

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SbD	2,138	6.2/6.4, 2.3/R15.2	901	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 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.

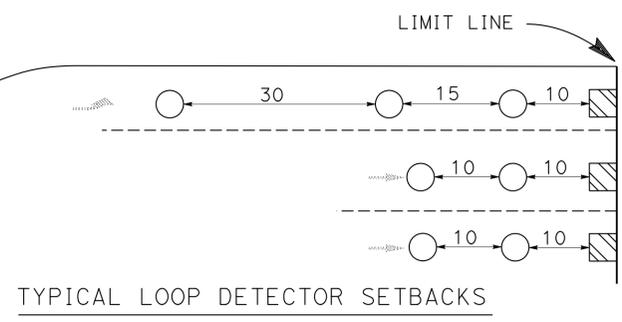
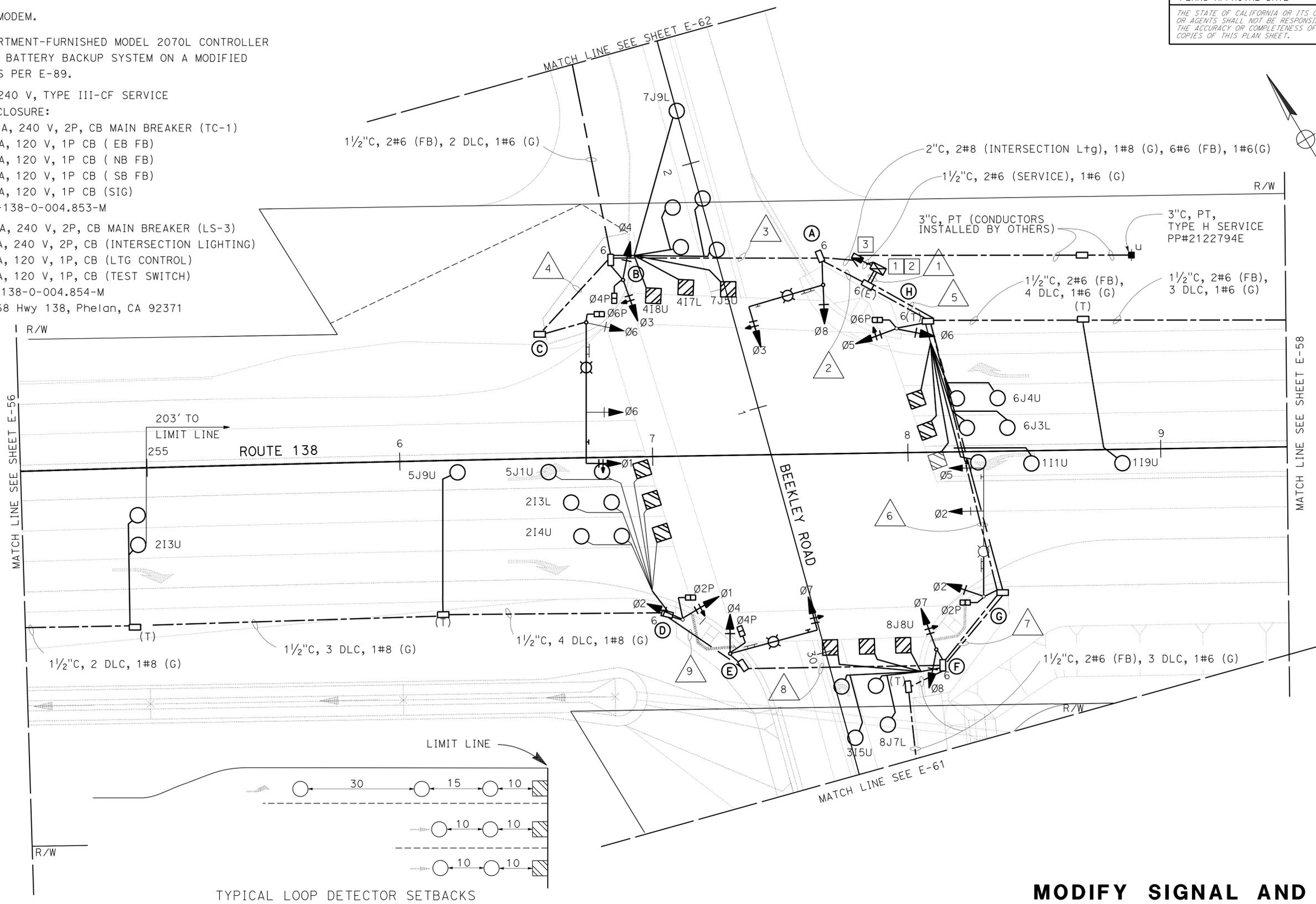
REGISTERED PROFESSIONAL ENGINEER
KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- FOR PHASE DIAGRAM SEE SHEET E-63

LEGEND: (THIS SHEET ONLY)

- INSTALL LTE MODEM.
- INSTALL DEPARTMENT-FURNISHED MODEL 2070L CONTROLLER ASSEMBLY AND BATTERY BACKUP SYSTEM ON A MODIFIED FOUNDATION AS PER E-89.
- INSTALL 120/240 V, TYPE III-CF SERVICE EQUIPMENT ENCLOSURE:
 METER A: 100 A, 240 V, 2P, CB MAIN BREAKER (TC-1)
 15 A, 120 V, 1P CB (EB FB)
 15 A, 120 V, 1P CB (NB FB)
 15 A, 120 V, 1P CB (SB FB)
 50 A, 120 V, 1P CB (SIG)
 ctid: 08-54-138-0-004.853-M
 METER B: 100 A, 240 V, 2P, CB MAIN BREAKER (LS-3)
 30 A, 240 V, 2P, CB (INTERSECTION LIGHTING)
 15 A, 120 V, 1P, CB (LTG CONTROL)
 15 A, 120 V, 1P, CB (TEST SWITCH)
 ctid: 08-54-138-0-004.854-M
 ADDRESS: 3368 Hwy 138, Phelan, CA 92371



**MODIFY SIGNAL AND LIGHTING
(LOCATION 2)**

E-57

SCALE: 1" = 20'

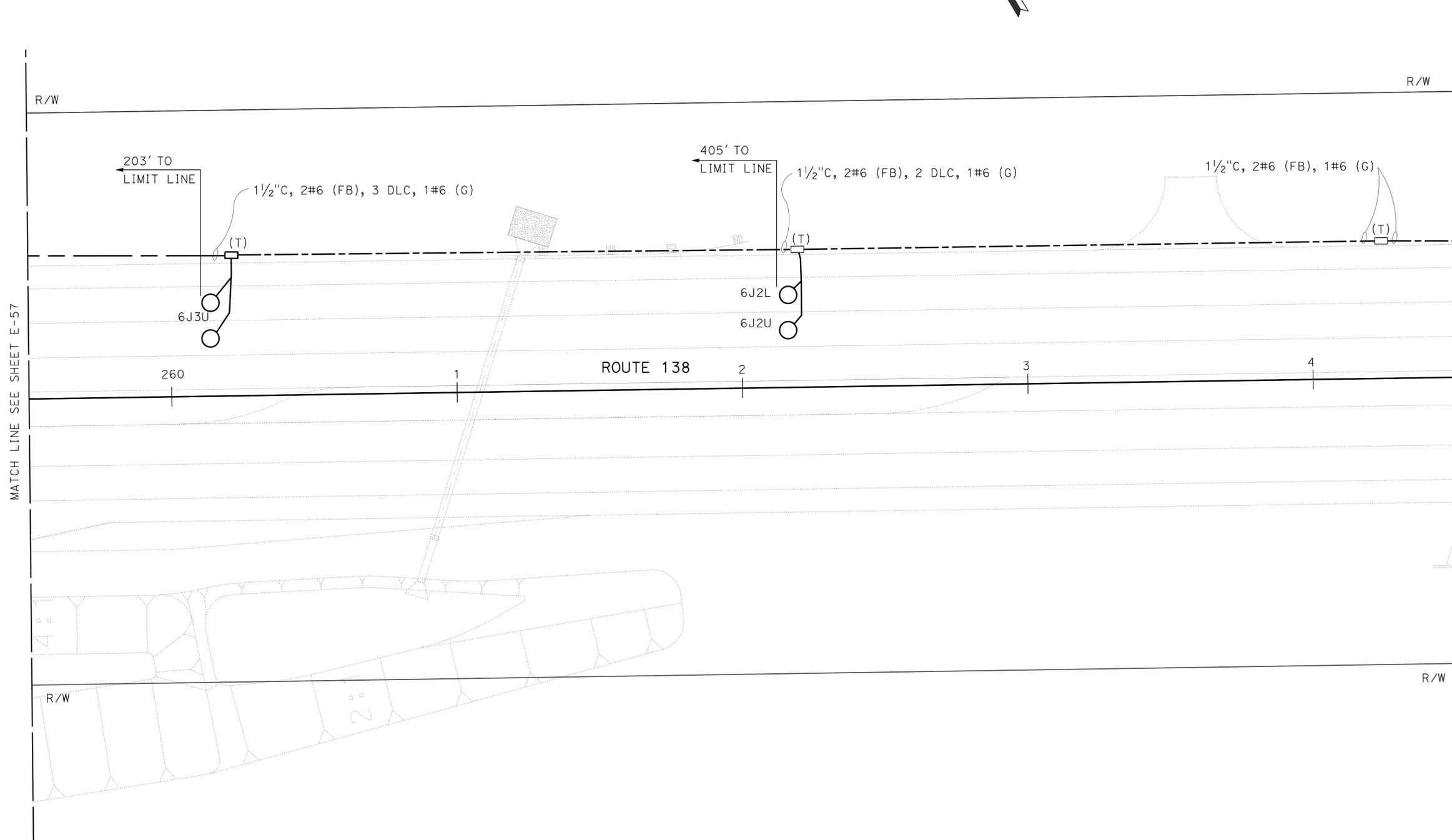
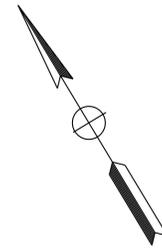
APPROVED FOR ELECTRICAL WORK ONLY

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 REVISOR: FERDINAND DE LA CRUZ

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	902	1168
Katherine Dinh		9-05-13			
REGISTERED ELECTRICAL ENGINEER		DATE			
3-3-14		PLANS APPROVAL DATE			
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

NOTE:

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



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

**MODIFY SIGNAL AND LIGHTING
(LOCATION 2)
E-58**

APPROVED FOR ELECTRICAL WORK ONLY

SCALE: 1" = 20'

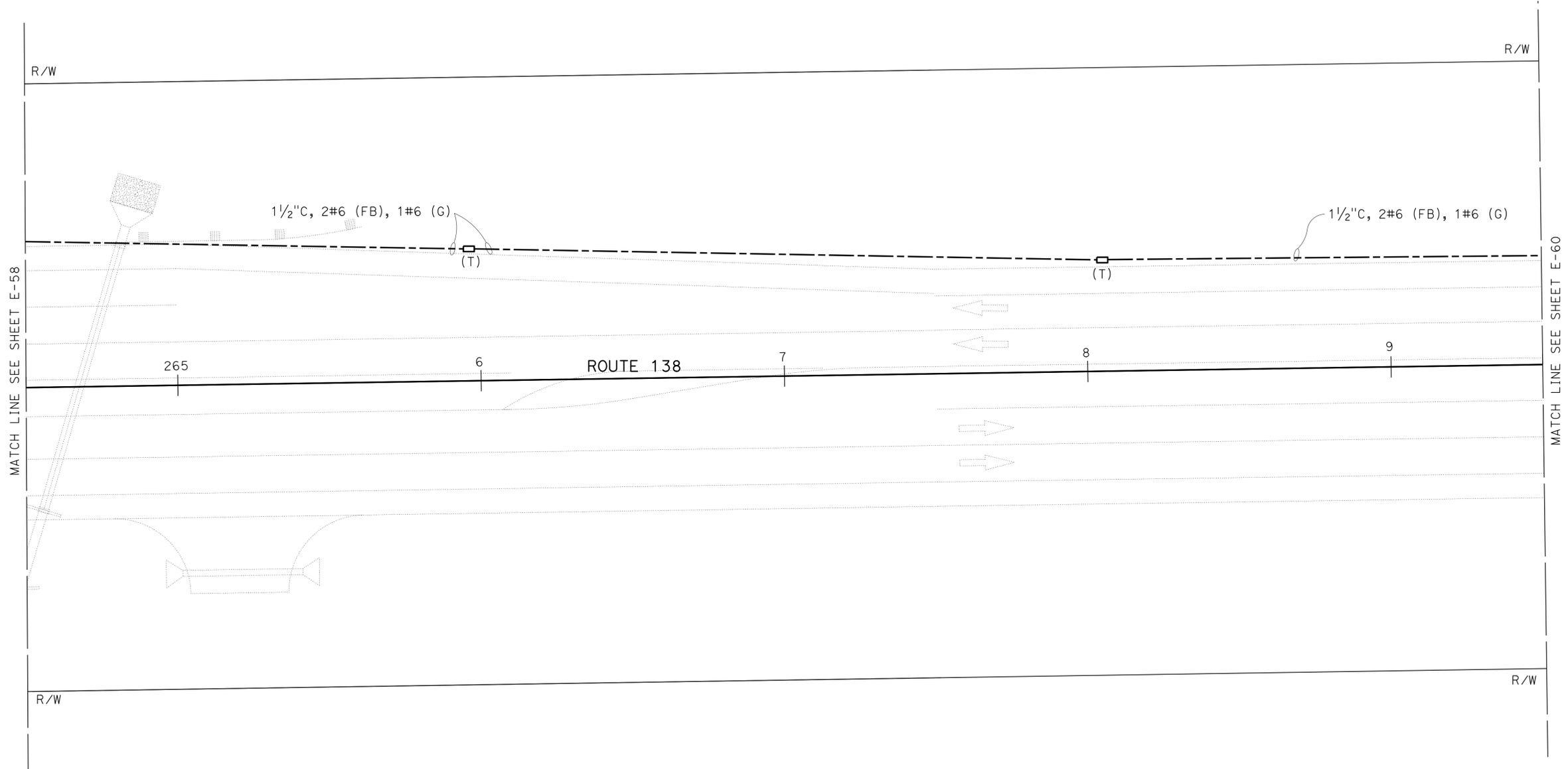
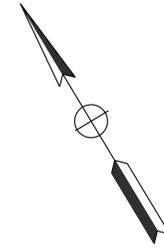
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	903	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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NOTE:
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 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



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

**MODIFY SIGNAL AND LIGHTING
 (LOCATION 2)**
 SCALE: 1" = 20'

APPROVED FOR ELECTRICAL WORK ONLY

E-59

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	904	1168

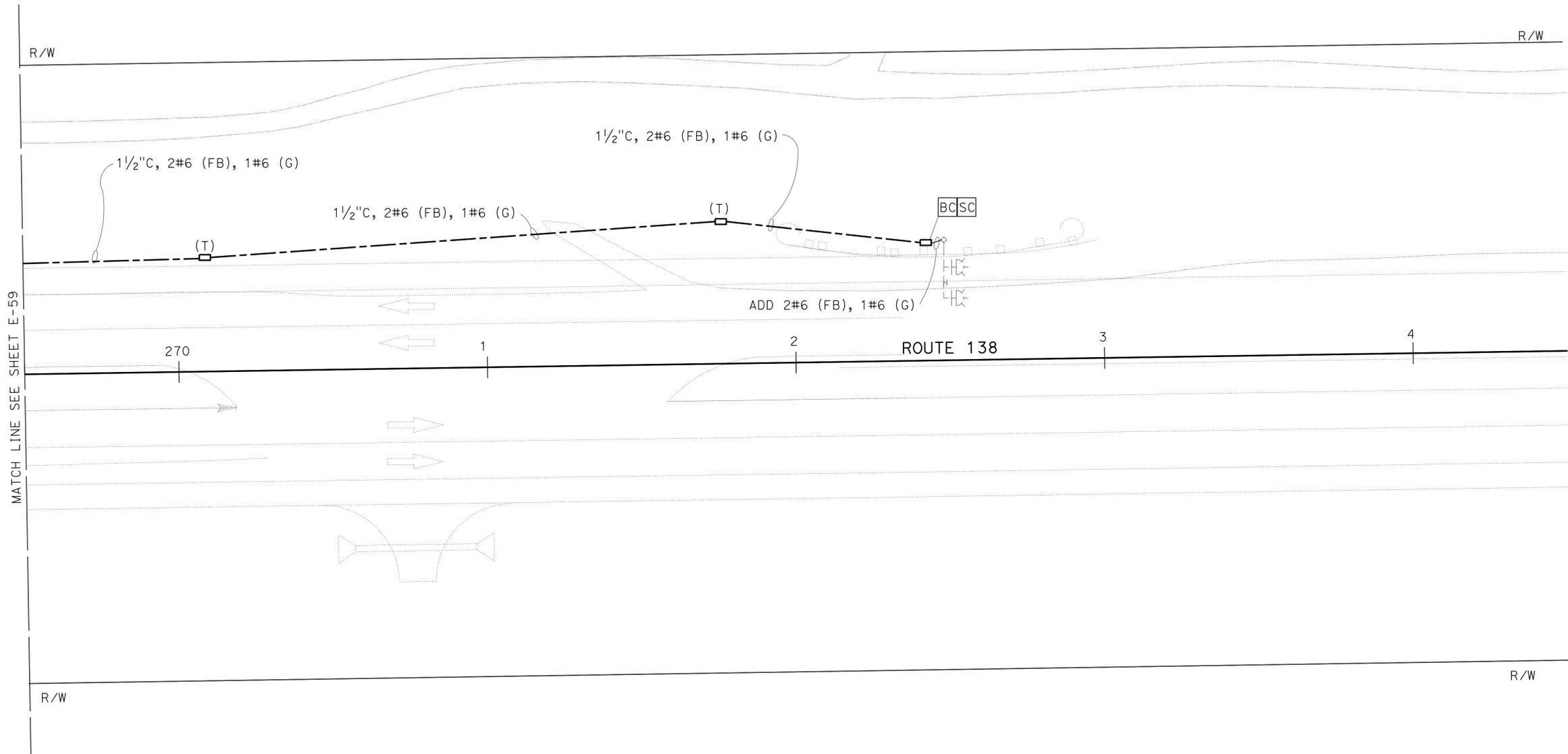
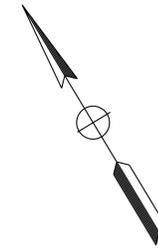
Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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NOTE:

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



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
Caltrans ELECTRICAL DESIGN B	FERNINAND DE LA CRUZ	FERNINAND DE LA CRUZ	DATE
		CHECKED BY	REVISION

**MODIFY SIGNAL AND LIGHTING
(LOCATION 2)**
SCALE: 1" = 20' **E-60**

APPROVED FOR ELECTRICAL WORK ONLY

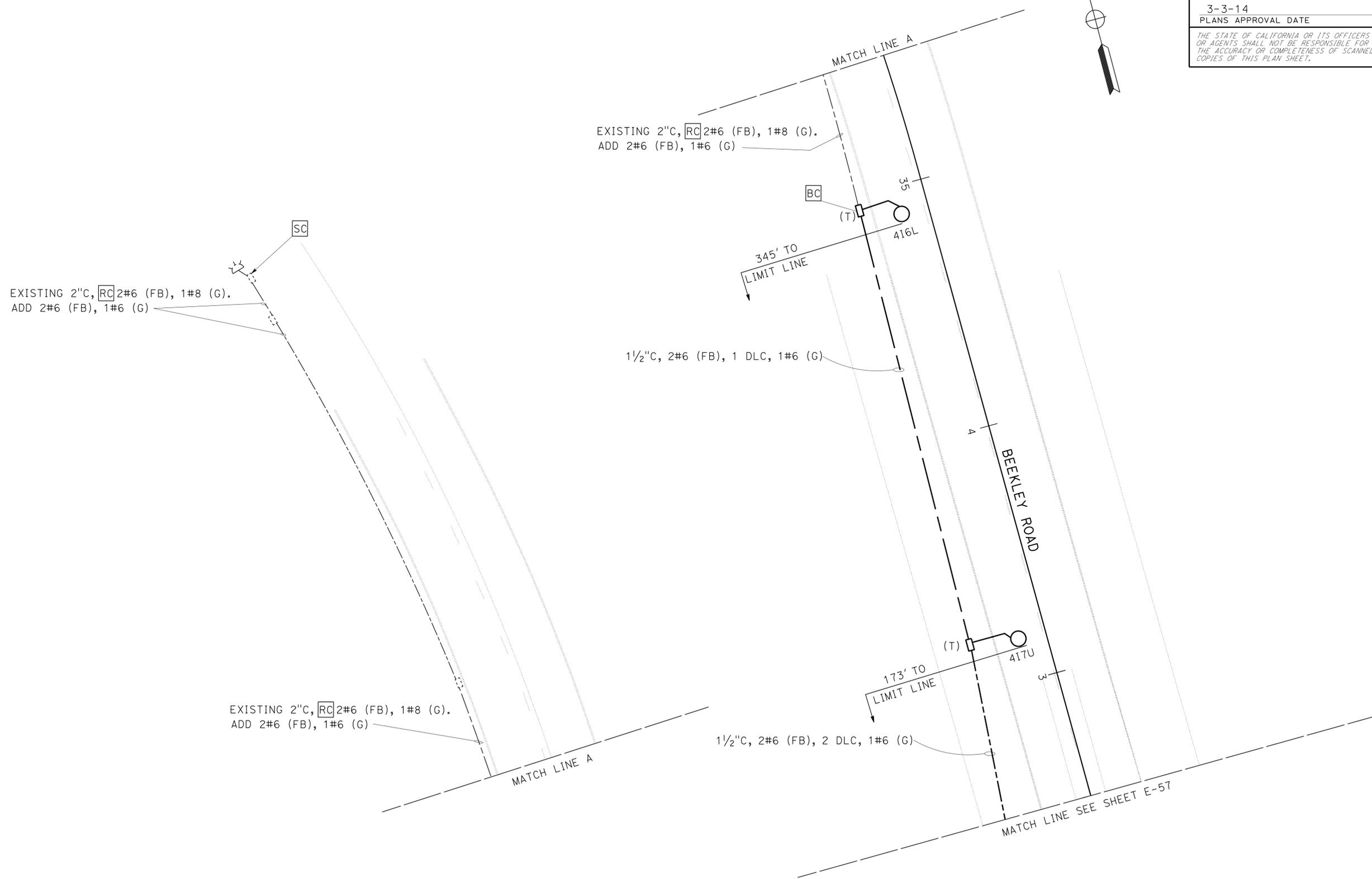
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	906	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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 COPIES OF THIS PLAN SHEET.

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



**MODIFY SIGNAL AND LIGHTING
 (LOCATION 2)
 SCALE: 1" = 20'**

E-62

APPROVED FOR ELECTRICAL WORK ONLY

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	907	1168

Katherine Dinh 9-05-13
REGISTERED ELECTRICAL ENGINEER DATE

3-3-14
PLANS APPROVAL DATE

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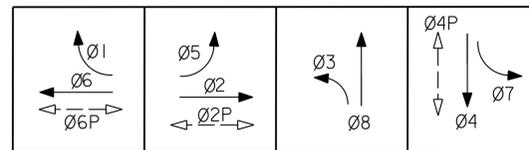
POLE AND EQUIPMENT SCHEDULE

No.	STANDARD			VEH SIG M+g		COUNTDOWN PED SIGNAL	APS		LED LUMINAIRE	SPECIAL REQUIREMENTS
	Type	SMA	LMA	MAST ARM	POLE		∅	ARROW		
(A)	19-A-3-100	30'	15'	I-MAS	SV-I-T	—	6	←	235 W	D3 "ROUTE 138" , R73-3(CA) [1] [2]
(B)	I-A	—	—	—	TV-2-T	SP-I-T	6	→	—	
(C)	29A-5-100	55'	15'	2-MAS	SV-I-T	SP-I-T	4	←	235 W	D3 "BEEKLEY ROAD", R73-2(CA) [1] [2]
(D)	I-A	—	—	—	TV-2-T	SP-I-T	4	→	—	
(E)	24A-3-100	35'	15'	I-MAS	SV-I-T	SP-I-T	2	←	235 W	D3 "ROUTE 138" , R73-3(CA) [1] [2]
(F)	I-A	—	—	—	TV-2-T	—	2	→	—	
(G)	29A-5-100	50'	15'	2-MAS	SV-I-T	SP-I-T		←	235 W	D3 "BEEKLEY ROAD", R73-2(CA), R9-3A [1] [2]
(H)	I-A	—	—	—	TV-2-T	SP-I-T		→	—	

LEGEND: (THIS SHEET ONLY)

- [1] FOR SIGN DETAILS, SEE PLAN SHEETS S, SD AND SQ.
- [2] FOR STREET NAME SIGN DETAILS, SEE PLAN SHEET SD-1.

PHASE DIAGRAM-STEADY DEMAND



CONDUIT AND CONDUCTOR SCHEDULE

CABLE TYPE	S + d	PHASE	CONDUIT RUN NUMBER																
			1	2	3	4	5	6	7	8	9								
VEH-PED 12CSC	(A)	Ø8,Ø3	1	1	1	1													
	(B)	Ø4,Ø3,Ø4P	1	1	1	1													
	(C)	Ø1,Ø6,Ø6P	1	1	1	1	1	1											
	(D)	Ø1,Ø2,Ø2P	1	1					1	1	1	1	1	1	1	1	1	1	1
	(E)	Ø4,Ø7,Ø4P	1	1					1	1	1	1	1	1	1	1	1	1	1
	(F)	Ø7,Ø8	1	1					1	1	1	1	1	1	1	1	1	1	1
	(G)	Ø2,Ø5,Ø2P	1						1	1	1	1	1	1	1	1	1	1	1
	(H)	Ø5,Ø6,Ø6P	1						1	1	1	1	1	1	1	1	1	1	1
APS 3CSC		TOTAL	8	6	3	3	2	1	5	3	4	3	3	3	2	2	1	1	
AWG	CIRCUIT																		
#8	LUMINAIRE			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
#6	GROUND		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
#6	FLASHING BEACON			4	2			4	2	2									
DLC		Ø1	2						2										
		Ø2	5						5	5	5	5	5	5	5	5	5	5	
		Ø3	2						2	2	2								
		Ø4	4	4	4														
		Ø5	2						2	2	2	2	2	2	2	2	2	2	
		Ø6	5						5										
		Ø7	2	2	2														
		Ø8	4						4	4	4								
		TOTAL DLC	26	6	6			20	13	13	7	7							
CONDUIT SIZE			2-4"	4"	4"	2"	2-4"	2-4"	2-3"	3"	3"	3"							

MODIFY SIGNAL AND LIGHTING (LOCATION 2)

E-63

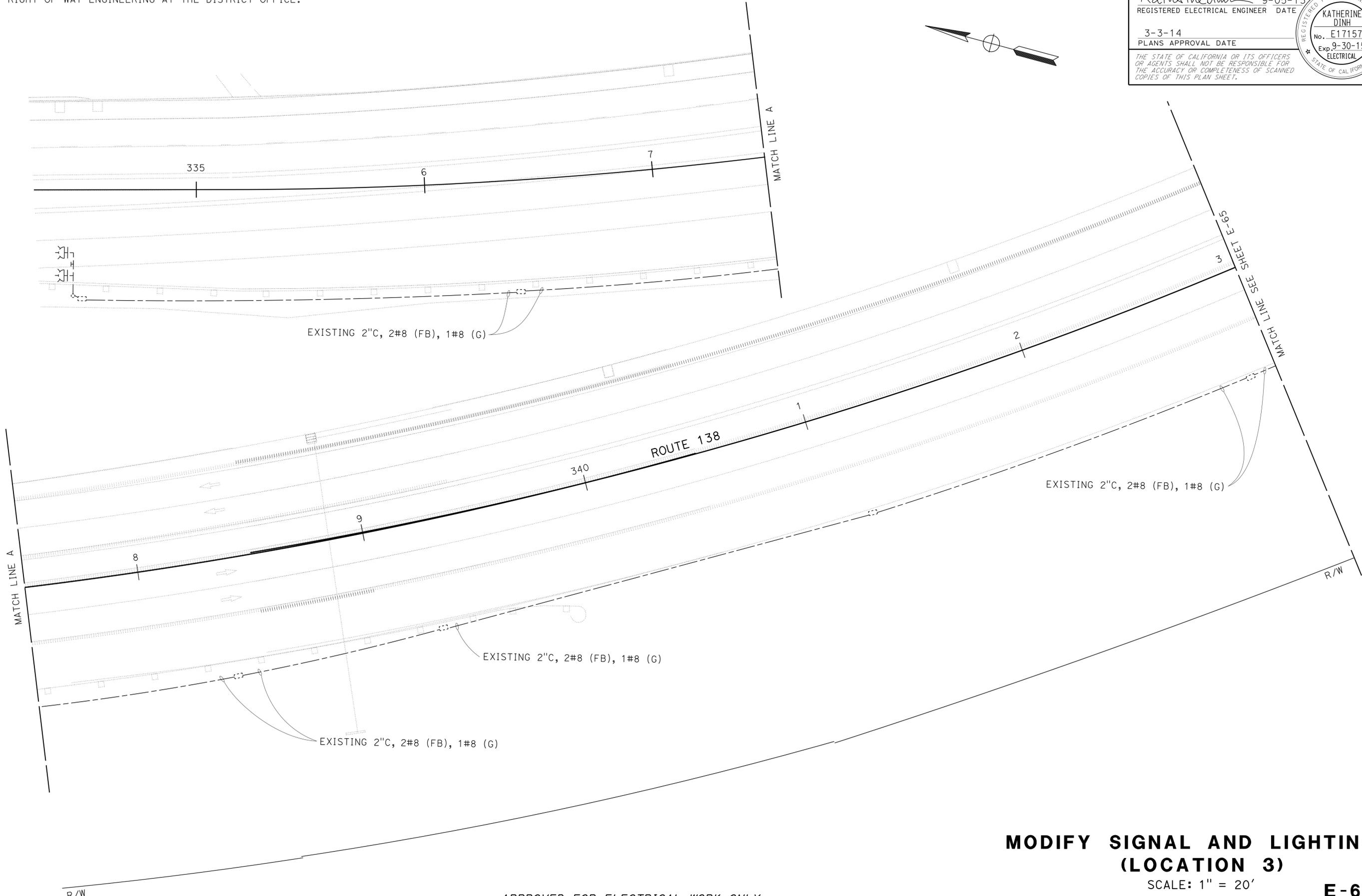
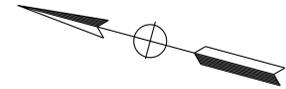
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	908	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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



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

**MODIFY SIGNAL AND LIGHTING
 (LOCATION 3)**

SCALE: 1" = 20'

E-64

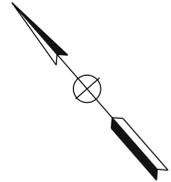
APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	909	1168

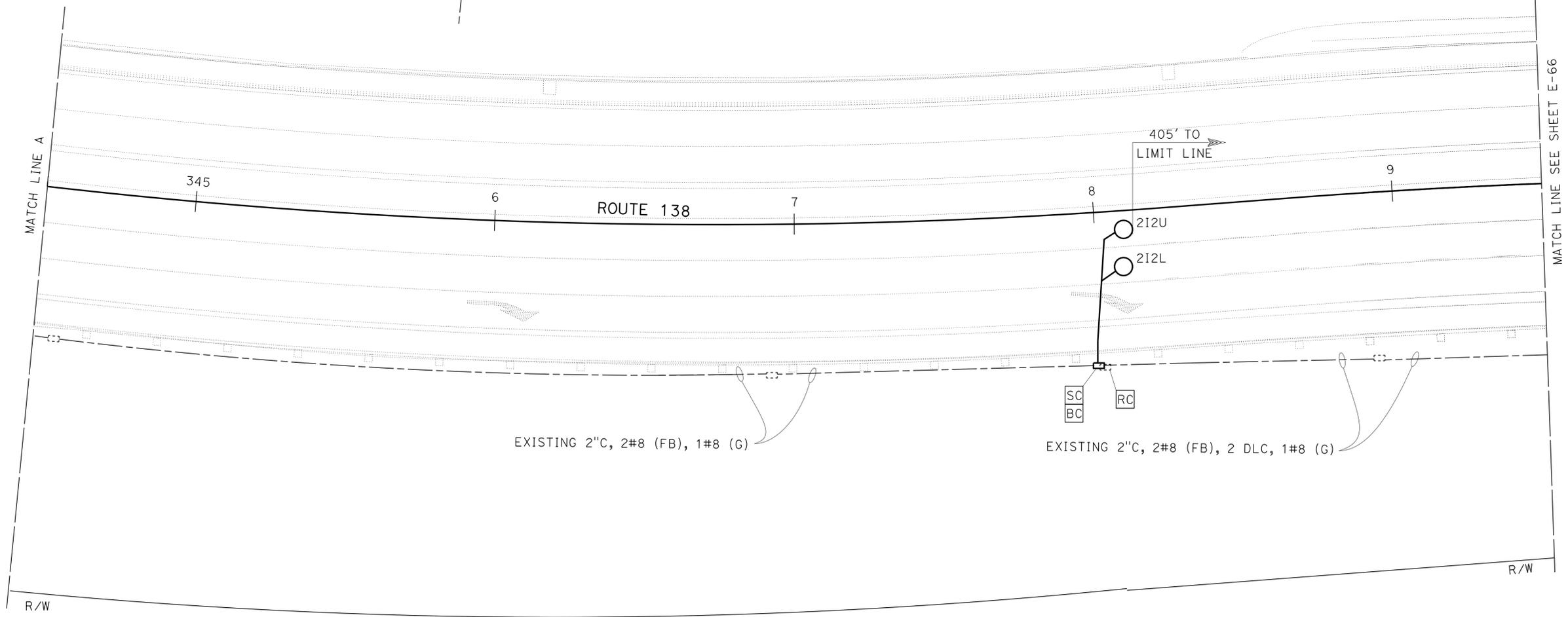
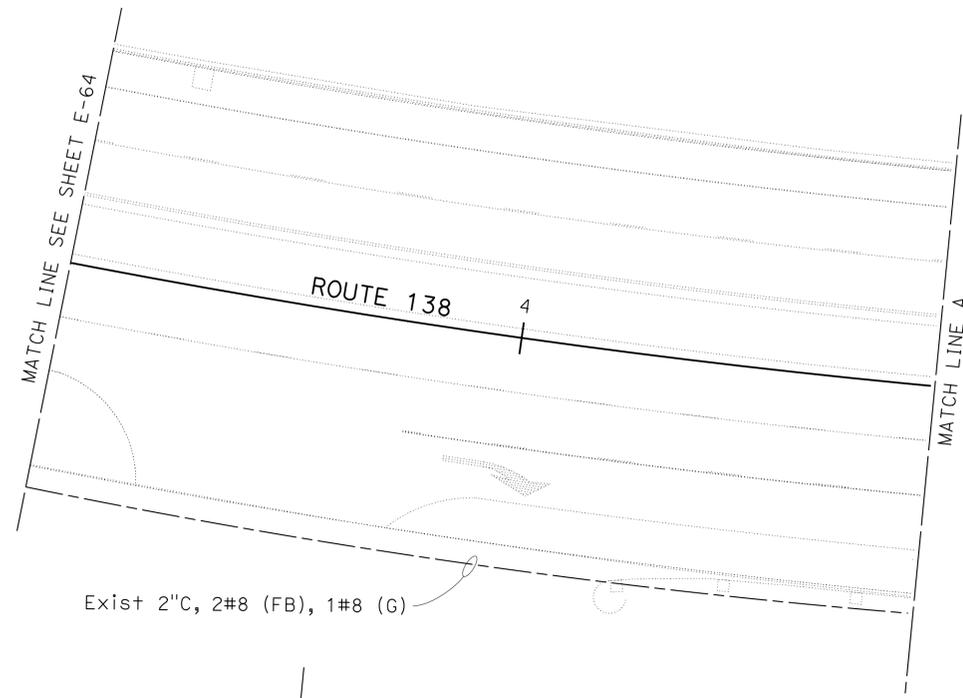
Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
Caltrans ELECTRICAL DESIGN B	FERNINAND DE LA CRUZ	CHECKED BY	LUIS PENALOZA
			FERNINAND DE LA CRUZ
			DATE REVISED

APPROVED FOR ELECTRICAL WORK ONLY



**MODIFY SIGNAL AND LIGHTING
(LOCATION 3)**

SCALE: 1" = 20'

E-65

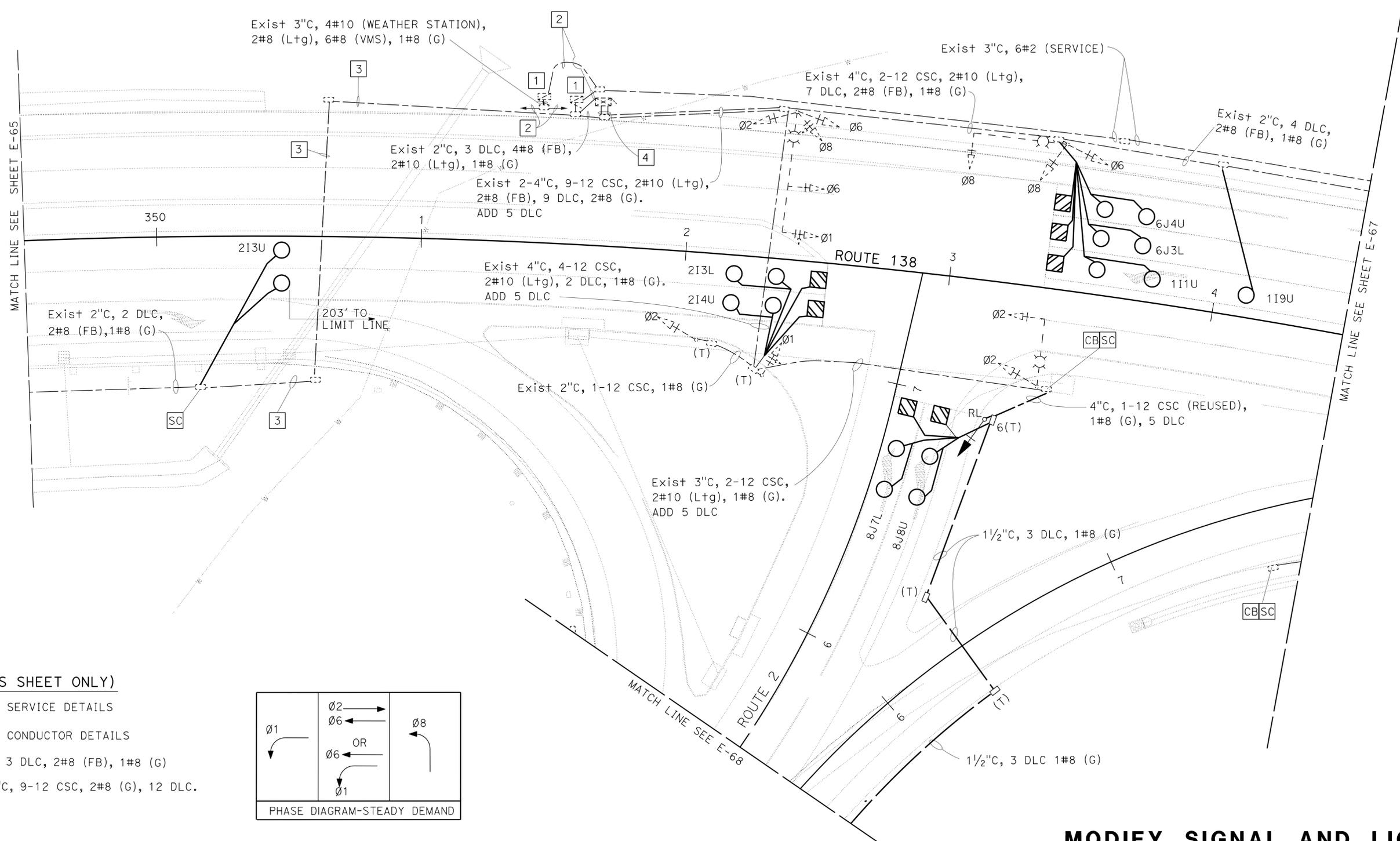
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	910	1168

Katherine Dinh 9-05-13
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 3-3-14
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REGISTERED PROFESSIONAL ENGINEER
KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

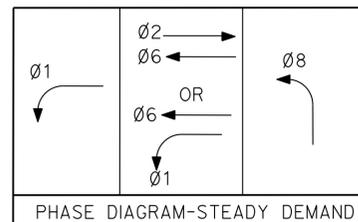
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- AB** ALL EXISTING LOOPS SHOWN.
- FOR STAGE CONSTRUCTION PLANS, SEE SHEET E-35 THRU E-42.



LEGEND: (THIS SHEET ONLY)

- SEE E-38 FOR SERVICE DETAILS
- SEE E-38 FOR CONDUCTOR DETAILS
- EXISTING 2"C, 3 DLC, 2#8 (FB), 1#8 (G)
- EXISTING 2-3"C, 9-12 CSC, 2#8 (G), 12 DLC. ADD 5 DLC



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
Caltrans ELECTRICAL DESIGN B	FERNINAND DE LA CRUZ	FERNINAND DE LA CRUZ	LUIS PENALOZA
	CHECKED BY	DATE	DATE

APPROVED FOR ELECTRICAL WORK ONLY

MODIFY SIGNAL AND LIGHTING (LOCATION 3)

SCALE: 1" = 20'

E-66



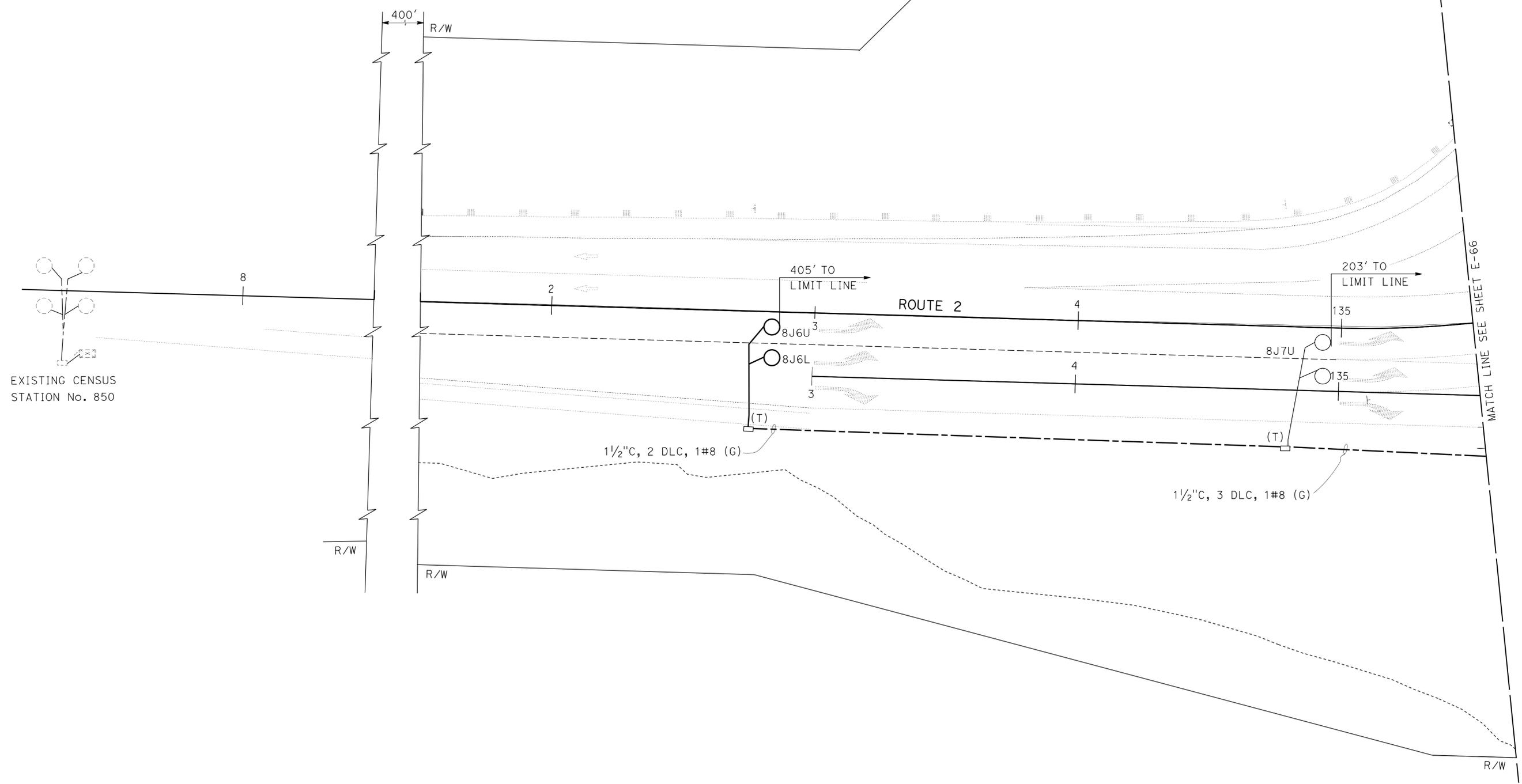
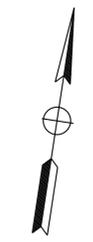
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
Caltrans ELECTRICAL DESIGN B	Ferdinand de la Cruz	Luis Penaloza Ferdinand de la Cruz	Luis Penaloza Ferdinand de la Cruz

**MODIFY SIGNAL AND LIGHTING
 (LOCATION 3)**
 SCALE: 1" = 20'

APPROVED FOR ELECTRICAL WORK ONLY



LAST REVISION | DATE PLOTTED => 07-MAR-2014
 09-05-13 | TIME PLOTTED => 14:34

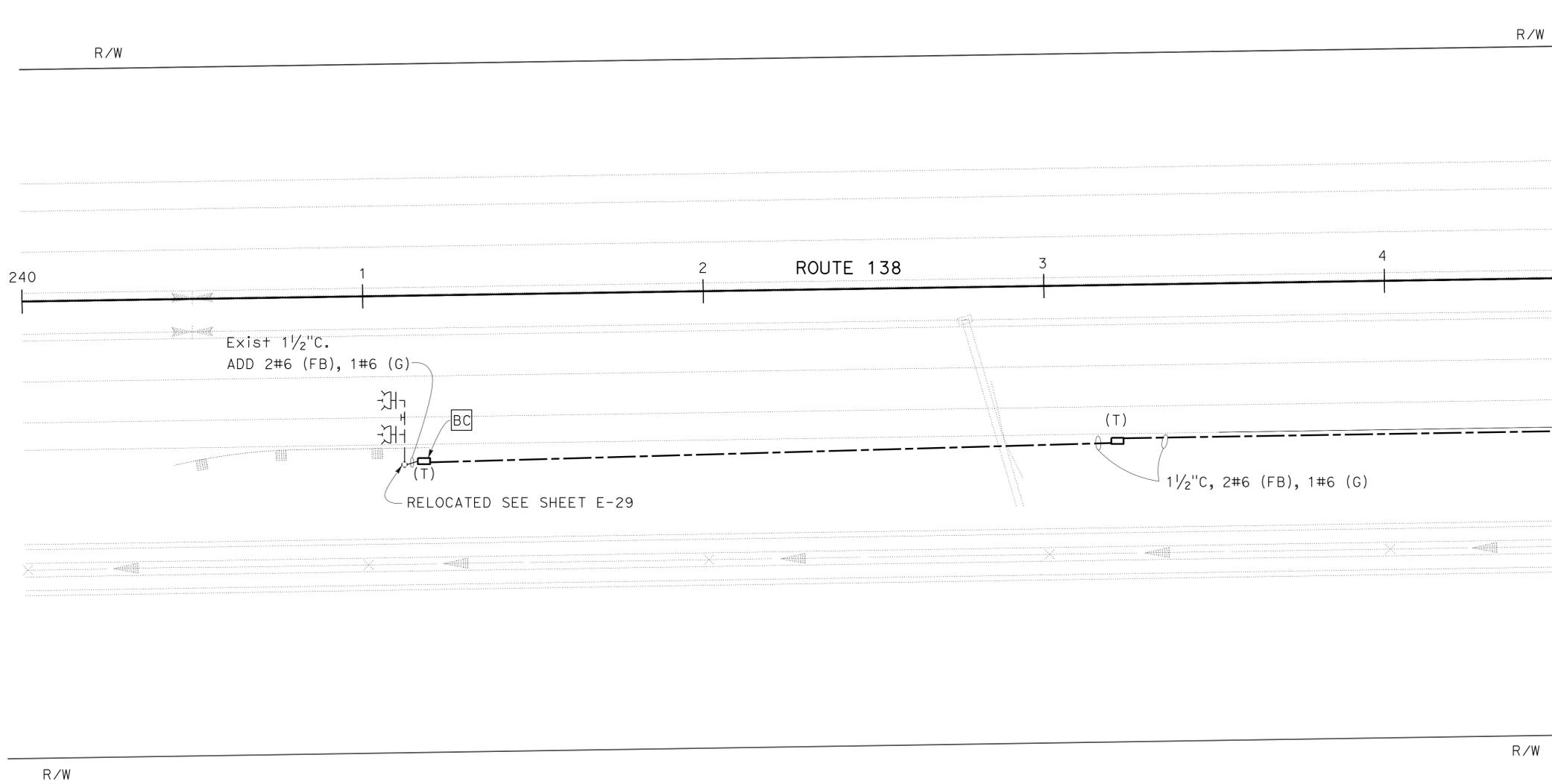
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	913	1168

Katherine Dinh 9-05-13
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 No. E17157
 Exp. 9-30-15
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
Caltrans ELECTRICAL DESIGN B	FERNINAND DE LA CRUZ	FERNINAND DE LA CRUZ	DATE
			REVISED BY
			DATE
			REVISOR
			DATE

MODIFY FLASHING BEACON

APPROVED FOR ELECTRICAL WORK ONLY

SCALE: 1" = 20' **E-69**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	914	1168

Katherine Dinh 9-05-13
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 KATHERINE DINH
 No. E17157
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 STATE OF CALIFORNIA

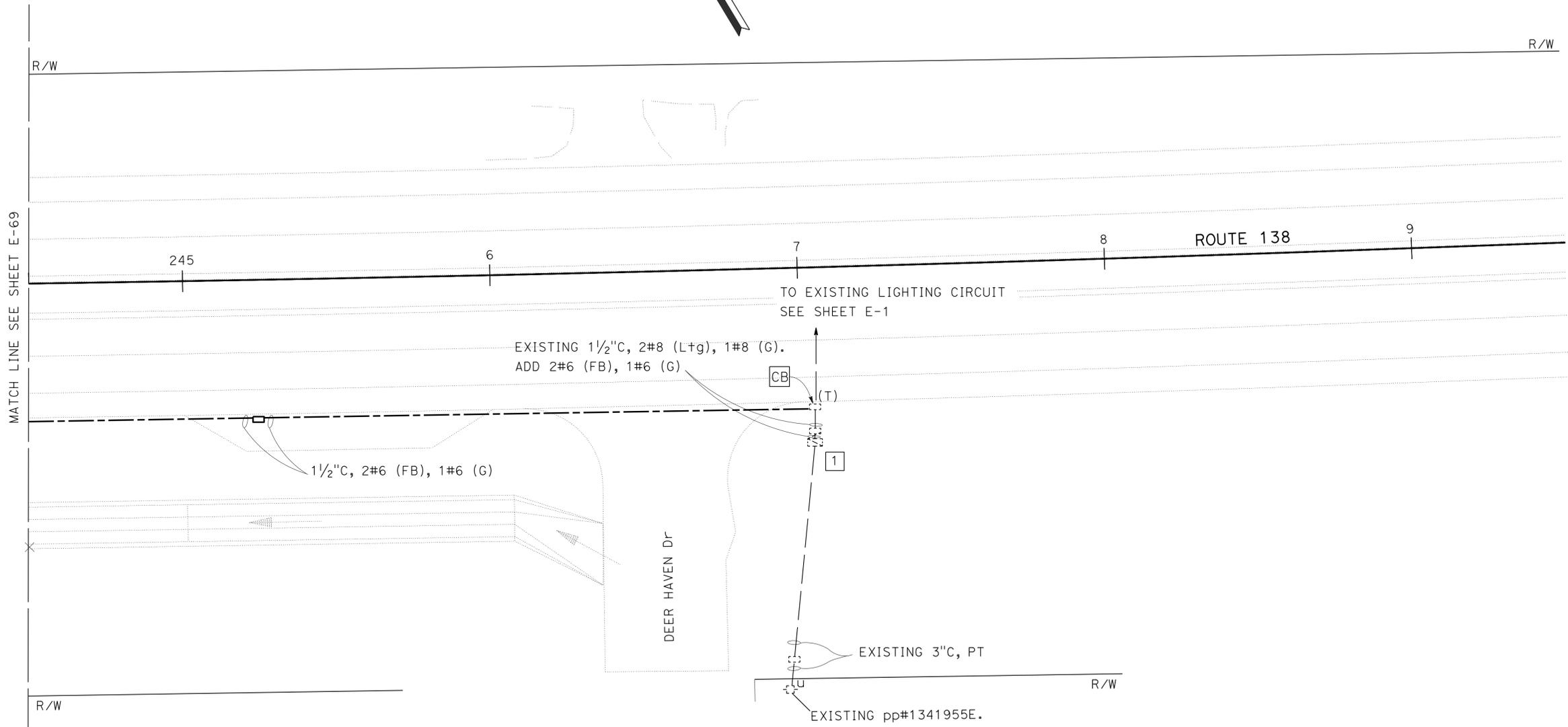
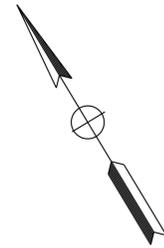
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:

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

LEGEND:

- 1 EXISTING 120/240 V, TYPE III-CF SERVICE EQUIPMENT ENCLOSURE. SEE SHEET E-1



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

MODIFY FLASHING BEACON
 SCALE: 1" = 20'
E-70

APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION DATE PLOTTED => 07-MAR-2014
 09-05-13 TIME PLOTTED => 14:34

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	916	1168

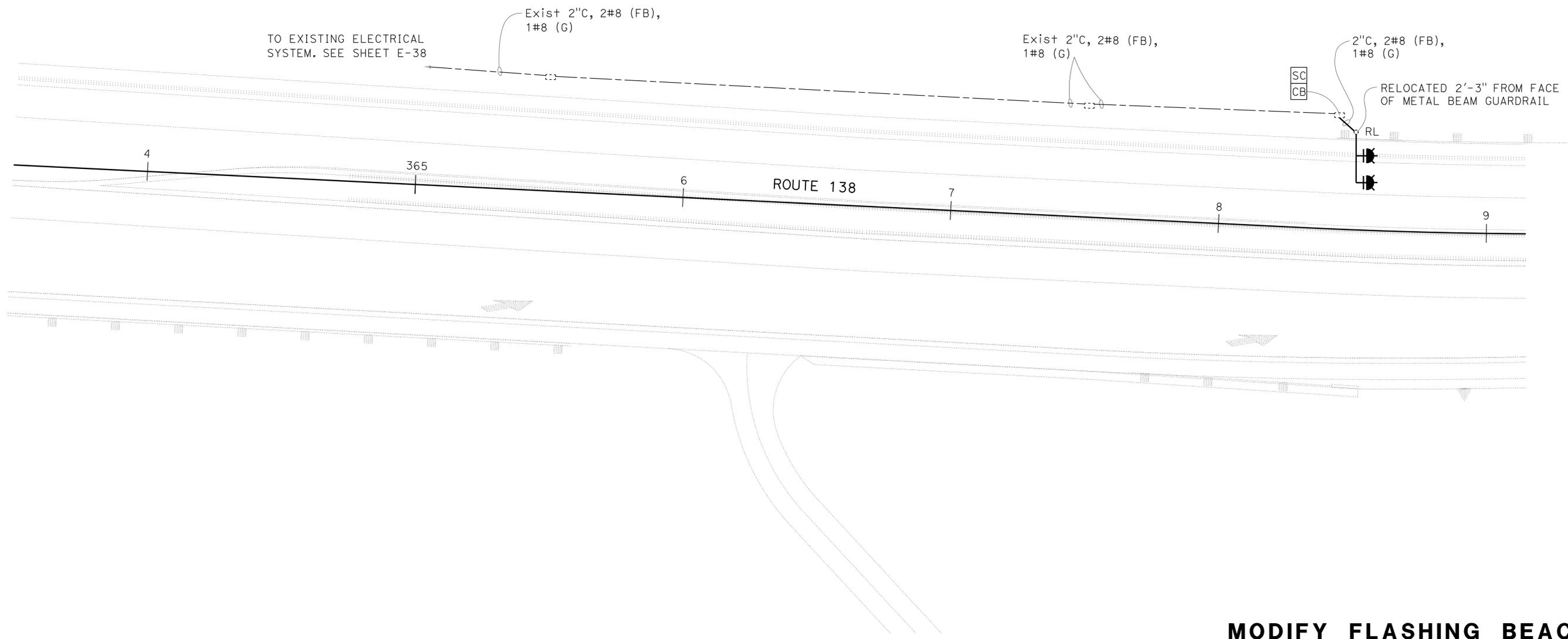
Katherine Dinh 9-05-13
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN B
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ
 CALCULATED/DESIGNED BY: FERDINAND DE LA CRUZ
 CHECKED BY: LUIS PENALOZA
 REVISOR: FERDINAND DE LA CRUZ
 DATE:



MODIFY FLASHING BEACON
 SCALE: 1" = 50'
E-72

APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION | DATE PLOTTED => 07-MAR-2014 | 09-05-13 | TIME PLOTTED => 14:35

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	917	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

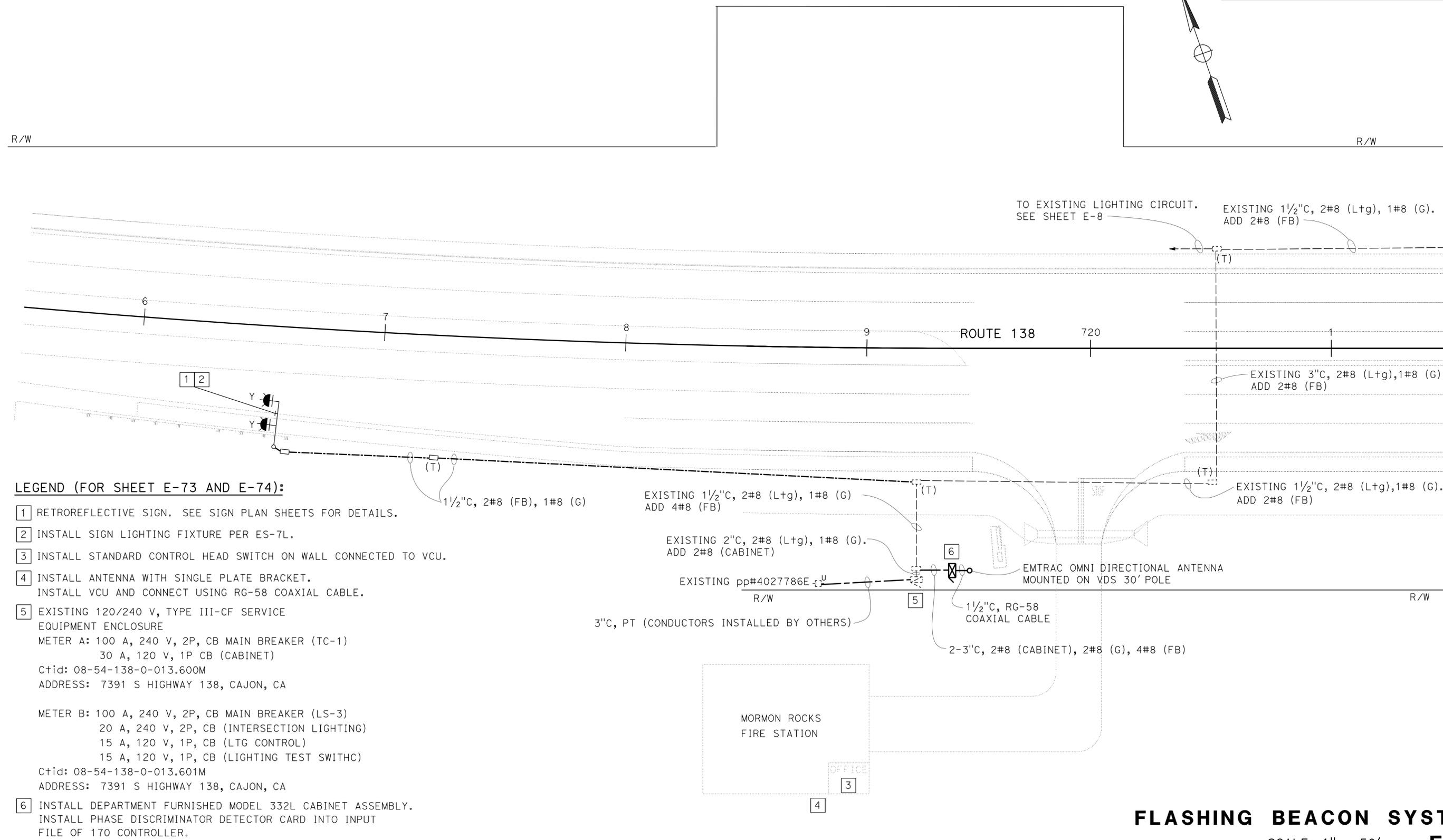
NOTE:
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ABBREVIATION:

VCU - VEHICLE CONTROL UNIT



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
 REVISED BY: DATE REVISOR



LEGEND (FOR SHEET E-73 AND E-74):

- 1 RETROREFLECTIVE SIGN. SEE SIGN PLAN SHEETS FOR DETAILS.
- 2 INSTALL SIGN LIGHTING FIXTURE PER ES-7L.
- 3 INSTALL STANDARD CONTROL HEAD SWITCH ON WALL CONNECTED TO VCU.
- 4 INSTALL ANTENNA WITH SINGLE PLATE BRACKET. INSTALL VCU AND CONNECT USING RG-58 COAXIAL CABLE.
- 5 EXISTING 120/240 V, TYPE III-CF SERVICE EQUIPMENT ENCLOSURE
 METER A: 100 A, 240 V, 2P, CB MAIN BREAKER (TC-1)
 30 A, 120 V, 1P CB (CABINET)
 Ctid: 08-54-138-0-013.600M
 ADDRESS: 7391 S HIGHWAY 138, CAJON, CA

 METER B: 100 A, 240 V, 2P, CB MAIN BREAKER (LS-3)
 20 A, 240 V, 2P, CB (INTERSECTION LIGHTING)
 15 A, 120 V, 1P, CB (LTG CONTROL)
 15 A, 120 V, 1P, CB (LIGHTING TEST SWITHC)
 Ctid: 08-54-138-0-013.601M
 ADDRESS: 7391 S HIGHWAY 138, CAJON, CA
- 6 INSTALL DEPARTMENT FURNISHED MODEL 332L CABINET ASSEMBLY. INSTALL PHASE DISCRIMINATOR DETECTOR CARD INTO INPUT FILE OF 170 CONTROLLER.

APPROVED FOR ELECTRICAL WORK ONLY

FLASHING BEACON SYSTEM
SCALE: 1" = 50'
E-73

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	918	1168

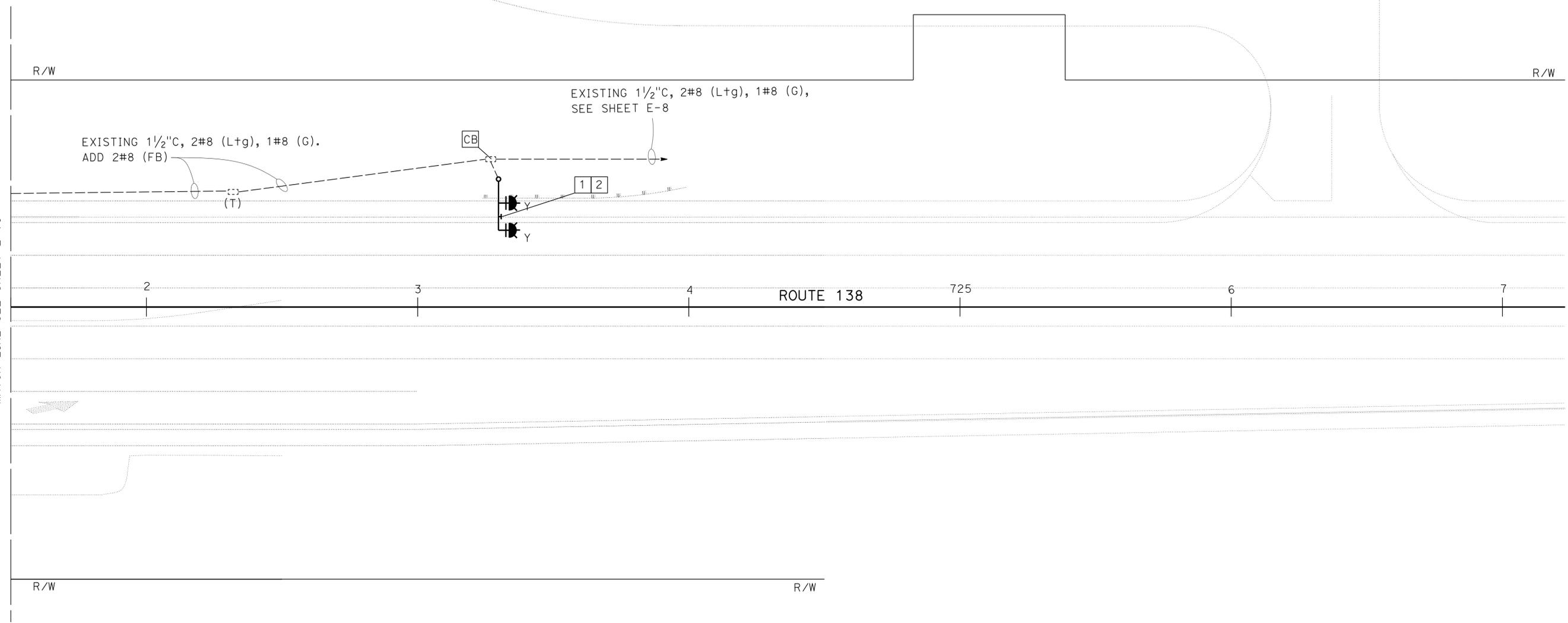
Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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NOTE:

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MATCH LINE SEE SHEET E-73

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Caltrans ELECTRICAL DESIGN B	FERDINAND DE LA CRUZ	CHECKED BY	LUIS PENALOZA	DATE
			FERDINAND DE LA CRUZ	REVISOR
				DATE

FLASHING BEACON SYSTEM
SCALE: 1" = 20'
E-74

APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION
 DATE PLOTTED => 07-MAR-2014
 08-29-13
 TIME PLOTTED => 14:35

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	919	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

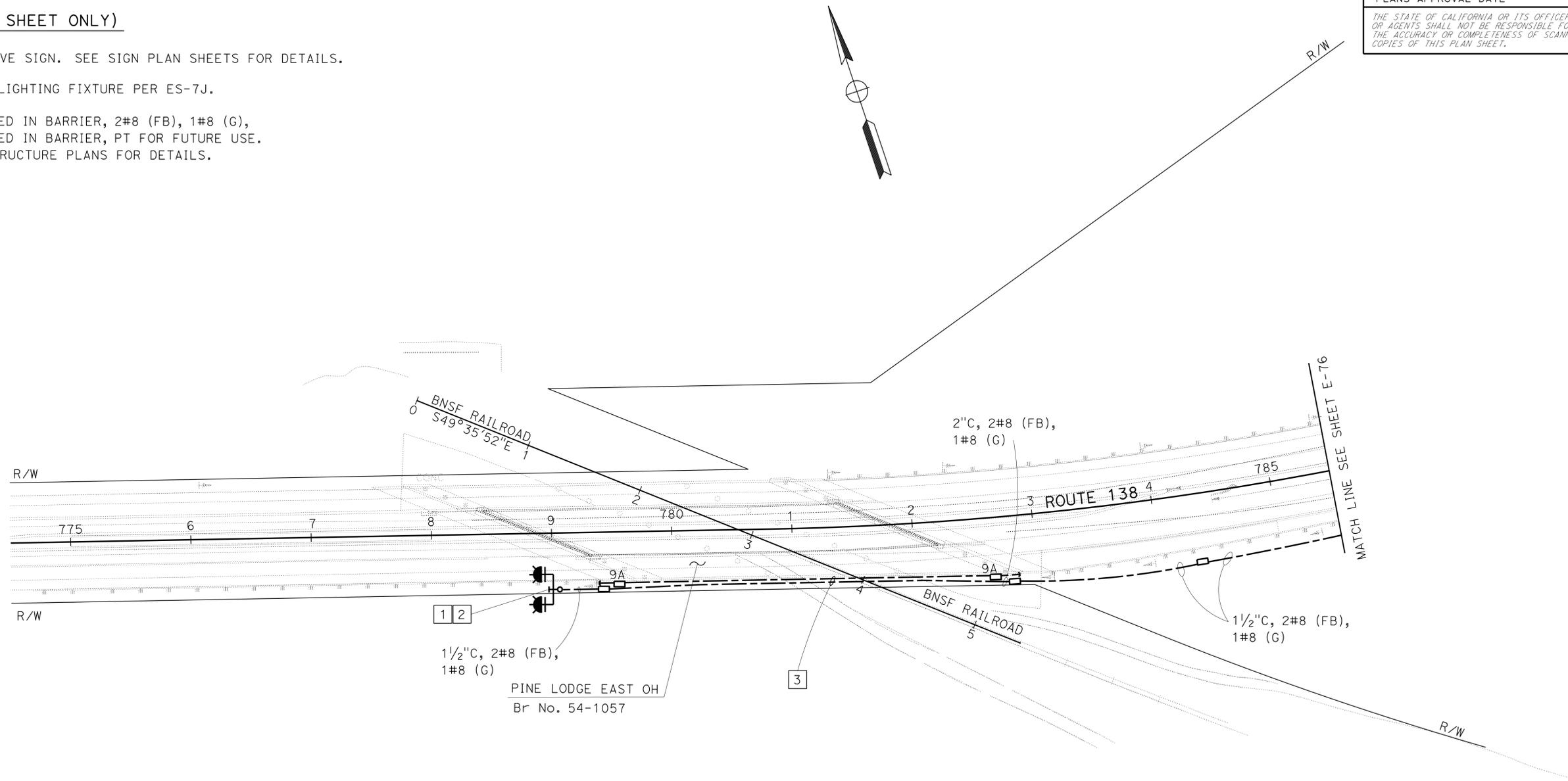
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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND: (THIS SHEET ONLY)

- 1 RETROREFLECTIVE SIGN. SEE SIGN PLAN SHEETS FOR DETAILS.
- 2 INSTALL SIGN LIGHTING FIXTURE PER ES-7J.
- 3 1-2"C INSTALLED IN BARRIER, 2#8 (FB), 1#8 (G),
1-2"C INSTALLED IN BARRIER, PT FOR FUTURE USE.
SEE BRIDGE STRUCTURE PLANS FOR DETAILS.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
Caltrans ELECTRICAL DESIGN B	FERNAND DE LA CRUZ	FERNAND DE LA CRUZ	FERNAND DE LA CRUZ

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FLASHING BEACON SYSTEM
SCALE: 1" = 50'
E-75

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN B

FUNCTIONAL SUPERVISOR
 FERDINAND DE LA CRUZ

CALCULATED/DESIGNED BY
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REVISOR BY
 DATE REVISED

LUIS PENALOZA
 FERDINAND DE LA CRUZ

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

LEGEND: (THIS SHEET ONLY)

- 1 INSTALL DEPARTMENT-FURNISHED MODEL 2070 CONTROLLER UNIT AND 334L CONTROLLER CABINET

R/W _____ R/W

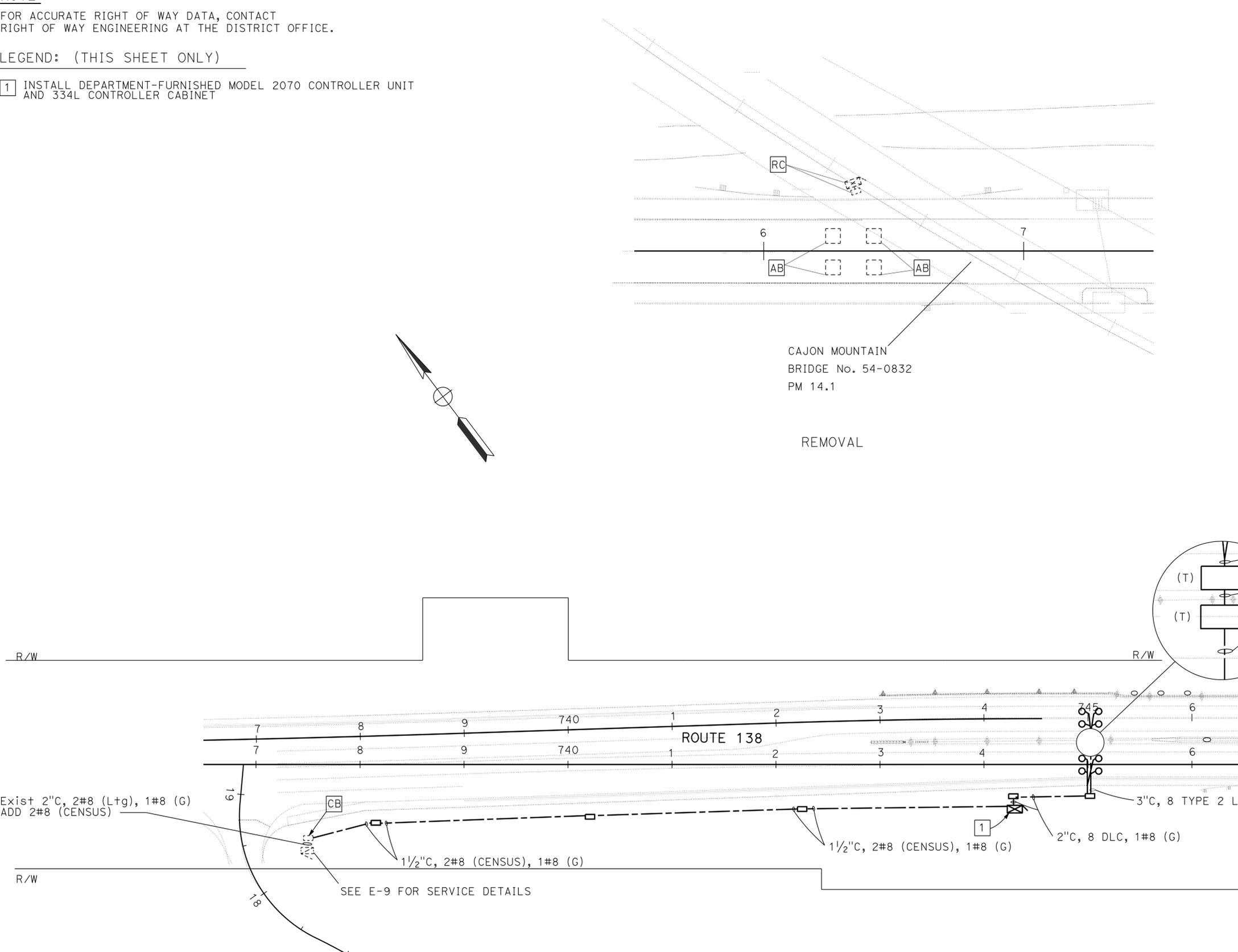
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	922	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE

3-3-14
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA



MODIFY TRAFFIC MONITORING STATION (COUNT)

SCALE: 1" = 50'

E-78

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN B

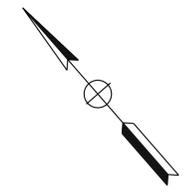
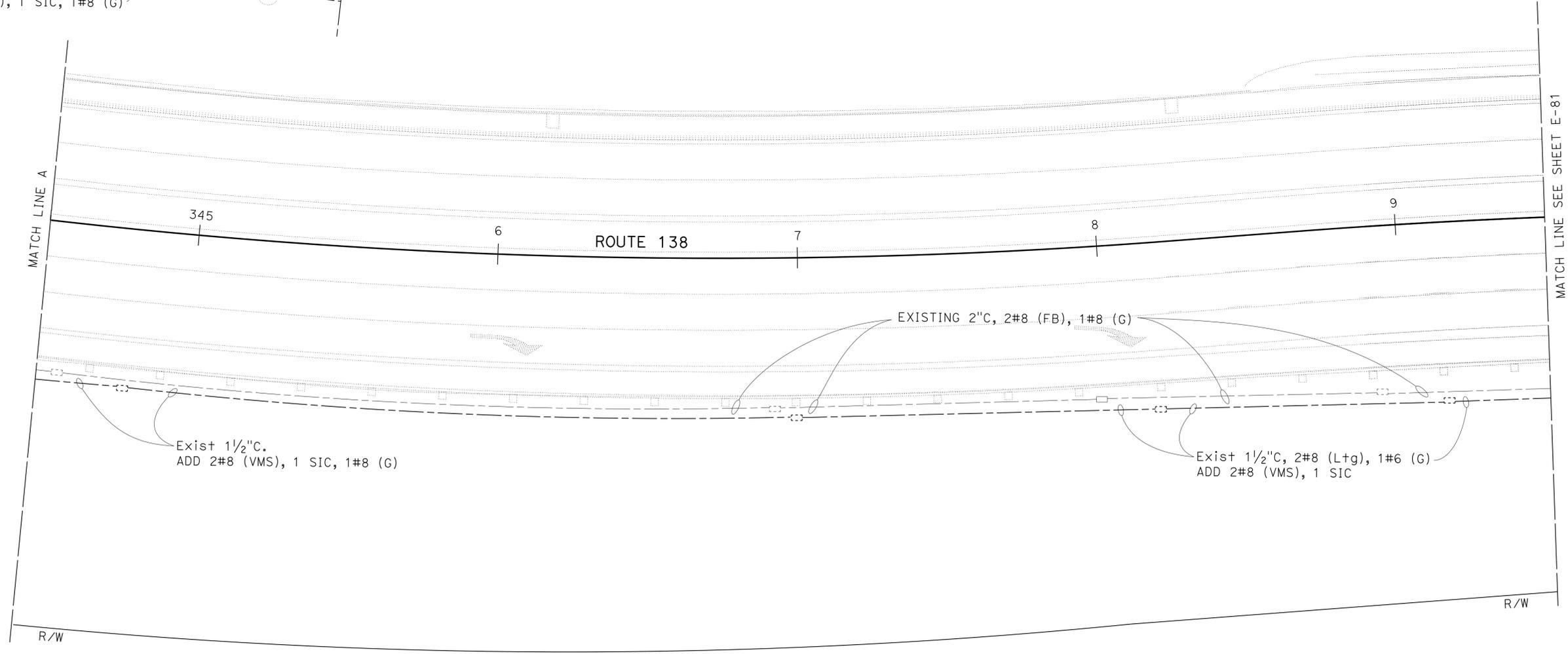
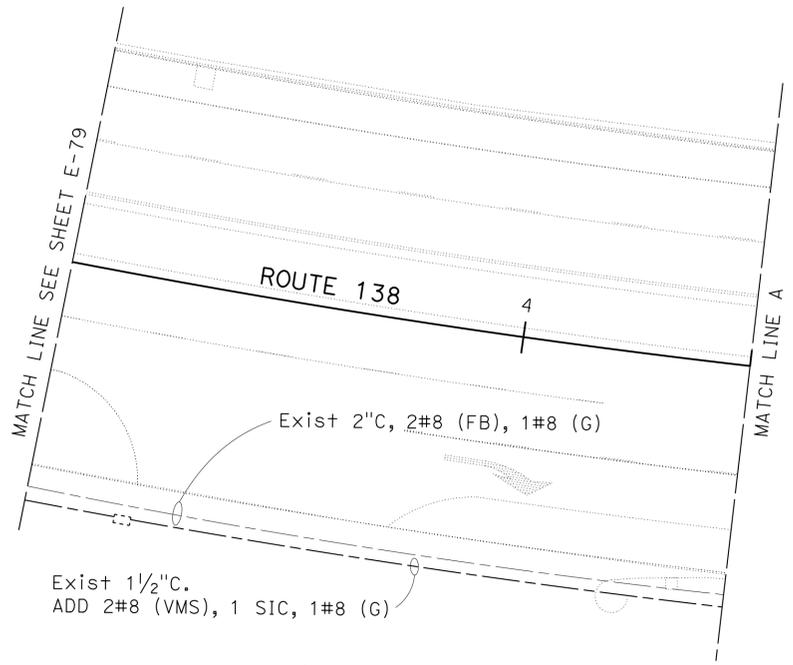
FUNCTIONAL SUPERVISOR
 FERDINAND DE LA CRUZ

CALCULATED/DESIGNED BY
 CHECKED BY

LUIS PENALOZA
 FERDINAND DE LA CRUZ

REVISED BY
 DATE REVISED

NOTE:
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 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	924	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE

3-3-14
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

ENVIRONMENTAL SENSOR STATION
 SCALE: 1" = 20'
E-80

APPROVED FOR ELECTRICAL WORK ONLY

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
---	--------------------------------------	---------------------------------------	----------------------------

NOTES:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. FOR EQUIPMENT REMOVAL, SEE ELECTRICAL STAGE CONSTRUCTION PLANS.
3. INSTALL VISIBILITY SENSOR AT 20 FEET HEIGHT ON TYPE VDS 30 POLE.

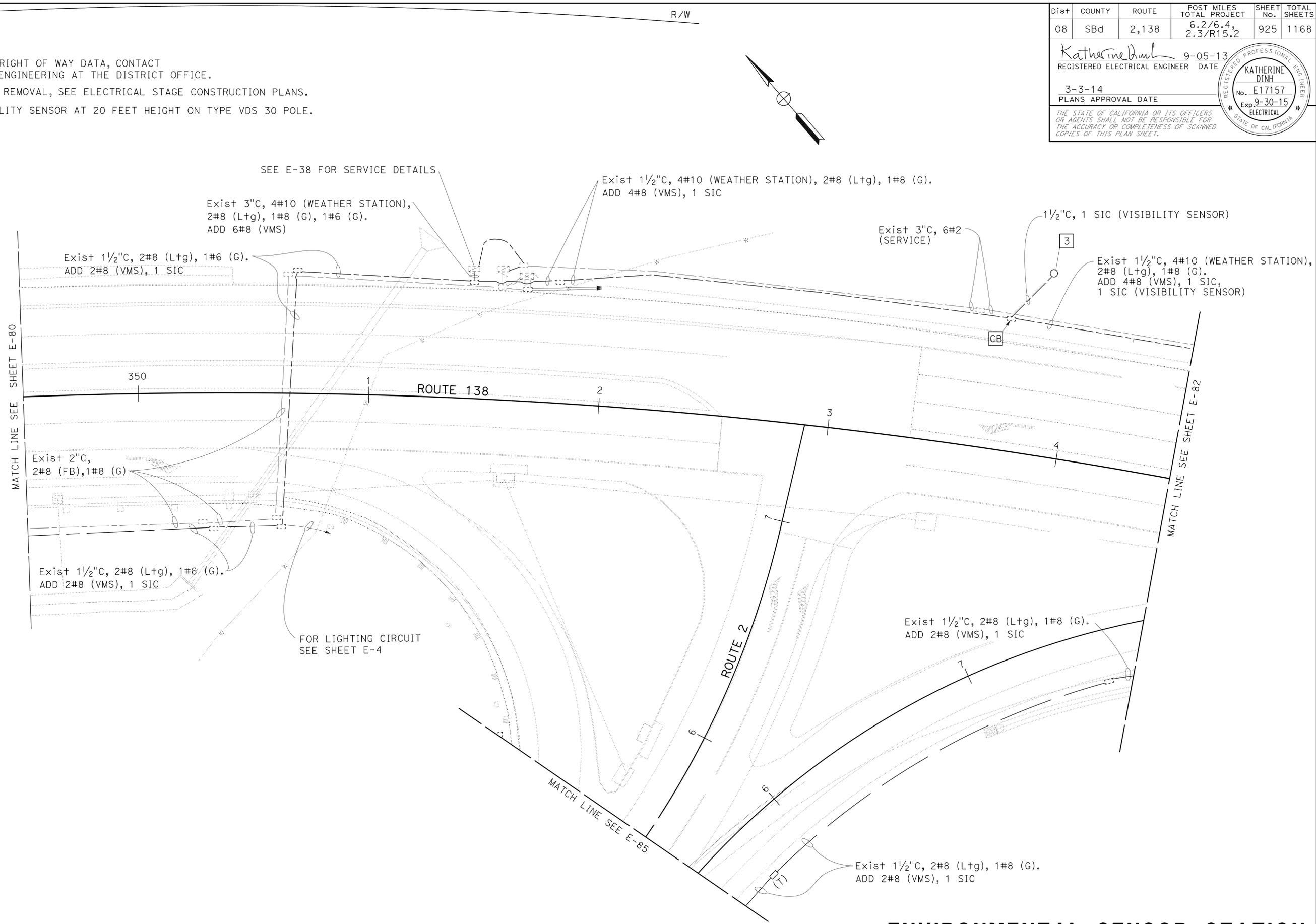
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	925	1168

Katherine Dinh 9-05-13
REGISTERED ELECTRICAL ENGINEER DATE

3-3-14
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
KATHERINE DINH
No. E17157
Exp. 9-30-15
ELECTRICAL
STATE OF CALIFORNIA



ENVIRONMENTAL SENSOR STATION
E-81

APPROVED FOR ELECTRICAL WORK ONLY

SCALE: 1" = 20'

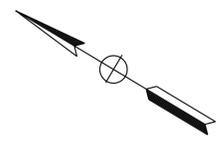
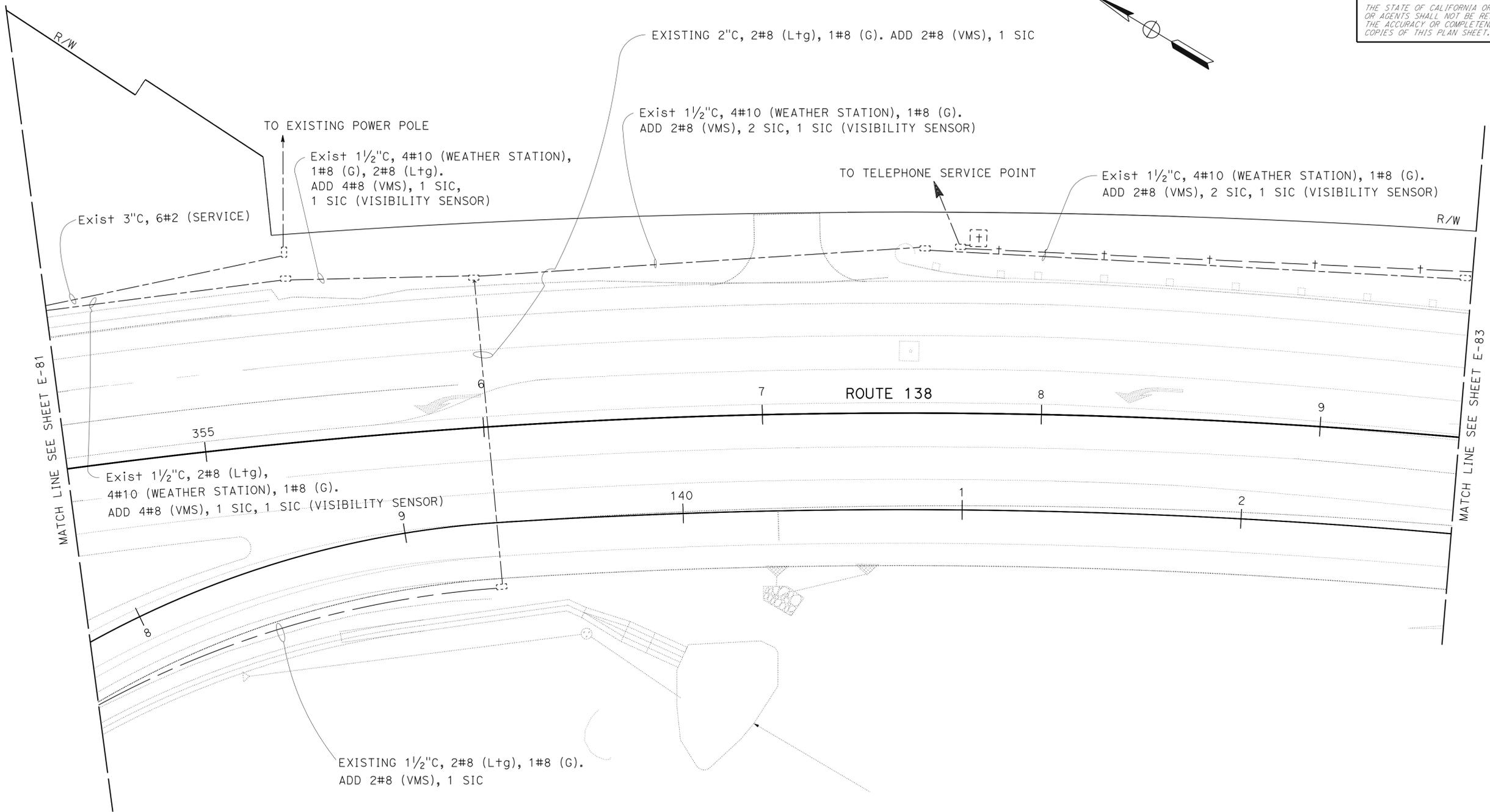
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	926	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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

ENVIRONMENTAL SENSOR STATION
 SCALE: 1" = 20'
E-82

APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION
 09-05-13
 DATE PLOTTED => 07-MAR-2014
 TIME PLOTTED => 14:36

NOTE:

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	929	1168

Katherine Dinh 9-05-13
REGISTERED ELECTRICAL ENGINEER DATE

3-3-14
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER

**KATHERINE
DINH**

No. E17157
Exp. 9-30-15
ELECTRICAL

STATE OF CALIFORNIA



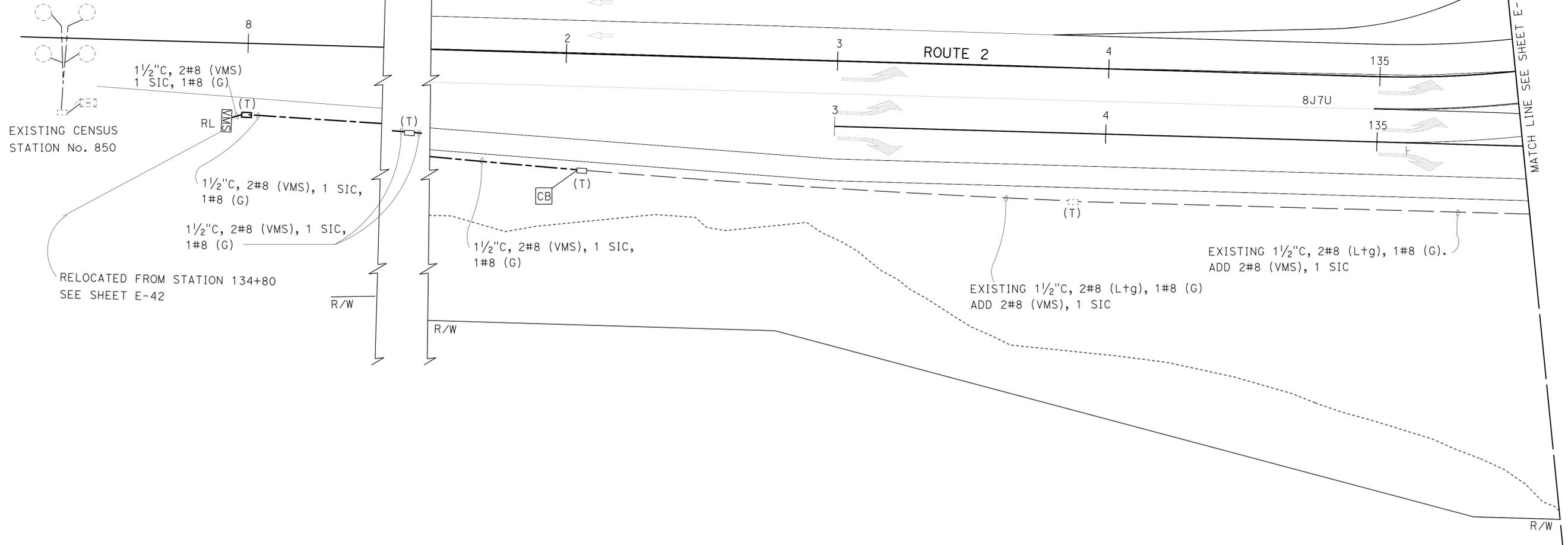
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN B

FUNCTIONAL SUPERVISOR
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CALCULATED/
DESIGNED BY
 CHECKED BY

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 FERDINAND DE LA CRUZ

REVISED BY
 DATE REVISED



ENVIRONMENTAL SENSOR STATION

APPROVED FOR ELECTRICAL WORK ONLY

SCALE: 1" = 20'

E-85

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	930	1168

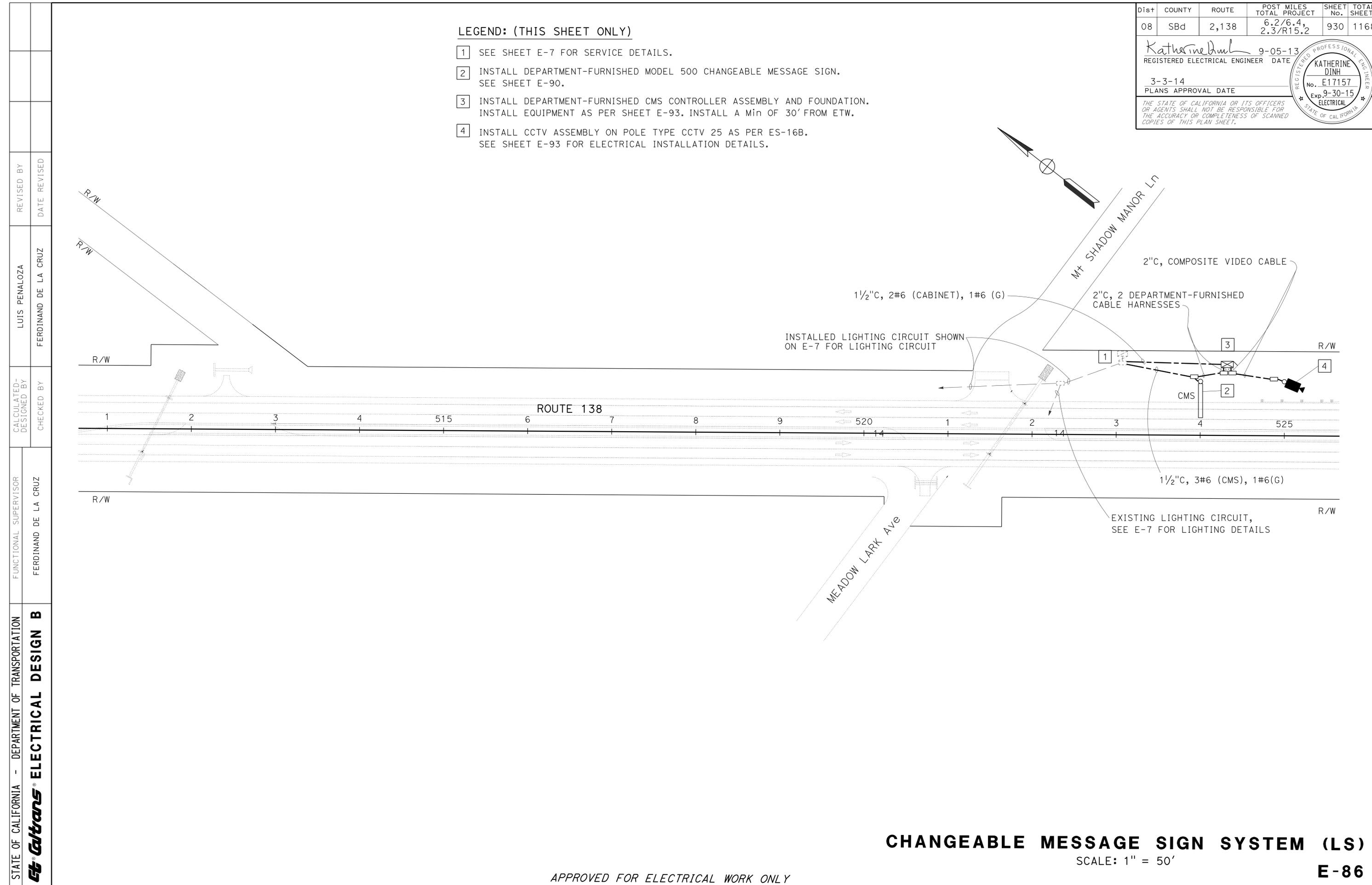
Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
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LEGEND: (THIS SHEET ONLY)

- 1 SEE SHEET E-7 FOR SERVICE DETAILS.
- 2 INSTALL DEPARTMENT-FURNISHED MODEL 500 CHANGEABLE MESSAGE SIGN. SEE SHEET E-90.
- 3 INSTALL DEPARTMENT-FURNISHED CMS CONTROLLER ASSEMBLY AND FOUNDATION. INSTALL EQUIPMENT AS PER SHEET E-93. INSTALL A Min OF 30' FROM ETW.
- 4 INSTALL CCTV ASSEMBLY ON POLE TYPE CCTV 25 AS PER ES-16B. SEE SHEET E-93 FOR ELECTRICAL INSTALLATION DETAILS.



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

CHANGEABLE MESSAGE SIGN SYSTEM (LS)
 SCALE: 1" = 50'
E-86

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	931	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE

3-3-14
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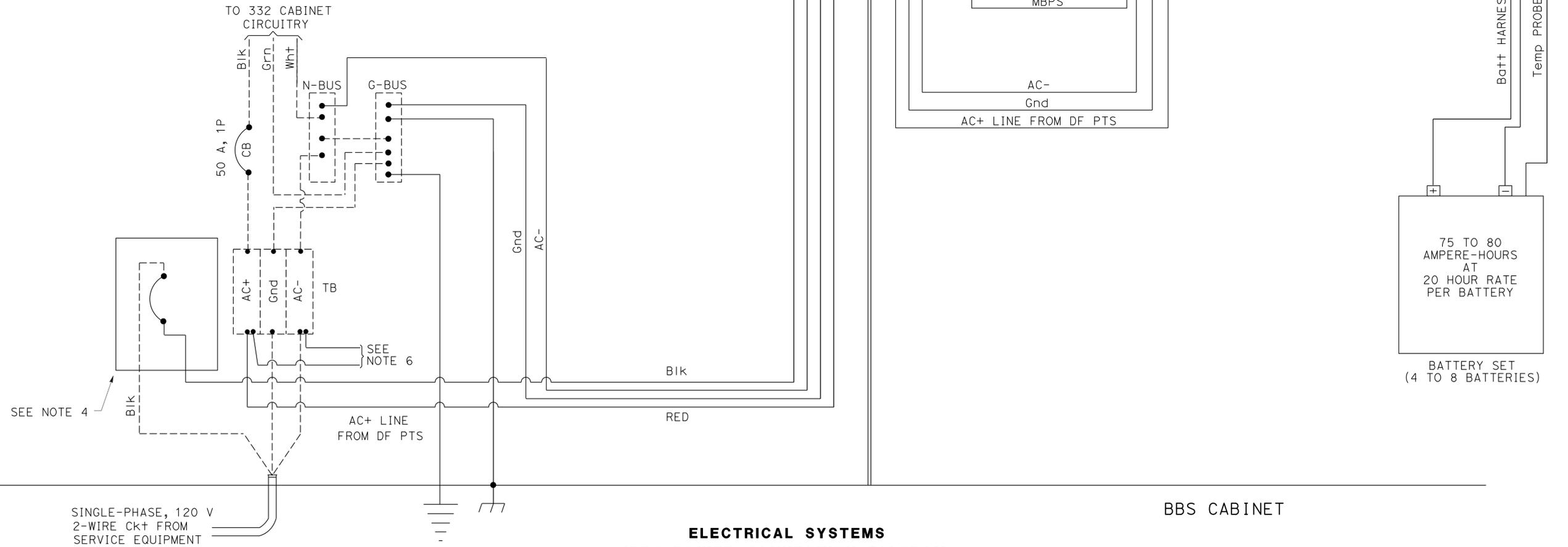
REGISTERED PROFESSIONAL ENGINEER
 KATHERINE
 DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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
- DF = DEPARTMENT-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 SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL 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 SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL 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 SHALL BE INSULATED WITH TAPE AND A SIX-FOOT COIL ON EACH END.



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

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

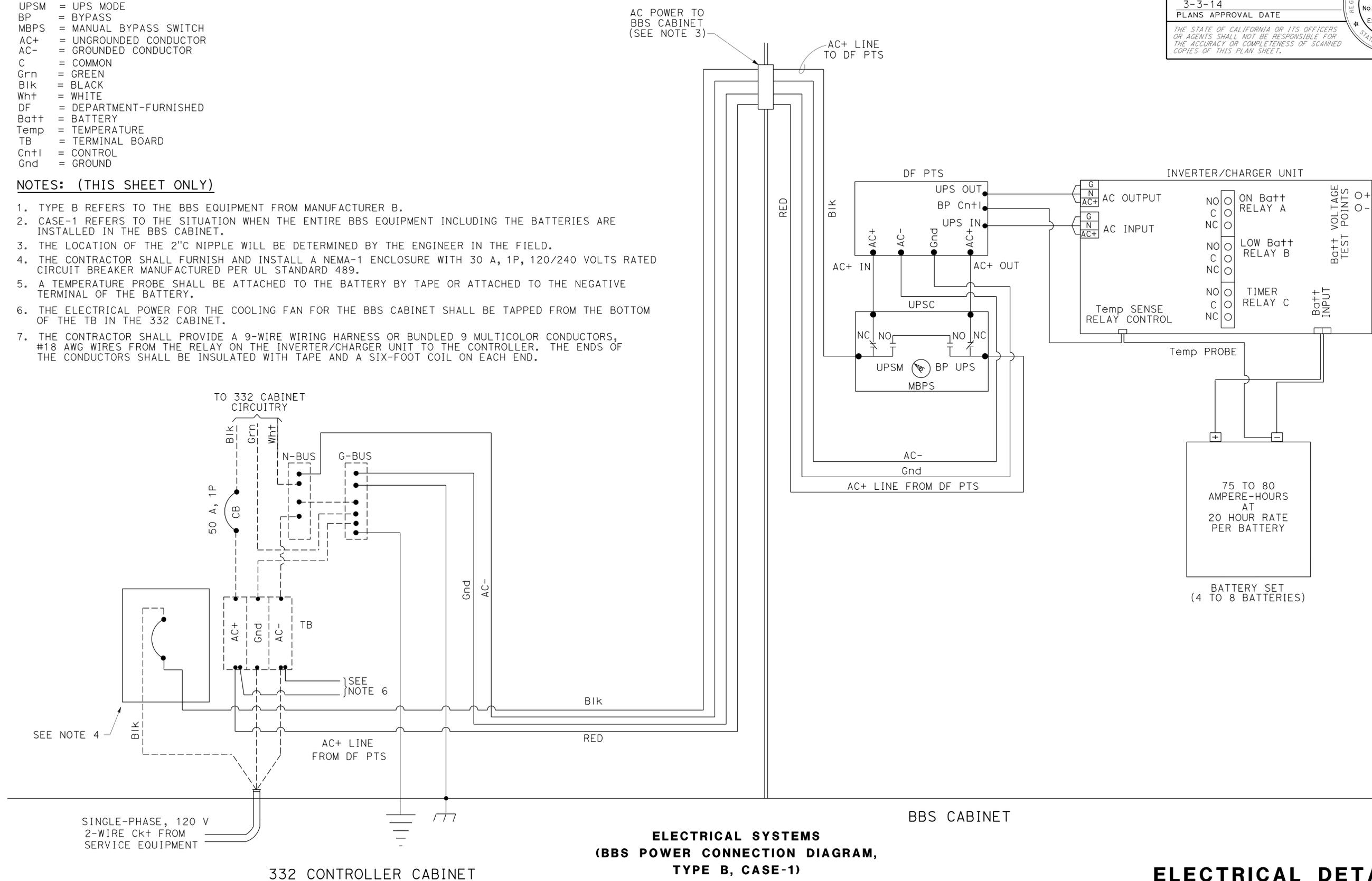
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	932	1168
Katherine Dinh			9-05-13	REGISTERED ELECTRICAL ENGINEER DATE	
3-3-14			PLANS APPROVAL DATE		
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LEGEND: (THIS SHEET ONLY)

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- 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
- Wh+ = WHITE
- DF = DEPARTMENT-FURNISHED
- Batt+ = BATTERY
- Temp = TEMPERATURE
- TB = TERMINAL BOARD
- Cntl = CONTROL
- Gnd = GROUND

NOTES: (THIS SHEET ONLY)

1. TYPE B REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER B.
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 SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL 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 SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL 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 SHALL BE INSULATED WITH TAPE AND A SIX-FOOT COIL ON EACH END.



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

ELECTRICAL DETAILS
 NO SCALE
E-88

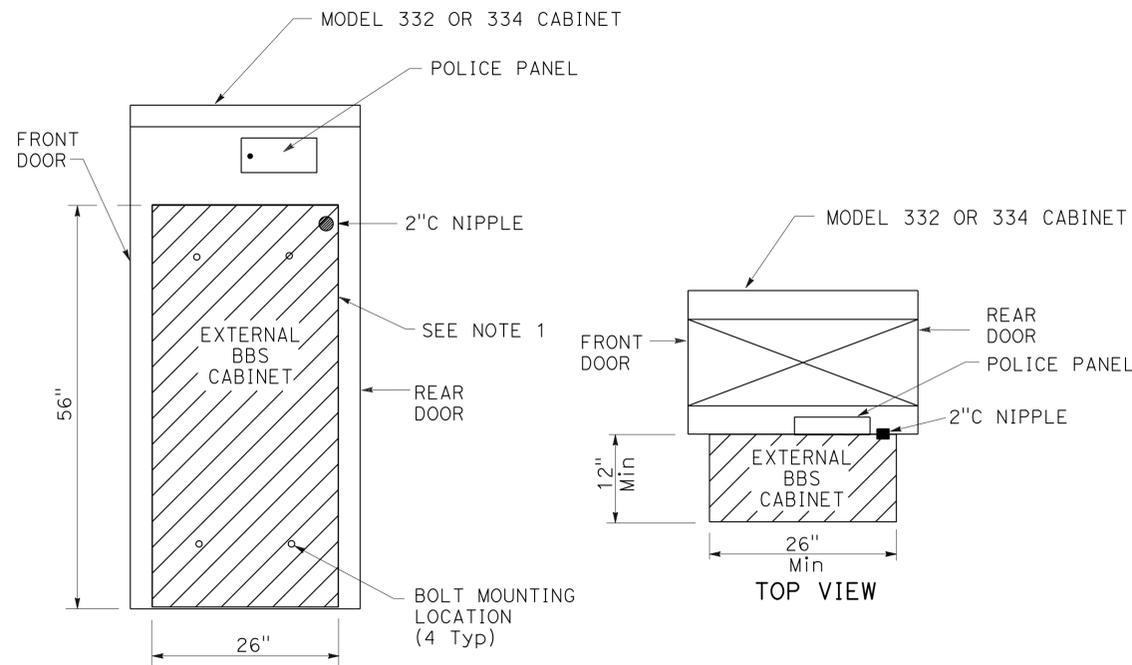
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN B
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ
 DESIGNED BY: FERDINAND DE LA CRUZ
 CHECKED BY:
 REVISIONS: (None shown)
 REVISOR: (None shown)
 DATE: (None shown)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBD	2,138	6.2/6.4, 2.3/R15.2	933	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

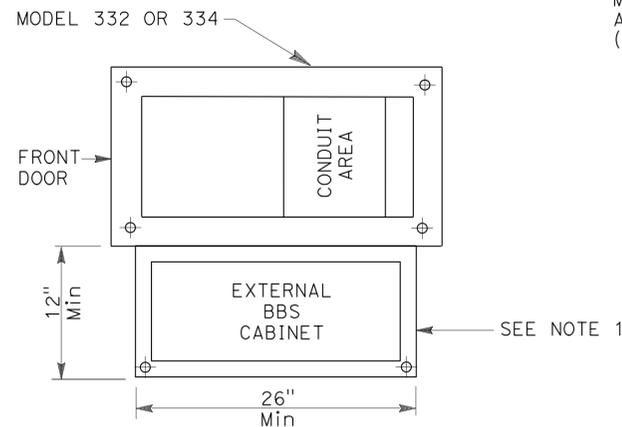
REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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SIDE VIEW

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

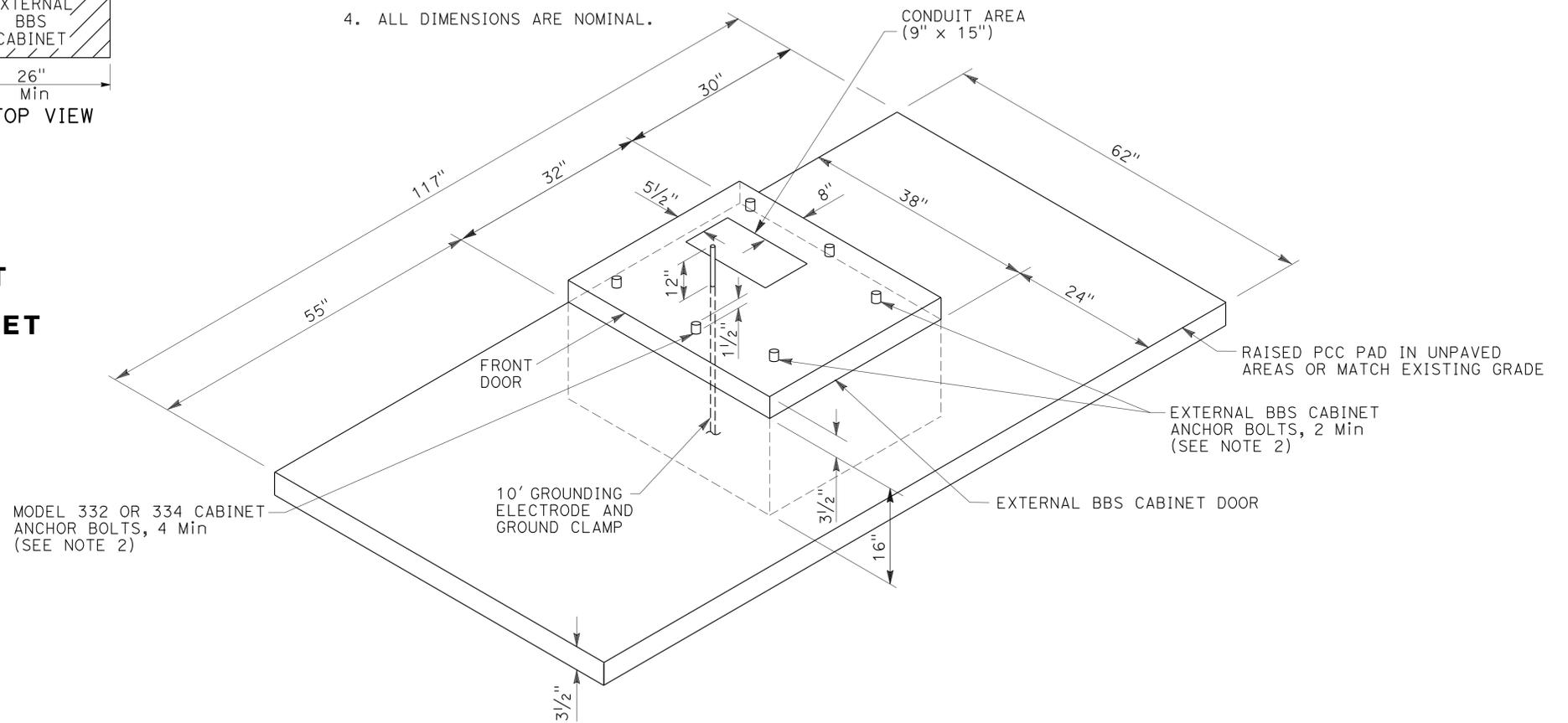


**BASE PLAN FOR BBS
MOUNTED TO THE
MODEL 332 OR 334 CABINET**

(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 SHALL 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 SHALL BE 3/4" Dia X 15" WITH A 2"-90° BEND. THE CABINET MANUFACTURER'S SPECIFICATION SHALL 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 SHALL 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

NO SCALE

E-89

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	934	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA

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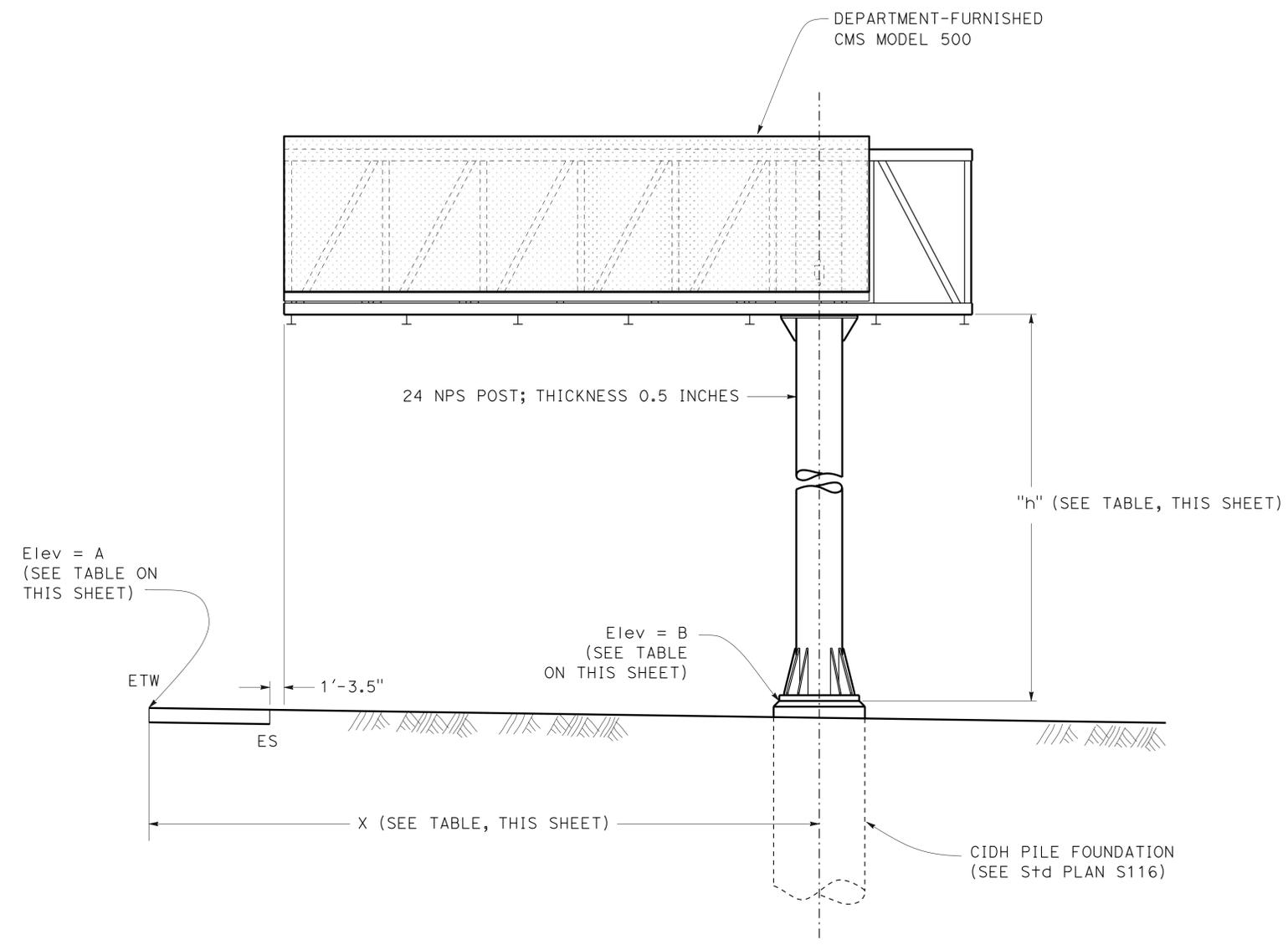
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FUNCTIONAL SUPERVISOR
 FERDINAND DE LA CRUZ

CALCULATED/DESIGNED BY
 CHECKED BY

LUIS PENALOZA
 FERDINAND DE LA CRUZ

REVISED BY
 DATE REVISED



UNBALANCED BUTTERFLY TRUSS SINGLE POST FOR CMS TABLE

CMS TYPE	STATION	ORIENTATION	"X" (FT)	"h" (FT)	ETW ELEVATION A (FT)	BOTTOM OF BASE PLATE ELEVATION B (FT)	QUANTITIES		
							FURNISH SIGN STRUCTURE (TRUSS) (LB)	INSTALL SIGN STRUCTURE (TRUSS) (LB)	60" CIDH CONCRETE PILE (SIGN FOUNDATION) (FT)
MODEL 500 UNBALANCED BUTTERFLY TRUSS	524+00	FWBT	33	24	3984.678	3981.512	15283	15283	22
TOTAL							15283	15283	22

ELECTRICAL DETAILS
 NO SCALE
E-90

LAST REVISION DATE PLOTTED => 07-MAR-2014 14:37
 09-05-13 TIME PLOTTED => 14:37

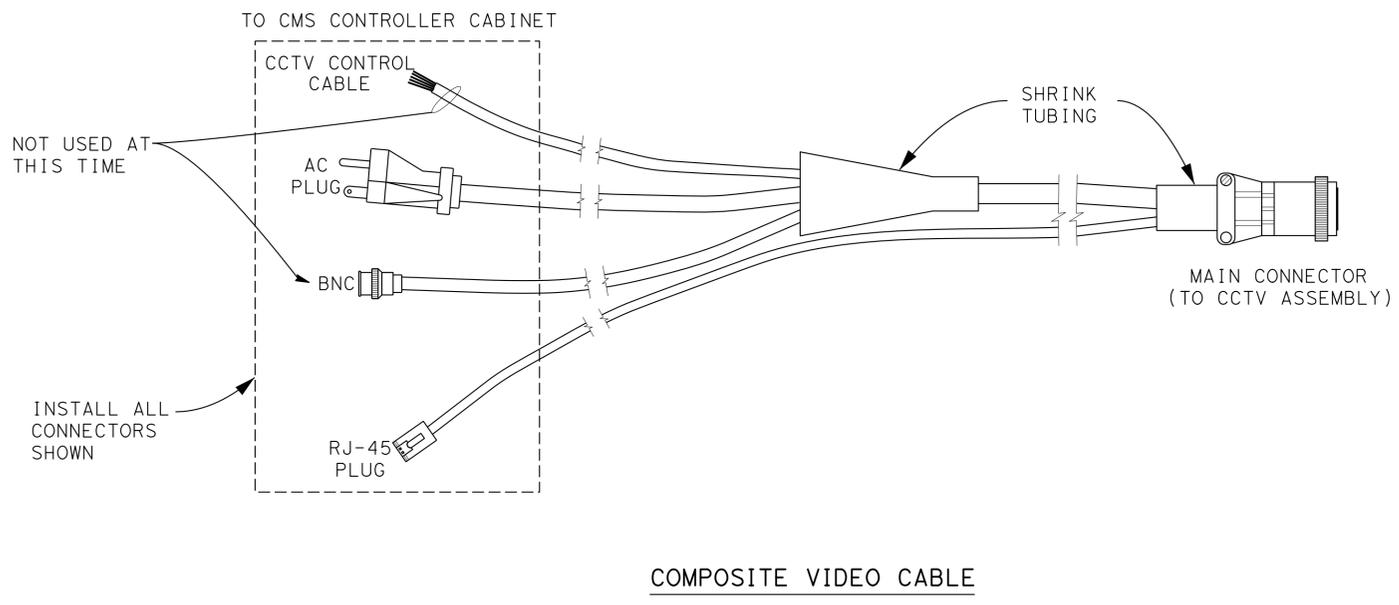
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	935	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
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 No. E17157
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COMPOSITE VIDEO CABLE

**CHANGEABLE MESSAGE SIGN SYSTEM
(CLOSED CIRCUIT TELEVISION SYSTEM DETAIL)**

ELECTRICAL DETAILS
NO SCALE
E-91

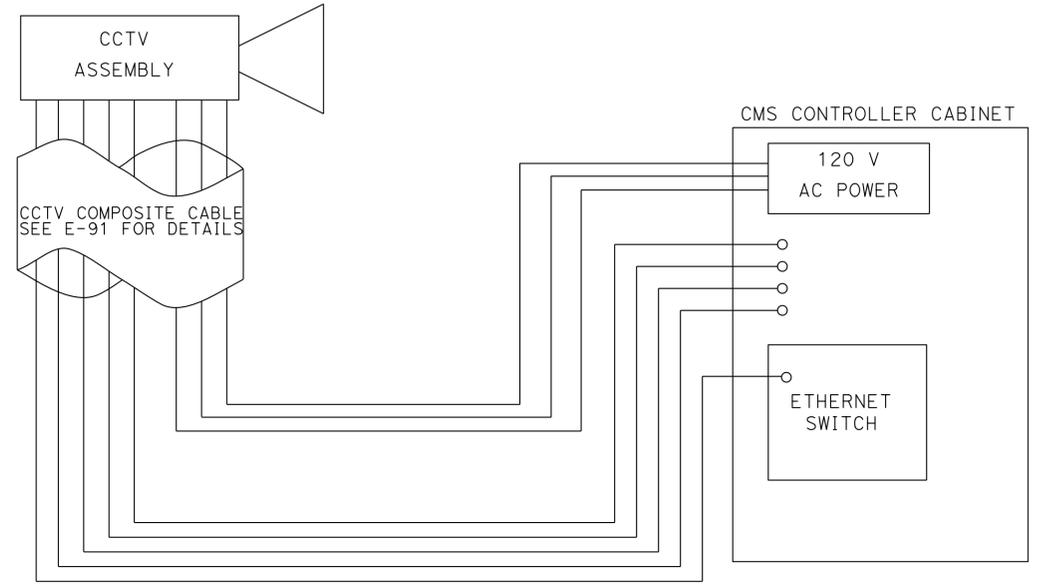
LAST REVISION | DATE PLOTTED => 07-MAR-2014
 09-05-13 | TIME PLOTTED => 14:37

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	936	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 KATHERINE DINH
 No. E17157
 Exp. 9-30-15
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CCTV ASSEMBLY WIRING DIAGRAM

**CHANGEABLE MESSAGE SIGN SYSTEM
(CLOSED CIRCUIT TELEVISION SYSTEM DETAIL)**

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 FERDINAND DE LA CRUZ
 REVISED BY
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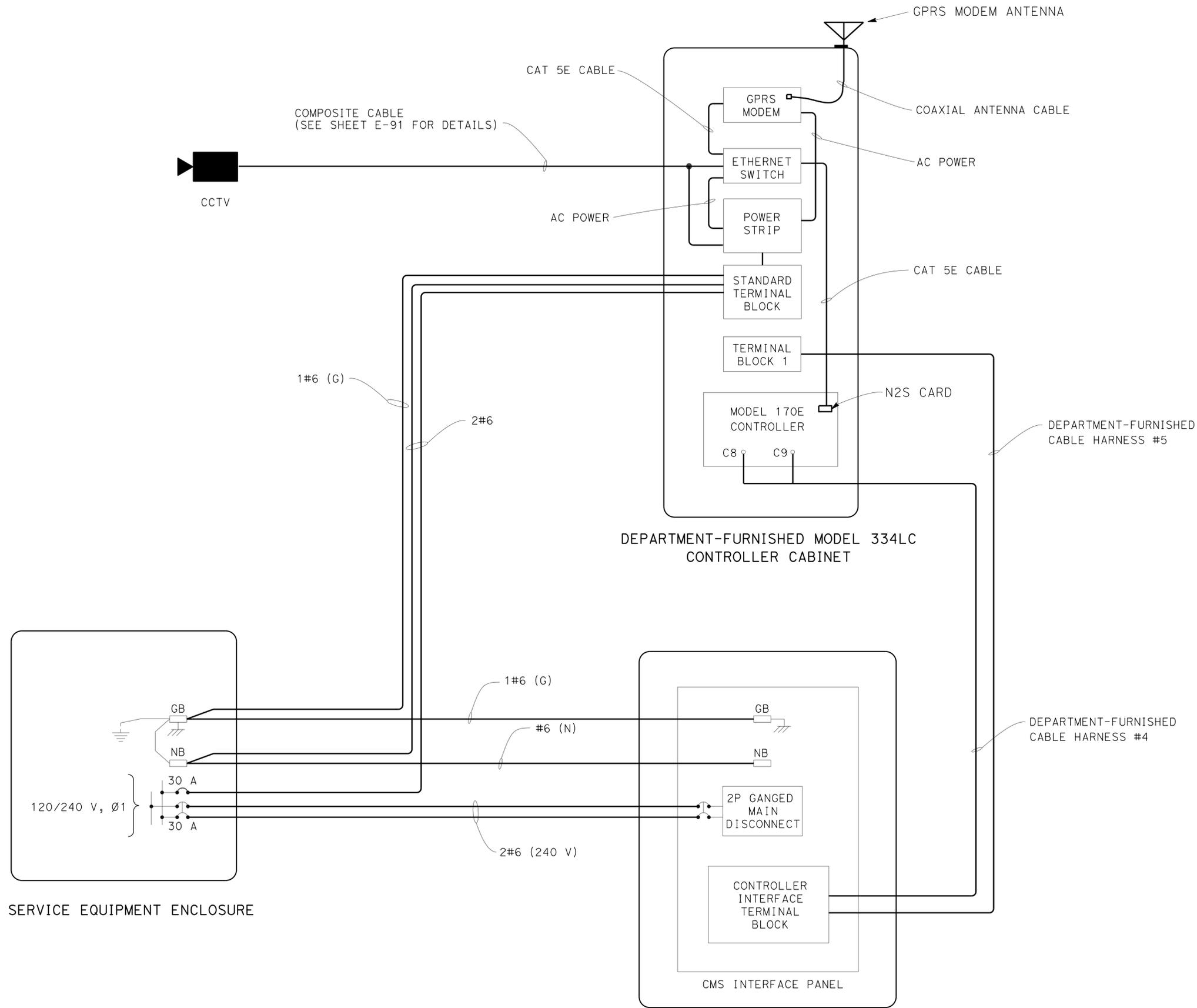
ELECTRICAL DETAILS
NO SCALE **E-92**

LAST REVISION DATE PLOTTED => 07-MAR-2014 TIME PLOTTED => 14:38

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	937	1168

Katherine Dinh 9-05-13
 REGISTERED ELECTRICAL ENGINEER DATE
 3-3-14
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REGISTERED PROFESSIONAL ENGINEER
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 No. E17157
 Exp. 9-30-15
 ELECTRICAL
 STATE OF CALIFORNIA



**CHANGEABLE MESSAGE SIGN SYSTEM
(SYSTEM WIRING DIAGRAM)**

DEPARTMENT-FURNISHED
MODEL 500 CHANGEABLE MESSAGE SIGN

ELECTRICAL DETAILS
NO SCALE
E-93

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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 CHECKED BY: FERDINAND DE LA CRUZ
 DESIGNED BY: LUIS PENALOZA
 REVISIONS:

NO.	DATE	REVISION

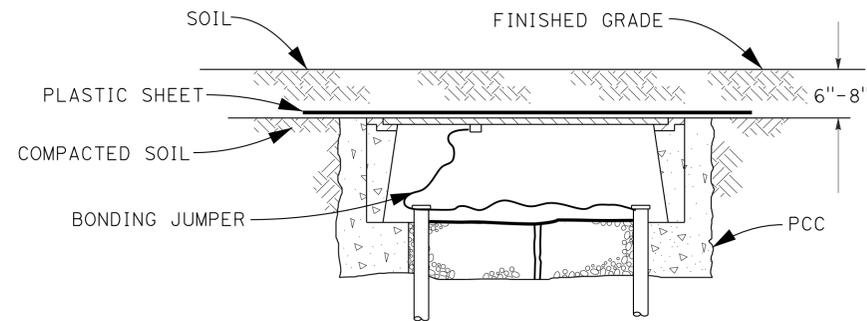
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	938	1168

Katherine Dinh 9-05-13
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 3-3-14
 PLANS APPROVAL DATE

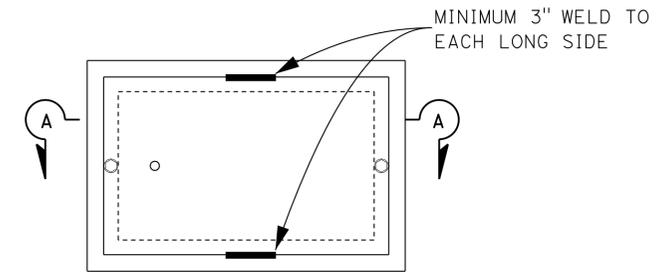
REGISTERED PROFESSIONAL ENGINEER
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 No. E17157
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NOTE:
FOR ADDITIONAL DETAILS, SEE REVISED STANDARD PLAN ES-8B.



SECTION A-A



TOP VIEW

TYPICAL BURIED No. 5(T) PULL BOX

BURIED PULL BOX DETAIL

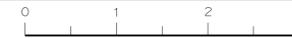
ELECTRICAL DETAILS

APPROVED FOR ELECTRICAL WORK ONLY

NO SCALE

E-94

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
Caltrans ELECTRICAL DESIGN B	FERNINAND DE LA CRUZ	FERNINAND DE LA CRUZ	DATE



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	939	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

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NOTES:

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

LIGHTING

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	3" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	PULL BOX No. 5(T)	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	TYPE 30 SLIP BASE LUMINAIRE 15' LA	STANDARD FOUNDATION
E-1	10	200	2	3	500	250	2	2

SHEET No.	(N)	(N)	(N)	(N)
	TYPE III SERVICE EQUIPMENT ENCLOSURE	TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	TYPE H SERVICE RISER	TRANSFORMER 1-KVA
E-1	1	1	1	1

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	2" CONDUIT PVC SCHEDULE 80	3" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	TYPE III SERVICE EQUIPMENT ENCLOSURE	TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	TYPE H SERVICE RISER	TRANSFORMER 1-KVA
E-2	10	10	400	2	20	20	1	1	1	1

SHEET No.	(N)	(N)	(N)	(N)	(N)
	PULL BOX No. 5	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	TYPE 30 LUMINAIRE 15' LA	STANDARD FOUNDATION
E-3	2	1,000	500	2	2

SHEET No.	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE
E-4	150	2,000	1,000

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	3" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5(T)	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	TYPE 30 SLIP BASE LUMINAIRE 15' LA	STANDARD FOUNDATION
E-5	500	200	3	1,400	700	3	3

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 LUIS PENALOZA
 REVISOR: FERDINAND DE LA CRUZ
 DATE: _____

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ELECTRICAL QUANTITIES
E-95

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	940	1168

Katherine Dinh
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3-3-14
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LIGHTING

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 3" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) TYPE III SERVICE EQUIPMENT ENCLOSURE	(N) TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	(N) TYPE H SERVICE RISER	(N) TRANSFORMER 1-KVA
E-6	150	10	260	3	800	400	1	1	1	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 3" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) TYPE 30 SLIP BASE LUMINAIRE 15' LA	(N) STANDARD FOUNDATION
E-7	250	10	200	3	1,200	600	2	2

SHEET No.	(N) TYPE III SERVICE EQUIPMENT ENCLOSURE	(N) TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	(N) TYPE H SERVICE RISER	(N) TRANSFORMER 1-KVA
E-7	1	1	1	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 3" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5	(N) PULL BOX No. 5(T)	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) TYPE 30 SLIP BASE LUMINAIRE 10' LA	(N) TYPE 31 SLIP BASE LUMINAIRE 15' LA	(N) STANDARD FOUNDATION
E-8	700	300	2	5	1,800	900	1	1	2

SHEET No.	(N) TYPE III SERVICE EQUIPMENT ENCLOSURE	(N) TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	(N) TYPE H SERVICE RISER	(N) TRANSFORMER 1-KVA
E-8	1	1	1	1

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 LUIS PENALOZA FERDINAND DE LA CRUZ
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ELECTRICAL QUANTITIES
E-96

LAST REVISION DATE PLOTTED => 07-MAR-2014 12-05-13 TIME PLOTTED => 14:38

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	941	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

3-3-14
PLANS APPROVAL DATE

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LIGHTING

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	2" CONDUIT PVC SCHEDULE 80	3" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	PULL BOX No. 5(T)	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE
E-9	LF	LF	LF	EA	EA	LF	LF
	350	10	250	7	1	800	400

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	TYPE III SERVICE EQUIPMENT ENCLOSURE	TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	TYPE H SERVICE RISER	TRANSFORMER 1-KVA	TYPE 30 SLIP BASE LUMINAIRE 10' LA	TYPE 31 SLIP BASE LUMINAIRE 15' LA	STANDARD FOUNDATION
E-9	EA	EA	EA	EA	EA	EA	EA
	1	1	1	1	3	1	4

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	2" CONDUIT PVC SCHEDULE 80	3" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	PULL BOX No. 5(T)	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	TYPE 30 SLIP BASE LUMINAIRE 10' LA	TYPE 31 SLIP BASE LUMINAIRE 15' LA	STANDARD FOUNDATION
E-10	LF	LF	LF	EA	EA	LF	LF	EA	EA	EA
	700	20	100	2	2	2,000	1,000	1	1	2

SHEET No.	(N)	(N)	(N)	(N)
	TYPE III SERVICE EQUIPMENT ENCLOSURE	TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	TYPE H SERVICE RISER	TRANSFORMER 1-KVA
E-10	EA	EA	EA	EA
	1	1	1	1

ELECTRICAL STAGE CONSTRUCTION

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	TEMPORARY WOOD POLE	VIDEO DETECTION CAMERA	MESSENGER CABLE	VIDEO COMPOSITE CABLE	VIDEO POWER CABLE
E-19	LF	EA	EA	EA	LF	LF	LF
	100	1	4	3	300	1,000	1,000

ELECTRICAL QUANTITIES
E-97

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 LUIS PENALOZA
 REVISOR: FERDINAND DE LA CRUZ
 REVISION DATE:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	942	1168

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ELECTRICAL STAGE CONSTRUCTION

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	TEMPORARY WOOD POLE	VIDEO DETECTION CAMERA	MESSENGER CABLE	VIDEO COMPOSITE CABLE	VIDEO POWER CABLE	SIGNAL HEAD W/3 SIGNAL INDICATORS
E-21	100	1	9	3	2,000	2,000	2,000	7

SHEET No.	(N)
	FLASHING BEACON FOUNDATION
E-23	1

SHEET No.	(N)
	FLASHING BEACON FOUNDATION
E-29	1

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	TEMPORARY WOOD POLE	VIDEO DETECTION CAMERA	MESSENGER CABLE	VIDEO COMPOSITE CABLE	VIDEO POWER CABLE	SIGNAL HEAD W/3 SIGNAL INDICATORS
E-21	100	1	9	3	2,000	2,000	2,000	7

SHEET No.	(N)	(N)	(N)	(RL)	(N)	(RL)	(N)	(N)	(N)	(N)	(N)
	2" CONDUIT PVC SCHEDULE 80	3" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	TEMPORARY WOOD POLE	TEMPORARY WOOD POLE	VIDEO DETECTION CAMERA	VIDEO DETECTION CAMERA	MESSENGER CABLE	VIDEO COMPOSITE CABLE	VIDEO POWER CABLE	SIGNAL HEAD W/3 SIGNAL INDICATORS
E-43	100	100	1	3	5	1	2	1,000	2,000	2,000	6

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)
	#6 GAUGE WIRE CABLE	#10 (G) GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	#14 (G) GAUGE WIRE CABLE	#12 (N) GAUGE WIRE CABLE	TEMPORARY LUMINAIRE ON WOOD POLE
E-43	1,000	2,000	1,000	3,600	1,200	2

ELECTRICAL QUANTITIES
E-98

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	943	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

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ELECTRICAL STAGE CONSTRUCTION

SHEET No.	(N) TEMPORARY WOOD POLE	(N) VIDEO DETECTION CAMERA	(N) MESSENGER CABLE	(N) VIDEO COMPOSITE CABLE	(N) VIDEO POWER CABLE	(N) SIGNAL HEAD W/3 SIGNAL INDICATORS
	EA	EA	LF	LF	LF	EA
E-44	3	3	200	600	600	4

SHEET No.	(N) #10 (G) GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #14 (G) GAUGE WIRE CABLE	(N) #12 (N) GAUGE WIRE CABLE	(N) TEMPORARY LUMINAIRE ON WOOD POLE
	LF	LF	LF	LF	EA
E-44	200	300	3,000	400	1

SHEET No.	(N) #10 (G) GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) MESSENGER CABLE	(N) TEMPORARY LUMINAIRE ON WOOD POLE	(N) TEMPORARY WOOD POLE	(RL) VIDEO DETECTION CAMERA	(N) VIDEO COMPOSITE CABLE	(N) VIDEO POWER CABLE
	LF	LF	LF	EA	EA	EA	LF	LF
E-45	150	100	300	1	4	1	600	600

SHEET No.	(N) 2" CONDUIT PVC SCHEDULE 80	(RL) TEMPORARY WOOD POLE	(RL) VIDEO DETECTION CAMERA	(N) VIDEO DETECTION CAMERA	(N) MESSENGER CABLE	(N) VIDEO COMPOSITE CABLE	(N) VIDEO POWER CABLE	(RL) SIGNAL HEAD W/3 SIGNAL INDICATORS	(N) SIGNAL HEAD W/3 SIGNAL INDICATORS
	LF	EA	EA	EA	LF	LF	LF	EA	EA
E-46	200	9	6	1	1,000	2,500	2,500	8	1

SHEET No.	(N) #10 (G) GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #14 (G) GAUGE WIRE CABLE	(N) #12 (N) GAUGE WIRE CABLE	(RL) TEMPORARY LUMINAIRE ON WOOD POLE
	LF	LF	LF	LF	EA
E-46	1,000	1,200	3,500	1,200	2

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 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

ELECTRICAL QUANTITIES
E-99

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 12-05-13 TIME PLOTTED => 14:38

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	944	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____
3-3-14
PLANS APPROVAL DATE _____

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NOTES:

1. THE QUANTITIES ON THIS SHEET ARE APPROXIMATE MEASUREMENTS.
2. (N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

MODIFY SIGNAL AND LIGHTING (LOCATION 1)

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	EA	LF	LF
E-48	700	3	1,400	700

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	EA	LF	LF
E-49	700	2	1,400	700

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 3" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) PULL BOX No. 5(T)	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP
	LF	LF	LF	LF	LF	EA	LF	EA
E-50	800	150	2,000	400	1,000	5	2,100	6

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 4" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) PULL BOX No. 5	(N) PULL BOX No. 5(T)	(N) PULLBOX No. 6	(N) PULL BOX No. 6(E)
	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA
E-51	1,500	50	800	2,350	500	1,250	1	4	7	1

SHEET No.	(N) LED LUMINAIRE 235 WATTS	(N) TYPE III SERVICE EQUIPMENT ENCLOSURE	(N) CONTROLLER CABINET FOUNDATION W/ ANCHOR BOLTS	(N) CONTROLLER CABINET	(N) BATTERY BACK-UP SYSTEM	(N) TYPE III SERVICE EQUIPMENT ENCLOSURE	(N) TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	(N) TYPE H SERVICE RISER	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE D LOOP	(N) TYPE E LOOP
	EA	EA	EA	EA	EA	EA	EA	EA	LF	EA	EA
E-51	4	1	1	1	1	1	1	1	4,500	8	20

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**ELECTRICAL QUANTITIES
E-100**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	945	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

3-3-14
PLANS APPROVAL DATE _____

REGISTERED PROFESSIONAL ENGINEER
KATHERINE DINH
No. E17157
Exp. 9-30-13
ELECTRICAL
STATE OF CALIFORNIA

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MODIFY SIGNAL AND LIGHTING (LOCATION 1) cont.

SHEET No.	(N) TYPE 1 STANDARD FOUNDATION	(N) TYPE 1 STANDARD	(N) TYPE 26-4-100 STANDARD FOUNDATION	(N) TYPE 26-4-100 STANDARD	(N) TYPE 29A-5-100 STANDARD FOUNDATION	(N) TYPE 29A-5-100 STANDARD	(N) SIGNAL MOUNT SV-1-T	(N) SIGNAL MOUNT SV-2-T	(N) SIGNAL MOUNT TV-2-T	(N) SIGNAL INTERCONNECT CABLE 12 CSC
	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF
E-51	2	2	2	2	2	2	2	2	2	2,500

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP
	LF	EA	LF	LF	LF	EA
E-52	700	2	1,400	700	400	2

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	EA	LF	LF
E-53	700	3	1,400	700

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	EA	LF	LF
E-54	300	1	700	350

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**ELECTRICAL QUANTITIES
E-101**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	946	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____
3-3-14
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MODIFY SIGNAL AND LIGHTING (LOCATION 2)

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #8 (G) GAUGE WIRE CABLE	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP
	LF	EA	LF	LF	EA
E-56	200	1	350	350	2

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) 3" CONDUIT PVC SCHEDULE 80	(N) 4" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) PULL BOX No. 5	(N) PULL BOX No. 5(T)	(N) PULL BOX No. 6	(N) PULL BOX No. 6(E)
	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA
E-57	550	50	250	500	2,850	1,000	1,425	3	5	5	1

SHEET No.	(N) LED LUMINAIRE 235 WATTS	(N) CONTROLLER CABINET FOUNDATION W/ ANCHOR BOLTS	(N) CONTROLLER CABINET	(N) BATTERY BACK-UP SYSTEM	(N) TYPE III SERVICE EQUIPMENT ENCLOSURE	(N) TYPE III SERVICE FOUNDATION W/ANCHOR BOLTS	(N) TYPE H SERVICE RISER	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE D LOOP	(N) TYPE E LOOP
	EA	EA	EA	EA	EA	EA	EA	LF	EA	EA
E-57	4	1	1	1	1	1	1	6,000	12	25

SHEET No.	(N) TYPE 1 STANDARD FOUNDATION	(N) TYPE 1 STANDARD	(N) TYPE 19-A-3-100 STANDARD FOUNDATION	(N) TYPE 19A-3-100 STANDARD	(N) TYPE 24A-3-100 STANDARD FOUNDATION	(N) TYPE 24A-3-100 STANDARD	(N) TYPE 29A-5-100 STANDARD FOUNDATION	(N) TYPE 29A-5-100 STANDARD	(N) SIGNAL MOUNT SV-1-T	(N) SIGNAL MOUNT TV-2-T	(N) COUNTDOWN PED SIGNAL SP-1-T
	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
E-57	4	4	1	1	1	1	2	2	4	4	6

SHEET No.	(N) SIGNAL INTERCONNECT CABLE 12 CSC	(N) SIGNAL INTERCONNECT CABLE 3 CSC	(N) PEDESTRIAN PUSH BUTTON (AUDIBLE) PPB	(N) PEDESTRIAN PUSH BUTTON (EQUESTRIAN) PPB
	LF	LF	EA	EA
E-57	2,000	2,000	6	6

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REVISOR BY
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**ELECTRICAL QUANTITIES
E-102**

LAST REVISION | DATE PLOTTED => 07-MAR-2014
12-05-13 | TIME PLOTTED => 14:39

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	947	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

3-3-14
PLANS APPROVAL DATE _____

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MODIFY SIGNAL AND LIGHTING (LOCATION 2) Cont.

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP
	LF	EA	LF	LF	LF	EA
E-58	600	3	1400	700	1,800	4

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	EA	LF	LF
E-59	550	2	1,200	600

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	EA	LF	LF
E-60	300	2	1,400	700

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP
	LF	EA	EA	LF	LF	LF	EA
E-61	600	2	3	2,000	1,000	1,100	3

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5(T)	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP
	LF	EA	LF	LF	LF	EA
E-62	300	2	2,000	1,000	600	2

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 LUIS PENALOZA FERDINAND DE LA CRUZ
 REVISED BY: _____ DATE REVISED: _____

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**ELECTRICAL QUANTITIES
E-103**

LAST REVISION DATE PLOTTED => 07-MAR-2014
 12-05-13 TIME PLOTTED => 14:39

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	948	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

3-3-14
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MODIFY SIGNAL AND LIGHTING (LOCATION 3)

SHEET No.	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE
	LF	LF
E-64	2,000	1,000

SHEET No.	(N) 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP DETECTOR
	LF	LF	LF	LF	EA
E-65	1,000	2,000	1,000	400	2

SHEET No.	(N) PULL BOX No. 5(T)	(N) PULL BOX No. 6(T)	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE D LOOP	(N) TYPE E LOOP	(N) TYPE 1 STANDARD FOUNDATION	(N) TYPE 1 STANDARD
	EA	EA	LF	EA	EA	EA	EA
E-66	2	1	3,200	7	17	1	1

SHEET No.	(N) TYPE E LOOP DETECTOR
	EA
E-67	4

SHEET No.	(N) 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) DETECTOR LEAD-IN CABLE DLC	(N) TYPE E LOOP DETECTOR	(N) PULL BOX No. 5(T)
	LF	LF	LF	LF	EA	EA
E-68	300	2,000	1,000	2,100	4	2

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 REVISOR: LUIS PENALOZA
 DATE REVISOR: FERDINAND DE LA CRUZ

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**ELECTRICAL QUANTITIES
E-104**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	949	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

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MODIFY FLASHING BEACON

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE	(N) PULL BOX No. 5(T)
	LF	LF	LF	EA
E-69	400	1,000	500	2

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	LF	LF
E-70	400	800	400

SHEET No.	(N) #6 GAUGE WIRE CABLE	(N) #6 (G) GAUGE WIRE CABLE
	LF	LF
E-71	2,000	1,000

SHEET No.	(N) TYPE 9 FLASHING BEACON CANTILEVER FOUNDATION	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE
	EA	LF	LF
E-72	1	200	100

FLASHING BEACON SYSTEM

SHEET No.	(N) TYPE 9 FLASHING BEACON CANTILEVER FOUNDATION	(N) TYPE 9 FLASHING BEACON CANTILEVER	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) 332L CABINET FOUNDATION W/ANCHOR BOLTS	(N) 332L CABINET	(N) OMNIDIRECTIONAL ANTENNA W/UNIVERSAL SIDE BRACKET	(N) COMBO GPS/UHF ANTENNA W/BRACKET	(N) 1-A POLE FOUNDATION	(N) 1-A POLE
	EA	EA	LF	LF	LF	EA	EA	EA	EA	EA	EA
E-73	1	1	500	200	100	1	1	1	1	1	1

**ELECTRICAL QUANTITIES
E-105**

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	950	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

3-3-14
PLANS APPROVAL DATE _____

KATHERINE DINH
No. E17157
Exp. 9-30-13
ELECTRICAL

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.

FLASHING BEACON SYSTEM Cont.

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)
	COMPUTER CONTROL UNIT	HEAD SWITCH WALL MOUNTED	PRIORITY DETECTOR	STANDARD NEMA KIT	STAND ALONE CABINET W/ REAR PIN CONNECTORS	RG-58 COAXIAL CABLE
	EA	EA	EA	EA	EA	LF
E-73	1	1	2	2	2	250

SHEET No.	(N)	(N)	(N)
	TYPE 9 FLASHING BEACON CANTILEVER FOUNDATION	TYPE 9 FLASHING BEACON CANTILEVER	#8 GAUGE WIRE CABLE
	EA	EA	LF
E-74	1	1	400

SHEET No.	(N)	(N)	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	PULL BOX No. 9A	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	TYPE 15 FLASHING BEACON FOUNDATION	TYPE 15 FLASHING BEACON
	LF	EA	EA	LF	LF	EA	EA
E-75	600	3	2	1,400	700	700	1

SHEET No.	(N)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	PULL BOX No. 9A	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE
	LF	EA	EA	LF	LF
E-76	700	1	2	1,400	700

MODIFY TRAFFIC MONITORING STATION

SHEET No.	(N)	(N)	(N)	(RL)	(N)	(N)	(N)	(N)
	1 1/2" CONDUIT PVC SCHEDULE 80	PULL BOX No. 5	334L CABINET FOUNDATION W/ANCHOR BOLTS	334L CABINET	#8 GAUGE WIRE CABLE	#8 (G) GAUGE WIRE CABLE	LOOP DETECTOR TYPE E	LOOP WIRE TYPE 2
	LF	EA	EA	EA	LF	LF	EA	LF
E-77	300	2	1	1	400	600	10	1,200

ELECTRICAL QUANTITIES E-106

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN B

REVISOR BY DATE

LUIS PENALOZA
FERDINAND DE LA CRUZ

CALCULATED/DESIGNED BY
CHECKED BY

FUNCTIONAL SUPERVISOR
FERDINAND DE LA CRUZ

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	951	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

3-3-14
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.

NOTES:

1. THE QUANTITIES ON THIS SHEET ARE APPROXIMATE MEASUREMENTS.
2. (N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.
3. (RL) - RELOCATED FROM PHASE A.

MODIFY TRAFFIC MONITORING STATION Cont.

SHEET No.	(N) 1/2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5	(N) 334L CABINET FOUNDATION W/ANCHOR BOLTS	(N) 334L CABINET	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) LOOP DETECTOR TYPE E	(N) LOOP WIRE TYPE 2
	LF	EA	EA	EA	LF	LF	EA	LF
E-78	800	5	1	1	1,600	800	8	400

ENVIRONMENTAL SENSOR STATION

SHEET No.	(N) 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) SIGNAL INTERCONNECT CABLE	(RL) VARIABLE MESSAGE SIGN (VMS)
	LF	LF	LF	LF	EA
E-79	500	1,200	600	600	1

SHEET No.	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) SIGNAL INTERCONNECT CABLE
	LF	LF	LF
E-80	1,400	700	700

SHEET No.	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) SIGNAL INTERCONNECT CABLE
	LF	LF	LF
E-81	2,800	1,400	1,400

SHEET No.	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) SIGNAL INTERCONNECT CABLE
	LF	LF	LF
E-82	2,000	1,000	2,000

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-107**

APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION DATE PLOTTED => 07-MAR-2014 12-05-13 TIME PLOTTED => 14:40

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	952	1168

Katherine Dinh
REGISTERED ELECTRICAL ENGINEER DATE _____

3-3-14
PLANS APPROVAL DATE _____

No. E17157
Exp. 9-30-13
ELECTRICAL

REGISTERED PROFESSIONAL ENGINEER
KATHERINE DINH
No. E17157
Exp. 9-30-13
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.

NOTES:

1. THE QUANTITIES ON THIS SHEET ARE APPROXIMATE MEASUREMENTS.
2. (N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.
3. (RL) - RELOCATED FROM PHASE A.

ENVIRONMENTAL SENSOR STATION Cont.

SHEET No.	(N) 2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) SIGNAL INTERCONNECT CABLE	(N) PAVEMENT SENSOR
	LF	LF	LF	LF	EA
E-83	100	1,200	600	600	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(RL) VARIABLE MESSAGE SIGN (VMS)
	LF	LF	LF	EA
E-84	100	400	200	1

SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) #8 GAUGE WIRE CABLE	(N) #8 (G) GAUGE WIRE CABLE	(N) SIGNAL INTERCONNECT CABLE	(RL) VARIABLE MESSAGE SIGN (VMS)
	LF	LF	LF	LF	EA
E-85	800	1,200	800	800	1

CHANGEABLE MESSAGE SIGN

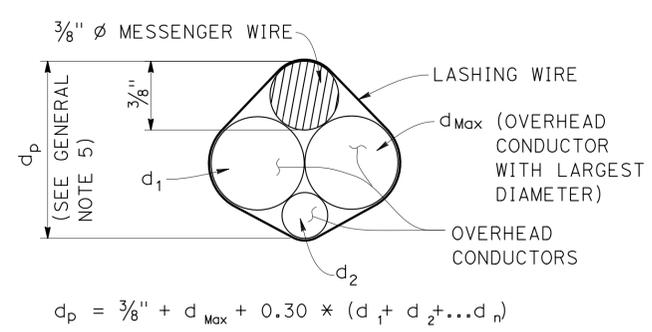
SHEET No.	(N) 1 1/2" CONDUIT PVC SCHEDULE 80	(N) 2" CONDUIT PVC SCHEDULE 80	(N) PULL BOX No. 5	(N) CONTROLLER CABINET	(N) BATTERY BACK-UP SYSTEM	(N) CMS COMPLETE SYSTEM	(N) CCTV POLE	(N) CCTV CAMERA SYSTEM
	LF	LF	EA	EA	EA	EA	EA	EA
E-86	30	300	4	1	1	1	1	1

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

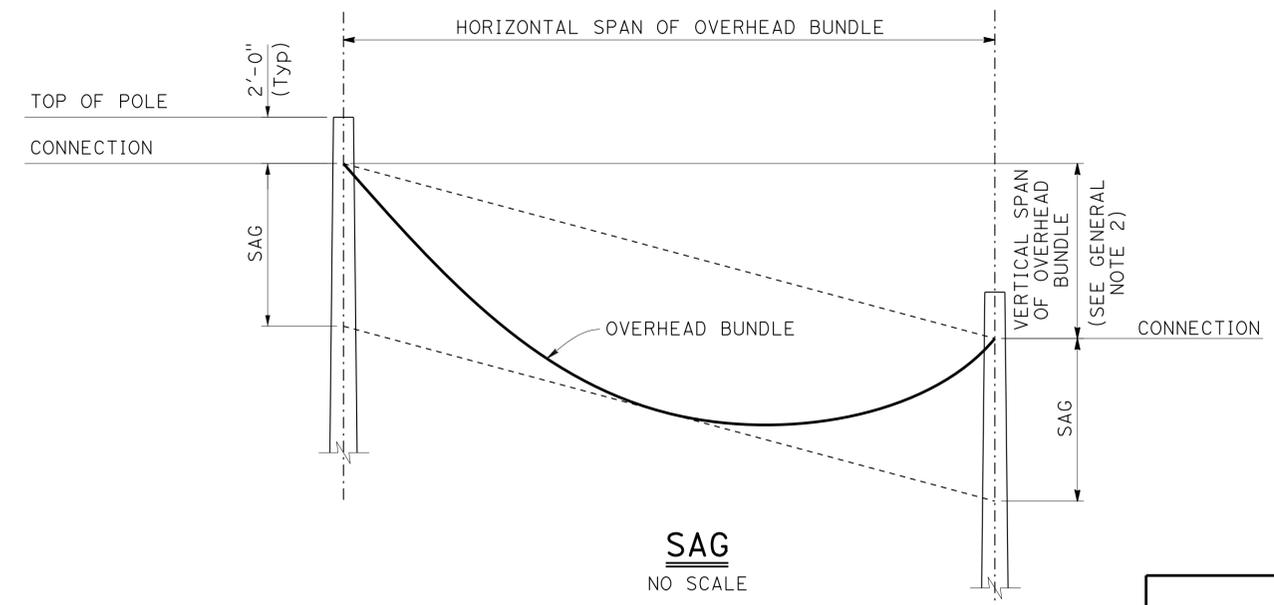
APPROVED FOR ELECTRICAL WORK ONLY

**ELECTRICAL QUANTITIES
E-108**

LAST REVISION | DATE PLOTTED => 07-MAR-2014
 12-05-13 | TIME PLOTTED => 14:40



PROJECTED DEPTH OF OVERHEAD BUNDLE, (d_p)



Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition (LTS-5).

GROUP LOAD COMBINATIONS:

- I Dead Load
- II Dead Load + Wind Load
- III Dead Load + 0.5 (Wind Load) + Ice Load
- IV Fatigue: Not used

LOADING:

Wind Loading: 100 mph (3-second gust)
 Wind Recurrence Interval: 10 years
 Combined height, exposure, and elevated terrain factor = 1.05
 (Exposure C, structure is not located on or over the top half of a ridge, hill, or escarpment)

Ice Loading: 3.0 psf on surfaces, 0.60 in radial thickness of ice at a unit weight of 60 pcf on overhead bundles

BASIC DESIGN VALUES:

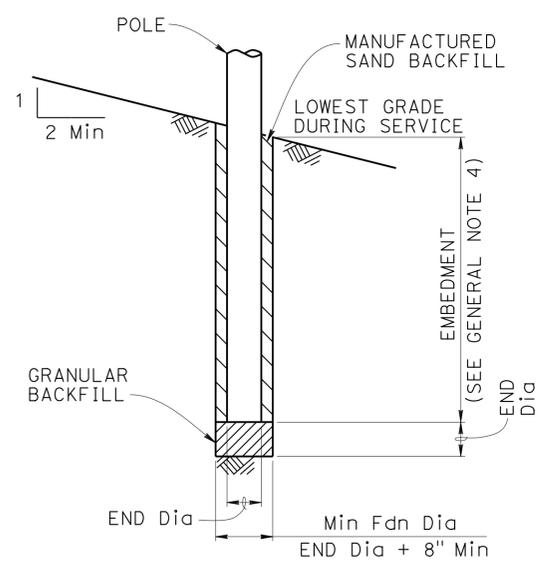
Timber Poles: Fb = 1850 psi
 Fv = 110 psi
 Fcp = 230 psi
 Fc = 950 psi
 E = 1500 x 10³ psi

DESIGN WIRE BREAKING STRENGTHS:

ASTM A475, Utilities Grade, 7 strand modified by termination efficiency factor of 0.8.

FOUNDATION DESIGN NOTES:

1. Pole embedment depth design is based on Broms' approximate procedure as described in Article 13.6 of AASHTO LTS-5.
2. Embedment depth is calculated based on following soil parameters, Cohesive Soil: Shear strength of soil c = 1500 psf. Cohesionless Soil: φ = 30 deg, γ = 120 pcf. Soil assumed to be unsaturated.
3. An overload factor of 2.0 and an under capacity factor of 0.7 were used for safety factor of 2.86.
4. Allowable vertical bearing pressure at the end bearing of poles is 3000 psf at 6 feet or more embedment.



POLE FOUNDATION

GENERAL NOTES:

1. The messenger wire and any combination of overhead conductors must not exceed either a self weight of 3.0 lb/ft or the maximum d_p.
2. The maximum vertical span is 10% of the horizontal span.
3. For poles with adjacent unbalanced horizontal spans, the shortest horizontal span must be at least 50% of the largest horizontal span.
4. Add 2'-0" for slopes above 1V:4H.
5. For a pole supporting multiple spans, calculate d_p for each span and use the largest value.
6. Do not exceed the attachments shown.

DIAMETERS AND SELF WEIGHT OF OVERHEAD CONDUCTORS

CONDUCTOR OR CABLE TYPE	DIAMETER d (in)	WEIGHT w (plf)
3 CONDUCTOR SIGNAL CABLE (3CSC)	0.400	0.0980
5 CONDUCTOR SIGNAL CABLE (5CSC)	0.500	0.1560
9 CONDUCTOR SIGNAL CABLE (9CSC)	0.650	0.2760
12 CONDUCTOR SIGNAL CABLE (12CSC)	0.800	0.3970
28 CONDUCTOR SIGNAL CABLE (28CSC)	0.900	0.6490
1#14	0.166	0.0235
1#12	0.185	0.0330
1#10	0.210	0.0476
1#8	0.271	0.0774
1#6	0.310	0.1130
1#4	0.359	0.1690
1#3	0.388	0.2080
1#2	0.420	0.2560
1#1	0.498	0.3340
6-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.350	0.0860
12-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.500	0.1440
DETECTOR LEAD-IN CABLE (DLC)	0.310	0.0440
12 to 48-STRAND FIBER OPTIC CABLE (48FOC)	0.424	0.0600
72-STRAND FIBER OPTIC CABLE (72FOC)	0.484	0.0770
96-STRAND FIBER OPTIC CABLE (96FOC)	0.535	0.1050
144-STRAND FIBER OPTIC CABLE (144FOC)	0.670	0.1890
3/8" Ø MESSENGER WIRE	0.375	0.2730
VCP CABLE	0.390	0.017
VCC CABLE	0.390	0.068
EVP CABLE	0.30	0.04

NO SCALE

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

BRANCH CHIEF	DESIGN	BY A MALAK	CHECKED YU SONG
	DETAILS	BY H NGUYEN	CHECKED A MALAK
	QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.
DEPARTMENT OF TRANSPORTATION	DESIGN AND TECHNICAL SERVICES	N/A
	SPECIAL DESIGNS BRANCH	POST MILE
		2.2/15.2

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGNS BRANCH

BRIDGE NO.
N/A
POST MILE
2.2/15.2

TEMPORARY WOOD POLES
GENERAL NOTES

SES-1

POLE SELECTION TABLE

LEGEND

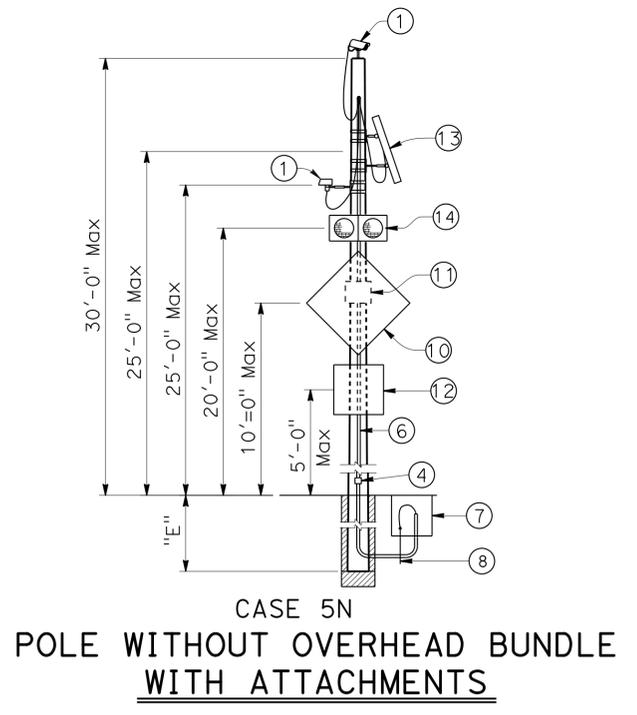
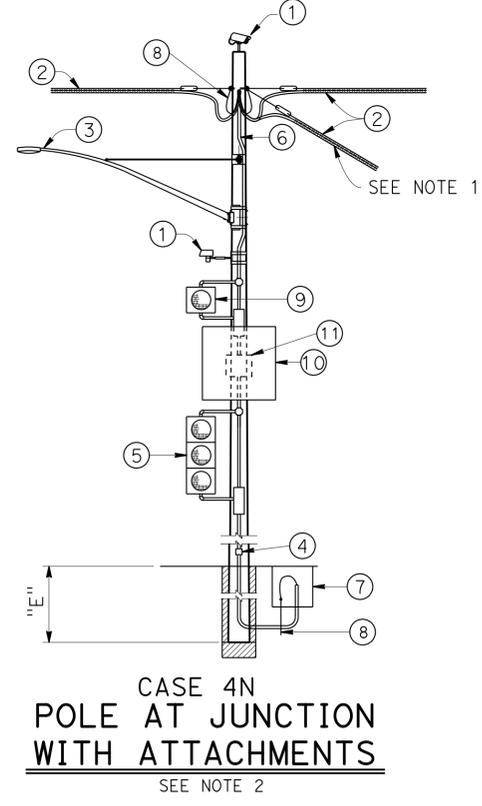
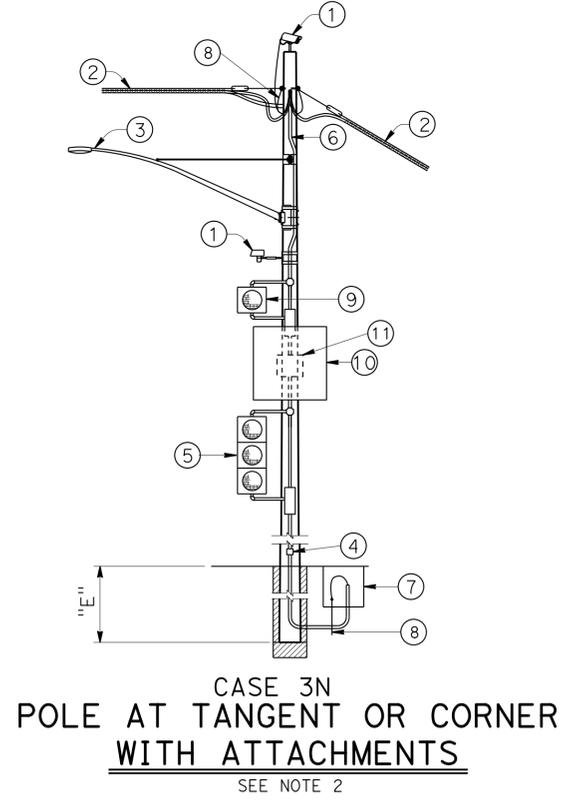
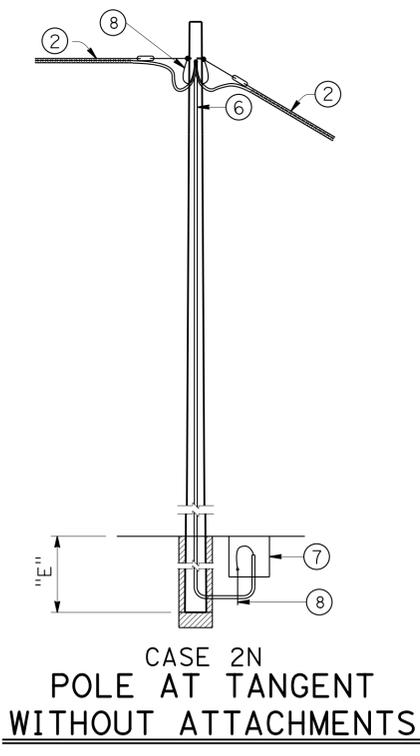
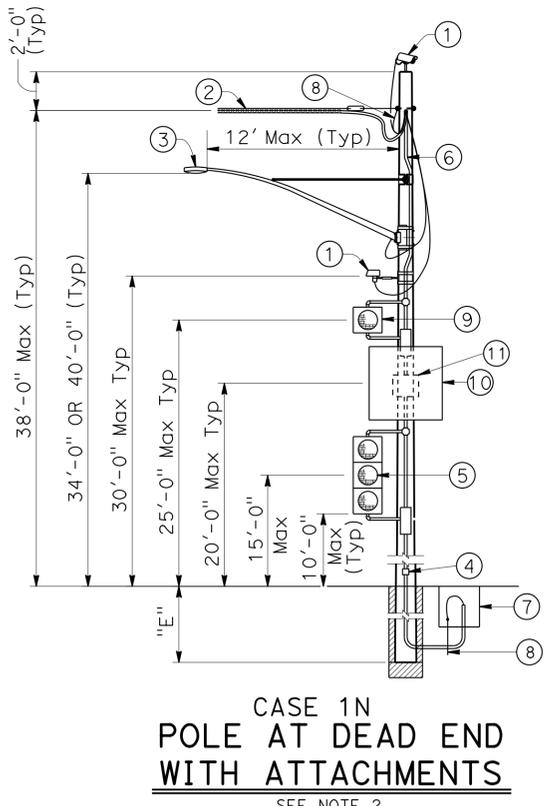
- Wood Pole No Attachments
- ^A Wood Pole with Attachments
- OH- Overhead Bundle

OVERHEAD BUNDLE HORIZONTAL SPAN (Max)	MAXIMUM d _p	CASE 1N				CASE 2N				CASE 3N				CASE 4N				CASE 5N
		1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1.0"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	N/A
50'	MINIMUM POLE CLASS	H-1	H-2	H-2	H-2	4	3	2	1	H-2	H-2	H-3	H-3	H-4	H-4	H-4	H-5	CLASS 1 E = 10'
	POLE EMBEDMENT (E)	11'				10'				11'				12'				
100'	MINIMUM POLE CLASS	H-2	H-3	H-4	H-5	1	H-1	H-2	H-3	H-4	H-5	H-5	H-6	H-5	H-5	H-6		
	POLE EMBEDMENT (E)	12'				11'				12'				12'				
150'	MINIMUM POLE CLASS	H-4	H-5	H-6		H-1	H-2	H-3	H-5	H-6				H-6				
	POLE EMBEDMENT (E)	12'				12'				12'				12'				
200'	MINIMUM POLE CLASS	H-5	H-6			H-2	H-3	H-5										
	POLE EMBEDMENT (E)	12'				12'												

- ① CCTV camera assembly or vehicle detection system
- ② Overhead bundle consisting of 3/8" ∅ messenger wire and overhead conductors and lashing wire.
- ③ Luminaire with mast arm
- ④ Pedestrian pushbutton
- ⑤ Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- ⑥ Riser with weather head as required
- ⑦ Pull box as required
- ⑧ Grounding as required
- ⑨ Single section flashing beacon or single sheet sign panel (4 SQFT Max)
- ⑩ Single sheet sign panel (4' x 4' Max) or signal face with 3 indications
- ⑪ Flashing beacon control assembly
- ⑫ NEMA 3R enclosure, 26"(W) x 56"(H) x 12"(D) Max dimensions. Max weight including batteries, 450 lbs
- ⑬ 25' SQFT Max total photovoltaic panels mounted as shown as required
- ⑭ 2-section 12" flashing beacon

NOTES:

1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
2. Cases, 1N, 3N and 4N may substitute the attachments shown in Case 5N if the photovoltaic panel is not included.



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

BRANCH CHIEF DAVID NEUMANN

DESIGN	BY A MALAK	CHECKED YU SONG
DETAILS	BY H NGUYEN	CHECKED A MALAK
QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGNS BRANCH **B**

BRIDGE NO.	N/A
POST MILE	2.2/15.2

**TEMPORARY WOOD POLES
NON-GUYED - NO SIGNALS ON SPANS**

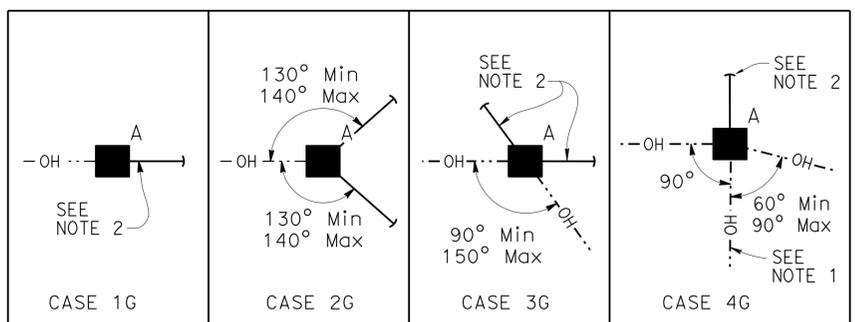
SES-2
SHEET 2 OF 11

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	957	1168
Aiman malak REGISTERED CIVIL ENGINEER		12-19-13 DATE			
3-3-14 PLANS APPROVAL DATE					
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.</small>					

LEGEND

- Wood Pole with Attachments
- Overhead Bundle
- Guy Anchor

POLE SELECTION TABLE

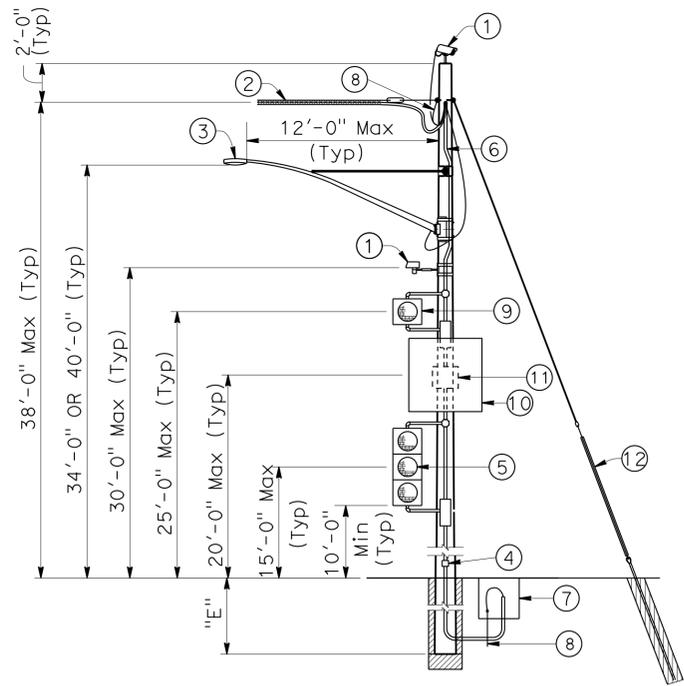


- ① CCTV camera assembly or vehicle detection system
- ② Overhead bundle consisting of 3/8" ϕ messenger wire and overhead conductors and lashing wire.
- ③ Luminaire with mast arm
- ④ Pedestrian pushbutton
- ⑤ Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- ⑥ Riser with weather head as required
- ⑦ Pull box as required
- ⑧ Grounding as required
- ⑨ Single section flashing beacon or single sheet sign panel (4 SQFT Max)
- ⑩ Single sheet sign panel (4' x 4' Max) or signal face with 3 indications
- ⑪ Flashing beacon control assembly
- ⑫ 1/2" ϕ guy wire with white guy marker and strain insulator (for anchorage see "TEMPORARY WOOD POLES-DETAILS No. 2" sheet)

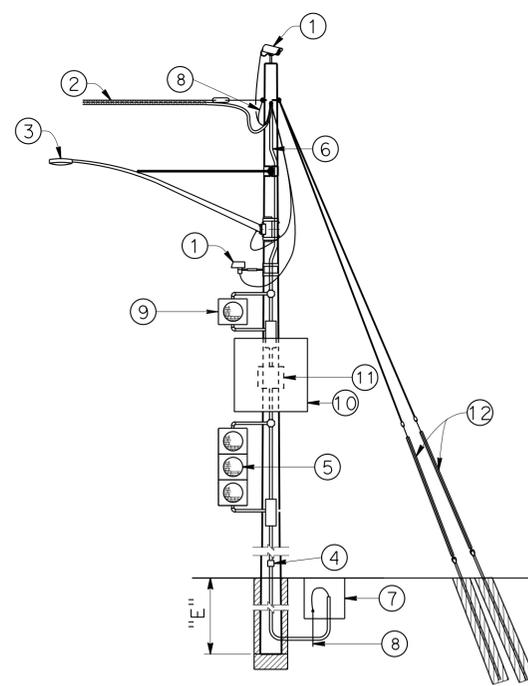
OVERHEAD BUNDLE HORIZONTAL SPAN (Max)	MAXIMUM d_p	1"				1.5"				2.0"				2.5"			
		1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"
50'	MINIMUM POLE CLASS	H-1	H-1	H-2	H-2	1	1	1	1	1	1	1	H-1	H-2	H-2	H-3	H-3
	POLE EMBEDMENT (E)	10'				9'				9'				11'			
100'	MINIMUM POLE CLASS	H-2	H-2	H-3	H-4	1	H-1	H-1	H-1	1	H-1	H-2	H-2	H-3	H-3	H-4	H-4
	POLE EMBEDMENT (E)	11'				9'				9'				12'			
150'	MINIMUM POLE CLASS	H-3	H-3	H-4	H-5	H-1	H-1	H-2	H-2	H-2	H-3	H-3	H-3	H-4	H-5	H-5	H-6
	POLE EMBEDMENT (E)	11'				9'				9'				12'			
200'	MINIMUM POLE CLASS	H-4	H-4	H-5	H-6	H-1	H-2	H-3	H-3	H-3	H-3	H-4	H-4	H-5	H-6		
	POLE EMBEDMENT (E)	11'				9'				9'				12'			

NOTES:

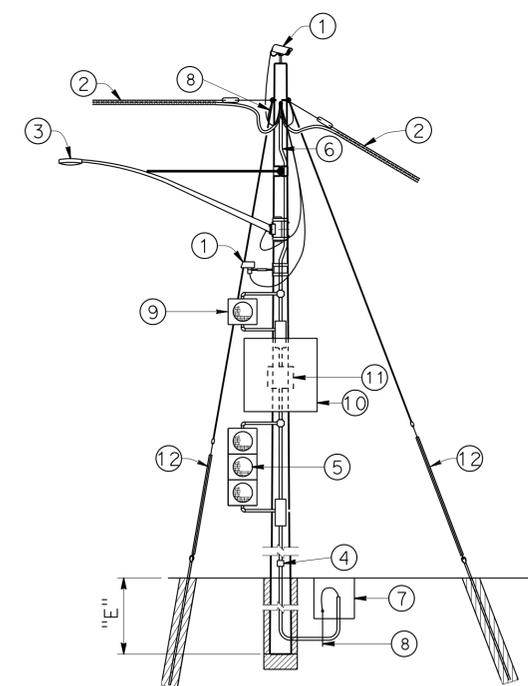
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
2. Guy wire in line with opposing span $\pm 5^\circ$.



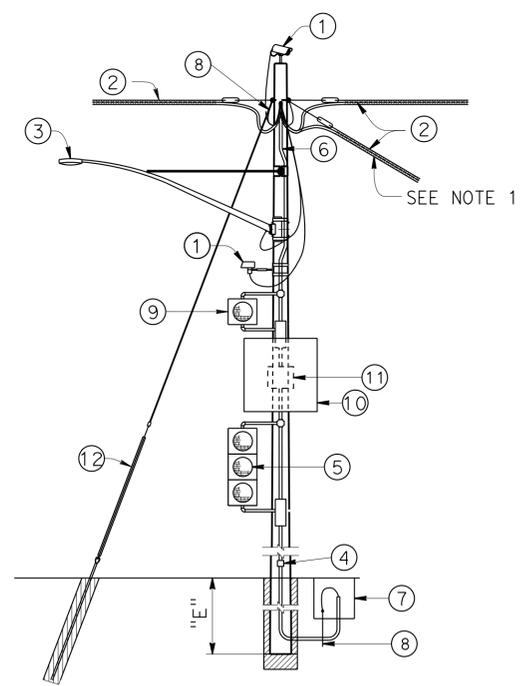
CASE 1G
POLE AT DEAD END WITH ATTACHMENTS



CASE 2G
POLE AT DEAD END WITH ATTACHMENTS



CASE 3G
POLE AT CORNER WITH ATTACHMENTS



CASE 4G
POLE AT JUNCTION WITH ATTACHMENTS

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

BRANCH CHIEF	DESIGN	BY A MALAK	CHECKED YU SONG
	DETAILS	BY H NGUYEN	CHECKED A MALAK
	QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.	
DEPARTMENT OF TRANSPORTATION	DESIGN AND TECHNICAL SERVICES	N/A	
	SPECIAL DESIGNS BRANCH	POST MILE	
		2.2/15.2	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGNS BRANCH

BRIDGE NO.
N/A
POST MILE
2.2/15.2

TEMPORARY WOOD POLES
GUYED - NO SIGNALS ON SPANS

SES-3

LEGEND

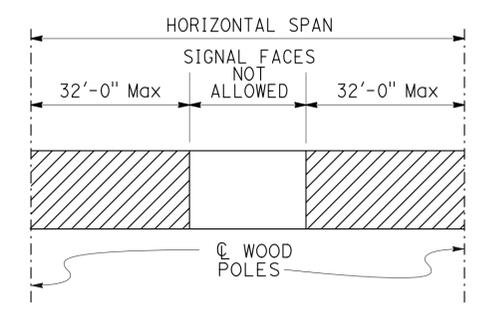
- A Wood Pole with Attachments
- TS- Overhead Bundle with Signal Faces (See Note 2)
- OH- Overhead Bundle
- Guy Anchor

POLE SELECTION TABLE

OVERHEAD BUNDLE HORIZONTAL SPAN Max	MAXIMUM dp	CASE 1GT			CASE 2GT			CASE 3GT (Mod)		
		1"	1.5"	2.0"	1"	1.5"	2.0"	1"	1.5"	2.0"
50'	MINIMUM POLE CLASS	H-2	H-3	H-3	H-2	H-2	H-2	H-3	H-4	H-4
	POLE EMBEDMENT (E)	10'			10'			11'		
100'	MINIMUM POLE CLASS	H-3	H-3	H-4	H-2	H-3	H-3	H-4	H-4	H-5
	POLE EMBEDMENT (E)	11'			10'			11'		
150'	MINIMUM POLE CLASS	H-3	H-4	H-4	H-2	H-3	H-4	H-4	H-5	H-5
	POLE EMBEDMENT (E)	11'			10'			11'		

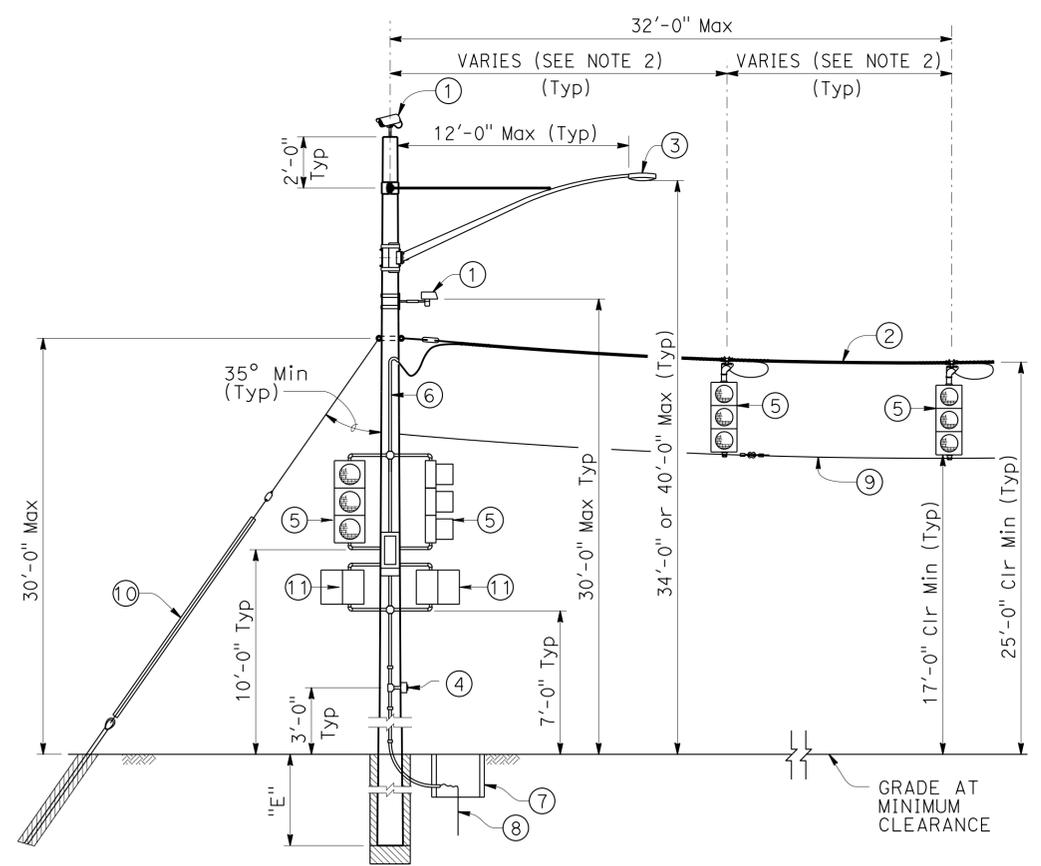
NOTES:

- In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
- Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".
- Guy wire in line with opposing span $\pm 5^\circ$.

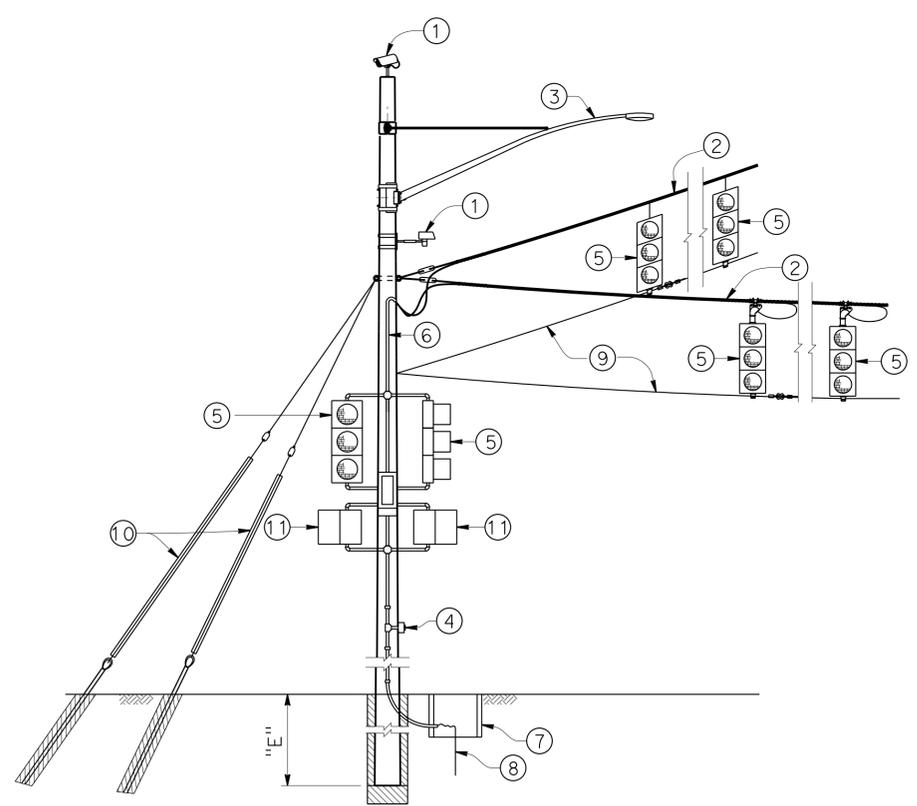


LOCATION OF SIGNAL FACES

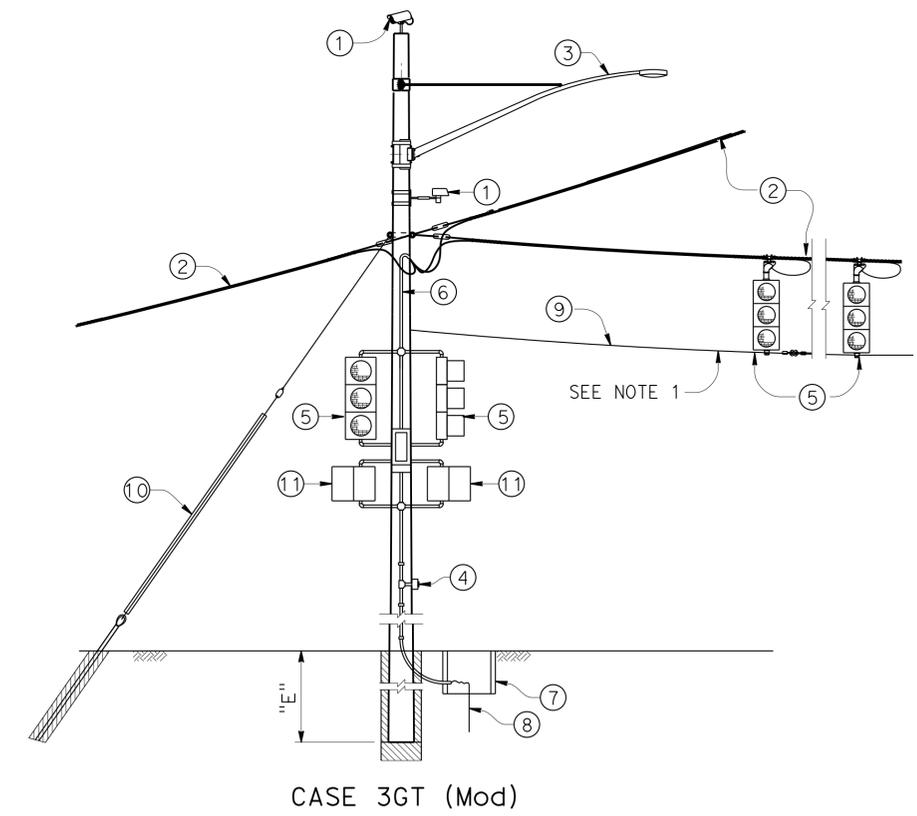
- CCTV camera assembly or vehicle detection system
- Overhead bundle consisting of $\frac{3}{8}$ " ϕ messenger wire and overhead conductors and lashing wire
- Luminaire with mast arm
- Pedestrian pushbutton
- Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- Riser with weather head as required
- Pull box as required
- Grounding as required
- $\frac{3}{8}$ " ϕ tether wire
- $\frac{1}{2}$ " ϕ guy wire with white guy marker and strain insulator. For anchorage see "TEMPORARY WOOD POLES-DETAILS No. 2" sheet
- Pedestrian signal head



**CASE 1GT
POLE AT DEAD END
WITH ATTACHMENTS**



**CASE 2GT
POLE AT CORNER
WITH ATTACHMENTS**



**CASE 3GT (Mod)
POLE AT JUNCTION
WITH ATTACHMENTS**

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

BRANCH CHIEF	DAVID NEUMANN
--------------	---------------

DESIGN	BY A MALAK	CHECKED YU SONG
DETAILS	BY H NGUYEN	CHECKED A MALAK
QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
 DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGNS BRANCH

BRIDGE NO.	N/A
POST MILE	2.2/15.2

TEMPORARY WOOD POLES
GUYED - WITH SIGNAL FACES ON SPANS

SHEET	4	OF	11
-------	---	----	----

LEGEND

- A Wood Pole with Attachments
- TS--- Overhead Bundle with Signal Faces (See Note 1)

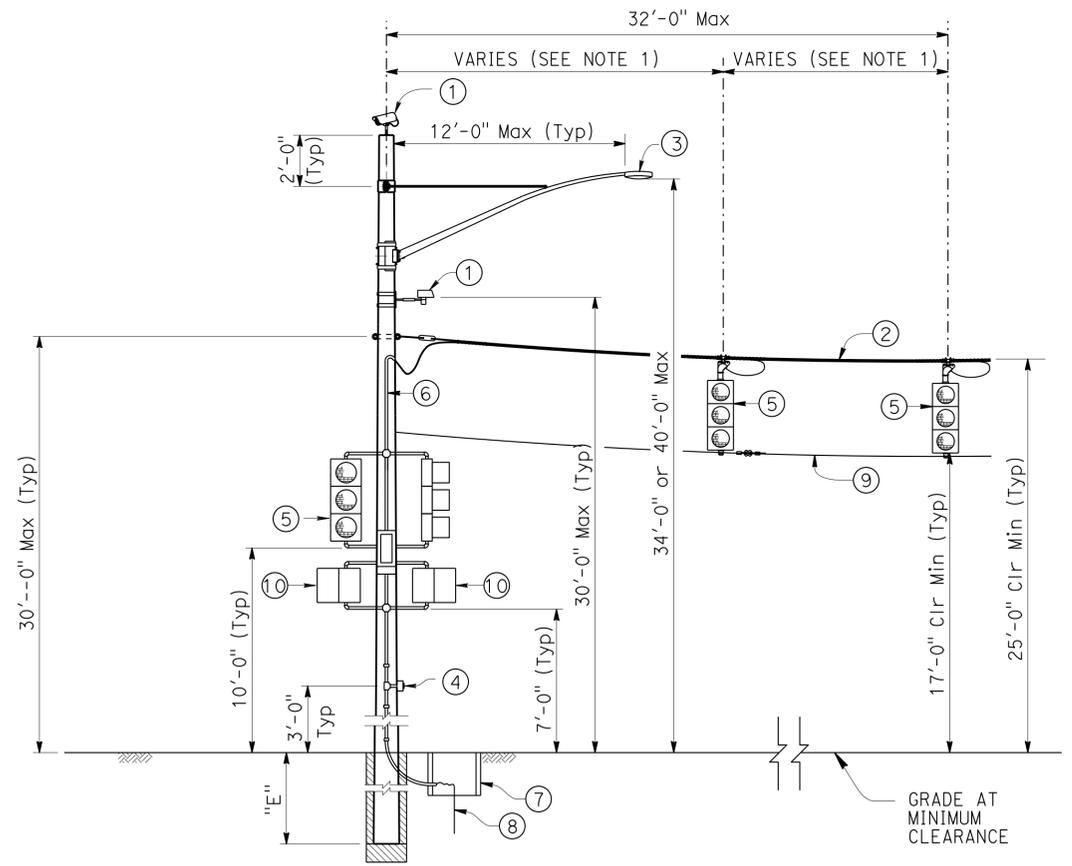
POLE SELECTION TABLE

		CASE 1NT			
OVERHEAD BUNDLE HORIZONTAL SPAN (Max)	75'	MAXIMUM d _p	1"	1.5"	2.0"
		MINIMUM POLE CLASS	H-5	H-6	H-6
		POLE EMBEDMENT (E)	13'		

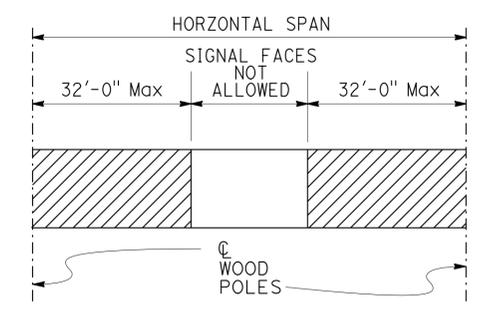
- ① CCTV camera assembly or vehicle detection system
- ② Overhead bundle consisting of 3/8" ø messenger wire and overhead conductors and lashing wire
- ③ Luminaire with mast arm
- ④ Pedestrian pushbutton
- ⑤ Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- ⑥ Riser with weather head as required
- ⑦ Pull box as required
- ⑧ Grounding as required
- ⑨ 3/8" ø tether wire
- ⑩ Pedestrian signal head

NOTES:

1. Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".



**CASE 1NT
POLE AT DEAD END
WITH ATTACHMENTS**



LOCATION OF SIGNAL FACES

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

BRANCH CHIEF DAVID NEUMANN

DESIGN	BY A MALAK	CHECKED YU SONG
DETAILS	BY H NGUYEN	CHECKED A MALAK
QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGNS BRANCH **B**

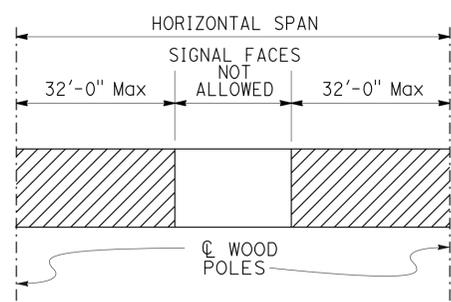
BRIDGE NO.	N/A
POST MILE	2.2/15.2

**TEMPORARY WOOD POLES
NON-GUYED - WITH SIGNAL FACES ON SPANS**

SES-5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	960	1168

Aman malak
 REGISTERED CIVIL ENGINEER DATE 12-19-13
 3-3-14
 PLANS APPROVAL DATE
 No. C73369
 Exp. 12-31-2014
 CIVIL
 STATE OF CALIFORNIA
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LOCATION OF SIGNAL FACES

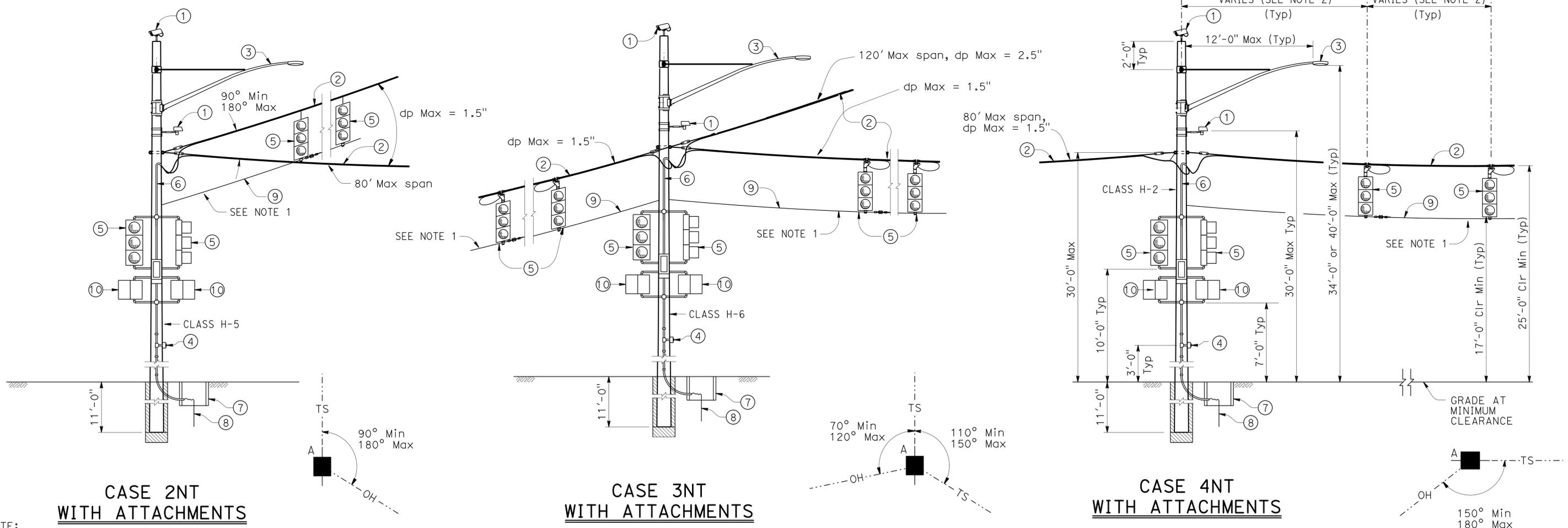
- ① CCTV camera assembly or vehicle detection system
- ② Overhead bundle consisting of 3/8" ø messenger wire and overhead conductors and lashing wire
- ③ Luminaire with mast arm
- ④ Pedestrian pushbutton
- ⑤ Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- ⑥ Riser with weather head as required
- ⑦ Pull box as required
- ⑧ Grounding as required
- ⑨ 3/8" ø tether wire
- ⑩ Pedestrian signal head

NOTES:

- 1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 70' unless otherwise indicated on the plans.
- 2. Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".

LEGEND

- A Wood Pole with Attachments
- TS- Overhead Bundle with Signal Faces (See Note 2)
- OH- Overhead Bundle

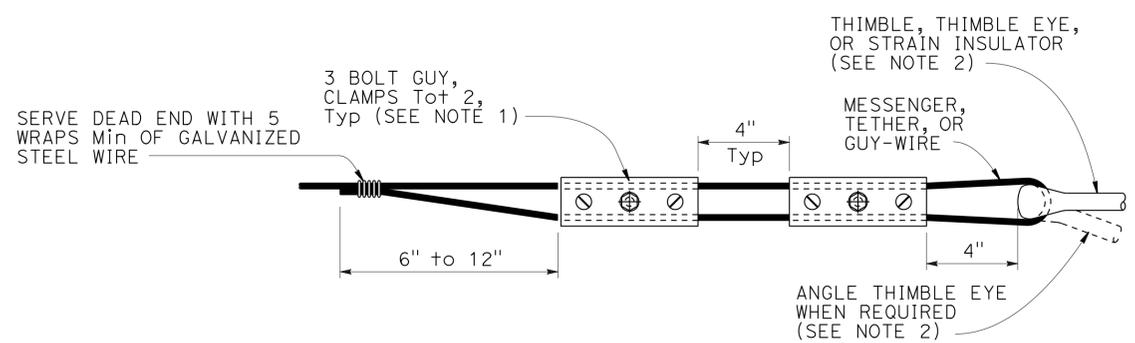


NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

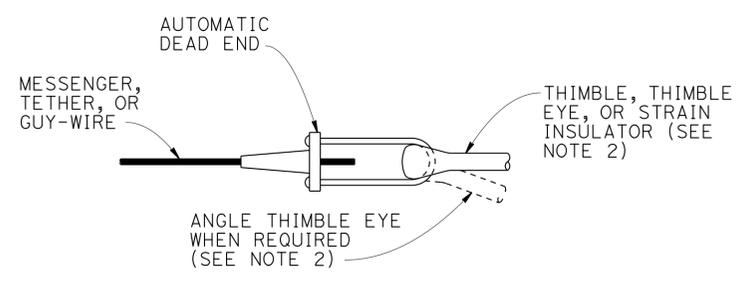
NO SCALE

BRANCH CHIEF DAVID NEUMANN	DESIGN BY A MALAK	CHECKED YU SONG	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES DESIGN AND TECHNICAL SERVICES SPECIAL DESIGNS BRANCH	BRIDGE NO. N/A	TEMPORARY WOOD POLES NON-GUYED - WITH SIGNAL FACES ON SPANS	SES-6
	DETAILS BY H NGUYEN	CHECKED A MALAK			POST MILE 2.2/15.2		
	QUANTITIES BY	CHECKED					

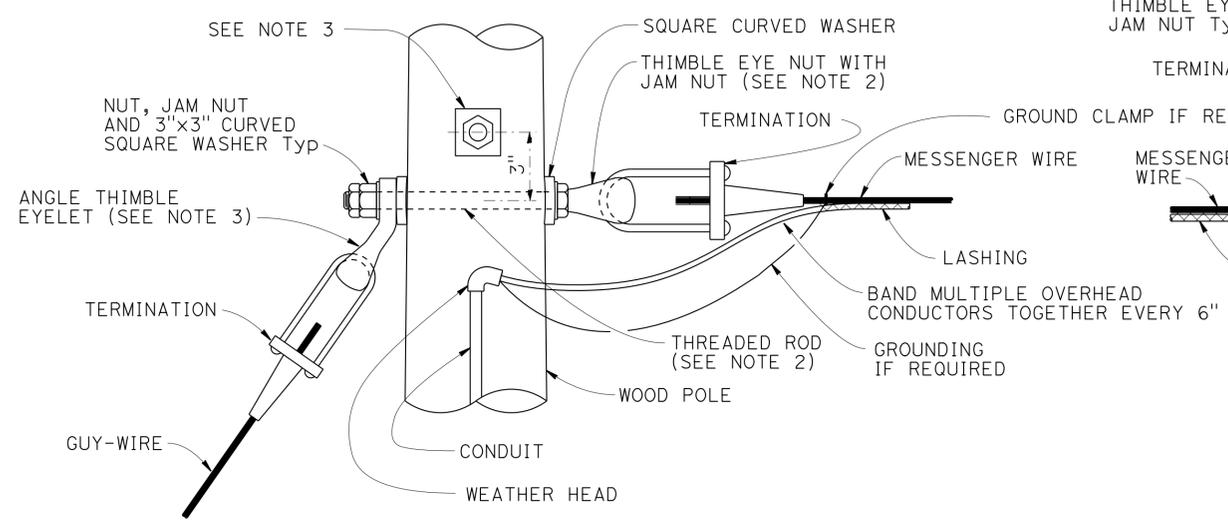
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	961	1168
12-19-13 REGISTERED CIVIL ENGINEER DATE			3-3-14 PLANS APPROVAL DATE		
No. C73369 Exp. 12-31-2014 CIVIL STATE OF CALIFORNIA			REGISTERED PROFESSIONAL ENGINEER ATMAN MALAK		
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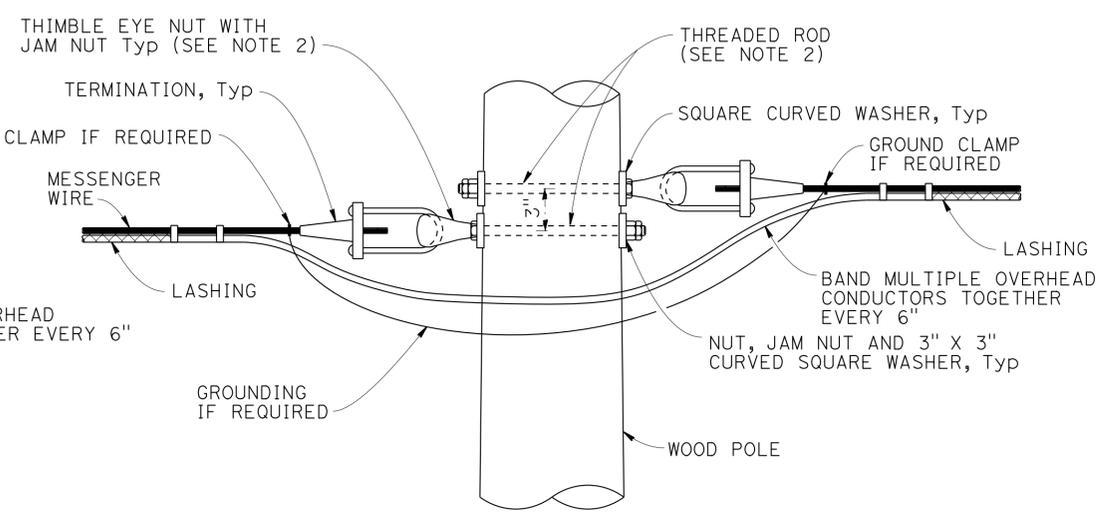
ALTERNATIVE TERMINATION OF MESSENGER WIRES USING GUY CLAMPS



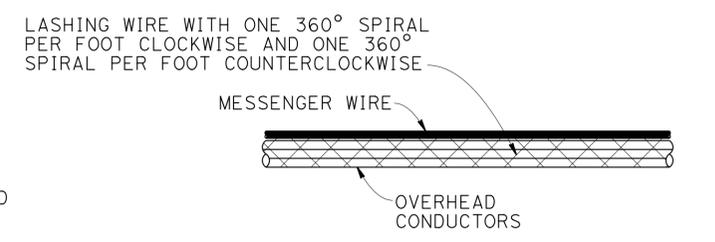
TERMINATION OF WIRES USING AUTOMATIC DEAD END



POLE AT DEAD END WITH GUY-WIRE CONNECTION

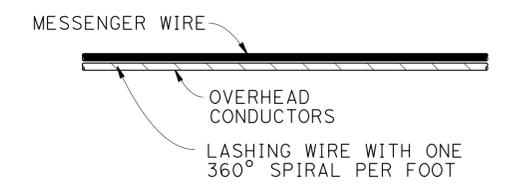


POLE AT TANGENT OR CORNER CONNECTION



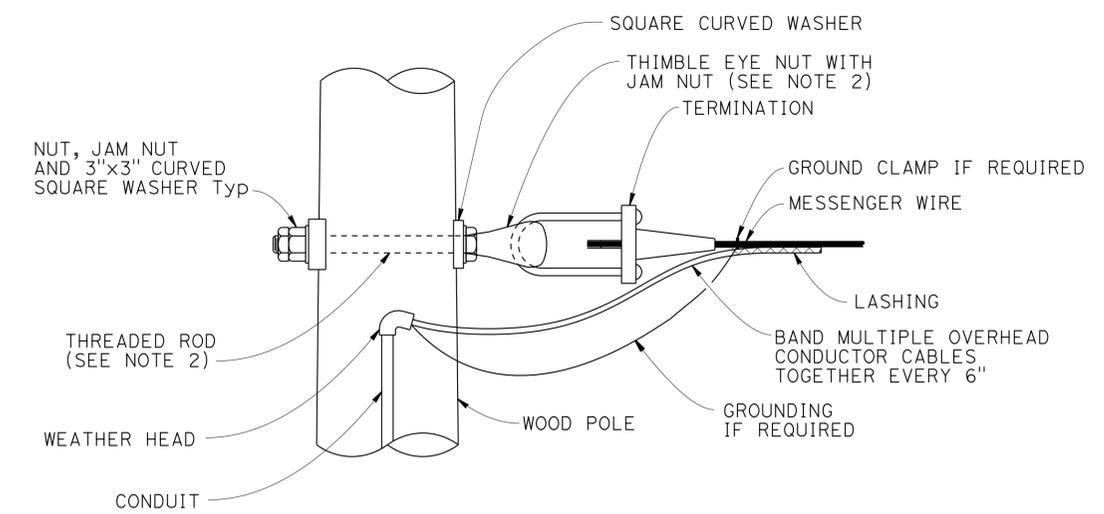
DOUBLE LASHING DETAIL

USE IF d_p IS GREATER THAN 1/2"



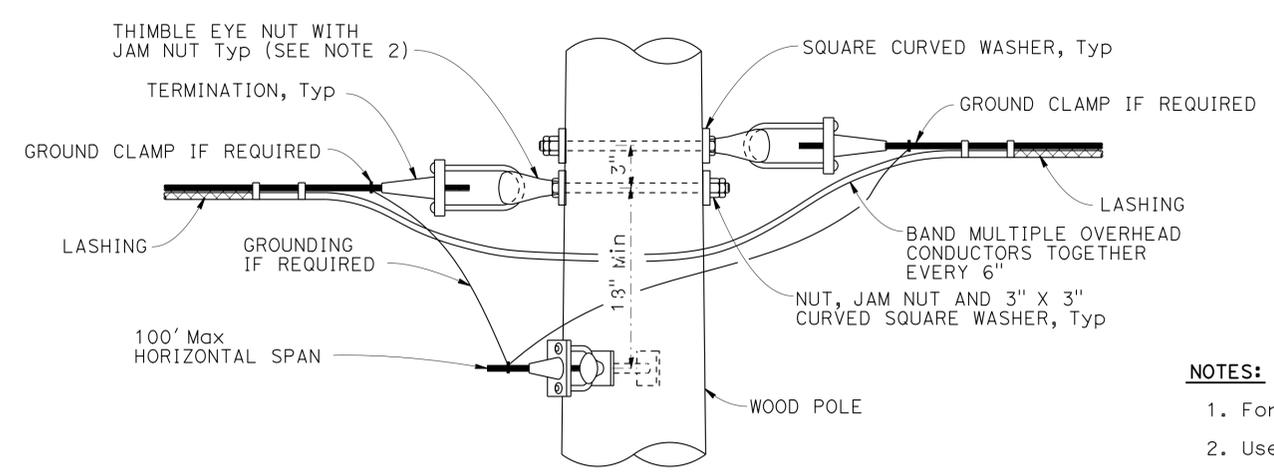
TYPICAL LASHING DETAIL

USE IF d_p IS 1/2" OR LESS



POLE AT DEAD END CONNECTION

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



POLE AT JUNCTION CONNECTION

NOTES:

1. For guy wires use 3 clamps.
2. Use 5/8" dia except 3/4" dia at guyed wires.
3. Install additional angle thimble eyelet at poles with two guy wires.

NO SCALE

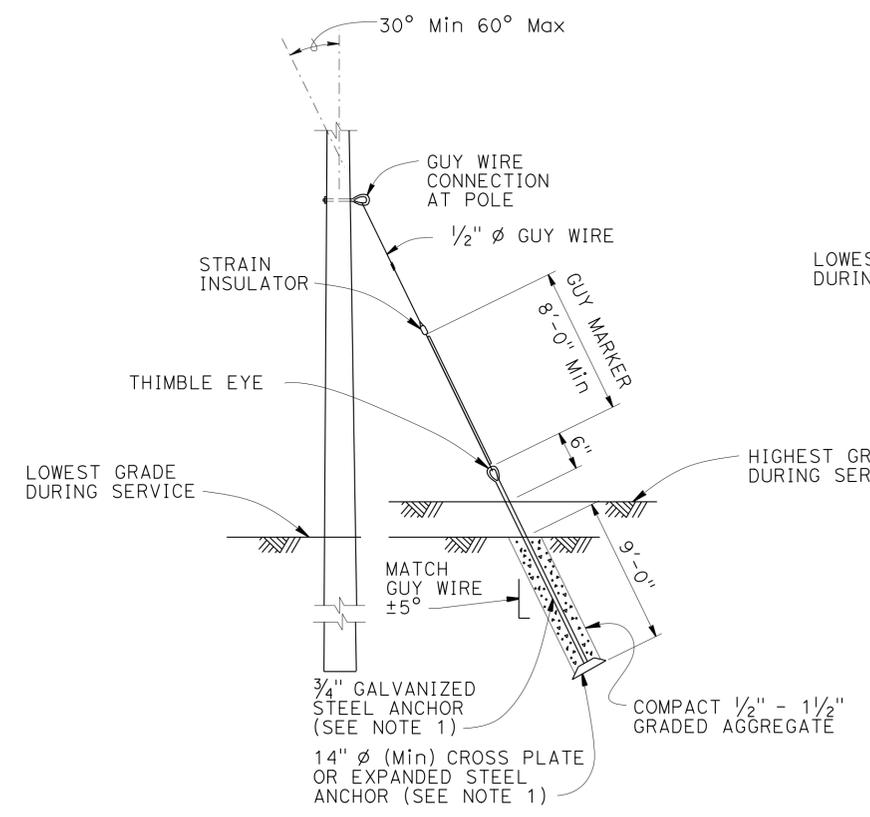
BRANCH CHIEF <u>DAVID NEUMANN</u>	DESIGN BY <u>A MALAK</u>	CHECKED <u>YU SONG</u>	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES DESIGN AND TECHNICAL SERVICES SPECIAL DESIGNS BRANCH B	BRIDGE NO. <u>N/A</u>	TEMPORARY WOOD POLES DETAILS No. 1	SES-7
	DETAILS BY <u>H NGUYEN</u>	CHECKED <u>A MALAK</u>			POST MILE <u>2.2/15.2</u>		
	QUANTITIES BY _____	CHECKED _____			PROJECT NUMBER & PHASE: <u>0800000609</u>		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	962	1168

Amman malak 12-19-13
 REGISTERED CIVIL ENGINEER DATE
 3-3-14
 PLANS APPROVAL DATE
 No. C73369
 Exp. 12-31-2014
 CIVIL
 STATE OF CALIFORNIA
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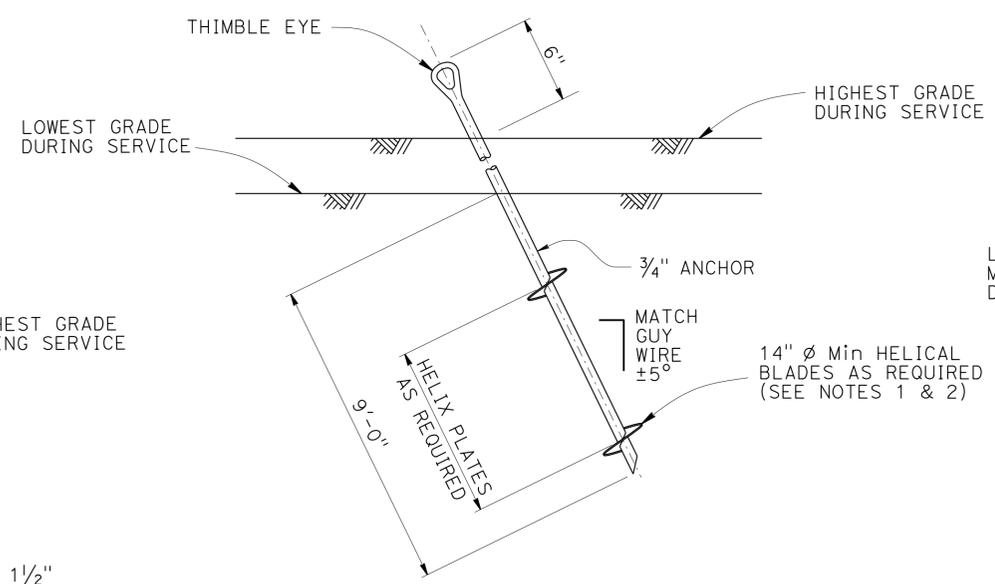
NOTES:

1. Minimum allowable tension capacity "Qa" = 8,900 lbs.
2. Minimum installation torque "T" = 1780 lbs-ft.
3. Helical anchor detail may be used in place of expanded steel anchors.

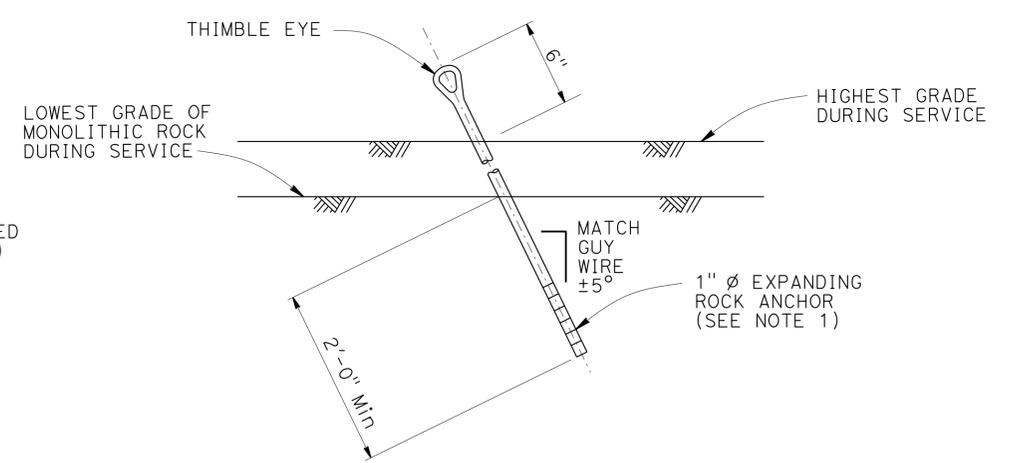


EXPANDED STEEL ANCHOR DETAIL

SEE NOTE 3



HELICAL ANCHOR DETAIL



EXPANDING ROCK ANCHOR DETAIL

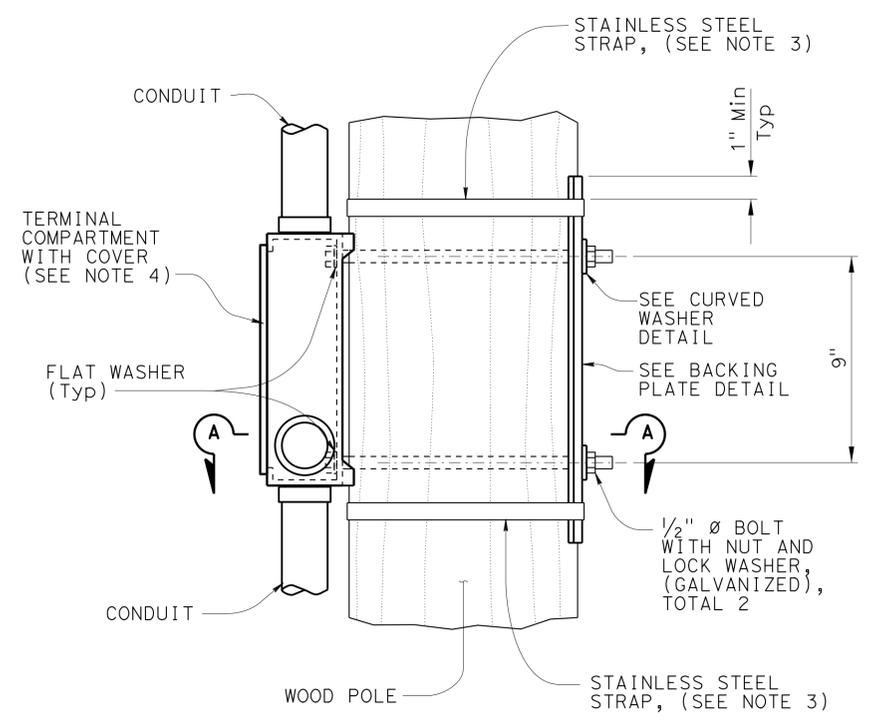
NOTE:
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

NO SCALE

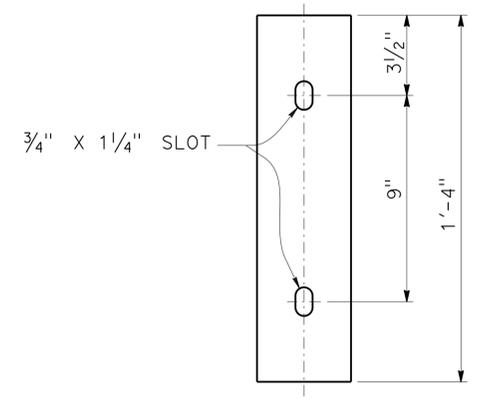
BRANCH CHIEF <u>DAVID NEUMANN</u>	DESIGN BY <u>A MALAK</u>	CHECKED <u>YU SONG</u>	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES DESIGN AND TECHNICAL SERVICES SPECIAL DESIGNS BRANCH B	BRIDGE NO. N/A	TEMPORARY WOOD POLES DETAILS No. 2	SES-8
	DETAILS BY <u>H NGUYEN</u>	CHECKED <u>A MALAK</u>			POST MILE 2.2/15.2		
	QUANTITIES BY	CHECKED					

USERNAME => s124496 DATE PLOTTED => 07-MAR-2014 TIME PLOTTED => 10:43

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	964	1168
<i>Amun malak</i> REGISTERED CIVIL ENGINEER			12-19-13 DATE		
3-3-14 PLANS APPROVAL DATE					
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.</small>					



ELEVATION

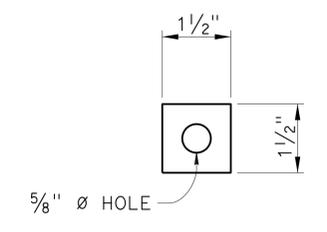


ELEVATION

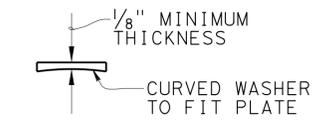


PLAN

**BACKING PLATE
DETAIL**



ELEVATION

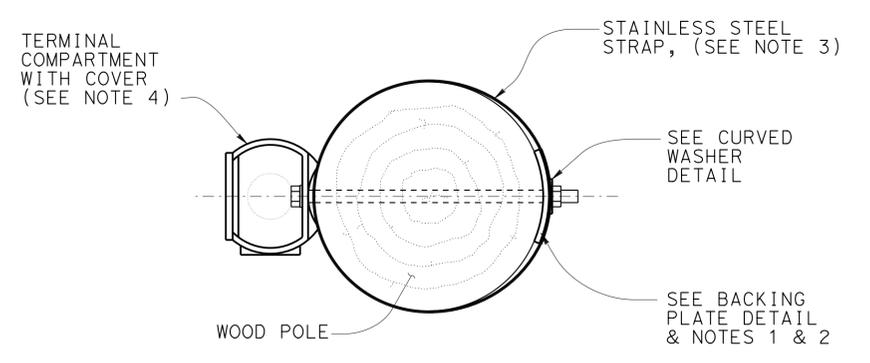


PLAN

**CURVED WASHER
DETAIL**

NOTES:

1. Verify pole dimensions at terminal compartment for fabrication of backing plate and curved washer.
2. Backing plate to be galvanized after fabrication.
3. 3/4" x 0.044" minimum, rounded edge stainless steel straps, double wrapped with 2" long bend under stainless steel strap buckle.
4. For details not shown see Standard Plan ES-4D.



SECTION A-A

**SIDE MOUNTING
TERMINAL COMPARTMENT**

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

NO SCALE

BRANCH CHIEF	DAVID NEUMANN
--------------	---------------

DESIGN	BY A MALAK	CHECKED YU SONG
DETAILS	BY H NGUYEN	CHECKED A MALAK
QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGNS BRANCH **B**

BRIDGE NO.	N/A
POST MILE	2.2/15.2

TEMPORARY WOOD POLES
DETAILS No. 4

SES-10

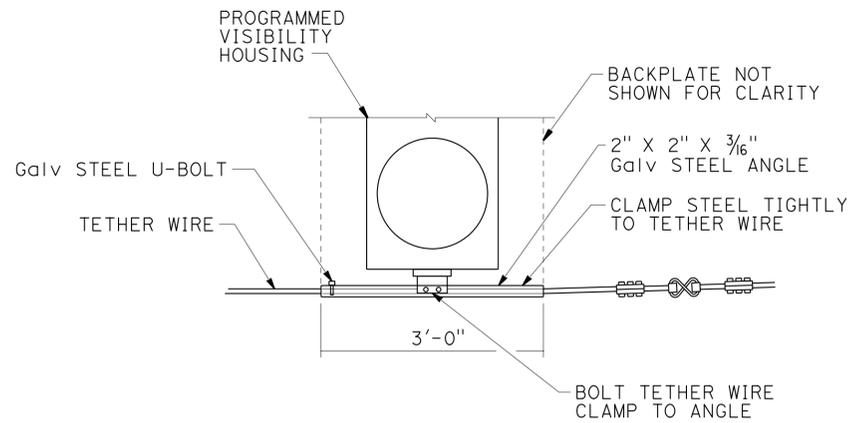
USERNAME => s124496 DATE PLOTTED => 07-MAR-2014 TIME PLOTTED => 10:44

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	965	1168

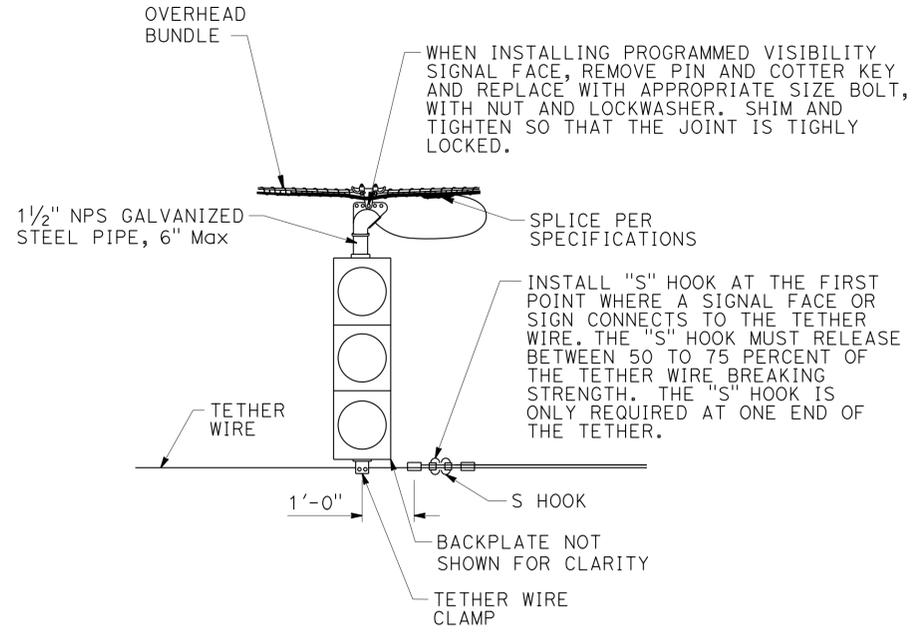
<i>Aiman Malak</i>		12-19-13
REGISTERED CIVIL ENGINEER	DATE	
3-3-14		
PLANS APPROVAL DATE		

REGISTERED PROFESSIONAL ENGINEER	No. C73369
Exp. 12-31-2014	CIVIL
STATE OF CALIFORNIA	

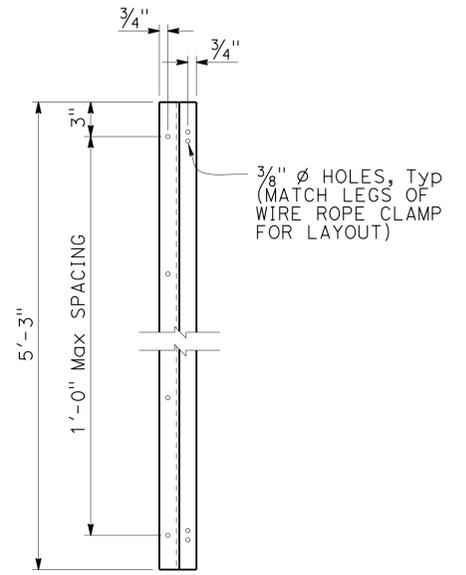
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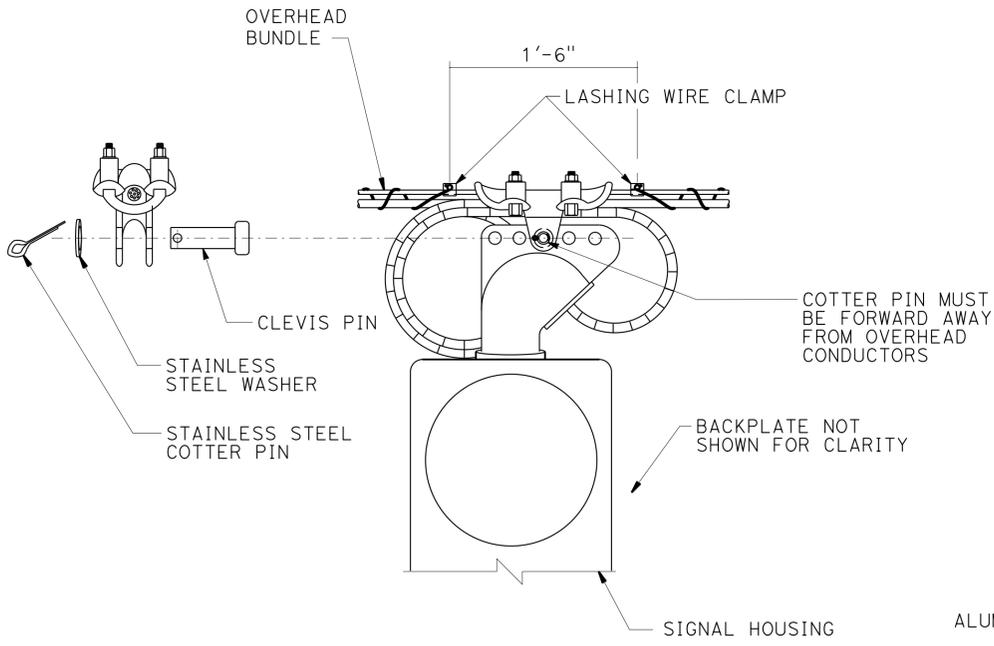
TETHER WIRE ATTACHMENT FOR PROGRAMMED VISIBILITY SIGNAL FACE



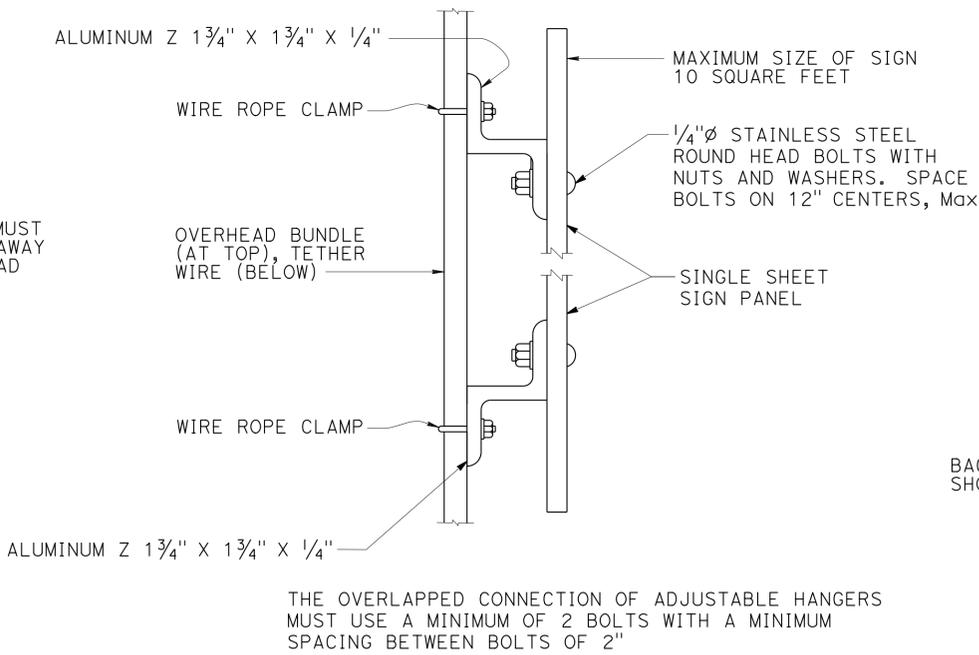
SIGNAL FACE SUPPORT



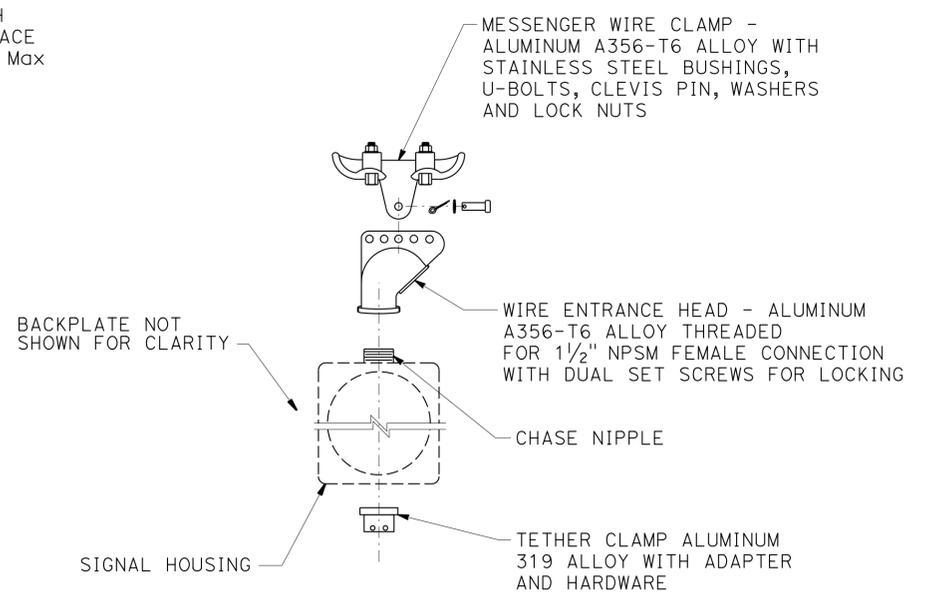
Z-BAR ELEVATION



MESSENGER WIRE CLAMP COTTER PIN DETAIL



SIGN MOUNTING DETAIL



SIGNAL FACE SUPPORT EXPLODED VIEW

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

BRANCH CHIEF	DAVID NEUMANN
--------------	---------------

DESIGN	BY A MALAK	CHECKED YU SONG
DETAILS	BY H NGUYEN	CHECKED A MALAK
QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGNS BRANCH

BRIDGE NO.	N/A
POST MILE	2.2/15.2

TEMPORARY WOOD POLES
DETAILS No. 5

SES-11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SbD	2,138	6.2/6.4, 2.3/R15.2	966	1168

Grace M. Tsushima
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 3-3-14

UNIT OF MEASUREMENT SYMBOLS:

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

TABLE A

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

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

TABLE B

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

* For use on a sign panel only

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ABBREVIATIONS
(SHEET 2 OF 2)**

NO SCALE

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

REVISED STANDARD PLAN RSP A10B

	M	
Maint	MAINTENANCE	
Max	MAXIMUM	
MB	METAL BEAM	
MBB	METAL BEAM BARRIER	
MBGR	METAL BEAM GUARD RAILING	
Med	MEDIAN	
MGS	MIDWEST GUARDRAIL SYSTEM	
MH	MANHOLE	
Min	MINIMUM	
Misc	MISCELLANEOUS	
Misc I & S	MISCELLANEOUS IRON AND STEEL	
Mkr	MARKER	
Mod	MODIFIED, MODIFY	
Mon	MONUMENT	
MP	METAL PLATE	
MPGR	METAL PLATE GUARD RAILING	
MR	MOVEMENT RATING	
MSE	MECHANICALLY STABILIZED EMBANKMENT	
Mt	MOUNTAIN, MOUNT	
MtI	MATERIAL	
MVP	MAINTENANCE VEHICLE PULLOUT	
	N	
N	NORTH	
NB	NORTHBOUND	
No.	NUMBER (MUST HAVE PERIOD)	
Nos.	NUMBERS (MUST HAVE PERIOD)	
NPS	NOMINAL PIPE SIZE	
NS	NEAR SIDE	
NSP	NEW STANDARD PLAN	
NTS	NOT TO SCALE	
	O	
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	
	P	
p	PAGE	
PAP	PERFORATED ALUMINUM PIPE	
PB	PULL BOX	
PC	POINT OF CURVATURE, PRECAST	
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE	
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN	
PCP	PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE	
PCVC	POINT OF COMPOUND VERTICAL CURVE	
PEC	PERMIT TO ENTER AND CONSTRUCT	
Ped	PEDESTRIAN	
Ped OC	PEDESTRIAN OVERCROSSING	
Ped UC	PEDESTRIAN UNDERCROSSING	
Perm MtI	PERMEABLE MATERIAL	

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

	S	
S	SOUTH, SUPPLEMENT	
SAE	STRUCTURE APPROACH EMBANKMENT	
Salv	SALVAGE	
SAPP	STRUCTURAL ALUMINUM PLATE PIPE	
SB	SOUTHBOUND	
SC	SAND CUSHION	
SCSP	SLOTTED CORRUGATED STEEL PIPE	
SD	STORM DRAIN	
Sec	SECOND, SECTION	
Sep	SEPARATION	
SG	SUBGRADE	
Shld	SHOULDER	
Sht	SHEET	
Sim	SIMILAR	
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	
	T	
T	SEMI-TANGENT	
Tan	TANGENT	
TBB	THRIE BEAM BARRIER	
Tbr	TIMBER	
TC	TOP OF CURB	
TCB	TRAFFIC CONTROL BOX	
TCE	TEMPORARY CONSTRUCTION EASEMENT	
Tel	TELEPHONE	
Temp	TEMPORARY	
TG	TOP OF GRADE	
Tot	TOTAL	
TP	TELEPHONE POLE	
TPB	TREATED PERMEABLE BASE	
TPM	TREATED PERMEABLE MATERIAL	
Trans	TRANSITION	

	T continued	
TS	TRANSVERSE, TRAFFIC SIGNAL, TUBULAR STEEL	
Typ	TYPICAL	
	U	
UC	UNDERCROSSING	
UD	UNDERDRAIN	
UG	UNDERGROUND	
UON	UNLESS OTHERWISE NOTED	
UP	UNDERPASS	
	V	
V	VALVE, DESIGN SPEED	
Var	VARIABLE, VARIES	
VC	VERTICAL CURVE	
VCP	VITRIFIED CLAY PIPE	
Vert	VERTICAL	
Via	VIADUCT	
Vol	VOLUME	
	W	
W	WEST, WIDTH	
WB	WESTBOUND	
WH	WEEP HOLE	
WM	WIRE MESH	
WS	WATER SURFACE	
WSP	WELDED STEEL PIPE	
Wt	WEIGHT	
WV	WATER VALVE	
WW	WINGWALL	
WWL	WINGWALL LAYOUT LINE	
	X	
X Sec	CROSS SECTION	
Xing	CROSSING	
	Y	
Yr	YEAR	
Yrs	YEARS	

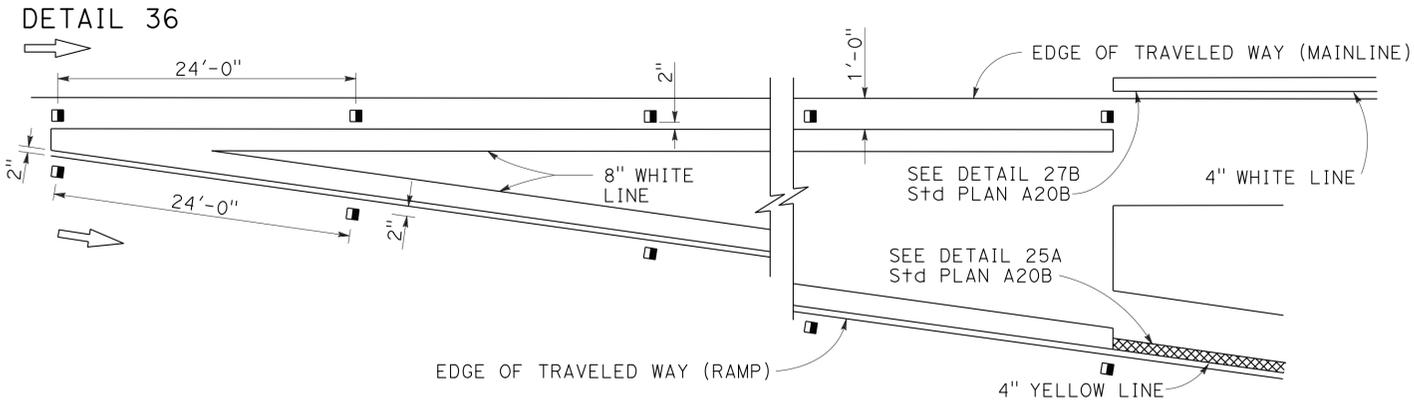
REVISED STANDARD PLAN RSP A10B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SbD	2,138	6.2/6.4, 2.3/R15.2	967	1168

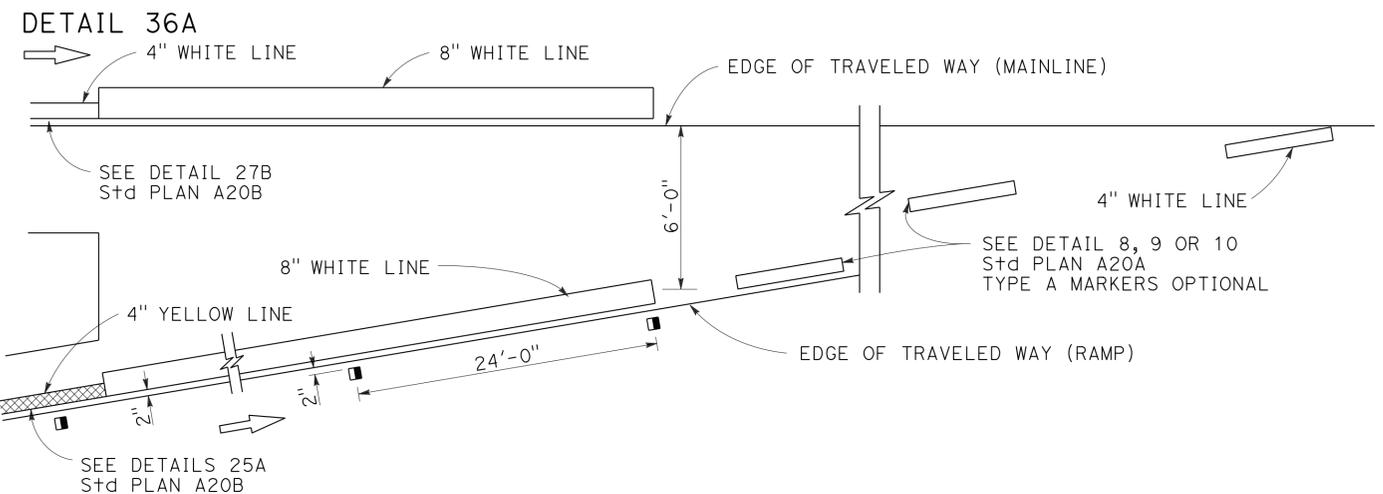
Roberto L. McLaughlin
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

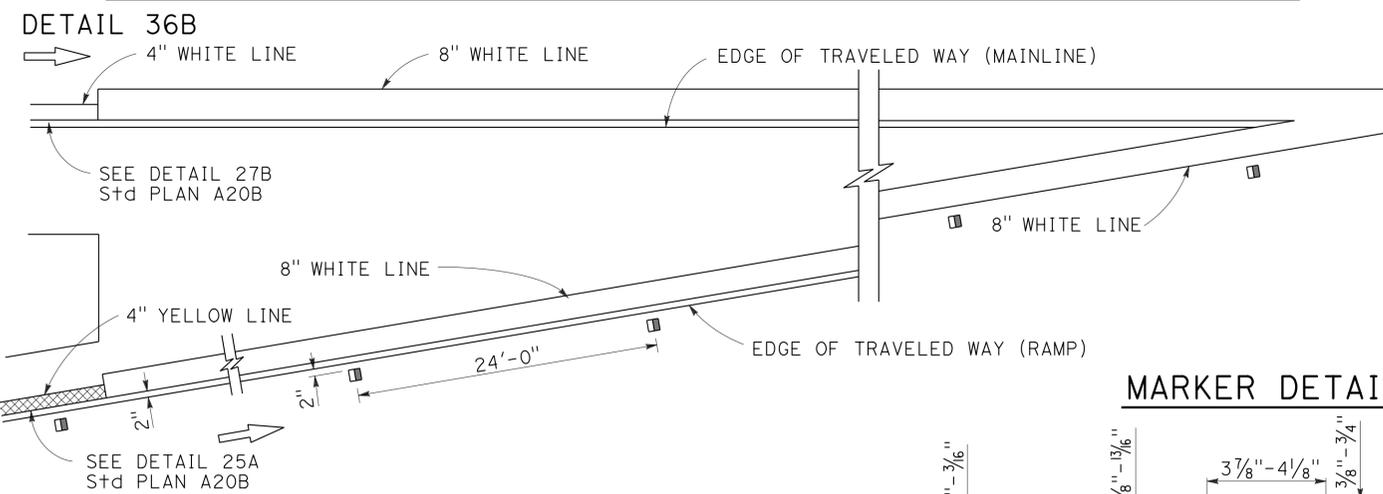
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT



ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT



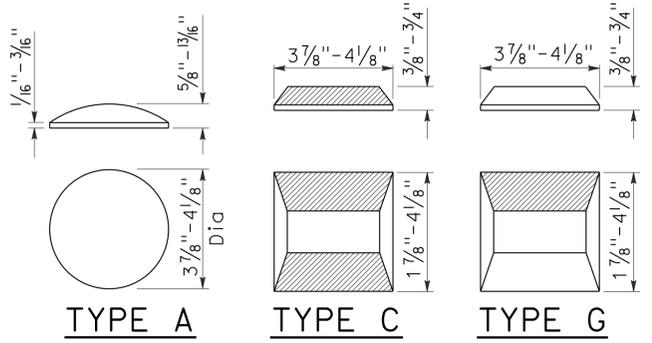
ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT



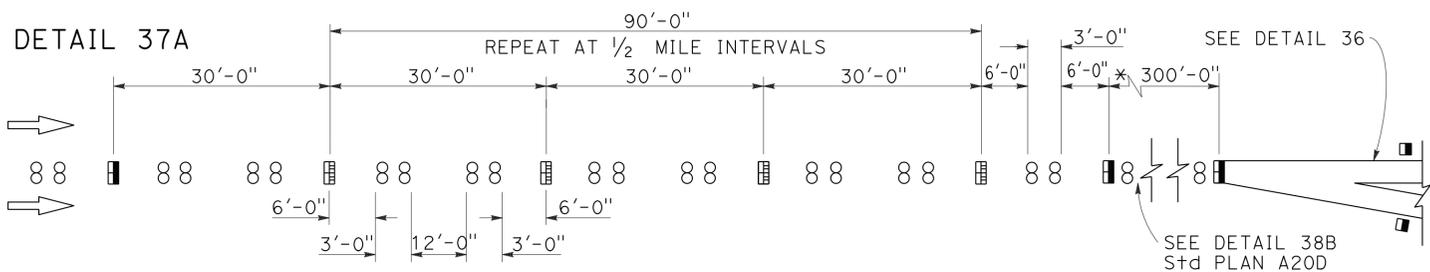
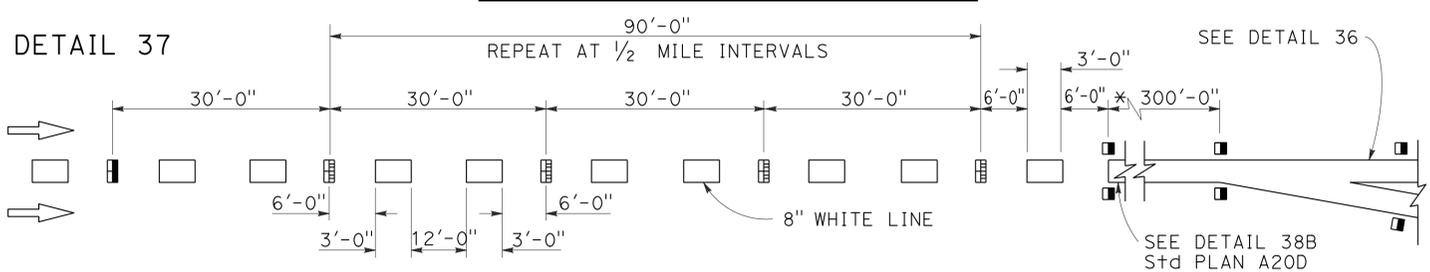
MARKER DETAILS

LEGEND:

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

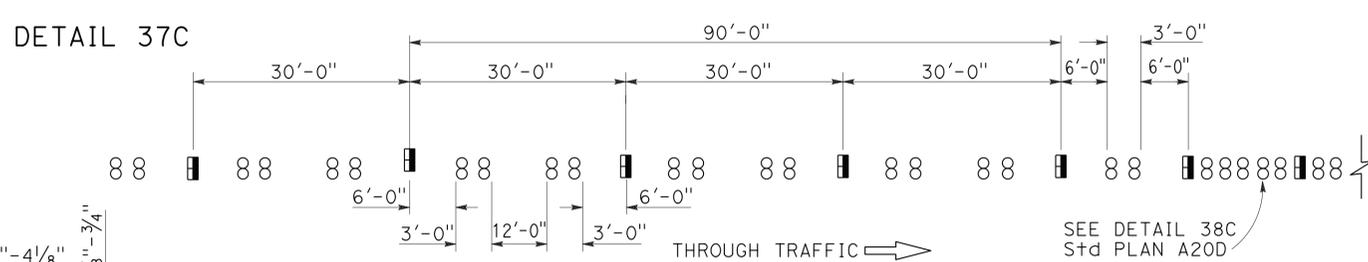
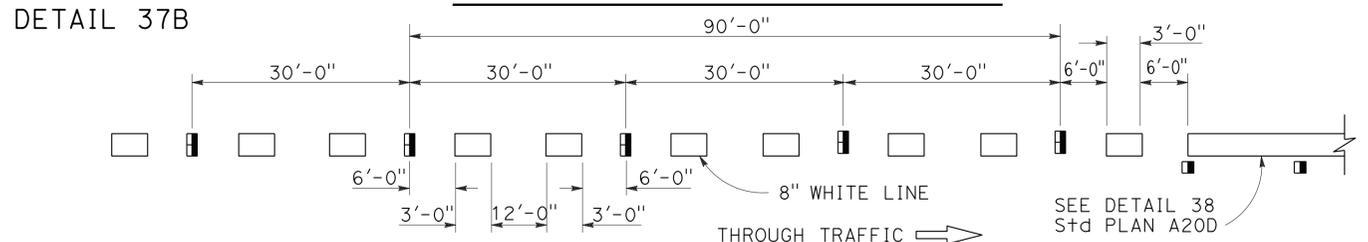


LANE DROP AT EXIT RAMPS



* 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

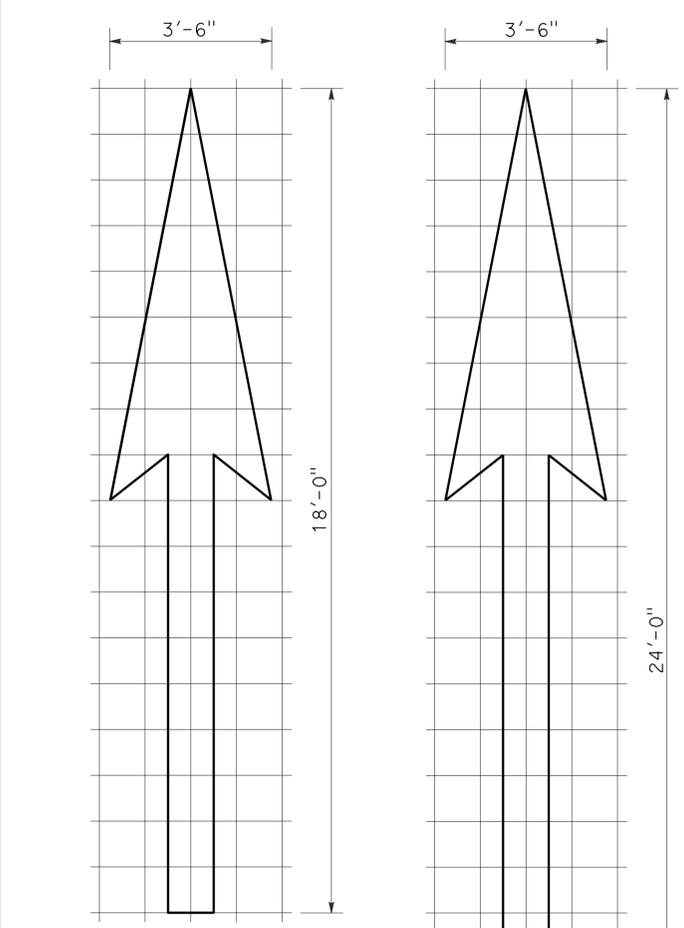
2010 REVISED STANDARD PLAN RSP A20C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	968	1168

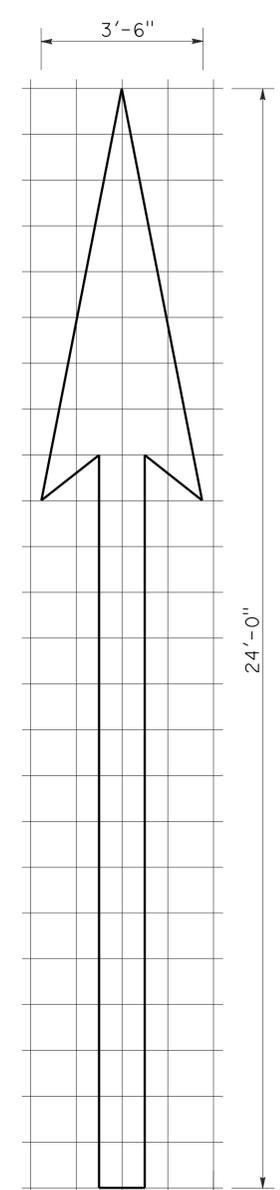
Roberto L. McLaughlin
 REGISTERED CIVIL ENGINEER
 April 20, 2012
 PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
 Roberto L. McLaughlin
 No. C40375
 Exp. 3-31-13
 CIVIL
 STATE OF CALIFORNIA

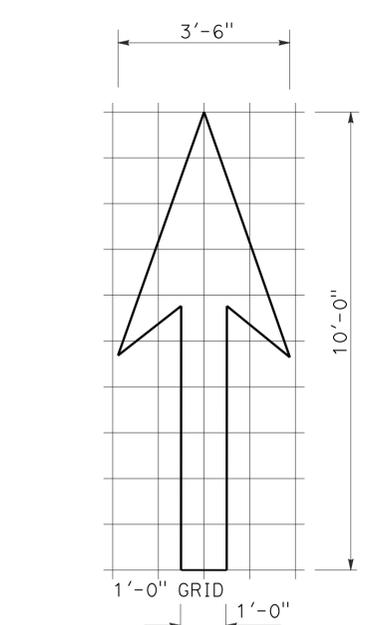
TO ACCOMPANY PLANS DATED 3-3-14



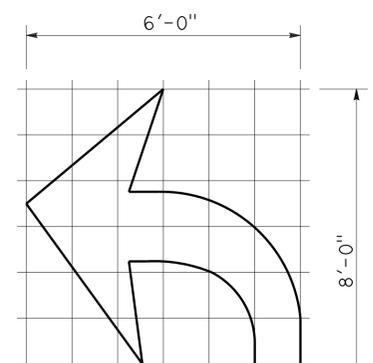
A=25 ft²
TYPE I 18'-0" ARROW



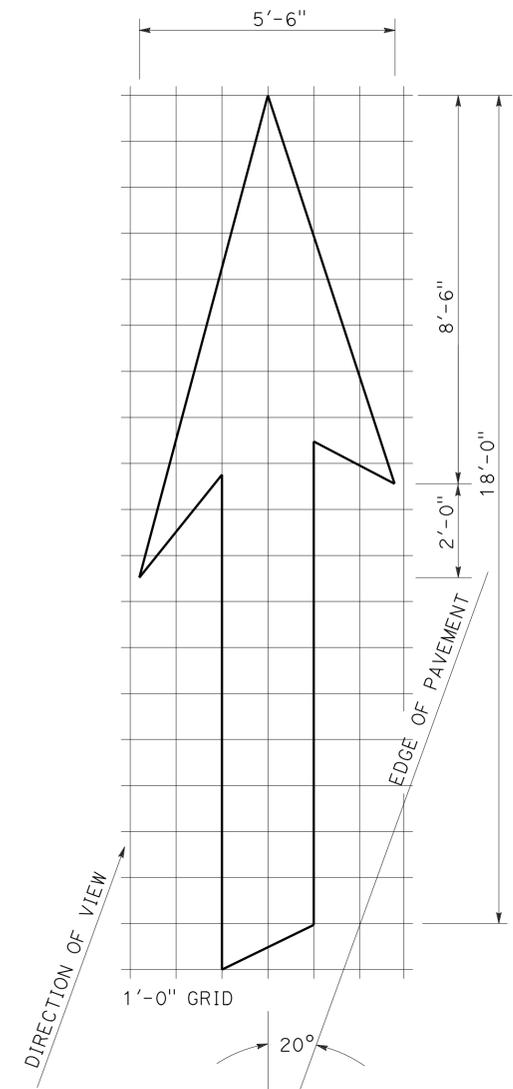
A=31 ft²
TYPE I 24'-0" ARROW



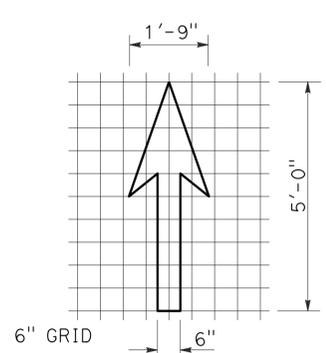
A=14 ft²
TYPE I 10'-0" ARROW



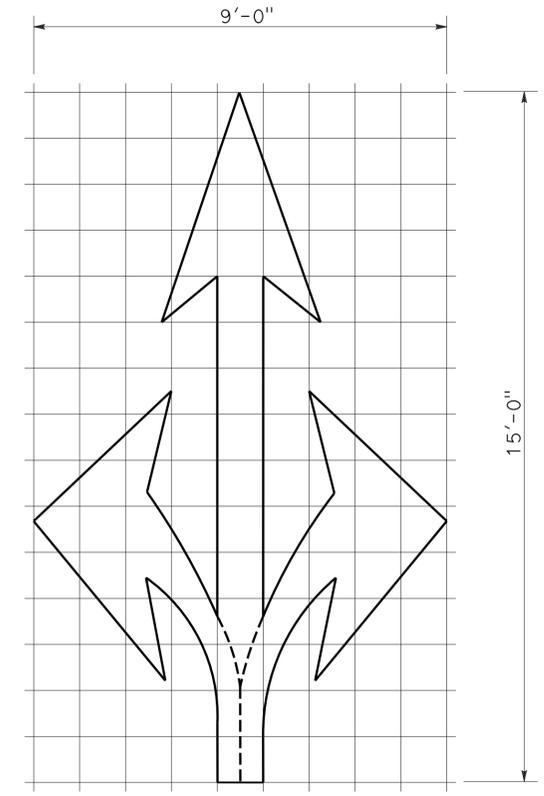
A=15 ft²
TYPE IV (L) ARROW
 (For Type IV (R) arrow, use mirror image)



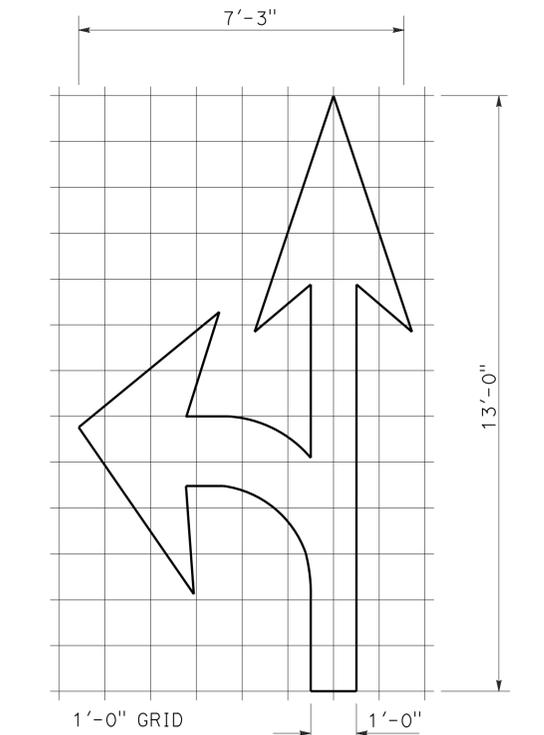
A=42 ft²
TYPE VI ARROW
 Right lane drop arrow
 (For left lane, use mirror image)



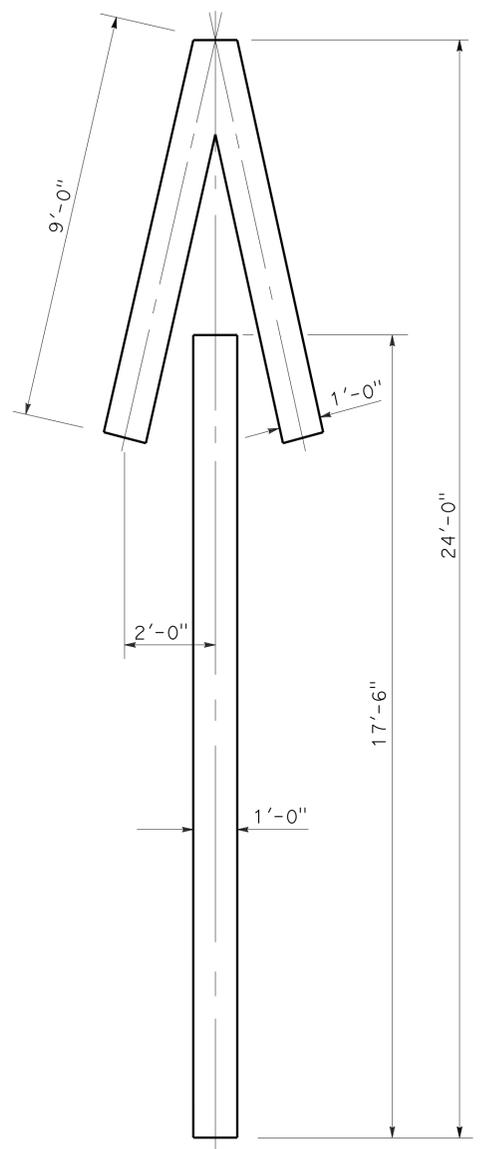
A=3.5 ft²
BIKE LANE ARROW



A=36 ft²
TYPE VIII ARROW



A=27 ft²
TYPE VII (L) ARROW
 (For Type VII (R) arrow, use mirror image)



A=33 ft²
TYPE V ARROW

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

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

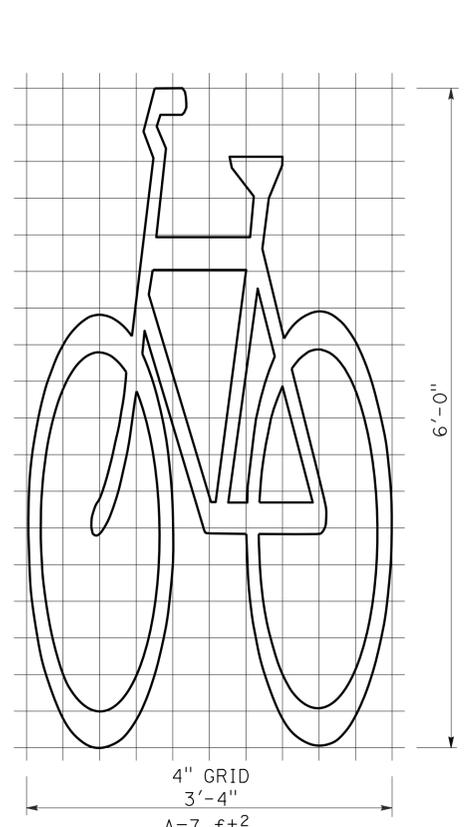
RSP A24A DATED APRIL 20, 2012 SUPERSEDES STANDARD PLAN A24A DATED MAY 20, 2011 - PAGE 13 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A24A

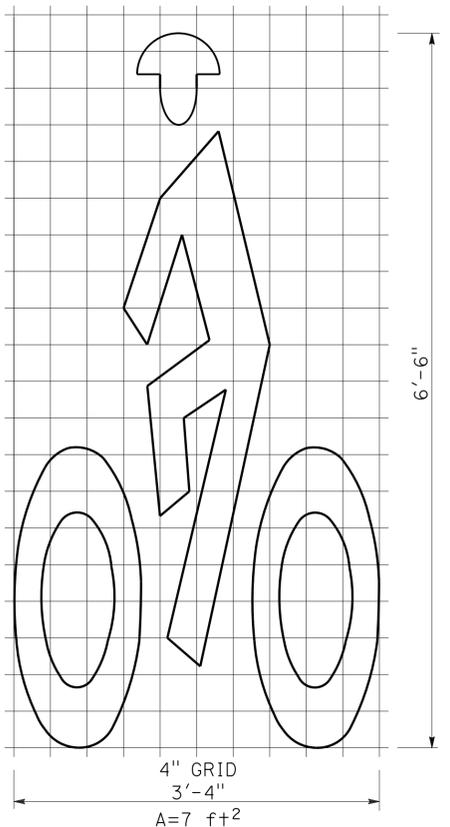
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	969	1168

Roberto L. McLaughlin
 REGISTERED CIVIL ENGINEER
 October 19, 2012
 PLANS APPROVAL DATE
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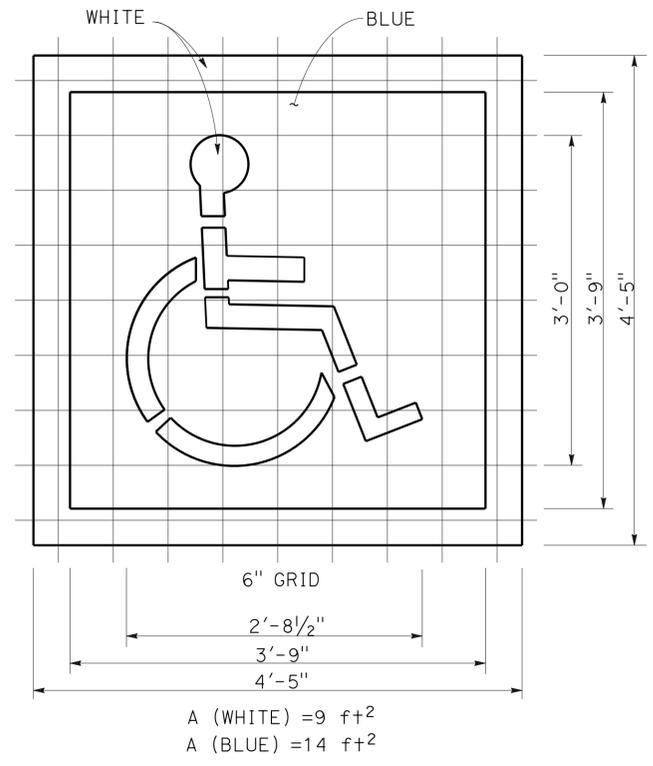
REGISTERED PROFESSIONAL ENGINEER
 Roberto L. McLaughlin
 No. C40375
 Exp. 3-31-13
 CIVIL
 STATE OF CALIFORNIA



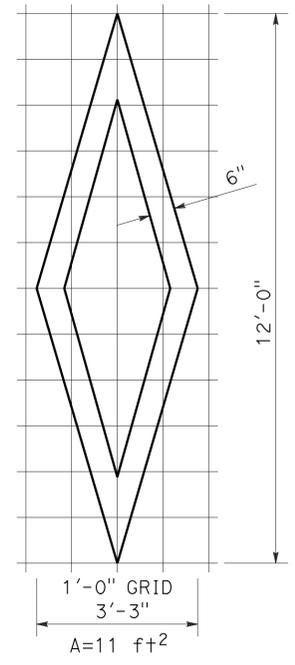
**BIKE LANE SYMBOL
WITHOUT PERSON**



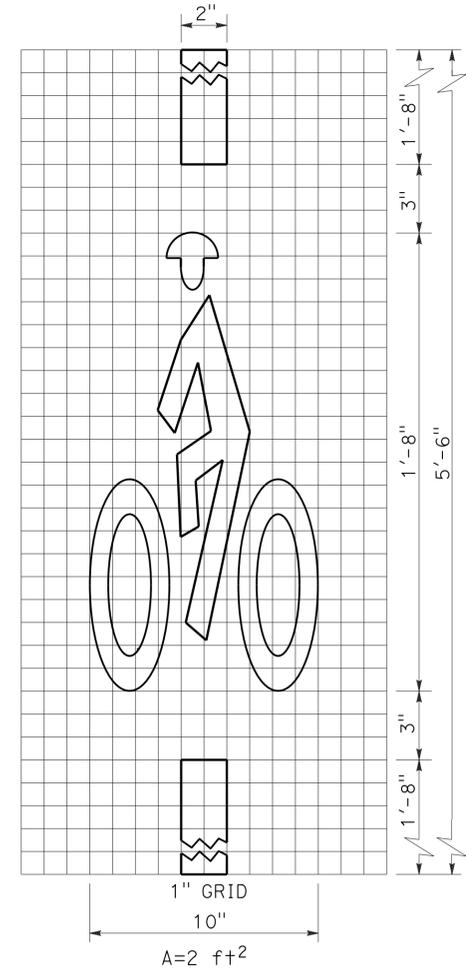
**BIKE LANE SYMBOL
WITH PERSON**



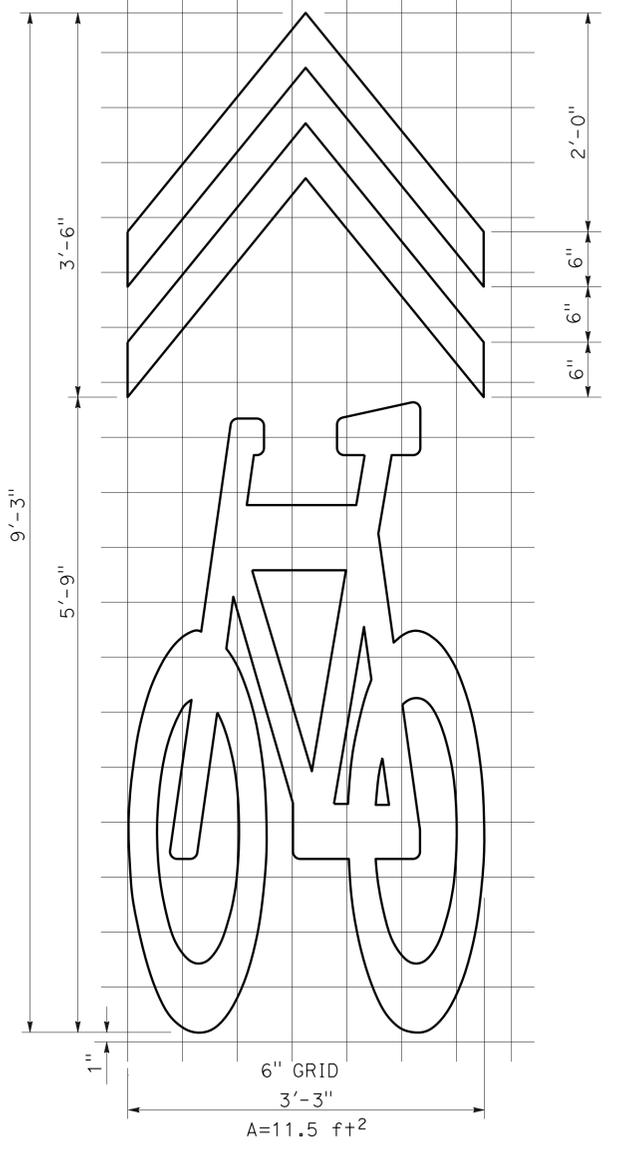
**INTERNATIONAL SYMBOL
OF ACCESSIBILITY (ISA) MARKING**



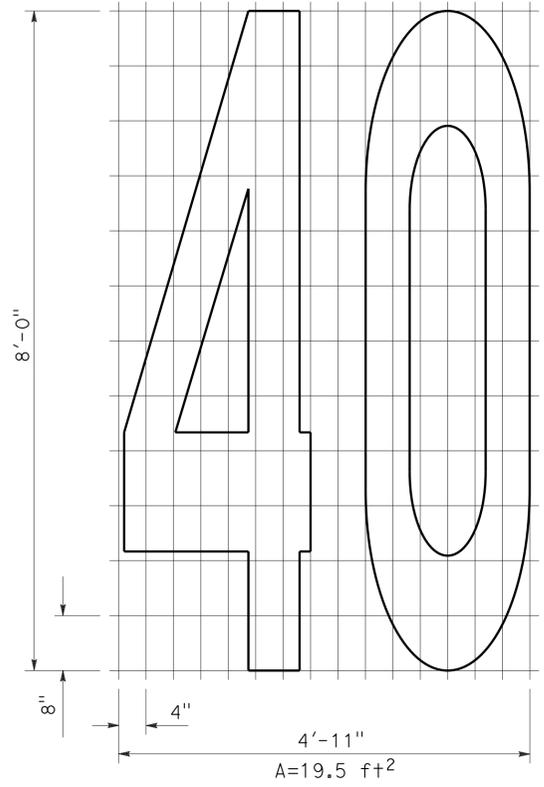
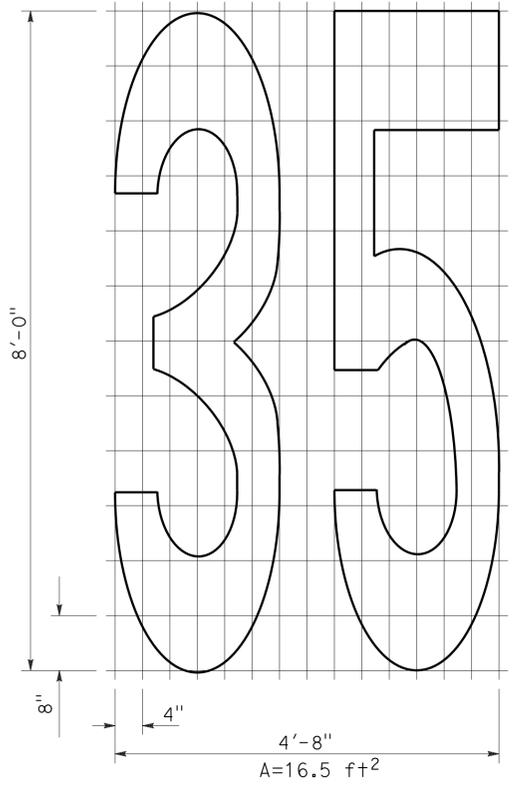
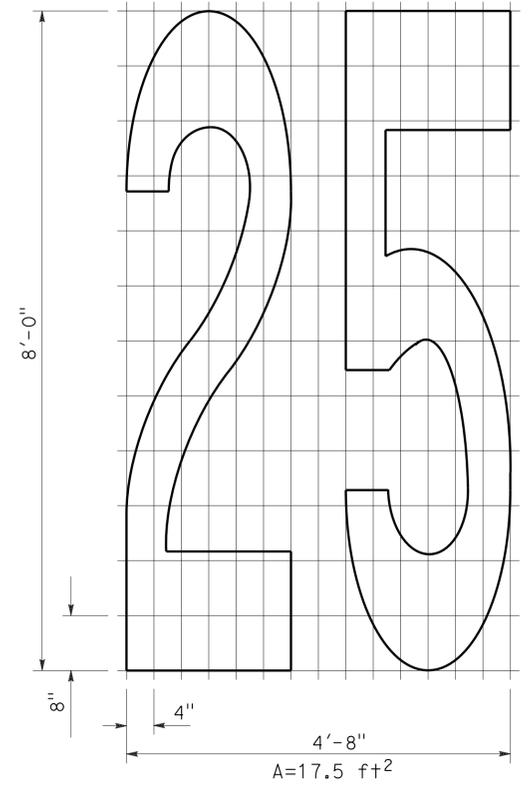
DIAMOND SYMBOL



**BICYCLE LOOP
DETECTOR SYMBOL**



SHARED ROADWAY BICYCLE MARKING



NUMERALS

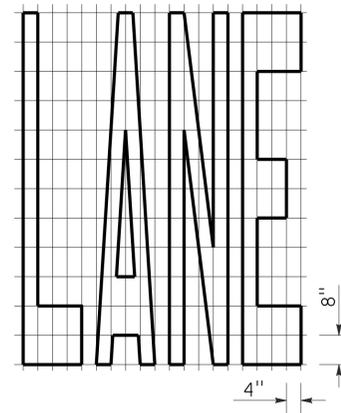
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**PAVEMENT MARKINGS
 SYMBOLS AND NUMERALS**
 NO SCALE

RSP A24C DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A24C DATED MAY 20, 2011 - PAGE 15 OF THE STANDARD PLANS BOOK DATED 2010.

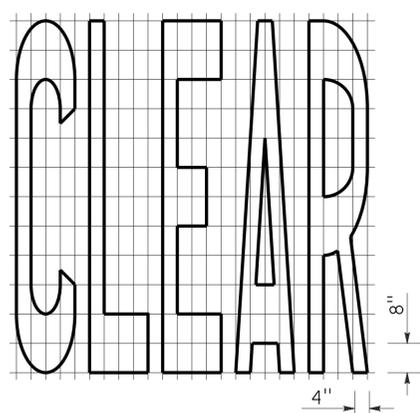
REVISED STANDARD PLAN RSP A24C

2010 REVISED STANDARD PLAN RSP A24C

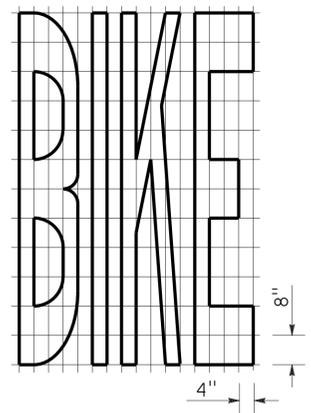
TO ACCOMPANY PLANS DATED 3-3-14



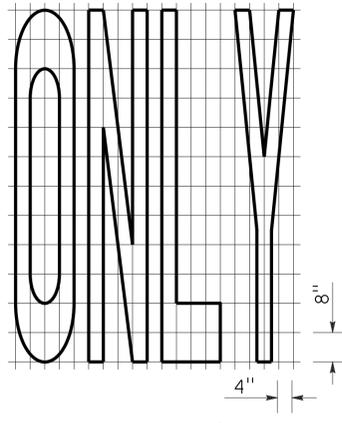
A=24 ft²



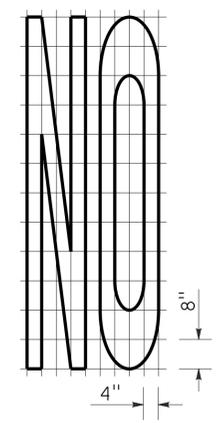
A=27 ft²



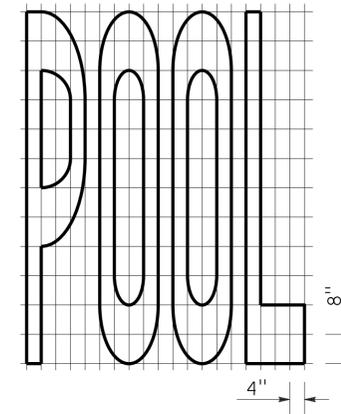
A=21 ft²



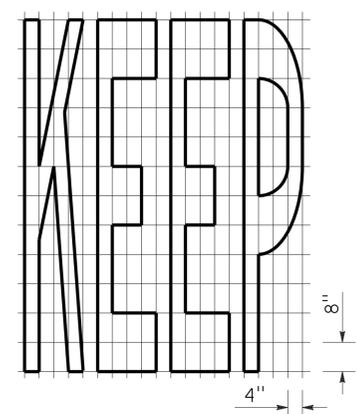
A=22 ft²



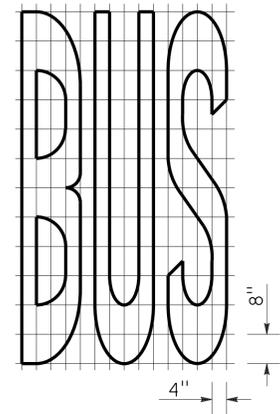
A=14 ft²



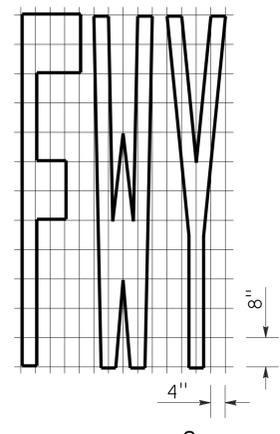
A=23 ft²



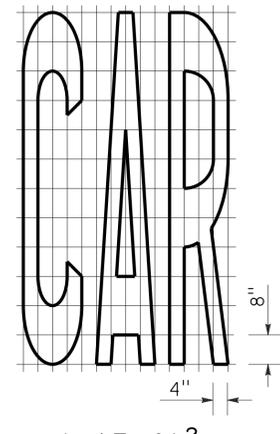
A=24 ft²



A=20 ft²

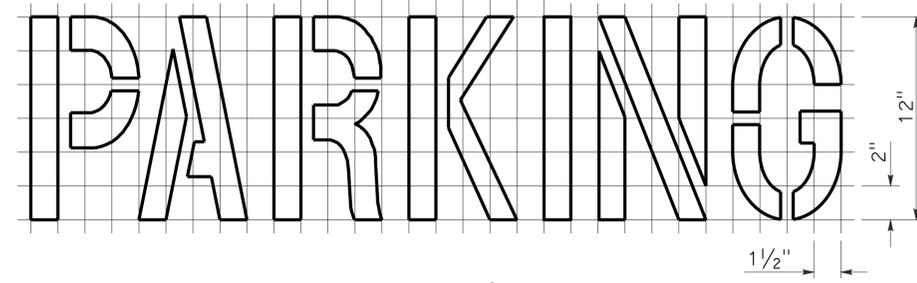
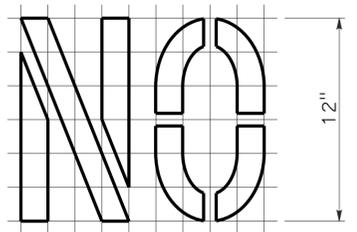


A=16 ft²

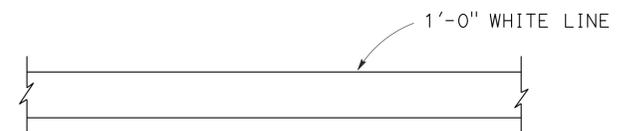


A=17 ft²

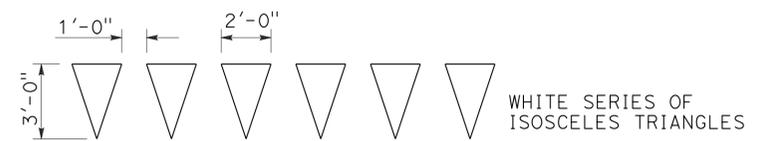
WORD MARKINGS			
ITEM	ft ²	ITEM	ft ²
LANE	24	NO	14
POOL	23	BIKE	21
CLEAR	27	BUS	20
KEEP	24	ONLY	22
		FWY	16



A=2 ft²
See Notes 6 and 7



LIMIT LINE (STOP LINE)



WHITE SERIES OF
ISOSCELES TRIANGLES
DIRECTION
OF TRAVEL
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.

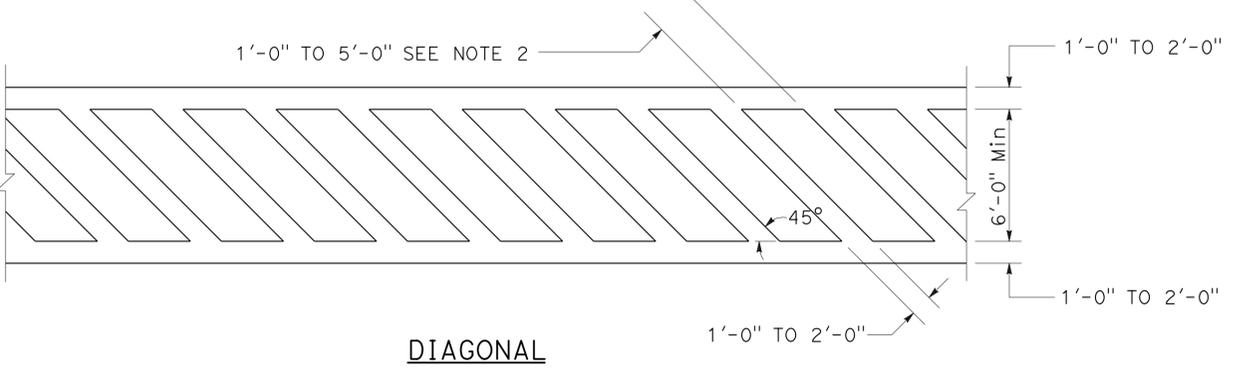
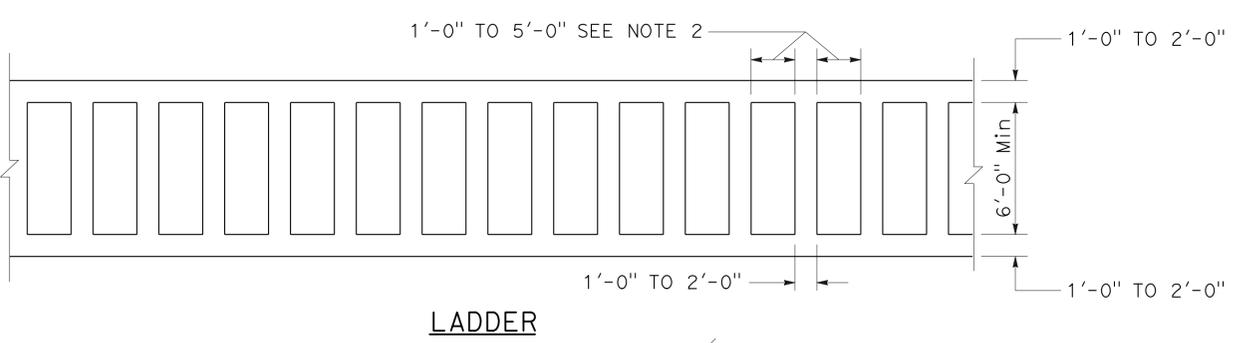
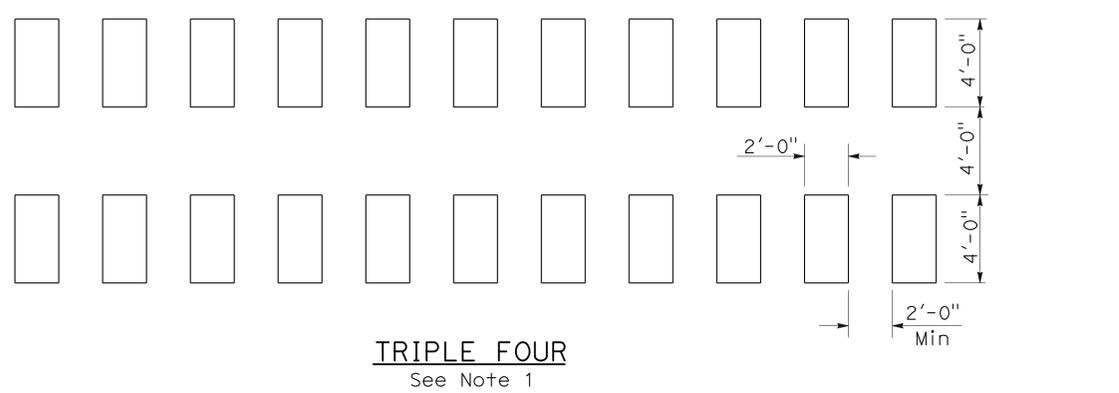
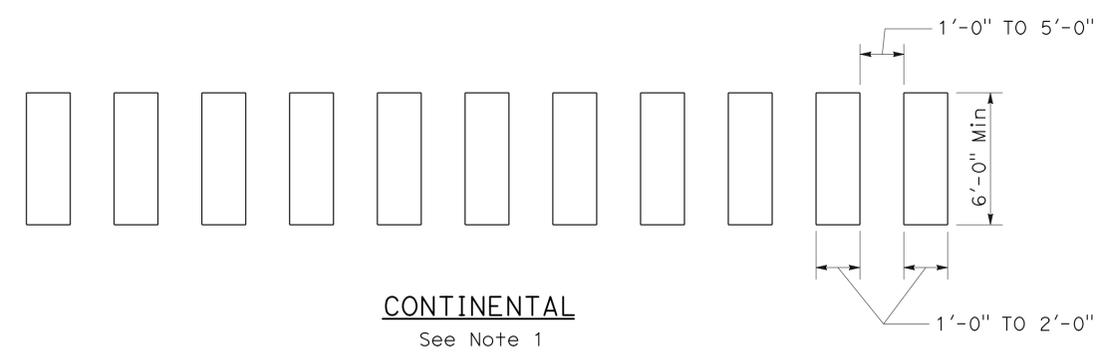
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	971	1168

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

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 Roberto L. McLaughlin
 No. C40375
 Exp. 3-31-13
 CIVIL
 STATE OF CALIFORNIA

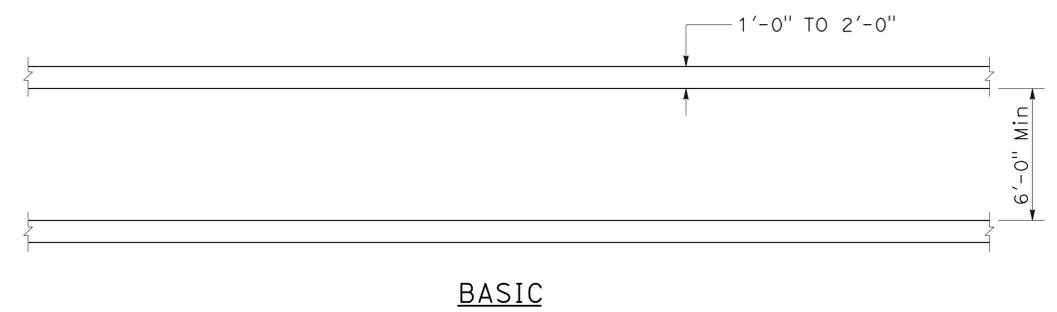
TO ACCOMPANY PLANS DATED 3-3-14



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.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	972	1168

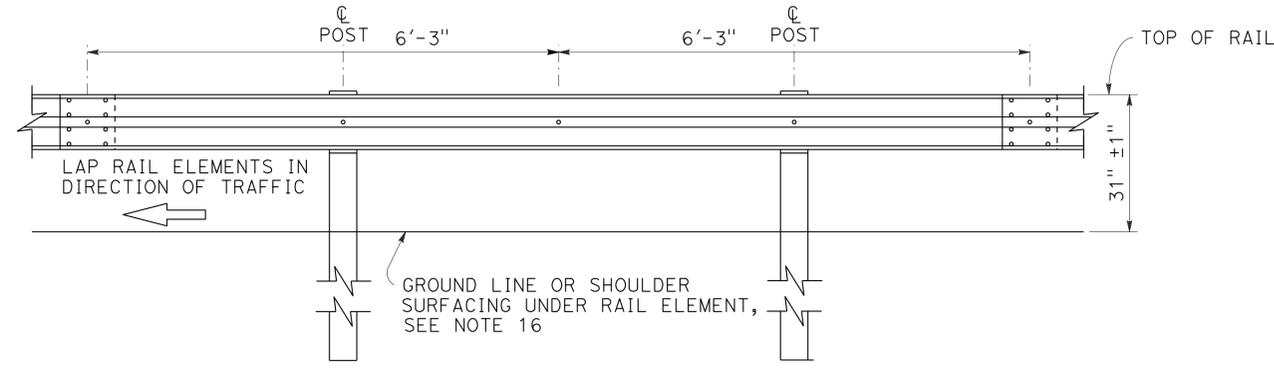
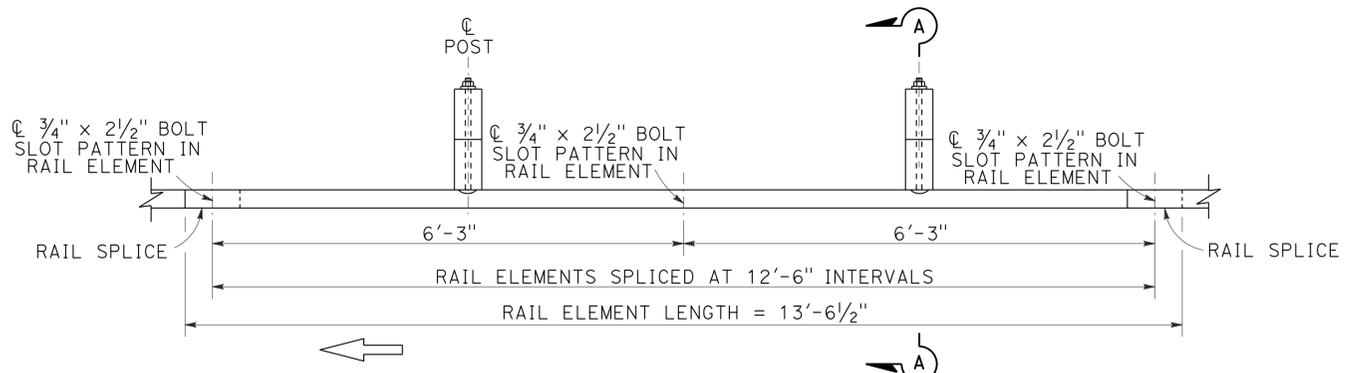
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

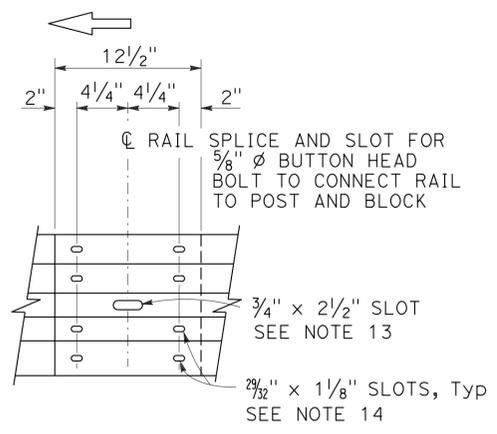
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REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

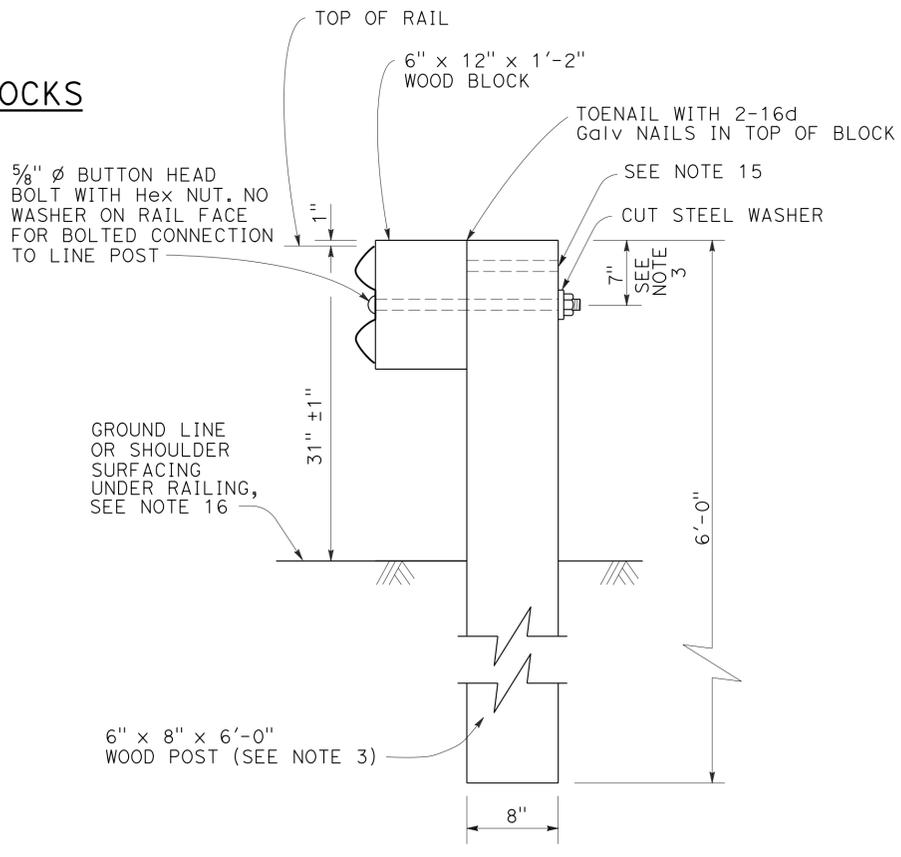
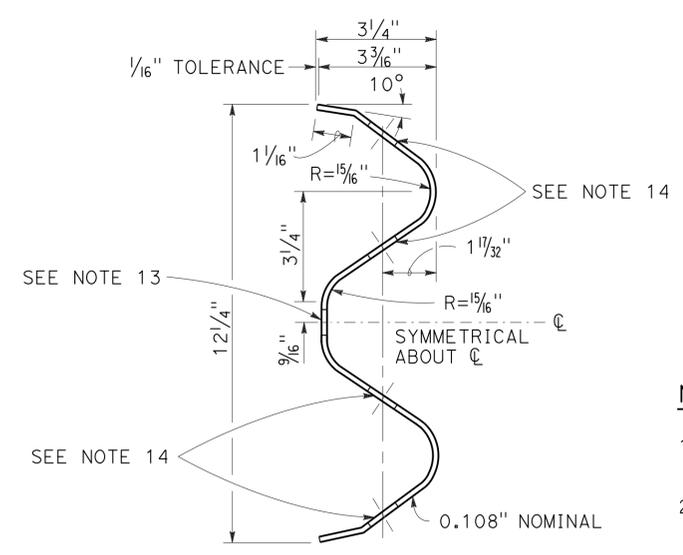
TO ACCOMPANY PLANS DATED 3-3-14



MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



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



SECTION A-A
TYPICAL 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 MSG 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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	2,138	6.2/6.4, 2.3/R15.2	973	1168

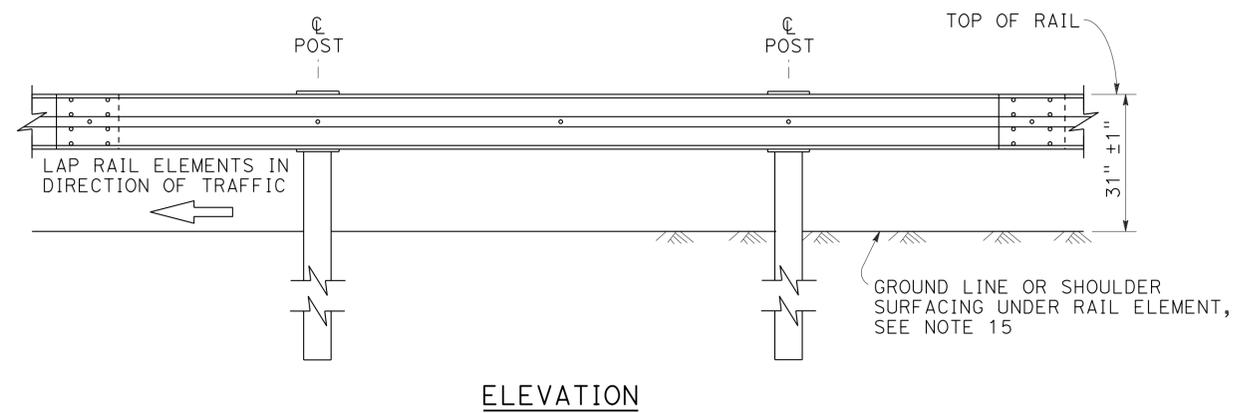
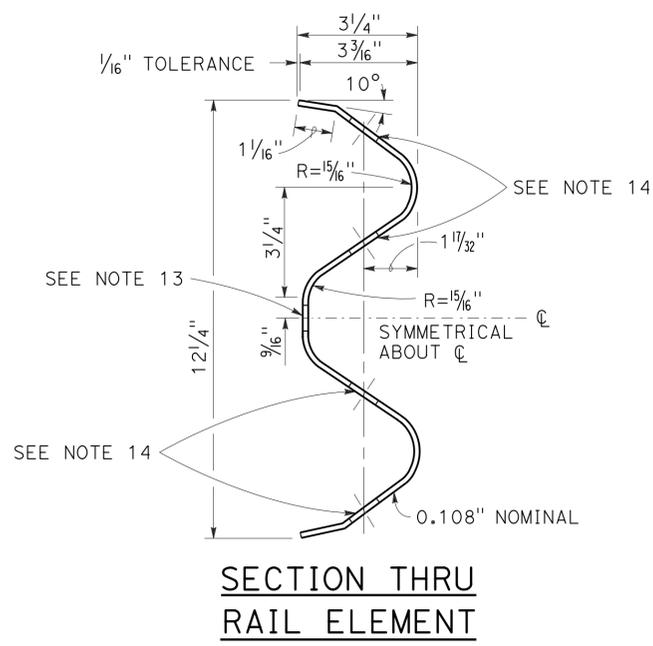
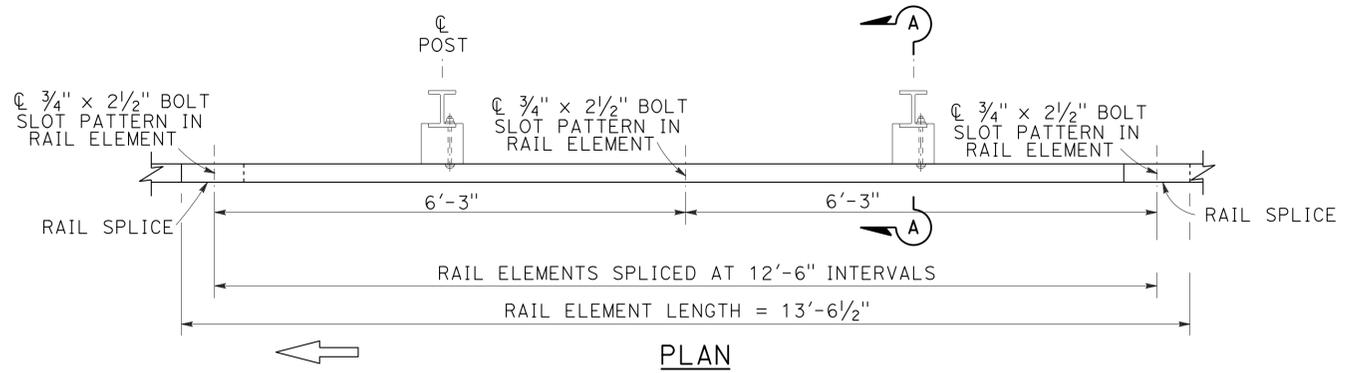
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

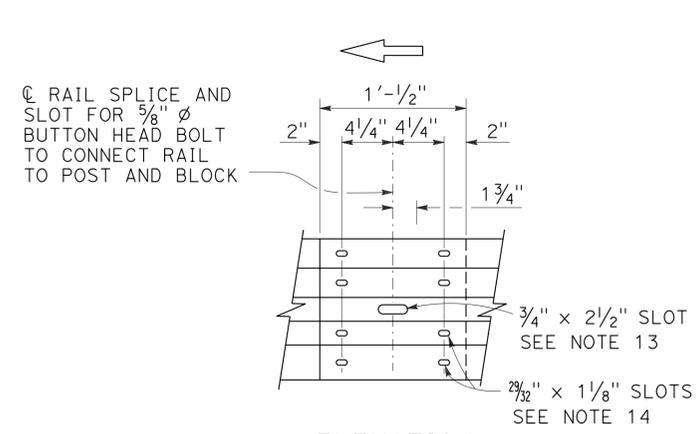
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TO ACCOMPANY PLANS DATED 3-3-14

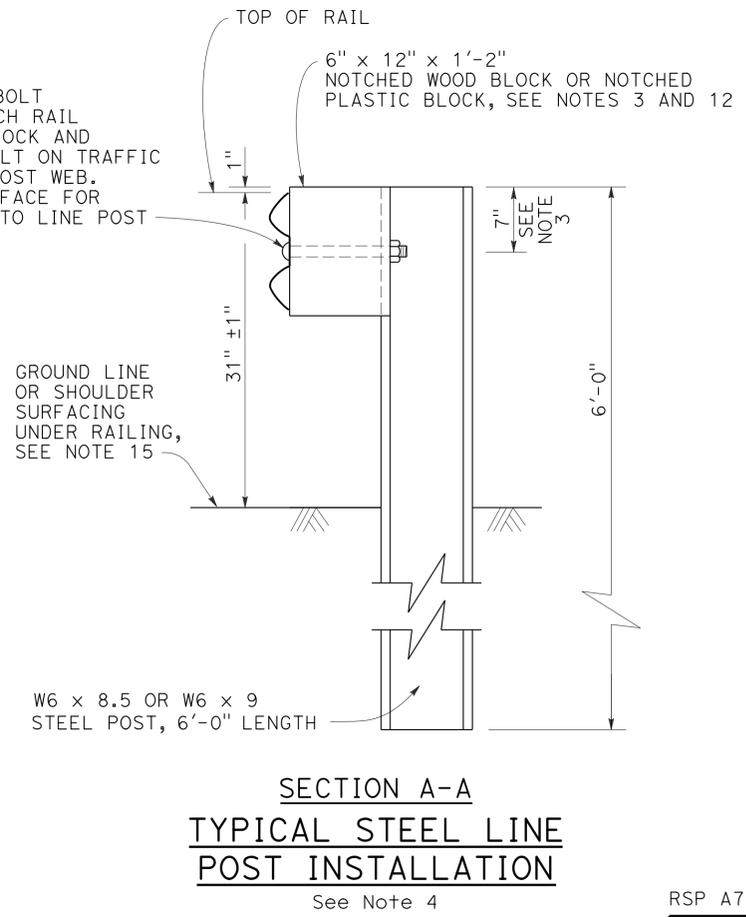
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA



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" ø x 1 3/8" button head oval shoulder splice bolts inserted into the 2 7/32" x 1 1/8" slots and bolted together with 5/8" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- 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.



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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77L2

2010 REVISED STANDARD PLAN RSP A77L2

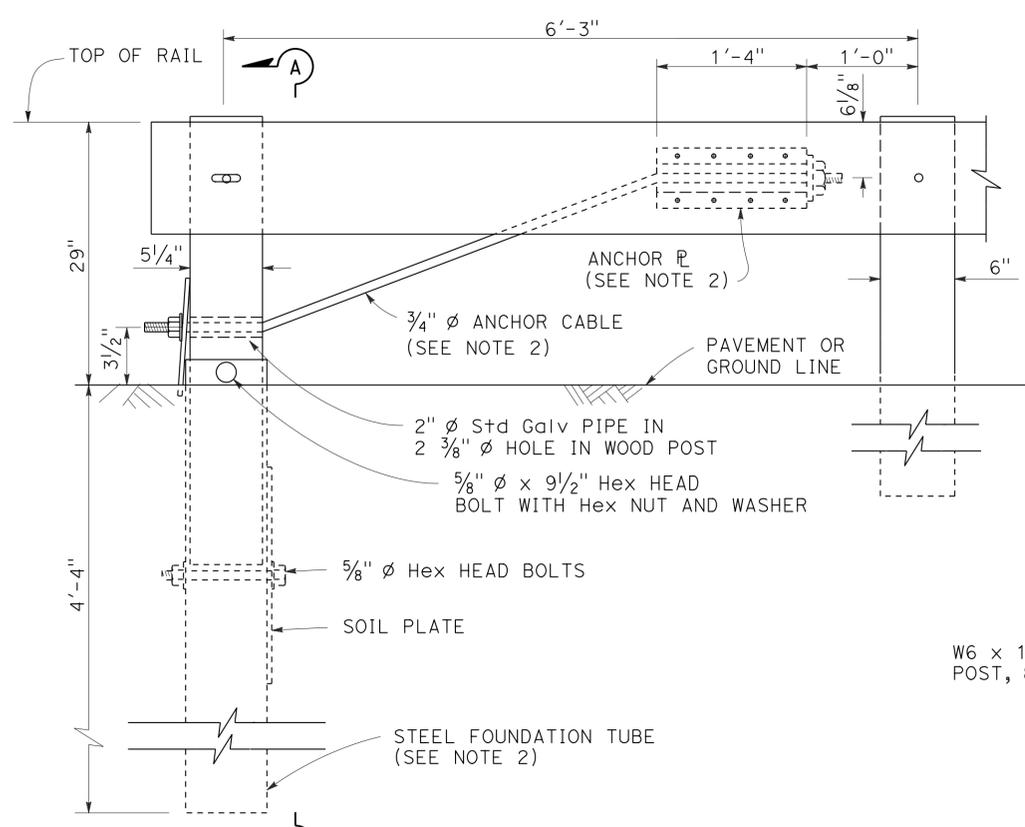
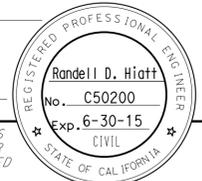
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	974	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

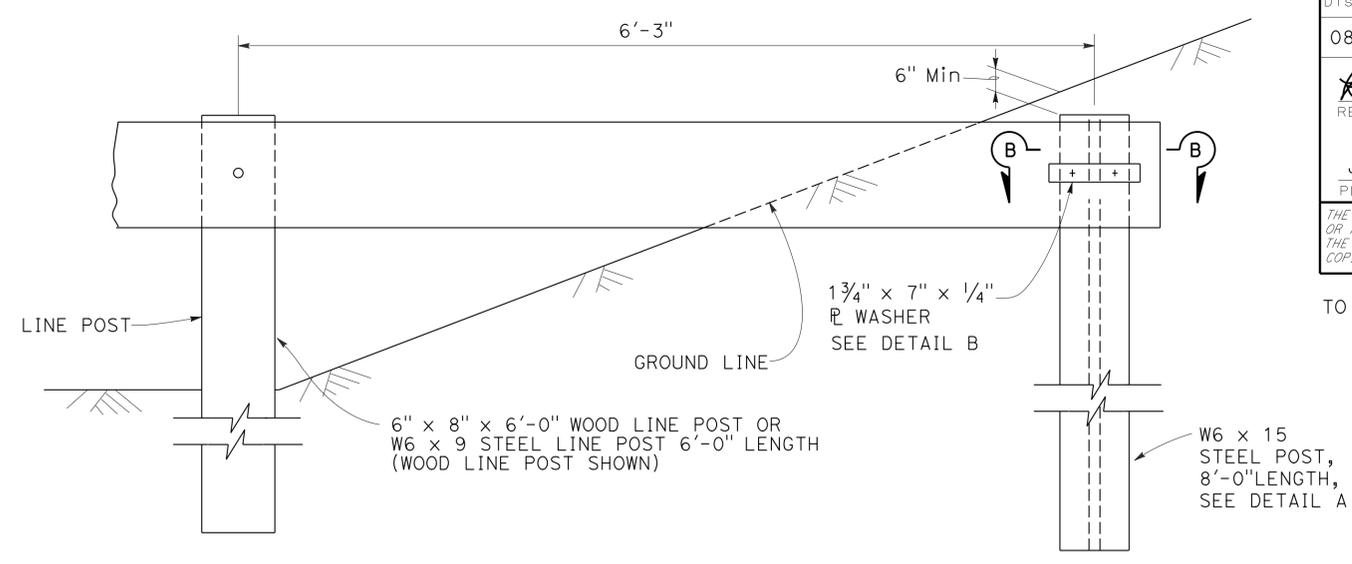
July 19, 2013
PLANS APPROVAL DATE

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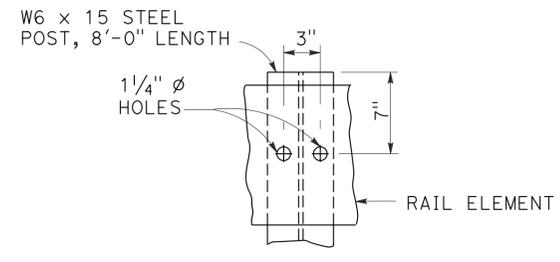
TO ACCOMPANY PLANS DATED 3-3-14



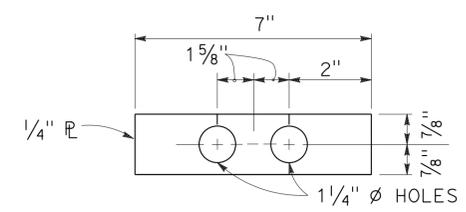
**ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)**



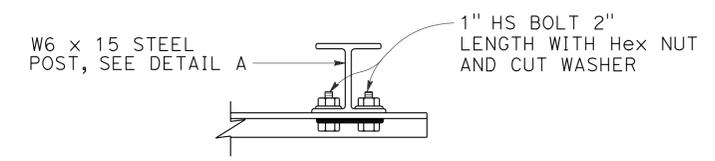
BURIED POST END ANCHOR



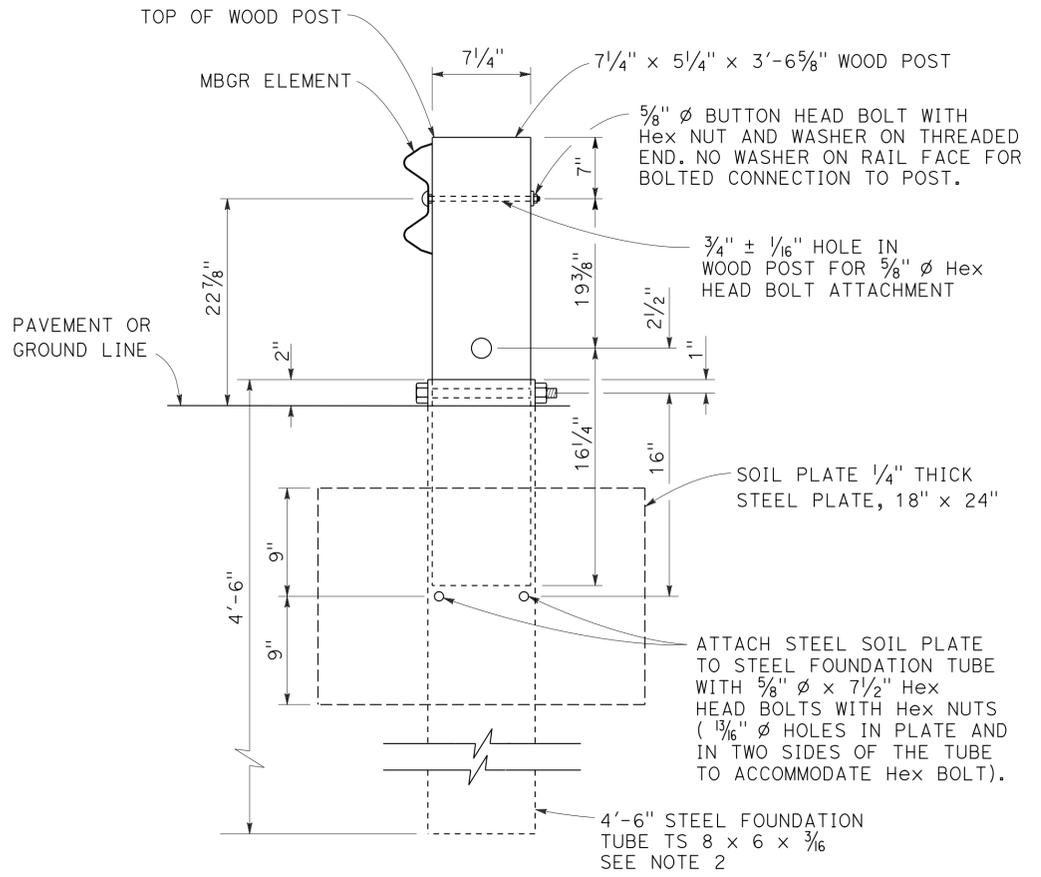
DETAIL A



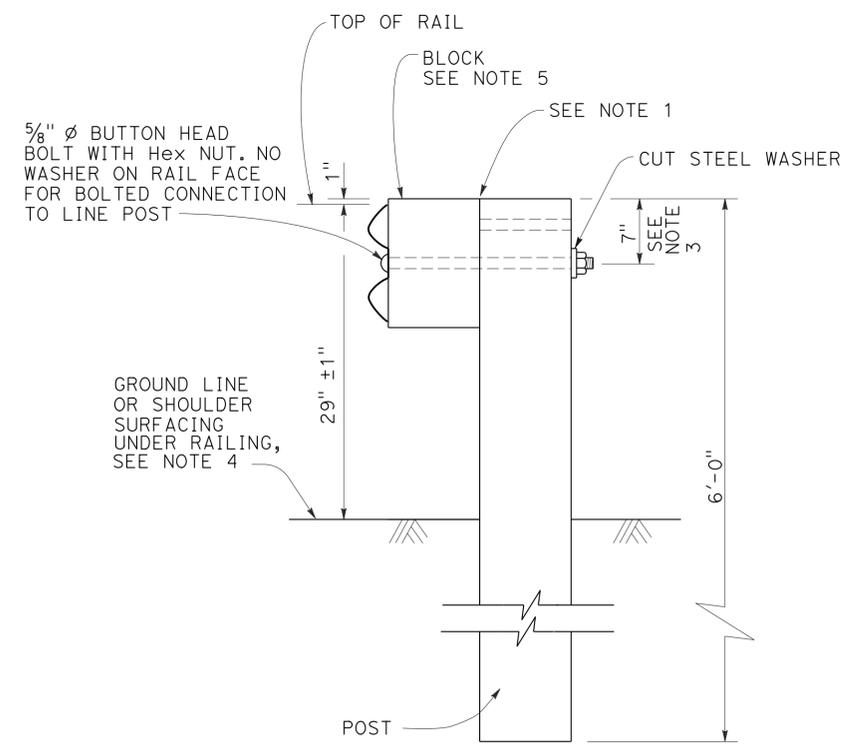
DETAIL B



SECTION B-B



SECTION A-A



**TYPICAL LINE
POST INSTALLATION**

NOTES:

1. For wood post and wood block, toenail with 2-16d Galv nails in top of block. For steel post and notched wood or plastic block, notched face of block faces steel post.
2. 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 embadment of the 6'-0" length tube shall be 5'-9". A 5/8" ϕ 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.
3. To connect railing to 27" terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
4. Install posts in soil.
5. See Revised Standard Plans RSP A77N1 and RSP A77N2 for details.
6. 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
RECONSTRUCT INSTALLATION**

NO SCALE

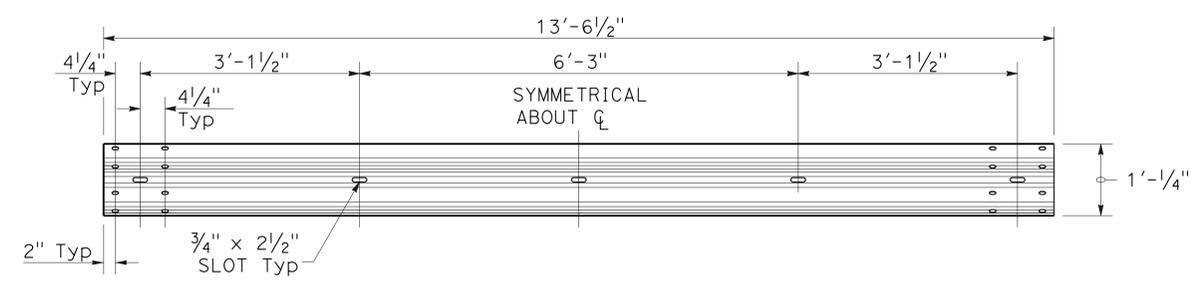
RSP A77L3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77L3

2010 REVISED STANDARD PLAN RSP A77L3



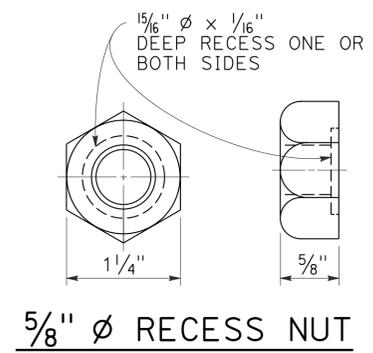
TO ACCOMPANY PLANS DATED 3-3-14



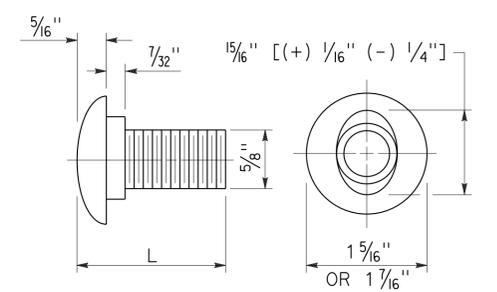
TYPICAL RAIL ELEMENT

NOTE:

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



5/8" Ø RECESS NUT

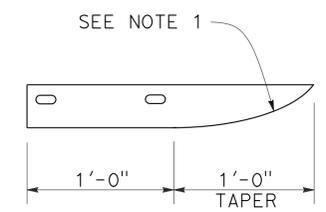


5/8" Ø BUTTON HEAD BOLT

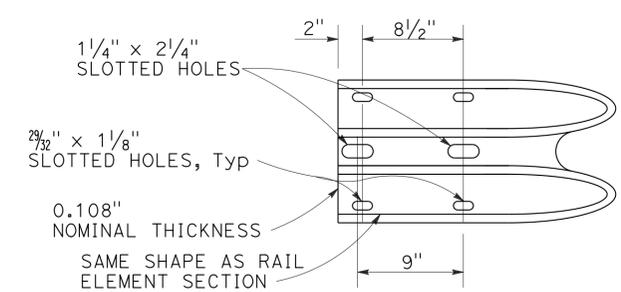
BUTTON HEAD BOLT

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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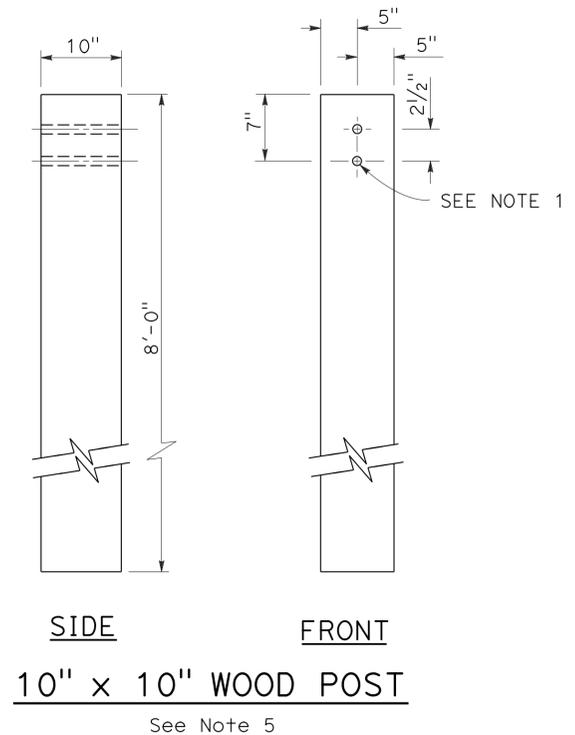
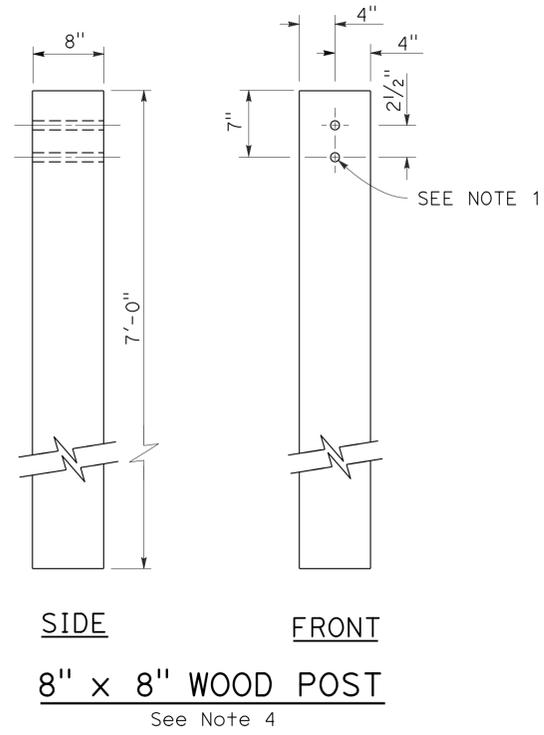
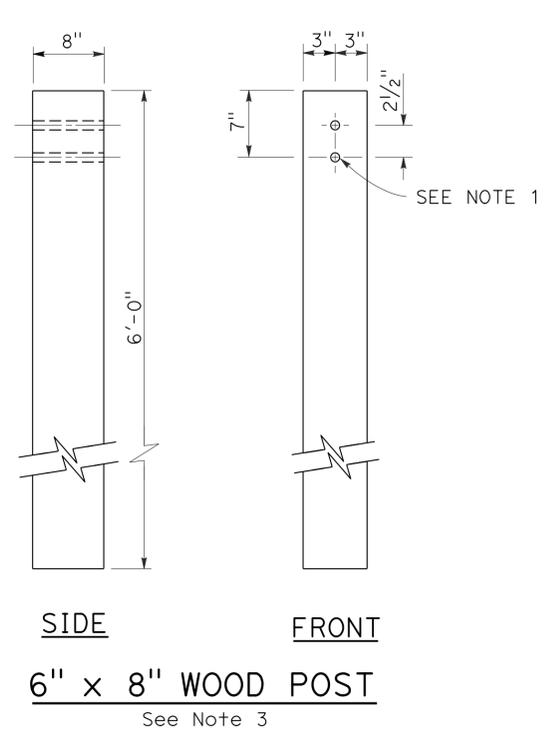
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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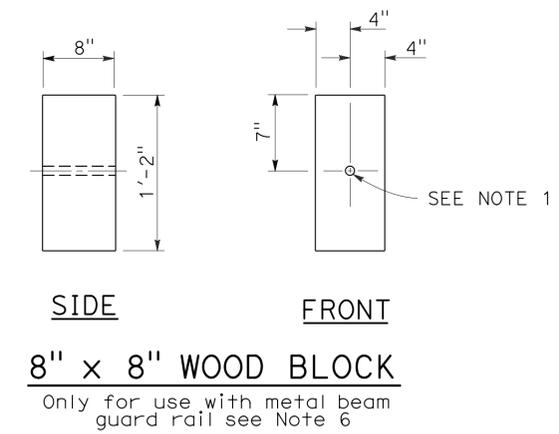
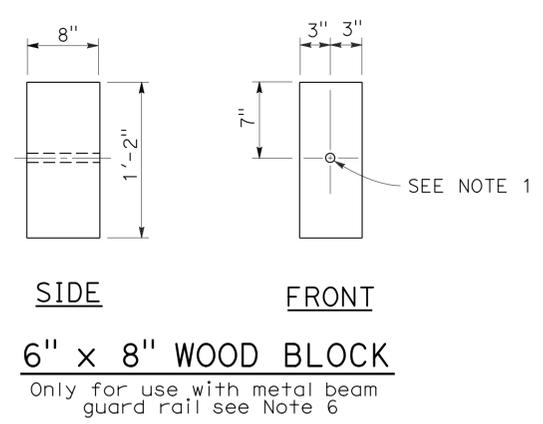
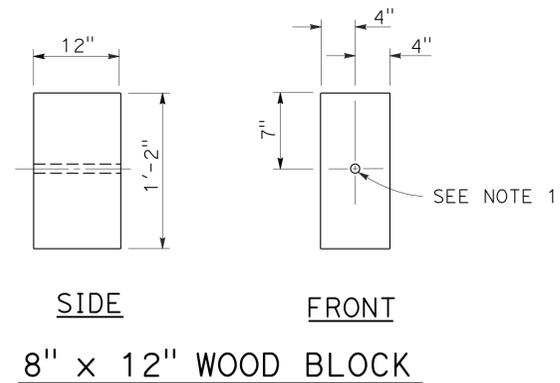
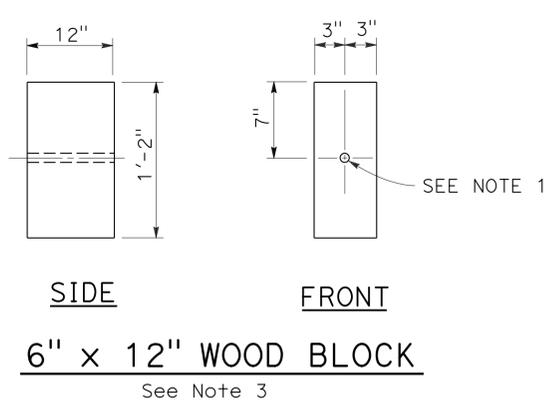
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 3-3-14



NOTES:

1. All holes in wood posts and blocks shall be 3/4" Dia ± 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.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**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	2,138	6.2/6.4, 2.3/R15.2	977	1168

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

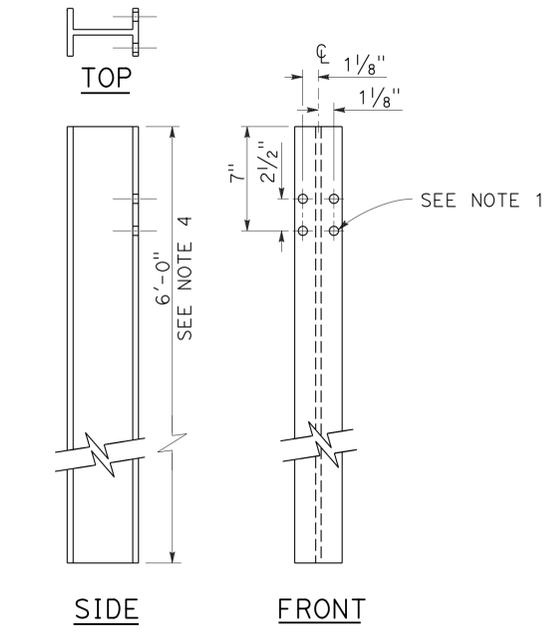
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TO ACCOMPANY PLANS DATED 3-3-14

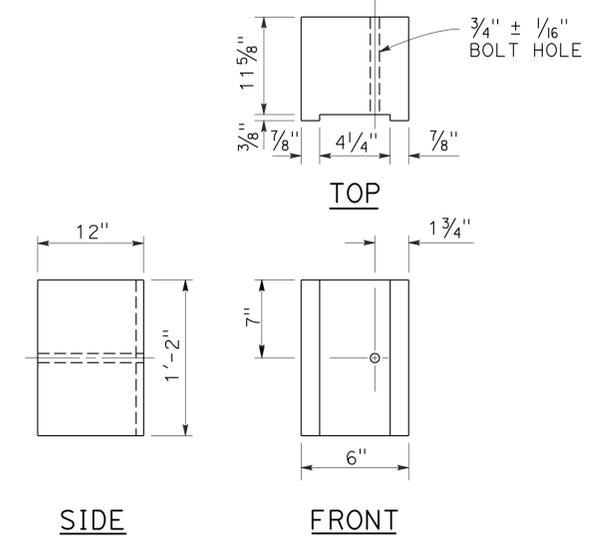
NOTES:

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.

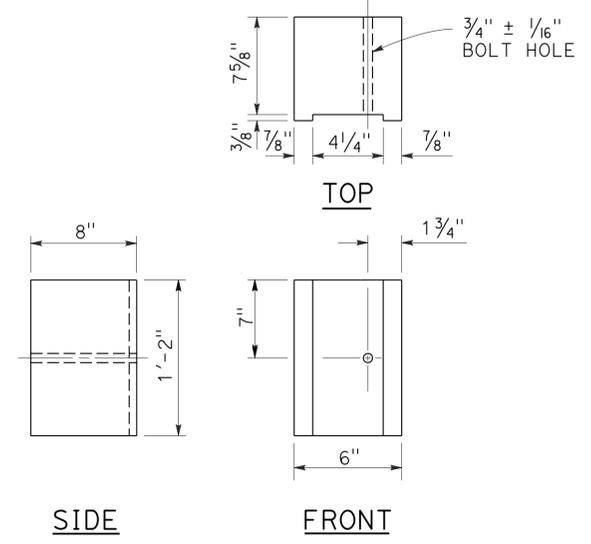
2010 REVISED STANDARD PLAN RSP A77N2



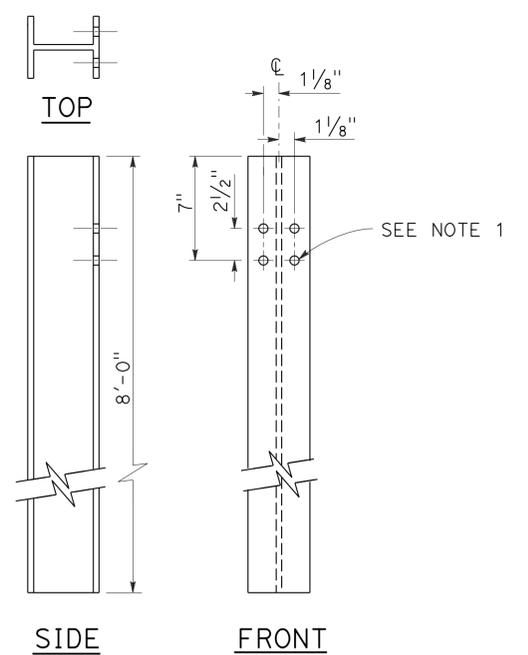
**W6 x 9 OR W6 x 8.5
STEEL POST**
See Note 4



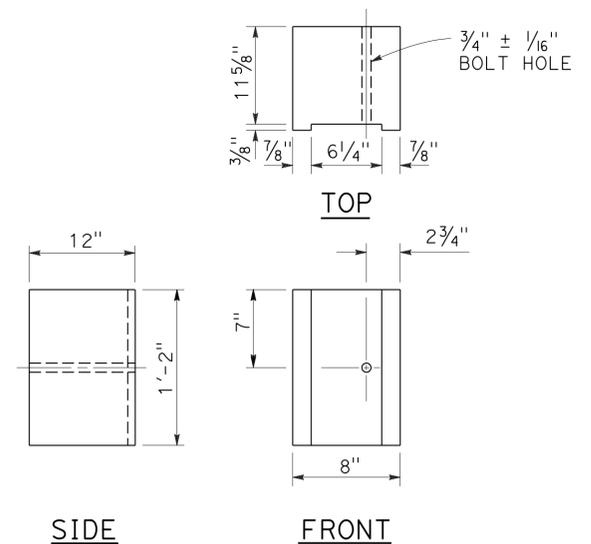
**6" x 12"
NOTCHED WOOD BLOCK**
See Notes 2 and 3



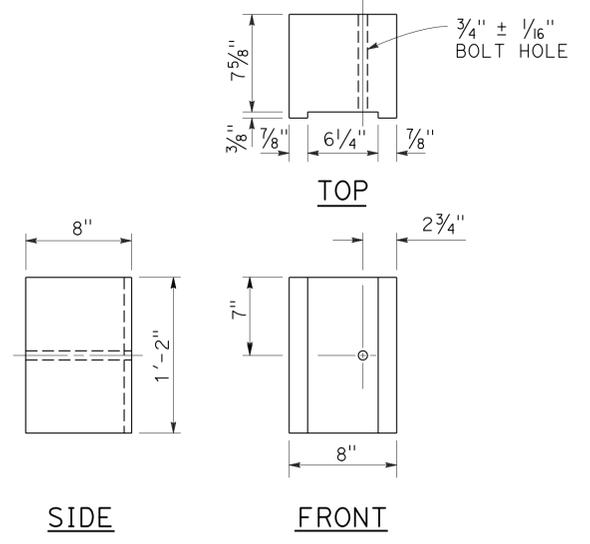
**6" x 8"
NOTCHED WOOD BLOCK**
Only for use with metal beam guard railing. See Note 5



**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.

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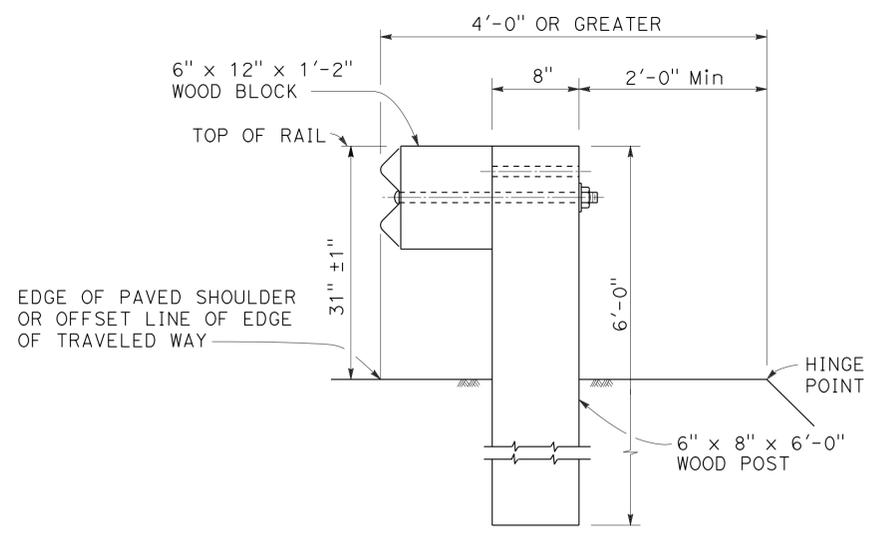
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

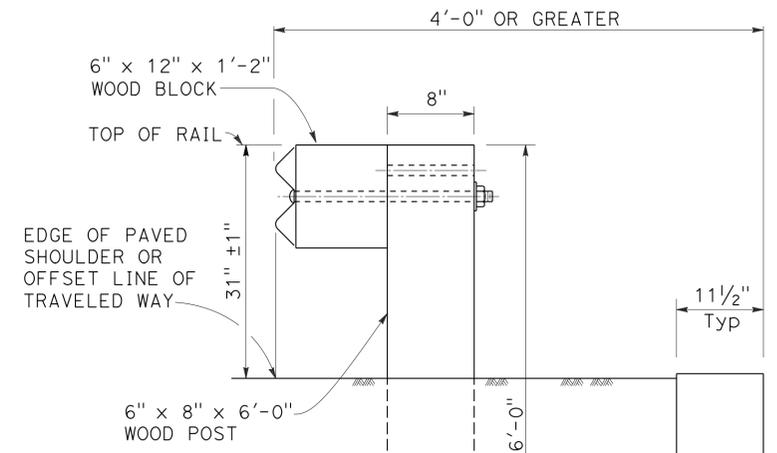
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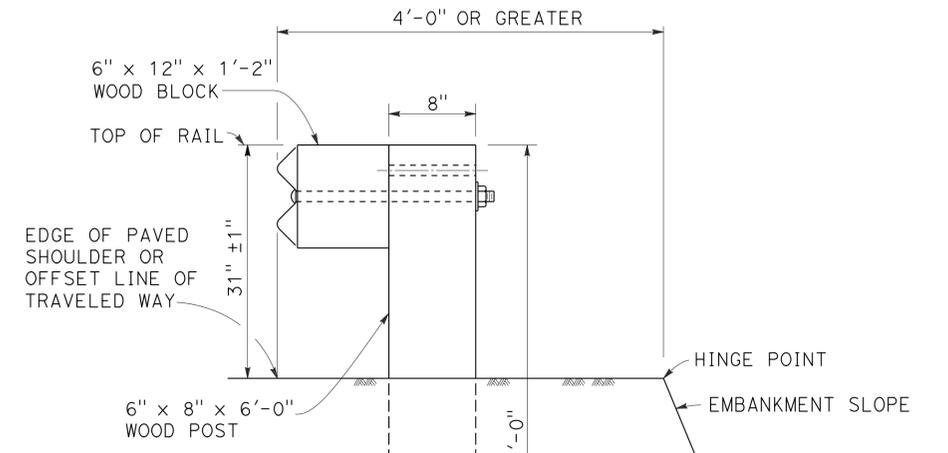
TO ACCOMPANY PLANS DATED 3-3-14



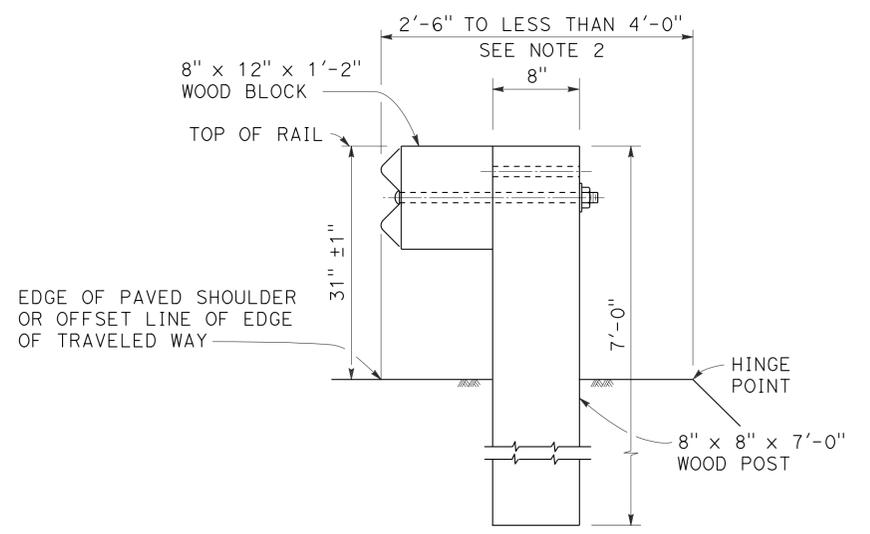
DETAIL A
TYPICAL ROADWAY
INSTALLATION
See Note 1



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	2,138	6.2/6.4, 2.3/R15.2	979	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

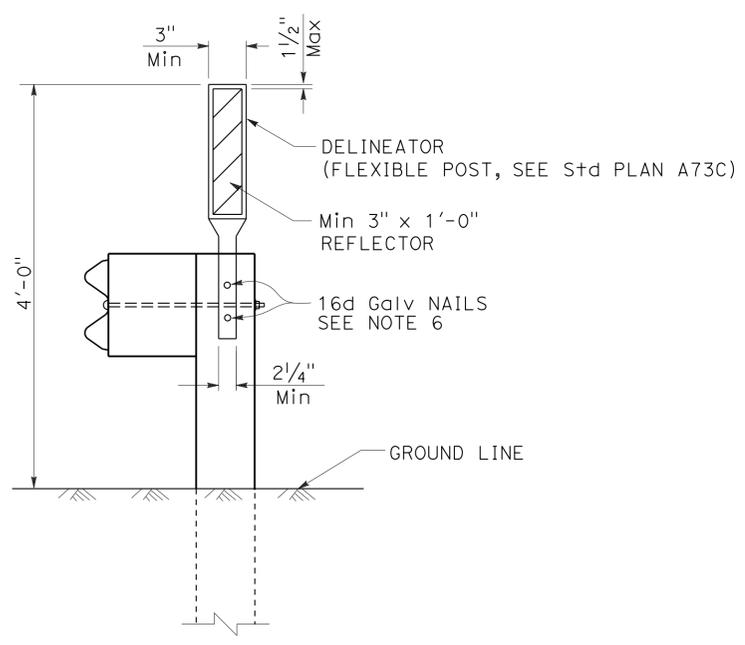
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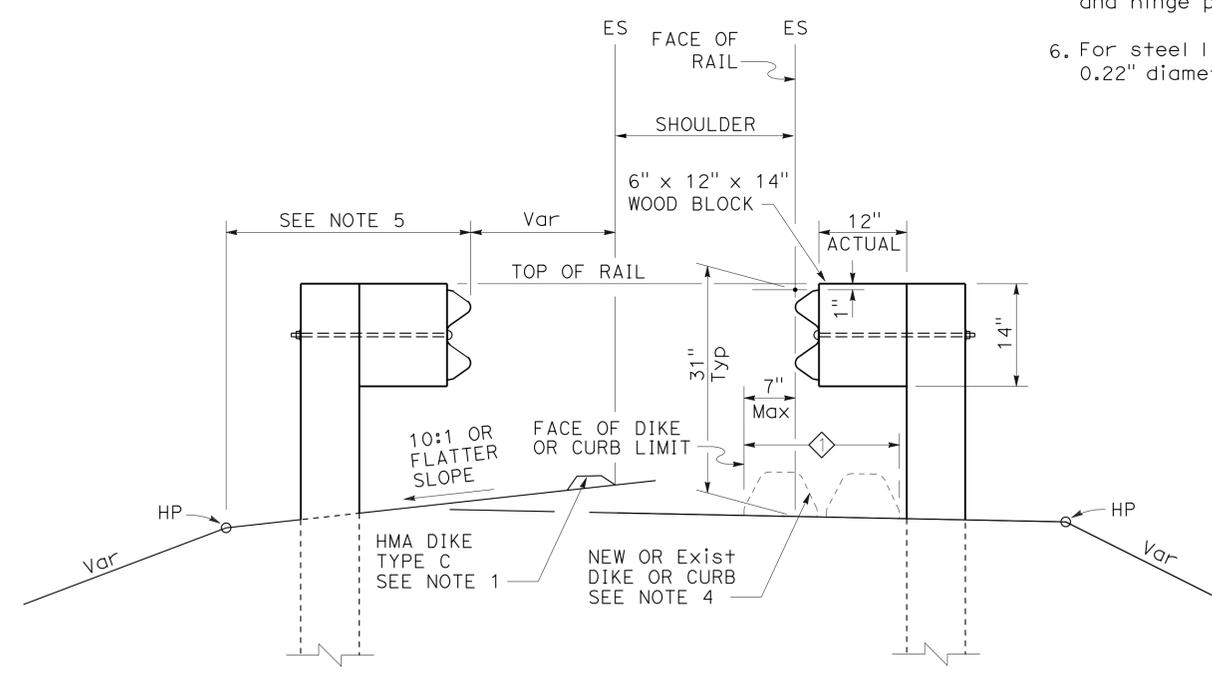
TO ACCOMPANY PLANS DATED 3-3-14

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	2,138	6.2/6.4, 2.3/R15.2	980	1168

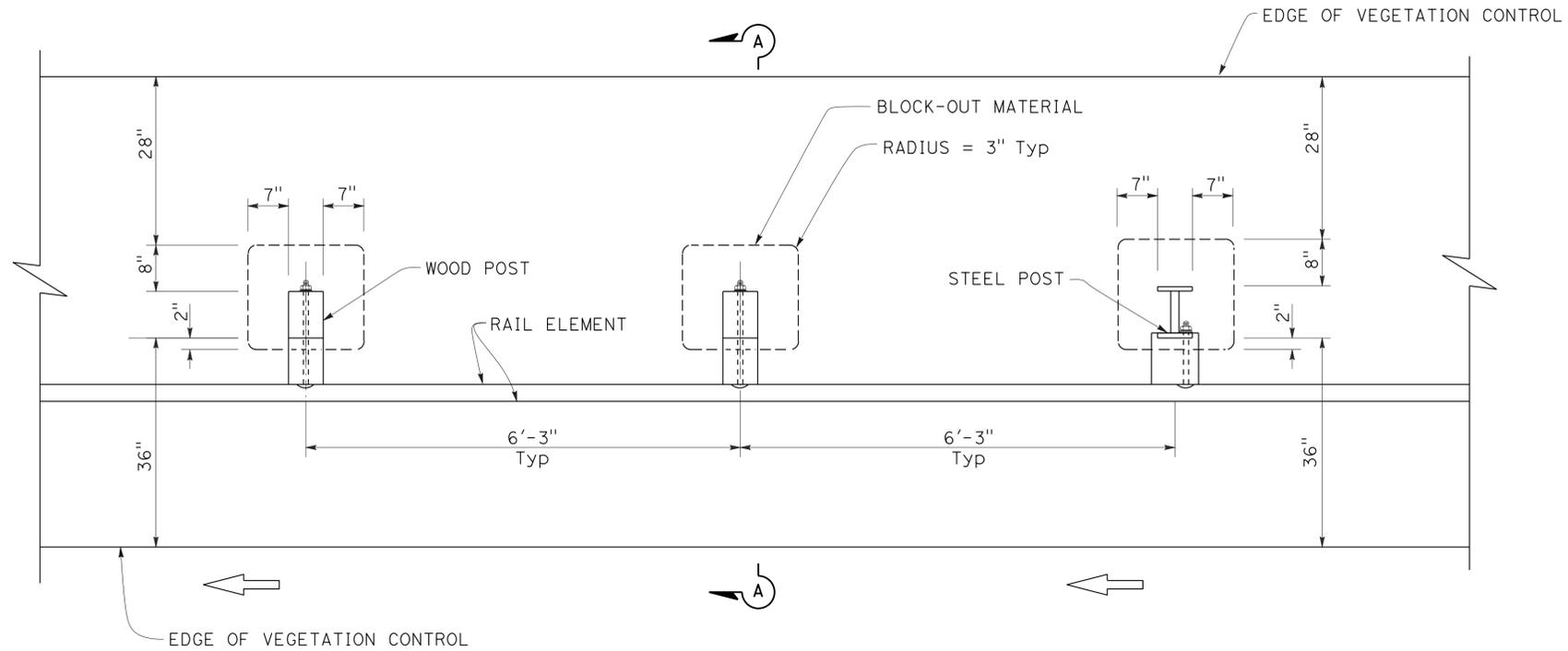
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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Randell D. Hiatt
No. C50200
Exp. 6-30-15
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STATE OF CALIFORNIA

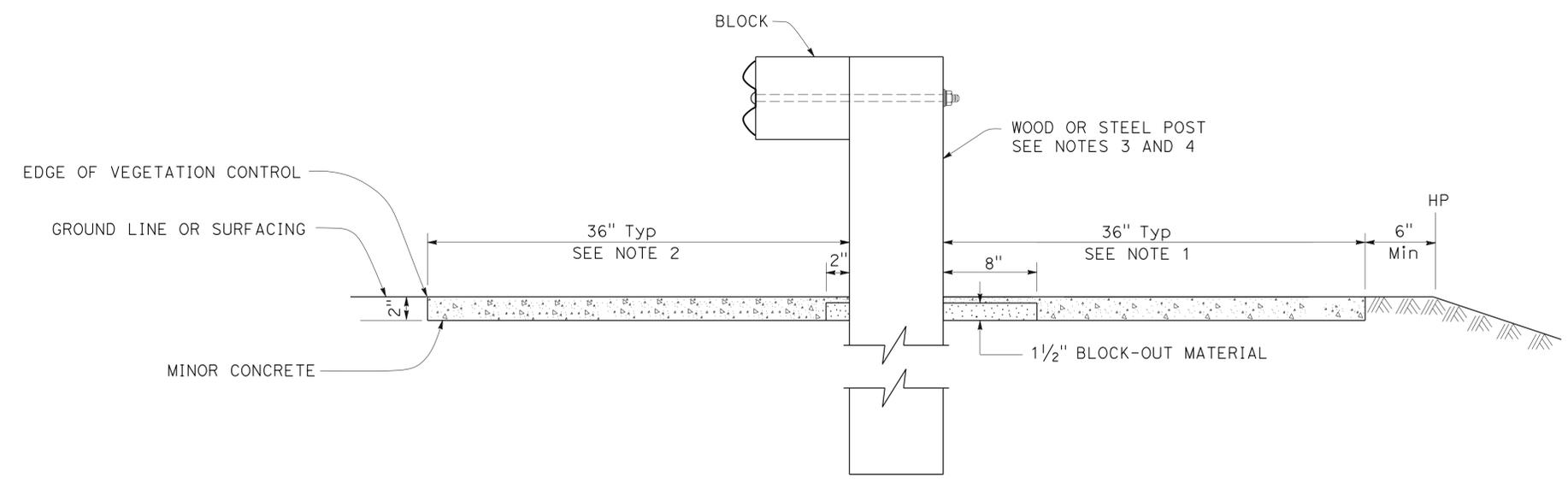
TO ACCOMPANY PLANS DATED 3-3-14



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	2,138	6.2/6.4, 2.3/R15.2	981	1168

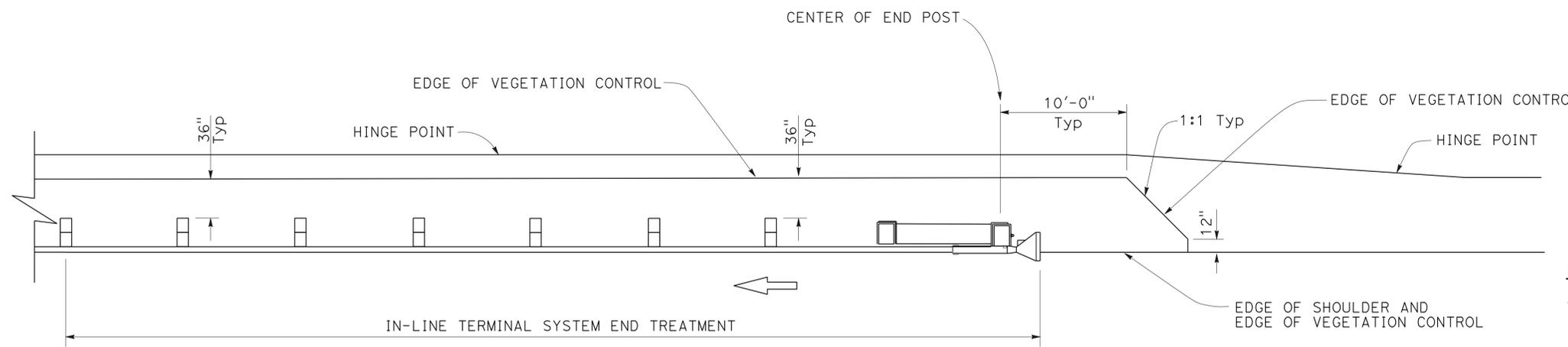
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

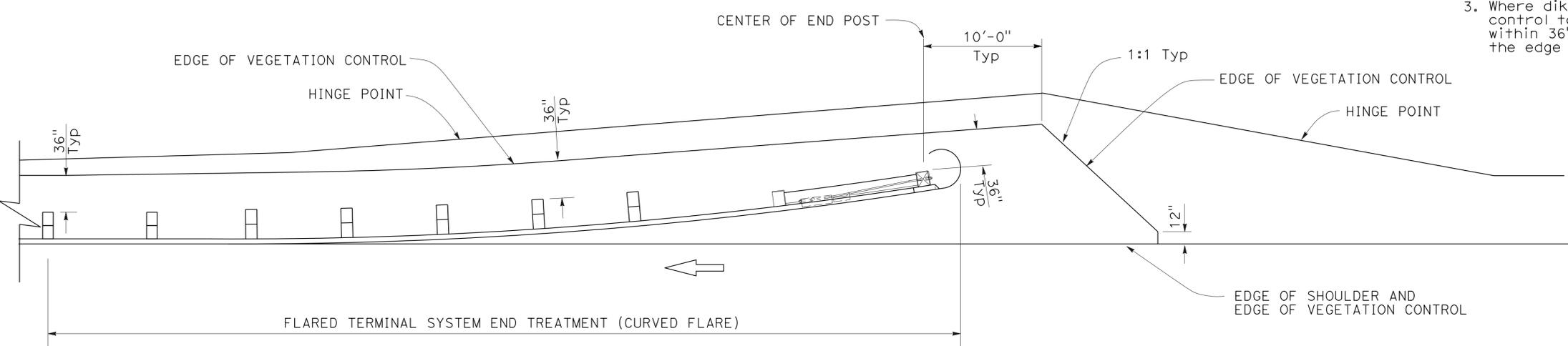
TO ACCOMPANY PLANS DATED 3-3-14



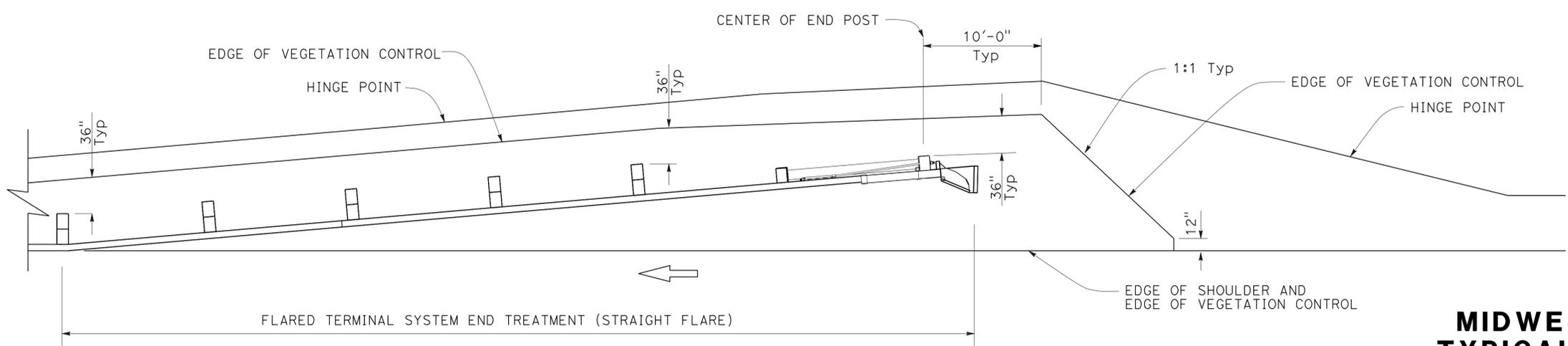
PLAN

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.



PLAN



PLAN

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	2,138	6.2/6.4, 2.3/R15.2	982	1168

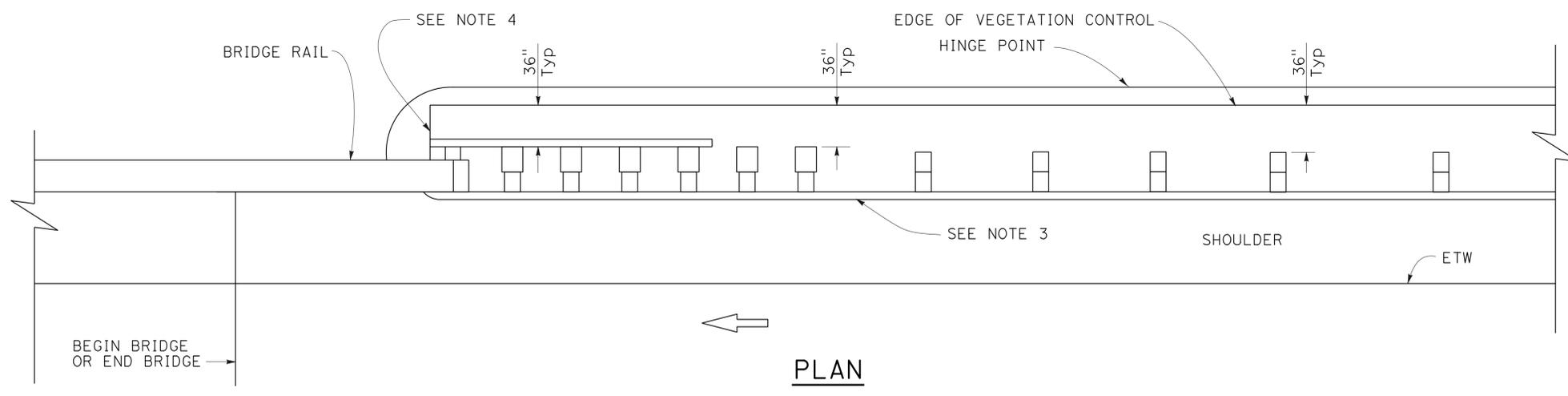
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

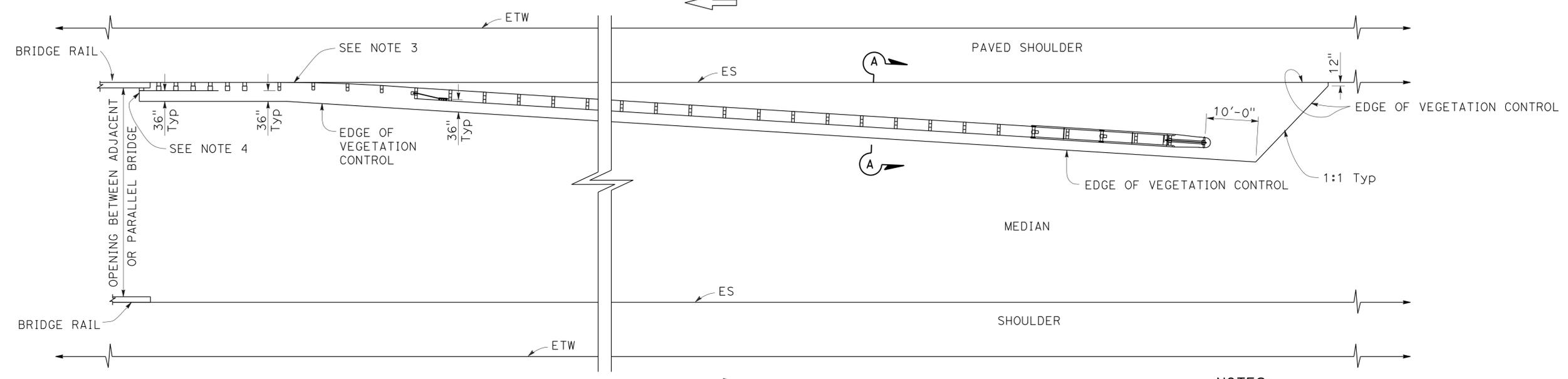
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TO ACCOMPANY PLANS DATED 3-3-14

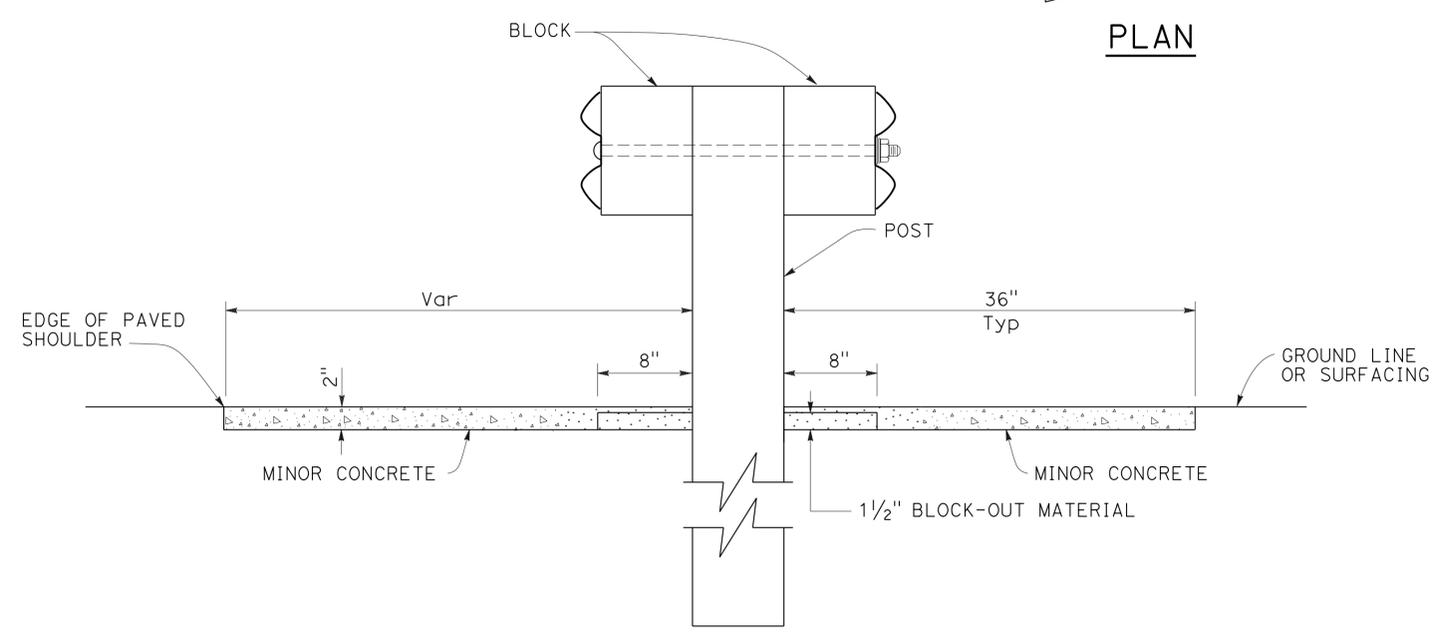
2010 REVISED STANDARD PLAN RSP A77N7



PLAN



PLAN



SECTION A-A

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.
4. End vegetation control at end of backside rail element.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
AT STRUCTURE APPROACH**

NO SCALE

RSP A77N7 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

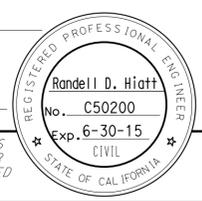
REVISED STANDARD PLAN RSP A77N7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	983	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

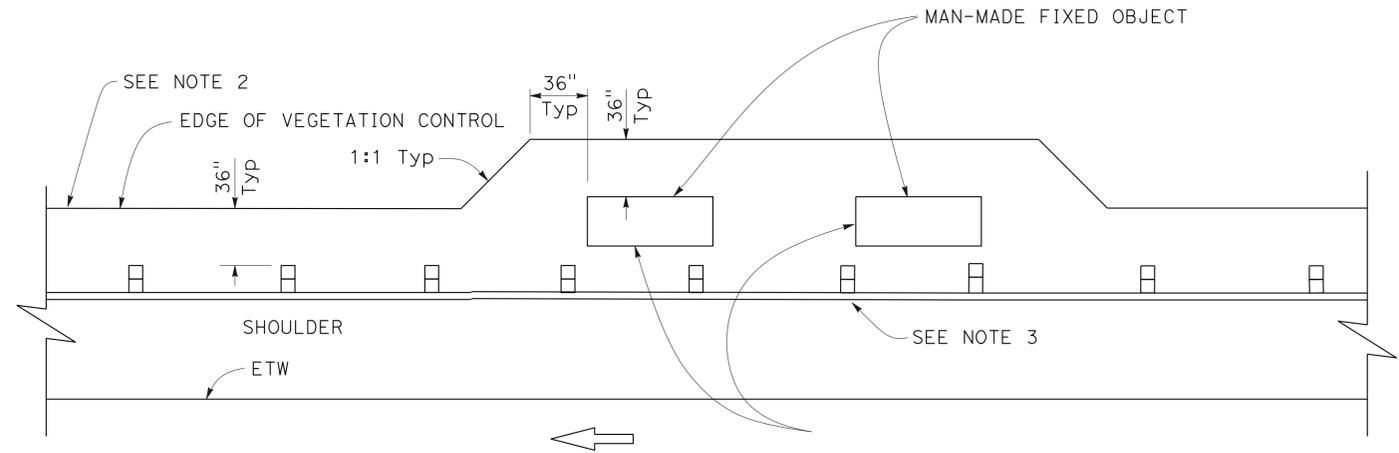
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TO ACCOMPANY PLANS DATED 3-3-14

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

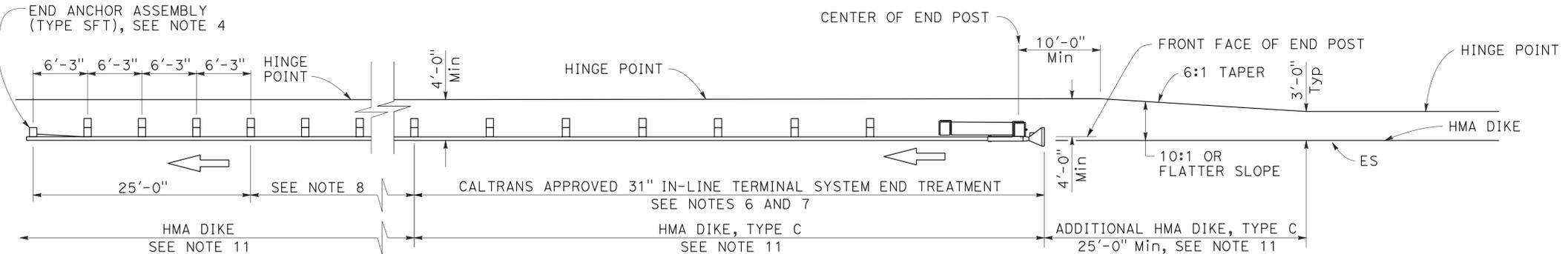
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBD	2,138	6.2/6.4, 2.3/R15.2	984	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

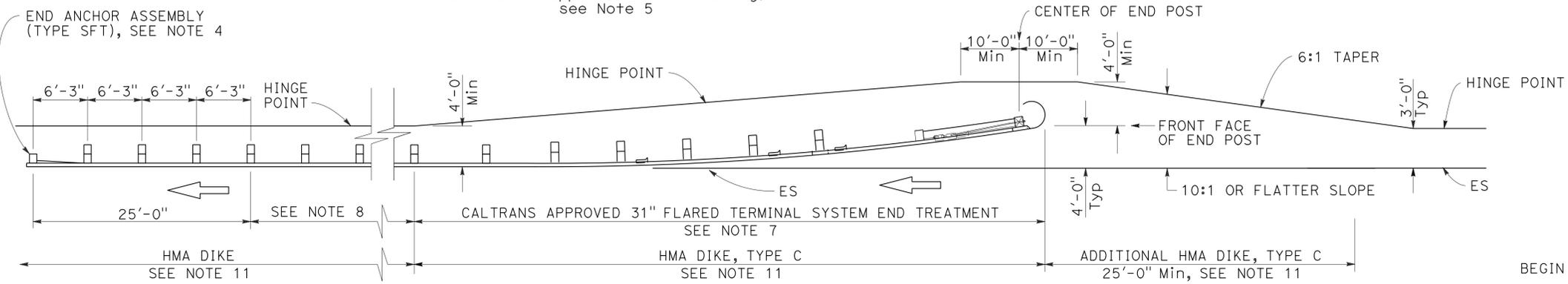
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TO ACCOMPANY PLANS DATED 3-3-14



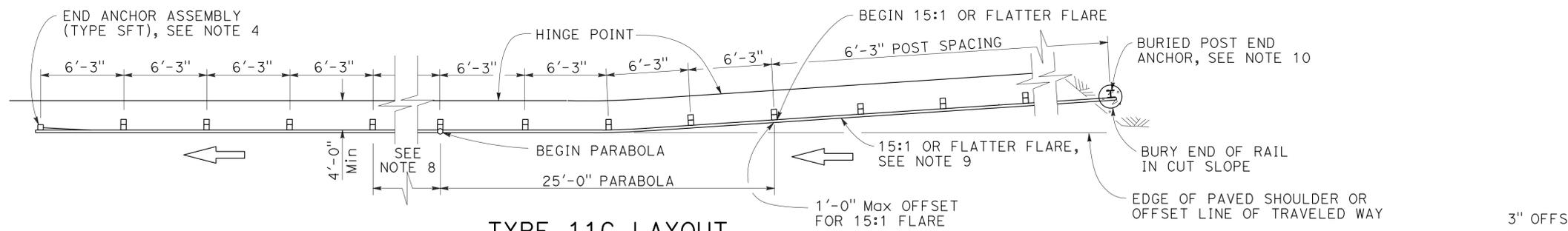
TYPE 11A LAYOUT

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



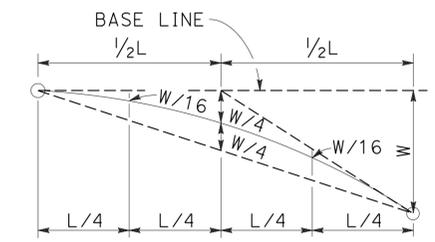
TYPE 11B LAYOUT

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

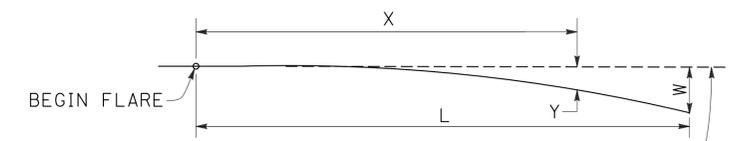


TYPE 11C LAYOUT

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



TYPICAL PARABOLIC LAYOUT

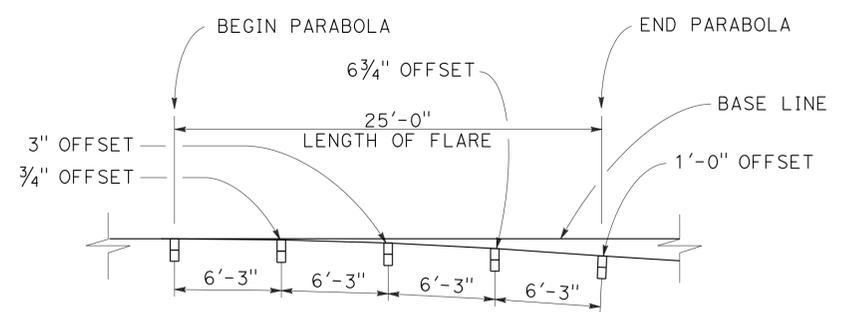


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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	2,138	6.2/6.4, 2.3/R15.2	985	1168

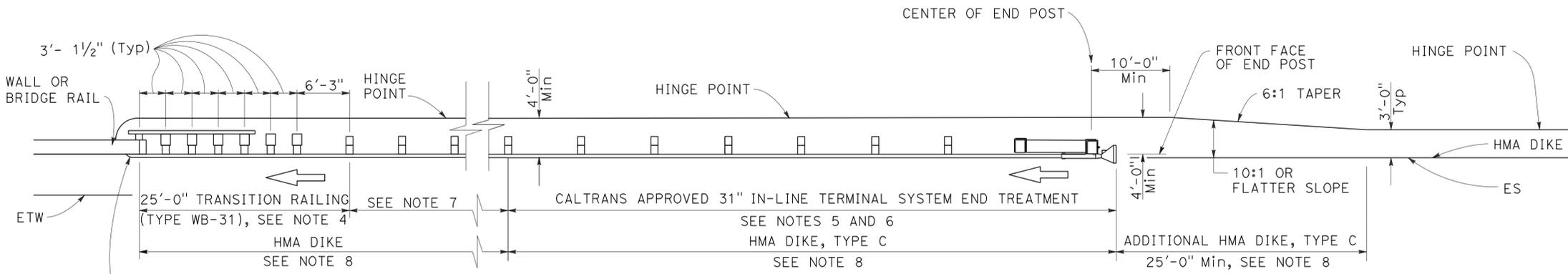
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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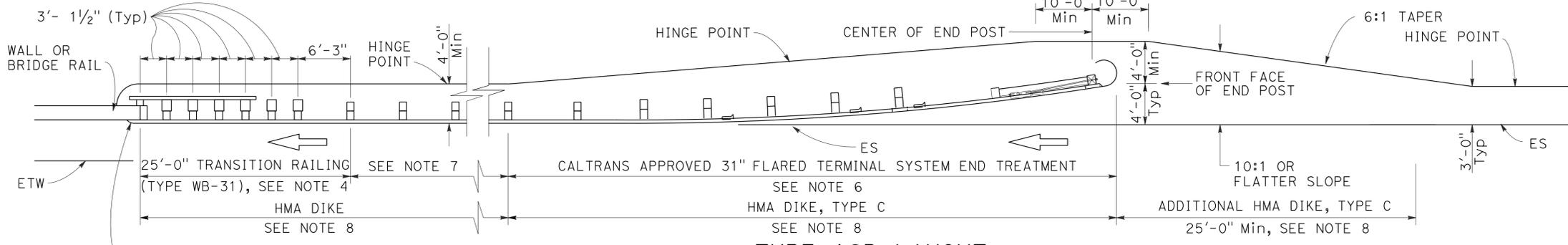


TO ACCOMPANY PLANS DATED 3-3-14



TYPE 12A LAYOUT

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



TYPE 12B LAYOUT

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

NOTES:

- 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
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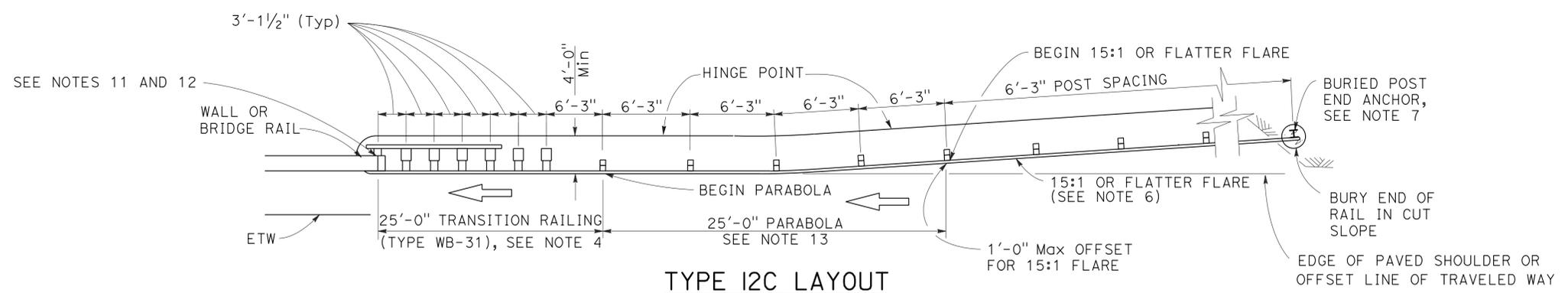
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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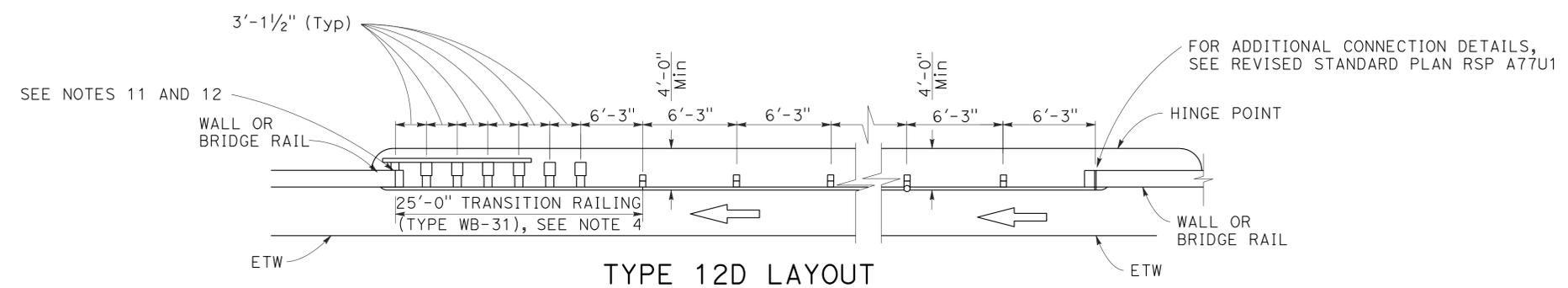
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 3-3-14



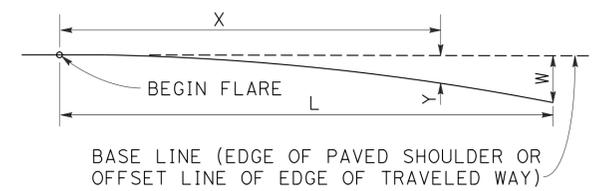
TYPE 12C LAYOUT

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



TYPE 12D LAYOUT

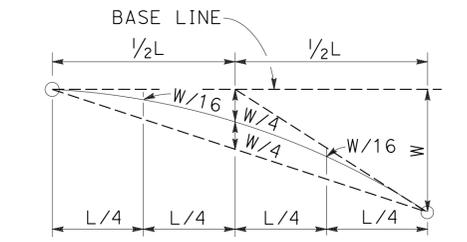
(Continuous MGS installation between structures)
See Notes 5 and 9



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

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

PARABOLIC FLARE OFFSETS



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.
- 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" m wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12C and 12D Layouts, see Revised Standard Plan RSP A77U4.
- Type 12D layout is typically used where continuous MGS is recommended between structures.
- The 15:1 or flatter flare for Type 12C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS with the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 12C 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 12C Layout is typically used:
 - To the right of approaching traffic, at the end of the structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - To the left of approaching traffic, at each of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - 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.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
STRUCTURE APPROACH
AND BETWEEN STRUCTURES**

NO SCALE

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

REVISED STANDARD PLAN RSP A77Q2

2010 REVISED STANDARD PLAN RSP A77Q2

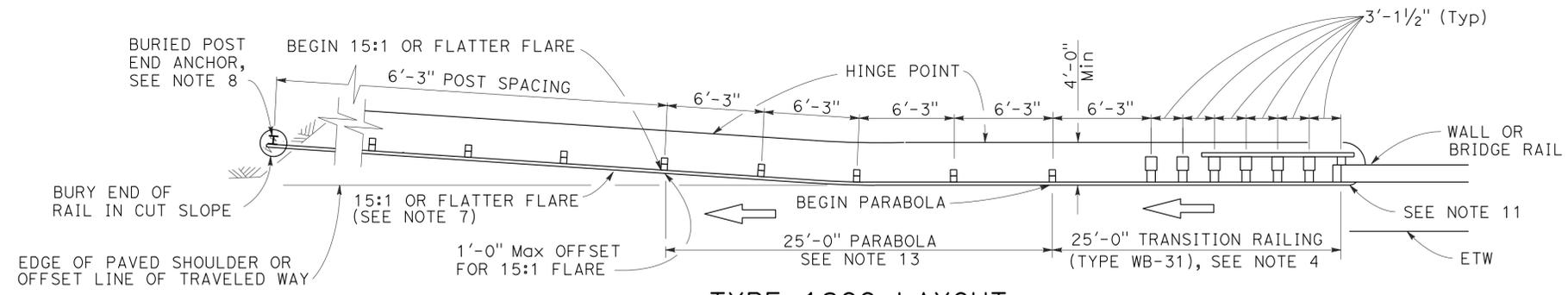
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	987	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

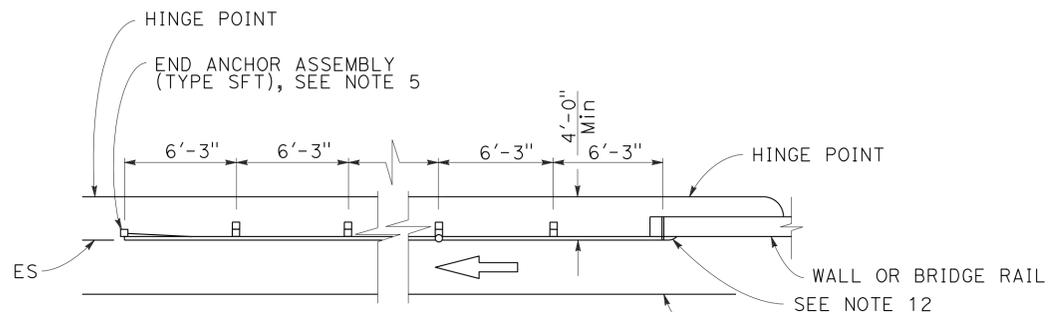
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No. C50200
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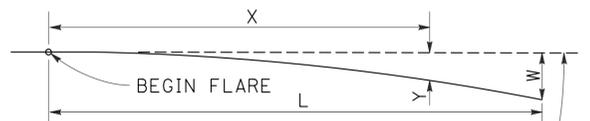
TYPE 12CC LAYOUT

(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

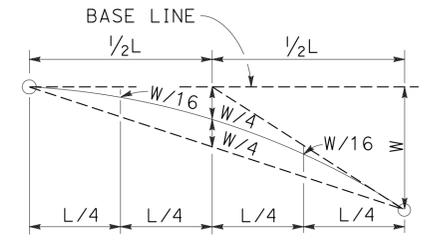


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

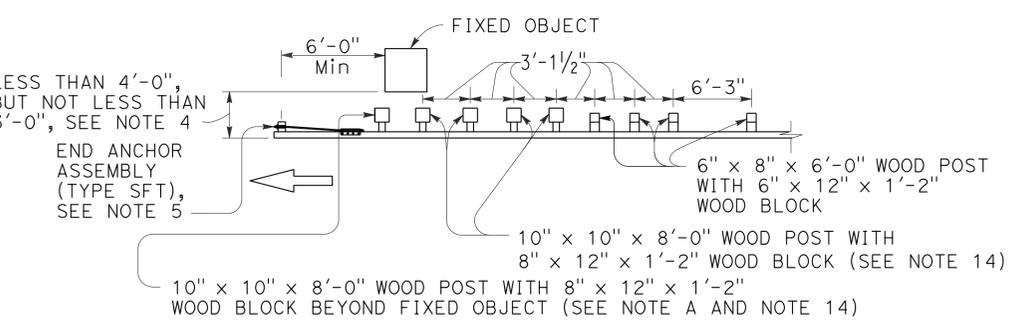
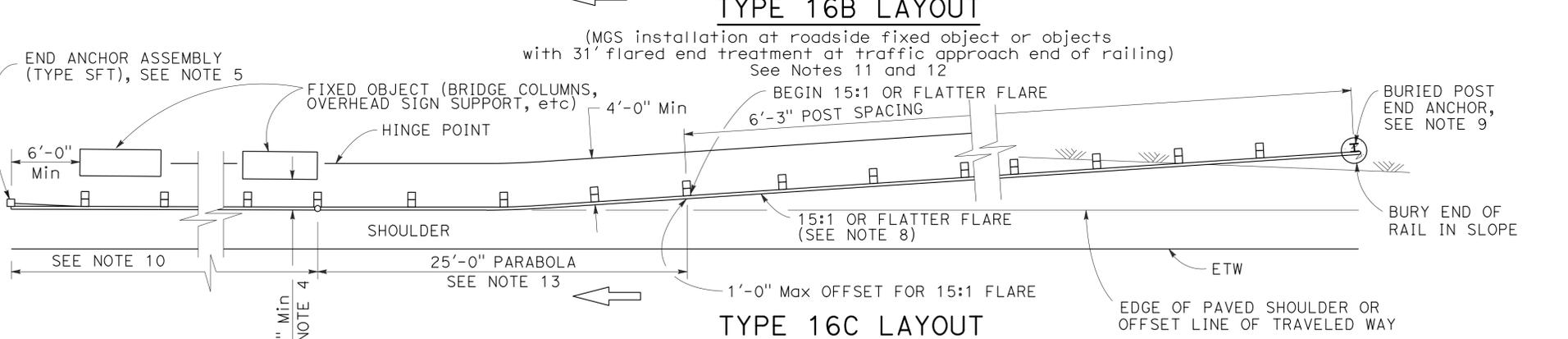
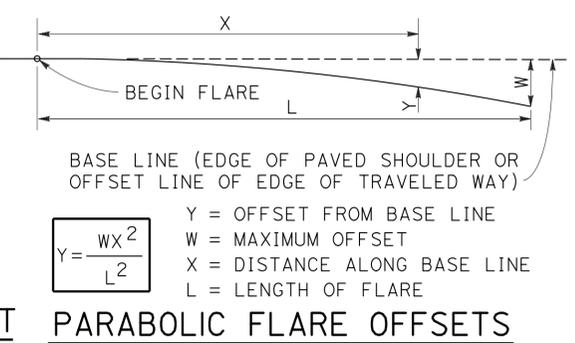
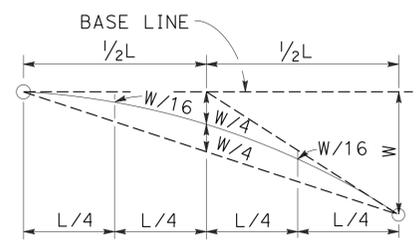
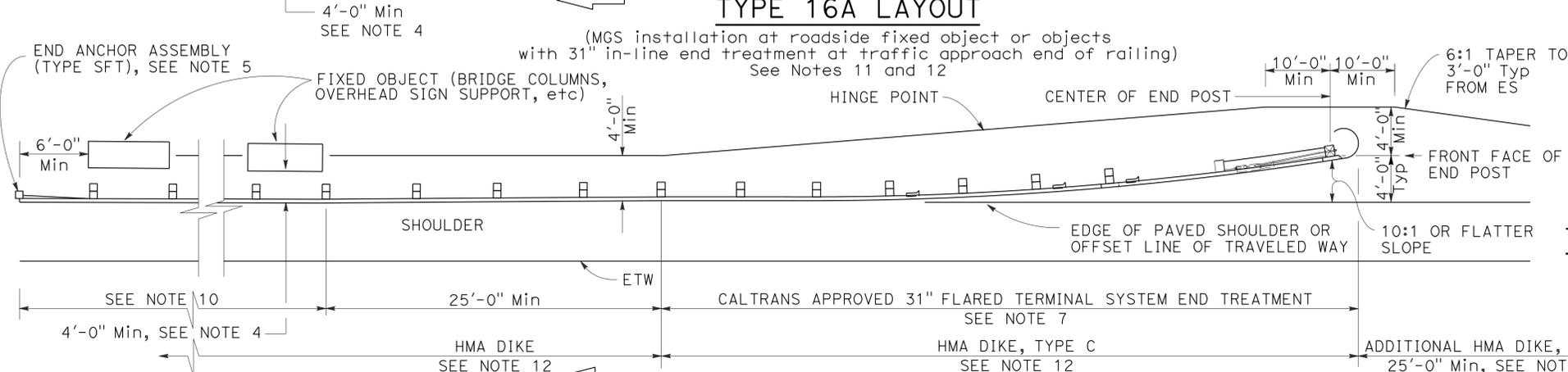
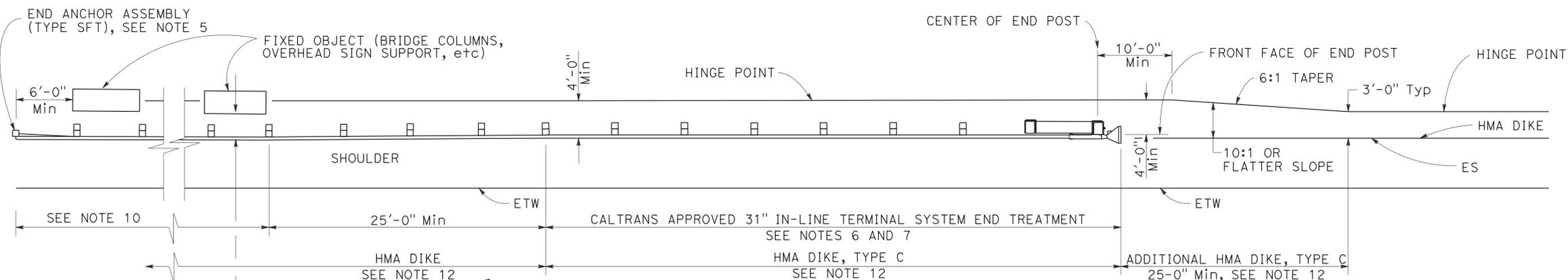
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	988	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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STATE OF CALIFORNIA



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

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".

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

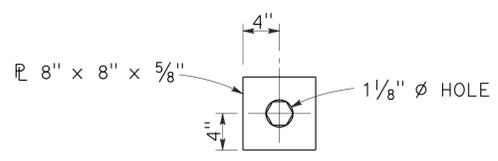
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	989	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

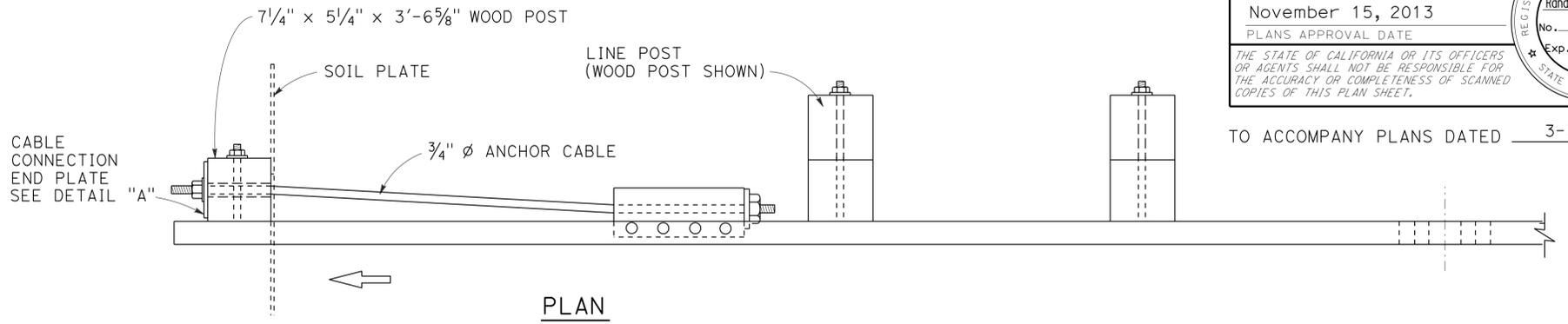
November 15, 2013
PLANS APPROVAL DATE

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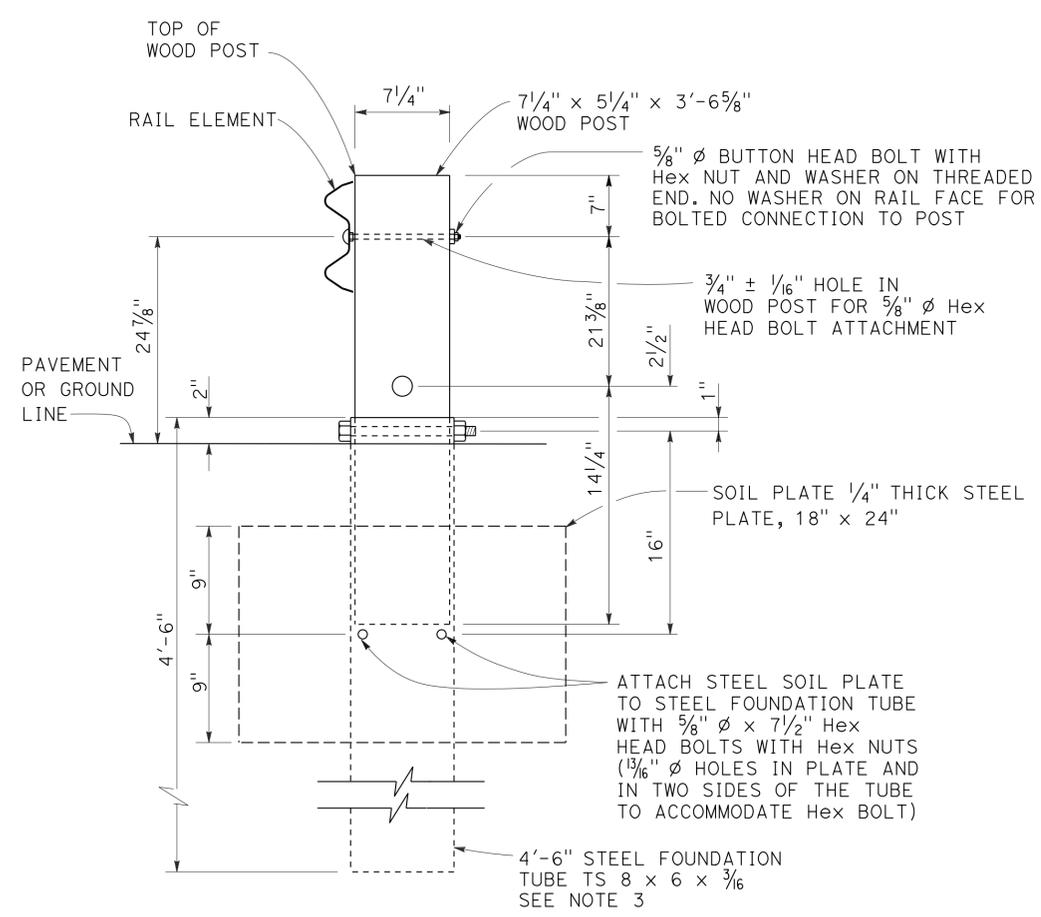
TO ACCOMPANY PLANS DATED 3-3-14



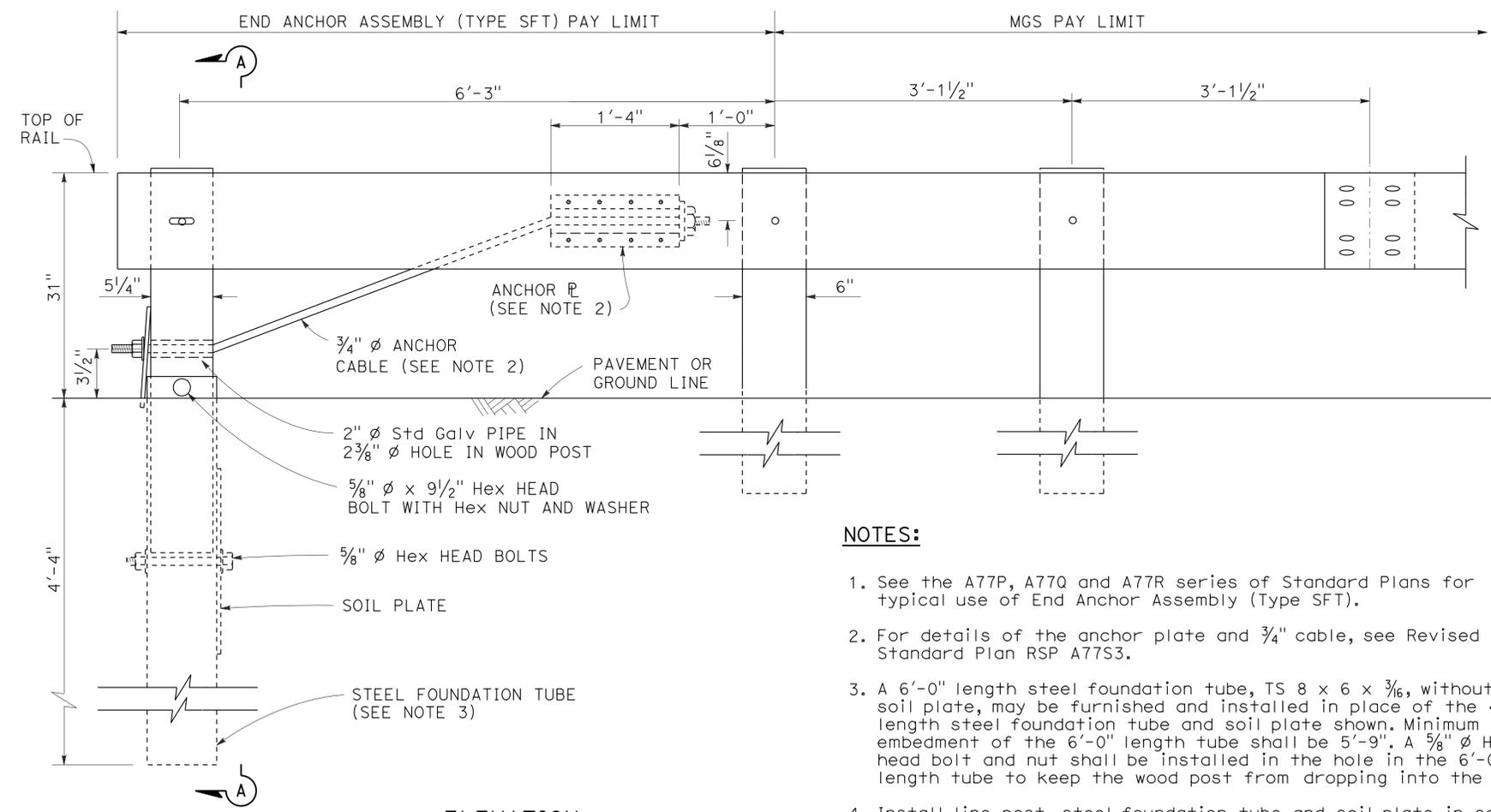
DETAIL "A"
CABLE CONNECTION
END PLATE



PLAN



SECTION A-A



ELEVATION

END ANCHOR
ASSEMBLY (TYPE SFT)
See Note 1

NOTES:

1. See the A77P, A77Q and A77R series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 3/4" cable, see Revised Standard Plan RSP A77S3.
3. A 6'-0" length steel foundation tube, TS 8 x 6 x 3/16, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" 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	2,138	6.2/6.4, 2.3/R15.2	990	1168

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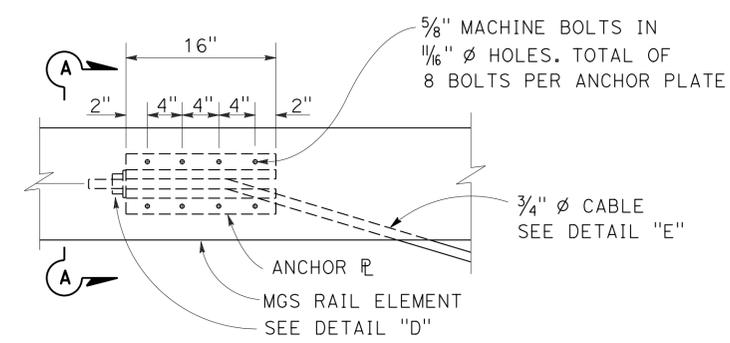
November 15, 2013
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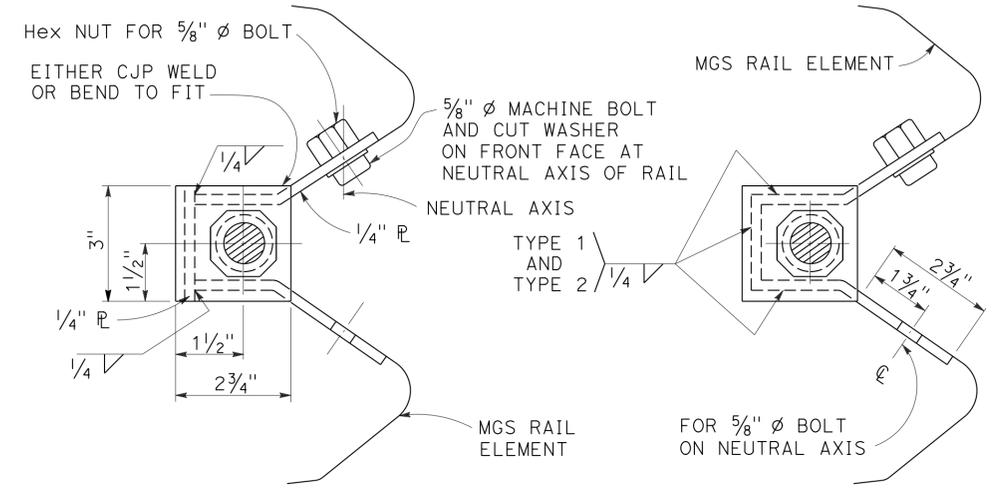


TO ACCOMPANY PLANS DATED 3-3-14

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

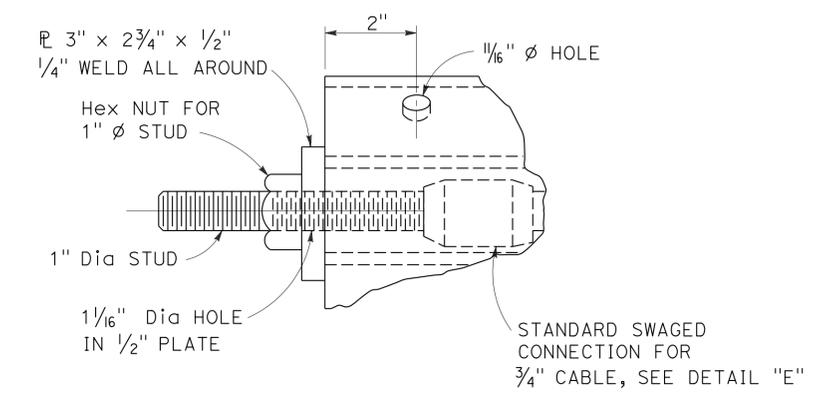


ANCHOR PLATE DETAIL
(MGS shown, TBB similar)

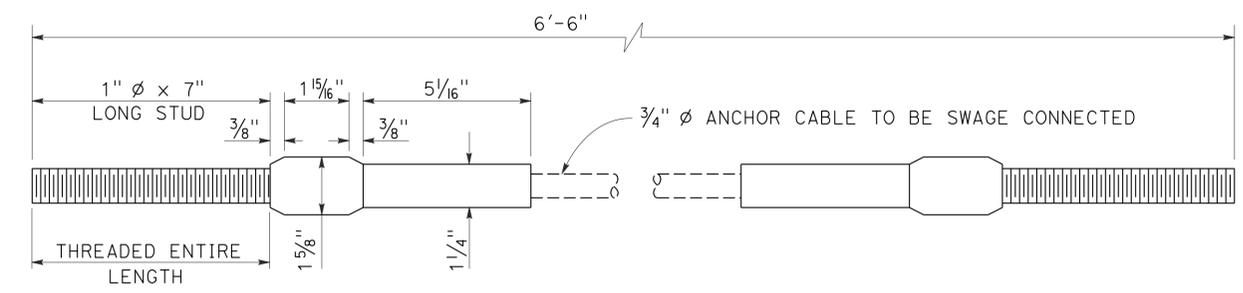


NOTE:
Dimensioning applies to both types.

SECTION A-A (ALTERNATIVE TYPE 1) **SECTION A-A (ALTERNATIVE TYPE 2)**



DETAIL "D"



ANCHOR CABLE WITH SWAGED FITTING AND STUD
DETAIL "E"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL RAILING
ANCHOR CABLE AND
ANCHOR PLATE DETAILS**

NO SCALE
RSP A77S3 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77S3
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

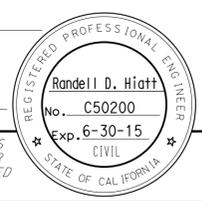
2010 REVISED STANDARD PLAN RSP A77S3

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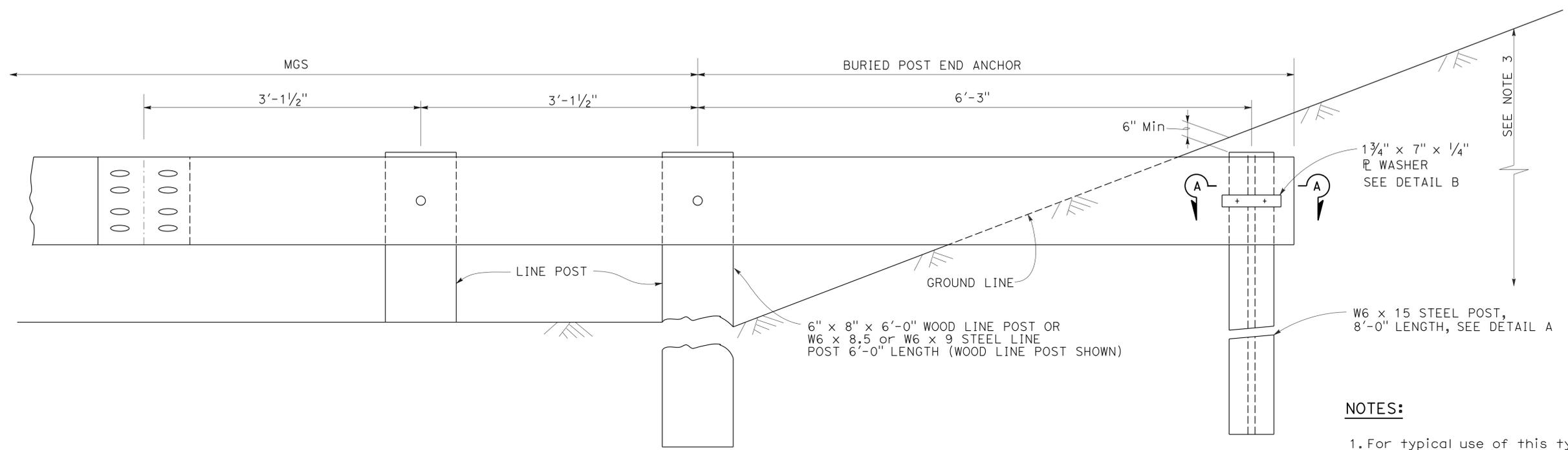
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
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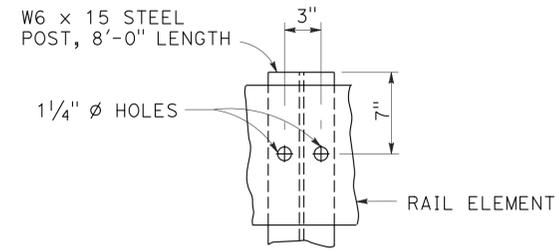
TO ACCOMPANY PLANS DATED 3-3-14



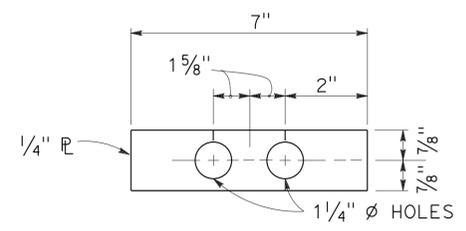
BURIED POST END ANCHOR
See Note 3

NOTES:

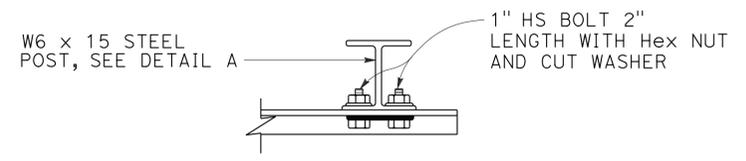
1. For typical use of this type of end anchor with MGS see the A77P, A77Q and A77R Series of the Standard Plans.
2. Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers approximately 1'-0" thick. Each layer shall be moistened 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	2,138	6.2/6.4, 2.3/R15.2	992	1168

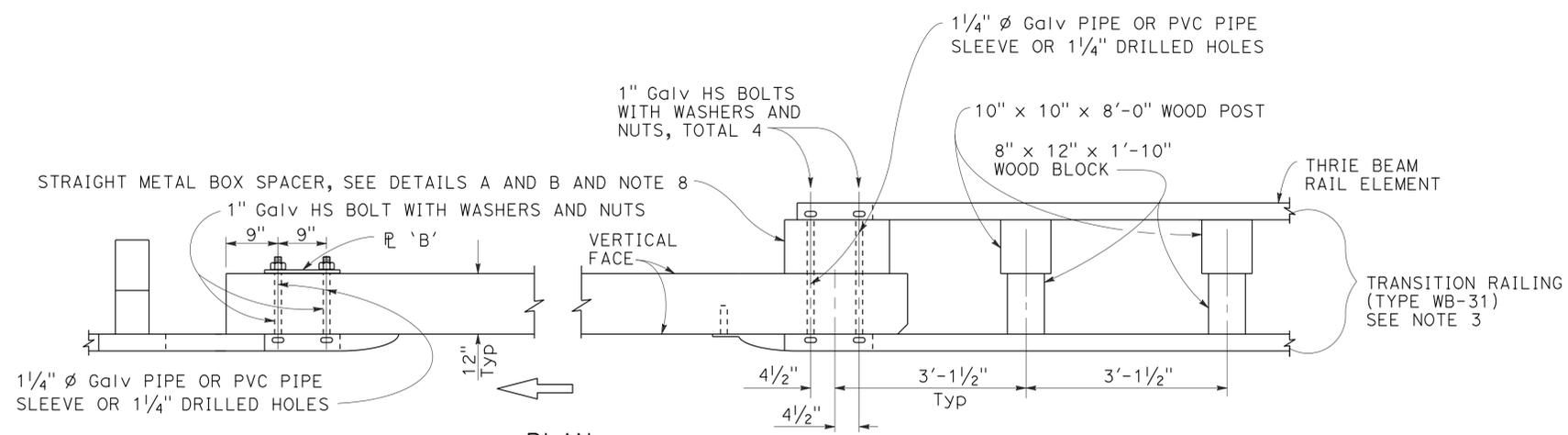
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July 19, 2013
PLANS APPROVAL DATE

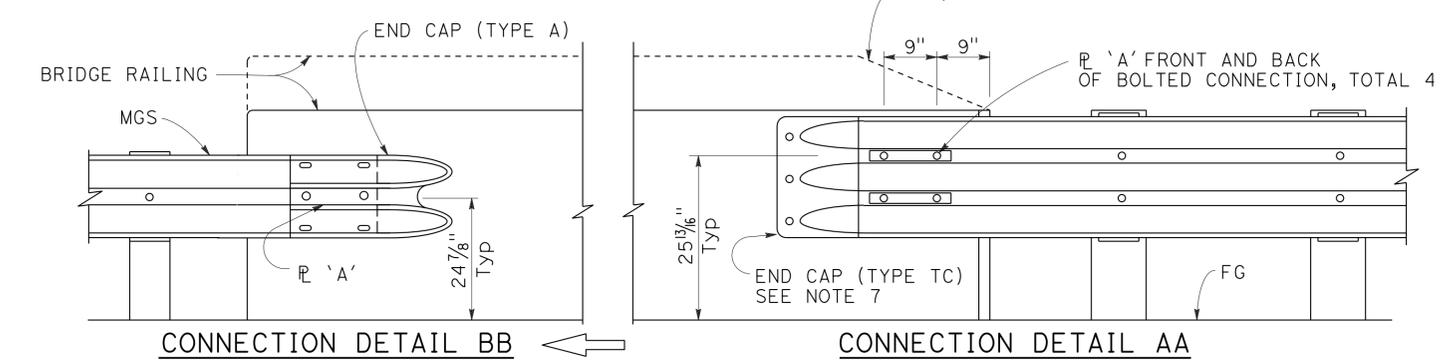
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TO ACCOMPANY PLANS DATED 3-3-14



PLAN

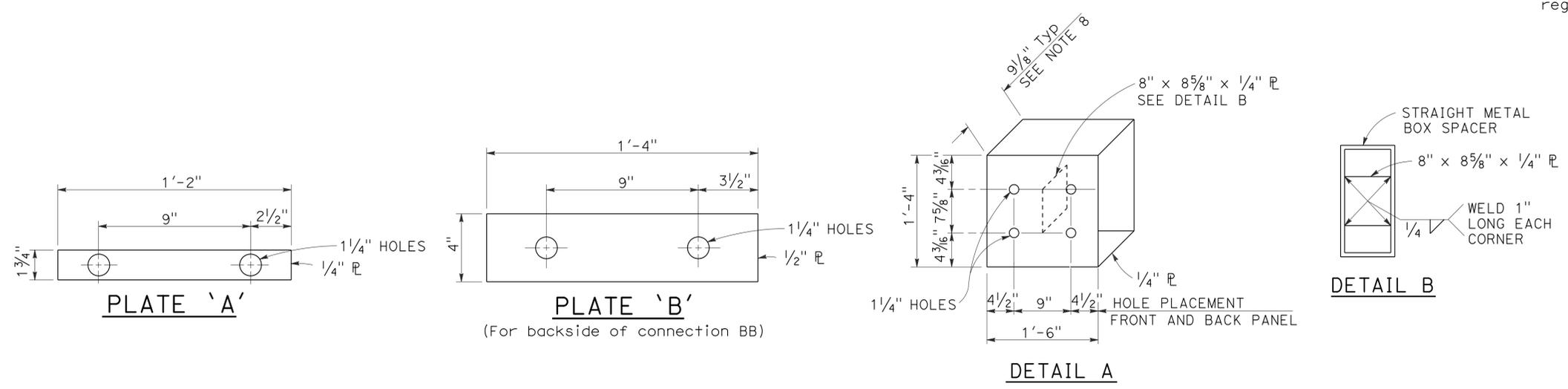


ELEVATION

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	2,138	6.2/6.4, 2.3/R15.2	993	1168

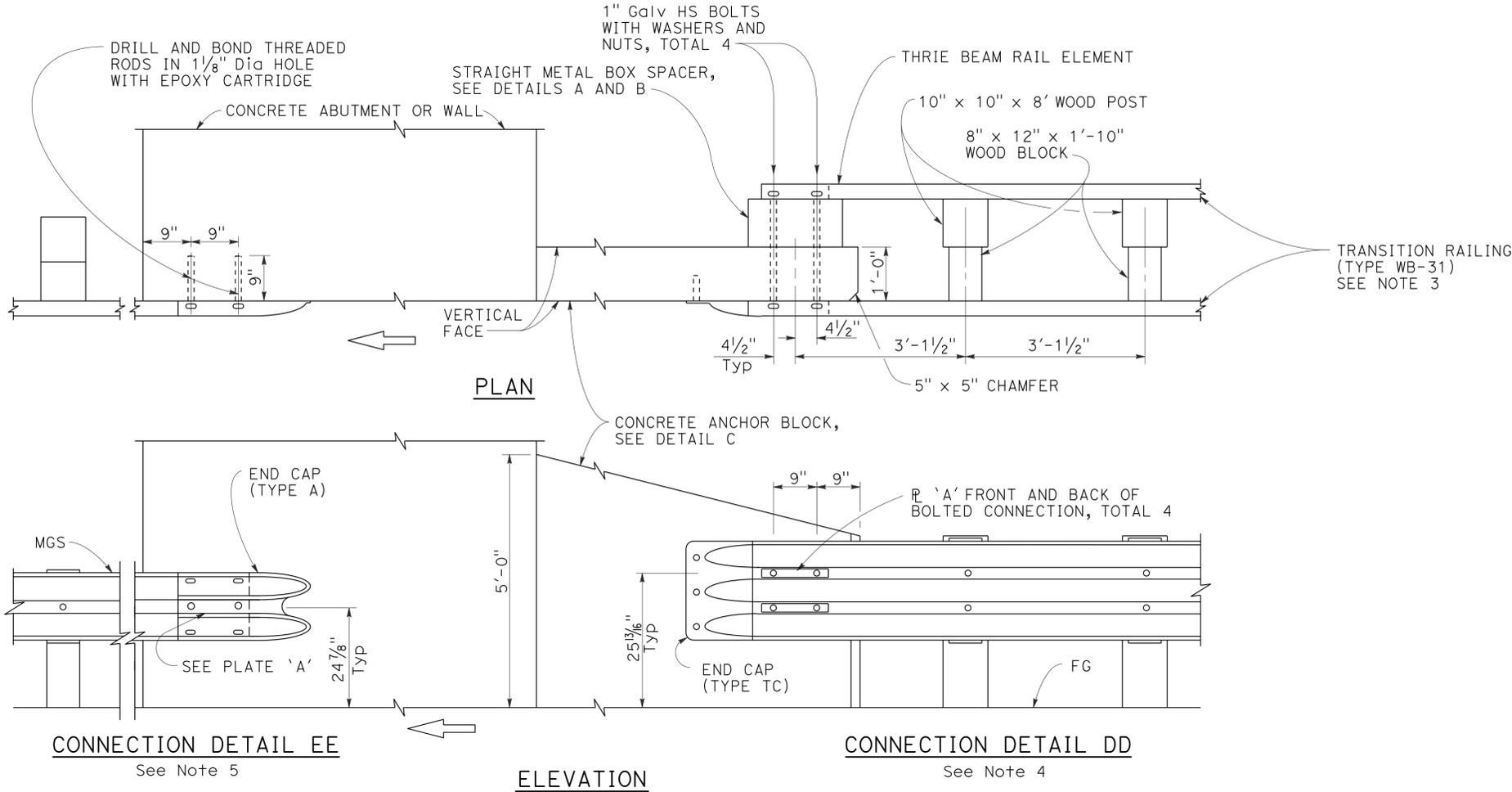
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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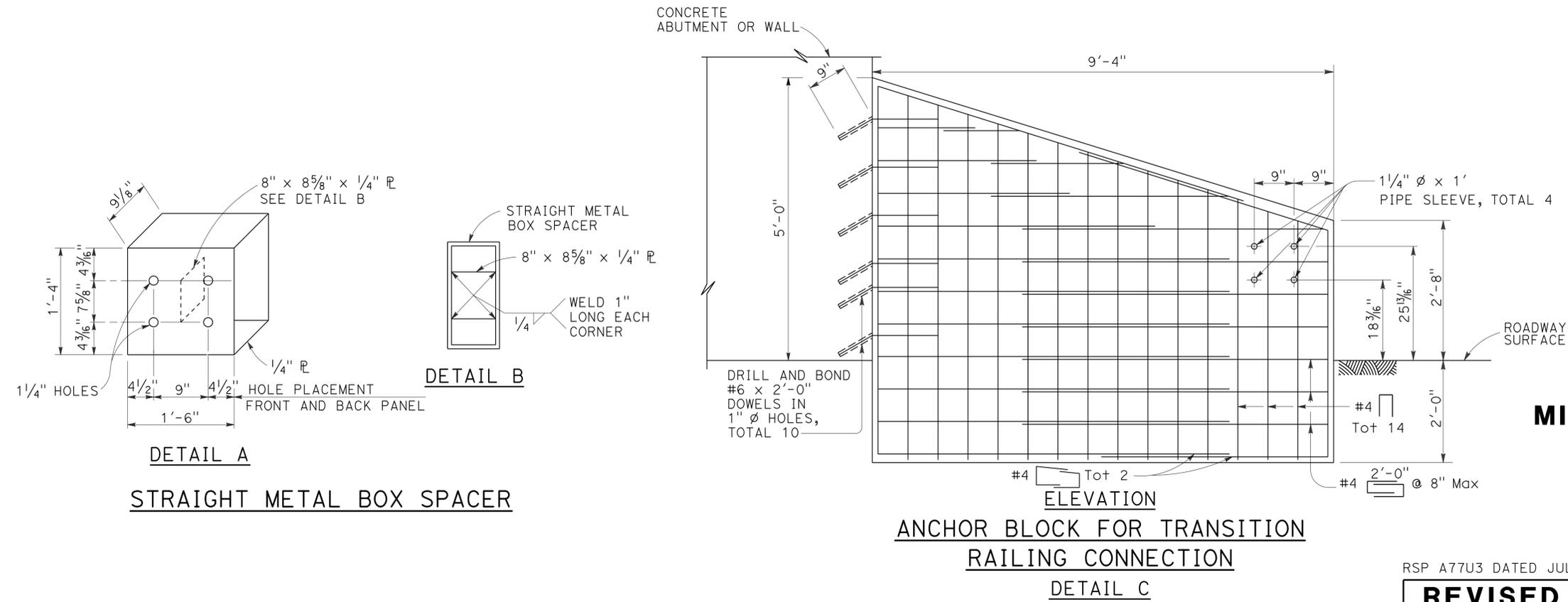
TO ACCOMPANY PLANS DATED 3-3-14



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

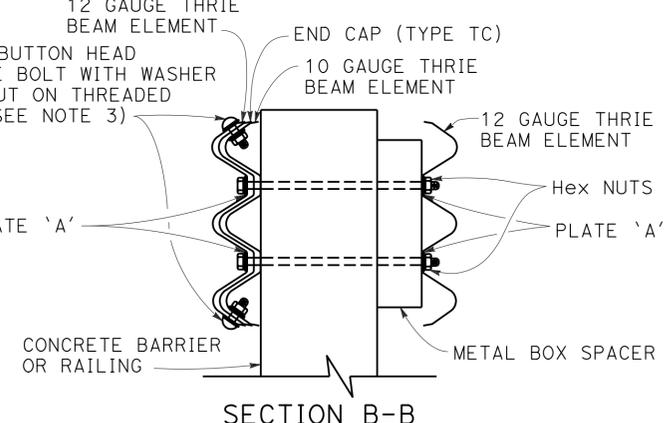
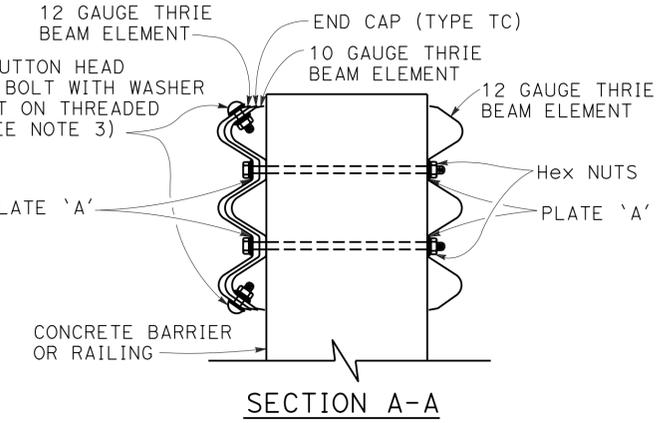
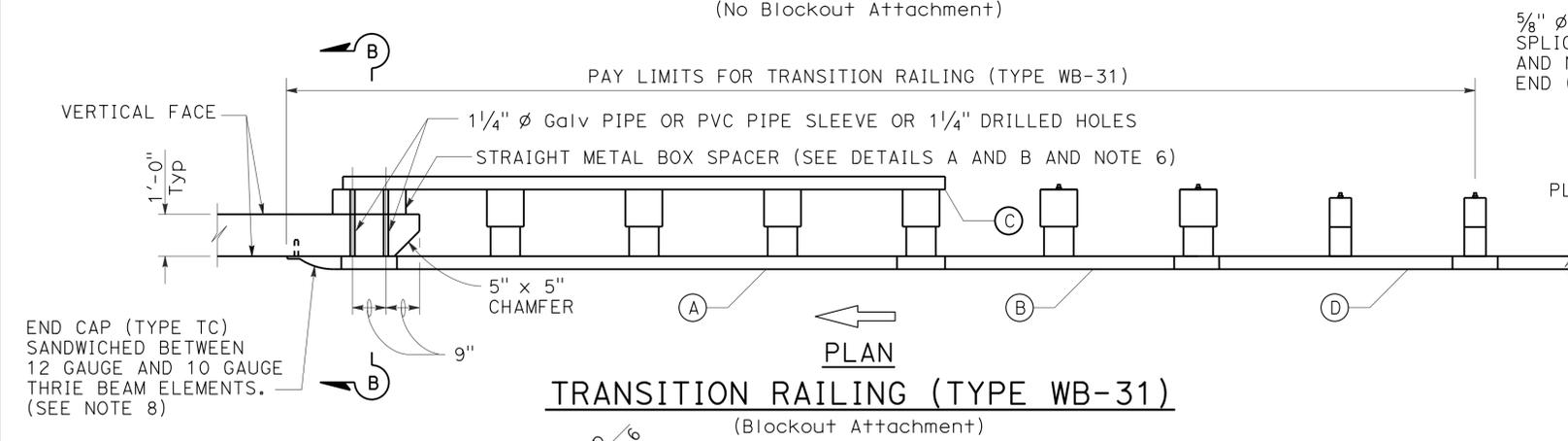
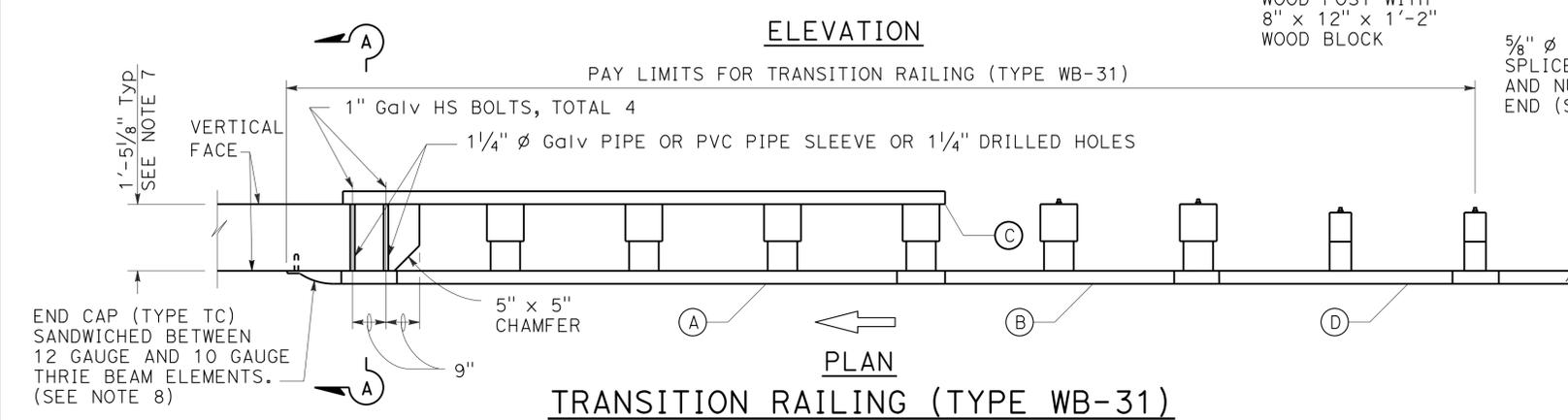
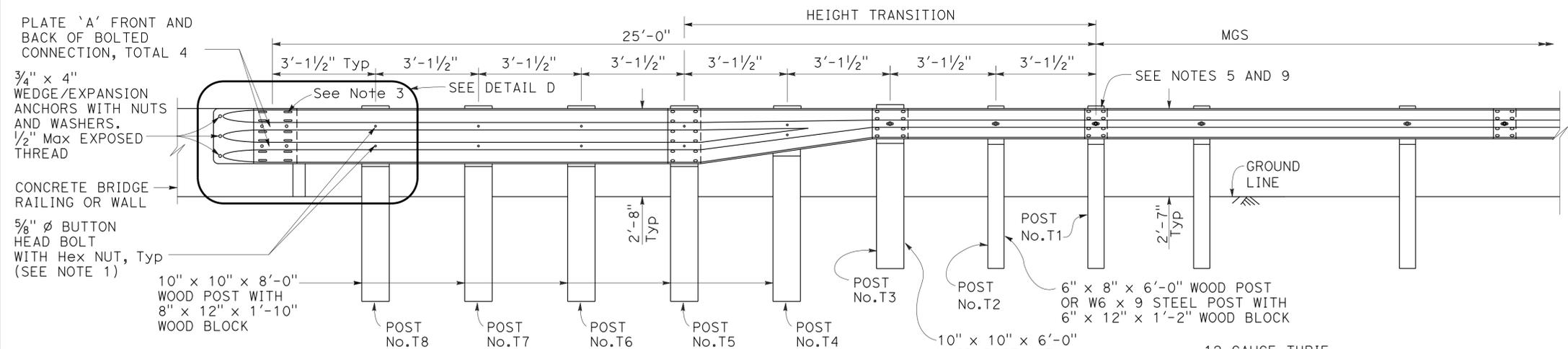
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	994	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

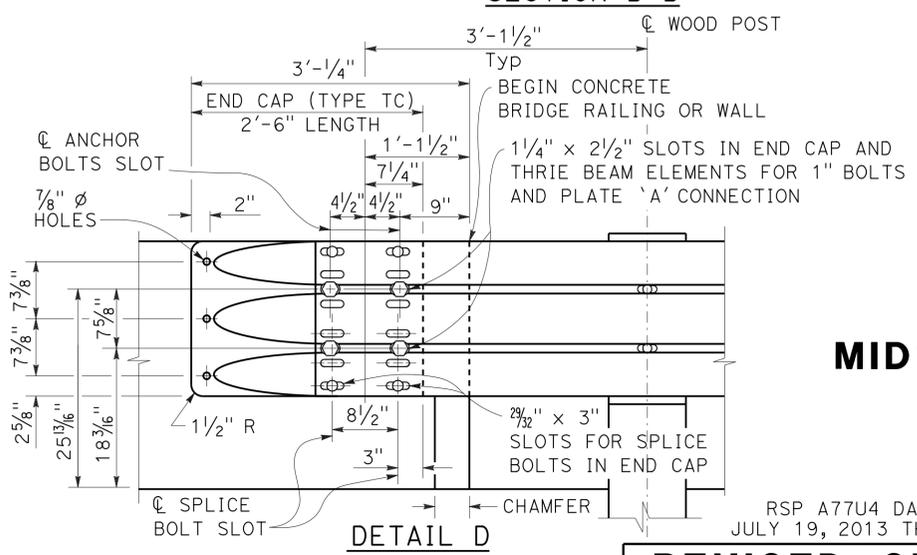
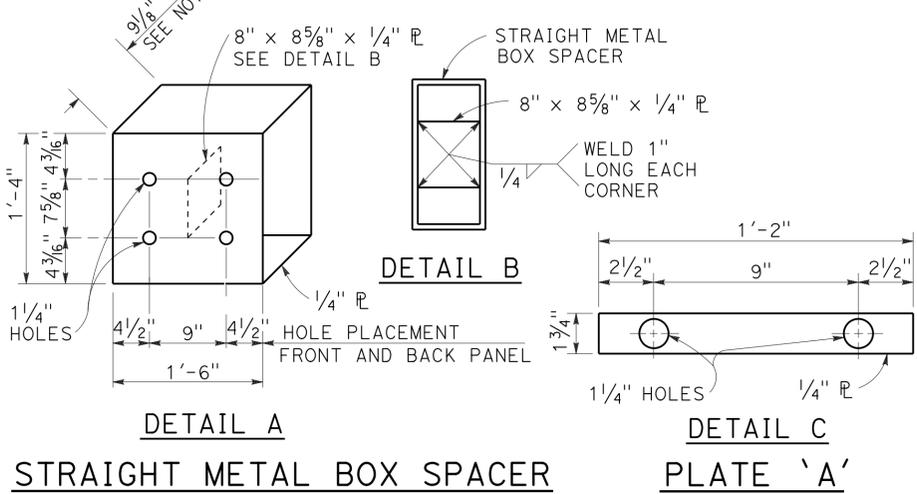
November 15, 2013
PLANS APPROVAL DATE

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- 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 3-3-14
1. Use 5/8" ϕ 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 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1/4" ϕ . 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 1/2" 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 1/2", 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.

REVISED STANDARD PLAN RSP A77U4

2010 REVISED STANDARD PLAN RSP A77U4

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	995	1168

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

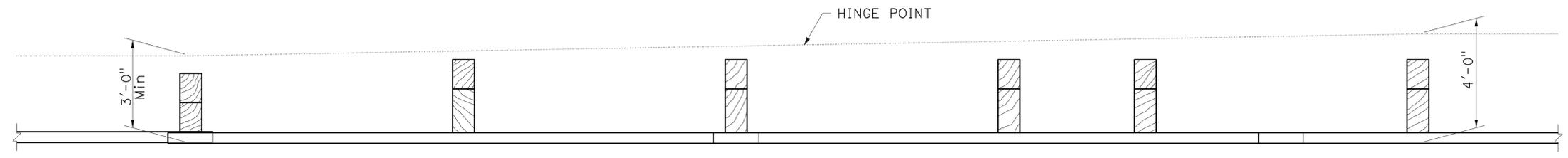
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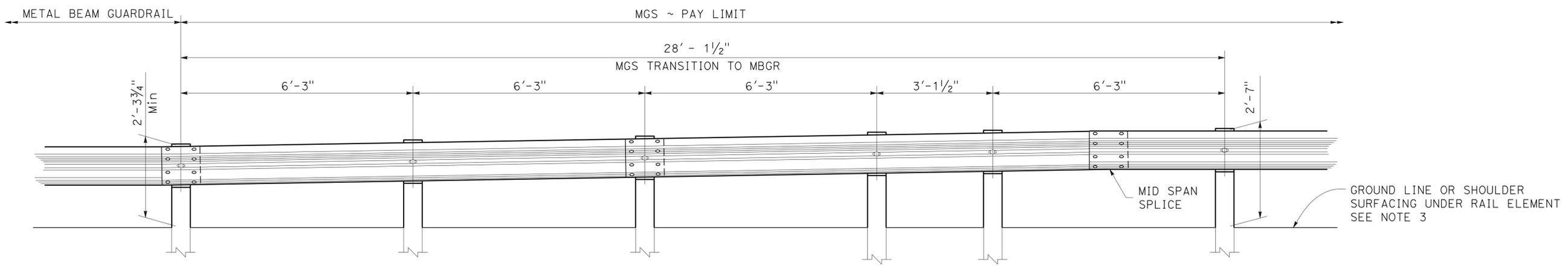
TO ACCOMPANY PLANS DATED 3-3-14

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.

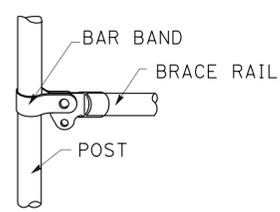
REVISED STANDARD PLAN RSP A77U5

2010 REVISED STANDARD PLAN RSP A77U5

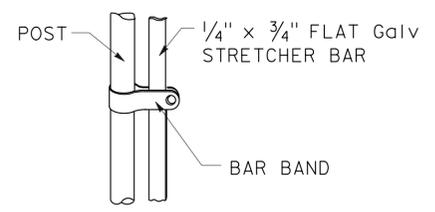
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Sbd	2,138	6.2/6.4, 2.3/R15.2	996	1168

Glenn DeCou
 REGISTERED CIVIL ENGINEER
 October 19, 2012
 PLANS APPROVAL DATE
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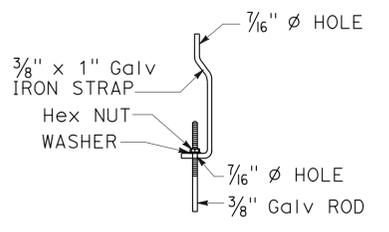
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BRACE RAIL



STRETCHER BAR

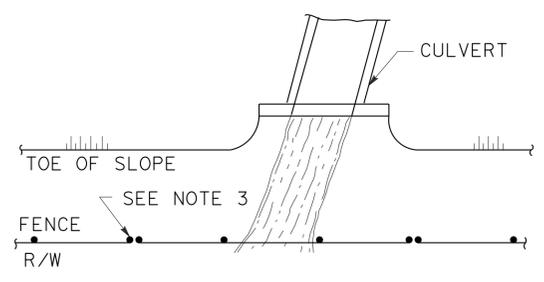


TRUSS TIGHTENER

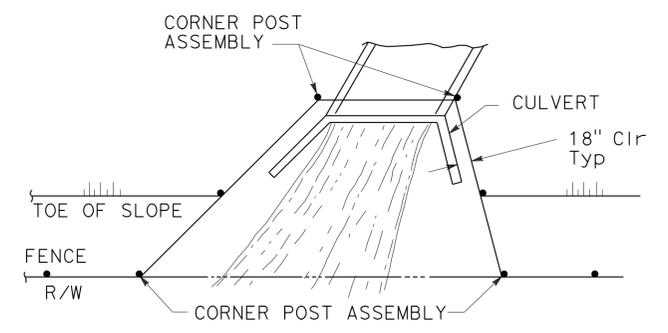
NOTES:

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.

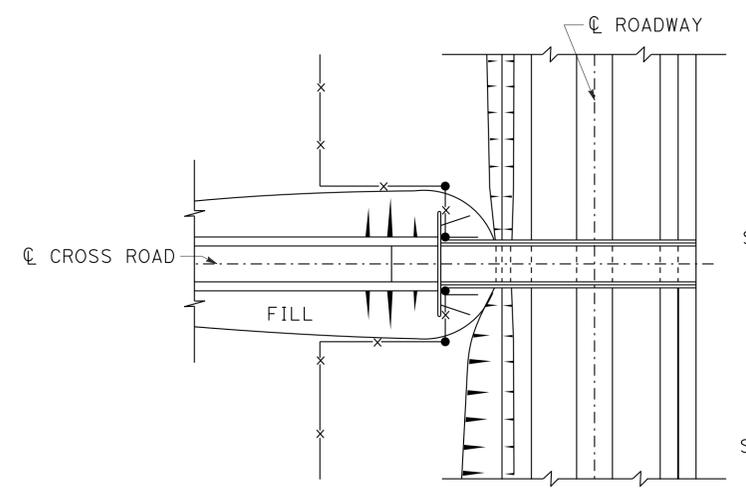
TO ACCOMPANY PLANS DATED 3-3-14



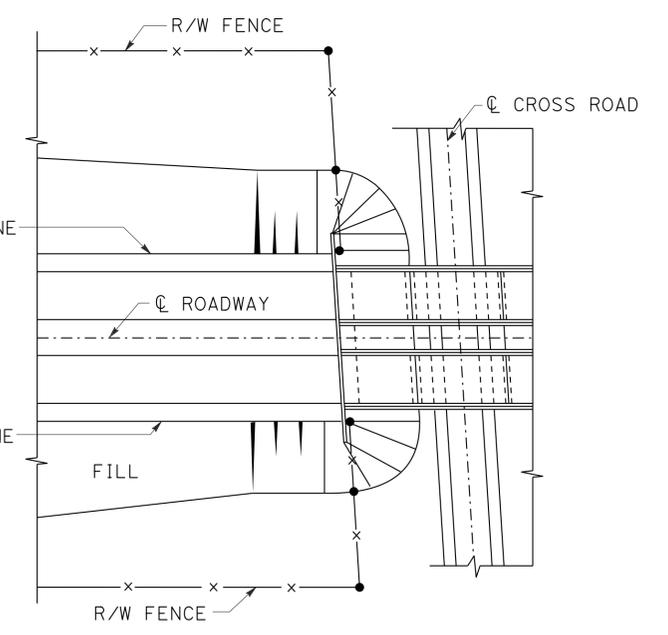
PLAN



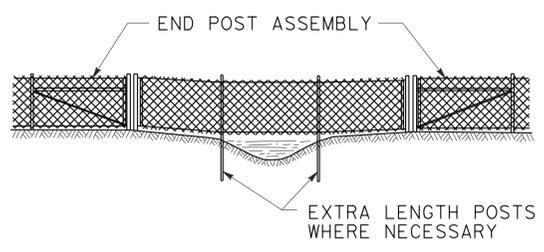
PLAN



PLAN OF ROADWAY - OVERCROSSING

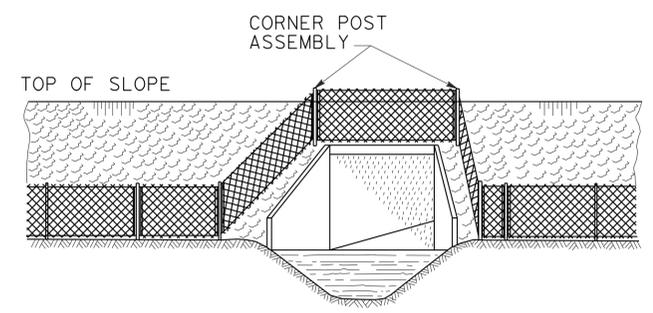


PLAN OF ROADWAY - UNDERCROSSING



ELEVATION

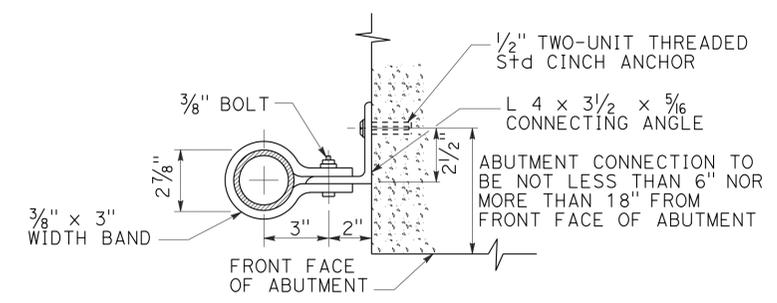
INSTALLATION OVER STREAM



ELEVATION

INSTALLATION AROUND HEADWALL

See Note 4



ABUTMENT CONNECTION

TYPICAL INSTALLATION AT BRIDGES

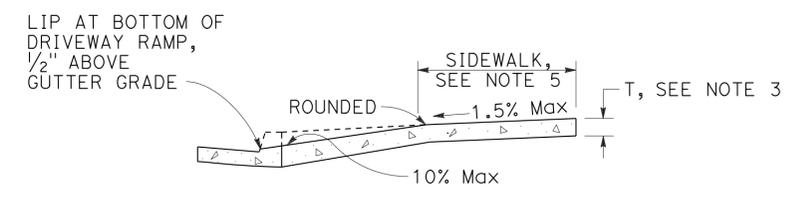
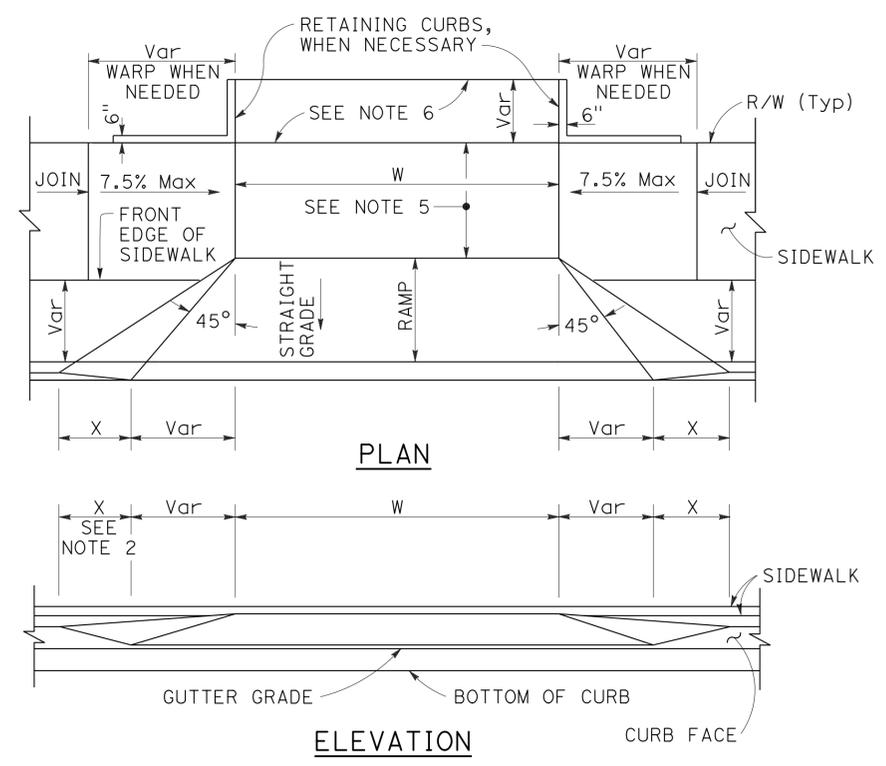
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE DETAILS
 NO SCALE

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

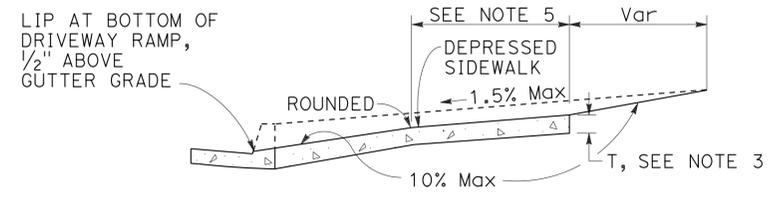
REVISED STANDARD PLAN RSP A85B

2010 REVISED STANDARD PLAN RSP A85B

TO ACCOMPANY PLANS DATED 3-3-14



CASE A
Typical driveway, sidewalk not depressed



CASE B
Driveway with depressed sidewalk

SECTIONS

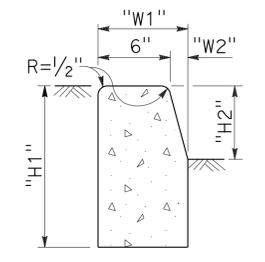
TABLE A

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"

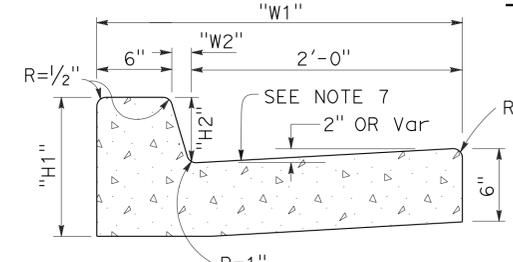
CURB QUANTITIES

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

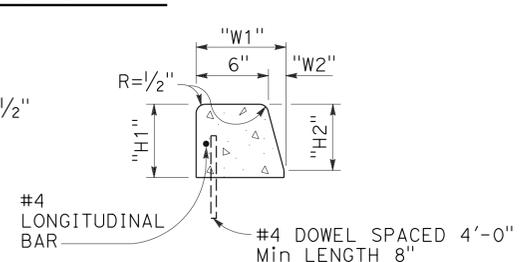
DRIVEWAYS



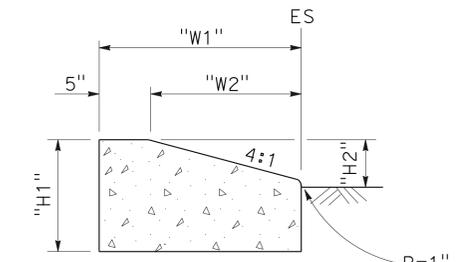
TYPE A1 CURBS
See Table A



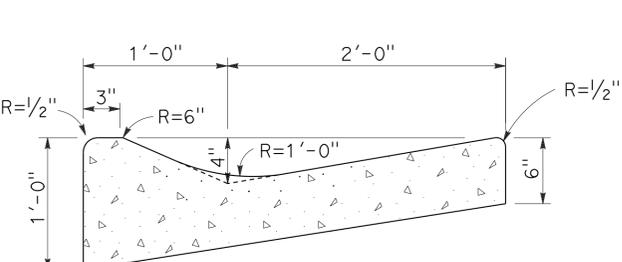
TYPE A2 CURBS
See Table A



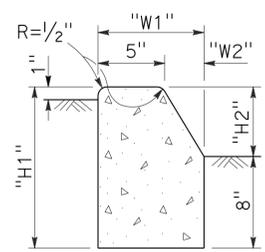
TYPE A3 CURBS
Superimposed on existing pavement
See Table A



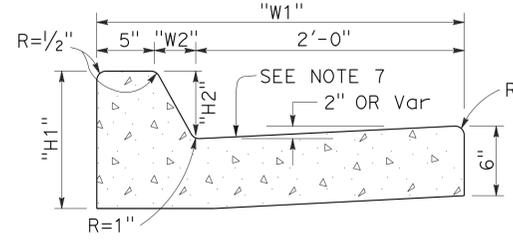
TYPE D CURBS
See Table A



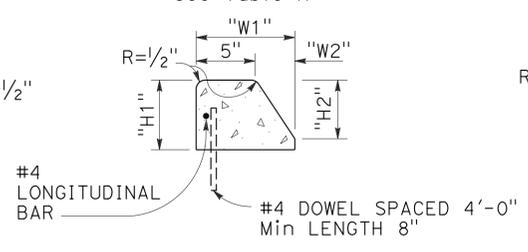
TYPE E CURB



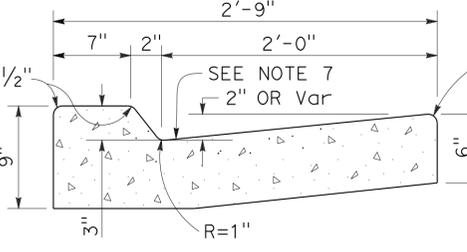
TYPE B1 CURBS
See Table A



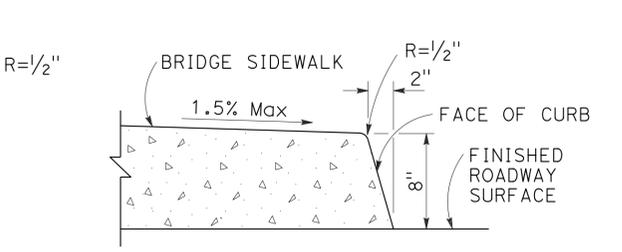
TYPE B2 CURBS
See Table A



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

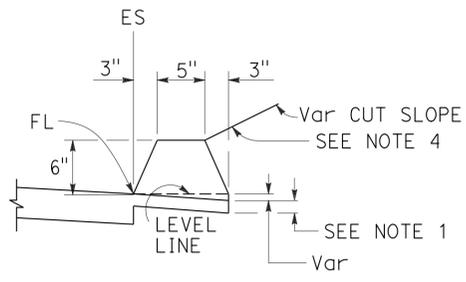
RSP A87A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A87A DATED MAY 20, 2011 - PAGE 119 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A87A

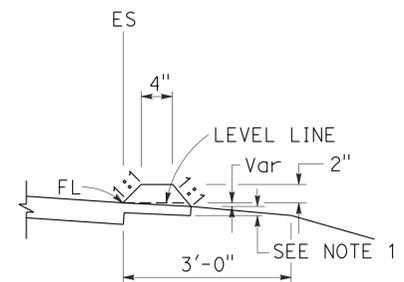
2010 REVISED STANDARD PLAN RSP A87A



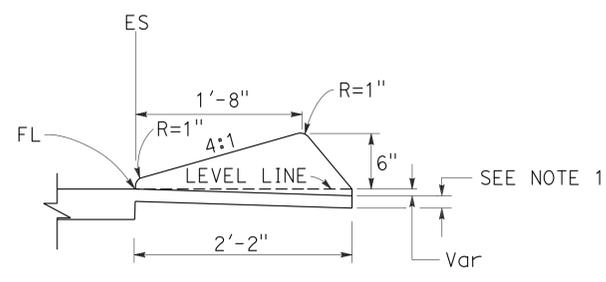
TO ACCOMPANY PLANS DATED 3-3-14



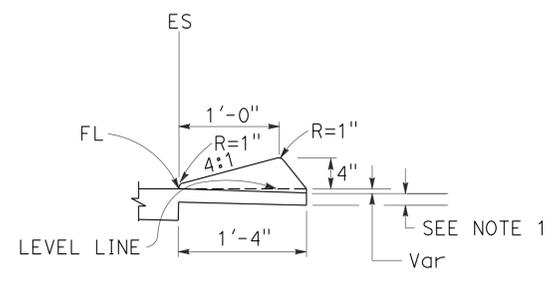
TYPE A
See Note 3



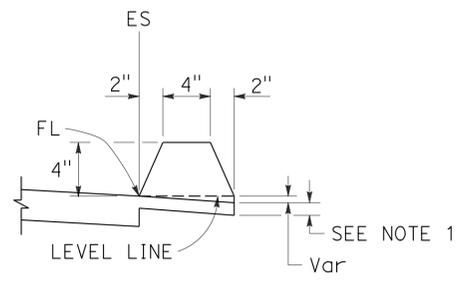
TYPE C



TYPE D

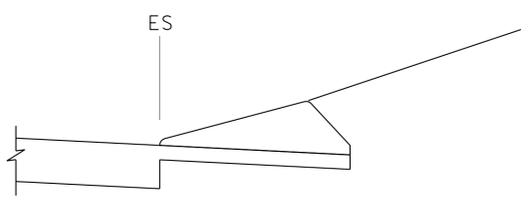


TYPE E

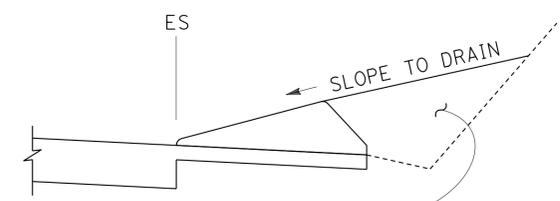


TYPE F
See Note 5

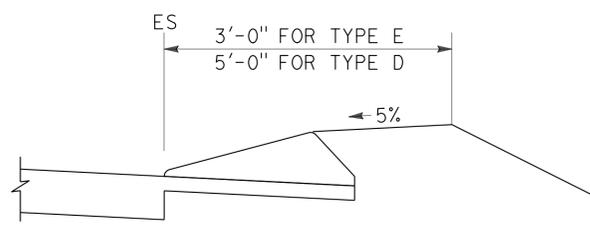
DIKES



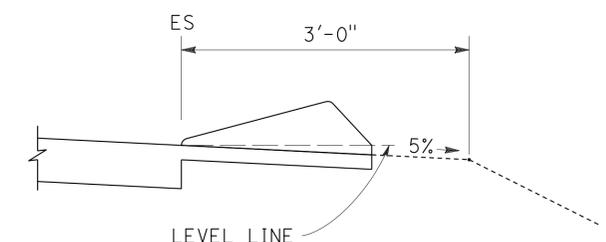
CASE C-1
Cut Slope



CASE C-2
Cut Slope



CASE F



CASE R
See Note 2

TYPE D AND E BACKFILL DETAILS

NOTES:

- 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.
- Case R applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
- Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
- Fill and compact with excavated material to top of dike.
- 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.

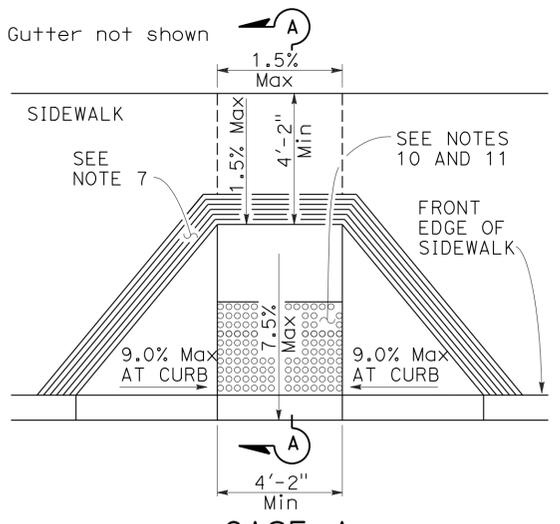
REVISED STANDARD PLAN RSP A87B

2010 REVISED STANDARD PLAN RSP A87B

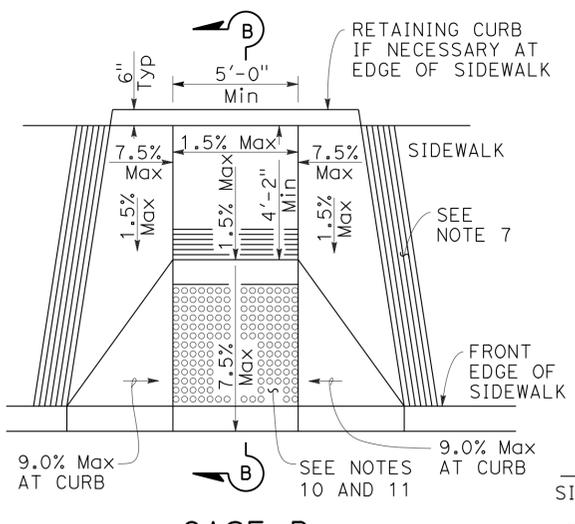
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SbD	2,138	6.2/6.4, 2.3/R15.2	999	1168

H. David Cordova
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
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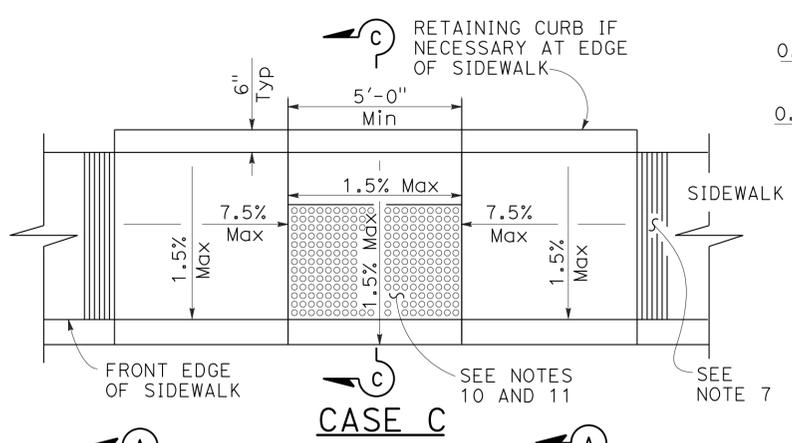
REGISTERED PROFESSIONAL ENGINEER
Hector David Cordova
No. C41957
Exp. 3-31-14
CIVIL
STATE OF CALIFORNIA



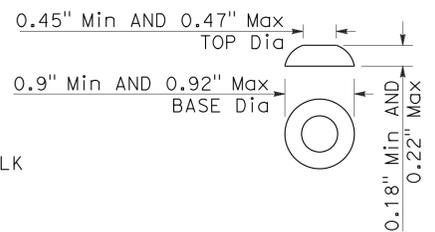
CASE A



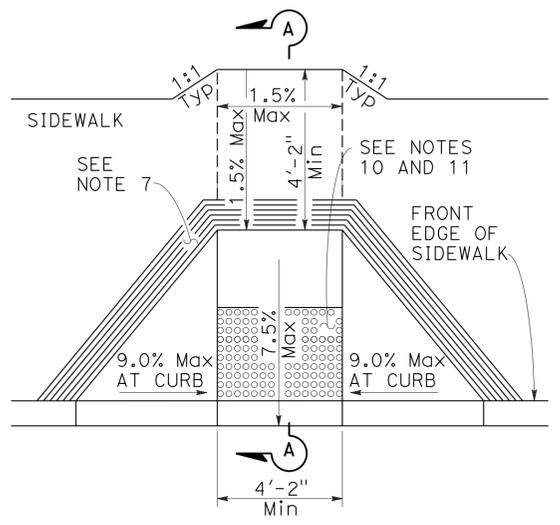
CASE B



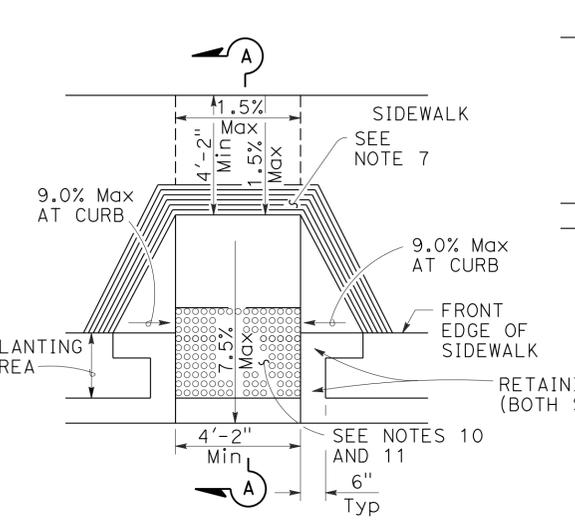
CASE C



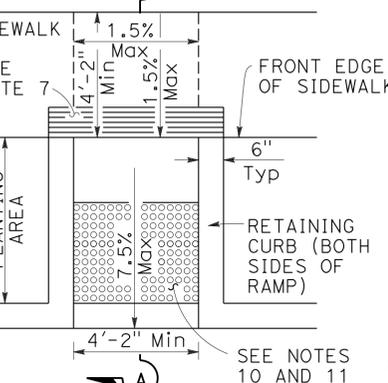
RAISED TRUNCATED DOME



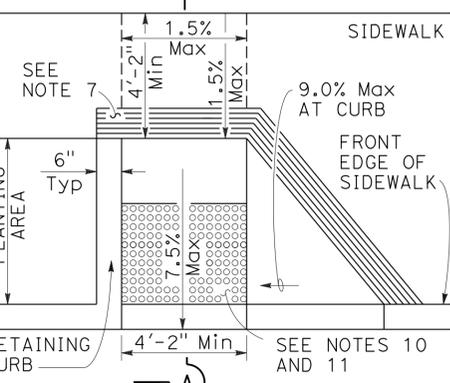
CASE D



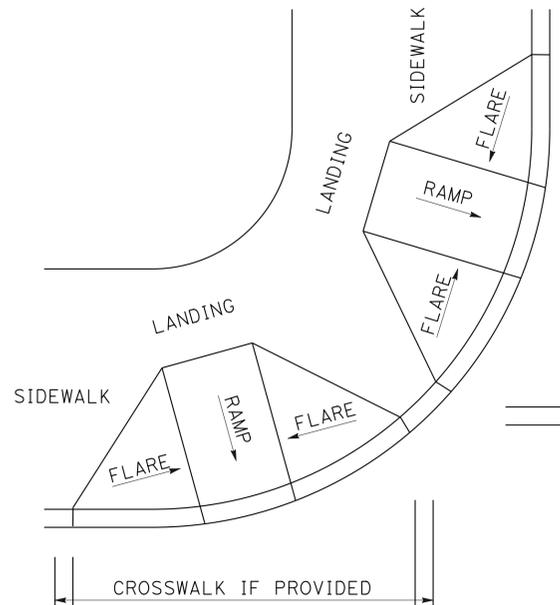
CASE E



CASE F



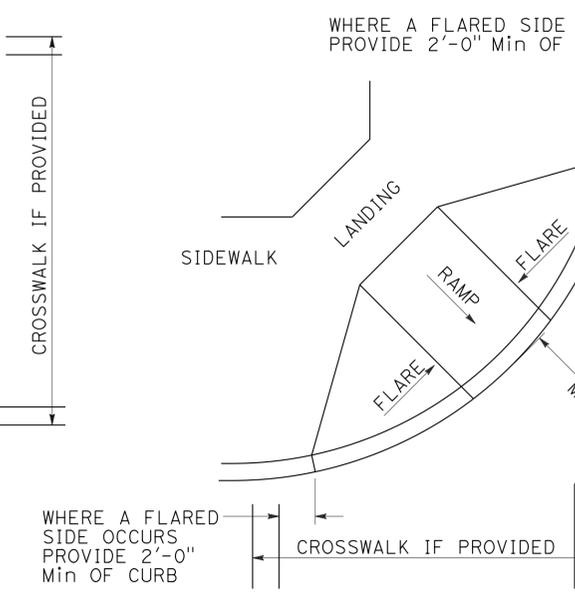
CASE G



DETAIL A

TYPICAL TWO-RAMP CORNER INSTALLATION

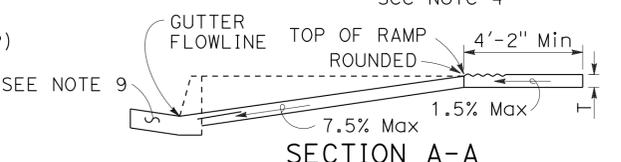
See Note 1



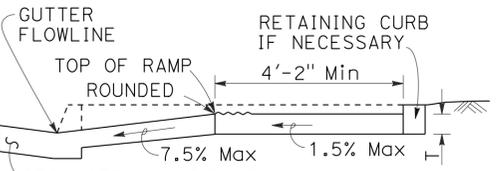
DETAIL B

TYPICAL ONE-RAMP CORNER INSTALLATION

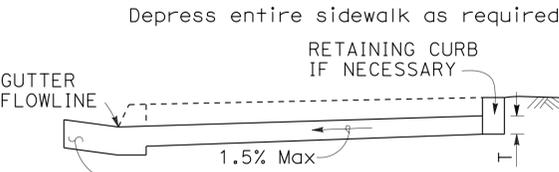
See Notes 1 and 3



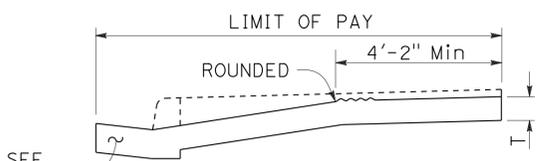
SECTION A-A



SECTION B-B

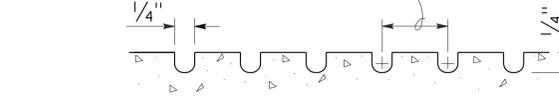


SECTION C-C



RETROFIT PAY LIMITS

Existing curb and sidewalk



GROOVING DETAIL

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. Detectable Warning Surfaces shall conform to the details on this plan and 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

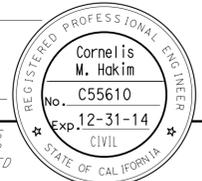
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CURB RAMP DETAILS
NO SCALE

RSP A88A DATED JULY 19, 2013 SUPERSEDES 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

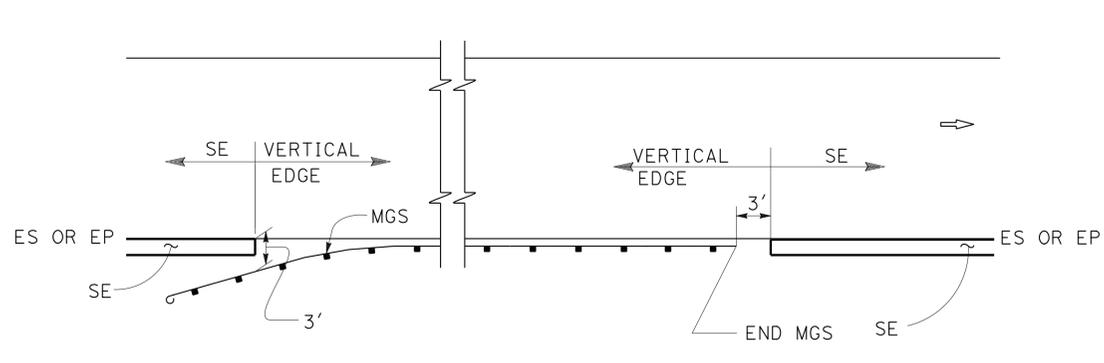
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	2,138	6.2/6.4, 2.3/R15.2	1000	1168



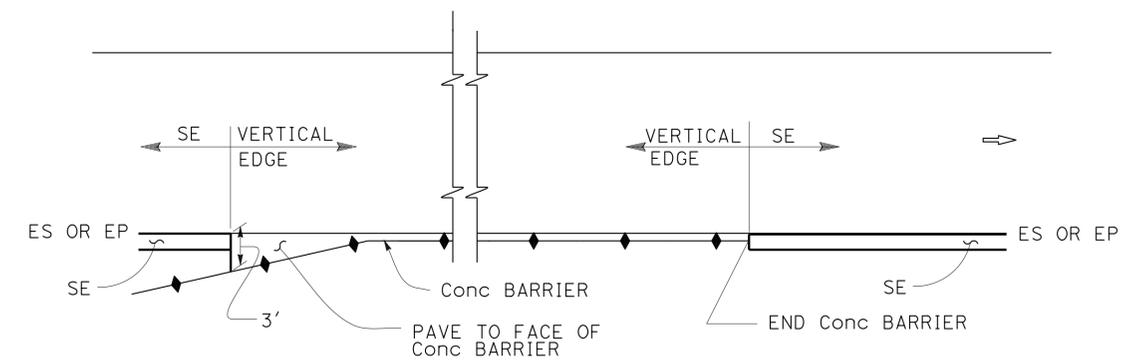
 REGISTERED CIVIL ENGINEER
 November 15, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 3-3-14

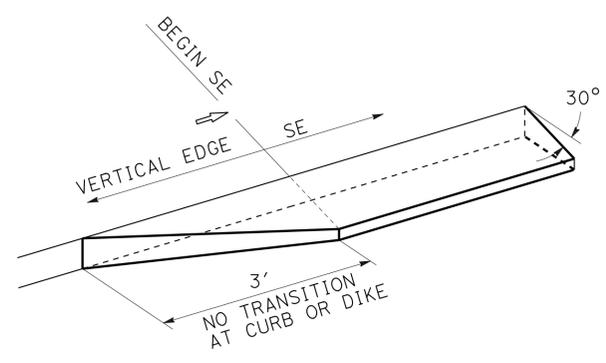
ABBREVIATIONS:
SE SAFETY EDGE



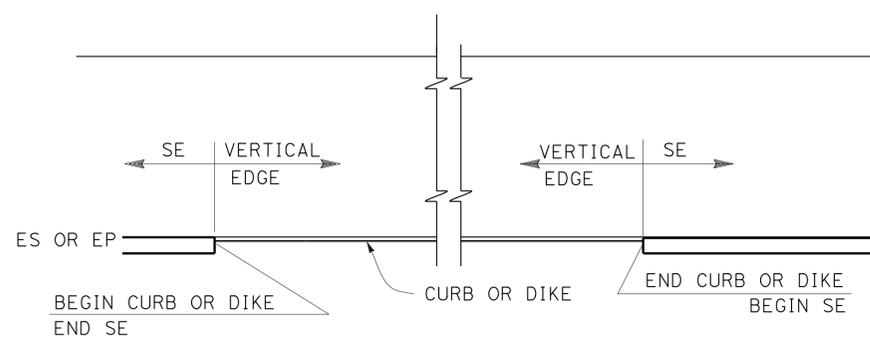
MGS



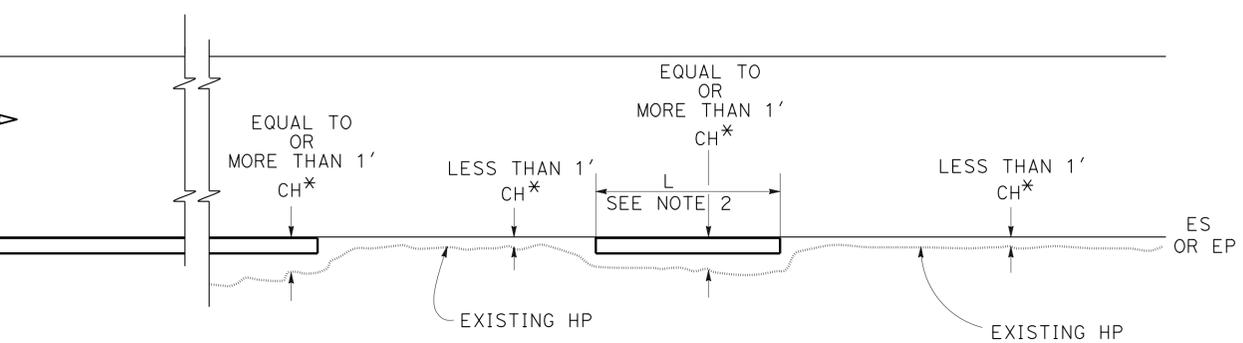
CONCRETE BARRIER



TRANSITION DETAIL FOR CONCRETE ONLY

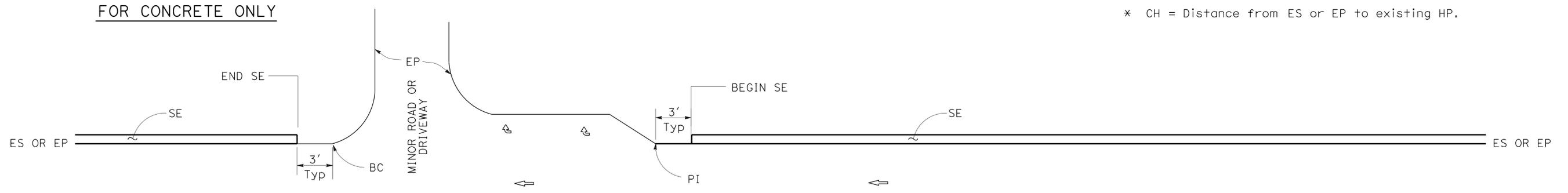


CURB OR DIKE



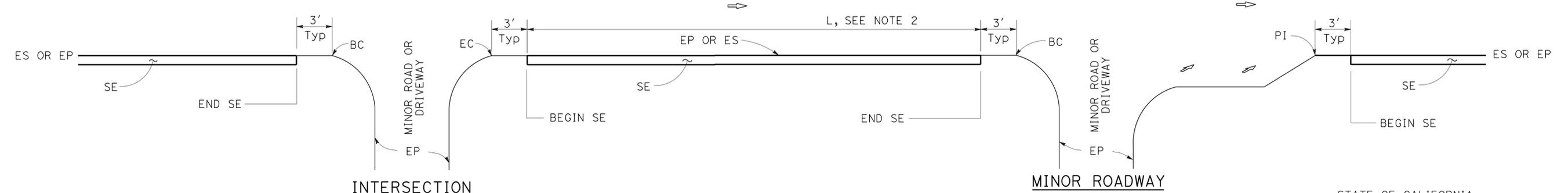
NARROW SIDE SLOPE

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



STATE ROUTE

STATE ROUTE



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