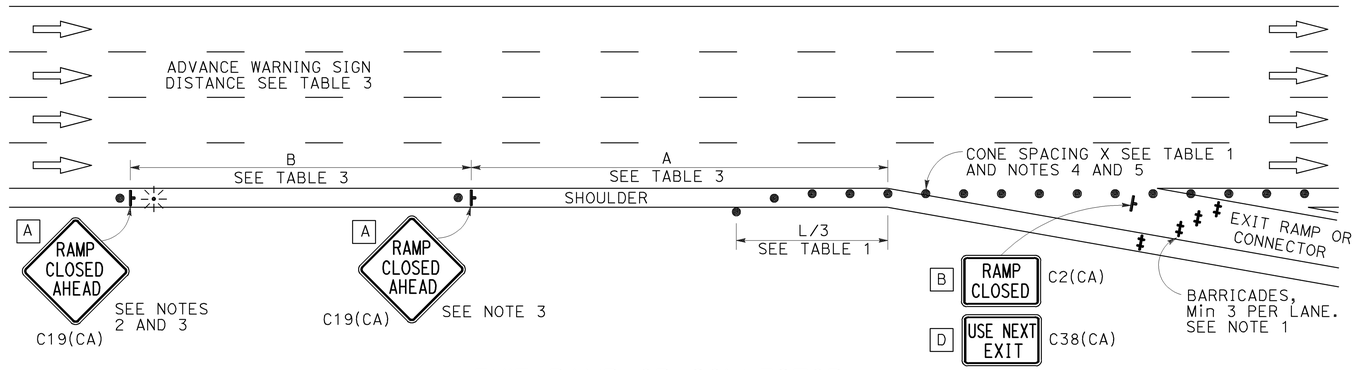
RSP T10A DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T10A DATED MAY 20, 2011 - PAGE 238 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T10A

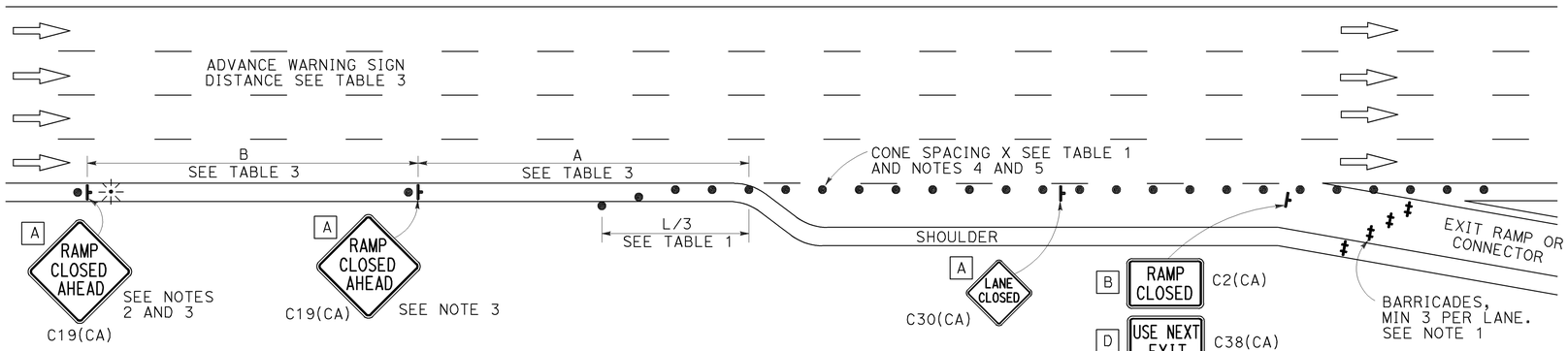
2010 REVISED STANDARD PLAN RSP T10A

12-18-12

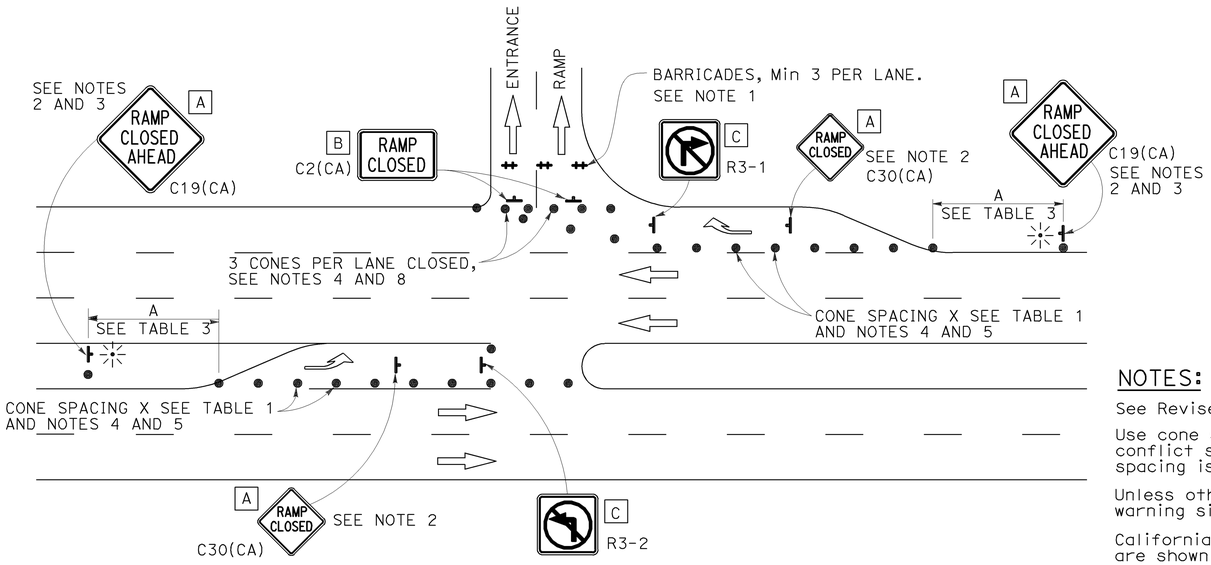
TYPICAL RAMP CLOSURES



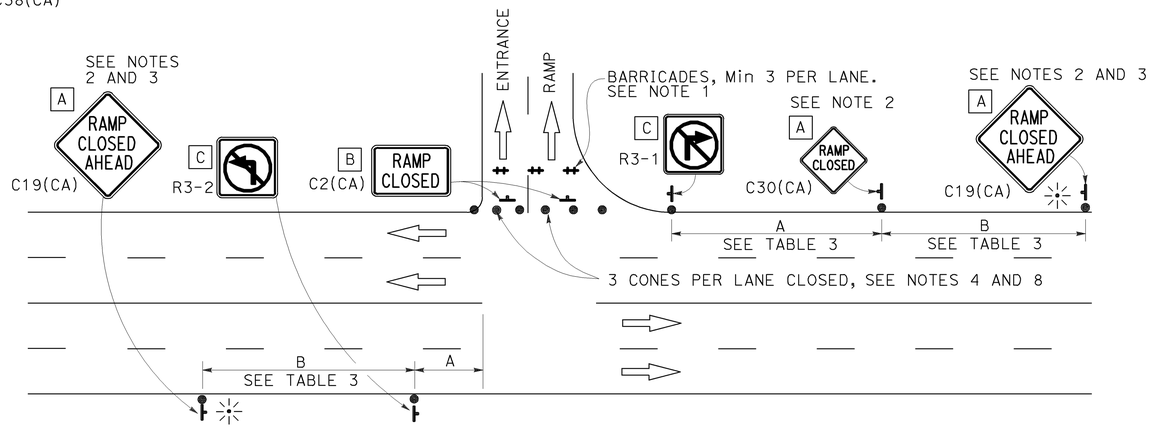
EXIT RAMP OR CONNECTOR



EXIT RAMP OR CONNECTOR WITH ADDITIONAL LANE



ENTRANCE RAMP WITH TURNING POCKETS



ENTRANCE RAMP WITHOUT TURNING POCKETS

SIGN PANEL SIZE (Min)

- A 48" × 48"
- B 48" × 30"
- C 36" × 36"
- D 48" × 36"

LEGEND

- ● TRAFFIC CONE
- ⊢ TEMPORARY TRAFFIC CONTROL SIGN
- ‡ BARRICADES
- ⁘ PORTABLE FLASHING BEACON

NOTES:

1. Barricades shall be Type I, II, or III for closures lasting one week or less and Type III for closures lasting longer than one week.
2. In addition to placing the C19(CA) "RAMP CLOSED AHEAD" and C30(CA) "RAMP CLOSED" signs, black on orange overlay plates with the word "CLOSED" may be mounted, as directed by the Engineer, on all guide signs that refer to the closed ramp. The letter size on the overlay shall be the same as the guide sign.
3. Each advance C19(CA) "RAMP CLOSED AHEAD" sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" × 16" in size and shall be orange or fluorescent red-orange in color. A flashing beacon shall be placed on top of the first C19(CA) sign during hours of darkness.
4. All cones used for ramp closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
5. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime ramp closures only.
6. At least one person shall be assigned to provide full time maintenance of traffic control devices, unless otherwise directed by the Engineer.
7. The existing "EXIT" signs shall be covered during ramp closures.
8. A minimum of 3 cones shall be placed transversely across each closed lane and shoulder.

NOTES:

See Revised Standard Plan RSP T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as approriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.

California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	59	67

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gurinderpal Bhullar
No. C48815
Exp. 9-30-14
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.

TO ACCOMPANY PLANS DATED 1-27-14

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR RAMP CLOSURE

NO SCALE

RSP T14 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T14
DATED MAY 20, 2011 - PAGE 242 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T14

2010 REVISED STANDARD PLAN RSP T14

12-18-12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	60	67

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gurinderpal Bhullar
No. C48815
Exp. 9-30-14
CIVIL
STATE OF CALIFORNIA

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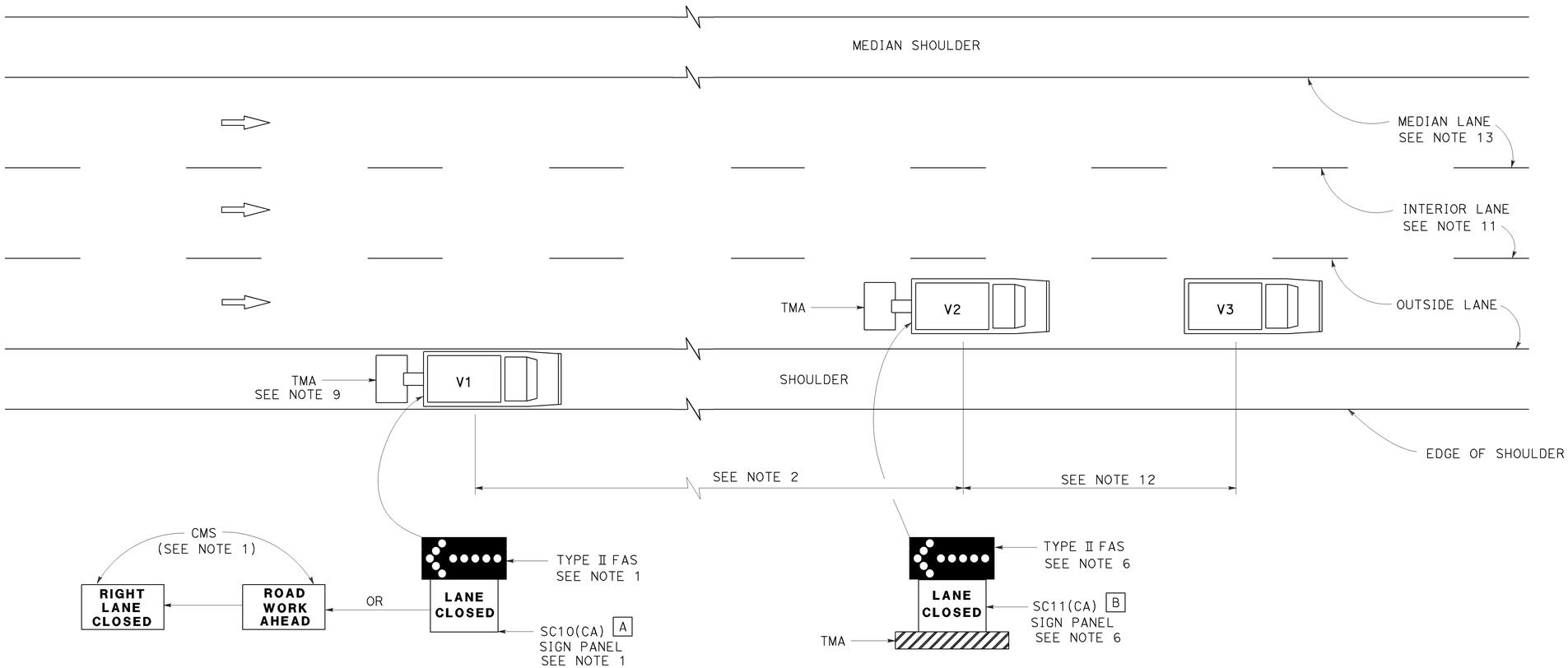
TO ACCOMPANY PLANS DATED 1-27-14



SIGN PANEL SIZE (Min)

A 66" x 36"

B 54" x 42"

LEGEND

V1	SIGN VEHICLE
V2	SHADOW VEHICLE
V3	WORK/APPLICATION VEHICLE
	FLASHING ARROW SIGN (FAS)
CMS	CHANGEABLE MESSAGE SIGN
TMA	TRUCK-MOUNTED ATTENUATOR

MOVING LANE CLOSURE ON MEDIAN LANE OR OUTSIDE LANE OF MULTILANE HIGHWAYS

NOTES:

1. Either a changeable message sign or a SC10(CA) sign panel and a Type II flashing arrow sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "RIGHT LANE CLOSED" message. For median lane closure, the flashing arrow symbol shall be reversed with the arrowhead on the right and the changeable message sign shall show "LEFT LANE CLOSED".
2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
3. A minimum sight distance of 1500′ should be provided in advance of sign vehicle V1.
4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500′.
5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2. For median lane closure the flashing arrow sign symbol shall be displayed with the arrowhead on the right.
7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
8. All vehicles shall be equipped with flashing or rotating amber lights.
9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
10. Where workers would be on foot in the work area, a stationary type lane closure (Revised Standard Plan T10, T11, etc., as applicable) shall be used instead of this plan.
11. For moving lane closure on interior lane of multilane highways, use Revised Standard Plan T16.
12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
13. When the work/application vehicle V3 occupies the median lane, sign vehicle V1 should drive in the median shoulder and indicate left lane closed ahead.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON MULTILANE HIGHWAYS

NO SCALE

RSP T15 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T15
DATED MAY 20, 2011 - PAGE 243 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T15

2010 REVISED STANDARD PLAN RSP T15

12-18-12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	61	67

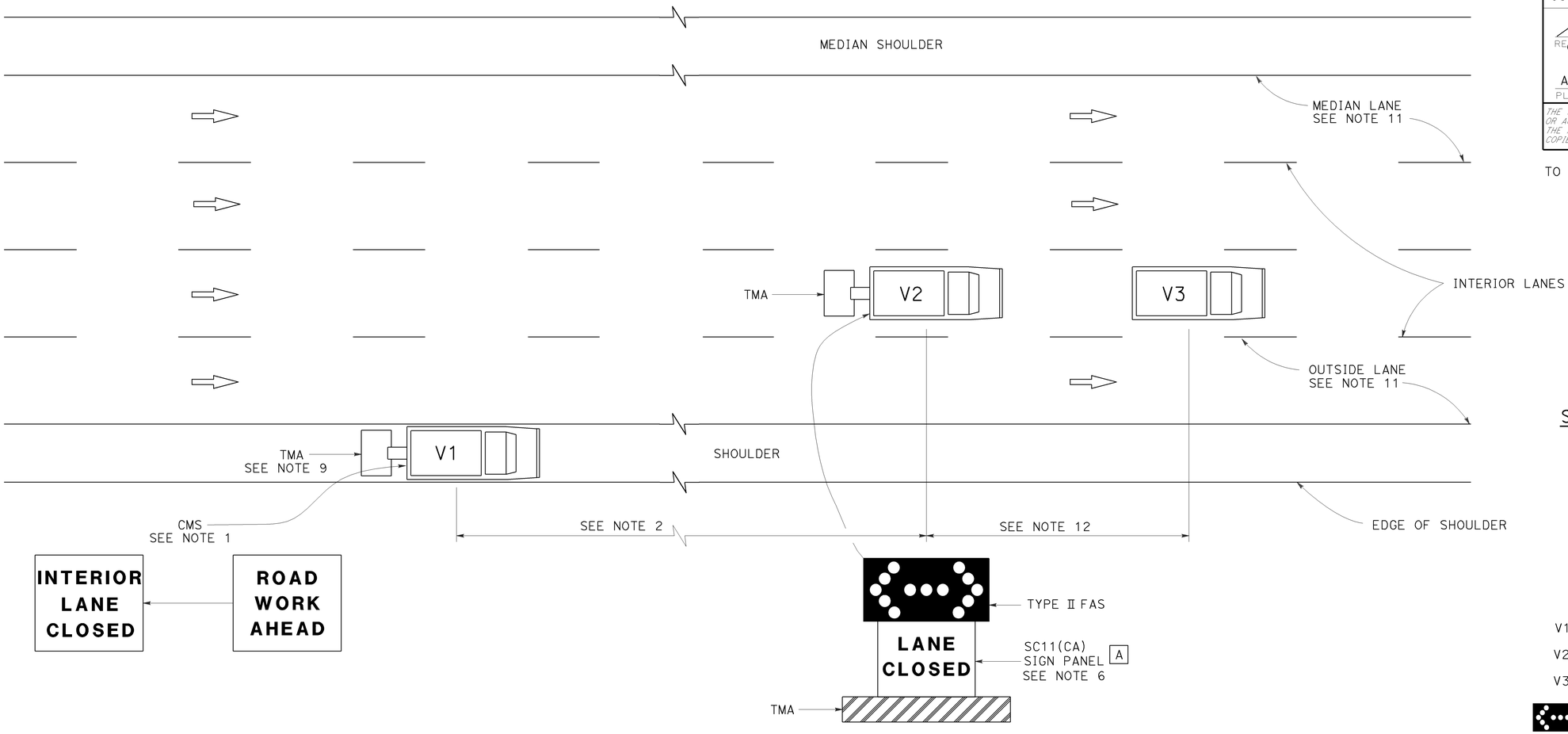
REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

Gurinderpal Bhullar
No. C48815
Exp. 9-30-14
CIVIL
REGISTERED PROFESSIONAL ENGINEER
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.

TO ACCOMPANY PLANS DATED 1-27-14



MOVING LANE CLOSURE ON INTERIOR LANE OF MULTILANE HIGHWAYS

SIGN PANEL SIZE (Min)

A 54" x 42"

LEGEND

V1	SIGN VEHICLE
V2	SHADOW VEHICLE
V3	WORK/APPLICATION VEHICLE
	FLASHING ARROW SIGN (FAS) IN FLASHING DOUBLE ARROW MODE
CMS	CHANGEABLE MESSAGE SIGN
TMA	TRUCK-MOUNTED ATTENUATOR

NOTES:

1. A changeable message sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "INTERIOR LANE CLOSED" message. The message "CENTER LANE CLOSED" may be used in place of the "INTERIOR LANE CLOSED" message.
2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
3. A minimum sight distance of 1500′ should be provided in advance of sign vehicle V1.
4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500′.
5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2.
7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
8. All vehicles shall be equipped with flashing or rotating amber lights.
9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
10. Where workers would be on foot in the work area, a stationary type lane closure (Revised Standard Plan T10, T11 etc., as applicable) shall be used instead of this plan.
11. For moving lane closure on median lane or outside lane of multilane highways, use Revised Standard Plan T15.
12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON MULTILANE HIGHWAYS

NO SCALE

RSP T16 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T16
DATED MAY 20, 2011 - PAGE 244 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T16

2010 REVISED STANDARD PLAN RSP T16

12-18-12

LEGEND:

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 TAPE
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
TSP	TELEPHONE SERVICE POINT

ABBREVIATIONS

APS	ACCESSIBLE PEDESTRIAN SIGNAL
BBS	BATTERY BACKUP SYSTEM
BC	BOLT CIRCLE
BPB	BICYCLE PUSH BUTTON
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
Ckt	CIRCUIT
CMS	CHANGEABLE MESSAGE SIGN
Ctid	CALTRANS IDENTIFICATION
Comm	COMMUNICATION
DLC	LOOP DETECTOR LEAD-IN CABLE
EMS	EXTINGUISHABLE MESSAGE SIGN
EVUC	EMERGENCY VEHICLE UNIT CABLE
EVUD	EMERGENCY VEHICLE UNIT DETECTOR
FB	FLASHING BEACON
FBCA	FLASHING BEACON CONTROL ASSEMBLY
FBS	FLASHING BEACON WITH SLIP BASE
FO	FIBER OPTIC
G	EQUIPMENT GROUNDING CONDUCTOR
GB	GROUND BUS
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HAR	HIGHWAY ADVISORY RADIO
Hex	HEXAGONAL
HPS	HIGH PRESSURE SODIUM
IISNS	INTERNALLY ILLUMINATED STREET NAME SIGN
ISL	INDUCTION SIGN LIGHTING
LED	LIGHT EMITTING DIODE
LMA	LUMINAIRE MAST ARM
LPS	LOW PRESSURE SODIUM
Ltg	LIGHTING
Lum	LUMINAIRE
M	METERED
MAT	MAST ARM MOUNTING TOP ATTACHMENT
MAS	MAST ARM MOUNTING SIDE ATTACHMENT
M/M	MULTIPLE TO MULTIPLE TRANSFORMER
Mtg	MOUNTING
MV	MERCURY VAPOR LIGHTING FIXTURE
MVDS	MICROWAVE VEHICLE DETECTION SYSTEM
N	NEUTRAL (GROUNDED CONDUCTOR)
NB	NEUTRAL BUS
NC	NORMALLY CLOSE
NO	NORMALLY OPEN
P	CIRCUIT BREAKER'S POLE
PB	PULL BOX
PBA	PUSH BUTTON ASSEMBLY
PEC	PHOTOELECTRIC CONTROL
Ped	PEDESTRIAN
PEU	PHOTOELECTRIC UNIT
PT	CONDUIT WITH PULL TAPE
RE	RELOCATED EQUIPMENT
RM	RAMP METERING
RWIS	ROADSIDE WEATHER INFORMATION SYSTEM
SB	SLIP BASE
SIC	SIGNAL INTERCONNECT CABLE
Sig	SIGNAL
SMA	SIGNAL MAST ARM
SNS	STREET NAME SIGN
SP	SERVICE POINT
TDC	TELEPHONE DEMARCATION CABINET
TMS	TRAFFIC MONITORING STATION
TOS	TRAFFIC OPERATIONS SYSTEM
Veh	VEHICLE
VIVDS	VIDEO IMAGE VEHICLE DETECTION SYSTEM
WIM	WEIGH-IN-MOTION
Xfmr	TRANSFORMER

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	62	67

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

Theresa Aziz Gabriel No. E15129 Exp. 6-30-14 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

July 19, 2013
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED 1-27-14

SOFFIT AND WALL MOUNTED LUMINAIRES

- PENDANT, 70 W HPS UNLESS OTHERWISE SPECIFIED
- FLUSH, 70 W HPS UNLESS OTHERWISE SPECIFIED
- WALL SURFACE, 70 W HPS UNLESS OTHERWISE SPECIFIED
- EXISTING SOFFIT OR WALL LUMINAIRE TO REMAIN UNMODIFIED
- (M) EXISTING SOFFIT OR WALL LUMINAIRE TO BE MODIFIED AS SPECIFIED

NOTE:
Arrow indicates "street side" of luminaire.

COMMONLY USED SYMBOLS FOR UNITED STATES CUSTOMARY UNITS OF MEASUREMENT:

SYMBOL USED	DEFINITIONS
Ω	OHMS
min	MINUTE
s	SECOND
bps	BITS PER SECOND
Bps	BYTES PER SECOND
A	AMPERE
V	VOLT
V(dc)	VOLT (DIRECT CURRENT)
V(ac)	VOLT (ALTERNATING CURRENT)
FC	FOOT - CANDLE
W	WATTS
VA	VOLT-AMPERE
M	MEGA
k	KILO
m	MILLI
μ	MICRO
p	PICO
Hz	HERTZ

MISCELLANEOUS ELECTROLIERS

NEW	EXISTING	
		LUMINAIRE ON WOOD POLE
		NON-STANDARD ELECTROLIER (SEE PROJECT NOTES OR PROJECT PLANS)
		CITY ELECTROLIER
		ELECTROLIER FOUNDATION (FUTURE INSTALLATION)

NOTES:

1. HPS luminaires shall be 310 W HPS when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. HPS luminaires shall be 200 W when installed on other type standards or poles, unless otherwise specified.
2. LED luminaires shall be 235 W when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. LED luminaires shall be 165 W when installed on other type standards or poles, unless otherwise specified.
3. Luminaires shall be the cutoff type, ANSI Type III medium cutoff lighting distribution, unless otherwise specified.

STANDARD ELECTROLIER

NEW	EXISTING	STANDARD TYPE
		15
		15D
S	S	15 STRUCTURE
S	S	15D STRUCTURE
		21
		21D
		21 STRUCTURE
		21D STRUCTURE
		30
		31
		32

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

NO SCALE

RSP ES-1A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1A DATED MAY 20, 2011 - PAGE 425 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-1A

2010 REVISED STANDARD PLAN RSP ES-1A

7-15-13

CONDUIT

NEW	EXISTING	
— — — —	— — — —	LIGHTING CONDUIT, UNLESS OTHERWISE INDICATED OR NOTED
— - — - — -	— - — - — -	TRAFFIC SIGNAL CONDUIT
— — C — —	— — c — —	COMMUNICATION CONDUIT
— — T — —	— — t — —	TELEPHONE CONDUIT
— — F — —	— — f — —	FIRE ALARM CONDUIT
— — FO — —	— — fo — —	FIBER OPTIC CONDUIT
— — — ⊣	— — — ⊣	CONDUIT TERMINATION
R	r	CONDUIT RISER ATTACHED TO THE STRUCTURE OR SERVICE POLE

SERVICE EQUIPMENT

NEW	EXISTING	
OH	oh	OVERHEAD LINES
U	U	WOOD POLE, "U" INDICATES UTILITY OWNED
		POLE GUY WITH ANCHOR
		UTILITY TRANSFORMER - GROUND MOUNTED
III	III	SERVICE EQUIPMENT ENCLOSURE TYPE. DOOR INDICATES FRONT OF ENCLOSURE
T	t	TELEPHONE DEMARCATION CABINET

POLE-MOUNTED SERVICE DESIGNATION

TYPE H SERVICE, 28'-10" — TYPE OF INSTALLATION AND POLE HEIGHT ABOVE GRADE

FLASHING BEACON

NEW	EXISTING	
R	R	FLASHING BEACON (ONE VEHICLE SIGNAL HEAD WITH BACKPLATE AND VISOR) "R" INDICATES RED INDICATION, "Y" INDICATES YELLOW INDICATION
Y Y	Y Y	FLASHING BEACON WITH TYPE 15-FBS STANDARD AND A SIGN.
R R	R R	FLASHING BEACON WITH TYPES 9, 9A OR 9B SIGN UNLESS OTHERWISE SPECIFIED OR INDICATED

SIGNAL EQUIPMENT

NEW	EXISTING	
C	C	PEDESTRIAN SIGNAL HEAD "C" INDICATES COUNTDOWN PEDESTRIAN HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD (WITH BACKPLATE AND 3-SECTIONS: RED, YELLOW AND GREEN)
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
PV	PV	MODIFICATIONS OF BASIC SYMBOL: "L" INDICATES ALL NON-ARROW SECTIONS LOUVERED "LG" INDICATES LOUVERED GREEN SECTION ONLY "PV" INDICATES ALL 12" SECTIONS PROGRAMMED VISIBILITY "8" INDICATES ALL 8" SECTIONS (ONLY WHEN SPECIFIED)
		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW AND GREEN LEFT ARROW SECTIONS
		VEHICLE SIGNAL HEAD CONSISTING OF RED AND YELLOW SECTIONS WITH AN UP GREEN ARROW SECTION
		VEHICLE SIGNAL HEAD (5 SECTION) CONSISTING OF RED, YELLOW AND GREEN SECTIONS WITH YELLOW AND GREEN RIGHT ARROW SECTIONS
		TYPE 15TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		STANDARD WITH LUMINAIRE AND SIGNAL MAST ARMS AND ATTACHED VEHICLE SIGNAL HEADS
		TYPE 1 STANDARD WITH ATTACHED VEHICLE SIGNAL HEADS
		STANDARD WITH A SIGNAL MAST ARM, ATTACHED VEHICLE SIGNAL HEADS AND INTERNALLY ILLUMINATED STREET NAME SIGN
		CONTROLLER ASSEMBLY. DOOR INDICATES FRONT OF CABINET

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	63	67

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

Theresa Aziz Gabriel No. E15129 Exp. 6-30-14 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

July 19, 2013
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED 1-27-14

SIGNAL EQUIPMENT Cont

NEW	EXISTING	
●	○	GUARD POST
		TYPE 1 STANDARD WITH RAMP METERING SIGN
		OPTICAL DETECTOR FOR THE EMERGENCY VEHICLE DETECTION SYSTEM

NOTES:

1. All signal sections shall be 12" unless shown otherwise.
2. Signal heads shall be provided with backplates unless shown otherwise.

ILLUMINATED OVERHEAD SIGN

NEW	EXISTING	
		SINGLE POST, SINGLE ILLUMINATED SIGN, BALANCED BUTTERFLY
		SINGLE POST, DOUBLE ILLUMINATED SIGN, BALANCED BUTTERFLY
		SINGLE POST, SINGLE ILLUMINATED SIGN, FULL CANTILEVER
		DOUBLE POST, SINGLE ILLUMINATED SIGN
		SINGLE ILLUMINATED SIGN MOUNTED ON STRUCTURE
		DOUBLE POST, SINGLE ILLUMINATED SIGN WITH ELECTROLIER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

NO SCALE

RSP ES-1B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1B DATED MAY 20, 2011 - PAGE 426 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-1B

2010 REVISED STANDARD PLAN RSP ES-1B

7-15-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	64	67

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

Theresa Aziz Gabriel No. E15129 Exp. 6-30-14 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

July 19, 2013
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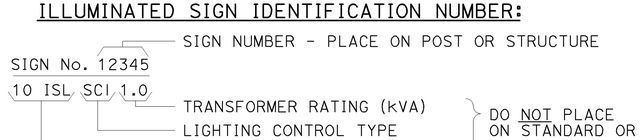
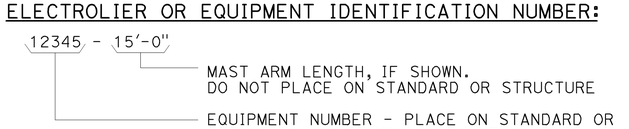
TO ACCOMPANY PLANS DATED 1-27-14

EQUIPMENT IDENTIFICATION

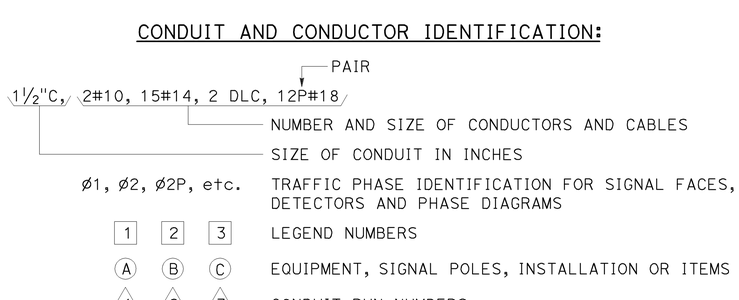
ILLUMINATED SIGN IDENTIFICATION NUMBER:



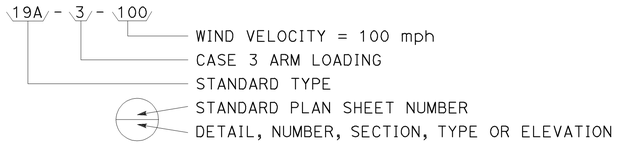
ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



CONDUIT AND CONDUCTOR IDENTIFICATION:



SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



MISCELLANEOUS EQUIPMENT

NEW	EXISTING	
CMS	cms	CHANGEABLE MESSAGE SIGN
		CLOSED CIRCUIT TELEVISION CAMERA
		HIGHWAY ADVISORY RADIO POLE AND ANTENNA
EMS	ems	EXTINGUISHABLE MESSAGE SIGN
M V	m v	DETECTION DEVICE M = MICROWAVE SENSOR V = VIDEO IMAGE SENSOR

WIRING DIAGRAM LEGEND

	EXTERNAL CONDUCTOR
	CONDUCTOR OR BUS
	TIE POINT
	CONTACTOR COIL
	CONTACTOR, NO CONTACT
	TERMINAL BLOCKS
	CONTACTOR, NC CONTACT
	ENCLOSURE BOND
	GROUNDING ELECTRODE
	CIRCUIT BREAKER
	RECEPTACLE

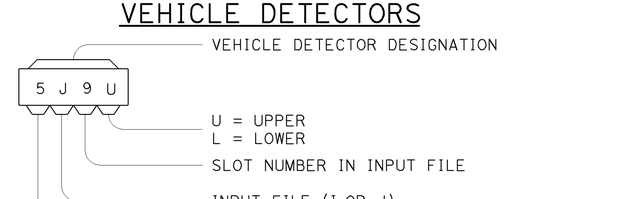
PULL BOXES

NEW	EXISTING	
		PULL BOX, No. 5 UNLESS OTHERWISE INDICATED OR NOTED
3	9A(21)	PULL BOX, ADDITIONAL DESIGNATIONS OR DESCRIPTIONS

3 No. 3½ PULL BOX
5 No. 5 PULL BOX
6 No. 6 PULL BOX
7 No. 7 (CEILING PULL BOX)
8 No. 8 (PENDANT SOFFIT PULL BOX)
9 No. 9 PULL BOX
9A No. 9A PULL BOX

(C) COMMUNICATIONS PULL BOX
(E) PULL BOX WITH EXTENSION
(S) SPRINKLER CONTROL PULL BOX
(21) ANCHOR BOLTS AND CONDUIT FOR FUTURE INSTALLATION OF TYPE 21 STANDARD
(T) TRAFFIC PULL BOX

VEHICLE DETECTORS



NEW	EXISTING	
		TYPE A DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE B DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE C DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE D DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE E DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE Q DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		MAGNETIC DETECTOR
DH	dh	DETECTOR HANDHOLE
		MICROWAVE OR VIDEO DETECTION ZONE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

NO SCALE

RSP ES-1C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1C DATED MAY 20, 2011 - PAGE 427 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-1C

2010 REVISED STANDARD PLAN RSP ES-1C

7-11-13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	65	67

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Theresa Aziz Gabriel
No. E15129
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

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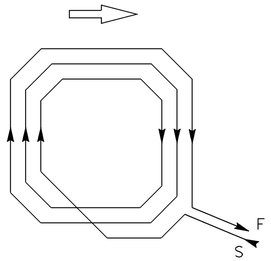
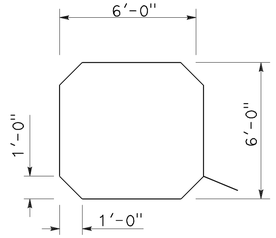
TO ACCOMPANY PLANS DATED 1-27-14

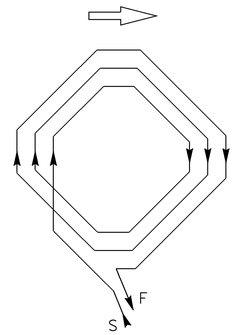


WINDING DETAIL

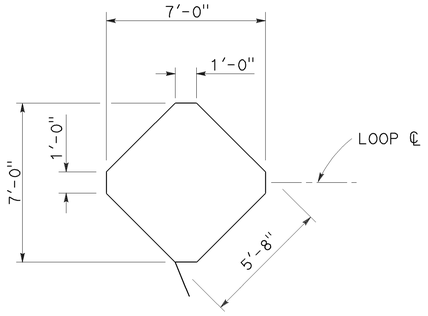


SAWCUT DETAIL

TYPE A LOOP DETECTOR CONFIGURATION

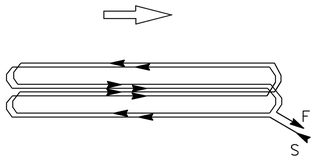


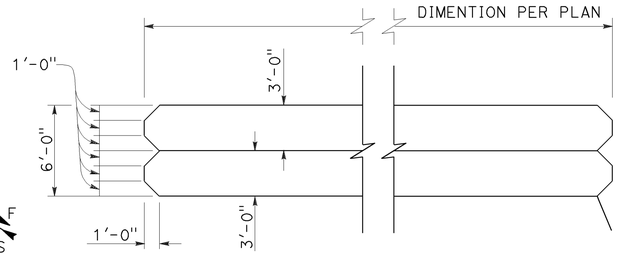
WINDING DETAIL



SAWCUT DETAIL

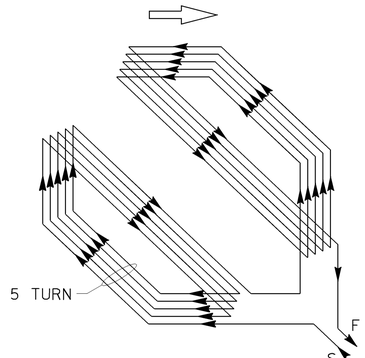
TYPE B LOOP DETECTOR CONFIGURATION



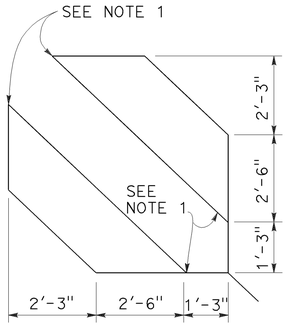


WINDING DETAIL SAWCUT DETAIL

TYPE C LOOP DETECTOR CONFIGURATION

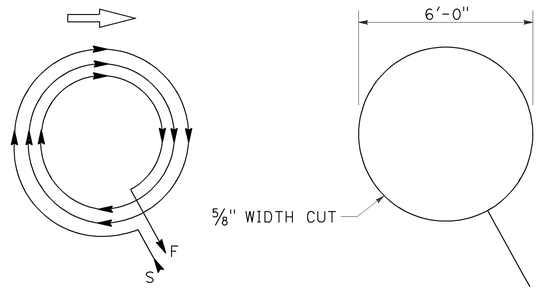


WINDING DETAIL



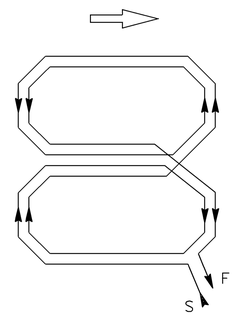
SAWCUT DETAIL

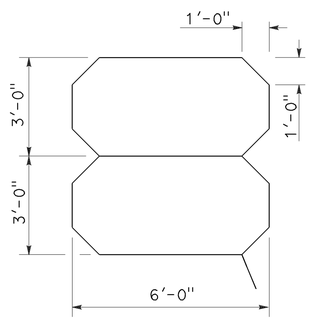
TYPE D LOOP DETECTOR CONFIGURATION



WINDING DETAIL SAWCUT DETAIL

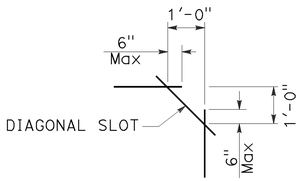
TYPE E LOOP DETECTOR CONFIGURATION





WINDING DETAIL SAWCUT DETAIL

TYPE Q LOOP DETECTOR CONFIGURATION



PLAN VIEW OF DIAGONAL SLOT AT CORNERS

NOTES:

1. Round corners of acute angle sawcuts to prevent damage to conductors.
2. Typical distance separating loops from edge to edge is 10' for Type A, B, D and E installation in single lane.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (DETECTORS)

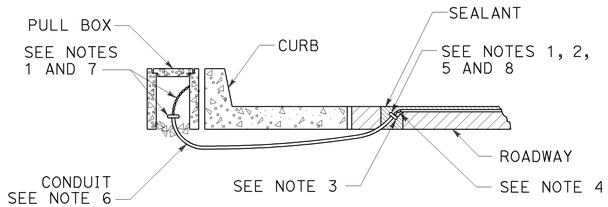
NO SCALE

RSP ES-5B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5B DATED MAY 20, 2011 - PAGE 449 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-5B

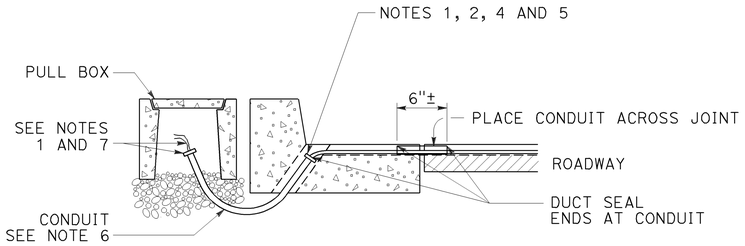
2010 REVISED STANDARD PLAN RSP ES-5B

7-9-13

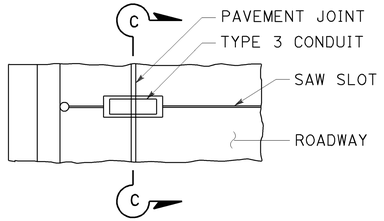


TYPE A

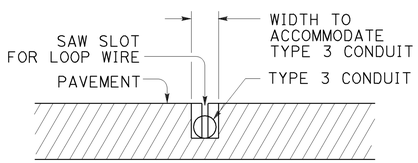
CURB TERMINATION DETAIL



CROSS SECTION



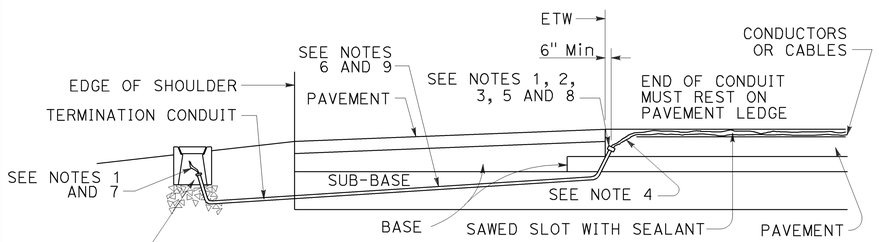
PLAN VIEW



SECTION C-C

TYPE B

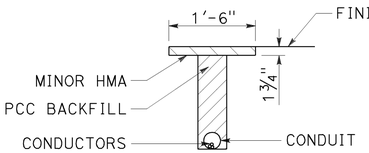
CURB TERMINATION DETAIL



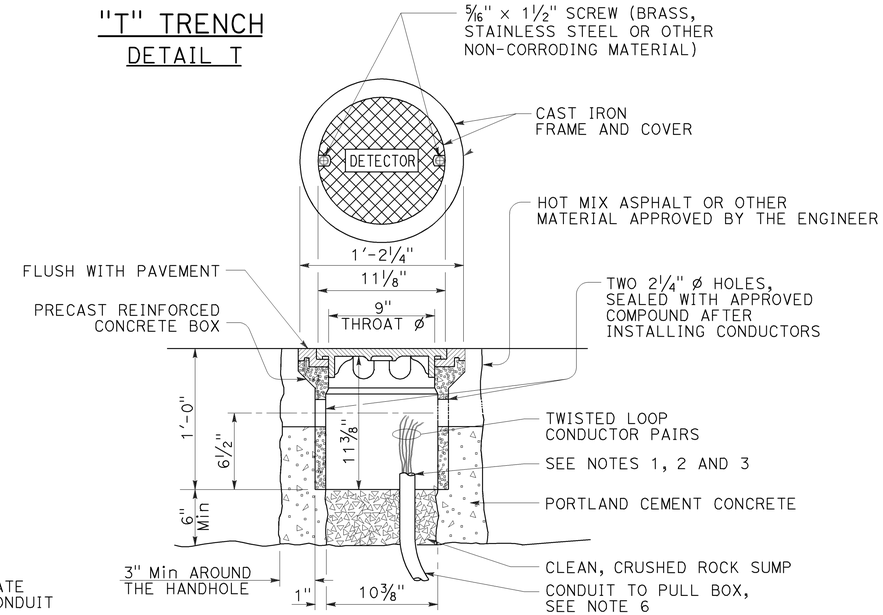
CROSS SECTION

PLAN VIEW

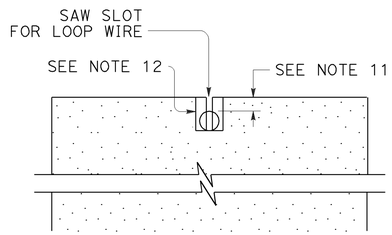
SHOULDER TERMINATION DETAILS



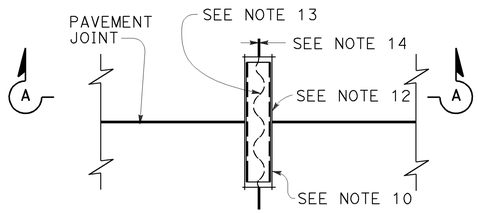
"T" TRENCH DETAIL T



DETECTOR HANDHOLE DETAIL

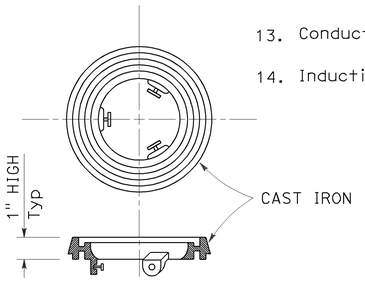


SECTION A-A



PLAN VIEW

TYPICAL LOOP LEAD-IN DETAIL AT PAVEMENT JOINT



LOCKING GRADE RING

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	66	67

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

Theresa Aziz Gabriel No. E15129 Exp. 6-30-14 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — 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.

TO ACCOMPANY PLANS DATED 1-27-14

NOTES:

1. Bushing shall be used at end of conduit.
2. Tape detector conductors or cables 3" each side of bushings.
3. Install duct seal compound to each end of termination conduit before installing sealant.
4. Round all sharp edges where detector conductors or cables have to pass.
5. End of conduit shall be 3⅛" below roadway surface.
6.

Conduit size	Loop conductors
1"C minimum	1 to 2 pairs
1½"C minimum	3 to 4 pairs
2"C minimum	5 or more pairs

7. Splice detector conductors or cables to detector lead-in-cable.
8. Location of detector handhole when shown on plans.
9. When the shoulder and traveled way are paved with the same material and there is no joint between them, the conduit shall extend only 2'-0" into the shoulder pavement.
10. ¾"C, Type 3 conduit 6" long minimum, plug both ends with duct compound to keep out sealant.
11. ½" Minimum between top of conduit and pavement surface.
12. Sawcut shall not exceed 1" in width and ⅛" longer than conduit to be installed.
13. Conductors with ½" minimum slack inside conduit.
14. Inductive loop detector saw slot.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CURB TERMINATION AND HANDHOLE)

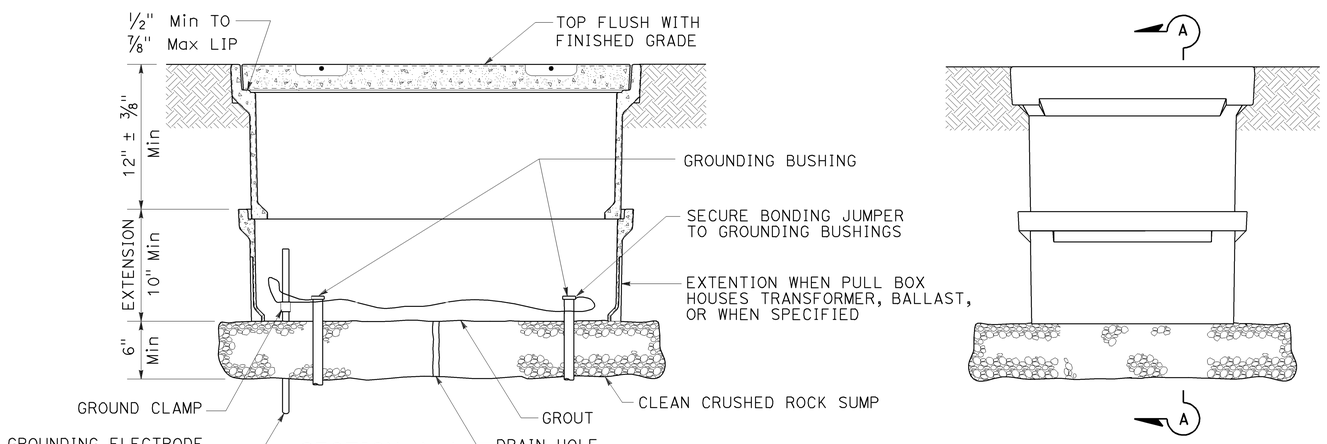
NO SCALE

RSP ES-5D DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5D DATED MAY 20, 2011 - PAGE 451 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-5D

2010 REVISED STANDARD PLAN RSP ES-5D

7-9-13

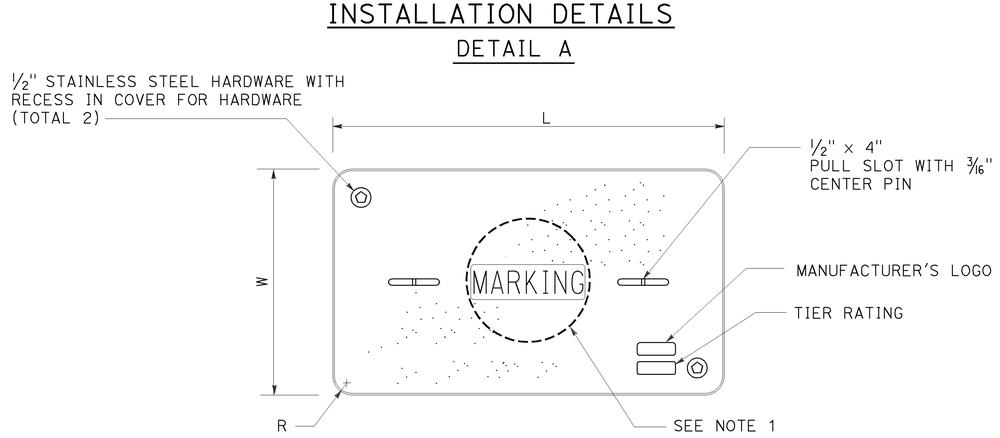


SECTION A-A

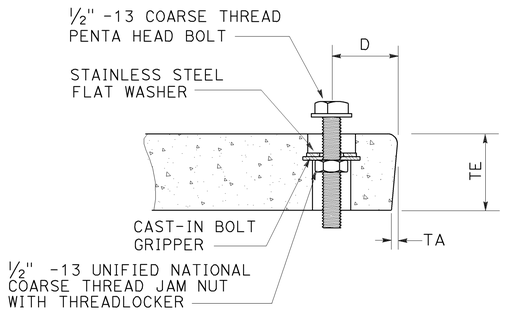
SIDE VIEW

INSTALLATION DETAILS

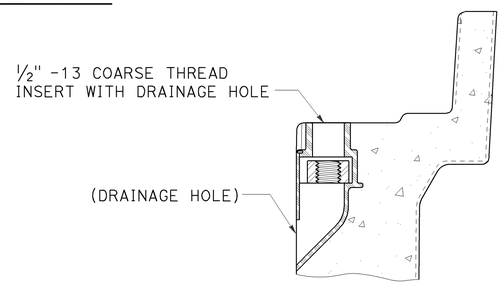
DETAIL A



COVER TOP VIEW



TYPICAL COVER CAPTIVE BOLT
OR SIMILAR



TYPICAL THREADED INSERT
OR SIMILAR

DIMENSION TABLE										
PULL BOX	PULL BOX			COVER						
	MINIMUM DEPTH BOX	MINIMUM DEPTH EXTENSION	MAXIMUM WEIGHT	L	W	R	TE	TA	D	MAXIMUM WEIGHT
No. 3½	12"	N/A	40 lb	1′ - 3⅜"	10⅛"	1⅜"	2"	⅛"	1¾"	30 lb
No. 5	12"	10"	55 lb	1′ - 11¼"	1′ - 1¾"	1⅜"	2"	⅛"	1¾"	60 lb
No. 6	12"	10"	70 lb	2′ - 6½"	1′ - 5½"	1⅜"	2"	⅛"	2"	85 lb

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SLO	101	R21.6/R23.9	67	67

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Theresa Aziz Gabriel
No. E15129
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

July 19, 2013
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.

TO ACCOMPANY PLANS DATED 1-27-14

NOTES:

1. Pull box covers shall be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" sprinkler control circuits, 50 V or less; "CALTRANS" on all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service;
   A) No. 3½ pull box.
      1) "SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
      2) "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
   B) No. 5, 6, 9 or 9A pull box.
      1) "TRAFFIC SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
      2) "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
      3) "LIGHTING-HIGH VOLTAGE" - Lighting or sign lighting circuits where voltage is above 600 V.
      4) "IRRIGATION" - Circuits to irrigation controller 120 V or more.
      5) "RAMP METER" - Ramp meter circuits.
      6) "COUNT STATION" - Count or speed monitor circuits.
      7) "COMMUNICATIONS" - Communication circuits.
      8) "TOS COMMUNICATIONS" - TOS communication line.
      9) "TOS POWER" - TOS power.
      10) "TDC POWER" - Telephone demarcation cabinet power.
      11) "CCTV" - Closed circuit television circuits.
      12) "TMS" - Traffic monitoring station circuits.
      13) "CMS" - Changeable message sign circuits.
      14) "HAR" - Highway advisory radio circuits.
      15) "BOOSTER PUMP" - Booster pump circuit.
2. The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be ⅛" greater.
3. Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within ⅛". Top outside radius of covers and pull boxes shall have a ⅛" radius.
4. Pull box extension may be another pull box as long as the bottom edge of the pull box can fit into the cover opening.
5. All dimensions for the cover for non-traffic pull box are nominal values.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (NON-TRAFFIC PULL BOX)

NO SCALE

RSP ES-8A DATED JULY 19, 2013 SUPERSEDES RSP ES-8A DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-8A

2010 REVISED STANDARD PLAN RSP ES-8A

7-15-13