



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	502	824

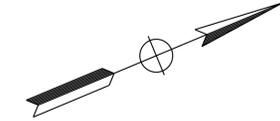
  

<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	

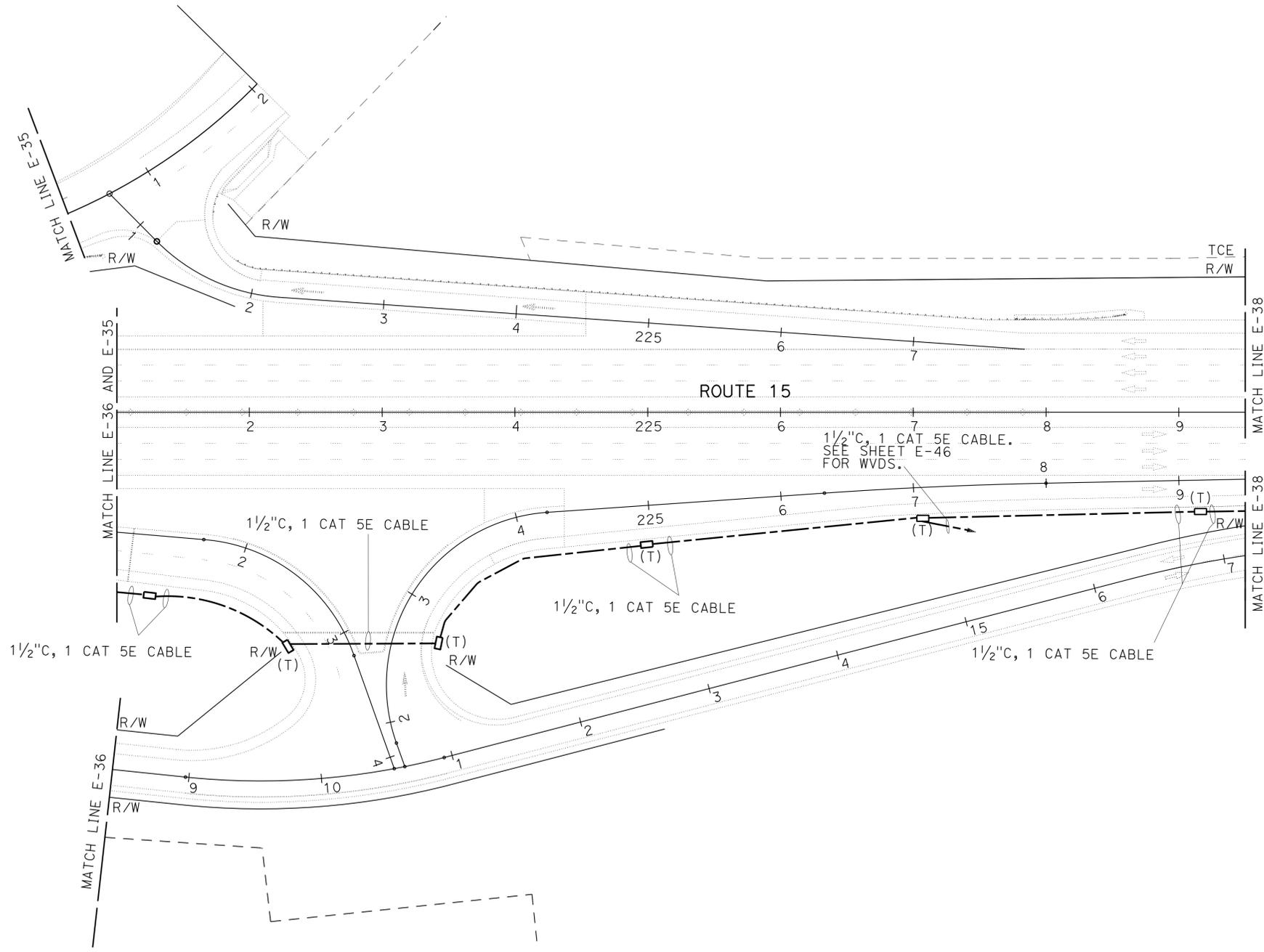
REGISTERED PROFESSIONAL ENGINEER
FERDINAND DE LA CRUZ
No. E17215
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

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.



**NOTE:**

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	REVISOR	DATE
<b>Caltrans</b> ELECTRICAL DESIGN B	REVISOR	DATE
FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY
FERDINAND DE LA CRUZ	FERDINAND DE LA CRUZ	FERDINAND DE LA CRUZ
	REVISOR	DATE
	REVISOR	DATE

**TRAFFIC MONITORING STATION (LOCATION 4)**

SCALE: 1" = 50'

**E-37**

APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION DATE PLOTTED => 27-JUN-2014  
04-16-14 TIME PLOTTED => 13:46

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	503	824

<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	



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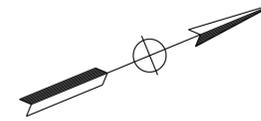
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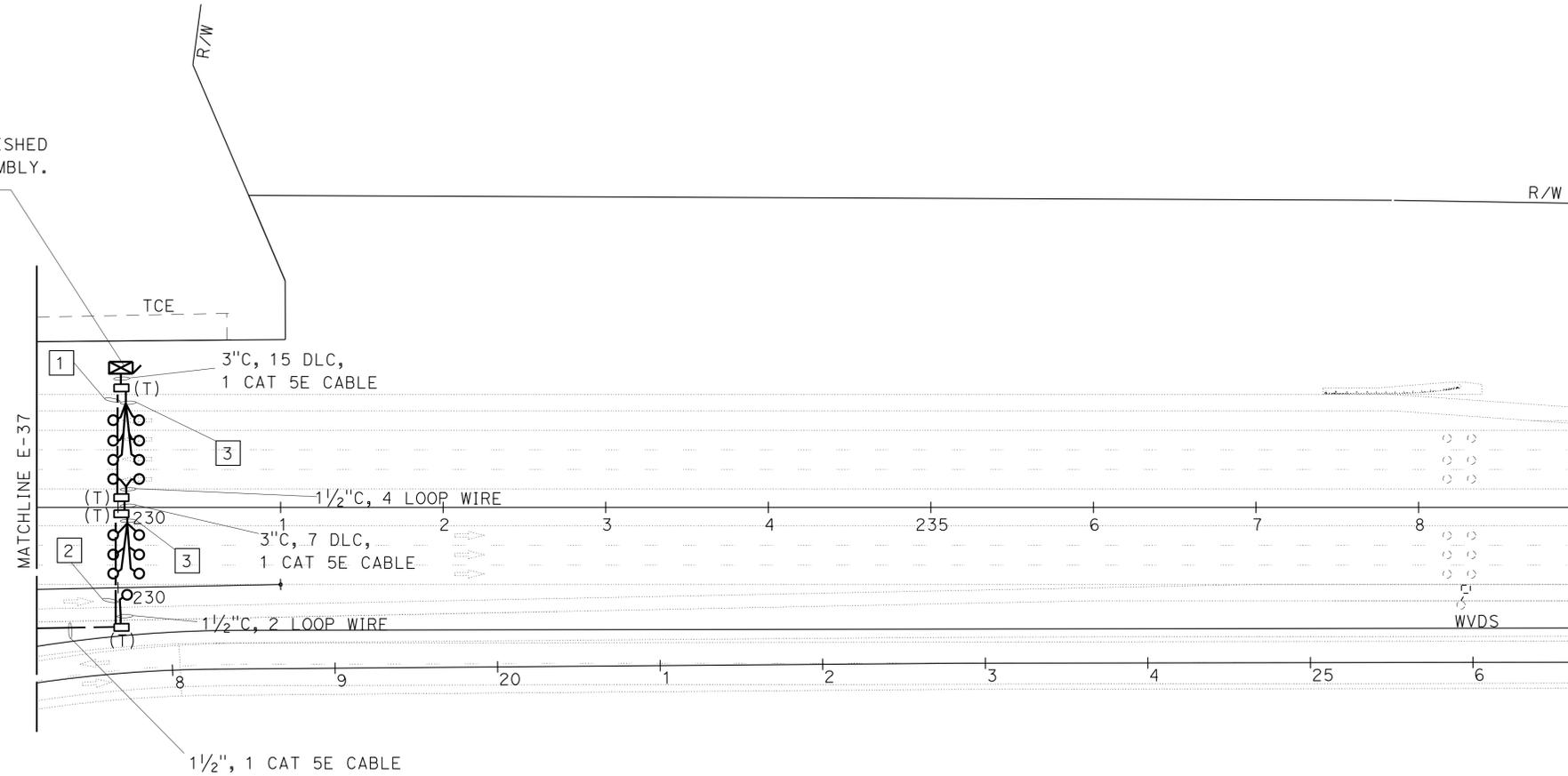
- 1 3"C, 9 DLC, 1 CAT 5E CABLE
- 2 3"C, 2 LOOP WIRE, 1 CAT 5E CABLE
- 3 1 1/2"C, 12 LOOP WIRE

**EXISTING WIRELESS VEHICLE DETECTION SYSTEM EQUIPMENT:**

- EXISTING SENSOR NODES
- EXISTING POLE MOUNTED ACCESS POINT



INSTALL DEPARTMENT-FURNISHED MODEL 334L CABINET ASSEMBLY. SEE E-57 FOR DETAILS.



**TRAFFIC MONITORING STATION  
(LOCATION 4)**  
SCALE: 1" = 50'

**E-38**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	REVISOR	DATE
<b>Caltrans</b> ELECTRICAL DESIGN B	LUIS PENALOZA	4-16-14
FUNCTIONAL SUPERVISOR	FERDINAND DE LA CRUZ	6-23-14
CALCULATED/DESIGNED BY	CHECKED BY	DATE

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	505	824

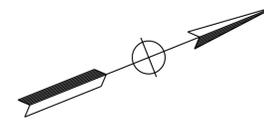
  

<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
FERDINAND DE LA CRUZ
No. E17215
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

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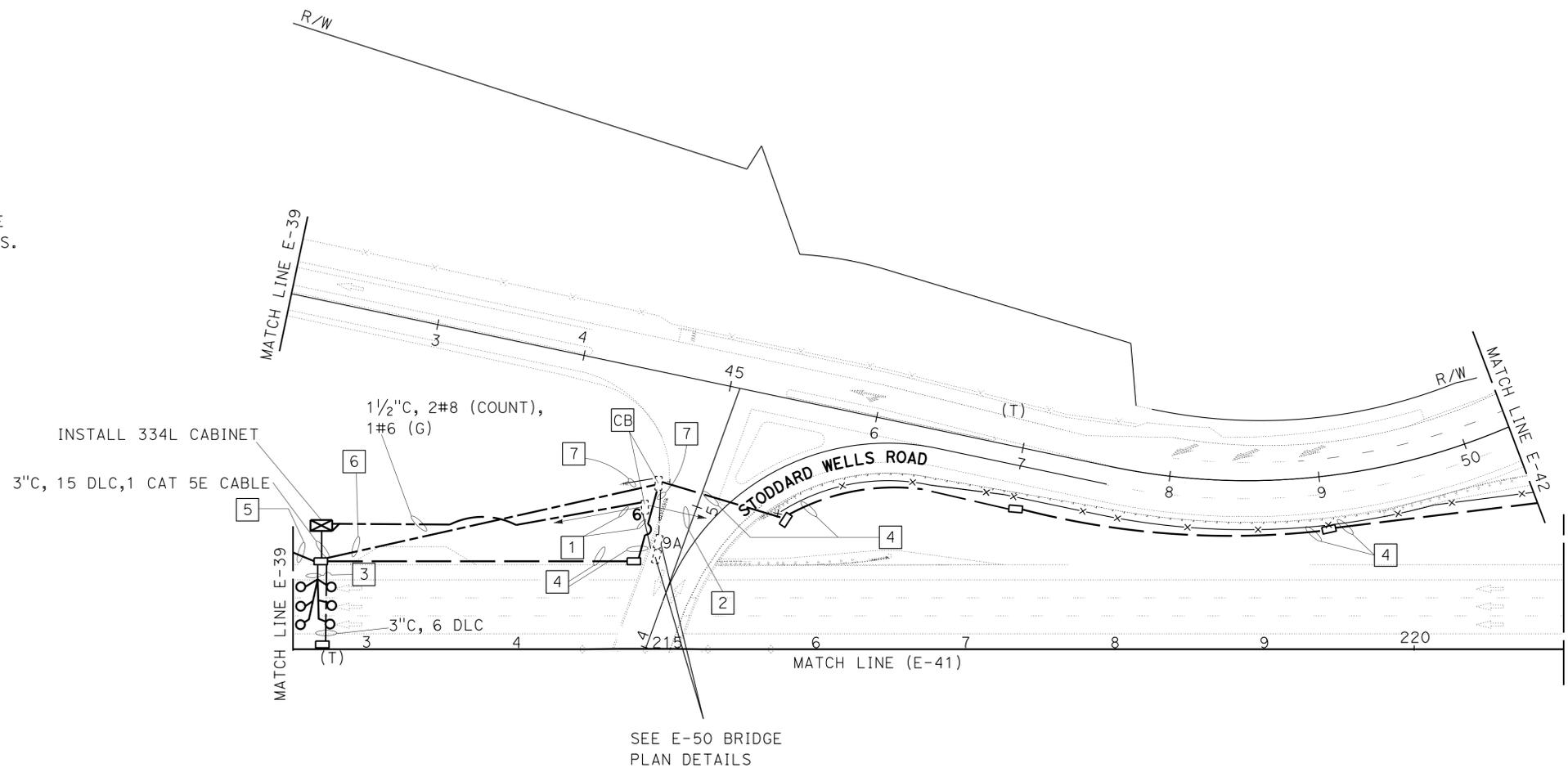


**NOTE:**

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

**LEGEND: (THIS SHEET ONLY)**

- 1 TO ICC CONTROLLER. SEE E-13 FOR CONTINATION.
- 2 1 1/2"C, 2#8 (Count), 2#8 (Irr), 1#6 (G). SEE E-13 FOR CONTINATION.
- 3 1 1/2"C, 12 LOOP WIRE
- 4 1 1/2"C, 1 DLC, 1#6 (G)
- 5 1 1/2"C, 2 DLC, 1#6 (G)
- 6 1 1/2"C, 1 CAT 5E CABLE
- 7 TO ICC CONTROLLER, SEE SHEET E-35 FOR DETAILS.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
<b>Caltrans</b> ELECTRICAL DESIGN B	FERDINAND DE LA CRUZ	LUIS PENALOZA	FERDINAND DE LA CRUZ
	CHECKED BY	DESIGNED BY	CALCULATED BY

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**TRAFFIC MONITORING STATION (COUNT)**  
SCALE: 1" = 50'

**E-40**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	507	824

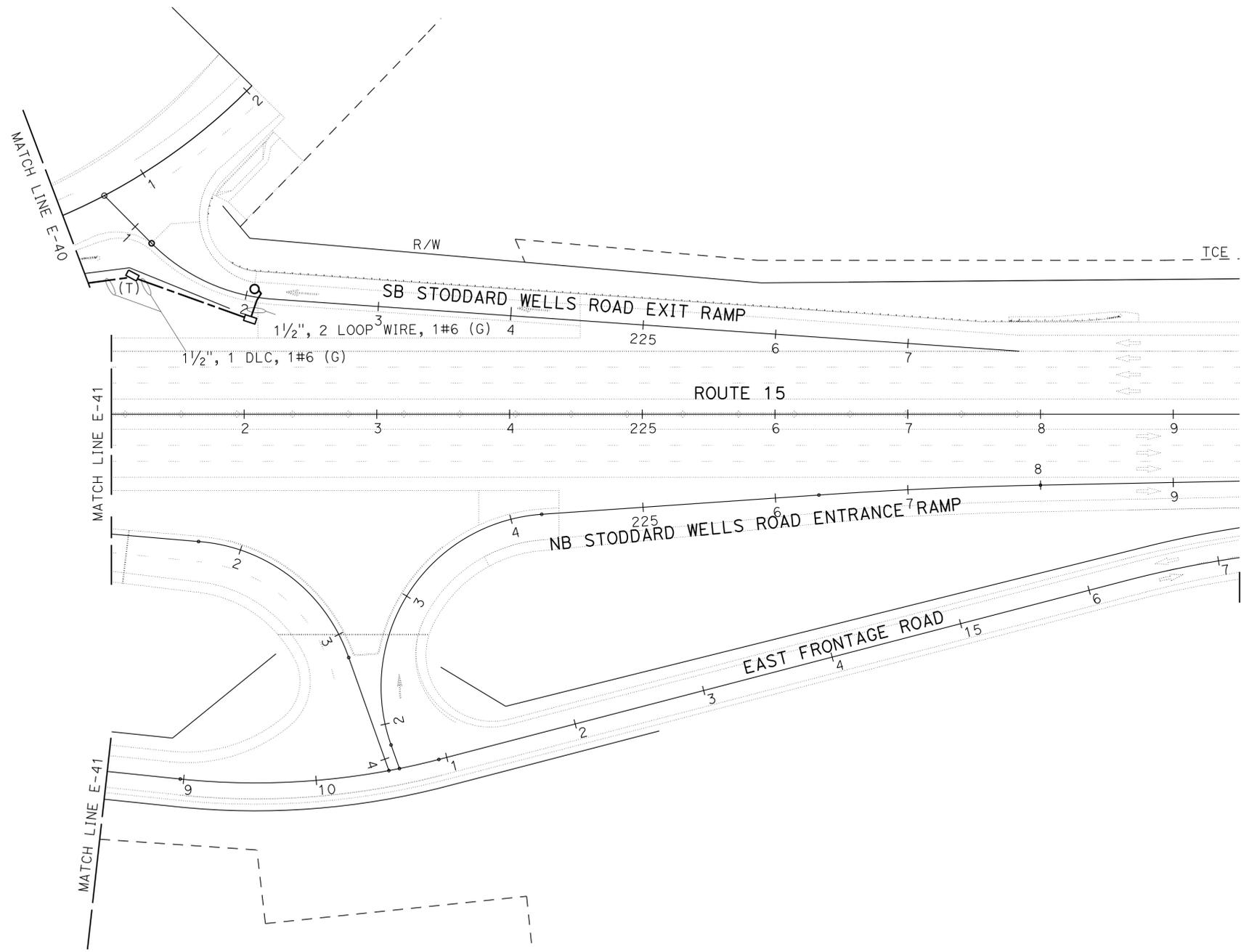
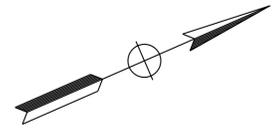
<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
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No. E17215
Exp. 6-30-14
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<b>Caltrans</b> ELECTRICAL DESIGN B
FUNCTIONAL SUPERVISOR FERDINAND DE LA CRUZ
CALCULATED/DESIGNED BY CHECKED BY
LUIS PENALOZA FERDINAND DE LA CRUZ
REVISED BY DATE REVISED

**TRAFFIC MONITORING STATION  
 (COUNT)**  
 SCALE: 1" = 50'

**E-42**

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	510	824

<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
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REGISTERED PROFESSIONAL ENGINEER  
**FERDINAND DE LA CRUZ**  
 No. E17215  
 Exp. 6-30-14  
 ELECTRICAL  
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**NOTE:**

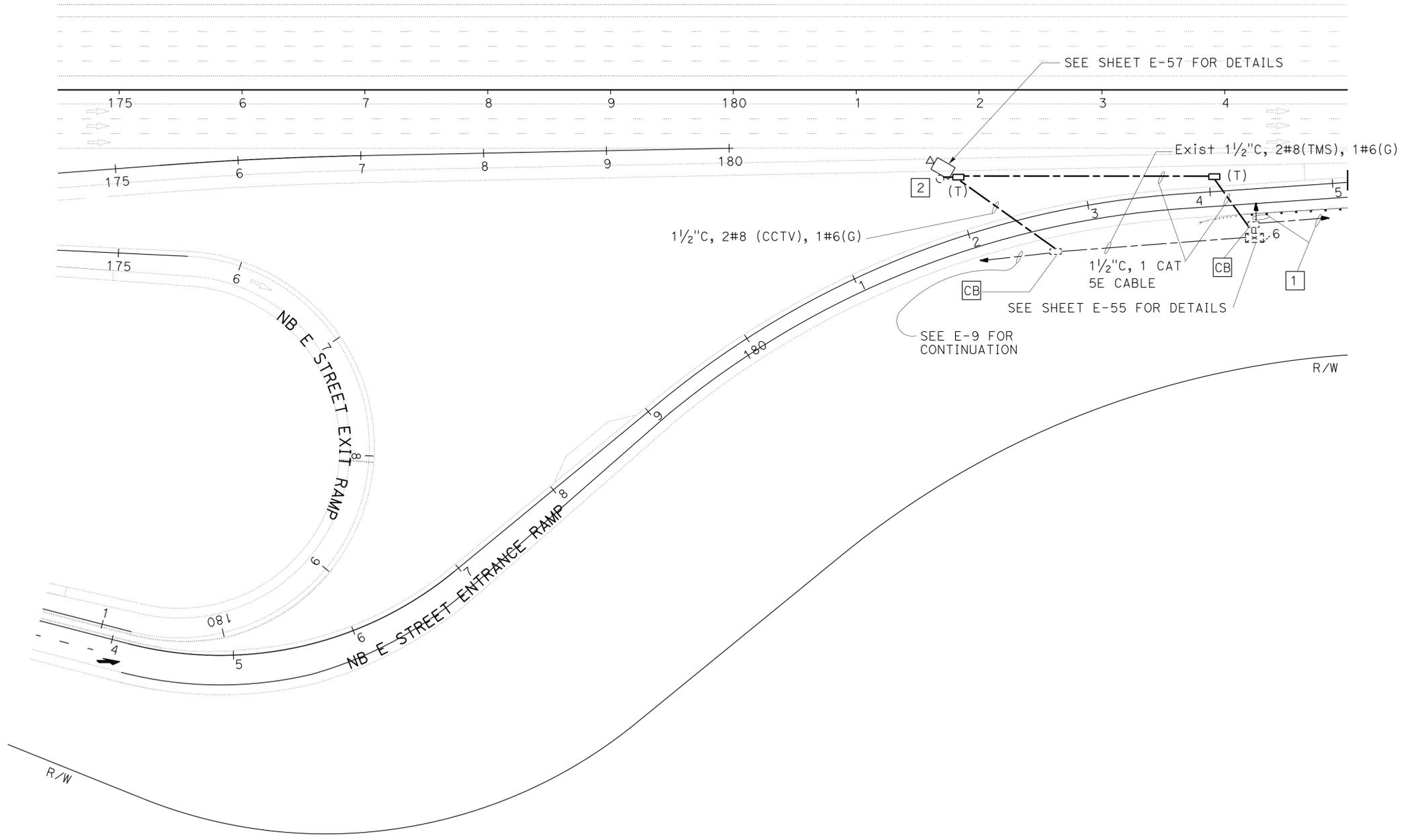
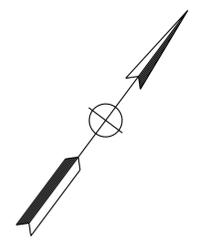
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**WIRELESS VEHICLE DETECTION SYSTEM EQUIPMENT: (SHEETS E-45 AND E-46)**

RELOCATED WIRELESS VEHICLE DETECTION SYSTEM POLE WITH CCTV CAMERA

**LEGEND:**

- 1 REMAINDER OF TMS CIRCUIT NOT SHOWN. SEE SHEET E-31 FOR DETAILS.
- 2 INSTALL CCTV ASSEMBLY ON RELOCATED WVDS POLE. INSTALL "CLOSED CIRCUIT TELEVISION MOUNTING ADAPTER" AS PER DETAIL C OF REVISED STANDARD PLAN ES-16B. INSTALL EQUIPMENT AS PER E-55.



**(CCTV INSTALLATION)**

**MODIFY WIRELESS VEHICLE DETECTION SYSTEM (LOCATION 1)**  
 SCALE: 1" = 50'

**E-45**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
<b>Caltrans</b> ELECTRICAL DESIGN B
FUNCTIONAL SUPERVISOR FERDINAND DE LA CRUZ
CALCULATED/DESIGNED BY CHECKED BY
LUIS PENALOZA FERDINAND DE LA CRUZ
REVISED BY DATE REVISED

**NOTE:**

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

**LEGEND:**

- 1 REMAINDER OF CIRCUIT NOT SHOWN. SEE SHEET E-37 FOR REMAINDER OF CIRCUIT.
- 2 INSTALL CCTV ASSEMBLY ON RELOCATED WVDS POLE. INSTALL "CLOSED CIRCUIT TELEVISION MOUNTING ADAPTER" AS PER DETAIL C OF REVISED STANDARD PLAN ES-16B. INSTALL EQUIPMENT AS PER E-57.

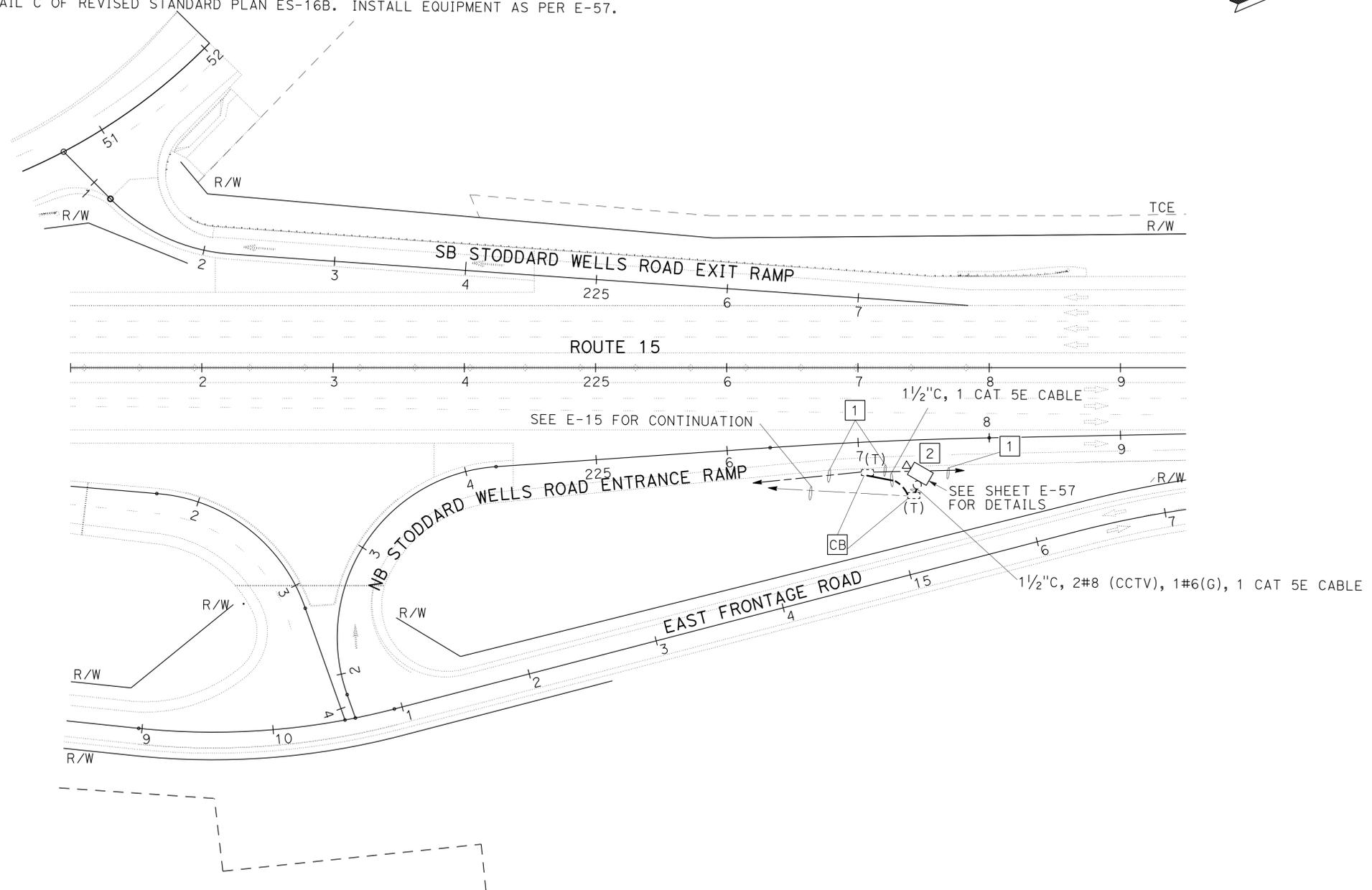
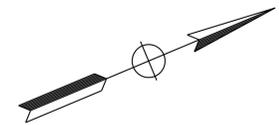
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	511	824

<i>Ferdinand De La Cruz</i>	4-16-14
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6-23-14	
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FUNCTIONAL SUPERVISOR FERDINAND DE LA CRUZ
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LUIS PENALOZA FERDINAND DE LA CRUZ
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**MODIFY WIRELESS VEHICLE DETECTION SYSTEM  
(CCTV INSTALLATION)  
(LOCATION 2)**

SCALE: 1" = 50'

**E-46**

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	512	824

<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	

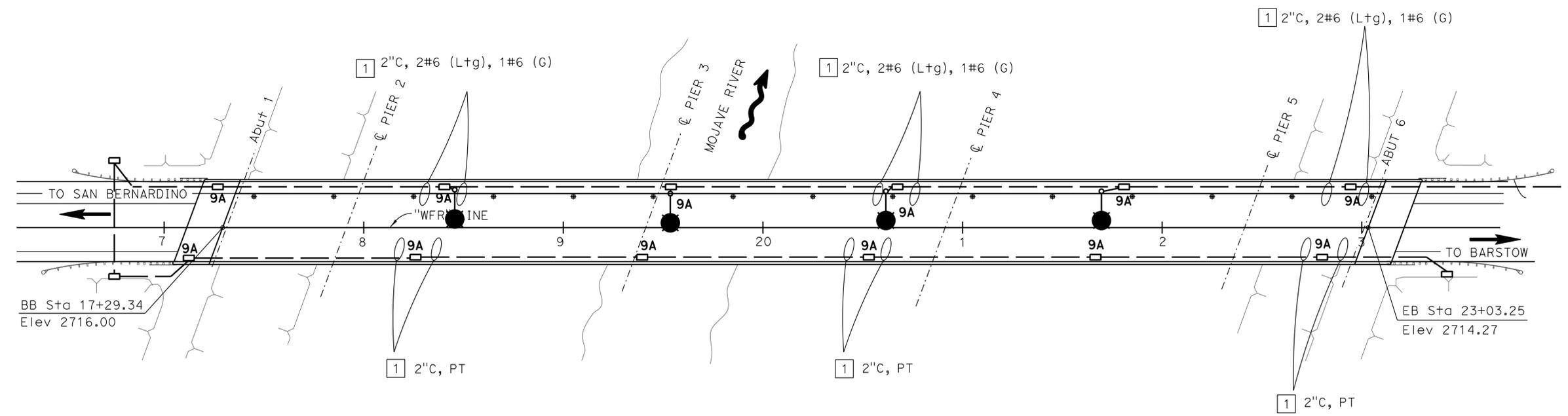
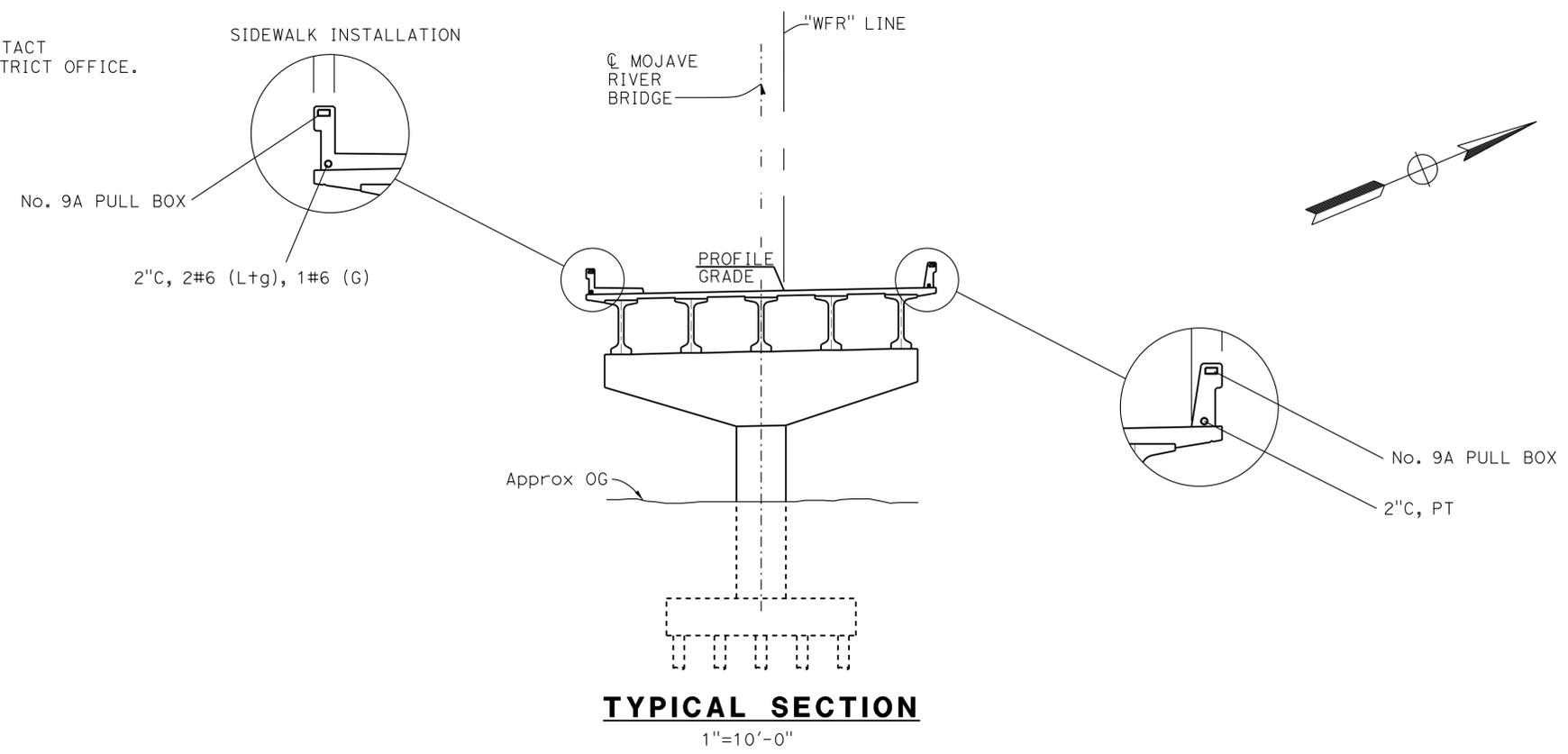
  

REGISTERED PROFESSIONAL ENGINEER
FERDINAND DE LA CRUZ
No. E17215
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

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**NOTE:**  
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**LEGEND:**  
1 CONDUIT INSTALLED IN BARRIER



NOTE: MOJAVE RIVER BRIDGE (WIDEN) NOT SHOWN, SEE STRUCTURES PLANS FOR BRIDGE No. 54-0483.

**BRIDGE No. 54C-0661**

**ELECTRICAL DETAILS**

NO SCALE **E-47**

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
REVISOR: LUIS PENALOZA  
DESIGNER: FERDINAND DE LA CRUZ  
CHECKED BY: [Blank]  
DESIGNED BY: [Blank]

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	513	824

REGISTERED ELECTRICAL ENGINEER DATE 4-16-14  
 No. E17215  
 Exp. 6-30-14  
 ELECTRICAL  
 STATE OF CALIFORNIA

6-23-14  
 PLANS APPROVAL DATE

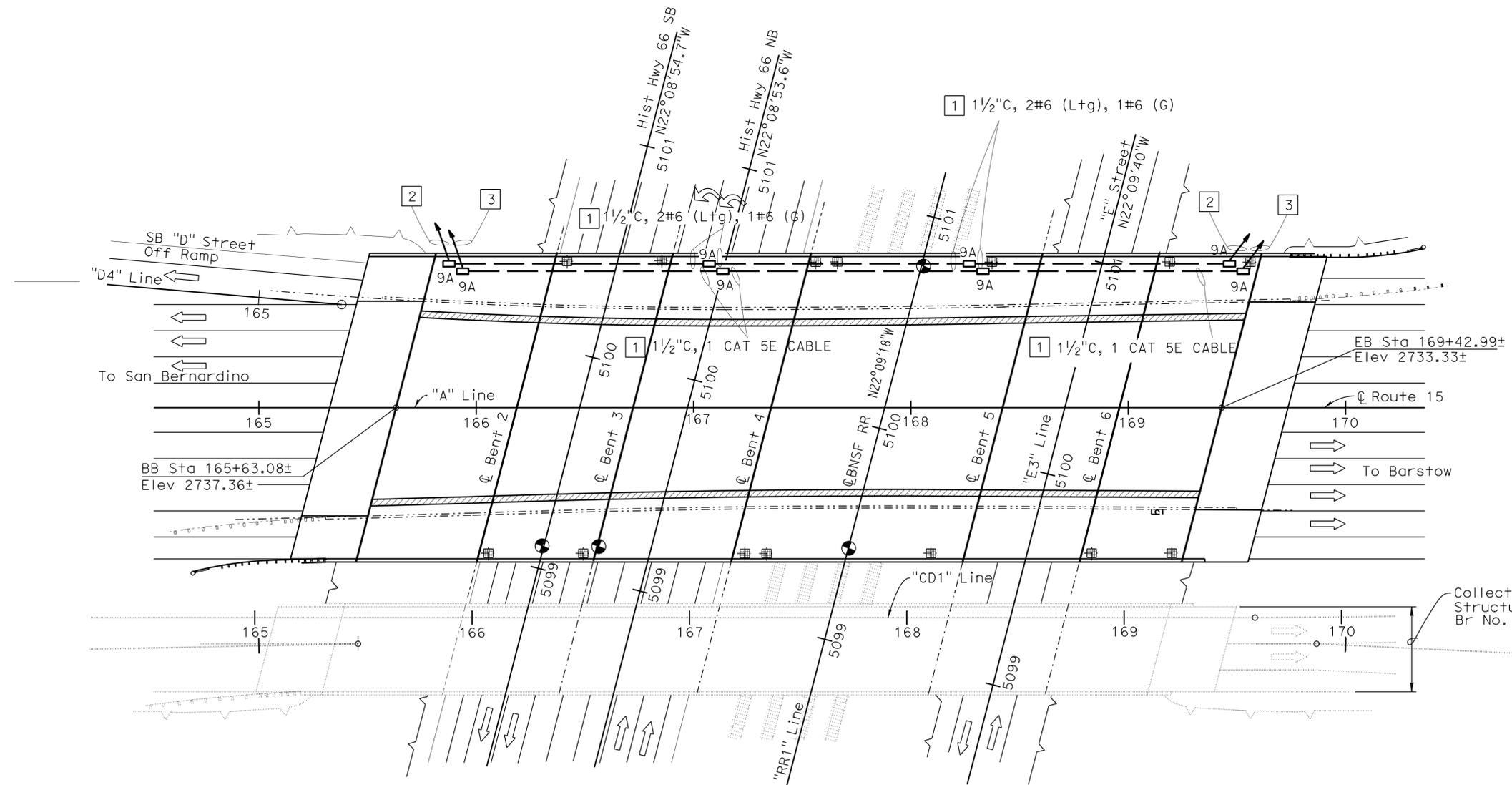
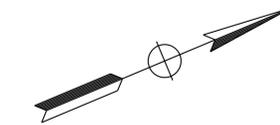
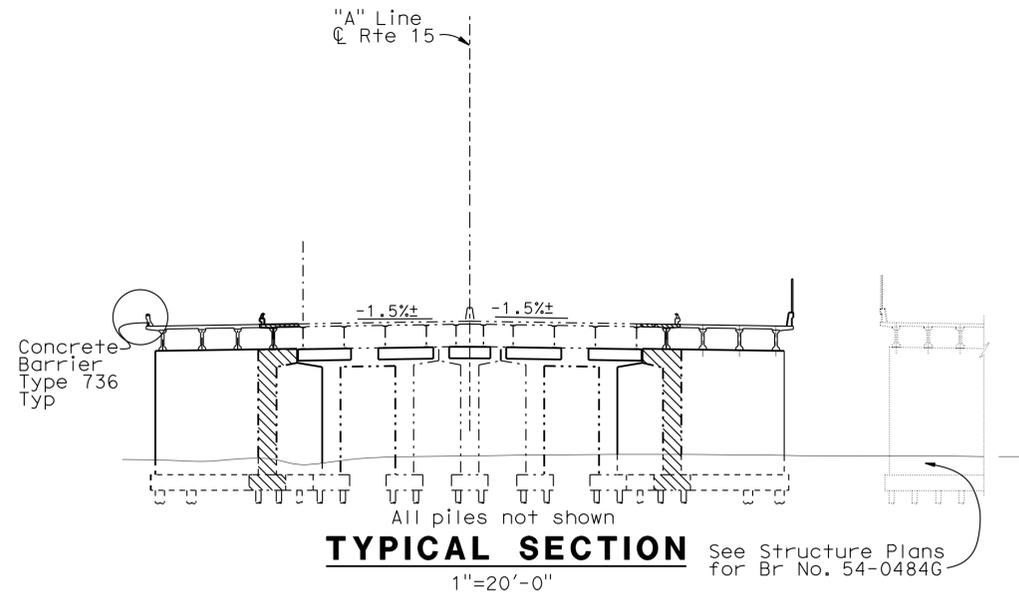
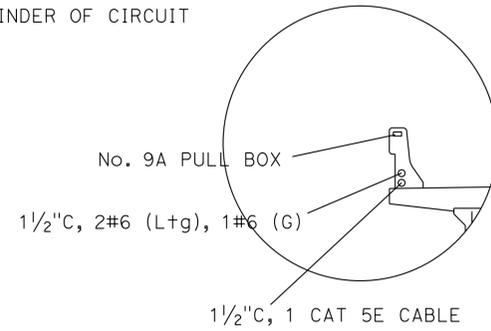
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**NOTE:**

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

**LEGEND:**

- 1 CONDUIT INSTALLED IN BARRIER
- 2 LIGHTING CIRCUIT SEE E-6 FOR REMAINDER OF ELECTRICAL CIRCUIT
- 3 SEE E-29 FOR REMAINDER OF CIRCUIT



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: FERDINAND DE LA CRUZ  
 CHECKED BY:  
 REVISIONS: REVISED BY: DATE REVISION: DATE REVISION:

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**ELECTRICAL DETAILS**

NO SCALE

**E-48**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	514	824

<i>Ferdinand De La Cruz</i>	4-16-14
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6-23-14	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
FERDINAND DE LA CRUZ
No. E17215
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

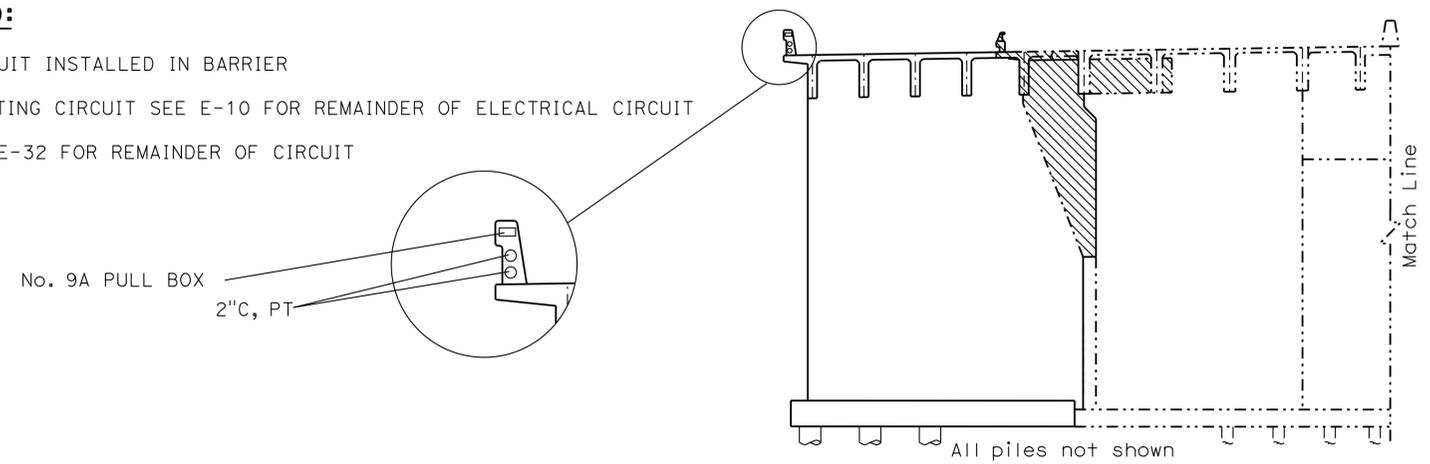
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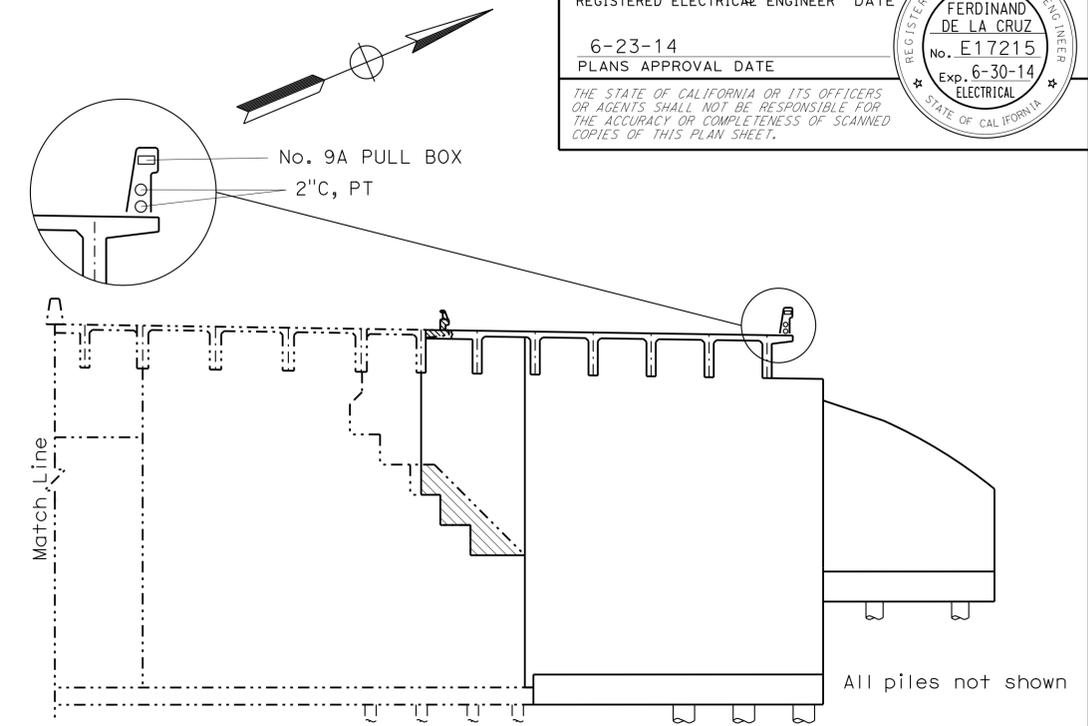
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

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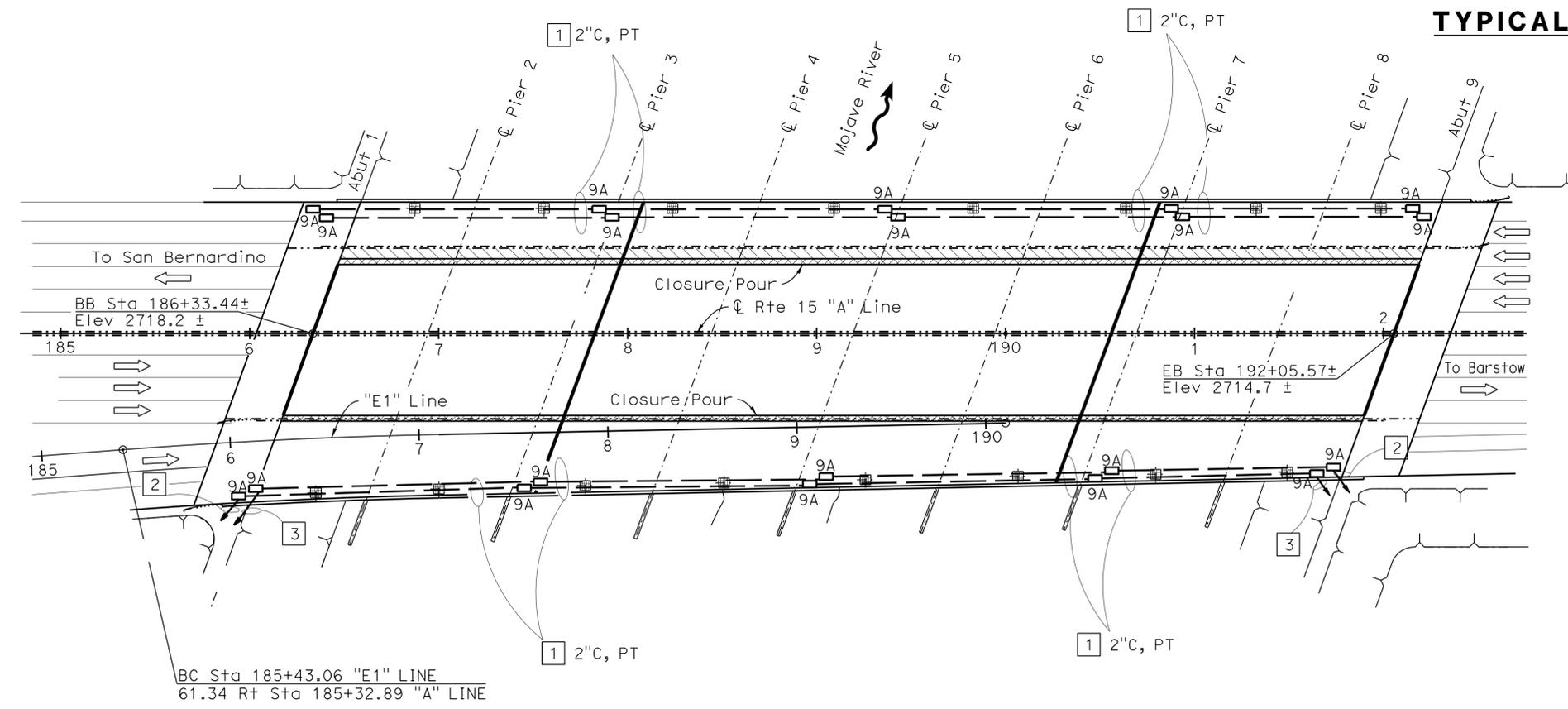
- 1 CONDUIT INSTALLED IN BARRIER
- 2 LIGHTING CIRCUIT SEE E-10 FOR REMAINDER OF ELECTRICAL CIRCUIT
- 3 SEE E-32 FOR REMAINDER OF CIRCUIT



**TYPICAL SECTION (LEFT WIDENING)**  
South Bound Rte 15  
3/32" = 1'-0"



**TYPICAL SECTION (RIGHT WIDENING)**  
North Bound Rte 15  
3/32" = 1'-0"



**BRIDGE No. 54-0483 (RIGHT WIDENING)**

**ELECTRICAL DETAILS**  
NO SCALE  
**E-49**

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
<b>Caltrans</b> ELECTRICAL DESIGN B	FERDINAND DE LA CRUZ	LUIS PENALOZA	6-23-14
		FERDINAND DE LA CRUZ	4-16-14

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
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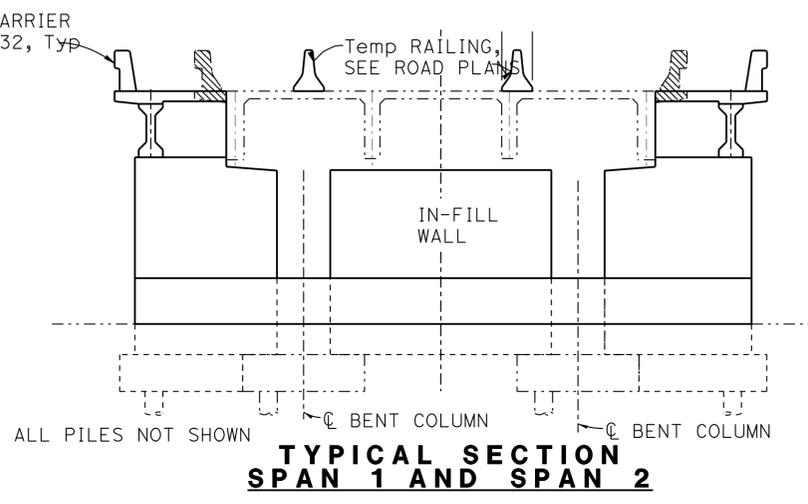
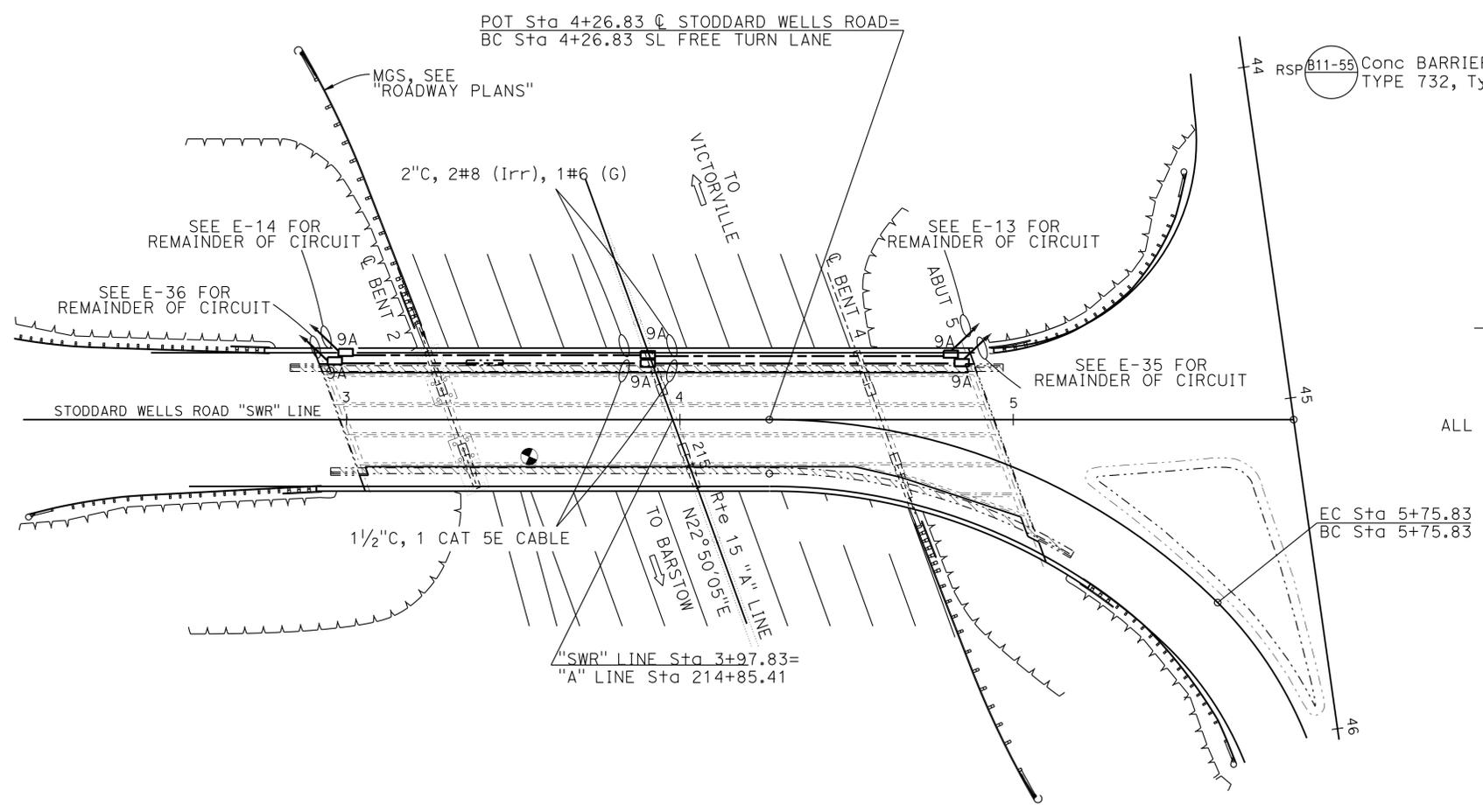
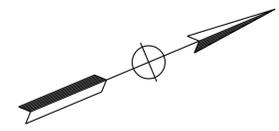
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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<i>Ferdinand De La Cruz</i>	4-16-14
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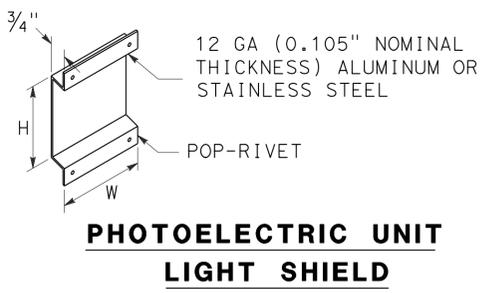
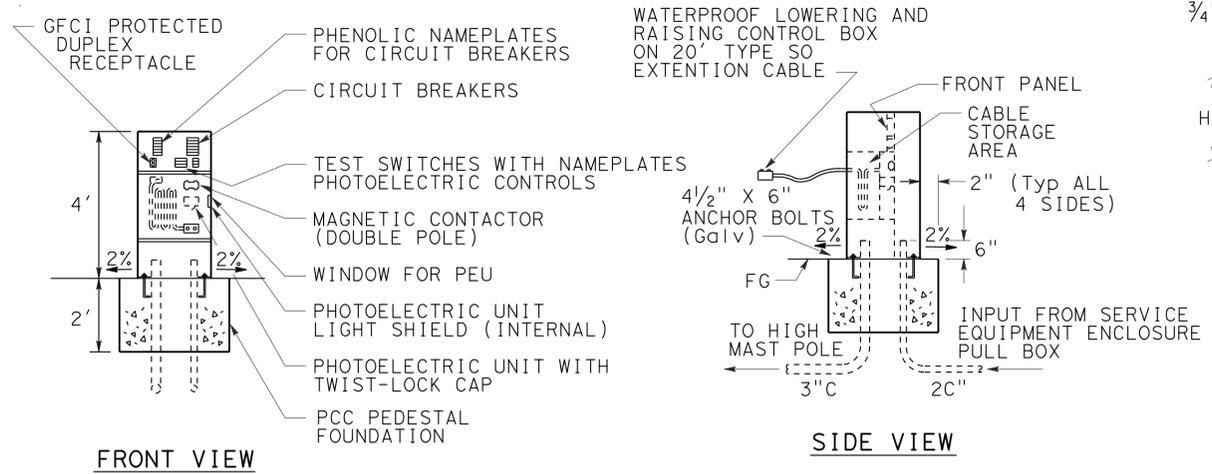
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: FERDINAND DE LA CRUZ  
 CHECKED BY:  
 LUIS PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY: DATE REVISED:  
 x  
 x  
 x  
 x  
 x

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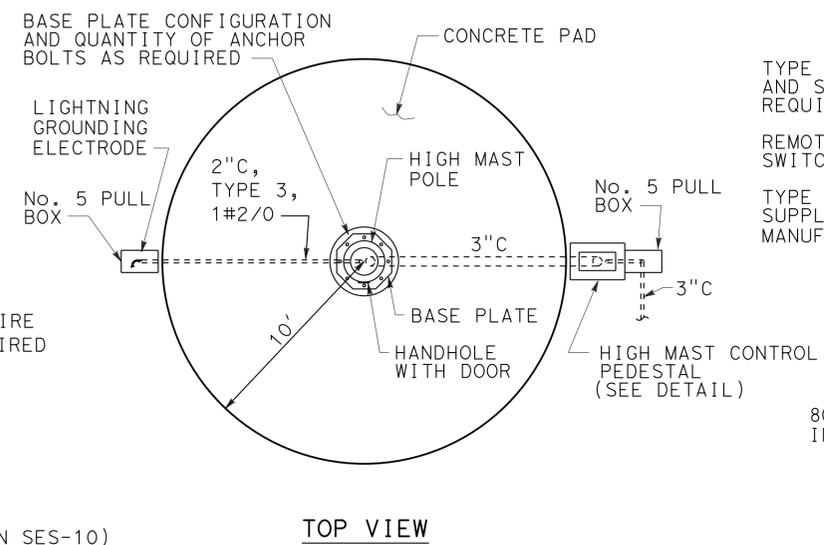
**ELECTRICAL DETAILS**  
 NO SCALE  
**E-50**

**PEU LIGHT SHIELD NOTES**

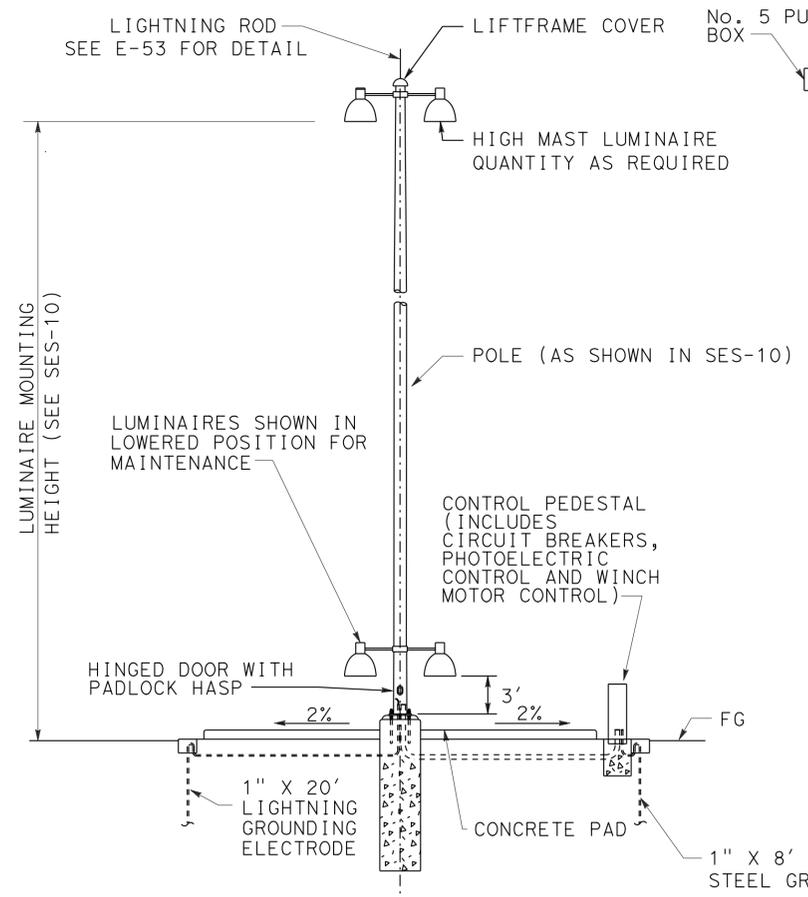
- DIMENSIONS MUST BE AS REQUIRED FOR SHIELD TO COVER WINDOW FOR PHOTOELECTRIC UNIT BY 1" IN ALL DIRECTIONS.
- DEVICE SHIELDS DIRECT LIGHT (HEADLIGHTS) FROM AFFECTING PHOTOELECTRIC UNIT.
- LUMINAIRES MUST BE PROTECTED FROM LIGHTNING STRIKES AND POWER SURGES.



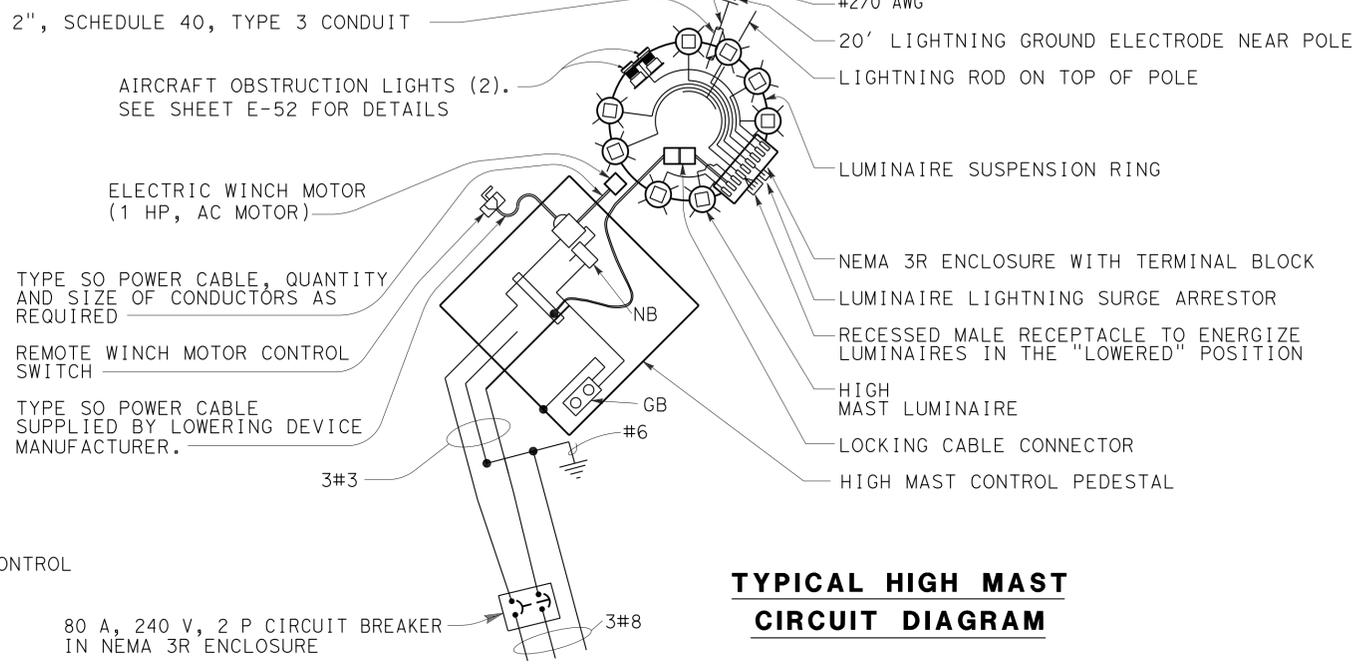
**HM CONTROL PEDESTAL DETAIL**



**TOP VIEW**



**HIGH MAST LIGHTING SYSTEM**

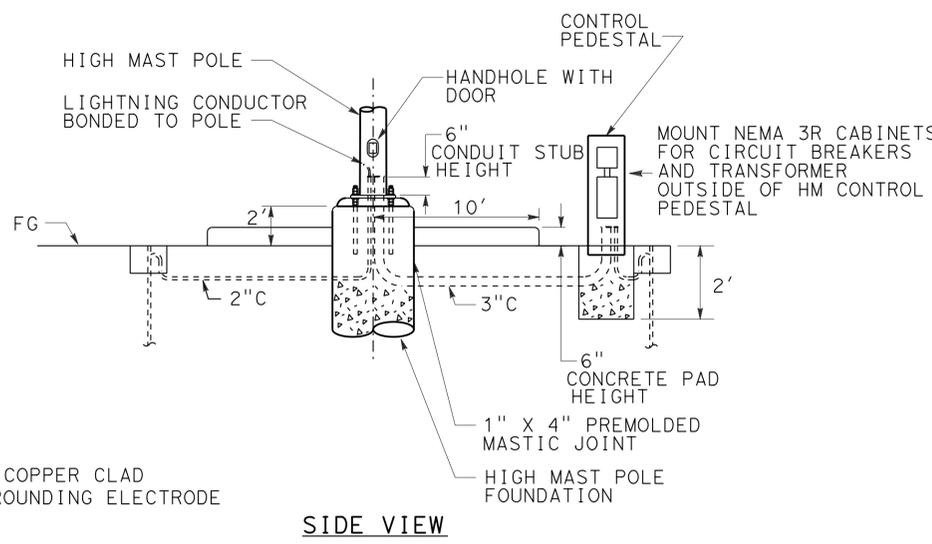


**TYPICAL HIGH MAST CIRCUIT DIAGRAM**

ENGRAVED PEC CONTROL PHENOLIC NAMEPLATE TABLE PEC CONTROL 120 V		
LOCATION	EQUIPMENT MUST BE NAMEPLATED	NAMEPLATE
HM CONTROL PEDESTAL	MAIN BREAKER	MAIN BREAKER 240 VOLTS
	WINCH MOTOR AND CONTROL CIRCUIT BREAKER	WINCH MOTOR & CONTROL 120 VOLTS
	HIGH MAST LIGHTING CIRCUIT BREAKER	HIGH MAST LIGHTING 240 VOLTS
	PEC CONTROL	PEC CONTROL 120 V
	GROUND FAULT PROTECTED DUPLEX RECEPTACLE	GFCI RECEPTACLE 120 VOLTS
	HIGH MAST LIGHTING PHOTOELECTRIC CONTROL TEST SWITCH	AUTOMATIC TEST   HIGH MAST LTG PEC

**PHENOLIC NAMEPLATE NOTES:**

- NAMEPLATES MUST BE ATTACHED USING STAINLESS STEEL OR ALLUMINUM SCREWS, BOLTS OR RIVETS.
- WHEN NAMEPLATES ARE GROUPED TOGETHER, THEY MUST BE OF THE SAME LENGTH AND WIDTH.
- NAMEPLATES MUST BE 1/4" (Min) WHITE LETTERS ON BLACK BACKGROUND.
- THE "AUTOMATIC", "TEST" PORTION OF THE NAMEPLATE FOR THE PHOTOELECTRIC CONTROL TEST SWITCH MUST CORRESPOND TO THE MOVEMENT OF THE SWITCH TOGGLE LEVER.



**PAD AND CONTROL PEDESTAL DETAIL**

**ABBREVIATIONS:**

- HM HIGH MAST
- MH METAL HALIDE

**(HIGH MAST LIGHTING DETAILS)**

**LIGHTING CONDUIT ELECTRICAL DETAILS**  
NO SCALE  
**E-51**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - **ELECTRICAL DESIGN B**  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 DESIGNED BY: FERDINAND DE LA CRUZ  
 CHECKED BY:  
 CALCULATED BY:  
 REVISIONS:  
 REVISION BY: LUIS PENALOZA  
 DATE: 7/2/2010  
 REVISION BY: FERDINAND DE LA CRUZ  
 DATE: 4-16-14

LAST REVISION: DATE PLOTTED => 27-JUN-2014  
 04-16-14 TIME PLOTTED => 1:31:47

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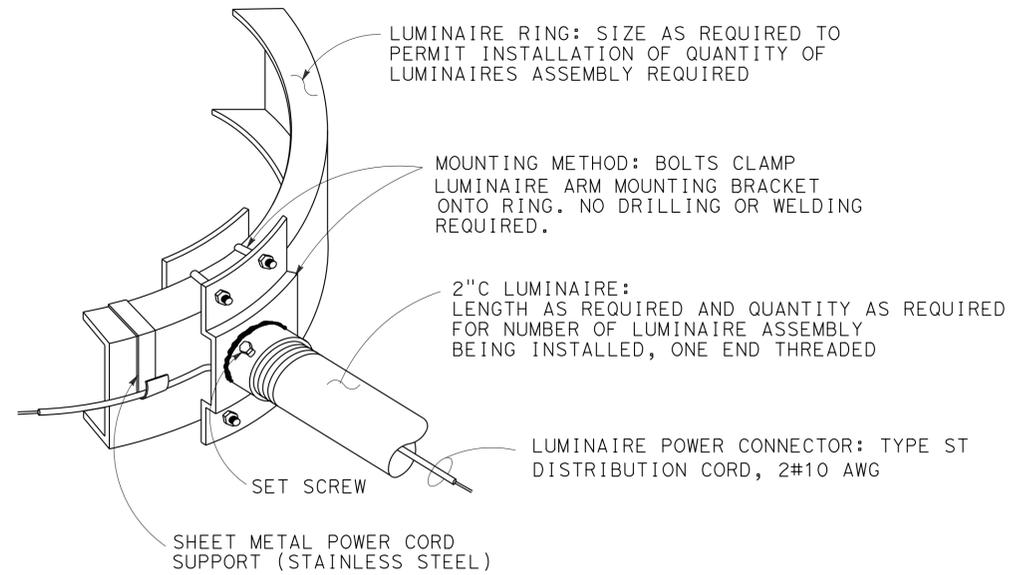
  

REGISTERED PROFESSIONAL ENGINEER
FERDINAND DE LA CRUZ
No. E17215
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ELECTRICAL

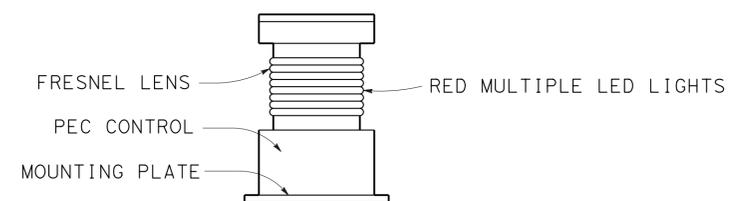
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**LEGEND: (THIS SHEET ONLY)**

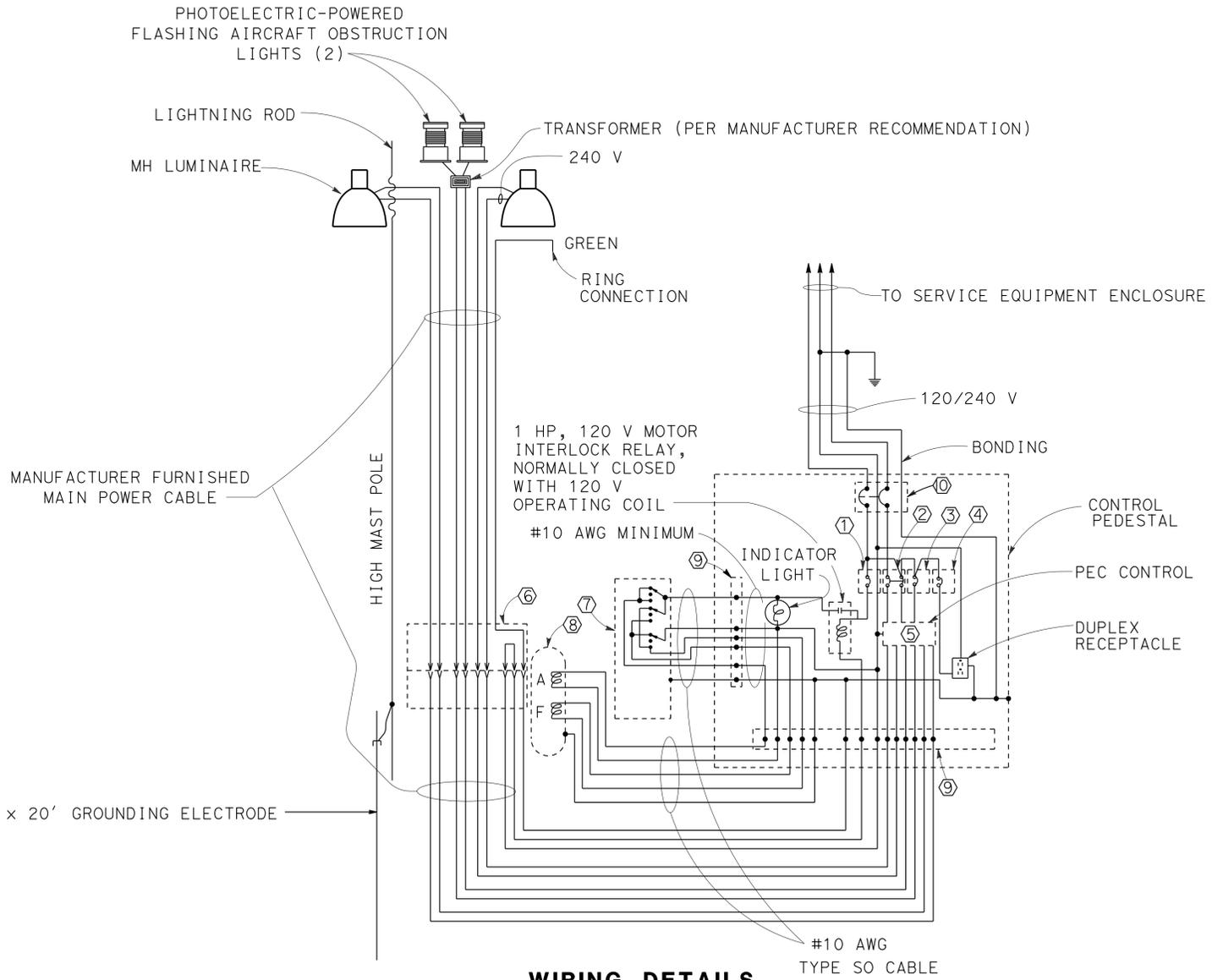
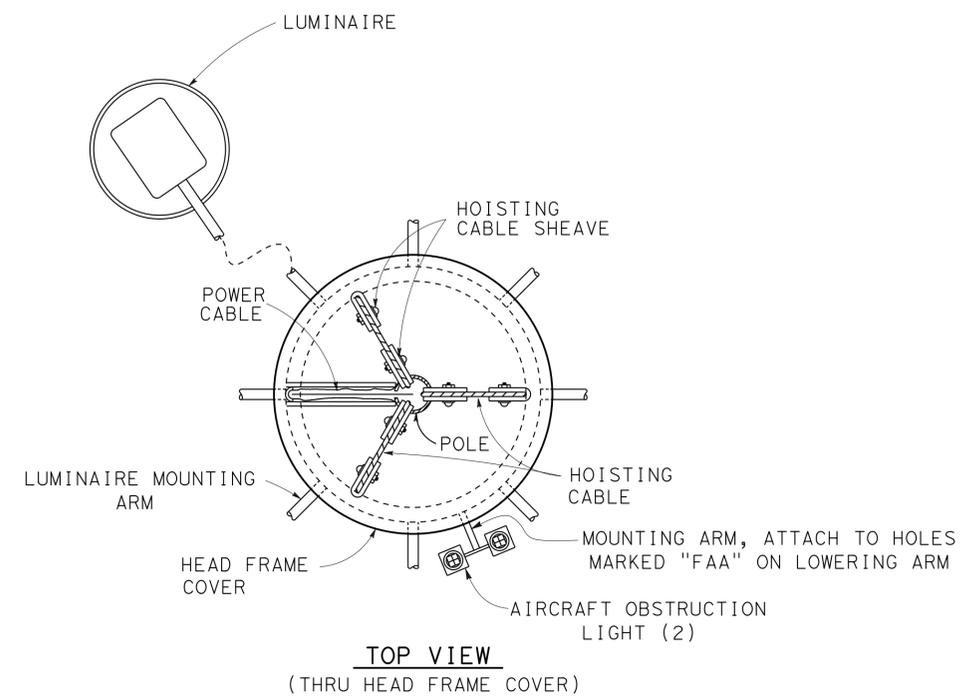
- ① 30 A, 120 V CIRCUIT BREAKER, SINGLE POLE GFI TYPE FOR MOTOR
- ② 40 A, 240 V CIRCUIT BREAKER, DOUBLE POLE FOR LIGHTING AND AIRCRAFT OBSTRUCTION LIGHTING
- ③ 15 A, 120 V CIRCUIT BREAKER, SINGLE POLE FOR PEC
- ④ 15 A, 120 V CIRCUIT BREAKER, SINGLE POLE FOR DUPLEX RECEPTACLE
- ⑤ TYPE ∇ PHOTOELECTRIC CONTROL
- ⑥ LOCKING CONNECTOR (MALE AND FEMALE)
- ⑦ MOTOR POWER AND DIRECTIONAL CONTROL SWITCH RAISE, OFF, LOWER
- ⑧ INTERNAL WINCH MOTOR (1 HP)
- ⑨ TERMINAL BLOCK
- ⑩ 40 A, 240 V MAIN CIRCUIT BREAKER, DOUBLE POLE



**TYPICAL LUMINAIRE MOUNTING ARM ATTACHMENT TO LUMINAIRE RING**



**AIRCRAFT OBSTRUCTION LIGHT**



**WIRING DETAILS**

**(HIGH MAST LIGHTING DETAILS)**

**ELECTRICAL DETAILS**  
NO SCALE  
**E-52**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - **Electrical Design B**

FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ

REVISOR: LUIS PENALOZA

DESIGNER: FERDINAND DE LA CRUZ

DATE: 7/2/2010

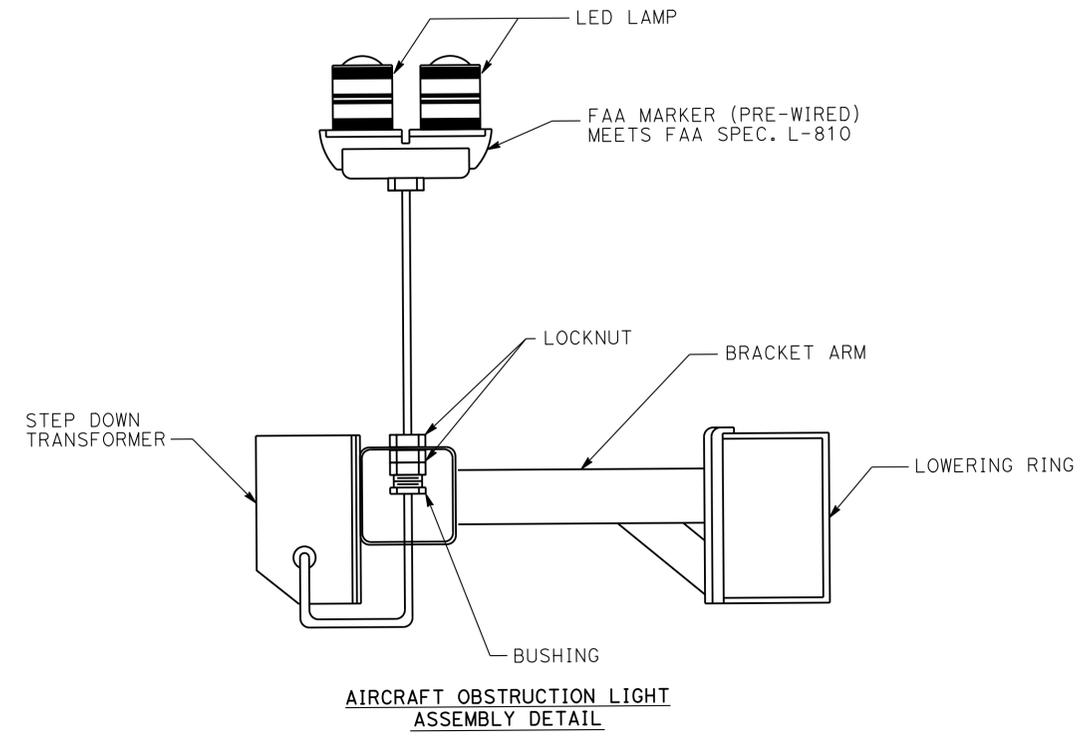
LAST REVISION DATE PLOTTED => 27-JUN-2014 04-16-14 TIME PLOTTED => 13:47

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	518	824

4-16-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 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.

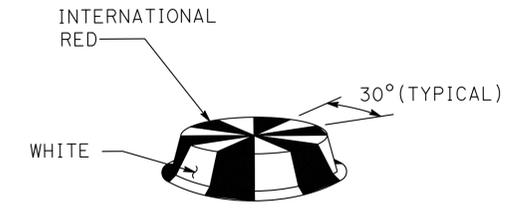
**PEC NOTES:**

- ① CARTRIDGE TYPE FUSE - (300 V, 1 A)  
1 1/32" DIAMETER X 1 1/2" AND 300 V,  
5 A FUSE HOLDER
- ② TEST SWITCH ("AUTOMATIC" - "TEST")  
120 V, 5 A
- ③ AC MAGNETIC CONTACTOR - 2 POLE - 240 V,  
40 A CONTINUOUS CURRENT CARRYING  
CAPACITY 120 V, 60 Hz OPERATING  
COIL
- ④ TERMINAL BOARD - 6 TERMINALS - 240 V,  
40 A
- ⑤ LOAD CONDUCTOR - SIZE AS NOTED ON THE  
PLANS
- ⑥ #14 AWG CONDUCTOR

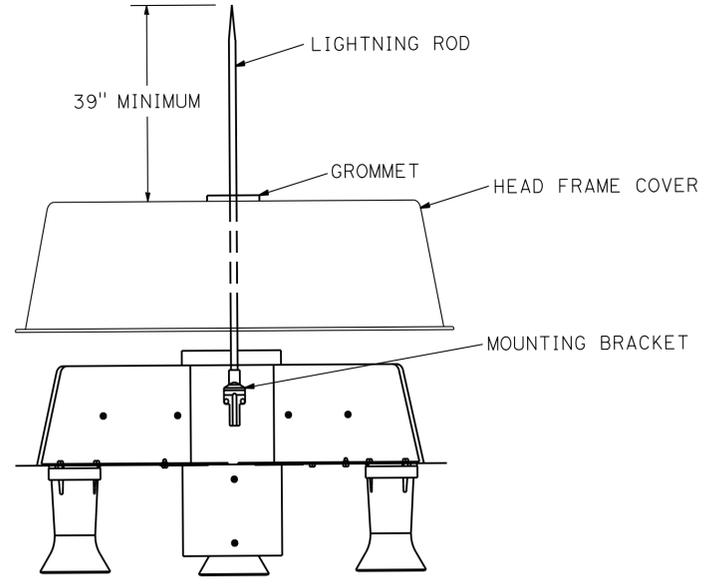


**FLOODLIGHT NOTES:**

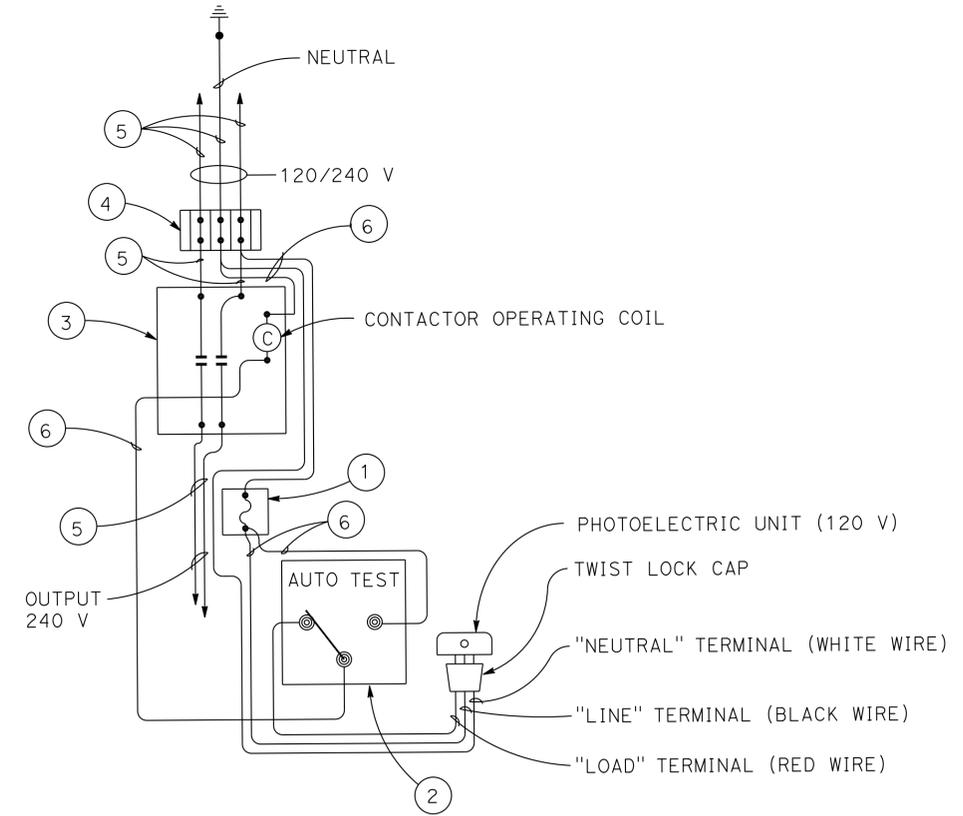
1. THE INDIVIDUAL ILLUMINATION PATTERNS, INCLUDING LIGHT SPREAD AND AIMING, MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
2. CIRCULAR LIGHT SHIELDS MUST BE MOUNTED ON EACH LUMINAIRE TO LIMIT OFF AXIS, STRAY LIGHT.



**HEAD FRAME COVER  
PAINTING DETAIL**



**LIGHTNING ROD DETAIL**



**WIRING DIAGRAM FOR TYPE V LIGHTING PEC**

**(HIGH MAST LIGHTING DETAILS)**

**ELECTRICAL DETAILS**

NO SCALE

**E-53**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 REVISIONS: LUIS PENALOZA, FERDINAND DE LA CRUZ







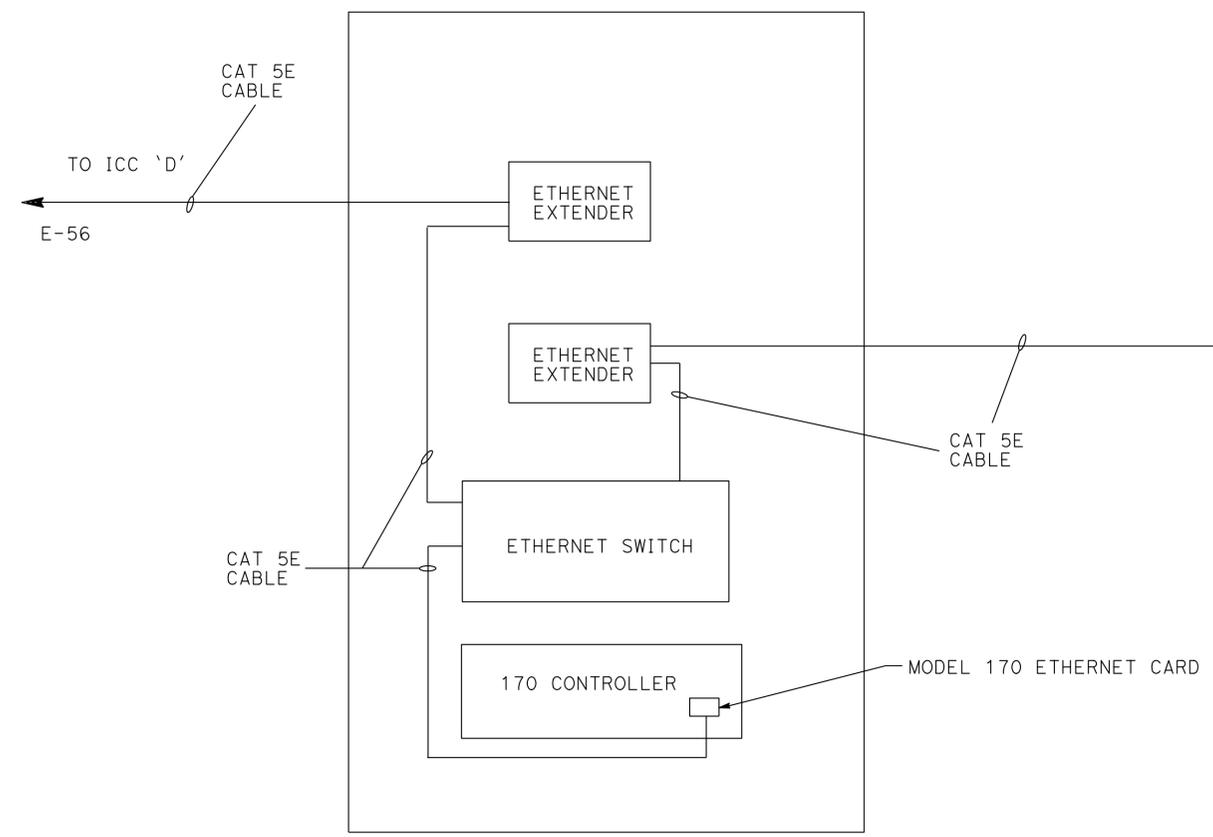
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	522	824

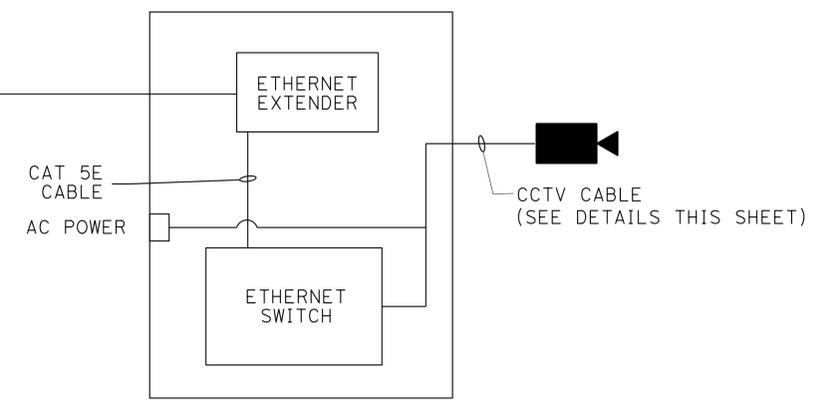
<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER  
**Ferdinand DE LA CRUZ**  
 No. E17215  
 Exp. 6-30-14  
 ELECTRICAL  
 STATE OF CALIFORNIA

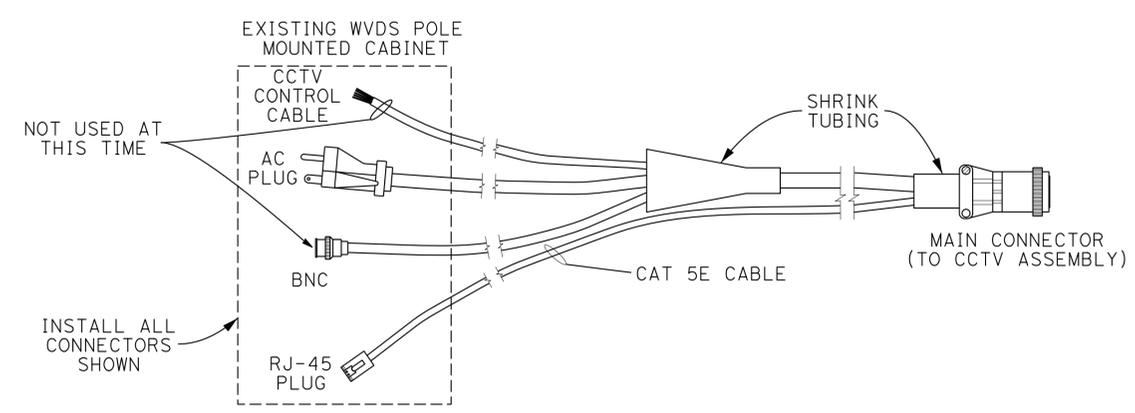
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



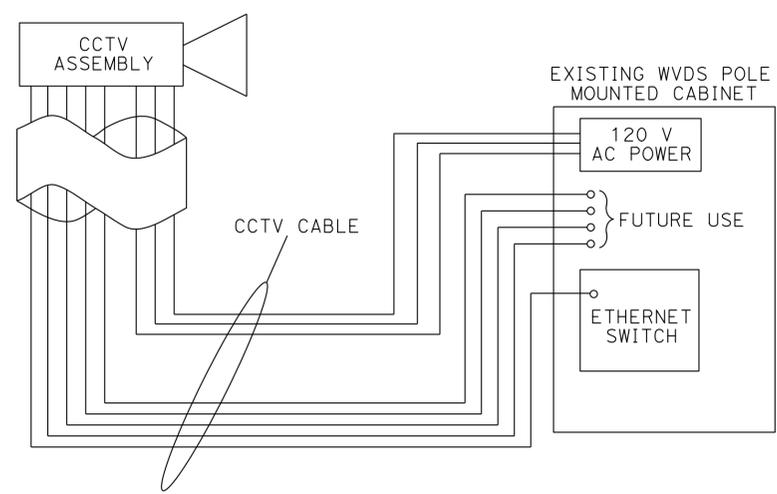
**TRAFFIC MONITORING STATION  
(TMS #4)**  
(SEE SHEET E-38)



**EXISTING WVDS CONTROLLER CABINET  
(WVDS #2)**  
(SEE SHEET E-46)



**CCTV CABLE**



**CCTV ASSEMBLY WIRING DIAGRAM**

**ELECTRICAL DETAILS**  
NO SCALE  
**E-57**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 DESIGNED BY: FERDINAND DE LA CRUZ  
 CHECKED BY:  
 REVISIONS:  
 REVISION BY: LUIS PENALOZA  
 DATE: 6-23-14  
 REVISION BY: FERDINAND DE LA CRUZ  
 DATE: 4-16-14  
 REVISION BY:  
 DATE:  
 REVISION BY:  
 DATE:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	523	824

<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER  
**Ferdinand DE LA CRUZ**  
 No. E17215  
 Exp. 6-30-14  
 ELECTRICAL  
 STATE OF CALIFORNIA

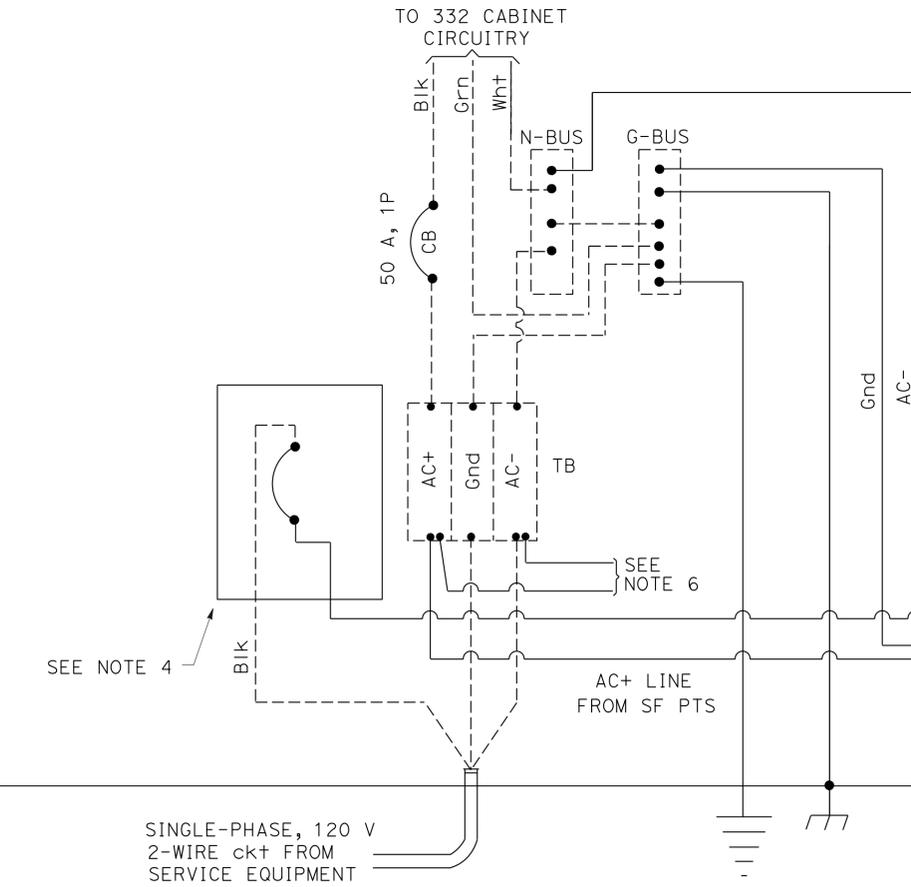
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**LEGEND: (THIS SHEET ONLY)**

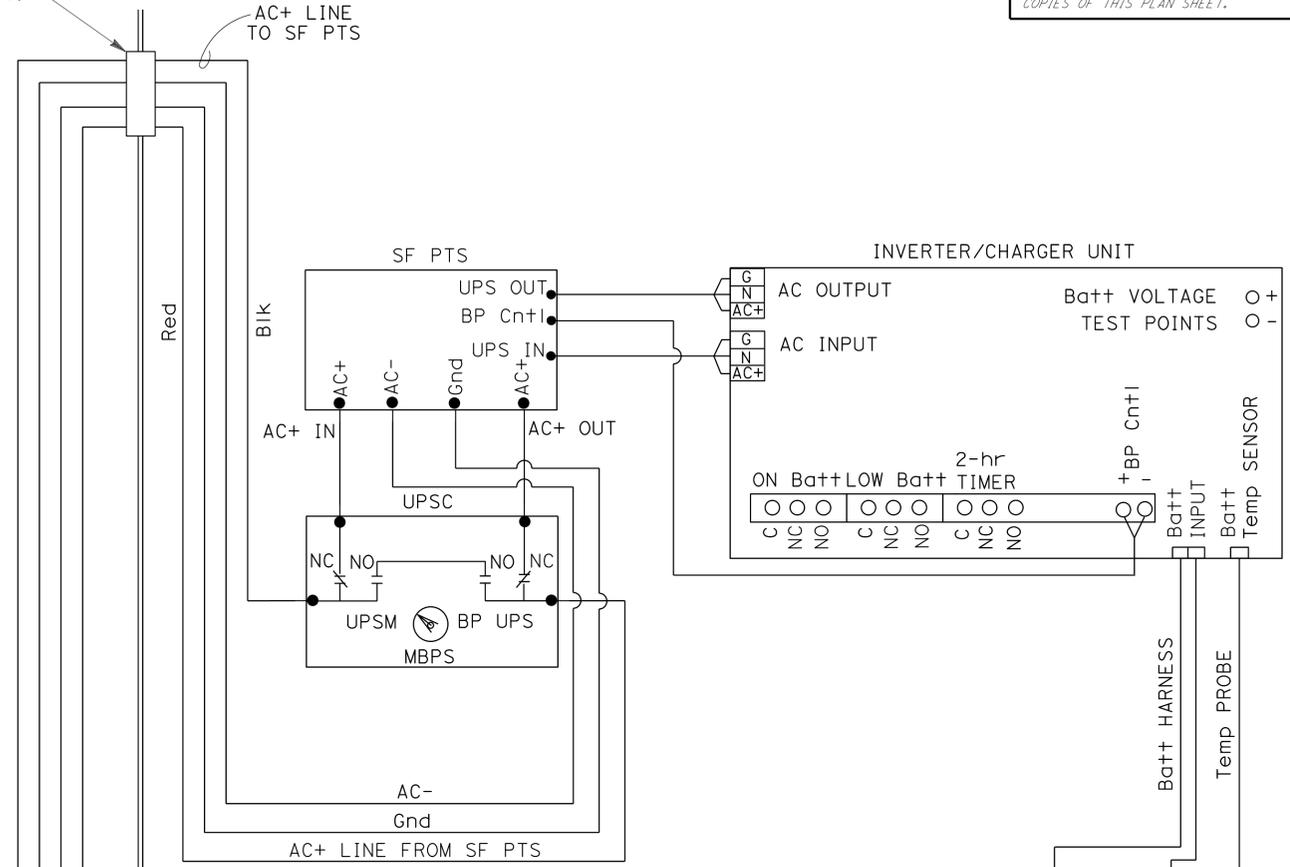
- PTS = POWER TRANSFER SWITCH
- UPS = UNINTERRUPTIBLE POWER SUPPLY
- UPSC = UNINTERRUPTIBLE POWER SUPPLY CONTROLLER
- UPSM = UPS MODE
- BP = BYPASS
- MBPS = MANUAL BYPASS SWITCH
- AC+ = UNGROUNDED CONDUCTOR
- AC- = GROUNDED CONDUCTOR
- C = COMMON
- Grn = GREEN
- Blk = BLACK
- Wht = WHITE
- SF = STATE-FURNISHED
- TB = TERMINAL BOARD
- Cntl = CONTROL
- Gnd = GROUND
- Temp = TEMPERATURE
- Batt = BATTERY

**NOTES: (THIS SHEET ONLY)**

1. TYPE A REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER A.
2. CASE-1 REFERS TO THE SITUATION WHEN THE ENTIRE BBS EQUIPMENT INCLUDING THE BATTERIES ARE INSTALLED IN THE BBS CABINET.
3. THE LOCATION OF THE 2" C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE CONTRACTOR MUST FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 1/2 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE MUST BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET MUST BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR MUST PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OF THE CONDUCTORS MUST BE INSULATED WITH TAPE AND A SIX-FOOT COIL ON EACH END.



AC POWER TO BBS CABINET (SEE NOTE 3)



BBS CABINET

**ELECTRICAL SYSTEMS  
(BBS POWER CONNECTION DIAGRAM,  
TYPE A, CASE-1)**

**ELECTRICAL DETAILS**

NO SCALE

**E-58**

332 CONTROLLER CABINET

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	524	824

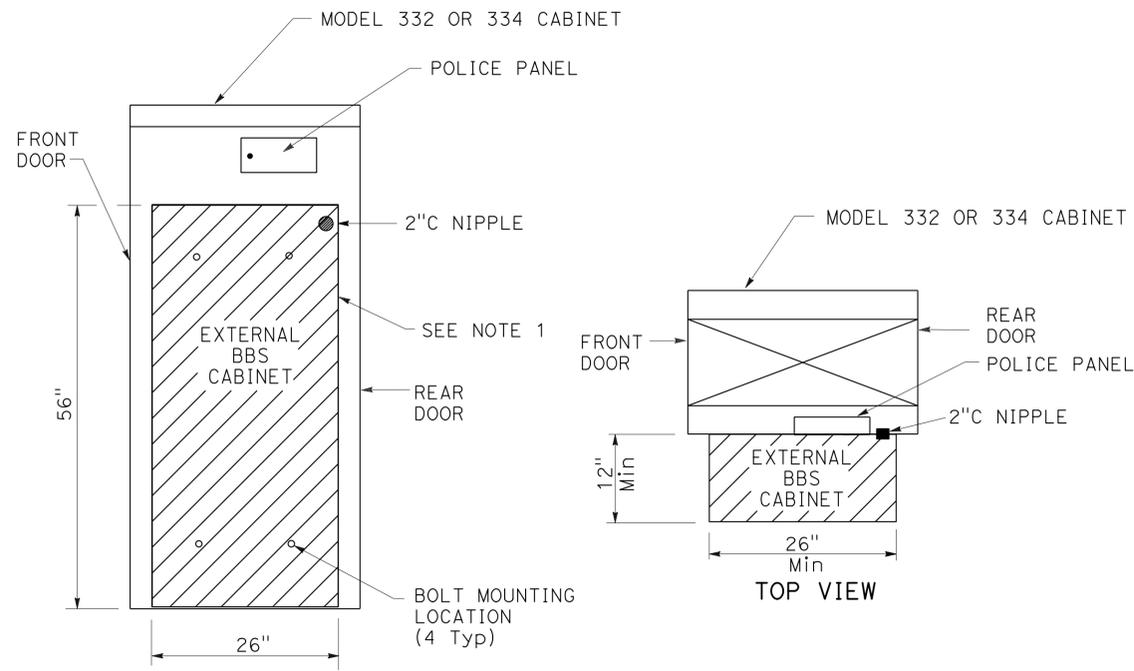
  

<i>Ferdinand De La Cruz</i>	4-16-14
REGISTERED ELECTRICAL ENGINEER	DATE
6-23-14	
PLANS APPROVAL DATE	

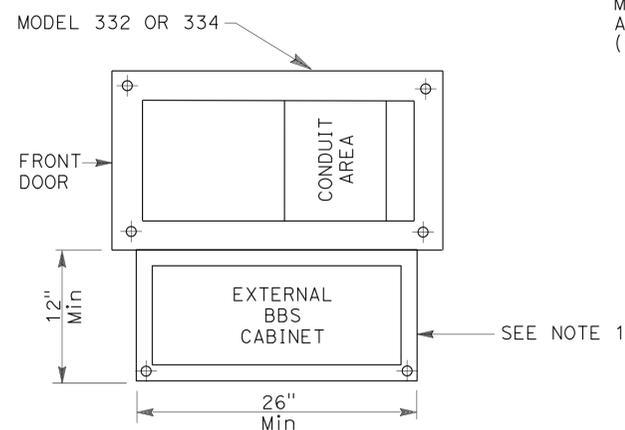
REGISTERED PROFESSIONAL ENGINEER
FERDINAND DE LA CRUZ
No. E17215
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

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.



SIDE VIEW

**EXTERNAL BBS CABINET MOUNTED TO THE MODEL 332 OR 334 CABINET**

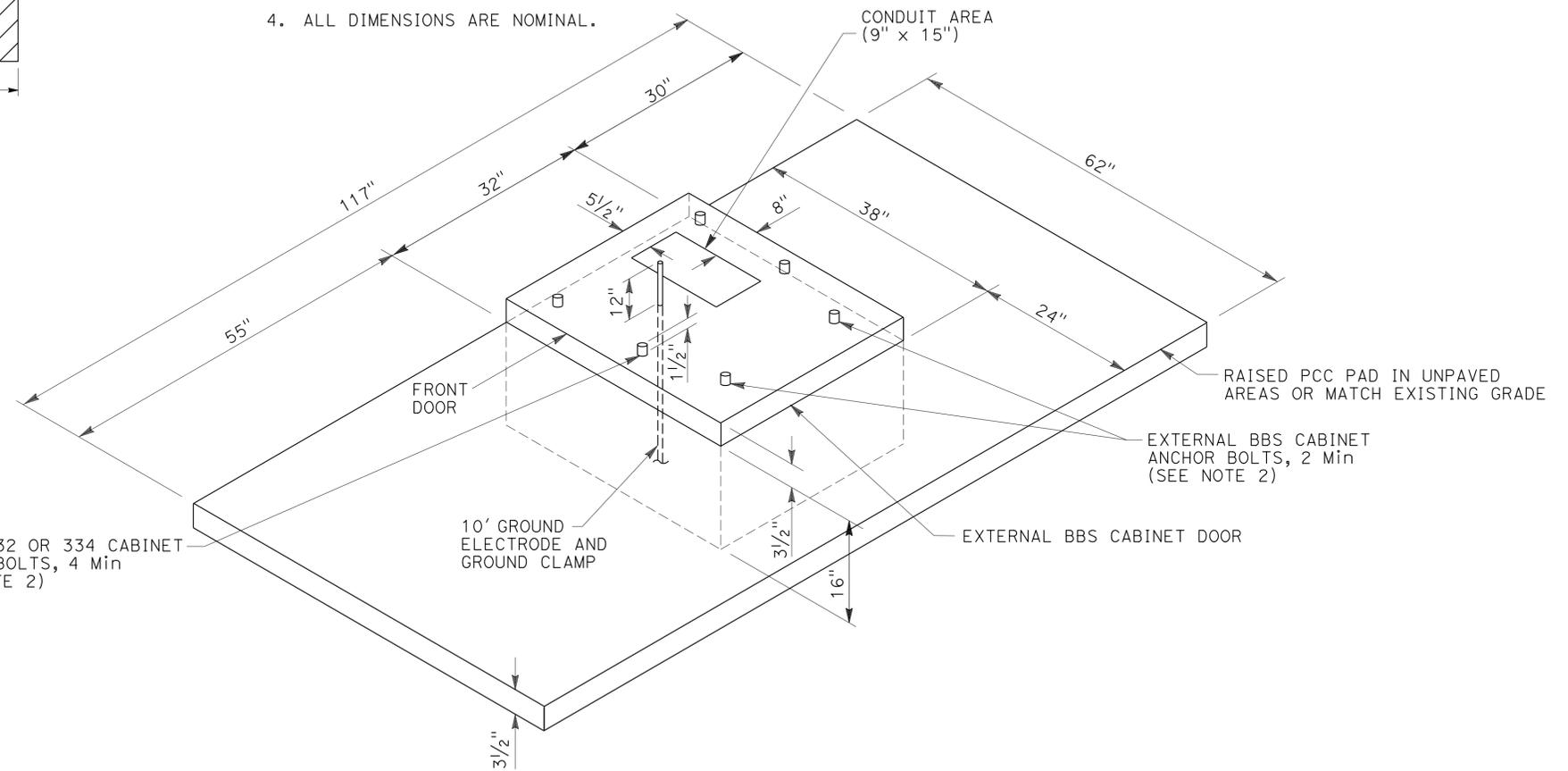


**BASE PLAN FOR BBS MOUNTED TO THE MODEL 332 OR 334 CABINET**

(FOR DIMENSIONS AND DETAILS NOT SHOWN, SEE SHEET A6-1 TO A6-4, CABINET HOUSING DETAILS OF THE TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATION (TEES))

**NOTES: (THIS SHEET ONLY)**

1. THE EXTERNAL BBS CABINET MUST BE MOUNTED TO THE MODEL 332 OR 334 CABINET WITH FOUR 18-8 STAINLESS STEEL HEX HEAD, FULLY-THREADED, 3/8"-16 X 1" BOLTS; TWO WASHERS PER BOLT, DESIGNED FOR 3/8" BOLTS AND ARE 18-8 STAINLESS STEEL, 1" OUTSIDE DIAMETER, ROUND, AND FLAT; AND ONE K-LOCK NUT PER BOLT THAT IS 18-8 STAINLESS STEEL AND A HEX-NUT. THE ENGINEER WILL HAVE TO APPROVE THE BOLT MOUNTING LOCATION PRIOR TO INSTALLATION.
2. THE ANCHOR BOLTS MUST BE 3/4" Dia X 15" WITH A 2"-90° BEND. THE CABINET MANUFACTURER'S SPECIFICATION MUST DETERMINE THE LOCATION OF THE ANCHOR BOLTS IN THE FOUNDATION. THE ENGINEER WILL HAVE TO APPROVE THE ANCHOR BOLTS AND ITS LOCATION IN THE FOUNDATION PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR MUST VERIFY THE DIMENSIONS OF THE BBS CABINET PRIOR TO CONSTRUCTING THE FOUNDATION OF THE MODIFIED PORTION OF THE S+d MODEL 332 AND 334 CABINET FOUNDATION. THE ENGINEER WILL HAVE TO APPROVE ANY NECESSARY DEVIATIONS PRIOR TO CONSTRUCTION.
4. ALL DIMENSIONS ARE NOMINAL.



**MODIFIED MODEL 332 AND 334 CABINET FOUNDATION DETAIL FOR BATTERY BACKUP SYSTEM (BBS)**

(FOR DIMENSIONS AND DETAILS NOT SHOWN AND ADDITIONAL NOTES, SEE SHEET ES-3C OF THE STANDARD PLANS FOR MODEL 332 AND 334 CABINETS)

**MODIFY SIGNAL AND LIGHTING (BBS FOUNDATION DETAILS)**

**ELECTRICAL DETAILS**

SCALE: 1" = 20'

**E-59**

**NOTE:**

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	525	824

*Ferdinand De La Cruz* 4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE

6-23-14  
 PLANS APPROVAL DATE

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 OR AGENTS SHALL NOT BE RESPONSIBLE FOR  
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**LIGHTING AND SIGN ILLUMINATION**

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) INDUCTIVE SIGN LIGHTING FIXTURE	(N) TYPE SC2A CONTROL
	LF	LF	LF	EA	EA
E-1	50	200	100	2	1

SHEET No.	(N) 1" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #8 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) No. 5 PULL BOX	(N) TRAFFIC PULL BOX	(N) TYPE 31 LUMINAIRE	(N) STANDARD FOUNDATION
	LF	LF	LF	LF	LF	EA	EA	EA	EA
E-2	50	600	850	1260	650	1	4	2	2

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #8 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) TRAFFIC PULL BOX	(N) TYPE 31 LUMINAIRE	(N) STANDARD FOUNDATION	(N) INDUCTIVE SIGN LIGHTING FIXTURE	(N) TYPE SC2A CONTROL
	LF	LF	LF	LF	EA	EA	EA	EA	EA
E-3	2400	2500	2400	2500	11	5	5	2	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) No. 5 PULL BOX	(N) TRAFFIC PULL BOX	(N) TYPE 31 LUMINAIRE	(N) STANDARD FOUNDATION	(N) 100' HIGH MAST LIGHTING ASSEMBLY
	LF	LF	LF	EA	EA	EA	EA	EA
E-4	2000	7100	2000	1	9	1	1	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #8 GAUGE WIRE CABLE	(N) #6 GAUGE WIRE CABLE	(N) TRAFFIC PULL BOX	(N) TYPE 31 LUMINAIRE	(N) STANDARD FOUNDATION	(N) INDUCTIVE SIGN LIGHTING FIXTURE	(N) TYPE SC2A CONTROL	(N) 100' HIGH MAST LIGHTING ASSEMBLY
	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA
E-5	2000	4400	2800	2400	11	3	3	1	1	1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: FERDINAND DE LA CRUZ  
 CHECKED BY:  
 REVISOR: LUIS PENALOZA  
 DATE: FERDINAND DE LA CRUZ  
 REVISION: DATE PLOTTED => 27-JUN-2014  
 TIME PLOTTED => 13:47

**ELECTRICAL QUANTITIES**

**E-60**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	526	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 PLANS APPROVAL DATE

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 THE ACCURACY OR COMPLETENESS OF SCANNED  
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**NOTE:**

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**LIGHTING AND SIGN ILLUMINATION**

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) 1" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) INDUCTIVE SIGN LIGHTING FIXTURE	(N) TYPE SC2A CONTROL
	LF	LF	LF	LF	LF	LF	LF	EA	EA
E-6	600	1400	50	750	325	6400	2000	2	1

SHEET No.	(N) TYPE 31 LUMINAIRE	(N) TYPE 30 LUMINAIRE	(N) TYPE 10 LUMINAIRE OVERHEAD SIGN MOUNTED	STANDARD FOUNDATION	(N) No. 5 PULL BOX	(N) TRAFFIC PULL BOX	(N) No. 9A PULL BOX	(N) TYPE III-CF SERVICE EQUIPEMENT ENCLOSURE	(N) TYPE III-BF SERVICE EQUIPEMENT ENCLOSURE
	EA	EA	EA	EA	EA	EA	EA	EA	EA
E-6	1	1	1	2	12	2	3	2	1

SHEET No.	(N) 4" CONDUIT PVC SCHEDULE 80	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) No. 5 PULL BOX	(N) No. 6 PULL BOX	(N) TRAFFIC PULL BOX
	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA
E-7	200	250	100	1800	4600	3200	2200	9	5	2

SHEET No.	(N) TYPE 30 LUMINAIRE	STANDARD FOUNDATION	(N) TYPE III-CF SERVICE EQUIPEMENT ENCLOSURE
	EA	EA	EA
E-7	5	5	3

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE	(N) INDUCTIVE SIGN LIGHTING FIXTURE	(N) TYPE SC2A CONTROL	(N) TRAFFIC PULL BOX
	LF	LF	LF	LF	EA	EA	EA
E-8	100	300	800	400	2	1	3

**ELECTRICAL QUANTITIES**

**E-61**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 LUIS PENALOZA  
 FERDINAND DE LA CRUZ  
 FERDINAND DE LA CRUZ  
 FERDINAND DE LA CRUZ  
 FERDINAND DE LA CRUZ



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	527	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 PLANS APPROVAL DATE

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**NOTE:**

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

**LIGHTING AND SIGN ILLUMINATION**

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) TRAFFIC PULL BOX	(N) TYPE 30 LUMINAIRE	(N) STANDARD FOUNDATION
	LF	LF	LF	LF	LF	EA	EA	EA
E-9	200	1400	4200	3200	2300	10	5	5

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) No. 5 PULL BOX	(N) No. 9A PULL BOX	(N) TRAFFIC PULL BOX	(N) TYPE 30 LUMINAIRE	(N) STANDARD FOUNDATION
	LF	LF	LF	LF	EA	EA	EA	EA	EA
E-10	100	4300	3200	2300	2	25	7	1	1

SHEET No.	(N) TYPE 21 LUMINAIRE	(N) STANDARD FOUNDATION
	EA	EA
E-10	4	4

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) No. 5 PULL BOX	(N) TRAFFIC PULL BOX	(N) TYPE 30 LUMINAIRE	(N) STANDARD FOUNDATION
	LF	LF	LF	LF	LF	EA	EA	EA	EA
E-11	200	2000	4200	3200	2300	3	9	1	1

SHEET No.	(N) INDUCTIVE SIGN LIGHTING FIXTURE	(N) TYPE SC2A CONTROL
	EA	EA
E-11	2	1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR  
 FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY  
 CHECKED BY  
 LUIS PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY  
 DATE REVISED

**ELECTRICAL QUANTITIES**

**E-62**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	528	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 PLANS APPROVAL DATE

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**NOTE:**

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

**LIGHTING AND SIGN ILLUMINATION**

SHEET No.	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #6 GAUGE WIRE CABLE	(N) #6 GAUGE WIRE CABLE	(N) No. 5 PULL BOX	(N)
	LF	LF	LF	LF	LF	LF	EA	EA
E-12	200	1400	3200	1600	2400	1200	3	7

SHEET No.	(N) TYPE 31 LUMINAIRE	(N) STANDARD FOUNDATION	(N) INDUCTIVE SIGN LIGHTING FIXTURE	(N) TYPE III-BF SERVICE EQUIPEMENT ENCLOSURE	(N) TYPE III-CF SERVICE EQUIPEMENT ENCLOSURE
	EA	EA	EA	EA	EA
E-12	4	4	2	1	1

SHEET No.	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 1" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) No. 5 PULL BOX	(N)
	LF	LF	LF	LF	LF	LF	EA	EA
E-13	100	1600	300	3600	2000	1200	5	2

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) TYPE 31 LUMINAIRE	(N) STANDARD FOUNDATION	(N) #6 (G) GAUGE WIRE CABLE	(N) TRAFFIC PULL BOX	(N) III-BF SERVICE EQUIPMENT ENCLOSURE
	LF	LF	LF	LF	EA	EA	LF	EA	EA
E-14	200	500	1000	500	1	1	1200	2	1

**ELECTRICAL QUANTITIES**

**E-63**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	529	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 PLANS APPROVAL DATE

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**NOTE:**

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**LIGHTING AND SIGN ILLUMINATION**

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	3" CONDUIT PVC SCHEDULE 80	2" CONDUIT PVC SCHEDULE 80	1 1/2" CONDUIT PVC SCHEDULE 80	#8 GAUGE WIRE CABLE	#6 GAUGE WIRE CABLE	#6 (G) GAUGE WIRE CABLE	No. 5 PULL BOX	TRAFFIC PULL BOX	TYPE 31 LUMINAIRE
	LF	LF	LF	LF	LF	LF	EA	EA	EA
E-15	500	1000	2000	5400	4000	4700	7	8	3

SHEET No.	(N)	(N)	(N)	(N)	(N)
	TYPE 30 LUMINAIRE	STANDARD FOUNDATION	INDUCTIVE SIGN LIGHTING FIXTURE	TYPE SC2A CONTROL	TYPE III-CF SERVICE EQUIPEMENT ENCLOSURE
	EA	EA	EA	EA	EA
E-15	2	5	2	1	1

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	#6 GAUGE WIRE CABLE	#6 (G) GAUGE WIRE CABLE	TYPE 31 LUMINAIRE	STANDARD FOUNDATION	TRAFFIC PULL BOX	INDUCTIVE SIGN LIGHTING FIXTURE
	LF	LF	LF	EA	EA	EA	EA
E-16	1000	2000	1000	2	2	3	2

**SIGNAL AND LIGHTING (LOCATION 1)**

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	4" CONDUIT PVC SCHEDULE 80	3" CONDUIT PVC SCHEDULE 80	2" CONDUIT PVC SCHEDULE 80	1 1/2" CONDUIT PVC SCHEDULE 80	No. 5 PULL BOX	TRAFFIC PULL BOX	No. 6 PULL BOX	6(T) PULL BOX	6(E) PULL BOX	MODEL 2070L CONTROLLER ASSEMBLY
	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA
E-19	330	200	120	120	9	5	1	2	2	1

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	#6 (G) GAUGE WIRE CABLE	DLC	TYPE D LOOP DETECTOR	TYPE E LOOP DETECTOR	BATTERY BACK-UP SYSTEM	SIGNAL INTERCONNECT CABLE	#10 GAUGE WIRE CABLE
	LF	LF	LF	LF	EA	EA	EA	LF	LF
E-19	800	3000	100	4000	8	24	1	500	1400

**ELECTRICAL QUANTITIES E-64**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: FERDINAND DE LA CRUZ  
 CHECKED BY:  
 REVISOR: LUIS PENALOZA  
 DATE: FERDINAND DE LA CRUZ



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	530	824

*Ferdinand De La Cruz* 4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE

6-23-14  
 PLANS APPROVAL DATE

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**SIGNAL AND LIGHTING  
(LOCATION 1)**

SHEET No.	(N) TYPE 15TS	(N) TYPE 29A-5-100 (Mod)	(N) 26A-4-100 (Mod)	(N) TYPE 1-A	(N) 15' LUMINAIRE MAST ARM (INTERSECTION LTG)
	EA	EA	EA	EA	EA
E-19	2	2	1	1	3

SHEET No.	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CONDUCTOR CABLE	(N) #8 (G) GAUGE WIRE CONDUCTOR CABLE	(N) SIC	(N) DLC	(N) WALL SURFACE 70 W HPS	(N) No. 5 PULL BOX	(N) TYPE E LOOP DETECTOR
	LF	LF	LF	LF	LF	LF	EA	EA	EA
E-20	300	400	600	300	300	280	3	6	4

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CONDUCTOR CABLE	(N) #8 (G) GAUGE WIRE CONDUCTOR CABLE	(N) DLC	(N) SIC	(N) TYPE E LOOP DETECTOR	(N) No. 5 PULL BOX
	LF	LF	LF	LF	LF	EA	EA
E-21	440	260	520	350	300	4	4

**SIGNAL AND LIGHTING  
(LOCATION 2)**

SHEET No.	(N) TYPE 15TS	(N) TYPE 29A-5-100 (Mod)	(N) 26A-4-100 (Mod)	(N) 24A-4-100	(N) TYPE 1-A	(N) PPB POST	(N) 15' LUMINAIRE MAST ARM (INTERSECTION LTG)	(N) #6 GAUGE WIRE CONDUCTOR CABLE	(N) #10 GAUGE WIRE CONDUCTOR CABLE	(N) MODEL 2070 CONTROLLER ASSEMBLY
	EA	EA	EA	EA	EA	EA	EA	LF	LF	EA
E-24	1	1	2	1	1	1	3	40	400	1

SHEET No.	(N) 4" CONDUIT PVC SCHEDULE 80	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CONDUCTOR CABLE	(N) #8 (G) GAUGE WIRE CONDUCTOR CABLE	(N) SIC	(N) DLC	(N) No. 5 PULL BOX	(N) TRAFFIC PULL BOX
	LF	LF	LF	LF	LF	LF	LF	EA	EA
E-24	500	380	1000	1500	3000	100	4800	13	1

SHEET No.	(N) #10 GAUGE WIRE CONDUCTOR CABLE	(N) No. 6 PULL BOX	(N) No. 6(E) PULL BOX	(N) TYPE D LOOP DETECTOR	(N) TYPE E LOOP DETECTOR
	LF	EA	EA	EA	EA
E-24	1000	4	1	10	29

**ELECTRICAL QUANTITIES  
E-65**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
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 CALCULATED/DESIGNED BY: LUIS PENALOZA  
 CHECKED BY: FERDINAND DE LA CRUZ  
 REVISED BY: DATE REVISADO



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 FUNCTIONAL SUPERVISOR  
 FERDINAND DE LA CRUZ  
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 REVISED BY  
 DATE REVISED

**NOTE:**

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	531	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 PLANS APPROVAL DATE

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**TRAFFIC MONITORING STATION  
(LOCATION 1)**

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) TRAFFIC PULL BOX
	LF	LF	EA
E-26	500	600	2

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) DLC CABLE	(N) LOOP WIRE	(N) TRAFFIC PULL BOX	(N) TRAFFIC PULL BOX 6(T)	(N) 334L CONTROLLER CABINET ASSEMBLY
	LF	LF	LF	LF	LF	LF	EA	EA	EA
E-27	500	1600	2100	1000	6000	1200	12	1	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) TRAFFIC PULL BOX
	LF	LF	EA
E-28	1500	1500	8

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) No. 5 PULL BOX	(N) No. 9A PULL BOX	(N) TRAFFIC PULL BOX
	LF	LF	EA	EA	EA
E-29	2600	2600	10	3	2

**ELECTRICAL QUANTITIES  
E-66**

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 04-18-14 TIME PLOTTED => 13:48

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 DATE REVISED

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	532	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
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**TRAFFIC MONITORING STATION  
 (LOCATION 2)**

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) DLC CABLE	(N) LOOP WIRE	(N) TRAFFIC PULL BOX
	LF	LF	LF	LF	LF	EA
E-30	50	1400	1500	1200	1000	7

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) DLC CABLE	(N) LOOP WIRE	(N) TRAFFIC PULL BOX	(N) No. 6 PULL BOX	(N) 334L CONTROLLER CABINET ASSEMBLY
	LF	LF	LF	LF	LF	EA	EA	EA
E-31	200	200	700	2400	240	2	1	1

SHEET No.	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) TRAFFIC PULL BOX	(N) No. 5 PULL BOX	(N) No. 9A PULL BOX
	LF	LF	LF	EA	EA	EA
E-32	1000	600	2000	2	1	3

**ELECTRICAL QUANTITIES  
 E-67**

LAST REVISION DATE PLOTTED => 27-JUN-2014  
 04-18-14 TIME PLOTTED => 13:48

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
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 FERDINAND DE LA CRUZ

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 CHECKED BY

LUIS PENALOZA  
 FERDINAND DE LA CRUZ

REVISED BY  
 DATE REVISED

**NOTE:**

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	533	824

REGISTERED ELECTRICAL ENGINEER DATE 4-23-14  
 6-23-14  
 PLANS APPROVAL DATE

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**TRAFFIC MONITORING STATION  
 (LOCATION 3)**

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) DLC CABLE	(N) LOOP WIRE	(N) No. 5 PULL BOX	(N) No. 6(T) PULL BOX	(N) TRAFFIC PULL BOX	(N) 334L CONTROLLER CABINET ASSEMBLY
	LF	LF	LF	LF	LF	EA	EA	EA	EA
E-33	500	1200	2000	5000	1000	3	1	7	1

SHEET No.	(N) 1½" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) TRAFFIC PULL BOX
	LF	LF	EA
E-34	1200	1000	4

**ELECTRICAL QUANTITIES  
 E-68**

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**NOTE:**

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	534	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
**FERDINAND DE LA CRUZ**  
 No. E17215  
 Exp. 6-30-14  
 ELECTRICAL  
 STATE OF CALIFORNIA

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**TRAFFIC MONITORING STATION  
(LOCATION 3)**

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) TRAFFIC PULL BOX
	LF	LF	EA
E-35	600	1000	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 1" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) TRAFFIC PULL BOX	(N) No. 9A PULL BOX
	LF	LF	LF	EA	EA
E-36	1500	10	2000	5	2

**TRAFFIC MONITORING STATION  
(LOCATION 4)**

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) TRAFFIC PULL BOX
	LF	LF	EA
E-37	1400	1400	6

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) DLC CABLE	(N) LOOP WIRE	(N) TRAFFIC PULL BOX	(N) 334L CONTROLLER CABINET ASSEMBLY
	LF	LF	LF	LF	LF	EA	EA
E-38	400	200	1000	5200	700	4	1

**TRAFFIC MONITORING STATION  
(COUNT)**

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #6 (G) GAUGE WIRE CABLE	(N) DLC CABLE	(N) LOOP WIRE	(N) TRAFFIC PULL BOX
	LF	LF	LF	LF	EA
E-39	600	600	1200	700	2

**ELECTRICAL QUANTITIES  
E-69**

LAST REVISION DATE PLOTTED => 27-JUN-2014  
 04-18-14 TIME PLOTTED => 13:48

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	535	824

4-23-14  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-23-14  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 FERDINAND DE LA CRUZ  
 No. E17215  
 Exp. 6-30-14  
 ELECTRICAL  
 STATE OF CALIFORNIA

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### TRAFFIC MONITORING STATION (COUNT)

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) CAT 5E CABLE	(N) LOOP WIRE	(N) DLC CABLE	(N) No. 5 PULL BOX	(N) TRAFFIC PULL BOX	(N) 334L CONTROLLER CABINET ASSEMBLY
	LF	LF	LF	LF	LF	LF	EA	EA	EA
E-40	2000	600	1000	500	200	2200	4	2	1

SHEET No.	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) LOOP WIRE CABLE	(N) TRAFFIC PULL BOX
	LF	LF	LF	EA
E-41	100	10	1000	2

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) DLC CABLE	(N) LOOP WIRE CABLE	(N) No. 5 PULL BOX	(N) TRAFFIC PULL BOX	(N) #6 (G) GAUGE WIRE CABLE
	LF	LF	LF	EA	EA	LF
E-42	300	300	100	1	1	200

### MODIFY WIRELESS VEHICLE DETECTION SYSTEM (LOCATION 1)

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) CAT 5E CABLE	(N) RELOCATED POLE	(N) POLE FOUNDATION	(N) VEHICLE DETECTION SYSTEM W/ DIGITAL CAMERA	(N) TRAFFIC PULL BOX	(N) #8 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	LF	EA	EA	EA	EA	LF	LF
E-45	500	500	1	1	1	2	200	100

### MODIFY WIRELESS VEHICLE DETECTION SYSTEM (LOCATION 2)

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) CAT 5E CABLE	(N) RELOCATED POLE	(N) POLE FOUNDATION	(N) VEHICLE DETECTION SYSTEM W/ DIGITAL CAMERA
	LF	LF	LF	LF	EA	EA	EA
E-46	200	400	200	200	1	1	1

## ELECTRICAL QUANTITIES E-70

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR  
 FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY  
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 LUIS PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY  
 DATE REVISED

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	536	824
<i>Eliseo Lopez</i> REGISTERED CIVIL ENGINEER			4-30-14	DATE	
6-23-14			PLANS APPROVAL DATE		
No. C72910 Exp. 12/31/14 CIVIL			REGISTERED PROFESSIONAL ENGINEER ELISEO LOPEZ STATE OF CALIFORNIA		
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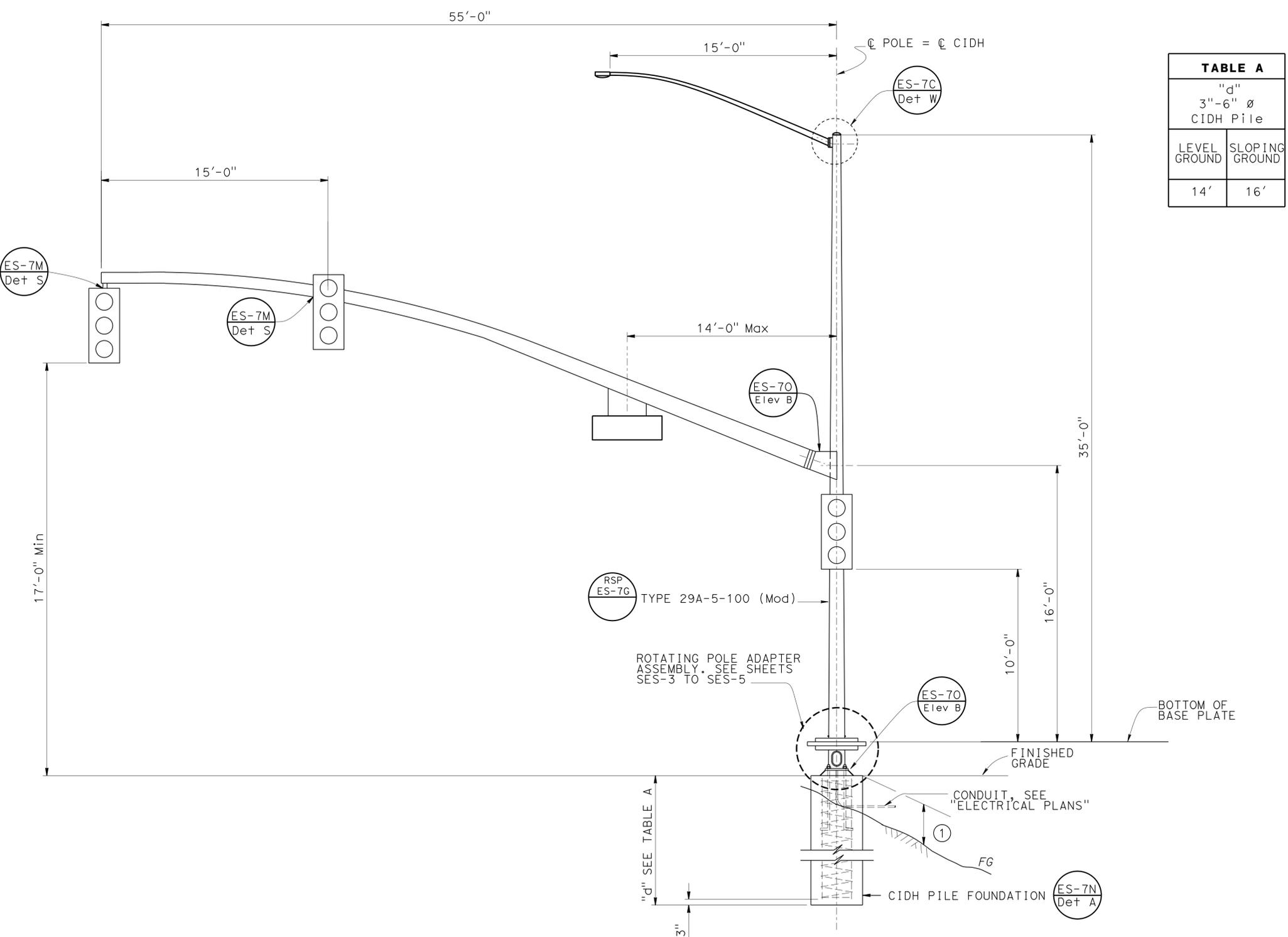


TABLE A	
"d" 3"-6" Ø CIDH Pile	
LEVEL GROUND	SLOPING GROUND
14'	16'

**DESIGN NOTES:**

**SPECIFICATIONS**  
 Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition

**LOADING**  
 Wind Loading : (3 sec gust) 100 mph

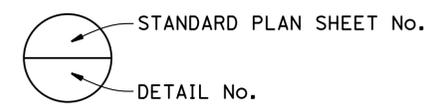
**UNIT STRESSES**  
 Structural Steel: fy = 55,000 psi tapered steel tube  
 fy = 50,000 psi unless otherwise noted.  
 Anchor bolts: fy = 55,000 psi unless otherwise noted.  
 Reinforced Concrete: f'c = 3,600 psi  
 fy = 60,000 psi

- NOTES:**
1. For rotating pole locations, see "PROJECT PLANS".
  2. For Type 29A-5-100 (Mod) details not shown, see 2010 Revised Standard Plan ES-7G.
  3. All steel must be galvanized after fabrication.
  4. During pole erection the post must be raked as necessary with the use of leveling nuts to provide a plumb pole axis.
  5. Foundation must be treated as level ground condition if slope inclination is flatter than 4H:1V.
  6. The Engineer will determine final location of rotating pole.
  7. Foundation design is base on AASHTO LTS-5 article 13.6 Broms' approximate procedure assuming a cohesionless material. The angle of internal friction used is 30 degrees and unit weight of soil used is 120 lb/ft<sup>3</sup>.
  8. For details not shown, see "2010 STANDARD PLANS" and "2010 REVISED STANDARD PLANS".

① 1'-3" maximum for sloped finished grade

**ELEVATION**  
**TYPE 29A-5-100 (Mod)**

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



BRANCH CHIEF	JEFF WOODY		DESIGN BY	E. LOPEZ	CHECKED	M. LICHA	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN SPECIAL DESIGN BRANCH	BRIDGE NO.	TYPE 29A-5-100 MODIFIED		SES-1
			DETAILS BY	T. NGUYEN	CHECKED	E. LOPEZ			POST MILE	ROTATING POLE LAYOUT		
		QUANTITIES BY		CHECKED			UNIT: 3619	PROJECT NUMBER & PHASE: 0814000086-1	CONTRACT NO.: 08-3555V1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		
STRUCTURES DESIGN SPECIAL DESIGN SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3												
REVISION DATES: 1/22/14, 5/12/14, 4/11/14, 4/28/14												

USERNAME => s124496 DATE PLOTTED => 27-JUN-2014 TIME PLOTTED => 11:28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	537	824

*Eliseo Lopez*  
 REGISTERED CIVIL ENGINEER DATE 4-30-14  
 PLANS APPROVAL DATE 6-23-14  
 No. C72910  
 Exp. 12/31/14  
 CIVIL  
 STATE OF CALIFORNIA

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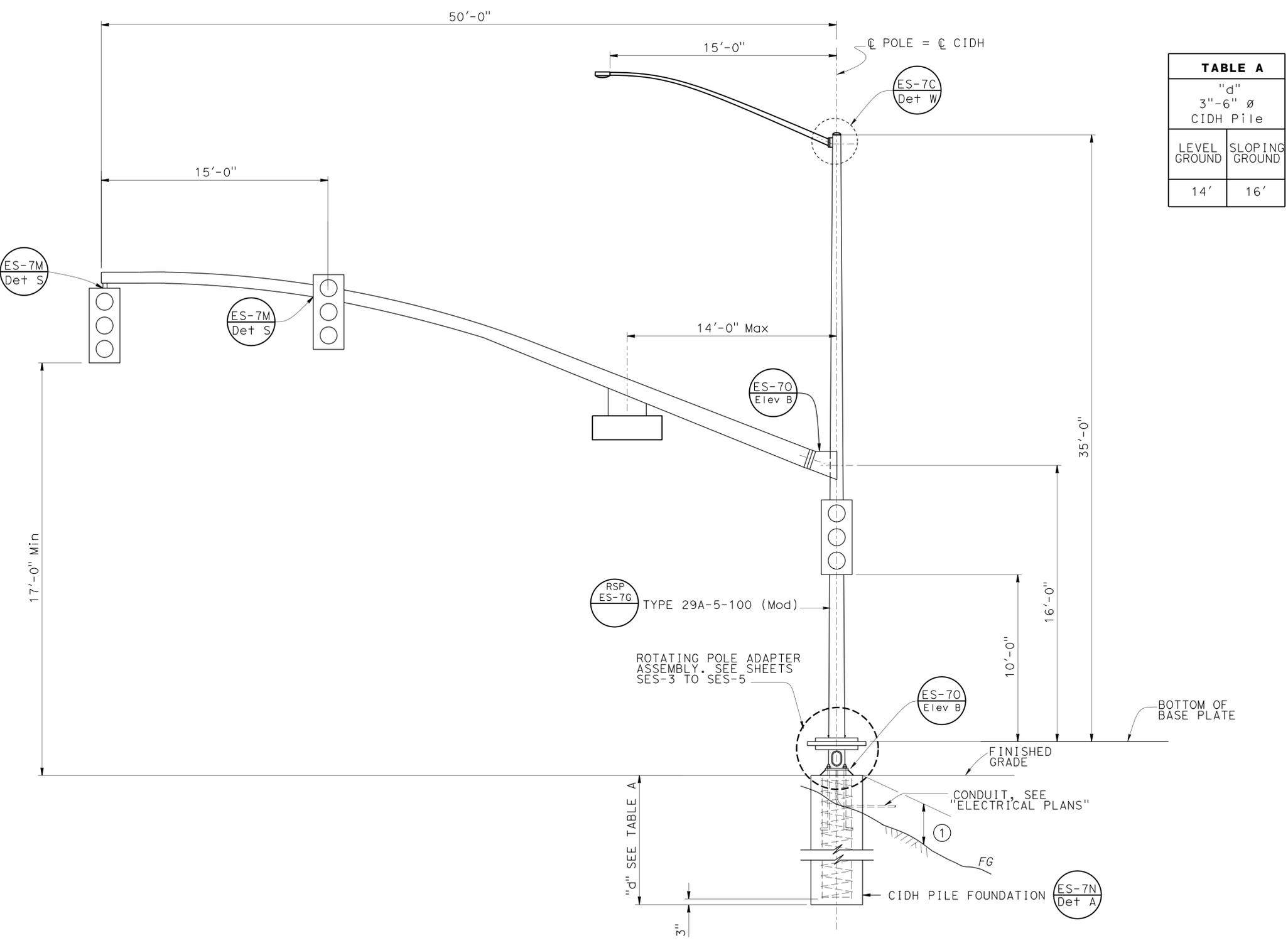


TABLE A	
"d" 3'-6" Ø CIDH Pile	
LEVEL GROUND	SLOPING GROUND
14'	16'

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 Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition

**LOADING**  
 Wind Loading : (3 sec gust) 100 mph

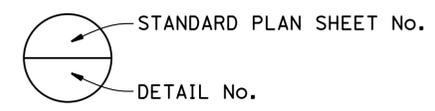
**UNIT STRESSES**  
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 fy = 50,000 psi unless otherwise noted.  
 Anchor bolts: fy = 55,000 psi  
 Reinforced Concrete: f'c = 3,600 psi  
 fy = 60,000 psi

- NOTES:**
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  - For Type 29A-5-100 (Mod) details not shown, see 2010 Revised Standard Plan ES-7G.
  - All steel must be galvanized after fabrication.
  - During pole erection the post must be raked as necessary with the use of leveling nuts to provide a plumb pole axis.
  - Foundation must be treated as level ground condition if slope inclination is flatter than 4H:1V.
  - The Engineer will determine final location of rotating pole.
  - Foundation design is base on AASHTO LTS-5 article 13.6 Broms' approximate procedure assuming a cohesionless material. The angle of internal friction used is 30 degrees and unit weight of soil used is 120 lb/ft<sup>3</sup>.
  - For details not shown, see "2010 STANDARD PLANS" and "2010 REVISED STANDARD PLANS".

① 1'-3" maximum for sloped finished grade

**ELEVATION**  
**TYPE 29A-5-100 (Mod)**

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

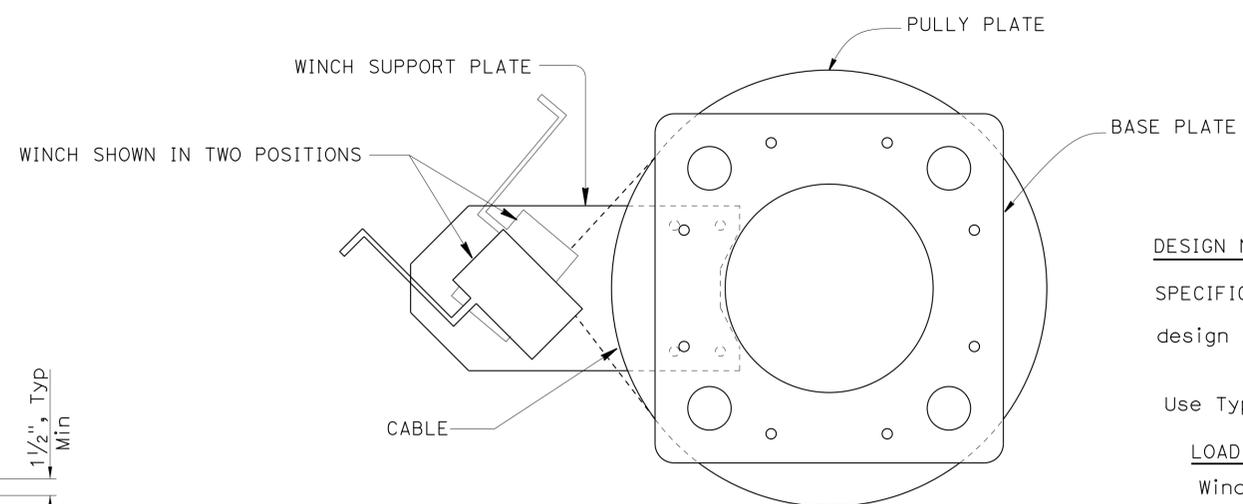


BRANCH CHIEF <b>JEFF WOODY</b>	DESIGN BY <b>E. LOPEZ</b>	CHECKED BY <b>M. LICHA</b>	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN SPECIAL DESIGN BRANCH	BRIDGE NO.	<b>TYPE 29A-5-100 MODIFIED</b>	<b>SES-2</b>	
	DETAILS BY <b>T. NGUYEN</b>	CHECKED BY <b>E. LOPEZ</b>			POST MILE 43.492			REVISION DATES 1/22/14 5/12/14 3/17/14 4/28/14
	QUANTITIES BY	CHECKED			CONTRACT NO.: 08-3555V1			

STRUCTURES DESIGN SPECIAL DESIGN SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3 UNIT: 3619 PROJECT NUMBER & PHASE: 0814000086-1 CONTRACT NO.: 08-3555V1 DISREGARD PRINTS BEARING EARLIER REVISION DATES

USERNAME => s124496 DATE PLOTTED => 27-JUN-2014 TIME PLOTTED => 11:28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	538	824
<i>Eliseo Lopez</i> REGISTERED CIVIL ENGINEER			4-30-14	DATE	
6-23-14			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.					



**SECTION B-B**  
Showing winch and winch support plate position

**DESIGN NOTES:**

**SPECIFICATIONS:**

design : AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition.

Use Type 29A-5-100 (Mod) With Rotating Pole Adapter.

**LOADING:**

Wind Loading : (3 Sec Gust) 100 mph

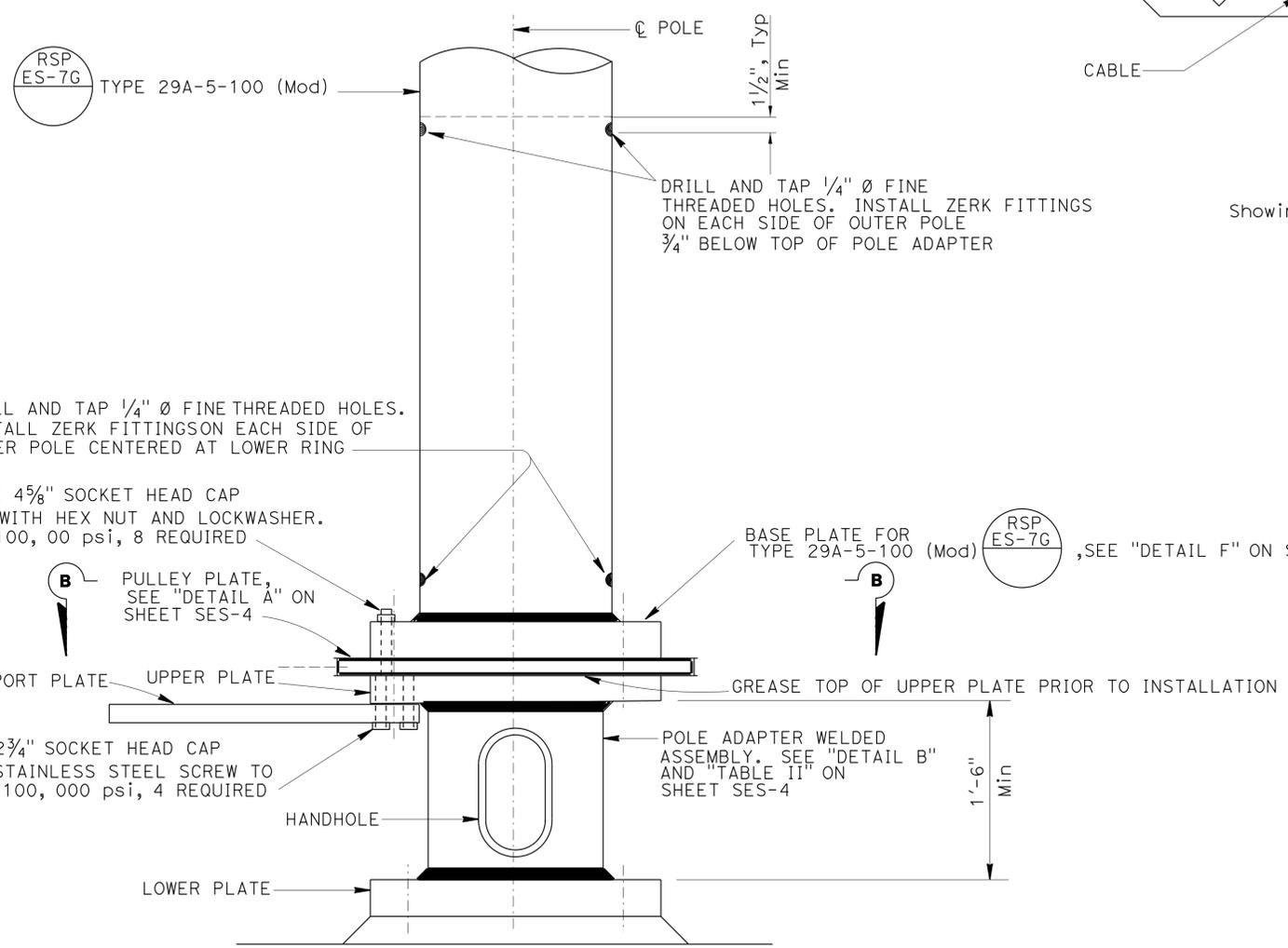
**UNIT STRESSES FOR ROTATING POLE ADAPTER ASSEMBLY**

fy = 55, 000 psi tapered steel tube  
 fy = 50, 000 psi structural steel unless otherwise noted

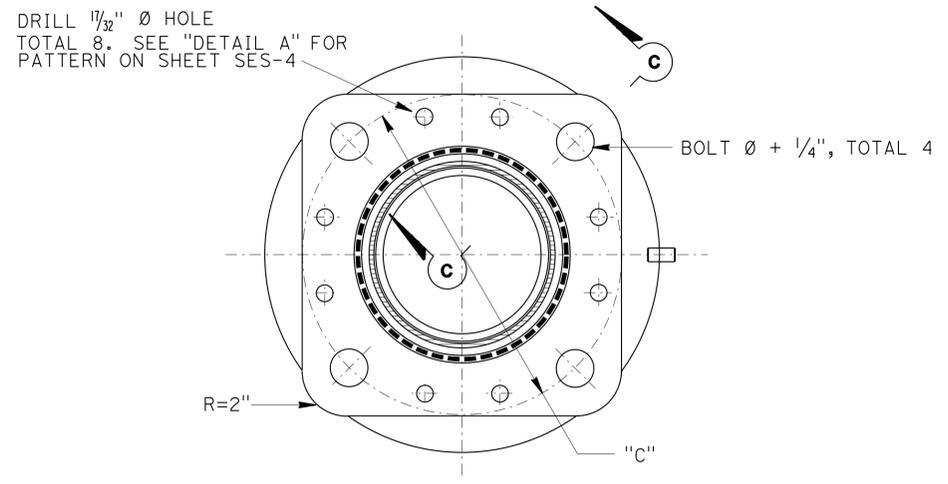
Anchor Bolts : fy = 55, 000 psi unless otherwise noted

**NOTES:**

1. Washer assembly consists of two fiber, two flat and lock washers.
2. All steel must be galvanized after fabrication unless otherwise noted.
3. See "SECTION C-C" on sheet SES-4.
4. For c dimension, see "table I" on sheet SES-5.
5. For details not shown, see 2010 "STANDARD PLANS" and 2010 "REVISED STANDARD PLANS".



**ROTATING POLE ASSEMBLY**  
(Some fasteners not shown)



**SECTION B-B**  
(Bolts and nuts not shown)

NO SCALE

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

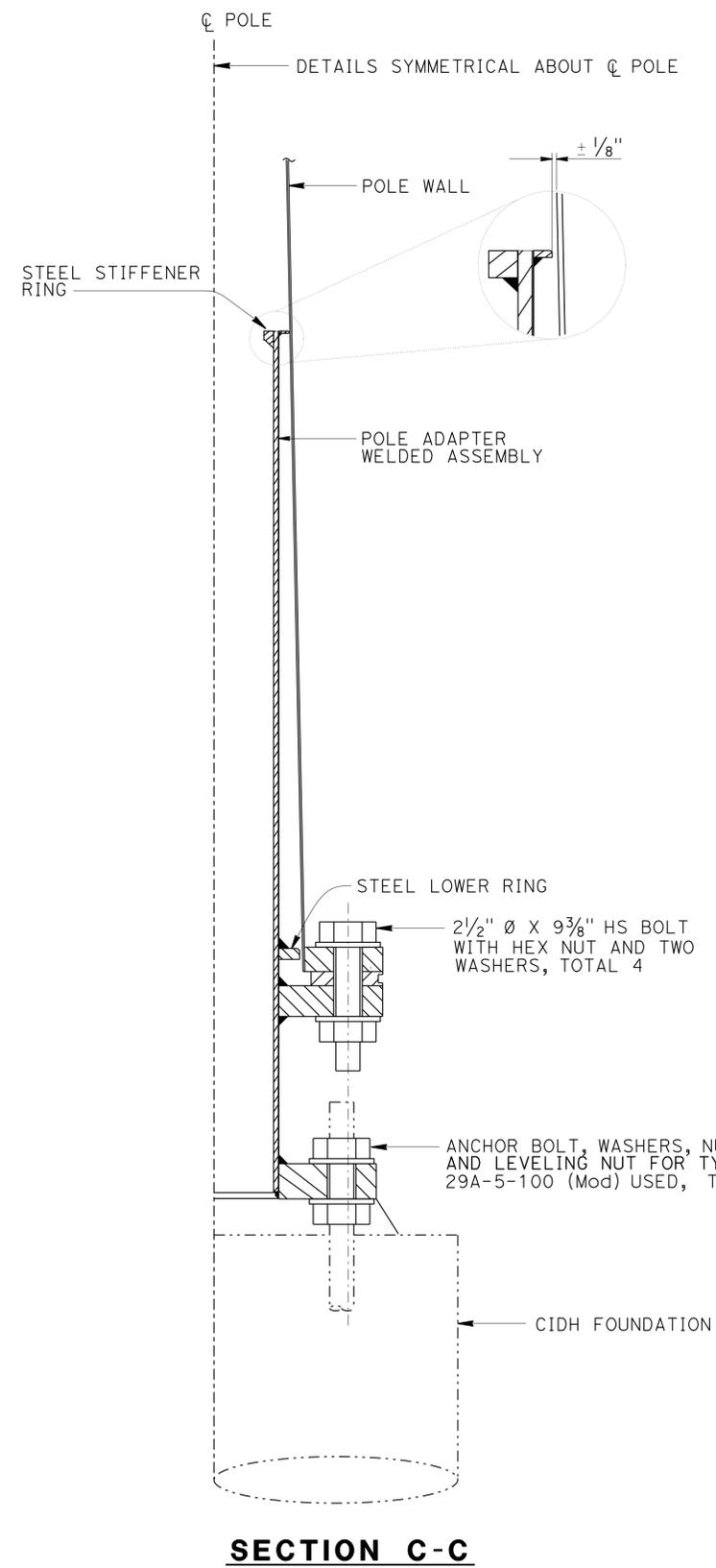
BRANCH CHIEF	JEFF WOODY		DESIGN	BY E. LOPEZ	CHECKED M. LICHA	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN SPECIAL DESIGN BRANCH	BRIDGE NO.	TYPE 29A-5-100 MODIFIED		SES-3
			DETAILS	BY J. GUO / T. NGUYEN	CHECKED E. LOPEZ			POST MILE	ROTATING POLE ADAPTER ASSEMBLY DETAILS No. 1		
		QUANTITIES	BY	CHECKED		UNIT: 3619	PROJECT NUMBER & PHASE: 0814000086-1	CONTRACT NO.: 08-3555V1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES
STRUCTURES DESIGN SPECIAL DESIGN SHEET (ENGLISH) (REV. 09-01-10)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		0	1	2	3	1/22/14	5/12/14	5/8/14	5/28/14

USERNAME => s124496 DATE PLOTTED => 27-JUN-2014 TIME PLOTTED => 11:28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	539	824

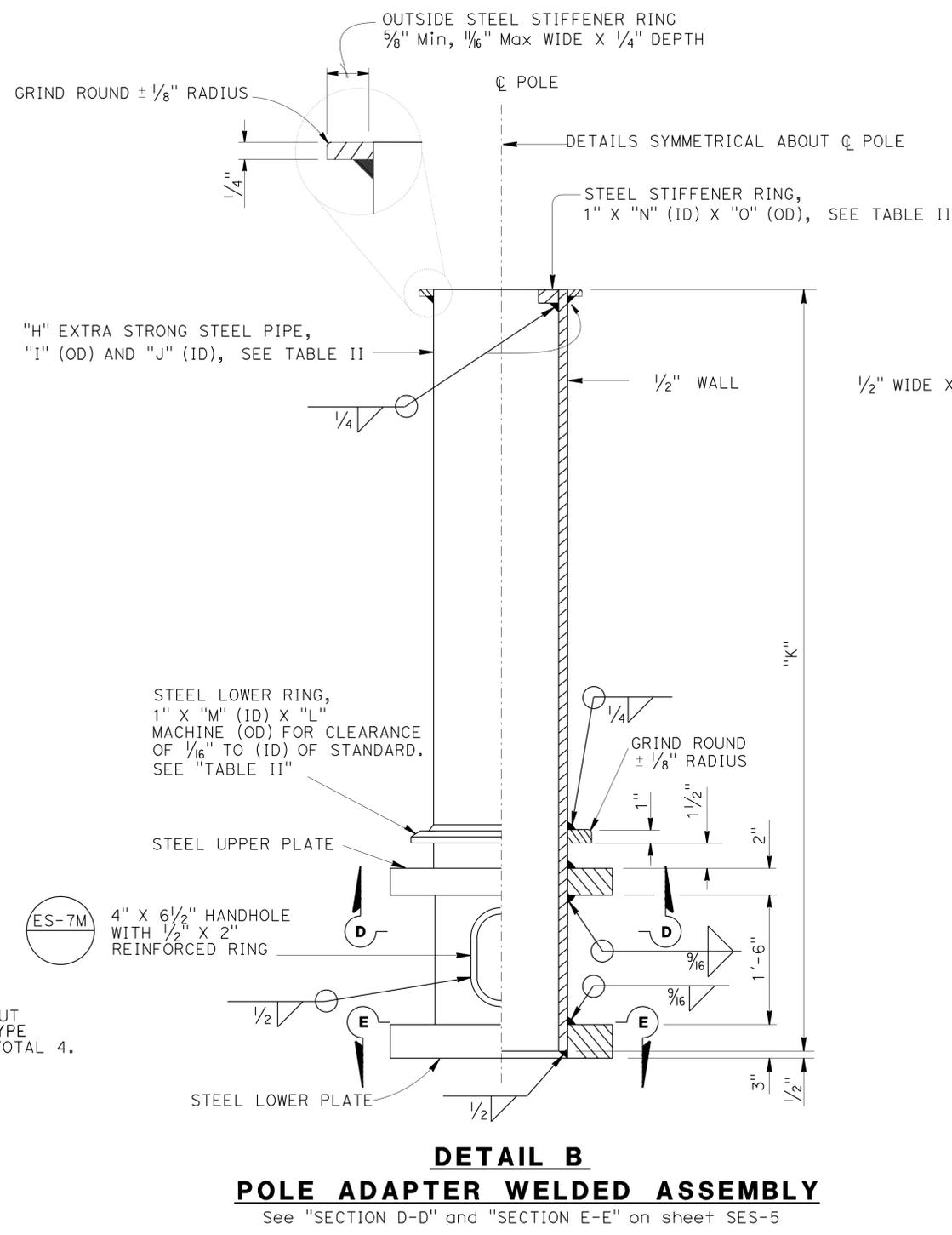
Eliseo Lopez  
 REGISTERED CIVIL ENGINEER  
 4-30-14 DATE  
 6-23-14 PLANS APPROVAL DATE  
 No. C72910  
 Exp. 12/31/14  
 CIVIL  
 STATE OF CALIFORNIA

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**SECTION C-C**

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

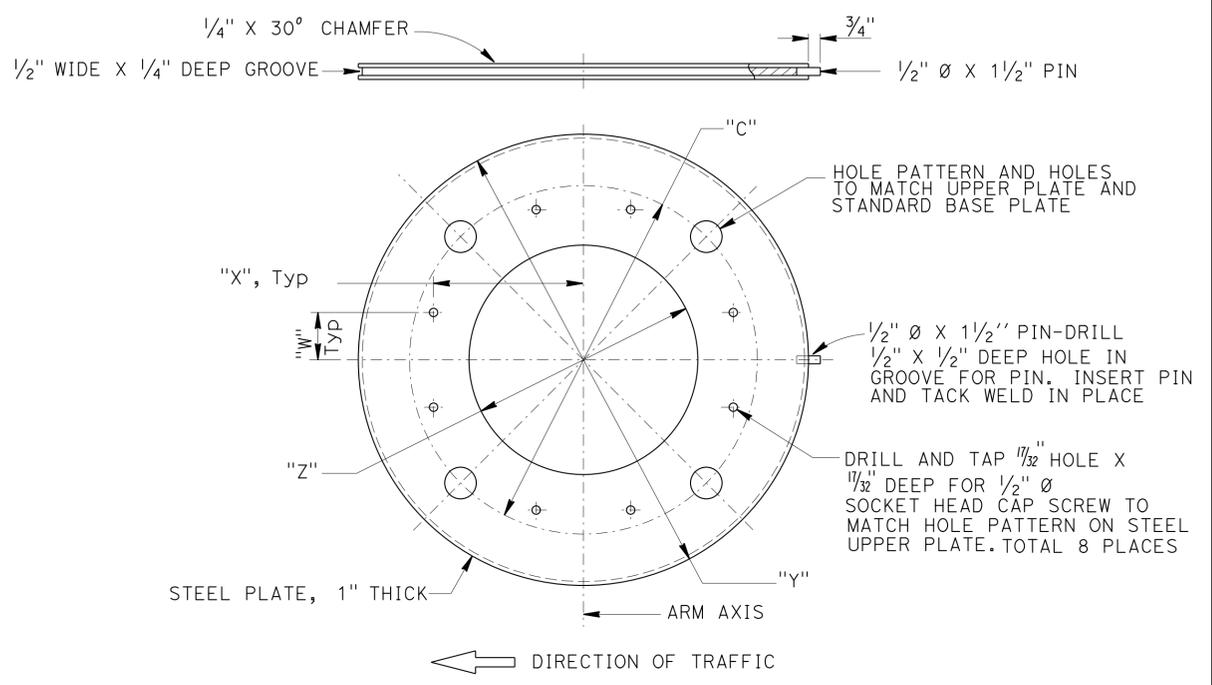


**DETAIL B**  
**POLE ADAPTER WELDED ASSEMBLY**  
 See "SECTION D-D" and "SECTION E-E" on sheet SES-5

**TABLE II**

SIGNAL & LIGHTING STANDARD (Mod)	POLE ADAPTER WELDED ASSEMBLY							
	XS PIPE				LOWER RING		STIFFENER RING	
	"H"	"I" (OD)	"J" (ID)	"K"	"L" (OD)	"M" (ID)	"N" (ID)	"O" (OD)
TYPE 29A-5-100	10"	10 3/4"	9 3/4"	9'-0"	12 1/8"	10 3/4"	8 3/4"	9 3/4"

ID = Inside diameter  
 OD = Outside diameter



**DETAIL A**  
**PULLEY PLATE**

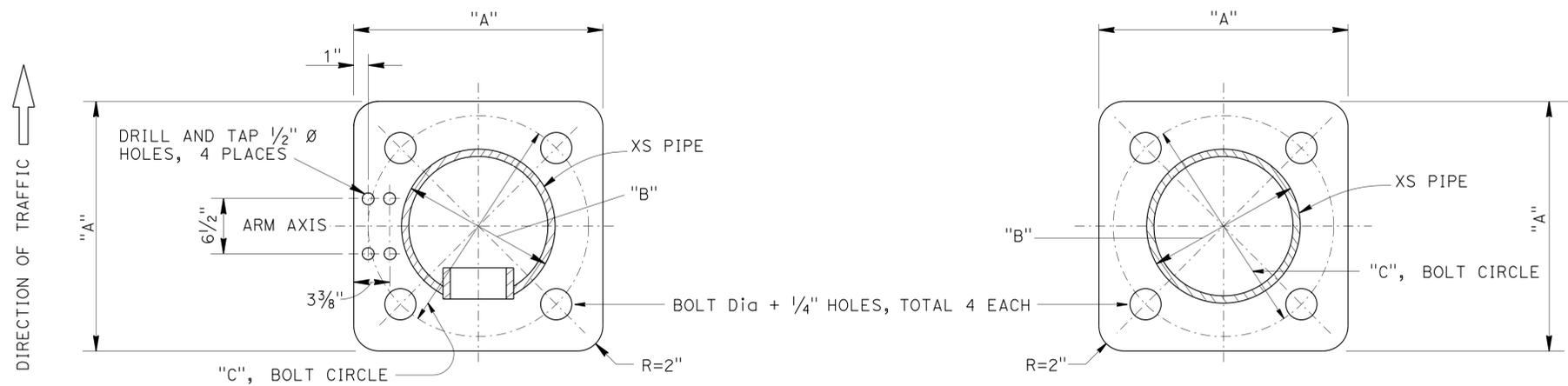
**TABLE III**

SIGNAL & LIGHTING STANDARD (Mod)	PULLEY PLATE DIMENSIONS			
	"W"	"X"	"Y"	"Z"
TYPE 29A-5-100	3"	9 1/2"	28 1/2"	14 1/2"

NO SCALE

BRANCH CHIEF JEFF WOODY	DESIGN	BY E. LOPEZ	CHECKED M. LICHA	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN	BRIDGE NO.	TYPE 29A-5-100 MODIFIED	SES-4	
	DETAILS	BY J. GUO / T. NGUYEN	CHECKED E. LOPEZ			POST MILE			ROTATING POLE ADAPTER ASSEMBLY DETAILS No. 2
	QUANTITIES	BY	CHECKED			43.492			

STRUCTURES DESIGN SPECIAL DESIGN SHEET (ENGLISH) (REV. 09-01-10)  
 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 UNIT: 3619  
 PROJECT NUMBER & PHASE: 0814000086-1  
 CONTRACT NO.: 08-3555V1  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES: 1/22/14, 5/12/14, 6/3/14, 4/28/14  
 SHEET OF



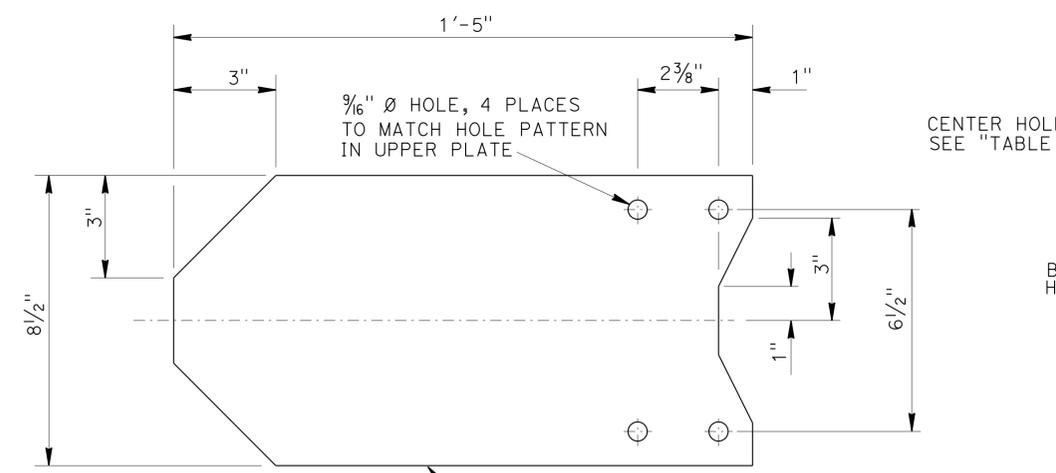
**SECTION D-D**

**SECTION E-E**

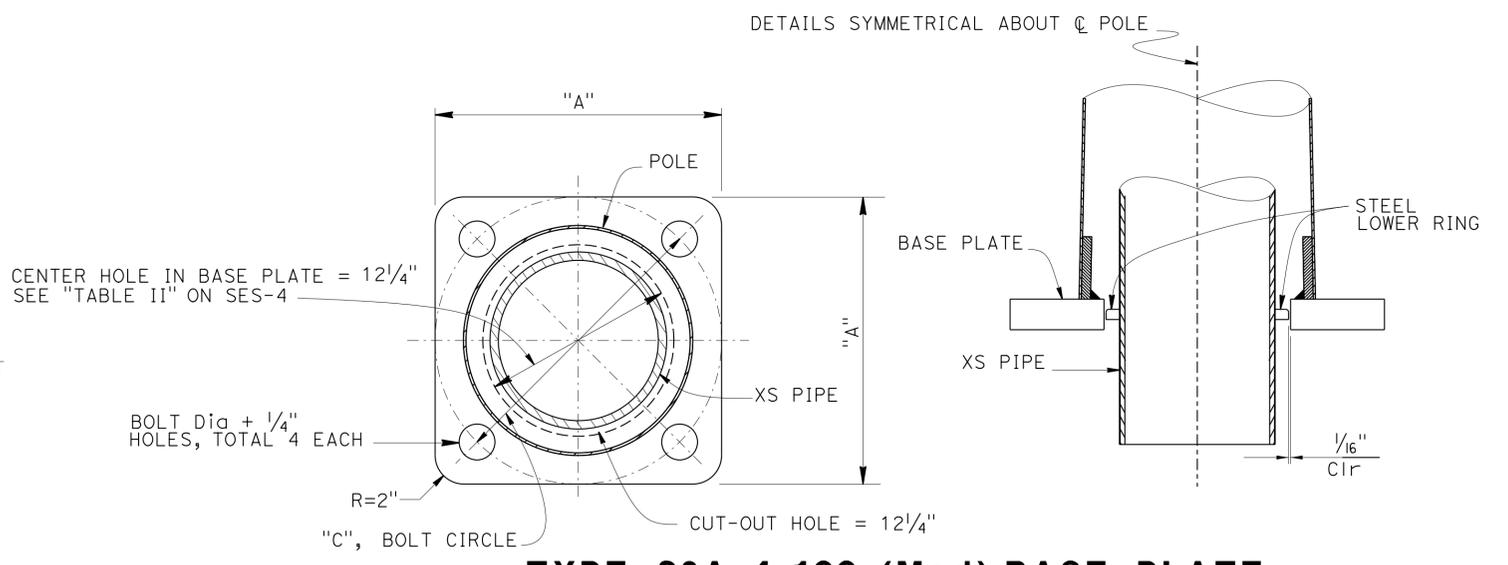
**UPPER & LOWER PLATE**

**TABLE I**

SIGNAL & LIGHTING STANDARD (Mod)	UPPER & LOWER PLATE DIMENSIONS		
	"A"	"B"	"C"
TYPE 29A-5-100	23"	10 3/4"	21"



**WINCH SUPPORT PLATE**



**TYPE 26A-4-100 (Mod) BASE PLATE**

**DETAIL F**

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

**NOTE:**  
SEE "DETAIL B" ON SHEET SES-4 FOR "SECTION D-D" AND "SECTION E-E" OF UPPER AND LOWER PLATE.

NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	541	824

*Eliseo Lopez*  
 REGISTERED CIVIL ENGINEER DATE 4-30-14  
 PLANS APPROVAL DATE 6-23-14  
 No. C72910  
 Exp. 12/31/14  
 CIVIL  
 STATE OF CALIFORNIA

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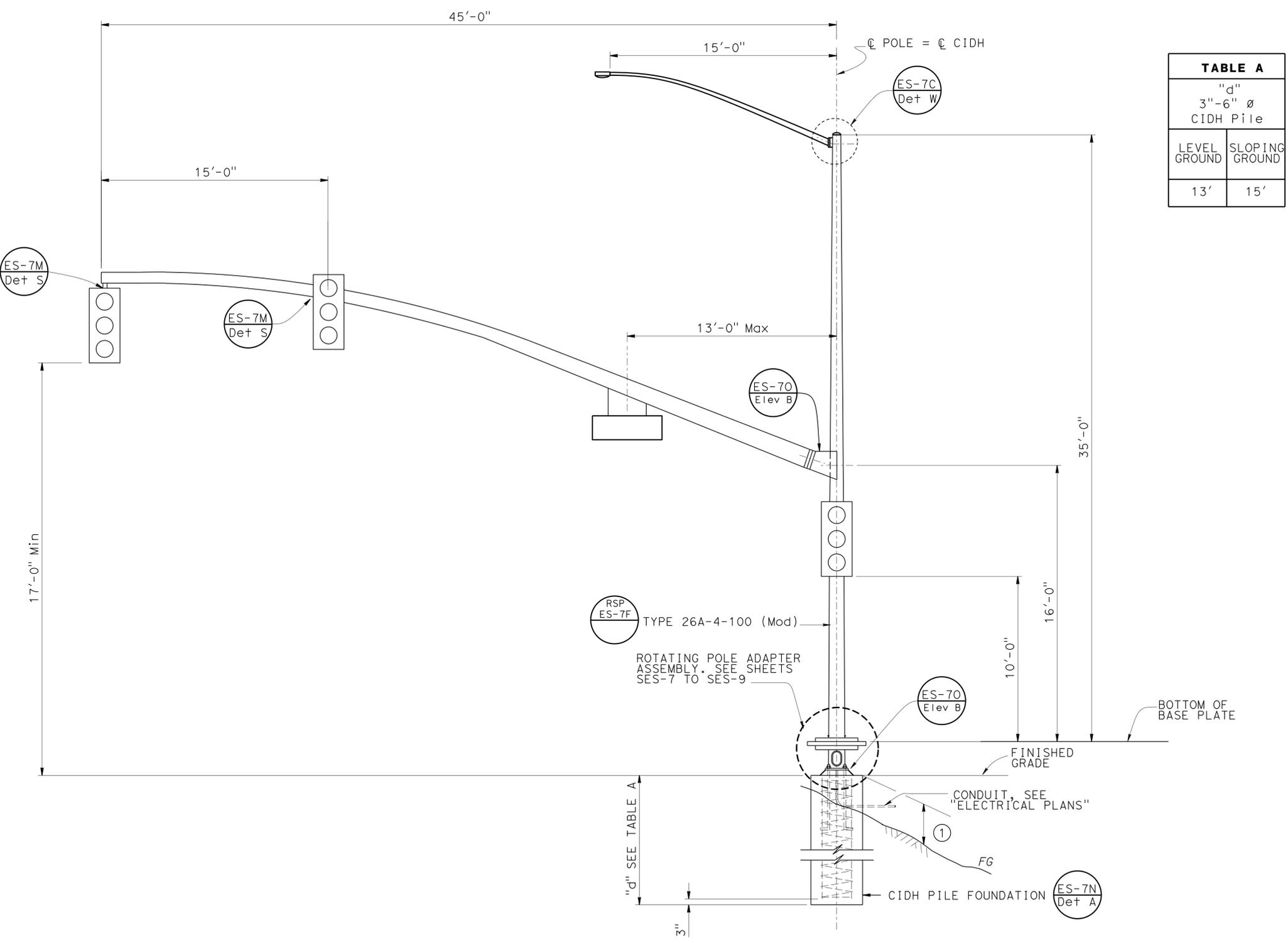


TABLE A	
"d" 3"-6" Ø CIDH Pile	
LEVEL GROUND	SLOPING GROUND
13'	15'

**DESIGN NOTES:**

**SPECIFICATIONS**  
 Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition

**LOADING**  
 Wind Loading : (3 sec gust) 100 mph

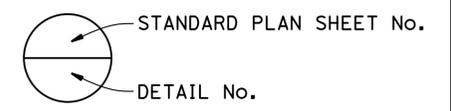
**UNIT STRESSES**  
 Structural Steel: fy = 55,000 psi tapered steel tube  
 fy = 50,000 psi unless otherwise noted  
 Anchor bolts: fy = 55,000 psi unless otherwise noted  
 Reinforced Concrete: f'c = 3,600 psi  
 fy = 60,000 psi

- NOTES:**
1. For rotating pole locations, see "PROJECT PLANS".
  2. For Type 29A-5-100 (Mod) details not shown, see 2010 Revised Standard Plan ES-7F.
  3. All steel must be galvanized after fabrication.
  4. During pole erection the post must be raked as necessary with the use of leveling nuts to provide a plumb pole axis.
  5. Foundation must be treated as level ground condition if slope inclination is flatter than 4H:1V.
  6. The Engineer will determine final location of rotating pole.
  7. Foundation design is base on AASHTO LTS-5 article 13.6 Broms' approximate procedure assuming a cohesionless material. The angle of internal friction used is 30 degrees and unit weight of soil used is 120 lb/ft<sup>3</sup>.
  8. For details not shown, see "2010 STANDARD PLANS" and "2010 REVISED STANDARD PLANS".

① 1'-3" maximum for sloped finished grade

**ELEVATION**  
**TYPE 26A-4-100 (Mod)**

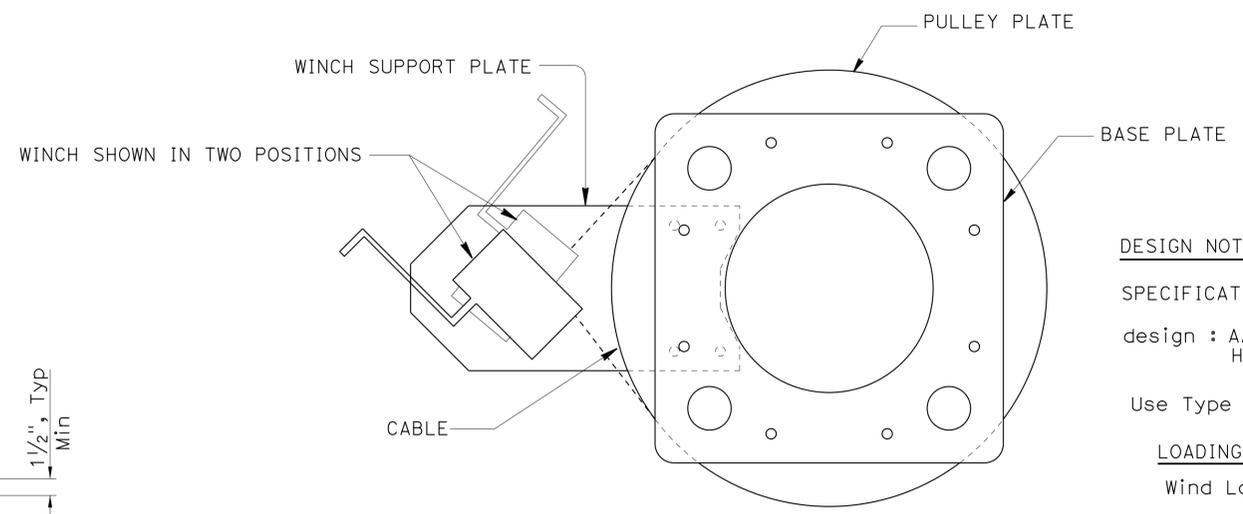
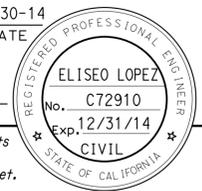
NOTE:  
 THE CONTRACTOR MUST VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.



BRANCH CHIEF JEFF WOODY	DESIGN BY E. LOPEZ	CHECKED M. LICHA	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN SPECIAL DESIGN BRANCH	BRIDGE NO.	TYPE 26A-4-100 MODIFIED ROTATING POLE LAYOUT	SES-6
	DETAILS BY T. NGUYEN	CHECKED E. LOPEZ			POST MILE		
	QUANTITIES BY	CHECKED			43.492		

NO SCALE  
 UNIT: 3619  
 PROJECT NUMBER & PHASE: 0814000086-1 CONTRACT NO.: 08-3555V1  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES: 3/24/14, 5/12/14, 4/2/14, 4/28/14  
 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3  
 FILE => 08-3555v1-ses06.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	542	824
<i>Eliseo Lopez</i> REGISTERED CIVIL ENGINEER			4-30-14	DATE	
6-23-14			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.					



**SECTION B-B**  
Showing winch and winch support plate position

**DESIGN NOTES:**

**SPECIFICATIONS:**

design : AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition.

Use Type 26A-4-100 (Mod) With Rotating Pole Adapter.

**LOADING:**

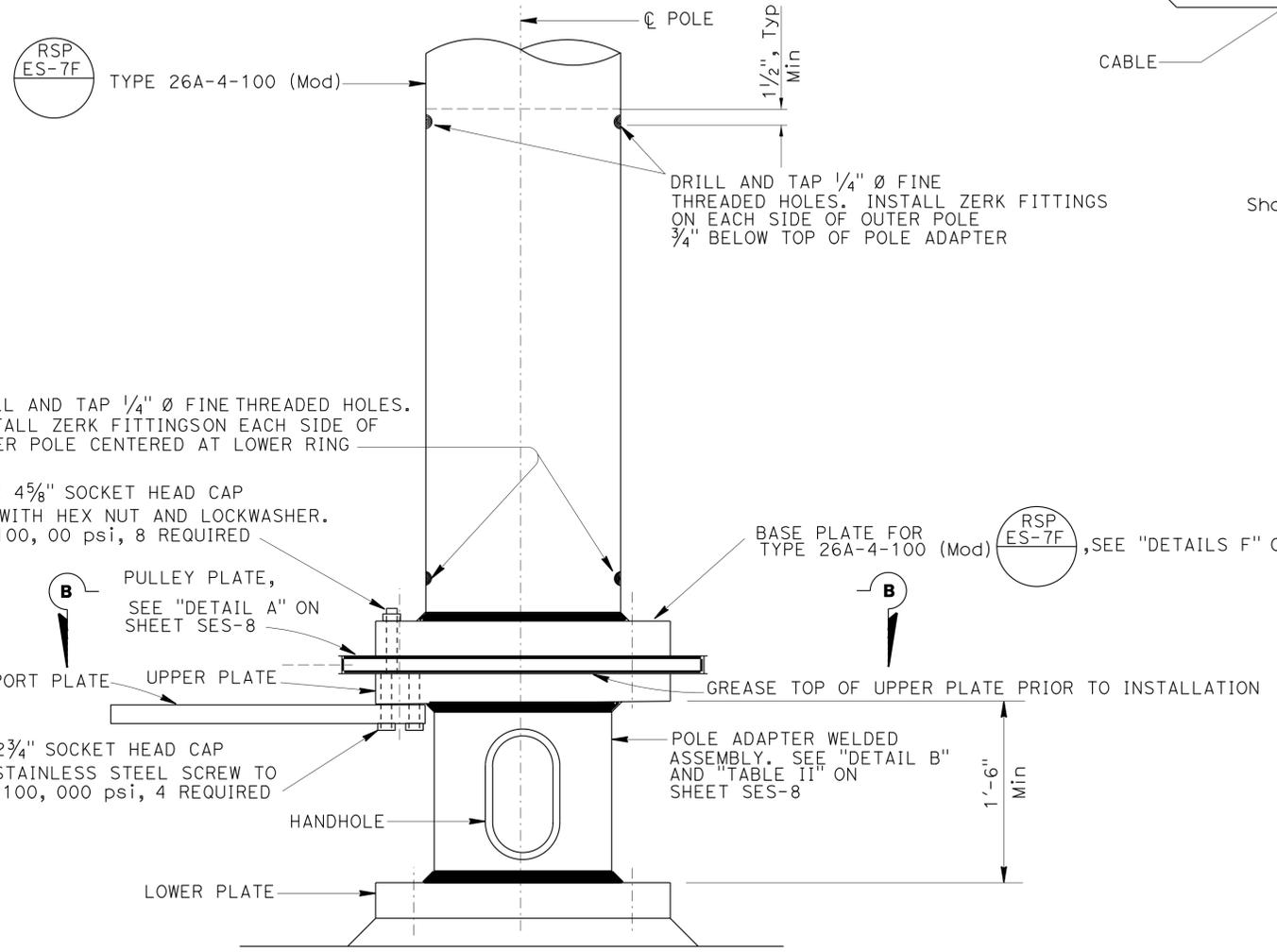
Wind Loading : (3 Sec Gust) 100 mph

**UNIT STRESSES FOR ROTATING POLE ADAPTER ASSEMBLY**

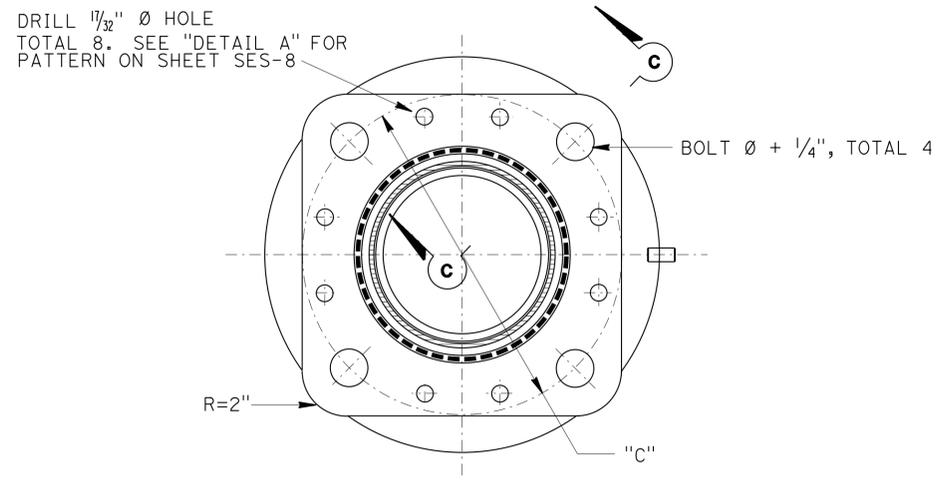
- fy = 50, 000 psi steel tube
- fy = 50, 000 psi structural steel unless otherwise noted
- Anchor Bolts: fy = 50, 000 psi unless otherwise noted

**NOTES:**

1. Washer assembly consists of two fiber, two flat and lock washers.
2. All steel must be galvanized after fabrication unless otherwise noted.
3. See "SECTION C-C" on sheet SES-8.
4. For c dimension, see "table I" on sheet SES-9.
5. For details not shown, see 2010 "STANDARD PLANS" and 2010 "REVISED STANDARD PLANS".



**ROTATING POLE ASSEMBLY**  
(Some fasteners not shown)



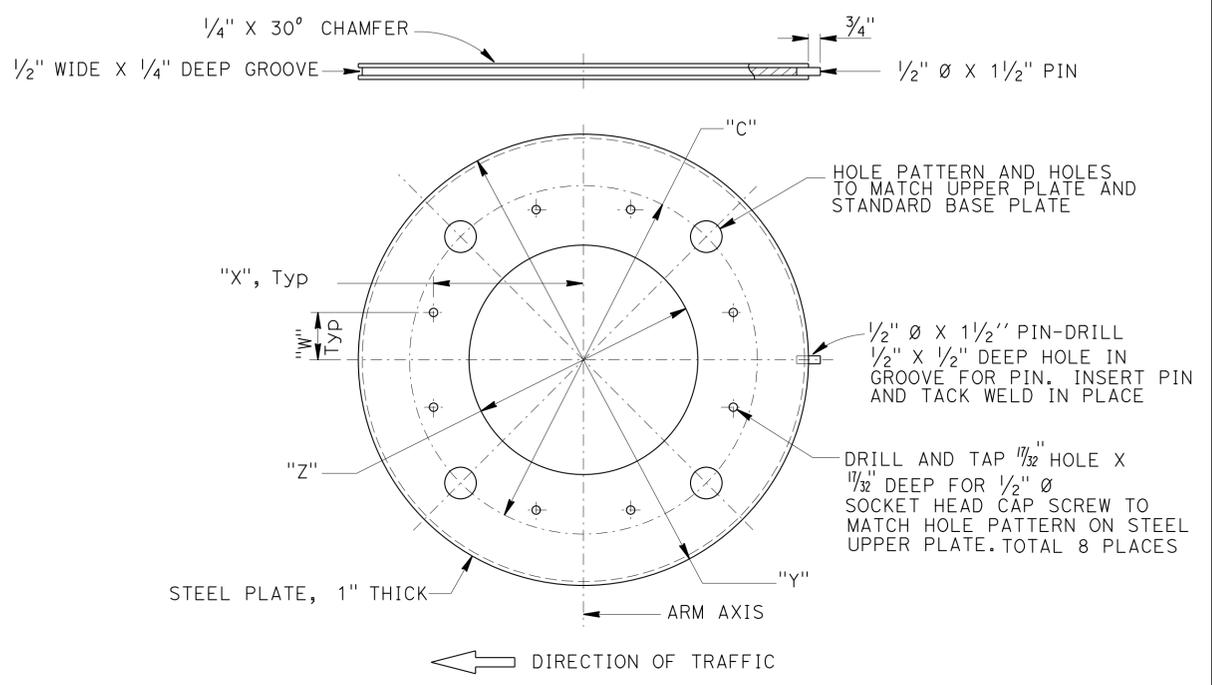
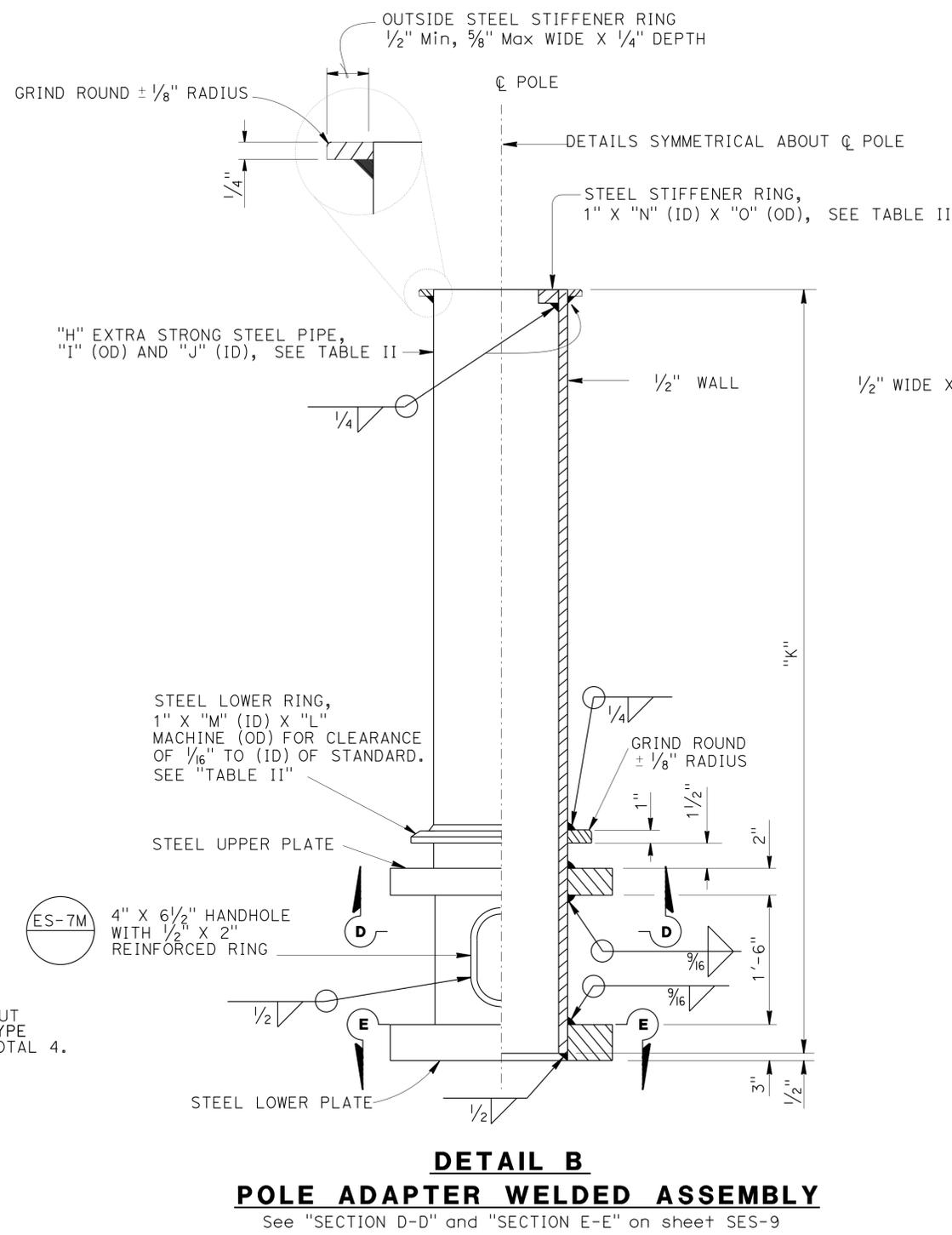
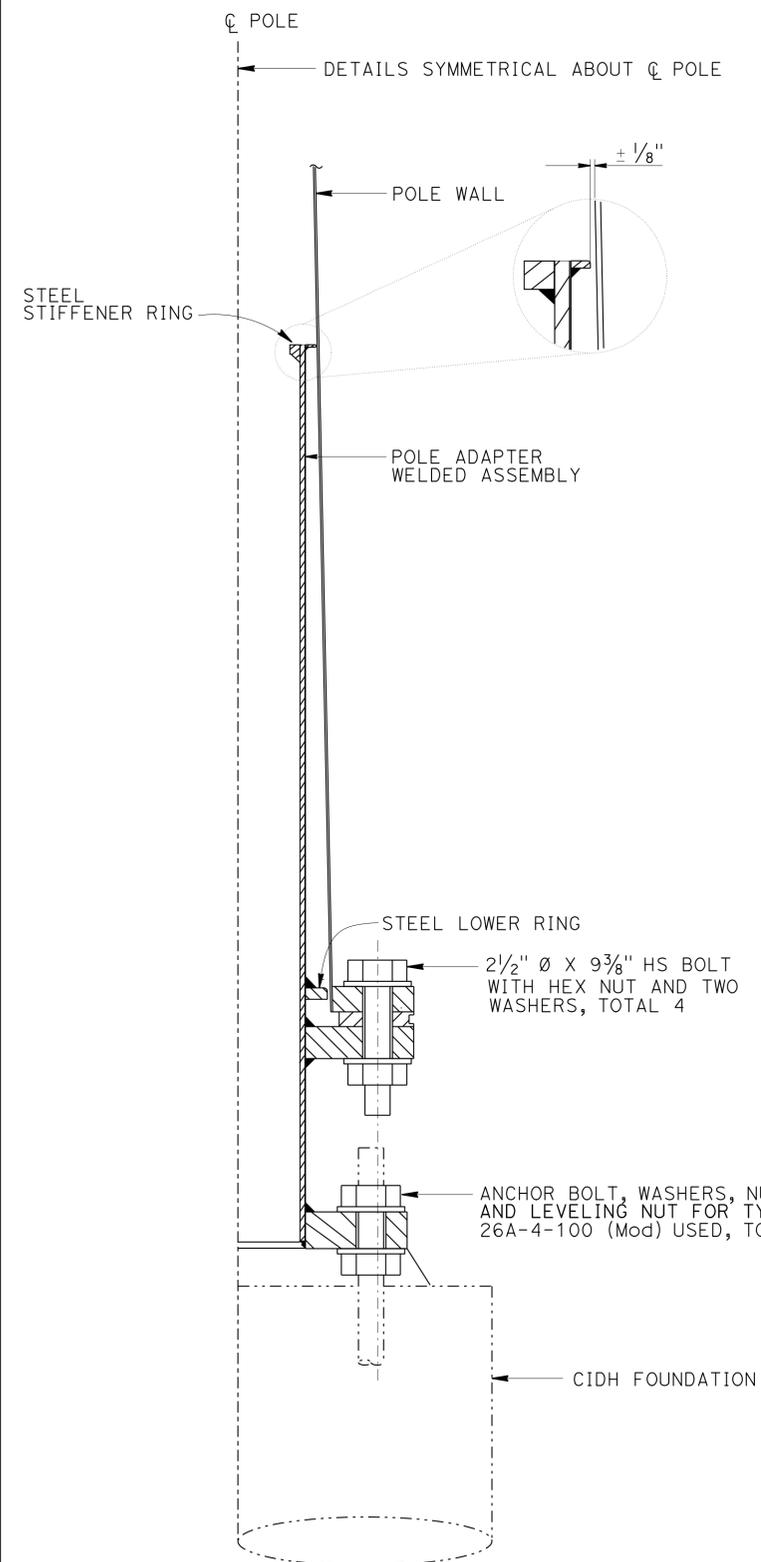
**SECTION B-B**  
(Bolts and nuts not shown)

NO SCALE

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

BRANCH CHIEF <b>JEFF WOODY</b>	DESIGN	BY E. LOPEZ	CHECKED M. LICHA	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN SPECIAL DESIGN BRANCH	BRIDGE NO.	<b>TYPE 26A-4-100 MODIFIED</b>	<b>SES-7</b>	
	DETAILS	BY T. NGUYEN	CHECKED E. LOPEZ			POST MILE			<b>ROTATING POLE ADAPTER ASSEMBLY DETAILS No. 1</b>
	QUANTITIES	BY	CHECKED			43.492			

USERNAME => s124496 DATE PLOTTED => 27-JUN-2014 TIME PLOTTED => 11:29



**DETAIL A**  
**PULLEY PLATE**

**TABLE III**

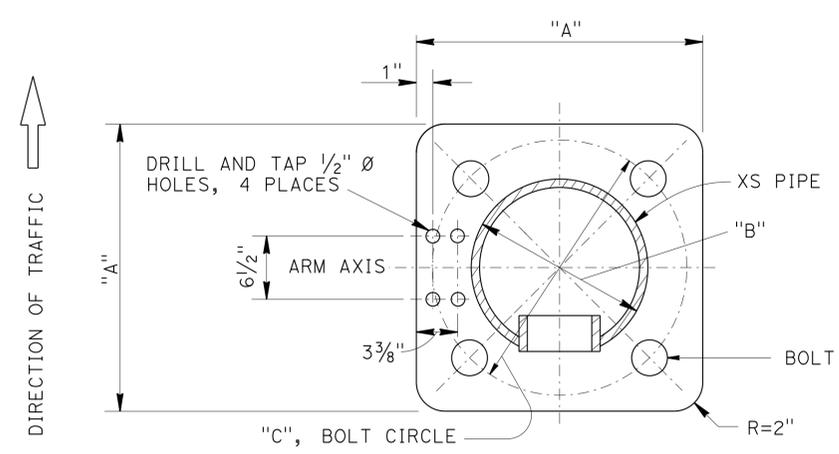
SIGNAL & LIGHTING STANDARD (Mod)	PULLEY PLATE DIMENSIONS			
	"W"	"X"	"Y"	"Z"
TYPE 26A-4-100	3"	9 $\frac{1}{2}$ "	28 $\frac{1}{2}$ "	14 $\frac{1}{2}$ "

**TABLE II**

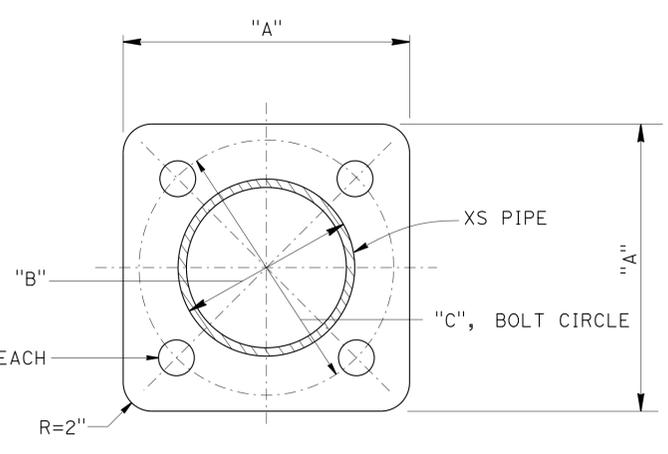
SIGNAL & LIGHTING STANDARD (Mod)	POLE ADAPTER WELDED ASSEMBLY							
	XS PIPE				LOWER RING		STIFFENER RING	
	"H"	"I" (OD)	"J" (ID)	"K"	"L" (OD)	"M" (ID)	"N" (ID)	"O" (OD)
TYPE 26A-4-100	10"	10 $\frac{3}{4}$ "	9 $\frac{3}{4}$ "	9'-0"	12 $\frac{1}{8}$ "	10 $\frac{3}{4}$ "	8 $\frac{3}{4}$ "	9 $\frac{3}{4}$ "

ID = Inside diameter  
OD = Outside diameter

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



**SECTION D-D**

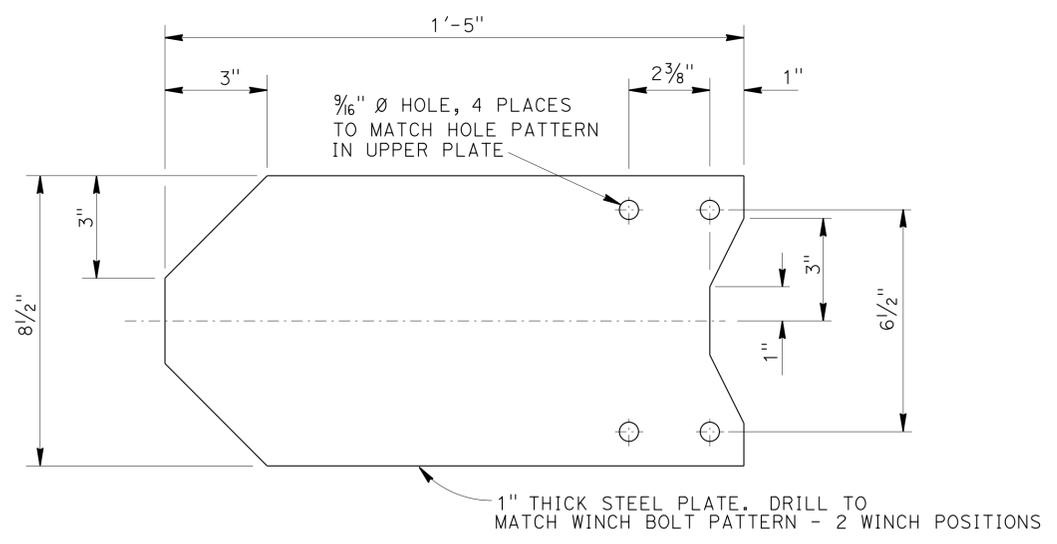


**SECTION E-E**

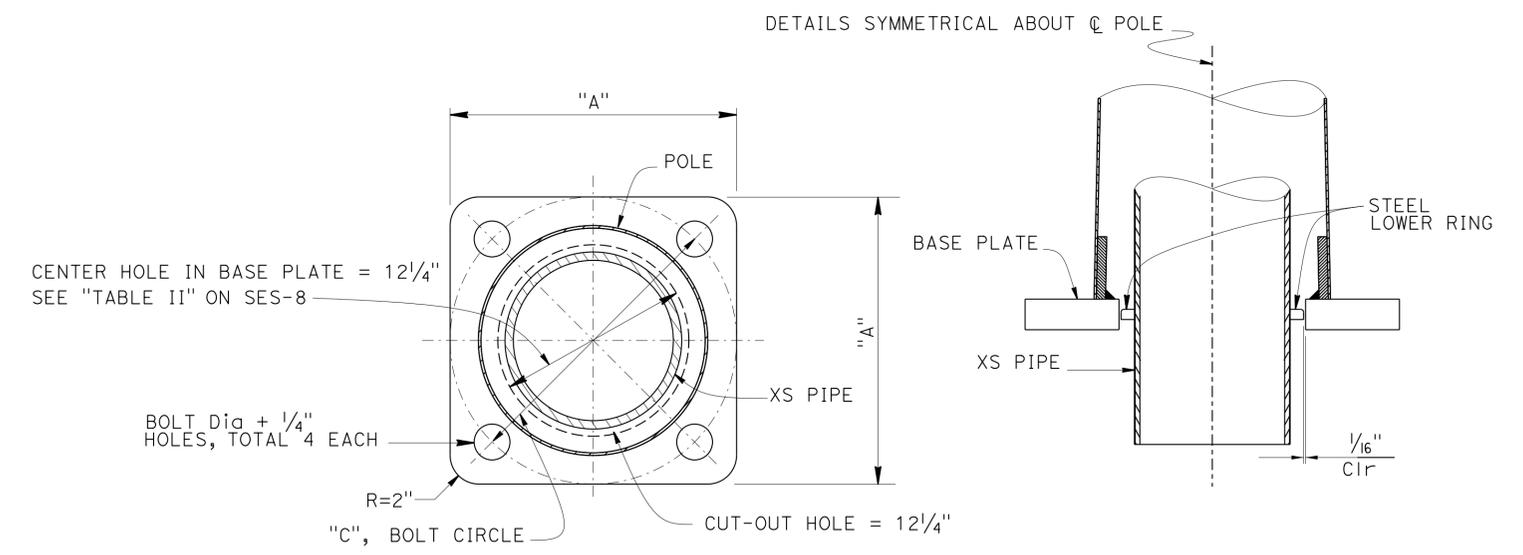
**UPPER & LOWER PLATE**

**TABLE I**

SIGNAL & LIGHTING STANDARD (Mod)	UPPER & LOWER PLATE DIMENSIONS		
	"A"	"B"	"C"
26A-4-100	23"	10 3/4"	21"



**WINCH SUPPORT PLATE**



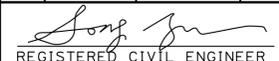
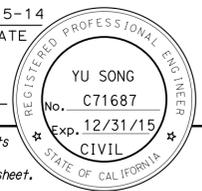
**TYPE 26A-4-100 (Mod) BASE PLATE**

**DETAIL F**

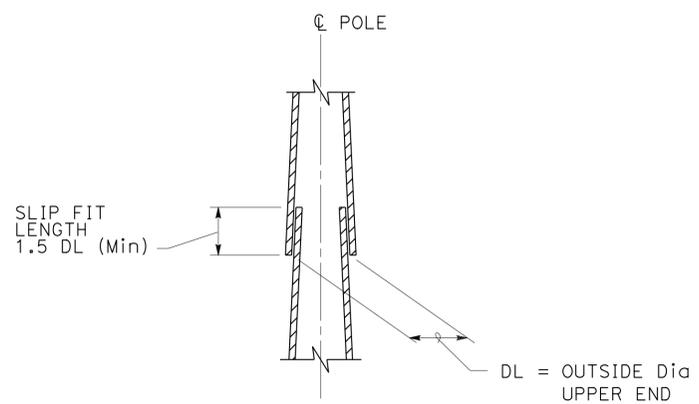
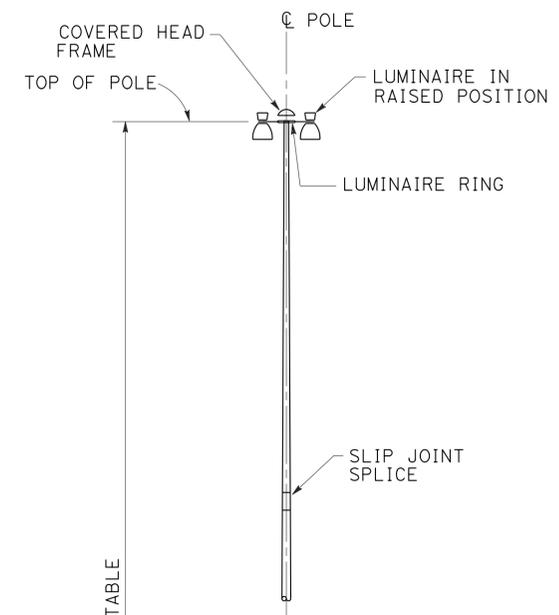
NOTE:  
 THE CONTRACTOR MUST VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

**NOTE:**  
 SEE "DETAIL B" ON SHEET SES-8 FOR "SECTION D-D" AND "SECTION E-E" OF UPPER AND LOWER PLATE.

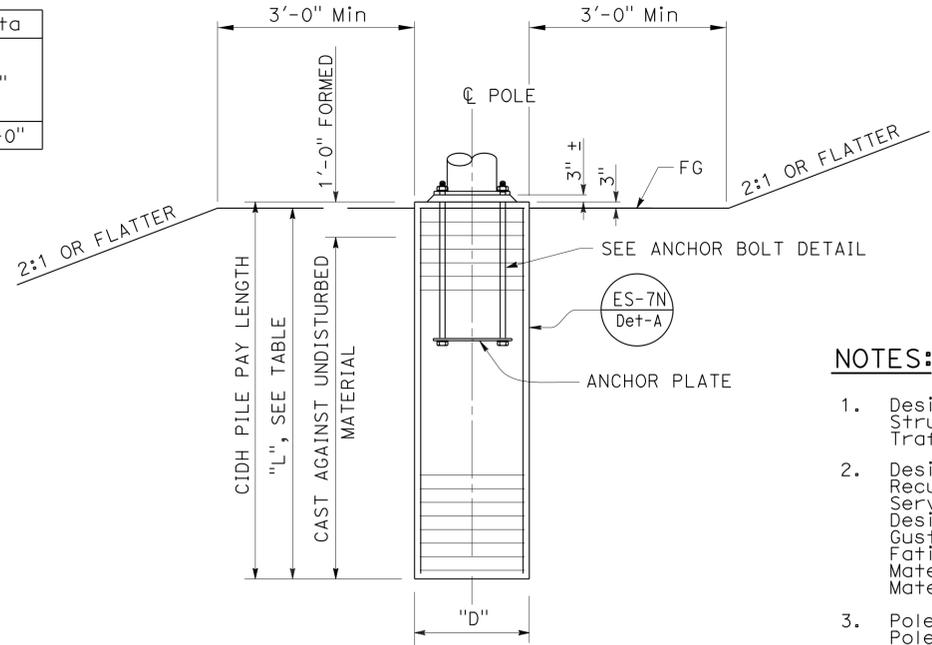
NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	545	824
 REGISTERED CIVIL ENGINEER			6-5-14	DATE	
6-23-14			PLANS APPROVAL DATE		
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.					

Pole Type	Pole Data					Base Plate Data			CIDH Pile Data	
	Height "H"	Min OD Base	Min Thickness Base	Dia	Thick-ness	Anchor Bolts			"D"	"L"
						Total	Size "d"	BOLT CIRCLE (BC)		
HM 100	100'-0"	2'-2"	1/2"	3'-6"	3"	12	1 3/4"	3'-0"	6'-0"	15'-0"



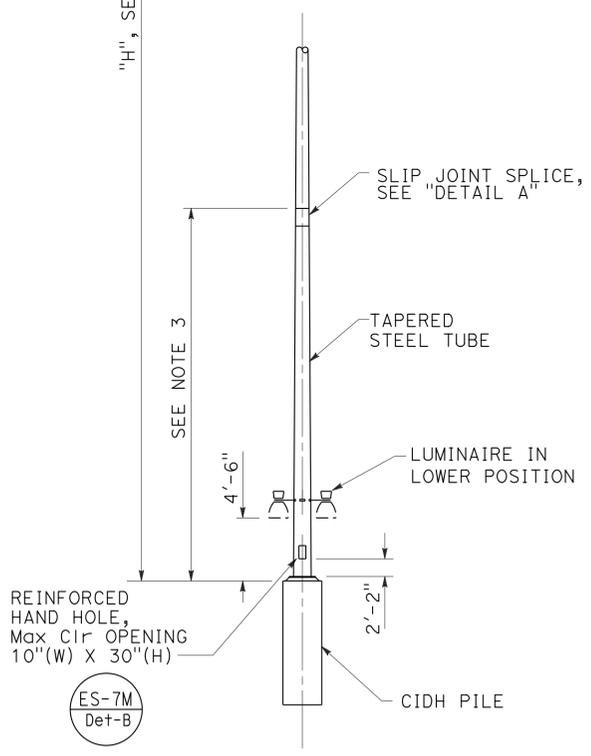
**SLIP JOINT SPLICE DETAIL**  
DETAIL A



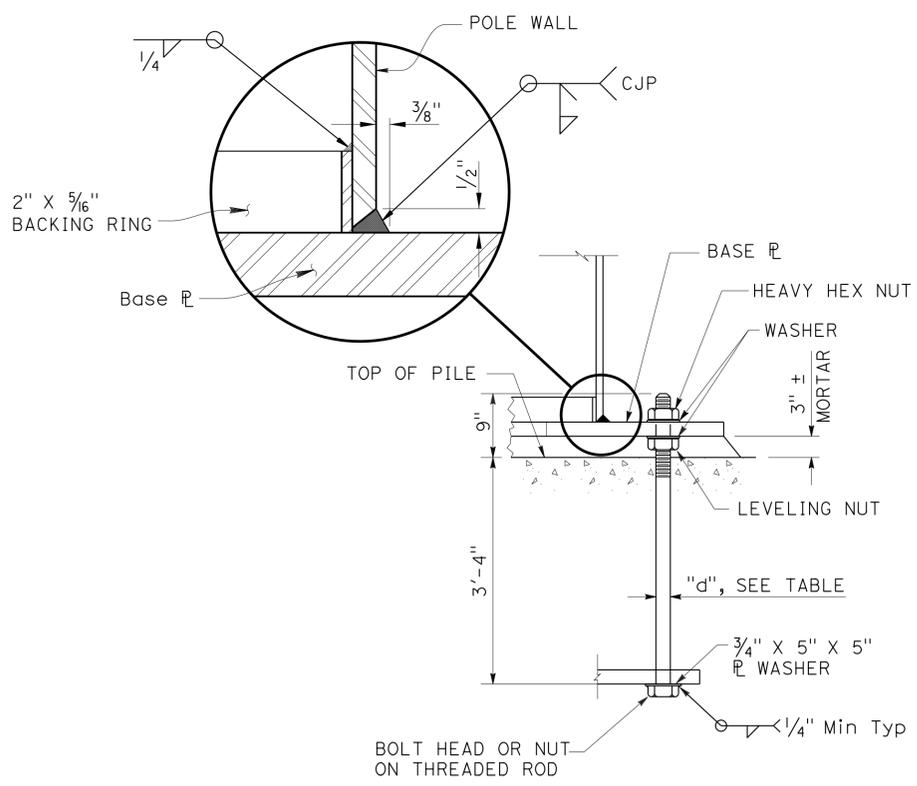
**TYPICAL LOCATION**  
ELEVATION B

**NOTES:**

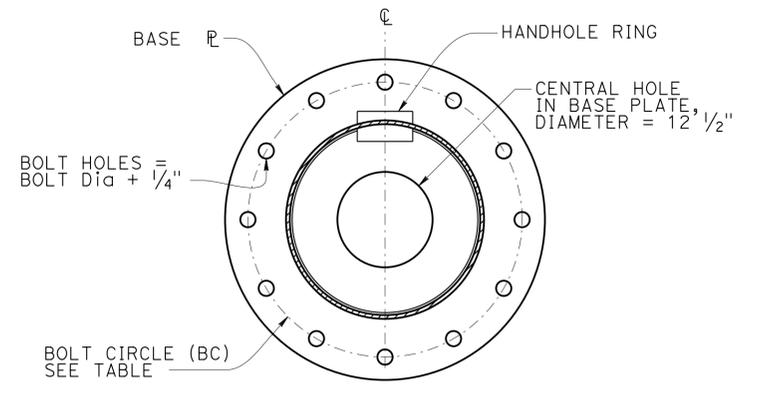
- Design conforms to 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition.
- Design Criteria:  
 Recurrence Interval = 50 Years  
 Service Life = 50 Years  
 Design Wind Speed = 85 mph (3-second gust speed)  
 Gust Effect Factor = 1.14  
 Fatigue Importance Category = 1  
 Materials (Steel Poles and hand hole): 55,000 Psi yield strength  
 Materials (Steel Anchor bolts): 55,000 Psi yield strength
- Pole details must suit the lowering device and foundation plan. Pole details must be submitted to the Engineer for approval.
- Pole must be round or minimum 12-sided and tapered at a rate of 0.14 inch per foot.
- Maximum number of luminaires is Ten(10). Maximum weight of each luminaire is 85 lbs, with exposed projected area of 3.4 ft<sup>2</sup>. For number of luminaires to be mounted on the pole, see Electrical Plans.
- Base plate shape is optional.
- For drain holes at pole base, see ES-6B Detail N.
- Hand hole opening must be located on the downstream side of traffic unless otherwise determined by the Engineer.
- The following soil parameters were assumed for the pole foundation design:  
 $\phi = 30^\circ$   
 $\gamma = 100$  pcf  
 $c = 1000$  psf



**POLE**  
ELEVATION A



**ANCHOR BOLT DETAIL**  
DETAIL B



**BASE PLATE DETAIL**  
DETAIL C

THE CONTRACTOR MUST VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

BRANCH CHIEF	DAVID A. NEUMANN	
	DESIGN	BY YU SONG
	DETAILS	BY P C WELLS
QUANTITIES	BY X	CHECKED X

DESIGN	BY YU SONG	CHECKED T MARCHENKO
DETAILS	BY P C WELLS	CHECKED YU SONG
QUANTITIES	BY X	CHECKED X

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN SPECIAL DESIGN BRANCH	BRIDGE No.	X
		POST MILE	42.5/46.0
		PROJECT NUMBER & PHASE:	0800000621

LIGHTING STANDARD, 100' HIGH MAST LIGHT POLE		SES-10
ELECTRICAL SYSTEMS		

	<b>M</b>	
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	
MtI	MATERIAL	
MVP	MAINTENANCE VEHICLE PULLOUT	
	<b>N</b>	
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	
	<b>O</b>	
Obir	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	
	<b>P</b>	
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 MtI	PERMEABLE MATERIAL	

	<b>P continued</b>	
PG	PROFILE GRADE	
PI	POINT OF INTERSECTION	
PJP	PARTIAL JOINT PENETRATION	
Pkwy	PARKWAY	
PL, 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	
	<b>Q</b>	
Qty	QUANTITY	
	<b>R</b>	
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	

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

	<b>T continued</b>	
TS	TRANSVERSE, TRAFFIC SIGNAL, TUBULAR STEEL	
Typ	TYPICAL	<b>U</b>
UC	UNDERCROSSING	
UD	UNDERDRAIN	
UG	UNDERGROUND	
UON	UNLESS OTHERWISE NOTED	
UP	UNDERPASS	<b>V</b>
V	VALVE, DESIGN SPEED	
Var	VARIABLE, VARIES	
VC	VERTICAL CURVE	
VCP	VITRIFIED CLAY PIPE	
Vert	VERTICAL	
Via	VIADUCT	
Vol	VOLUME	<b>W</b>
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	
WWL	WINGWALL LAYOUT LINE	<b>X</b>
X Sec	CROSS SECTION	
Xing	CROSSING	<b>Y</b>
Yr	YEAR	
Yrs	YEARS	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	546	824

*Grace M. Tsushima*  
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER  
 Grace M. Tsushima  
 No. C49814  
 Exp. 9-30-14  
 CIVIL  
 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 6-23-14

**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 <sup>3</sup> , 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

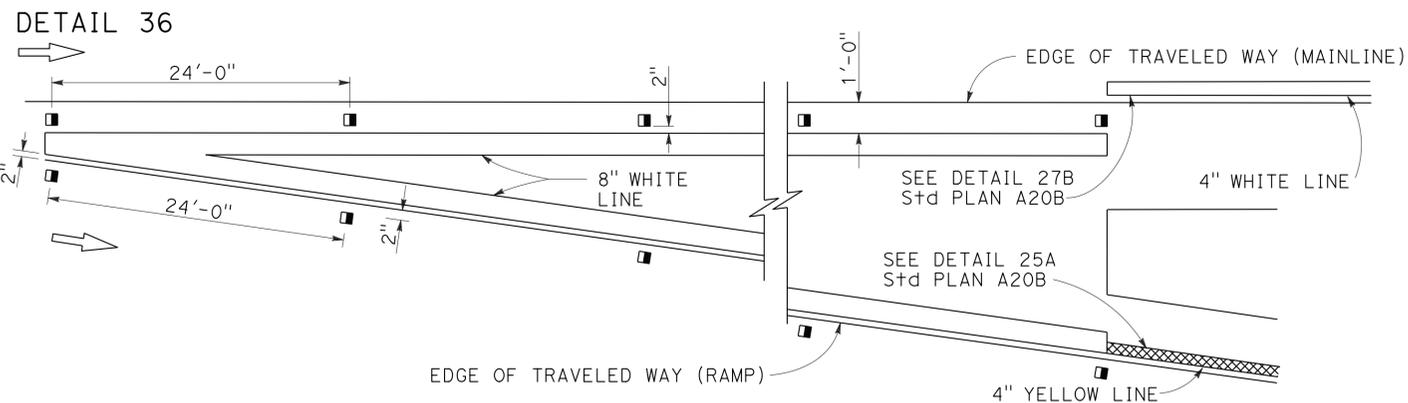
**ABBREVIATIONS  
(SHEET 2 OF 2)**

NO SCALE

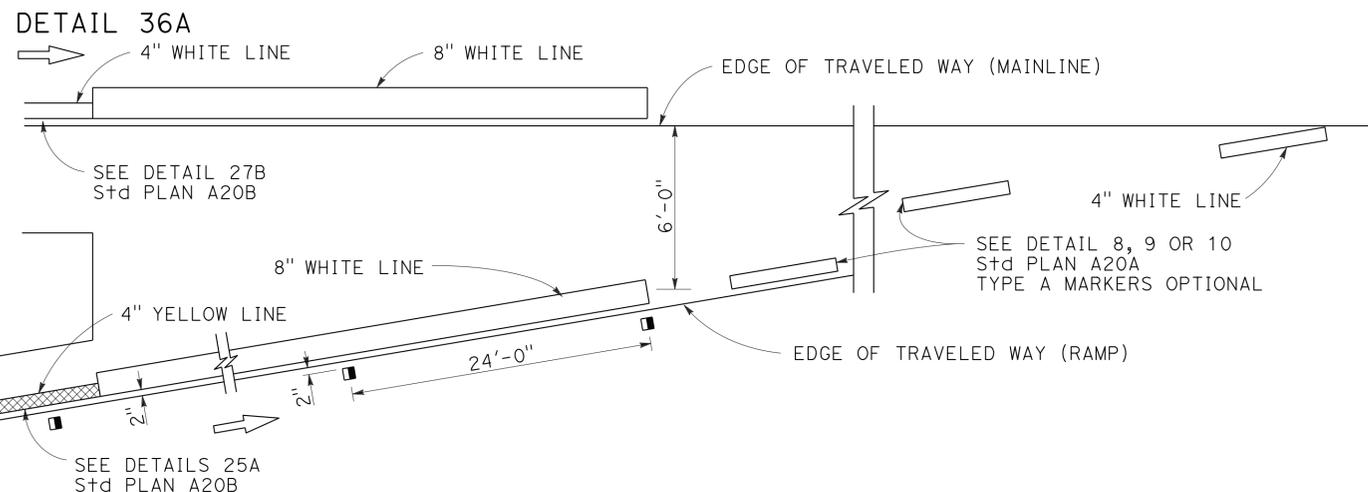
RSP A10B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A10B  
DATED MAY 20, 2011 - PAGE 2 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A10B

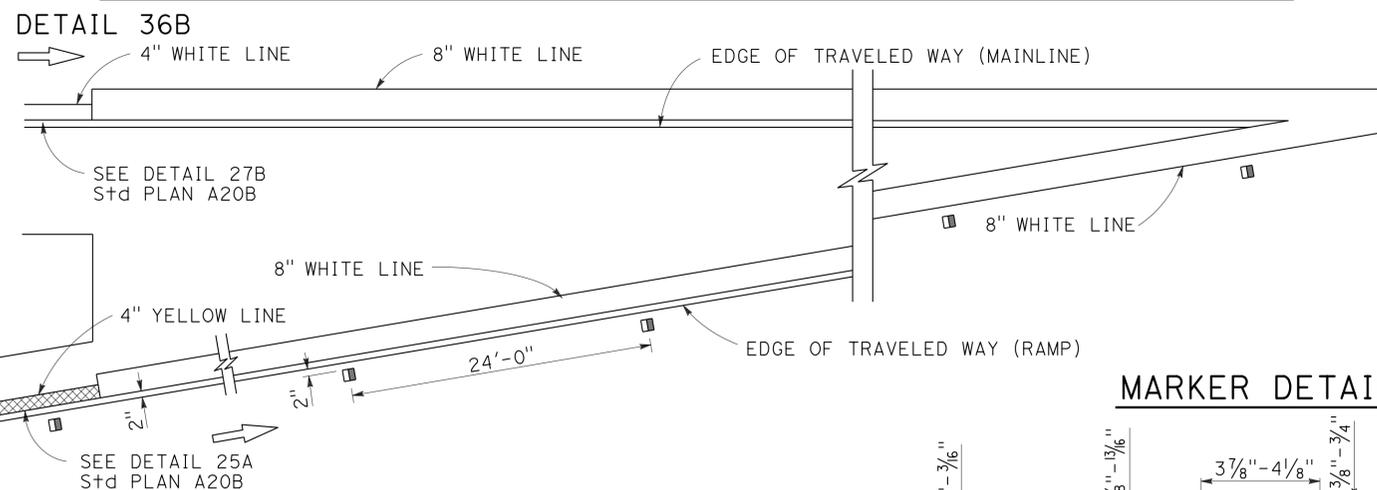
### EXIT RAMP NEUTRAL AREA (GORE) TREATMENT



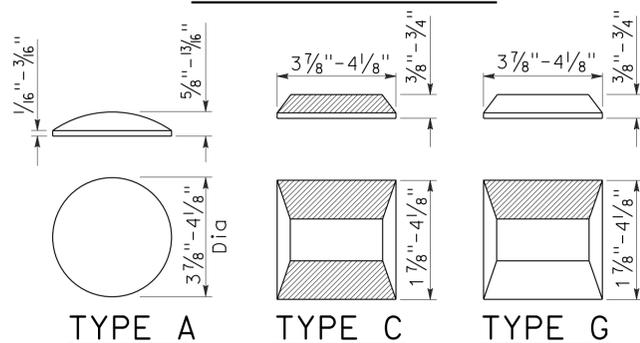
### ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT



### ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT



### MARKER DETAILS



#### LEGEND:

##### MARKERS

- TYPE A WHITE NON-REFLECTIVE
- ◻ TYPE C RED-CLEAR RETROREFLECTIVE
- ◼ TYPE G ONE-WAY CLEAR RETROREFLECTIVE

RETROREFLECTIVE FACE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	547	824

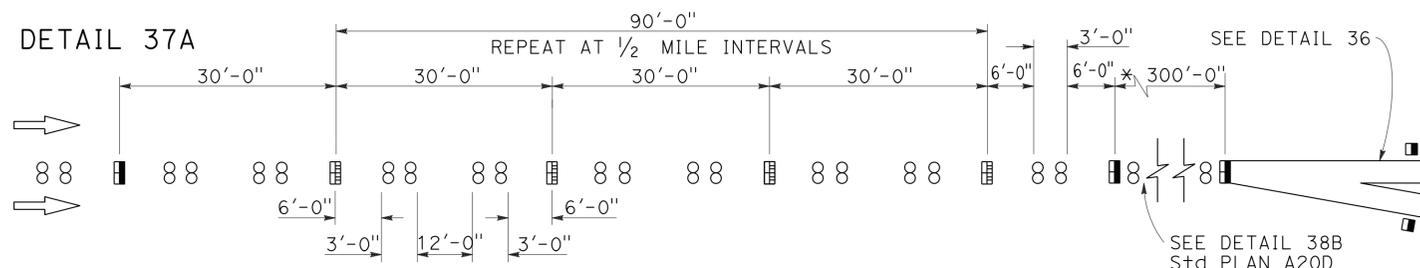
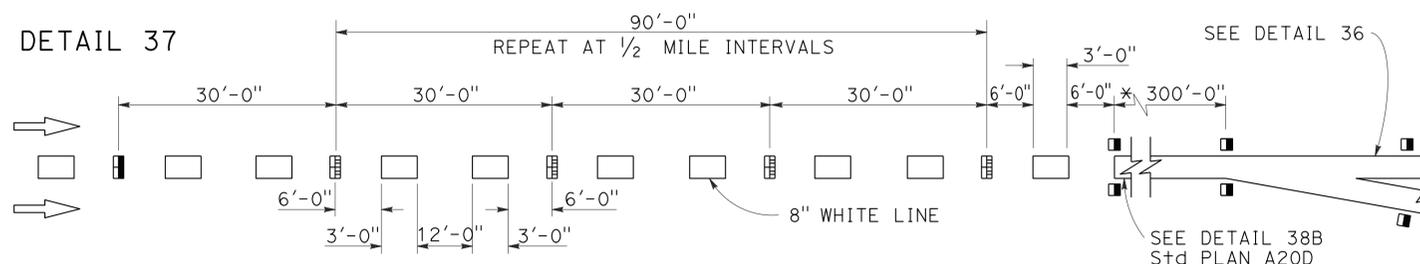
*Roberto L. McLaughlin*  
 REGISTERED CIVIL ENGINEER  
 No. C40375  
 Exp. 3-31-15  
 CIVIL  
 STATE OF CALIFORNIA

July 19, 2013  
 PLANS APPROVAL DATE

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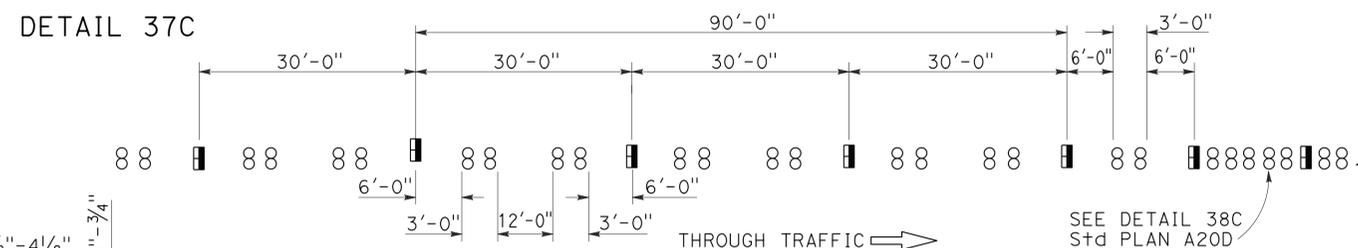
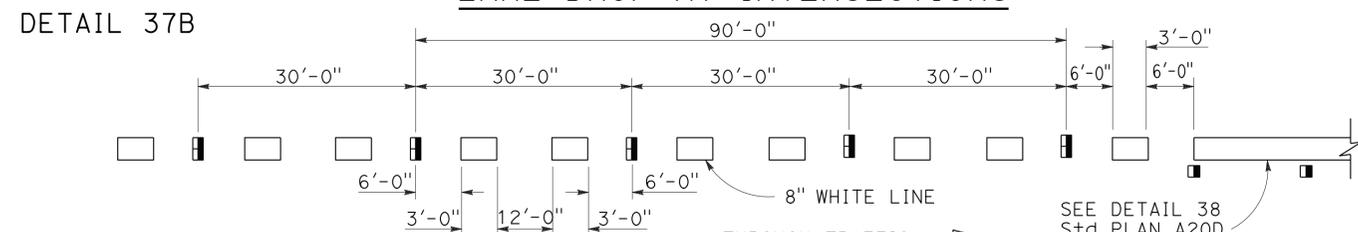
TO ACCOMPANY PLANS DATED 6-23-14

### LANE DROP AT EXIT RAMP



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

### LANE DROP AT INTERSECTIONS



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKERS AND TRAFFIC LINE TYPICAL DETAILS**  
 NO SCALE

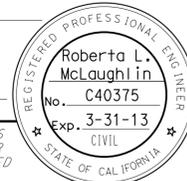
RSP A20C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A20C DATED MAY 20, 2011 - PAGE 11 OF THE STANDARD PLANS BOOK DATED 2010.

### REVISED STANDARD PLAN RSP A20C

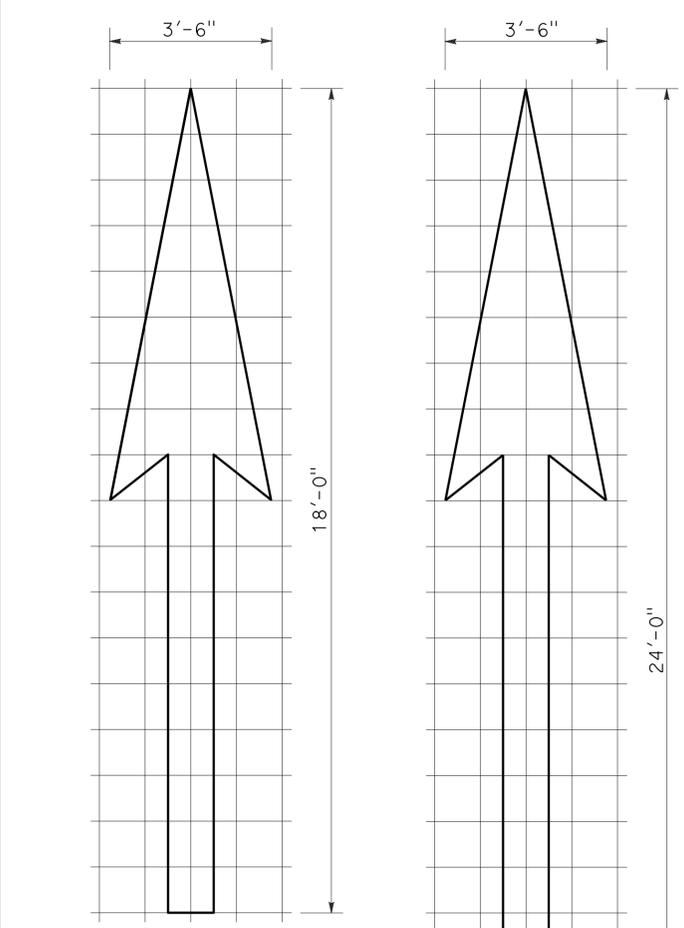
2010 REVISED STANDARD PLAN RSP A20C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	548	824

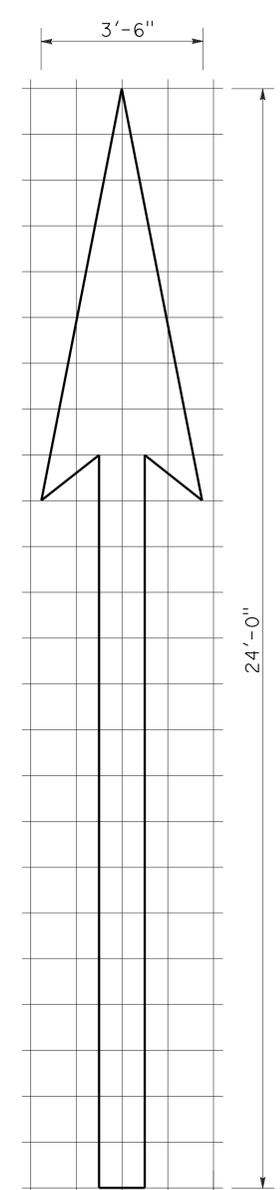
Roberto L. McLaughlin  
 REGISTERED CIVIL ENGINEER  
 April 20, 2012  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



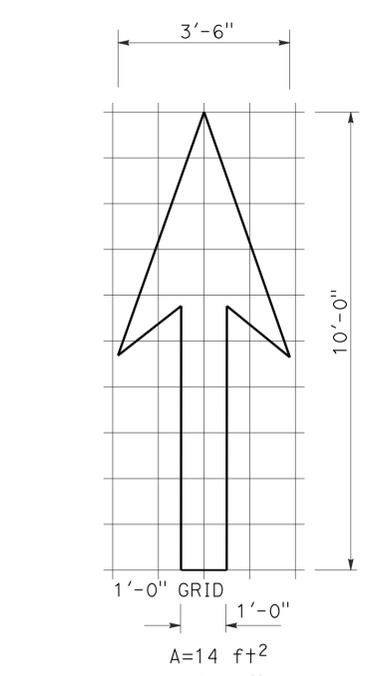
TO ACCOMPANY PLANS DATED 6-23-14



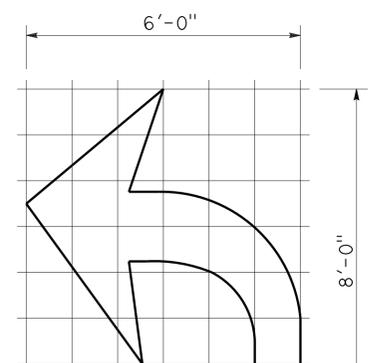
A=25 ft<sup>2</sup>  
**TYPE I 18'-0" ARROW**



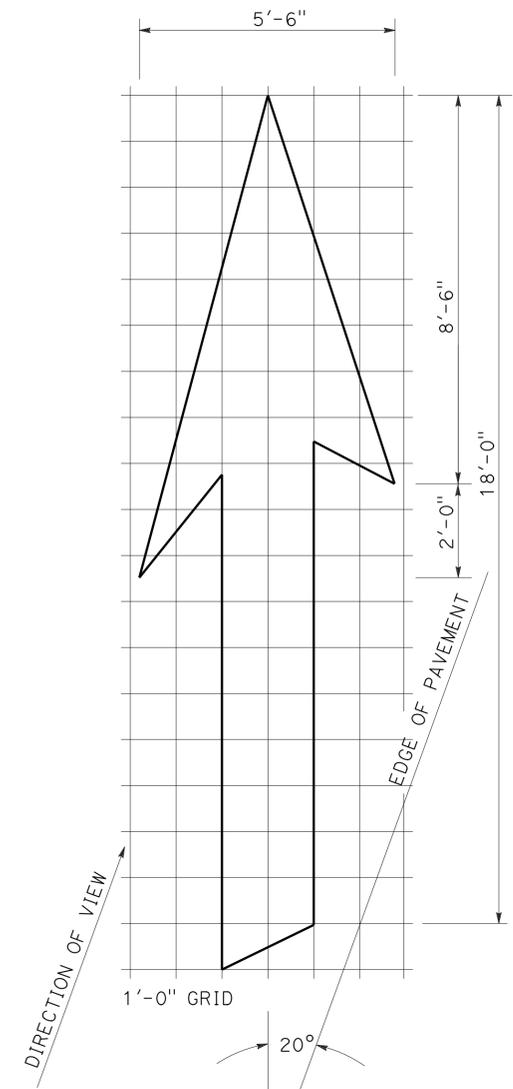
A=31 ft<sup>2</sup>  
**TYPE I 24'-0" ARROW**



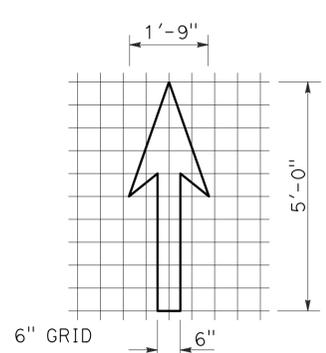
A=14 ft<sup>2</sup>  
**TYPE I 10'-0" ARROW**



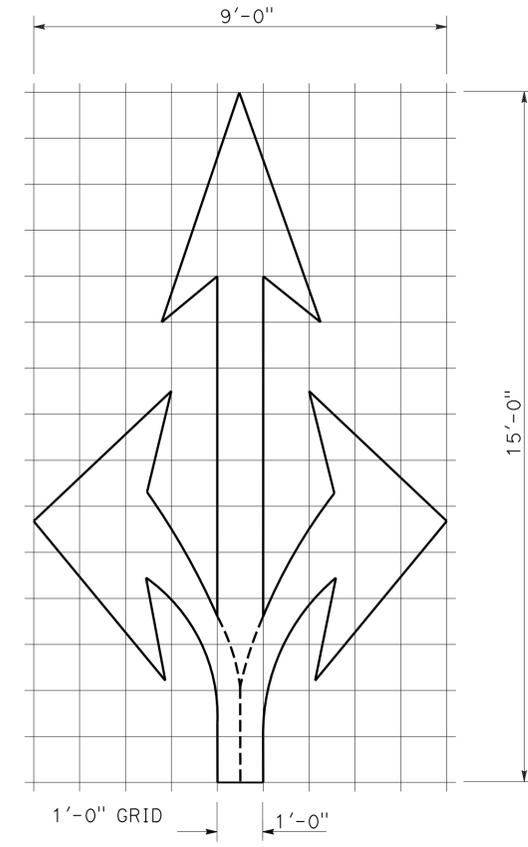
A=15 ft<sup>2</sup>  
**TYPE IV (L) ARROW**  
(For Type IV (R) arrow, use mirror image)



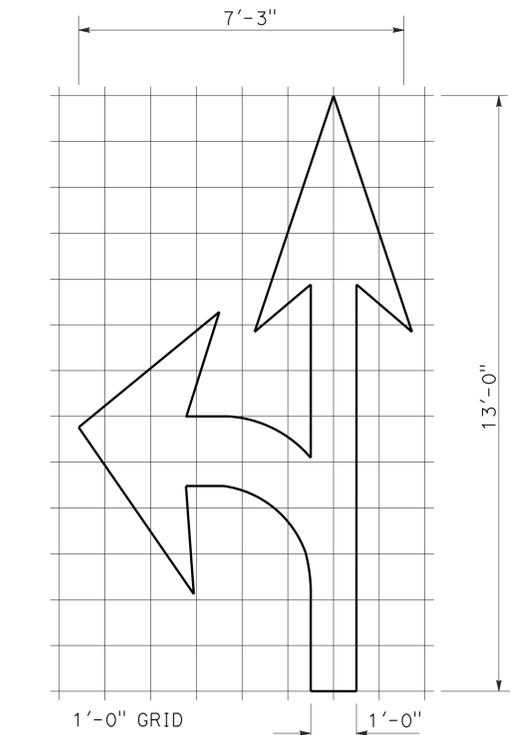
A=42 ft<sup>2</sup>  
**TYPE VI ARROW**  
Right lane drop arrow  
(For left lane, use mirror image)



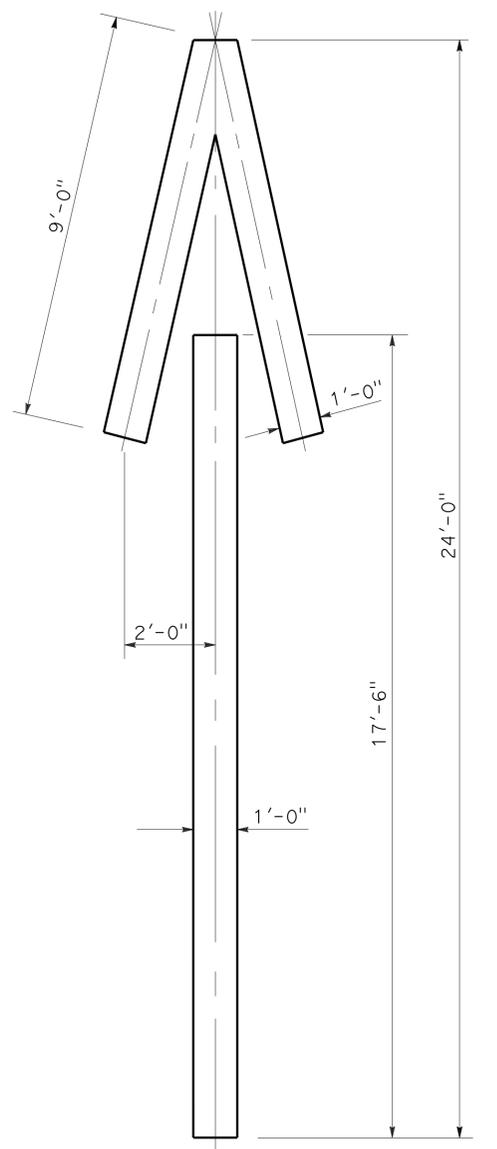
A=3.5 ft<sup>2</sup>  
**BIKE LANE ARROW**



A=36 ft<sup>2</sup>  
**TYPE VIII ARROW**



A=27 ft<sup>2</sup>  
**TYPE VII (L) ARROW**  
(For Type VII (R) arrow, use mirror image)



A=33 ft<sup>2</sup>  
**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.

**2010 REVISED STANDARD PLAN RSP A24A**

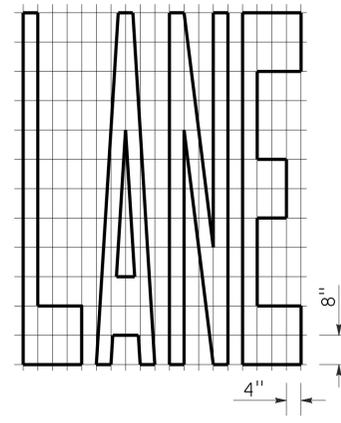
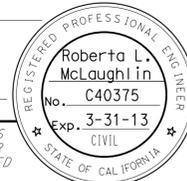


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	550	824

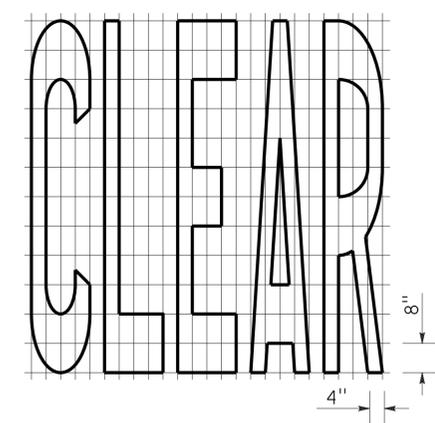
Roberto L. McLaughlin  
 REGISTERED CIVIL ENGINEER  
 July 20, 2012  
 PLANS APPROVAL DATE

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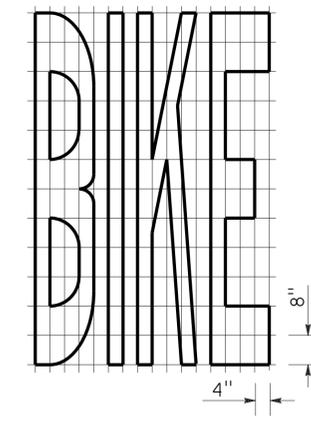
TO ACCOMPANY PLANS DATED 6-23-14



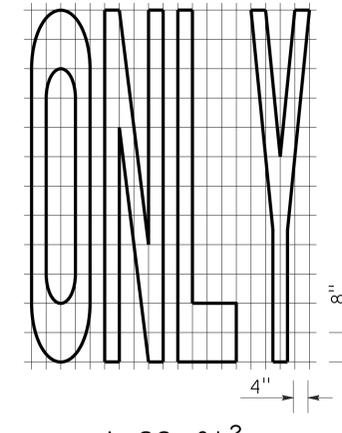
A=24 ft<sup>2</sup>



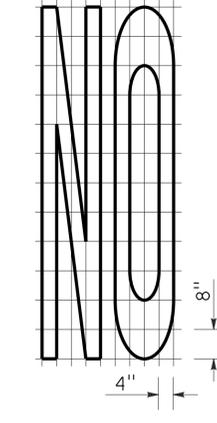
A=27 ft<sup>2</sup>



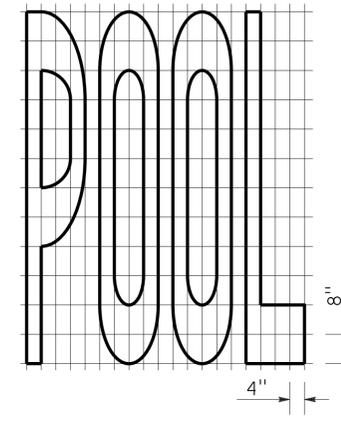
A=21 ft<sup>2</sup>



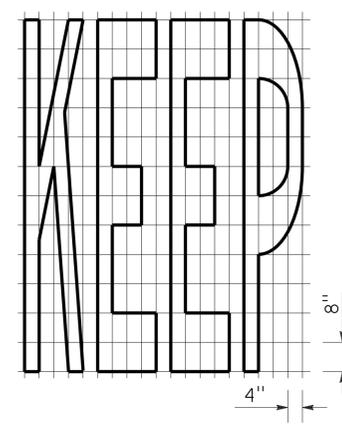
A=22 ft<sup>2</sup>



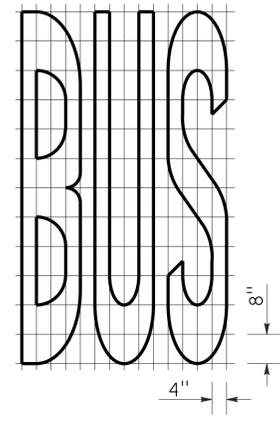
A=14 ft<sup>2</sup>



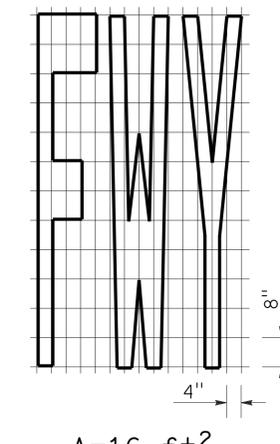
A=23 ft<sup>2</sup>



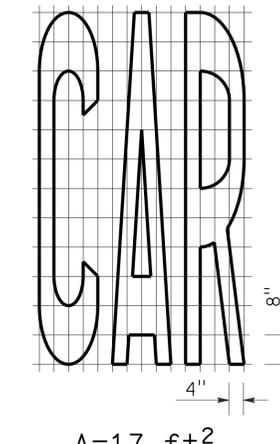
A=24 ft<sup>2</sup>



A=20 ft<sup>2</sup>

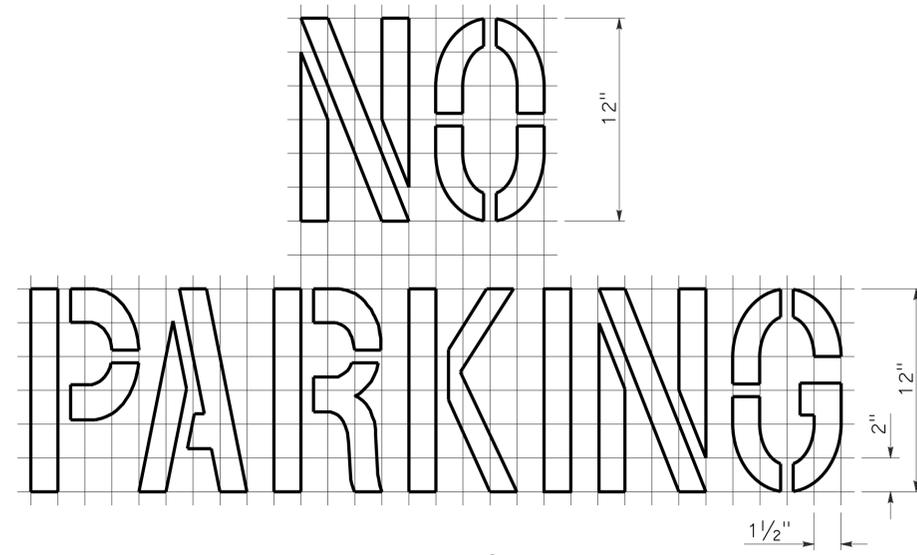


A=16 ft<sup>2</sup>

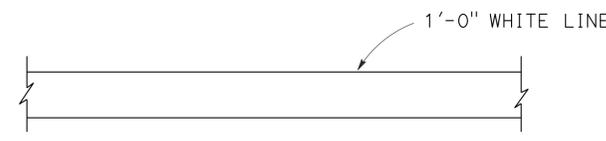


A=17 ft<sup>2</sup>

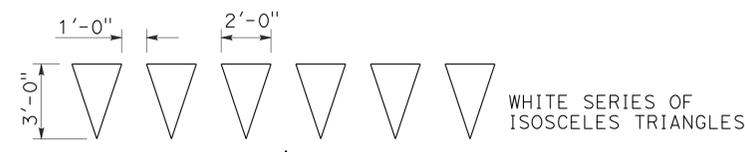
WORD MARKINGS			
ITEM	ft <sup>2</sup>	ITEM	ft <sup>2</sup>
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16



A=2 ft<sup>2</sup>  
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**

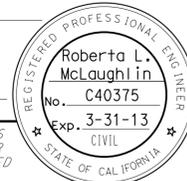
NO SCALE

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

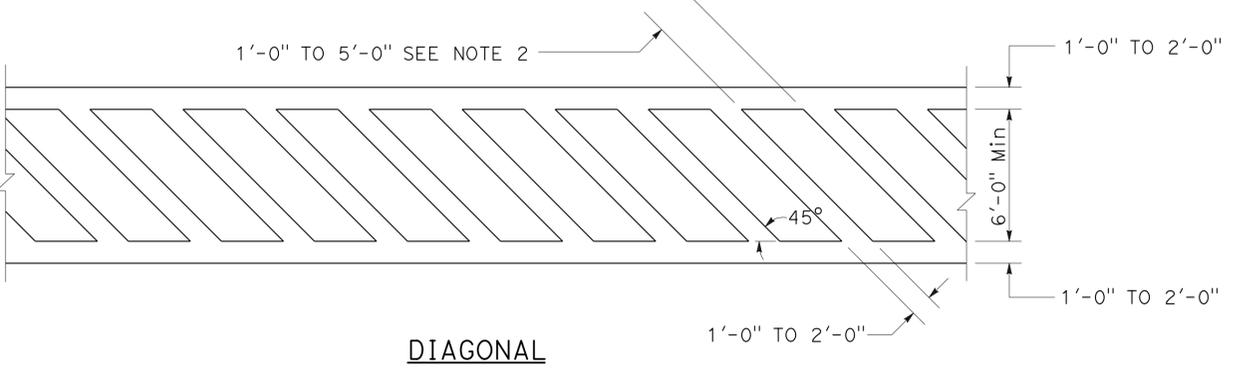
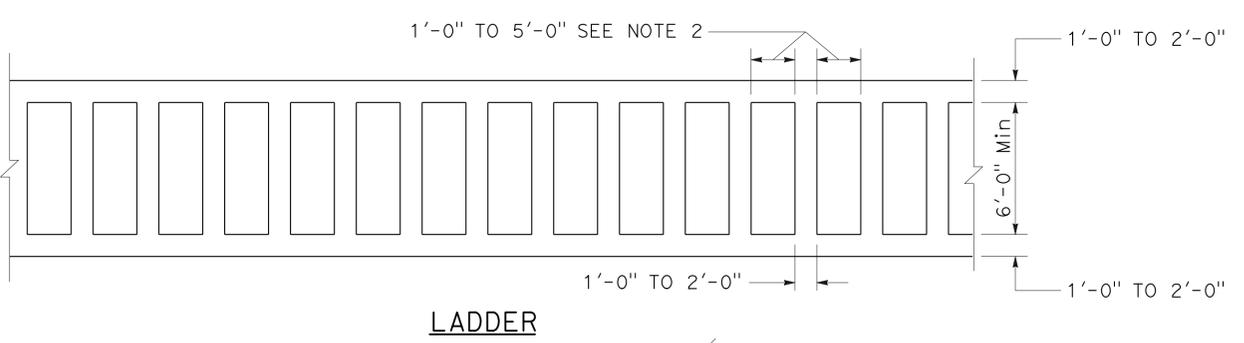
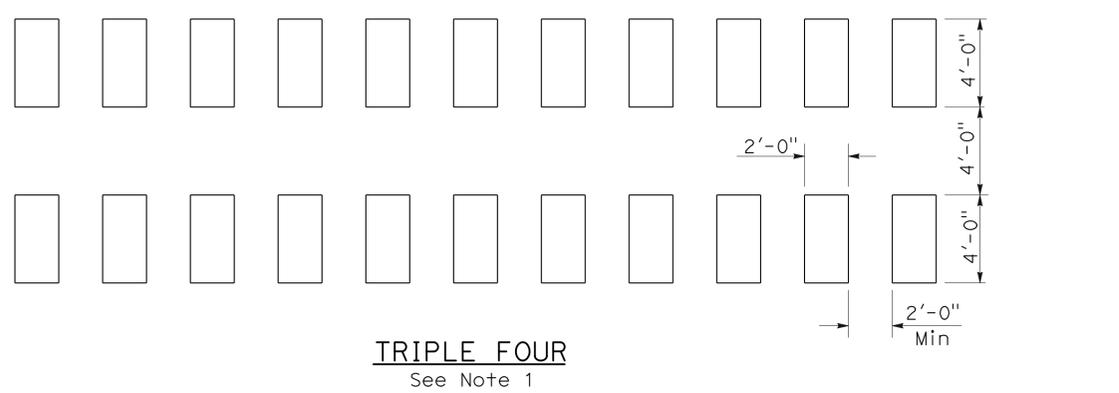
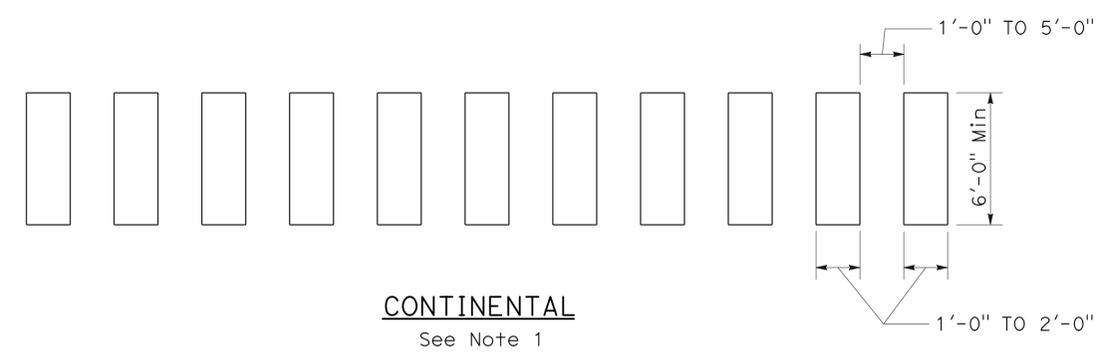
2010 REVISED STANDARD PLAN RSP A24E

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	551	824

 REGISTERED CIVIL ENGINEER		
July 20, 2012 PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>		

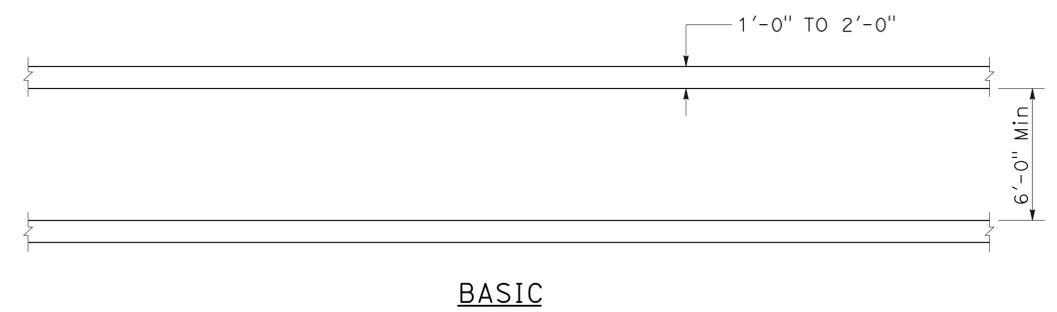
TO ACCOMPANY PLANS DATED 6-23-14



**HIGHER VISIBILITY CROSSWALKS**

**NOTES:**

1. Spaces between markings should be placed in wheel tracks of each lane.
2. Spacings not to exceed 2.5 times width of longitudinal line.
3. All crosswalk markings must be white except for those near schools must be yellow.



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS**  
**CROSSWALKS**  
NO SCALE

RSP A24F DATED JULY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**2010 REVISED STANDARD PLAN RSP A24F**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	552	824

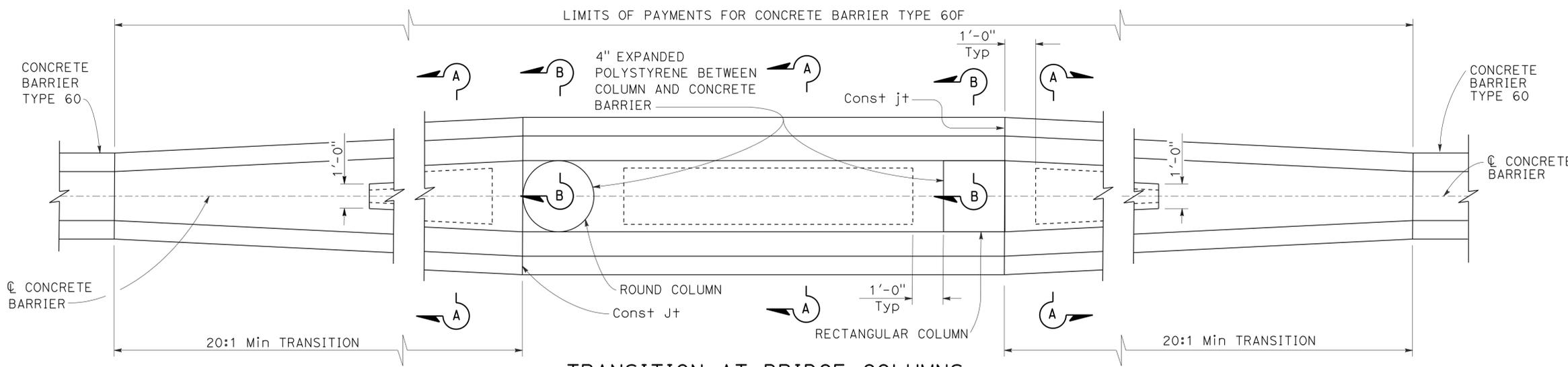
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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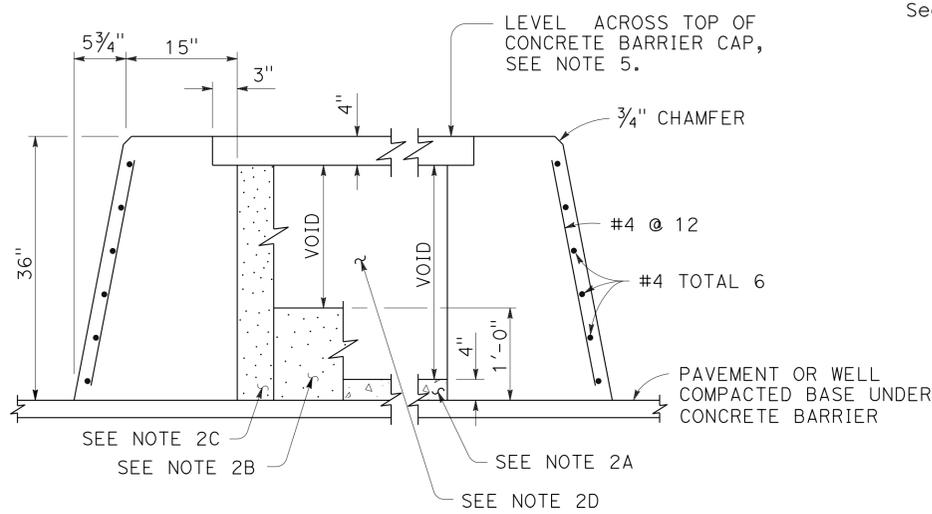
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-23-14

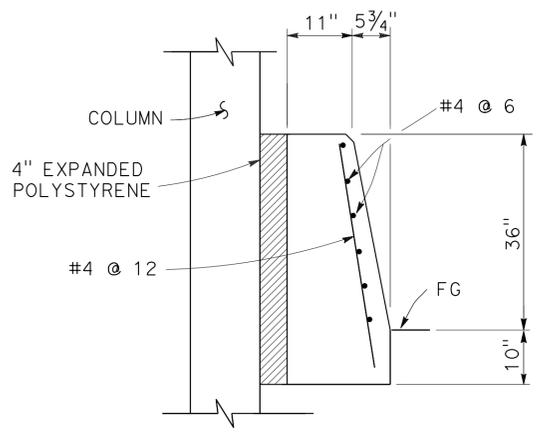


**TRANSITION AT BRIDGE COLUMNS**

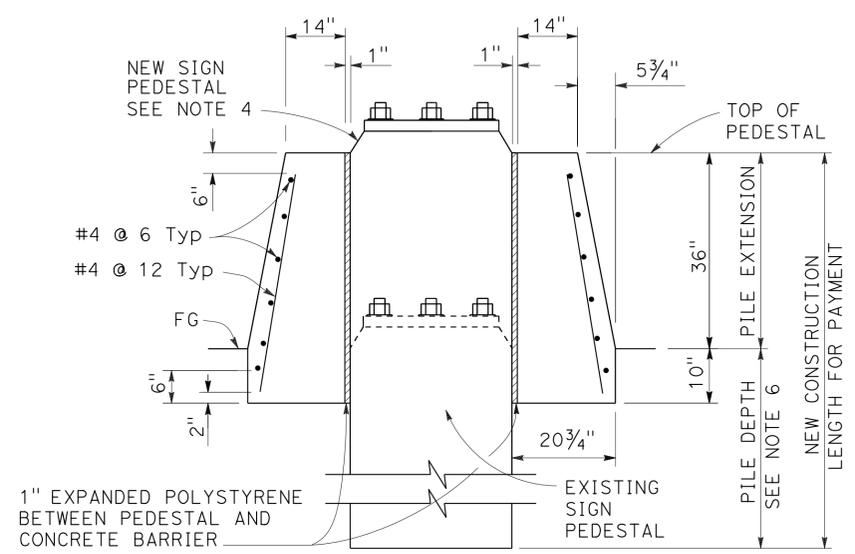
Concrete Barrier Type 60F  
See Note 7



**SECTION A-A**



**SECTION B-B**



**SECTION C-C**

**NOTES:**

- See Standard Plan A76A for Concrete Barrier Type 60.
- Contractor options for fill between concrete barrier walls:
  - Place 4" PCC at base between concrete barrier walls.
  - Place 1'-0" of granular material at base between walls.
  - Place granular material from base to bottom of 4" cap.
  - Monolithic concrete with foam blockouts is not permitted.
- Reinforcing steel shall extend continuous through construction joints.
- See "Overhead Sign" plans for sign pedestal elevations on new construction.
- Adjust height of concrete barrier wall on low side of offset or superelevated roadways to provide level grade across top of concrete barrier cap.
- See Overhead Signs Standard Plan Pile Foundation Tables.
- All locations with limited shoulder width available for barrier, see Standard Plan A76F for use of Concrete Barrier Type 60GE.

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**CONCRETE BARRIER TYPE 60F**

NO SCALE

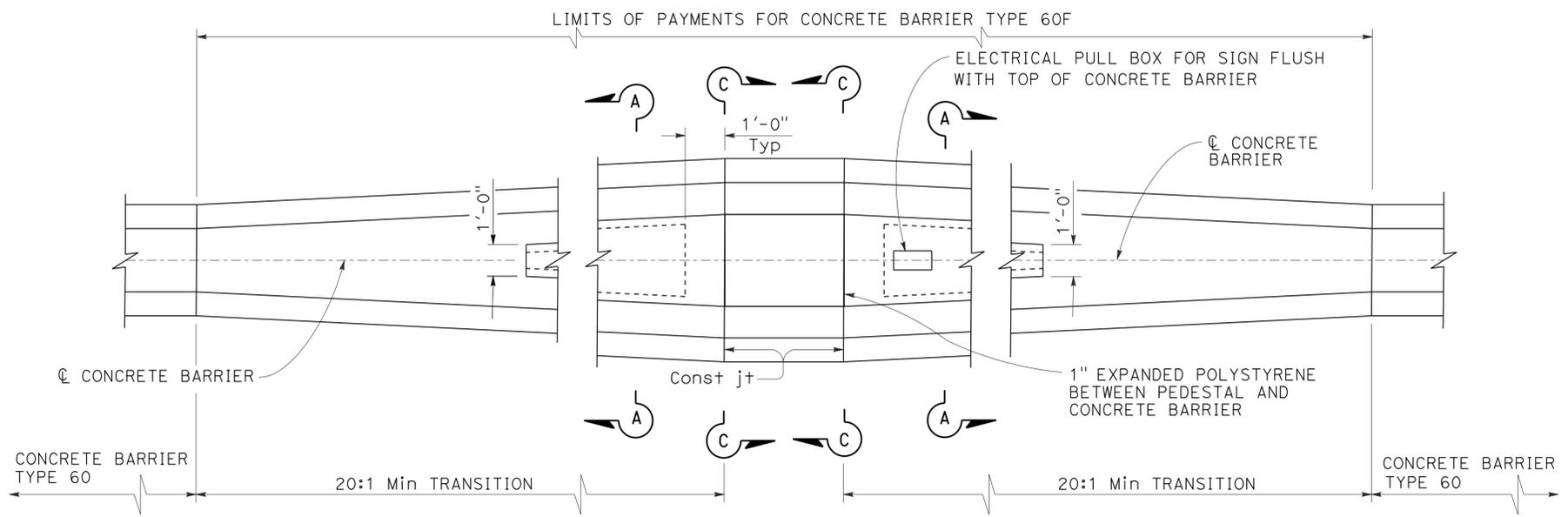
RSP A76C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A76C  
DATED MAY 20, 2011 - PAGE 36 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A76C**

2010 REVISED STANDARD PLAN RSP A76C

**TRANSITION AT SIGN PEDESTAL**

Concrete Barrier Type 60F  
See Note 7



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	553	824

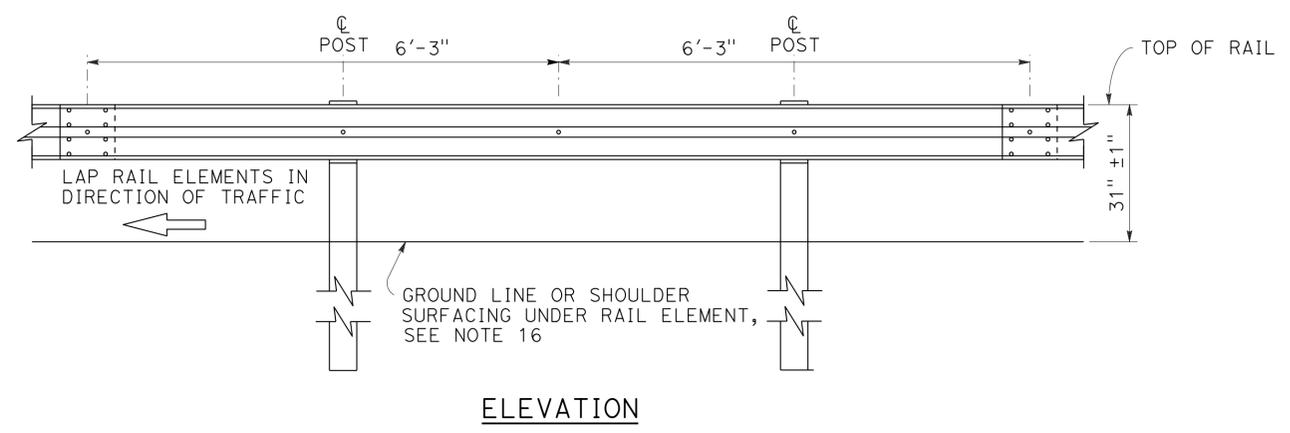
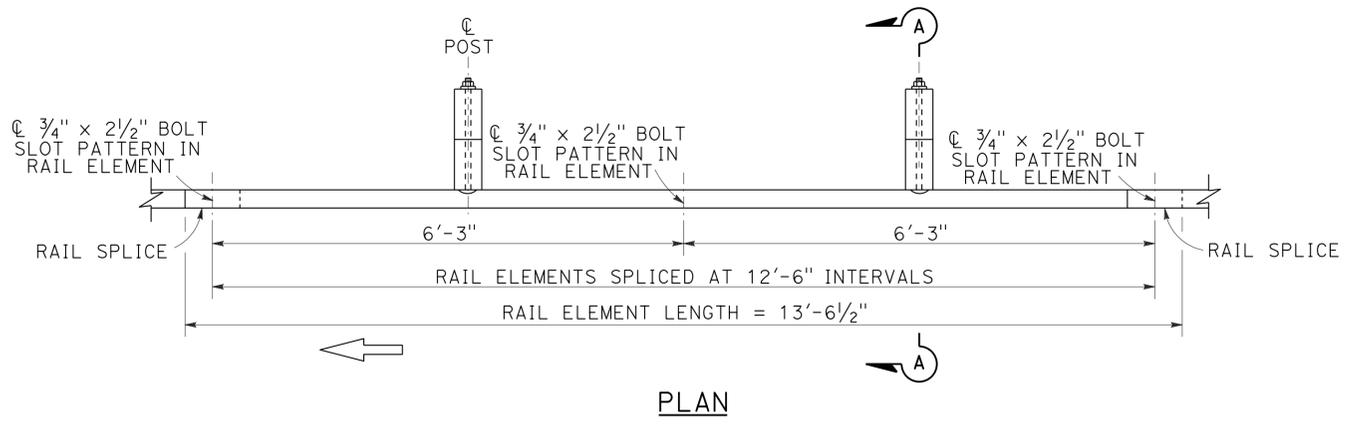
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

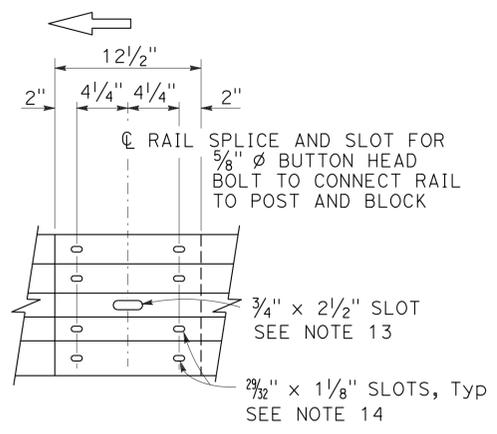
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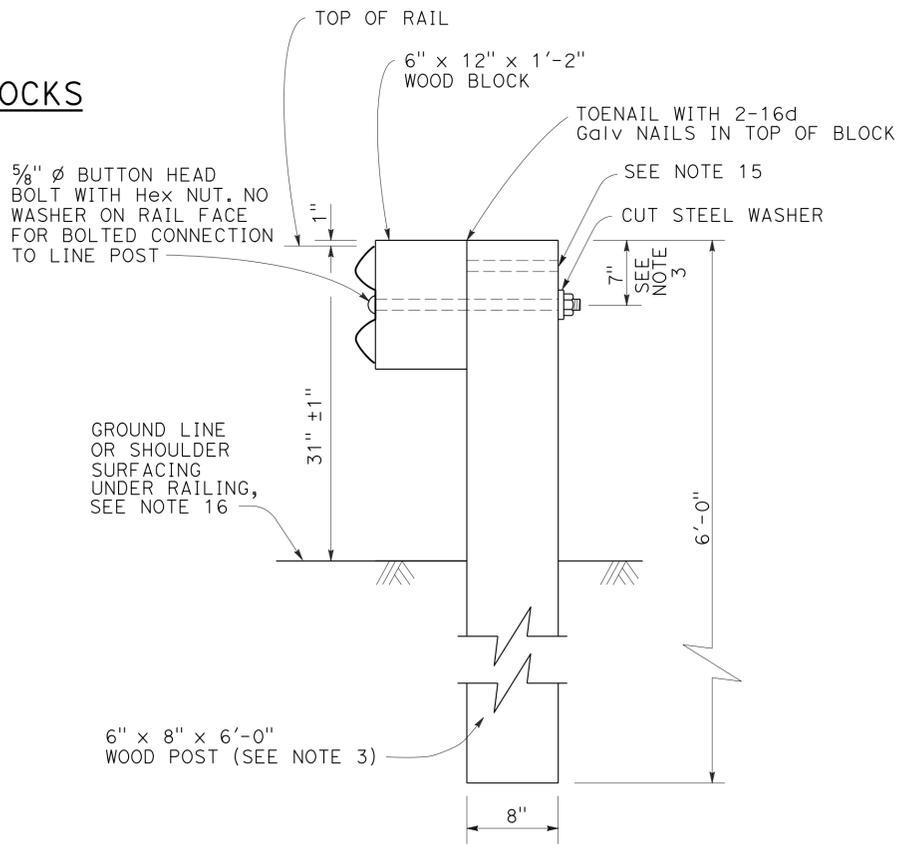
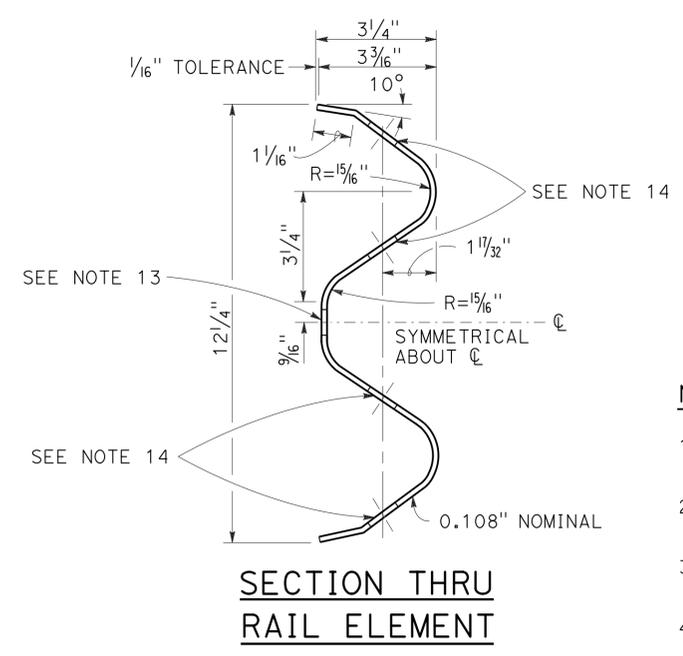
TO ACCOMPANY PLANS DATED 6-23-14



**MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS**



- Connect the over lapped end of the rail elements with  $\frac{5}{8}$ "  $\phi$  x  $1\frac{3}{8}$ " button head oval shoulder splice bolts inserted into the  $\frac{23}{32}$ " x  $1\frac{1}{8}$ " slots and bolted together with  $\frac{5}{8}$ "  $\phi$  recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



SECTION A-A  
TYPICAL WOOD LINE POST INSTALLATION  
See Note 4

**NOTES:**

- For details of steel post installations, see Revised Standard Plan RSP A77L2.
- For details of standard hardware used to construct MGS, see Revised Standard Plan RSP A77M1.
- For details of wood posts and wood blocks used to construct MGS, see Revised Standard Plan RSP A77N1.
- For additional installation details, see Revised Standard Plan RSP A77N3.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
- If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
- For MGS end anchor details, see Revised Standard Plans RSP A77S1 and RSP A77T2.
- For details of MGS transition to bridge railing, see Revised Standard Plan RSP A77U4.
- For additional details of MGS connection to bridge railing, see Revised Standard Plans RSP A77U1, RSP A77U2 and RSP A77V1.
- For MGS connection details to abutments and walls, see Revised Standard Plan RSP A77U3.
- For typical MGS delineation and dike positioning details, see Revised Standard Plan RSP A77N4.
- Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
- Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
- Additional hole in uppermost portion of line post is for potential future adjustments of railing height. See Revised Standard Plan RSP A77N1.
- Install posts in soil.

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**MIDWEST GUARDRAIL SYSTEM  
STANDARD RAILING SECTION  
(WOOD POST WITH  
WOOD BLOCK)**

NO SCALE

RSP A77L1 DATED JULY 19, 2013 SUPPLEMENTS STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77L1**

2010 REVISED STANDARD PLAN RSP A77L1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	554	824

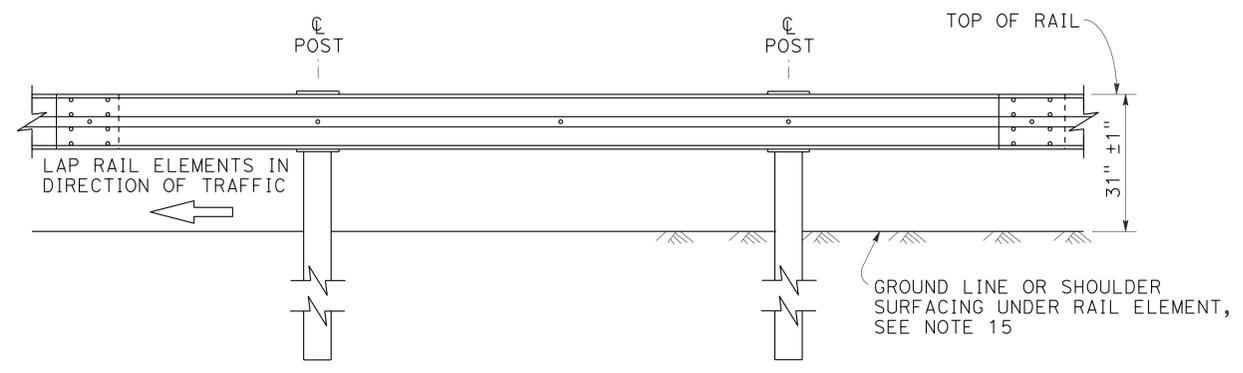
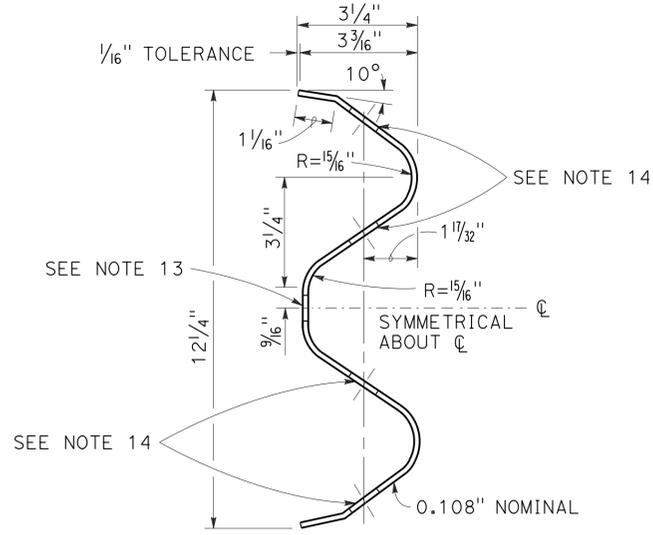
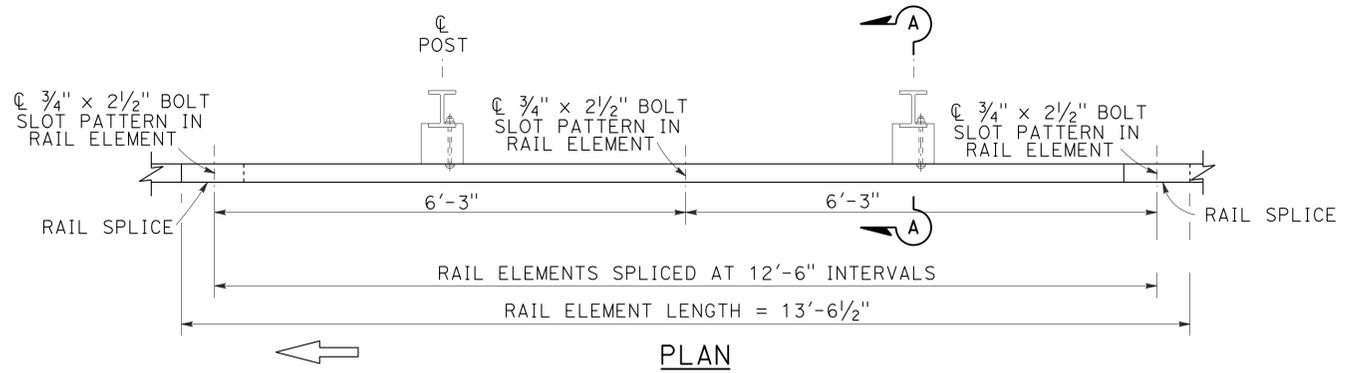
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

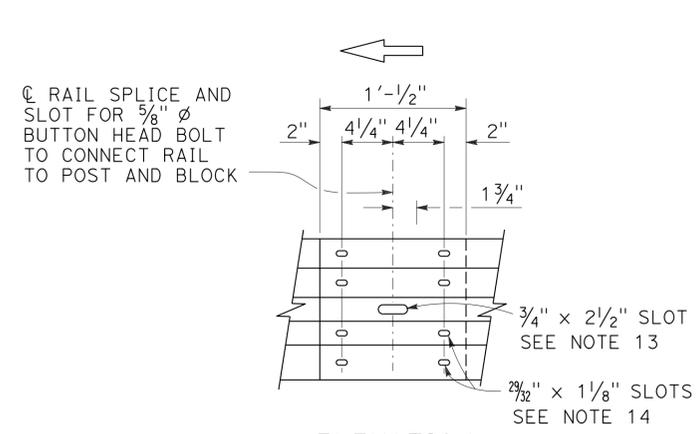
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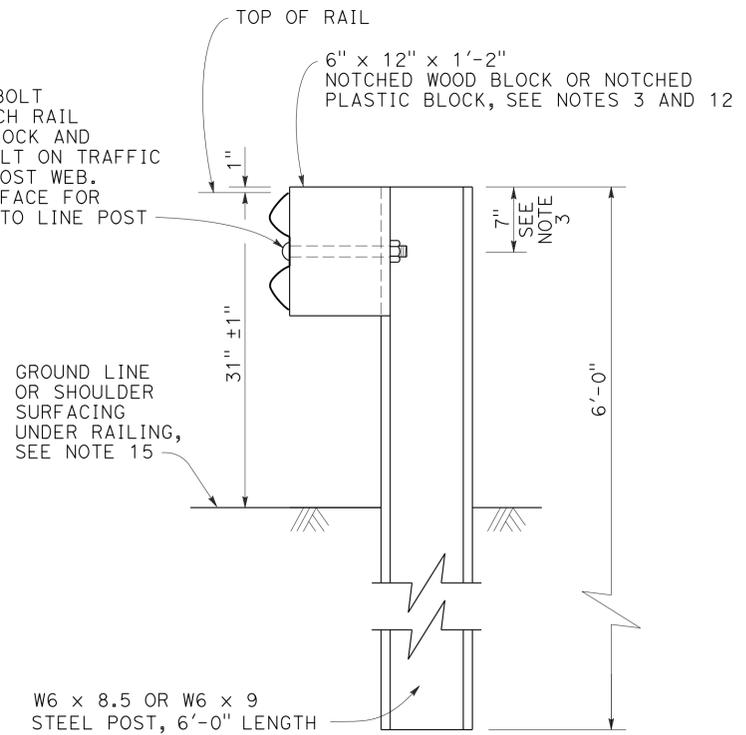
TO ACCOMPANY PLANS DATED 6-23-14



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



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



SECTION A-A  
TYPICAL STEEL LINE POST INSTALLATION  
See Note 4

**NOTES:**

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

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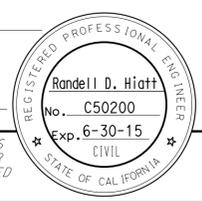
**MIDWEST GUARDRAIL SYSTEM STANDARD RAILING SECTION (STEEL POST WITH NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCK)**

NO SCALE

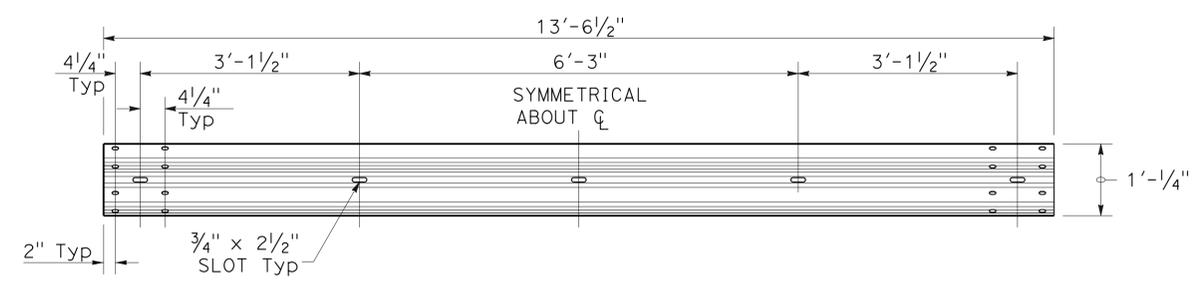
RSP A77L2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77L2**

2010 REVISED STANDARD PLAN RSP A77L2



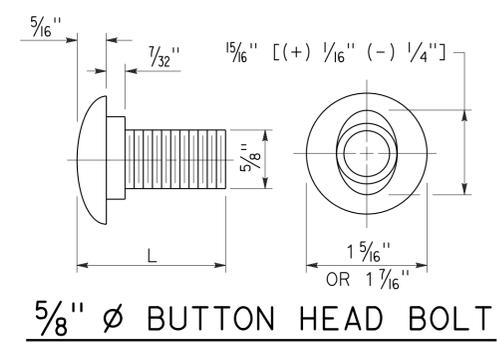
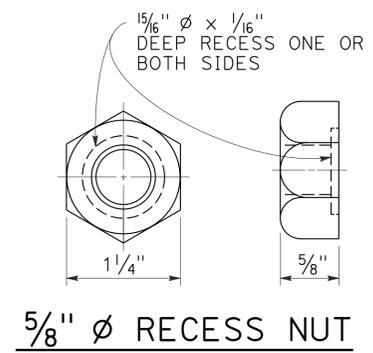
TO ACCOMPANY PLANS DATED 6-23-14



**TYPICAL RAIL ELEMENT**

**NOTE:**

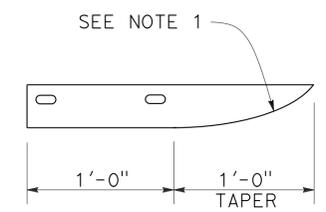
1. Slotted holes for splice bolts to overlap ends of rail element.



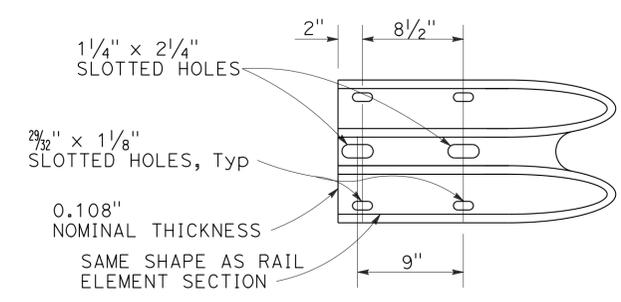
**BUTTON HEAD BOLT**

L	THREAD LENGTH
1 3/8"	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
** 2 3/4"	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**

2010 REVISED STANDARD PLAN RSP A77M1

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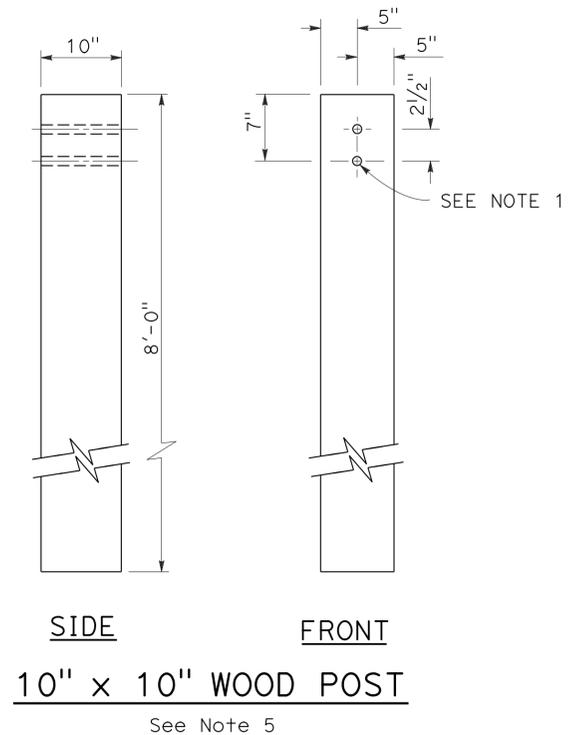
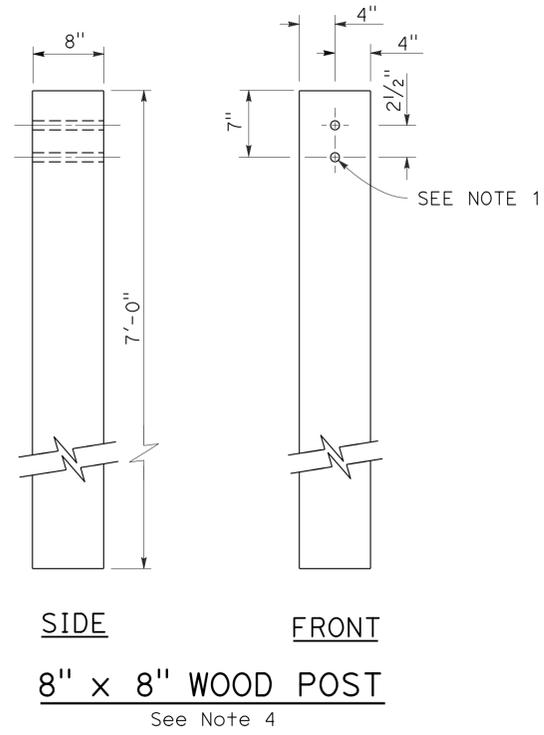
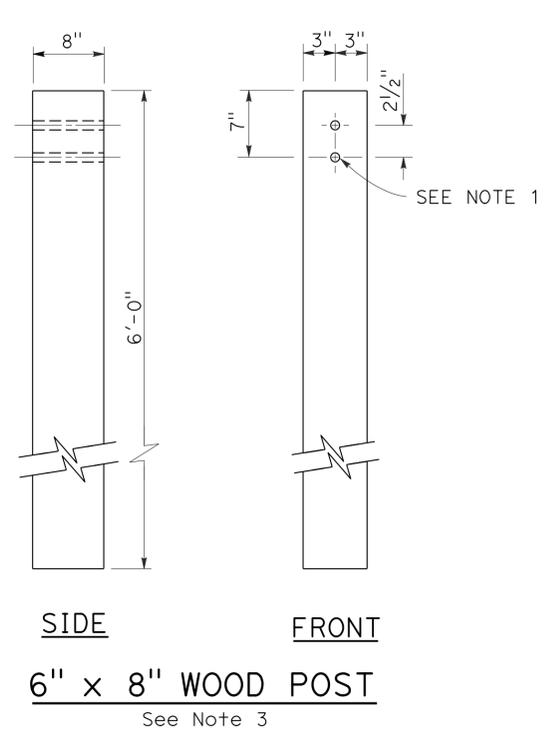
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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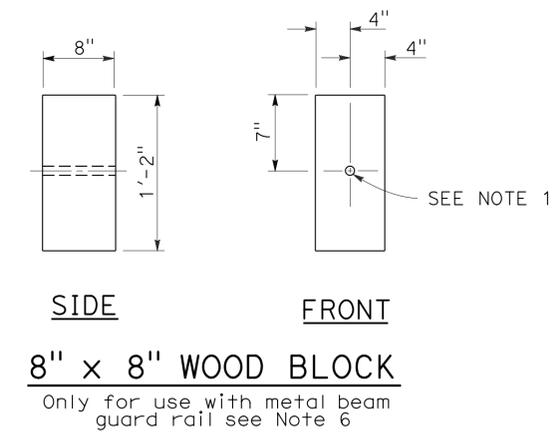
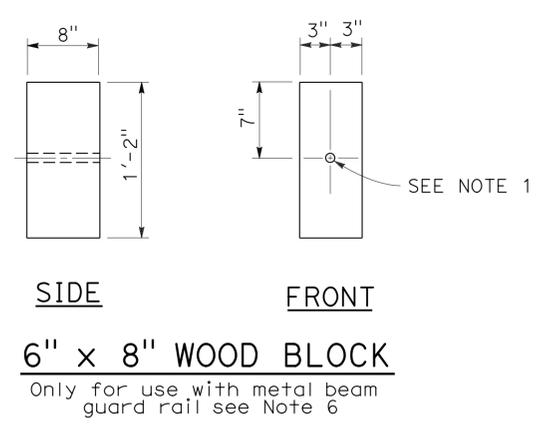
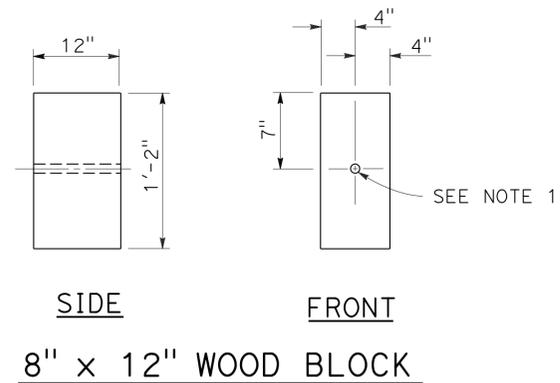
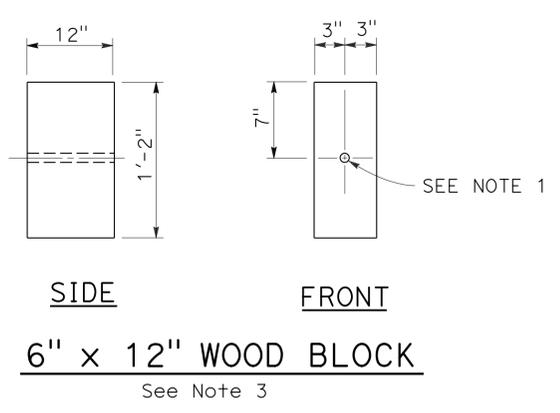
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-23-14



**NOTES:**

1. All holes in wood posts and blocks shall be  $\frac{3}{4}$ " Dia  $\pm$   $\frac{1}{16}$ ".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of MGS.
4. This post and 8" x 12" block combination used for line post sections of MGS on narrow roadways.
5. This post and 8" x 12" block combination is typically used where strengthened line post sections of MGS are warranted to shield fixed objects.
6. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" wood blocks.



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**MIDWEST GUARDRAIL SYSTEM  
WOOD POST AND  
WOOD BLOCK DETAILS**

NO SCALE

RSP A77N1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77N1**

2010 REVISED STANDARD PLAN RSP A77N1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	557	824

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

November 15, 2013  
PLANS APPROVAL DATE

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

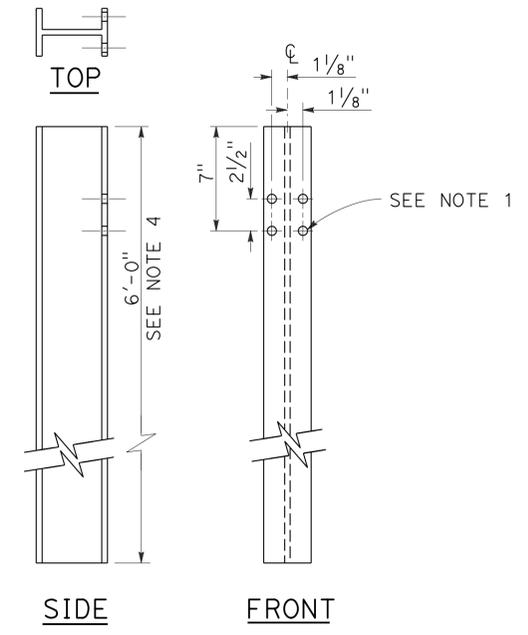
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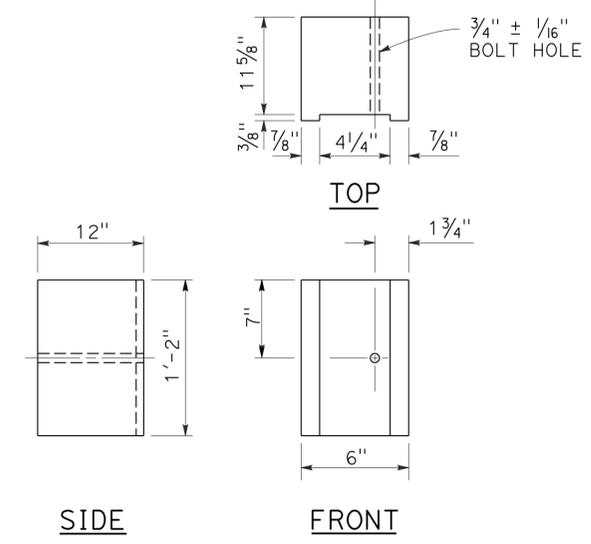
**NOTES:**

1. All holes in steel post shall be 1 3/8" 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.

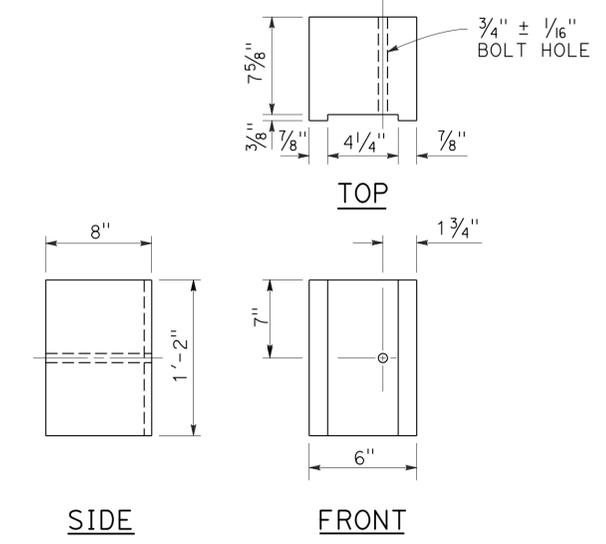
2010 REVISED STANDARD PLAN RSP A77N2



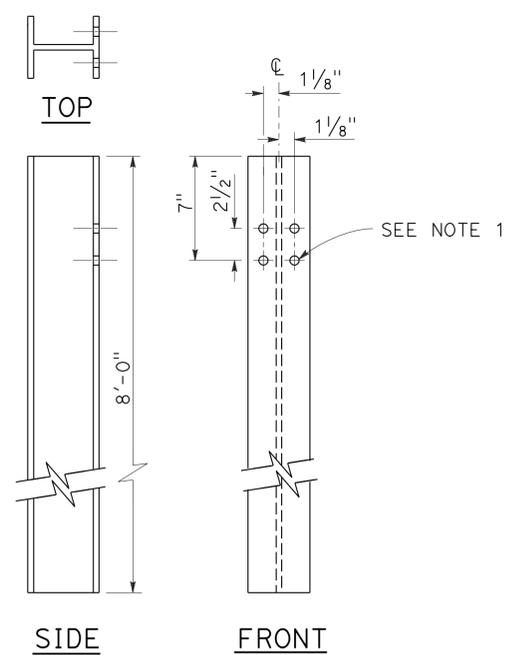
**W6 x 9 OR W6 x 8.5  
STEEL POST**  
See Note 4



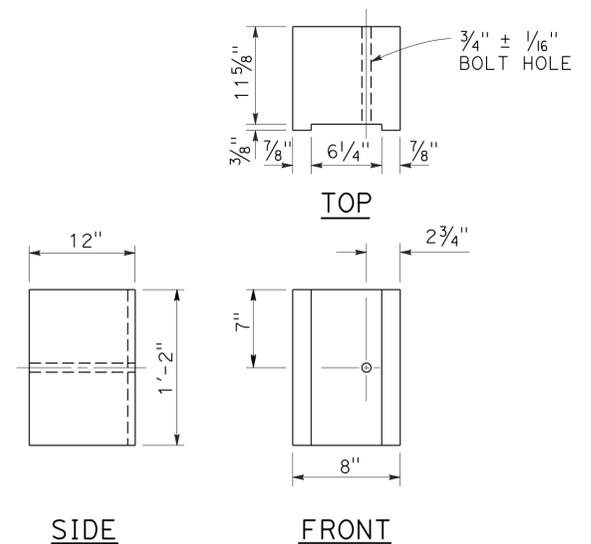
**6" x 12"  
NOTCHED WOOD BLOCK**  
See Notes 2 and 3



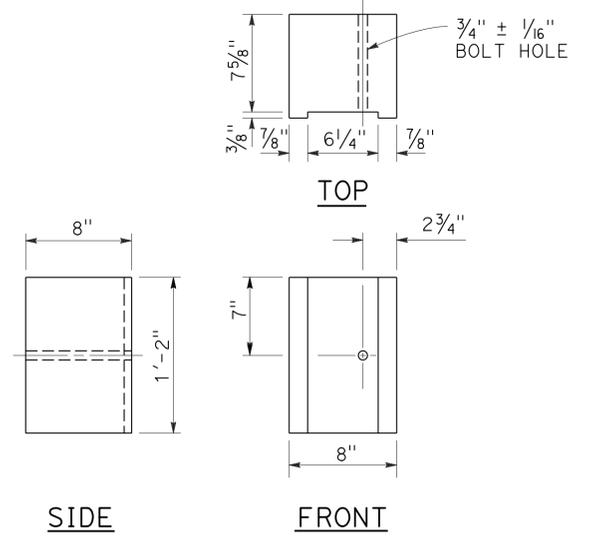
**6" x 8"  
NOTCHED WOOD BLOCK**  
Only for use with metal beam guard railing. See Note 5



**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**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	558	824

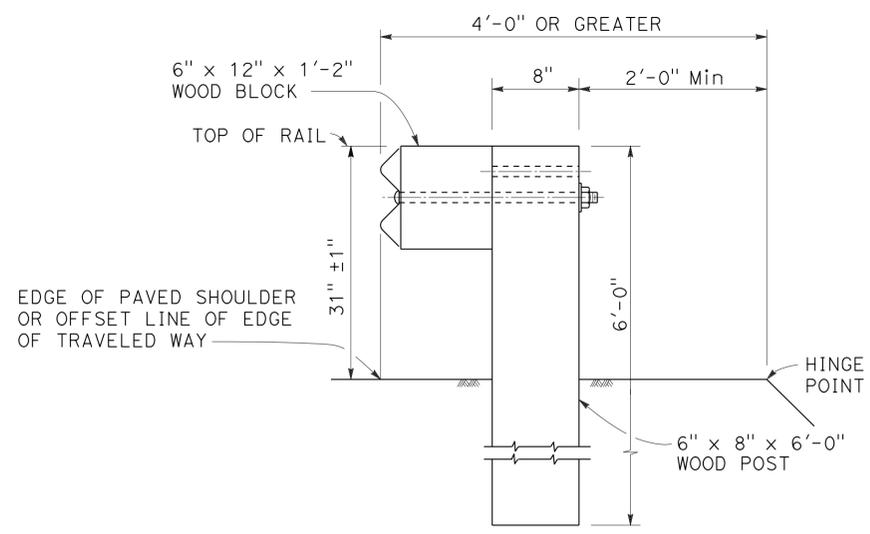
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

November 15, 2013  
PLANS APPROVAL DATE

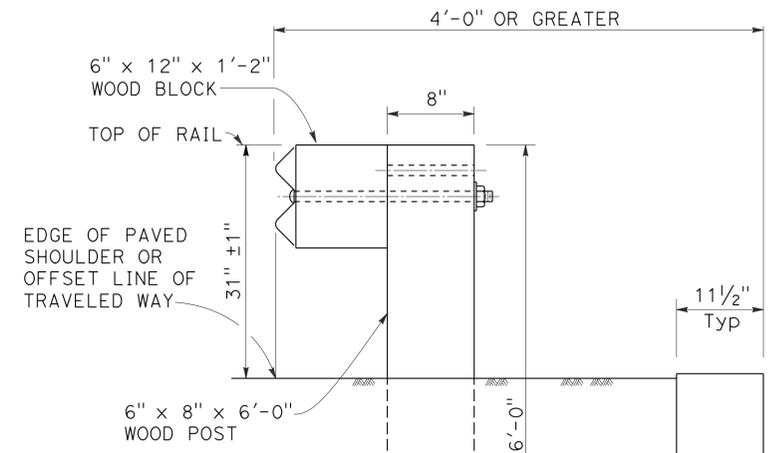
*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-15  
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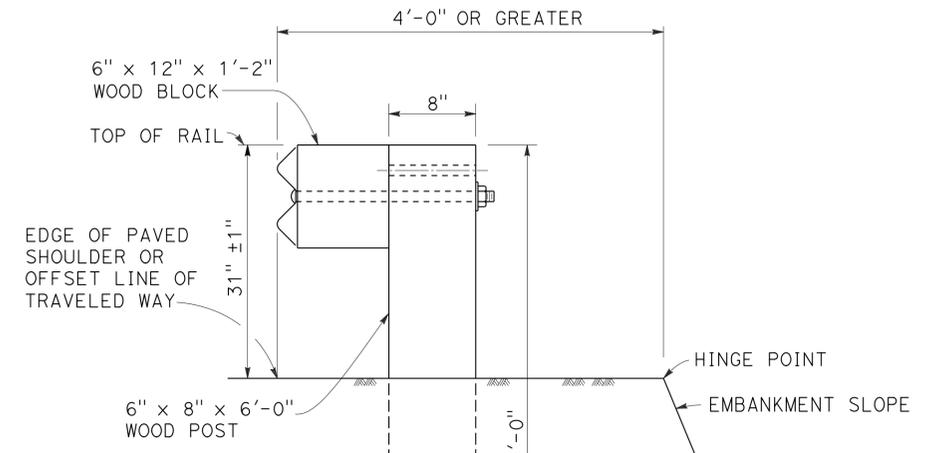
TO ACCOMPANY PLANS DATED 6-23-14



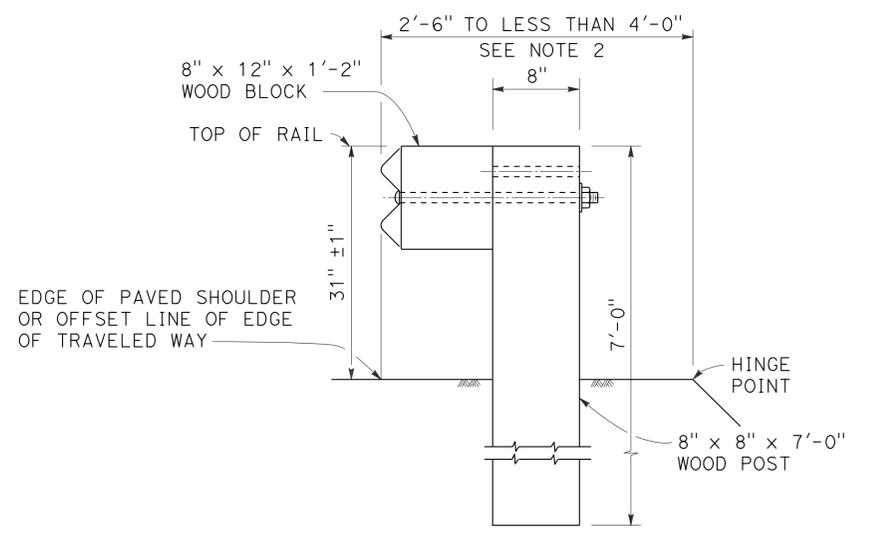
**DETAIL A**  
**TYPICAL ROADWAY**  
**INSTALLATION**  
See Note 1



**DETAIL C**



**DETAIL D**



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

**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**

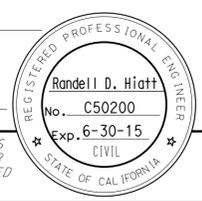
2010 REVISED STANDARD PLAN RSP A77N3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	559	824

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

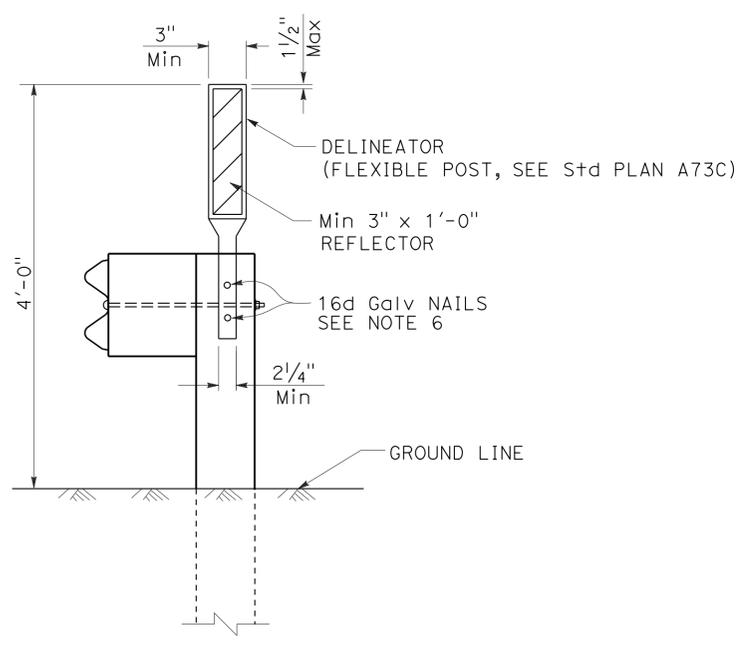
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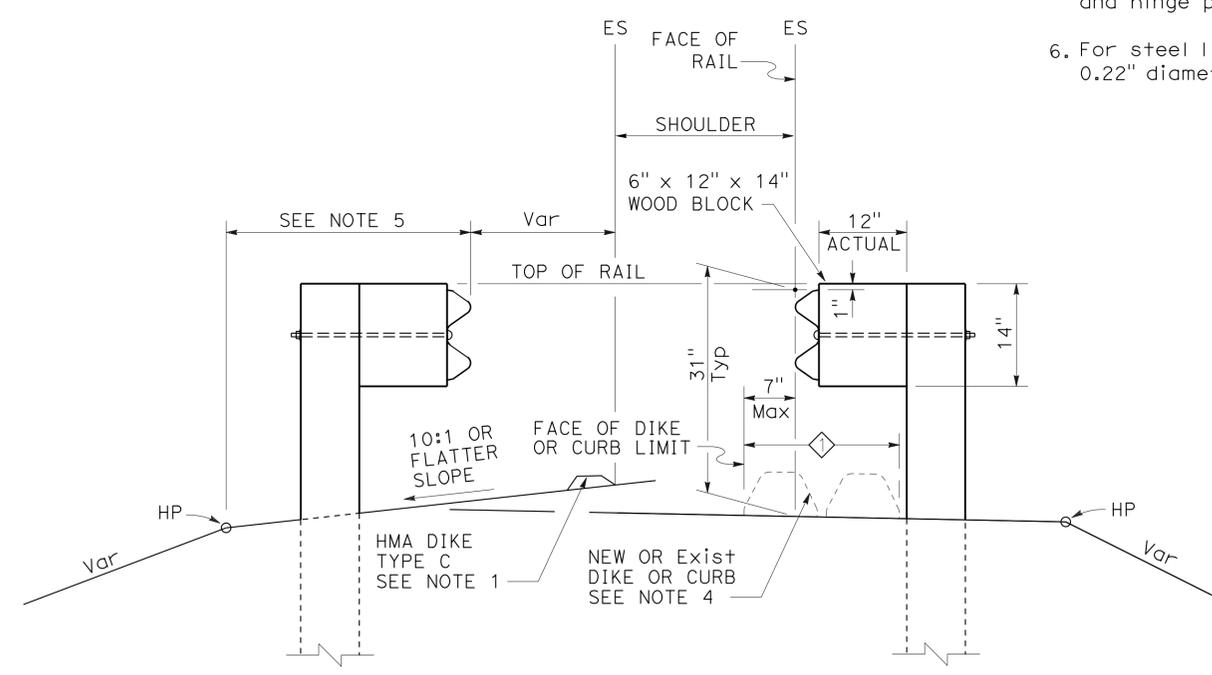
TO ACCOMPANY PLANS DATED 6-23-14

**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 3/32" diameter holes.



**MGS DELINEATION**  
See Note 3



**DIKE POSITIONING**  
See Note 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	560	824

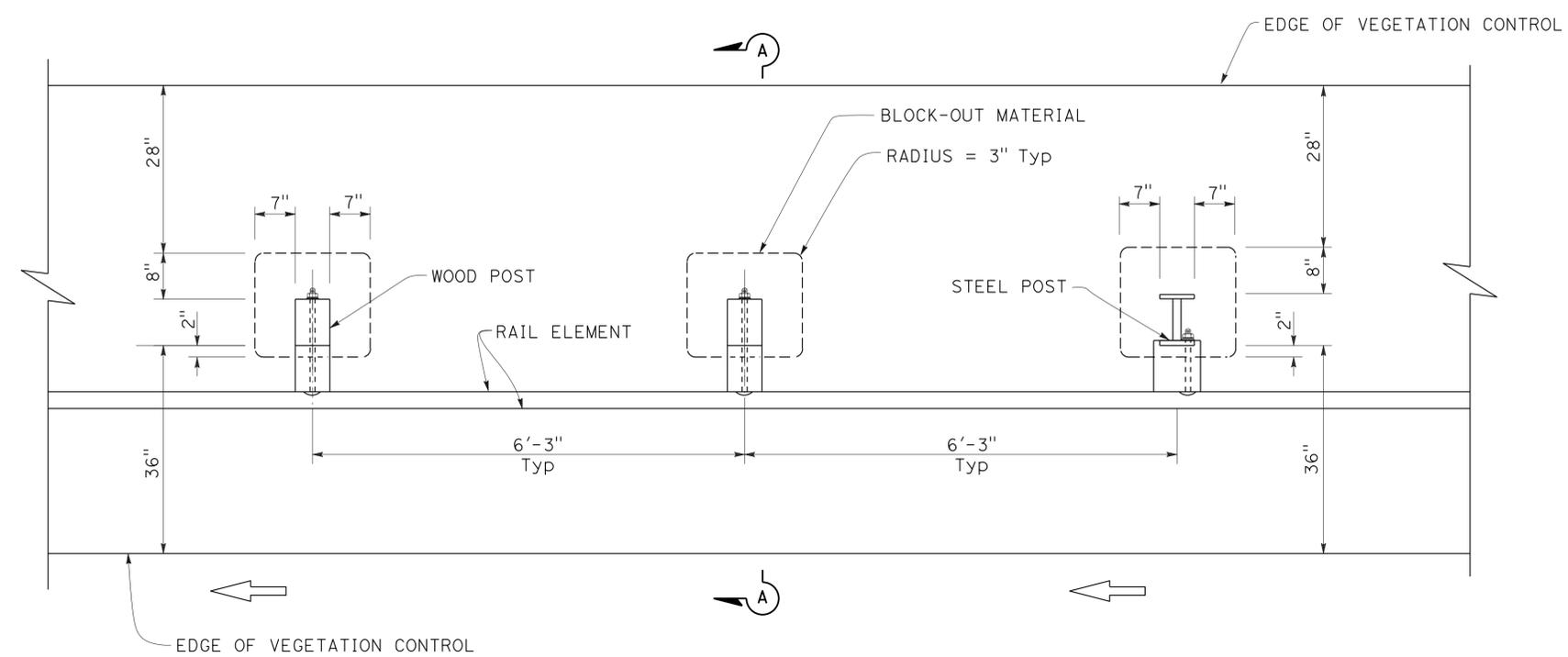
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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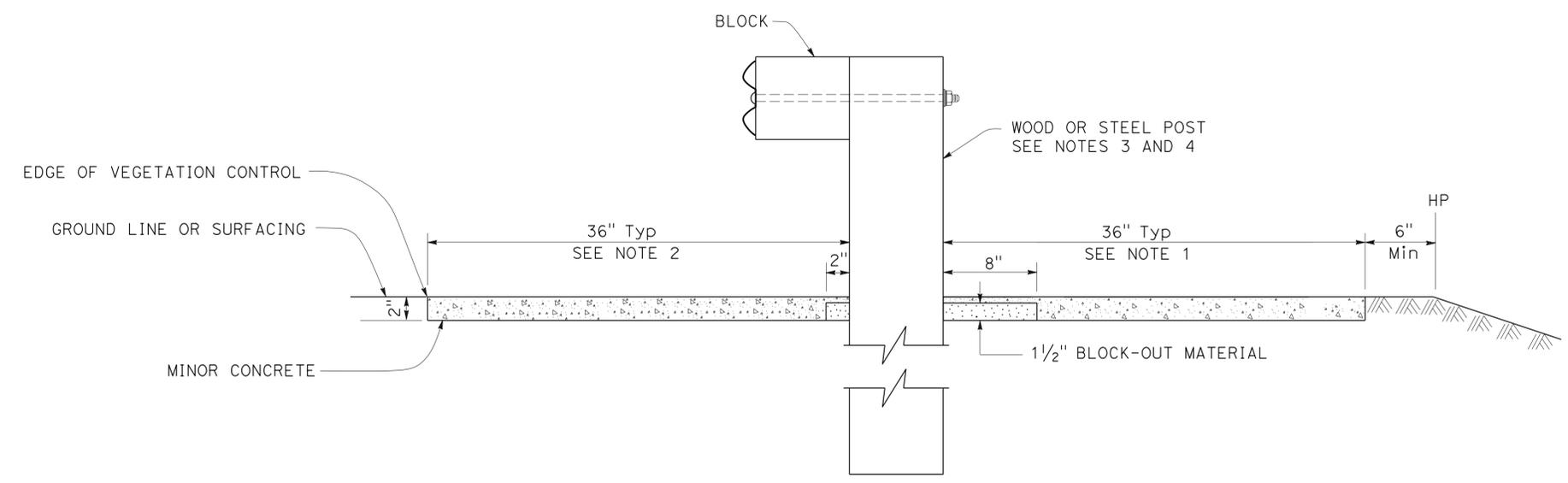
TO ACCOMPANY PLANS DATED 6-23-14



PLAN

NOTES:

1. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. For wood post sizes, see Revised Standard Plan RSP A77N1.
4. For steel post sizes, see Revised Standard Plan RSP A77N2.
5. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.



SECTION A-A

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
TYPICAL VEGETATION CONTROL  
STANDARD RAILING SECTION**

NO SCALE

RSP A77N5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77N5**

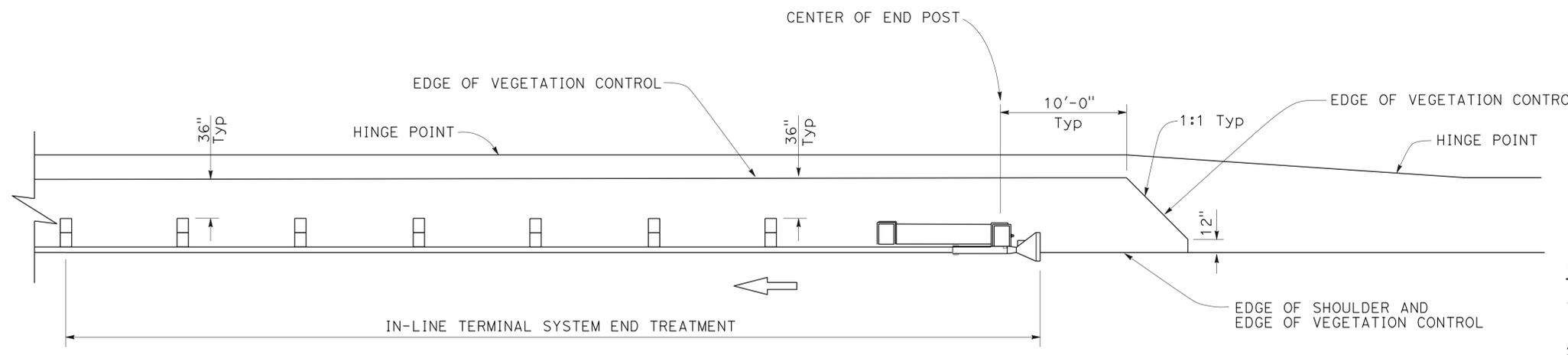
2010 REVISED STANDARD PLAN RSP A77N5

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	561	824

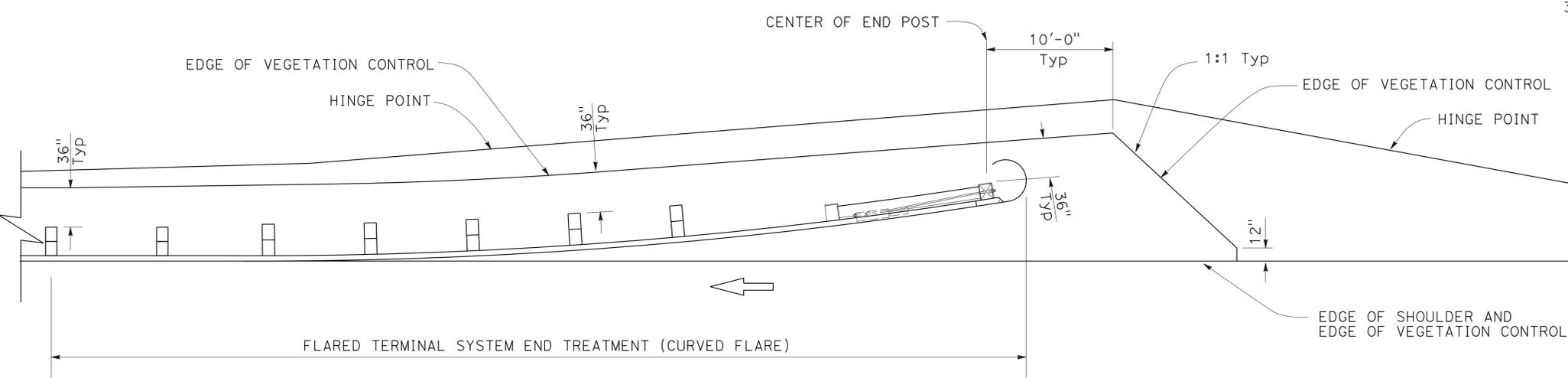
**Randell D. Hiatt**  
 REGISTERED CIVIL ENGINEER  
 July 19, 2013  
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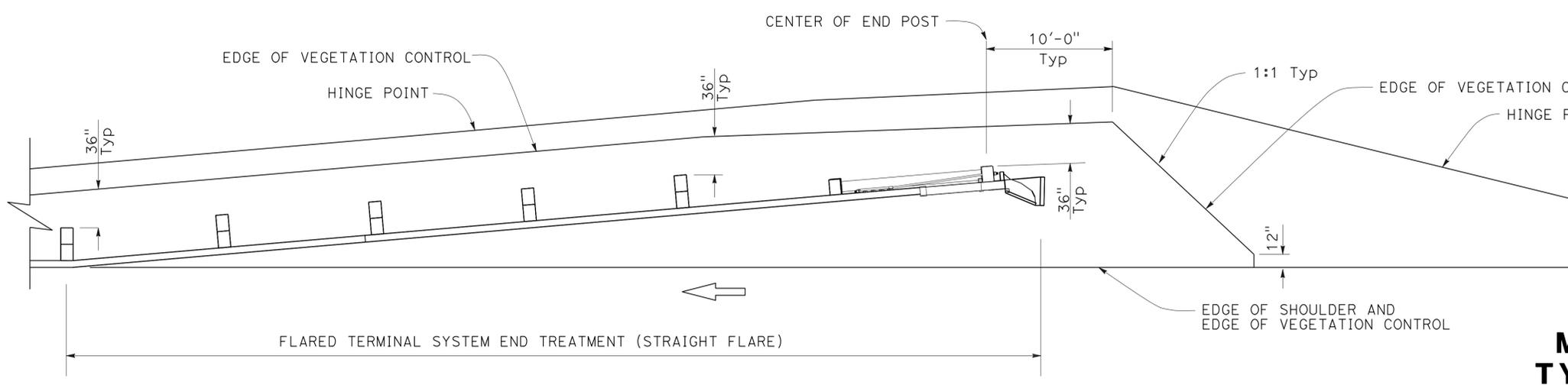
TO ACCOMPANY PLANS DATED 6-23-14



**PLAN**



**PLAN**



**PLAN**

**NOTES:**

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
 TYPICAL VEGETATION CONTROL  
 FOR TERMINAL SYSTEM END TREATMENTS**  
 NO SCALE

RSP A77N6 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77N6**

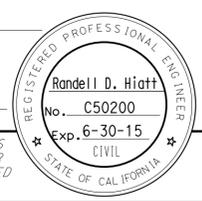
**2010 REVISED STANDARD PLAN RSP A77N6**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	562	824

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

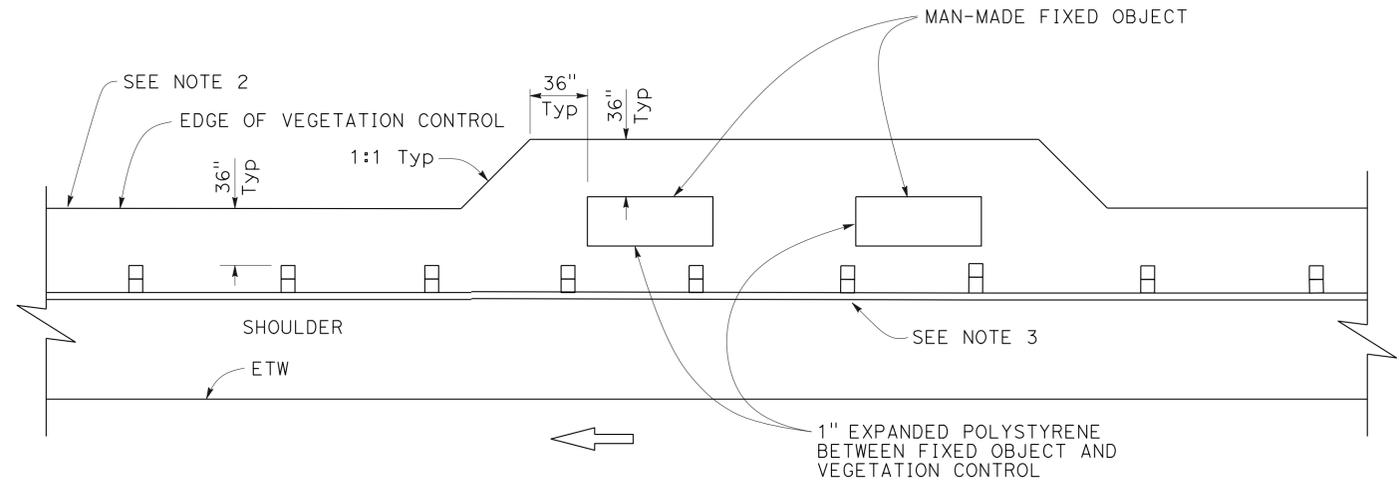
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TO ACCOMPANY PLANS DATED 6-23-14

**NOTES:**

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.



**PLAN**  
Fixed object(s) on shoulder

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
TYPICAL VEGETATION CONTROL  
AT FIXED OBJECT**

NO SCALE

RSP A77N8 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77N8**

2010 REVISED STANDARD PLAN RSP A77N8

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	563	824

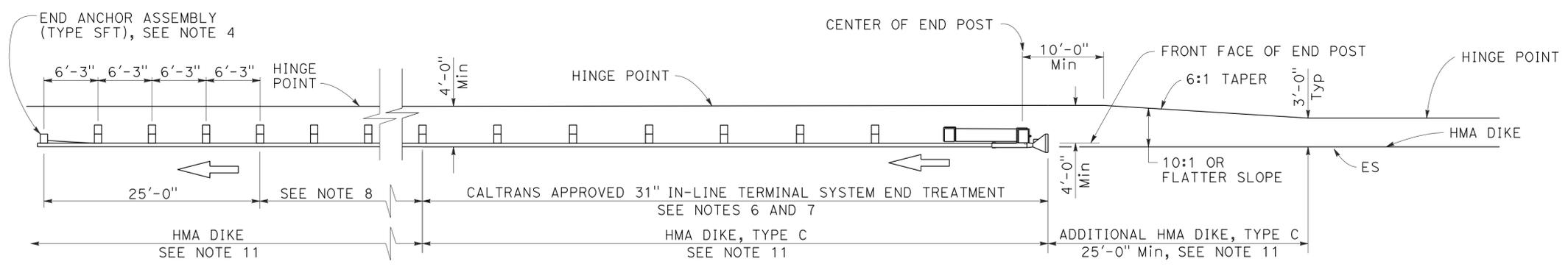
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

November 15, 2013  
PLANS APPROVAL DATE

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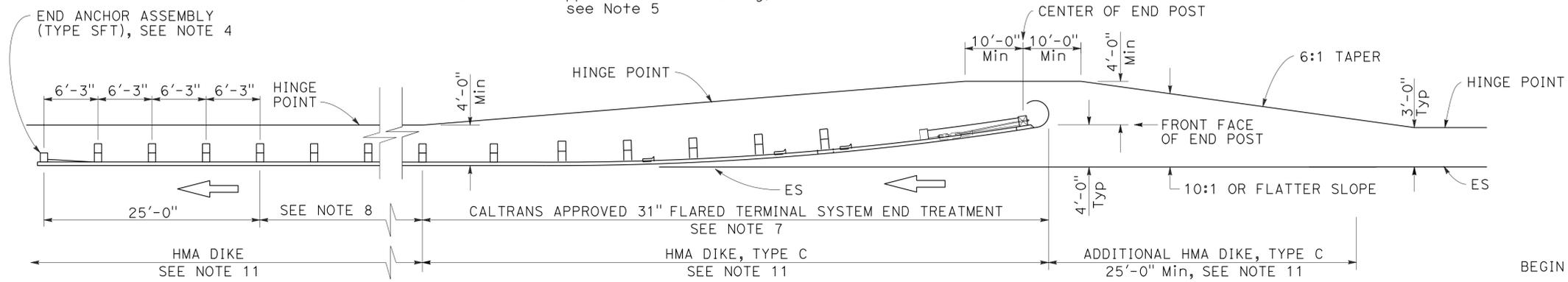
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-23-14



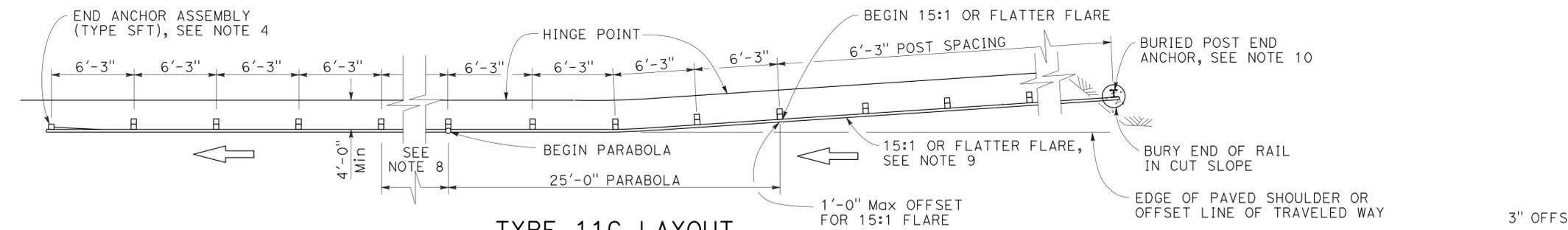
**TYPE 11A LAYOUT**

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



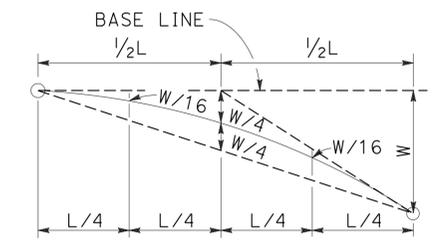
**TYPE 11B LAYOUT**

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

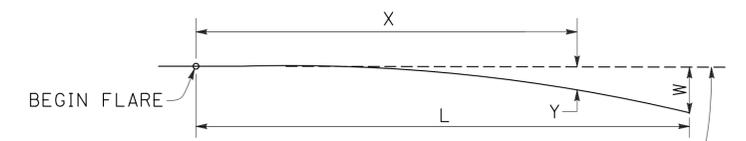


**TYPE 11C LAYOUT**

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



**TYPICAL PARABOLIC LAYOUT**

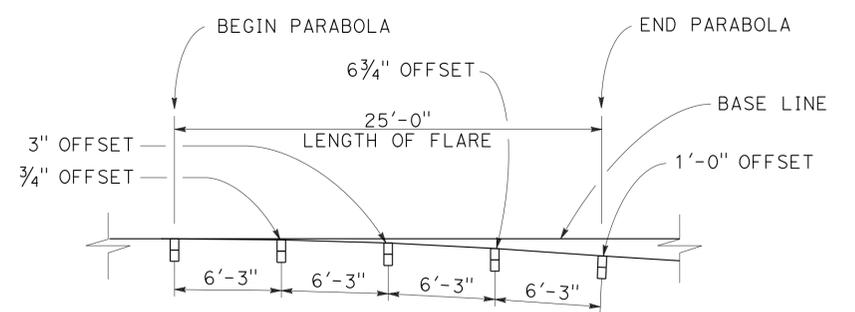


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

**PARABOLIC FLARE OFFSETS**



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

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**

**NOTES:**

- 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.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 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.
- For End Anchor Assembly (Type SFT) details, see Revised Standard Plan RSP A77S1.
- 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.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11C Layout, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.

2010 REVISED STANDARD PLAN RSP A77P1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	564	824

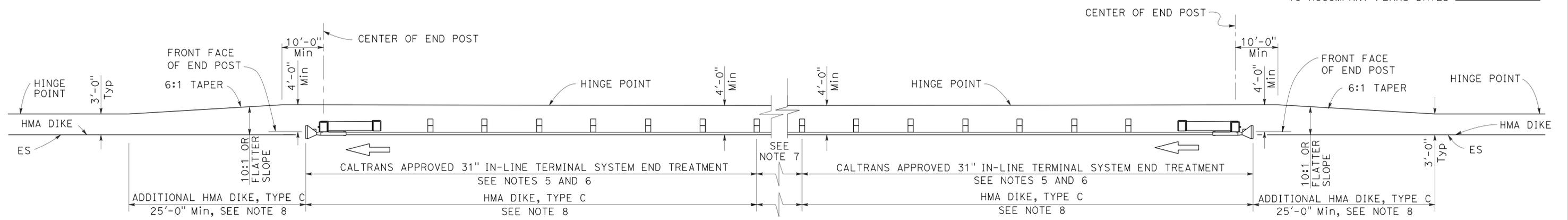
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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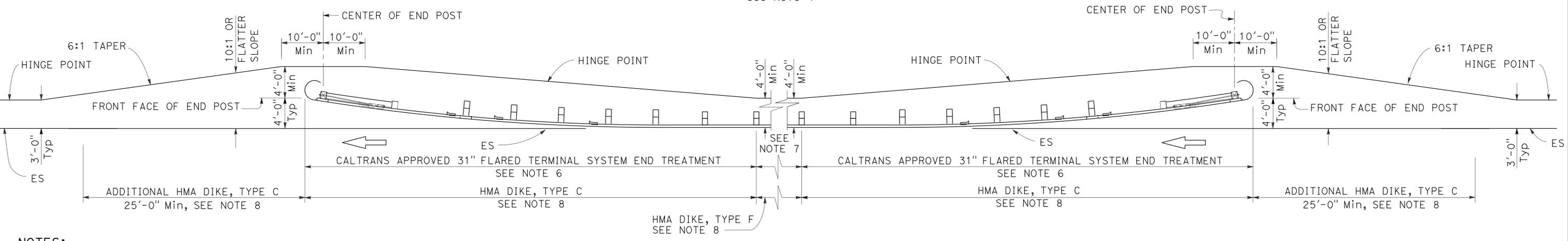


TO ACCOMPANY PLANS DATED 6-23-14



**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:**

- 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.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 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.
- 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.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	565	824

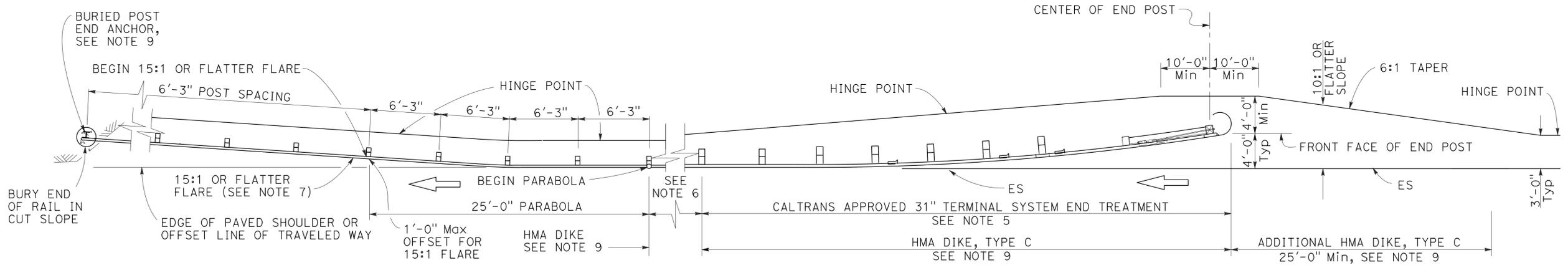
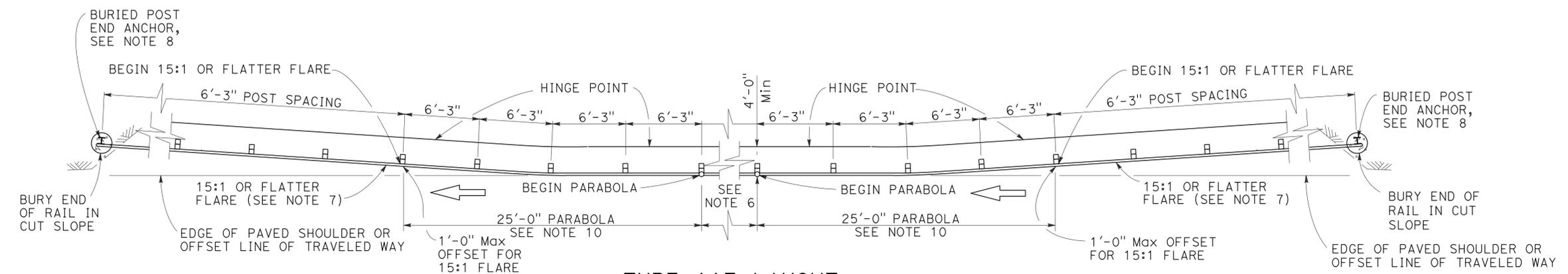
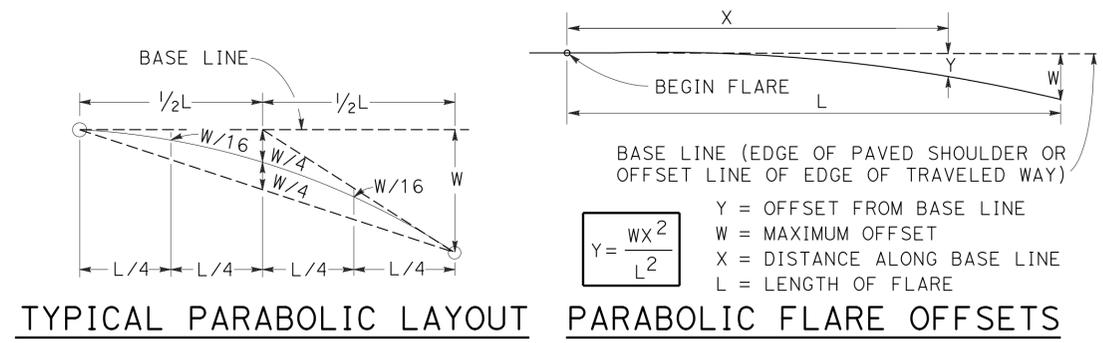
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED 6-23-14



**NOTES:**

- 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.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 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.
- 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.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11F and 11G Layouts, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	566	824

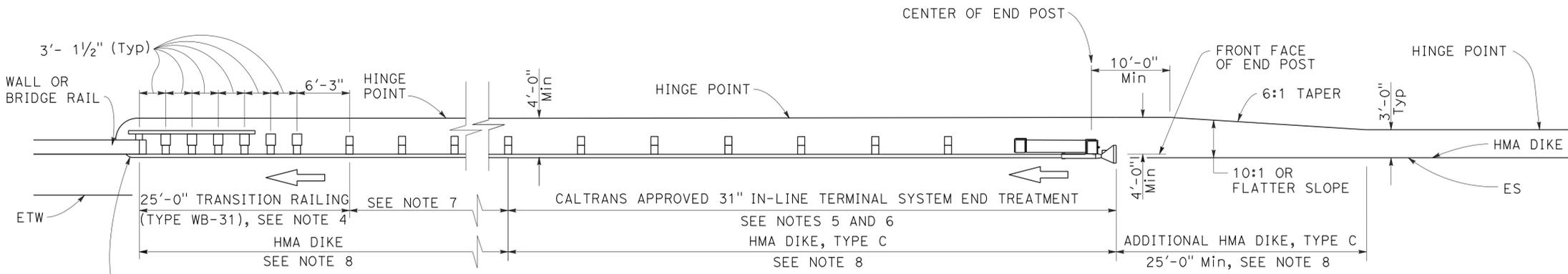
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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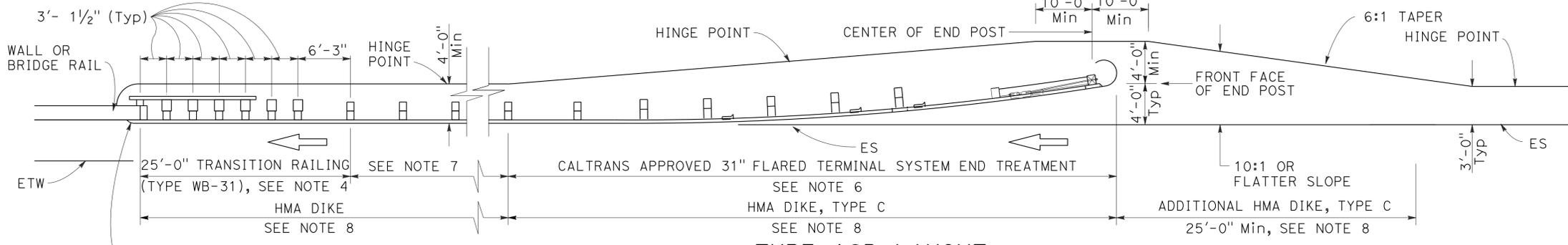


TO ACCOMPANY PLANS DATED 6-23-14



**TYPE 12A LAYOUT**

(MGS installation at structure approach with 31" in-line end treatment at traffic approach end of railing)  
See Notes 5 and 6, 8, 9



**TYPE 12B LAYOUT**

(MGS installation at structure approach with 31" Flared end treatment at traffic approach end of railing)  
See Notes 6, 8, 9

**NOTES:**

- 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.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 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.
- For Transition Railing (Type WB-31) details for Types 12A and 12B Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type 31" of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatment. 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.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12A or Type 12B Layouts are typically used:
  - To the right of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the left of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
  - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
  - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Revised Standard Plan RSP 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.
- 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.
- 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	567	824

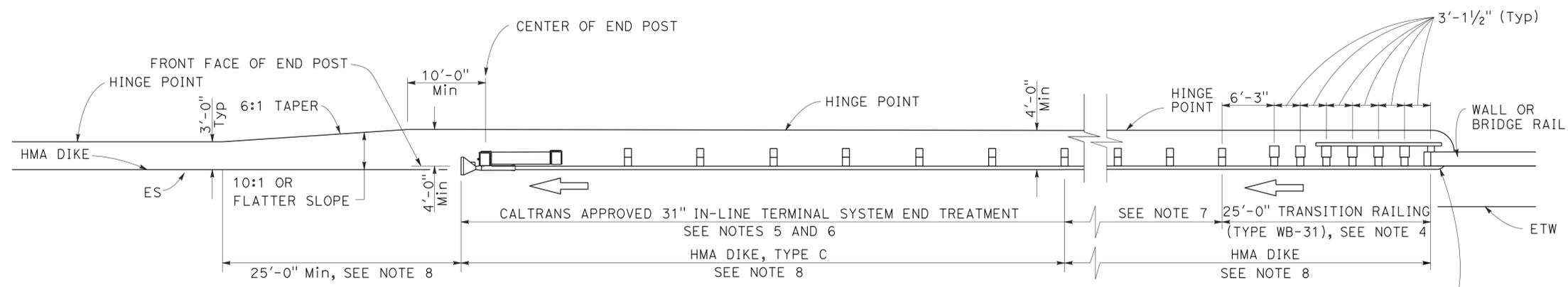
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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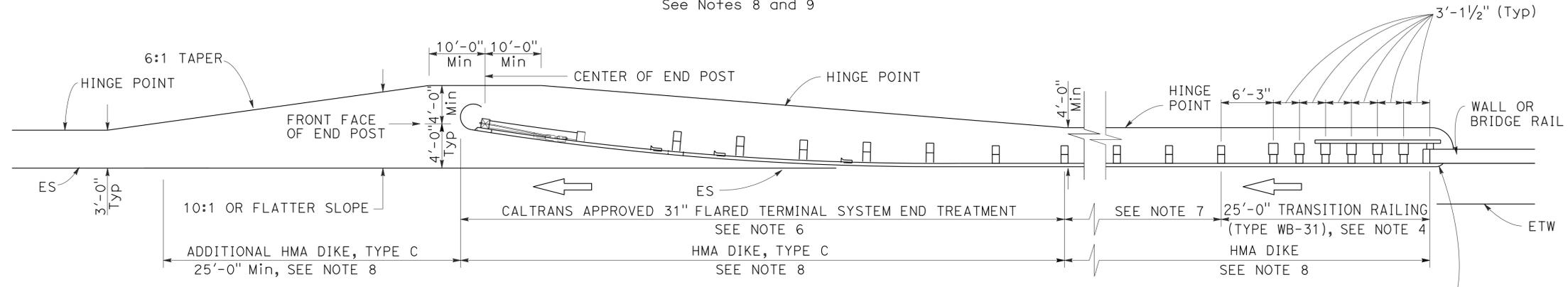
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-23-14



**TYPE 12AA LAYOUT**

(MGS installation at structure departure with 31" in-line end treatment at trailing end of railing)  
See Notes 8 and 9



**TYPE 12BB LAYOUT**

(MGS installation at structure departure with 31" flared end treatment at trailing end of railing)  
See Notes 8 and 9

**NOTES:**

- 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.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 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 posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12AA and 12BB Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type of 31" terminal system to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, other fixed objects), it may be advisable to construct additional MGS (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and 31" end treatments.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12AA or Type 12BB Layouts are typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of typical connections to bridge rail, see Connection Detail CC on Revised Standard Plan RSP A77U2 and Connection Detail HH on Revised Standard Plan RSP A77V2.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
TYPICAL LAYOUTS FOR  
STRUCTURE DEPARTURE**  
NO SCALE

RSP A77Q4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77Q4**

2010 REVISED STANDARD PLAN RSP A77Q4

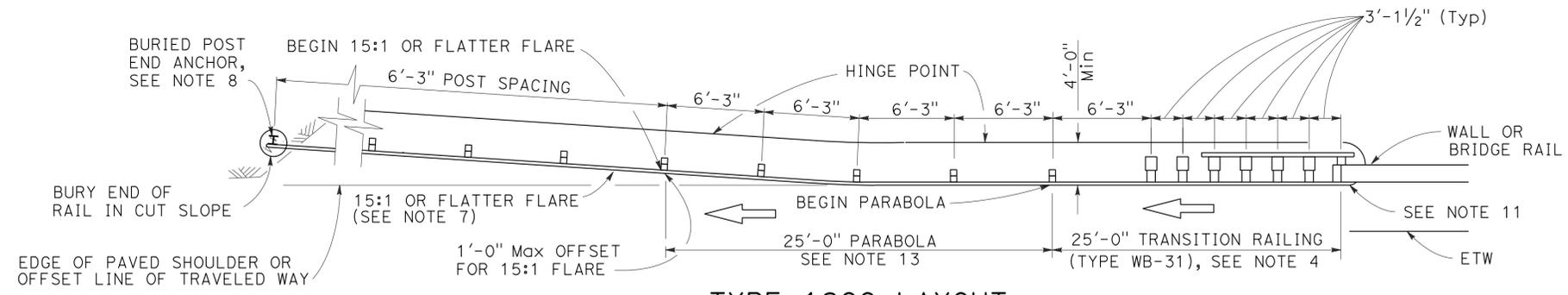
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	568	824

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

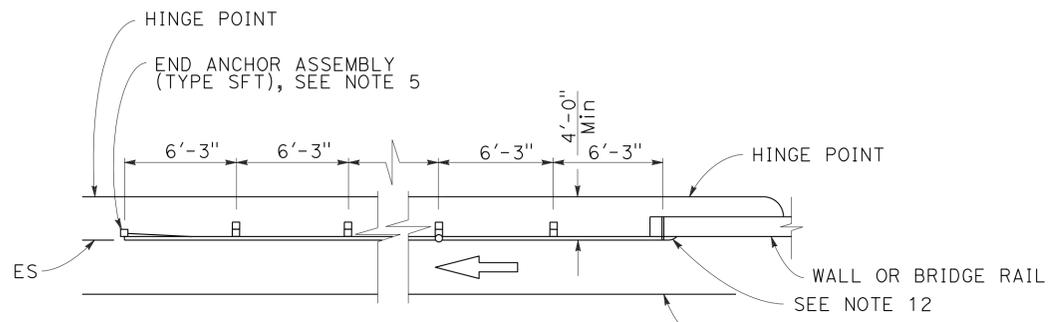
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

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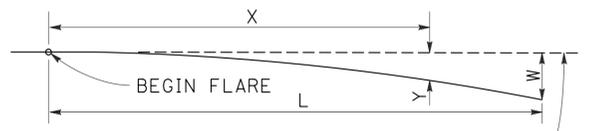
**TYPE 12CC LAYOUT**

(MGS installation at structure departure with a Buried end anchor treatment at trailing end of railing)  
See Notes 9 and 10



**TYPE 12DD LAYOUT**

(MGS installation at structure departure With end anchor assembly at trailing end of railing)  
See Notes 6 and 9

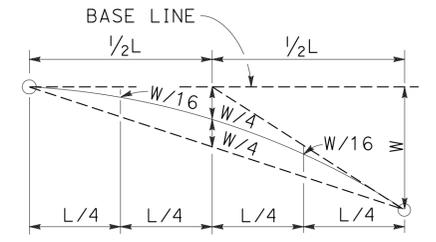


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**

**NOTES:**

- 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.
- MSG post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 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.
- For Transition Railing (Type WB-31) details for Type 12CC Layout, see Revised Standard Plan RSP A77U4.
- For details of End Anchor Assembly (Type SFT) used with Type 12DD Layout, see Revised Standard Plan RSP A77S1.
- Type 12DD layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is equal to or greater than 40 feet and MGS is recommended (embankment height, side slopes, other fixed objects). Length of railing to be equal to multiples of 12'-6". For MGS connection details to bridge rail, see Revised Standard Plans RSP A77U1 and RSP A77V1. For MGS connection details to wall, see Revised Standard Plan RSP A77U3.
- The 15:1 or flatter flare for Type 12CC 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".
- For details of the buried post end anchor used with Type 12CC Layout, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12CC Layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of a typical connection to bridge rail for Layout Type 12CC, see Connection Detail CC on Revised Standard Plan RSP A77U2 and Connection Detail HH on Revised Standard Plan RSP A77V2.
- For additional details of a typical connection to bridge rail for Layout Type 12DD, see Connection Detail BB on Revised Standard Plan RSP A77U1 and Connection Detail GG on Revised Standard Plan RSP A77V1.
- 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 DEPARTURE**

NO SCALE

RSP A77Q5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77Q5**

2010 REVISED STANDARD PLAN RSP A77Q5

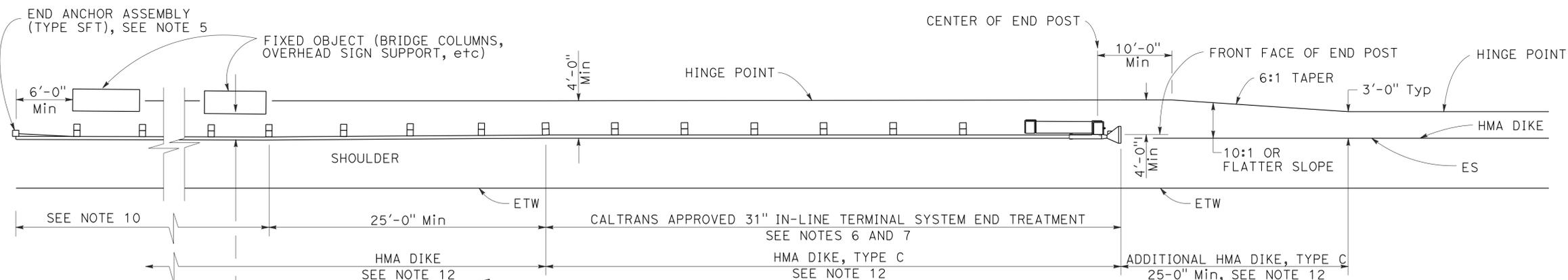
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	569	824

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

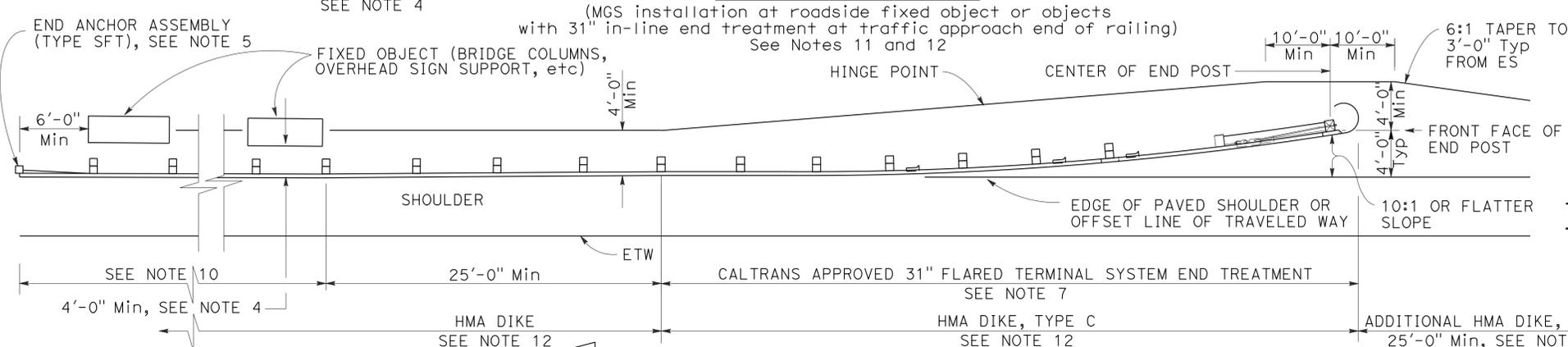
July 19, 2013  
PLANS APPROVAL DATE

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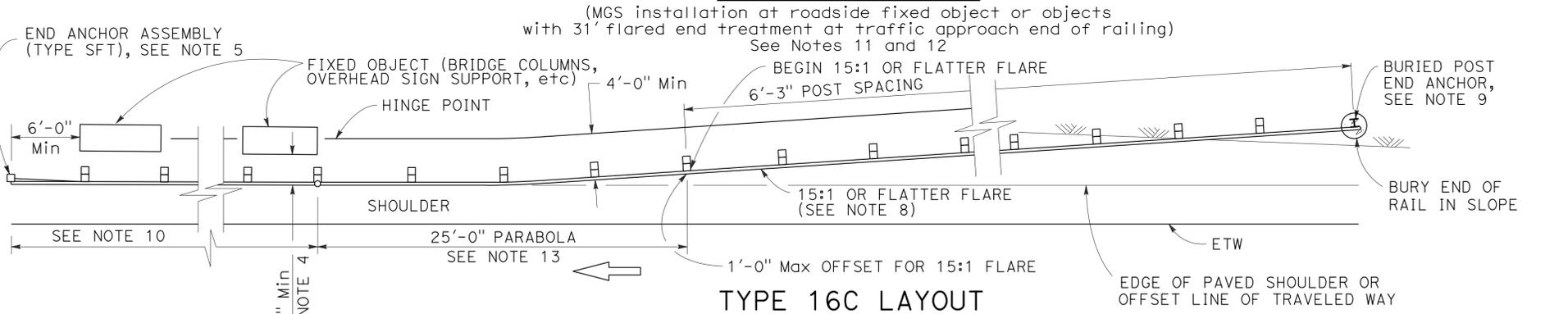
NO. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA



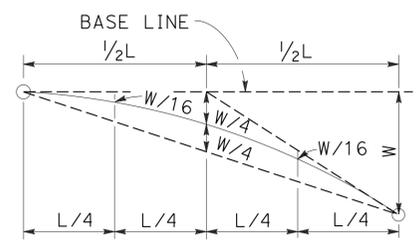
**TYPE 16A LAYOUT**



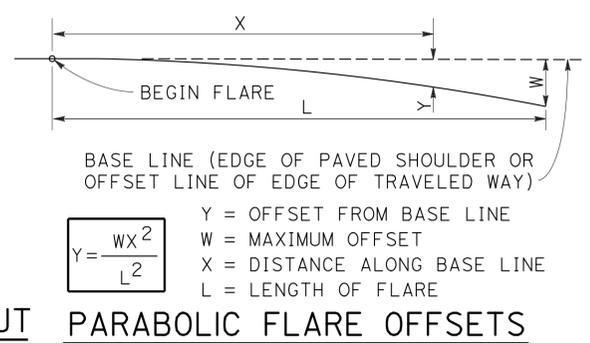
**TYPE 16B LAYOUT**



**TYPE 16C LAYOUT**



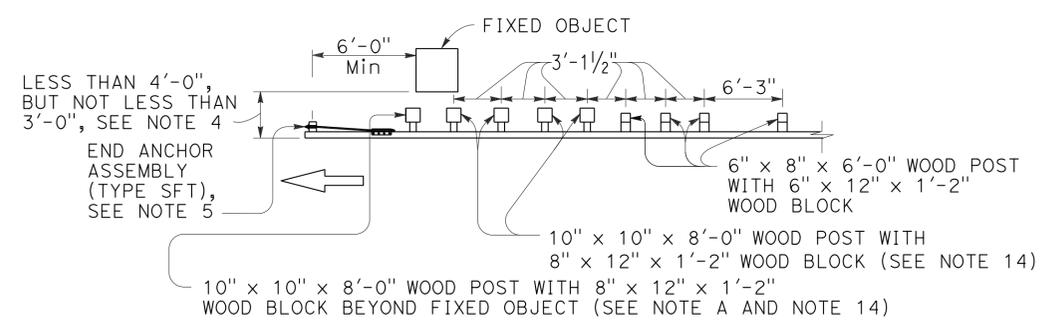
**TYPICAL PARABOLIC LAYOUT**



**PARABOLIC FLARE OFFSETS**

**NOTES:**

- 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.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 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.
- 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).
- For End Anchor Assembly (Type SFT) details, see Revised Standard Plan RSP A77S1.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type of 31" terminal system to be used will be shown on the Project Plans.
- The 15:1 or flatter flare used with Type 16C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the Buried Post End Anchor used with Type 16C Layout, see Revised Standard Plan RSP A77T2.
- 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.
- 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.
- Where placement of dike is required with MGS, see Revised Standard Plan RSP A77N4 for dike positioning details.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
- 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".



**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'-1/2" 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

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**

2010 REVISED STANDARD PLAN RSP A77R3

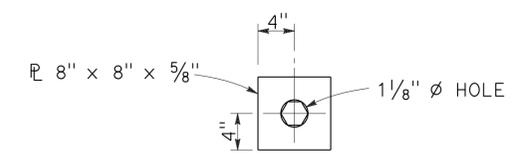
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	570	824

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

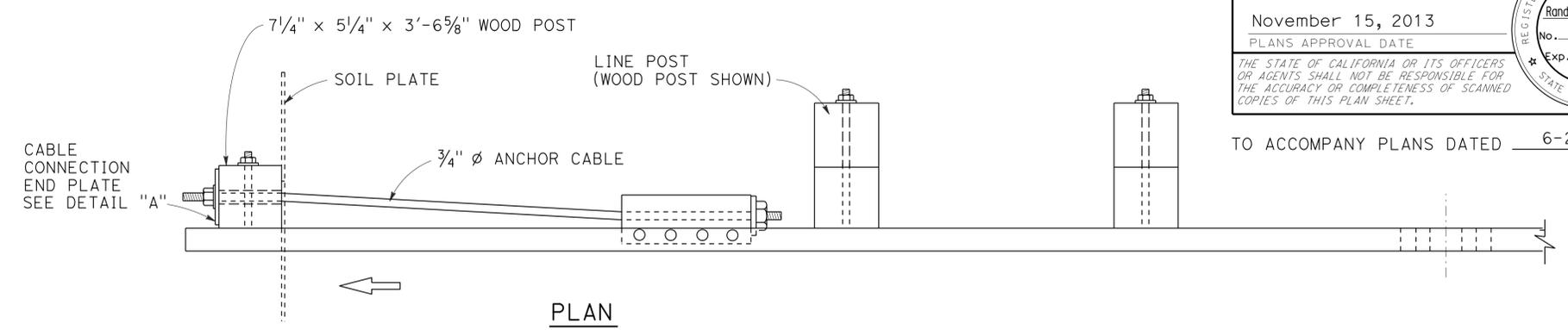
November 15, 2013  
PLANS APPROVAL DATE

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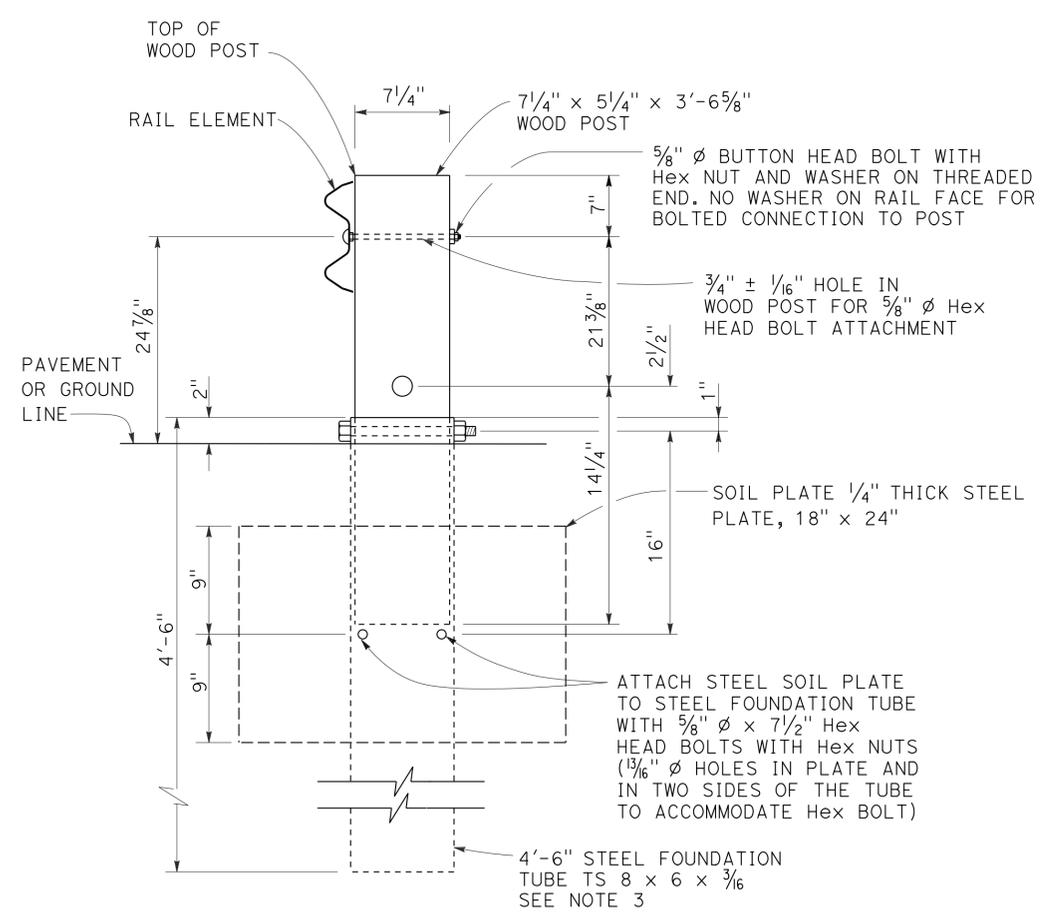
TO ACCOMPANY PLANS DATED 6-23-14



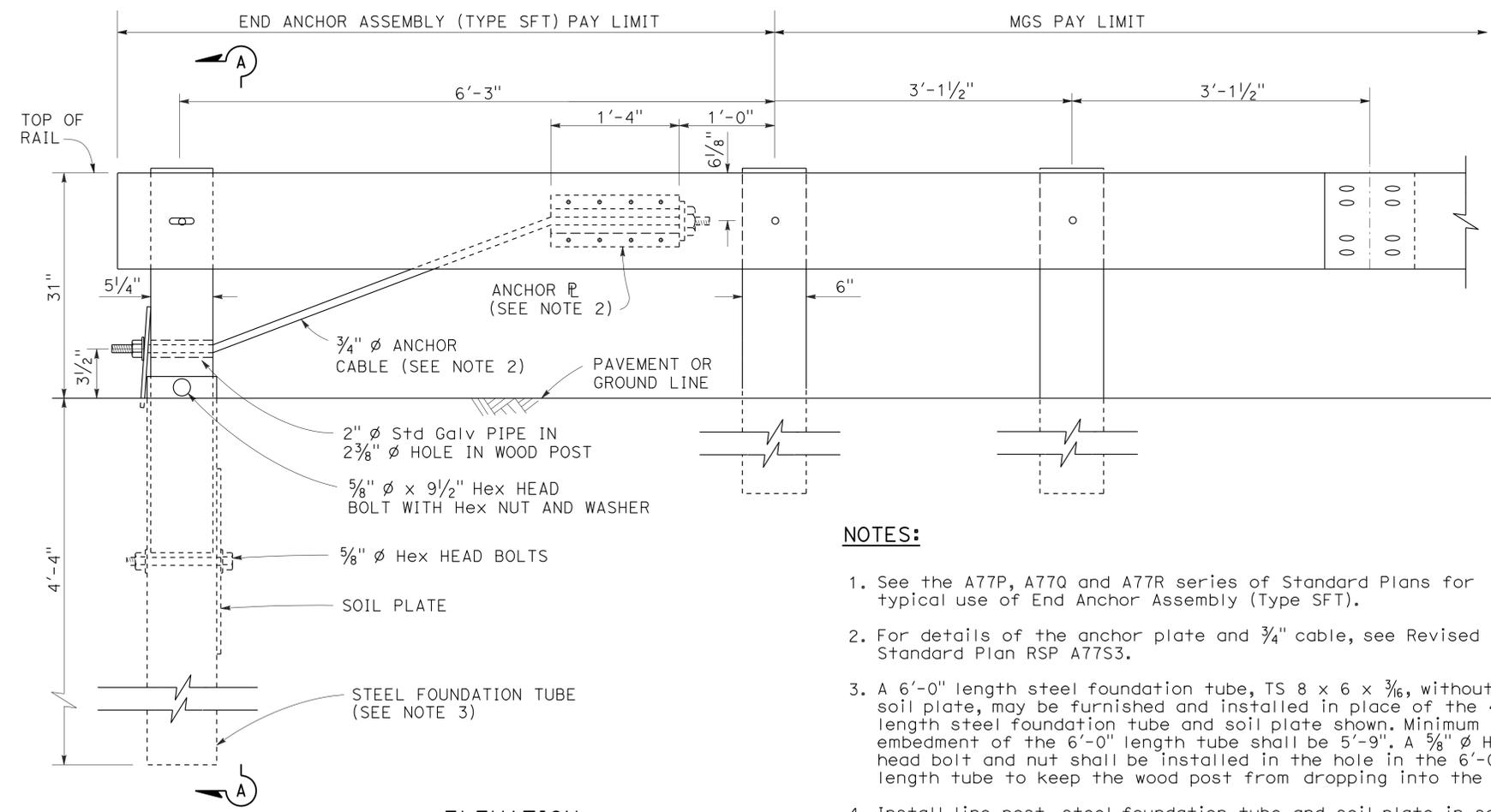
**DETAIL "A"**  
**CABLE CONNECTION**  
**END PLATE**



**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 inch 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 inch diameter hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. 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**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	571	824

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

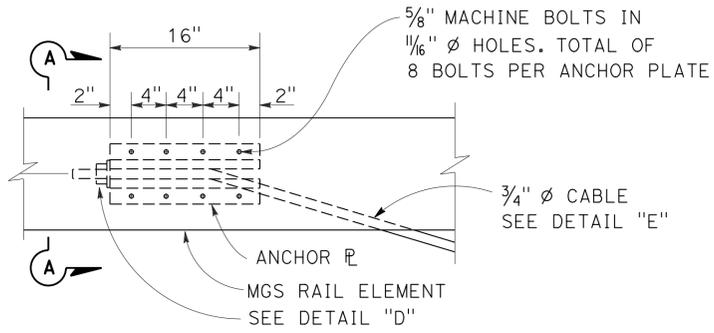
November 15, 2013  
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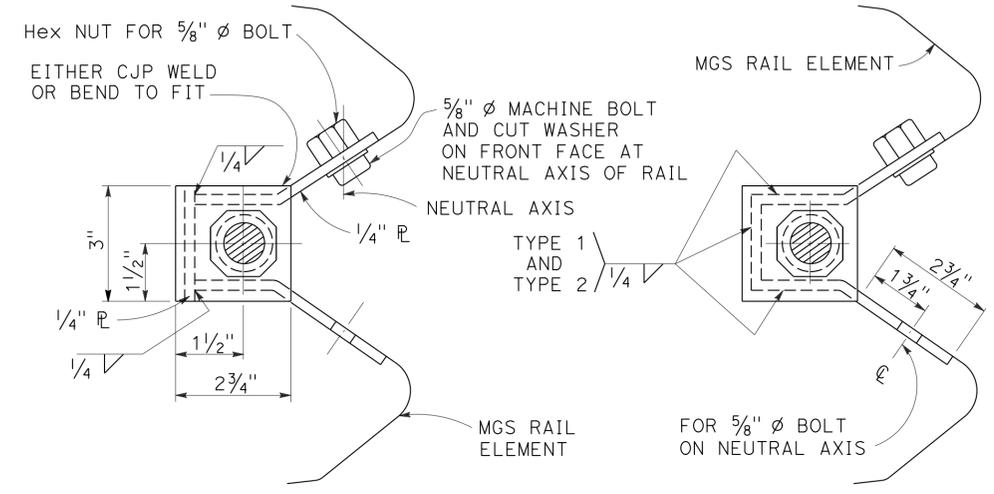
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TO ACCOMPANY PLANS DATED 6-23-14

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



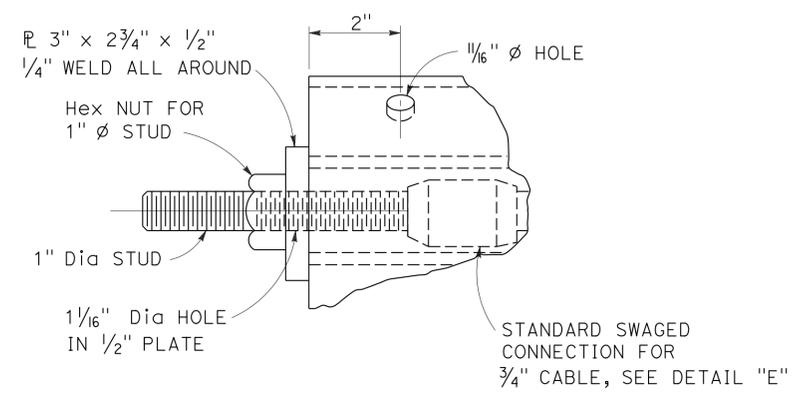
**ANCHOR PLATE DETAIL**  
(MGS shown, TBB similar)



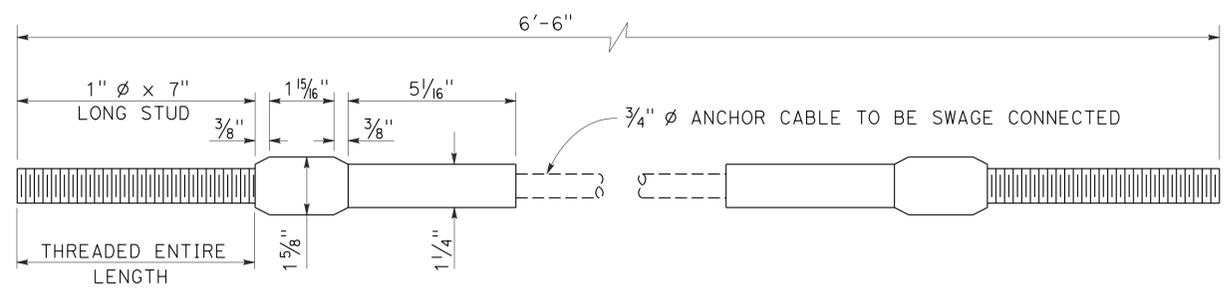
**SECTION A-A**  
(ALTERNATIVE TYPE 1)

**SECTION A-A**  
(ALTERNATIVE TYPE 2)

**NOTE:**  
Dimensioning applies to both types.



**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.

2010 REVISED STANDARD PLAN RSP A77S3

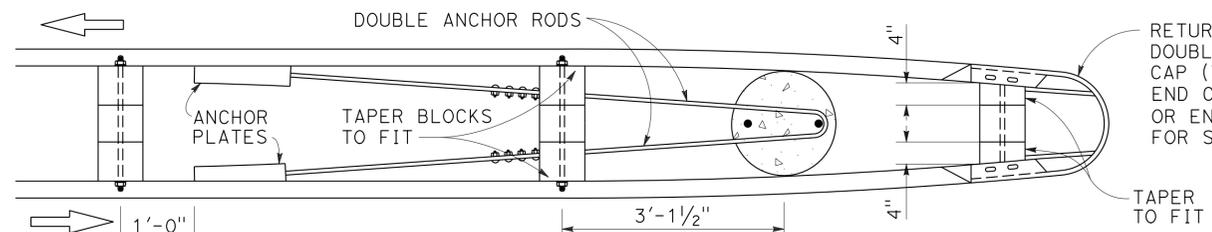
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	572	824

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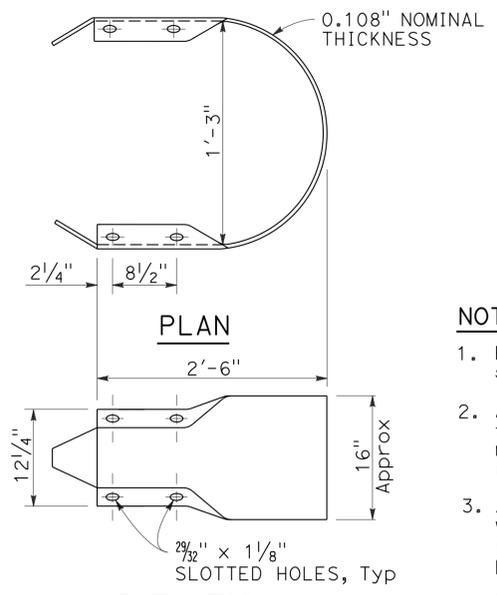
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**PLAN**

See Note 4

RETURN CAP (TYPE TA) FOR DOUBLE THRIE BEAM OR RETURN CAP (TYPE A) FOR DOUBLE MGS.  
END CAP (TYPE A) FOR SINGLE MGS OR END CAP (TYPE TC) FOR SINGLE THRIE BEAM



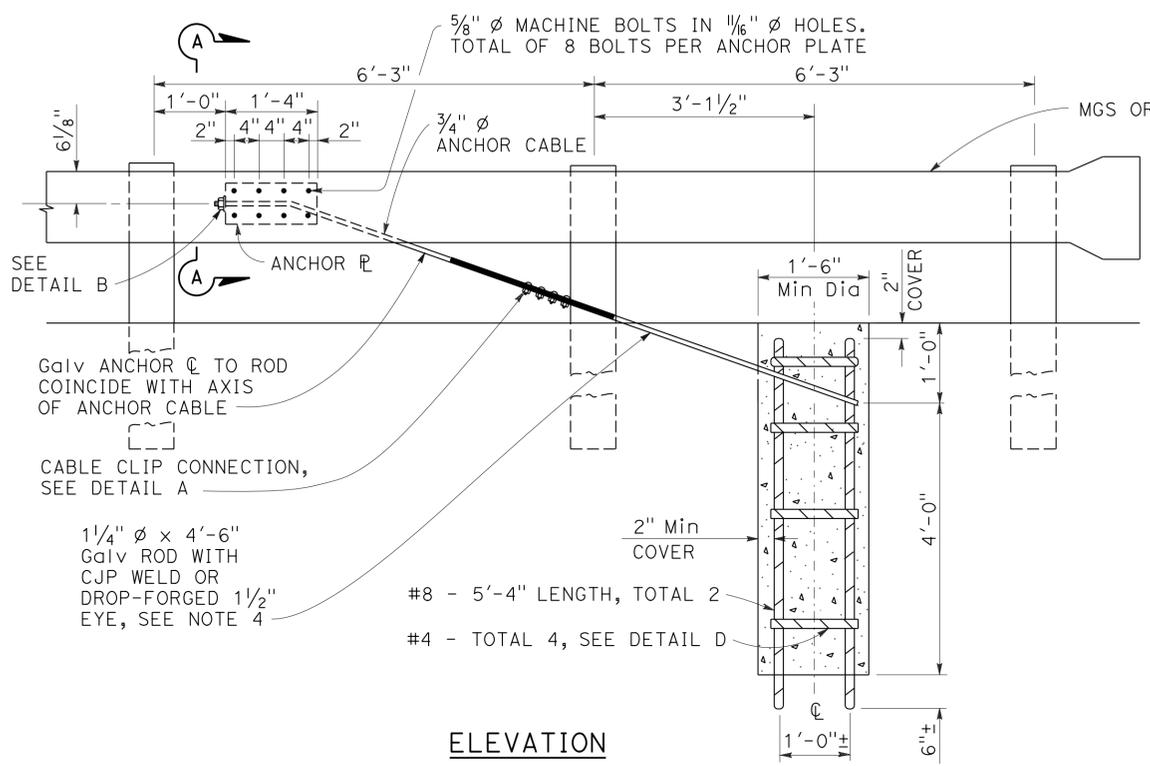
**ELEVATION**

**RETURN CAP (TYPE A)**

TO ACCOMPANY PLANS DATED 6-23-14

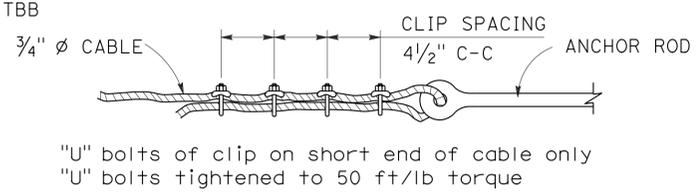
**NOTES:**

- For typical use of this type of end anchor, see Revised Standard Plan RSP A78E2.
- Anchor cable to be parallel to railing for straight runs of rail. Anchor cable may have angle point at anchor plate if railing is curved.
- Anchor rod hooks to be in contact with anchor reinforcement when concrete is placed. Wire ties may be used to position anchor rods.
- Single sided railing installations require only one anchor plate, anchor rod and anchor cable. Single sided railing will not have a rail element or blockouts on backside of line posts as shown in the plan view.



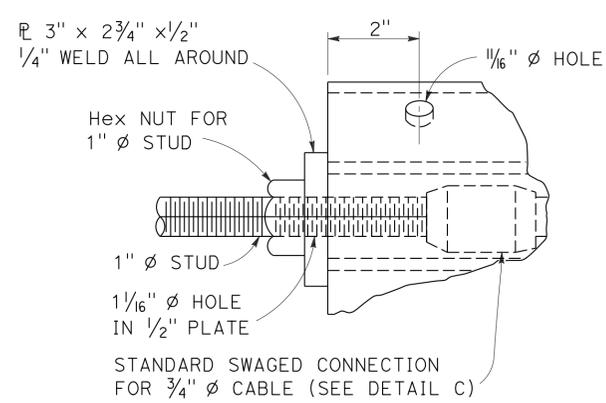
**ELEVATION**  
**END ANCHOR ASSEMBLY (TYPE CA)**

(Wood post, MGS shown, details similar for Thrie Beam Barrier.)



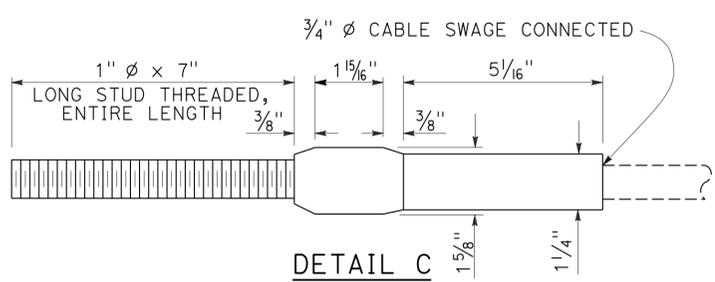
**DETAIL A**  
**CABLE CLIP CONNECTION**

"U" bolts of clip on short end of cable only  
"U" bolts tightened to 50 ft/lb torque



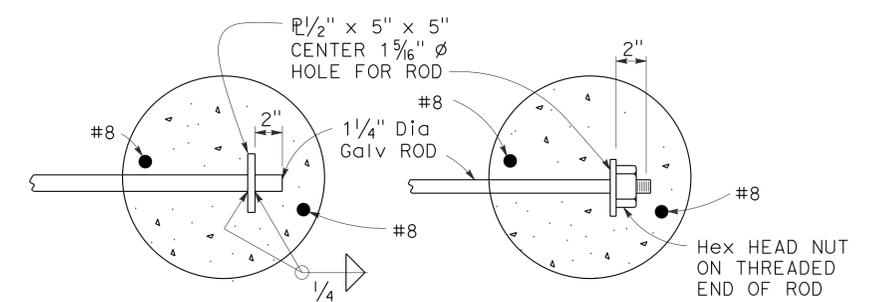
**DETAIL B**

**ANCHOR CABLE WITH SWAGED FITTING AND STUD**



**DETAIL C**

**ANCHOR CABLE WITH SWAGED FITTING AND STUD**

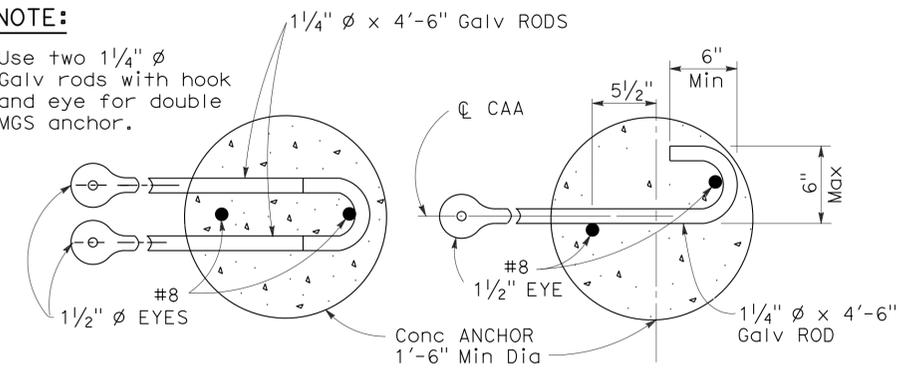


**OPTIONAL ENDS ON SINGLE ANCHOR ROD**

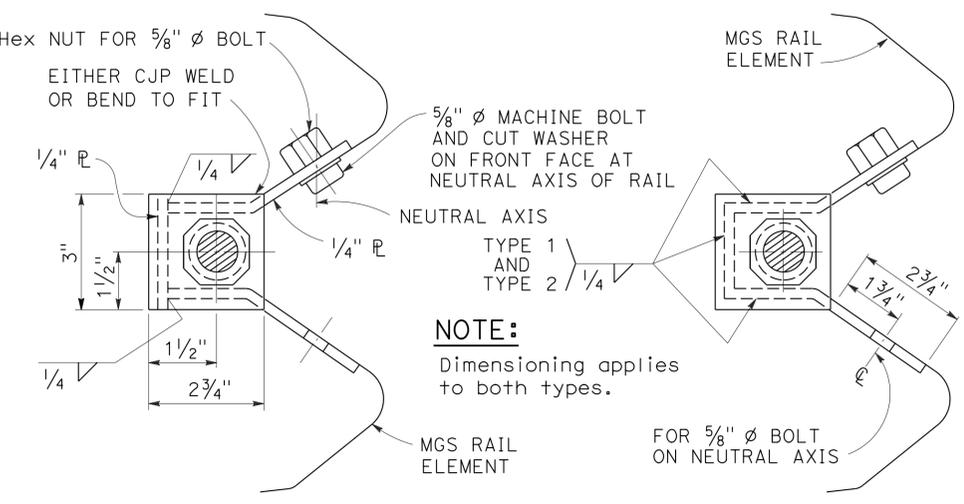
(Not to be used for double anchors)

**NOTE:**

Use two 1/4 inch diameter Galv rods with hook and eye for double MGS anchor.



**DOUBLE ANCHOR ANCHOR RODS**  
**SINGLE ANCHOR ANCHOR RODS**

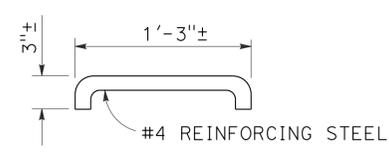


**SECTION A-A (Alternative Type 1)**

**SECTION A-A (Alternative Type 2)**

**ANCHOR PLATE DETAILS**

**NOTE:**  
Dimensioning applies to both types.



**DETAIL D**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL RAILING END ANCHOR ASSEMBLY (TYPE CA)**

NO SCALE

RSP A77T1 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77T1 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77T1**

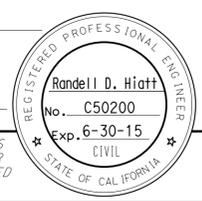
2010 REVISED STANDARD PLAN RSP A77T1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	573	824

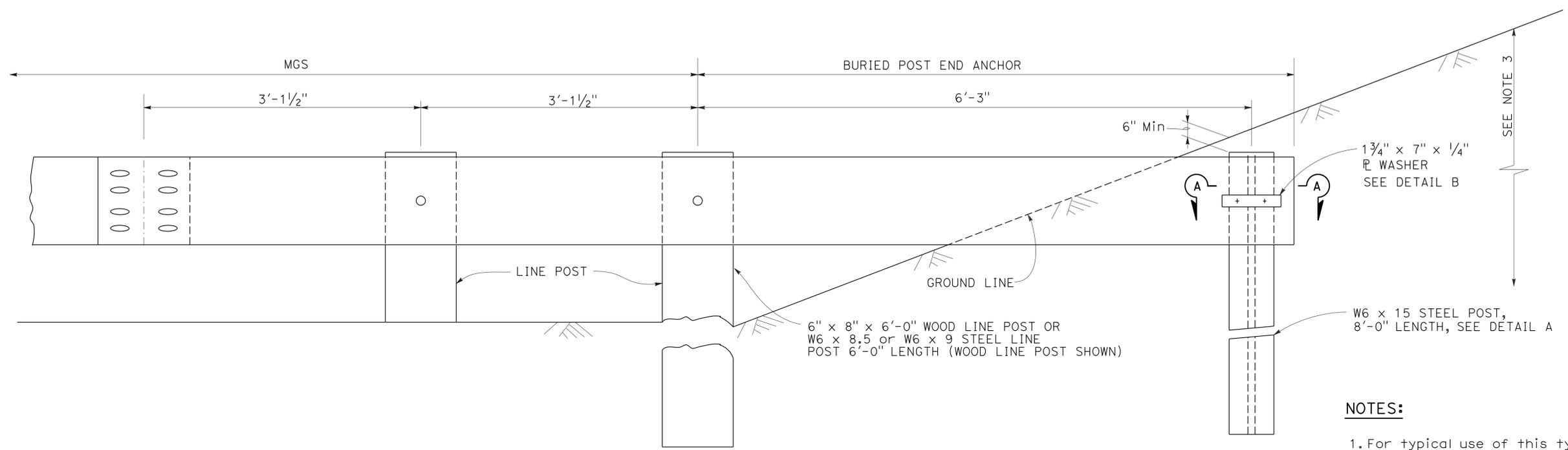
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TO ACCOMPANY PLANS DATED 6-23-14

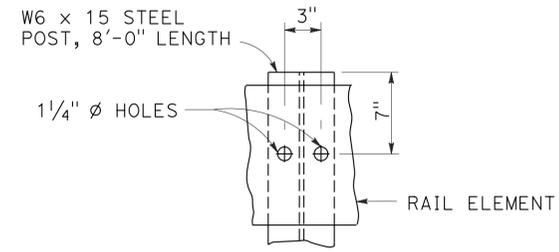


**BURIED POST END ANCHOR**

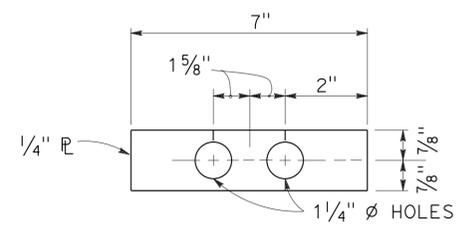
See Note 3

**NOTES:**

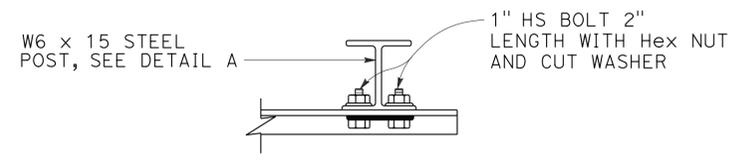
1. For typical use of this type of end anchor with MGS see the A77P, A77Q and A77R Series of the Standard Plans.
2. Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers approximately 1'-0" thick. Each layer shall be moistened 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.



**DETAIL A**



**DETAIL B**



**SECTION A-A**

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	574	824

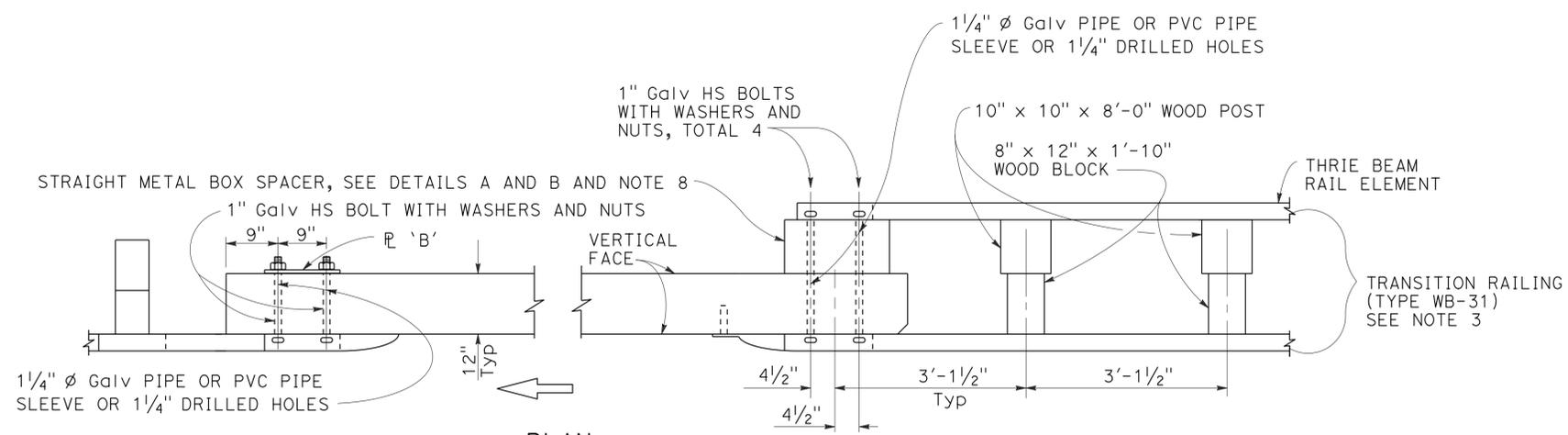
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

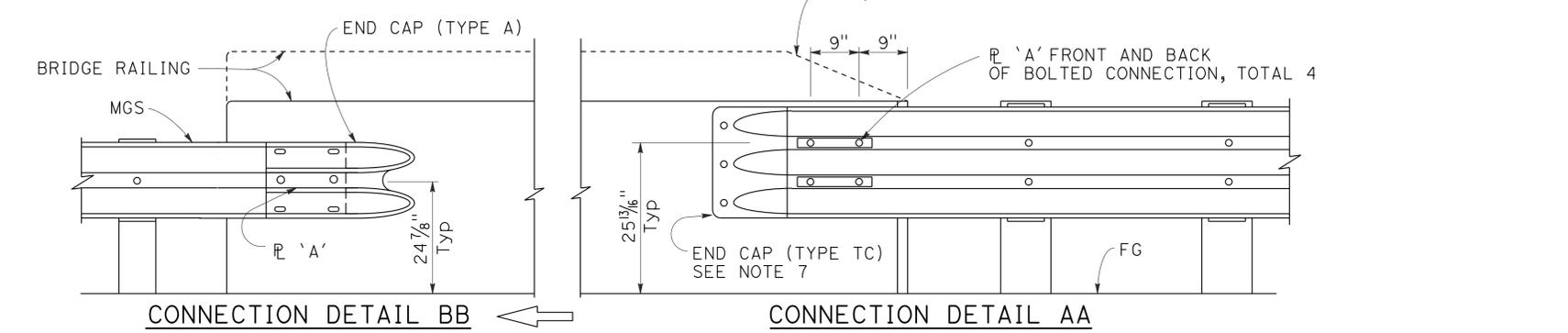
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 6-23-14



PLAN

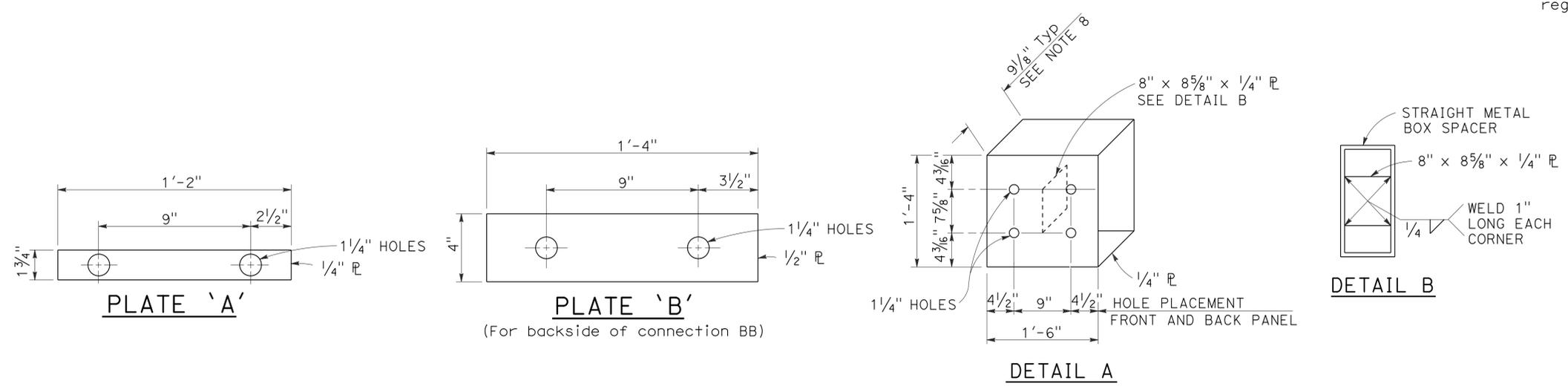


ELEVATION

MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

**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 three 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 three 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 three 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.



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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	575	824

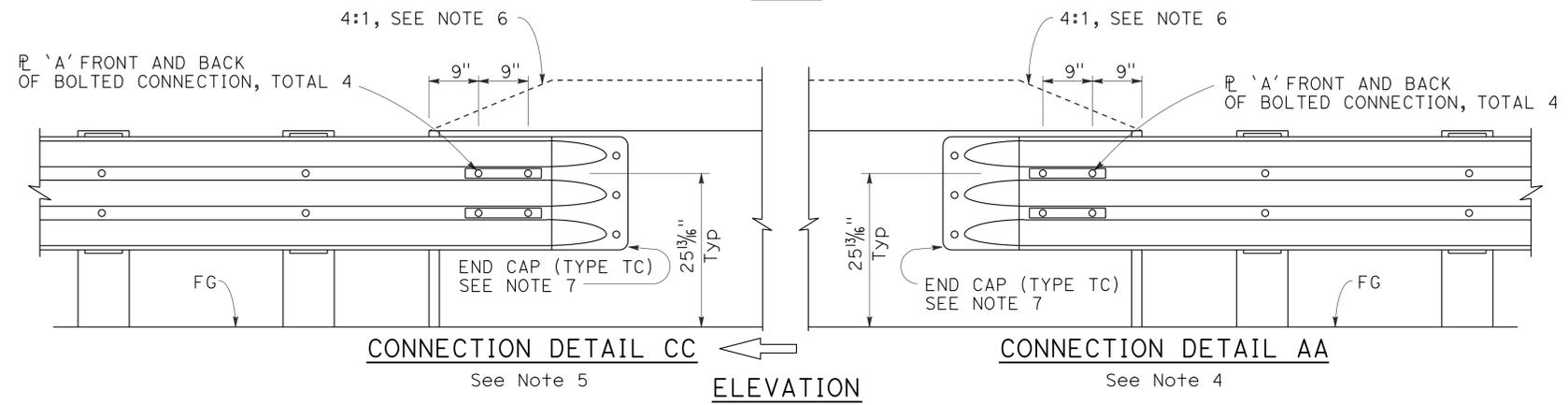
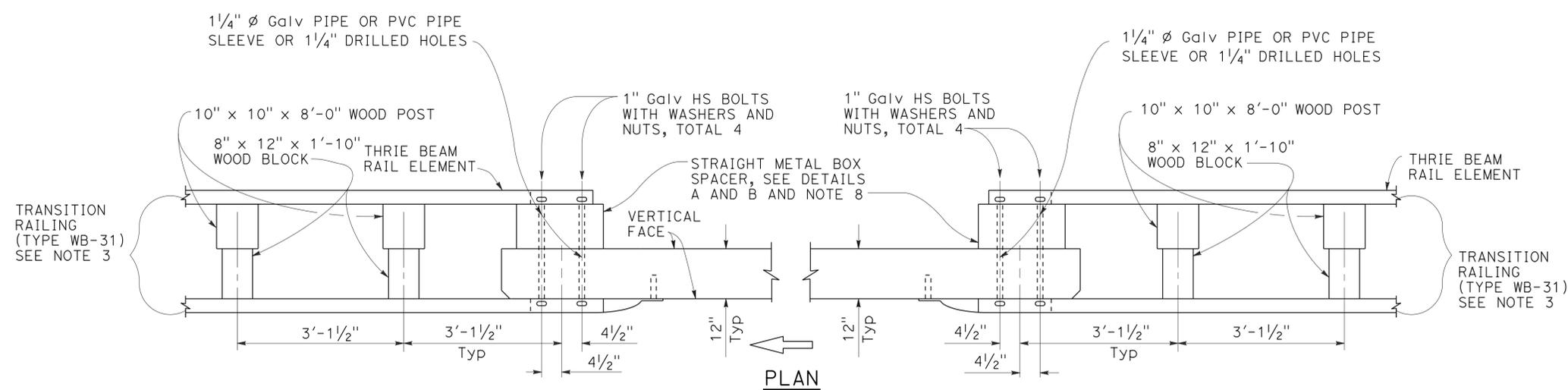
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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

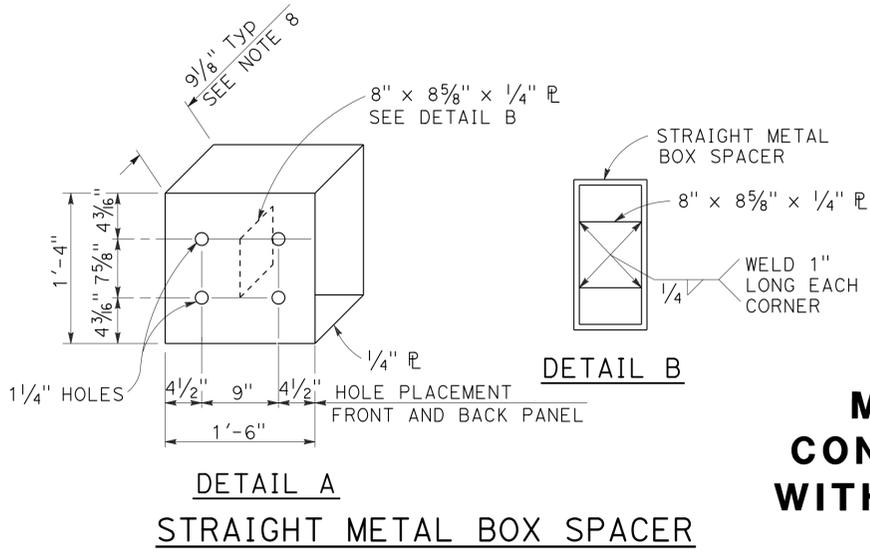
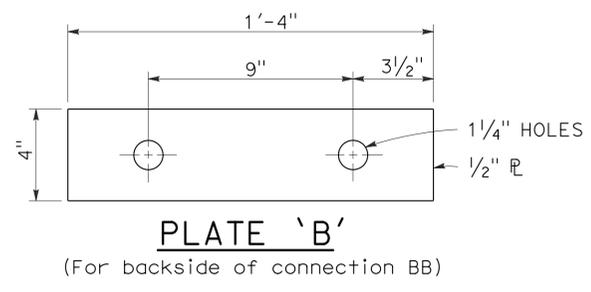
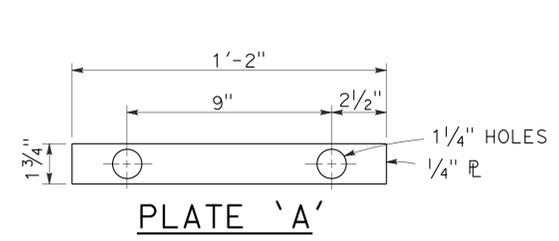
TO ACCOMPANY PLANS DATED 6-23-14



**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 inch 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.



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**

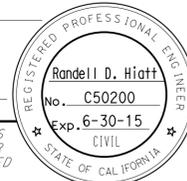
2010 REVISED STANDARD PLAN RSP A77U2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	576	824

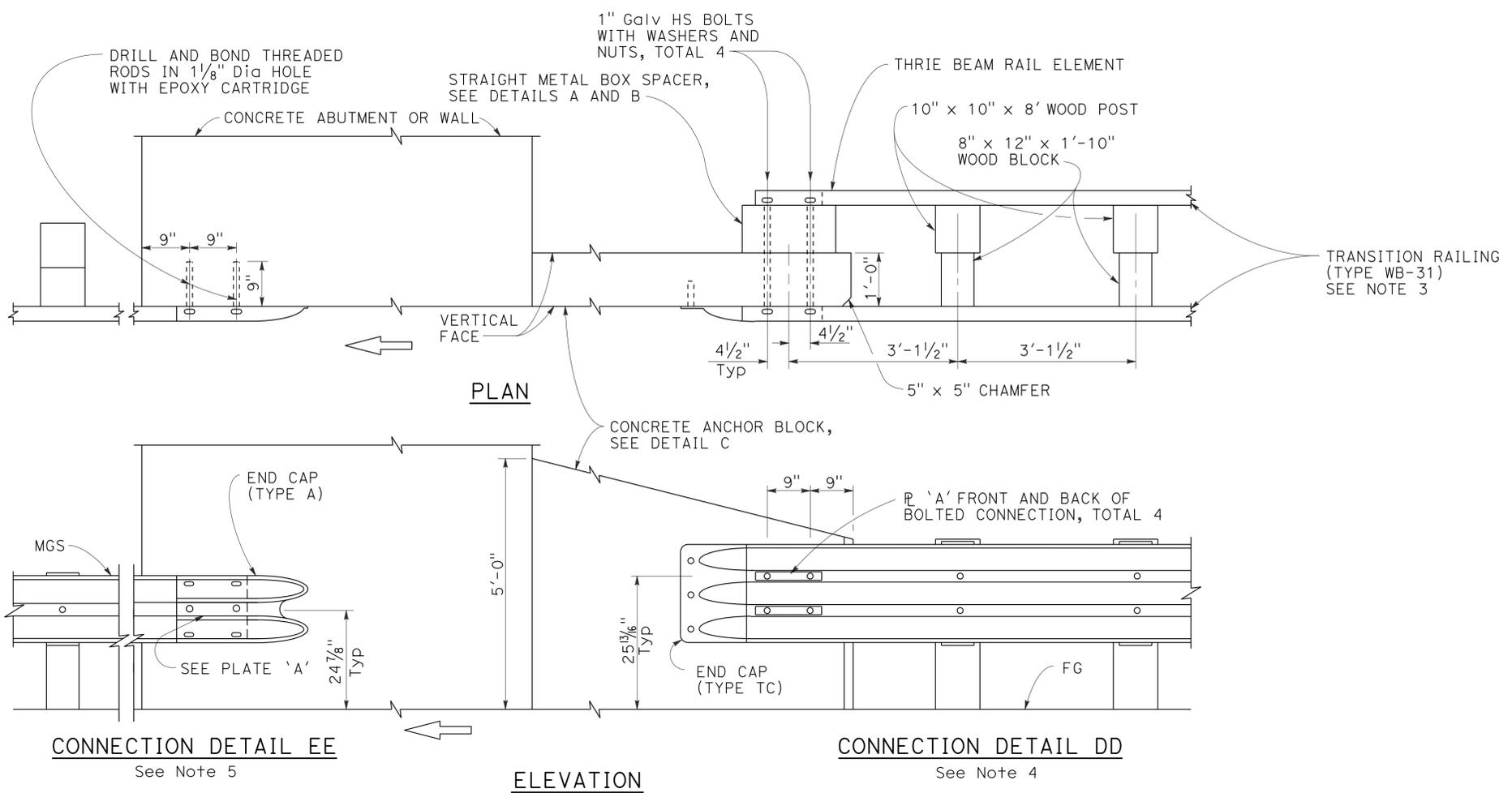
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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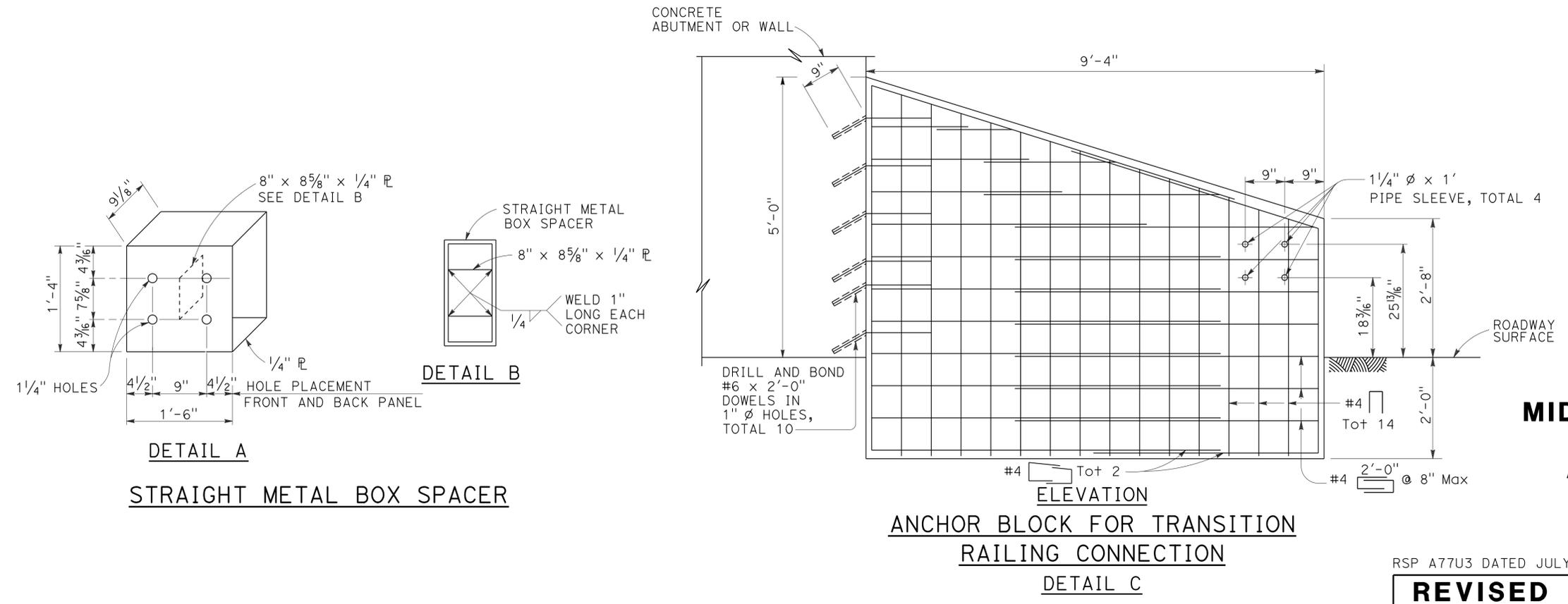
TO ACCOMPANY PLANS DATED 6-23-14



**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 railing section 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.

**MIDWEST GUARDRAIL SYSTEM CONNECTION TO ABUTMENT OR WALL**



**MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO ABUTMENTS AND WALLS**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

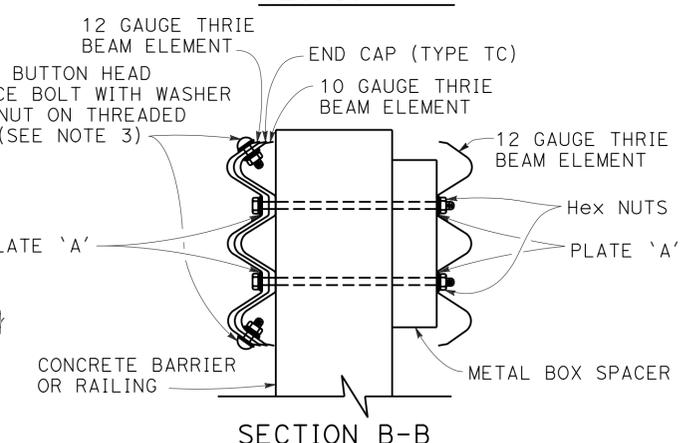
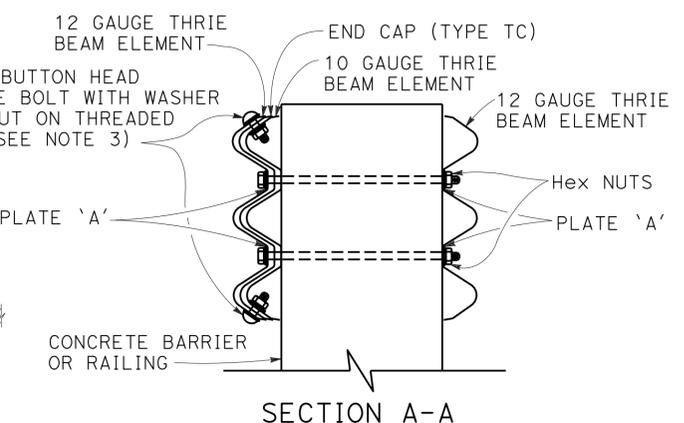
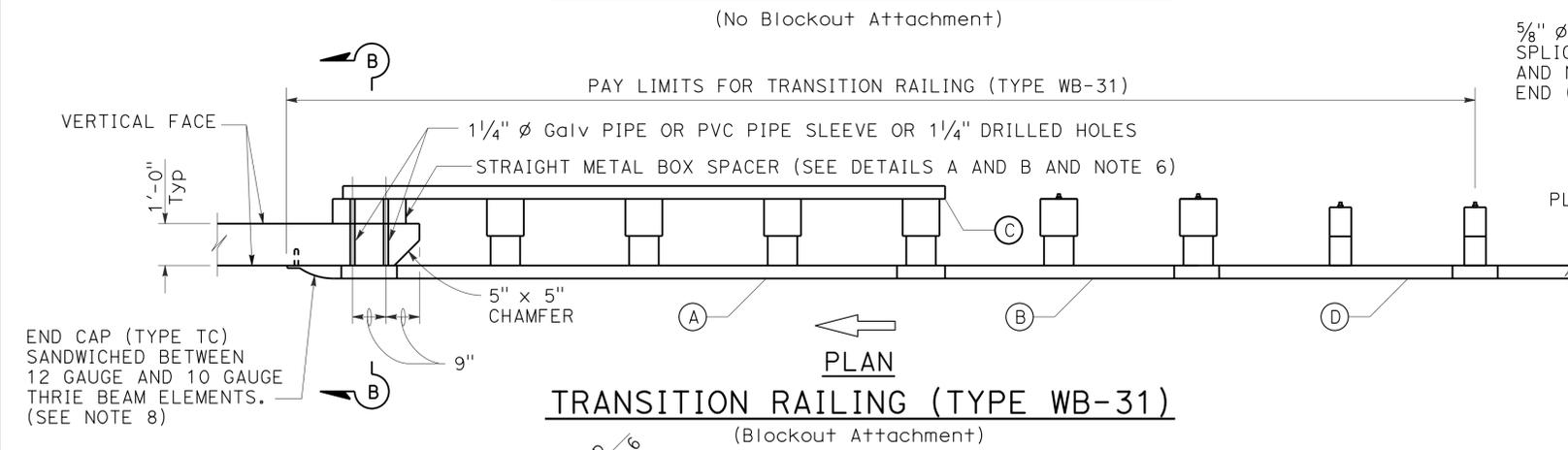
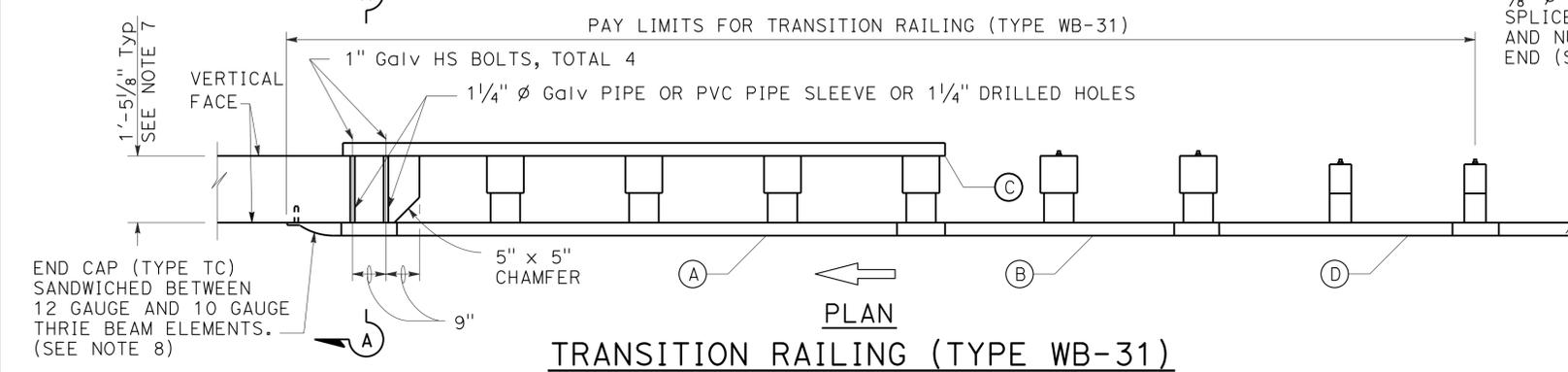
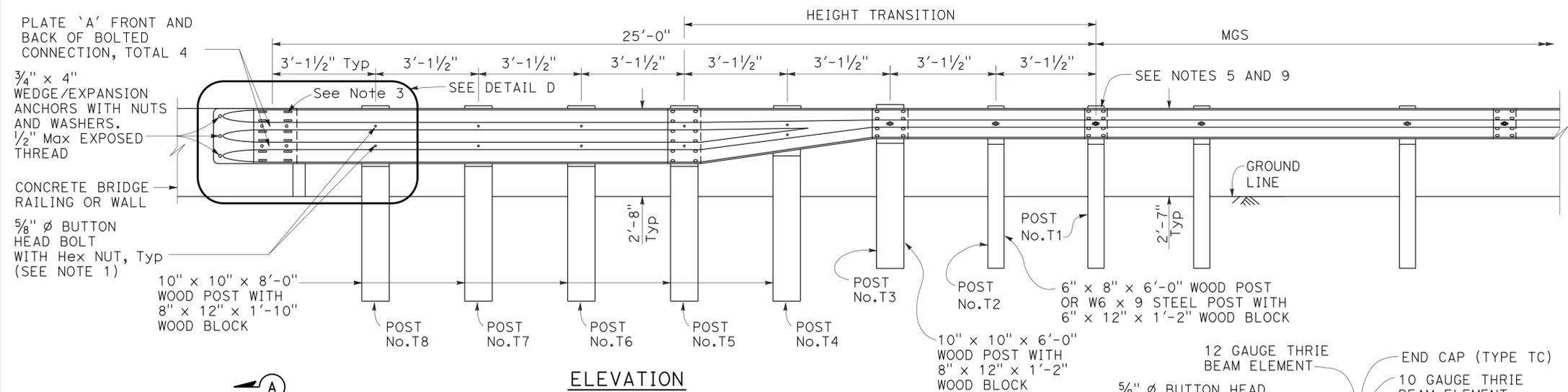
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	577	824

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

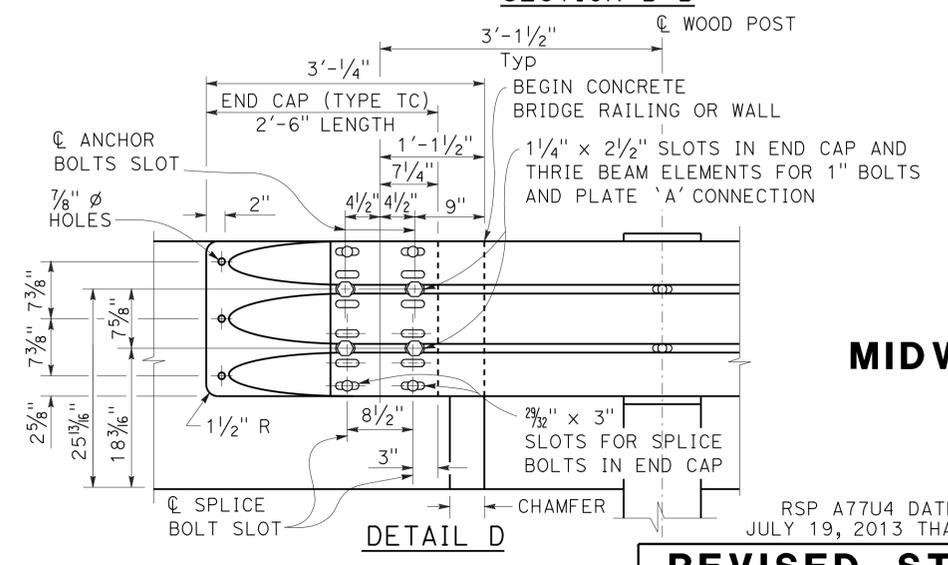
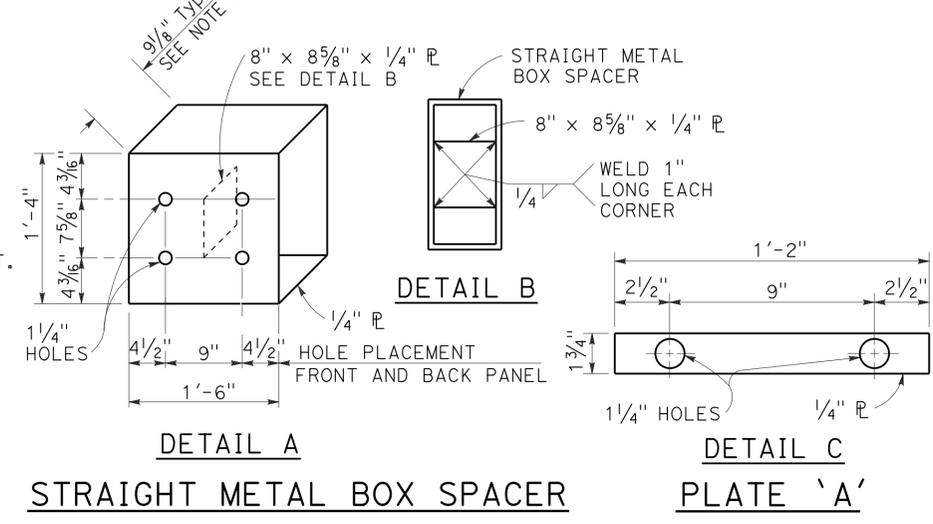
November 15, 2013  
PLANS APPROVAL DATE

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



- 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'-3/2" LENGTH)
- 10 GAUGE = 0.138" THICK  
12 GAUGE = 0.108" THICK



- NOTES:** TO ACCOMPANY PLANS DATED 6-23-14
1. Use 5/8"  $\phi$  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 1 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1 1/4"  $\phi$ . 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 9/8" to 1 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 21 1/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1 1/2", metal plates similar to Plate 'A' are to be used as spacers.
  7. Where the width of the concrete railing or wall is greater than 17 1/8", wood blocks are to be used to fill the space created between the backside of Posts No. 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.

2010 REVISED STANDARD PLAN RSP A77U4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	578	824

Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

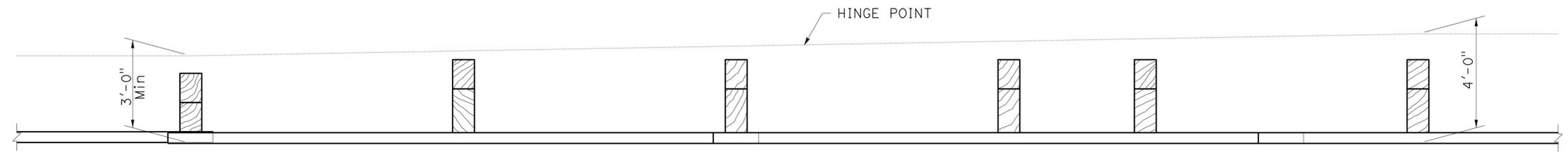
July 19, 2013  
PLANS APPROVAL DATE

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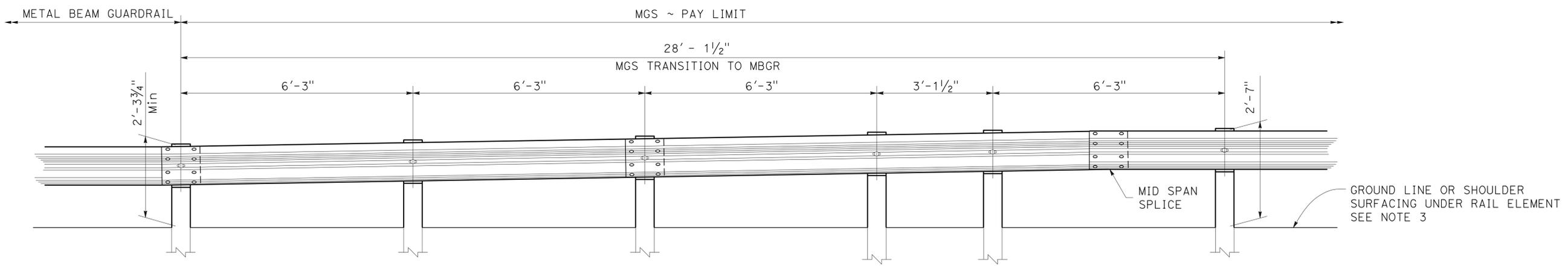
TO ACCOMPANY PLANS DATED 6-23-14

**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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	579	824

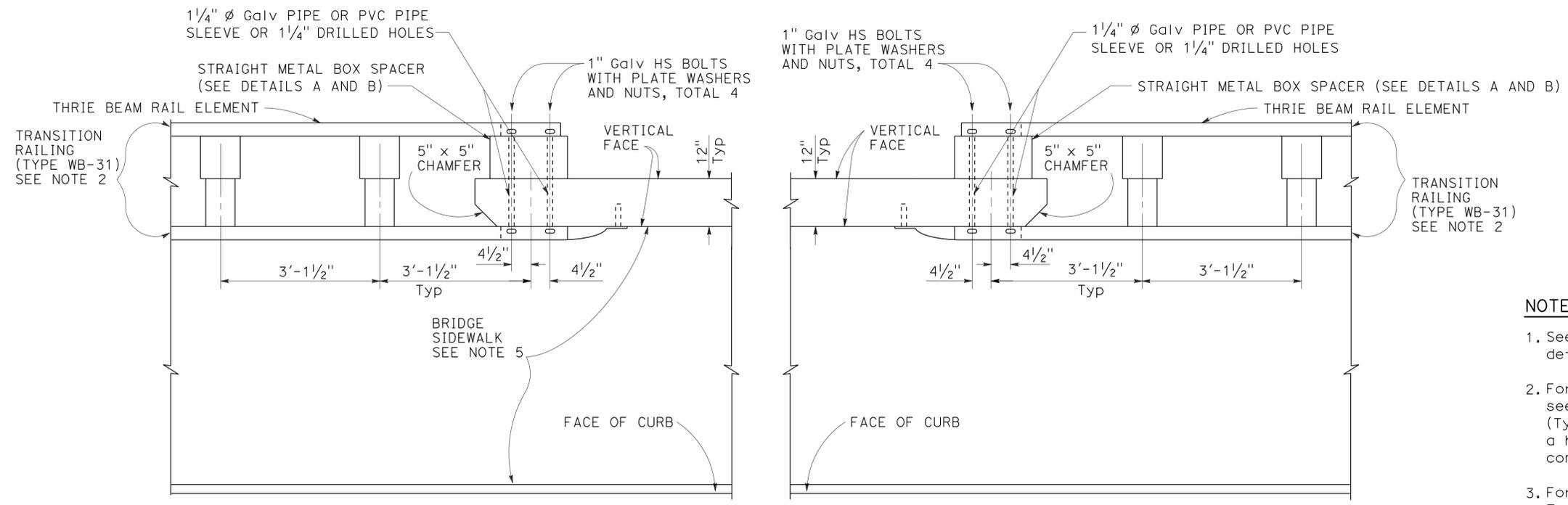
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

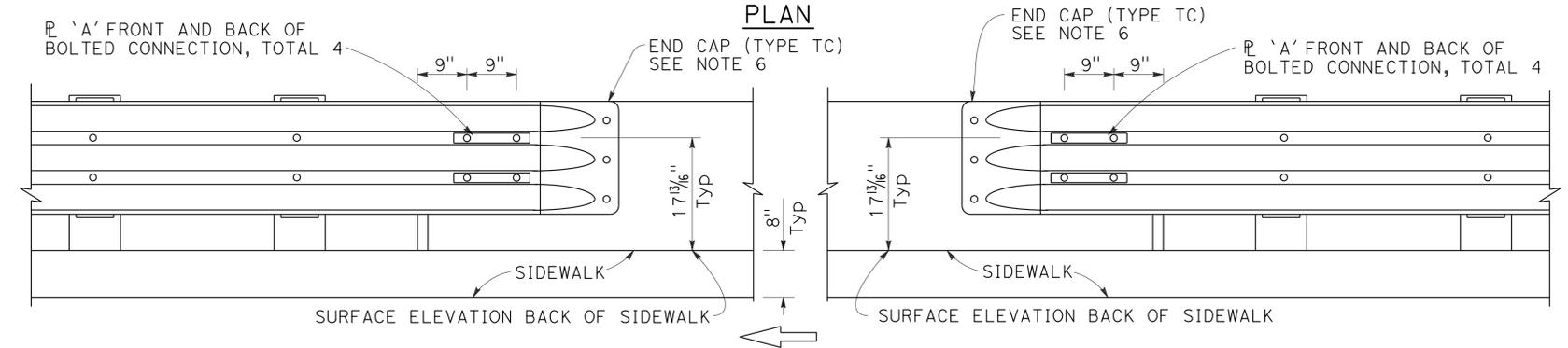
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REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-23-14



PLAN



CONNECTION DETAIL HH

CONNECTION DETAIL FF

See Notes 4

See Notes 3

ELEVATION

MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITH SIDEWALKS

NOTES:

1. See Revised Standard Plan RSP A77V1 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 three 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 HH, see Layout Types 12AA and 12BB on Revised Standard Plan RSP A77Q4.
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.

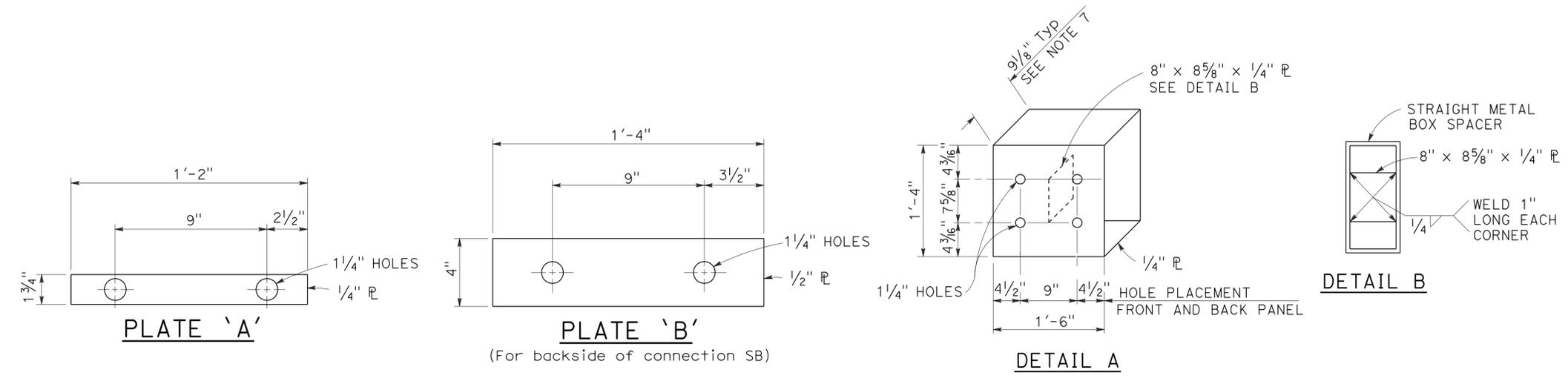


PLATE 'A'

PLATE 'B'

(For backside of connection SB)

DETAIL A

DETAIL B

STRAIGHT METAL BOX SPACER

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
CONNECTIONS TO BRIDGE  
RAILINGS WITH SIDEWALKS  
DETAILS No. 2**

NO SCALE

RSP A77V2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

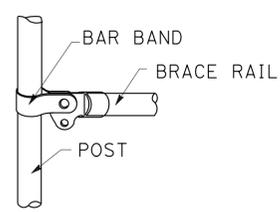
**REVISED STANDARD PLAN RSP A77V2**

2010 REVISED STANDARD PLAN RSP A77V2

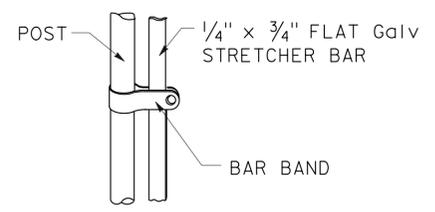
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd	15	42.5/46.0	580	824

Glenn DeCou  
 REGISTERED CIVIL ENGINEER  
 October 19, 2012  
 PLANS APPROVAL DATE  
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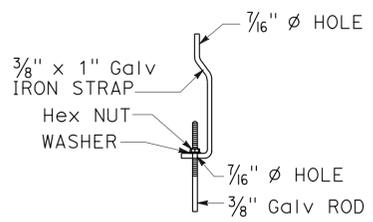
REGISTERED PROFESSIONAL ENGINEER  
 Glenn DeCou  
 No. C34547  
 Exp. 9-30-13  
 CIVIL  
 STATE OF CALIFORNIA



**BRACE RAIL**



**STRETCHER BAR**

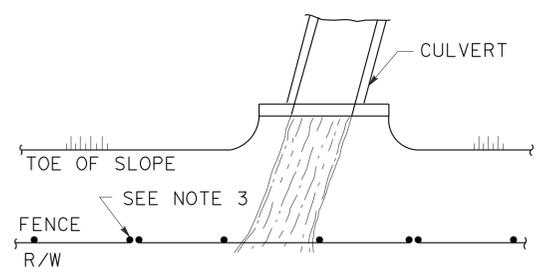


**TRUSS TIGHTENER**

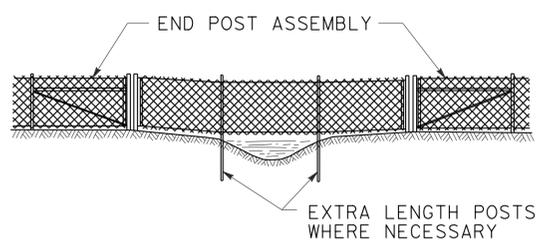
**NOTES:**

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

TO ACCOMPANY PLANS DATED 6-23-14

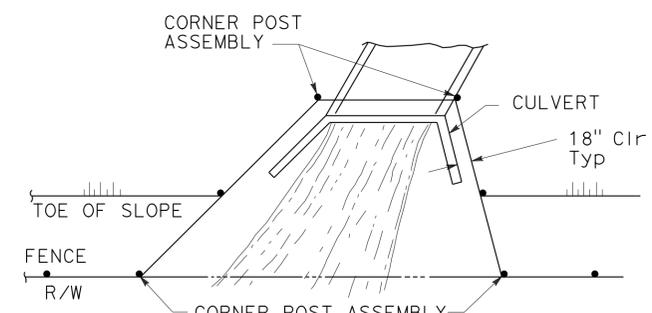


**PLAN**

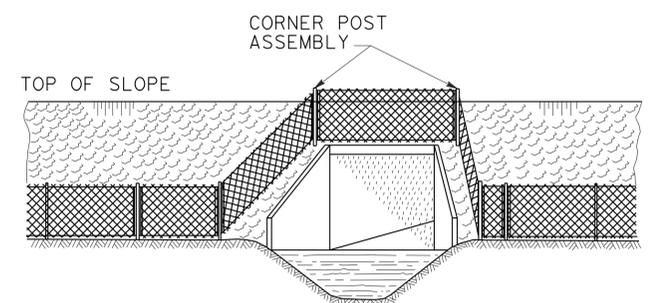


**ELEVATION**

**INSTALLATION OVER STREAM**



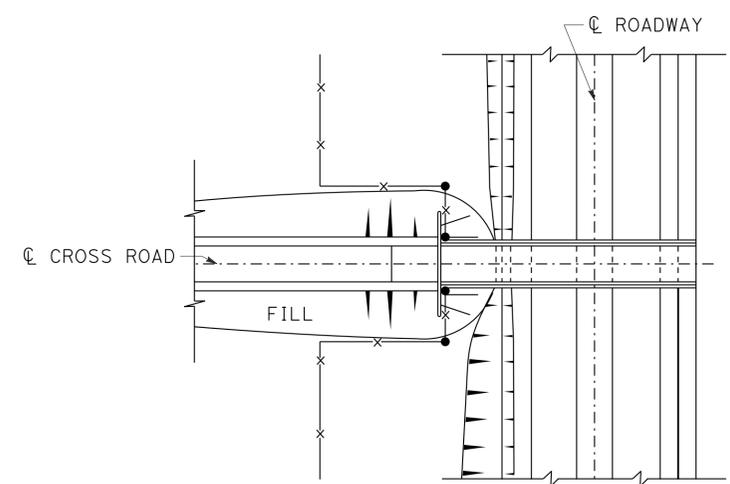
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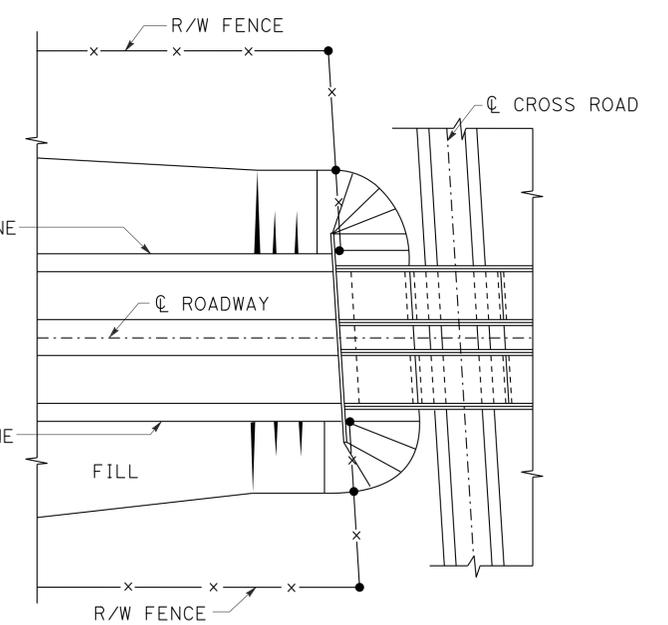
**ELEVATION**

**INSTALLATION AROUND HEADWALL**

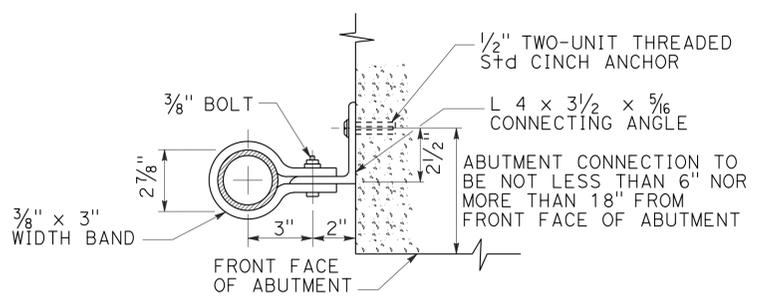
See Note 4



**PLAN OF ROADWAY - OVERCROSSING**



**PLAN OF ROADWAY - UNDERCROSSING**



**ABUTMENT CONNECTION**

**TYPICAL INSTALLATION AT BRIDGES**

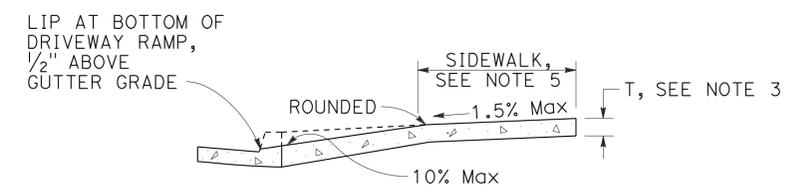
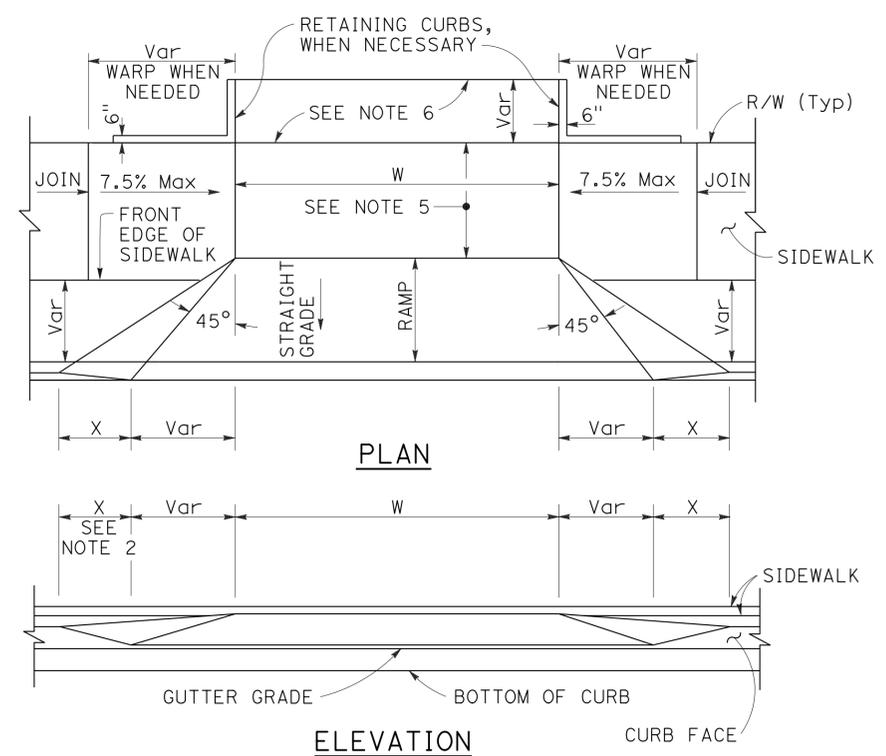
STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**CHAIN LINK FENCE DETAILS**  
 NO SCALE

RSP A85B DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A85B DATED MAY 20, 2011 - PAGE 114 OF THE STANDARD PLANS BOOK DATED 2010.

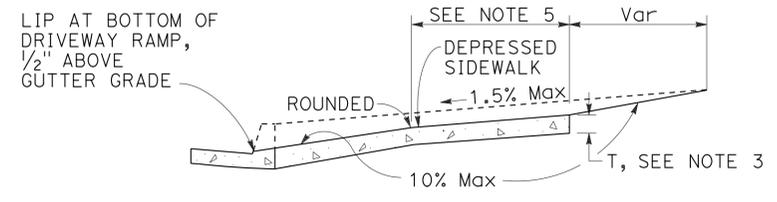
**REVISED STANDARD PLAN RSP A85B**

2010 REVISED STANDARD PLAN RSP A85B

TO ACCOMPANY PLANS DATED 6-23-14



**CASE A**  
Typical driveway, sidewalk not depressed



**CASE B**  
Driveway with depressed sidewalk

**SECTIONS**

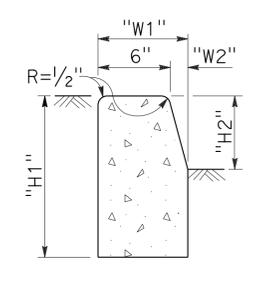
**TABLE A**

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

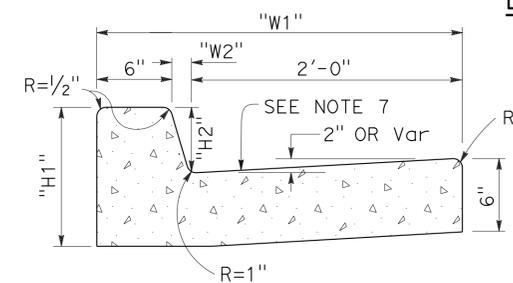
**CURB QUANTITIES**

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

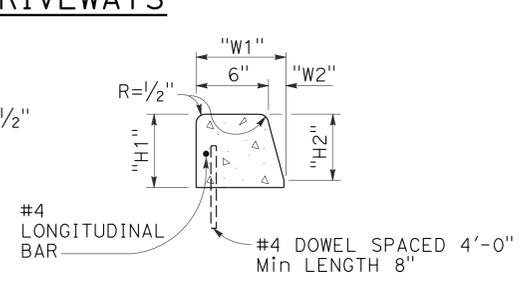
**DRIVEWAYS**



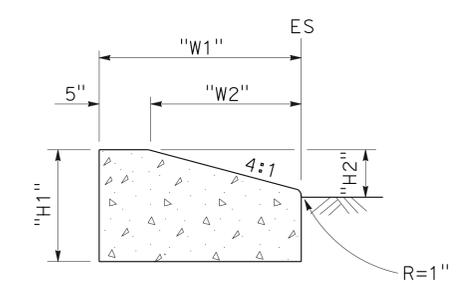
**TYPE A1 CURBS**  
See Table A



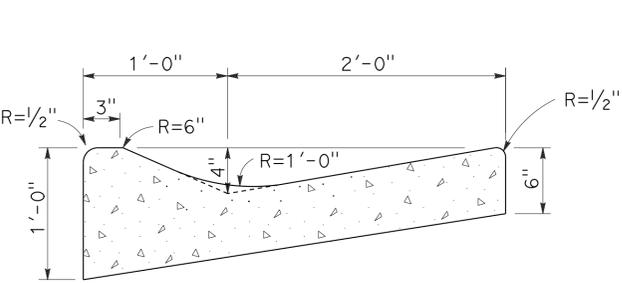
**TYPE A2 CURBS**  
See Table A



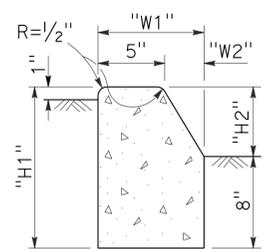
**TYPE A3 CURBS**  
Superimposed on existing pavement  
See Table A



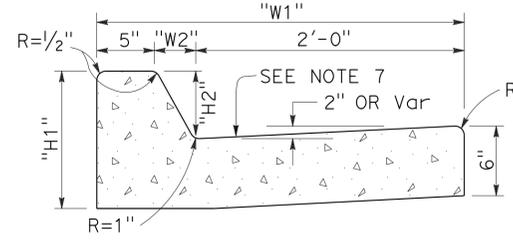
**TYPE D CURBS**  
See Table A



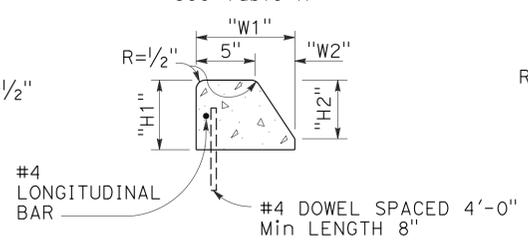
**TYPE E CURB**



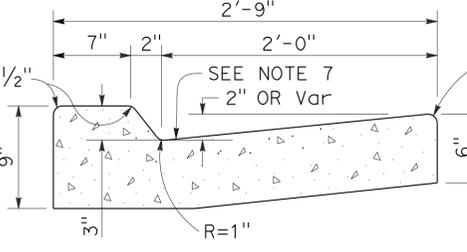
**TYPE B1 CURBS**  
See Table A



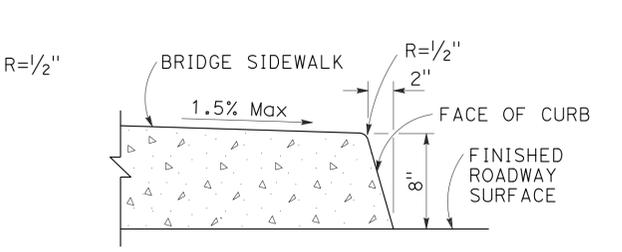
**TYPE B2 CURBS**  
See Table A



**TYPE B3 CURBS**  
Superimposed on existing pavement  
See Table A



**TYPE B4 CURBS**



**TYPE H CURB**  
On Bridges

**CURBS**

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

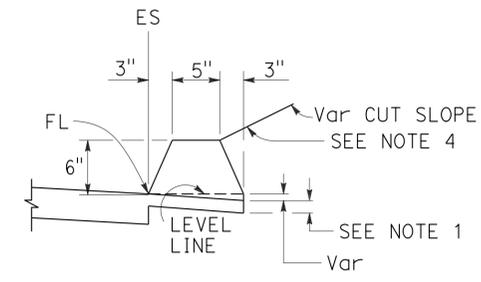
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**CURBS AND DRIVEWAYS**

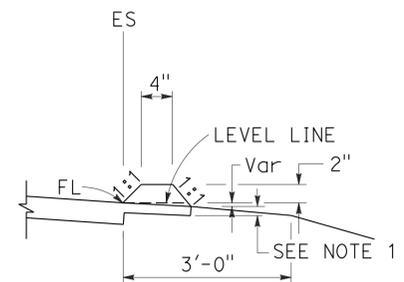
NO SCALE

2010 REVISED STANDARD PLAN RSP A87A

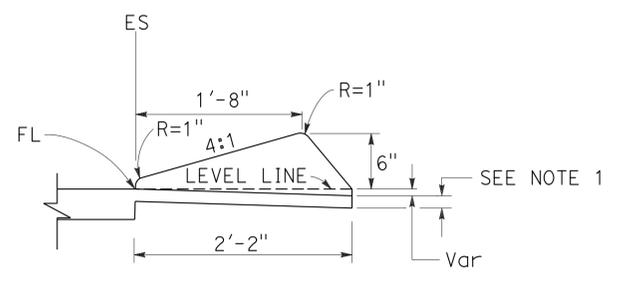
TO ACCOMPANY PLANS DATED 6-23-14



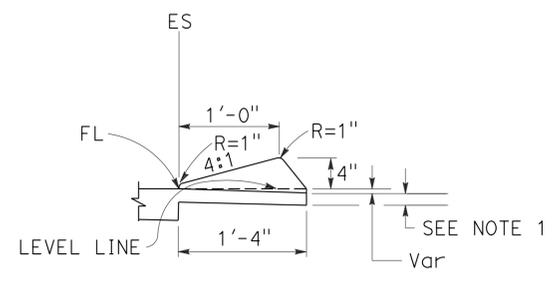
**TYPE A**  
See Note 3



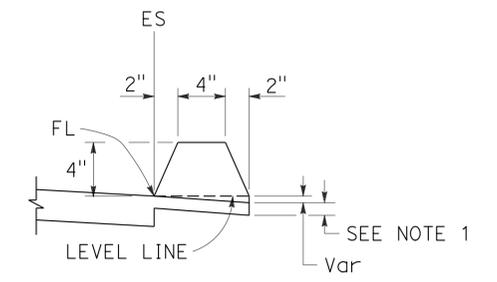
**TYPE C**



**TYPE D**

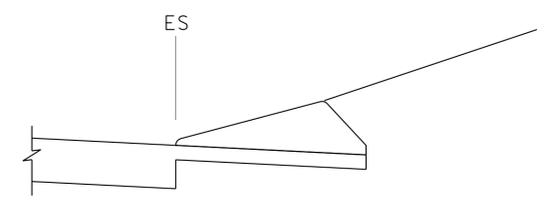


**TYPE E**

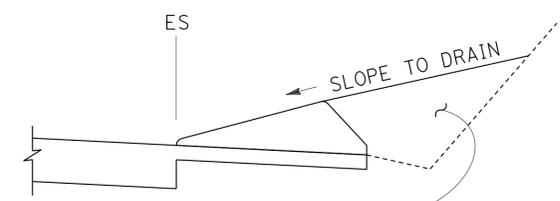


**TYPE F**  
See Note 5

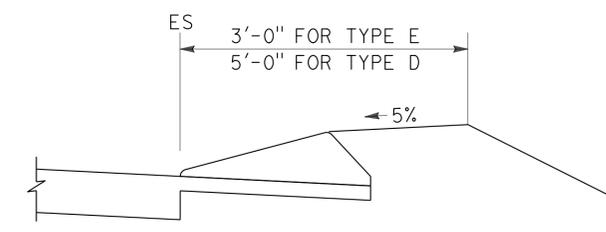
**DIKES**



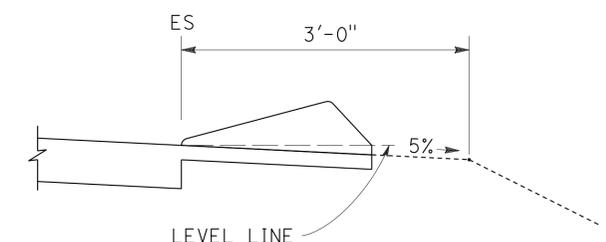
**CASE C-1**  
Cut Slope



**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.

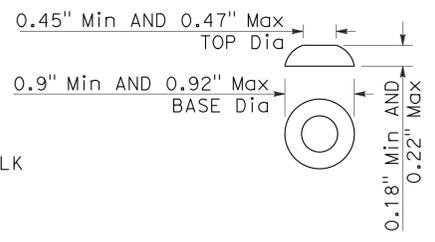
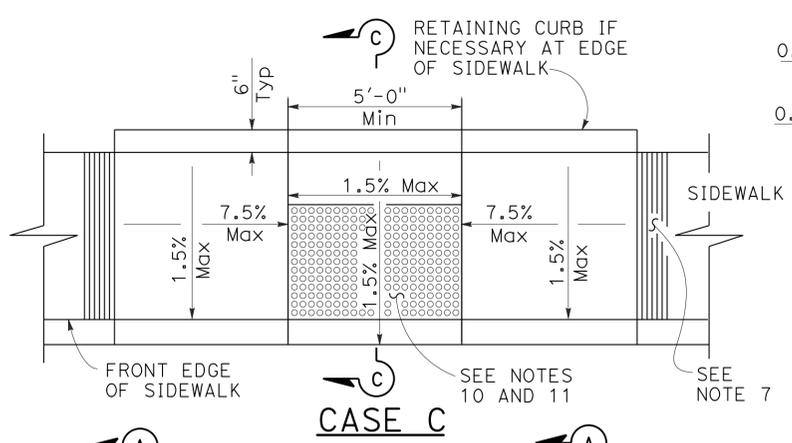
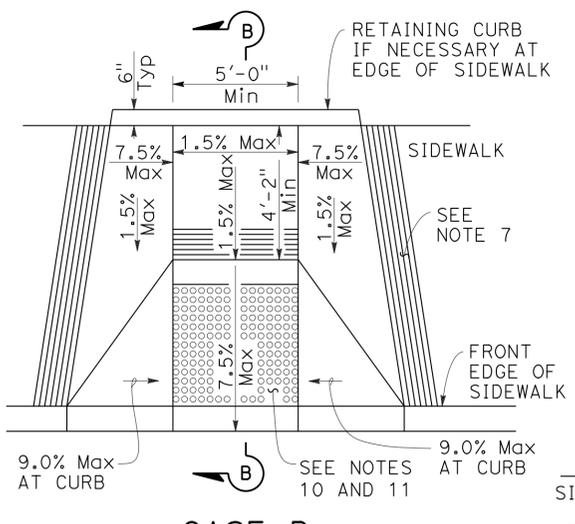
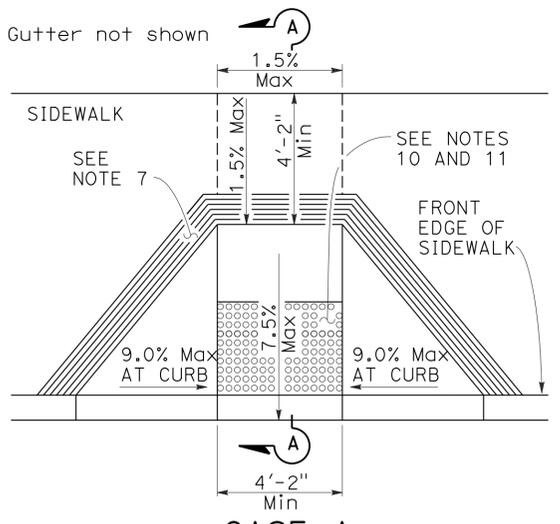
**REVISED STANDARD PLAN RSP A87B**

2010 REVISED STANDARD PLAN RSP A87B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	583	824

H. David Cordova  
 REGISTERED CIVIL ENGINEER  
 March 21, 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.

REGISTERED PROFESSIONAL ENGINEER  
 Hector David Cordova  
 No. C41957  
 Exp. 3-31-14  
 CIVIL  
 STATE OF CALIFORNIA

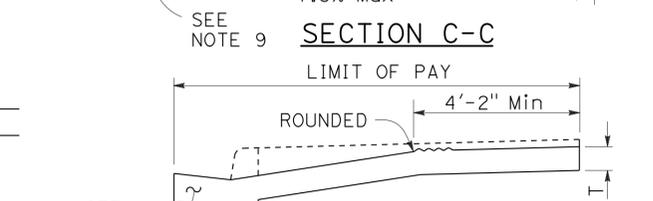
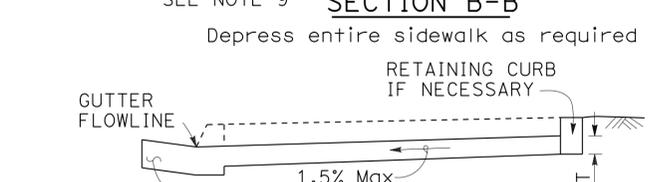
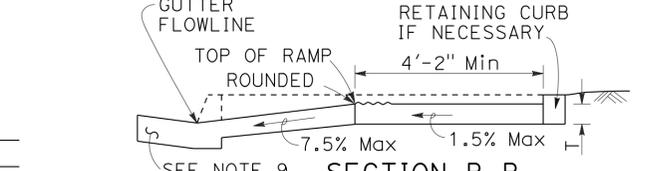
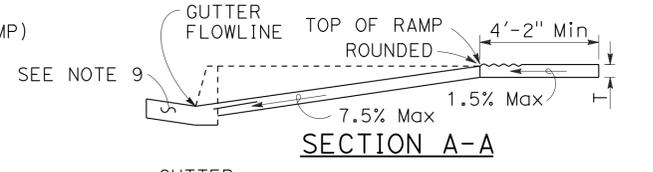
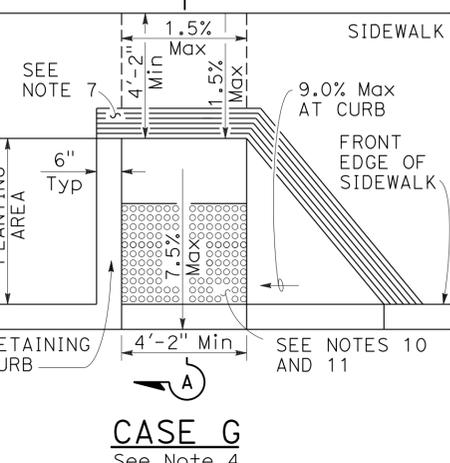
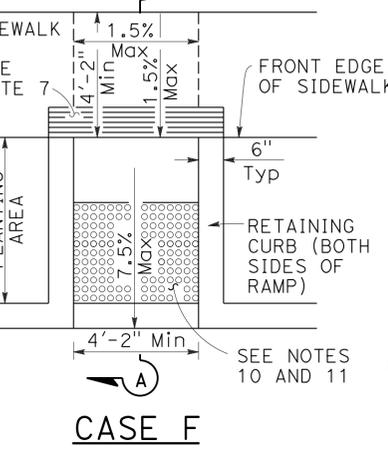
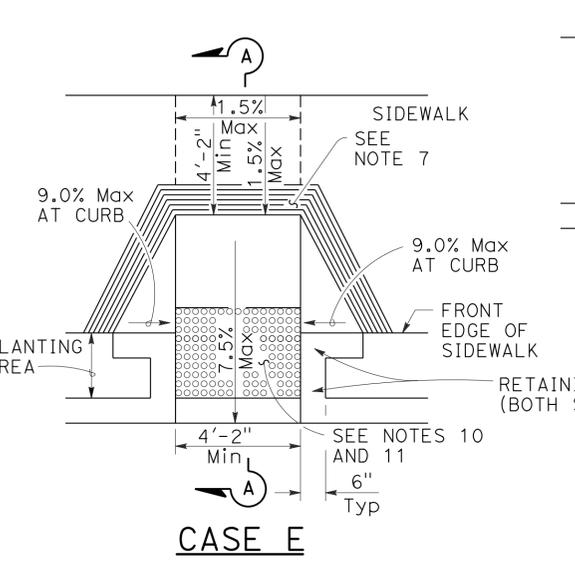
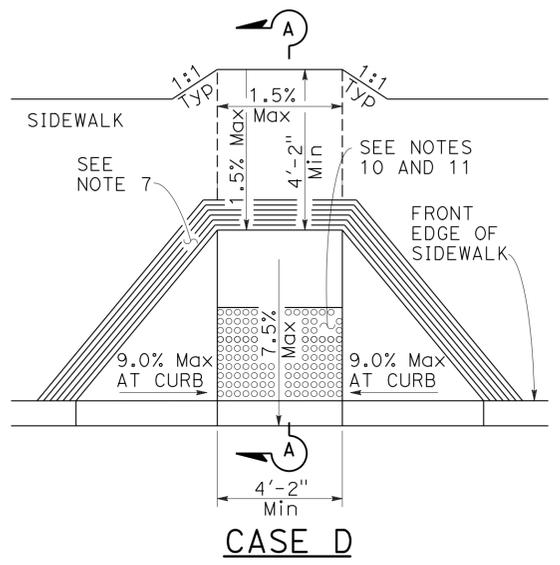


**RAISED TRUNCATED DOME**

TO ACCOMPANY PLANS DATED 6-23-14

**NOTES:**

- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
- If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
- As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
- If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-2".
- Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
- The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
- Transitions from ramps and landing to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
- Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1:20 (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
- Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. A 4'-0" wide detectable warning surface may be used on a 4'-2" wide curb ramp. Detectable Warning Surfaces shall conform to the requirements in the Standard Specifications.
- The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
- Sidewalk and ramp thickness, "T", shall be 3/2" minimum.
- Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
- Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.

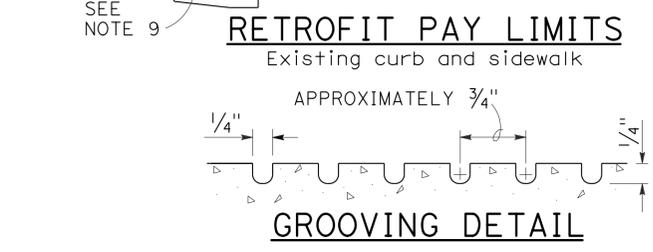
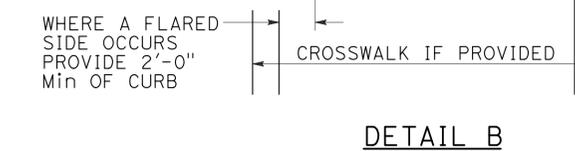
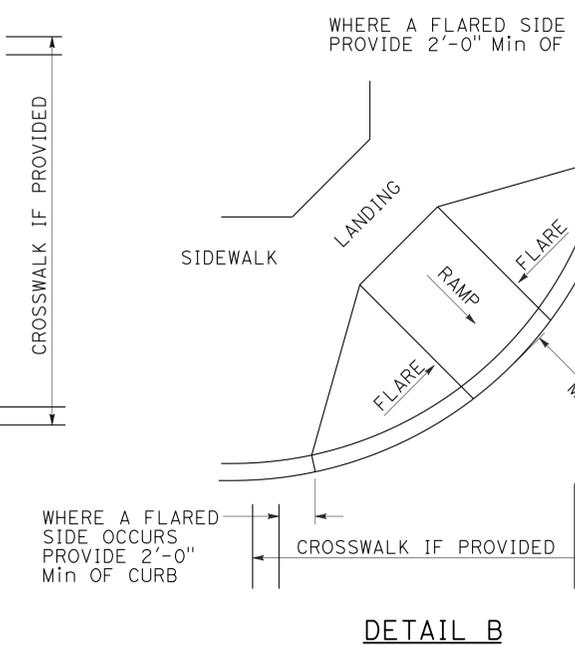
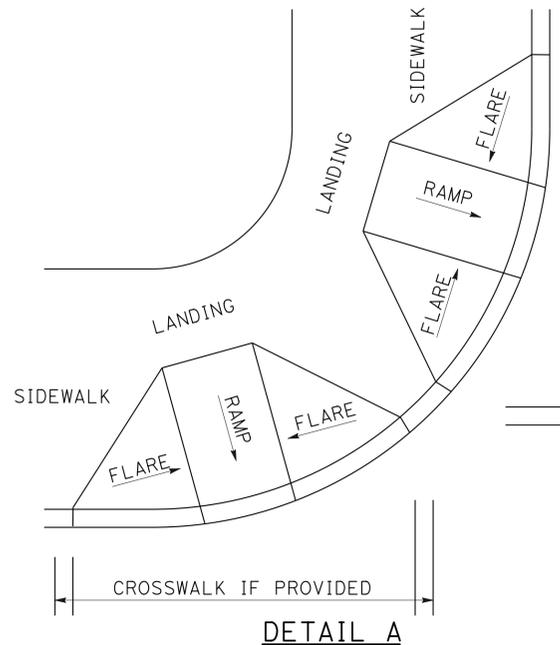


**RAISED TRUNCATED DOME PATTERN (IN-LINE) DETECTABLE WARNING SURFACE**

See Note 10

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**CURB RAMP DETAILS**  
NO SCALE

RSP A88A DATED MARCH 21, 2014 SUPERSEDES RSP A88A DATED JULY 19, 2013 AND STANDARD PLAN A88A DATED MAY 20, 2011 - PAGE 121 OF THE STANDARD PLANS BOOK DATED 2010.



**REVISED STANDARD PLAN RSP A88A**

2010 REVISED STANDARD PLAN RSP A88A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	584	824

H. David Cordova  
REGISTERED CIVIL ENGINEER

March 21, 2014  
PLANS APPROVAL DATE

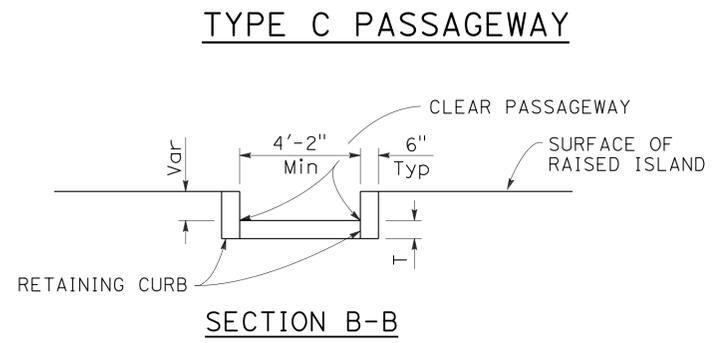
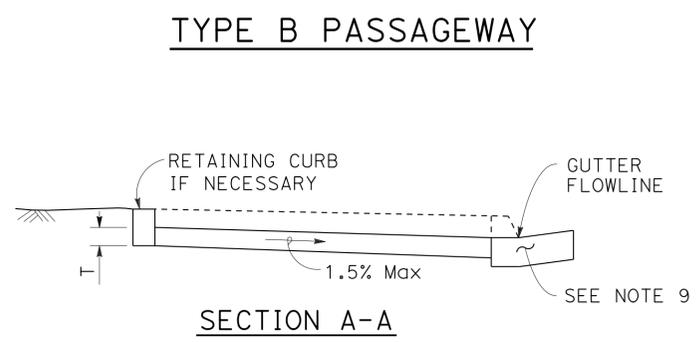
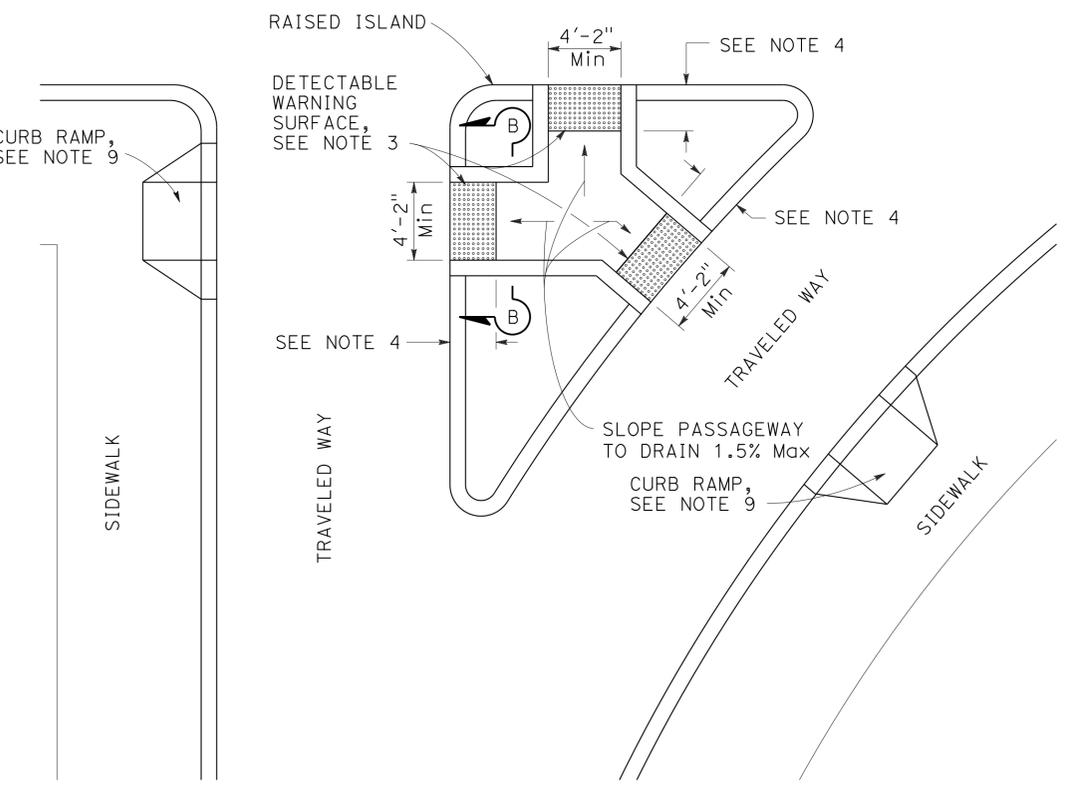
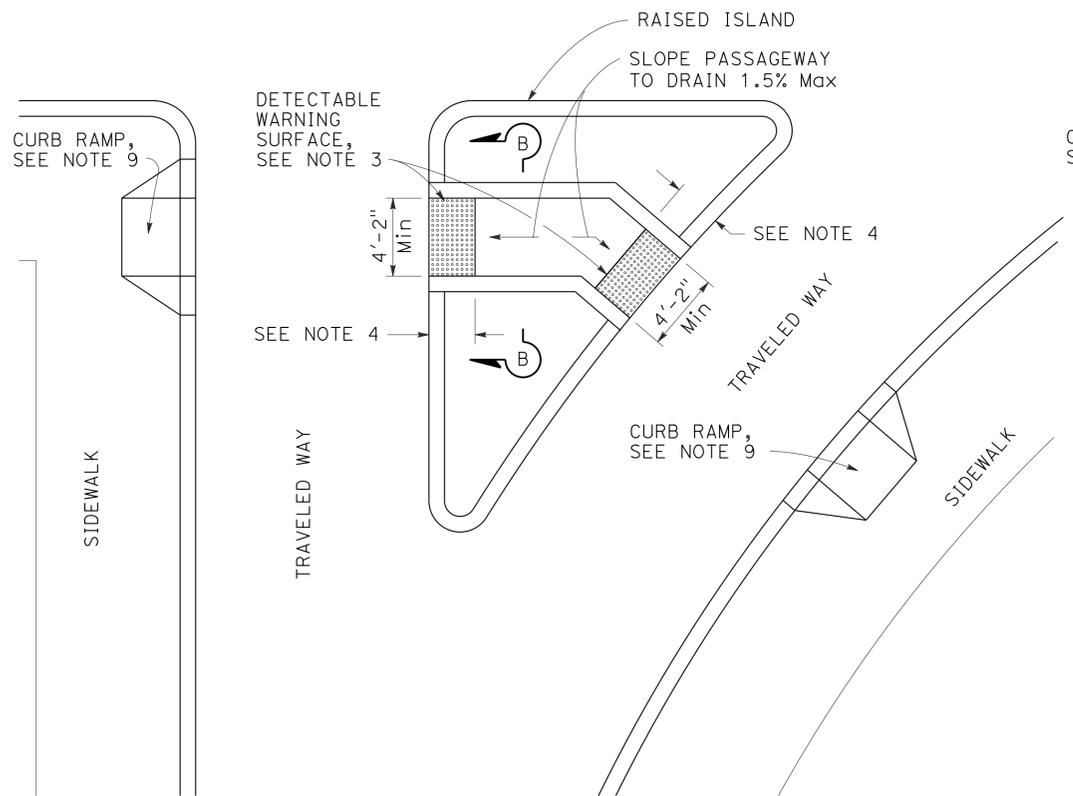
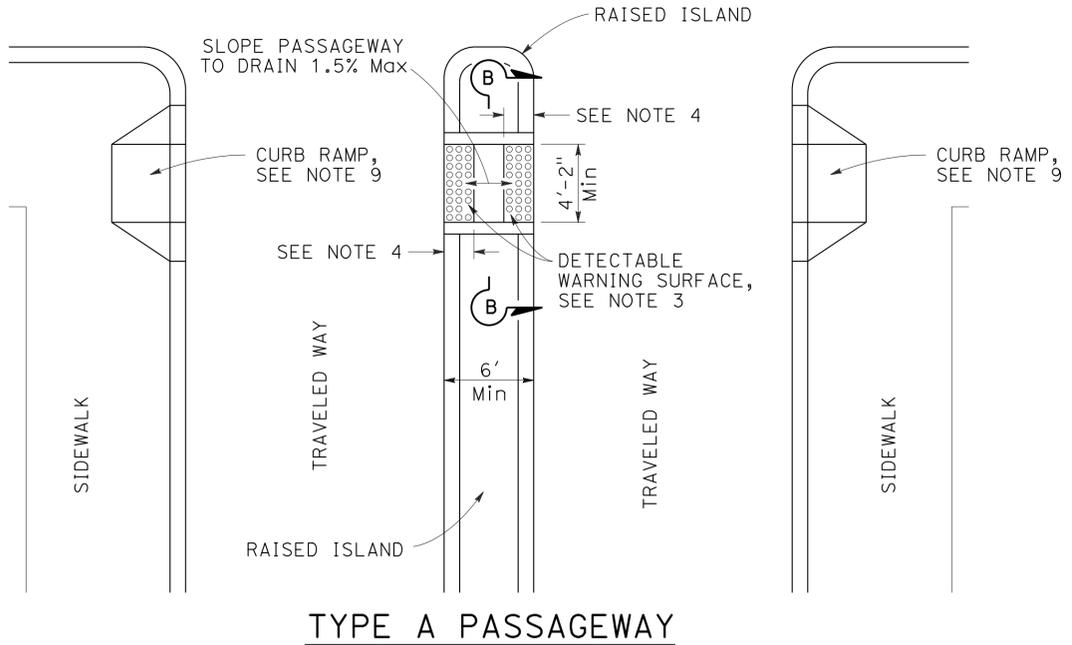
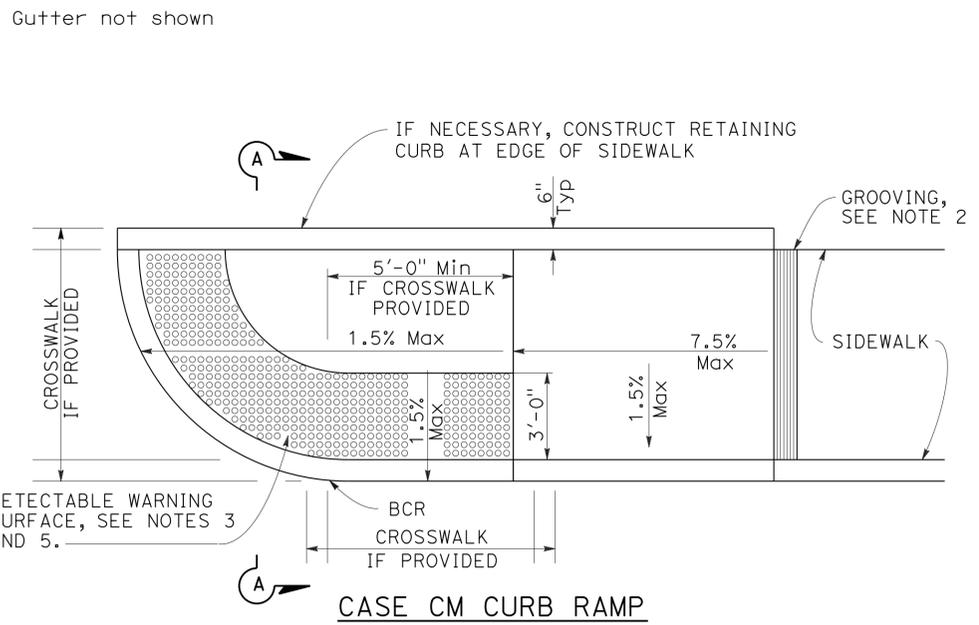
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Hector David Cordova  
REGISTERED PROFESSIONAL ENGINEER  
No. C41957  
Exp. 3-31-14  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-23-14

**NOTES:**

1. Sidewalk, ramp and passageway thickness, "T", shall be 3 1/2" minimum.
2. For details of grooving used with Case CM curb ramp, see Revised Standard Plan RSP A88A.
3. For details of detectable warning surfaces, see Revised Standard Plan RSP A88A.
4. Where an island passageway length is greater than or equal to 6'-0", but less than 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 3'-0" depth of the passageway length. A 4'-0" wide detectable warning surface may be used on a 4'-2" wide island passageway.
5. For Case CM curb ramp, the edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
6. Transitions from ramps to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
7. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
8. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.
9. For additional curb ramp details, see Revised Standard Plan RSP A88A.



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**CURB RAMP AND ISLAND PASSAGEWAY DETAILS**

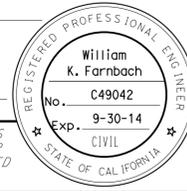
NO SCALE

RSP A88B DATED MARCH 21, 2014 SUPERSEDES RSP A88B DATED JULY 19, 2013 AND STANDARD PLAN A88B DATED MAY 20, 2011 - PAGE 122 OF THE STANDARD PLANS BOOK DATED 2010.

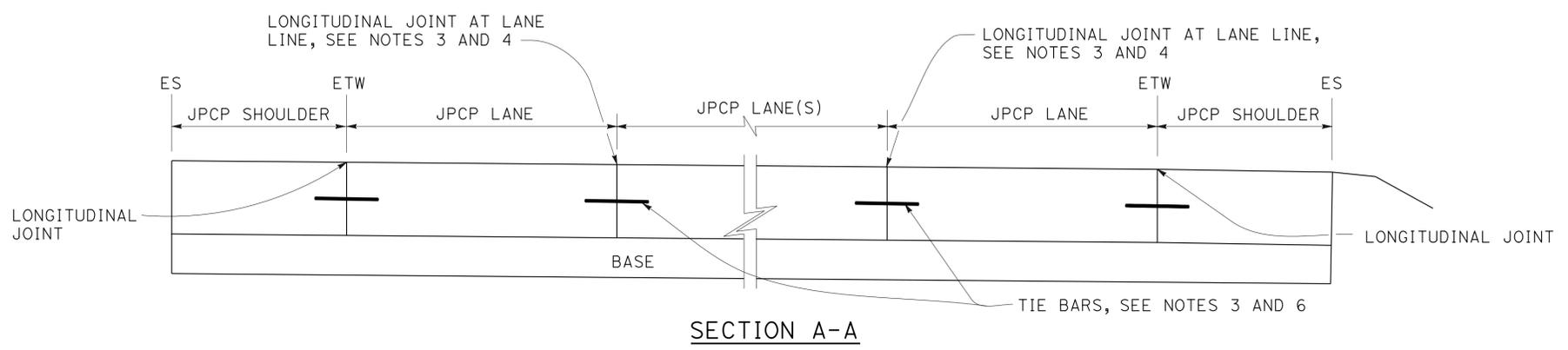
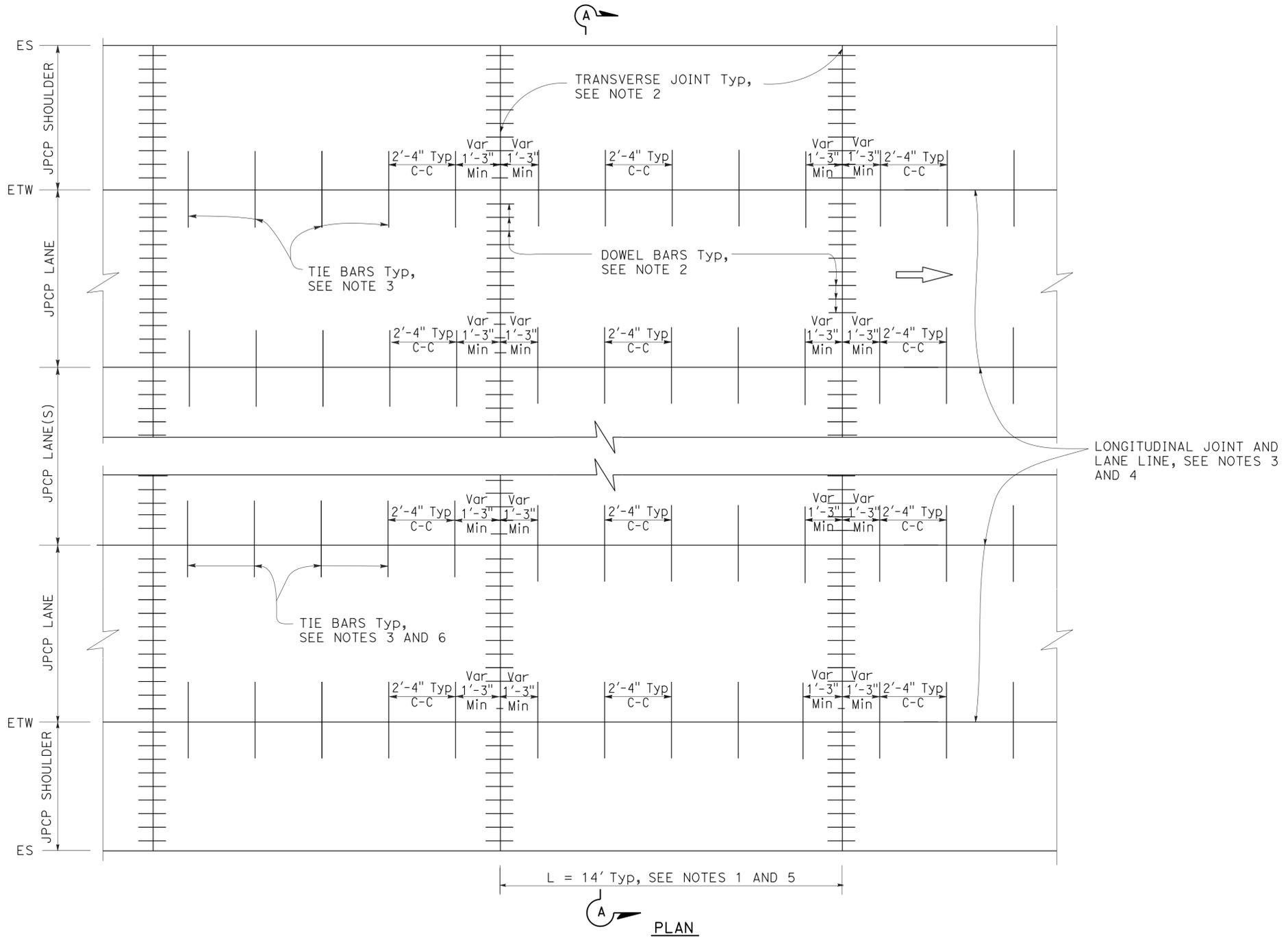
2010 REVISED STANDARD PLAN RSP A88B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	585	824

William K. Farnbach  
 REGISTERED CIVIL ENGINEER  
 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 6-23-14



**NOTES:**

1. Transverse joint spacing may be adjusted to no less than 10' and no more than 14' to conform to bridges, change in pavement type, and hardened concrete pavement.
2. For transverse joint and dowel bar details not shown, see Revised Standard Plan RSP P10.
3. For longitudinal joint and tie bar details not shown, see Revised Standard Plan RSP P15.
4. For additional longitudinal joint layout details, see Revised Standard Plan RSP P18.
5. For joint layout at intersections, see Project Plans.
6. For dowel bars at longitudinal joint. see Revised Standard Plan RSP P18.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**JOINTED PLAIN  
 CONCRETE PAVEMENT  
 NEW CONSTRUCTION**  
 NO SCALE

RSP P1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P1 DATED MAY 20, 2011 - PAGE 125 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP P1**

2010 REVISED STANDARD PLAN RSP P1

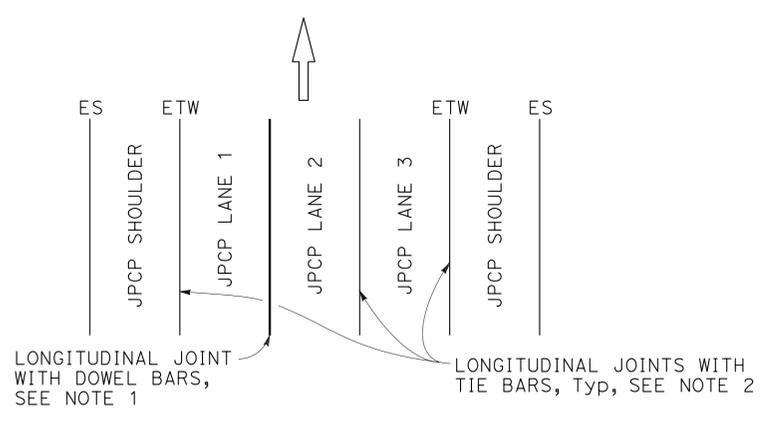
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	586	824

William K. Farnbach  
 REGISTERED CIVIL ENGINEER  
 No. C49042  
 Exp. 9-30-14  
 STATE OF CALIFORNIA

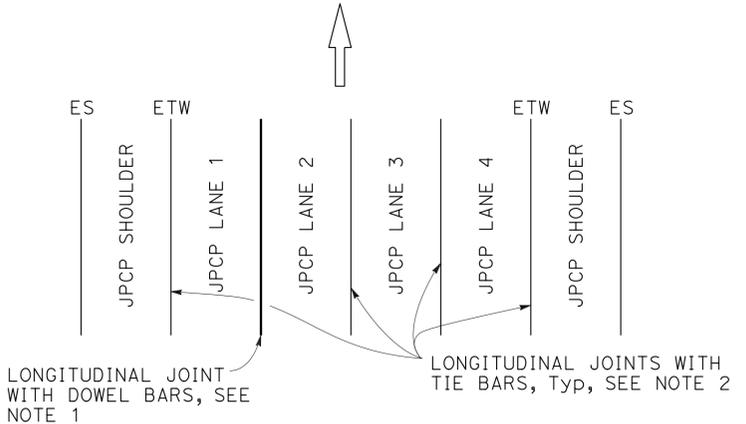
July 19, 2013  
 PLANS APPROVAL DATE

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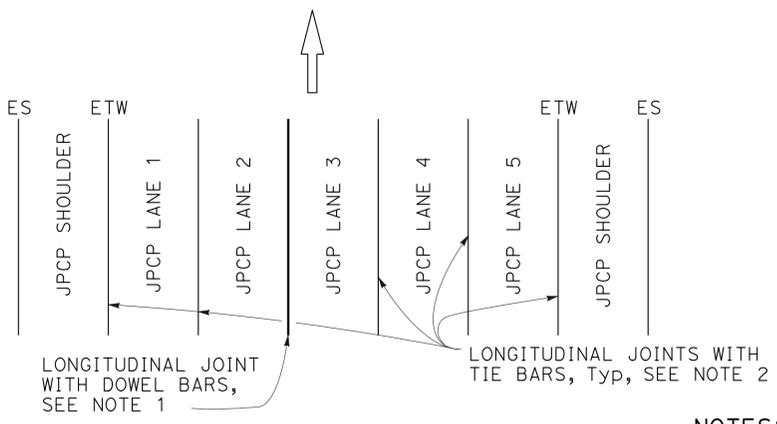
TO ACCOMPANY PLANS DATED 6-23-14



**3 LANES WITH CONCRETE SHOULDERS**  
PLAN



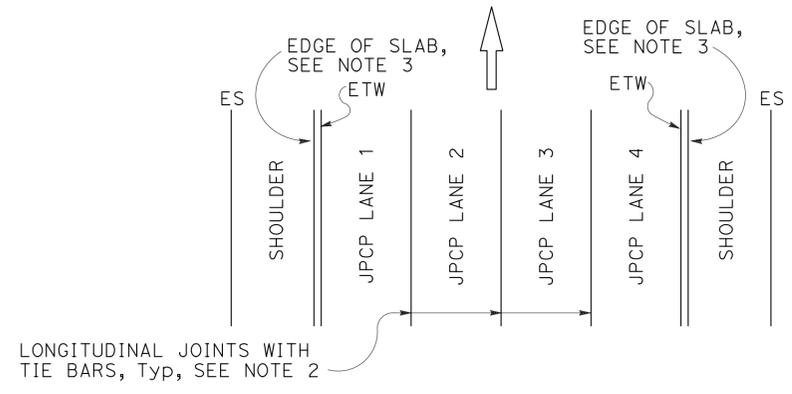
**4 LANES WITH CONCRETE SHOULDERS**  
PLAN



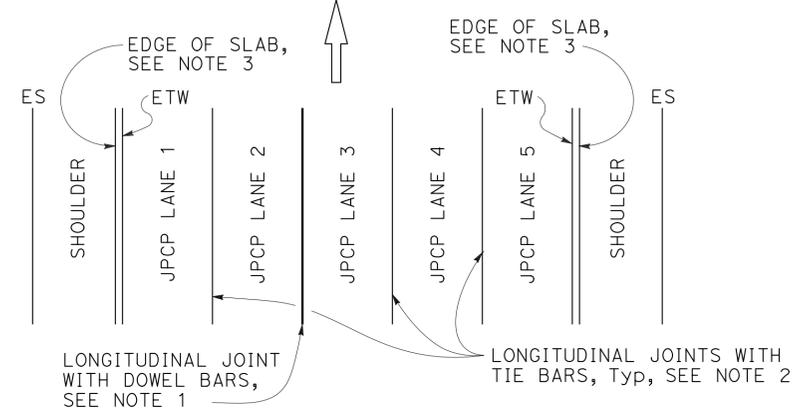
**5 LANES WITH CONCRETE SHOULDERS**  
PLAN

**NOTES:**

1. See Revised Standard Plan RSP P10 for longitudinal joint with dowel bars.
2. See Revised Standard Plan RSP P15 for longitudinal joint with tie bars.
3. S = Reservoir depth.  
 $S = \frac{7}{8}'' \pm \frac{1}{16}''$  for asphalt rubber seals  
 $S = \frac{9}{16}'' \pm \frac{1}{16}''$  for silicone seals  
 Preformed compression seals must be  $\frac{13}{16}''$  wide and  $S = 1\frac{1}{16}'' \pm \frac{1}{16}''$



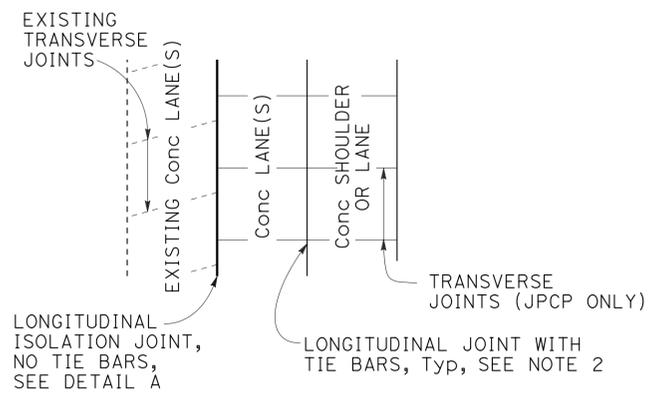
**4 LANES OR LESS WITH AC SHOULDERS**  
PLAN



**5 LANES WITH AC SHOULDERS**  
PLAN

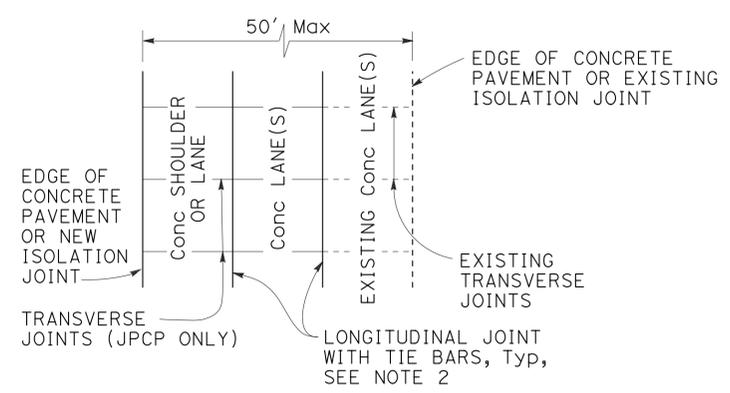
**NEW CONSTRUCTION**

Location of Longitudinal Joints For JPCP



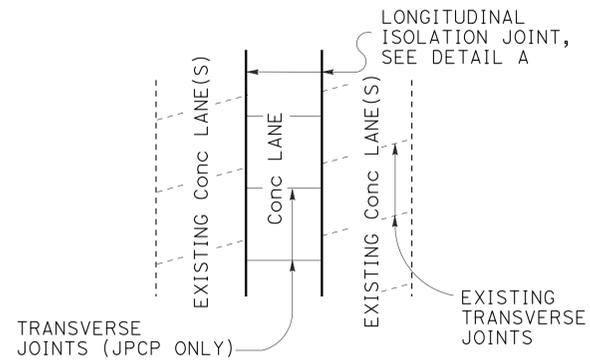
**CASE 1**  
PLAN

Transverse Joints do not align between new and existing.



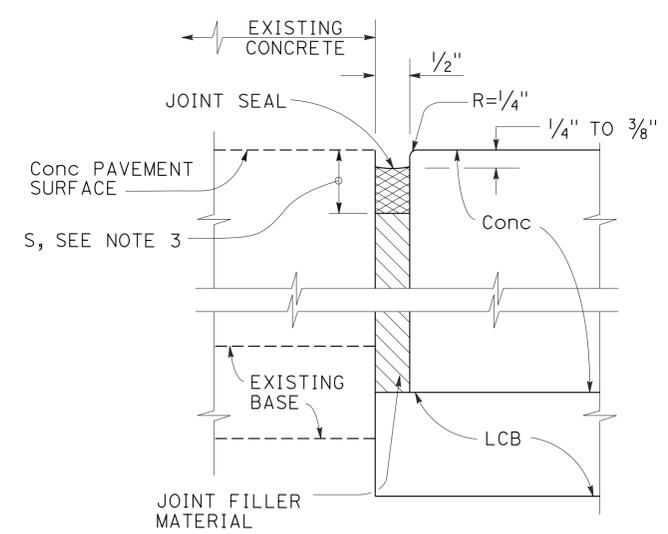
**CASE 2**  
PLAN

Transverse Joints align between new and existing. (For JPCP only)



**CASE 3 (INTERIOR LANE REPLACEMENT)**  
PLAN

Transverse Joints do not align between new and existing.



**DETAIL "A"**  
ISOLATION JOINT

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**CONCRETE PAVEMENT  
LANE SCHEMATICS  
AND ISOLATION JOINT DETAIL**

NO SCALE

**LANE/SHOULDER ADDITION OR RECONSTRUCTION**

For JPCP and CRCP

RSP P18 DATED JULY 19, 2013 SUPERSEDES RSP P18 DATED APRIL 20, 2012 AND STANDARD PLAN P18 DATED MAY 20, 2011 - PAGE 135 OF THE STANDARD PLANS BOOK DATED 2010.

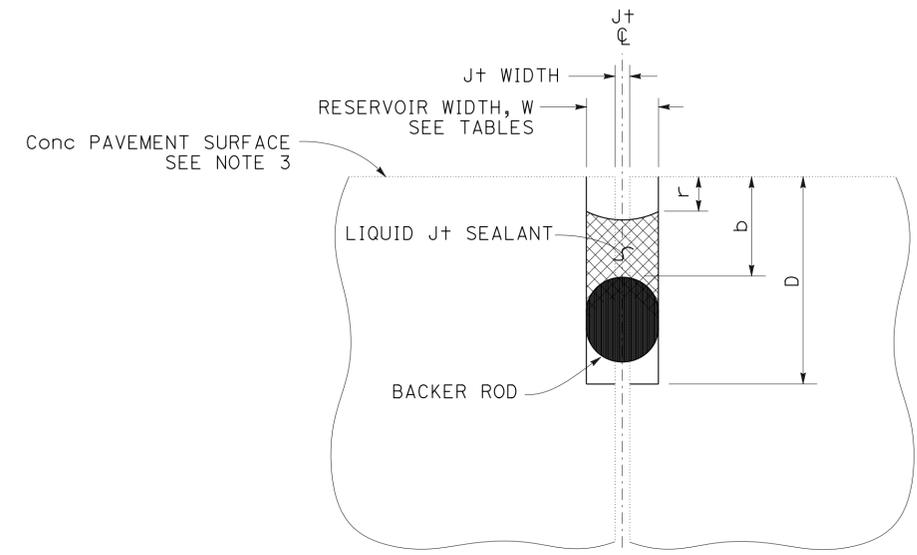
**REVISED STANDARD PLAN RSP P18**

2010 REVISED STANDARD PLAN RSP P18

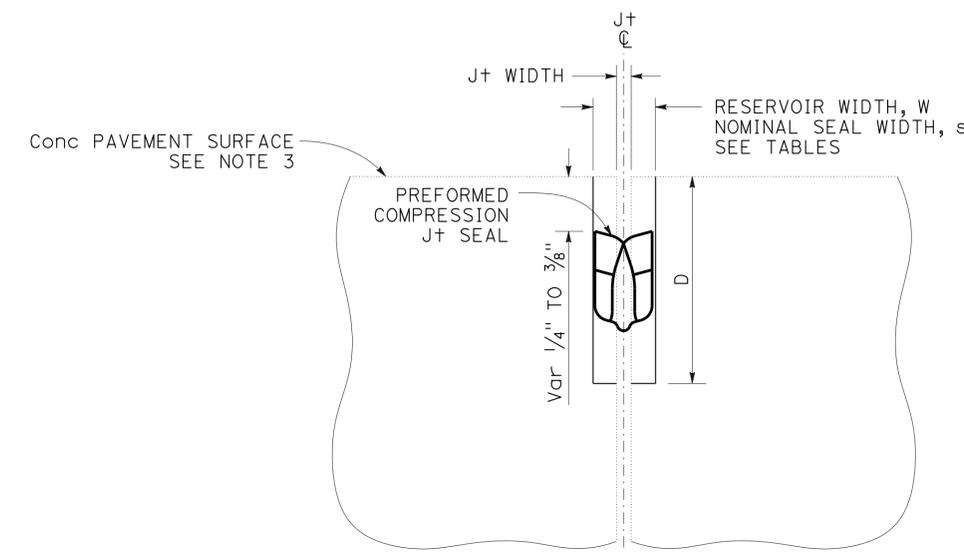
TO ACCOMPANY PLANS DATED 6-23-14

**NOTES:**

1. Details do not apply to isolation joints and longitudinal construction joints.
2. Tie bars, dowel bars, and bar reinforcement are not shown.
3. Depths are measured from the final concrete pavement surface elevation after any grinding.



**LIQUID JOINT SEALANT**



**PREFORMED COMPRESSION JOINT SEAL**

Const SEASON	Min RESERVOIR WIDTH * W ± 1/16"
WINTER	1/4"
SPRING	3/8"
SUMMER	
FALL	

\* Minimum reservoir width for replace joint seal = existing joint width + 1/8"

RESERVOIR WIDTH W ± 1/16"	LIQUID JOINT SEALANT DIMENSIONS					
	BACKER ROD NOMINAL Dia *	DEPTHS (ASPHALT RUBBER) **		DEPTHS (SILICONE)		
		RESERVOIR D ± 1/4"	BACKER ROD b ± 1/16"	RESERVOIR D ± 1/4"	BACKER ROD b ± 1/16"	RECESS r ± 1/16"
1/4"	3/8"	1 3/4"	7/8"	1 3/8"	1/2"	1/4"
3/8"	1/2"	1 7/8"	7/8"	1 1/2"	1/2"	1/4"
1/2"	3/4"	2"	7/8"	1 3/4"	9/16"	5/16"
5/8"	7/8"	2 1/4"	1"	2"	5/8"	5/16"
3/4"	1"	2 3/4"	1 1/8"	2 1/4"	3/4"	3/8"
7/8"	1 1/4"	3"	1 1/4"	2 1/2"	13/16"	3/8"
1"	1 1/2"	3 1/4"	1 3/8"	2 5/8"	7/8"	3/8"
1 1/8"	1 1/2"	3 1/2"	1 1/2"	2 13/16"	1"	1/2"

\* Larger diameter backer rods may be substituted according to manufacturer recommendations if reservoir depth is increased equivalently.

\*\* Asphalt rubber sealant recess depth "r" varies from 1/4" to 3/8"

RESERVOIR WIDTH W ± 1/16"	PREFORMED COMPRESSION JOINT SEAL DIMENSIONS	
	NOMINAL SEAL WIDTH s	RESERVOIR DEPTH D ± 1/4"
1/4"	7/16"	1 1/4"
3/8"	11/16"	1 7/16"
1/2"	13/16"	1 11/16"
5/8"	1"	1 7/8"
3/4"	1 1/4"	2 1/8"
7/8"	1 5/8"	2 5/8"
1"	1 9/8"	2 9/8"
1 1/8"	2"	2 7/8"

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**JOINT SEALS**

NO SCALE

RSP P20 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P20 DATED MAY 20, 2011 - PAGE 136 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP P20

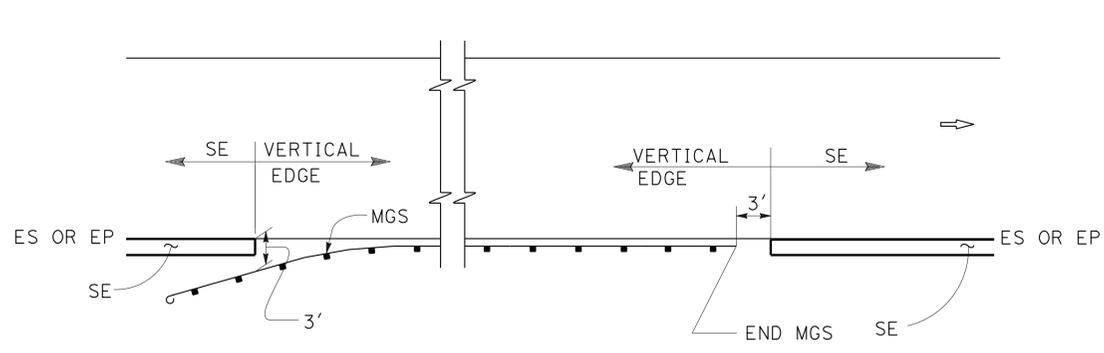
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	588	824

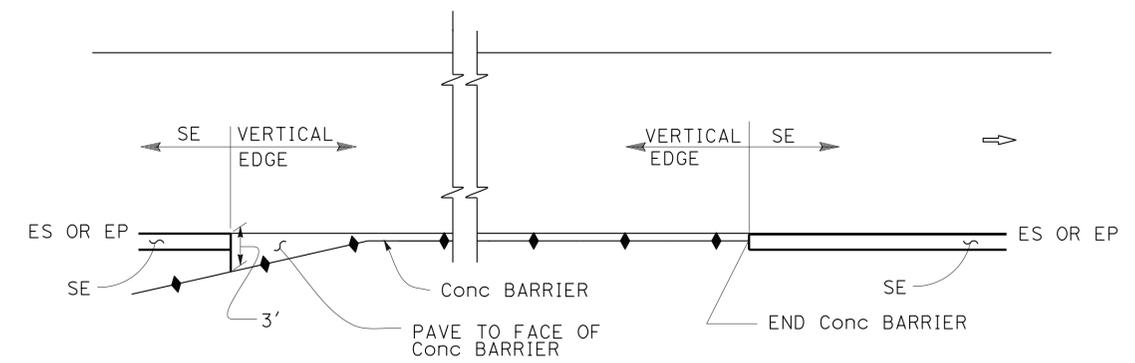
REGISTERED CIVIL ENGINEER November 15, 2013 PLANS APPROVAL DATE	
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>	

TO ACCOMPANY PLANS DATED 6-23-14

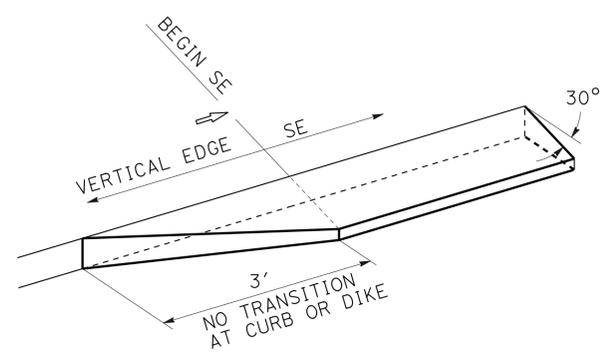
**ABBREVIATIONS:**  
SE SAFETY EDGE



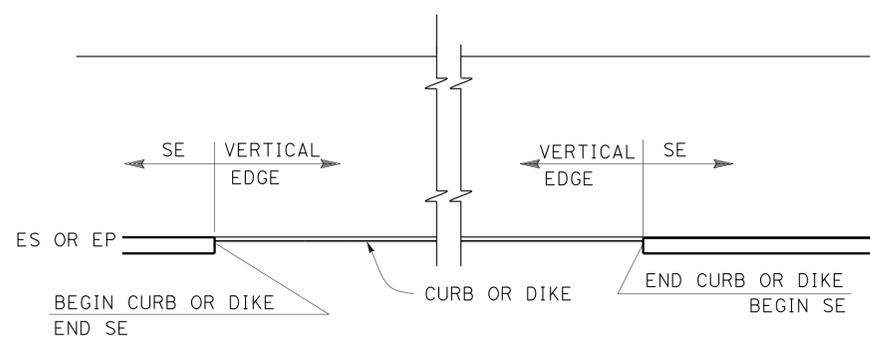
**MGS**



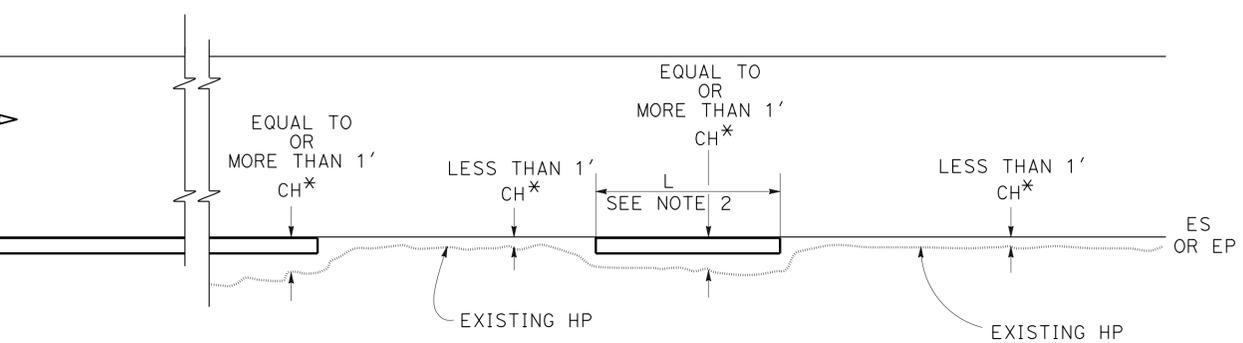
**CONCRETE BARRIER**



**TRANSITION DETAIL FOR CONCRETE ONLY**

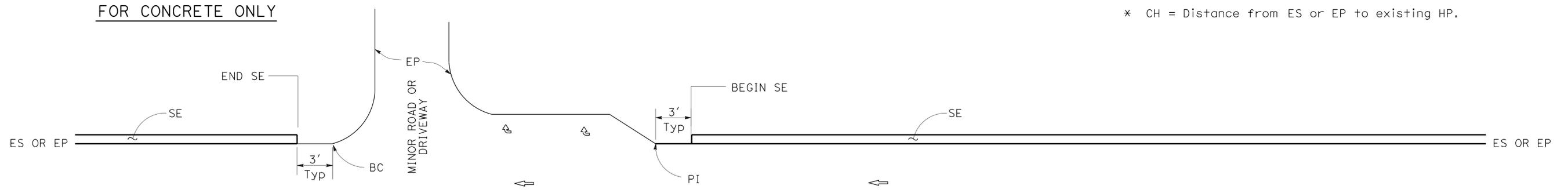


**CURB OR DIKE**



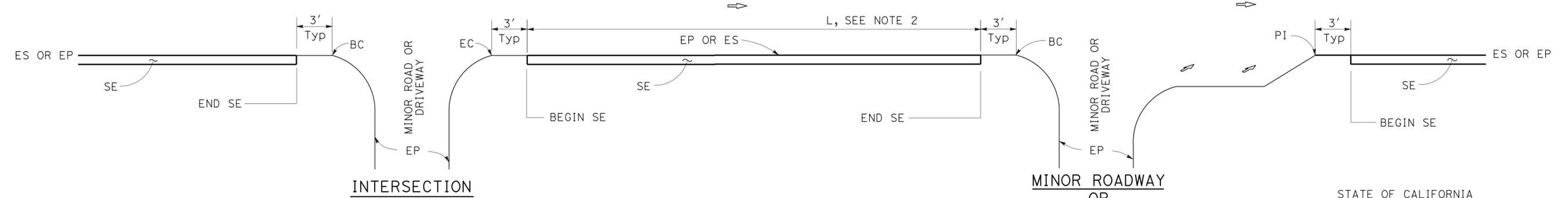
**NARROW SIDE SLOPE**

\* CH = Distance from ES or EP to existing HP.



**STATE ROUTE**

**STATE ROUTE**



**INTERSECTION**

**DRIVEWAY AND INTERSECTION**

**MINOR ROADWAY OR DRIVEWAY**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**PAVEMENT EDGE TREATMENTS**

NO SCALE

**NOTES:**

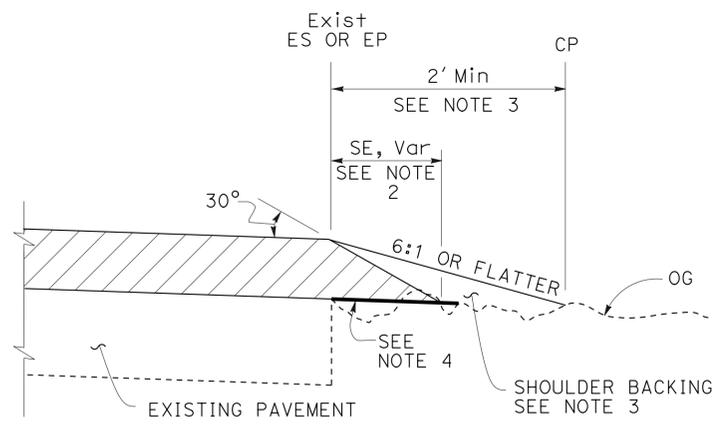
1. For details not shown, see Revised Standard Plans RSP P75 and RSP P76.
2. Safety edge is optional when L is less than 30'.

RSP P74 DATED NOVEMBER 15, 2013 SUPERSEDES RSP P74 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

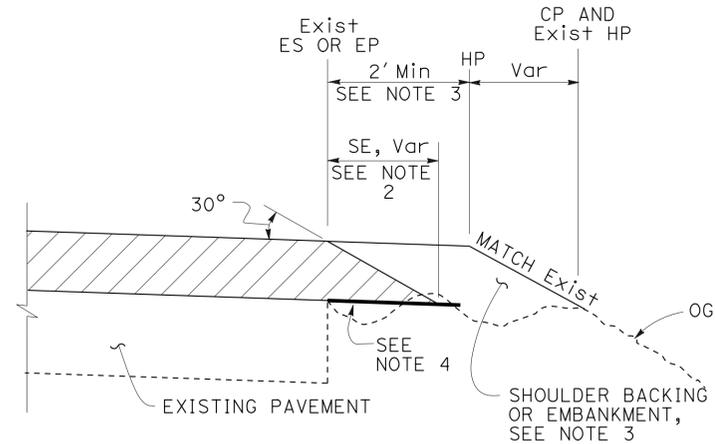
**REVISED STANDARD PLAN RSP P74**

2010 REVISED STANDARD PLAN RSP P74

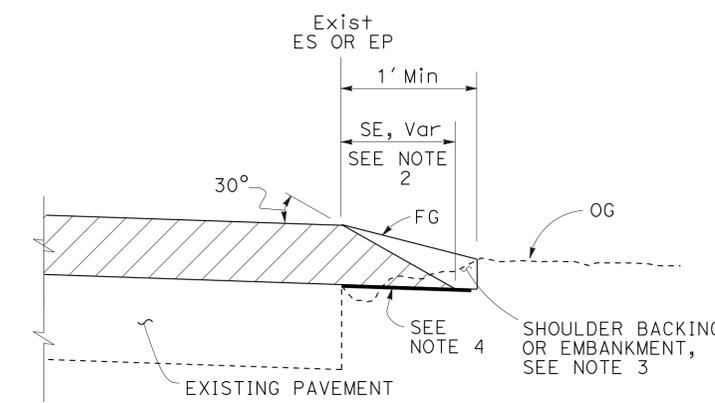
2010 REVISED STANDARD PLAN RSP P75



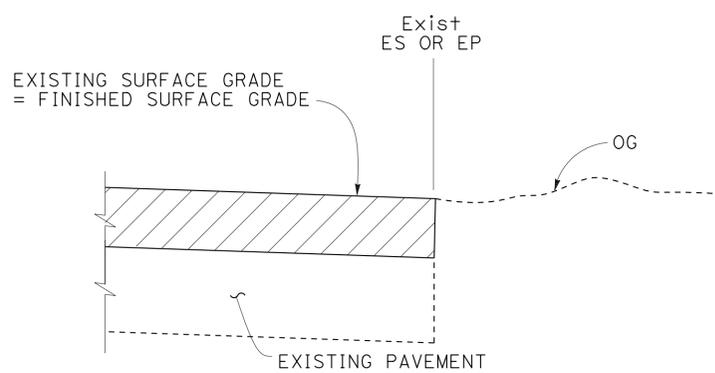
**CASE A**  
Safety Edge



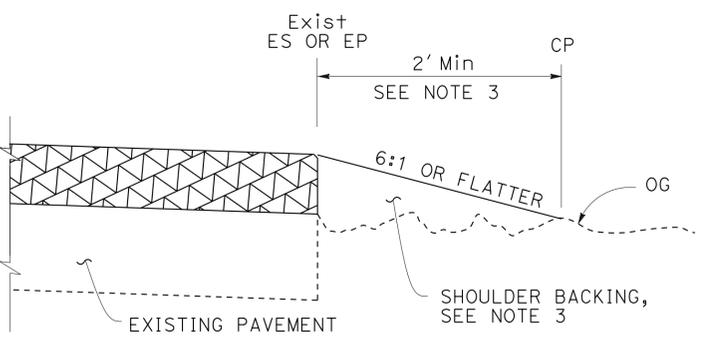
**CASE B**  
Safety Edge



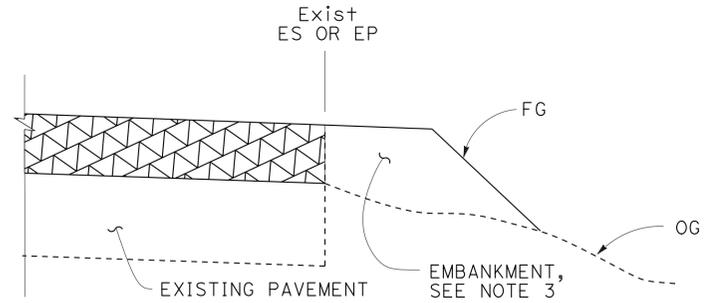
**CASE C**  
Safety Edge



**CASE D**  
Vertical Edge



**CASE E**  
Vertical Edge



**CASE F**  
Vertical Edge  
\* See Table A and Revised Std Plan RSP P74

- NOTES:**
- For limits of safety edge and vertical edge treatments, see Revised Standard Plan RSP P74.
  - Details shown for HMA overlay thickness less than 0.43'. See Detail "A" for HMA overlay thickness more than 0.43' or concrete overlay.
  - For locations and limits of shoulder backing or embankment see project plans.
  - Grade existing ground to place safety edge. 1' minimum width
  - Safety edge transverse joint must match overlay transverse joint. End of #6 longitudinal bar must be 2" ± 1/2" clear from transverse joint.
  - Safety edge is not needed in the area of MGS, barrier, right turn lane and acceleration lane. See Revised Standard Plan RSP P74.

**LEGEND:**

- HMA OVERLAY
- HMA OR CONCRETE OVERLAY
- CONCRETE OVERLAY

**ABBREVIATIONS:**

- SE SAFETY EDGE
- TT TOTAL THICKNESS OF SE

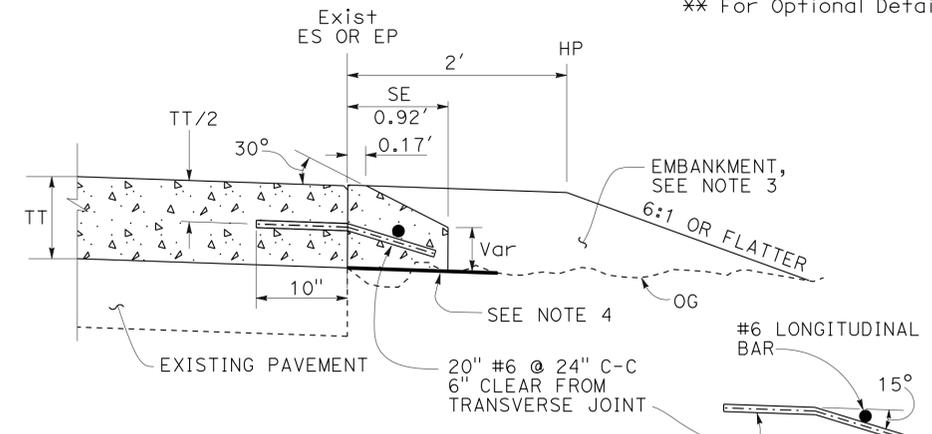
**TABLE A**  
EDGE TREATMENT FOR VARIOUS OVERLAY THICKNESS AND CONDITIONS

FIELD CONDITION	OVERLAY THICKNESS	
	LESS THAN 0.15'	0.15' OR MORE
Exist SLOPE 6:1 OR FLATTER	CASE E	CASE A
Exist SLOPE 3:1 TO 6:1	CASE E	CASE B
Exist SLOPE STEEPER THAN 3:1	CASE F	CASE F
CUT SECTION (REPLACE, COLD PLANE, MILL PAVEMENT)	CASE D	CASE C

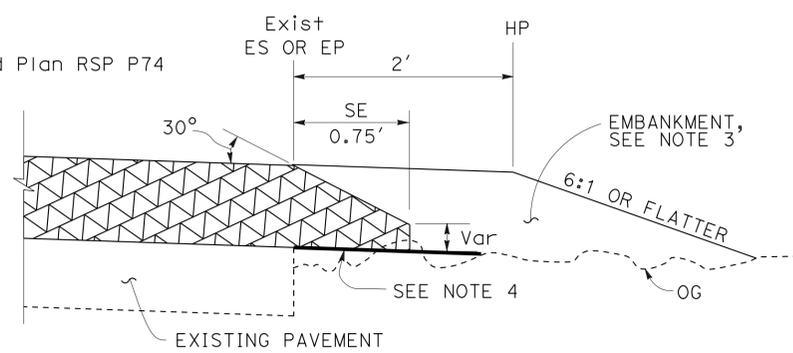
**ADDITIONAL HMA OR CONCRETE QUANTITIES FOR SE/SIDE/MILE**

TYPICAL CROSS SECTION	TT	TOTAL ADDITIONAL MATERIAL FOR SE/SIDE/MILE		
		HMA (TON)	CONCRETE (CY)*	CONCRETE (CY)**
	0.15'	NA	NA	NA
	0.20'	13.7	NA	NA
	0.30'	30.9	NA	NA
	0.40'	54.9	NA	NA
	0.45'	69.4	NA	NA
	0.50'	84.2	NA	NA
	0.60'	113.9	NA	NA
	0.70'	143.6	70.9	94.2
	0.80'	173.3	85.6	112.2
	0.90'	203.0	100.3	130.2
	1.00'	232.7	114.9	148.2
	1.10'	262.4	129.6	166.2
1.20'	292.1	144.3	184.2	

\* For Detail "A"  
\*\* For Optional Detail "A"



**OPTIONAL DETAIL "A"**  
For concrete overlay  
See Note 5



**DETAIL "A"**

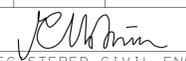
For HMA overlay thickness more than 0.43' or concrete overlay

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT EDGE TREATMENTS- OVERLAYS**  
NO SCALE

RSP P75 DATED NOVEMBER 15, 2013 SUPERSEDES RSP P75 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	590	824

 REGISTERED CIVIL ENGINEER		
November 15, 2013 PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>		

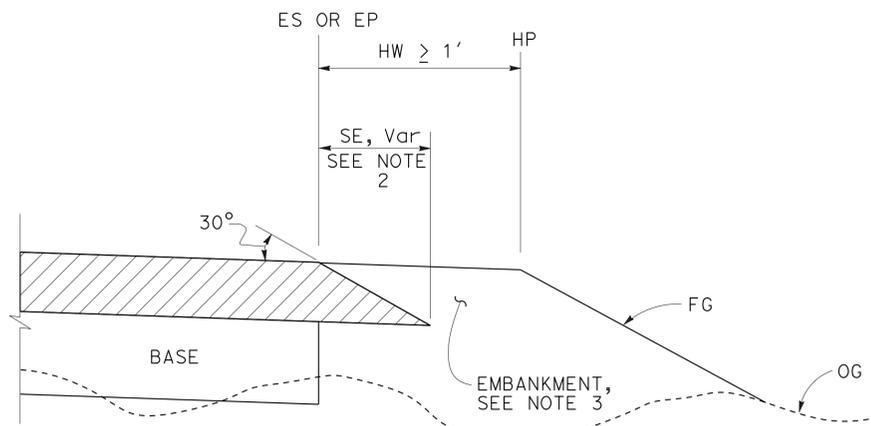
**LEGEND:**

-  HMA PAVEMENT
-  HMA OR CONCRETE PAVEMENT
-  CONCRETE PAVEMENT

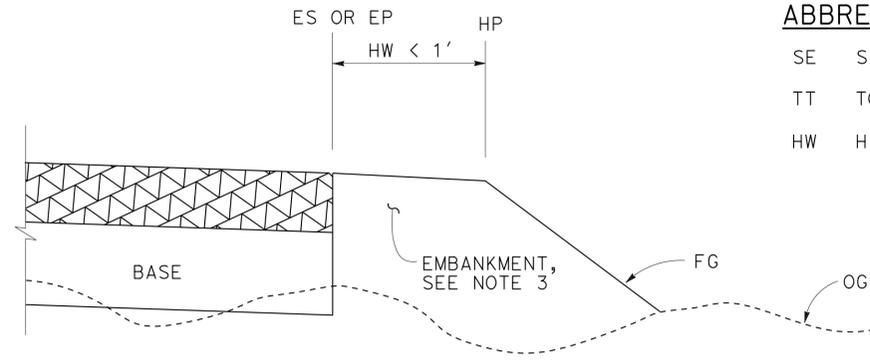
**ABBREVIATIONS:**

- SE SAFETY EDGE
- TT TOTAL THICKNESS OF SE
- HW HINGE WIDTH, DISTANCE FROM ES OR EP TO HP

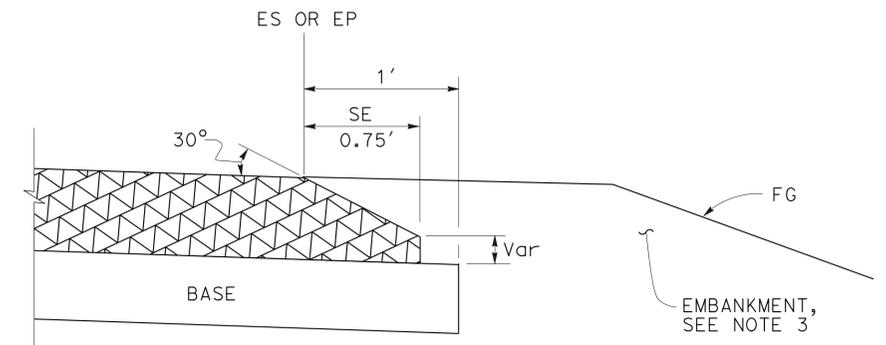
TO ACCOMPANY PLANS DATED 6-23-14



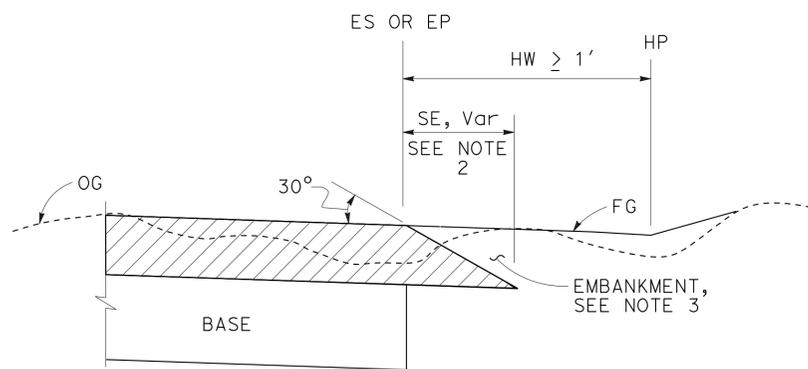
**CASE K**  
Safety Edge - Fill Section, HW  $\geq$  1'



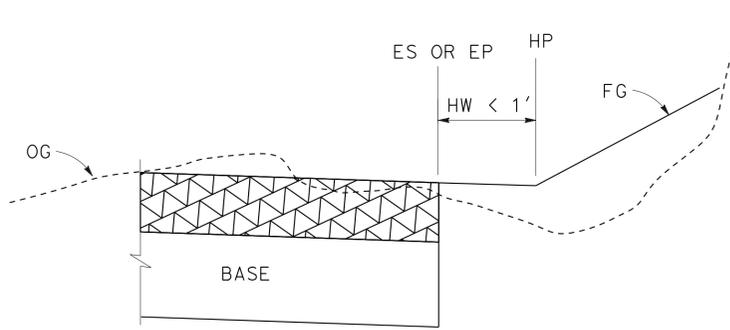
**CASE L**  
Vertical Edge - Fill Section, HW  $<$  1'



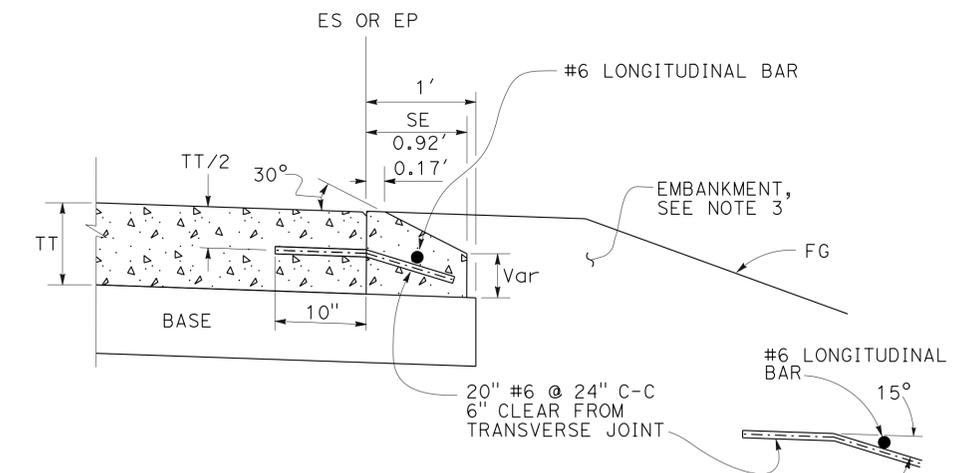
**DETAIL "B"**  
For HMA pavement thickness more than 0.43' or concrete pavement



**CASE M**  
Safety Edge - Cut Section, HW  $\geq$  1'



**CASE N**  
Vertical Edge - Cut Section, HW  $<$  1'



**OPTIONAL DETAIL "B"**  
For concrete pavement  
See Note 4

**FILL SECTION**

**CUT SECTION**

**NOTES:**

- For limits of safety edge and vertical edge treatments, see Revised Standard Plan RSP P74
- Details shown for HMA pavement thickness less than 0.43'. See Detail "B" for HMA pavement thickness more than 0.43' or concrete pavement.
- For locations and limits of embankment see project plans.
- Safety edge transverse joint must match pavement transverse joint. End of #6 longitudinal bar must be 2"  $\pm$  1/2" clear from transverse joint.
- Safety edge is not needed in the area of MGS, barrier, right turn lane and acceleration lane. See Revised Standard Plan RSP P74.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT EDGE TREATMENTS-  
NEW CONSTRUCTION**  
NO SCALE

RSP P76 DATED NOVEMBER 15, 2013 SUPERSEDES RSP P76 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.  
**REVISED STANDARD PLAN RSP P76**

2010 REVISED STANDARD PLAN RSP P76

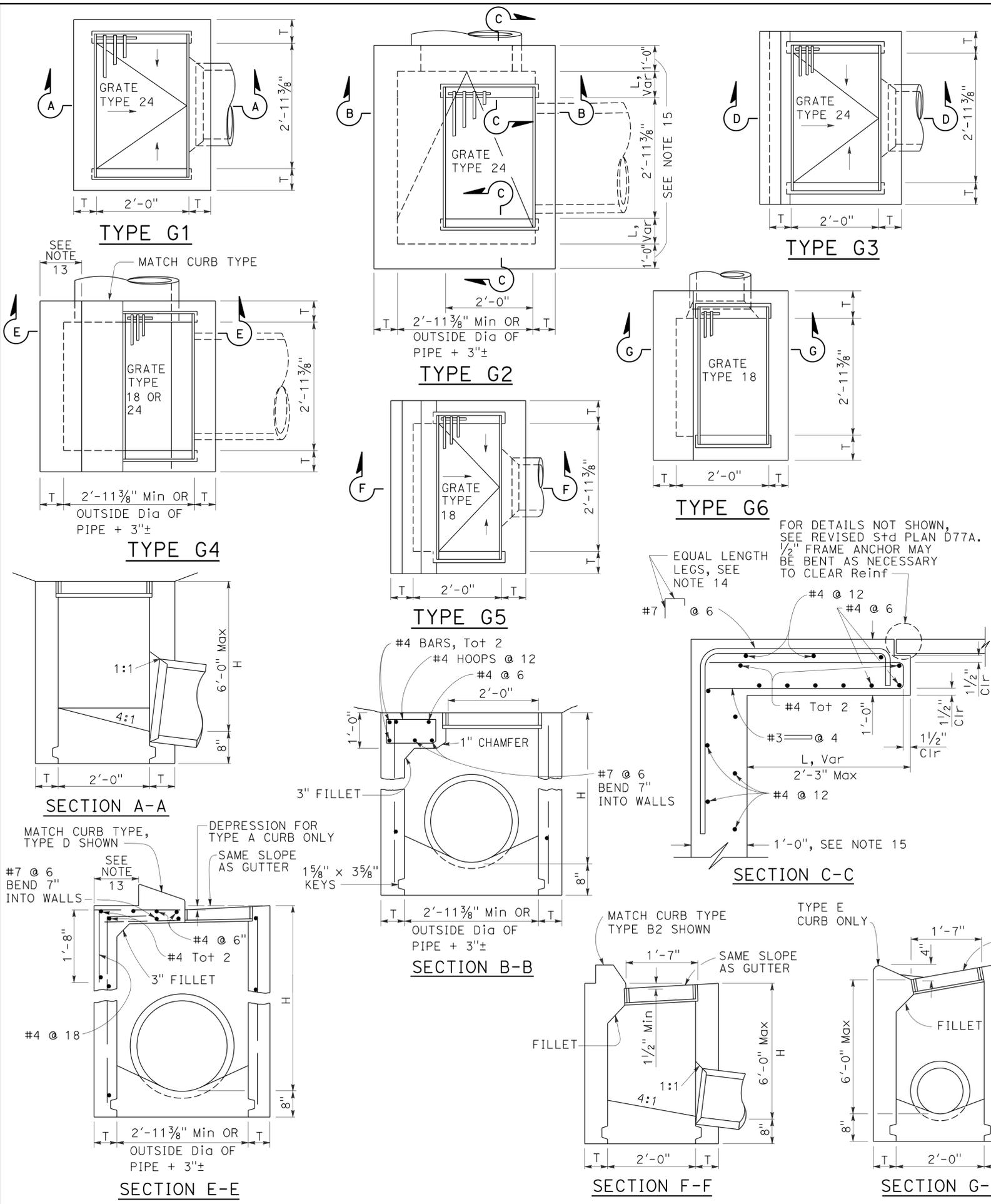
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	591	824

Glenn DeCou  
REGISTERED CIVIL ENGINEER

October 19, 2012  
PLANS APPROVAL DATE

Glenn DeCou  
No. C34547  
Exp. 9-30-13  
CIVIL  
STATE OF CALIFORNIA

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



**NOTES:**

- "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
- For "T" wall thickness, see Table A below.
- Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits shall be reinforced with #4 bars @ 1'-6" ± centers placed 1 1/2" clear to inside of box unless otherwise shown.
- Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom and alternative half round bottom.
- Steps-None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below top of inlet. The distance between steps shall not exceed 1'-0" and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts shall comply with State Industrial Safety requirements. See Standard Plan D74C for step details.
- Details shown apply to both metal and concrete pipe.
- Pipe(s) can be placed in any wall.
- Curb section shall match adjacent curb.
- Basin floors shall have wood trowel finish and a minimum slope of 12:3 from all directions toward outlet pipe.
- Set inlet so that grate bars are parallel to direction of principal surface flow.
- See Revised Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
- See Standard Plan D78A for gutter depression details.
- This dimension will vary with different grates, curbs types, box width and wall thickness.
- Bar may be rotated as necessary to clear opening. Where "L" is 6" or less, bar may be omitted.
- Where "L" is 6" or less, wall thickness shall be as shown in Table A.
- Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet, and concrete poured in one continuous operation. Precast inlets shall have mortared connections conforming to details for Type GCP Inlet shown on Standard Plan D75B. See Standard Specifications for mortar composition.

**TABLE A**

TYPE	CONCRETE QUANTITIES			
	H=3'-0" TO 8'-0" (T=6")	H=8'-1" TO 20'-0" (T=8")	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
G-1	0.95	0.220	See Note A	SEE NOTE A
G-2*	1.31	0.255	3.50	0.357
G-3	1.03	0.220	See Note A	SEE NOTE A
G-4* (TYPE 24)	1.27	0.255	3.48	0.357
G-4* (TYPE 18)	1.30	0.255	3.50	0.357
G-5	1.02	0.220	SEE NOTE A	SEE NOTE A
G-6	1.04	0.220	SEE NOTE A	SEE NOTE A

TABLE BASED ON 8" FLOOR SLAB. NO DEDUCTIONS ARE TO BE MADE TO THESE QUANTITIES BECAUSE OF PIPE OPENINGS, DIFFERENT FLOOR ALTERNATIVES OR DIFFERENT CURB TYPES. \* QUANTITIES FOR TYPE G-2 AND G-4 INLETS BASED ON THE MINIMUM INTERIOR DIMENSIONS.

**NOTE A:**

Maximum allowable height 6'-0".

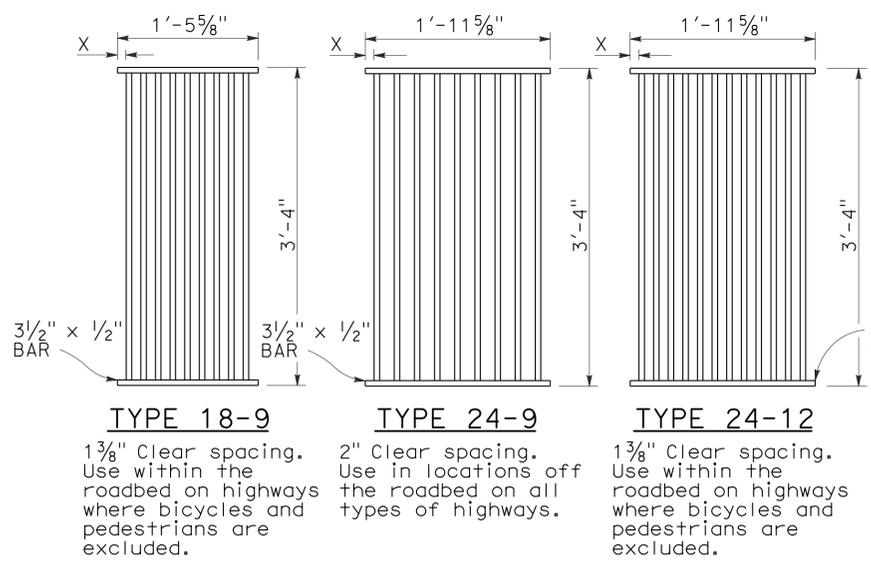
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**DRAINAGE INLETS**  
NO SCALE

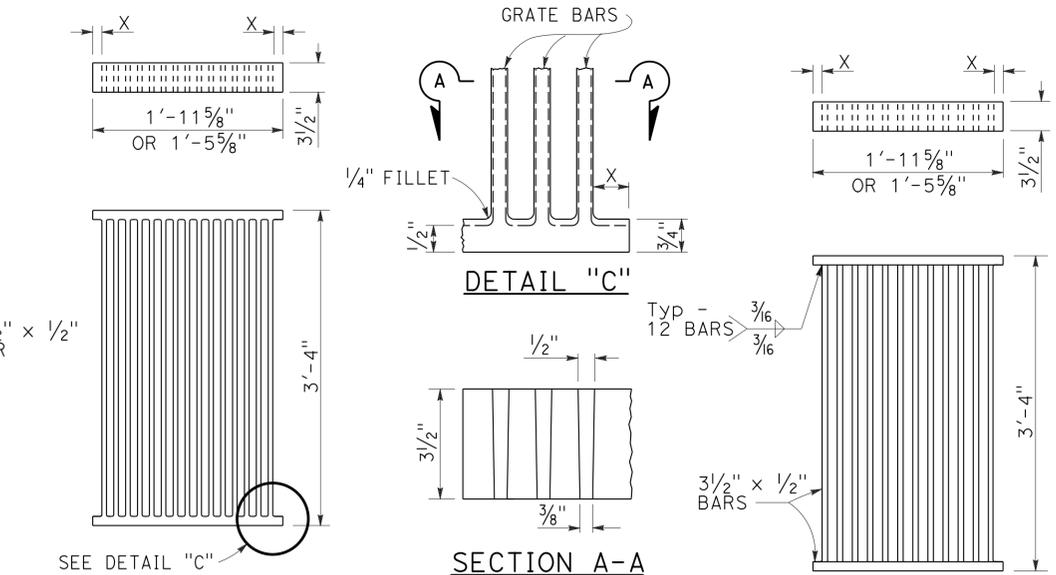
RSP D73 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN D73 DATED MAY 20, 2011 - PAGE 156 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP D73**

2010 REVISED STANDARD PLAN RSP D73

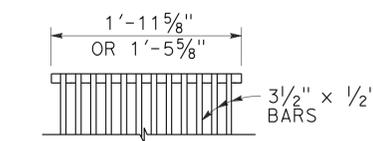


**RECTANGULAR GRATE DETAILS**  
(See table below)

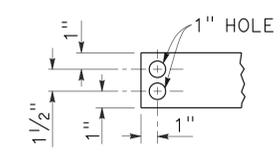


**ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE**

**ALTERNATIVE WELDED GRATE**

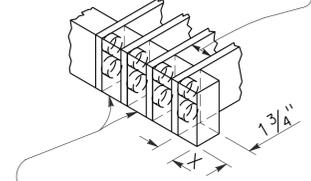


**CAST END BLOCK**

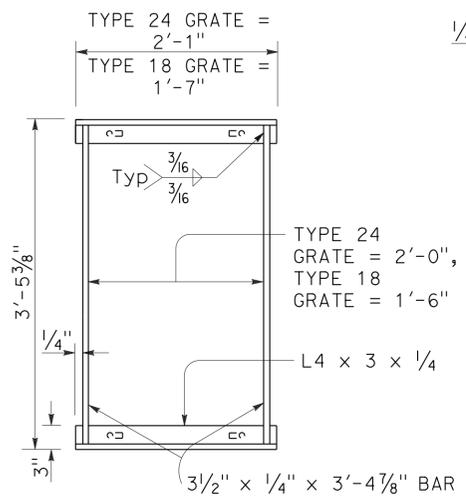


**END OF BAR**

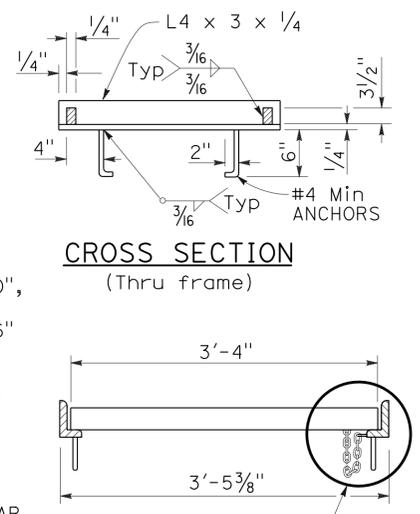
SPACING SAME AS FOR WELDED OR BOLTED GRATE



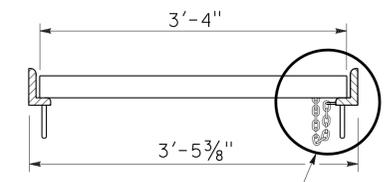
**ALTERNATIVE CAST DUCTILE IRON OR CAST CARBON STEEL END BLOCK GRATE**



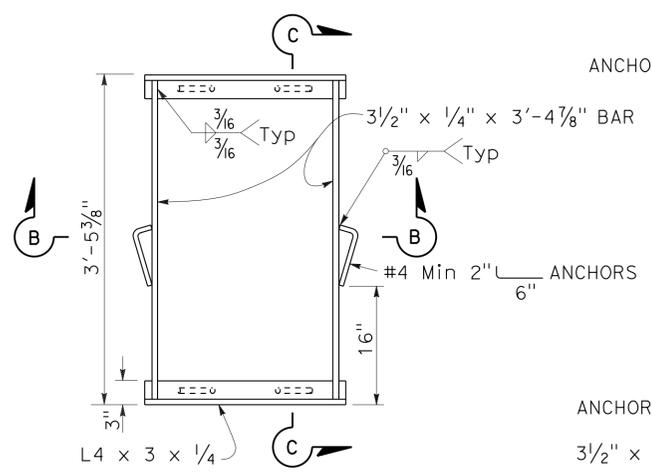
**TYPICAL FRAME**



**CROSS SECTION**  
(Thru frame)

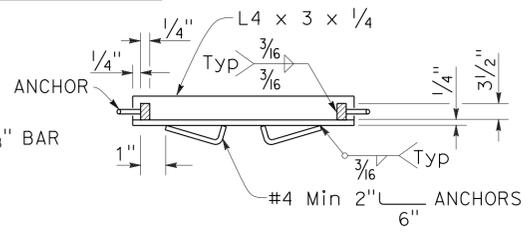


**LONGITUDINAL SECTION**  
(Thru frame and grate)

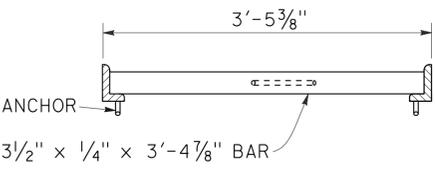


**TYPICAL FRAME**

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



**SECTION B-B**



**SECTION C-C**

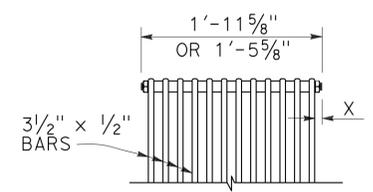
**RECTANGULAR FRAME DETAILS**  
(For all rectangular grates)

**GRATE BAR SPACING TABLE**

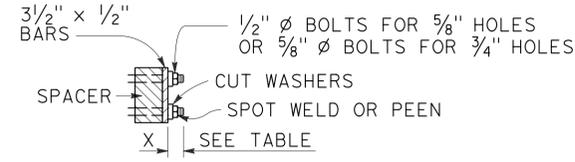
TYPE	NO. OF BARS	CLEAR BAR SPACING	X
18-9	9	1 3/8"	1 1/16"
24-9	9	2"	1 9/16"
24-12	12	1 3/8"	1 1/4"

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

INLET TYPE	GRATE TYPE	NO. OF GRATES	WEIGHT LB
GDO	24-12	2	634
GOL-7	24-12	1	326
GOL-10	24-12	1	326
G0,G1,G2,G3,G4 (TYPE 24)	24-9	1	263
	24-12	1	326
G4 (TYPE 18),G5,G6	18-9	1	249
GT1	18-9	2	498
GT2	18-9	2	498
GT3	24-12	2	652
GT4	24-12	2	652
TRASH RACK			22
GRATE CHAIN			3

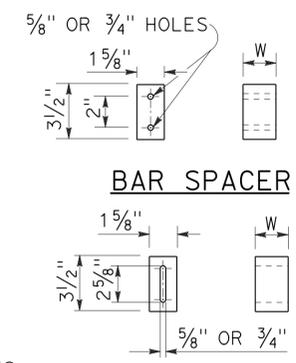


**BOLTED END BLOCK**



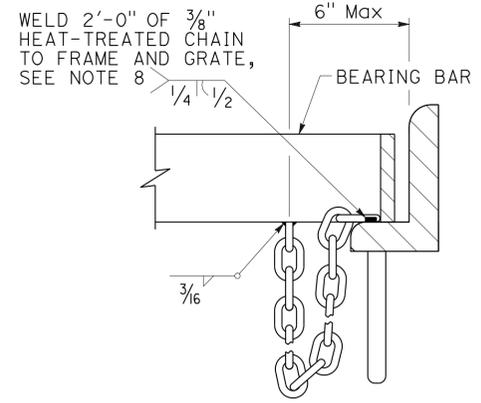
**BOLTING DETAIL**

**ALTERNATIVE BOLTED GRATE**



**BAR SPACER**

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



**DETAIL "D"**  
(Steel grates only)

**NOTES:**

1. Grate type numbers refer to approximate width of grate in inches and number of bars, respectively.
2. Contractor has the option of using cast ductile iron, cast carbon steel, welded, bolted, or cast end block grate.
3. Rounded top of bars optional on all grates.
4. Pipe inlets with a grate shall be placed so that bars parallel direction of principle surface flow.
5. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
6. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
7. Grate and frame weights are based on welded grates (weights of face angles, steps, protection bars, etc. are not included).
8. Connect chain to grate and frame only at locations shown on the plans. When chain is required, do not use cast ductile iron grates.

**GRATE DETAILS No. 1**  
NO SCALE

RSP D77A DATED APRIL 19, 2013 SUPERSEDES RSP D77A DATED JULY 20, 2012 AND STANDARD PLAN D77A DATED MAY 20, 2011 - PAGE 164 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP D77A**

2010 REVISED STANDARD PLAN RSP D77A

**BASIS FOR Misc IRON & STEEL FINAL PAY WEIGHTS FOR DRAINAGE INLETS**  
(See Note 7)



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	594	824

  
 LICENSED LANDSCAPE ARCHITECT  
 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.

**A**

AB AGGREGATE BASE  
 ABS ACRYLONITRILE-BUTADIENE-STYRENE  
 AC ASPHALT CONCRETE  
 ACC ARMOR-CLAD CONDUCTORS  
 Adj ADJACENT/ADJUSTABLE  
 AIC AUXILIARY IRRIGATION CONTROLLER  
 Alt ALTERNATIVE  
 AMEND AMENDMENT  
 ARV AIR RELEASE VALVE  
 AUTO AUTOMATIC  
 AUX AUXILIARY  
 AVB ATMOSPHERIC VACUUM BREAKER

**B**

B&B BALLED AND BURLAPPED  
 B/B BRASS/BRONZE  
 B/B/PL BRASS/BRONZE/PLASTIC  
 B/PL BRASS/PLASTIC  
 BFM BONDED FIBER MATRIX  
 Bit Ctd BITUMINOUS COATED  
 BP BOOSTER PUMP  
 BPA BACKFLOW PREVENTER ASSEMBLY  
 BPE BACKFLOW PREVENTER ENCLOSURE  
 BV BALL VALVE

**C**

C CONDUIT  
 CAP CORRUGATED ALUMINUM PIPE  
 CARV COMBINATION AIR RELEASE VALVE  
 CB COUPLING BAND  
 CCA CAM COUPLER ASSEMBLY  
 CEC CONTROLLER ENCLOSURE CABINET  
 CHDPE CORRUGATED HIGH DENSITY POLYETHYLENE  
 CL CHAIN LINK  
 CNC CONTROL AND NEUTRAL CONDUCTORS  
 Conc CONCRETE  
 CP COPPER PIPE  
 CS COMPOST SOCK  
 CSP CORRUGATED STEEL PIPE  
 CST CENTER STRIP  
 CV CHECK VALVE

**D**

Dia DIAMETER  
 DIP DUCTILE IRON PIPE  
 DIT DRIP IRRIGATION TUBING  
 DG DECOMPOSED GRANITE  
 DN DIAMETER NOMINAL  
 DVA DRIP VALVE ASSEMBLY

**E**

EC EROSION CONTROL  
 ECTC EROSION CONTROL TECHNOLOGY COUNCIL  
 Elect ELECTRIC/ELECTRICAL  
 Elev ELEVATION  
 ELL ELBOW  
 ENCL ENCLOSURE  
 EP EDGE OF PAVEMENT  
 ES EDGE OF SHOULDER  
 EST END STRIP  
 ESTB ESTABLISHMENT  
 ETW EDGE OF TRAVELED WAY

**F**

F FULL CIRCLE  
 F/P FULL/PART CIRCLE  
 FCV FLOW CONTROL VALVE  
 FERT FERTILIZER  
 FG FINISHED GRADE  
 FH FLEXIBLE HOSE  
 FIPT FEMALE IRON PIPE THREAD  
 FIS FERTILIZER INJECTOR SYSTEM  
 FL FLOW LINE  
 FR FIBER ROLL  
 FS FLOW SENSOR  
 FSC FLOW SENSOR CABLE  
 FV FLUSH VALVE

**G**

Galv GALVANIZED  
 GARV GARDEN VALVE  
 GARVA GARDEN VALVE ASSEMBLY  
 GM GRAVEL MULCH  
 GPH GALLONS PER HOUR  
 GPM GALLONS PER MINUTE  
 GSP GALVANIZED STEEL PIPE  
 GV GATE VALVE

**H**

H HALF CIRCLE  
 HDPE HIGH DENSITY POLYETHYLENE  
 HP HORSEPOWER/HINGE POINT  
 HPL HIGH PRESSURE LINE  
 Hwy HIGHWAY

**I**

IC IRRIGATION CONTROLLER  
 ICC IRRIGATION CONTROLLER(S)  
 IN CONTROLLER ENCLOSURE CABINET  
 ID INSIDE DIAMETER  
 IFS IRRIGATION FILTRATION SYSTEM  
 IPS IRON PIPE SIZE  
 IPT IRON PIPE THREAD  
 Irr IRRIGATION

**L**

L LENGTH

**M**

Max MAXIMUM  
 MBGR METAL BEAM GUARD RAILING  
 MCV MANUAL CONTROL VALVE  
 MIC MASTER IRRIGATION CONTROLLER  
 Min MINIMUM  
 MIPT MALE IRON PIPE THREAD  
 Misc MISCELLANEOUS  
 MtI MATERIAL  
 MVP MAINTENANCE VEHICLE PULLOUT

**N**

NCN NO COMMON NAME  
 NL NOZZLE LINE  
 No. NUMBER  
 NPT NATIONAL PIPE THREAD

**O**

O/C ON CENTER  
 OD OUTSIDE DIAMETER  
 OL OVERLAP

**P**

P PART CIRCLE  
 PB PULL BOX  
 PCC PORTLAND CEMENT CONCRETE  
 PE POLYETHYLENE  
 PKt PACKET  
 PL PLASTIC  
 PLS PURE LIVE SEED  
 PLT PLANT/PLANTING  
 PLT ESTB PLANT ESTABLISHMENT  
 PM POST MILE  
 PR PRESSURE RATED  
 PRLV PRESSURE RELIEF VALVE  
 PRV PRESSURE REGULATING VALVE  
 PVC POLYVINYL CHLORIDE  
 PvmT PAVEMENT

**Q**

Q QUARTER CIRCLE  
 QCV QUICK COUPLING VALVE

**NOTE:**  
 For additional abbreviations,  
 see Standard Plans A10A and A10B.

**R**

R RADIUS  
 RCP REINFORCED CONCRETE PIPE  
 RCV REMOTE CONTROL VALVE  
 RCVM REMOTE CONTROL VALVE (MASTER)  
 RCVMF REMOTE CONTROL VALVE (MASTER) W/FLOW SENSOR  
 RCVP REMOTE CONTROL VALVE W/PRESSURE REGULATOR  
 RCW RECYCLED WATER  
 RECP ROLLED EROSION CONTROL PRODUCT  
 REQ REQUIRED  
 RICS REMOTE IRRIGATION CONTROL SYSTEM  
 R/W RIGHT OF WAY

**S**

S SLIP  
 SCH SCHEDULE  
 SF STATE-FURNISHED  
 Shld SHOULDER  
 Sq SQUARE  
 SST SIDE STRIP  
 Sta STATION  
 Std STANDARD  
 SW SIDEWALK/SOUND WALL

**T**

T THIRD CIRCLE/THREAD  
 TLS TRUCK LOADING STANDPIPE  
 TQ THREE QUARTER CIRCLE  
 TRM TURF REINFORCEMENT MAT  
 TT TWO-THIRDS CIRCLE  
 TWSA TREE WELL SPRINKLER ASSEMBLY  
 Typ TYPICAL

**U**

UG UNDERGROUND

**W**

W WIDTH  
 W/ WITH  
 WM WATER METER  
 WS WYE STRAINER  
 WSA WYE STRAINER ASSEMBLY  
 WSP WELDED STEEL PIPE  
 WWM WELDED WIRE MESH

TO ACCOMPANY PLANS DATED 6-23-14

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**LANDSCAPE AND  
 EROSION CONTROL ABBREVIATIONS**  
 NO SCALE

RSP H1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H1  
 DATED MAY 20, 2011 - PAGE 218 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP H1**

2010 REVISED STANDARD PLAN RSP H1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	595	824

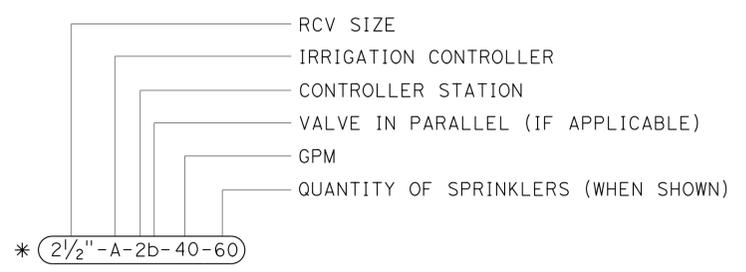
  
 LICENSED LANDSCAPE ARCHITECT  
 November 15, 2013  
 PLANS APPROVAL DATE  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



TO ACCOMPANY PLANS DATED 6-23-14

EXISTING	NEW	ITEM DESCRIPTION
		WATER METER (WM)
		BACKFLOW PREVENTER ASSEMBLY (BPA)
		BACKFLOW PREVENTER ENCLOSURE (BPE)
		BOOSTER PUMP (BP)
		TRUCK LOADING STANDPIPE (TLS)
		FLOW SENSOR (FS)
		MASTER IRRIGATION CONTROLLER (MIC)
		AUXILIARY IRRIGATION CONTROLLER (AIC)
		IRRIGATION CONTROLLER (IC) IRRIGATION CONTROLLER (IC) (BATTERY) IRRIGATION CONTROLLER (IC) (SOLAR) IRRIGATION CONTROLLER (IC) (TWO WIRE) IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)
		ARMOR-CLAD CONDUCTORS (ACC)
		CONTROL AND NEUTRAL CONDUCTORS (CNC)
		IRRIGATION CONDUIT
		EXTEND IRRIGATION CONDUIT
		DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)
		PLASTIC PIPE (SUPPLY LINE) (MAIN)
		PLASTIC PIPE (SUPPLY LINE) (LATERAL)
		COPPER PIPE (SUPPLY LINE)
		DRIP IRRIGATION TUBING
		REMOTE CONTROL VALVE (RCV) REMOTE CONTROL VALVE (MASTER) (RCVM) REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)
		REMOTE CONTROL VALVE W/PRESSURE REGULATOR (RCVP)
		EXISTING MANUAL CONTROL VALVE (MCV)
		DRIP VALVE ASSEMBLY (DVA)
		WYE STRAINER ASSEMBLY (WSA)

EXISTING	NEW	ITEM DESCRIPTION
		GATE VALVE (GV)
		BALL VALVE (BV)
		QUICK COUPLING VALVE (QCV)
		CAM COUPLER ASSEMBLY (CCA)
		GARDEN VALVE ASSEMBLY (GARVA)
		PRESSURE REGULATING VALVE (PRV)
		PRESSURE RELIEF VALVE (PRLV)
		FLOW CONTROL VALVE (FCV)
		COMBINATION AIR RELEASE VALVE (CARV)
		CHECK VALVE (CV)
		FLUSH VALVE (FV)
		EXISTING NOZZLE LINE W/TURNING UNION
		EXISTING IRRIGATION SYSTEM
		EXISTING IRRIGATION SYSTEM TO BE REMOVED
		CHAIN LINK GATE
		QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
		SPRINKLER W/SPRINKLER PROTECTOR
		CONNECT TO EXISTING SYSTEM
		CAP
		CAP EXISTING
		FIBER ROLL
		COMPOST SOCK



\* (2 1/2" - A - 2b - 40 - 60)

**VALVE CODE**

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

RSP H2 DATED NOVEMBER 15, 2013 SUPERSEDES RSP H2 DATED JULY 19, 2013 AND STANDARD PLAN H2 DATED MAY 20, 2011 - PAGE 219 OF THE STANDARD PLANS BOOK DATED 2010.

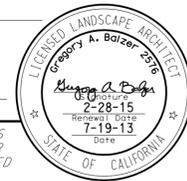
**REVISED STANDARD PLAN RSP H2**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**LANDSCAPE AND EROSION CONTROL SYMBOLS**  
NO SCALE

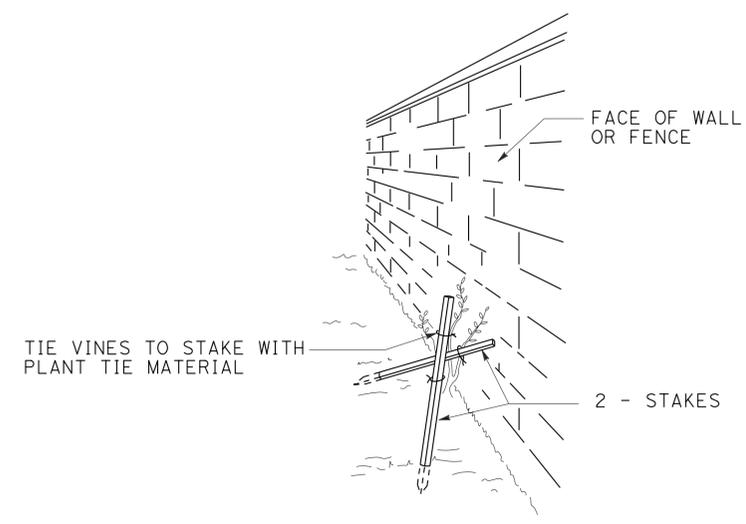
2010 REVISED STANDARD PLAN RSP H2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	596	824

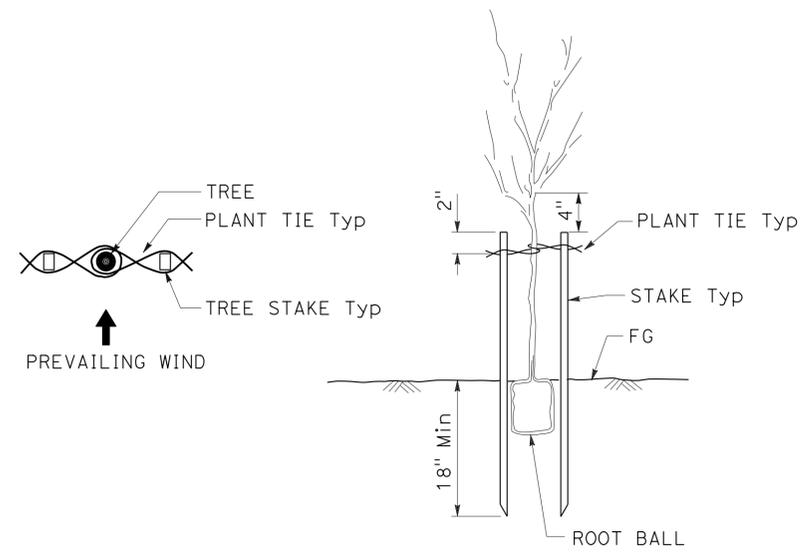
July 19, 2013  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



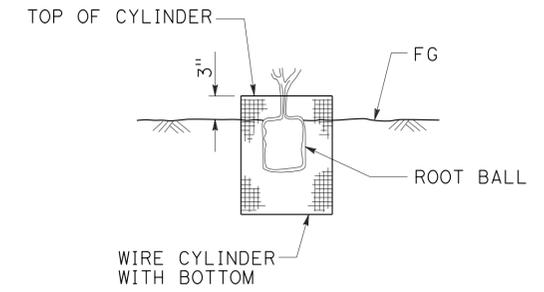
TO ACCOMPANY PLANS DATED 6-23-14



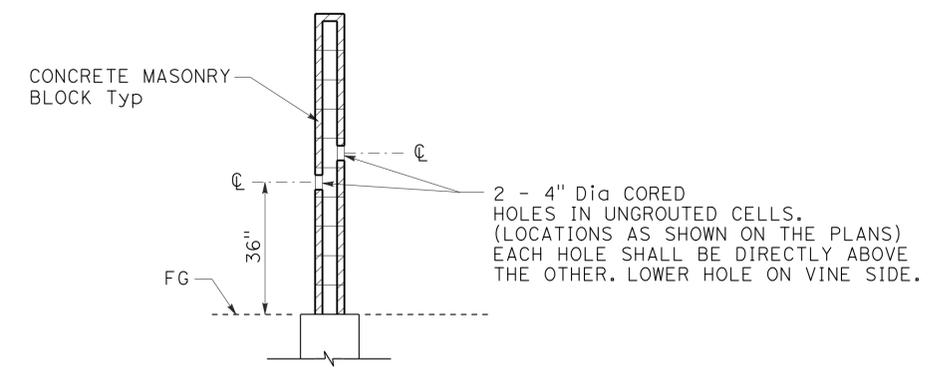
**PERSPECTIVE VINE STAKING**



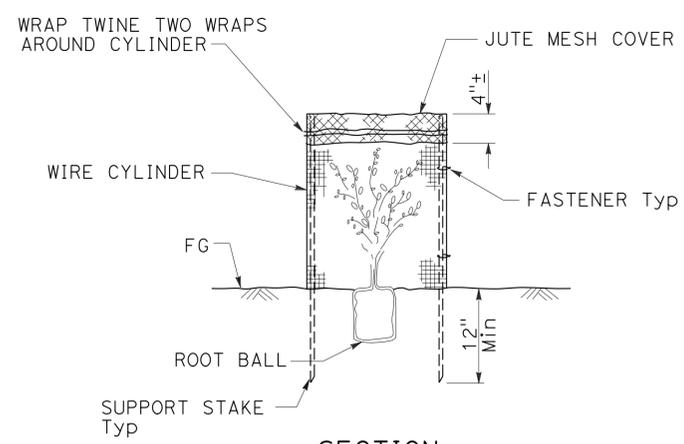
**TREE STAKING**



**SECTION ROOT PROTECTOR**



**SECTION CORE HOLE (VINE)**



**SECTION FOLIAGE PROTECTOR**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**LANDSCAPE DETAILS**  
 NO SCALE

RSP H4 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H4 DATED MAY 20, 2011 - PAGE 221 OF THE STANDARD PLANS BOOK DATED 2010.

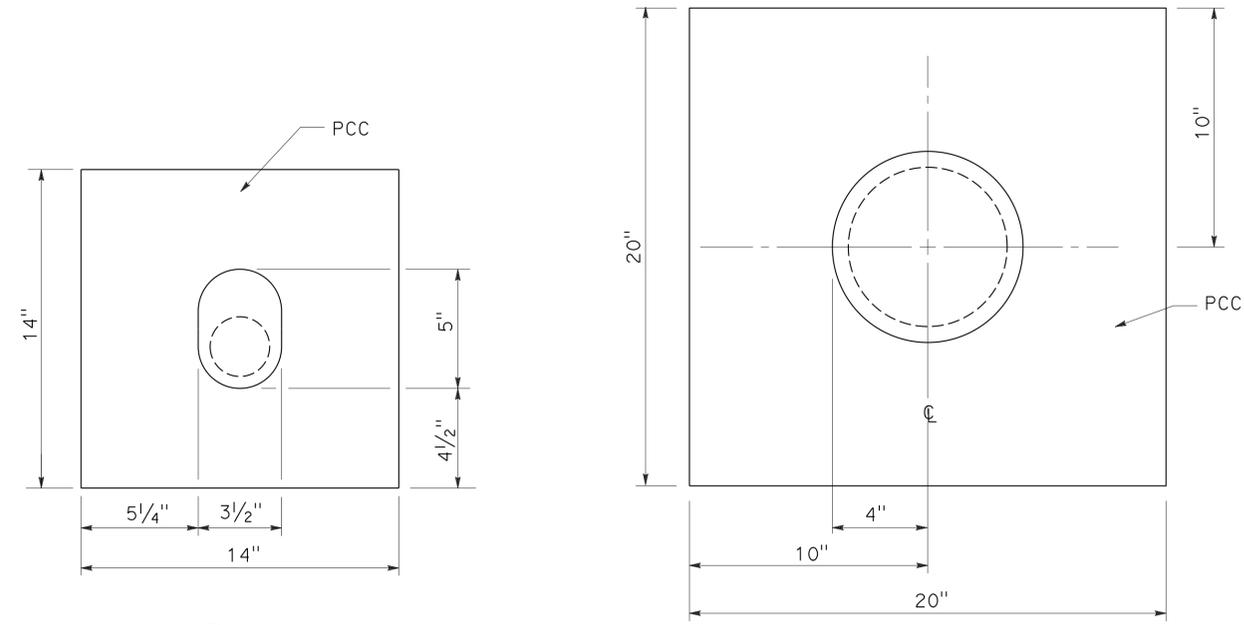
**REVISED STANDARD PLAN RSP H4**

2010 REVISED STANDARD PLAN RSP H4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	597	824

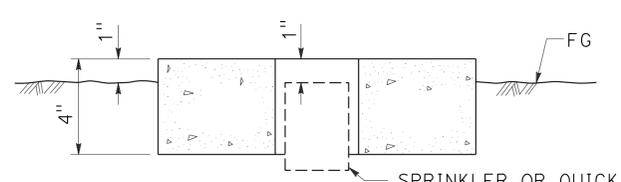
*Gregory A. Balzer*  
 LICENSED LANDSCAPE ARCHITECT  
 July 19, 2013  
 PLANS APPROVAL DATE  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 6-23-14



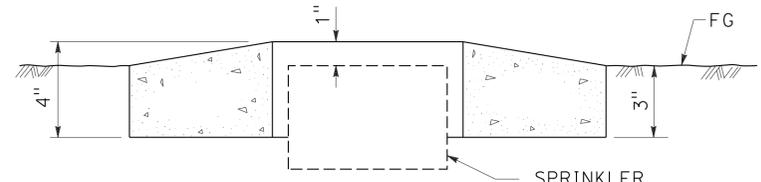
PLAN

PLAN



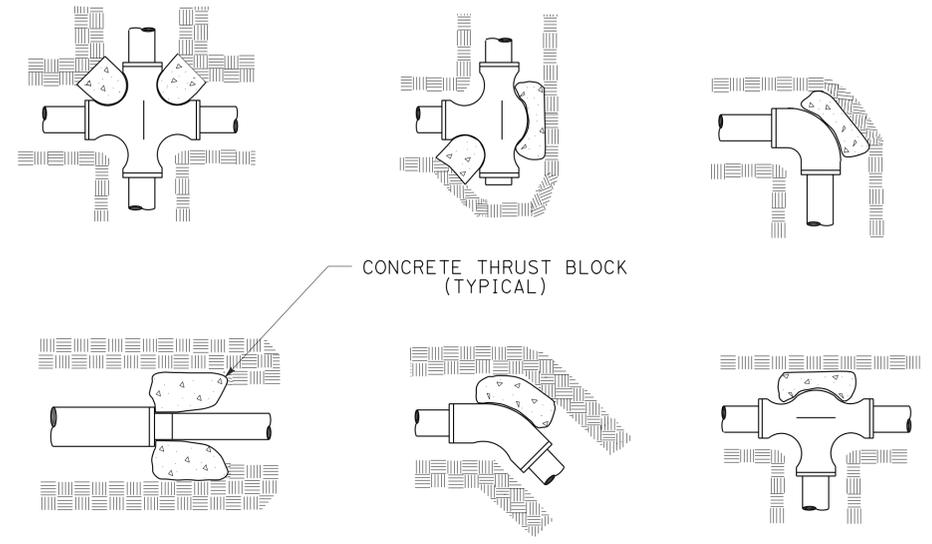
SECTION SPRINKLER OR QUICK COUPLING VALVE

SPRINKLER PROTECTOR TYPE I



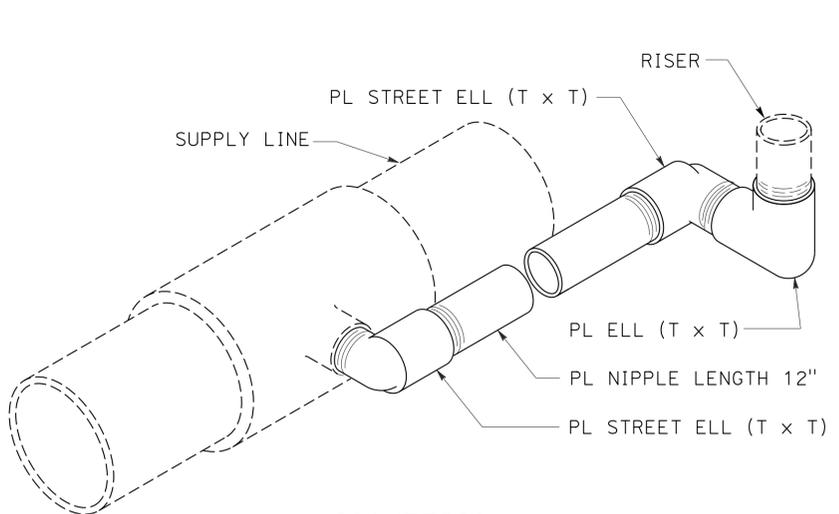
SECTION SPRINKLER

SPRINKLER PROTECTOR TYPE II



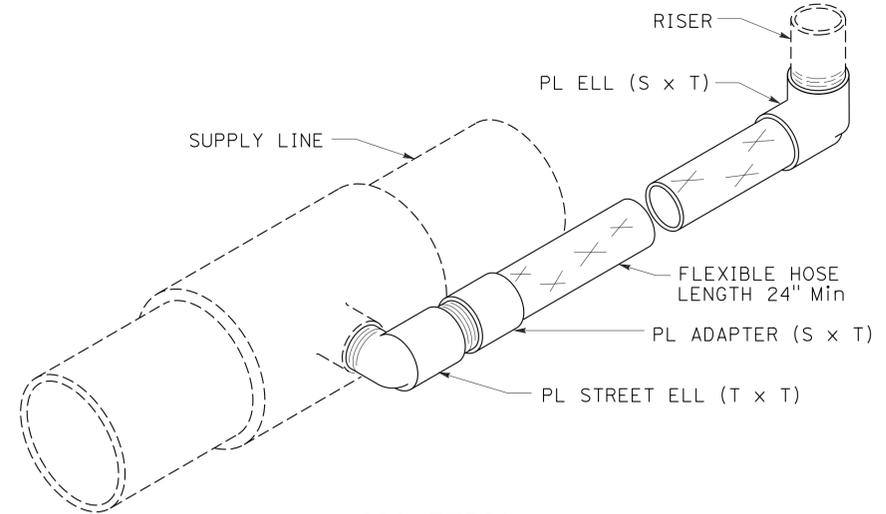
CONCRETE THRUST BLOCK (TYPICAL)

TYPICAL THRUST BLOCKS



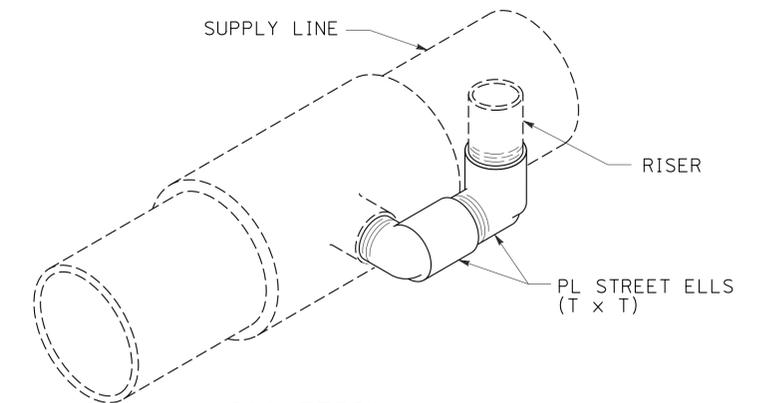
ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE I



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE II



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE III

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**LANDSCAPE DETAILS**

NO SCALE

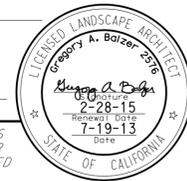
RSP H6 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H6 DATED MAY 20, 2011 - PAGE 223 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP H6**

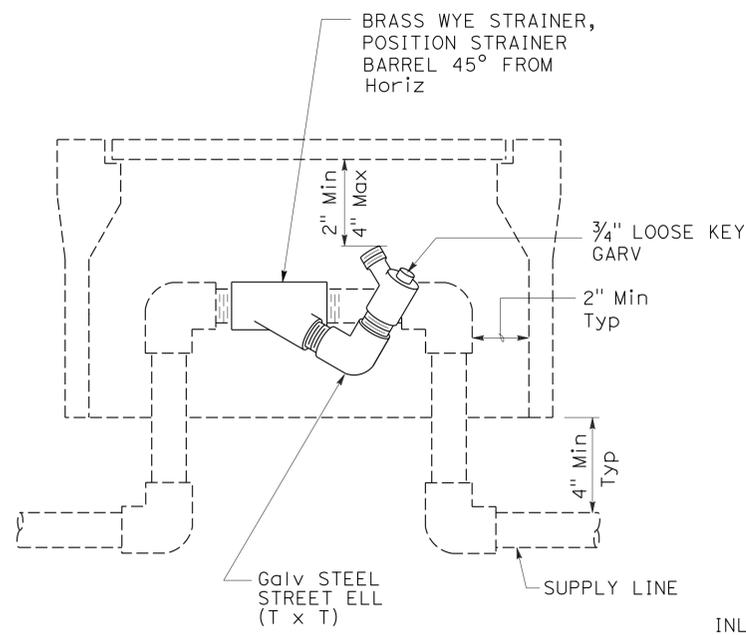
2010 REVISED STANDARD PLAN RSP H6

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	598	824

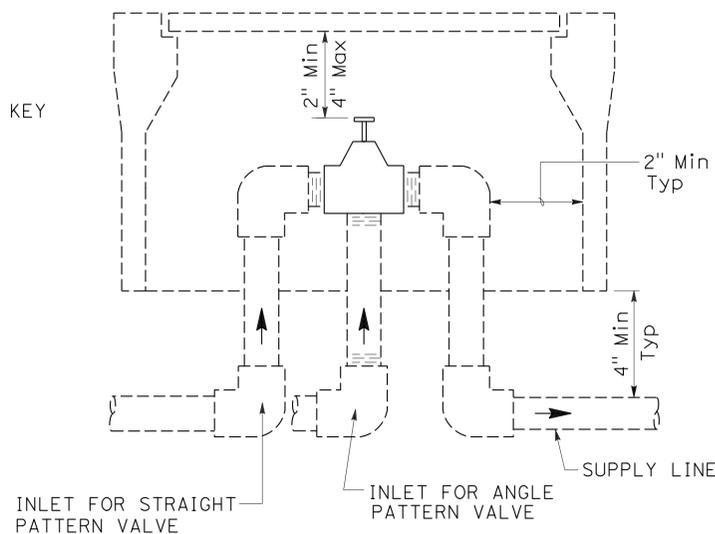
*Gregory A. Balzer*  
 LICENSED LANDSCAPE ARCHITECT  
 July 19, 2013  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



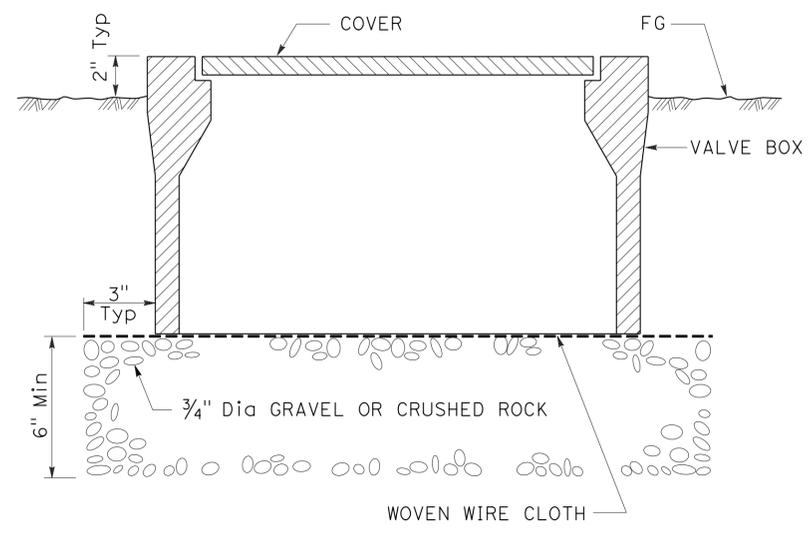
TO ACCOMPANY PLANS DATED 6-23-14



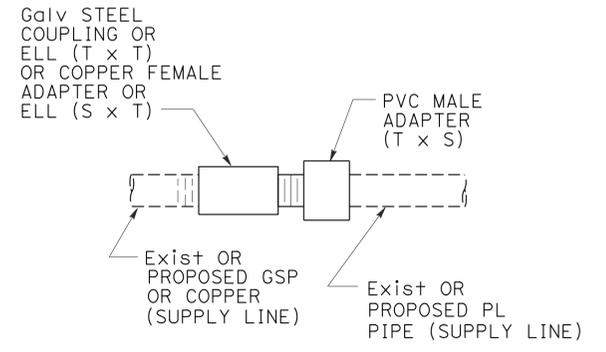
**ELEVATION**  
**WYE STRAINER ASSEMBLY**



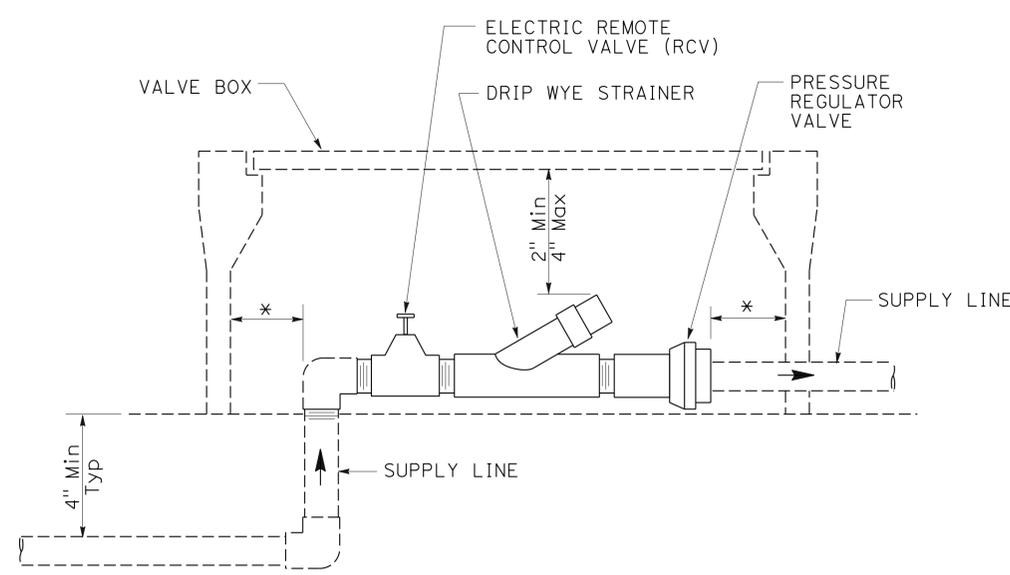
**ELEVATION**  
**VALVE**



**SECTION**  
**VALVE BOX**



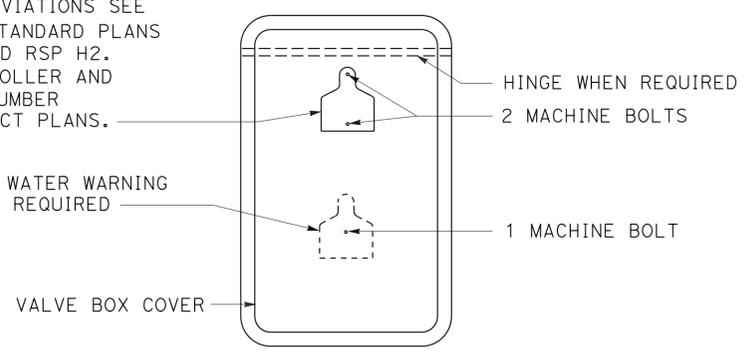
**GALVANIZED OR COPPER PIPE CONNECTION TO PLASTIC PIPE**



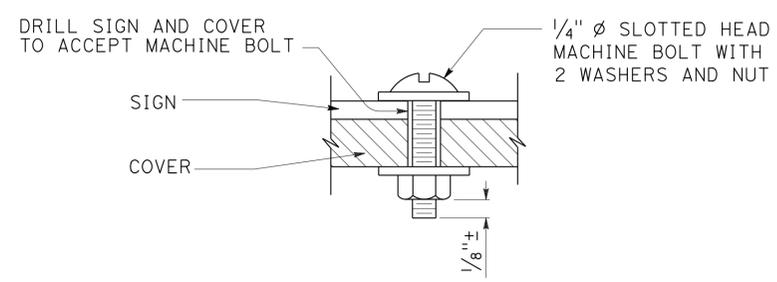
**ELEVATION**  
**DRIP VALVE ASSEMBLY**

IDENTIFICATION LABEL:  
FOR ABBREVIATIONS SEE  
REVISED STANDARD PLANS  
RSP H1 AND RSP H2.  
FOR CONTROLLER AND  
STATION NUMBER  
SEE PROJECT PLANS.

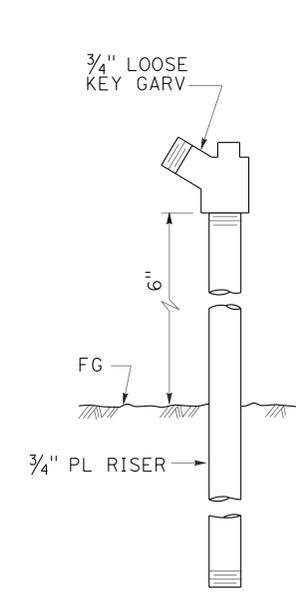
RECYCLED WATER WARNING  
SIGN WHEN REQUIRED



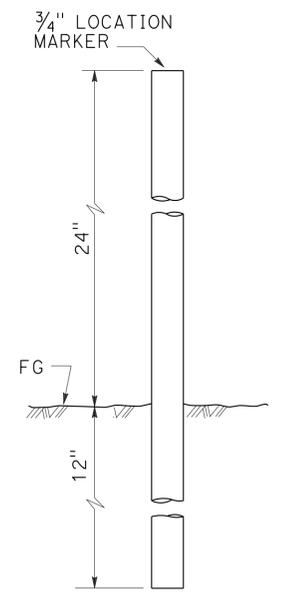
**PLAN**



**SECTION**  
**VALVE BOX IDENTIFICATION**



**ELEVATION**  
**GARDEN VALVE ASSEMBLY**



**ELEVATION**  
**LOCATION MARKER**

**GARDEN VALVE ASSEMBLY**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**LANDSCAPE DETAILS**

NO SCALE

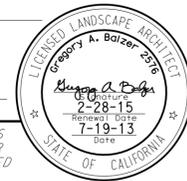
RSP H7 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H7  
DATED MAY 20, 2011 - PAGE 224 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP H7**

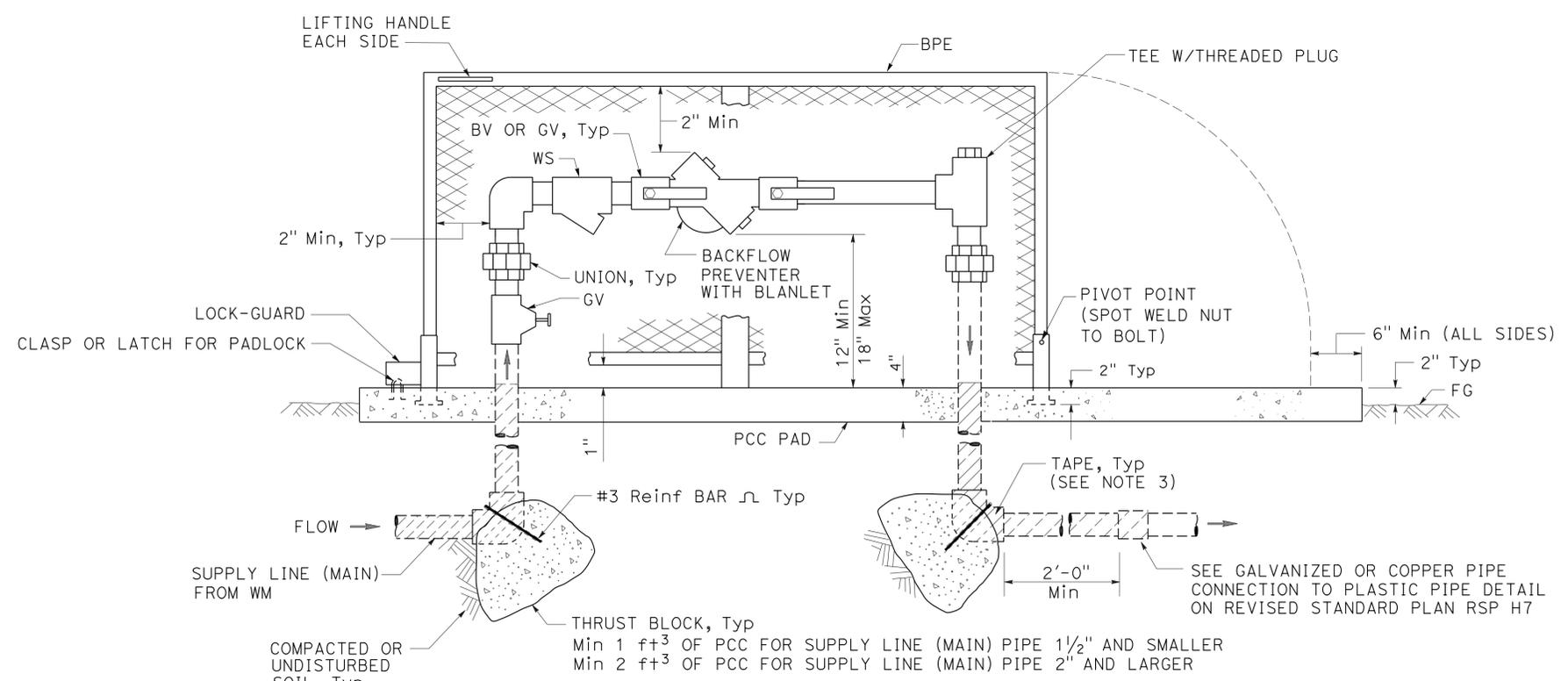
2010 REVISED STANDARD PLAN RSP H7

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	599	824

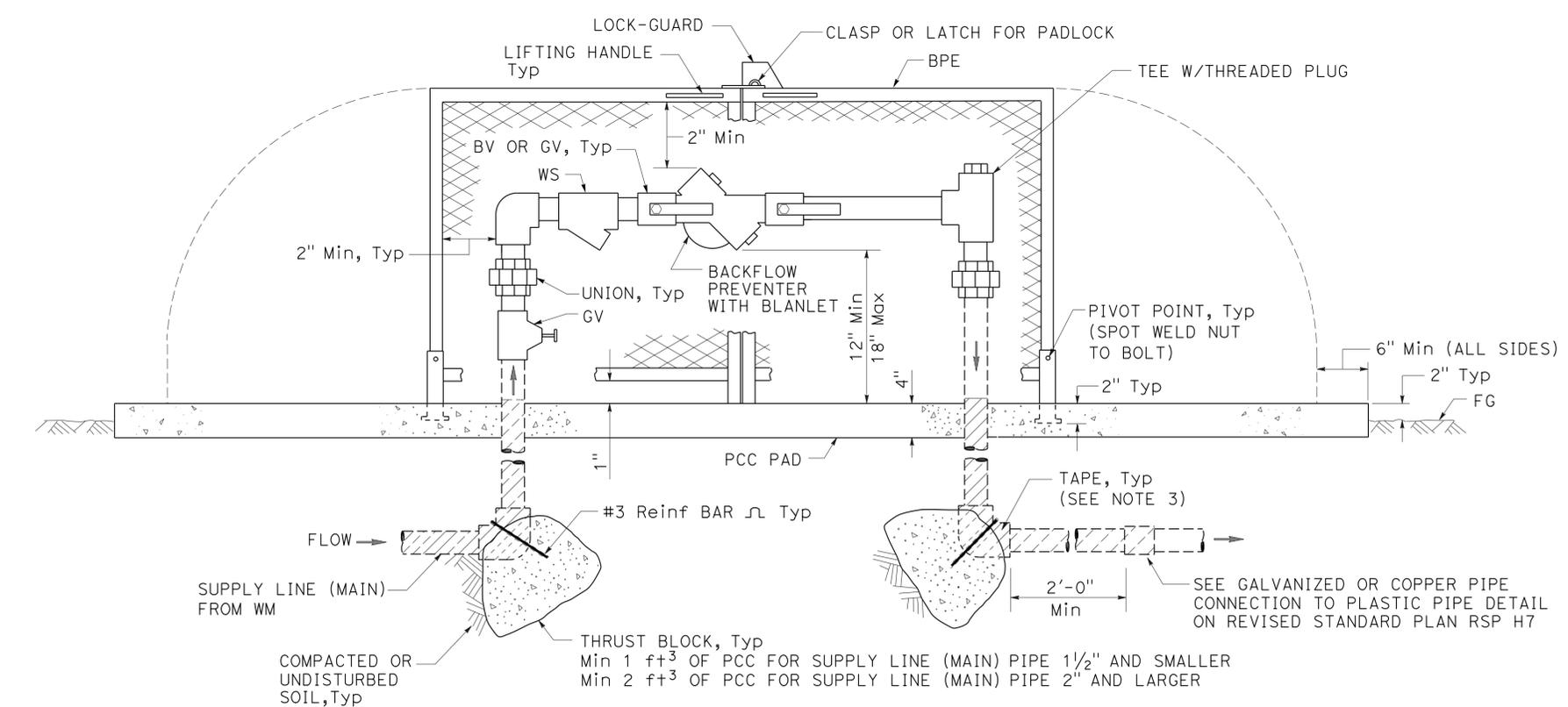
*Gregory A. Balzer*  
 LICENSED LANDSCAPE ARCHITECT  
 July 19, 2013  
 PLANS APPROVAL DATE  
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TO ACCOMPANY PLANS DATED 6-23-14



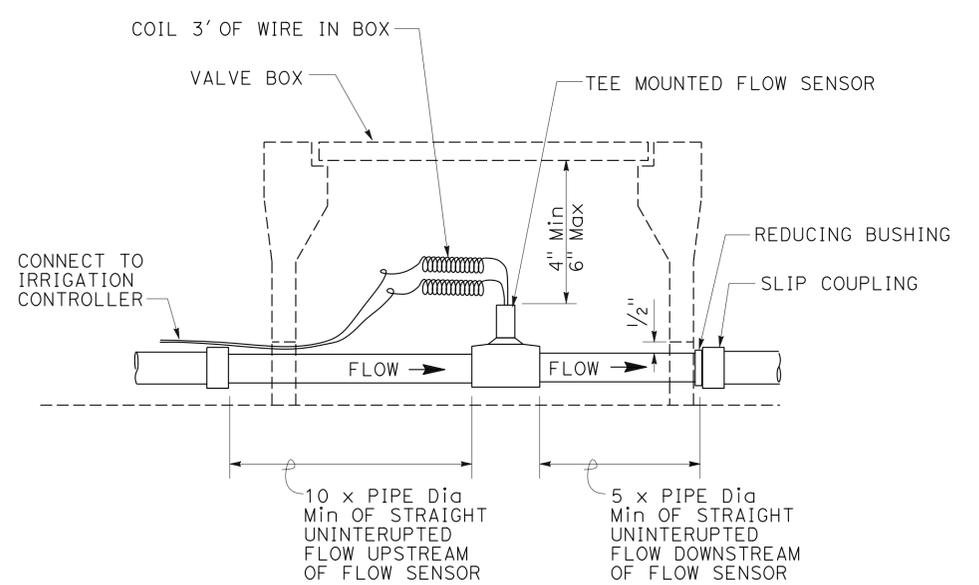
**ELEVATION**  
**BACKFLOW PREVENTER ASSEMBLY**  
 IN ONE PIECE ENCLOSURE



**ELEVATION**  
**BACKFLOW PREVENTER ASSEMBLY**  
 IN TWO PIECE ENCLOSURE

**NOTES:**

1. Wye strainer and fittings must be the same size as the backflow preventer shown on the plans.
2. Backflow preventer assembly manifold pipe must be the same pipe as the supply line (main) pipe to be installed from the water meter to the backflow preventer assembly.
3. All metal in contact with soil and Portland Cement Concrete must be wrapped with 2" wide plastic backed adhesive polyethylene tape 20 mil thick with 1/2" overlap.



**SECTION**  
**FLOW SENSOR**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**LANDSCAPE DETAILS**  
 NO SCALE

RSP H8 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H8 DATED MAY 20, 2011 - PAGE 225 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP H8**

2010 REVISED STANDARD PLAN RSP H8

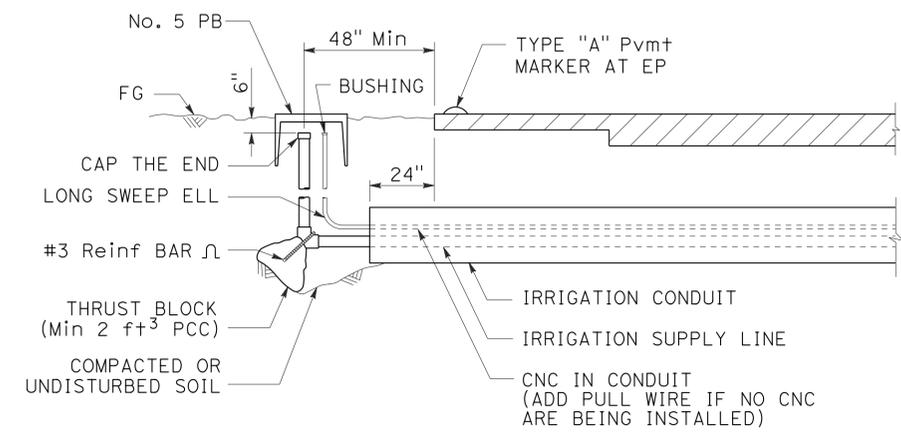
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	42.5/46.0	600	824

*Gregory A. Balzer*  
 LICENSED LANDSCAPE ARCHITECT

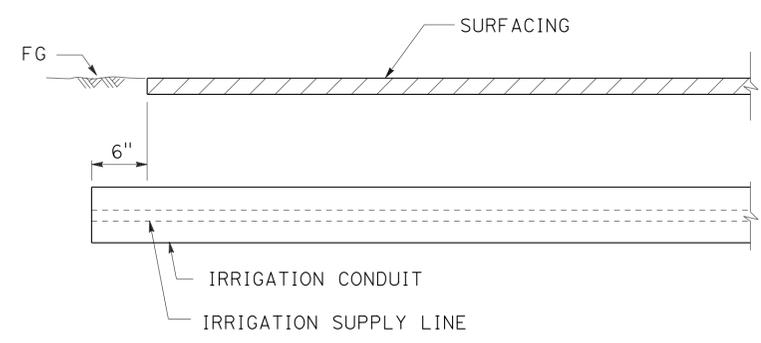
July 19, 2013  
 PLANS APPROVAL DATE

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.

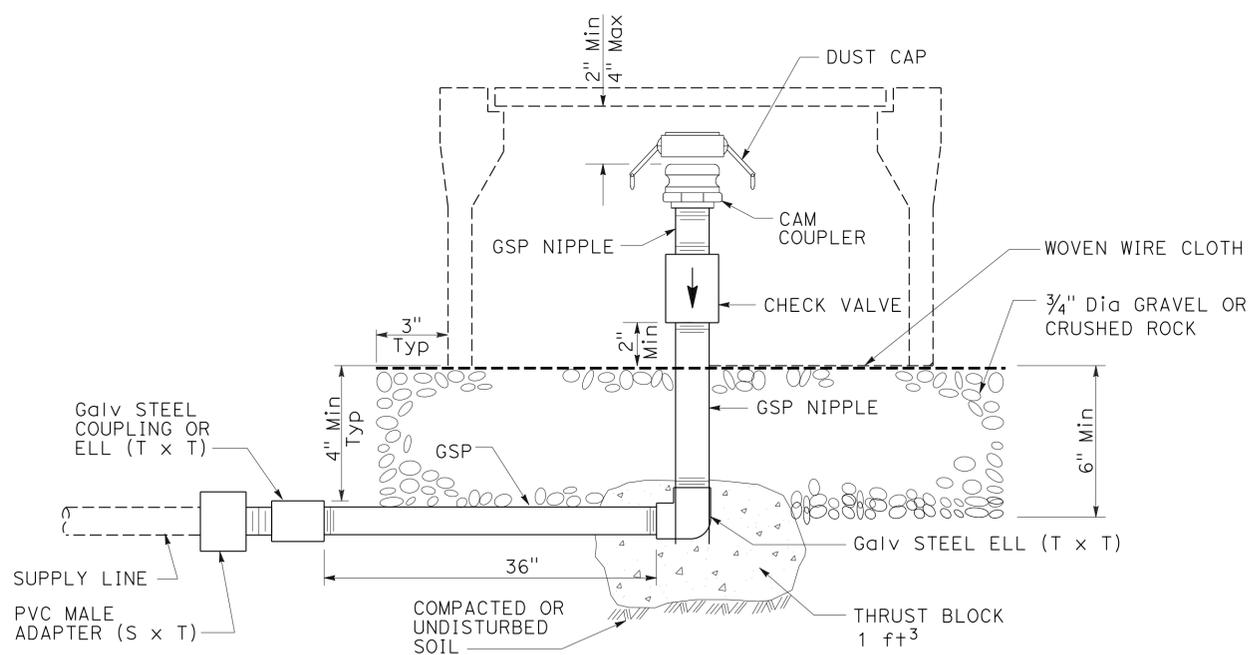
TO ACCOMPANY PLANS DATED 6-23-14



**SECTION**  
**IRRIGATION CONDUIT**  
UNDER TRAVELED WAY



**SECTION**  
**IRRIGATION CONDUIT**  
UNDER SIDEWALKS, DRIVEWAYS AND PATHS



**ELEVATION**  
**CAM COUPLER ASSEMBLY**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**LANDSCAPE DETAILS**

NO SCALE

RSP H9 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H9 DATED MAY 20, 2011 - PAGE 226 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP H9**

2010 REVISED STANDARD PLAN RSP H9