

SHEET No.	DESCRIPTION
1	TITLE AND LOCATION MAP
2	LOCATIONS OF CONSTRUCTION
3	CONSTRUCTION AREA SIGNS
4	SUMMARY OF QUANTITIES
5-23	WIRELESS VEHICLE DETECTION SYSTEM
24-37	REVISED STANDARD PLANS

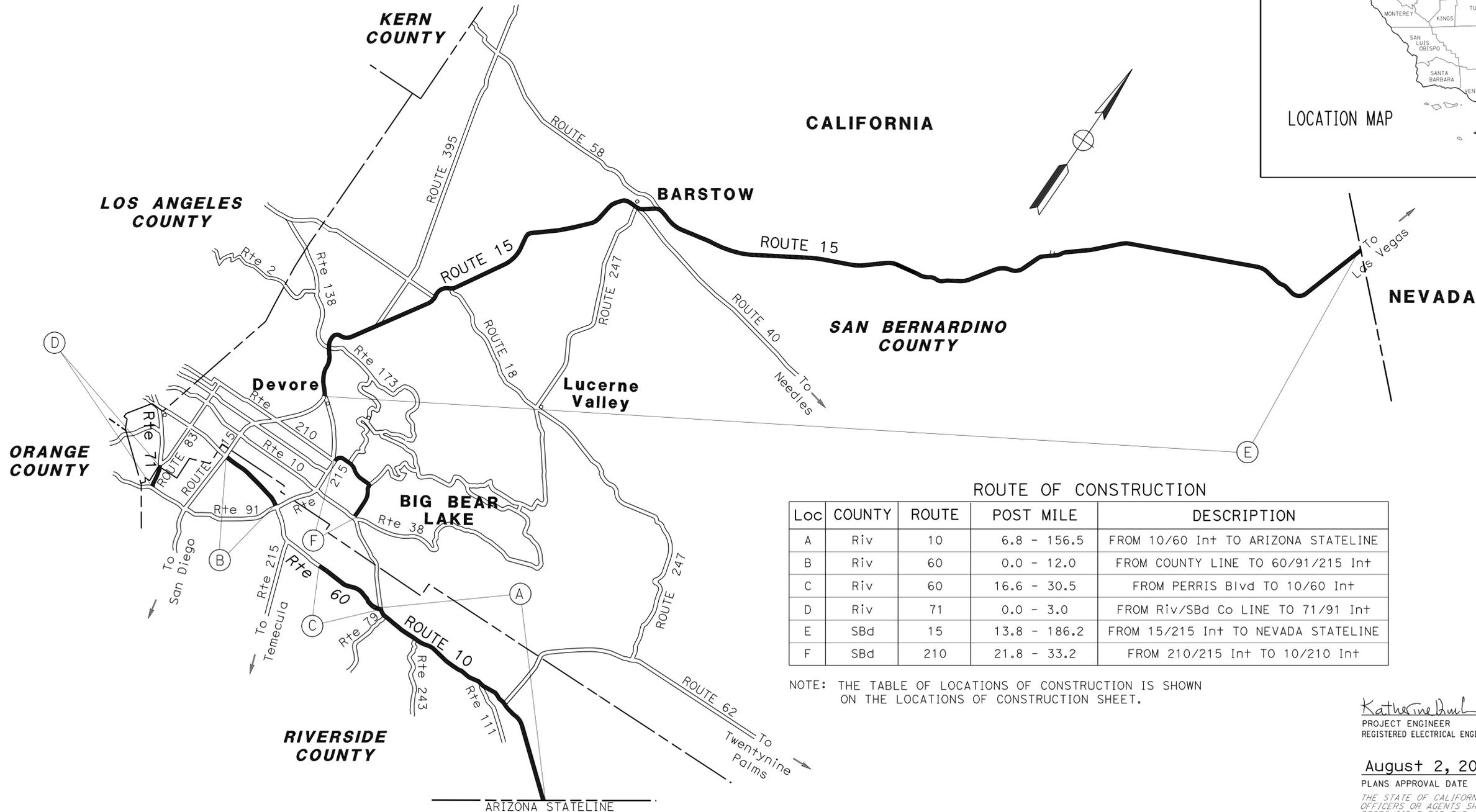
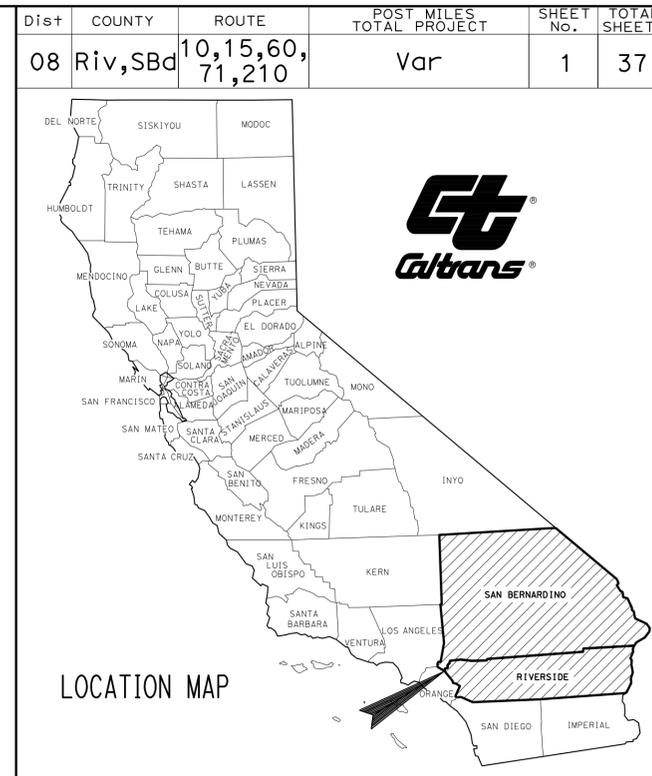
THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

ACNH-000C(330)E

PROJECT PLANS FOR CONSTRUCTION ON  
STATE HIGHWAY  
IN RIVERSIDE AND SAN BERNARDINO COUNTIES  
AT  
VARIOUS LOCATIONS

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



ROUTE OF CONSTRUCTION

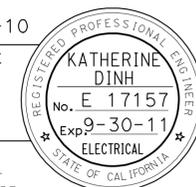
Loc	COUNTY	ROUTE	POST MILE	DESCRIPTION
A	Riv	10	6.8 - 156.5	FROM 10/60 Int TO ARIZONA STATELINE
B	Riv	60	0.0 - 12.0	FROM COUNTY LINE TO 60/91/215 Int
C	Riv	60	16.6 - 30.5	FROM PERRIS Blvd TO 10/60 Int
D	Riv	71	0.0 - 3.0	FROM Riv/SBd Co LINE TO 71/91 Int
E	SBd	15	13.8 - 186.2	FROM 15/215 Int TO NEVADA STATELINE
F	SBd	210	21.8 - 33.2	FROM 210/215 Int TO 10/210 Int

NOTE: THE TABLE OF LOCATIONS OF CONSTRUCTION IS SHOWN ON THE LOCATIONS OF CONSTRUCTION SHEET.

PROJECT MANAGER  
MELECIO CHALCO

DESIGN ENGINEER  
FERDINAND DE LA CRUZ

*Katherine Dinh* 8-02-10  
PROJECT ENGINEER DATE  
REGISTERED ELECTRICAL ENGINEER



August 2, 2010

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.

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

NO SCALE





Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	3	37

REGISTERED CIVIL ENGINEER *TRAN HOANG* DATE 6-16-10  
 8-2-10  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 No. C 54996  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

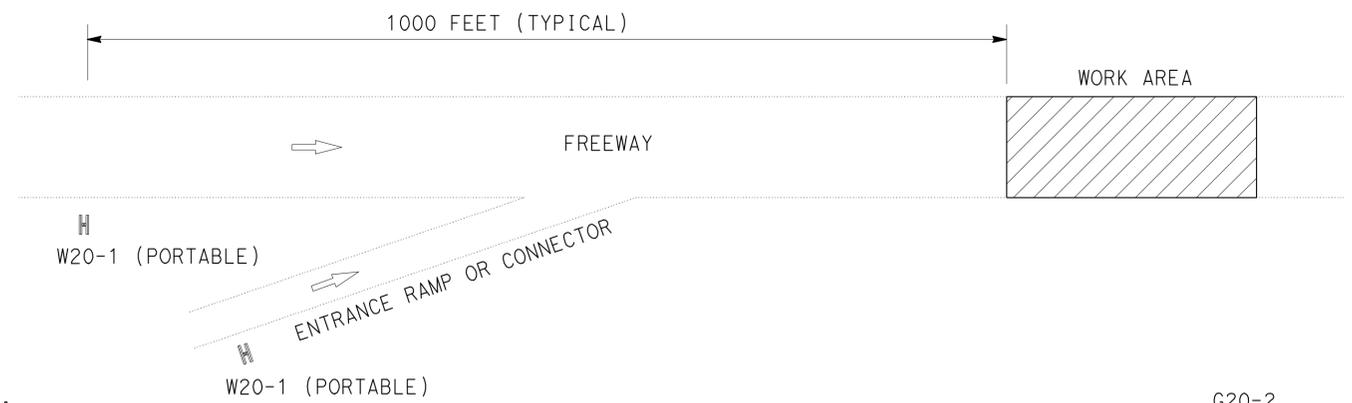
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**LEGEND:**

- ⊥ CONSTRUCTION AREA SIGN (ONE POST)
- H PORTABLE CONSTRUCTION AREA SIGN
- ➡ DIRECTION OF TRAFFIC

**NOTES:**

- CONSTRUCTION AREA SIGN LOCATIONS SHOWN ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED BY THE ENGINEER.
- REFER TO STANDARD PLANS T10 AND T14 FOR TRAFFIC CONTROL REQUIREMENTS.
- PORTABLE W20-1 SIGNS SHALL BE PLACED ON ENTRANCE RAMP AND/OR CONNECTOR ENTERING FREEWAY 1 MILE BEFORE THE WORK AREA.
- PORTABLE W20-1 SIGNS SHALL BE REQUIRED AT EACH LOCATION WHERE THE CONTRACTOR IS WORKING. NUMBER OF PORTABLE W20-1 SIGNS DEPENDS ON THE NUMBER OF LOCATIONS CONTRACTOR IS WORKING.
- LOCATIONS OF PORTABLE CHANGEABLE MESSAGE SIGNS TO BE DETERMINED BY THE ENGINEER.



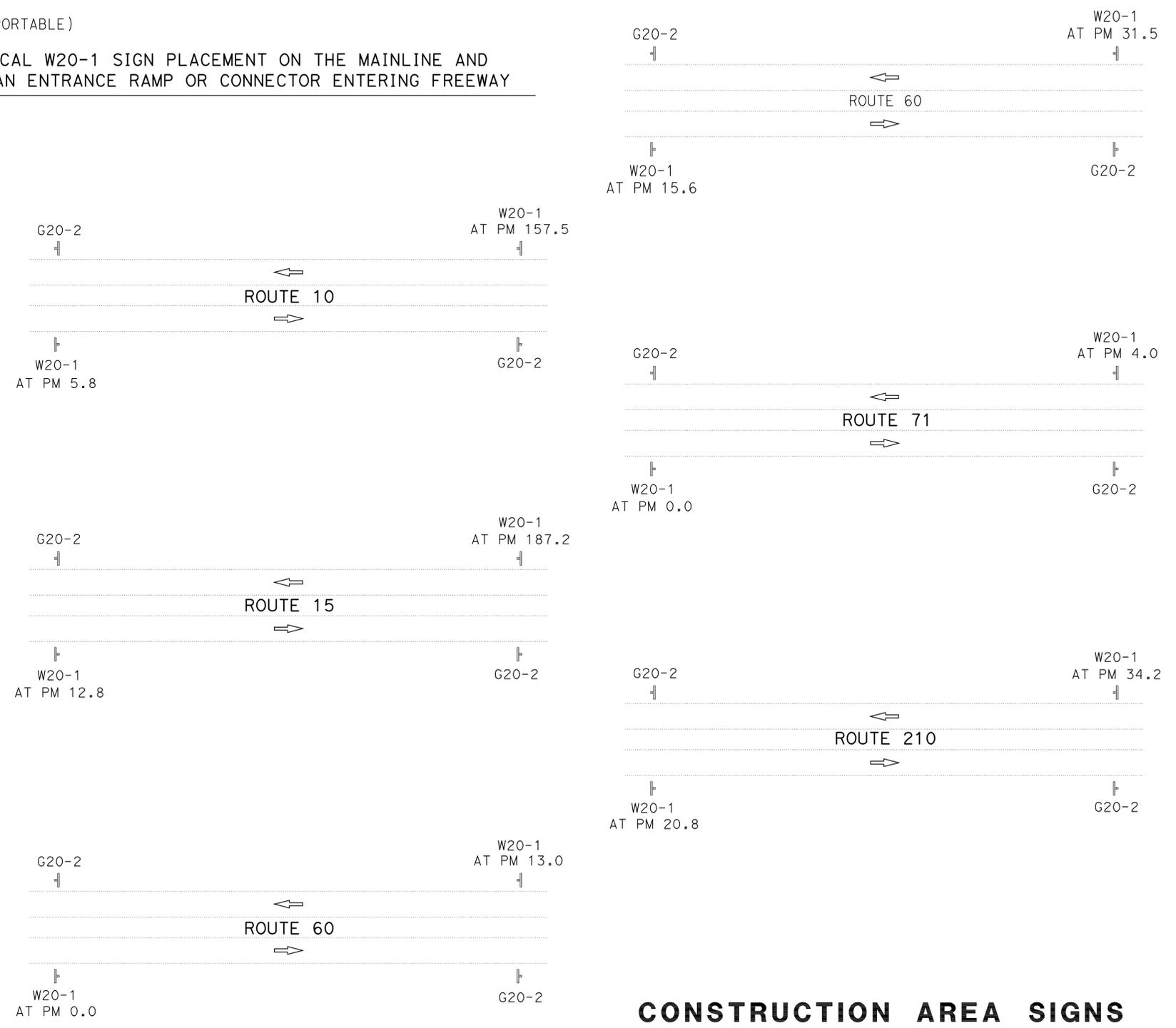
TYPICAL W20-1 SIGN PLACEMENT ON THE MAINLINE AND FOR AN ENTRANCE RAMP OR CONNECTOR ENTERING FREEWAY

**PORTABLE CONSTRUCTION AREA SIGNS**

SIGN CODE	PANEL SIZE	SIGN MESSAGE	No. OF SIGNS
	(In X In)		(EA)
W20-1	48 X 48	ROAD WORK AHEAD	SEE NOTE 4

**STATIONARY MOUNTED CONSTRUCTION AREA SIGNS**

SIGN CODE	PANEL SIZE	SIGN MESSAGE	No. OF POST(S) AND SIZE	No. OF SIGNS
	(In X In)			(EA)
W20-1	48 X 48	ROAD WORK AHEAD	1 - 6in X 6in	12
G20-2	36 X 18	END ROAD WORK	1 - 4in X 6in	12
TOTAL				24



**CONSTRUCTION AREA SIGNS**

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

THIS PLAN ACCURATE FOR CONSTRUCTION AREA SIGN WORK ONLY

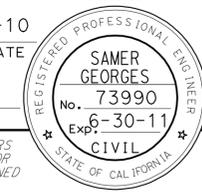
NO SCALE

**CS-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 LARRY SARTORI  
 FUNCTIONAL SUPERVISOR  
 V. TRAN  
 T. HOANG  
 REVISOR BY  
 DATE REVISED  
 04-10  
 V. TRAN  
 04-10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	4	37

 6-16-10  
 REGISTERED CIVIL ENGINEER DATE  
 8-2-10  
 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. FOR METAL BEAM GUARD RAILING LAYOUT DETAILS SEE 2006 REVISED STANDARD PLAN RSP A77G1.
2. EXACT LOCATION OF METAL BEAM GUARD RAILING INSTALL TO BE DETERMINED BY THE ENGINEER.

**SUMMARY OF QUANTITIES**

Loc	COUNTY	ROUTE	PM	METAL BEAM GUARD RAIL (WOOD POST)	DOUBLE METAL BEAM GUARD RAILING (WOOD POST)	CRASH CUSION (TYPE CAT)	END ANCHOR ASSEMBLY (TYPE SFT)	REMARKS
				LF	LF	EA	EA	
1	SBd	15	38.8	75.0	50.0	2	2	ON NORTH BOUND OUTSIDE SHOULDER
2	SBd	15	44.8	75.0	50.0	2	2	ON NORTH BOUND OUTSIDE SHOULDER
3	SBd	15	133.9	75.0	50.0	2	2	IN THE MEDIAN
4	SBd	15	175.9	75.0	50.0	2	2	IN THE MEDIAN
5	SBd	15	180.8	75.0	50.0	2	2	IN THE MEDIAN
<b>TOTAL</b>				375.0	250.0	10	10	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION

FUNCTIONAL SUPERVISOR  
 RENEE SASSE

CALCULATED/DESIGNED BY  
 CHECKED BY

SAMER GEORGES  
 RENEE SASSE

REVISED BY  
 DATE REVISED

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

**SUMMARY OF QUANTITIES**

**Q-1**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, Sbd	10,15,60, 71,210	Var	5	37

KATHERINE DINH 8-02-10  
 REGISTERED ELECTRICAL ENGINEER DATE  
 8-2-10  
 PLANS APPROVAL DATE

KATHERINE DINH  
 No. E 17157  
 Exp. 9-30-11  
 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.

**ABBREVIATION: SHEETS E-1 TO E-6**  
 CNTR = VDS POLE LOCATED IN THE CENTER MEDIAN  
**PROJECT NOTE: SHEETS E-1 TO E-6**

1. SEE SHEET Q-1 FOR MBGR LOCATIONS AND QUANTITIES.

### RIVERSIDE COUNTY ROUTE 10

LOCATION NUMBER	APPROXIMATE LOCATION	ROUTE	DIRECTION	APPROXIMATE POST MILE	CONSTRUCTION NOTES											COMMUNICATION NOTES		
					INSTALL EQUIPMENT *							APPROXIMATE GPS COORDINATES OF VDS POLE				GPRS LINK TO TMC  (PARENT LOCATION)	WIRELESS RADIO LINK TO LOCATION No.	
					DIRECTIONAL ANTENNA	MULTIPOINT ANTENNA	GPRS MODEM	REPEATER	TYPE 15-FBS POLE (Mod)	VEHICLE DETECTOR SENSOR	METAL BEAM GUARD RAIL	LATTITUDE	LONGITUDE	EXISTING MBGR				
					NUMBER OF LANES (EACH DIRECTION)	EB	WB											
1	BEAUMONT Ave	10	EB	7.5	1		1			16		4	4	N 33° 55' 30.4"	W 116° 58' 54.0"	Y	NO	3
2	WEST OF HIGHLAND St	10	EB	9.0	1		1			16		4	4	N 33° 55' 36.5"	W 116° 57' 11.0"	N	NO	3
3	EAST OF HIGHLAND St	10	EB	10.5		1	1			16		4	4	N 33° 55' 33.9"	W 116° 55' 40.7"	N	YES	1, 2, 4, 5
4	22ND St	10	EB	12.0	1		1			16		4	4	N 33° 55' 26.8"	W 116° 54' 1.0"	Y	NO	3
5	SAN GORGONIO OC	10	EB	13.4	1		1			16		4	4	N 33° 55' 26.7"	W 116° 52' 35.6"	N	NO	3
6	EAST OF RAMSEY St	10	EB	14.7	1		1			16		4	4	N 33° 55' 35.0"	W 116° 51' 7.4"	Y	NO	8
7	SAN GORGONIO WASH	10	WB	16.3	1					16		4	4	N 33° 55' 54.2"	W 116° 49' 38.1"	Y	NO	8
8	WEST OF MAIN St	10	WB	18.0		1	1			16		4	4	N 33° 55' 9.7"	W 116° 48' 1.9"	N	YES	6, 7, 9, 10
9	MAIN St	10	EB	19.4	1			1	1	16		4	4	N 33° 55' 5.9"	W 116° 46' 38.3"	Y	NO	8
10	FORNAT WASH	10	CNTR	21.7	1		1			16		4	4	N 33° 55' 28.4"	W 116° 44' 17.0"	Y	NO	8
11	WEST OF VERBENIA Ave	10	EB	24.3	1		1			16		4	4	N 33° 55' 27.7"	W 116° 41' 39.4"	N	NO	8
12	WHITWATER REST AREA	10	EB	26.1	1		1			16		4	4	N 33° 55' 19.2"	W 116° 39' 46.2"	Y	NO	14
13	WEST OF ROUTE 62	10	EB	28.5	1					16		4	4	N 33° 55' 5.2"	W 116° 37' 21.5"	Y	NO	14
14	GARNET Ave OC	10	EB	30.8		1	1			16		4	4	N 33° 54' 37.3"	W 116° 35' 7.8"	N	YES	13,15
15	INDIAN Ave	10	EB	33.1	1			1	1	16		4	4	N 33° 54' 16.2"	W 116° 32' 44.1"	Y	NO	14
16	RAMON WASH	10	EB	35.6	1					16		4	4	N 33° 53' 6.4"	W 116° 30' 38.0"	Y	NO	17
17	WEST OF DATE PALM Dr	10	EB	38.0		1	1			16		4	4	N 33° 51' 43.6"	W 116° 28' 49.4"	N	YES	16,18,19
18	EAST OF DATE PALM Dr	10	EB	40.4	1					16		4	4	N 33° 50' 32.4"	W 116° 26' 46.0"	N	NO	17
19	WEST OF RAMON Rd	10	EB	42.7	1					16		4	4	N 33° 49' 22.5"	W 116° 24' 50.1"	N	NO	17
20	EAST OF MONTEREY Ave	10	EB	45.4	1		1			12		3	3	N 33° 47' 53.9"	W 116° 22' 32.5"	N	NO	22
21	EAST OF COOK St	10	EB	48.0	1		1			12		3	3	N 33° 46' 35.7"	W 116° 20' 20.9"	N	NO	22
22	WASHINGTON St	10	EB	50.5		1	1			12		3	3	N 33° 45' 38.3"	W 116° 18' 7.2"	N	YES	20, 21, 23, 24
23	JEFFERSON St	10	EB	52.7	1		1			12		3	3	N 33° 44' 50.7"	W 116° 15' 55.8"	N	NO	22
24	MONROE St	10	EB	54.7	1		1	1	1	12		3	3	N 33° 44' 21.3"	W 116° 14' 1.3"	N	NO	22
25	ROUTE 111/10 SEPERATION	10	EB	57.0	1		1	1	1	12		3	3	N 33° 43' 32.4"	W 116° 12' 4.7"	N	NO	28
26	DILLON Rd	10	CNTR	58.9	1		1	1		8		2	2	N 34° 42' 54.0"	W 116° 10' 20.2"	Y	NO	28
27	POLARIS WASH	10	CNTR	61.1	1					8		2	2	N 33° 42' 17.6"	W 116° 18' 2.3"	N	NO	28
28	SMOKEY GULCH	10	CNTR	64.7			1	1		8		2	2	N 33° 41' 59.2"	W 116° 05' 13.4"	N	YES	25, 26, 27, 29, 30
29	BROWN ARROYO	10	CNTR	67.6	1		1	1		8		2	2	N 33° 41' 22.1"	W 116° 02' 24.5"	N	NO	28
30	WEST OF CACTUS CITY REST AREA	10	CNTR	70.2	1	1	1	1		8		2	2	N 33° 40' 45.6"	W 115° 59' 48.3"	N	NO	28
SUB-TOTAL (THIS SHEET)					24	6	22	8	4	416	0							

\* SEE SHEET E-7 FOR VDS TYPE 35 POLE AND ADDITIONAL EQUIPMENT SCHEDULE.

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

## WIRELESS VEHICLE DETECTION SYSTEM (LOCATIONS AND EQUIPMENT SCHEDULE)

E-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	6	37
Katherine Dinh			8-02-10		
REGISTERED ELECTRICAL ENGINEER			DATE		
8-2-10			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>					

## RIVERSIDE COUNTY ROUTE 10

LOCATION NUMBER	APPROXIMATE LOCATION	ROUTE	DIRECTION	APPROXIMATE POST MILE	CONSTRUCTION NOTES													COMMUNICATION NOTES	
					INSTALL EQUIPMENT *							APPROXIMATE GPS COORDINATES OF VDS POLE						GPRS LINK TO TMC  (PARENT LOCATION)	WIRELESS RADIO LINK TO LOCATION No.
					DIRECTIONAL ANTENNA	MULTIPOINT ANTENNA	GPRS MODEM	REPEATER	TYPE 15-FBS POLE (Mod)	VEHICLE DETECTOR SENSOR	METAL BEAM GUARD RAIL	NUMBER OF LANES (EACH DIRECTION)	LATTITUDE	LONGITUDE	EXISTING MBGR				
																EB	WB		
31	WEST CACTUS WASH	10	CNTR	72.9		1	1	1		8		2	2	N 33° 40' 32.9"	W 115° 56' 58.8"	Y	YES	32	
32	HAPPY GULCH BRIDGE	10	CNTR	75.7	1			1		8		2	2	N 33° 40' 4.2"	W 115° 54' 10.8"	Y	NO	31	
33	BURIED MOUNTAIN WASH	10	CNTR	78.5		1	1	1		8		2	2	N 33° 39' 46.8"	W 115° 51' 13.2"	Y	YES	34,35	
34	PAUL GULCH	10	CNTR	81.2	1			1		8		2	2	N 33° 39' 36.3"	W 115° 48' 26.9"	Y	NO	33	
35	SOUTH OF CHIRIACO SUMMIT	10	CNTR	84.2	1		1	1		8		2	2	N 33° 39' 35.7"	W 115° 45' 34.1"	N	NO	33	
36	NORTH OF CHIRIACO SUMMIT	10	CNTR	86.9	1		1	1		8		2	2	N 33° 39' 41.6"	W 115° 42' 40.0"	Y	NO	38	
37	WEST OF HAYFIELD Rd	10	CNTR	89.8	1			1		8		2	2	N 33° 40' 3.8"	W 115° 39' 37.4"	N	NO	38	
38	WEST OF KRUME DITCH	10	CNTR	92.7		1	1	1		8		2	2	N 33° 40' 16.8"	W 115° 36' 36.2"	N	YES	36,37, 39	
39	RED CLOUD Rd	10	CNTR	95.4	1		1	1		8		2	2	N 33° 40' 39.6"	W 115° 33' 45.7"	N	YES	38	
40	WEST OF UNION DITCH	10	CNTR	98.0		1	1	1		8		2	2	N 33° 41' 14.6"	W 115° 31' 11.8"	Y	YES	41	
41	ADAIR DITCH	10	CNTR	100.4	1			1		8		2	2	N 33° 41' 47.2"	W 115° 28' 46.0"	Y	NO	40	
42	WEST OF Rte 177	10	CNTR	103.4	1			1		8		2	2	N 33° 42' 24.9"	W 115° 25' 49.2"	Y	NO	43	
43	AIRPORT DITCH	10	CNTR	106.2		1	1	1		8		2	2	N 33° 42' 38.0"	W 115° 22' 53.4"	N	YES	42, 44, 45	
44	GHOST DITCH	10	CNTR	109.2		1	1	1		8		2	2	N 33° 42' 14.7"	W 115° 19' 44.2"	Y	NO	43	
45	WEST OF OBAN DITCH	10	CNTR	111.8	1		1	1		8		2	2	N 33° 41' 42.1"	W 115° 17' 11.8"	N	NO	43	
46	CORN SPRINGS	10	CNTR	114.4	1					8		2	2	N 33° 40' 56.0"	W 115° 14' 35.7"	N	NO	48	
47	TARANTULA DITCH	10	CNTR	116.8	1			1		8		2	2	N 33° 40' 14.1"	W 115° 12' 14.4"	Y	NO	48	
48	ALTA DITCH	10	CNTR	119.6		1	1	1		8		2	2	N 33° 39' 25.3"	W 115° 09' 29.0"	Y	YES	46,47,49	
49	ACARI DITCH	10	CNTR	122.2	1			1		8		2	2	N 33° 38' 40.5"	W 115° 06' 57.6"	Y	NO	48	
50	ESSO DITCH	10	CNTR	125.1	1			1		8		2	2	N 33° 37' 46.1"	W 115° 04' 12.4"	N	NO	51	
51	MUD DITCH	10	CNTR	127.9		1	1	1		8		2	2	N 33° 37' 1.0"	W 115° 01' 24.5"	Y	YES	50,52,53	
52	CALADA DITCH	10	CNTR	130.9	1			1		8		2	2	N 33° 36' 21.4"	W 115° 58' 24.4"	N	NO	51	
53	TEED DITCH	10	CNTR	134.0	1			1		8		2	2	N 33° 36' 22.9"	W 115° 55' 14.9"	Y	NO	51	
54	GALE DITCH	10	CNTR	136.8	1			1		8		2	2	N 33° 36' 31.6"	W 115° 52' 21.0"	N	NO	55	
55	ISORA DITCH	10	CNTR	139.3		1	1	1		8		2	2	N 33° 36' 34.7"	W 115° 49' 46.8"	Y	YES	54, 56, 57	
56	WEST OF PALOWALLA DITCH	10	CNTR	141.9	1			1		8		2	2	N 33° 36' 35.6"	W 114° 47' 7.4"	N	NO	55	
57	WEST OF WEIGH STATION	10	CNTR	144.4	1		1	1		8		2	2	N 33° 36' 32.6"	W 114° 44' 33.3"	N	NO	55	
58	KEIM UC	10	CNTR	146.9	1		1	1		8		2	2	N 33° 36' 24.2"	W 114° 41' 46.8"	Y	NO	60	
59	EAST OF Jc+ 78	10	CNTR	149.5	1		1	1		8		2	2	N 33° 36' 23.4"	W 114° 39' 3.4"	N	NO	60	
60	LOVEKIN Blvd	10	CNTR	152.2		1	1	1		8		2	2	N 33° 36' 25.6"	W 114° 36' 18.2"	Y	YES	58, 59, 61	
61	EAST OF Rte 95	10	CNTR	154.8	1		1			8		2	2	N 33° 36' 27.4"	W 114° 33' 34.9"	N	NO	60	
SUB-TOTAL (THIS SHEET)					21	10	18	28	0	248	0								

\* SEE SHEET E-7 FOR VDS TYPE 35 POLE AND ADDITIONAL EQUIPMENT SCHEDULE.

## WIRELESS VEHICLE DETECTION SYSTEM (LOCATIONS AND EQUIPMENT SCHEDULE)

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: [Blank] CHECKED BY: [Blank]  
 L. PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY: [Blank] DATE REVISED: [Blank]  
 K.D.  
 04-24-10

LAST REVISION: [Blank] DATE PLOTTED => 10-AUG-2010  
 08-02-10 TIME PLOTTED => 10:48

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, Sbd	10,15,60, 71,210	Var	7	37

KATHERINE DINH 8-02-10  
 REGISTERED ELECTRICAL ENGINEER DATE  
 8-2-10  
 PLANS APPROVAL DATE

KATHERINE DINH  
 No. E 17157  
 Exp. 9-30-11  
 ELECTRICAL  
 STATE OF CALIFORNIA

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### RIVERSIDE COUNTY ROUTES 60 AND 71

LOCATION NUMBER	APPROXIMATE LOCATION	ROUTE	DIRECTION	APPROXIMATE POST MILE	CONSTRUCTION NOTES												COMMUNICATION NOTES	
					INSTALL EQUIPMENT *								APPROXIMATE GPS COORDINATES OF VDS POLE				GPRS LINK TO TMC  (PARENT LOCATION)	WIRELESS RADIO LINK TO LOCATION No.
					DIRECTIONAL ANTENNA	MULTIPOINT ANTENNA	GPRS MODEM	REPEATER	TYPE 15-FBS POLE (Mod)	VEHICLE DETECTOR SENSOR	METAL BEAM GUARD RAIL	NUMBER OF LANES (EACH DIRECTION)		LATITUDE	LONGITUDE	EXISTING MBGR		
												EB	WB					
B 62	WEST OF MAIN St	60	WB	11.6	1		1			16		4	4	N 33° 59' 49.8"	W 117° 21' 58.0"	Y	NO	63
63	SANTA ANA RIVER BRIDGE	60	WB	10.7		1	1			16		4	4	N 34° 00' 11.8"	W 117° 22' 50.1"	Y	YES	62, 64
64	WEST OF RUBIDOUX Blvd	60	WB	9.3	1		1	1	1	16		4	4	N 34° 00' 15.7"	W 117° 24' 20.3"	N	NO	63
65	WEST OF VALLEY WAY	60	WB	7.3	1		1			20		5	5	N 34° 00' 46.2"	W 117° 26' 15.8"	N	NO	66
66	EAST OF PEDLEY Rd	60	WB	6.3		1	1			20		5	5	N 34° 00' 51.5"	W 117° 26' 57.4"	Y	YES	65, 67
67	PYRITE Ave	60	WB	5.5	1		1			20		5	5	N 34° 00' 59.6"	W 117° 27' 46.4"	N	NO	66
68	WEST OF PYRITE St	60	WB	4.4	1					20		5	5	N 34° 01' 10.3"	W 117° 28' 58.4"	N	NO	69
69	AT COUNTRY VILLAGE Rd	60	EB	3.1		1	1			20		5	5	N 34° 01' 07.0"	W 117° 30' 23.8"	N	YES	68,70, 71
70	EAST OF ETIWANDA Ave	60	WB	2.2	1					20		5	5	N 34° 01' 06.4"	W 117° 31' 8.6"	N	NO	69
71	EAST OF THE 15/60 INTERCHANGE	60	WB	1.1	1		1	1	1	22		6	5	N 34° 01' 06.6"	W 117° 32' 11.1"	N	NO	69
72	WEST OF RUBIDOUX @ CMS SIGN	60	EB	8.7	1		1			16		4	4	N 34° 00' 20.5"	W 117° 24' 54.5"	Y	YES	
C 73	WEST OF NASON St	60	EB	18.1	1		1			12		3	3	N 33° 56' 20.7"	W 117° 11' 51.7"	N	NO	73
74	MORENO BEACH Dr	60	EB	19.1	1		1			12		3	3	N 33° 56' 20.2"	W 117° 10' 41.4"	N	NO	75
75	EAST OF REDLANDS Blvd	60	EB	20.2		1	1			8		2	2	N 33° 56' 20.9"	W 117° 09' 16.6"	Y	YES	75, 76, 77, 78
76	THEODORE OC	60	EB	21.4	1					8		2	2	N 33° 56' 20.4"	W 117° 08' 20.7"	N	NO	75
77	GILMAN SPRINGS OC	60	EB	22.0	1		1			8		2	2	N 33° 56' 16.5"	W 117° 07' 38.0"	Y	NO	75
78	EAST OF GILMAN SPRINGS OC	60	EB	23.7	1		1			8		2	2	N 33° 56' 12.5"	W 117° 06' 1.3"	N	NO	75
79	EAST OF GILMAN SPRINGS OC	60	EB	25.2	1		1			8		2	2	N 33° 56' 35.6"	W 117° 04' 33.6"	Y	YES	80
80	WEST OF JACK RABBIT Tr	60	WB	26.9		1	1			8		2	2	N 33° 56' 30.5"	W 117° 02' 55.2"	N	YES	79, 81, 82
81	EAST OF JACK RABBIT Tr	60	EB	28.6	1		1			8		2	2	N 33° 56' 57.1"	W 117° 01' 34.8"	N	NO	80
82	EAST OF THE 10/60 INTERCHANGE	60	EB	29.9	1		1	1	1	8		2	2	N 33° 56' 0.2"	W 117° 00' 15.1"	N	NO	80
D 83	SOUTH OF THE SBD/RIV COUNTY LINE	71	NB	0.5	1					8		2	2	N 33° 54' 59.9"	W 117° 39' 07.2"	N	NO	84
84	SOUTH OF THE SBD/RIV COUNTY LINE	71	SB	1.1		1	1			8		2	2	N 33° 54' 27.8"	W 117° 38' 56.9"	Y	YES	83
85	NORTH OF PRADO DAM Rd	71	SB	1.9		1	1			8		2	2	N 33° 53' 49.7"	W 117° 38' 48.1"	N	YES	86
86	SOUTH OF PRADO DAM Rd	71	SB	2.5	1		1			8		2	2	N 33° 53' 20.5"	W 117° 38' 46.6"	N	NO	83
SUB-TOTAL (THIS SHEET)					18	7	21	3	3	326	0							

\* SEE SHEET E-7 FOR VDS TYPE 35 POLE AND ADDITIONAL EQUIPMENT SCHEDULE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: L. PENALOZA  
 CHECKED BY: FERDINAND DE LA CRUZ  
 REVISED BY: K.D.  
 DATE REVISED: 04-24-10

## WIRELESS VEHICLE DETECTION SYSTEM (LOCATIONS AND EQUIPMENT SCHEDULE)

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	8	37
<i>Katherine Dinh</i> 8-02-10 REGISTERED ELECTRICAL ENGINEER DATE					
8-2-10 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>					

### SAN BERNARDINO COUNTY ROUTE 15

LOCATION NUMBER	APPROXIMATE LOCATION	ROUTE	DIRECTION	APPROXIMATE POST MILE	CONSTRUCTION NOTES												COMMUNICATION NOTES	
					INSTALL EQUIPMENT *								APPROXIMATE GPS COORDINATES OF VDS POLE				GPRS LINK TO TMC  (PARENT LOCATION)	WIRELESS RADIO LINK TO LOCATION No.
					DIRECTIONAL ANTENNA	MULTIPOINT ANTENNA	GPRS MODEM	REPEATER	TYPE 15-FBS POLE (Mod)	VEHICLE DETECTOR SENSOR	METAL BEAM GUARD RAIL	NUMBER OF LANES (EACH DIRECTION)		LATITUDE	LONGITUDE	EXISTING MBGR		
												EB	WB					
87	KENWOOD Ave	15	NB	14.9	1		1	1	1	20		5	5	N 34° 14' 12.5"	W 117° 25' 28.6"	N	NO	88
88	NORTH OF KENWOOD Ave	15	NB	17.4		1	1			20		5	5	N 34° 15' 37.1"	W 117° 26' 58.6"	Y	YES	87, 88
89	NORTH OF KENWOOD Ave	15	NB	19.3	1		1			16		4	4	N 34° 17' 9.8"	W 117° 27' 5.4"	Y	NO	88
90	NORTH OF Rte 138	15	NB	21.5	1		1			18		5	4	N 34° 18' 45.1"	W 117° 28' 31.1"	Y	NO	91
91	NORTH OF Rte 138	15	NB	23.3		1	1	1	1	10		5	-	N 34° 20' 10.2"	W 117° 28' 50.7"	N	YES	90, 92
92	NORTH OF Rte 138	15	NB	25.3	1		1	1	1	10		5	-	N 34° 20' 37.5"	W 117° 26' 56.6"	N	NO	91
93	NORTH OF OAKHILL Rd	15	NB	28.9		1	1			16		4	4	N 34° 21' 53.5"	W 117° 25' 50.3"	N	YES	94
94	SOUTH OF Rte 395	15	NB	31.1	1		1	1	1	16		4	4	N 34° 23' 27.9"	W 117° 24' 30.7"	Y	YES	93
95	NORTH OF 395/JOSHUA	15	NB	32.6		1	1			12		3	3	N 34° 24' 35.9"	W 117° 23' 35.3"	N	YES	96
96	MAIN St	15	NB	33.9	1					12		3	3	N 34° 25' 33.4"	W 117° 22' 50.6"	N	NO	95
97	SOUTH OF BEAR VALLEY CENTER	15	CNTR	35.5		1	1	1		12		3	3	N 34° 26' 42.1"	W 117° 21' 57.7"	Y	YES	98
98	SOUTH OF BEAR VALLEY CENTER	15	NB	37.4	1			1	1	12		3	3	N 34° 28' 1.9"	W 117° 20' 54.3"	N	NO	97
99	NORTH OF BEAR VALLEY	15	NB	38.8		1	1			12	1	3	3	N 34° 29' 7.3"	W 117° 20' 6.4"	N	YES	100
100	SOUTH OF Rte 18/PALMDALE Rd	15	NB	40.1	1			1	1	12		3	3	N 34° 30' 9.7"	W 117° 19' 27.2"	N	NO	99
101	NORTH ROY ROGERS	15	NB	41.6	1		1	1	1	16		4	4	N 34° 31' 27.2"	W 117° 19' 5.1"	N	NO	102
102	'D' STREET	15	NB	43.3		1	1	1	1	12		3	3	N 34° 32' 41.3"	W 117° 18' 4.7"	N	YES	101, 103
103	NORTH OF STODDARD WELLS Rd	15	NB	44.8	1		1			12	1	3	3	N 34° 33' 38.4"	W 117° 17' 9.3"	N	NO	102
104	CEMENT Co OC	15	NB	46.3		1	1	1	1	12		3	3	N 34° 34' 41.7"	W 117° 16' 13.7"	N	YES	105
105	NORTH OF NORTH STODDARD	15	NB	47.8	1			1	1	12		3	3	N 34° 35' 47.4"	W 117° 15' 17.6"	N	NO	104
106	SOUTH OF DALE EVANS Pkwy	15	NB	50.5		1	1	1	1	12		3	3	N 34° 37' 44.0"	W 117° 13' 45.2"	N	YES	107
107	NORTH OF DALE EVANS Pkwy	15	NB	52.5	1		1			12		3	3	N 34° 39' 18.6"	W 117° 12' 48.3"	N	NO	106
108	WILD WASH Rd OC	15	NB	54.7		1	1	1	1	14		3	4	N 34° 41' 6.2"	W 117° 12' 46.2"	N	YES	109
109	NORTH OF WILD WASH Rd OC	15	NB	56.7	1					12		3	3	N 34° 42' 41.7"	W 117° 11' 59.1"	N	NO	108
110	SOUTH OF HODGE Rd	15	NB	58.9	1		1	1	1	12		3	3	N 34° 44' 20.0"	W 117° 10' 44.9"	N	YES	112
111	NORTH OF HODGE Rd	15	NB	60.9	1					12		3	3	N 34° 45' 39.6"	W 117° 9' 23.9"	N	NO	112
112	NORTH OF HODGE Rd	15	NB	63.0		1	1			12		3	3	N 34° 46' 52.8"	W 117° 7' 52.7"	N	YES	111, 113
113	SOUTH OF OUTLET CENTER Dr	15	NB	65.6	1			1	1	14		3	4	N 34° 48' 27.9"	W 117° 5' 56.1"	N	NO	112
114	SOUTH OF LENWOOD Ave	15	NB	67.6		1	1	1	1	14		3	4	N 34° 50' 8"	W 117° 5' 24"	N	YES	115
115	NORTH OF LENWOOD Ave	15	NB	69.1	1					18		5	4	N 34° 52' 47"	W 117° 4' 58"	N	NO	114
116	NORTH OF Rte 58	15	NB	70.6		1	1	1	1	16		4	4	N 34° 51' 39"	W 117° 3' 57"	N	YES	117
117	NORTH OF Rte 58	15	NB	72.3	1		1			14		3	4	N 34° 53' 10"	W 117° 2' 38"	N	NO	116
SUB-TOTAL (THIS SHEET)					18	13	23	17	16	424	2							

\* SEE SHEET E-7 FOR VDS TYPE 35 POLE AND ADDITIONAL EQUIPMENT SCHEDULE.

## WIRELESS VEHICLE DETECTION SYSTEM (LOCATIONS AND EQUIPMENT SCHEDULE)

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: CHECKED BY:  
 L. PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY: DATE REVISED:  
 K.D.  
 04-24-10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	9	37
Katherine Dinh			8-02-10		
REGISTERED ELECTRICAL ENGINEER			DATE		
8-2-10			PLANS APPROVAL DATE		
KATHERINE DINH			No. E 17157		
Exp. 9-30-11			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.					

### SAN BERNARDINO COUNTY ROUTE 15

LOCATION NUMBER	APPROXIMATE LOCATION	ROUTE	DIRECTION	APPROXIMATE POST MILE	CONSTRUCTION NOTES											COMMUNICATION NOTES		
					INSTALL EQUIPMENT *							APPROXIMATE GPS COORDINATES OF VDS POLE				GPRS LINK TO TMC  (PARENT LOCATION)	WIRELESS RADIO LINK TO LOCATION No.	
					DIRECTIONAL ANTENNA	MULTIPOINT ANTENNA	GPRS MODEM	REPEATER	TYPE 15-FBS POLE (Mod)	VEHICLE DETECTOR SENSOR	METAL BEAM GUARD RAIL	NUMBER OF LANES (EACH DIRECTION)	LATITUDE	LONGITUDE	EXISTING MBGR			
																		EB
118	SOUTH Rte 15/40 IC	15	NB	73.9	1	1				16		3	5	N 34° 53' 9"	W 117° 00' 56"	Y	YES	
119	NORTH OF MAIN St	15	NB	76.0	1	1	1	1	8			2	2	N 34° 54' 12"	W 116° 59' 5"	N	YES	120
120	NORTH OF OLD 58	15	NB	78.1	1		1	1	10			2	3	N 34° 54' 20"	W 116° 57' 3"	Y	NO	119
121	SOUTH OF GHOST TOWN	15	SB	80.9		1	1	1	8			2	2	N 34° 54' 4"	W 116° 54' 13"	Y	YES	122
122	SOUTH OF YERMO St	15	CNTR	83.7	1		1	1	8			2	2	N 34° 54' 23"	W 116° 51' 31"	Y	NO	121
123	FIRST St OC	15	NB	85.6	1		1		8			2	2	N 34° 54' 39"	W 116° 49' 15"	Y	NO	124
124	SOUTH OF MINNEOLA	15	CNTR	88.0		1	1	1	8			2	2	N 34° 54' 58"	W 116° 46' 51"	Y	YES	124, 125
125	NORTH OF MINNEOLA	15	NB	90.1	1				8			2	2	N 34° 55' 23"	W 116° 44' 43"	Y	NO	124
126	NORTH OF COYOTE OC	15	NB	92.6	1		1	1	8			2	2	N 34° 56' 11"	W 116° 42' 20"	Y	NO	127
127	SOUTH OF HARVARD OC	15	CNTR	95.0	1			1	8			2	2	N 34° 57' 10"	W 116° 40' 11"	Y	YES	126
128	NORTH OF HARVARD Rd	15	CNTR	97.8	1		1	1	8			2	2	N 34° 58' 22"	W 116° 37' 24"	N	NO	127
129	EAST MANIX WASH	15	CNTR	100.6		1	1	1	8			2	2	N 34° 59' 32"	W 116° 34' 43"	N	YES	130
130	SOUTH OF FIELD Rd	15	CNTR	103.2	1			1	8			2	2	N 35° 00' 32"	W 116° 32' 15"	N	NO	129
131	CADY WASH	15	CNTR	105.9	1			1	8			2	2	N 35° 1' 28"	W 116° 29' 38"	Y	NO	132
132	NORTH OF MIDWAY RA	15	CNTR	108.6		1	1	1	8			2	2	N 35° 2' 38"	W 116° 27' 13"	Y	YES	131, 133
133	SOUTH OF AFTON Rd	15	CNTR	111.0	1			1	8			2	2	N 35° 3' 57"	W 116° 25' 15"	N	NO	132
134	NORTH OF AFTON Rd	15	CNTR	113.6	1		1	1	8			2	2	N 35° 4' 56"	W 116° 22' 53"	Y	NO	135
135	NORTH OF BIRD DITCH	15	CNTR	116.1		1	1	1	8			2	2	N 35° 5' 17"	W 116° 20' 16"	N	YES	134, 136
136	MOJAVE RIVER Ovfl	15	CNTR	118.5	1		1	1	8			2	2	N 35° 5' 46"	W 116° 17' 53"	Y	NO	135
137	NORTH OF BASIN Rd	15	SB	121.0		1	1	1	8			2	2	N 35° 6' 20"	W 116° 15' 27"	Y	YES	138
138	SOUTH OF RASOR Rd	15	SB	123.6	1			1	8			2	2	N 35° 7' 36"	W 116° 13' 15"	N	NO	137
139	MARL DITCH	15	CNTR	126.1	1		1	1	8			2	2	N 35° 9' 23"	W 116° 11' 27"	Y	NO	140
140	SOUTH OF ZZYXZ Rd	15	CNTR	128.7		1	1	1	8			2	2	N 35° 11' 10"	W 116° 9' 47"	N	YES	139, 141
141	TORK DITCH	15	CNTR	131.4	1		1	1	8			2	2	N 35° 12' 3"	W 116° 7' 16"	Y	NO	140
142	SOUTH OF WEST BAKER OC	15	CNTR	133.9		1	1	1	8	1		2	2	N 35° 13' 53"	W 117° 6' 9"	N	YES	143
143	WEST BAKER OC	15	CNTR	135.8	1			1	8			2	2	N 35° 15' 24"	W 117° 5' 3"	Y	NO	142
144	SOUTH OF EAST BAKER OC	15	NB	138.3		1	1		10			2	3	N 35° 16' 42.7"	W 116° 2' 58.8"	N	YES	145
145	NORTH OF EAST BAKER OC	15	NB	141.0	1			1	12			3	3	N 35° 18' 12.2"	W 116° 0' 52.8"	N	NO	144
146	NORTH OF EAST BAKER OC	15	NB	143.5	1			1	12			3	3	N 35° 19' 31.3"	W 115° 58' 47.2"	N	NO	147
147	SOUTH OF HALLORAN SPRINGS	15	NB	146.3		1	1	1	12			3	3	N 35° 20' 58.7"	W 115° 56' 28.4"	Y	YES	146, 148
148	SOUTH OF HALLORAN SPRINGS	15	NB	148.7	1			1	12			3	3	N 35° 20' 10.1"	W 115° 54' 23.9"	N	NO	147
SUB-TOTAL (THIS SHEET)					19	12	21	27	10	276	1							

\* SEE SHEET E-7 FOR VDS TYPE 35 POLE AND ADDITIONAL EQUIPMENT SCHEDULE.

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

## WIRELESS VEHICLE DETECTION SYSTEM (LOCATIONS AND EQUIPMENT SCHEDULE)

E-5

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	10	37

KATHERINE DINH 8-02-10  
 REGISTERED ELECTRICAL ENGINEER DATE  
 8-2-10  
 PLANS APPROVAL DATE

KATHERINE DINH  
 No. E 17157  
 Exp. 9-30-11  
 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.

### SAN BERNARDINO COUNTY ROUTE 15 AND 210

LOCATION NUMBER	APPROXIMATE LOCATION	ROUTE	DIRECTION	APPROXIMATE POST MILE	CONSTRUCTION NOTES													COMMUNICATION NOTES		
					INSTALL EQUIPMENT *								APPROXIMATE GPS COORDINATES OF VDS POLE					GPRS LINK TO TMC  (PARENT LOCATION)	WIRELESS RADIO LINK TO LOCATION No.	
					DIRECTIONAL ANTENNA	MULTIPOINT ANTENNA	GPRS MODEM	REPEATER	TYPE 15-FBS POLE (Mod)	VEHICLE DETECTOR SENSOR	METAL BEAM GUARD RAIL	NUMBER OF LANES (EACH DIRECTION)		LATITUDE	LONGITUDE	EXISTING MBGR				
												EB	WB							
149	NORTH OF HALLORAN SPRINGS	15	NB	151.4		1	1	1	1	12		3	3	N 35° 22' 58.4"	W 115° 51' 46.6"	Y	YES	150		
150	SOUTH OF HALLORAN SUMMIT	15	NB	153.6	1			1	1	12		3	3	N 35° 23' 40.3"	W 115° 49' 24.7"	Y	NO	149		
151	NORTH OF HALLORAN SUMMIT	15	NB	156.4	1			1	1	8		2	2	N 35° 24' 24.4"	W 115° 46' 44.5"	Y	NO	152		
152	NORTH OF HALLORAN SUMMIT	15	CNTR	158.8		1	1			8		2	2	N 35° 25' 16.1"	W 115° 44' 20.2"	Y	YES	151, 153, 154, 155		
153	VALLEY WELLS REST AREA	15	NB	161.3	1					10		3	2	N 35° 26' 6.2"	W 115° 41' 56.4"	Y	NO	152		
154	NORTH OF VALLEY WELLS REST AREA	15	NB	163.5	1			1	1	10		3	2	N 35° 26' 53.7"	W 115° 39' 43.4"	Y	NO	152		
155	NORTH OF VALLEY WELLS REST AREA	15	NB	166.1	1					10		3	2	N 35° 27' 44.7"	W 115° 37' 16.8"	Y	NO	152		
156	NORTH OF VALLEY WELLS REST AREA	15	CNTR	168.5	1		1			10		3	2	N 35° 28' 28.3"	W 115° 34' 55.2"	Y	NO	158		
157	SOUTH OF BAILEY	15	NB	170.9		1	1			12		3	3	N 35° 28' 8.1"	W 115° 32' 21.1"	N	YES	157		
158	NORTH OF BAILEY	15	NB	173.5		1	1	1	1	6		3	-	N 35° 28' 0.8"	W 115° 29' 28.1"	N	YES	159, 164		
159	SOUTH OF NIPTON Rd	15	CNTR	175.9	1		1	1		12	1	3	3	N 35° 28' 9.1"	W 115° 27' 11.2"	Y	NO	158		
160	NORTH OF NIPTON Rd	15	NB	178.4	1					12		3	3	N 35° 30' 6.0"	W 115° 26' 9.7"	Y	NO	161		
161	NORTH OF NIPTON Rd	15	CNTR	180.8		1	1	1		12	1	3	3	N 35° 32' 5.6"	W 115° 25' 20.2"	Y	YES	160, 162, 163		
162	SOUTH OF STATELINE	15	CNTR	183.4	1					8		2	2	N 35° 34' 5.0"	W 115° 24' 28.8"	Y	NO	161		
163	SOUTH OF STATELINE	15	CNTR	185.9	1					8		2	2	N 35° 36' 1.1"	W 115° 23' 38.4"	Y	NO	161		
164	NORTH OF BAILEY	15	SB	173.2	1			1	1	6		-	3	N 35° 28' 12.3"	W 115° 29' 52.6"	N	NO	158		
165	NORTH OF TRUCK RUNWAY RAMP	15	SB	23.2		1	1	1	1	8		-	4	N 34° 20' 12"	W 117° 28' 58"	N	YES	160		
166	SOUTH OF TRUCK BRAKE CHANGE AREA	15	SB	25.3	1		1			8		-	4	N 34° 20' 41"	W 117° 27' 23"	N	NO	165		
167	DEL ROSA UC	210	EB	25.7	1		1			12		3	3	N 34° 08' 32.8"	W 117° 15' 10.6"	N	YES	169		
168	WEST OF HIGHLAND	210	EB	26.5	1		1			8		2	2	N 34° 08' 12.3"	W 117° 14' 19.2"	N	NO	169		
169	EAST OF BASELINE	210	WB	29.7		1	1			8		2	2	N 34° 06' 54.1"	W 117° 11' 59.6"	N	YES	167, 168, 170		
170	ACCESS ROAD UNDERCROSSING	210	EB	30.8	1		1			8		2	2	N 34° 06' 8.7"	W 117° 11' 58.8"	N	NO	169		
SUBTOTAL (THIS SHEET)					15	7	13	9	7	208	2									
TOTAL					115	55	118	92	40	1892	5									

\* SEE SHEET E-7 FOR VDS TYPE 35 POLE AND ADDITIONAL EQUIPMENT SCHEDULE.

## WIRELESS VEHICLE DETECTION SYSTEM (LOCATIONS AND EQUIPMENT SCHEDULE)

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**® ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CALCULATED/DESIGNED BY: CHECKED BY:  
 L. PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY: DATE REVISED:  
 K.D.  
 04-24-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**® ELECTRICAL DESIGN B

FUNCTIONAL SUPERVISOR  
 FERDINAND DE LA CRUZ

CALCULATED, DESIGNED BY  
 CHECKED BY

L. PENALOZA  
 FERDINAND DE LA CRUZ

REVISED BY  
 DATE REVISED

K.D.  
 04-24-10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	11	37

Katherine Dinh 8-02-10  
 REGISTERED ELECTRICAL ENGINEER DATE

8-2-10  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 KATHERINE DINH  
 No. E 17157  
 Exp. 9-30-11  
 ELECTRICAL  
 STATE OF CALIFORNIA

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INSTALL EQUIPMENT								
	ACCESS POINT	BATTERIES	PHOTO-VOLTAIC PANELS	ETHERNET SWITCH	WIRELESS ETHERNET RADIO (WER)	VDS TYPE 35 POLE	PULL BOX No. 5(T)	ENCLOSURE
QUANTITY PER LOCATION	1	3	2	1	1	1	1	1
TOTAL	170	510	340	170	170	170	170	170

**WIRELESS VEHICLE DETECTION SYSTEM  
 (VDS TYPE 35 POLE AND  
 ADDITIONAL EQUIPMENT SCHEDULE)**

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

LAST REVISION | DATE PLOTTED => 10-AUG-2010  
 08-02-10 | TIME PLOTTED => 10:48

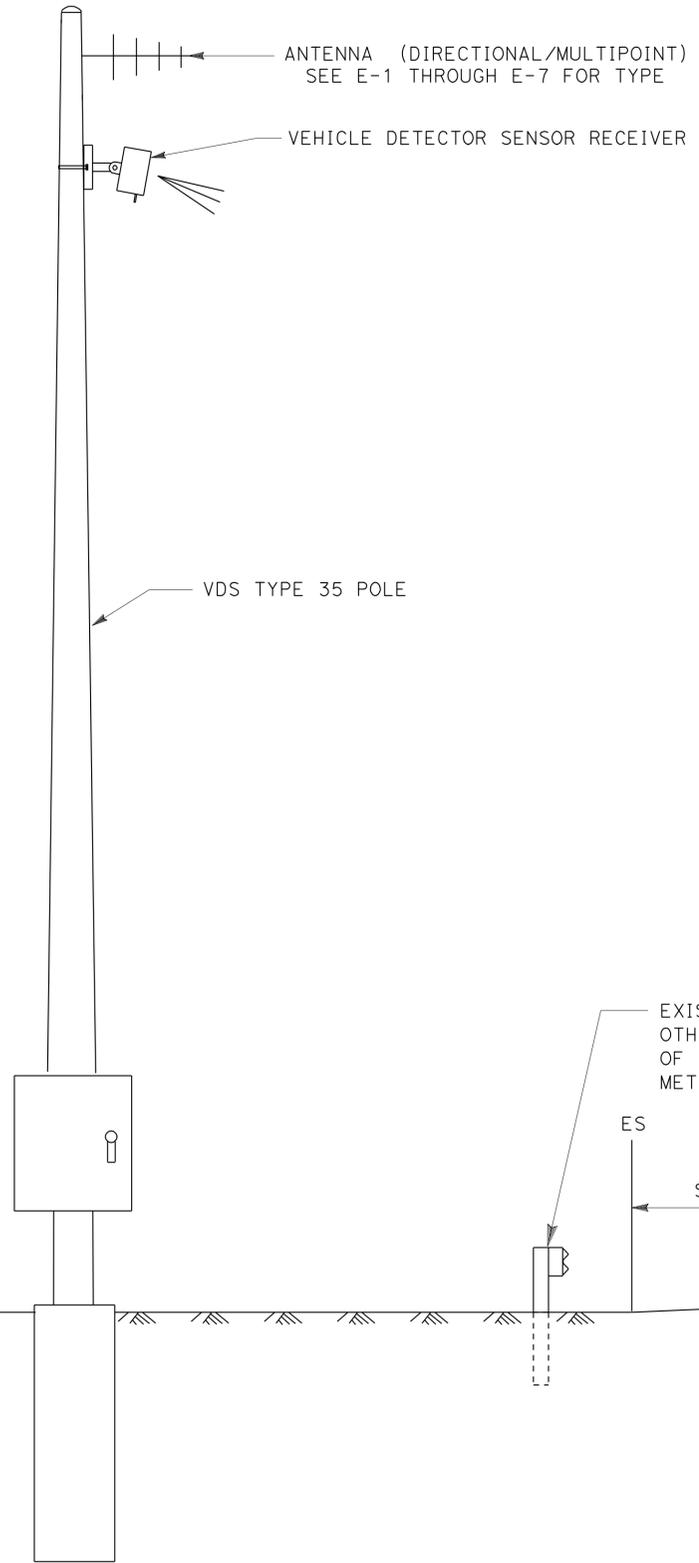
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	12	37
Katherine Dinh			8-02-10		
REGISTERED ELECTRICAL ENGINEER			DATE		
8-2-10			PLANS APPROVAL DATE		
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**ABBREVIATIONS:**

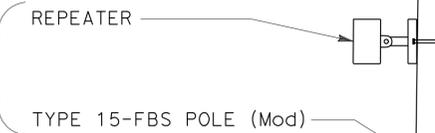
WVDS = WIRELESS VEHICLE DETECTION SYSTEM

**GENERAL NOTES:**

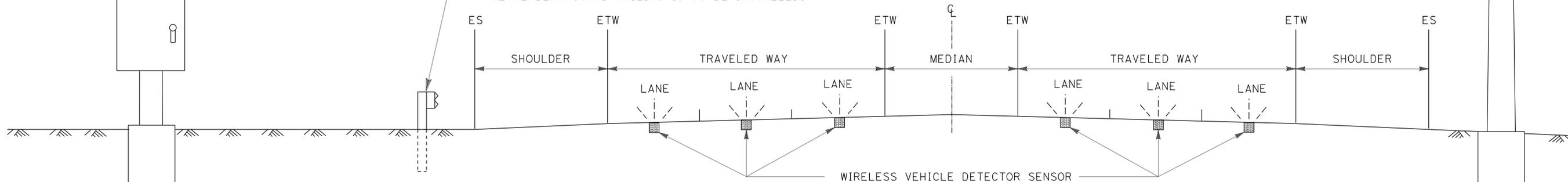
1. ALL CHASE NIPPLES SHALL INCLUDE A WEATHERPROOF GROMMET.
2. SEE SHEETS E-1 THROUGH E-7 FOR EQUIPMENT CONFIGURATIONS ON INDIVIDUAL POLES.



WHEN REQUIRED-SEE EQUIPMENT SCHEDULE AND SES-4 FOR VEHICLE DETECTION SYSTEM TYPE 15-FBS (Mod) - POLE DETAILS



EXISTING METAL BEAM GUARD RAILING (WHEN AVAILABLE). OTHERWISE THE POLE SHALL BE LOCATED A MINIMUM OF 30' FROM THE EDGE OF SHOULDER, UNLESS NEW METAL BEAM GUARD RAILING IS TO BE INSTALLED.



**WIRELESS VEHICLE DETECTION STATION-TYPICAL LAYOUT**

(NOT ALL WVDS EQUIPMENT SHOWN-SEE E-10 FOR FURTHER DETAILS)

**WIRELESS VEHICLE DETECTION SYSTEM**

NO SCALE

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

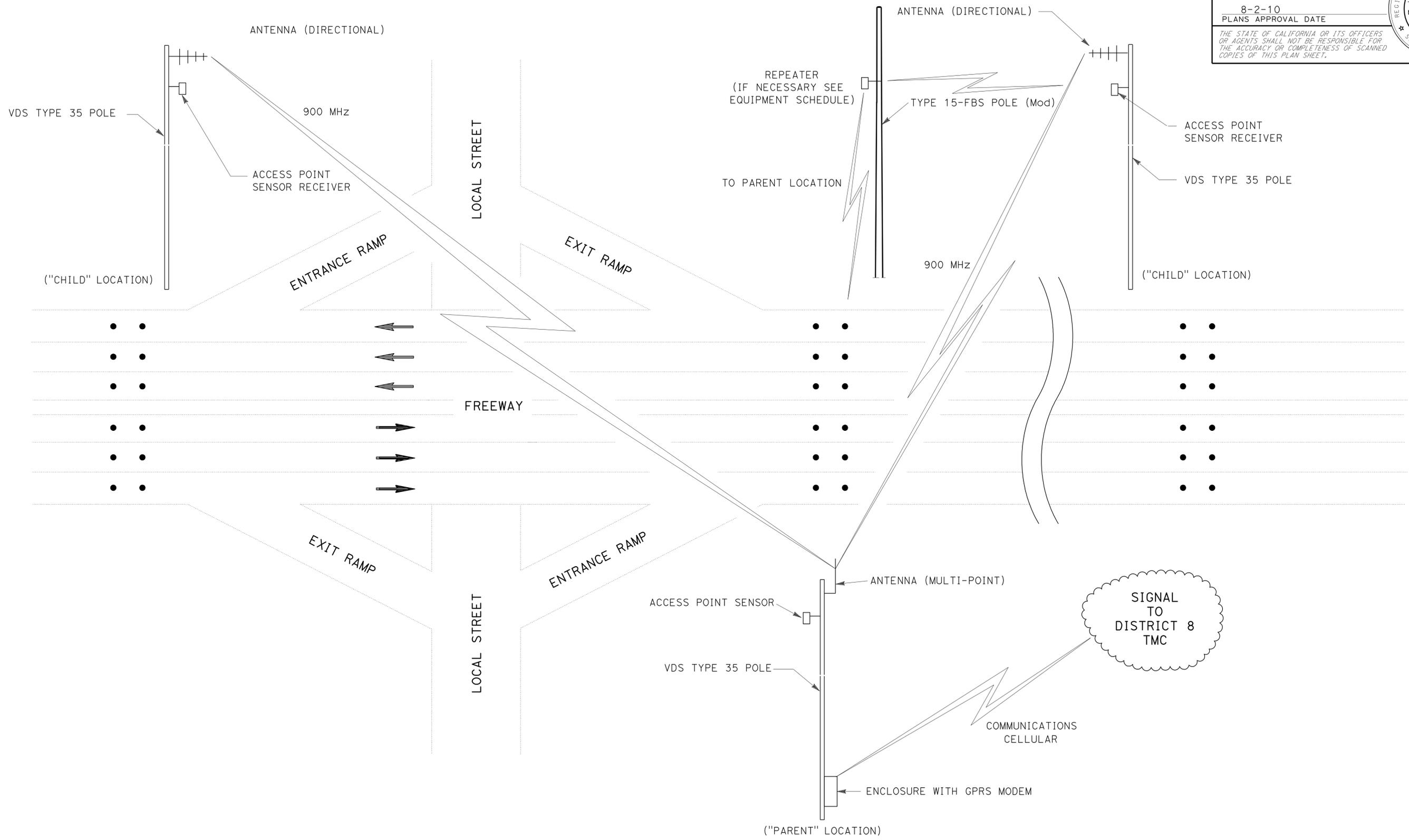
**E-8**

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 CALCULATED/DESIGNED BY  
 CHECKED BY  
 L. PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY  
 DATE REVISED  
 K.D.  
 04-24-10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	13	37
Katherine Dinh			8-02-10	REGISTERED ELECTRICAL ENGINEER DATE	
8-2-10			PLANS APPROVAL DATE		
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**LEGEND**

- WIRELESS VEHICLE DETECTOR SENSORS



**WIRELESS VEHICLE DETECTION STATION-TYPICAL COMMUNICATION LAYOUT**

**WIRELESS VEHICLE DETECTION SYSTEM**

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

NO SCALE

**E-9**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
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 FERDINAND DE LA CRUZ  
 FERDINAND DE LA CRUZ  
 FERDINAND DE LA CRUZ  
 K.D.  
 04-24-10



USERNAME => trr1chf  
DGN FILE => 80L790ua009.dgn

CU 08396

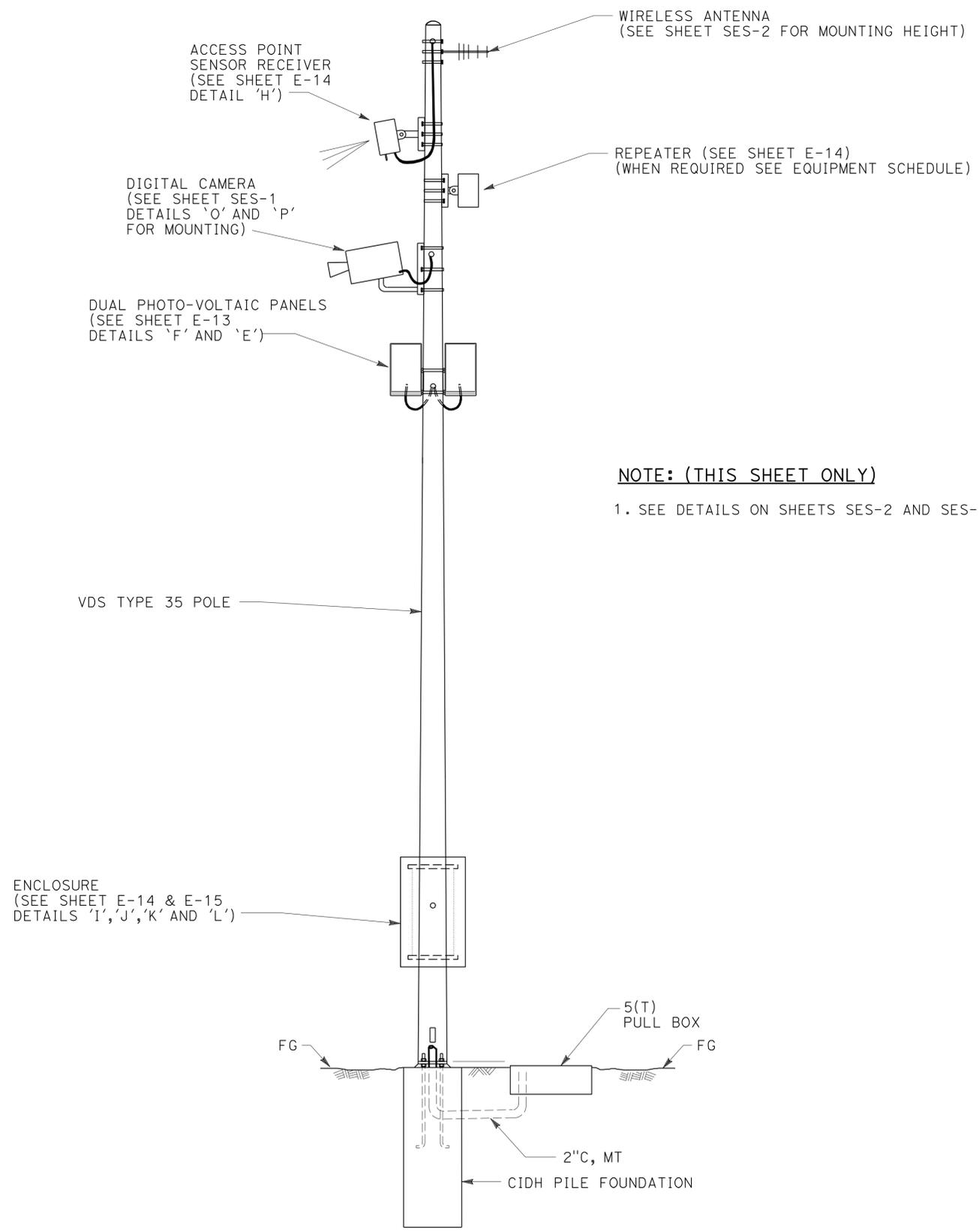
EA 0L7901

BORDER LAST REVISED 4/11/2008

LAST REVISION | DATE PLOTTED => 10-AUG-2010  
 08-02-10 | TIME PLOTTED => 10:49

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	14	37
Katherine Dinh		8-02-10		REGISTERED ELECTRICAL ENGINEER DATE	
8-2-10		PLANS APPROVAL DATE			
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 CHECKED BY:  
 L. PENALOZA  
 FERDINAND DE LA CRUZ  
 REVISED BY: K.D.  
 DATE REVISED: 04-24-10  
 K.D.



**NOTE: (THIS SHEET ONLY)**

1. SEE DETAILS ON SHEETS SES-2 AND SES-3 FOR VEHICLE DETECTION SYSTEM POLE DETAILS.

**DETAIL 'A'**

VDS INSTALLED ON VDS TYPE 35 POLE

**WIRELESS VEHICLE DETECTION SYSTEM  
(INSTALLATION DETAILS)**

NO SCALE

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

**E-10**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	15	37
Katherine Dinh		6-16-10		REGISTERED ELECTRICAL ENGINEER DATE	
8-2-10		PLANS APPROVAL DATE			
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**ABBREVIATION:**

VSN VEHICLE SENSOR NODE

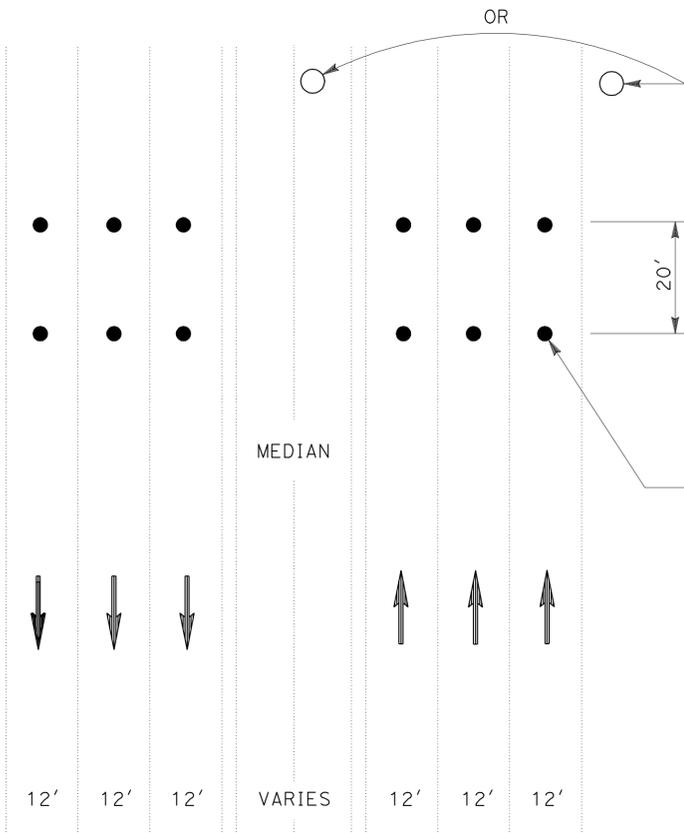
**LEGEND:**

● VSN - SEE DETAIL 'A'

REPEATER MOUNTED ON TYPE 15-FBS POLE (Mod) (IF REQUIRED-SEE EQUIPMENT SCHEDULE)

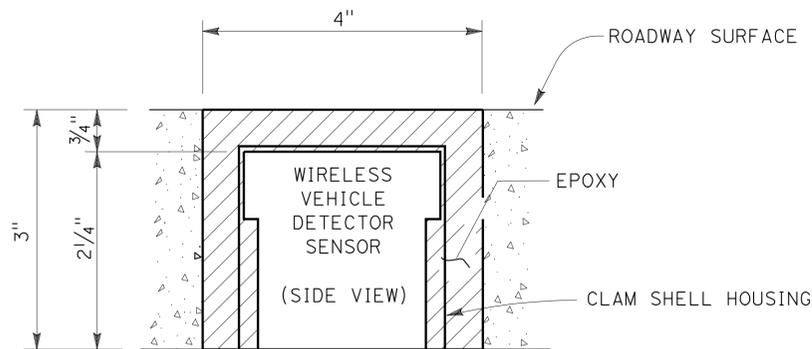
POLE MOUNTED WVDS SYSTEM (TO BE LOCATED A MAXIMUM OF 150' FROM FARTHEST VEHICLE DETECTION SENSOR SEE EQUIPMENT SCHEDULE FOR LOCATION)

WIRELESS VEHICLE DETECTOR SENSOR WITH CLAM SHELL HOUSING (CENTERED IN LANE) (SEE DETAIL 'C' BELOW)



**DETAIL 'B'**

WIRELESS VEHICLE DETECTOR SENSOR PLACEMENT DETAIL



**DETAIL 'C'**

WIRELESS VEHICLE DETECTOR SENSOR INSTALLED IN ROADWAY

**WIRELESS VEHICLE DETECTOR SENSOR INSTALLATION PROCEDURE:**

1. PRIOR TO INSTALLATION, IDENTIFY SENSOR'S ID, LANE NUMBER, AND LOCATION IN LANE.
2. CORE A HOLE AT LEAST 3" DEEP SO THAT WHEN INSTALLED THE TOP OF THE SENSOR IS AT LEAST 3/4" BELOW THE SURFACE.
3. MAKE SURE THE SENSOR INSTALLS FLAT IN THE CORED HOLED AND IS NOT TILTED.
4. USE THE HEAT-GUN OR HOT COMPRESSED AIR TO DRY THE INSIDE OF THE CORED HOLE. THERE MUST BE ABSOLUTELY NO MOISTURE ON THE APPLIED SURFACE.
5. FILL THE HOLE ABOUT 1/4 FULL OF THE SENSOR EPOXY/ADHESIVE.
6. PLACE SENSOR IN THE HOLE WITH ARROW POINTING IN THE DIRECTION OF TRAFFIC. IF NEEDED, THE EPOXY SHOULD STILL HAVE WORK TIME, SO THAT THE SENSOR CAN BE ROTATED TO THE CORRECT POSITION. PUSH SENSOR DOWN SO IT LAYS FLAT ON THE BOTTOM OF THE HOLE. THIS ASSURES THAT THERE IS A BOND UNDERNEATH THE SENSOR WITH THE EPOXY.
7. FILL THE HOLE WITH THE REMAINING EPOXY TO COVER THE SENSOR. LEVEL EPOXY WITH THE SURFACE OF THE ROAD.
8. AFTER THE FIRST APPLICATION, DO NOT LET THE EPOXY SIT FOR MORE THAN 30 SECONDS BEFORE THE NEXT APPLICATION.
9. THE INSTALLATION PAVEMENT TEMPERATURE SHOULD BE GREATER THAN -35°F.
10. DEPENDING ON AMBIENT TEMPERATURE AND HUMIDITY, ADHESIVE DRYING TIME WILL VARY FROM 5 MINUTES TO 15 MINUTES. VERIFY HARDNESS OF EPOXY BEFORE REOPENING THE LANE FOR TRAFFIC.
11. RECORD THE DISTANCES BETWEEN EACH SENSOR PAIR.

**WIRELESS VEHICLE DETECTION SYSTEM (SENSOR INSTALLATION DETAILS)**

NO SCALE

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

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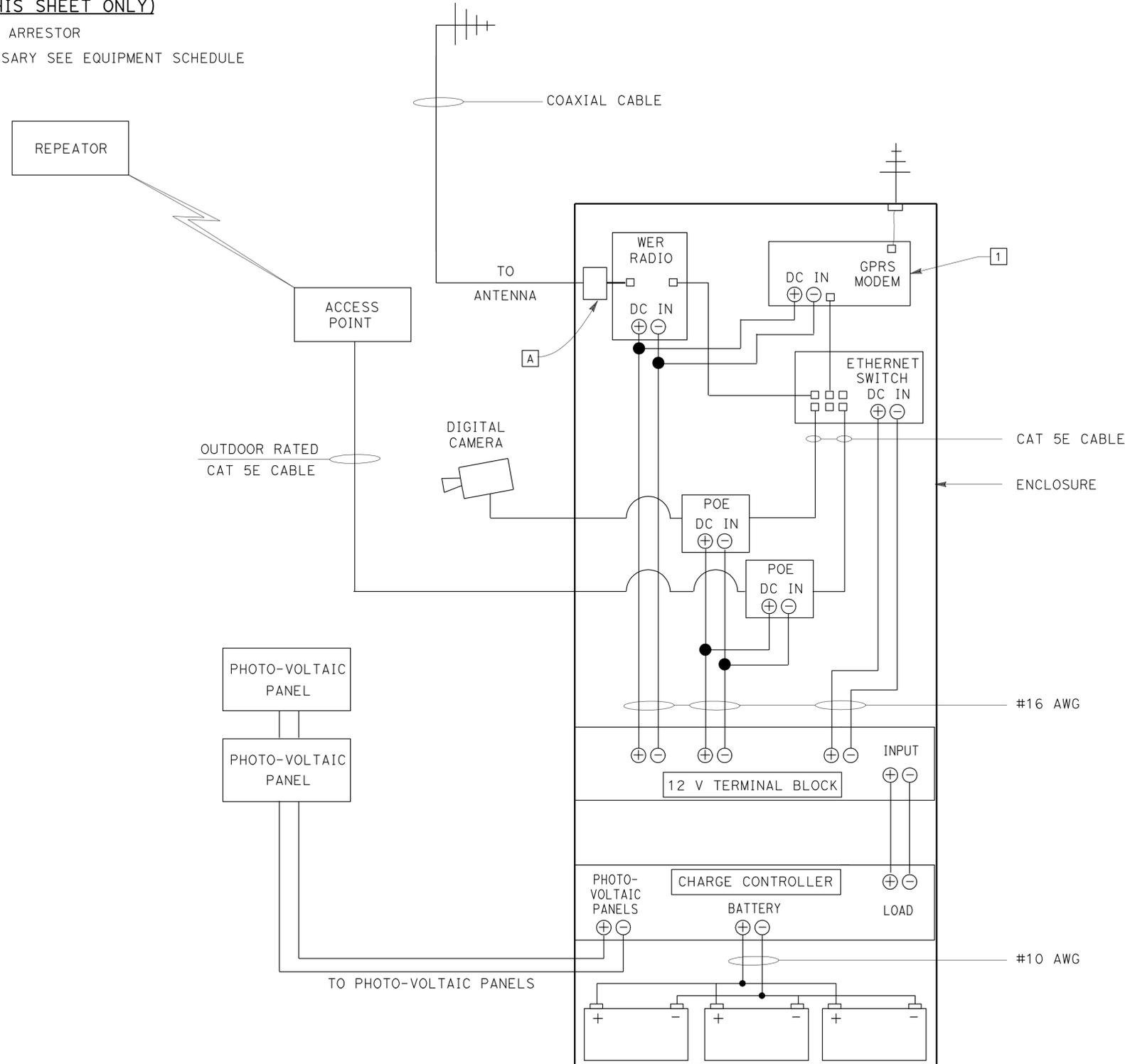
**E-11**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
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FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
DESIGNED BY: FERDINAND DE LA CRUZ  
CHECKED BY:  
L. PENALOZA  
REVISOR: FERDINAND DE LA CRUZ  
REVISION DATE: 04-24-10  
K.D.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	16	37
Katherine Dinh			8-02-10		
REGISTERED ELECTRICAL ENGINEER			DATE		
8-2-10					
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>					

**NOTES: (THIS SHEET ONLY)**

- A LIGHTING ARRESTOR
- 1 IF NECESSARY SEE EQUIPMENT SCHEDULE



**DETAIL 'D'**  
TYPICAL ENCLOSURE LAYOUT

**WIRELESS VEHICLE DETECTION SYSTEM  
(WIRING DETAILS)**

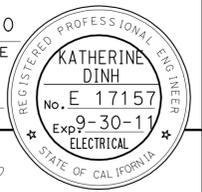
NO SCALE

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

**E-12**

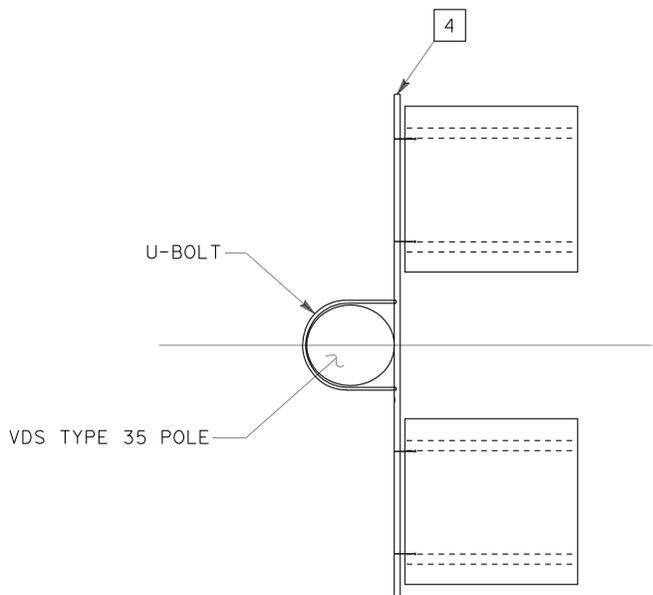
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 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 CHECKED BY: FERDINAND DE LA CRUZ  
 DESIGNED BY: FERDINAND DE LA CRUZ  
 REVISOR: L. PENALOZA  
 DATE: 04-24-10  
 REVISIONS: K.D.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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Katherine Dinh			6-16-10		
REGISTERED ELECTRICAL ENGINEER			DATE		
8-2-10			PLANS APPROVAL DATE		
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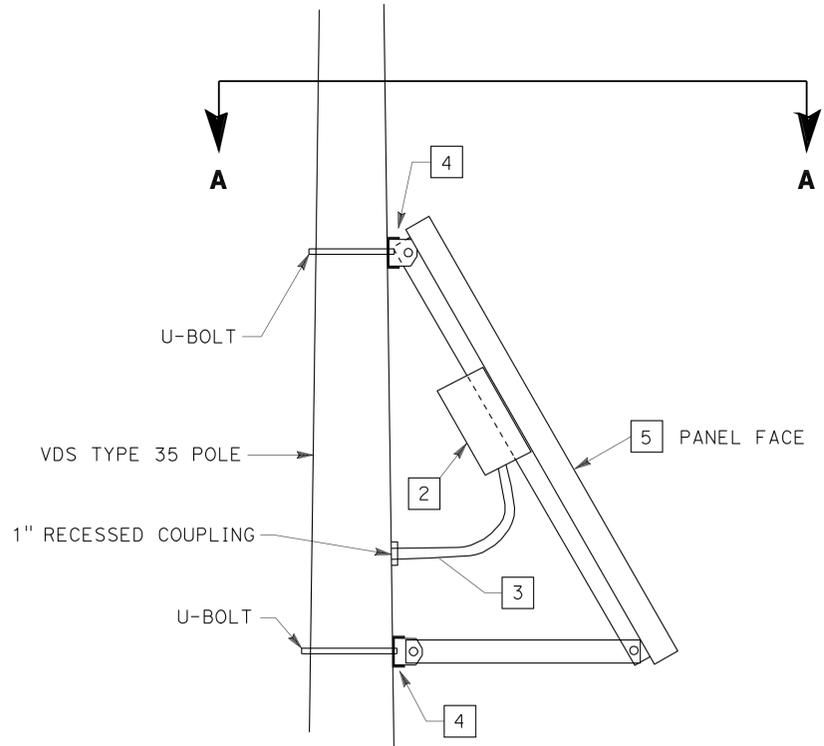


**NOTES: (THIS SHEET ONLY)**

- 1 ATTACH "L" BRACE TO SOLAR PANEL FRAME PER MANUFACTURER'S RECOMMENDATION.
- 2 JUNCTION BOX.
- 3 1/2" TYPE 4 CONDUIT.
- 4 "U" CHANNEL WITH ANGLE BRACKET.
- 5 PHOTO-VOLTAIC PANEL. WEIGHT SHALL NOT EXCEED 27 lbs.
6. ALL DIMENSIONS ARE APPROXIMATE.

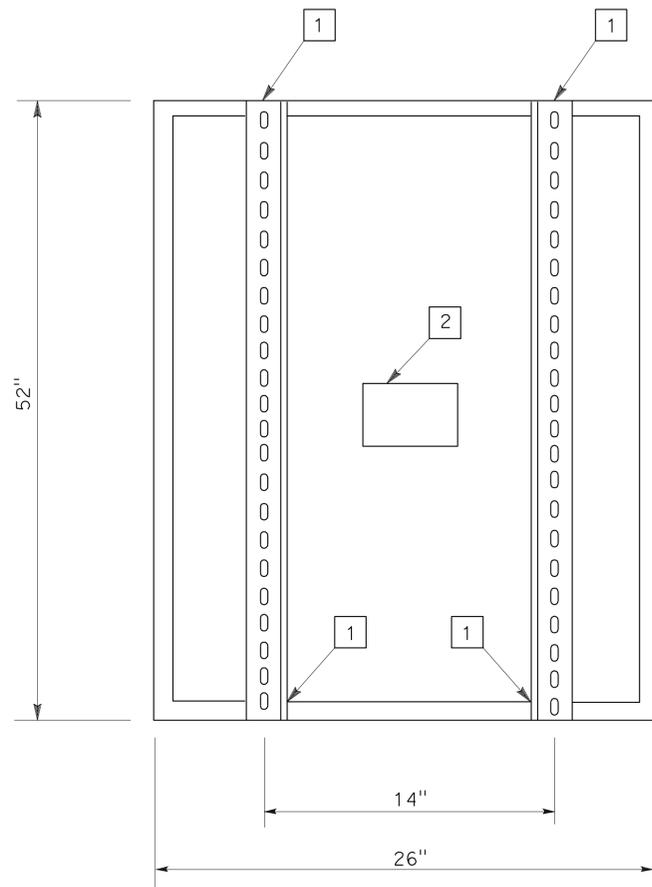


**SECTION A-A**



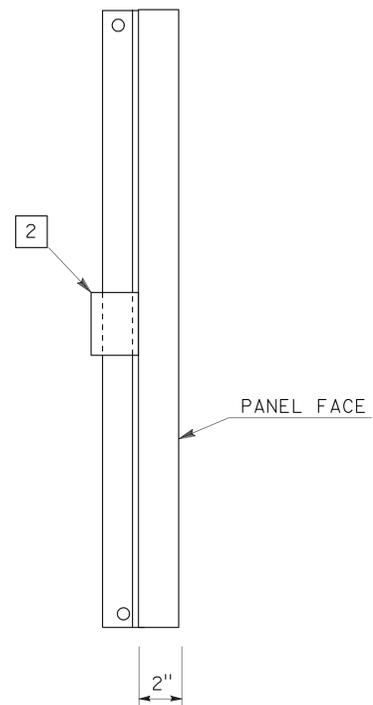
**ELEVATION**

**DETAIL 'F'**



**PHOTO-VOLTAIC PANEL**

**DETAIL 'E'**



**WIRELESS VEHICLE DETECTION SYSTEM  
(DUAL PHOTO-VOLTAIC PANELS DETAILS)**

NO SCALE

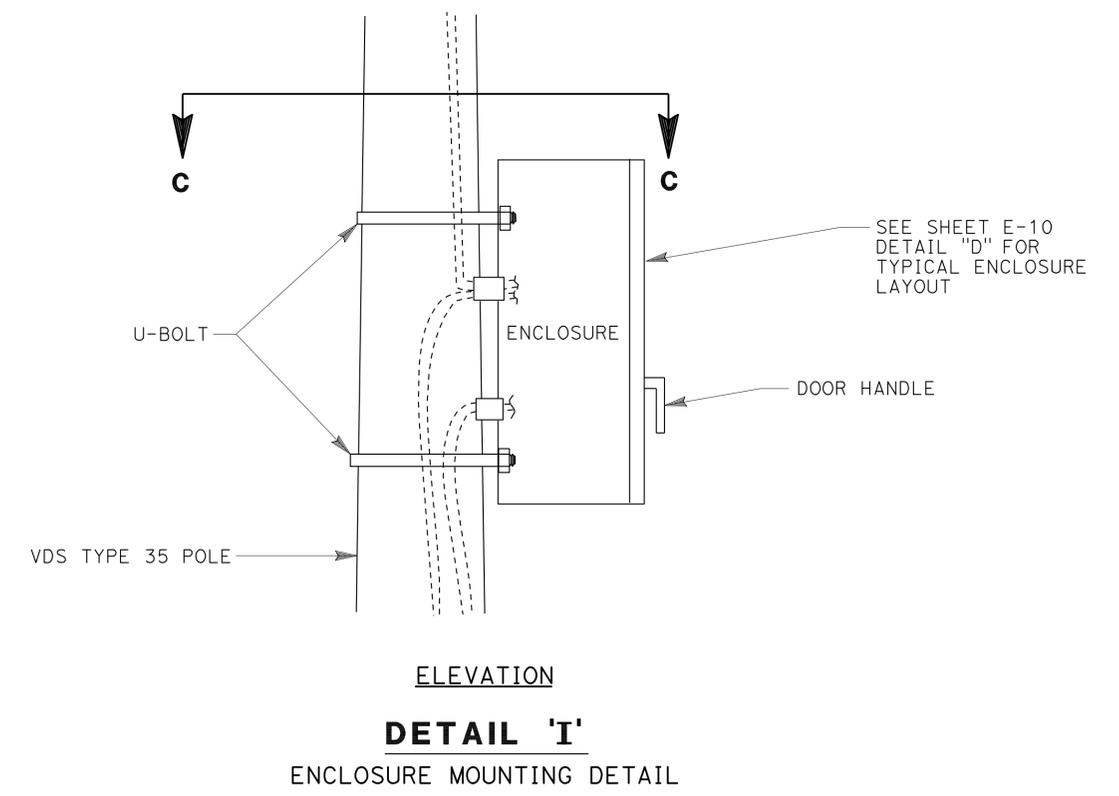
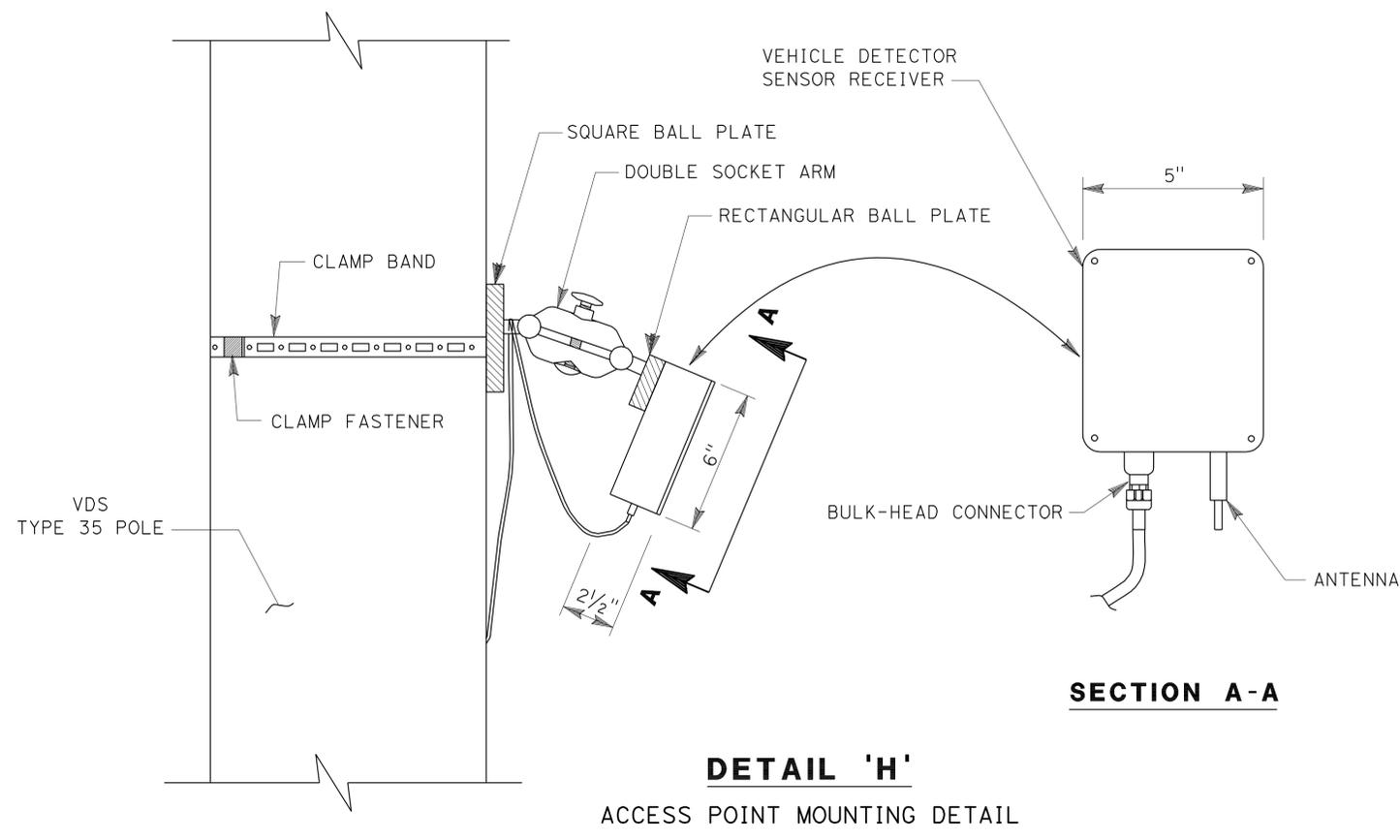
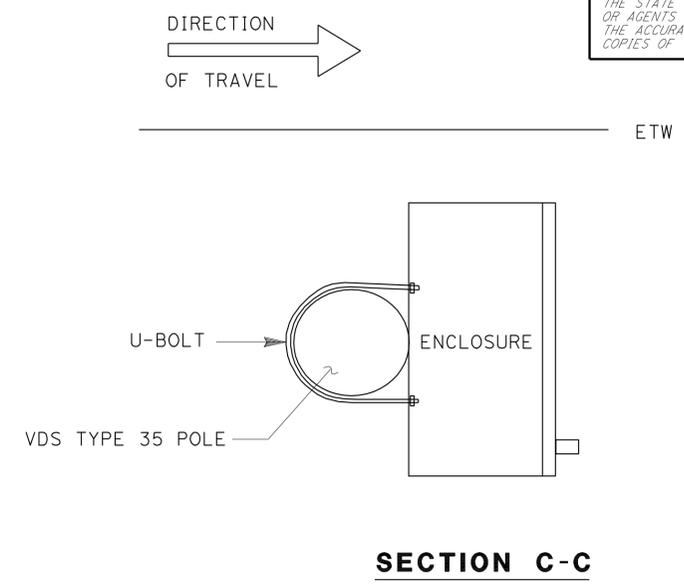
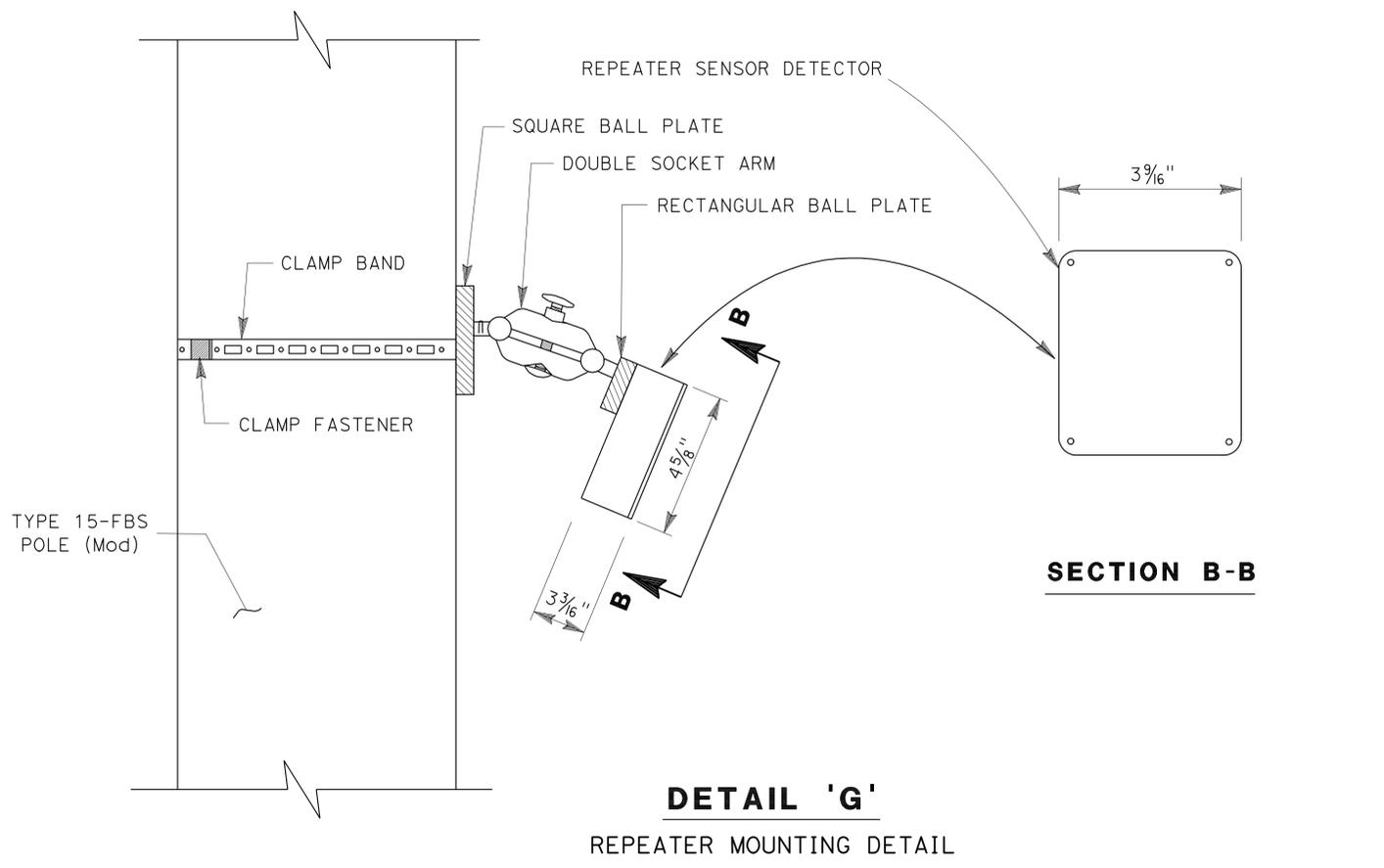
EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

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**Caltrans** ELECTRICAL DESIGN B  
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ  
 L. PENALOZA  
 FERDINAND DE LA CRUZ  
 K.D.  
 04-24-10  
 REVISOR: DATE  
 CALCULATED/DESIGNED BY: CHECKED BY:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	18	37
Katherine Dinh			6-16-10		
REGISTERED ELECTRICAL ENGINEER			DATE		
8-2-10					
PLANS APPROVAL DATE					
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 L. PENALOZA, FERDINAND DE LA CRUZ  
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**WIRELESS VEHICLE DETECTION SYSTEM (MOUNTING DETAILS)**

NO SCALE

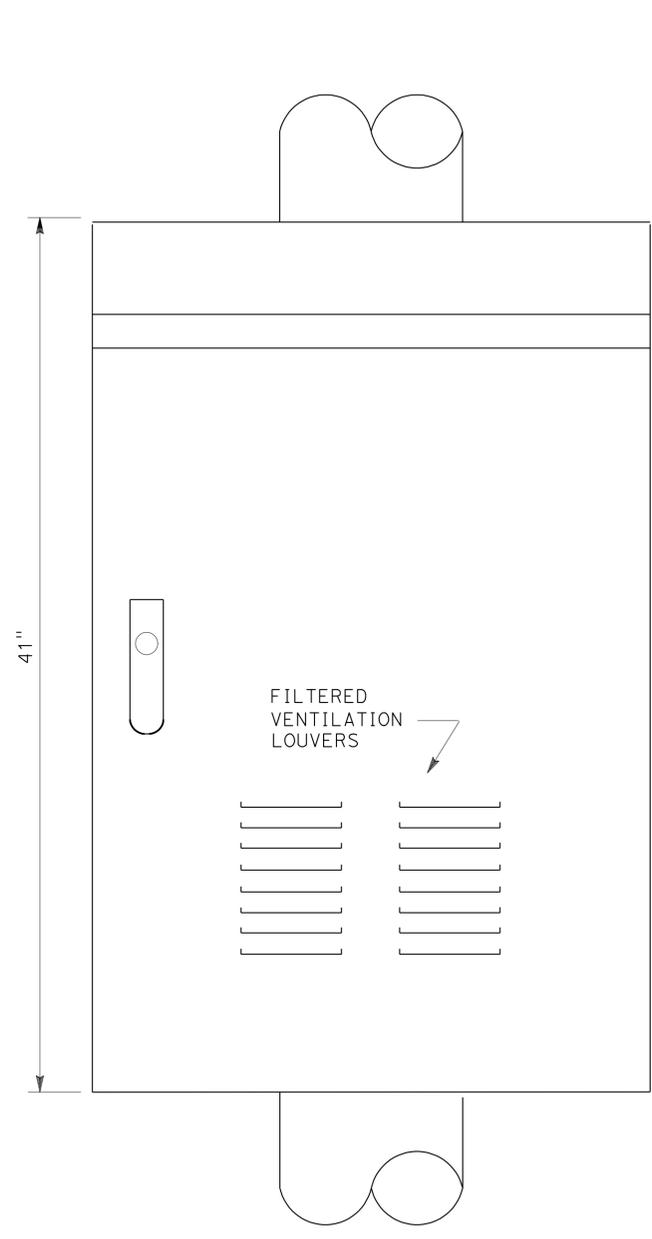
EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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Katherine Dinh			8-02-10		
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8-2-10					
PLANS APPROVAL DATE					
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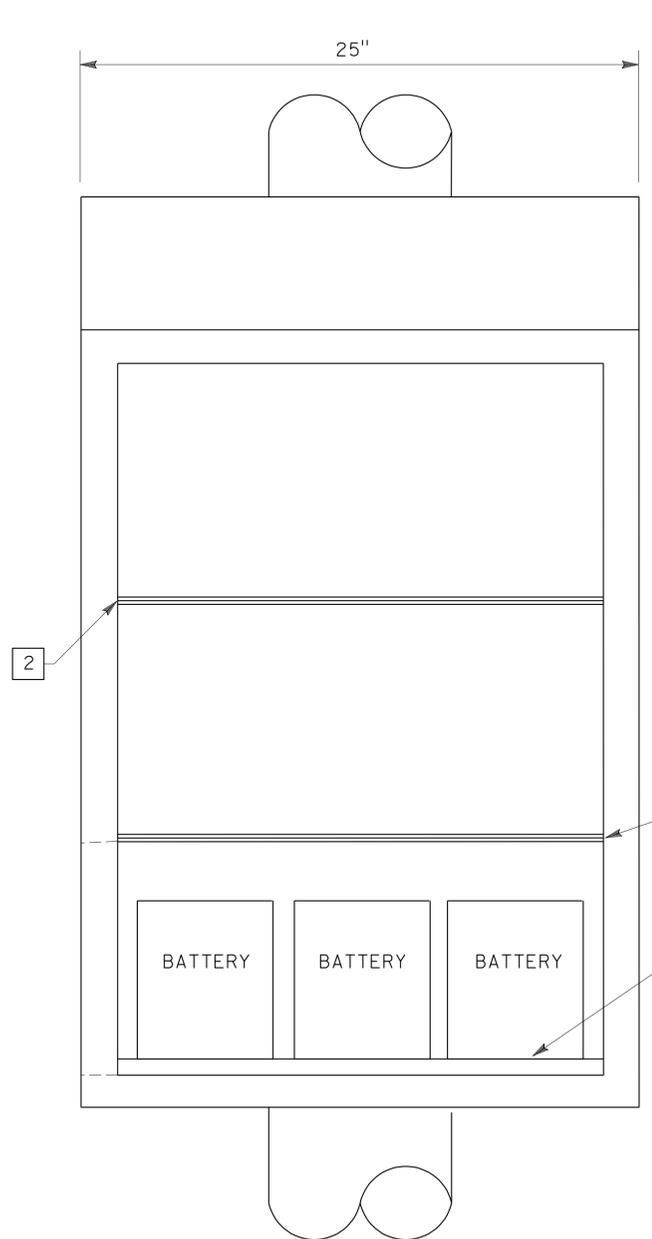
**NOTES: (THIS SHEET ONLY)**

1. THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING MATERIAL.
2. SHELF FOR EQUIPMENT.
3. SEE DETAIL 'I', SHEET E-14 FOR MOUNTING DETAILS.
4. 3/4" WOOD SHELF FOR BATTERIES.

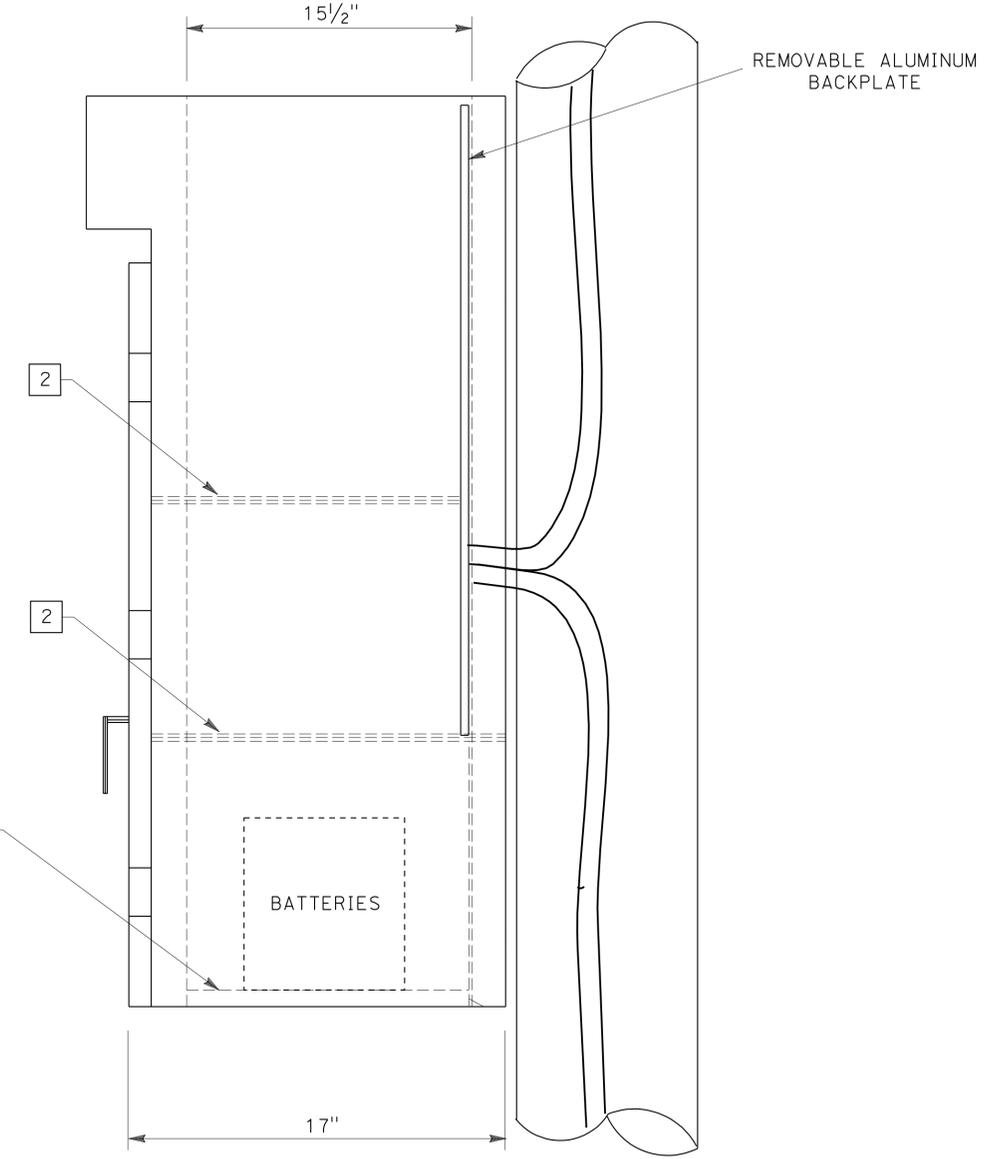
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 L. PENALOZA  
 REVISOR: FERDINAND DE LA CRUZ  
 K.D.  
 04-24-10



**FRONT**  
**DETAIL 'J'**



**FRONT (INTERIOR)**  
**DETAIL 'K'**



**SIDE**  
**DETAIL 'L'**

**WIRELESS VEHICLE DETECTION SYSTEM (ENCLOSURE DETAILS)**

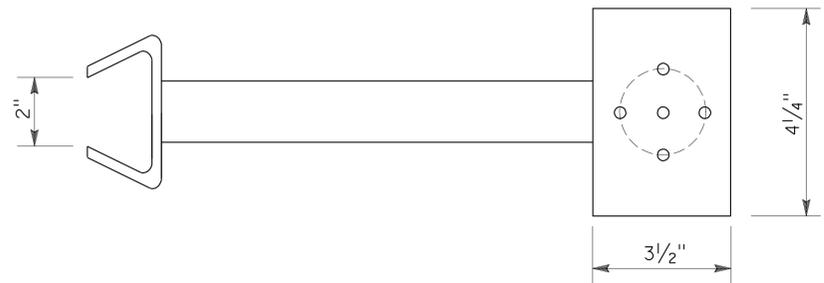
NO SCALE

EXISTING UTILITY FEATURES HAVE NOT BEEN POSITIVELY IDENTIFIED

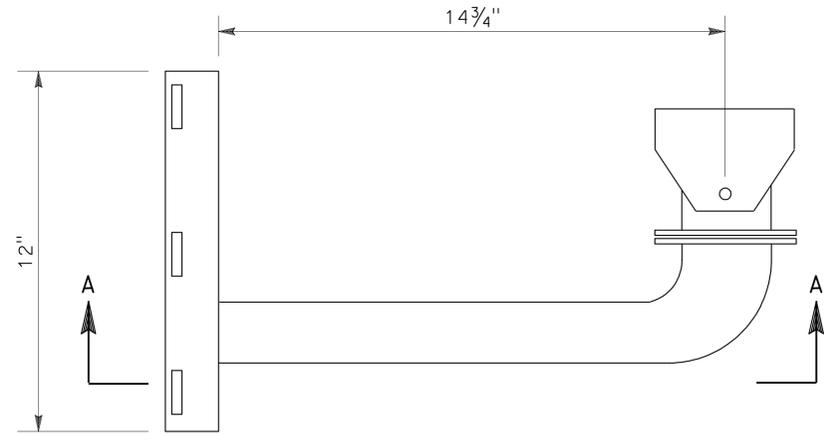
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
08	Riv, Sbd	10, 15, 60, 71, 210	Var	20	37

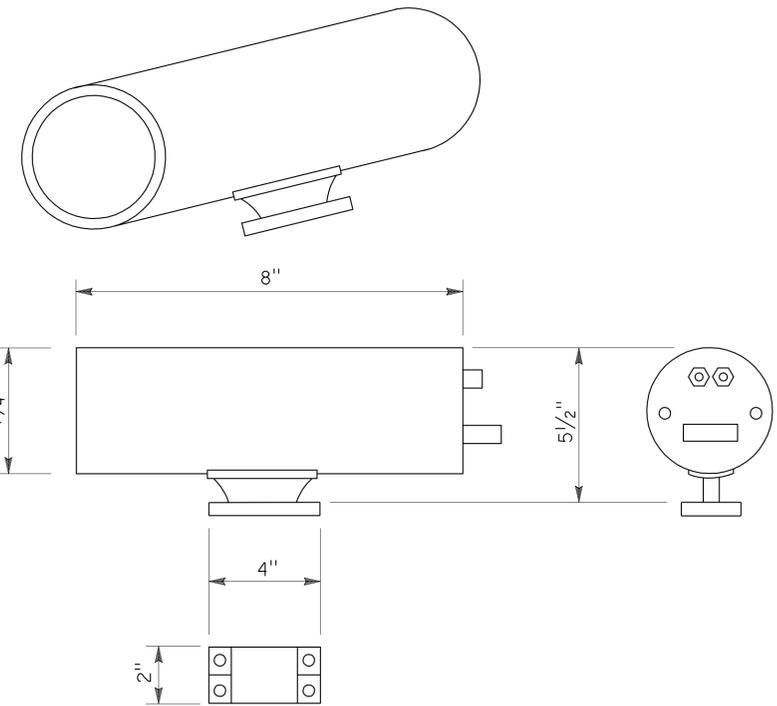
*Jeffrey B. Woody*  
 REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 8-2-10  
 PLANS APPROVAL DATE  
 No. C41260  
 Exp. 3/31/11  
 CIVIL  
 STATE OF CALIFORNIA  
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SECTION A-A



DETAIL 'O'  
CAMERA MOUNT

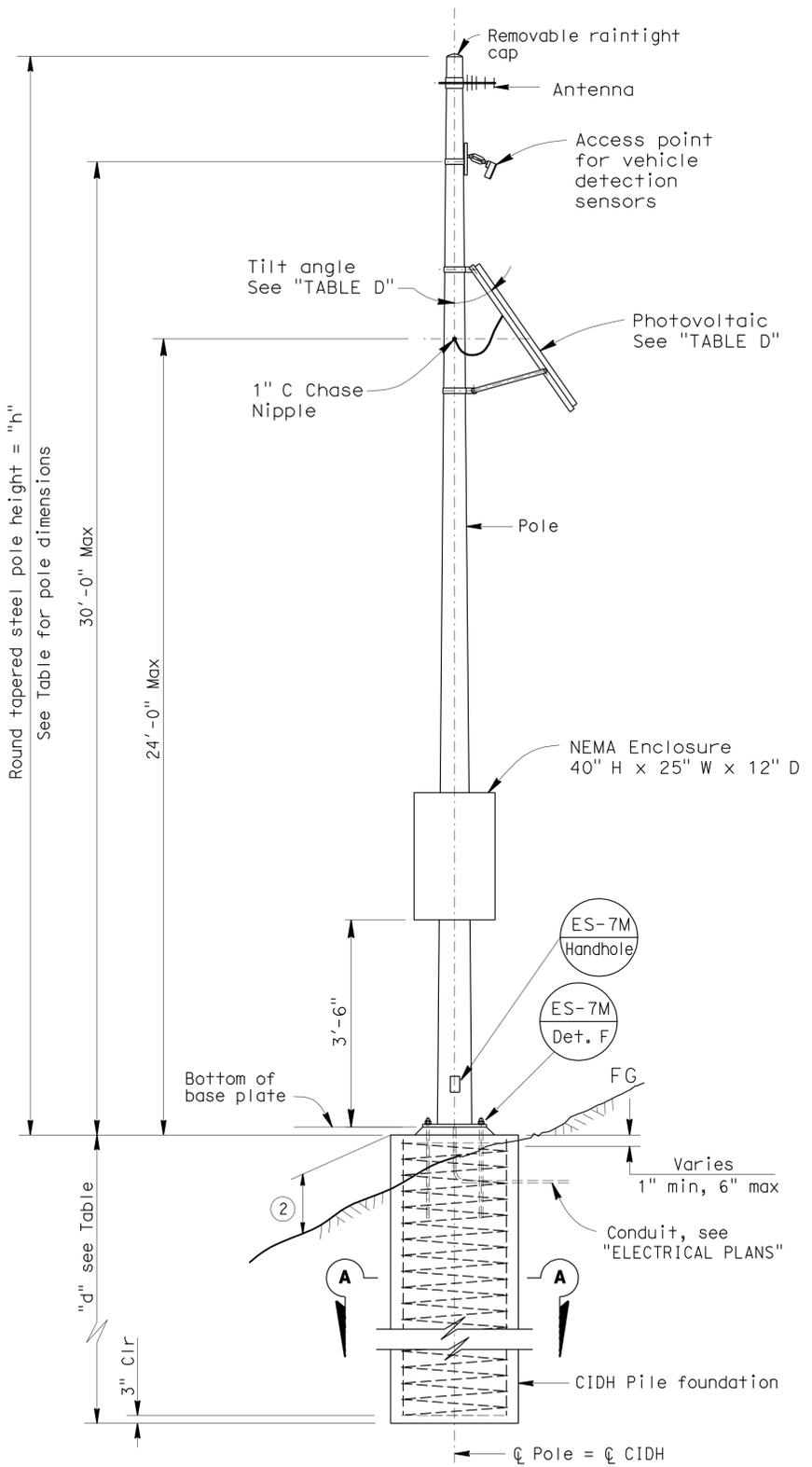


DETAIL 'P'  
CAMERA ENCLOSURE

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

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

BRANCH CHIEF <i>Jeffrey B. Woody</i>	DESIGN	BY J WOODY	CHECKED J GILLIAM	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES DESIGN AND TECHNICAL SERVICES <b>SPECIAL DESIGNS BRANCH</b>	BRIDGE NO.	N/A	<b>WIRELESS VEHICLE DETECTION SYSTEM</b> (DIGITAL CAMERA MOUNTING DETAILS)	<b>SES-1</b>
	DETAILS	BY MIKE SLAYTON	CHECKED J WOODY			POST MILE	Var		
	QUANTITIES	BY J WOODY	CHECKED J GILLIAM			Var	Var		
(ENGLISH) SPECIAL DESIGNS BRANCH BORDER SHEET (REV. 7-1-09)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			0 1 2 3	CU 08 EA 0L7901	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET OF



**ELEVATION**

**TABLE A**

Pole Type	Pole Data			Base Plate Data				"d" 2'-0" Ø CIDH Pile		Structural Steel LBS plus 3.5% Galvanizing	
	Height "h"	Min OD		Thickness "c"	Thickness	Anchor Bolts		LEVEL GROUND	SLOPING GROUND		
		BASE	TOP			SIZE	BC = BOLT CIRCLE				
VDS 35	35'	8 5/8"	3 7/8"	0.1793"	1'-1"	1"	1 1/4" x 3'-0" x 4"	1'-1"	10'-0"	12'-0"	550

**TABLE B**

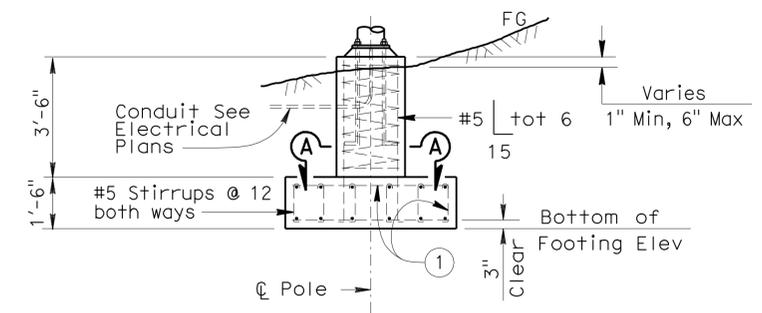
Attachment	Mounting Height	Weight Limits (lbs)
Enclosure	3'-5" Max. bottom Clr.	140 Max
Photovoltaic	24' Max	40 Max
WVDS	30' Max	2 Max
Antenna	Within top 3' of pole	4 Max

**TABLE C**

Spread Footing		
Ground	Footing Size Length x Width x Depth	Reinforcement Top & Bottom
Level	6'-0" x 6'-0" x 1'-6"	7 - #4
Sloping	7'-0" x 7'-0" x 1'-6"	8 - #4

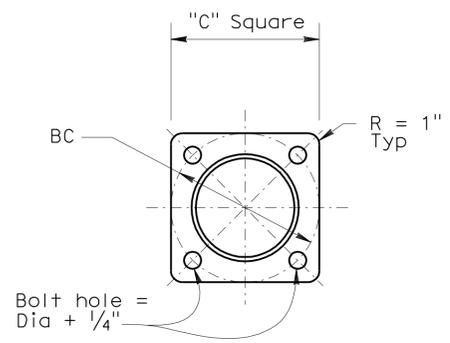
**TABLE D**

Photovoltaic Panel Limits	
Panel Size	Tilt Angle
15 ft <sup>2</sup> Max	45° Min

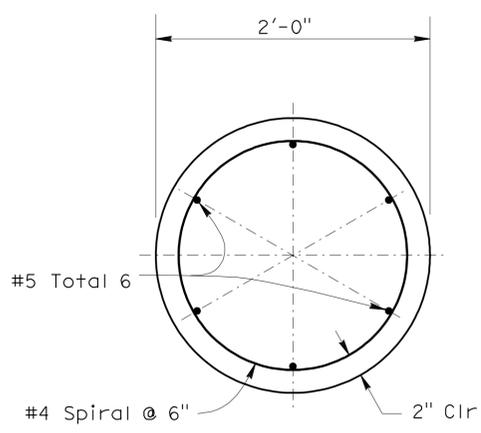


**ALTERNATIVE FOOTING ELEVATION**

- ① #5 bars and #5 stirrups (top & bottom) to run both longitudinal and transverse direction.
- ② 1'-3" Max for sloped finished grade.



**BASE PLATE**



**SECTION A-A**

**ABBREVIATIONS:**

WVDS - Wireless Vehicle Detection System

**GENERAL NOTES:**

**SPECIFICATIONS**

Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals dated 2001.

**LOADING**

Wind Loadings: 100 MPH

**UNIT STRESSES**

Structural Steel:  $f_y = 48,000$  psi tapered steel tube  
 $f_y = 36,000$  psi unless otherwise noted.

Anchor bolts = A307

Reinforced Concrete:  $f'_c = 3,600$  psi  
 $f_y = 60,000$  psi

**NOTES:**

1. All steel shall be galvanized after fabrication.
2. During pole erection the post shall be raked as necessary with the use of leveling nuts to provide a plumb pole axis.
3. The foundation shall be treated as level ground condition if the slope inclination is flatter than 4H:1V.
4. Foundation design is based on AASHTO 2001 article 13.6 Broms' approximate procedure assuming a cohesionless material. The angle of internal friction used is 30 degrees and unit weight of soil used is 120 lbs/ft<sup>3</sup>.
5. For details not shown, see "2006 STANDARD PLANS" and "2006 REVISED STANDARD PLANS".

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

BRANCH CHIEF *Jeffrey B. Woody*

DESIGN	BY E LOPEZ	CHECKED J DATILES
DETAILS	BY D W JUSTICE Jr	CHECKED E LOPEZ
QUANTITIES	BY E LOPEZ	CHECKED J DATILES

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

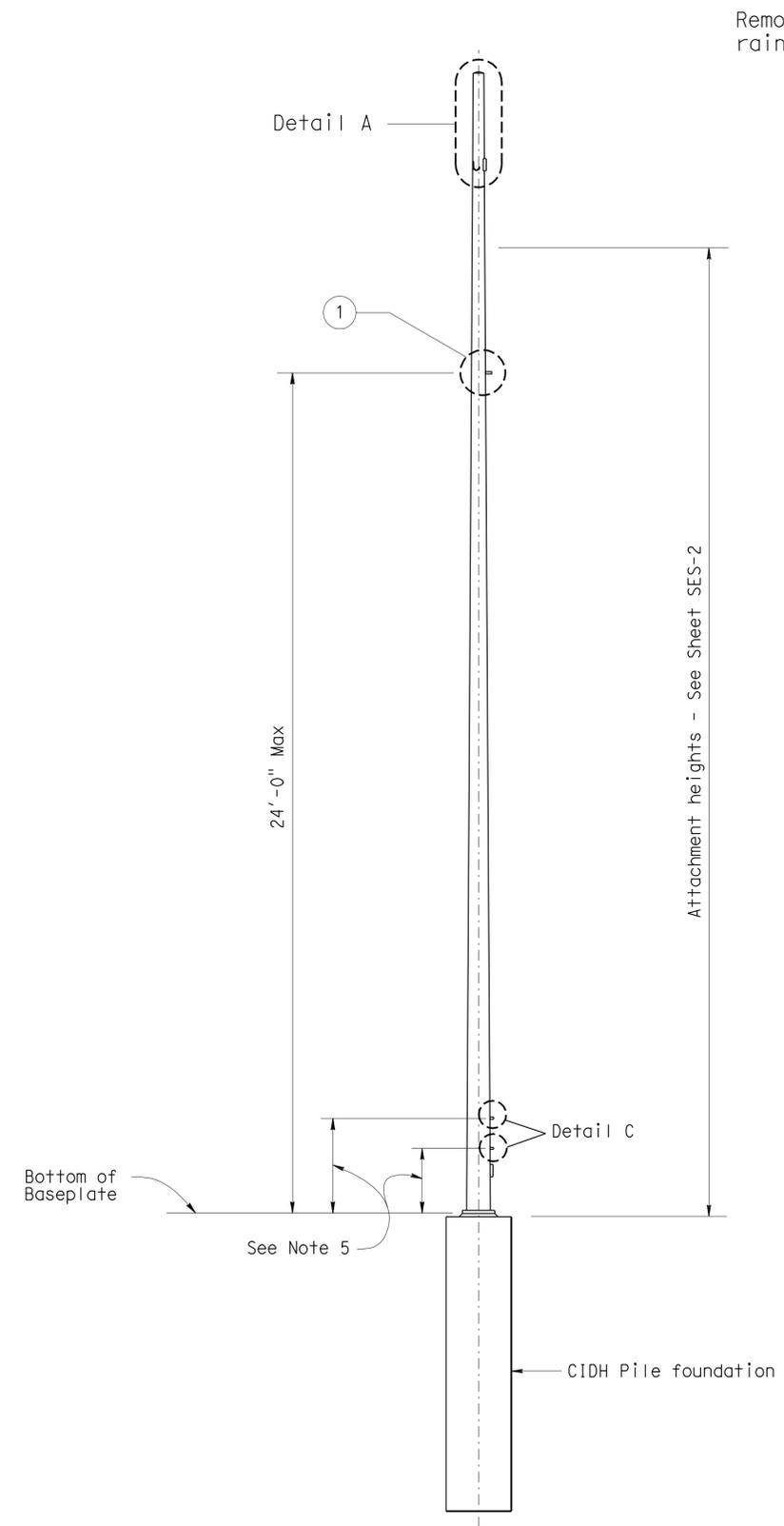
DIVISION OF ENGINEERING SERVICES  
 DESIGN AND TECHNICAL SERVICES  
 SPECIAL DESIGNS BRANCH

BRIDGE NO.	N/A
POST MILE	

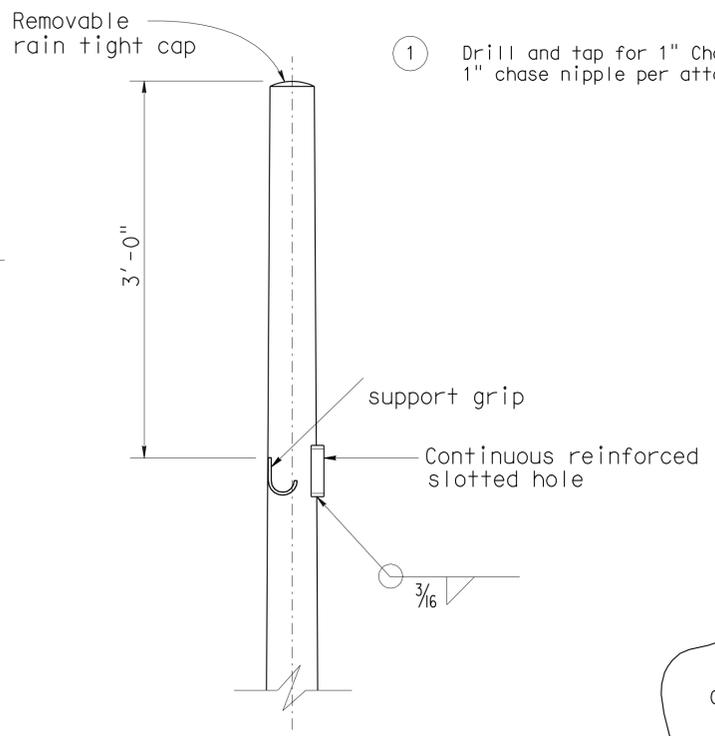
**ELECTRICAL SYSTEMS**  
**VEHICLE DETECTION SYSTEM**  
**POLE DETAILS**

**SES-2**

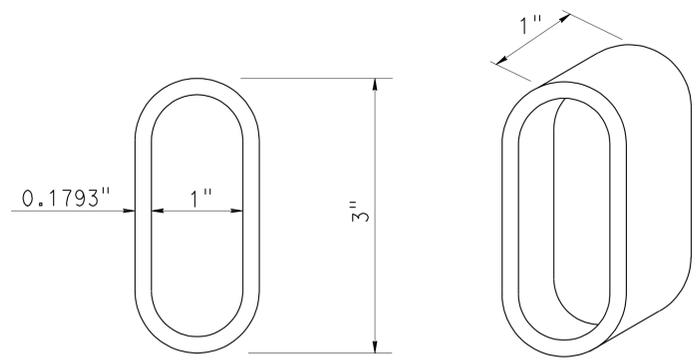
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
08	Riv, Sbd	10, 15, 60, 71, 210	Var	22	37
<i>Eliseo Lopez</i> REGISTERED CIVIL ENGINEER DATE 7-30-10			No. C72910 Exp. 12/31/10 CIVIL STATE OF CALIFORNIA		
PLANS APPROVAL DATE 8-2-10 <small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.</small>					



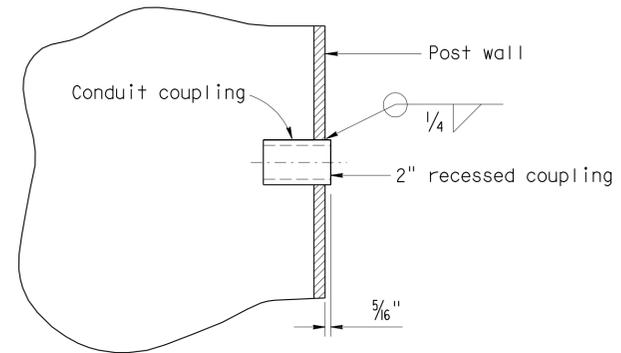
**ELEVATION**



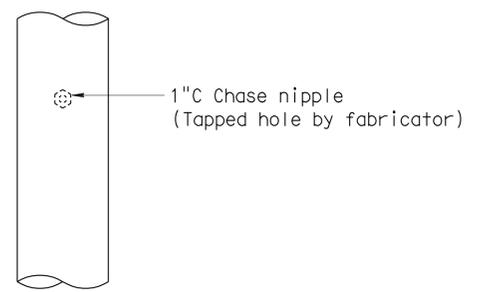
**DETAIL A**



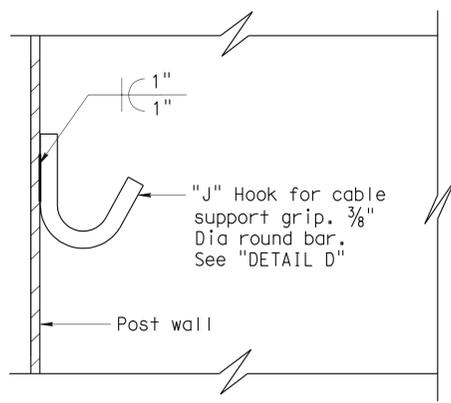
**SLOTTED HOLE**



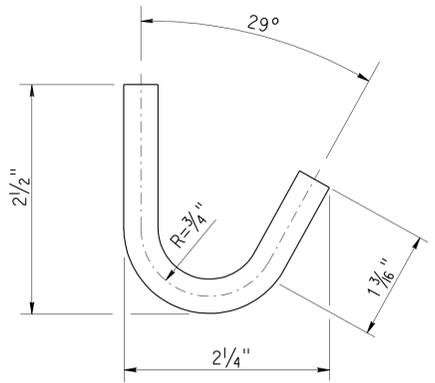
**2" RECESSED COUPLING  
DETAIL C (TYPICAL)**



**DETAIL B  
TYPICAL ELECTRICAL  
ACCESS DETAIL**



**J HOOK DETAIL**



**DETAIL D**

**NOTES:**

- Place all couplings on the same side of pole.
- Chase nipples and slotted hole shall have a rain tight plug. Plug should only be removed if chase nipple or slotted hole is used.
- The chase nipples shall be 1'-0" min vertical clearance from the slotted hole and not on the same side as the slotted hole.
- For attachment details, see sheet SES-2.
- Coupling location above ground and spacing shall be verified to match choice of enclosure, prior to fabrication.
- All attachments, unless otherwise noted, shall be mounted to pole with stainless steel straps or other method without drilling holes in pole. Enclosure may require drilling through post for mounting. Method of mounting enclosure will require Engineer approval.

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

NO SCALE

BRANCH CHIEF *Jeffrey B. Woody*

DESIGN	BY E LOPEZ	CHECKED J DATILES
DETAILS	BY D W JUSTICE Jr	CHECKED E LOPEZ
QUANTITIES	BY E LOPEZ	CHECKED J DATILES

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

BRIDGE NO.	N/A
POST MILE	

**ELECTRICAL SYSTEMS  
VEHICLE DETECTION SYSTEM  
POLE DETAILS**

**SES-3**

(ENGLISH) SPECIAL DESIGNS BRANCH BORDER SHEET (REV. 7-1-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
0 1 2 3  
CU 08  
EA 0L7901

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF

FILE => 08-017901\_ses3.dgn

USERNAME => hrmikes DATE PLOTTED => 06-AUG-2010 TIME PLOTTED => 13:36

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
08	Riv, Sbd	10, 15, 60, 71, 210	Var	23	37

*Eliseo Lopez* 7-30-10  
 REGISTERED CIVIL ENGINEER DATE

8-2-10  
 PLANS APPROVAL DATE

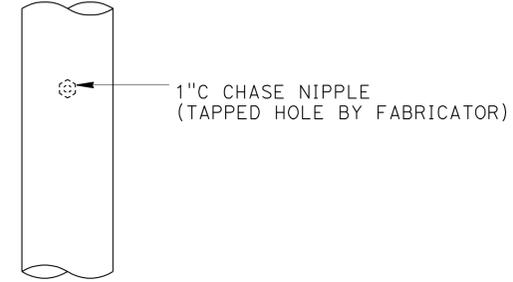
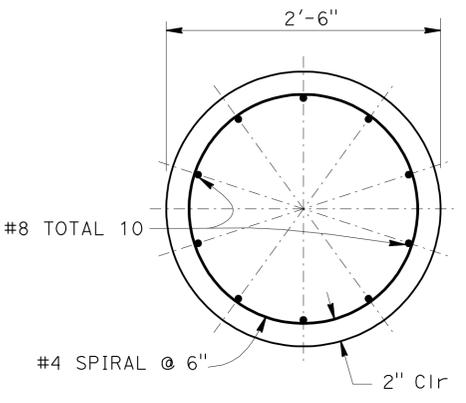
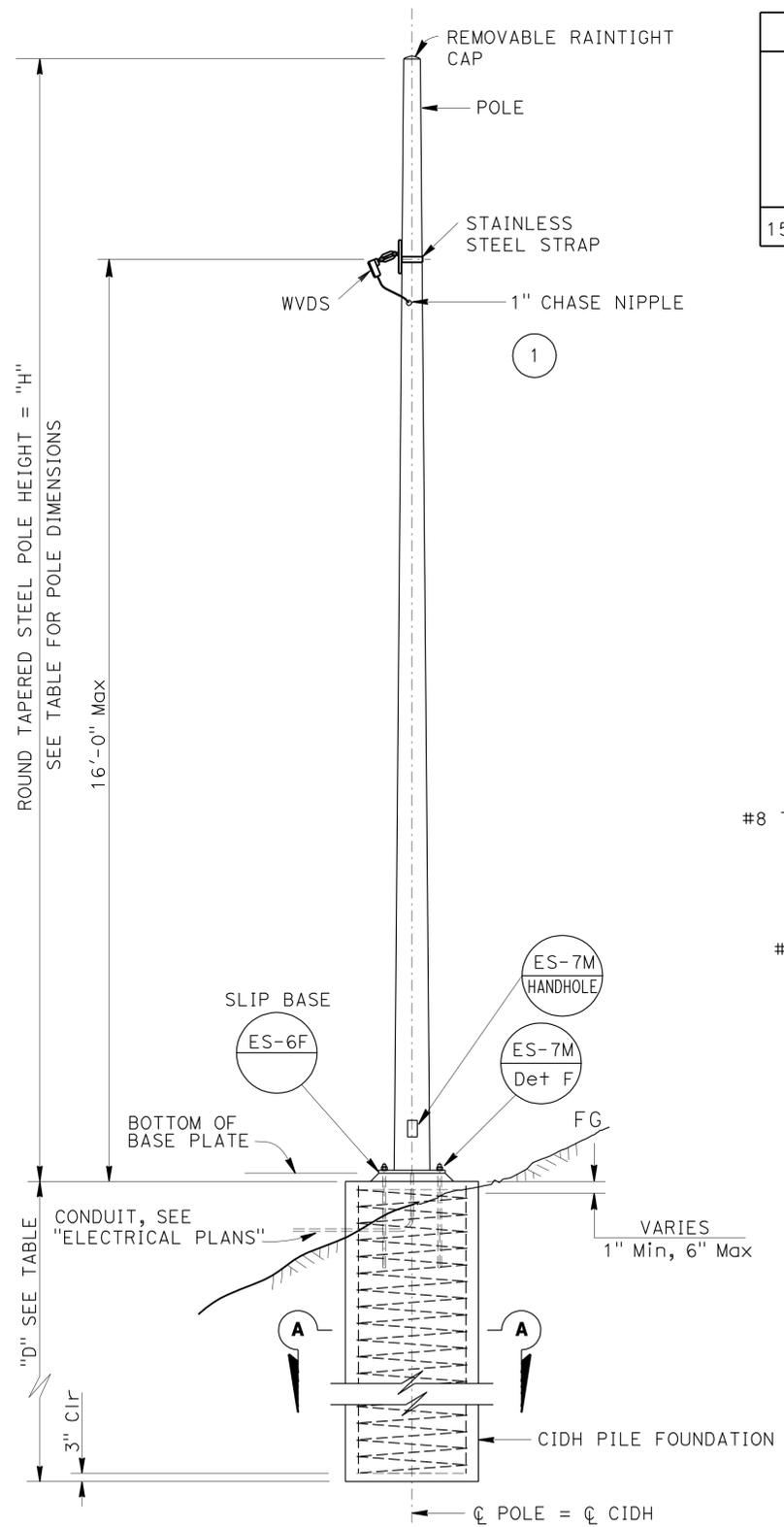
No. C72910  
 Exp. 12/31/10  
 CIVIL

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POLE TYPE	POLE DATA				BASE PLATE DATA				"d" 2'-6" Ø CIDH PILE		STRUCTURAL STEEL LBS PLUS 3.5% GALVANIZING
	HEIGHT "h"	Min OD		THICKNESS	"c"	THICKNESS	H.S. ANCHOR BOLTS (A325)		LEVEL GROUND	SLOPING GROUND	
		BASE	TOP				SIZE	BC = BOLT CIRCLE			
15-FBS (Mod)	18'-0"	8"	5.5"	0.1196"	-	-	1" x 3'-4"	1'-2"	5'-0"	7'-0"	376

SEE STANDARD PLANS ES-6F

ATTACHMENT	MOUNTING HEIGHT	WEIGHT LIMITS (LBS)
WVDS REPEATER	16'-0" Max	2 Lbs



**DETAIL B**  
**TYPICAL ELECTRICAL ACCESS DETAIL**

**SECTION A-A**  
SCALE: 1/2" = 1'-0"

1 DRILL AND TAP FOR 1" C CHASE NIPPLE AND PLUG WITH RAIN TIGHT PLUGS. 1" CHASE NIPPLE PER ATTACHMENT PER POLE. (SEE DETAIL "B")

**ABBREVIATION:**  
WVDS - WIRELESS VEHICLE DETECTION SYSTEM

**GENERAL NOTES:**

**SPECIFICATIONS**  
DESIGN : AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS DATED 2001.

**LOADING**  
WIND LOADINGS: 100 MPH

**UNIT STRESSES**  
STRUCTURAL STEEL:  $f_y = 48,000$  psi TAPERED STEEL TUBE  
 $f_y = 36,000$  psi UNLESS OTHERWISE NOTED.  
HS ANCHOR BOLTS = A325  
REINFORCED CONCRETE:  $f'_c = 3,600$  psi  
 $f_y = 60,000$  psi

- NOTES:**
- ALL STEEL SHALL BE GALVANIZED AFTER FABRICATION.
  - DURING POLE ERECTION THE POST SHALL BE RAKED AS NECESSARY WITH THE USE OF LEVELING NUTS TO PROVIDE A PLUMB POLE AXIS.
  - THE FOUNDATION SHALL BE TREATED AS LEVEL GROUND CONDITION IF THE SLOPE INCLINATION IS FLATTER THAN 4H:1V.
  - ALL ATTACHMENTS, UNLESS OTHERWISE NOTED, SHALL BE MOUNTED TO POLE WITH STAINLESS STEEL STRAPS OR OTHER METHOD WITHOUT DRILLING HOLES IN POLE.
  - SEE "2006 STANDARD PLANS" ES-7J FOR TYPE 15-FBS POLE.
  - SEE "2006 STANDARD PLANS" ES-6F FOR TYPE 15-FBS SLIP BASE PLATE DETAILS.
  - FOR DETAILS NOT SHOWN, SEE "2006 STANDARD PLANS" AND "2006 REVISED STANDARD PLANS".

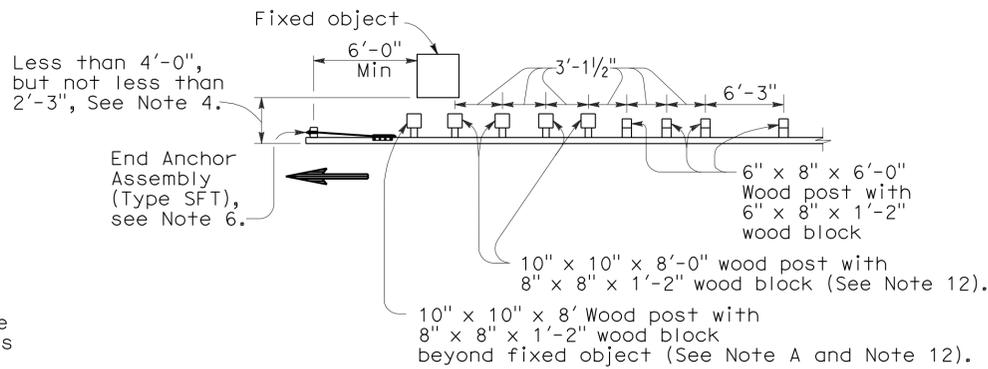
NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

BRANCH CHIEF <i>Jeffrey B. Woody</i>	DESIGN	BY E LOPEZ	CHECKED J DATILES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES DESIGN AND TECHNICAL SERVICES SPECIAL DESIGNS BRANCH	BRIDGE NO.	N/A	<b>ELECTRICAL SYSTEMS</b> <b>VEHICLE DETECTION SYSTEM</b> <b>TYPE 15-FBS (Mod) - POLE DETAILS</b>	<b>SES-4</b>
	DETAILS	BY D W JUSTICE Jr	CHECKED E LOPEZ			POST MILE			
	QUANTITIES	BY E LOPEZ	CHECKED J DATILES						

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3  
 CU 08 EA 0L7901  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES: 7-30-10

**NOTES:**

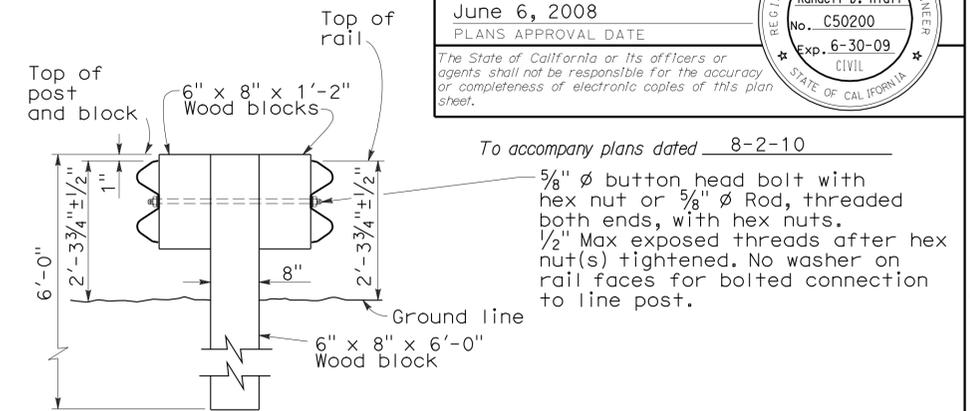
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts,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



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

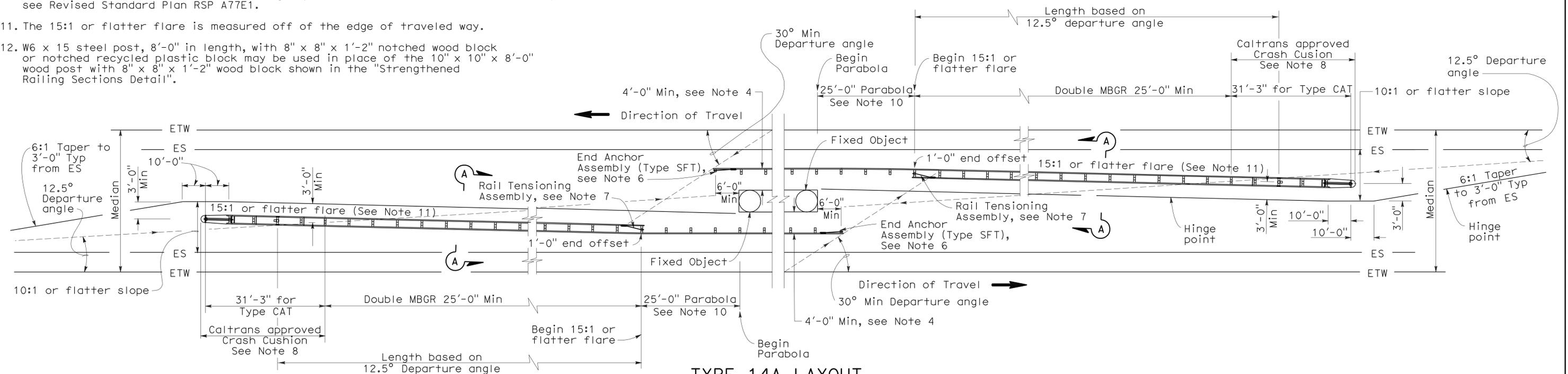
**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

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



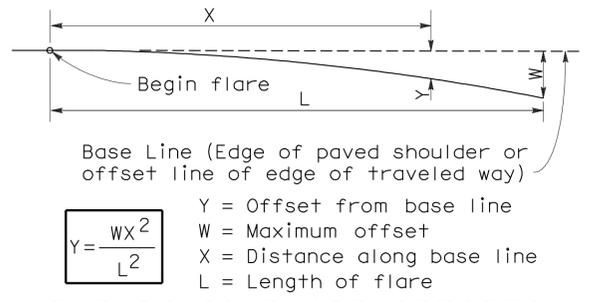
**SECTION A-A TYPICAL DOUBLE METAL BEAM GUARD RAILING**

To accompany plans dated 8-2-10  
 5/8"  $\phi$  button head bolt with hex nut or 5/8"  $\phi$  Rod, threaded both ends, with hex nuts.  
 1/2" Max exposed threads after hex nut(s) tightened. No washer on rail faces for bolted connection to line post.

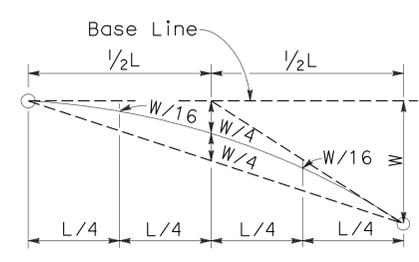


**TYPE 14A LAYOUT**

See Note 9



**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**

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

NO SCALE

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

**REVISED STANDARD PLAN RSP A77G1**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBD	10, 15, 60, 71, 210	Var	24	37

*Randell D. Hiatt*  
 REGISTERED CIVIL ENGINEER

June 6, 2008  
 PLANS APPROVAL DATE

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

2006 REVISED STANDARD PLAN RSP A77G1

**NOTES:**

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing section with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. Direction of adjacent traffic indicated by  $\rightarrow$ .

6. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
7. Type of crash cushion to be used will be shown on the Project Plans.
8. Type 15A layout is typically used on multilane freeways or expressways to shield fixed objects in the area between separated one-way roadbeds.
9. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
10. The 15:1 or flatter flare is measured off of the edge of the traveled way.
11. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	25	37

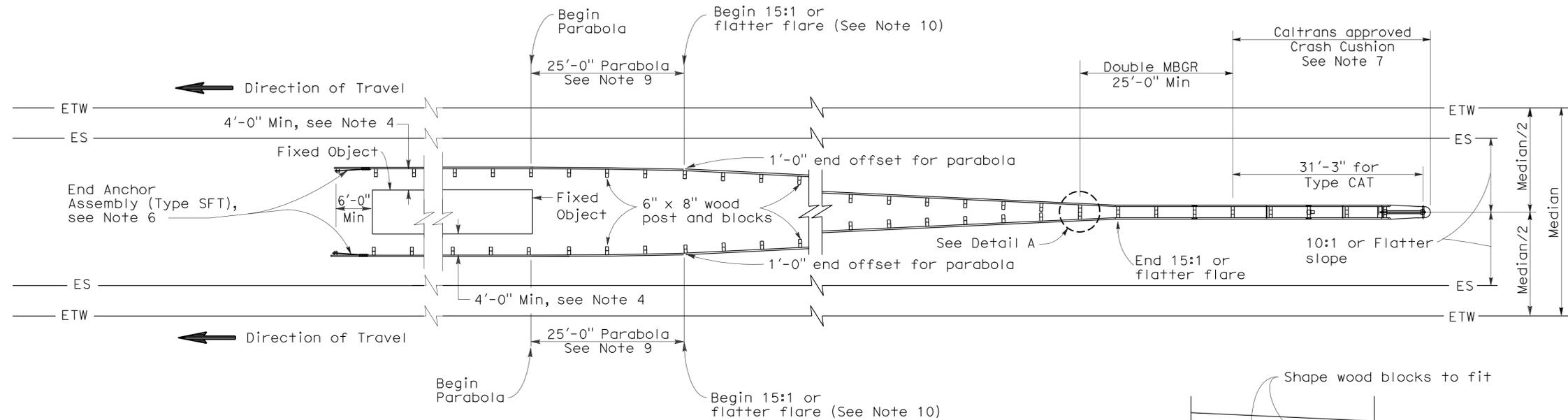
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

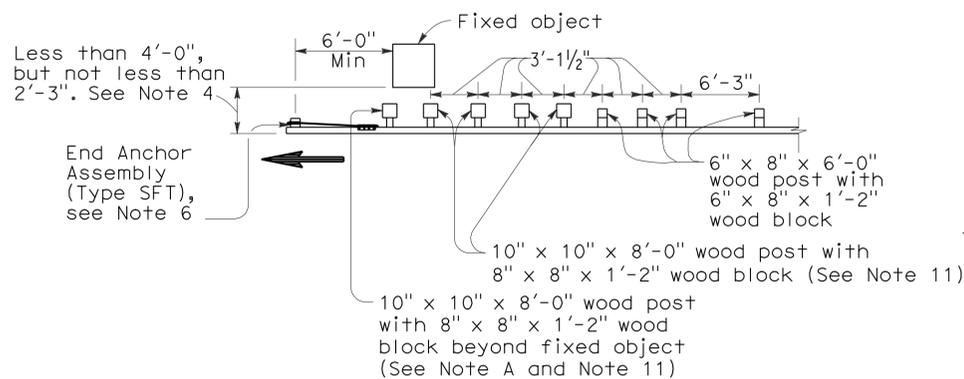
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To accompany plans dated 8-2-10

2006 REVISED STANDARD PLAN RSP A77G2



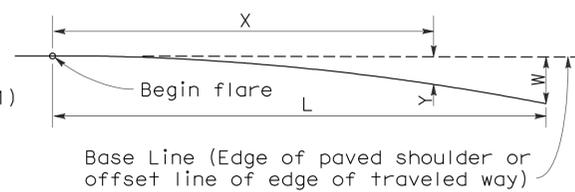
**TYPE 15A LAYOUT**  
See Note 9



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

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

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

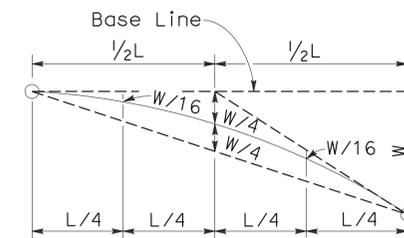


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

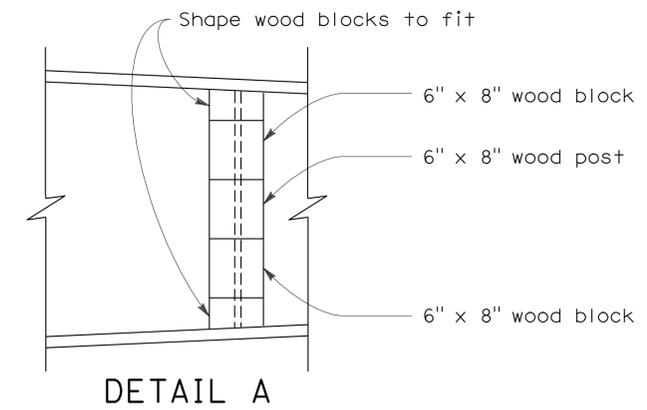
$Y = \frac{WX^2}{L^2}$

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

**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**



**DETAIL A**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

**REVISED STANDARD PLAN RSP A77G2**

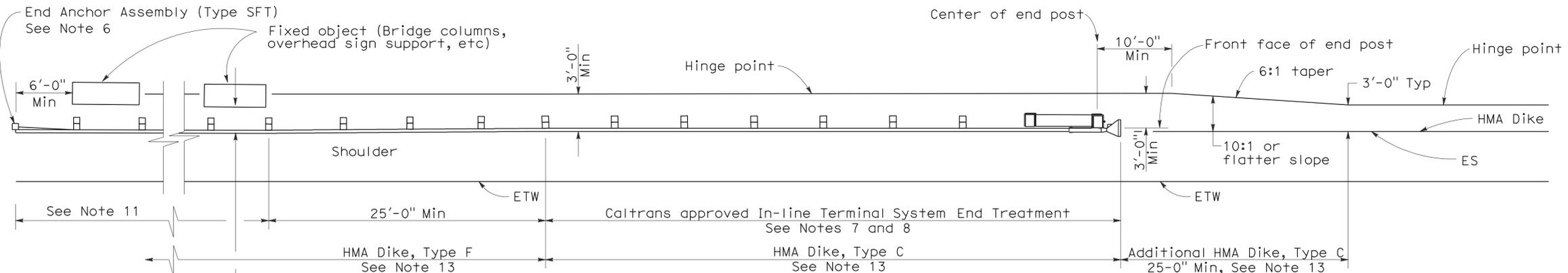
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	26	37

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

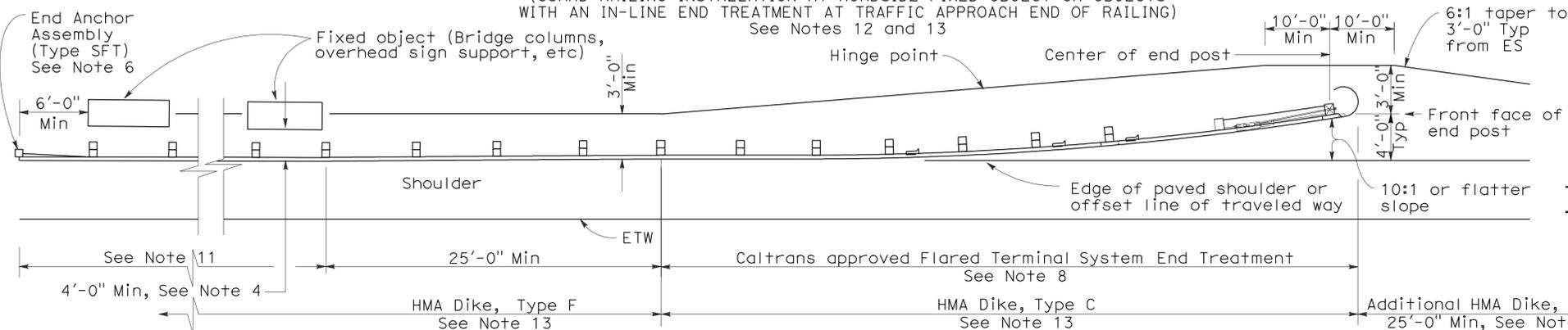
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REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA



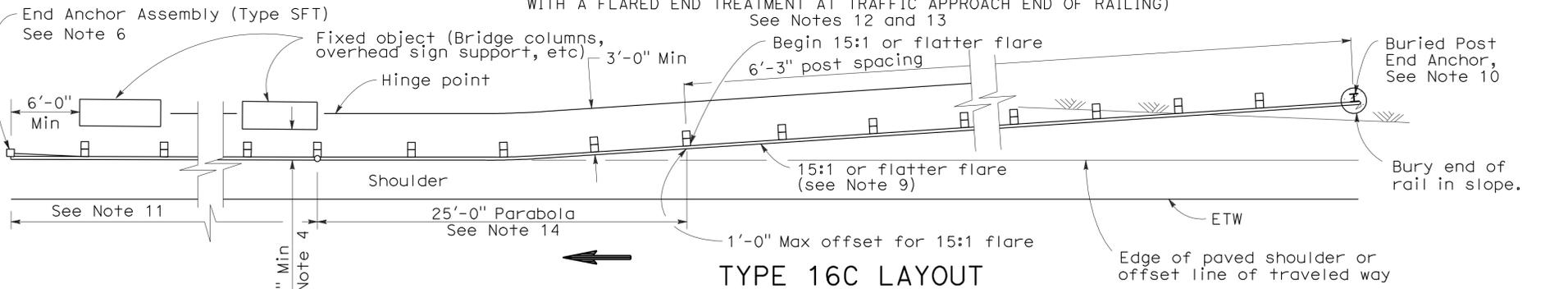
**TYPE 16A LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 12 and 13



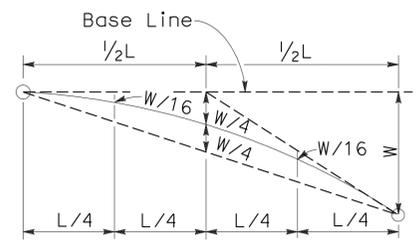
**TYPE 16B LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 12 and 13

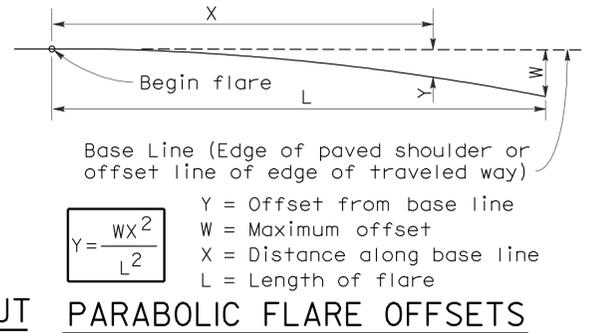


**TYPE 16C LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 12 and 13



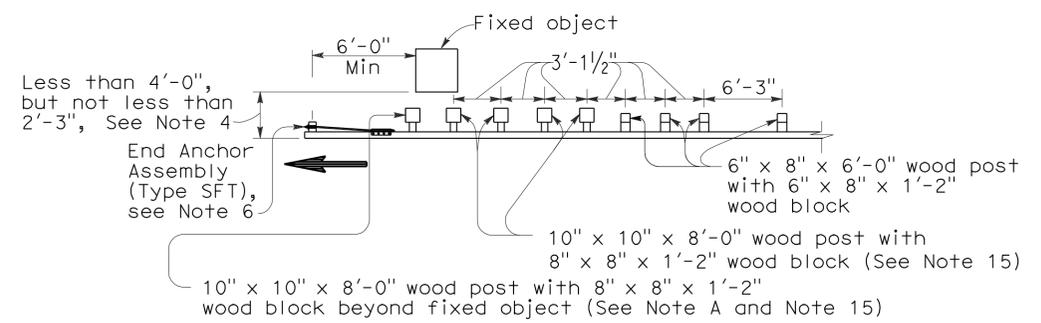
**TYPICAL PARABOLIC LAYOUT**



**PARABOLIC FLARE OFFSETS**

**NOTES:**

- Line post, blocks and hardware to be used are shown on Revised Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- The 15:1 or flatter flare used with Type 16C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plan A77I2.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
- Layout Types 16A, 16B or 16C are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for only one direction of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".



**NOTE A:**

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

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

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

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

NO SCALE

RSP A77G3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G3  
DATED MAY 1, 2006 - PAGE 61 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77G3**

2006 REVISED STANDARD PLAN RSP A77G3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	27	37

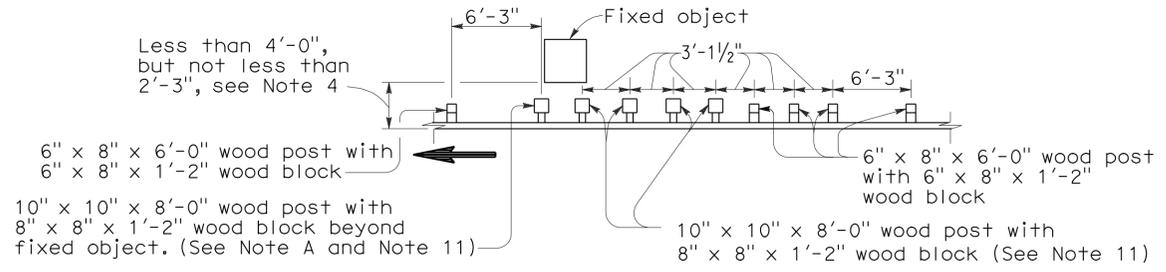
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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

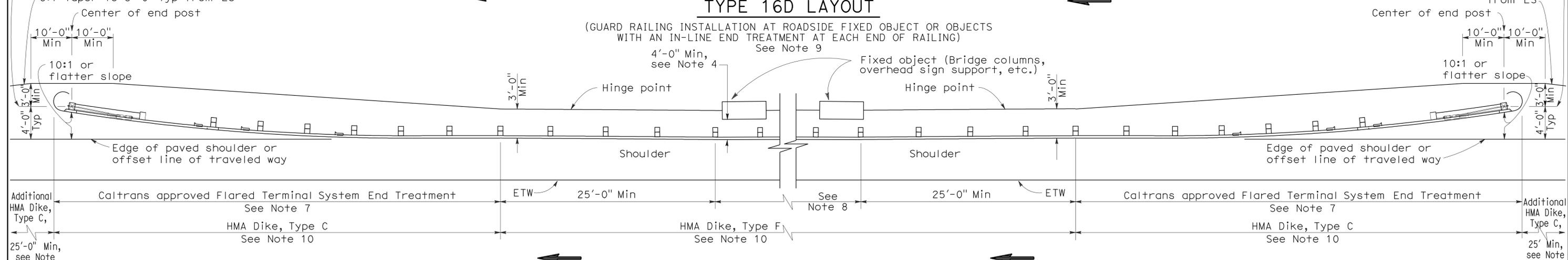
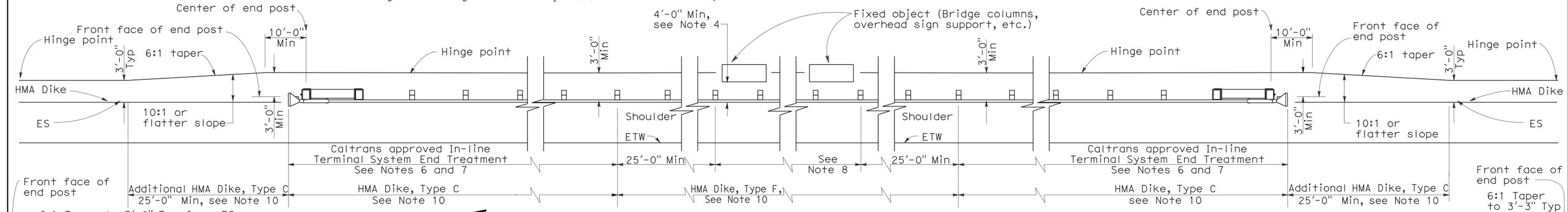
To accompany plans dated 8-2-10



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

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

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



- NOTES:**
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
  - Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
  - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
  - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
  - Direction of adjacent traffic indicated by → .

- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.

11. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic block may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail."

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

2006 REVISED STANDARD PLAN RSP A77G4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	28	37

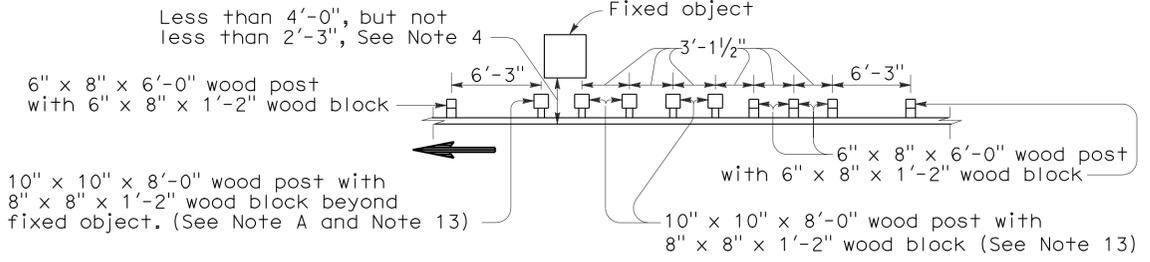
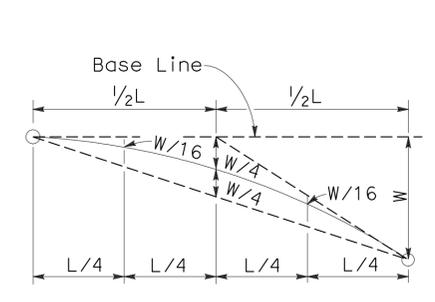
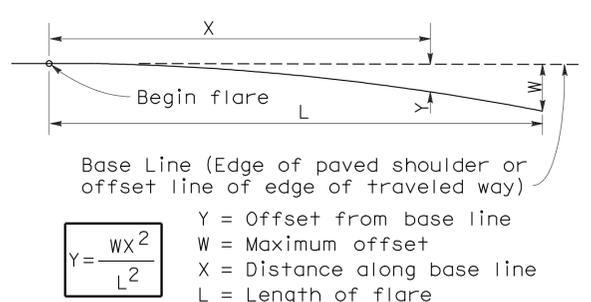
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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To accompany plans dated 8-2-10

2006 REVISED STANDARD PLAN RSP A77G5



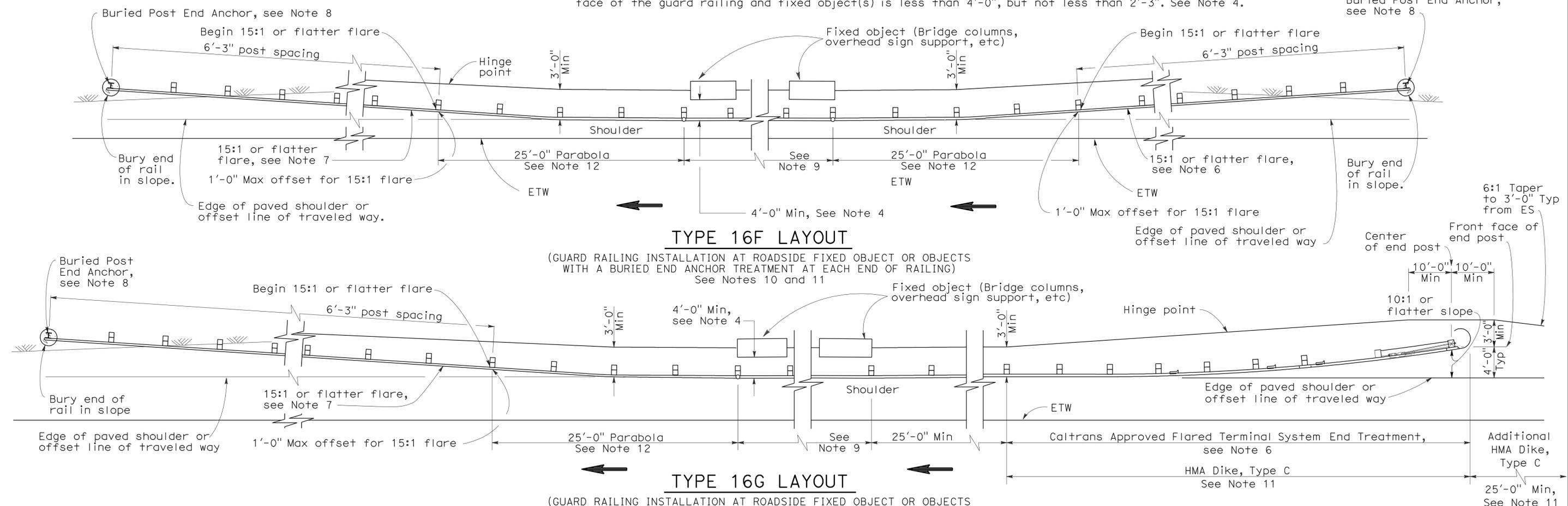
**NOTE A:** For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

**PARABOLIC FLARE OFFSETS**

**TYPICAL PARABOLIC LAYOUT**

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

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



**TYPE 16F LAYOUT**

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

**TYPE 16G LAYOUT**

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

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 8" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by →.

- The type of terminal system to be used will be shown on the Project Plans.
- The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the Buried Post End Anchor details, see Standard Plan A77I2.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used on highways where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.

- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

**REVISED STANDARD PLAN RSP A77G5**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	29	37

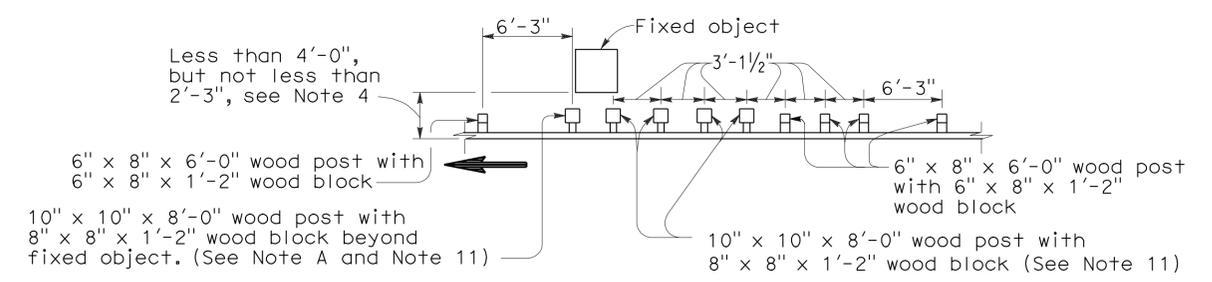
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
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STATE OF CALIFORNIA

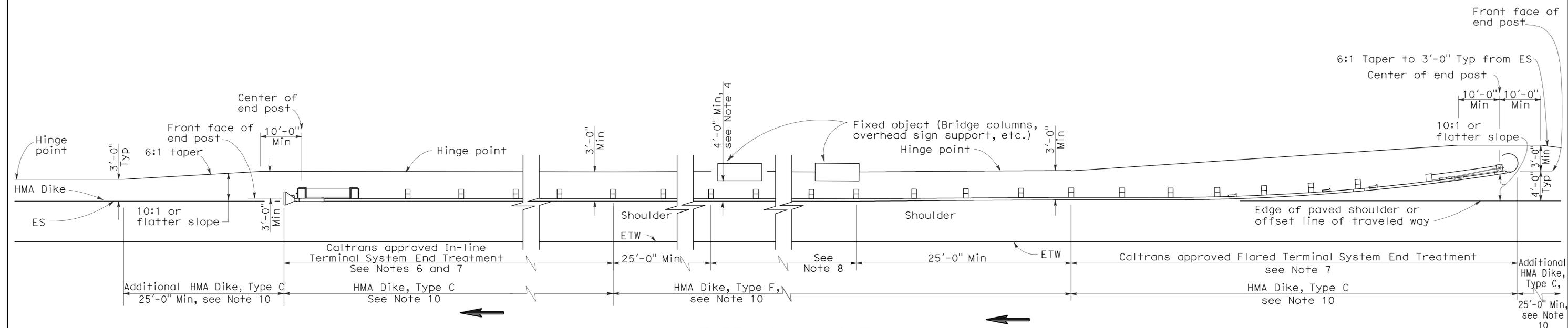
To accompany plans dated 8-2-10



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

### STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

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



### TYPE 16H LAYOUT

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

#### NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object, located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by → .

- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans, typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77G6 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G6  
DATED MAY 1, 2006 - PAGE 64 OF THE STANDARD PLANS BOOK DATED MAY 2006.

### REVISED STANDARD PLAN RSP A77G6

2006 REVISED STANDARD PLAN RSP A77G6

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	30	37

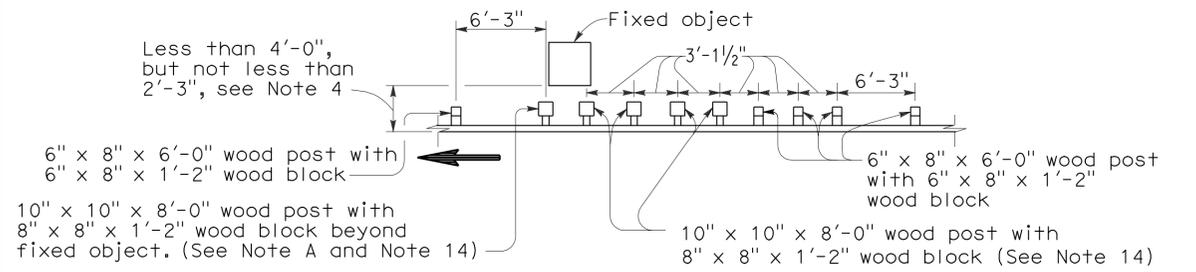
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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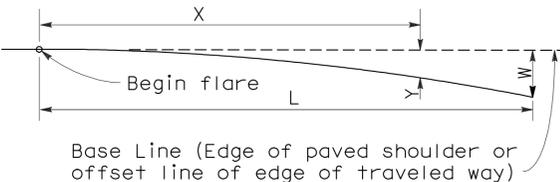
To accompany plans dated 8-2-10

2006 REVISED STANDARD PLAN RSP A77G7



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

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

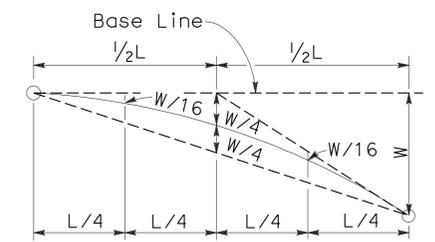


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

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

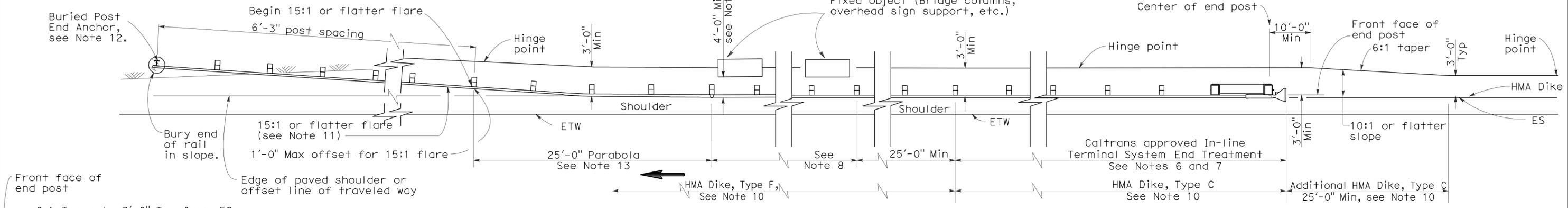
Y = Offset from base line  
W = Maximum offset  
X = Distance along base line  
L = Length of flare

**PARABOLIC FLARE OFFSETS**



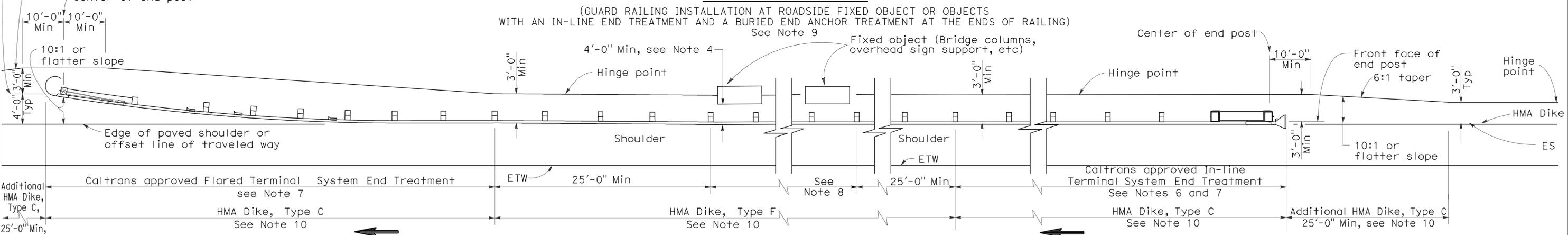
**TYPICAL PARABOLIC LAYOUT**

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



**TYPE 16I LAYOUT**

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



**TYPE 16J LAYOUT**

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by  $\rightarrow$ .

- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".

- For details of Buried Post End Anchor details, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard RSP Plan A77E1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

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

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

**REVISED STANDARD PLAN RSP A77G7**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	31	37

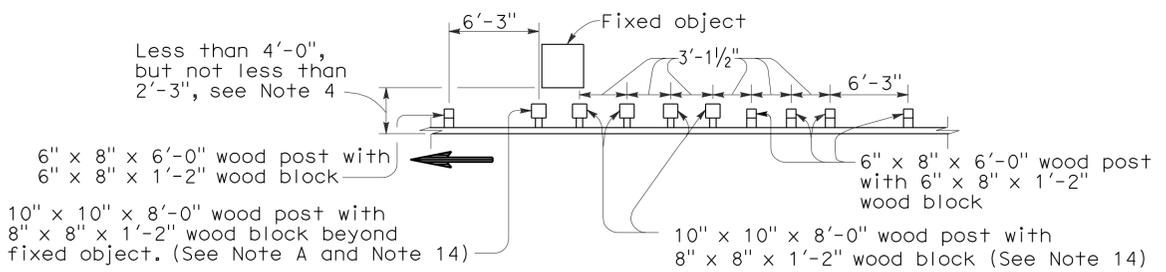
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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To accompany plans dated 8-2-10

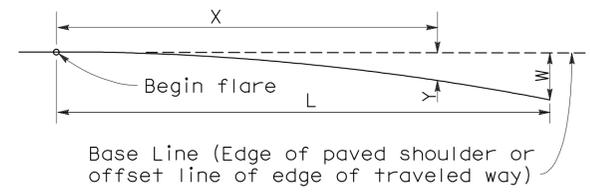
2006 REVISED STANDARD PLAN RSP A77G8



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

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

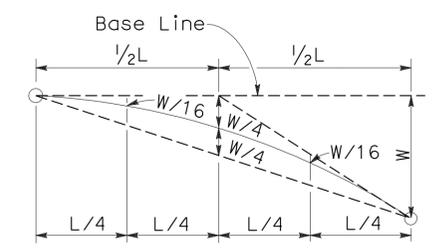
Use strengthened railing sections with Layout Types 16K or 16L Layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



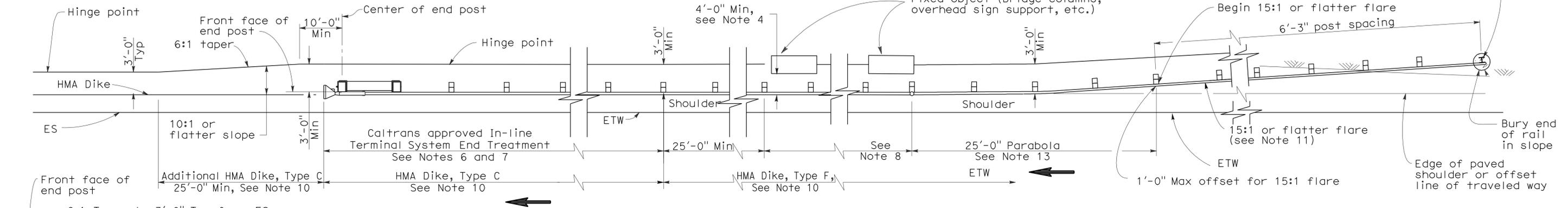
Y = Offset from base line  
W = Maximum offset  
X = Distance along base line  
L = Length of flare

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

**PARABOLIC FLARE OFFSETS**

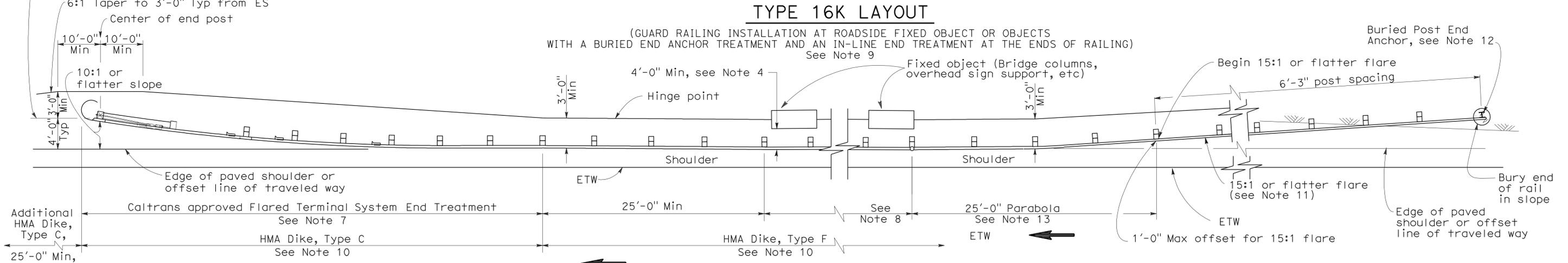


**TYPICAL PARABOLIC LAYOUT**



**TYPE 16K LAYOUT**

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



**TYPE 16L LAYOUT**

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

**NOTES:**

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by →.

- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".

- For details of Buried Post End Anchor details, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard RSP Plan A77E1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

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

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

**REVISED STANDARD PLAN RSP A77G8**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	32	37

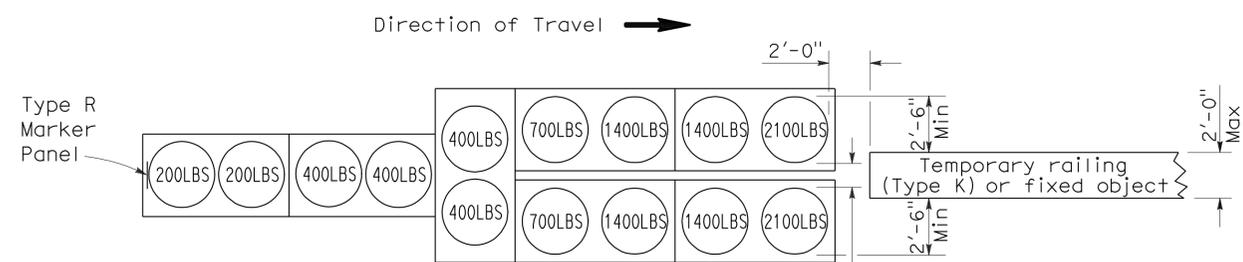
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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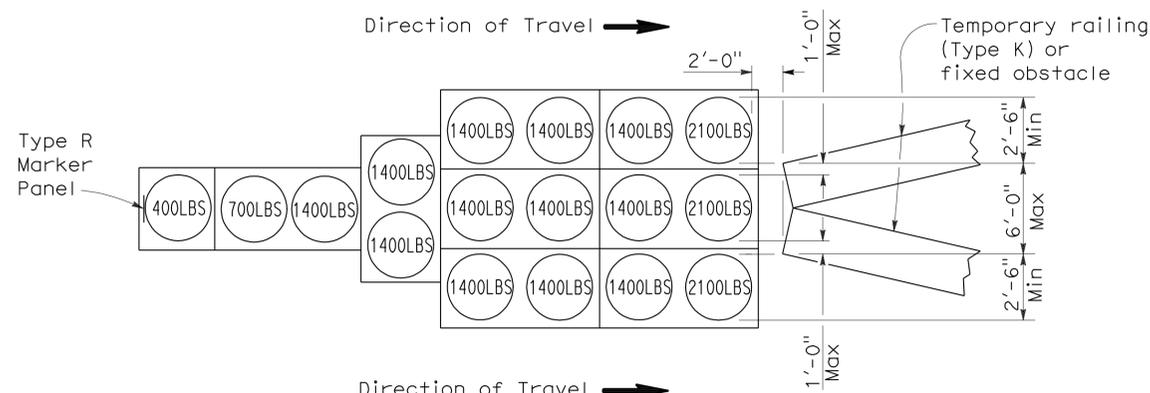
To accompany plans dated 8-2-10

2006 REVISED STANDARD PLAN RSP T1A



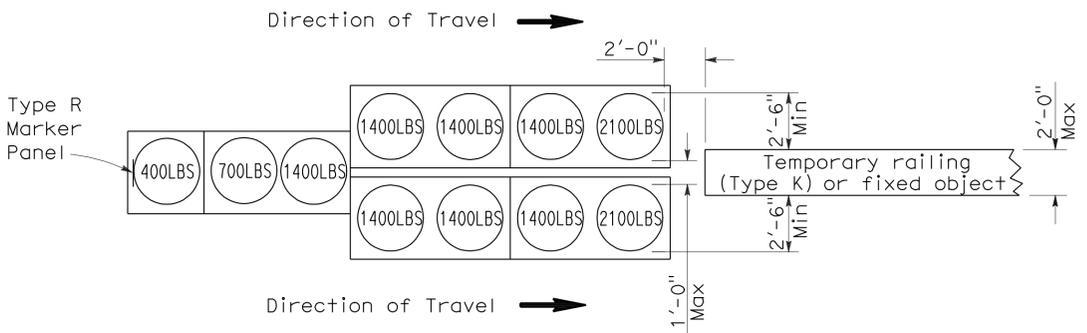
**ARRAY 'TU14'**

Approach speed 45 mph or more



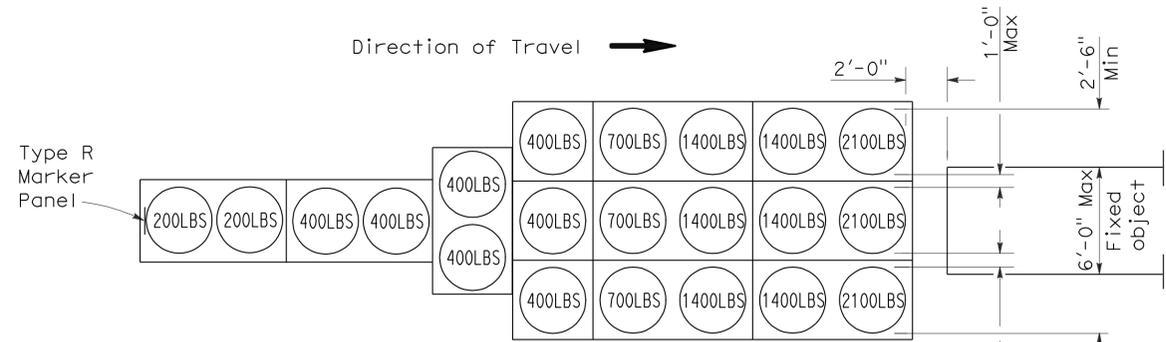
**ARRAY 'TU17'**

Approach speed less than 45 mph



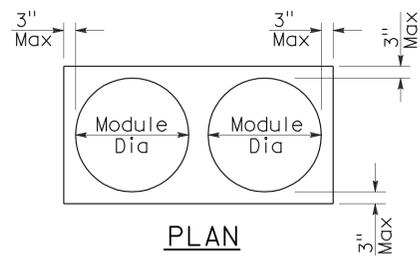
**ARRAY 'TU11'**

Approach speed less than 45 mph

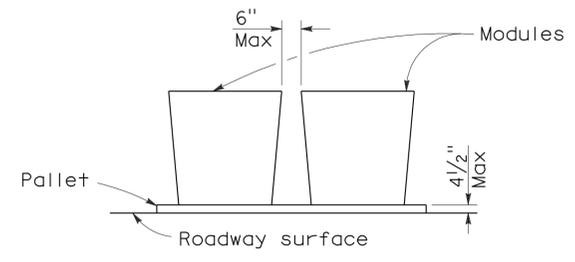


**ARRAY 'TU21'**

Approach speed 45 mph or more



**PLAN**



**ELEVATION**

**CRASH CUSHION PALLET DETAIL**

See Note 7

**NOTES:**

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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

**REVISED STANDARD PLAN RSP T1A**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	33	37

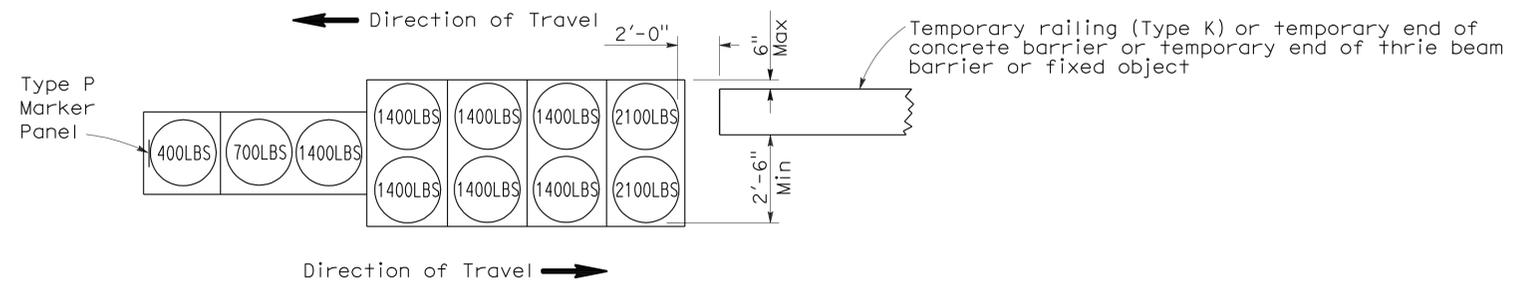
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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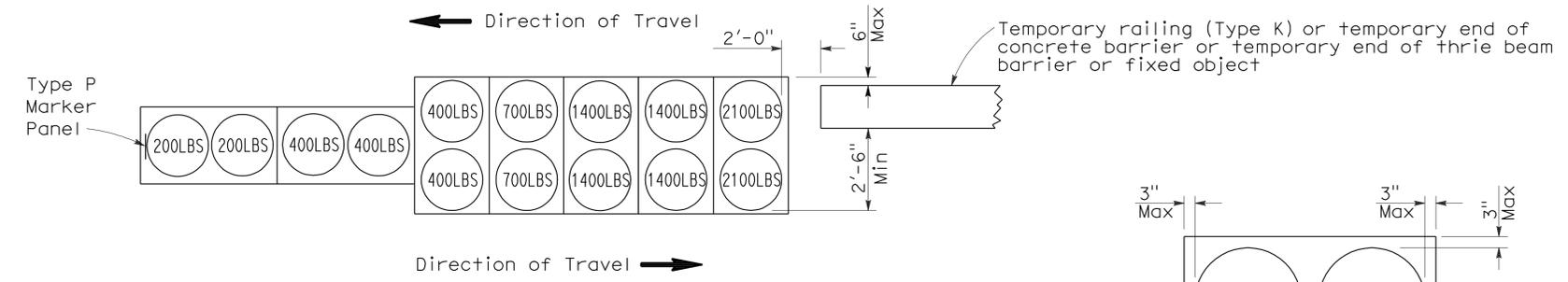
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 8-2-10



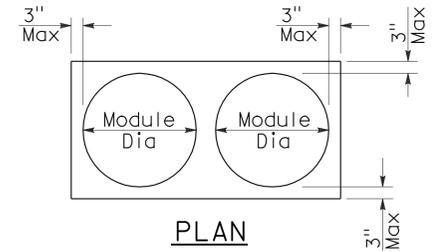
**ARRAY 'TB11'**

Approach speed less than 45 mph

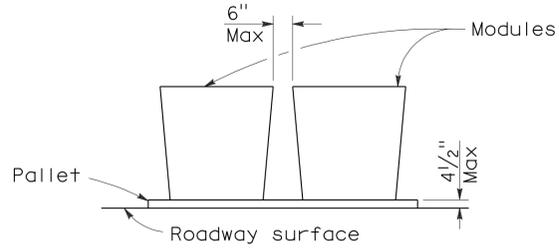


**ARRAY 'TB14'**

Approach speed 45 mph or more



PLAN



ELEVATION

**CRASH CUSHION PALLET DETAIL**

See Note 7

**NOTES:**

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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

**REVISED STANDARD PLAN RSP T1B**

2006 REVISED STANDARD PLAN RSP T1B

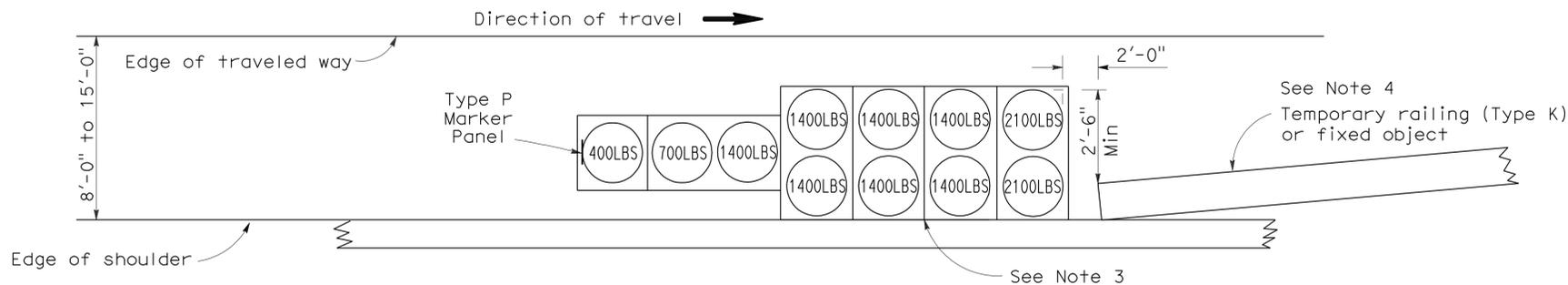
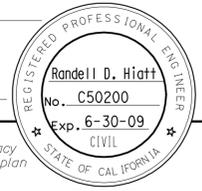
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	34	37

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

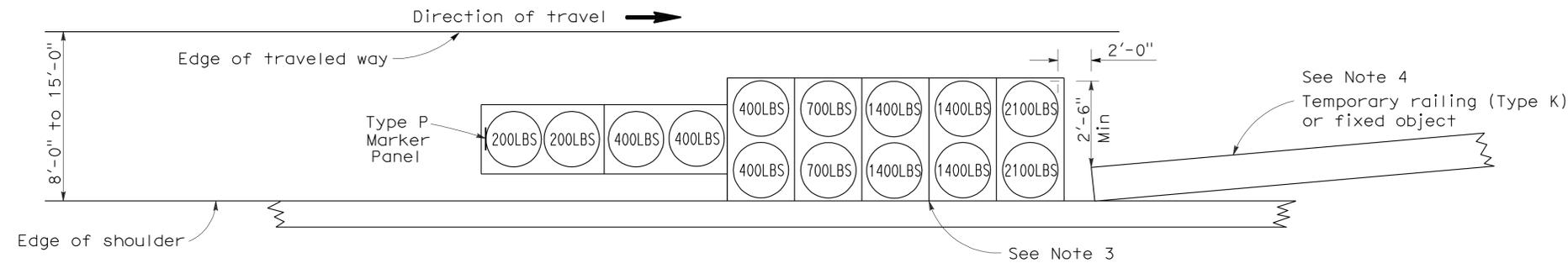
June 6, 2008  
PLANS APPROVAL DATE

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

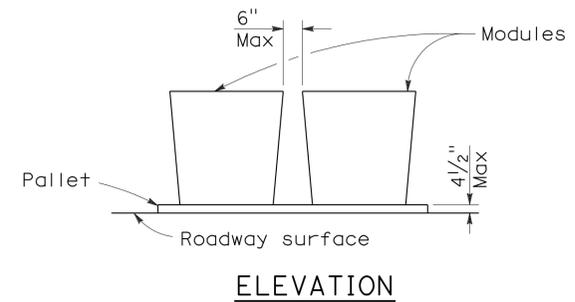
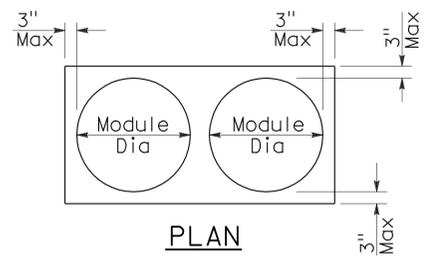
To accompany plans dated 8-2-10



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



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



**CRASH CUSHION PALLET DETAIL**  
See Note 11

**NOTES:**

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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(SHOULDER INSTALLATIONS)**

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

**REVISED STANDARD PLAN RSP T2**

2006 REVISED STANDARD PLAN RSP T2

# ELECTROLIERS

STANDARD TYPES		
15, 15D		High mast light pole
15 STRUCTURE		Double Arm lighting standard
21, 21D STRUCTURE		Existing electrolier
30		Electrolier foundation (Future installation)
31		
32		
35		
36-20A		

**NOTES:**

- Luminaires shall be 310 W HPS when installed on Type 21, 21D, 30, 31, 32, 35 and 36-20A Standards, unless otherwise specified. Luminaires shall be 200 W HPS when installed on other type standards or poles, unless otherwise specified.
- Luminaires shall be the cutoff type, ANSI Type III medium cutoff lighting distribution, unless otherwise specified.
- Variations noted adjacent to symbol on project plans.

- Electrolier (see project notes or project plans)
- Luminaire on wood pole

## STANDARD NOTES:

- AB** Abandon. If applied to conduit, remove conductors.
- BC** Install pull box in existing conduit run.
- BP** Pedestrian barricade, type as indicated on plan.
- CB** Install conduit into existing pull box.
- CC** Connect new and existing conduit. Remove existing conductors and install conductors as indicated.
- CF** Conduit to remain for future use. Remove conductors. Install pull wire or rope.
- DH** Detector handhole.
- FA** Foundation to be abandoned.
- IS** Install sign on signal mast arm.
- NS** No slip base on standard.
- PEC** Photoelectric control.
- PEU** Photoelectric unit.
- RC** Equipment or material to be removed and become the property of the Contractor.
- RE** Remove electrolier, fuses and ballast. Tape ends of conductors.
- RL** Relocate equipment.
- RR** Remove and reuse equipment.
- RS** Remove and salvage equipment.
- SC** Splice new to existing conductors.
- SD** Service disconnect.
- SF** Standard to remain for future use. Remove luminaire, pole conductors, fuses and ballast.
- TSP** Telephone service point.

# ABBREVIATIONS AND EQUIPMENT DESIGNATIONS

## PROPOSED EXISTING

BBS	bbs	Battery backup system
BC	bc	Bolt circle
C	C	Conduit
CCTV	cctv	Closed circuit television
CKT	ckt	Circuit
CMS	cms	Changeable message sign
DLC	dlc	Loop detector lead-in cable
EMS	ems	Extinguishable message sign
EVC	evc	Emergency vehicle cable
EVD	evd	Emergency vehicle detector
FB	fb	Flashing beacon
FBCA	fbca	Flashing beacon control assembly
FBS	fbs	Flashing beacon with slip base
FO	fo	Fiber optic
G	G	Ground (Equipment Grounding Conductor)
GFCI	GFCI	Ground fault circuit interrupt
HAR	har	Highway advisory radio
HEX	hex	Hexagonal
HPS	hps	High pressure sodium
IISNS	iisns	Internally illuminated street name sign
ISL	isl	Induction sign lighting
LED	led	Light emitting diode
LMA	lma	Luminaire mast arm
LPS	lps	Low pressure sodium
LTG	ltg	Lighting
LUM	lum	Luminaire
MAT	mat	Mast arm mounting vehicle signal faces, top attachment
MAS	mas	Mast arm mounting vehicle signal faces, side attachment
MAS-4A	mas-4A	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-4B	mas-4B	
MAS-4C	mas-4C	
MAS-5A	mas-5A	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MAS-5B	mas-5B	
MC	mc	Mercury contactor
M/M	m/m	Multiple to multiple transformer
MT	mt	Conduit with pull wire or rope only
MTG	mtg	Mounting
	mv	Mercury vapor lighting fixture
N	N	Neutral (Grounded Conductor)
NC	NC	Normally closed
NO	NO	Normally open
PB	pb	Pull box
PEC	pec	Photoelectric control (Type I, II, III, IV or V as shown)
PED	ped	Pedestrian
PEU	peu	Photoelectric unit
PPB	ppb	Pedestrian push button
RL		Relocated equipment
RM	rm	Ramp metering
SB	sb	Slip base
SIC	sic	Signal interconnect cable
SIG	sig	Signal
SMA	sma	Signal mast arm
SNS	sns	Street name sign
SP	sp	Service point
TDC	tdc	Telephone demarcation cabinet
TMS	tms	Traffic monitoring station
TOS	tos	Traffic Operations System
VEH	veh	Vehicle
XFMR	xfmr	Transformer
COMM	comm	Communication
RWIS	rwis	Roadway weather information system

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10, 15, 60, 71, 210	Var	35	37

*Jeffery G. McRae*  
REGISTERED ELECTRICAL ENGINEER

October 5, 2007  
PLANS APPROVAL DATE

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

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To accompany plans dated 8-2-10

## SOFFIT AND WALL MOUNTED LUMINAIRES

- Pendant, 70 W HPS unless otherwise specified.
- Flush, 70 W HPS unless otherwise specified.
- Wall surface, 70 W HPS unless otherwise specified.
- Existing soffit or wall luminaire to remain unmodified.
- Existing soffit or wall luminaire to be modified as specified.

### NOTE:

Arrow indicates "street side" of luminaire.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

# ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

RSP ES-1A DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-1A  
DATED MAY 1, 2006 - PAGE 400 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1A**

2006 REVISED STANDARD PLAN RSP ES-1A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	Riv, SBd	10,15,60, 71,210	Var	36	37

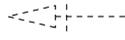
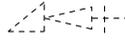
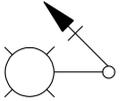
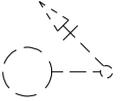
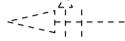
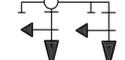
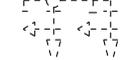
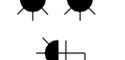
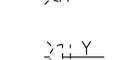
REGISTERED ELECTRICAL ENGINEER  
 October 5, 2007  
 PLANS APPROVAL DATE  
 Jeffrey G. McRae  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

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### CONDUIT

PROPOSED	EXISTING	
---	---	Lighting Conduit, unless otherwise indicated or noted
---	---	Traffic signal conduit
-C-	-c-	Communication conduit
-T-	-t-	Telephone conduit
-F-	-f-	Fire alarm conduit
-FO-	-fo-	Fiber optic conduit
---	---	Conduit termination 
		Conduit riser in/on structure or service pole

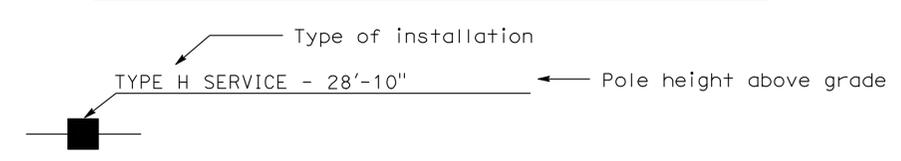
### SIGNAL EQUIPMENT

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

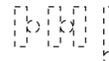
### SERVICE EQUIPMENT

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

### POLE-MOUNTED SERVICE DESIGNATION



### ILLUMINATED OVERHEAD SIGN

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

### SIGNAL EQUIPMENT Cont

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

### NOTES:

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

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

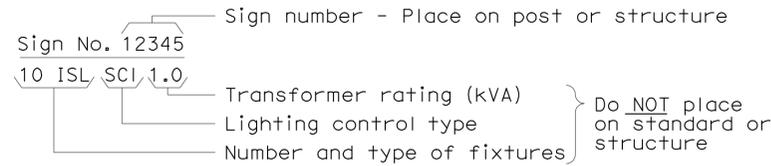
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B  
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1B**

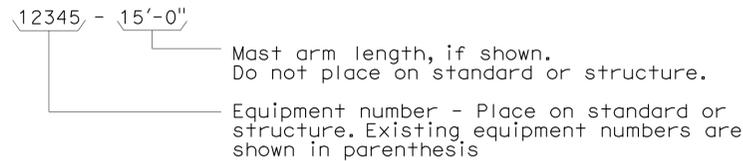
2006 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

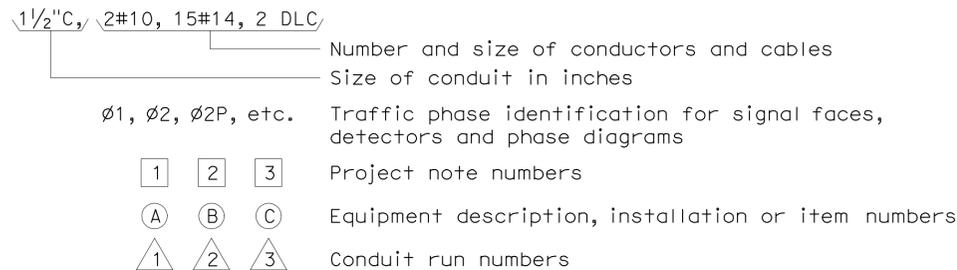
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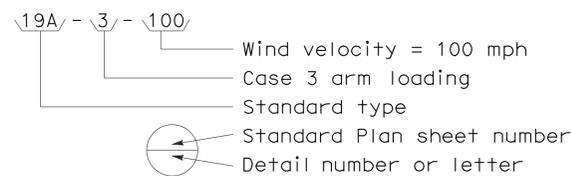
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



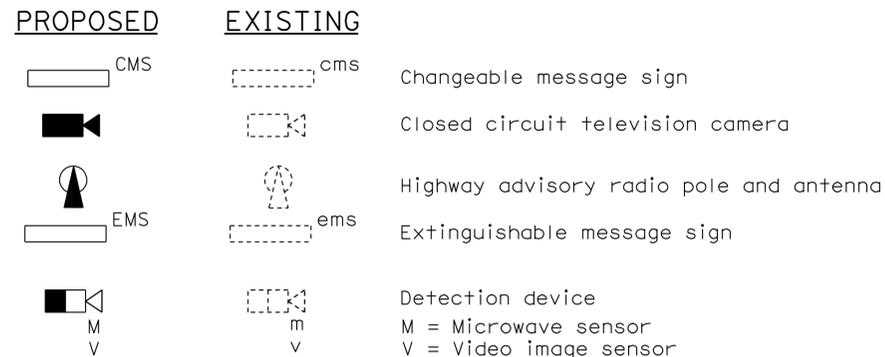
#### CONDUIT AND CONDUCTOR IDENTIFICATION:



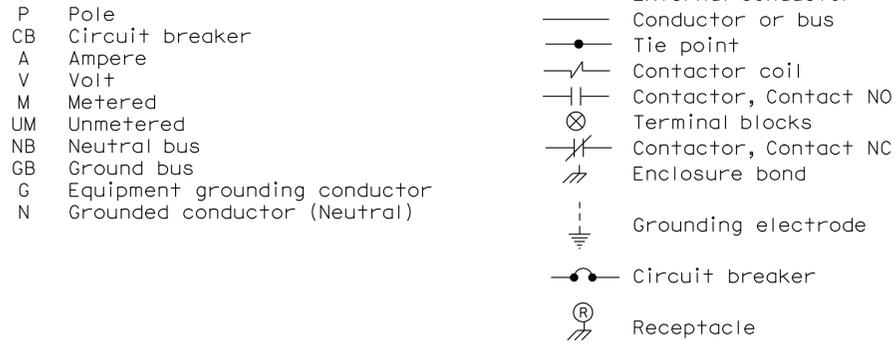
#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



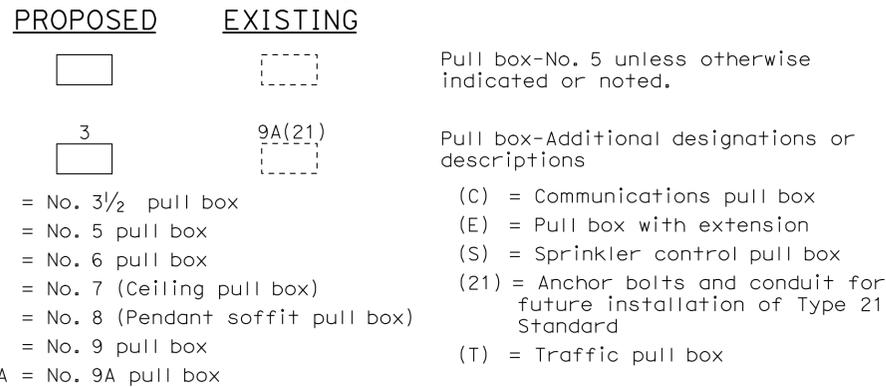
### MISCELLANEOUS EQUIPMENT



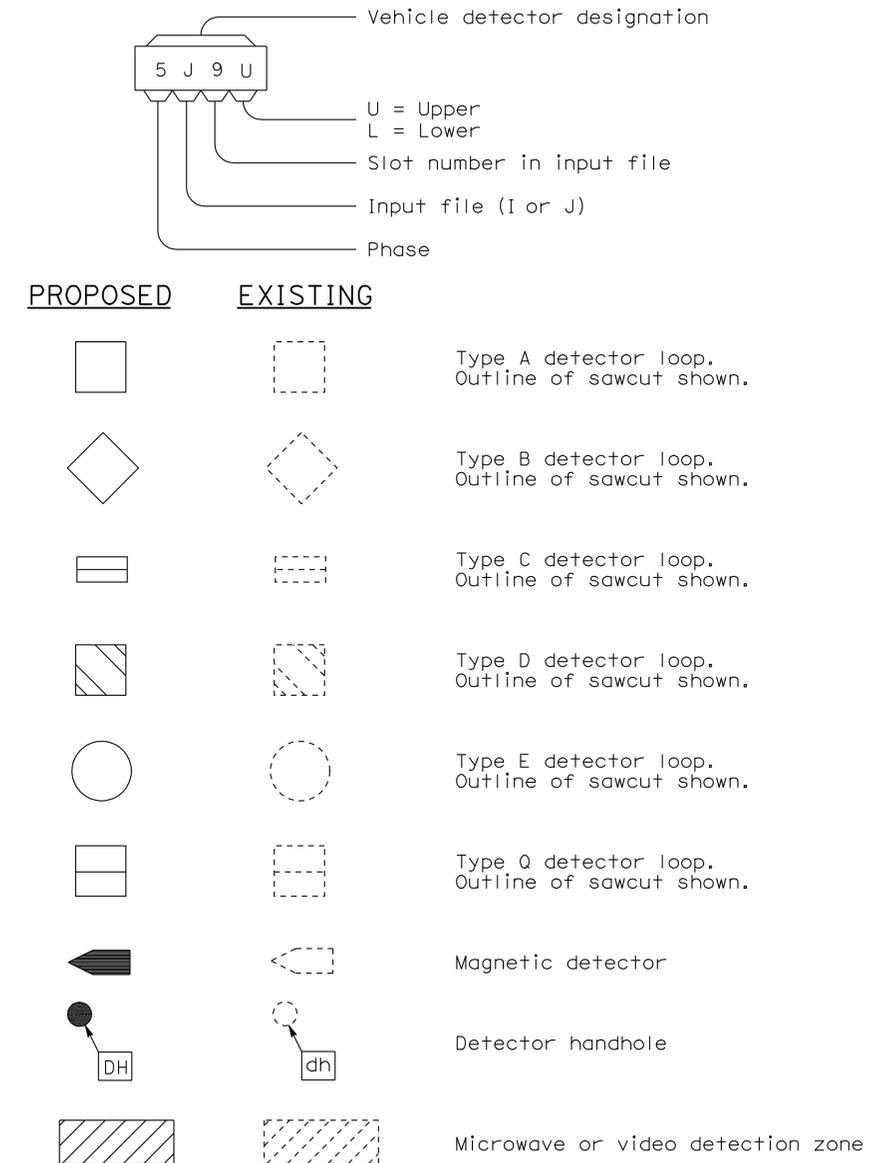
### WIRING DIAGRAM LEGEND



### PULL BOXES



### VEHICLE DETECTORS



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

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

**REVISED STANDARD PLAN RSP ES-1C**

2006 REVISED STANDARD PLAN RSP ES-1C