

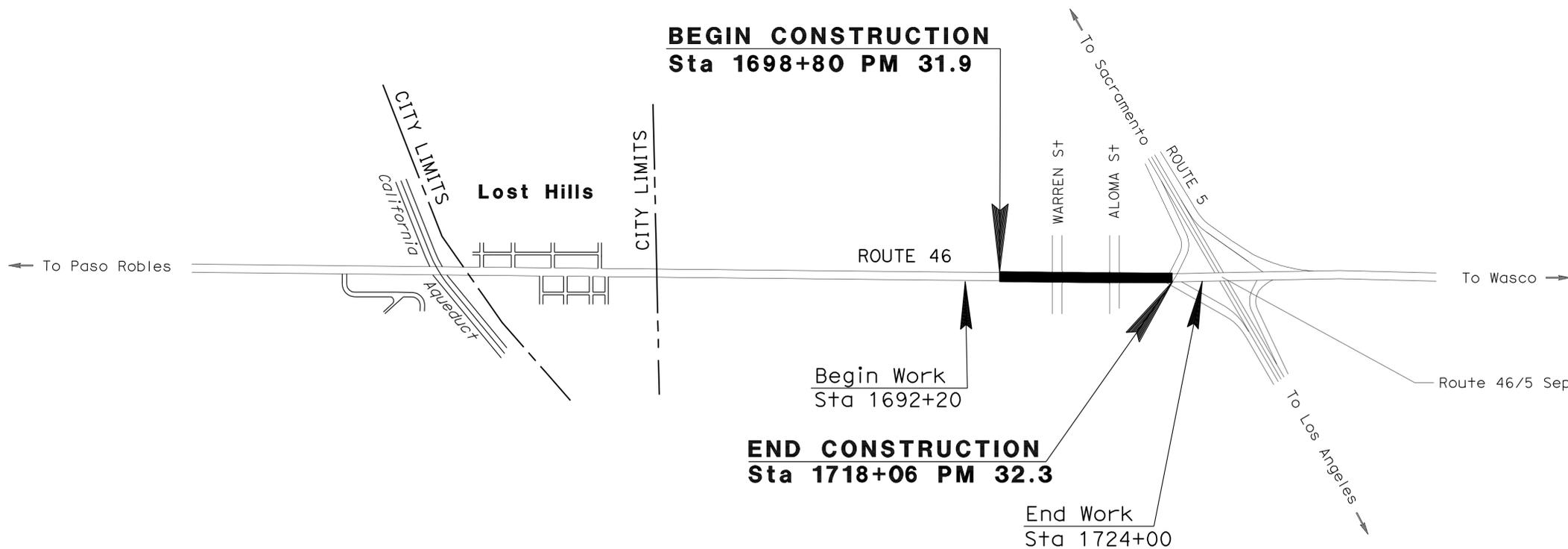
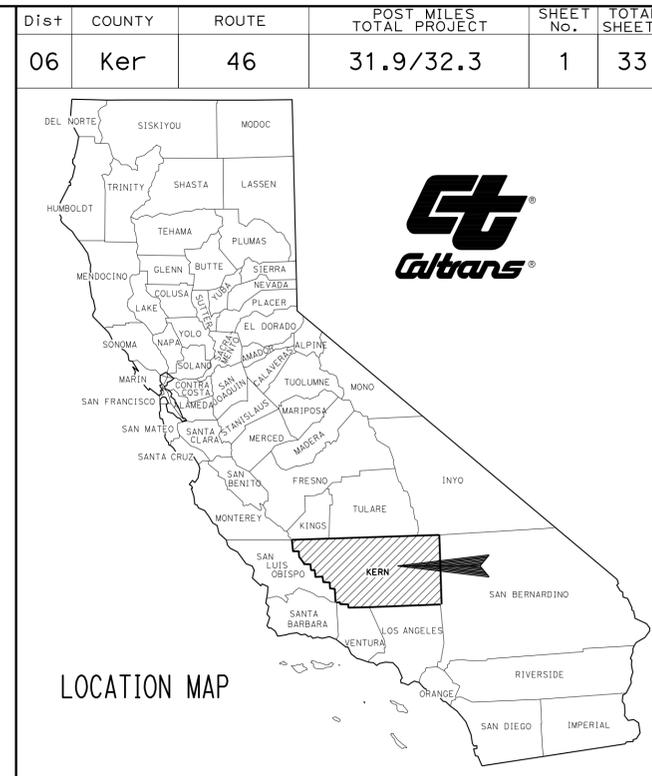
INDEX OF PLANS

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5	CONSTRUCTION DETAILS
6	CONSTRUCTION AREA SIGNS
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10	SUMMARY OF QUANTITIES
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17-33	REVISED AND NEW STANDARD PLANS

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

STATE OF CALIFORNIA HSNHG-P046(045)E  
**DEPARTMENT OF TRANSPORTATION**  
**PROJECT PLANS FOR CONSTRUCTION ON**  
**STATE HIGHWAY**  
**IN KERN COUNTY**  
**NEAR LOST HILLS**  
**FROM 0.3 MILE WEST OF WARREN STREET**  
**TO ROUTE 46/5 SEPARATION**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



NO SCALE

PROJECT MANAGER STEVE MILTON	DESIGN ENGINEER GURBHAY BRAR
---------------------------------	---------------------------------

*Chady Wei-Lung Chang* 1-30-09  
 PROJECT ENGINEER DATE  
 REGISTERED CIVIL ENGINEER



June 14, 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."

CONTRACT No.	<b>06-OJ3304</b>
PROJECT ID	<b>0600000170</b>



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	3	33

*Chay Wei-Lung* 1-30-09  
 REGISTERED CIVIL ENGINEER DATE

6-14-10  
 PLANS APPROVAL DATE

WEI-LUNG CHANG  
 No. 41899  
 Exp. 3-13-12  
 CIVIL

REGISTERED PROFESSIONAL ENGINEER  
 STATE OF CALIFORNIA

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

**NOTES:**

- FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- ALL THE UTILITY LINES SHOWN ARE EXISTING LINES.
- THE LOCATION OF TEMPORARY FENCE (TYPE ESA) WILL BE DETERMINED BY THE ENGINEER.

**LEGEND:**

- s--- 8" SANITARY SEWER LINE
- g--- SOUTHERN CAL GAS LINE
- t--- VERIZON CABLE LINE
- w--- 8" SEMI-TROPIC WATER LINE
- e--- PG&E LINE
- POTHOLE No.



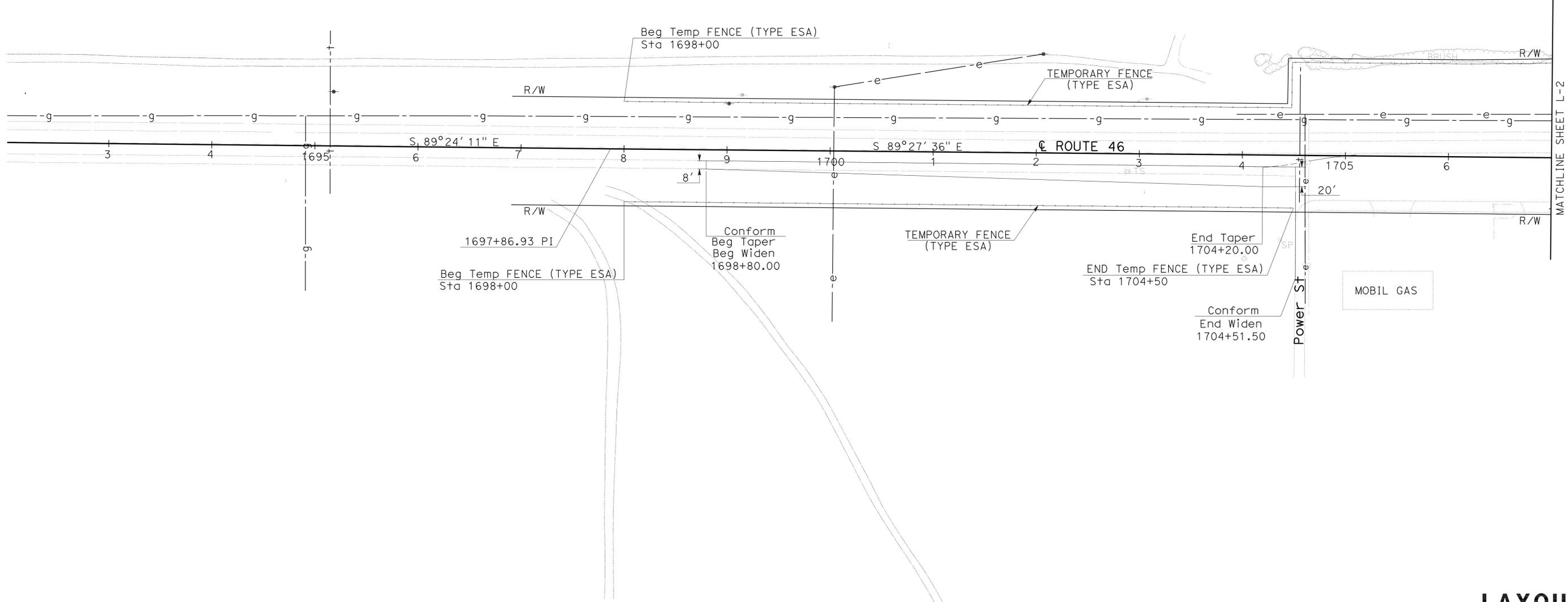
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN

FUNCTIONAL SUPERVISOR  
 GURBHAY BRAR

CALCULATED/DESIGNED BY  
 CHECKED BY

WEI-LUNG CHANG  
 JACK NAKASHIAN

REVISED BY  
 DATE REVISED



MATCHLINE SHEET L-2

SCALE: 1" = 50'

**LAYOUT  
L-1**

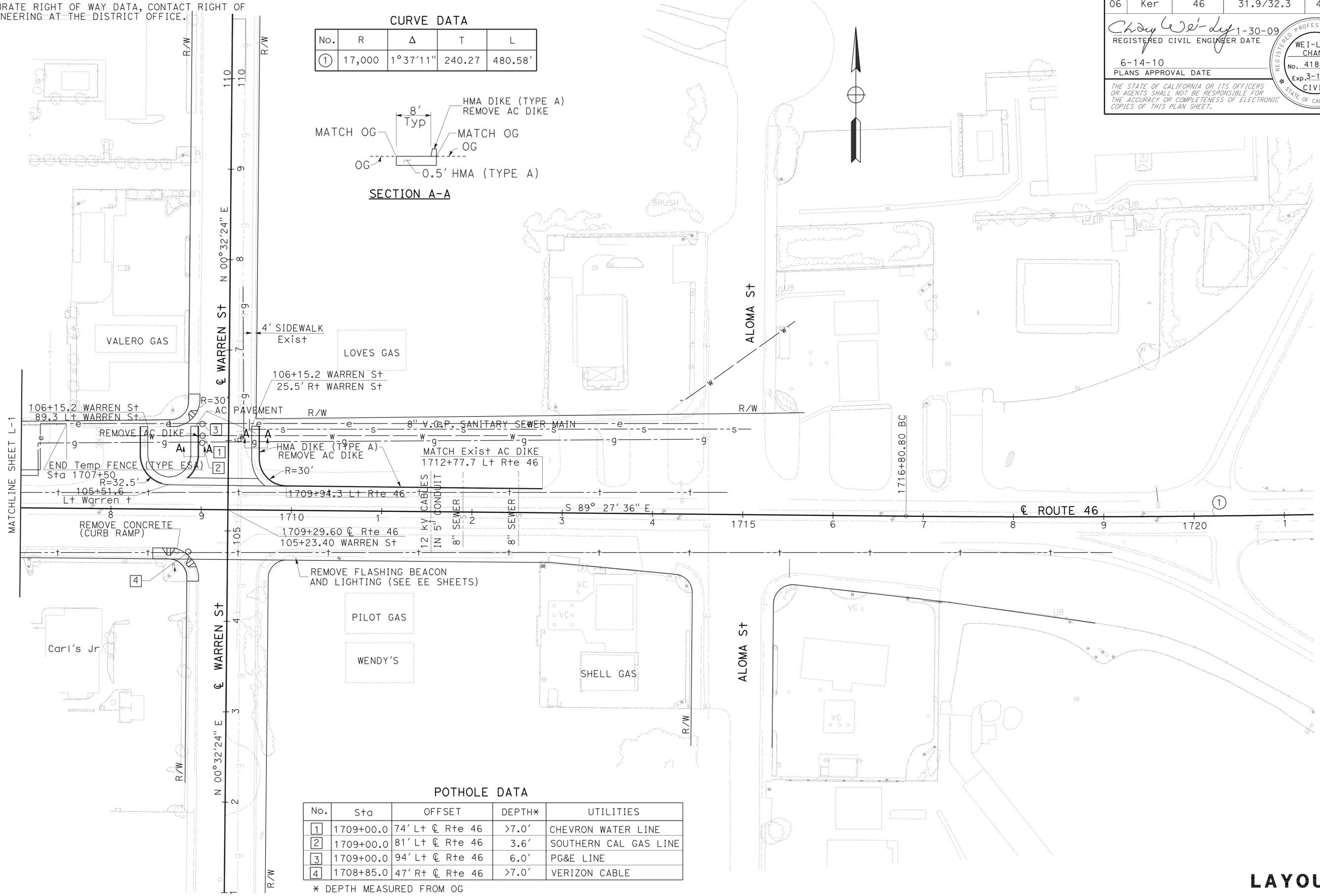
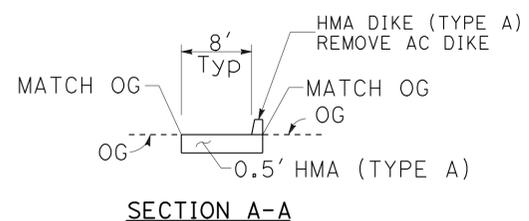
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN

FUNCTIONAL SUPERVISOR: GURBHAY BRAR  
 CALCULATED/DESIGNED BY: WEI-LUNG CHANG  
 CHECKED BY: JACK NAKASHIAN  
 REVISED BY: WEI-LUNG CHANG  
 DATE REVISED: [ ]

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

**CURVE DATA**

No.	R	Δ	T	L
①	17,000	1°37'11"	240.27	480.58'



**POTHOLE DATA**

No.	Sta	OFFSET	DEPTH*	UTILITIES
1	1709+00.0	74' Lt @ Rte 46	>7.0'	CHEVRON WATER LINE
2	1709+00.0	81' Lt @ Rte 46	3.6'	SOUTHERN CAL GAS LINE
3	1709+00.0	94' Lt @ Rte 46	6.0'	PG&E LINE
4	1708+85.0	47' Rt @ Rte 46	>7.0'	VERIZON CABLE

\* DEPTH MEASURED FROM OG

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	4	33

Chay Wei-Lung 1-30-09  
 REGISTERED CIVIL ENGINEER DATE

6-14-10  
 PLANS APPROVAL DATE

WEI-LUNG CHANG  
 No. 41899  
 Exp. 3-13-12  
 CIVIL

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.

SCALE: 1" = 50'

**LAYOUT L-2**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	5	33

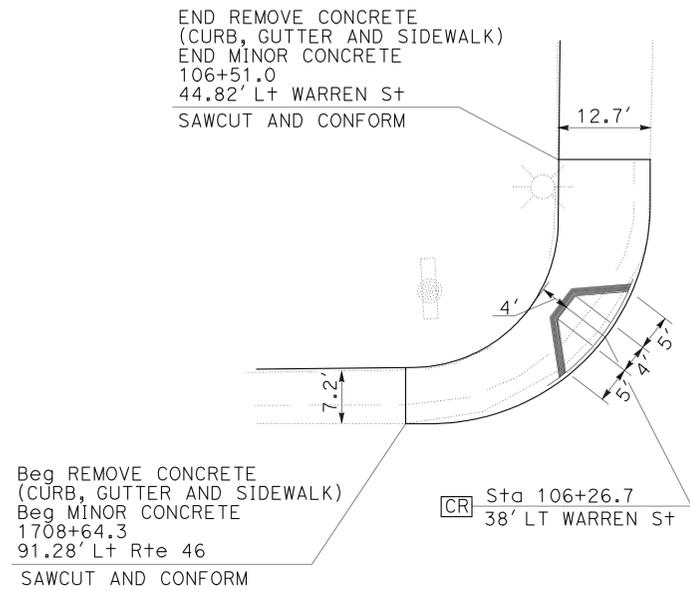
*Chay Wei-Lung* 1-30-09  
 REGISTERED CIVIL ENGINEER DATE  
 6-14-10  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 WEI-LUNG CHANG  
 No. 41899  
 Exp. 3-13-12  
 CIVIL  
 STATE OF CALIFORNIA

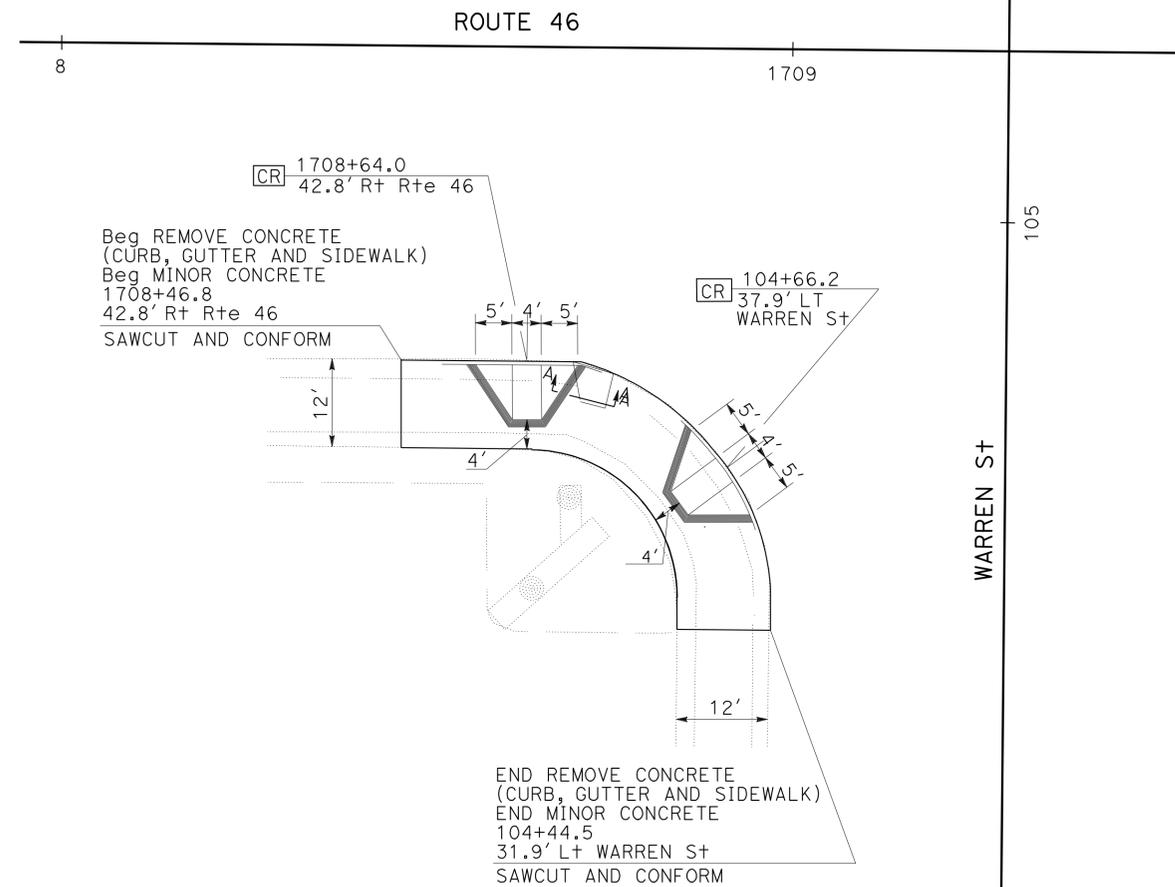
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

**LEGEND:**

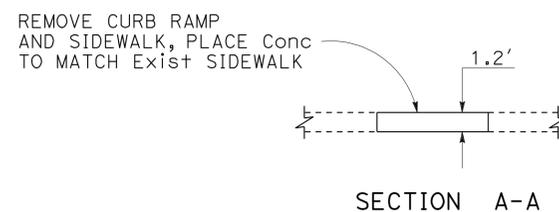
**CR** INSTALL CURB RAMP (CASE A)



N/W CORNER OF Rte 46/WARREN St



S/W CORNER OF Rte 46/WARREN St



**CONSTRUCTION DETAILS**  
NO SCALE  
**C-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN
<b>Caltrans</b>	
FUNCTIONAL SUPERVISOR	GURBHAY BRAR
CALCULATED/DESIGNED BY	CHECKED BY
WEI-LUNG CHANG	JACK NAKASHIAN
REVISED BY	DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	6	33

*Hassan Cohe* 04-29-10  
REGISTERED CIVIL ENGINEER DATE

6-14-10  
PLANS APPROVAL DATE

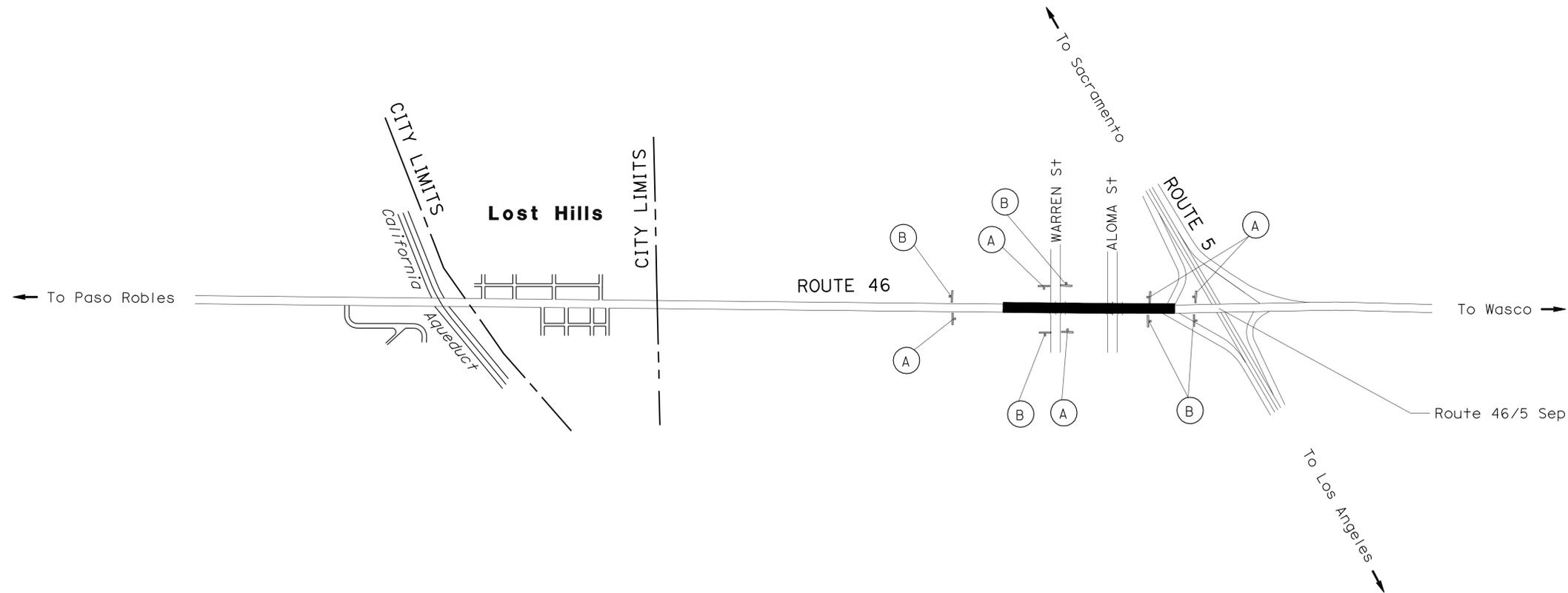
HASSAN M. TAHA  
No. 60130  
Exp. 06/30/10  
CIVIL

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

**NOTE:**  
1. LOCATIONS OF CONSTRUCTION AREA SIGNS SHOWN ARE APPROXIMATE.  
EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER.

**STATIONARY MOUNTED CONSTRUCTION AREA SIGNS**

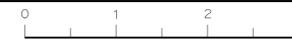
SIGN No.	SIGN CODE	SIGN MESSAGE	PANEL SIZE	No. OF POST AND SIZE	No. OF SIGNS
(A)	W20-1	ROAD WORK AHEAD	48" x 48"	1 - 6" x 6"	5
(B)	G20-2	END ROAD WORK	36" x 18"	1 - 4" x 4"	5



**CONSTRUCTION AREA SIGNS**  
NO SCALE  
**CS-1**

THIS PLAN ACCURATE FOR CONSTRUCTION AREA SIGN WORK ONLY

RELATIVE BORDER SCALE  
IS IN INCHES



USERNAME => trstark  
DGN FILE => 60J3301a001.dgn

CU 06386

EA 0J3301

BORDER LAST REVISED 4/11/2008

LAST REVISION | DATE PLOTTED => 16-JUN-2010  
05-12-10 TIME PLOTTED => 17:34

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

FUNCTIONAL SUPERVISOR  
MOHAMMED OATAMI

CALCULATED/DESIGNED BY  
CHECKED BY

VANIK POGOSYAN  
HASSAN TAHA

REVISED BY  
DATE REVISED



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	8	33

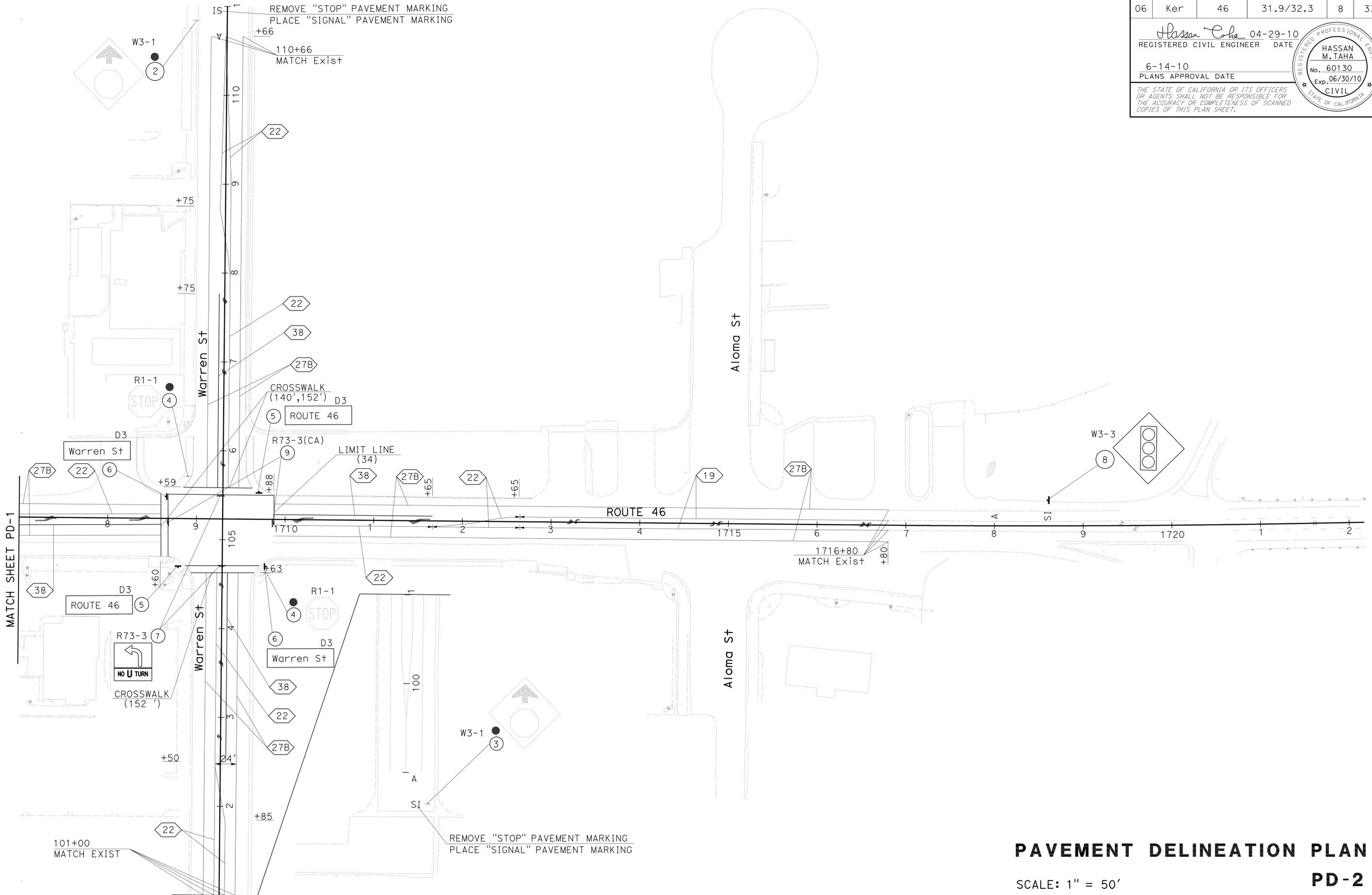
Hassan Cohe 04-29-10	
REGISTERED CIVIL ENGINEER	DATE
6-14-10	
PLANS APPROVAL DATE	

HASSAN M. TAHA	
No. 60130	
Exp. 06/30/10	
CIVIL	

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
<b>Caltrans</b> TRAFFIC DESIGN	MOHAMMED OATAMI	CHECKED BY	HASSAN TAHA
			DATE REVISION



**PAVEMENT DELINEATION PLAN**  
**PD-2**

SCALE: 1" = 50'

THIS PLAN ACCURATE FOR PAVEMENT DELINEATION ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	9	33

*Hassan Taaha* 04-29-10  
REGISTERED CIVIL ENGINEER DATE

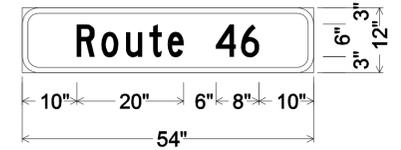
6-14-10  
PLANS APPROVAL DATE

HASSAN M. TAHA  
No. 60130  
Exp. 06/30/10  
CIVIL

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

### PAVEMENT DELINEATION QUANTITIES

SHEET No.	LOCATION	DETAIL No.	PAVEMENT MARKER (RETROREFLECTIVE)			THERMOPLASTIC TRAFFIC STRIPE				REMOVE PAVEMENT MARKER	REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)	REMOVE THERMOPLASTIC TRAFFIC STRIPE	THERMOPLASTIC PAVEMENT MARKING		REMOVE THERMOPLASTIC PAVEMENT MARKING				
			TYPE D YELLOW (TWO-WAY) EA	TYPE G CLEAR (ONE-WAY) EA	TYPE H YELLOW (ONE-WAY)	4" YELLOW LF	4" WHITE LF	8" WHITE LF	4" BROKEN (36'-12') LF				EA	LF		EA	LF	Description	SQFT
PD-1 AND PD-2	Sta 1696+80 TO 1708+60	27B											12-TYPE IV ARROW	180					
	Sta 1696+80 TO 1708+60	22	102			2360			102	2360			1-LIMIT LINE	34					
	Sta 1696+80 TO 1705+30	22	74			1700							3-CROSSWALK	444					
	Sta 1705+30 TO 1708+60	38		15									2-"STOP"		44				
	Sta 1709+88 TO 1716+80	27B					1384				1384		5-TYPE III ARROW	210					
	Sta 1709+88 TO 1711+65	22	16			354			20	554			4-"AHEAD"	124					
	Sta 1709+88 TO 1711+65	38		8									4-"SIGNAL"	128					
	Sta 1711+65 TO 1712+65	22	12			200							12-TYPE IV ARROW		180				
	Sta 1712+65 TO 1716+80	19	24		36	830		830											
	Sta 101+00 TO 104+63	27B					726				726								
	Sta 101+00 TO 104+63	22	34			726			44	726									
	Sta 101+00 TO 102+50	22	16			300													
	Sta 102+50 TO 104+63	38		10				213											
	Sta 105+59 TO 107+75	38		11				216											
	Sta 108+00 TO 110+66	22	26			532													
	Sta 105+59 TO 110+66	22	46			1014			54	1014									
Sta 105+59 TO 110+66	27B					507				507									
Sta 105+59 TO 110+66	27B					507				507									
SUB TOTAL			350	44	36	8016	5484	936	830	220	4654	5484		1120	224				
TOTAL				430		13,500	936	830	220	4654	5484			1120	224				



3" Radius, 1" Border, White on Green;  
[Route 46] C;



3" Radius, 1" Border, White on Green;  
[Warren Rd] C;

### SIGN QUANTITIES

SHEET No.	SIGN No.	SIGN CODE	SIGN MESSAGE	No. OF POST AND SIZE	PANEL SIZE	BACKGROUND		LEGEND		STANDARD GRAFFITI FILM	FURNISH SINGLE SHEET ALUMINUM SIGN (0.063" UNFRAMED)	ROADSIDE SIGN-ONE POST	ROADSIDE SIGN (SSBM)*	REMOVE ROADSIDE SIGN
						SHEETING COLOR	Retroreflectivity ASTM TYPE	SHEETING COLOR	Retroreflectivity ASTM TYPE					
PD-1	1	W3-3	SIGNAL AHEAD	1 - 4" x 6"	30" x 30"	YELLOW	III	R/G/B/Y	IV	X	6.25	1		
	2	W3-1	STOP AHEAD											1
	3	W3-1	STOP AHEAD											1
PD-2	4	R1-1	STOP											2
	5	D3	ROUTE 46	ON SIGNAL POLE	54" x 12"	GREEN	III	WHITE	IV	X	9		2	
	6	D3	WARREN ST	ON SIGNAL POLE	54" x 12"	GREEN	III	WHITE	IV	X	9		2	
	7	R73-3(CA)	LEFT TURN/NO U TURN	ON MAST ARM	24" x 24"	WHITE	III	BLACK		X	8		2	
	8	W3-3	SIGNAL AHEAD	1 - 4" x 6"	30" x 30"	YELLOW	III	R/G/B/Y	IV	X	6.25	1		
	9	R73-3(CA)	LEFT TURN/NO U TURN	ON MAST ARM	24" x 24"	WHITE	III	BLACK		X	8		2	
TOTAL											46.5	2		4

\* NOT A SEPARATE PAY ITEM, SEE E-PLANS.

## PAVEMENT DELINEATION AND SIGN DETAILS QUANTITIES

NO SCALE

PDQ-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	10	33

*Chay Wei-Lung* 1-30-09  
 REGISTERED CIVIL ENGINEER DATE  
 6-14-10  
 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.

### ROADWAY QUANTITIES

LOCATION	HOT MIX ASPHALT (TYPE A)	CLASS 2 AGGREGATE BASE	ROADWAY EXCAVATION	IMPORTED MATERIAL (SHOULDER BACKING)	TACK COAT
	TON	CY	CY	TON	TON
Sta 1698+80.00 TO Sta 1704+51.50 ROUTE 46	420	330	540	65	0.4
N/W CORNER OF Rte 46/WARREN St	50		25		0.07
S/W CORNER OF Rte 46/WARREN St	25		13		0.03
HMA DIKE	23				0.24
TOTAL	518	330	578	65	0.74

### MINOR CONCRETE (Misc CONSTRUCTION)

LOCATION	SIDEWALK	CURB RAMP
	CY	CY
S/W CORNER OF Rte 46/WARREN St	21	6
N/W CORNER OF Rte 46/WARREN St	24	3
SUB TOTAL	45	9
TOTAL	54	

### REMOVE CONCRETE (CURB, GUTTER AND SIDEWALK)

LOCATION	VOLUME
	CY
S/W CORNER OF Rte 46/WARREN St	30
N/W CORNER OF Rte 46/WARREN St	33
TOTAL	63

### HMA DIKE

LOCATION	PLACE HMA DIKE (TYPE A)	REMOVE AC DIKE	HMA (TYPE A)	TACK COAT
	LF	LF	TON	TON
N/W CORNER OF Rte 46/WARREN St	165	165	7.1	0.1
N/E CORNER OF Rte 46/WARREN St	370	370	15.9	0.14
TOTAL	535	535	23.0*	0.24*

\* QUANTITIES ARE ADDED TO THE ROADWAY QUANTITIES TABLE.

### TEMPORARY FENCE (TYPE ESA)

LOCATION	LENGTH
	LF
SOUTH OF ROUTE 46	650'
NORTH OF ROUTE 46	994'
TOTAL	1644'

## SUMMARY OF QUANTITIES Q-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 FUNCTIONAL SUPERVISOR: GURBHAY BRAR  
 CALCULATED/DESIGNED BY: WEI-LUNG CHANG  
 CHECKED BY: JACK NAKASHIAN  
 REVISED BY: DATE REVISED



**NOTES: (FOR SHEETS E-1 THRU E-4)**

1 120/240 V, 1Ø, 3-WIRE, TYPE III-CF SERVICE EQUIPMENT ENCLOSURE WITH THE FOLLOWING CIRCUIT BREAKERS:

CTID No. 0650046032050T

AMPERES	VOLTS	POLES	NAME PLATE	METER	PHOTOELECTRIC CONTROL TYPE
100	240	2	MAIN BREAKER	YES	—
70	120	1	TRAFFIC SIGNAL	YES	—
20	120	1	FLASHING BEACON	YES	—
20	120	1	TRAFFIC COUNT STATION	YES	—
20	120	1	SPARE	—	—
—	—	6	SPACE	—	—

**ABBREVIATIONS:**

- PG&E PACIFIC GAS AND ELECTRIC COMPANY
- CTID CALTRANS IDENTIFICATION
- STC SCREENED TRANSMISSION CABLE
- stc Exist SCREENED TRANSMISSION CABLE
- VCS VEHICLE CLASSIFICATION STATION
- vcS Exist VEHICLE CLASSIFICATION STATION

CTID No. 0650046032050L

AMPERES	VOLTS	POLES	NAME PLATE	METER	PHOTOELECTRIC CONTROL TYPE
100	240	2	MAIN BREAKER	YES	—
40	240	2	HIGHWAY LIGHTING	YES	IV
20	240	2	SPARE	YES	—
20	120	1	SPARE	YES	—
—	—	6	SPACE	YES	—

- 2 Exist PG&E PULL BOX, CONTRACTOR SHALL COORDINATE WITH PG&E FOR SERVICE REQUIREMENTS.
- 3 Exist MODEL 334 CABINET FOR VEHICLE CLASSIFICATION STATION.
- 4 INDUCTIVE LOOP DETECTORS AND PIEZO AXLE SENSORS SHALL BE INSTALLED AND IDENTIFIED AS SHOWN ON SHEET E-6, DETAILS A AND B.
- 5 800' TO LIMIT LINE, TYPE 15-FBS ADVANCED FLASHING BEACON WITH W3-3 SIGN. REFER TO SIGN PLANS FOR SIGN DETAILS.
- 6 STATE-FURNISHED MODEL 2070 CONTROLLER ASSEMBLY WITH WIRELESS MODEM AND BATTERY BACKUP SYSTEM.
- 7 REFER TO SIGN PLANS FOR SIGN DETAILS.
- 8. ALL PULL BOXES SHALL BE No. 5(E) UNLESS OTHERWISE NOTED.

**POLE AND EQUIPMENT SCHEDULE**

No.	STANDARD TYPE	SMA	LMA	VEH SIG MTG		PED SIG MTG	PPB		LED LUM	SPECIAL REQUIREMENTS
				MAST ARM	POLE		Ø	ARROW		
(A)	24-4-100	35'	12'	MAS MAS	SV-1-T	SP-1-T	4	←	165	F=14', INSTALL D3 SIGN (WARREN ST) ON SIGNAL POLE, INSTALL R73-3(CA) SIGN ON SMA. 7
(B)	1-A				TV-2-T	SP-1-T	6	→		
(C)	26-4-100	45'	12'	MAS MAS	SV-1-T		6	←	165	F=15', INSTALL D3 SIGN (ROUTE 46) ON SIGNAL POLE, INSTALL R73-3(CA) SIGN ON SMA. 7
(D)	1-A				TV-2-T	SP-1-T				
(E)	29-5-100	50'	15'	MAS MAS	SV-1-T	SP-1-T			165	F=15', INSTALL D3 SIGN (WARREN ST) ON SIGNAL POLE, INSTALL R73-3(CA) SIGN ON SMA. 7
(F)	1-A				TV-2-T		2	→		
(G)	26-4-100	40'	12'	MAS MAS	SV-1-T	SP-1-T	2	←	165	F=15', INSTALL D3 SIGN (ROUTE 46), R9-3a AND R9-3b ON SIGNAL POLE, INSTALL R73-3(CA) SIGN ON SMA. 7
(H)	1-A				TV-2-T	SP-1-T	4	→		

**CONDUIT AND CONDUCTOR SCHEDULE**

CABLE TYPE	POLE	PHASE	CONDUIT RUN NUMBER AND SIZE																	
			1	2	3	4	5	6	7	8	9	10								
VEH-PED 12CSC	(A)	1,6,6P	4	1	1	1														
	(B)	4,3,4P	6	1	1	1														
	(C)	8,3	6	1	1	1	1													
	(D)	5,6,6P	1	1	1	1	1													
	(E)	2,5,2P	1	1							1	1	1	1						
	(F)	8,7	2	1	1	1					1	1	1	1						
	(G)	4,7,4P	2	1	1	1					1	1	1							
	(H)	1,2,2P	4	1	1	1					1	1								
TOTAL			8	6	5	4	3	2	2	1	0	0	0	4	3	3	2	2	1	0
AWG	CIRCUIT																			
#8	LIGHTING			2	2	2					2	2	2	2						
SIC			1			1	1	1												
DLC	PHASE																			
	Ø1		2			2	2	2												
	Ø2		2	2								2								
	Ø2 ADV		1	1								1								
	Ø3		2	2								2	2	2						
	Ø4		2		2															
	Ø4 ADV		1	1								1								
	Ø5		2	2										2						
	Ø6		2		2	2	2	2												
	Ø6 ADV		1	1		1	1	1												
Ø7		2		2																
Ø8		2	2									2	2	2						
Ø8 ADV		1	1									1	1	1						
TOTAL DLC			20	10	10	5	5	0	10	5	5	0								

**MODIFY VEHICLE CLASSIFICATION STATION SIGNAL AND LIGHTING**

NO SCALE

**E-1**

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	12	33

<i>Mona Attallah</i>	5-12-10
REGISTERED ELECTRICAL ENGINEER	DATE
6-14-10	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
MONA N. ATTALLAH
No. 18407
Exp. 6/30/10
ELECTRICAL
STATE OF CALIFORNIA

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



**NOTES:**

1. FOR ADDITIONAL NOTES AND SCHEDULES, SEE SHEET E-1.
2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

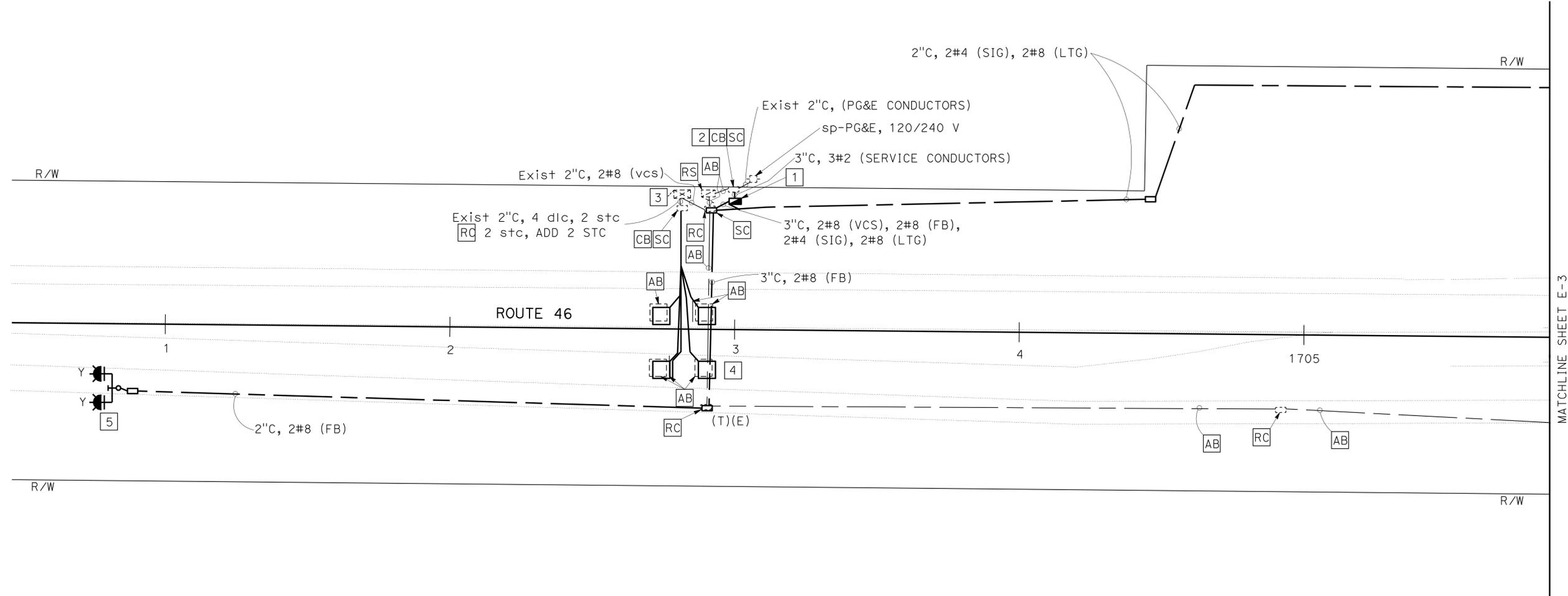
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**® ELECTRICAL DESIGN

FUNCTIONAL SUPERVISOR  
**ALI BAKHDOUD**

CALCULATED/DESIGNED BY  
 CHECKED BY

MONA ATTALLAH  
 RAJPREET SINGH

REVISED BY  
 DATE REVISED



**MODIFY VEHICLE CLASSIFICATION STATION  
 SIGNAL AND LIGHTING**

**E-2**

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

SCALE: 1" = 20'

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	13	33

<i>Mona Attallah</i> 5-12-10	
REGISTERED ELECTRICAL ENGINEER	DATE
6-14-10	
PLANS APPROVAL DATE	

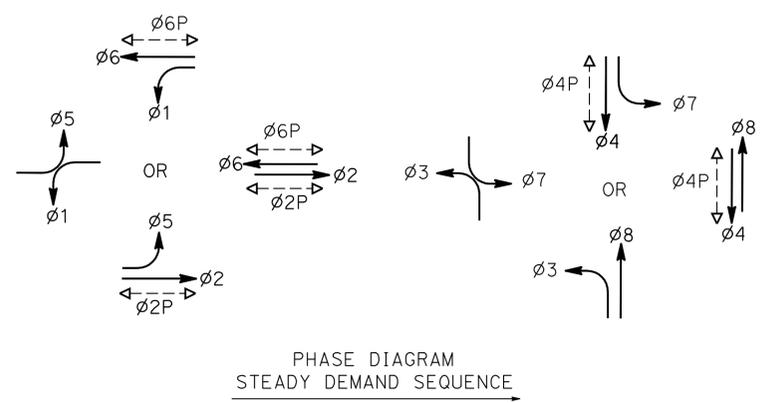
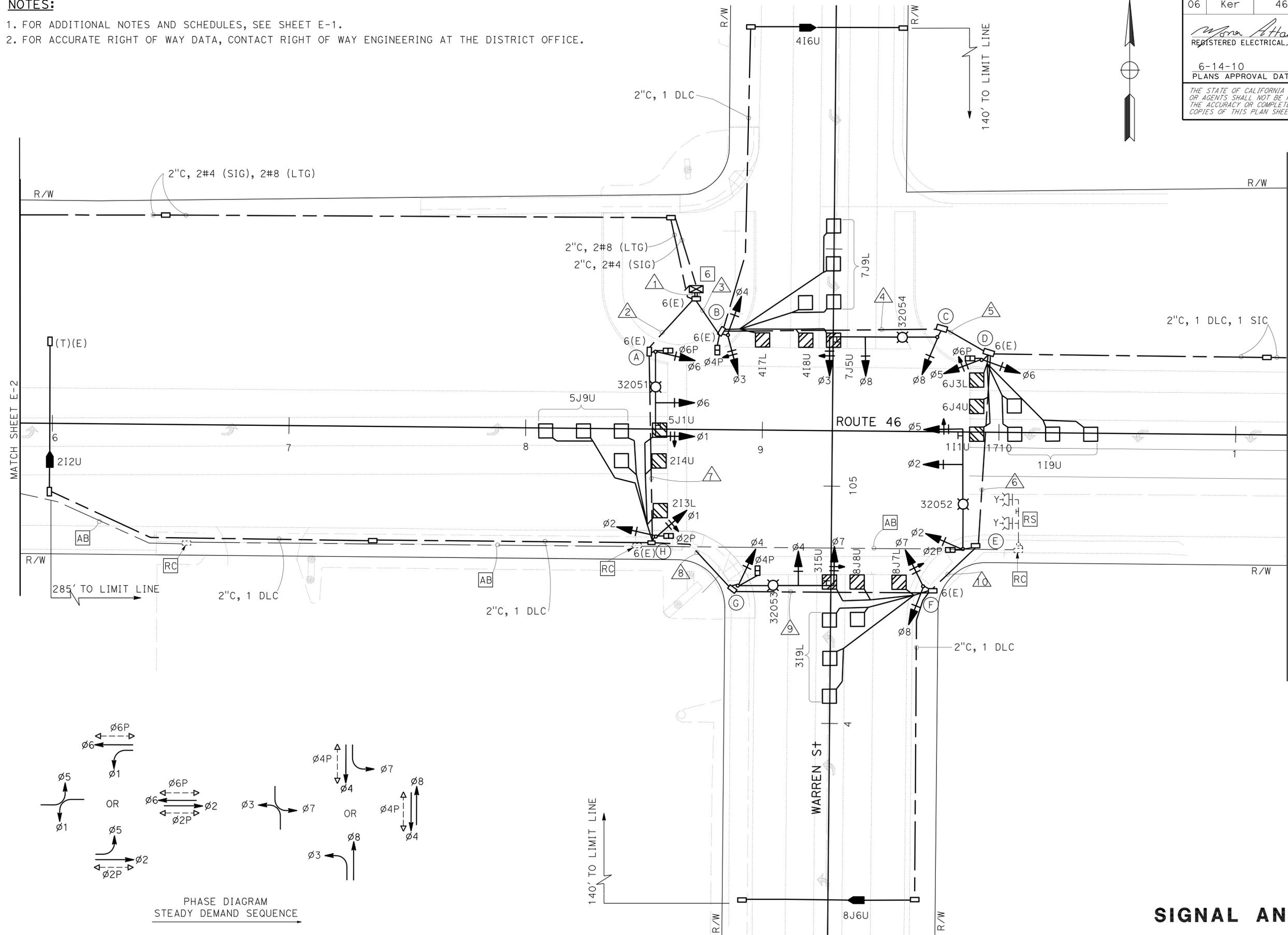
  

REGISTERED PROFESSIONAL ENGINEER <b>MONA N. ATTALLAH</b> No. 18407 Exp. 6/30/10 ELECTRICAL STATE OF CALIFORNIA	
---	--

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

**NOTES:**

1. FOR ADDITIONAL NOTES AND SCHEDULES, SEE SHEET E-1.
2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



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

FUNCTIONAL SUPERVISOR  
 ALI BAKHDOUD

CALCULATED/DESIGNED BY  
 CHECKED BY

MONA ATTALLAH  
 RAJPREET SINGH

REVISED BY  
 DATE REVISED

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.



USERNAME => trsrk  
 DGN FILE => 60j330u003.dgn

**SIGNAL AND LIGHTING**

SCALE: 1" = 20'

**E-3**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	14	33

<i>Mona Attallah</i>	5-12-10
REGISTERED ELECTRICAL ENGINEER	DATE
6-14-10	
PLANS APPROVAL DATE	

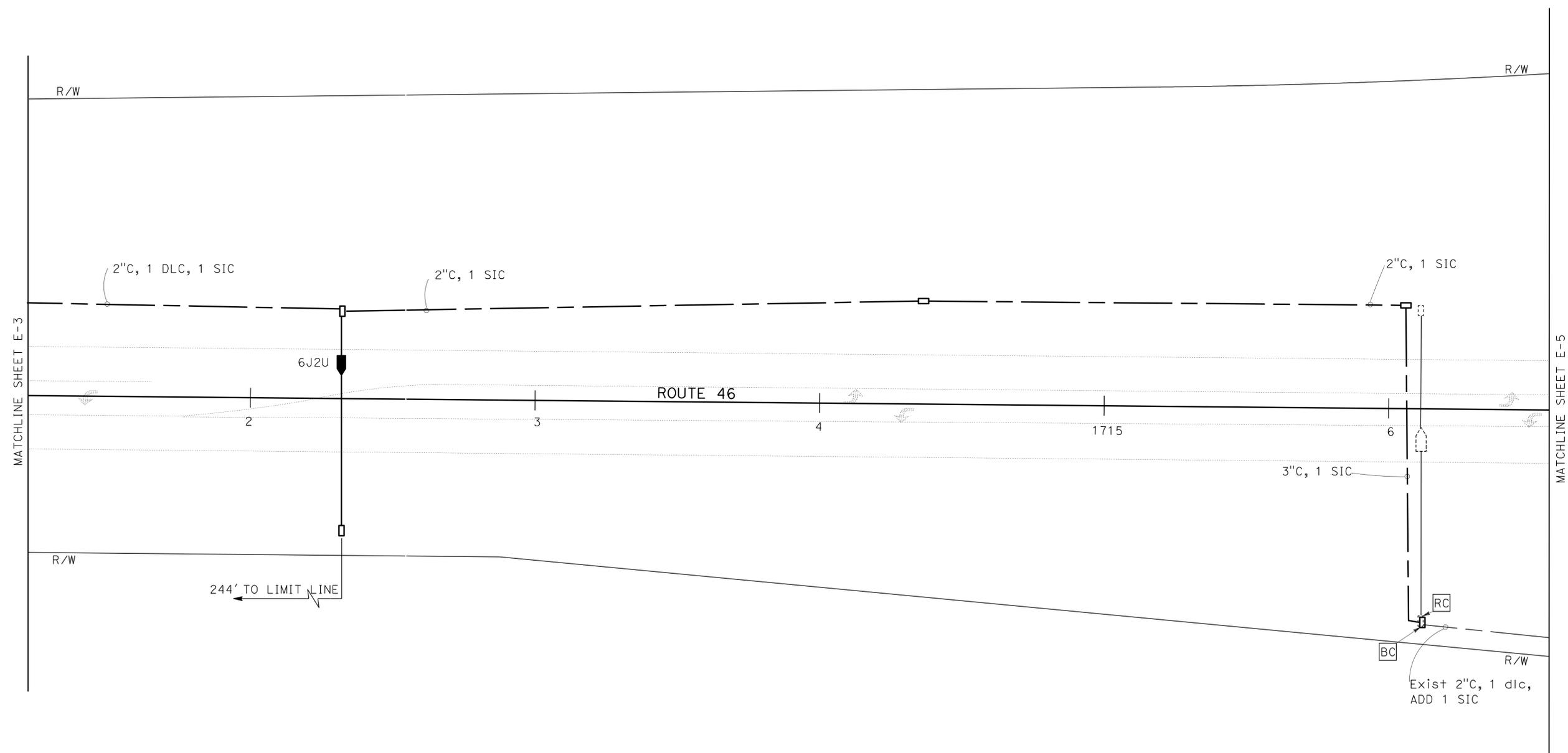
REGISTERED PROFESSIONAL ENGINEER
MONA N. ATTALLAH
No. 18407
Exp. 6/30/10
ELECTRICAL
STATE OF CALIFORNIA

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



**NOTES:**

- FOR ADDITIONAL NOTES AND SCHEDULES, SEE SHEET E-1.
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: ALI BAKHOUD  
 CALCULATED/DESIGNED BY: RAJPREET SINGH  
 CHECKED BY: MONA ATTALLAH  
 REVISED BY: RAJPREET SINGH  
 DATE REVISED:

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

**SIGNAL AND LIGHTING**

SCALE: 1" = 20'

**E-4**



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	15	33

<i>Mona Attallah</i>	5-12-10
REGISTERED ELECTRICAL ENGINEER	DATE
6-14-10	
PLANS APPROVAL DATE	

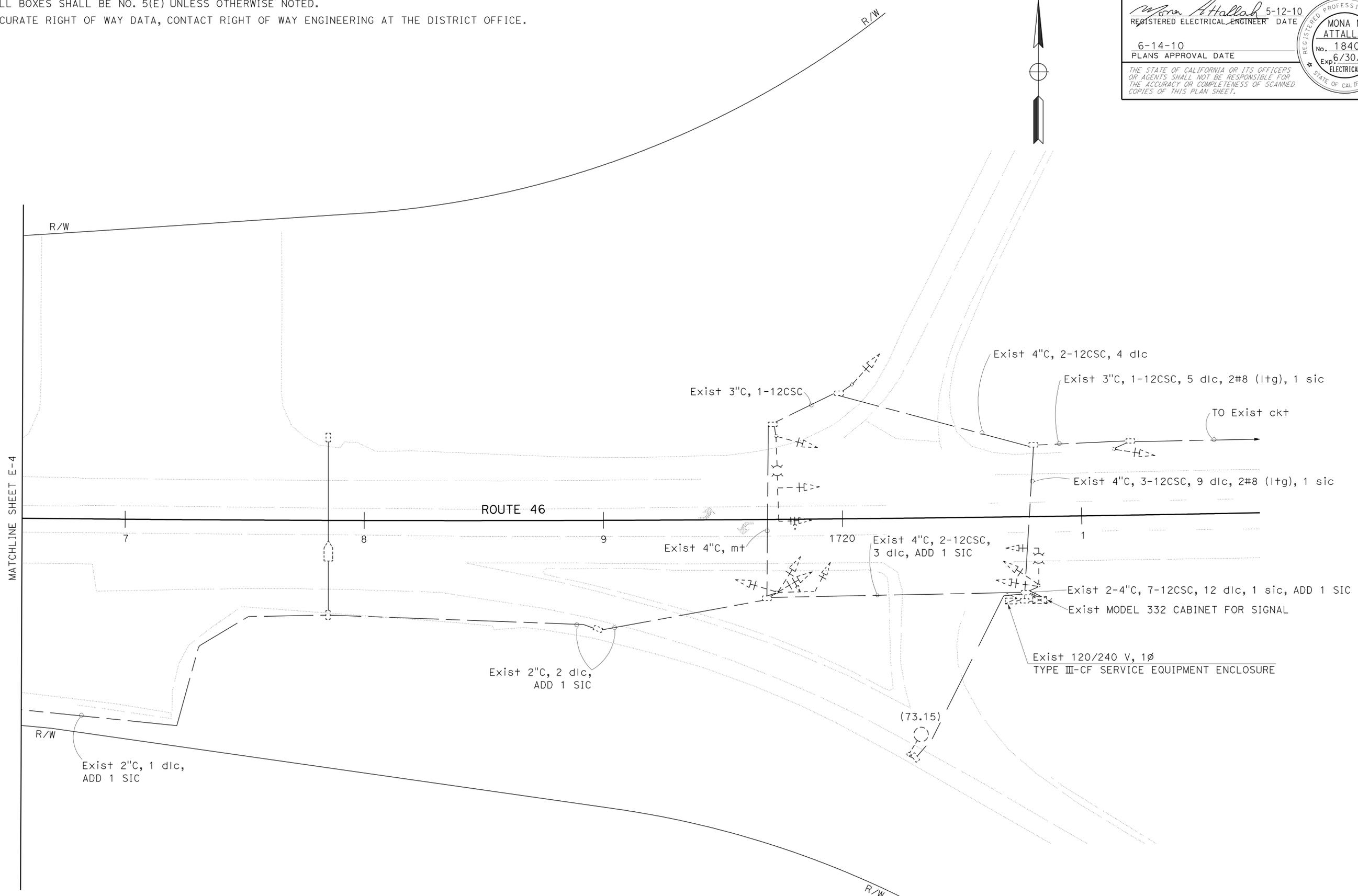
  

REGISTERED PROFESSIONAL ENGINEER
MONA N. ATTALLAH
No. 18407
Exp. 6/30/10
ELECTRICAL
STATE OF CALIFORNIA

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

**NOTES:**

1. ALL PULL BOXES SHALL BE NO. 5(E) UNLESS OTHERWISE NOTED.
2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



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

FUNCTIONAL SUPERVISOR  
 ALI BAKHOUD

CALCULATED/DESIGNED BY  
 CHECKED BY

MONA ATTALLAH  
 RAJPREET SINGH

REVISED BY  
 DATE REVISED

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.



USERNAME => trsrk  
 DGN FILE => 60j330ua005.dgn

**SIGNAL AND LIGHTING**

SCALE: 1" = 20'

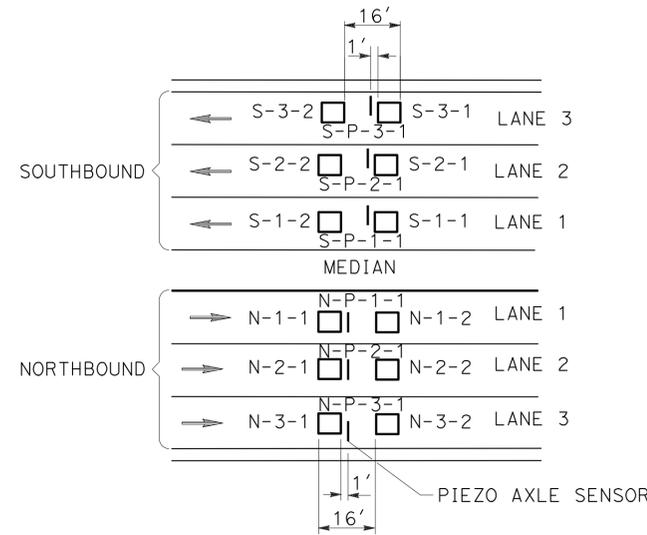
**E-5**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Ker	46	31.9/32.3	16	33

*Mon A. Attallah* 5-12-10  
 REGISTERED ELECTRICAL ENGINEER DATE  
 6-14-10  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 MONA N. ATTALLAH  
 No. 18407  
 Exp. 6/30/10  
 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.



**DLC IDENTIFICATION**

DIRECTION OF TRAFFIC  
 N - NORTHBOUND  
 S - SOUTHBOUND  
 E - EASTBOUND  
 W - WESTBOUND

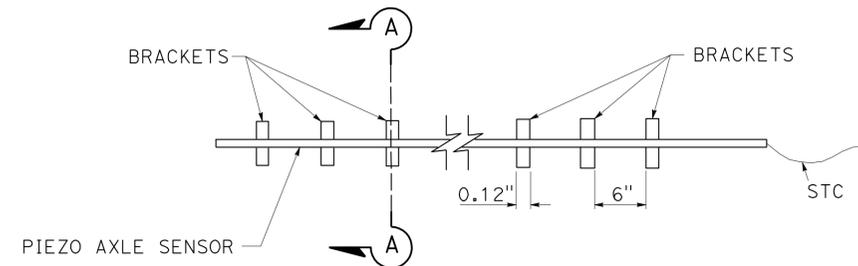
1 - ENTERING  
 2 - LEAVING  
 LANE NUMBER

**PIEZO AXLE SENSOR IDENTIFICATION**

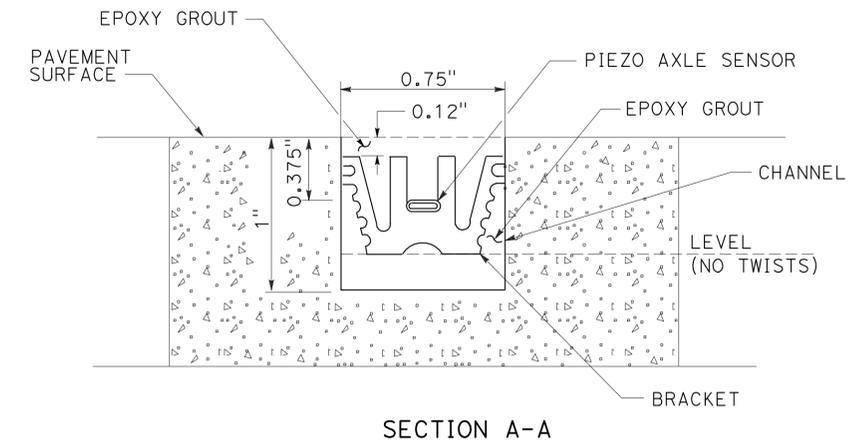
DIRECTION OF TRAFFIC  
 N - NORTHBOUND  
 S - SOUTHBOUND  
 E - EASTBOUND  
 W - WESTBOUND

1 - FOR ALL PIEZO AXLE SENSORS  
 LANE NUMBER  
 P - PIEZO AXLE SENSOR

**CENSUS DLC AND PIEZO AXLE SENSOR IDENTIFICATION**  
DETAIL A



**PIEZO AXLE SENSOR INSTALLATION**  
DETAIL B



**MODIFY VEHICLE CLASSIFICATION STATION**

**E-6**

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

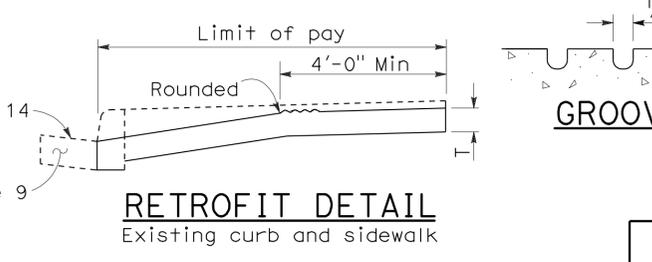
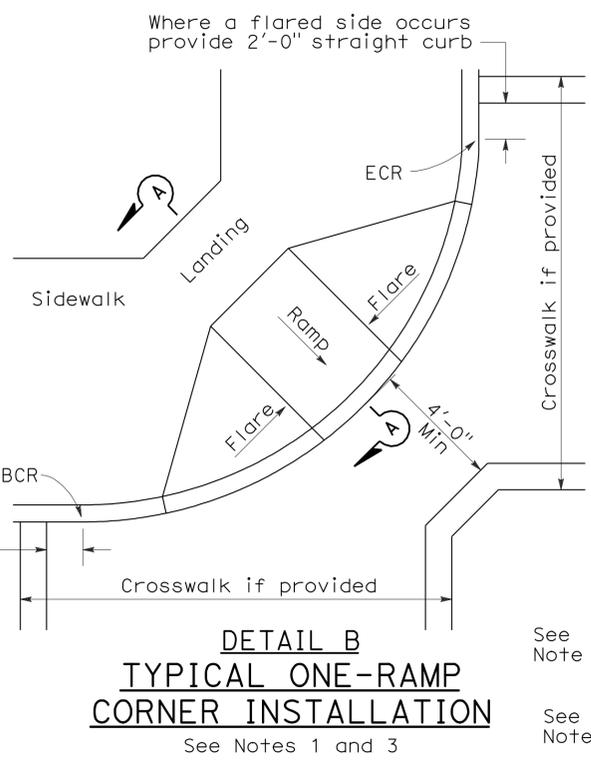
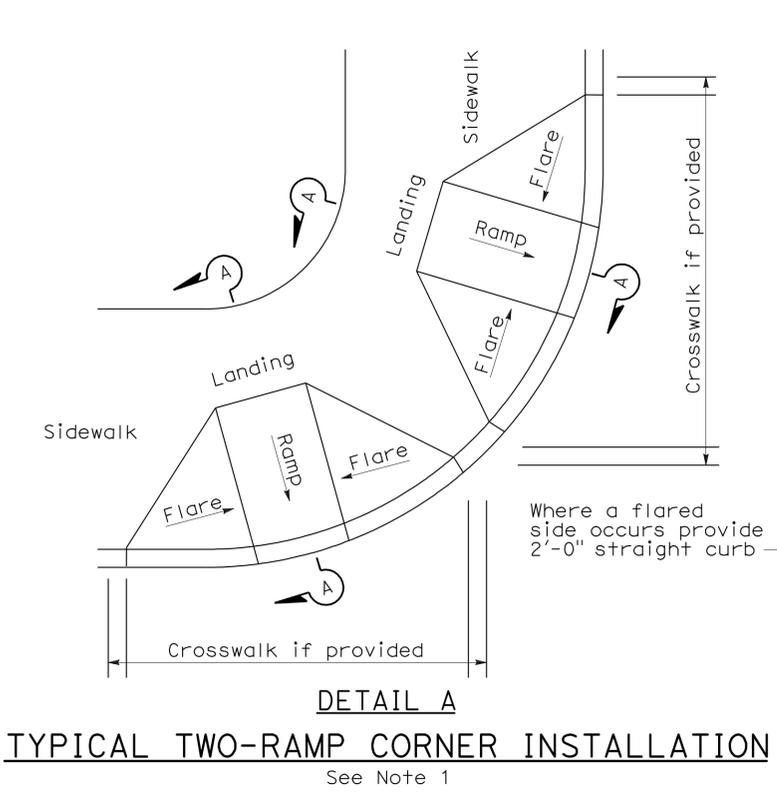
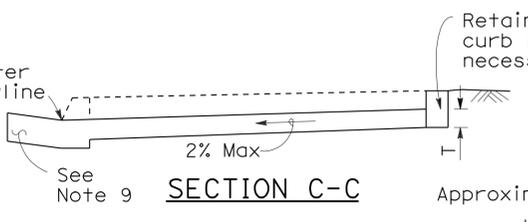
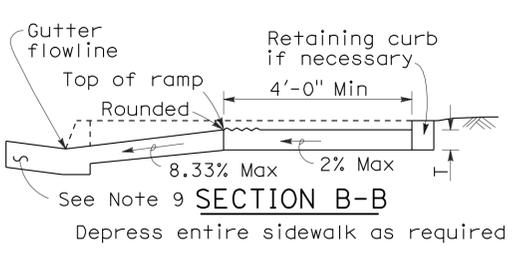
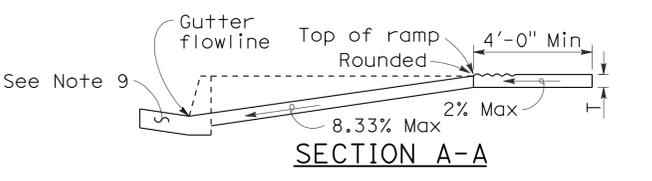
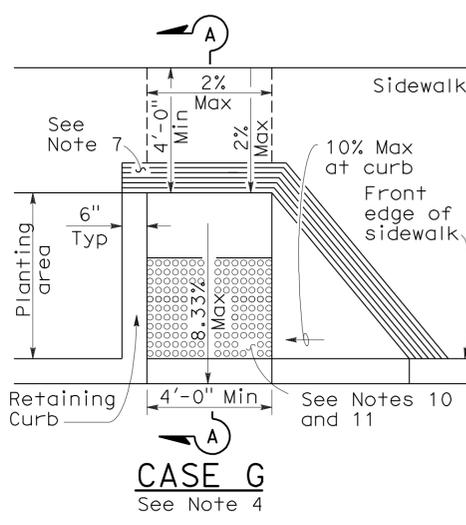
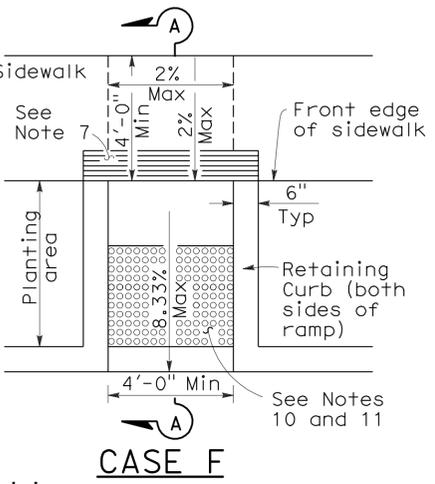
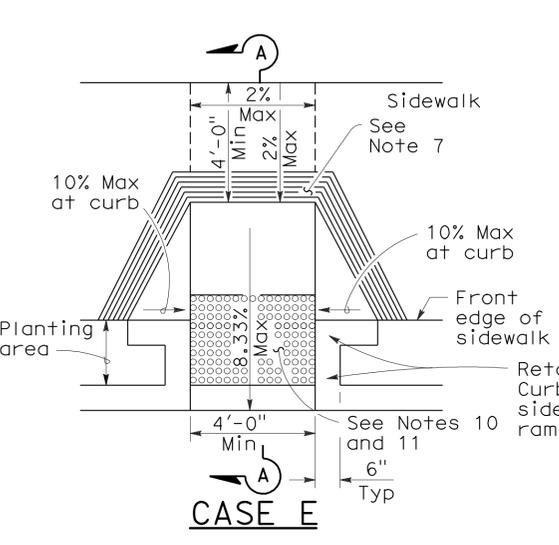
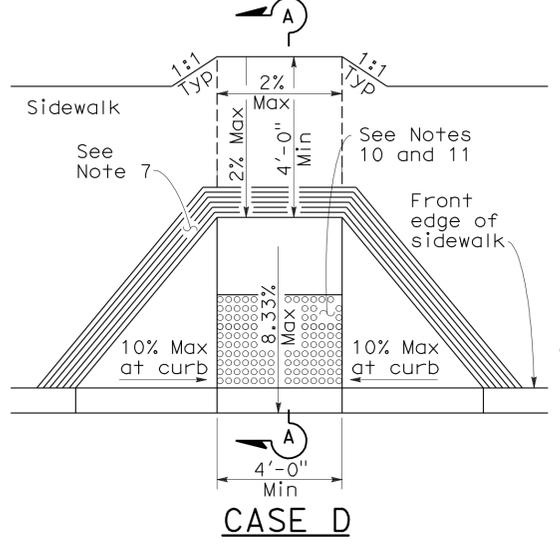
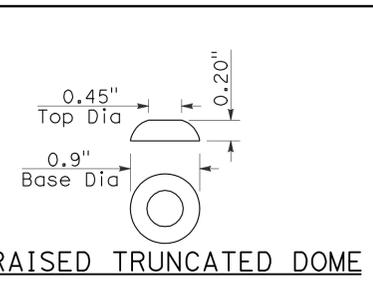
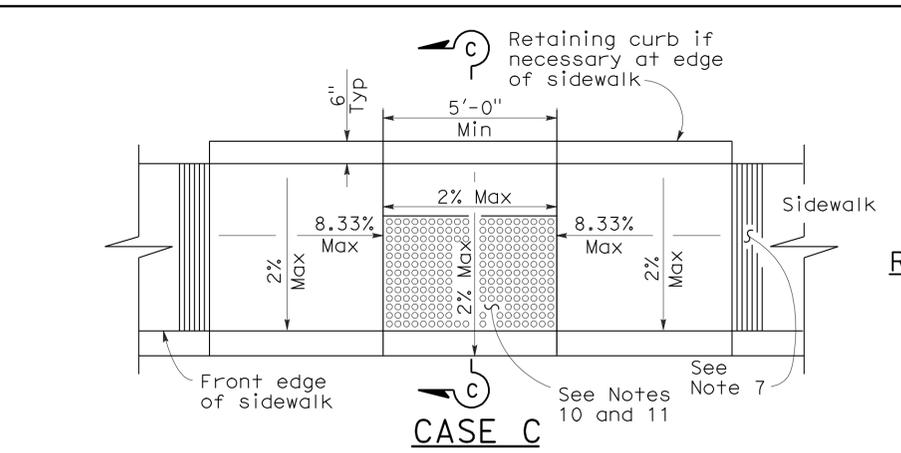
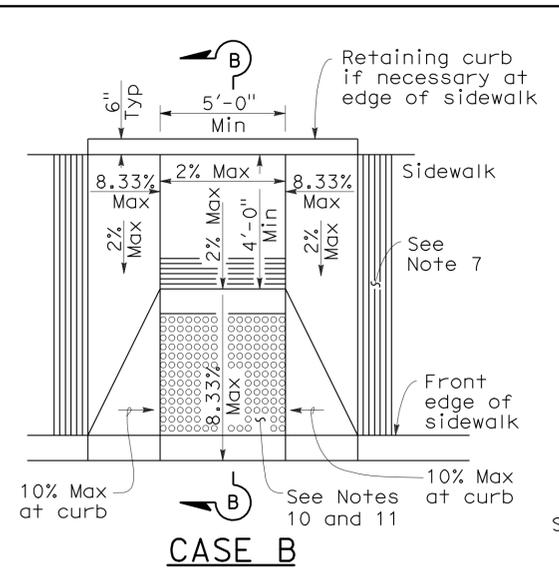
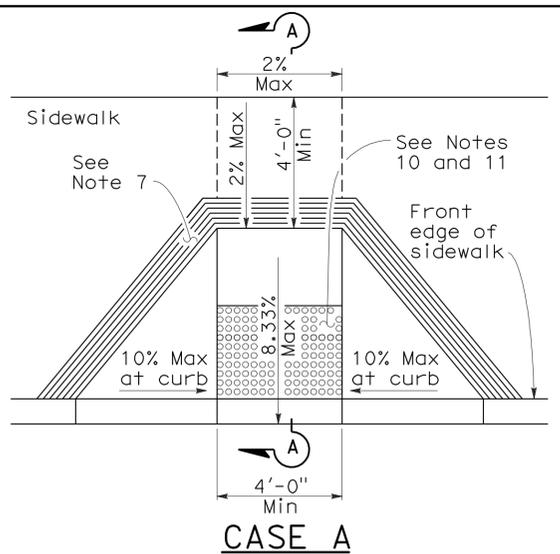
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
<b>Caltrans</b> ELECTRICAL DESIGN	ALI BAKHDOUD	MONA ATTALLAH	RAJPREET SINGH
	CALCULATED/DESIGNED BY	CHECKED BY	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	17	33

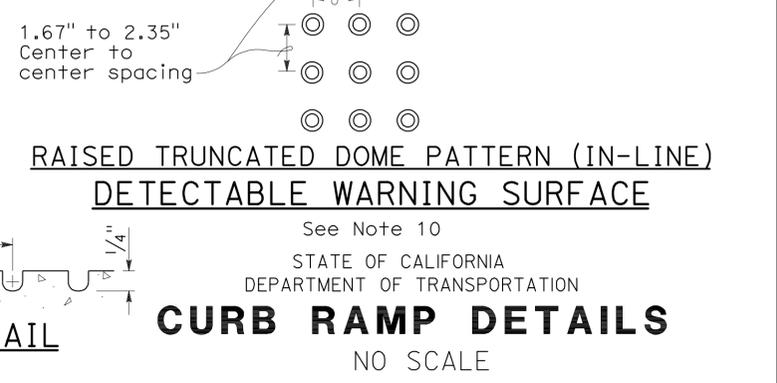
*H. David Cordova*  
 REGISTERED CIVIL ENGINEER  
 September 1, 2006  
 PLANS APPROVAL DATE  
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER  
**Hector David Cordova**  
 No. C41957  
 Exp. 3-31-08  
 CIVIL  
 STATE OF CALIFORNIA



**NOTES:**

- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
- If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-0" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
- As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
- If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-0".
- Side slope of ramp flares vary uniformly from a maximum of 10% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
- The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
- Transitions from ramps and landing to walks, gutters or streets shall be flush and free of abrupt changes.
- Maximum slopes of adjoining gutters, the road surface immediately adjacent to the curb ramp or accessible route shall not exceed 5 percent within 4'-0" of the top and bottom of the curb ramp.
- Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Special Provisions.
- The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
- Sidewalk and ramp thickness, "T", shall be 3/2" minimum.
- Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
- For retrofit conditions, removal and replacement of curb apron will be at the Contractor's option, unless otherwise shown on project plans.



See Note 10  
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**CURB RAMP DETAILS**  
 NO SCALE

RSP A88A DATED SEPTEMBER 1, 2006 SUPERSEDES STANDARD PLAN A88A  
 DATED MAY 1, 2006 - PAGE 115 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A88A**

2006 REVISED STANDARD PLAN RSP A88A

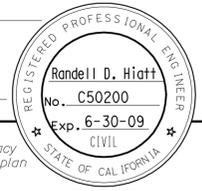
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	18	33

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

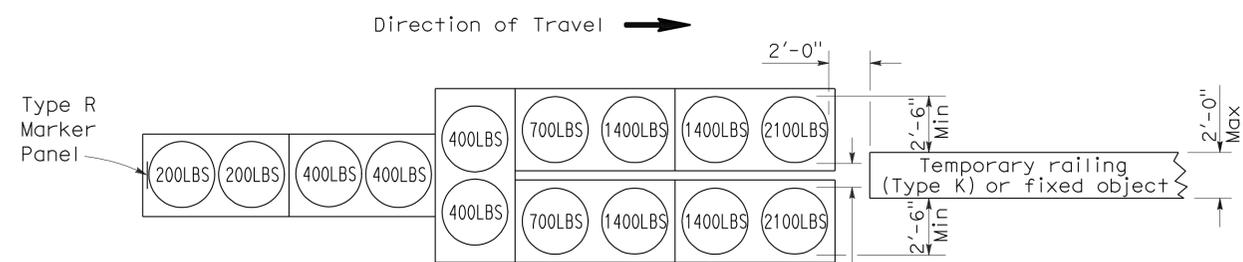
June 6, 2008  
PLANS APPROVAL DATE

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To accompany plans dated 6-14-10

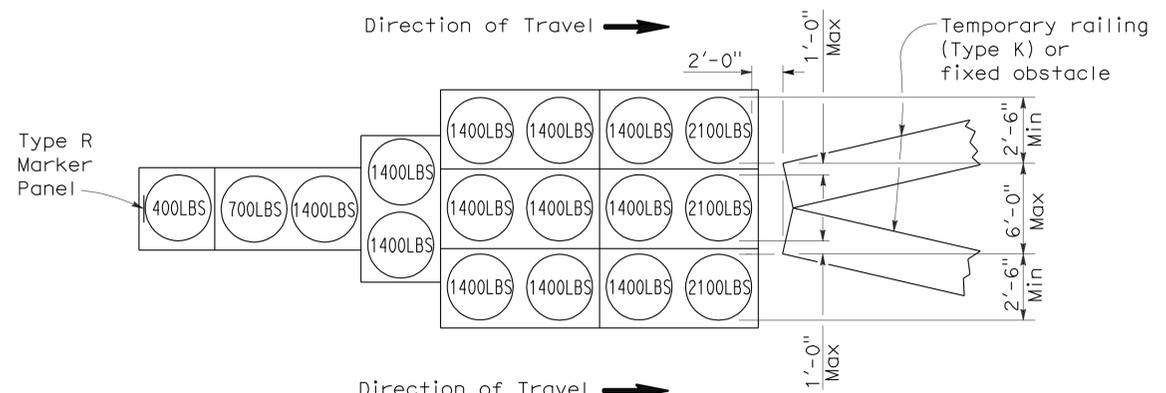


2006 REVISED STANDARD PLAN RSP T1A



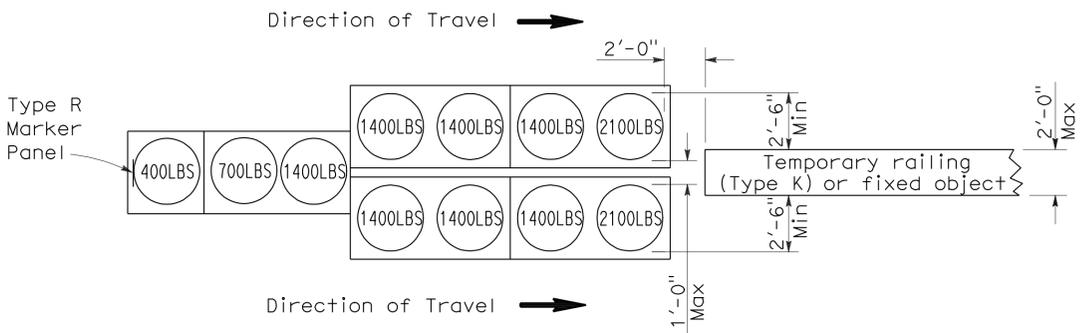
**ARRAY 'TU14'**

Approach speed 45 mph or more



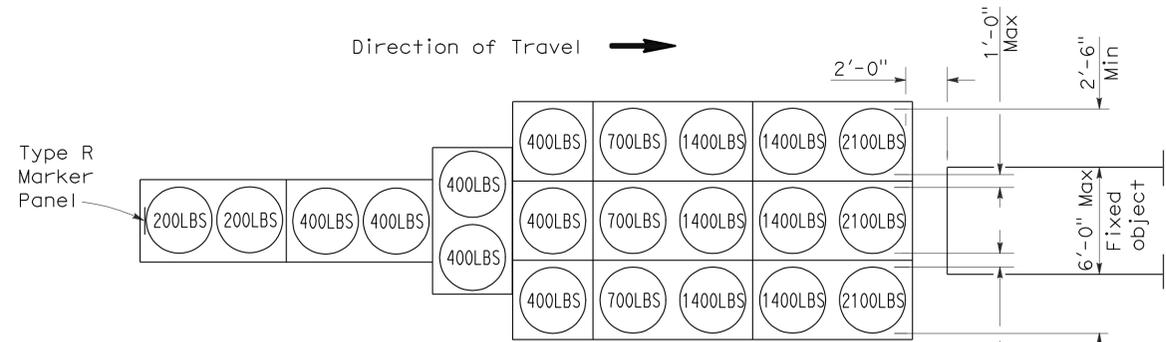
**ARRAY 'TU17'**

Approach speed less than 45 mph



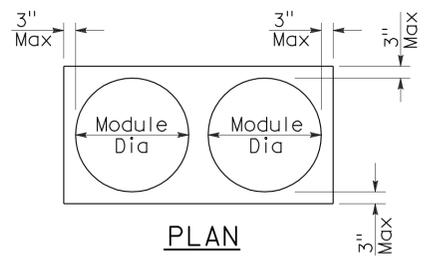
**ARRAY 'TU11'**

Approach speed less than 45 mph

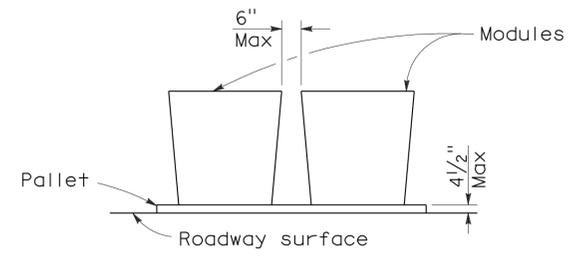


**ARRAY 'TU21'**

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**

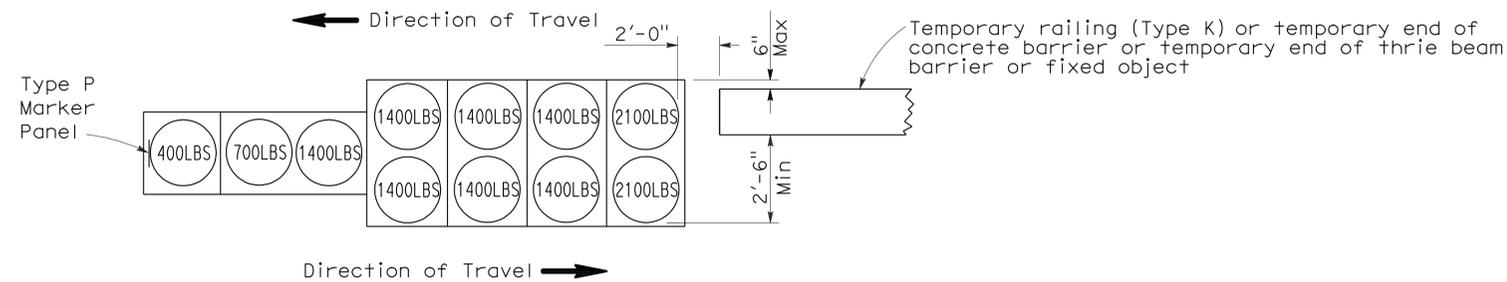
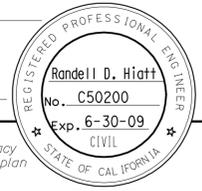
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	19	33

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

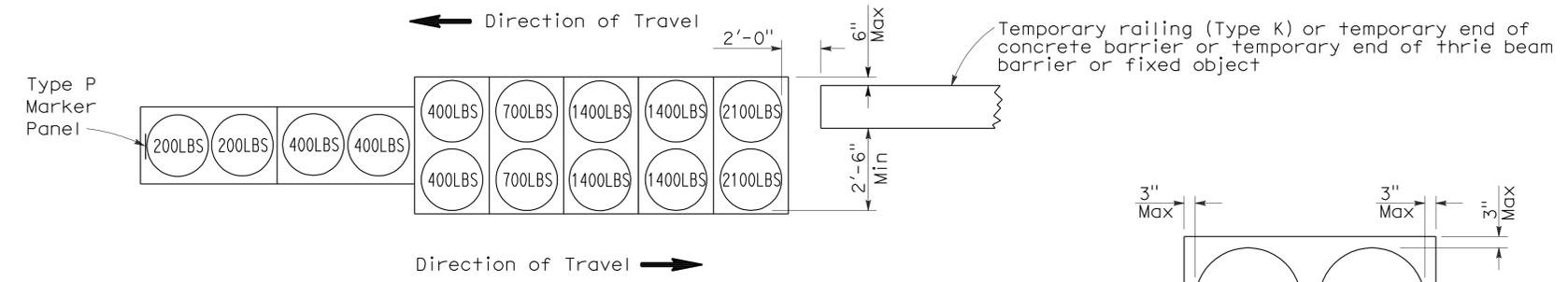
*The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.*

To accompany plans dated 6-14-10



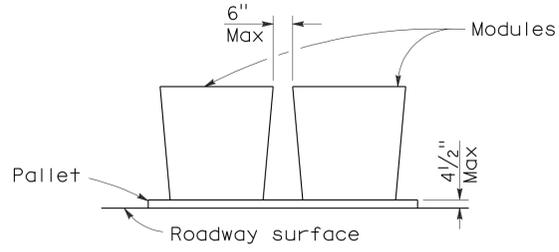
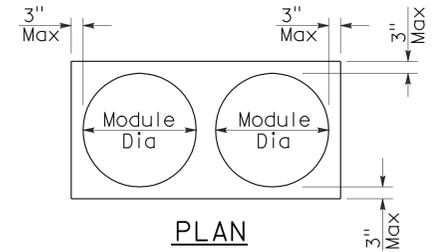
**ARRAY 'TB11'**

Approach speed less than 45 mph



**ARRAY 'TB14'**

Approach speed 45 mph or more



**CRASH CUSHION PALLET DETAIL**  
See Note 7

**NOTES:**

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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(BIDIRECTIONAL)**  
NO SCALE

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

**REVISED STANDARD PLAN RSP T1B**

2006 REVISED STANDARD PLAN RSP T1B

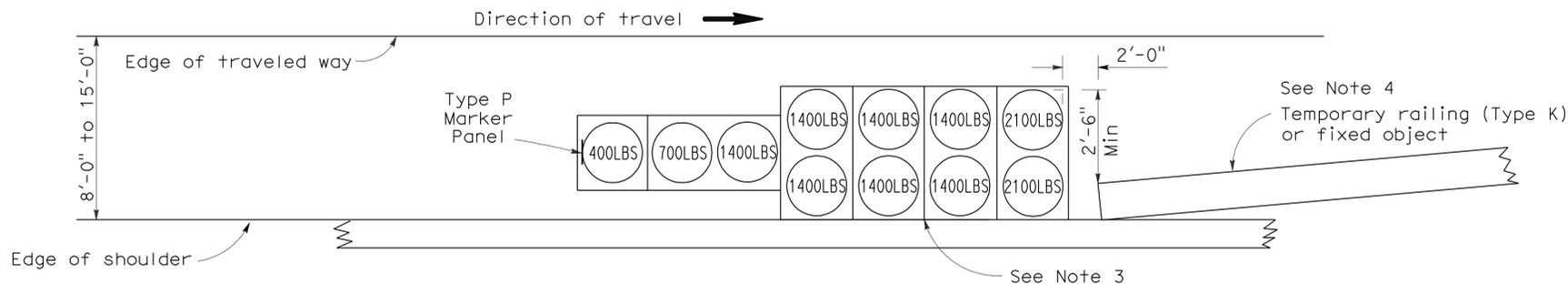
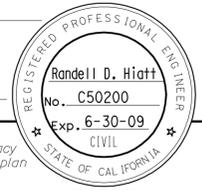
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	20	33

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

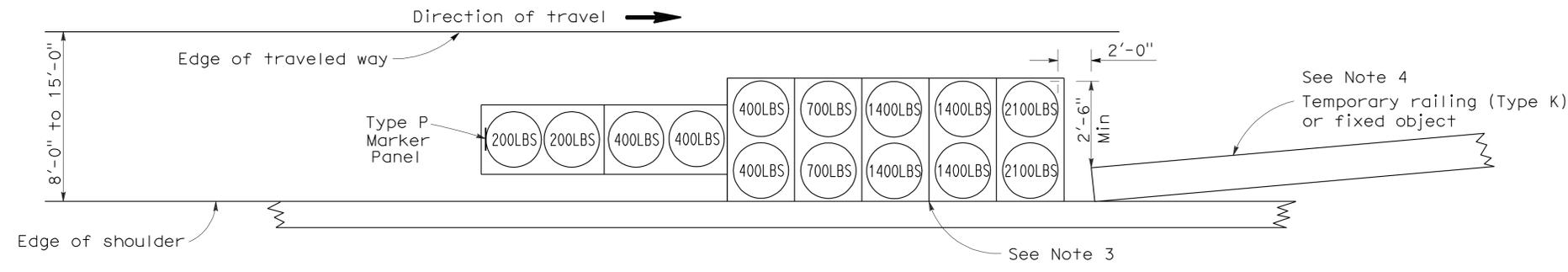
June 6, 2008  
PLANS APPROVAL DATE

*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 6-14-10



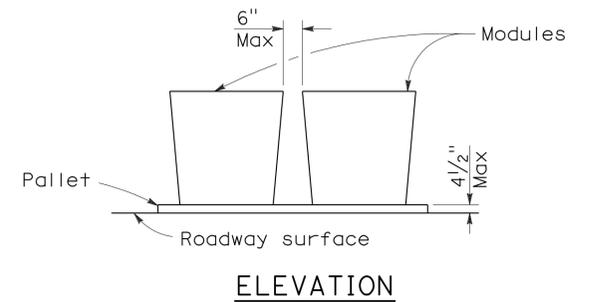
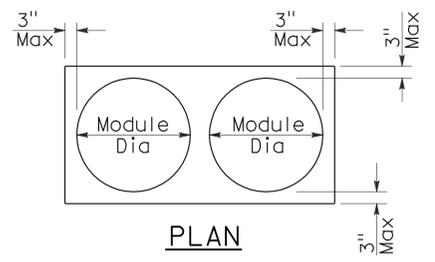
**ARRAY 'TS11'**  
Approach speed less than 45 mph  
See Note 9



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

**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.



**CRASH CUSHION PALLET DETAIL**  
See Note 11

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(SHOULDER INSTALLATIONS)**  
NO SCALE

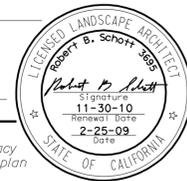
RSP T2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T2  
DATED MAY 1, 2006 - PAGE 213 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T2**

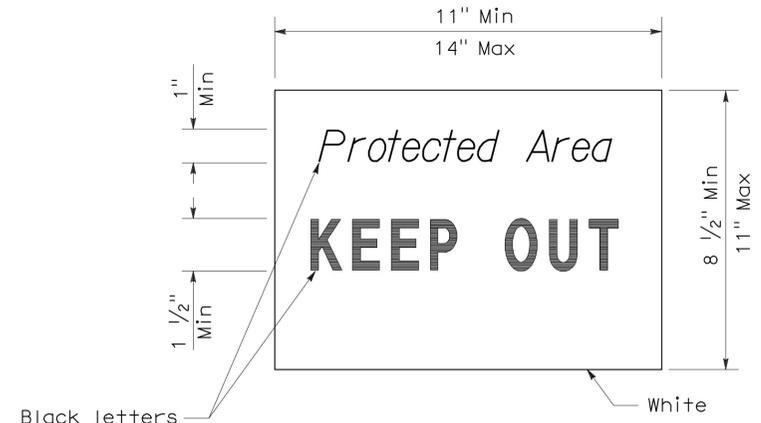
2006 REVISED STANDARD PLAN RSP T2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	21	33

*Robert B. Schott*  
 LICENSED LANDSCAPE ARCHITECT  
 April 3, 2009  
 PLANS APPROVAL DATE  
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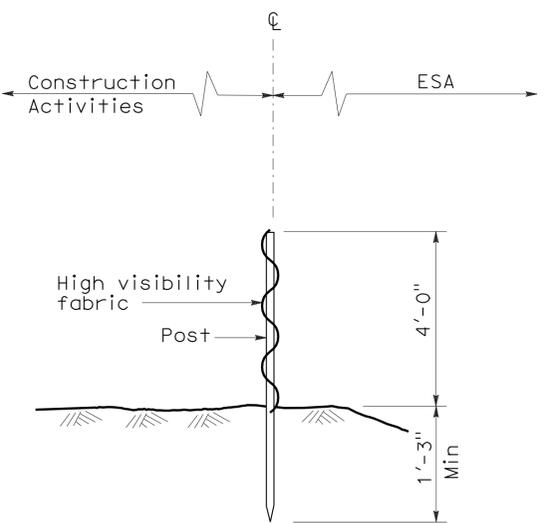
To accompany plans dated 6-14-10



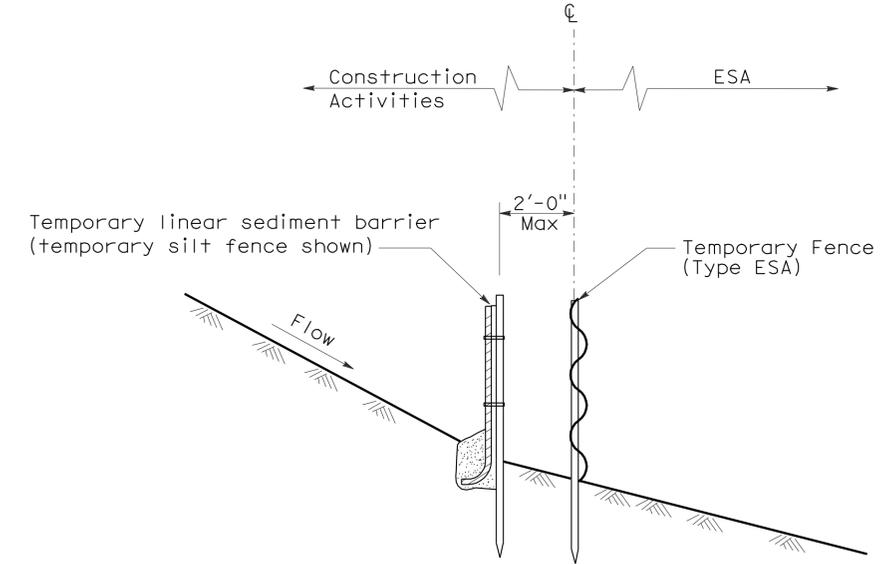
SIGN DETAIL

**NOTE:**

1. Temporary silt fence and temporary straw bale barrier shown for reference purposes only.

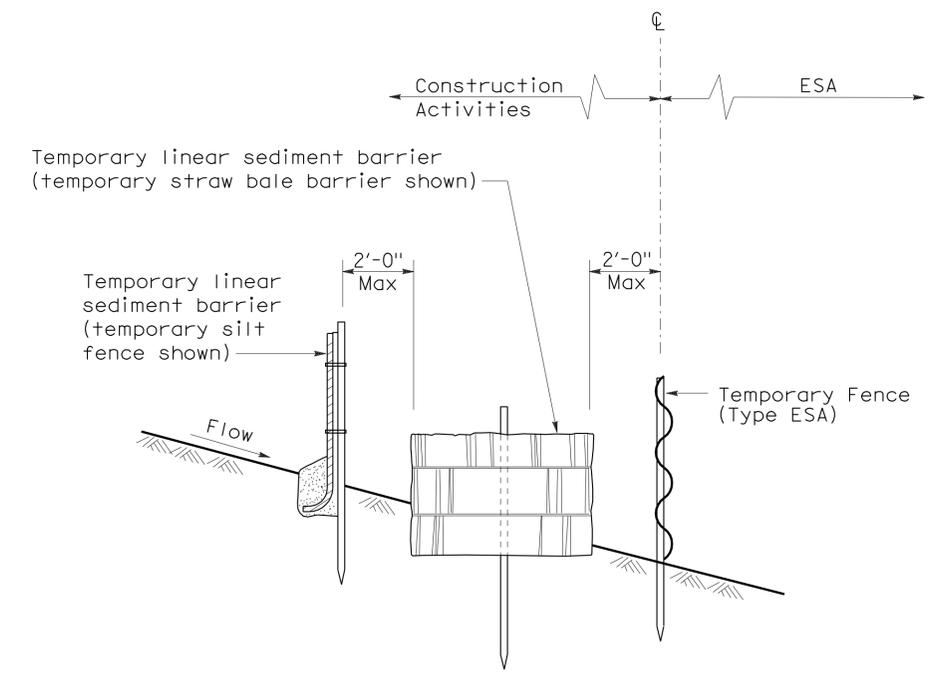


SECTION  
TEMPORARY FENCE (TYPE ESA)



SECTION  
PLACEMENT DETAIL  
FOR TEMPORARY LINEAR SEDIMENT BARRIER  
USED WITH TEMPORARY FENCE (TYPE ESA)

(See Note 1 )



SECTION  
PLACEMENT DETAIL  
FOR TEMPORARY SILT FENCE  
AND TEMPORARY STRAW BALE BARRIER  
USED WITH TEMPORARY FENCE (TYPE ESA)

(See Note 1 )

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

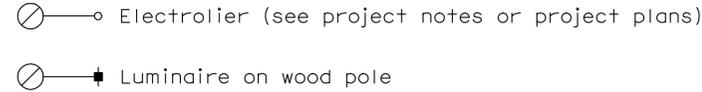
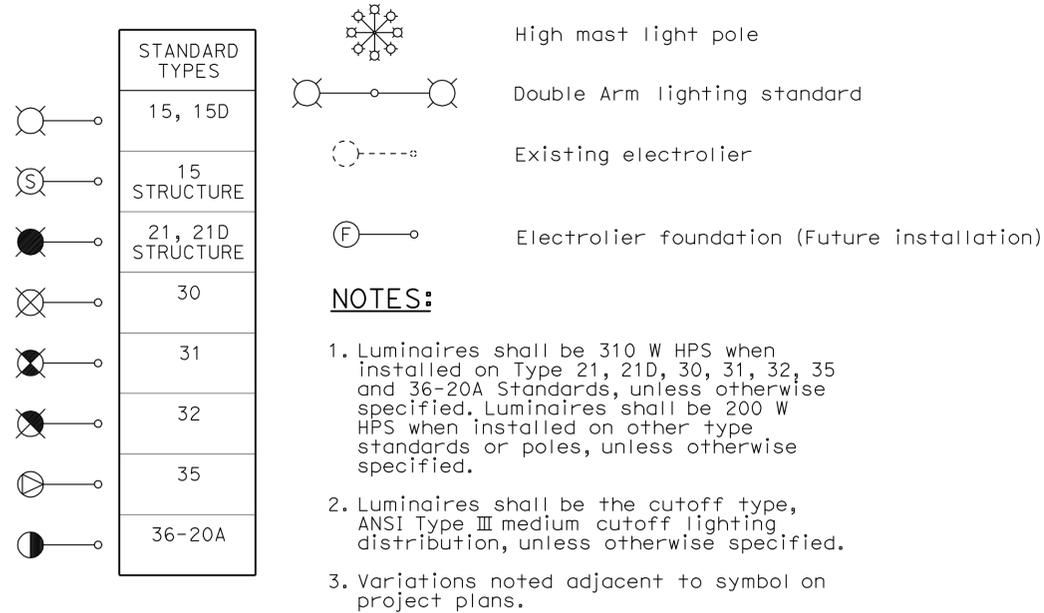
**TEMPORARY WATER POLLUTION CONTROL DETAILS**  
**[TEMPORARY FENCE (TYPE ESA)]**

NO SCALE

NSP T65 DATED APRIL 3, 2009 SUPPLEMENTS  
THE STANDARD PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP T65

# ELECTROLIERS



## STANDARD NOTES:

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

# ABBREVIATIONS AND EQUIPMENT DESIGNATIONS

## PROPOSED EXISTING

PROPOSED	EXISTING	DESCRIPTION
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	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-4C	mas-4C	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-5A	mas-5A	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MAS-5B	mas-5B	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MC	mc	Mercury contactor
M/M	m/m	Multiple to multiple transformer
MT	mt	Conduit with pull wire or rope only
MTG	mtg	Mounting
	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
06	Ker	46	31.9/32.3	22	33

*Jeffery G. McRae*  
REGISTERED ELECTRICAL ENGINEER

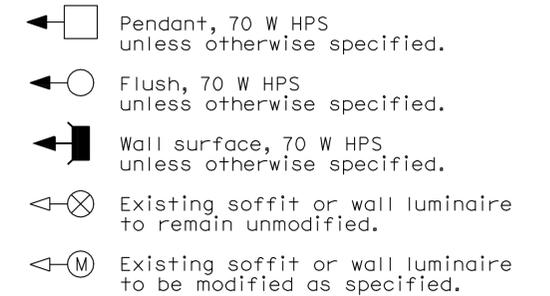
October 5, 2007  
PLANS APPROVAL DATE

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

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

To accompany plans dated 6-14-10

## SOFFIT AND WALL MOUNTED LUMINAIRES



### NOTE:

Arrow indicates "street side" of luminaire.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

# ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

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

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

2006 REVISED STANDARD PLAN RSP ES-1A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	23	33

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

### CONDUIT

PROPOSED	EXISTING	
		Lighting Conduit, unless otherwise indicated or noted
		Traffic signal conduit
		Communication conduit
		Telephone conduit
		Fire alarm conduit
		Fiber optic conduit
		Conduit termination
		Conduit riser in/on structure or service pole

### SIGNAL EQUIPMENT

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

### SERVICE EQUIPMENT

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

### POLE-MOUNTED SERVICE DESIGNATION



### ILLUMINATED OVERHEAD SIGN

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

### SIGNAL EQUIPMENT Cont

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

### NOTES:

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

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

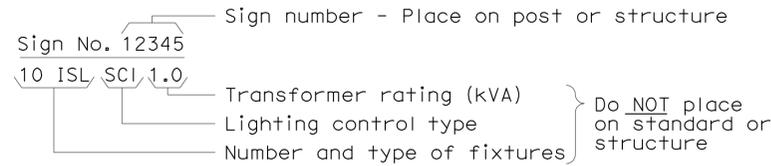
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B  
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

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

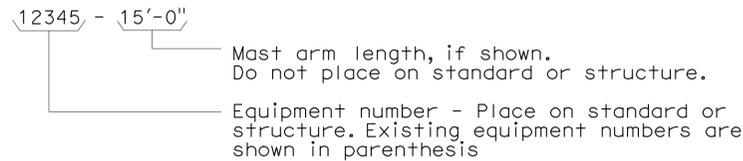
2006 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

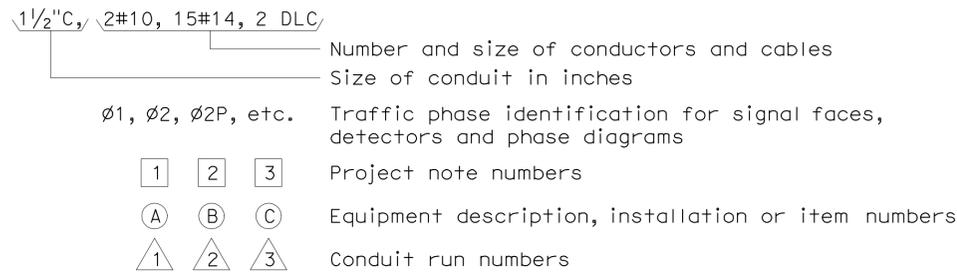
#### ILLUMINATED SIGN IDENTIFICATION NUMBER:



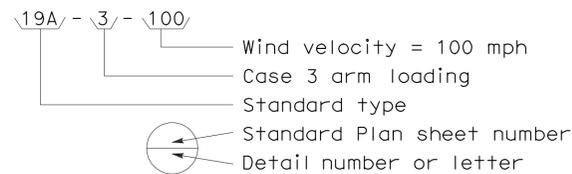
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



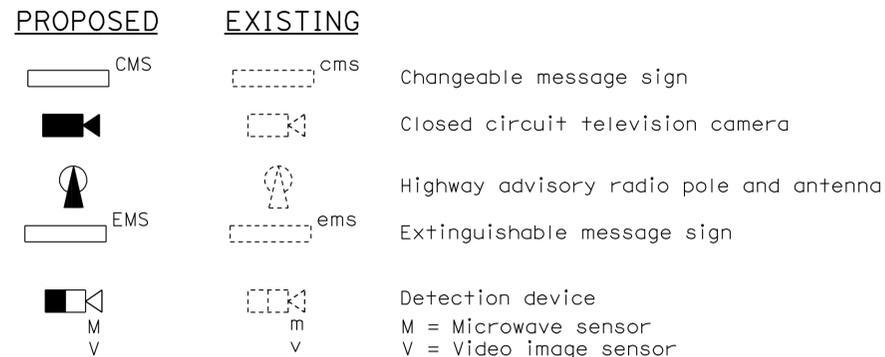
#### CONDUIT AND CONDUCTOR IDENTIFICATION:



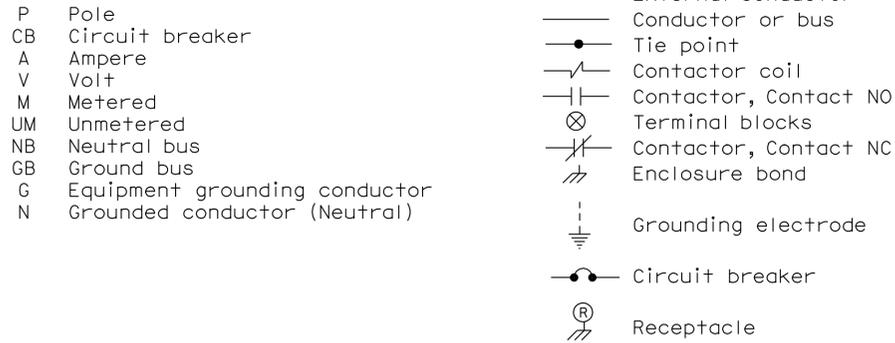
#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



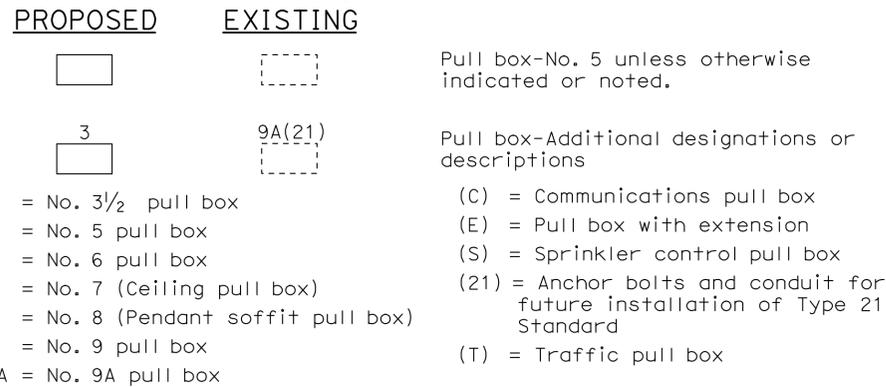
### MISCELLANEOUS EQUIPMENT



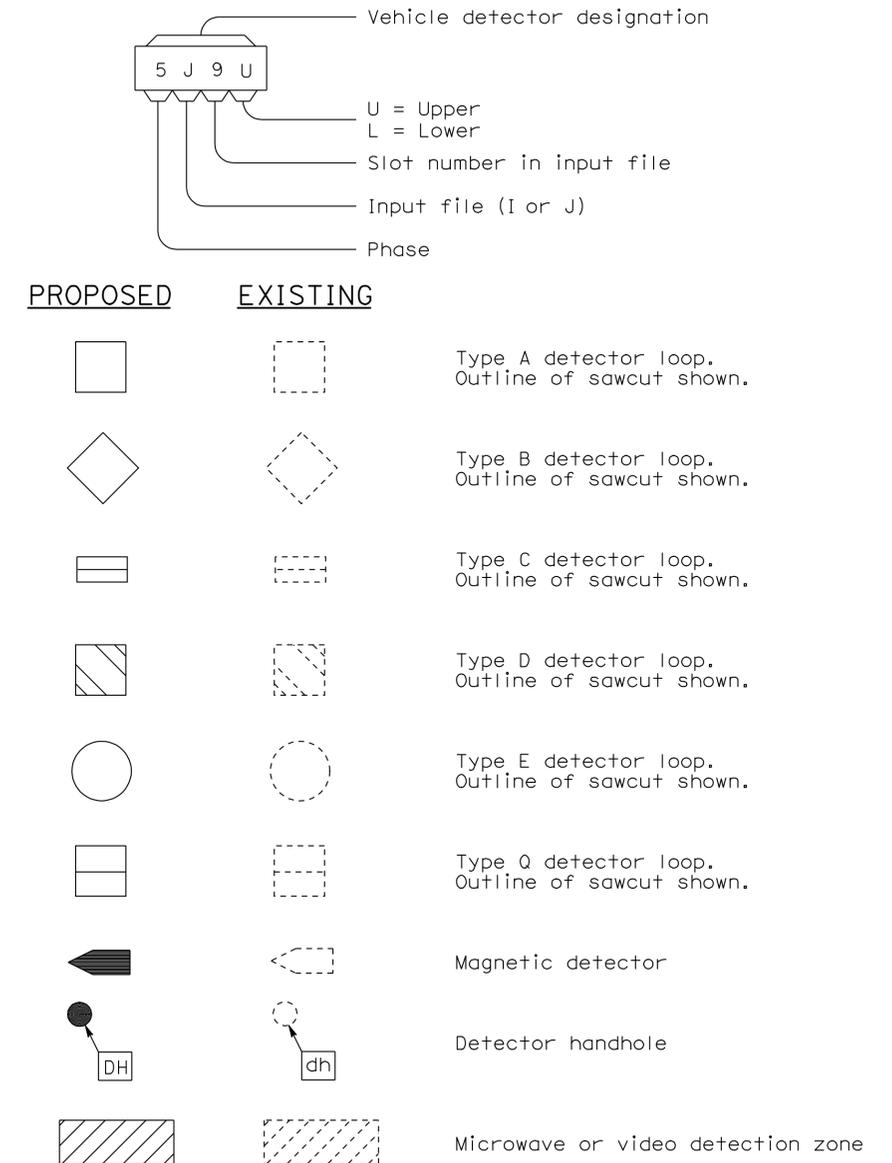
### WIRING DIAGRAM LEGEND



### PULL BOXES



### VEHICLE DETECTORS



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

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

2006 REVISED STANDARD PLAN RSP ES-1C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	25	33

*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 6-14-10

**NOTES-TYPE III SERVICE EQUIPMENT ENCLOSURES:**

1. Service equipment enclosure and metering equipment shall meet the requirements of the service utility. The meter area shall have a sealable, lockable, weathertight cover that can be removed without the use of tools.
2. Service equipment enclosures shall be factory wired and conform to NEMA standards.
3. Dimensions of service equipment enclosures shall meet the requirements of the service utility.
4. The dead front panels on Type III service equipment enclosures shall have a continuous stainless steel or aluminum piano hinge. The panel in front of the breakers shall be secured with a latch or captive screws. No live parts shall be mounted on the dead front panel.
5. The exterior door shall have provisions for padlocking. The padlock hole shall be a minimum diameter of  $\frac{7}{16}$ ".
6. Enclosures housing transformers of more than one kVA shall have effective screened ventilation louver of not less than 50 square inches. Screen shall be stainless steel No. 304, with a No. 10 size mesh. Framed screen shall be secured with at least four bolts.
7. Fasteners on the exterior of the enclosure shall be vandal-resistant and shall not be removable from the exterior. Exterior screws, nuts, bolts and washers shall be stainless steel.
8. Landing lugs for incoming service conductors shall be compatible with either copper or aluminum conductors sized to suit the conductors shown on the plan. Landing lugs shall be copper or tin-plated aluminum. Neutral bus shall be rated for 125 A and be suitable for copper or aluminum conductors unless otherwise specified. The terminal shall include but not be limited to:
  - a) Incoming terminals (landing lugs)
  - b) Neutral lugs
  - c) Solid neutral terminal strip
9. At least 6 standard single pole circuit breaker spaces,  $\frac{3}{4}$ " nominal, shall be provided for branch circuits. Circuit breaker interiors shall be copper. Interiors of enclosure shall accept plug-in or cable-in/cable-out circuit breakers.
10. Control wiring shall be 600 V, 14 stranded machine tool wire. Where subject to flexing, 19 strand wire shall be used.
11. Main bus shall be rated for 125 A and shall be tin-plated copper.
12. A plastic laminated wiring diagram shall be provided with brass mounting eyelets and attached to the inside of the enclosure and the wiring diagram shall be affixed to the interior with a UL or ETL approved method.

13. An engraved phenolic nameplate on the dead front panel indicating the function of each circuit or device shall be installed with stainless steel rivets or stainless steel screws:
  - a) Adjacent to the breaker or device with character size a minimum of  $\frac{1}{8}$ ".
  - b) At the top of the exterior door panel indicating State system number, voltage level and number of phases with character size a minimum of  $\frac{3}{16}$ ".
14. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.
15. In unpaved areas a raised portland cement concrete pad 2'-0" x 4" x width of foundation shall be constructed in front of new service equipment enclosure installation. Pad shall be set to elevation of foundation.
16. Foundation shall extend 2" minimum beyond edge of service equipment enclosure.
17. Internal bus, where shown, is typical only. Alternative design of proposed service equipment enclosure shall be submitted to the Engineer for approval.
18. Plug-in circuit breakers may be mounted in the vertical or horizontal position. Cable-in/cable-out circuit breakers shall be mounted in the vertical position.
19. Type III-AF and Type III-BF service equipment enclosures shall have the meter viewing windows located on the front side of the service equipment enclosures.
20. Type III-AR and Type III-BR service equipment enclosures shall be similarly constructed as Type III-AF and Type III-BF respectively, except the meter viewing windows shall be located on the back side of the service equipment enclosures.
21. Minimum clearance shall be required for front and back of service equipment enclosure per National Electrical Code, Article 110.26, "Spaces About Electric Equipment (600 Volts, Nominal, or Less)."

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

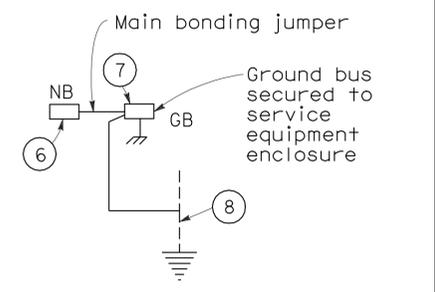
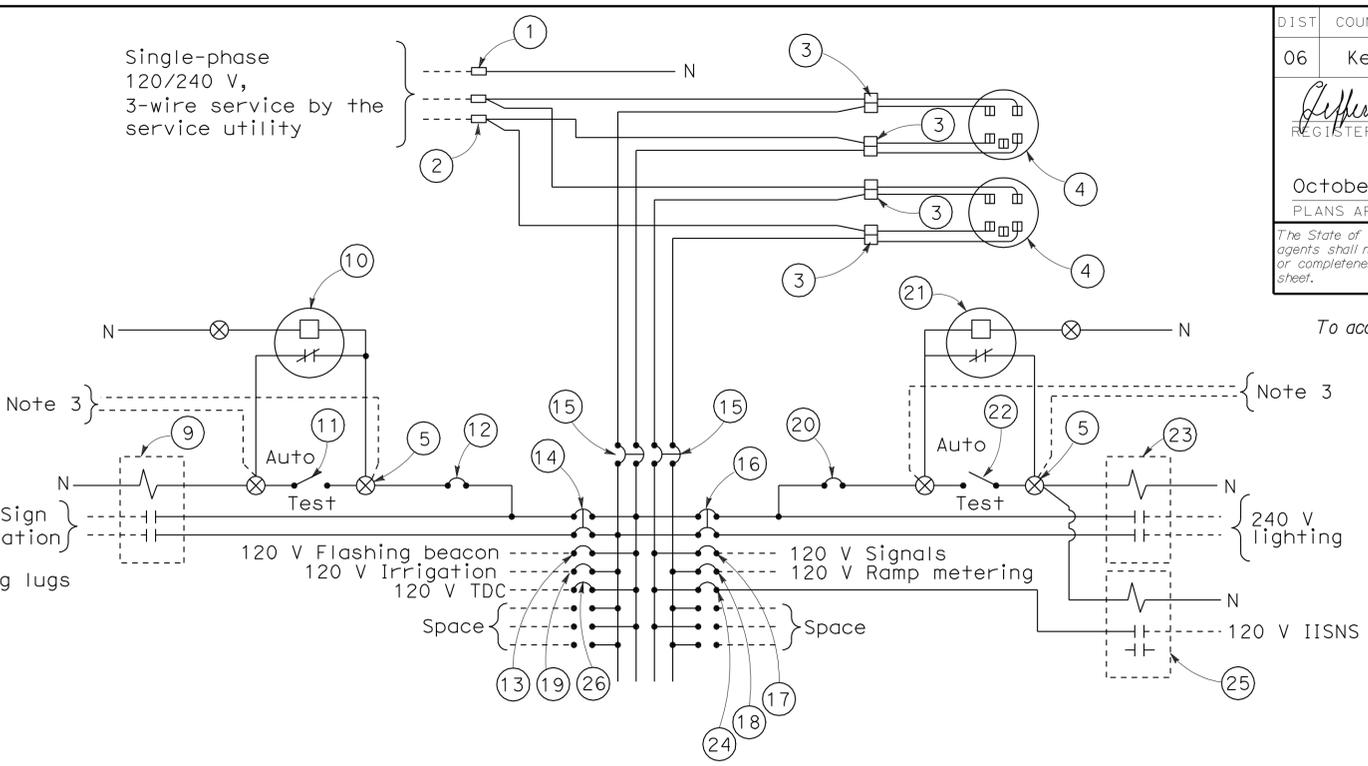
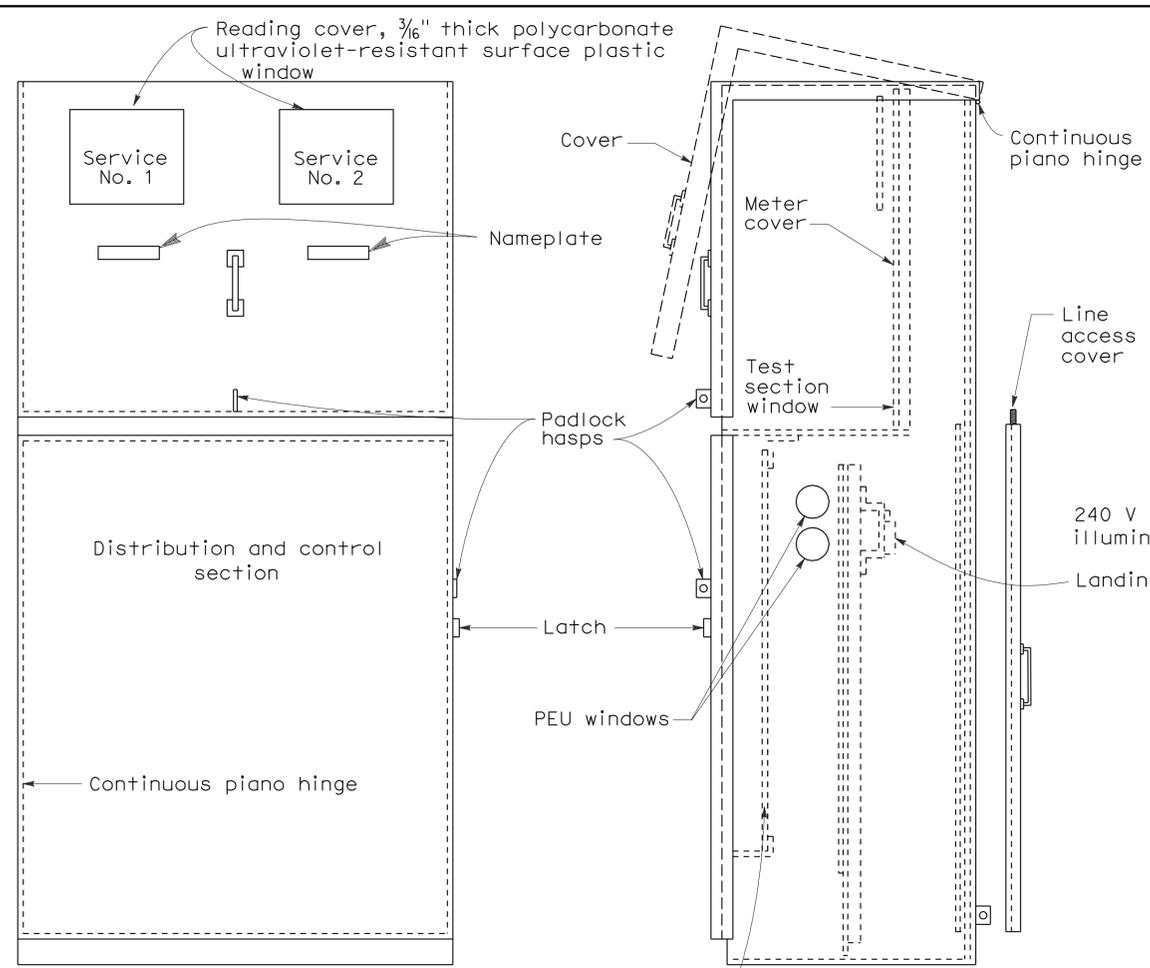
**ELECTRICAL SYSTEMS  
(SERVICE EQUIPMENT NOTES  
TYPE III SERIES)**

NO SCALE

RSP ES-2C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-2C  
DATED MAY 1, 2006 - PAGE 405 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-2C**

2006 REVISED STANDARD PLAN RSP ES-2C



**120/240 V SERVICE WIRING DIAGRAM (TYPICAL)**

**TYPE III-CF SERVICE EQUIPMENT ENCLOSURE WITH PROVISIONS FOR TWO 100 A METERS (TYPICAL)**

TYPE III-C SERVICE (120/240 V) EQUIPMENT LEGEND

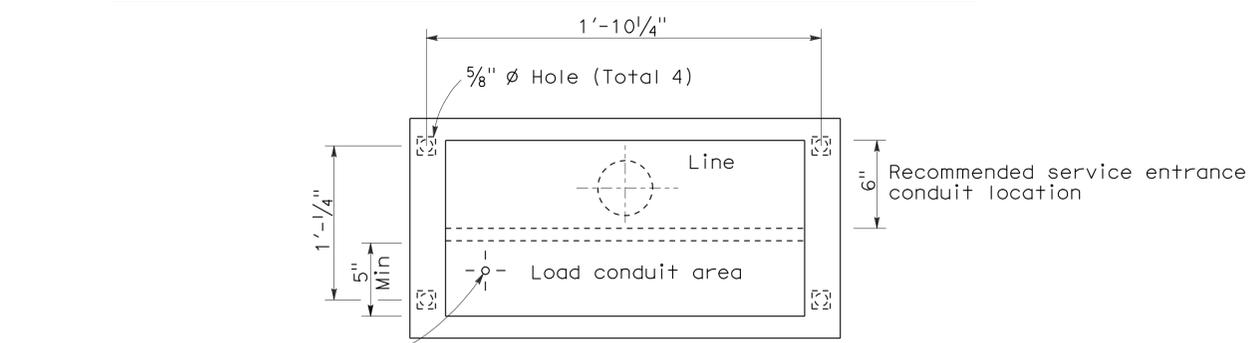
ITEM No.	COMPONENT	NAME PLATE DESCRIPTION	ITEM No.	COMPONENT	NAME PLATE DESCRIPTION
1	Neutral lug		14	30 A, 240 V, 2P, CB	Sign Illumination
2	Landing lug (Note 6)		15	100 A, 240 V, 2P, CB	Main Breaker
3	Test bypass facility		16	30 A, 240 V, 2P, CB	Lighting
4	Meter socket and support		17	50 A, 120 V, 1P, CB	Signals
5	Terminal blocks		18	30 A, 120 V, 1P, CB	Ramp Metering
6	Neutral bus		19	20 A, 120 V, 1P, CB	Irrigation
7	Ground bus		20	15 A, 120 V, 1P, CB	Lighting Control
8	Grounding electrode		21	Photoelectric unit (Note 7)	
9	30 A, 2PNO, Contactor	Sign Illumination	22	15 A, 1P, Test switch	Lighting Control
10	Photoelectric unit (Note 7)		23	60 A, 2PNO Contactor	Lighting
11	15 A, 1P, Test switch	Sign Illumination Test Switch	24	15 A, 120 V, 1P, CB	IISNS
12	15 A, 120 V, 1P, CB	Sign Illumination Control	25	30 A, 2PNO Contactor	IISNS
13	15 A, 120 V, 1P, CB	Flashing Beacon	26	20 A, 120 V, 1P, CB	Telephone Demarcation Cabinet

**NOTES: (FOR SERVICE EQUIPMENT ENCLOSURE)**

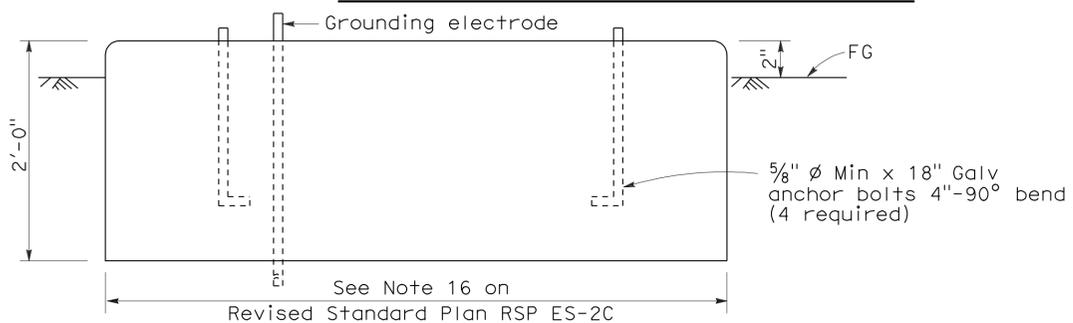
- Voltage ratings of service equipment shall conform to the service voltages indicated on the plans.
- Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
- Connect to remote test switch mounted on lighting standards, sign post or structure when required.
- Items No. 1 and 6 shall be isolated from the service equipment enclosure.
- Meter sockets shall be 5 clip type.
- The landing lug shall be suitable for multiple conductors.
- Type I photoelectric control shall be used unless otherwise indicated on the plans.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
 (SERVICE EQUIPMENT AND  
 TYPICAL WIRING DIAGRAM  
 TYPE III-C SERIES)**  
 NO SCALE

RSP ES-2F DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-2F  
 DATED MAY 1, 2006 - PAGE 408 OF THE STANDARD PLANS BOOK DATED MAY 2006.



**BASE FOR TYPE III-C SERVICE EQUIPMENT ENCLOSURE**



**FOUNDATION DETAIL**

2006 REVISED STANDARD PLAN RSP ES-2F

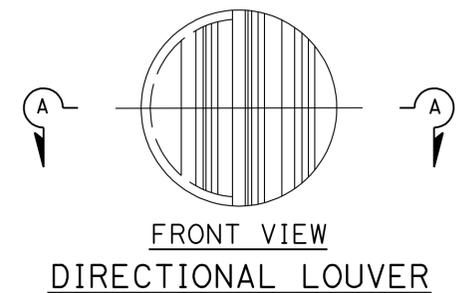
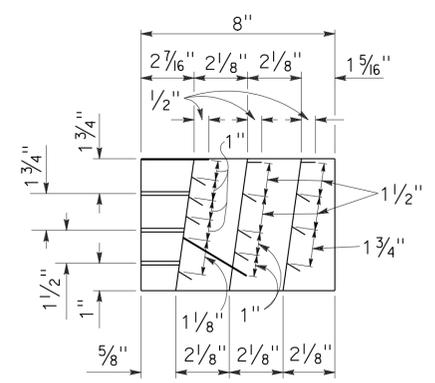
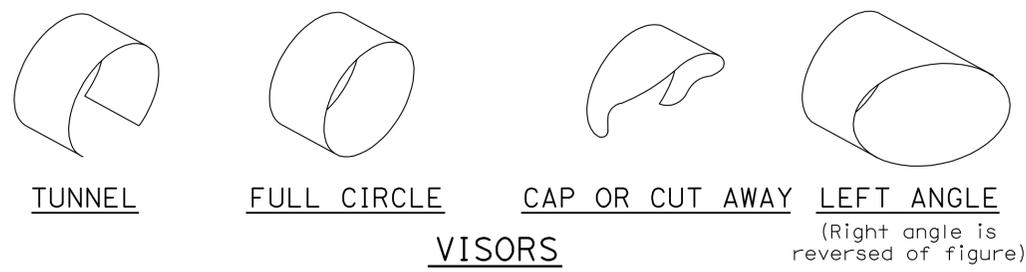
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	27	33

Jeffrey G. McRae  
 REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-10  
 ELECTRICAL  
 STATE OF CALIFORNIA

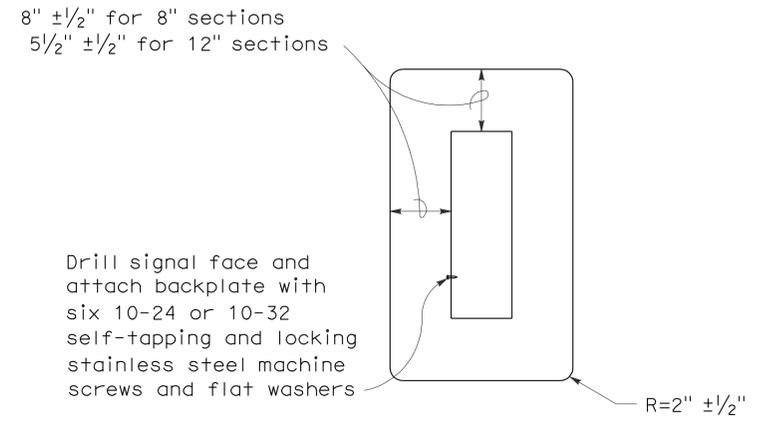
June 6, 2008  
 PLANS APPROVAL DATE

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To accompany plans dated 6-14-10



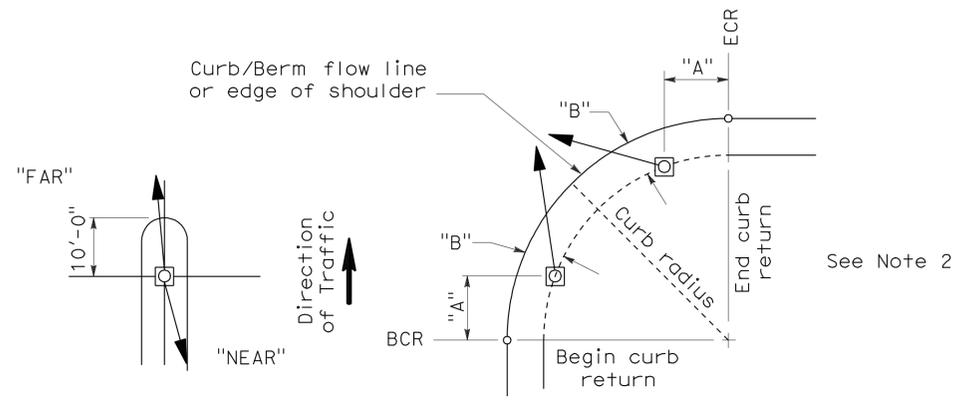
Directional louvers shall be oriented as directed by the Engineer and secured in place with one plated brass machine screw and nut.



**8" AND 12" SECTIONS**

**BACKPLATE**

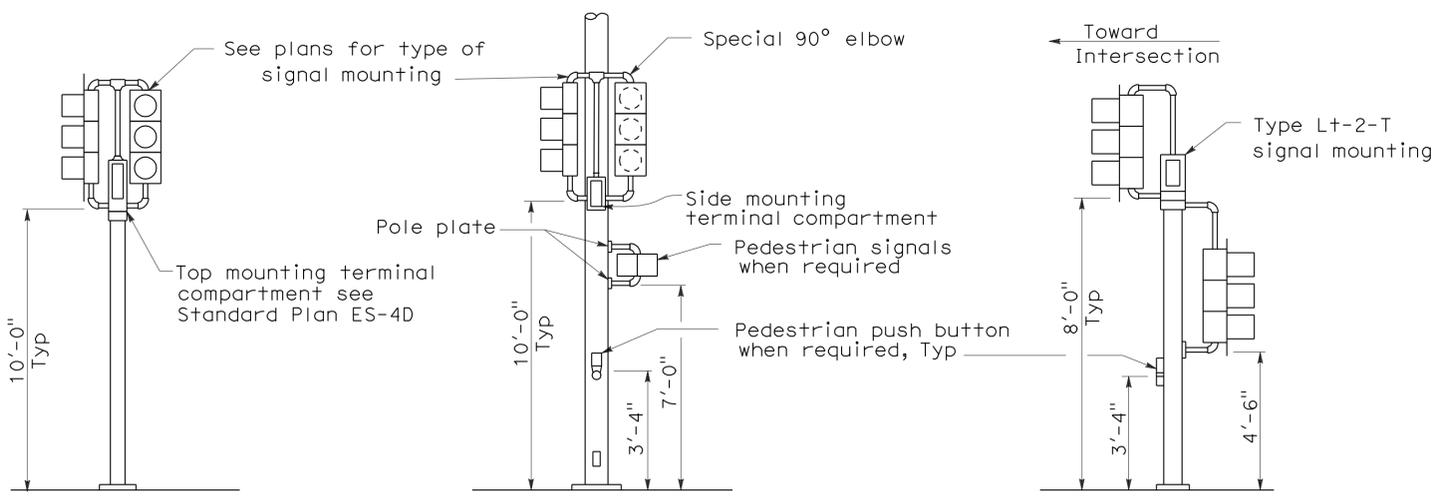
1/16" minimum thickness  
 3001-14 aluminum, or plastic when specified



**NOTES:**

1. Typical signal pole placement unless dimensioned on plans.
2. For "A" and "B" dimensions, see Pole Schedule, or as directed by the Engineer.

**SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS**



**TOP MOUNTED SIGNALS (TV)**

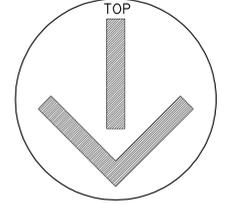
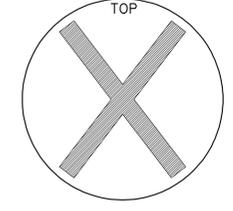
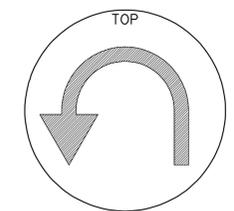
Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

**SIDE MOUNTED SIGNALS (SV AND SP)**

Normally used on standards with luminaire or signal mast arm

**LEFT TURN LANE SIGNAL**

Type 1-A, 1-B, 1-C and 1-D standard as indicated on plans



**TYPICAL SIGNAL INSTALLATIONS**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)**

NO SCALE

RSP ES-4C DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN ES-4C DATED MAY 1, 2006 - PAGE 420 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-4C**

2006 REVISED STANDARD PLAN RSP ES-4C

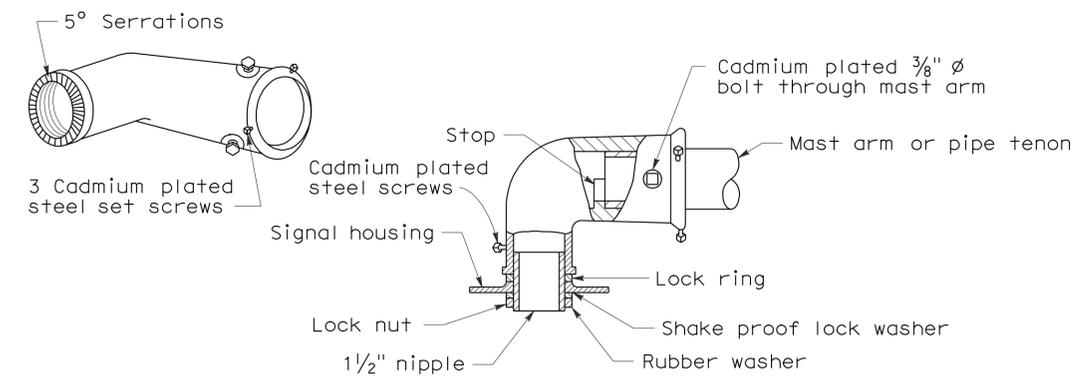
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	28	33

Jeffrey G. McRae  
 REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-10  
 STATE OF CALIFORNIA

June 6, 2008  
 PLANS APPROVAL DATE

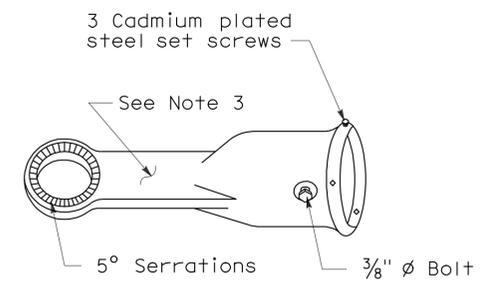
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To accompany plans dated 6-14-10



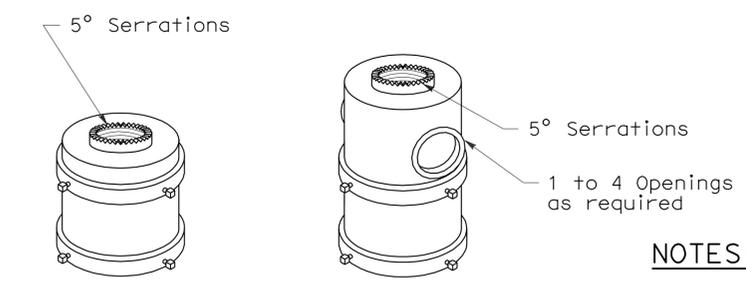
**MAST ARM MOUNTING - TYPE "MAT"**

For 2 NPS pipe, see Note 1.



**MAST ARM MOUNTING - TYPE "MAS"**

For 2 NPS pipe. See Note 1.



For one mounting For multiple mountings

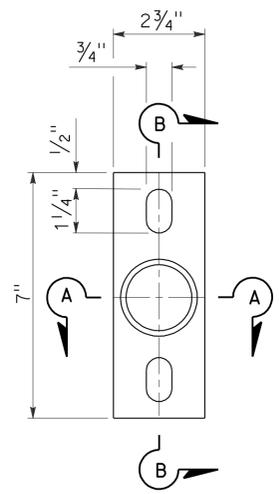
**TOP MOUNTINGS**

For 4 NPS pipe, see Note 2.

**NOTES:**

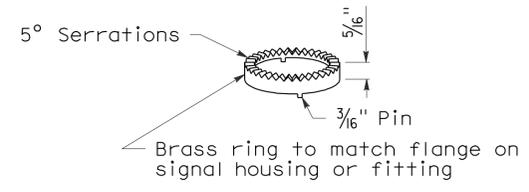
- After mast arm signal has been plumbed and secured, drill 7/16" hole through mast arm tenon in line with slip fitter hole. Place a cadmium plated 3/8" Ø galvanized bolt with washer under bolt head through hole and secure with washer, nut, and locknut. Seal openings between mast arm mountings and mast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

**SIGNAL SLIP FITTERS**



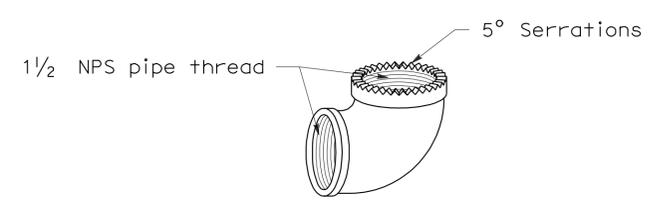
**POLE PLATE**

For side mountings



**LOCK RING**

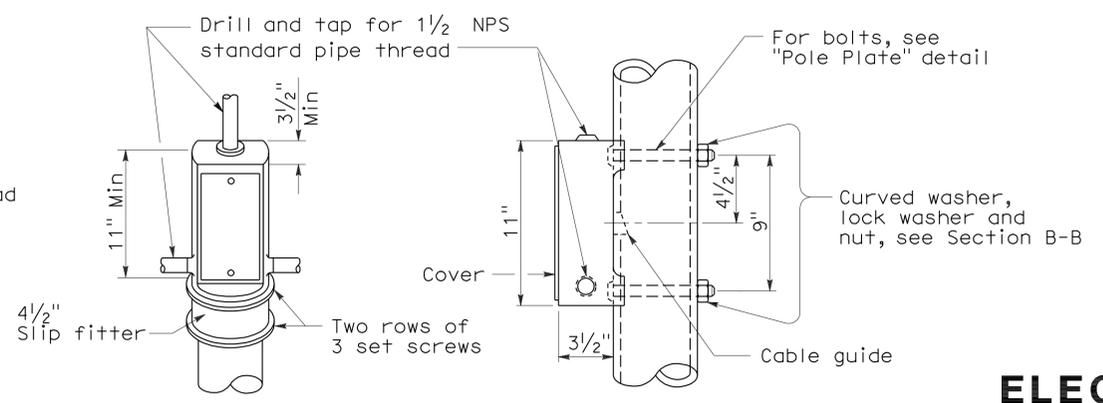
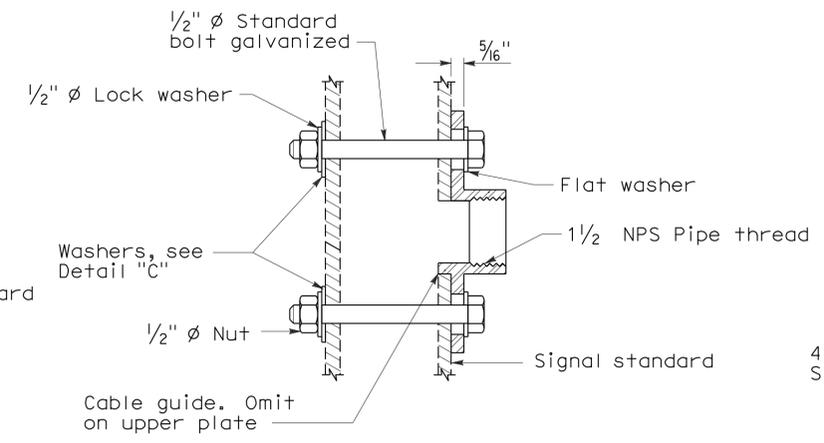
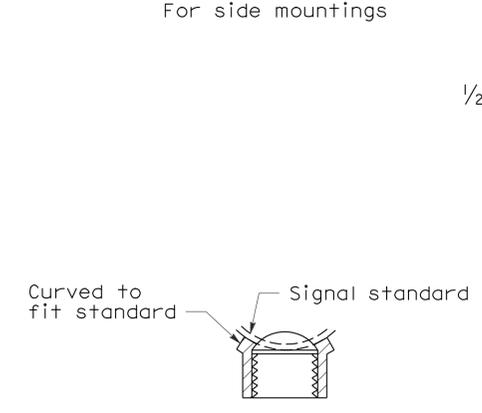
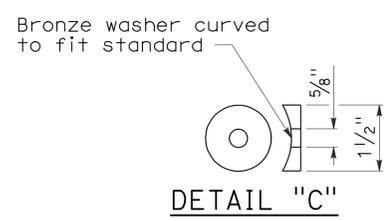
Use where locking ring is not integral with signal housing or fitting.



**SPECIAL 90° ELBOW**

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

**MISCELLANEOUS MOUNTING HARDWARE**



**TOP MOUNTING**

**SIDE MOUNTING**

**TERMINAL COMPARTMENTS**

**ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)**

NO SCALE

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

**REVISED STANDARD PLAN RSP ES-4D**

2006 REVISED STANDARD PLAN RSP ES-4D

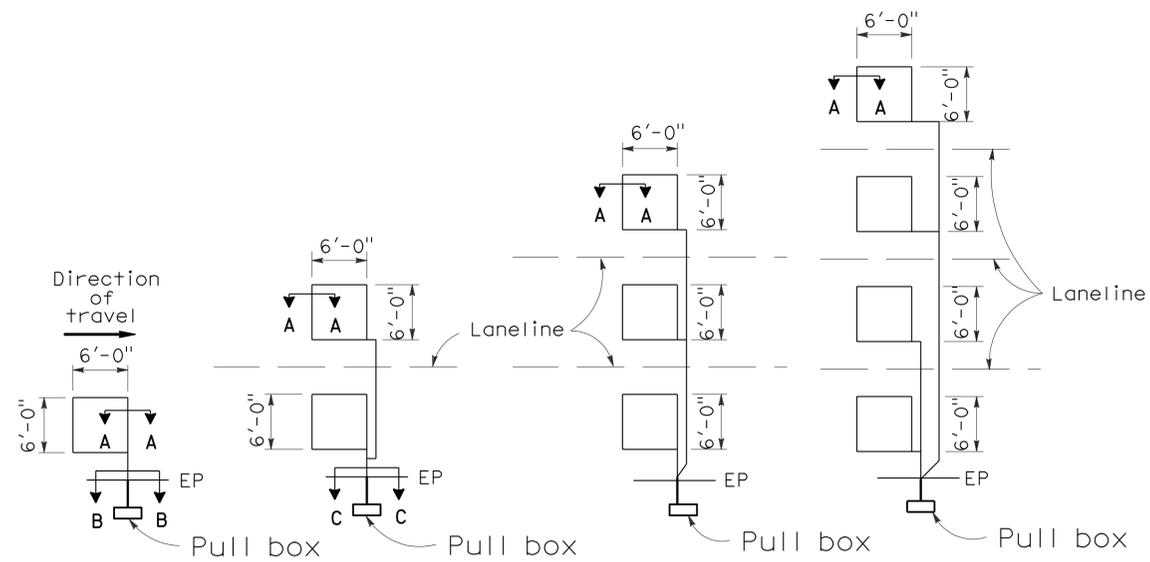
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	29	33

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

## LOOP INSTALLATION PROCEDURE

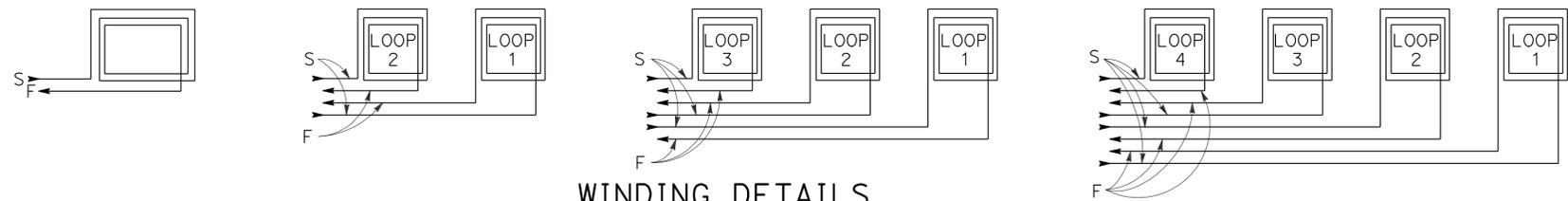
- Loops shall be centered in lanes.
- Saw slots in pavement for loop conductors as shown in details.
- Distance between side of loop and a lead-in saw cut from adjacent detectors shall be 2'-0" minimum. Distance between lead-in saw cuts shall be 6" minimum.
- Bottom of saw slot shall be smooth with no sharp edges.
- Slots shall be washed until clean, blown out and thoroughly dried before installing loop conductors.
- Adjacent loops on the same sensor unit channel shall be wound in opposite directions.
- Identify and tag loop circuit pairs in the pull box with loop number, start (S) and finish (F) of conductor. Identify and tag lead-in-cable with sensor number and phase.
- Install loop conductor in slot using a 3/16" to 1/4" thick wood paddle. Hold loop conductors with wood paddles (at the bottom of the sawed slot) during sealant placement.
- No more than 2 twisted pairs shall be installed in one sawed slot.
- Allow additional 5'-0" of slack length of conductor for the lead-in run to pull box.
- The additional length of each conductor for each loop shall be twisted together into a pair (6 turns per 3'-4" minimum) before being placed in the slot and conduit leading to pull box.
- Test each loop circuit for continuity, circuit resistance and insulation resistance at the pull box before filling slots.
- Fill slots as shown in details.
- Splice loop conductors to lead-in-cable. Splices shall be soldered.
- End of lead-in-cable and Type 2 loop conductor shall be waterproofed prior to installing in conduit to prevent moisture from entering the cable.
- Lead-in-cable shall not be spliced between the pull box and the controller cabinet terminals.
- Test each loop circuit for continuity, circuit resistance and insulation resistance at the controller cabinet location.
- Where loop conductors are not to be spliced to a lead-in-cable, the ends of the conductors shall be taped and waterproofed with electrical insulating coating.



TYPE 1A INSTALLATION    TYPE 2A INSTALLATION    TYPE 3A INSTALLATION    TYPE 4A INSTALLATION  
**SAWCUT DETAILS**

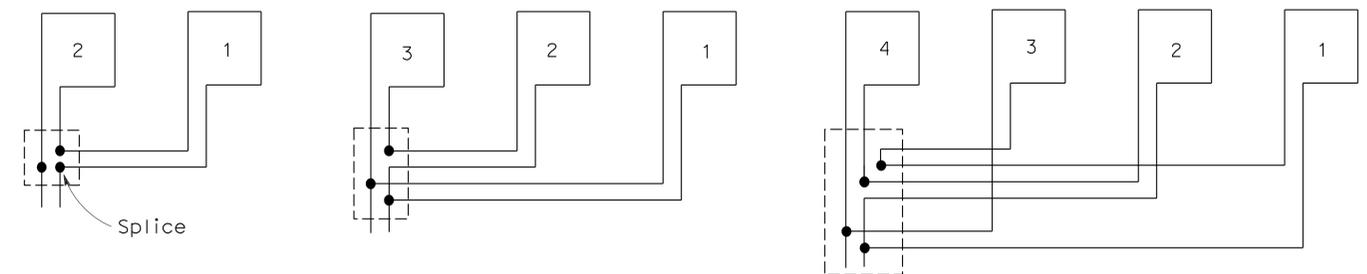
(Type A loop detector configurations illustrated)

- 1A thru 4A = 1 Type A loop configuration in each lane.
  - 1B thru 4B = 1 Type B loop configuration in each lane.
  - 1C = 1 Type C loop configuration entering lanes as required.
  - 1D thru 4D = 1 Type D loop configuration in each lane.
  - 1E thru 4E = 1 Type E loop configuration in each lane.
  - 1Q thru 4Q = 1 Type Q loop configuration in each lane.
- (Use Type A, B, C, D, E or Q loop detector configurations only when specified or shown on plans)



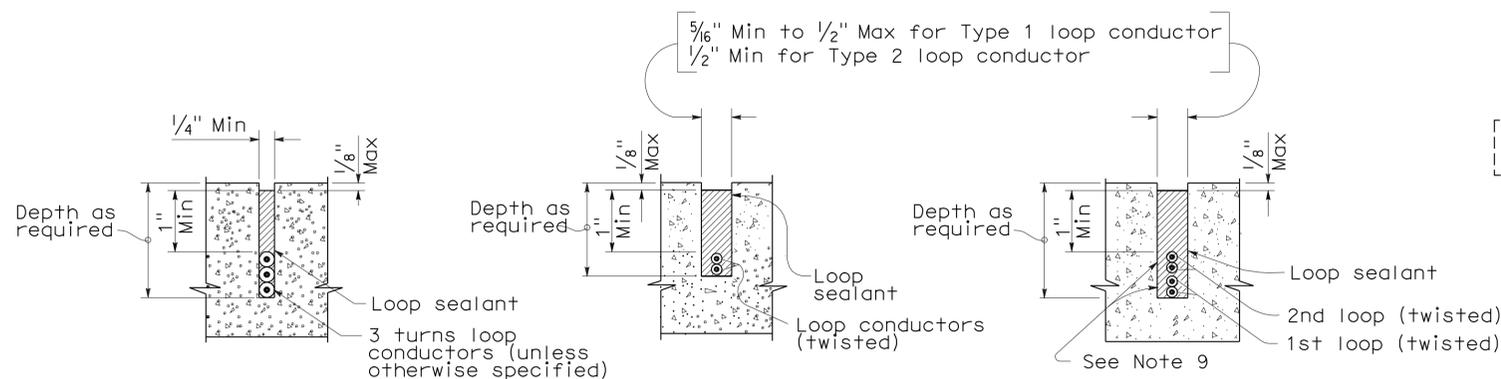
## WINDING DETAILS

See Notes 6 and 7



## TYPICAL LOOP CONNECTIONS

(Dashed lines represent the pull box)



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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (DETECTORS)

NO SCALE

RSP ES-5A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-5A DATED MAY 1, 2006 - PAGE 423 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-5A**

2006 REVISED STANDARD PLAN RSP ES-5A

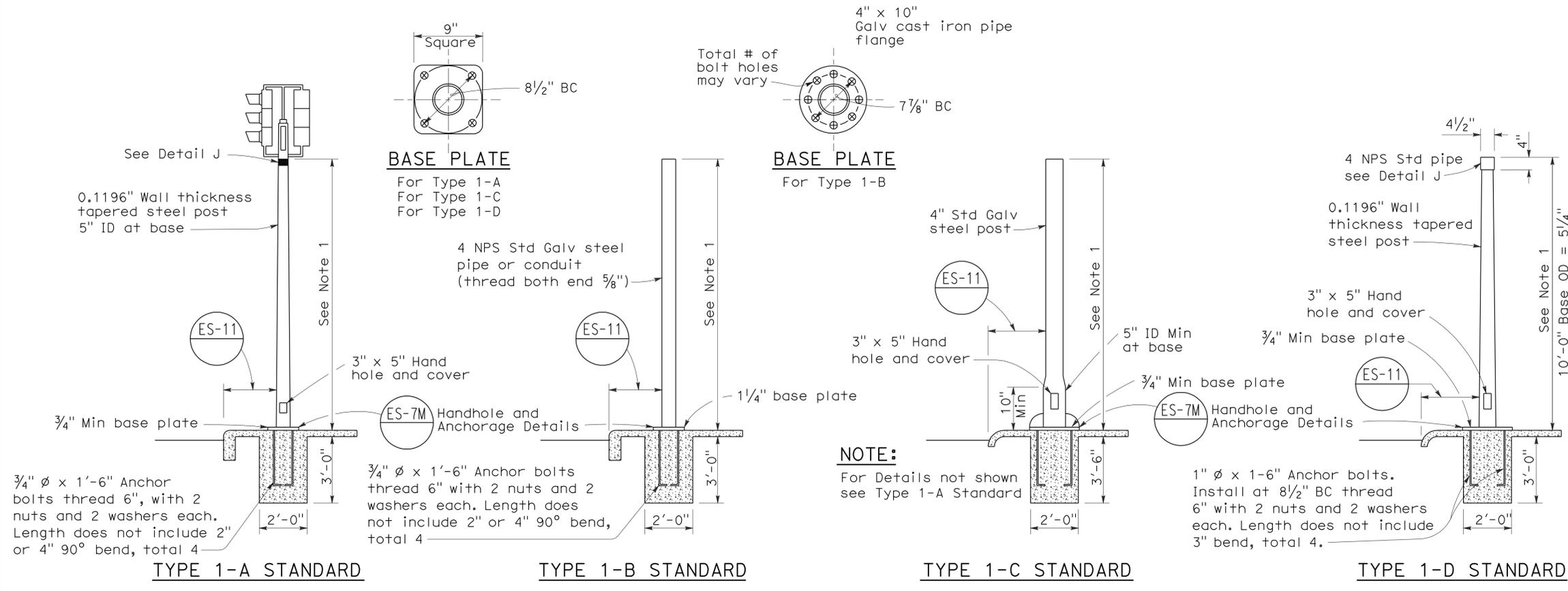
To accompany plans dated 6-14-10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	30	33

Stanley P. Johnson  
 REGISTERED CIVIL ENGINEER  
 October 5, 2007  
 PLANS APPROVAL DATE  
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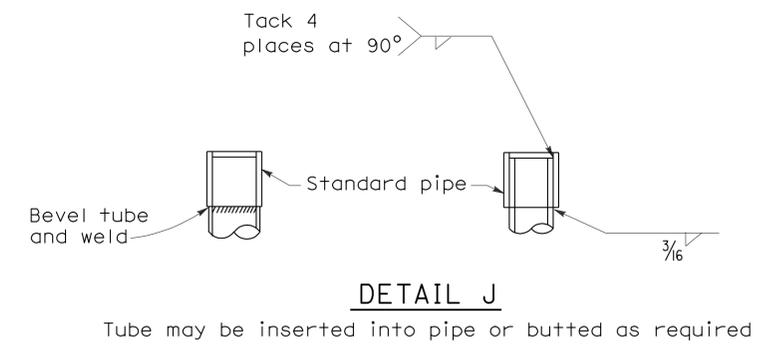
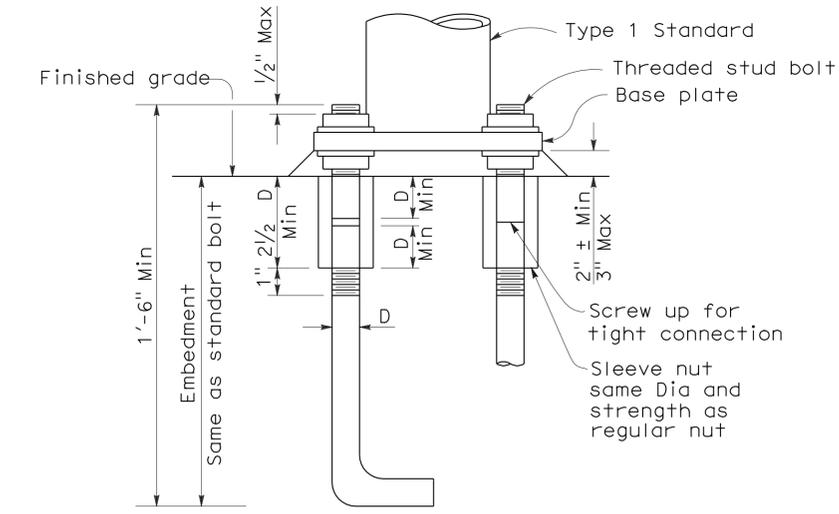
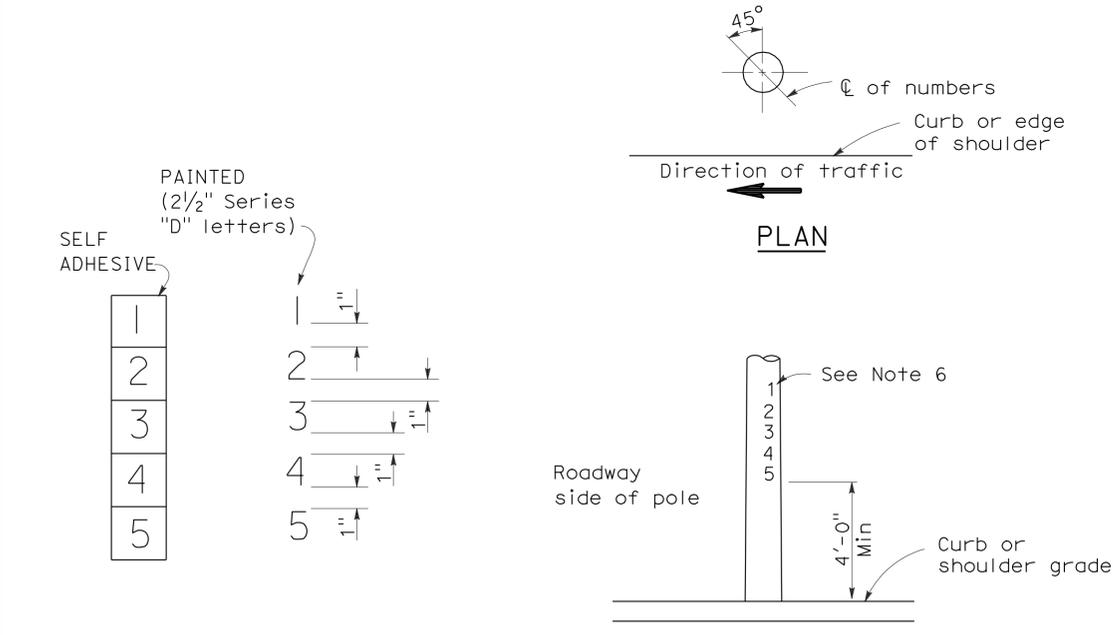
REGISTERED PROFESSIONAL ENGINEER  
 Stanley P. Johnson  
 No. C57793  
 Exp. 3-31-08  
 CIVIL  
 STATE OF CALIFORNIA

2006 REVISED STANDARD PLAN RSP ES-7B



- NOTES:**
- Standards shall be 10'-0" ± 2" for vehicle signals and 7'-0" ± 2" for pedestrian signals unless otherwise noted on plans.
  - Top of standards shall be 4 1/2" OD.
  - Conduits shall extend 2" maximum above finished surface of foundation and for Types 1-A, 1-C and 1-D shall be sloped toward handhole.
  - Anchor bolts shall be bonded to conduit or grounding conductor.
  - Conduit between standard and adjacent pull box shall be 2" minimum.
  - Paint numbers on roadway side facing traffic when electrolier or post is left of direction of traffic.

**TYPE 1 SIGNAL STANDARDS**



**LOCATION OF EQUIPMENT NUMBERS ON STANDARDS AND POSTS**

**ANCHOR BOLTS WITH SLEEVE NUTS**

Sleeve nuts to be used only when shown or specified on Project Plans

D = Diameter of anchor bolt

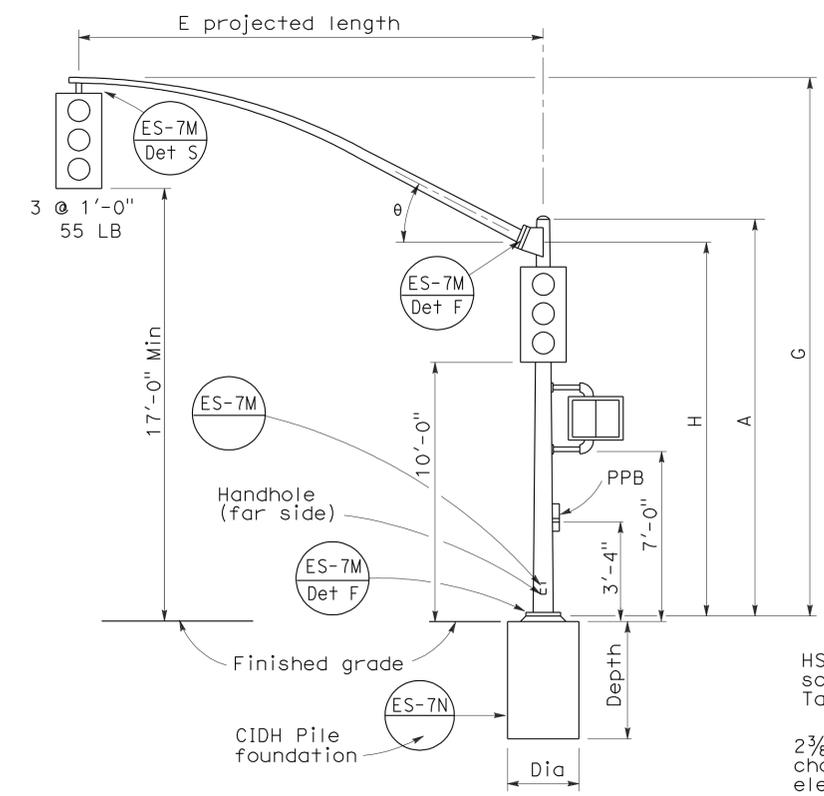
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD TYPE 1 STANDARD AND EQUIPMENT NUMBERING)**

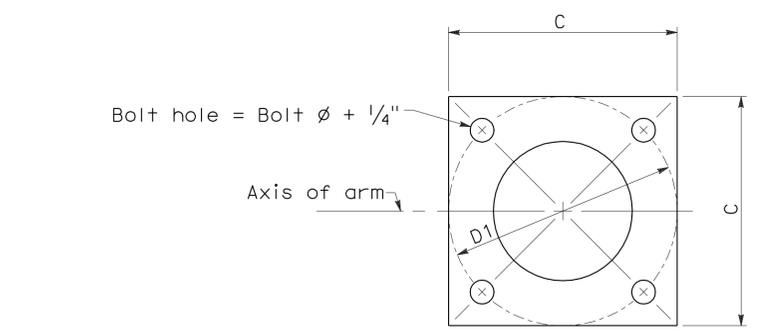
NO SCALE

RSP ES-7B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-7B DATED MAY 1, 2006 - PAGE 438 OF THE STANDARD PLANS BOOK DATED MAY 2006.

To accompany plans dated 6-14-10

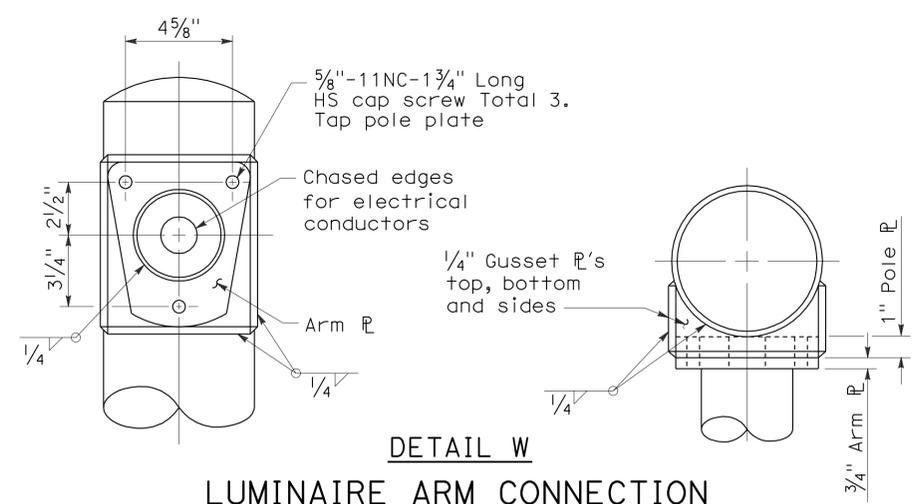


**ELEVATION**  
**TYPE 16-1-100, 18-1-100**

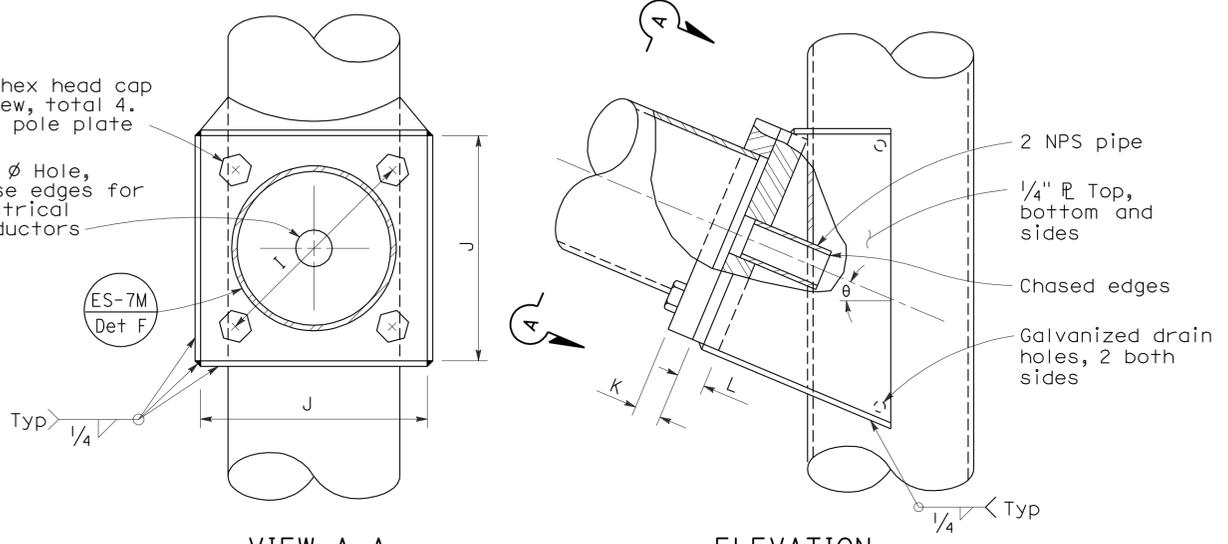


**BASE PLATE**

E Projected Length	G Mounting Height	H	Min OD At Pole	Thickness	I Bolt Circle	HS Cap Screws	J Plate size	K Arm $\phi$ Thickness	L Pole $\phi$ Thickness	$\theta$
15'-0"	21'-8"±	17'-6"	7"	0.1196"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°
20'-0"	21'-8"±		7 1/8"							
25'-0"	22'-8"±	16'-0"	7 5/8"							
30'-0"	23'-0"±		8"							

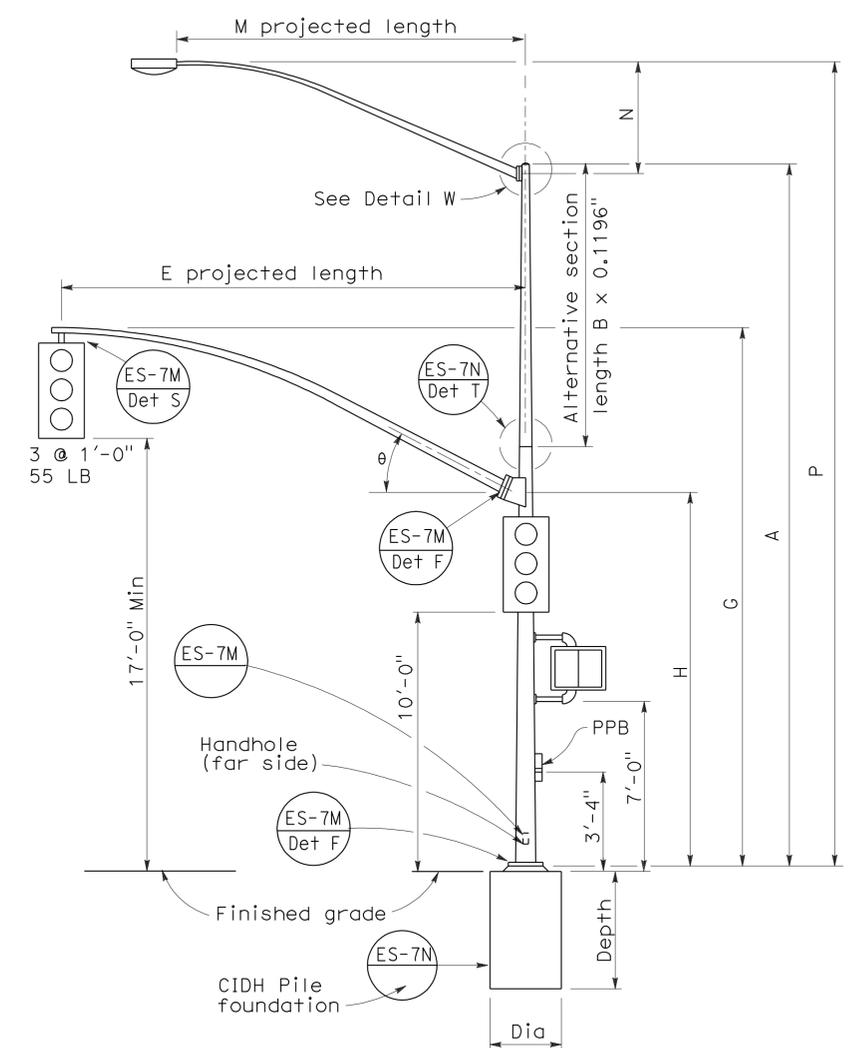


**DETAIL W**  
**LUMINAIRE ARM CONNECTION**



**VIEW A-A**  
**SIGNAL ARM CONNECTION DETAILS**

M Projected Length	N Rise	Min OD at Pole	Thickness	P Mounting Height	
				30'-0" Pole	35'-0" Pole
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 3/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±



**ELEVATION**  
**TYPE 19-1-100, 19A-1-100**

Pole Type	Load Case	Wind Velocity mph	POLE DATA					BASE PLATE DATA					CIDH PILE FOUNDATION						
			A Height	Min OD		Thickness	Alternative Section			C	D1 Bolt Circle	Thickness	Anchor Bolts		Luminaire Arm	Signal Arm	Diameter	Depth	Reinforced
				Base	Top		B Length	Bottom	Top				Size						
16-1-100	1	100	18'-6"	8 1/4"	0.1793"	None			1'-6"	1'-5 1/2"	1 1/4"	1 1/2" $\phi$ x 42" x 6"		None	15'-0"	2'-6"	7'-2"	Yes	
18-1-100			17'-0"	8 7/8"		None						None	20'-0"						
19-1-100			30'-0"	6 5/8"		10'-0"	8"	6 5/8"				6'-15' [12'-0"]	25'-0"						
19A-1-100			35'-0"	5 1/6"		15'-0"	5 1/6"	6'-15' [15'-0"]				30'-0"							

□ Indicates arm length to be used unless otherwise noted on plans.

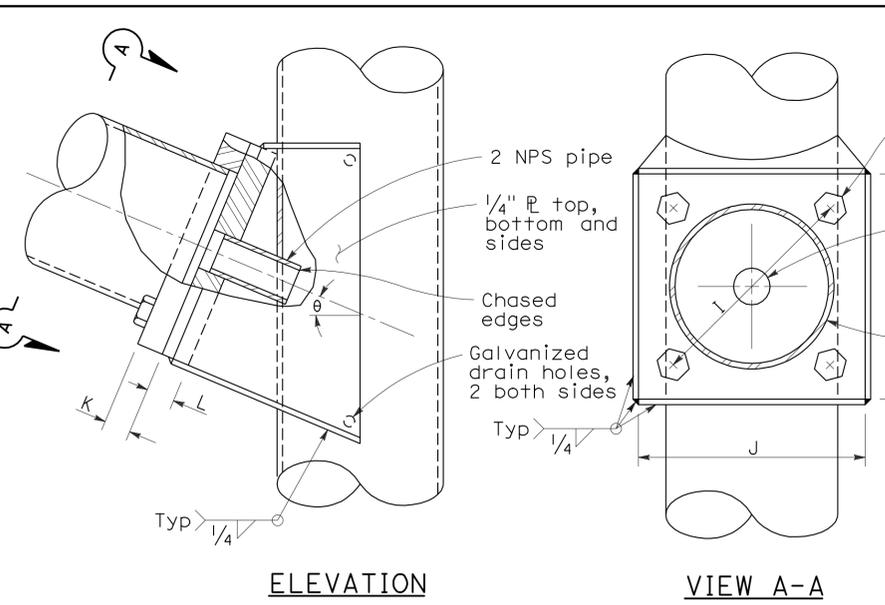
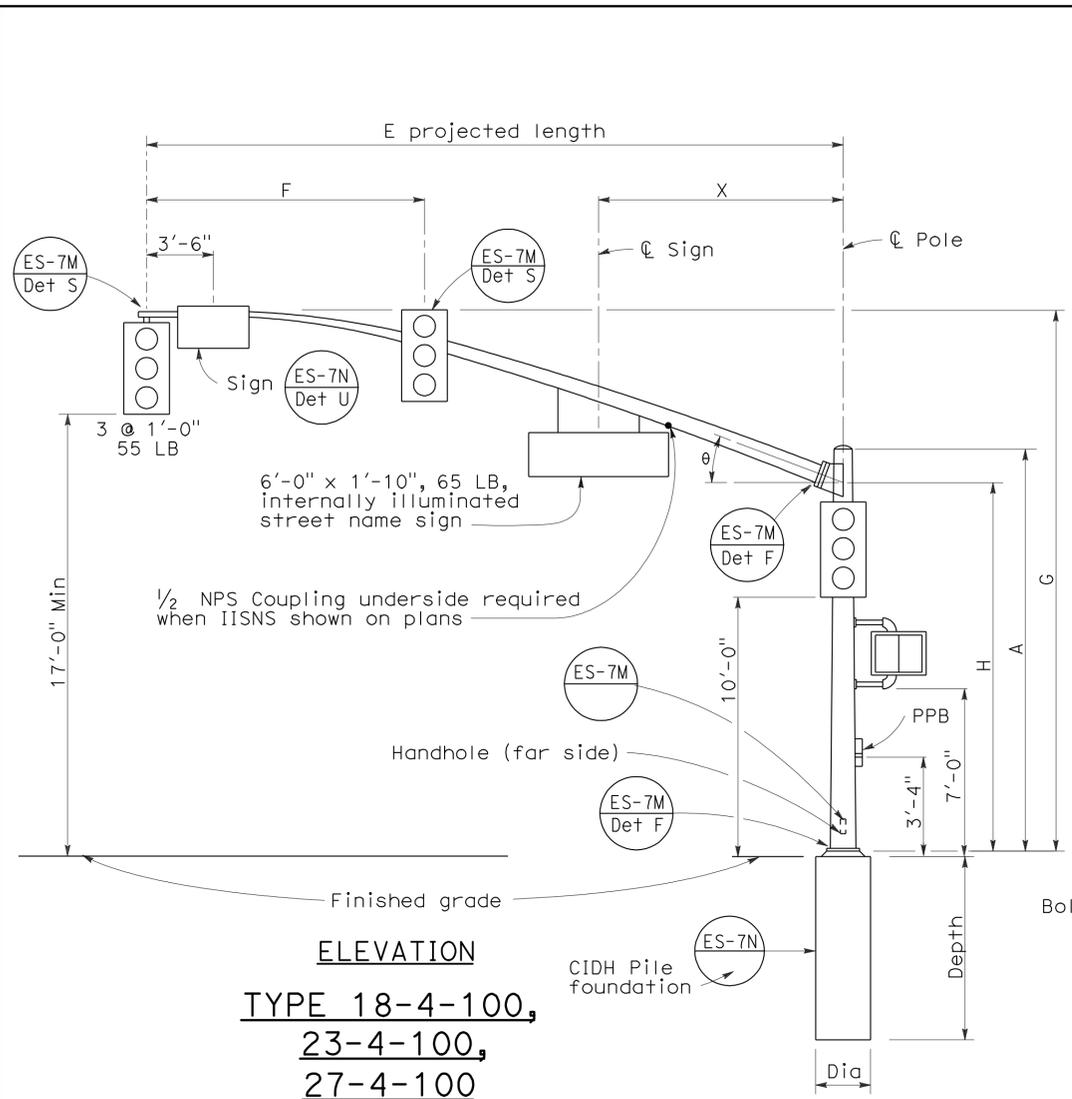
2006 REVISED STANDARD PLAN RSP ES-7C

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

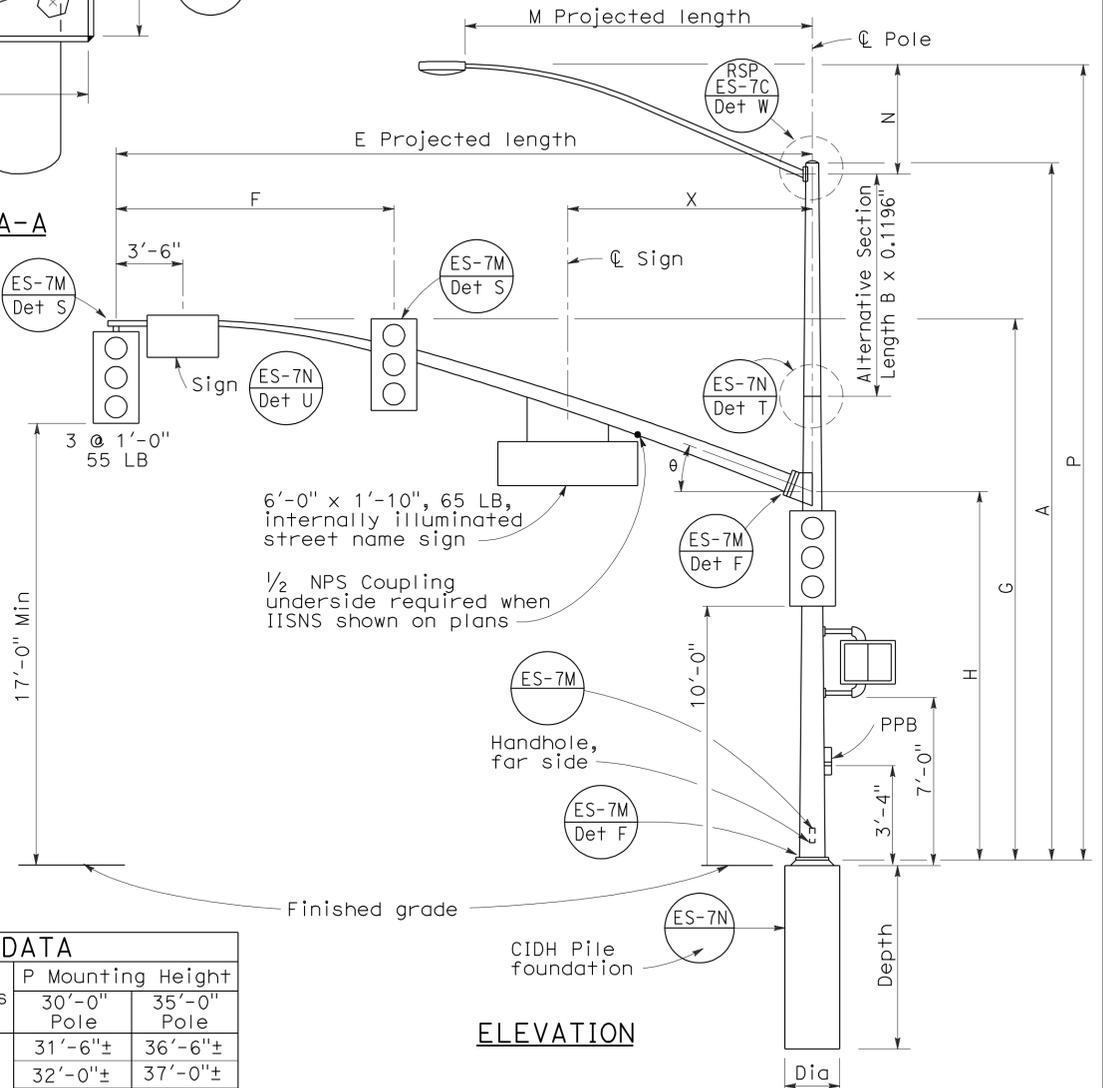
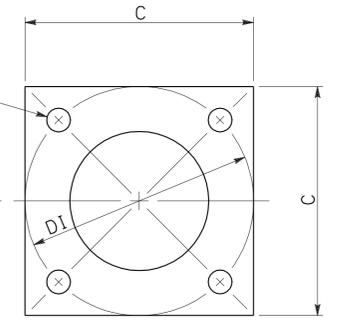
**ELECTRICAL SYSTEMS**  
**(SIGNAL AND LIGHTING STANDARD**  
**CASE 1 ARM LOADING**  
**WIND VELOCITY = 100 MPH**  
**ARM LENGTHS 15' TO 30')**

NO SCALE

RSP ES-7C DATED JUNE 15, 2007 SUPERSEDES STANDARD PLAN ES-7C  
DATED MAY 1, 2006 - PAGE 439 OF THE STANDARD PLANS BOOK DATED MAY 2006.



**SIGNAL ARM CONNECTION DETAILS**



**ELEVATION**

TYPE 19-4-100, 19A-4-100,  
 24-4-100, 24A-4-100,  
 26-4-100, 26A-4-100

E Projected Length	F Min Spacing	G Mounting Height	H	Min OD at Pole	Thickness	I Bolt Circle	HS Cap Screws	J Plate Size	K Arm $\phi$ Thickness	L Pole $\phi$ Thickness	$\theta$	X Max
25'-0"	10'-0"	22'-8"±	16'-0"	7 5/16"	0.2391"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°	10'-6"
30'-0"	12'-0"	8"										
35'-0"	14'-0"	8 1/16"										
40'-0"	15'-0"	9 3/8"										
45'-0"	15'-0"	23'-8"±		10 1/4"		13 1/2"		1'-1 1/2"	1 1/2"	1 3/4"	15°	13'-0"

M Projected Length	N Rise	Min OD at Pole	Thickness	P Mounting Height	
				30'-0" Pole	35'-0" Pole
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 7/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±	4"		33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

Pole Type	Load Case	Wind Velocity mph	POLE DATA						BASE PLATE DATA				Luminaire Arm	Signal Arm	CIDH PILE FOUNDATION				
			A Height	Min OD		Thickness	Alternative Section			C	DI Bolt Circle	Thickness			Anchor Bolts Size	Dia	Depth	Reinforced	
				Base	Top		B Length	Bottom	Top										
18-4-100	4	100	17'-0"	12"	0.2391"	None	9 3/8"	8"	1'-6"	1'-6"	1 1/2"	2" $\phi$ x 42" x 6"	None	25'-0", 30'-0"	3'-0"	9'-0"	Yes		
19-4-100			30'-0"			8"												None	8"
19A-4-100			35'-0"			7 5/16"												15'-0"	7 5/16"
23-4-100			17'-0"			9"												None	
24-4-100			30'-0"	8"	10'-0"	8"													
24A-4-100			35'-0"	7 5/16"	15'-0"	7 5/16"													
26-4-100			30'-0"	8"	10'-0"	8 3/8"													
26A-4-100			35'-0"	7 5/16"	15'-0"	9 3/4"	7 1/16"												
27-4-100			17'-0"	9 3/4"	None														

□ Indicates arm length to be used unless otherwise noted on plans.

**REVISED STANDARD PLAN RSP ES-7F**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
 (SIGNAL AND LIGHTING STANDARD  
 CASE 4 ARM LOADING  
 WIND VELOCITY=100 MPH  
 ARM LENGTHS 25' TO 45')**  
 NO SCALE

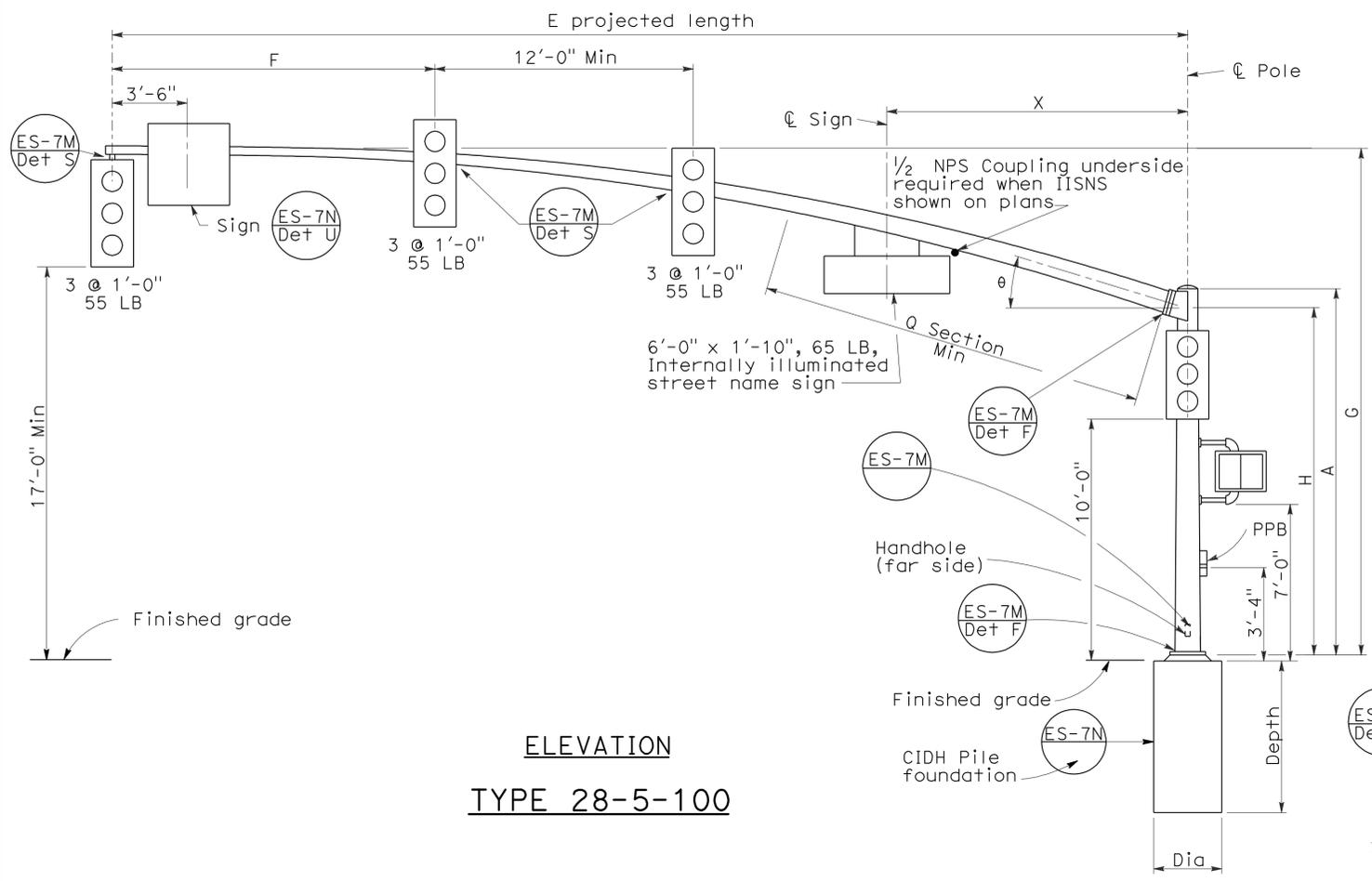
RSP ES-7F DATED OCTOBER 5, 2007 SUPERCEDES RSP ES-7F DATED  
 NOVEMBER 17, 2006 AND STANDARD PLAN ES-7F DATED MAY 1, 2006 -  
 PAGE 442 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP ES-7F

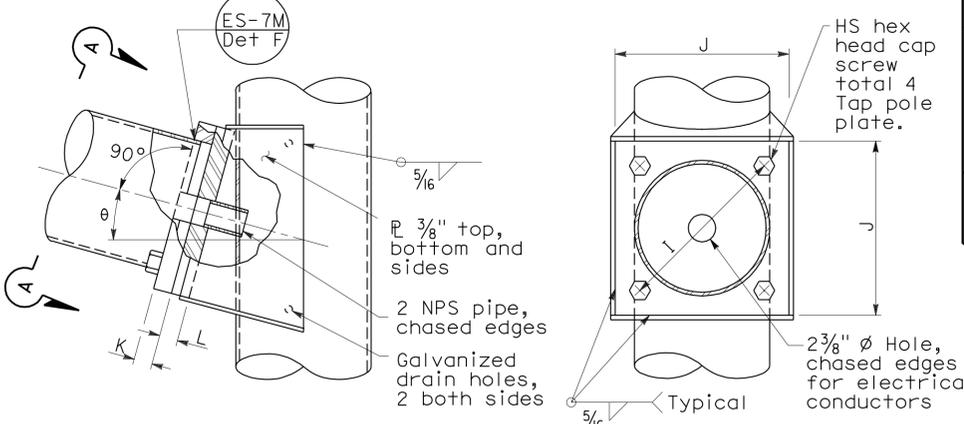
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Ker	46	31.9/32.3	33	33

Stanley P. Johnson  
 REGISTERED CIVIL ENGINEER  
 November 17, 2006  
 PLANS APPROVAL DATE  
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 To accompany plans dated 6-14-10

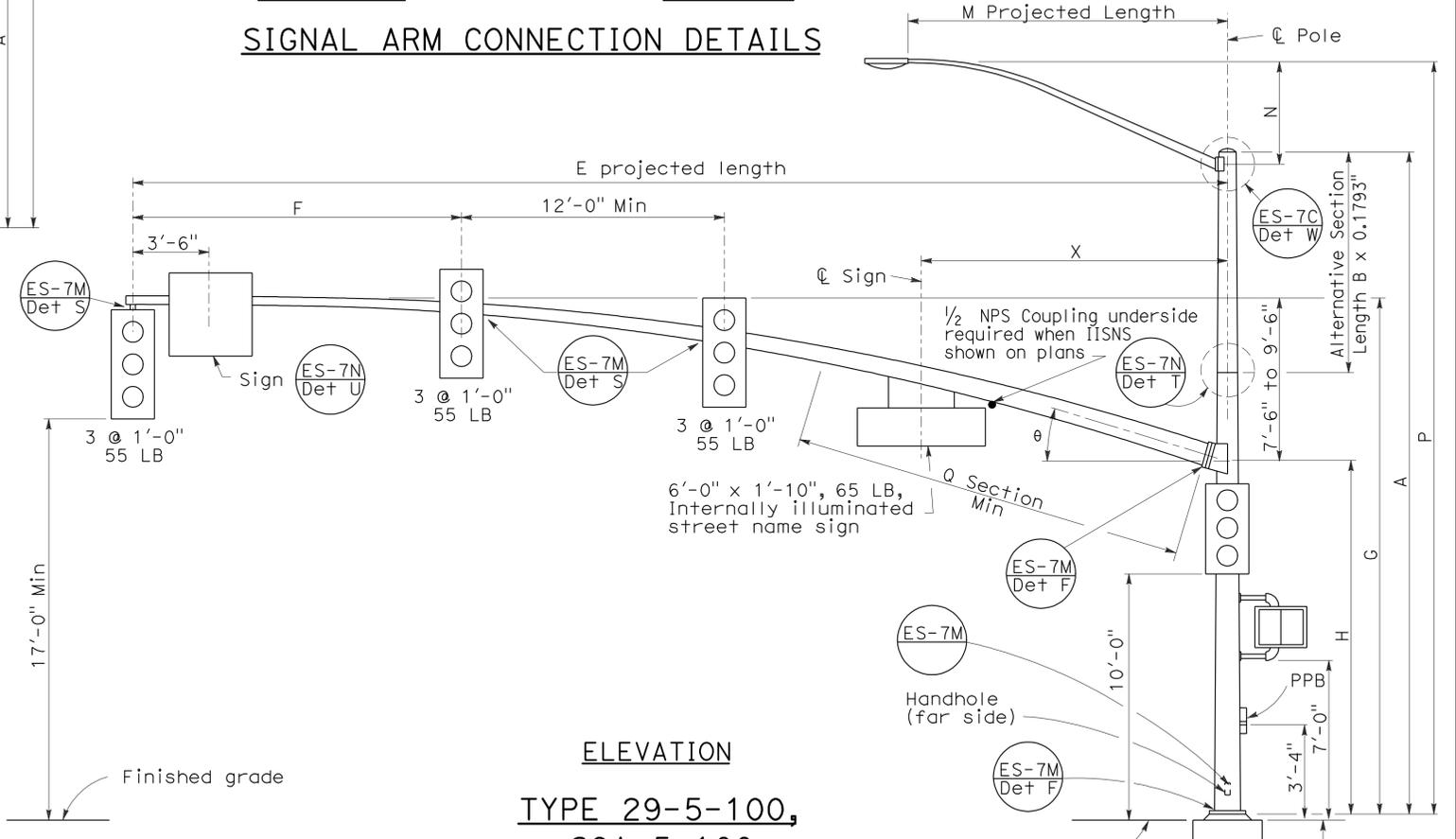
REGISTERED PROFESSIONAL ENGINEER  
 Stanley P. Johnson  
 No. C57793  
 Exp. 03-31-08  
 CIVIL  
 STATE OF CALIFORNIA



ELEVATION  
TYPE 28-5-100

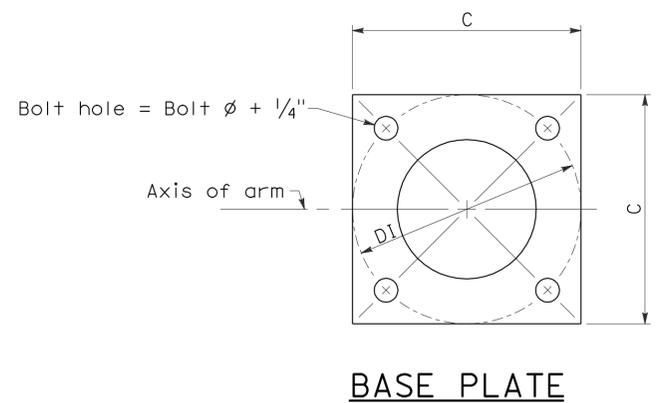


ELEVATION  
VIEW A-A  
SIGNAL ARM CONNECTION DETAILS



ELEVATION  
TYPE 29-5-100,  
29A-5-100

M Projected Length	N Rise	Min OD at Pole	Thickness	P Mounting Height
6'-0"	2'-0"±	3 1/4"	0.1196"	30'-0" Pole
8'-0"	2'-6"±	3 1/2"		31'-6"±
10'-0"	3'-3"±	3 7/8"		32'-0"±
12'-0"	4'-3"±	4 1/4"		32'-9"±
15'-0"	4'-9"±	4 1/4"		33'-9"±
				35'-0" Pole
				36'-6"±
				37'-0"±
				37'-9"±
				38'-9"±
				39'-3"±



BASE PLATE

E Projected Length	F Min Spacing	G Mounting Height	H	Min OD at Pole	Thickness	I Bolt Circle	HS Cap Screws	J Plate Size	K Arm R Thickness	L Pole R Thickness	θ	Q Section		X Max
												Length	Thickness	
50'-0"	15'-0"	23'-7"± to 25'-7"±	16'-0"	11 7/16"	0.1793"	16"	1 1/2"-6NC-3 1/4"	1'-4"	1 3/4"	1 3/4"	15°	18'-0"	0.2391"	14'-0"
55'-0"				23'-0"										

Pole Type	Load Case	Wind Velocity mph	POLE DATA					BASE PLATE DATA				Luminaire Arm	Signal Arm	CIDH PILE FOUNDATION									
			A Height	Min OD		Thickness	Alternative Section			C	DI Bolt Circle			Thickness	Anchor Bolts Size	Dia	Depth	Reinforced					
				Base	Top		B Length	Bottom	Top														
28-5-100	5	100	17'-0"	14"	11 11/16"	0.3125"	None	10'-0"	11 1/4"	9 7/8"	21"	21"	1 3/4"	2" ø x 42" x 6"	6'-15' [15'-0"]	50'-0", 55'-0"	3'-0"	9'-2"	Yes				
29-5-100			30'-0"																	9 7/8"	9 3/16"	23"	23"
29A-5-100			35'-0"																	9 3/16"			

□ Indicates arm length to be used unless otherwise noted on plans.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
 (SIGNAL AND LIGHTING STANDARD  
 CASE 5 ARM LOADING  
 WIND VELOCITY=100 MPH  
 ARM LENGTHS 50' TO 55')**

NO SCALE  
 RSP ES-7G DATED NOVEMBER 17, 2006 SUPERSEDES STANDARD PLAN ES-7G  
 DATED MAY 1, 2006 - PAGE 443 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-7G**

2006 REVISED STANDARD PLAN RSP ES-7G