

INDEX OF PLANS

SHEET No.	DESCRIPTION
1	TITLE AND LOCATION MAP
2-13	LAYOUTS
14	CONSTRUCTION AREA SIGNS
15-20	TRAFFIC HANDLING PLANS
21	SUMMARY OF QUANTITIES
22-52	ELECTRICAL PLANS
53-77	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 **ACNHP-000C(427)E**  
**DEPARTMENT OF TRANSPORTATION**

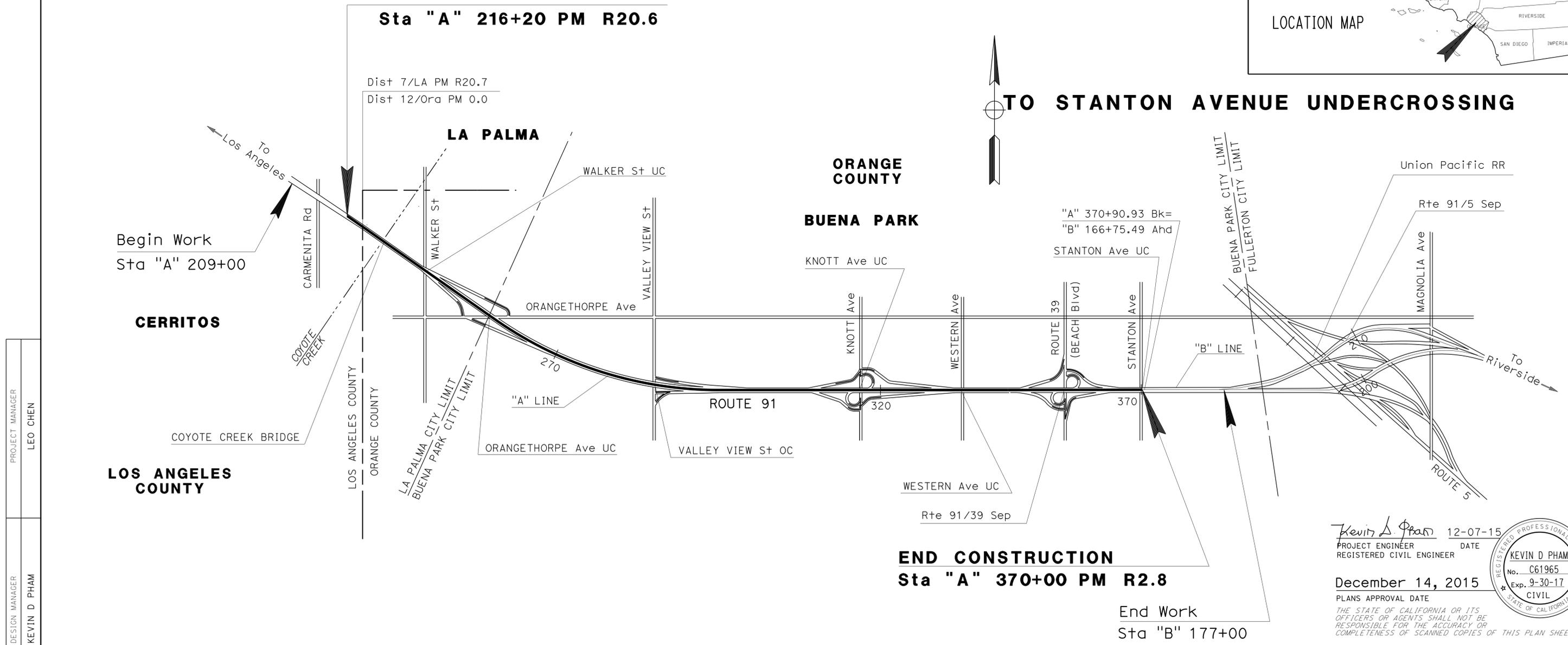
**PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY**  
**IN ORANGE AND LOS ANGELES COUNTIES**  
**IN LA PALMA, BUENA PARK AND CERRITOS**  
**FROM 0.1 MILE WEST OF LOS ANGELES COUNTY LINE**  
**TO STANTON AVENUE UNDERCROSSING**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	1	77

**BEGIN CONSTRUCTION**  
**Sta "A" 216+20 PM R20.6**

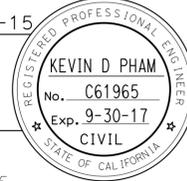
**TO STANTON AVENUE UNDERCROSSING**



**END CONSTRUCTION**  
**Sta "A" 370+00 PM R2.8**

End Work  
 Sta "B" 177+00

*Kevin D. Pham* 12-07-15  
 PROJECT ENGINEER DATE  
 REGISTERED CIVIL ENGINEER  
 December 14, 2015  
 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.



PROJECT MANAGER  
 LEO CHEN  
 DESIGN MANAGER  
 KEVIN D PHAM

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

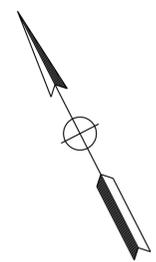
NO SCALE

CONTRACT No.	<b>12-0H2434</b>
PROJECT ID	<b>1214000038</b>

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	2	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

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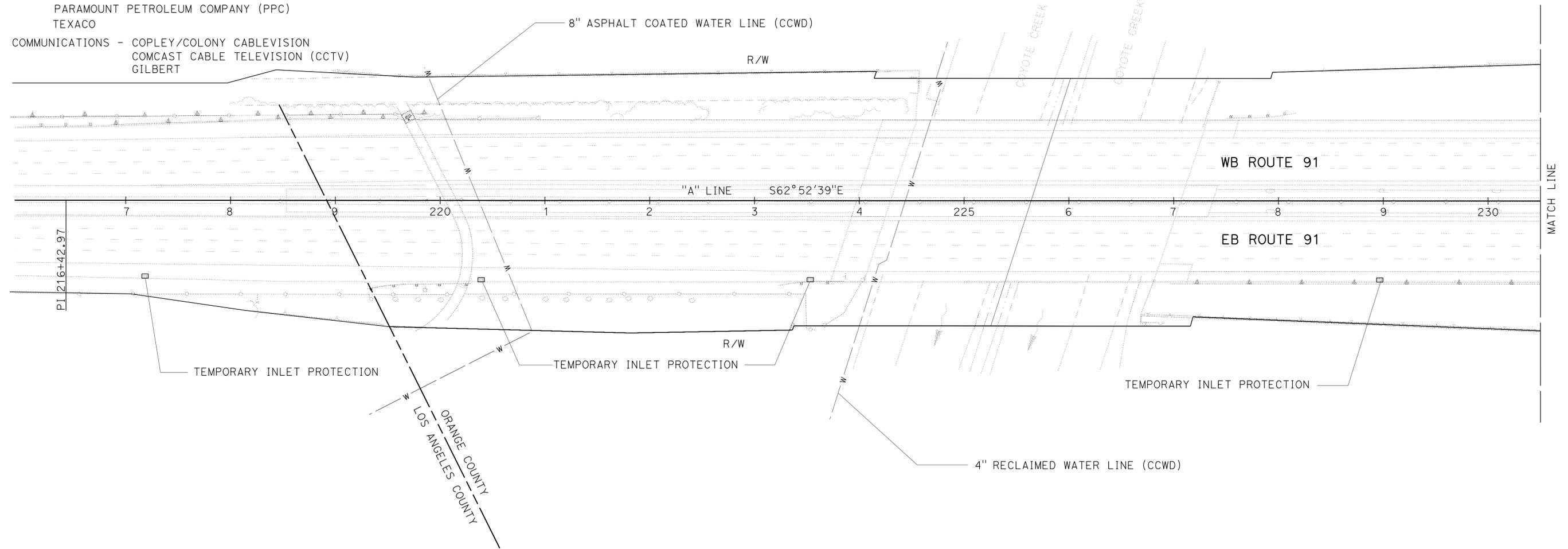
**NOTES:**

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- LOCATIONS OF EXISTING FACILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.

**UTILITY OWNERSHIP:**

- GAS - SOUTHERN CALIFORNIA GAS (SCG)
- ELECTRICITY - SOUTHERN CALIFORNIA EDISON (SCE)
- TELEPHONE - AMERICAN TELEPHONE & TELEGRAPH (AT&T)
- WATER - CITY OF LA PALMA (COLP)  
CITY OF BUENA PARK MUNICIPAL WATER (CBPMW)  
CITY OF CERRITOS WATER DEPARTMENT (CCWD)
- SEWER - ORANGE COUNTY SANITATION DISTRICT (OCSD)
- STORM DRAIN - ORANGE COUNTY FLOOD CONTROL DISTRICT (OCFCD)
- PETROLEUM - CHEVRON  
PARAMOUNT PETROLEUM COMPANY (PPC)  
TEXACO
- OIL - CHEVRON  
PARAMOUNT PETROLEUM COMPANY (PPC)  
TEXACO
- COMMUNICATIONS - COPLEY/COLONY CABLEVISION  
COMCAST CABLE TELEVISION (CCTV)  
GILBERT

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CALCULATED/DESIGNED BY: [Blank] CHECKED BY: [Blank]  
 MINH PHAM KEVIN PHAM  
 REVISED BY: [Blank] DATE REVISED: [Blank]



**LAYOUT**  
 SCALE: 1"=50'  
**L-1**

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
 09-29-15 TIME PLOTTED => 08:11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	3	77

12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL

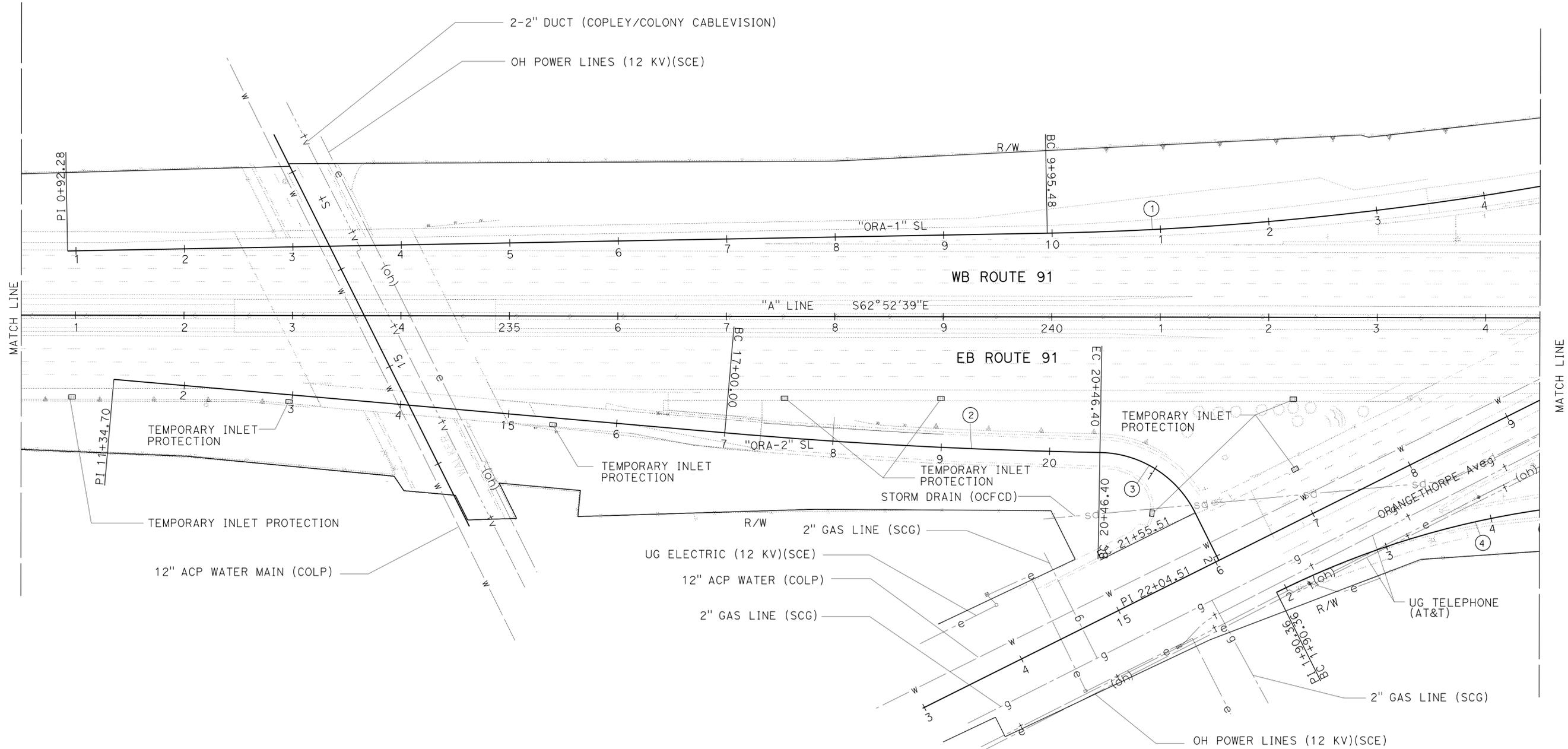
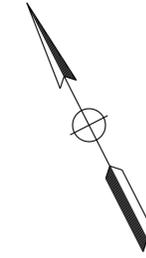
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTE:**

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

**CURVE DATA**

No.	⊕	R	Δ	T	L
1		2988'	10°00'08"	261.50'	521.66'
2		5000'	03°58'10"	173.27'	346.40'
3		100'	62°30'36"	60.70'	109.11'
4		800'	22°48'12"	161.33'	318.38'



**LAYOUT**  
SCALE: 1"=50'

**L-2**

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

FUNCTIONAL SUPERVISOR  
 CHRISTOPHER LE

CALCULATED/DESIGNED BY  
 CHECKED BY

MINH PHAM  
 KEVIN PHAM

REVISED BY  
 DATE REVISED

x  
 x  
 x  
 x  
 x

LAST REVISION DATE PLOTTED => 09-MAR-2016  
 09-29-15 TIME PLOTTED => 08:11

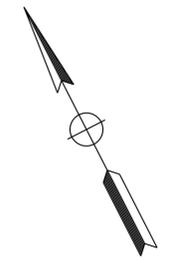
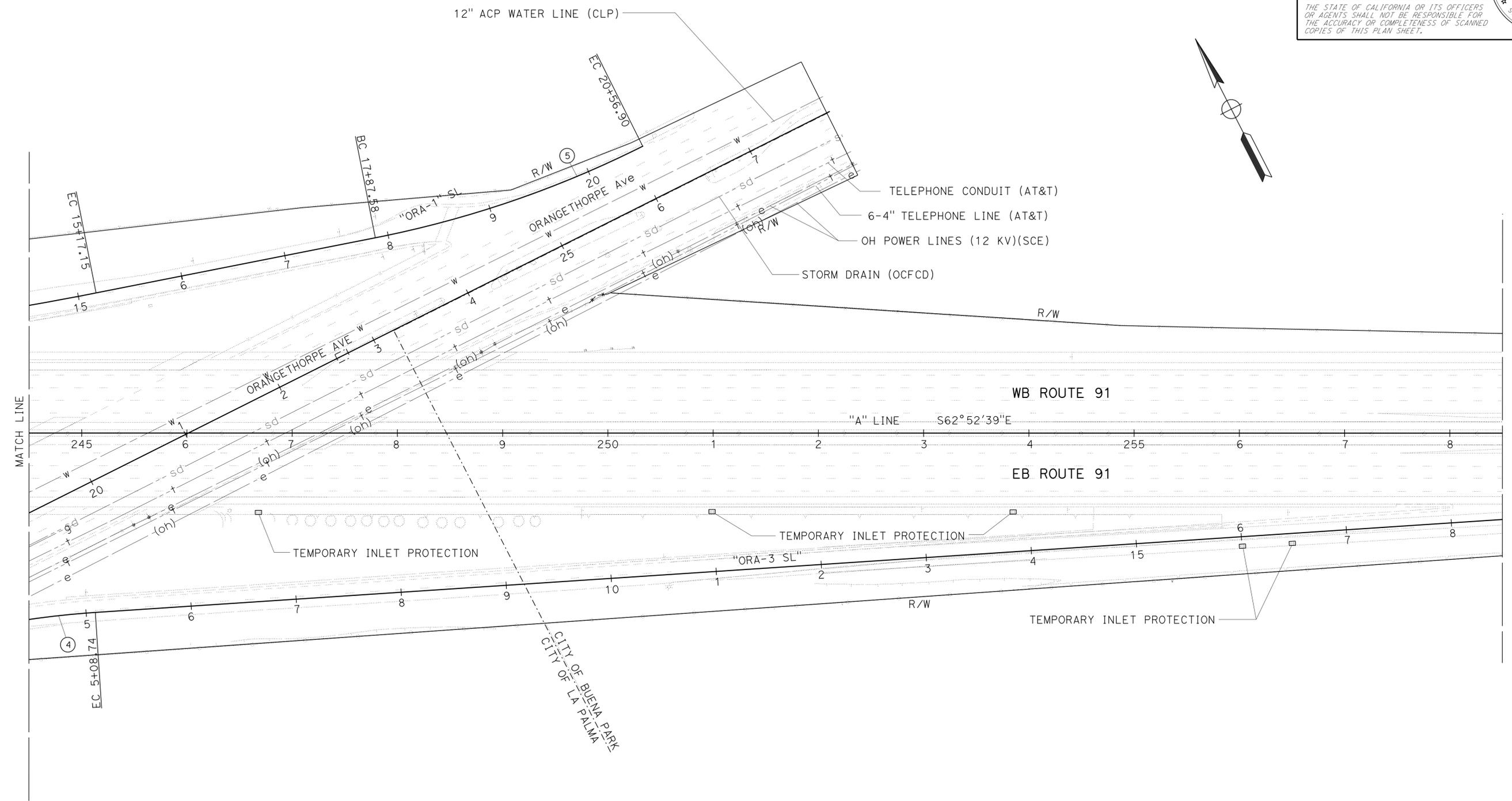
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	4	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 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.



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

No.	⊕	R	Δ	T	L
4		800'	22°48'12"	161.33'	318.38'
5		1000'	15°25'54"	135.48'	269.32'



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CALCULATED/DESIGNED BY: KEVIN PHAM  
 CHECKED BY: KEVIN PHAM  
 REVISED BY: KEVIN PHAM  
 DATE REVISED:

**LAYOUT**  
 SCALE: 1"=50'

**L-3**

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
 09-29-15 | TIME PLOTTED => 08:11



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	6	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE  
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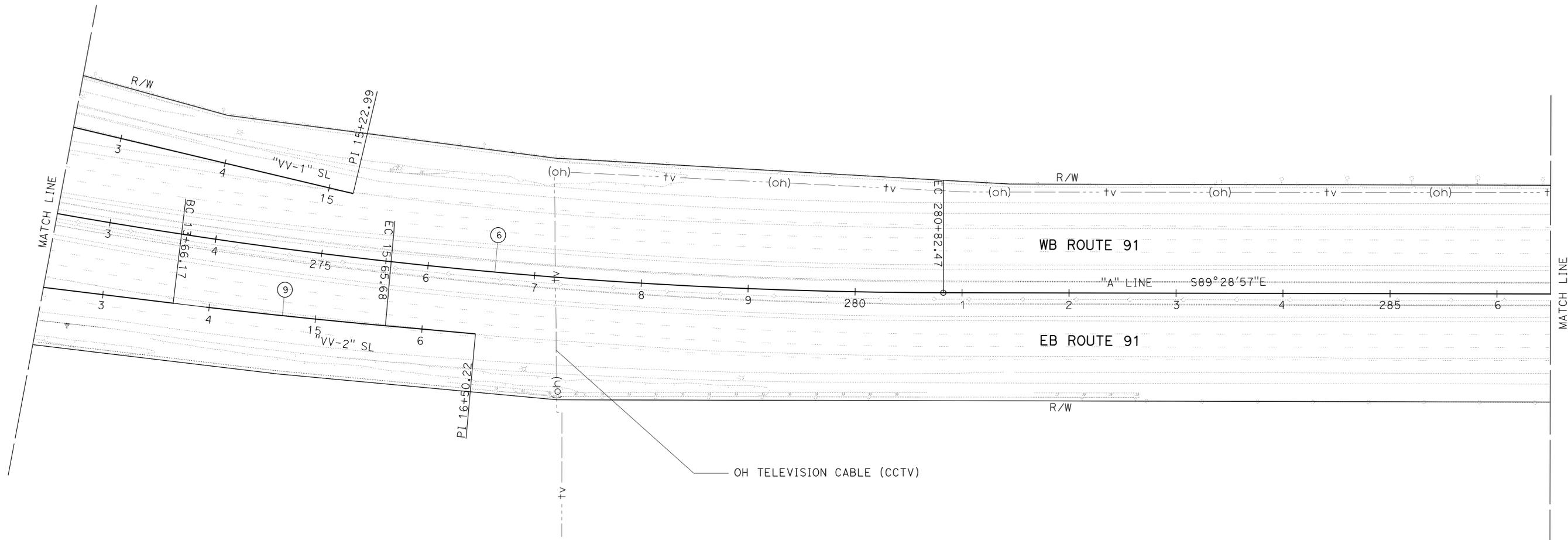


**NOTE:**

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

**CURVE DATA**

No.	⊕	R	Δ	T	L
6		4800'	20°29'32"	867.64'	1716.75'
9		6401'	01°30'34"	84.32'	168.63'

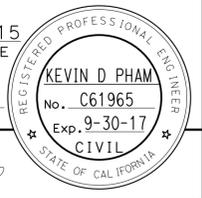


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN DIVISION
FUNCTIONAL SUPERVISOR	CHRISTOPHER LE
CALCULATED/DESIGNED BY	CHECKED BY
MINH PHAM	KEVIN PHAM
REVISOR BY	DATE

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
 09-29-15 | TIME PLOTTED => 08:11

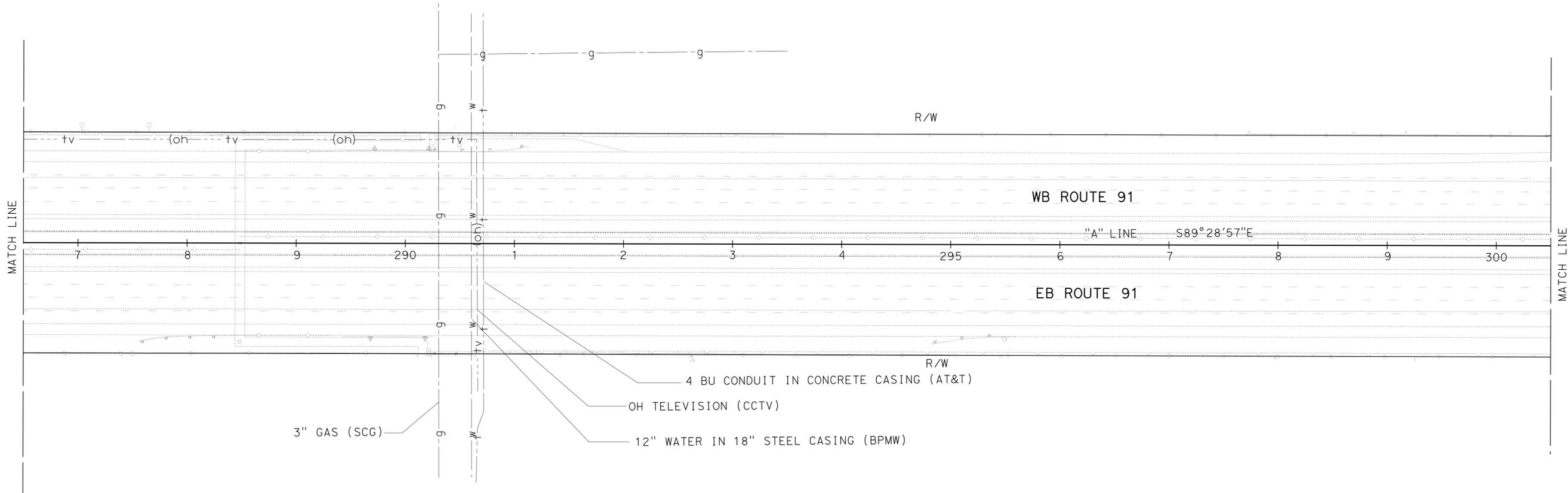
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	7	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE  
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**NOTE:**

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN DIVISION
FUNCTIONAL SUPERVISOR	CHRISTOPHER LE
CALCULATED/DESIGNED BY	CHECKED BY
MINH PHAM	KEVIN PHAM
REVISED BY	DATE REVISED

**LAYOUT**  
SCALE: 1"=50'

**L-6**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Oran	91	R20.6/R20.7 R0.0/R2.8	8	77

Kevin D. Pham 12-07-15  
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 12-14-15  
 PLANS APPROVAL DATE

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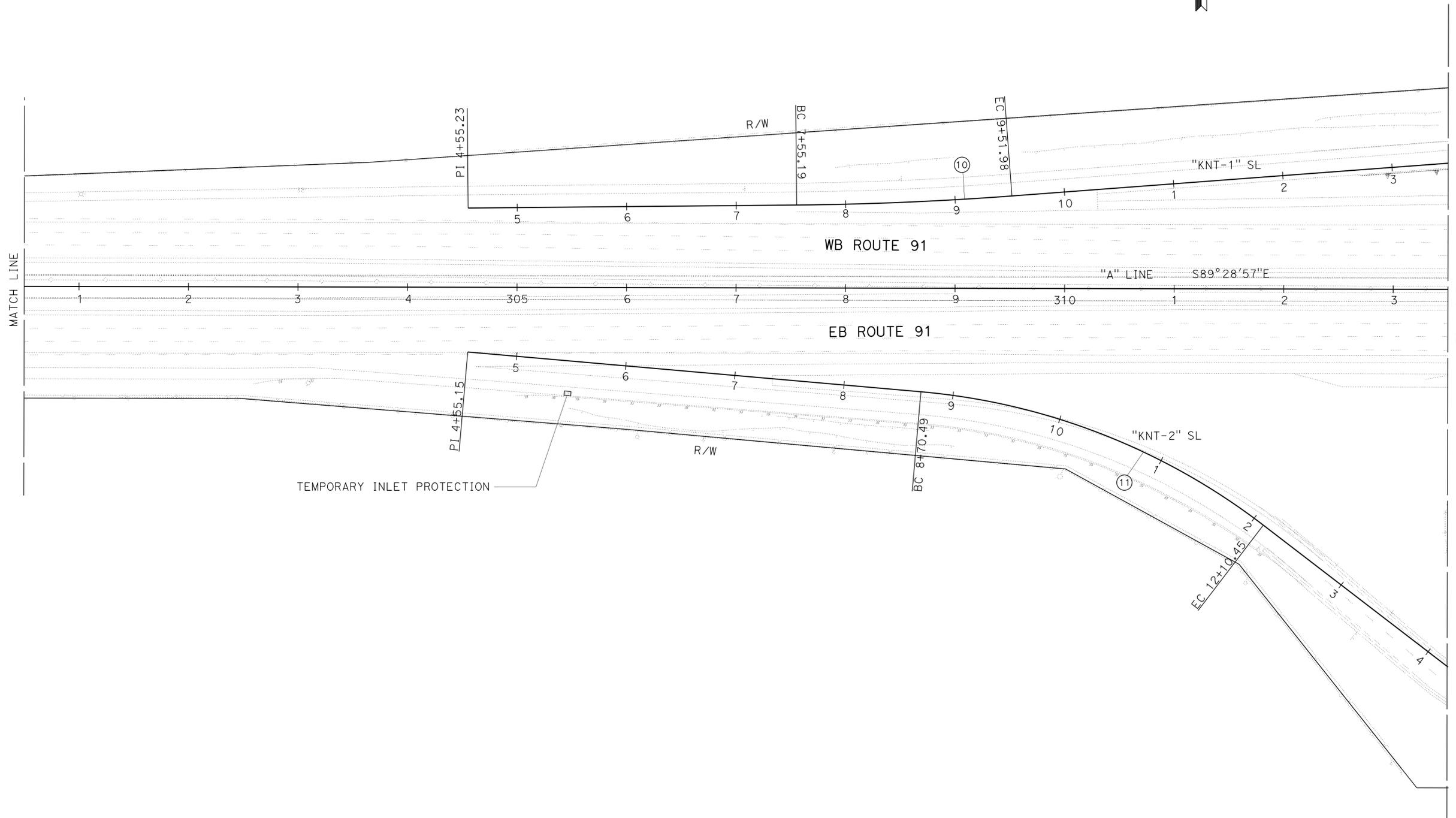
REGISTERED PROFESSIONAL ENGINEER  
 KEVIN D. PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL  
 STATE OF CALIFORNIA

**NOTE:**

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

**CURVE DATA**

No.	⊕	R	Δ	T	L
10		3000'	03°45'31"	98.43'	196.79'
11		600'	32°27'48"	174.68'	339.96'



**LAYOUT**  
SCALE: 1"=50'

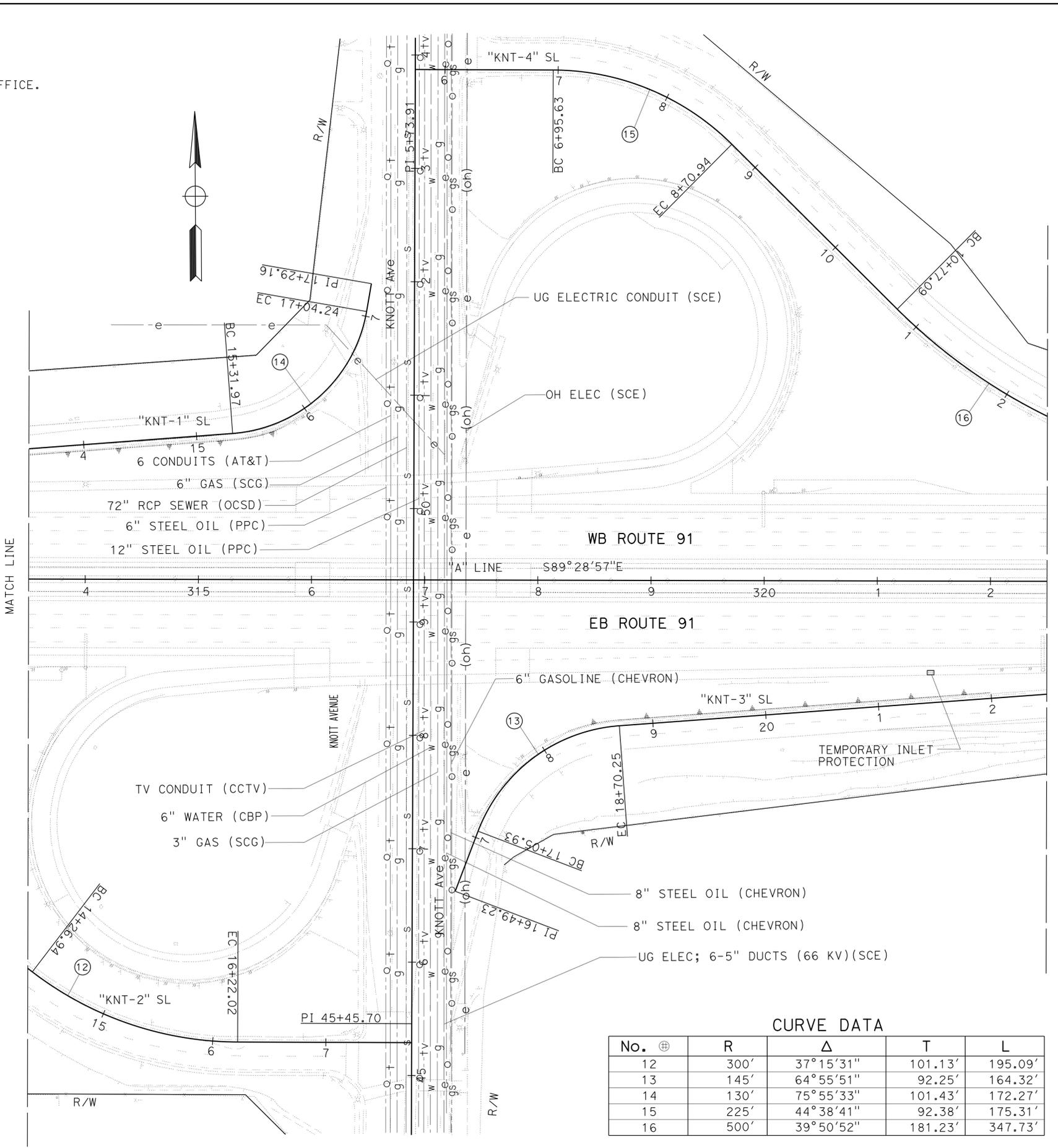
**L-7**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN DIVISION
FUNCTIONAL SUPERVISOR	CHRISTOPHER LE
CALCULATED/DESIGNED BY	CHECKED BY
MINH PHAM	KEVIN PHAM
REVISOR BY	DATE

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
 09-29-15 | TIME PLOTTED => 08:11

**NOTE:**

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



**CURVE DATA**

No. ⊕	R	Δ	T	L
12	300'	37°15'31"	101.13'	195.09'
13	145'	64°55'51"	92.25'	164.32'
14	130'	75°55'33"	101.43'	172.27'
15	225'	44°38'41"	92.38'	175.31'
16	500'	39°50'52"	181.23'	347.73'

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	9	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL

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**LAYOUT**  
 SCALE: 1"=50'

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	10	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
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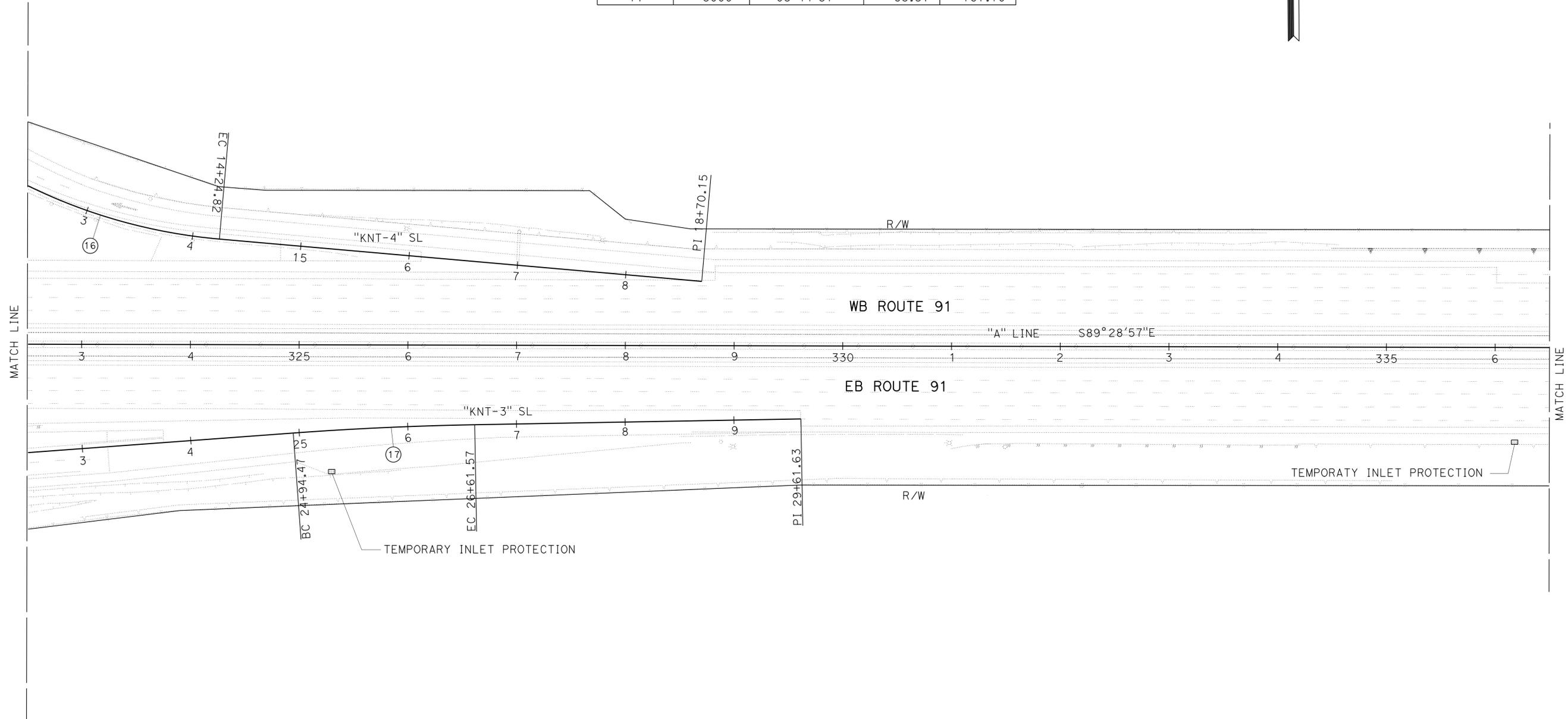


**NOTE:**

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

**CURVE DATA**

No.	⊕	R	Δ	T	L
16		500'	39°50'52"	181.23'	347.73'
17		3000'	03°11'31"	83.57'	167.10'



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN DIVISION
FUNCTIONAL SUPERVISOR	CHRISTOPHER LE
CALCULATED/DESIGNED BY	CHECKED BY
MINH PHAM	KEVIN PHAM
REVISOR	DATE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	11	77

<i>Kevin D. Pham</i>	12-07-15
REGISTERED CIVIL ENGINEER	DATE
12-14-15	
PLANS APPROVAL DATE	

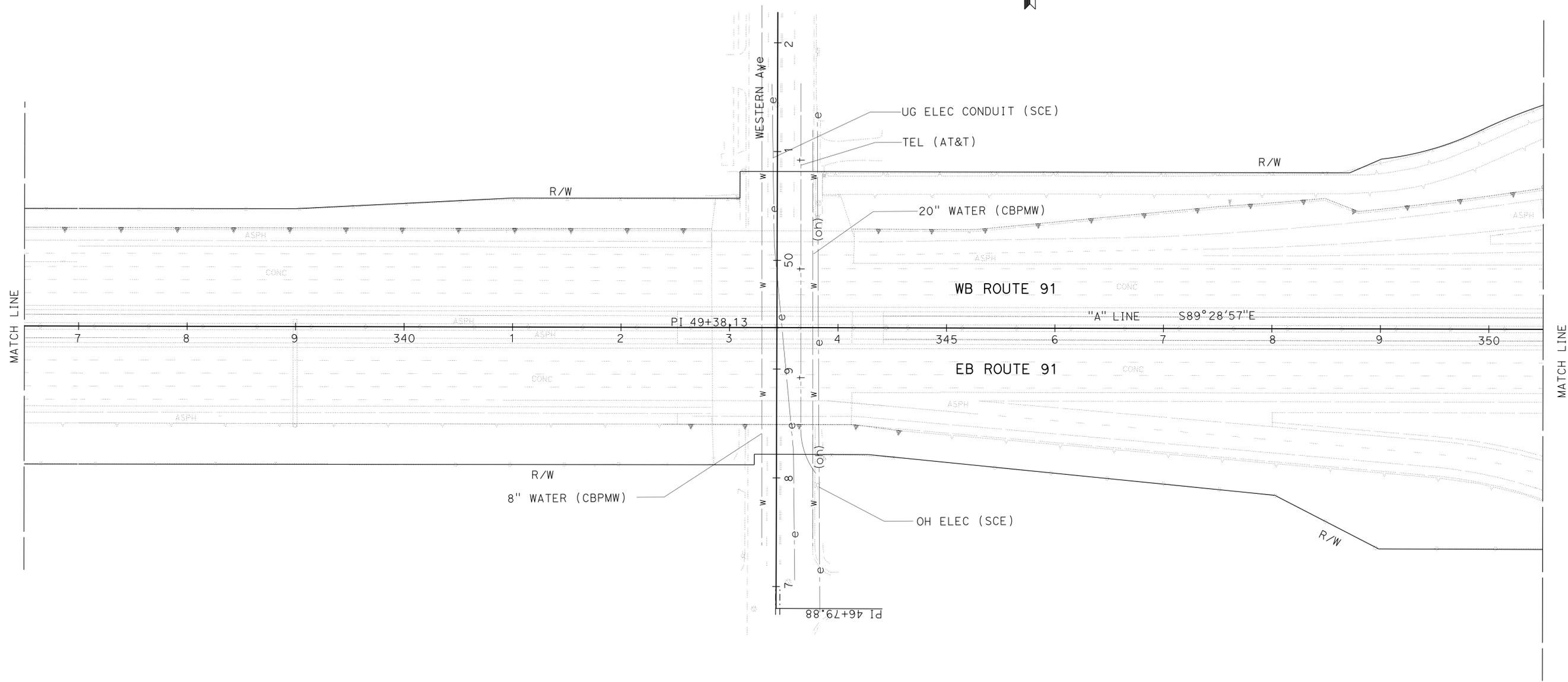
  

REGISTERED PROFESSIONAL ENGINEER
KEVIN D PHAM
No. C61965
Exp. 9-30-17
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN DIVISION
FUNCTIONAL SUPERVISOR	CHRISTOPHER LE
CALCULATED/DESIGNED BY	CHECKED BY
MINH PHAM	KEVIN PHAM
REVISOR BY	DATE
REVISOR BY	DATE

**LAYOUT**  
SCALE: 1"=50'  
**L-10**

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
09-29-15 | TIME PLOTTED => 08:11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Oran	91	R20.6/R20.7 R0.0/R2.8	12	77

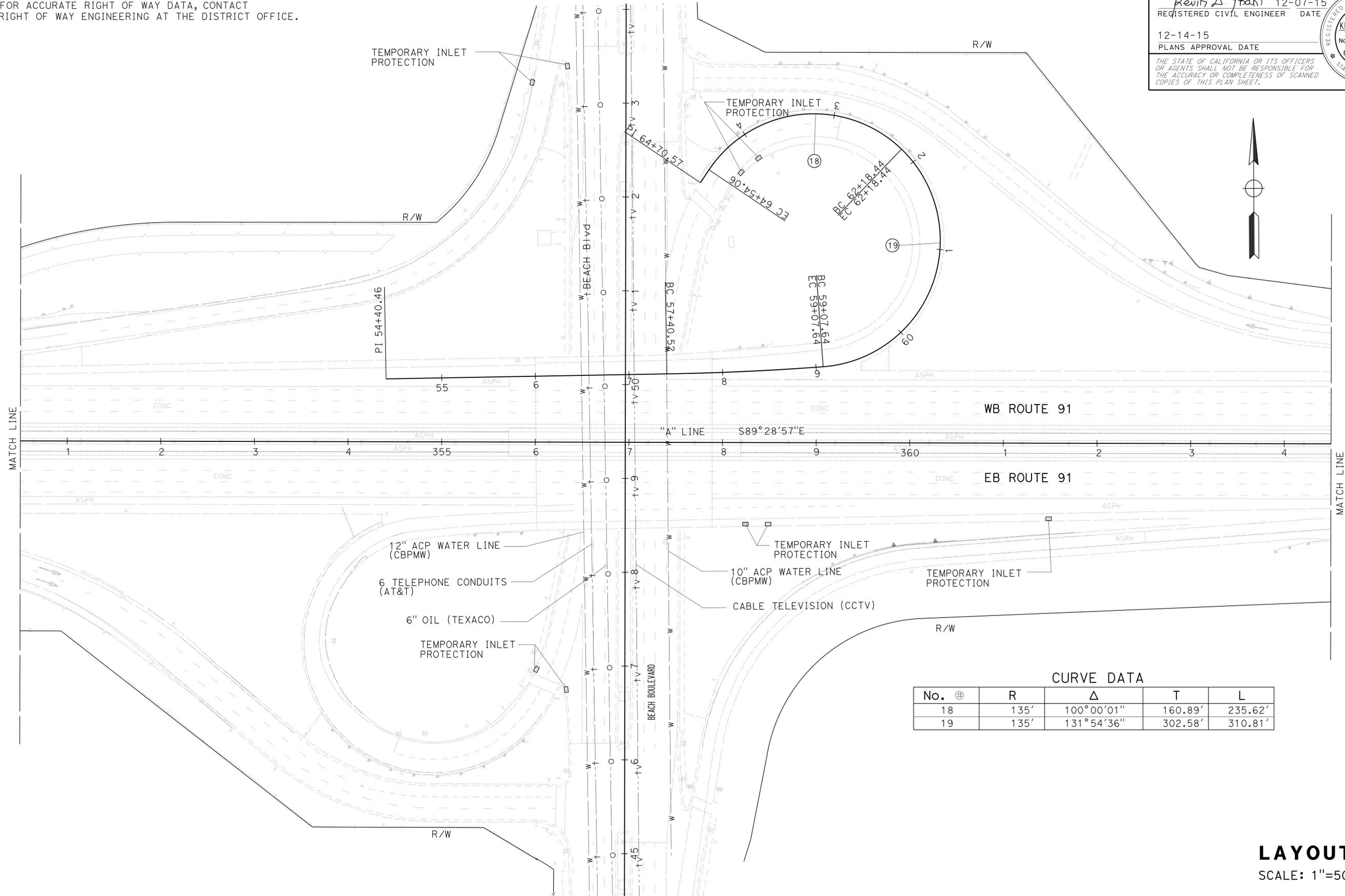
Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
 KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL  
 STATE OF CALIFORNIA

**NOTE:**

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



**CURVE DATA**

No.	±	R	Δ	T	L
18		135'	100°00'01"	160.89'	235.62'
19		135'	131°54'36"	302.58'	310.81'

**LAYOUT**  
 SCALE: 1"=50'  
**L-11**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 REVISIONS: MINH PHAM, KEVIN PHAM  
 REVISIONS: REVISED BY, DATE REVISED

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
 09-29-15 TIME PLOTTED => 08:11

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

FUNCTIONAL SUPERVISOR  
 CHRISTOPHER LE

CALCULATED-DESIGNED BY  
 CHECKED BY

MINH PHAM  
 KEVIN PHAM

REVISED BY  
 DATE REVISED

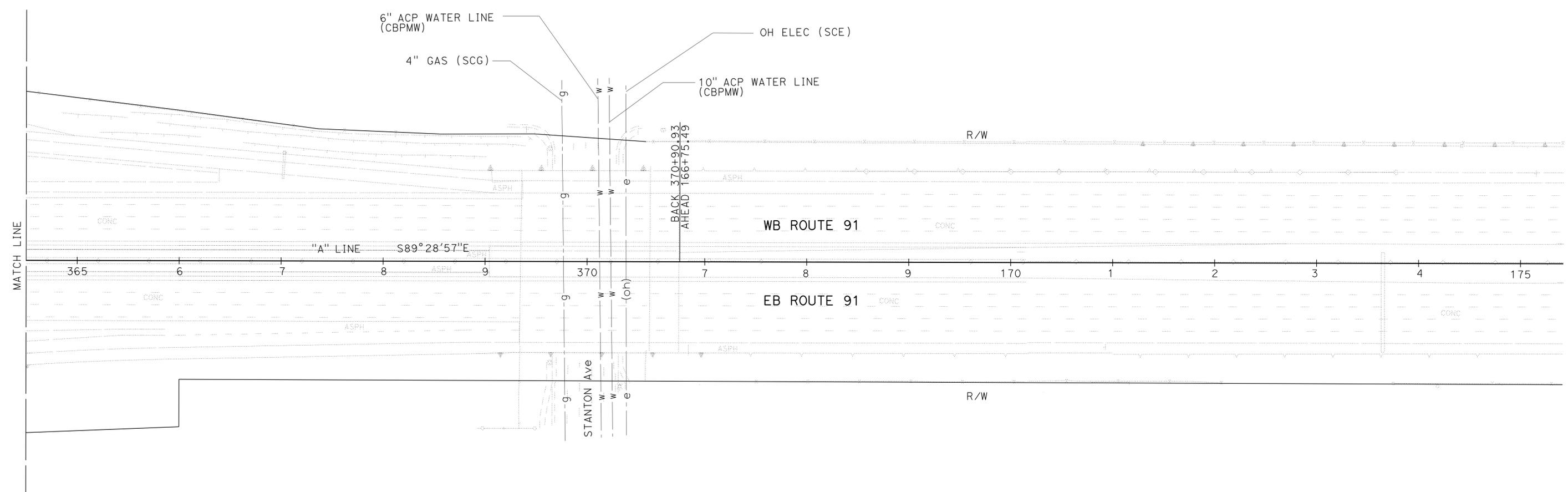
**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	13	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE

12-14-15  
 PLANS APPROVAL DATE

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 COPIES OF THIS PLAN SHEET.



**LAYOUT**  
 SCALE: 1"=50'  
**L-12**

LAST REVISION  
 09-29-15   
 DATE PLOTTED => 09-MAR-2016   
 TIME PLOTTED => 08:11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
7 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	14	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
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REGISTERED PROFESSIONAL ENGINEER  
 KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL  
 STATE OF CALIFORNIA

**NOTE:**

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

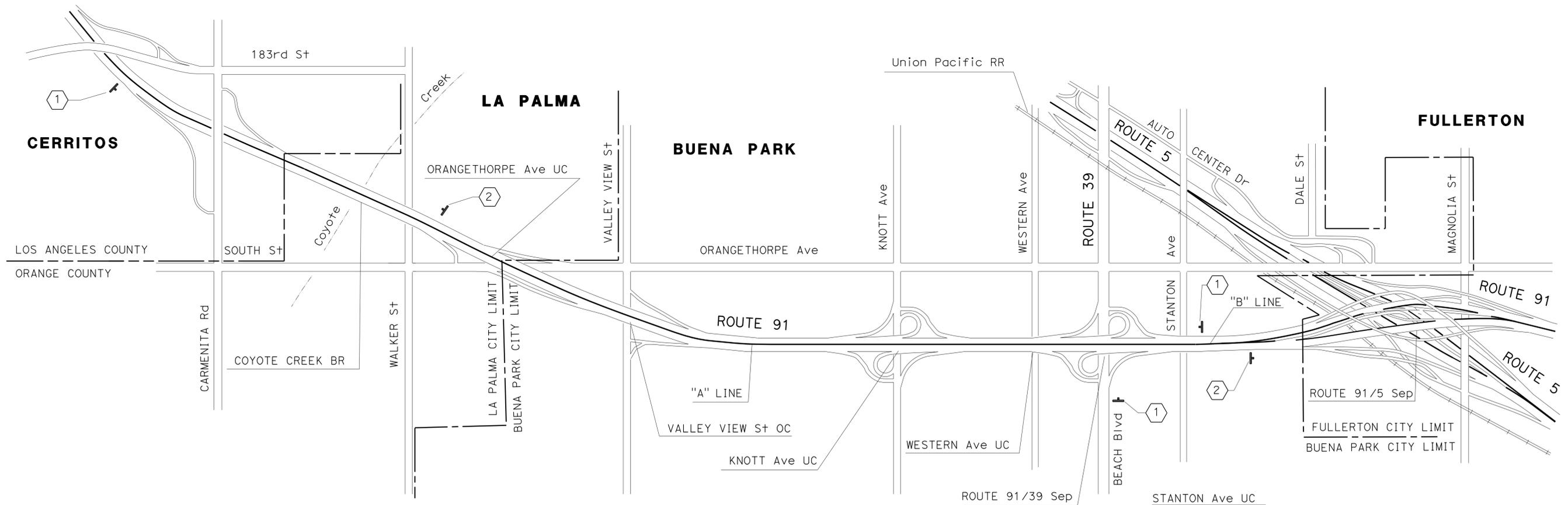
**LEGEND:**

- ⊕ CONSTRUCTION AREA SIGN-1 POST
- ⊗ CONSTRUCTION AREA SIGNS

**STATIONARY MOUNTED CONSTRUCTION AREA SIGNS**

SIGN No.	SIGN CODE	SIGN MESSAGE	PANEL SIZE	No. OF POSTS AND SIZE (IN)	No. OF SIGNS
⊕ 1	W20-1	ROAD WORK AHEAD	48" X 48"	1 - 4" X 6"	3
⊗ 2	G20-2	END ROAD WORK	48" X 18"	1 - 4" X 6"	2

FOR ADDITIONAL CONSTRUCTION AREA SIGNS SEE SHEET THQ-1



**CONSTRUCTION AREA SIGNS**

NO SCALE

APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN DIVISION  
 ALIX WILLIAMS  
 KEVIN PHAM  
 CHRISTOPHER LE

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

FUNCTIONAL SUPERVISOR  
 CHRISTOPHER LE

CALCULATED/DESIGNED BY  
 CHECKED BY

ALIX WILLIAMS  
 KEVIN PHAM

REVISED BY  
 DATE REVISED

**NOTE:**

LOCATIONS OF CONSTRUCTION AREA SIGNS AND PCMS SHOWN ARE APPROXIMATE.  
 EXACT SIGN LOCATIONS AND MESSAGE ON PCMS TO BE DETERMINED BY THE ENGINEER.

**CLOSURE:**

NB ROUTE 39 TO EB ROUTE 91 ON RAMP

**DETOUR:**

NB ROUTE 39 TO EB LA PALMA AV  
 TO NB MAGNOLIA ST+  
 TO EB ROUTE 91 ON RAMP

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
7 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	15	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
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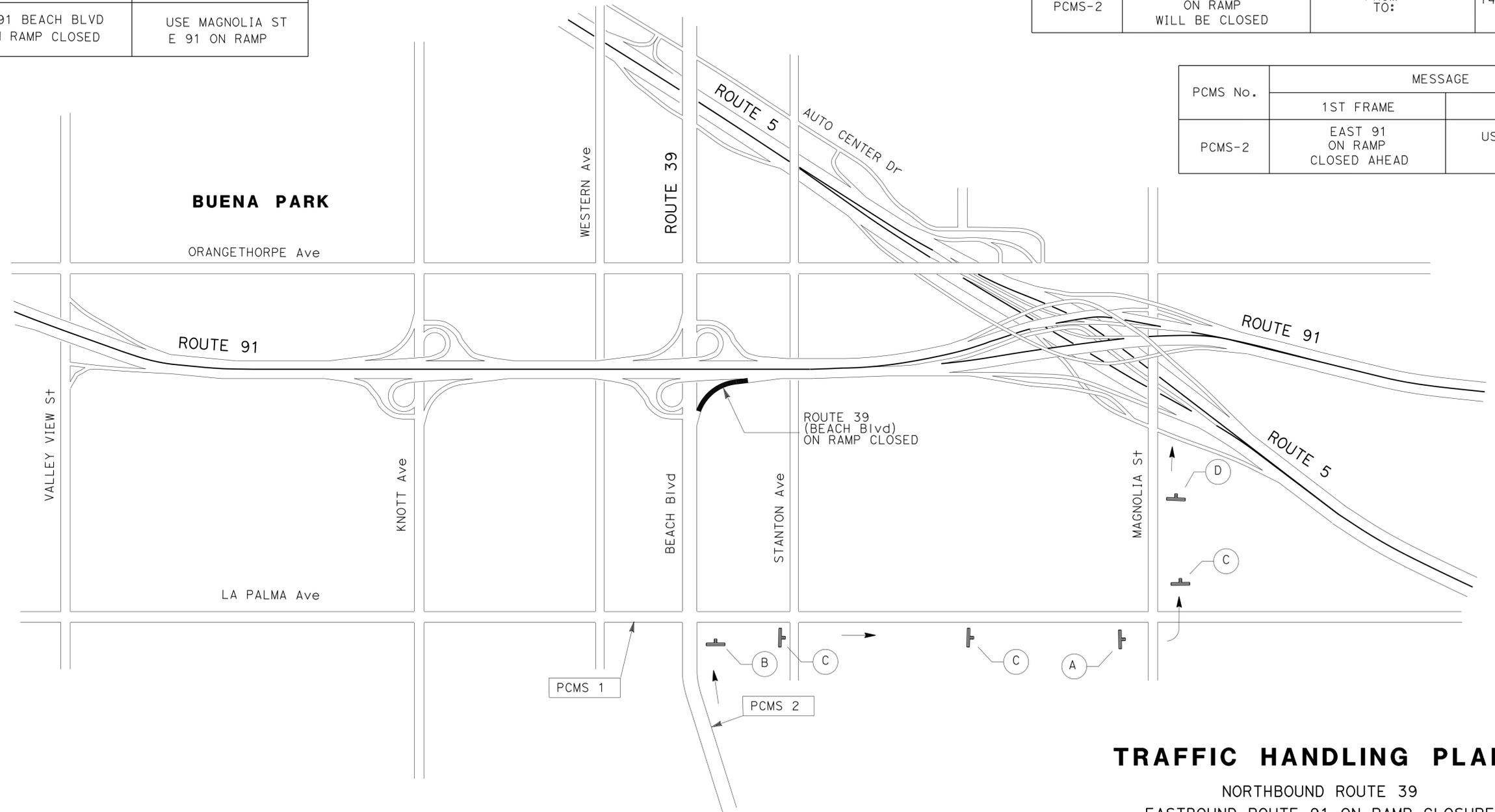
REGISTERED PROFESSIONAL ENGINEER  
 KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-15  
 CIVIL  
 STATE OF CALIFORNIA

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-1	E 91 BEACH BLVD ON RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-1	E 91 BEACH BLVD ON RAMP CLOSED	USE MAGNOLIA ST E 91 ON RAMP	

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-2	E 91 BEACH BLVD ON RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-2	EAST 91 ON RAMP CLOSED AHEAD	USE MAGNOLIA ST EAST 91 ON RAMP	



**TRAFFIC HANDLING PLAN**

NORTHBOUND ROUTE 39  
 EASTBOUND ROUTE 91 ON RAMP CLOSURE

NO SCALE

APPROVED FOR TRAFFIC HANDLING PLAN ONLY

**TH-1**

DATE PLOTTED => 09-MAR-2016  
 TIME PLOTTED => 08:11  
 LAST REVISION 9-24-15

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CHECKED BY: KEVIN PHAM  
 CALCULATED/DESIGNED BY: ALIX WILLIAMS  
 REVISOR: KEVIN PHAM  
 DATE: 12-14-15

**NOTE:**

LOCATIONS OF CONSTRUCTION AREA SIGNS AND PCMS SHOWN ARE APPROXIMATE.  
 EXACT SIGN LOCATIONS AND MESSAGE ON PCMS TO BE DETERMINED BY THE ENGINEER.

**CLOSURE:**

EB ROUTE 91 BEACH Blvd OFF RAMP

**DETOUR:**

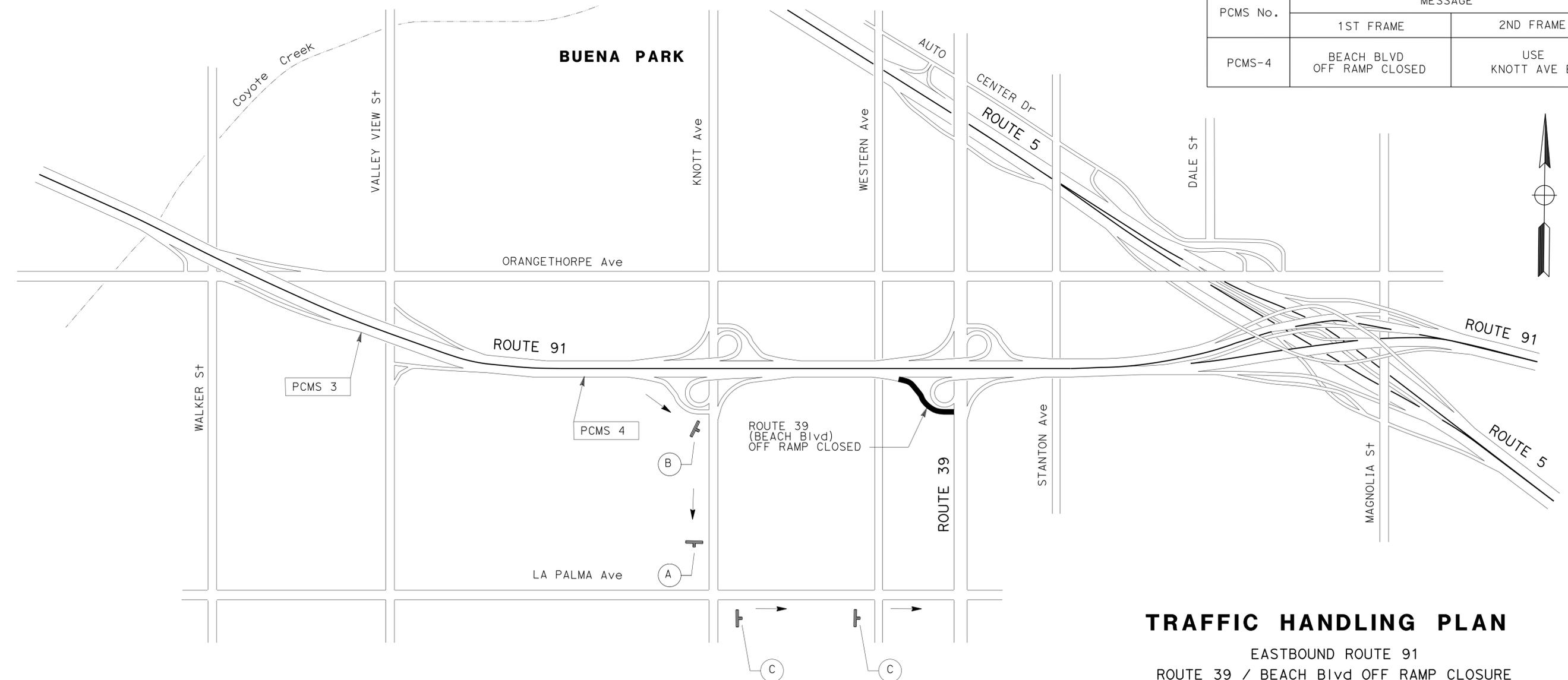
EB ROUTE 91 TO SB KNOTT AV  
 TO EB LA PALMA Av

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-3	BEACH BLVD OFF RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-3	BEACH BLVD OFF RAMP CLOSED	USE KNOTT AVE EXIT

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-4	BEACH BLVD OFF RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-4	BEACH BLVD OFF RAMP CLOSED	USE KNOTT AVE EXIT



**TRAFFIC HANDLING PLAN**

EASTBOUND ROUTE 91  
 ROUTE 39 / BEACH Blvd OFF RAMP CLOSURE

NO SCALE

APPROVED FOR TRAFFIC HANDLING PLAN ONLY

**TH-2**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
712	LA Ora	91	R20.6/R20.7 R0.0/R2.8	16	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 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.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CALCULATED/DESIGNED BY: ALIX WILLIAMS  
 CHECKED BY: KEVIN PHAM  
 REVISED BY: DATE  
 REVISED BY: DATE

**NOTE:**

LOCATIONS OF CONSTRUCTION AREA SIGNS AND PCMS SHOWN ARE APPROXIMATE.  
 EXACT SIGN LOCATIONS AND MESSAGE ON PCMS TO BE DETERMINED BY THE ENGINEER.

**CLOSURE:**

EB ROUTE 91 VALLEY VIEW ST ON RAMP

**DETOUR:**

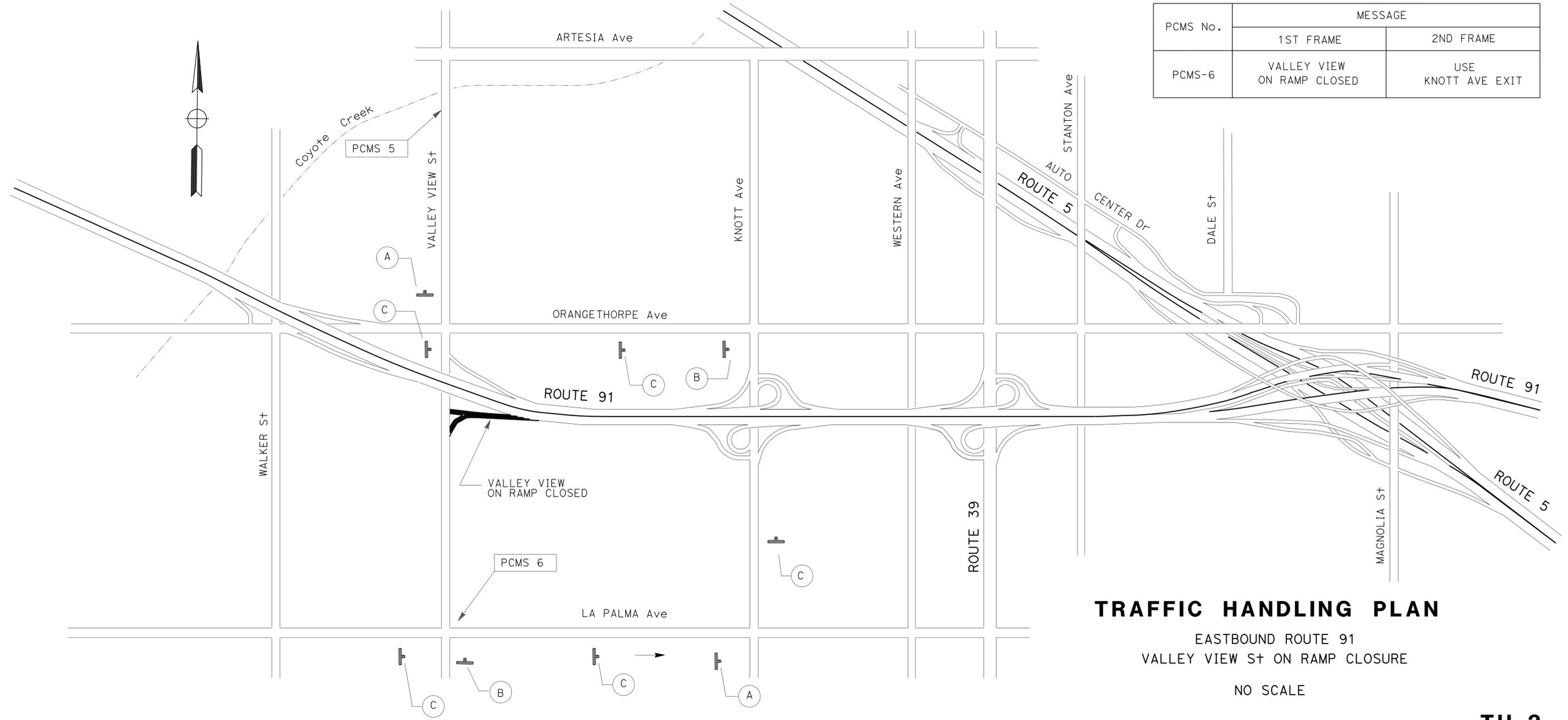
1. EB LA PALMA Av TO NB KNOTT Av TO EB ROUTE 91
2. EB ORANGETHORPE Av TO SB KNOTT Av TO EB ROUTE 91

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-5	EAST 91 VALLEY VIEW ON RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-5	EAST 91 VALLEY VIEW ON RAMP CLOSED	USE KNOTT AVE EXIT

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-6	VALLEY VIEW ON RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-6	VALLEY VIEW ON RAMP CLOSED	USE KNOTT AVE EXIT



**TRAFFIC HANDLING PLAN**

EASTBOUND ROUTE 91  
 VALLEY VIEW ST ON RAMP CLOSURE

NO SCALE

APPROVED FOR TRAFFIC HANDLING PLAN ONLY

**TH-3**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
0712	LA Ora	91	R20.6/R20.7 R0.0/R2.8	17	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 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  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CHECKED BY: KEVIN PHAM  
 DESIGNED BY: ALIX WILLIAMS  
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

**NOTE:**

1. LOCATIONS OF CONSTRUCTION AREA SIGNS AND PCMS SHOWN ARE APPROXIMATE.  
 EXACT SIGN LOCATIONS AND MESSAGE ON PCMS TO BE DETERMINED BY THE ENGINEER.

**CLOSURE:**

EB ROUTE 91 ORANGETHORPE Ave ON RAMP

**DETOUR:**

EB ORANGETHORPE Av  
 TO SB VALLEY VIEW St

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-7	ORANGETHORPE ON RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-7	ORANGETHORPE AVE ON RAMP CLOSED	USE VALLEY VIEW ON RAMP

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-8	E 91 ORANGETHORPE ON RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-8	E 91 ORANGETHORPE ON RAMP CLOSED	USE VALLEY VIEW ON RAMP



**TRAFFIC HANDLING PLAN**

EASTBOUND ROUTE 91  
 ORANGETHORPE Ave ON RAMP CLOSURE

NO SCALE

APPROVED FOR TRAFFIC HANDLING PLAN ONLY

**TH-4**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CALCULATED/DESIGNED BY: KEVIN PHAM  
 CHECKED BY: KEVIN PHAM  
 REVISED BY: ALIX WILLIAMS  
 DATE REVISED: [ ]

**NOTE:**

1. LOCATIONS OF CONSTRUCTION AREA SIGNS AND PCMS SHOWN ARE APPROXIMATE.  
 EXACT SIGN LOCATIONS AND MESSAGE ON PCMS TO BE DETERMINED BY THE ENGINEER.

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-9	ORANGETHORPE OFF RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-9	ORANGETHORPE AVE OFF RAMP CLOSED	USE CARMENITA EXIT

**CLOSURE:**

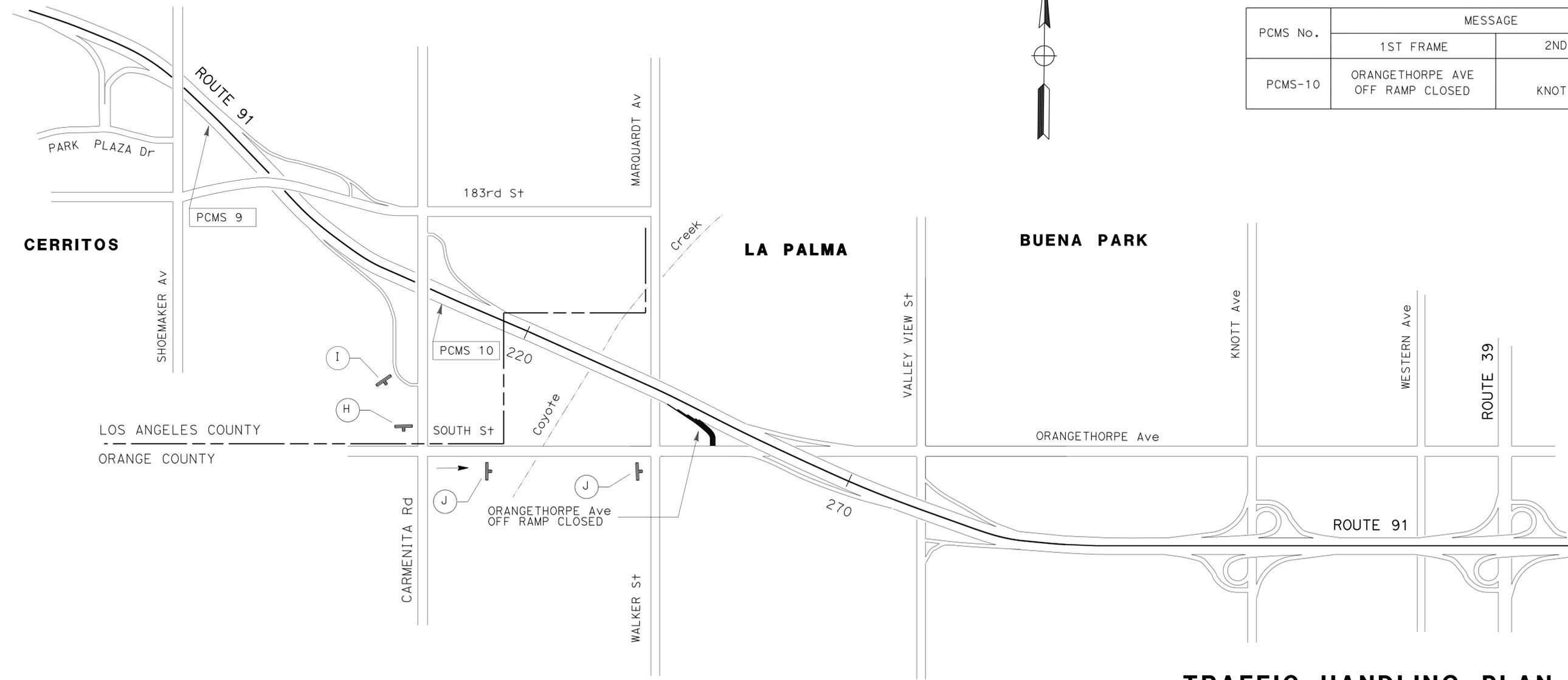
EB ROUTE 91 ORANGETHORPE Ave OFF RAMP

**DETOUR:**

EB ROUTE 91 TO SB CARMENITA Rd TO EB ORANGETHORPE Av

PCMS No.	MESSAGE		REMARK
	1ST FRAME	2ND FRAME	
PCMS-10	ORANGETHORPE OFF RAMP WILL BE CLOSED	FROM: TO:	14 DAYS PRIOR TO RAMP CLOSED

PCMS No.	MESSAGE	
	1ST FRAME	2ND FRAME
PCMS-10	ORANGETHORPE AVE OFF RAMP CLOSED	USE KNOTT AVE EXIT



**TRAFFIC HANDLING PLAN**

EASTBOUND ROUTE 91  
 ORANGETHORPE Ave OFF RAMP CLOSURE

NO SCALE

APPROVED FOR TRAFFIC HANDLING PLAN ONLY

**TH-5**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	19	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 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.

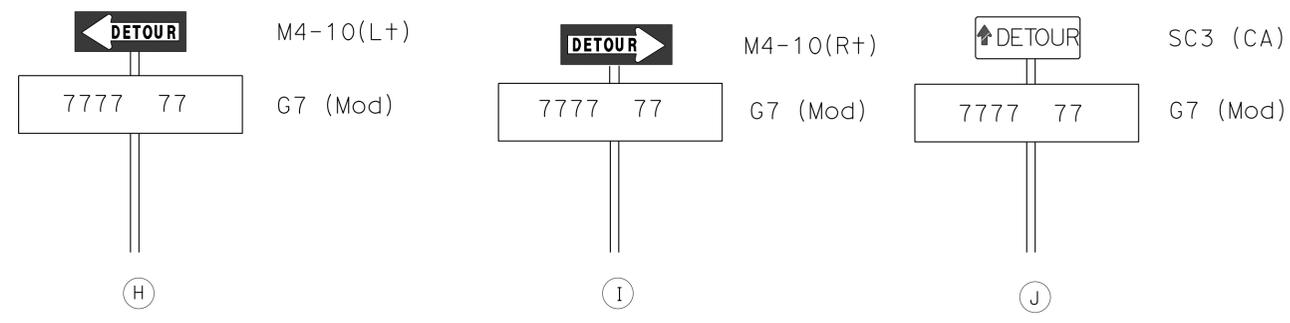
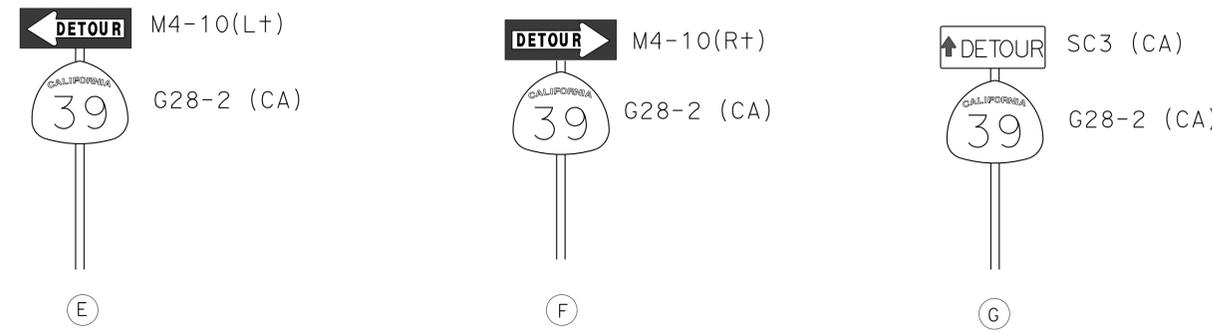
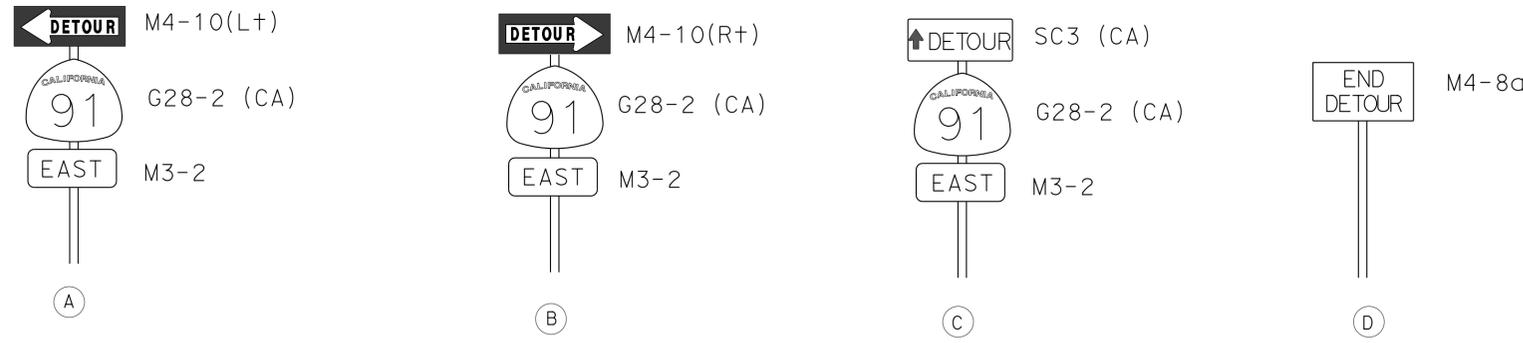
DATE PLOTTED => 09-MAR-2016  
 TIME PLOTTED => 08:11  
 LAST REVISION 9-24-15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	20	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS  
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REGISTERED PROFESSIONAL ENGINEER  
 KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL  
 STATE OF CALIFORNIA



### CONSTRUCTION AREA SIGN (DETOUR)

SHEET No.	SIGN	CODE	PANEL SIZE	PANEL LABEL	No. OF POST AND SIZE	No. OF SIGNS
TH-1	A	M4-10(L+)	48" x 18"		1 - 6" x 6"	1
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		
	B	M4-10(R+)	48" x 18"		1 - 6" x 6"	1
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		
	C	SC3 (CA)	48" x 18"		1 - 6" x 6"	3
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		
D	M4-8a	24" x 18"		1 - 6" x 6"	1	

SHEET No.	SIGN	CODE	PANEL SIZE	PANEL LABEL	No. OF POST AND SIZE	No. OF SIGNS
TH-2	A	M4-10(L+)	48" x 18"		1 - 6" x 6"	1
		G28-2 (CA)	54" x 12"	39		
	B	M4-10(R+)	48" x 18"		1 - 6" x 6"	1
		G28-2 (CA)	54" x 12"	39		
	C	SC3 (CA)	48" x 18"		1 - 6" x 6"	2
		G28-2 (CA)	54" x 12"	39		

SHEET No.	SIGN	CODE	PANEL SIZE	PANEL LABEL	No. OF POST AND SIZE	No. OF SIGNS
TH-3	A	M4-10(L+)	48" x 18"		1 - 6" x 6"	2
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		
	B	M4-10(R+)	48" x 18"		1 - 6" x 6"	2
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		
	C	SC3 (CA)	48" x 18"		1 - 6" x 6"	5
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		

SHEET No.	SIGN	CODE	PANEL SIZE	PANEL LABEL	No. OF POST AND SIZE	No. OF SIGNS
TH-4	B	M4-10(R+)	48" x 18"		1 - 6" x 6"	1
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		
	C	SC3 (CA)	48" x 18"		1 - 6" x 6"	3
		G28-2 (CA)	54" x 12"	91		
		M3-2	30" x 15"	EAST		

SHEET No.	SIGN	CODE	PANEL SIZE	PANEL LABEL	No. OF POST AND SIZE	No. OF SIGNS
TH-5	H	M4-10(L+)	48" x 18"		1 - 6" x 6"	1
		G7 (Mod)	54" x 18"	ORANGETHORPE		
	I	M4-10(R+)	48" x 18"		1 - 6" x 6"	1
		G7 (Mod)	54" x 18"	ORANGETHORPE		
	J	SC3 (CA)	48" x 18"		1 - 6" x 6"	2
		G7 (Mod)	54" x 18"	ORANGETHORPE		

### TRAFFIC HANDLING QUANTITIES

NO SCALE

THQ-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CALCULATED/DESIGNED BY: KEVIN PHAM  
 CHECKED BY:  
 ALIX WILLIAMS  
 KEVIN PHAM  
 REVISOR: ALIX WILLIAMS  
 DATE: 7/2/2010  
 REVISOR: ALIX WILLIAMS  
 DATE: 7/2/2010

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	21	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE

12-14-15  
 PLANS APPROVAL DATE

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CALCULATED/DESIGNED BY: ALIX WILLIAMS  
 CHECKED BY: KEVIN PHAM  
 REVISIONS: REVISED BY: DATE REVISED:

### ROADWAY

SHEET No.	DIRECTION	STATION	ROADSIDE PAVING (MISCELLANEOUS AREAS)	END ANCHOR ASSEMBLY (TYPE SFT)	TRANSITION RAILING (TYPE WB-31)	MIDWEST GUARDRAIL SYSTEM (TYPE 16A)
			SQYD	EA	EA	LF
L-4	EB	"A" 264+85 To "A" 265+10			1	
L-4	EB	"A" 265+10 To "A" 266+10		1		75
L-4	EB	"A" 265+72 To "A" 266+57	87			
TOTAL			87	1	1	75

### TEMPORARY WATER POLLUTION CONTROL

SHEET No.	STATION	TEMPORARY INLET PROTECTION
		EA
L-1	"A" 217+18 To "A" 231+00	5
L-2	"A" 231+00 To "A" 245+50	5
L-2	ORANGETHORPE Ave 15+70 To 17+28	2
L-3	"A" 245+50 To "A" 260+00	5
L-4	"A" 260+00 To "A" 274+00	1
L-7	"A" 302+00 To "A" 313+50	1
L-8	"A" 313+50 To "A" 322+50	1
L-9	"A" 322+50 To "A" 337+00	2
L-11	"A" 351+50 To "A" 366+00	3
L-11	NB BEACH Blvd 52+25 To 52+42	2
L-11	SB BEACH Blvd 46+74 To 53+41	4
TOTAL		31

## SUMMARY OF QUANTITIES

### Q-1

LAST REVISION: DATE PLOTTED => 09-MAR-2016 9-24-15 TIME PLOTTED => 08:12

REVISOR  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI

DESIGNER  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI

FUNCTIONAL SUPERVISOR  
 SHAHRAM SHAHRIARI

PROJECT NUMBER & PHASE  
 12140000381

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	22	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

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**GENERAL NOTES:**

- EACH 4" COMMUNICATION CONDUIT MUST HAVE 4-1" INNERDUCTS WITH PULL ROPE. INSTALL FIBER OPTIC CABLES IN THE BOTTOM CONDUIT. PLUG ENDS OF UNUSED INNERDUCTS AND CONDUITS.
- FIBER OPTIC CONDUIT MUST BE INSTALLED IN 6" WIDE TRENCH IN PAVED SHOULDER.
- ALL FIBER OPTIC CONDUIT BENDS MUST BE 4' RADIUS FACTORY BENDS.

**LEGEND:**

- EXISTING SPLICE VAULT
- NEW COMMUNICATION PULL BOX (SEE SHEET E-24 FOR DETAILS)
- NEW SPLICE VAULT WITH SPLICE CLOSURE (SEE SHEET E-15 AND E-25 FOR DETAILS)
- NEW FIBER OPTIC CONDUIT (SEE SHEET E-26 AND E-27 FOR DETAILS)

**ABBREVIATIONS:**

- FDU FIBER DISTRIBUTION UNIT
- HM HIGH MAST
- PoE POWER OVER ETHERNET
- RMS RAMP METERING SYSTEM
- RX RECEIVE
- SMFO NEW SINGLE MODE FIBER OPTIC CABLE
- TS TRAFFIC SIGNAL
- TX TRANSMIT
- TYPE A CABLE 36 SINGLEMODE FIBER OPTIC CABLE
- TYPE B CABLE 72 SINGLEMODE FIBER OPTIC CABLE
- TYPE C CABLE 72 SINGLEMODE FIBER OPTIC CABLE
- TYPE D CABLE 12 SINGLEMODE FIBER OPTIC CABLE

**TABLE OF CONTENTS (ELECTRICAL PLANS)**

E-1	NOTES, LEGEND AND ABBREVIATIONS
E-2 TO E-13	COMMUNICATION SYSTEM
E-14	COMMUNICATION SYSTEM (SCHEMATIC)
E-15	COMMUNICATION SYSTEM (FIBER ASSIGNMENT TABLE)
E-16	COMMUNICATION SYSTEM (TS, TMS, RMS CONTROLLER INTERFACE)
E-17	COMMUNICATION SYSTEM (CCTV INTERFACE)
E-18	COMMUNICATION SYSTEM (CMS 170 CONTROLLER INTERFACE)
E-19	COMMUNICATION SYSTEM (HIGH MAST CCTV - LOWERING RING RETAINER DETAILS)
E-20	COMMUNICATION SYSTEM (CCTV MOUNTING DETAILS)
E-21	COMMUNICATION SYSTEM (CCTV WIRING SCHEDULE AND PIN-OUT)
E-22	COMMUNICATION SYSTEM (HIGH MAST CCTV DETAILS)
E-23	COMMUNICATION SYSTEM (CMS MODEL 500 SYSTEM WIRING DIAGRAM)
E-24	COMMUNICATION SYSTEM (COMMUNICATION PULL BOX DETAILS)
E-25	COMMUNICATION SYSTEM (SPLICE VAULT DETAILS)
E-26	COMMUNICATION SYSTEM (CONDUIT JACKING DETAILS)
E-27	COMMUNICATION SYSTEM (CONDUIT TRENCHING DETAILS)
E-28	COMMUNICATION SYSTEM (CONDUIT ATTACHMENT DETAILS)
E-29	COMMUNICATION SYSTEM (CONDUIT ATTACHMENT DETAILS)
E-30	COMMUNICATION SYSTEM (CONDUIT ATTACHMENT DETAILS)
E-31	ELECTRICAL QUANTITIES

**(NOTES, LEGEND, AND ABBREVIATIONS)**

**COMMUNICATION SYSTEM**  
 NO SCALE  
**E-1**

LAST REVISION DATE PLOTTED => 09-MAR-2016  
 10-16-15 TIME PLOTTED => 08:12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	23	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE

12-14-15  
 PLANS APPROVAL DATE

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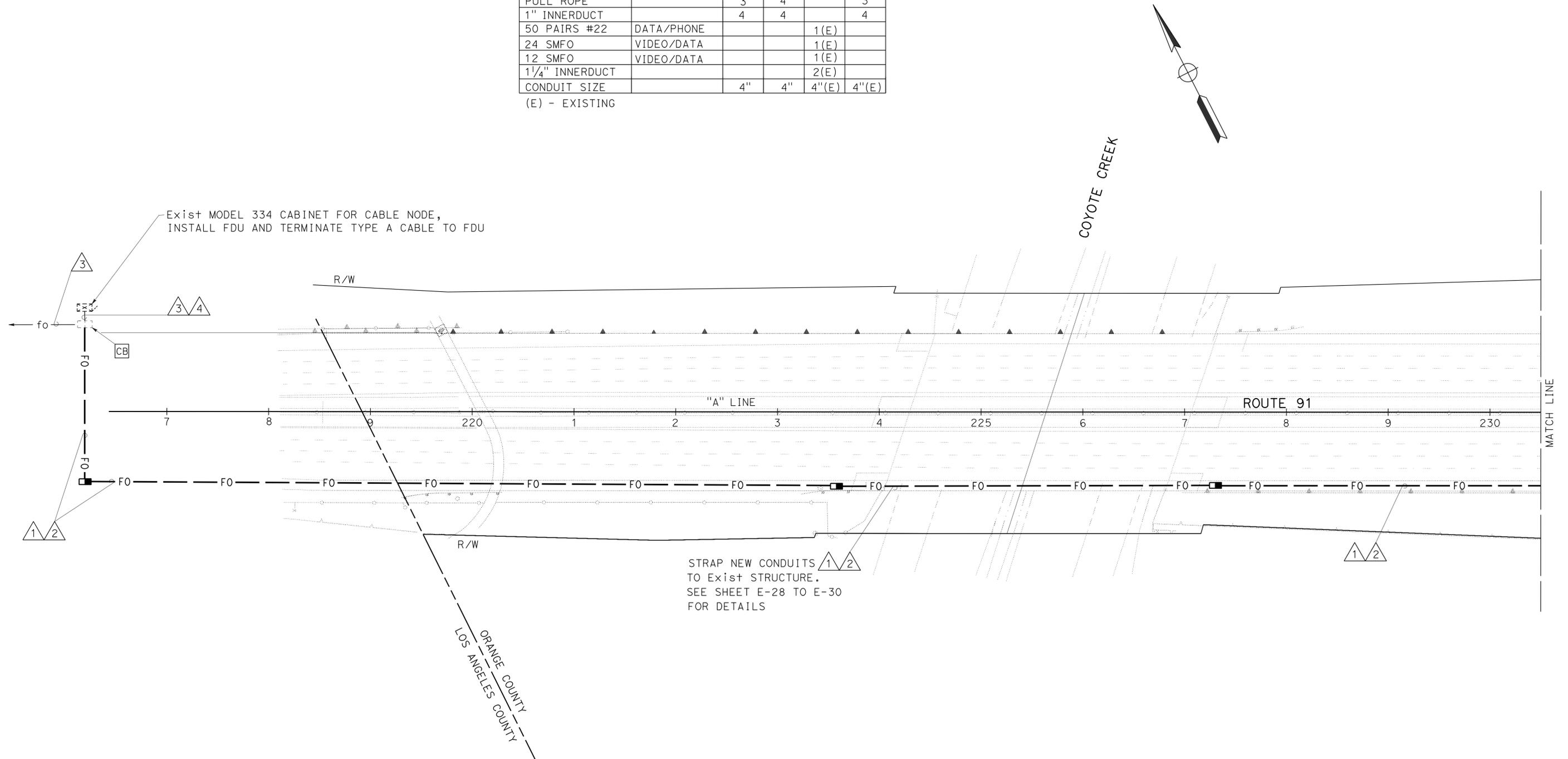
REGISTERED PROFESSIONAL ENGINEER  
**V.V. TRUONG**  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

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

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	1	2	3	4
TYPE A CABLE		1			1
PULL ROPE		3	4		3
1" INNERDUCT		4	4		4
50 PAIRS #22	DATA/PHONE			1(E)	
24 SMFO	VIDEO/DATA			1(E)	
12 SMFO	VIDEO/DATA			1(E)	
1 1/4" INNERDUCT				2(E)	
CONDUIT SIZE		4"	4"	4"(E)	4"(E)

(E) - EXISTING



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 REVISOR: SHAHRAM SHAHRIARI  
 REVISED BY: DATE

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

**COMMUNICATION SYSTEM**  
 SCALE: 1" = 50'

**E-2**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	24	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
**V. V. TRUONG**  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

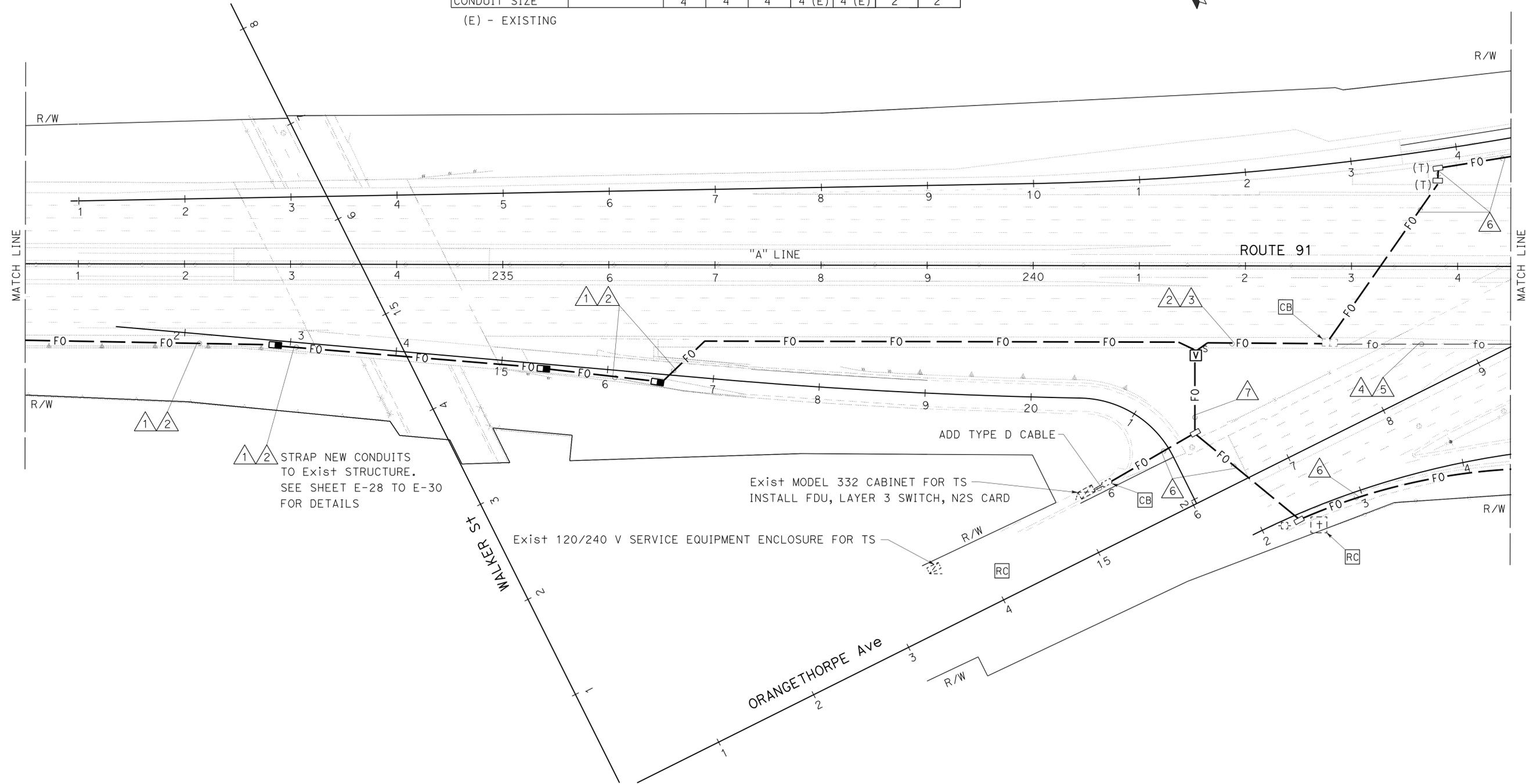
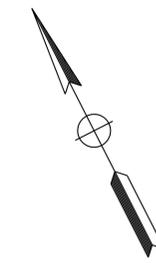
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**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	1	2	3	4	5	6	7
TYPE A CABLE		1		1	1			
TYPE B CABLE				1	1			
TYPE C CABLE				1	1			
TYPE D CABLE				1			1	2
PULL ROPE		3	4		1	4		
1" INNERDUCT		4	4	4	4	4		
CONDUIT SIZE		4"	4"	4"	4"(E)	4"(E)	2"	2"

(E) - EXISTING



STRAP NEW CONDUITS TO Exist STRUCTURE. SEE SHEET E-28 TO E-30 FOR DETAILS

Exist MODEL 332 CABINET FOR TS  
 INSTALL FDU, LAYER 3 SWITCH, N2S CARD

Exist 120/240 V SERVICE EQUIPMENT ENCLOSURE FOR TS

ADD TYPE D CABLE

**COMMUNICATION SYSTEM**

SCALE: 1" = 50'

**E-3**

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI  
 REVISOR BY: DATE  
 REVISOR BY: DATE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	25	77

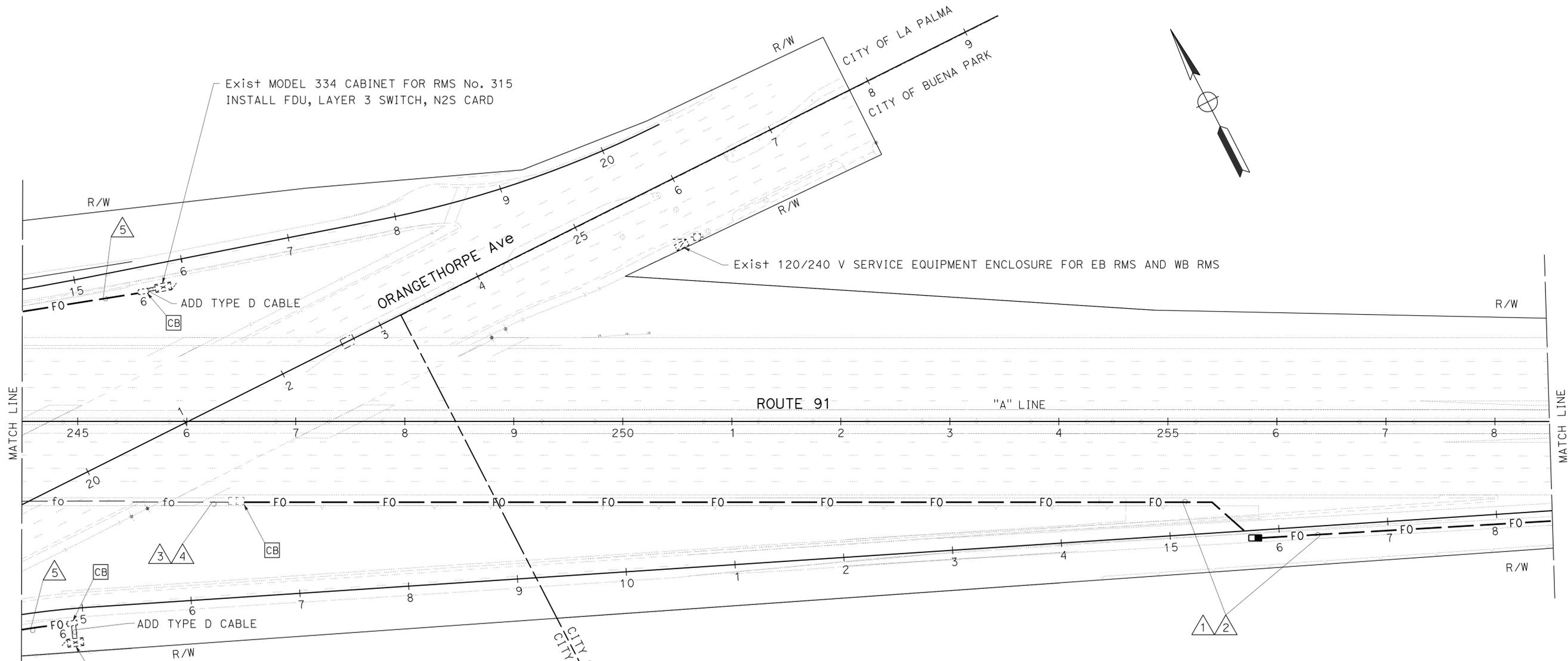
*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE

12-14-15  
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
**V.V. TRUONG**  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

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



CONDUCTOR AND CONDUIT SCHEDULE

CONDUCTOR TYPE	FUNCTION	△1	△2	△3	△4	△5
TYPE A CABLE		1		1		
TYPE B CABLE		1		1		
TYPE C CABLE		1		1		
TYPE D CABLE						1
PULL ROPE		1	4	1	4	
1" INNERDUCT		4	4	4	4	
CONDUIT SIZE		4"	4"	4"(E)	4"(E)	2"

(E) - EXISTING

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 REVISED BY: SHAHRAM SHAHRIARI  
 DATE REVISIED:

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

**COMMUNICATION SYSTEM**  
 SCALE: 1" = 50'

**E-4**

LAST REVISION: DATE PLOTTED => 09-MAR-2016  
 10-16-15    TIME PLOTTED => 08:12



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	27	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE

12-14-15  
 PLANS APPROVAL DATE

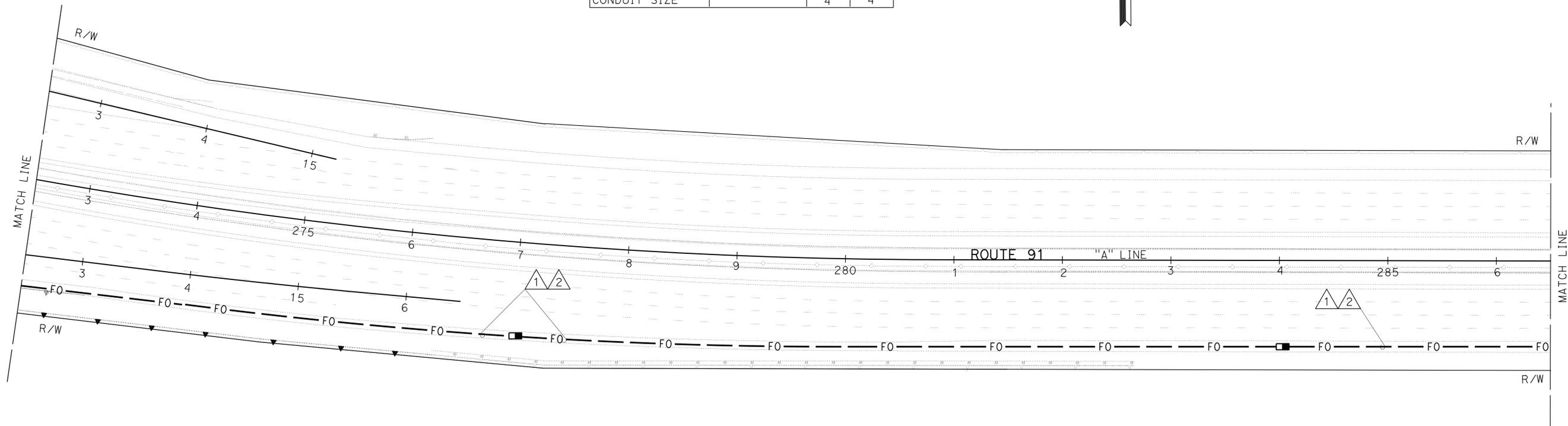
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REGISTERED PROFESSIONAL ENGINEER  
 V. V. TRUONG  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

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

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	1	2
TYPE A CABLE		1	
TYPE B CABLE		1	
TYPE C CABLE		1	
PULL ROPE		1	4
1" INNERDUCT		4	4
CONDUIT SIZE		4"	4"



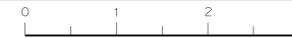
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 REVISOR: SHAHRAM SHAHRIARI  
 DATE: 12-14-15

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

**COMMUNICATION SYSTEM**

SCALE: 1" = 50'

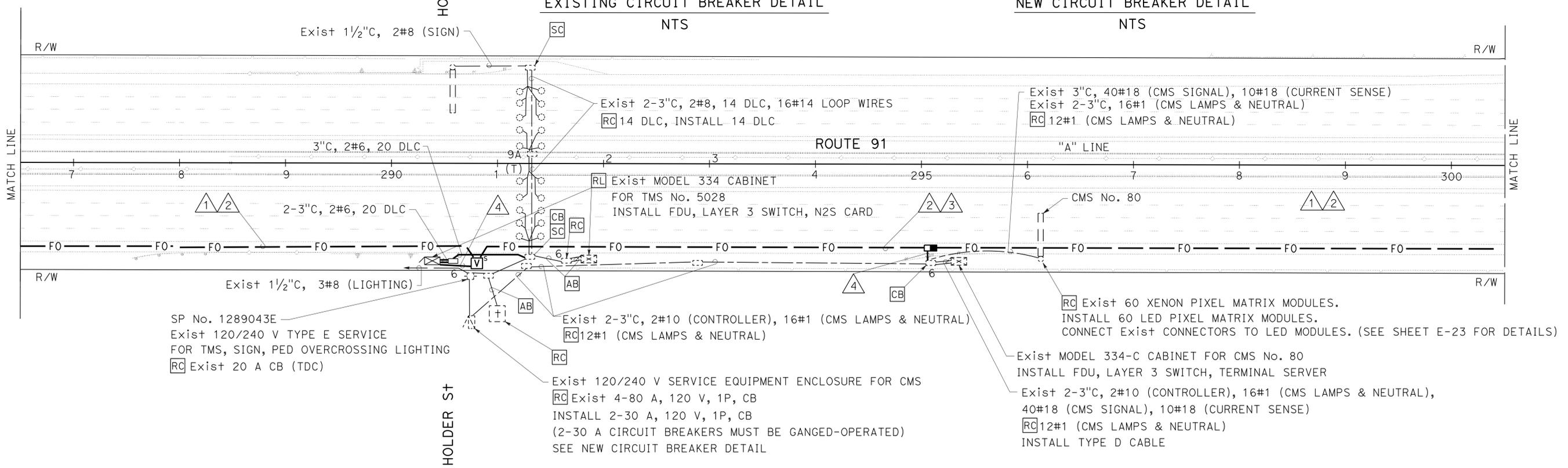
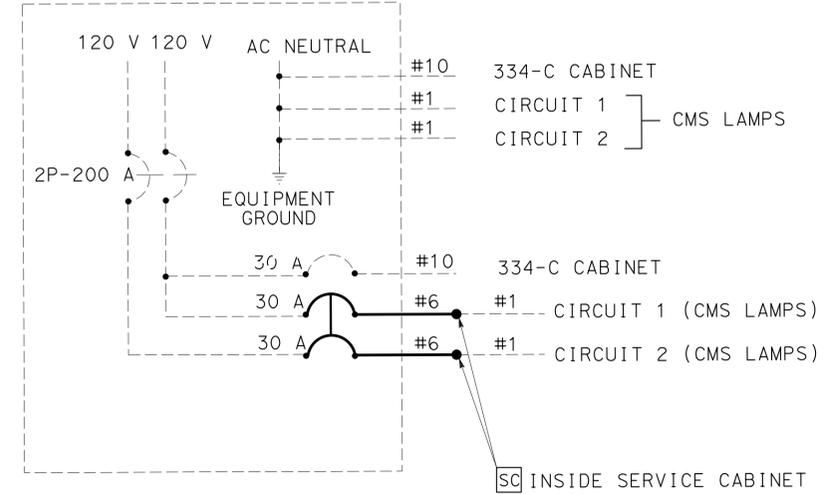
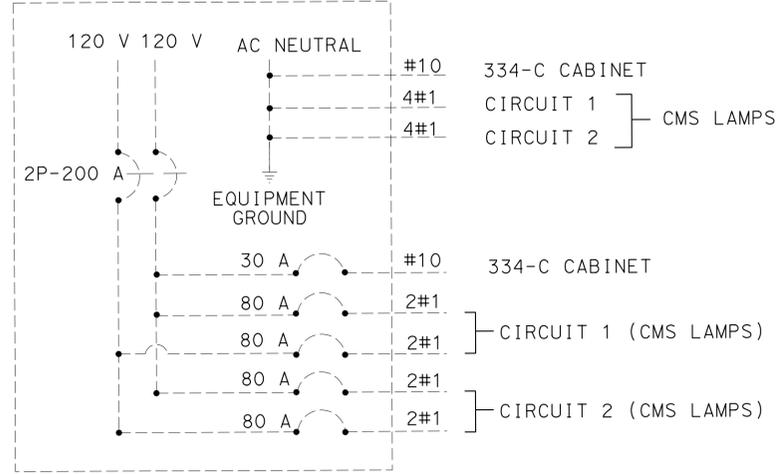
**E-6**



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

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	△1	△2	△3	△4
TYPE A CABLE		1		1	
TYPE B CABLE		1		1	
TYPE C CABLE		1		1	
TYPE D CABLE				1	1
PULL ROPE		1	4		
1" INNERDUCT		4	4	4	
CONDUIT SIZE		4"	4"	4"	2"



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

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

**COMMUNICATION SYSTEM**  
 SCALE: 1" = 50'  
**E-7**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	29	77

Vanessa Van Truong 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

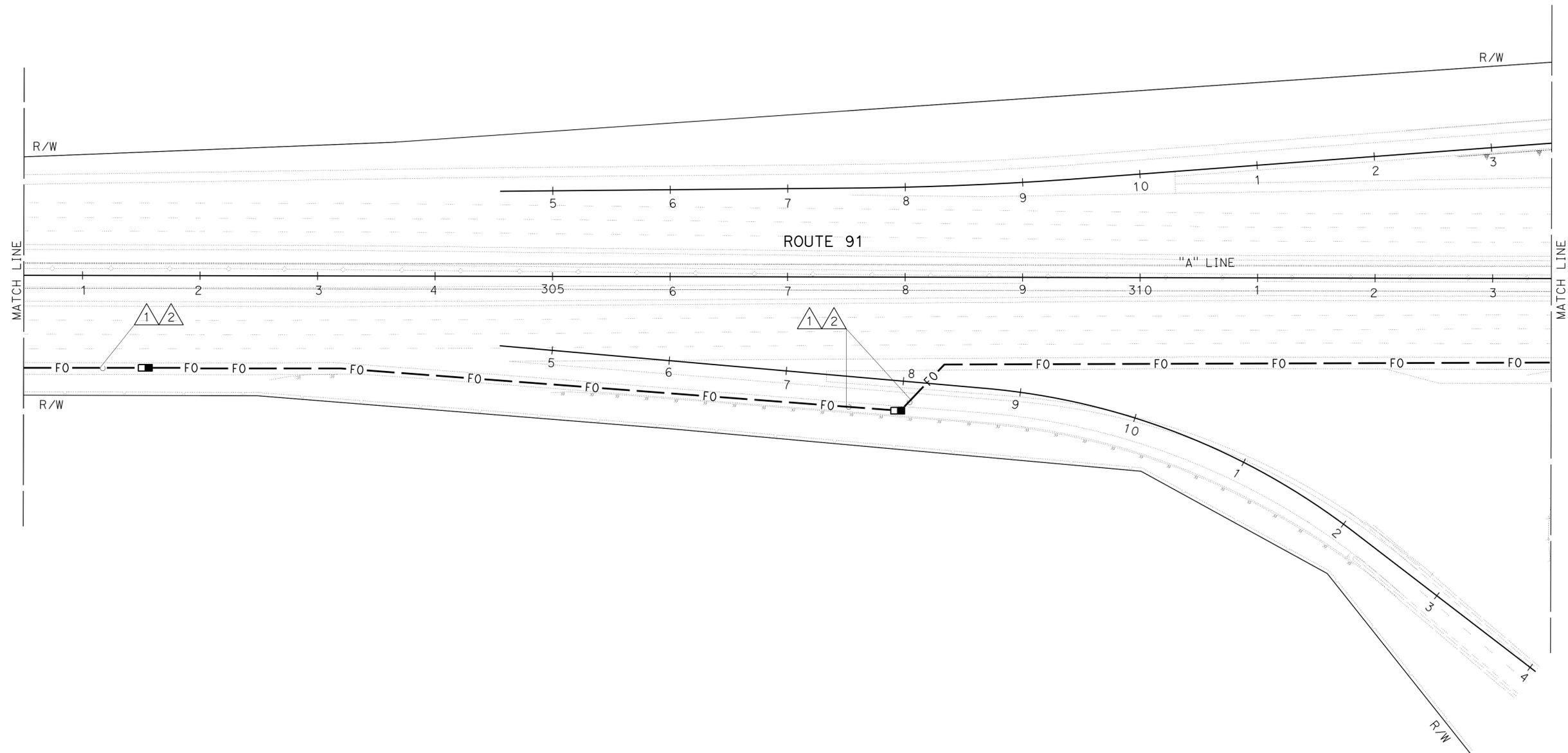
V.V. TRUONG  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

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

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	△ 1	△ 2
TYPE A CABLE		1	
TYPE B CABLE		1	
TYPE C CABLE		1	
PULL ROPE		1	4
1" INNERDUCT		4	4
CONDUIT SIZE		4"	4"



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI  
 REVISED BY: VANESSA TRUONG  
 DATE REVISED: SHAHRAM SHAHRIARI

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

**COMMUNICATION SYSTEM**

SCALE: 1" = 50'

**E-8**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	30	77

Vanessa Van Truong 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 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.

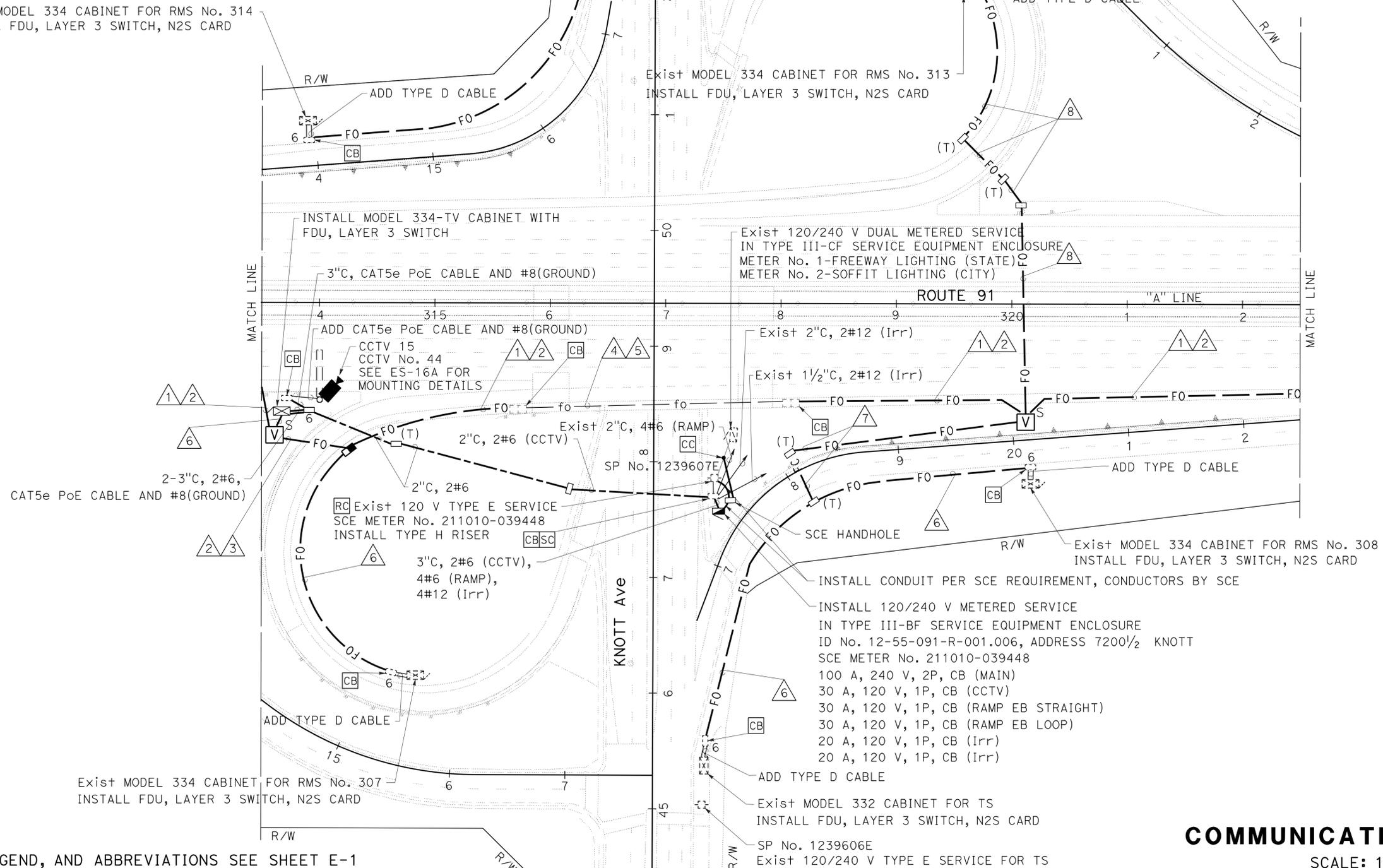
**NOTE:**  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	1	2	3	4	5	6	7	8
TYPE A CABLE		1		1	1				
TYPE B CABLE		1		1	1				
TYPE C CABLE		1		1	1				
TYPE D CABLE							1	2	3
PULL ROPE		1	4	1	1	4			
1" INNERDUCT		4	4	4	4	4			
CONDUIT SIZE		4"	4"	4"	4"(E)	4"(E)	2"	2"	3"

(E) - EXISTING

Exist MODEL 334 CABINET FOR RMS No. 314  
INSTALL FDU, LAYER 3 SWITCH, N2S CARD



**COMMUNICATION SYSTEM**

SCALE: 1" = 50'

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	31	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

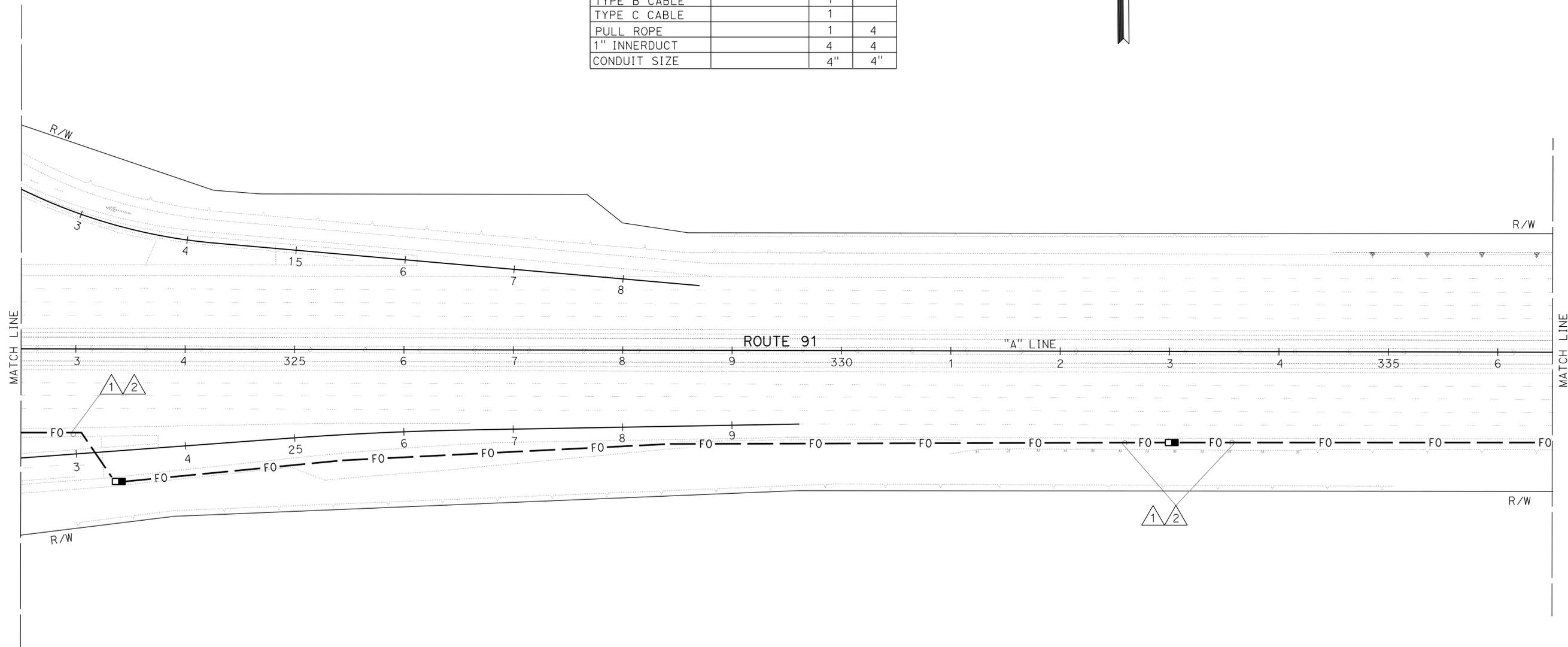
V.V. TRUONG  
 No. E 13983  
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 ELECTRICAL  
 STATE OF CALIFORNIA

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

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	①	②
TYPE A CABLE		1	
TYPE B CABLE		1	
TYPE C CABLE		1	
PULL ROPE		1	4
1" INNERDUCT		4	4
CONDUIT SIZE		4"	4"



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 REVISOR: SHAHRAM SHAHRIARI  
 DATE: 12-14-15

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

**COMMUNICATION SYSTEM**  
 SCALE: 1" = 50'  
**E-10**

LAST REVISION | DATE PLOTTED => 09-MAR-2016 | TIME PLOTTED => 08:12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	32	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 V.V. TRUONG  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

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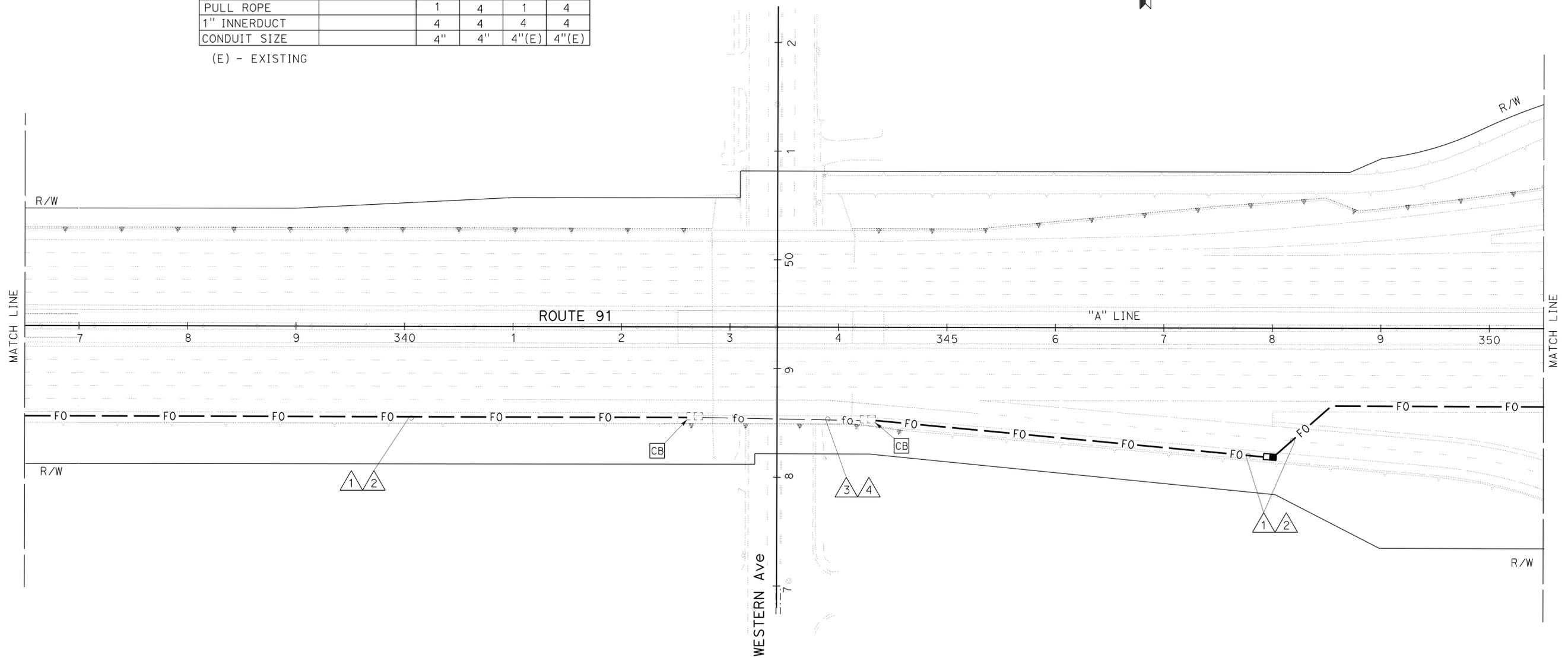


**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	△1	△2	△3	△4
TYPE A CABLE		1		1	
TYPE B CABLE		1		1	
TYPE C CABLE		1		1	
PULL ROPE		1	4	1	4
1" INNERDUCT		4	4	4	4
CONDUIT SIZE		4"	4"	4"(E)	4"(E)

(E) - EXISTING



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 REVISOR: SHAHRAM SHAHRIARI  
 DATE: 12-14-15

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
 APPROVED FOR ELECTRICAL WORK ONLY

**COMMUNICATION SYSTEM**  
 SCALE: 1" = 50'

**E-11**

LAST REVISION: 10-16-15    DATE PLOTTED => 09-MAR-2016    TIME PLOTTED => 08:12

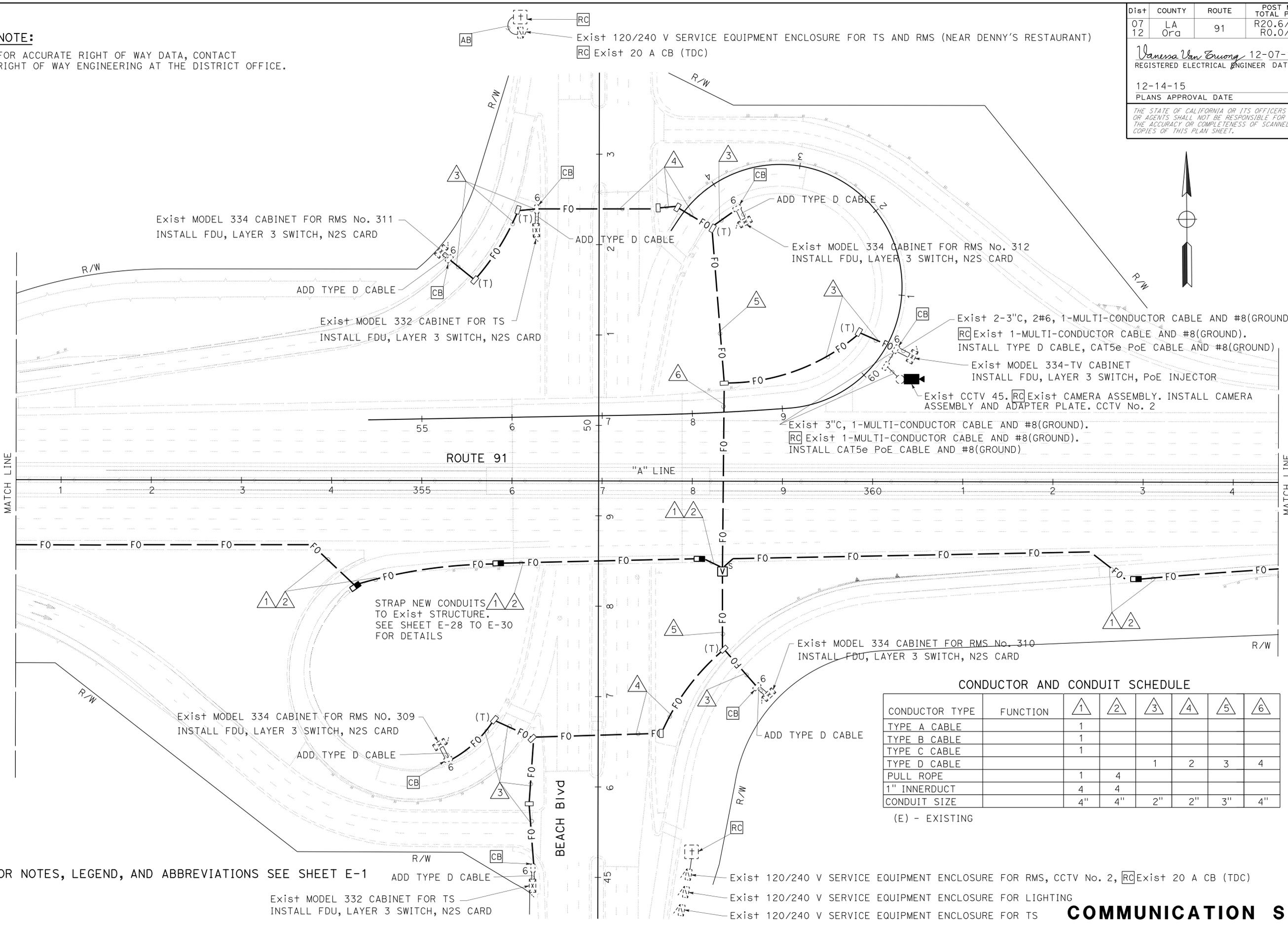
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	33	77

Vanessa Van Truong 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
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 V. V. TRUONG  
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**NOTE:**  
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 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	1	2	3	4	5	6
TYPE A CABLE		1					
TYPE B CABLE		1					
TYPE C CABLE		1					
TYPE D CABLE				1	2	3	4
PULL ROPE		1	4				
1" INNERDUCT		4	4				
CONDUIT SIZE		4"	4"	2"	2"	3"	4"

(E) - EXISTING

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1

**COMMUNICATION SYSTEM**  
 SCALE: 1" = 50'  
**E-12**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI  
 REVISOR: VANESSA TRUONG  
 DATE: 12-07-15  
 DESIGNED BY: VANESSA TRUONG  
 CHECKED BY: SHAHRAM SHAHRIARI  
 10-16-15  
 09-MAR-2016  
 08:12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	34	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
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 V.V. TRUONG  
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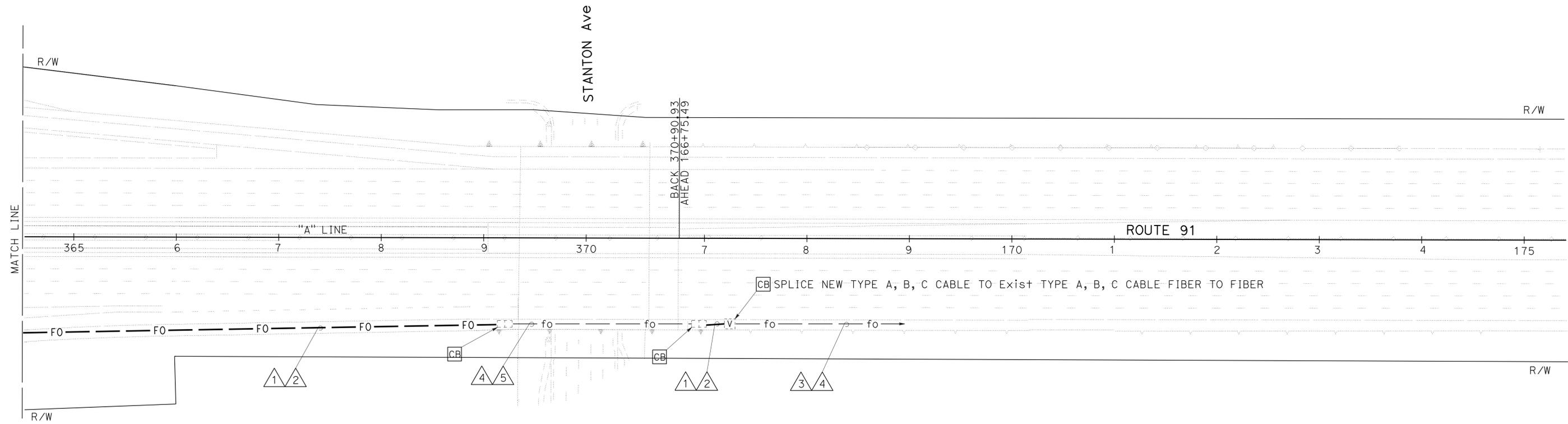
**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**CONDUCTOR AND CONDUIT SCHEDULE**

CONDUCTOR TYPE	FUNCTION	△1	△2	△3	△4	△5
TYPE A CABLE		1		1(E)		1
TYPE B CABLE		1		1(E)		1
TYPE C CABLE		1		1(E)		1
PULL ROPE		1	4	1(E)	4(E)	1
1" INNERDUCT		4	4	4(E)	4(E)	4
CONDUIT SIZE		4"	4"	4"(E)	4"(E)	4"(E)

(E) - EXISTING

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** **ELECTRICAL DESIGN**  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: CHECKED BY:  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI  
 REVISED BY: DATE REVISED:



FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1  
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**COMMUNICATION SYSTEM**

SCALE: 1" = 50'

**E-13**

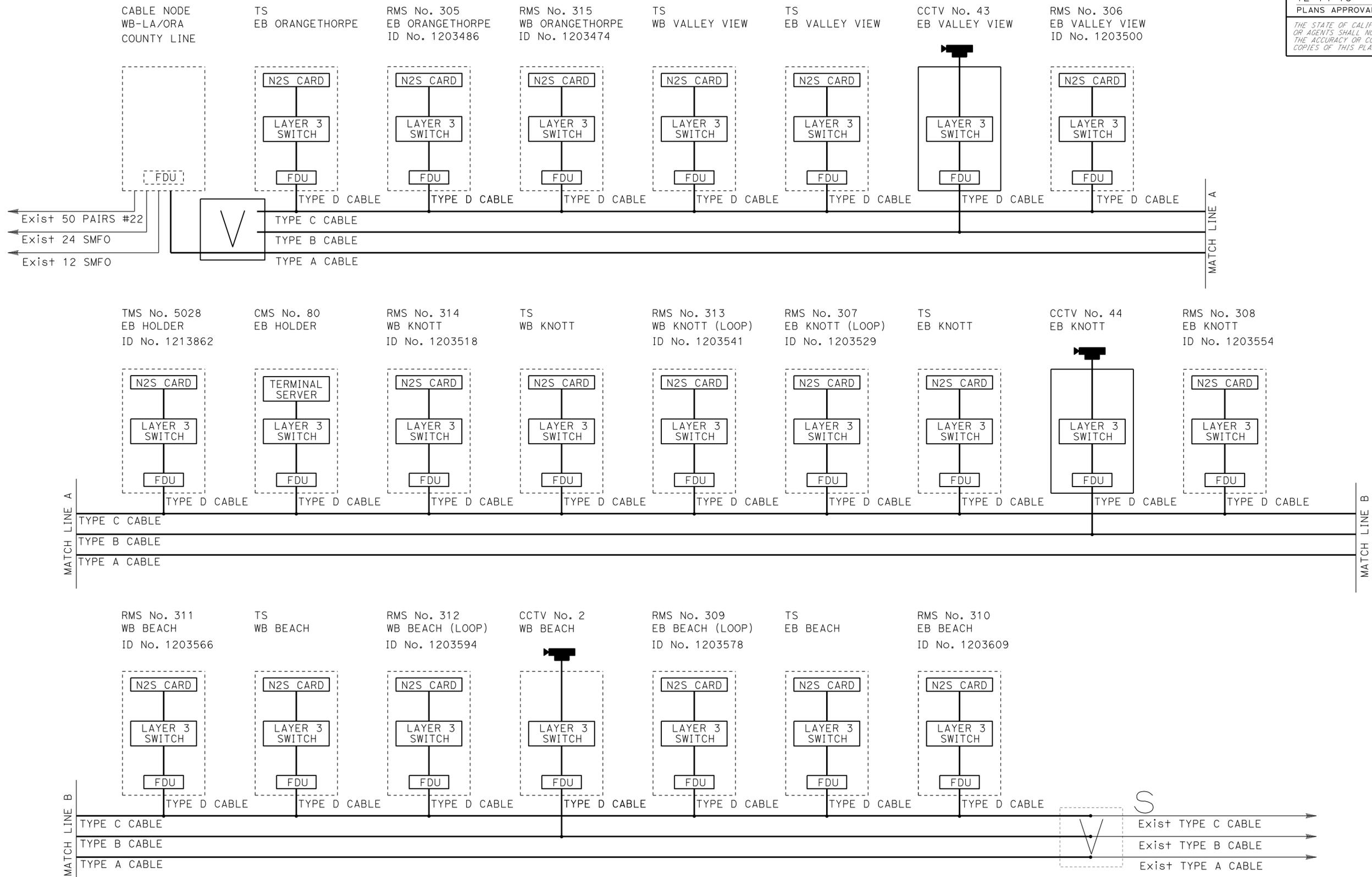
LAST REVISION DATE PLOTTED => 09-MAR-2016  
 10-16-15 TIME PLOTTED => 08:12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	35	77

12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
 V.V. TRUONG  
 No. E 13983  
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 ELECTRICAL  
 STATE OF CALIFORNIA



FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1

**COMMUNICATION SYSTEM**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CHECKED BY: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: VANESSA TRUONG  
 REVISOR: SHAHRAM SHAHRIARI  
 DATE: 12-14-15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
0712	LA Ora	91	R20.6/R20.7 R0.0/R2.8	36	77

Peter Ngo 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE

12-14-15  
 PLANS APPROVAL DATE

PETER NGO  
 No. E 16503  
 Exp 9/30/17

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.

### TYPE C CABLE

FIBER LOOP BACK	SPLICE VAULT STATION 241+20	FIBER No.	TS ORANGE THORPE	RMS 305 ORANGE THORPE	RMS 315 ORANGE THORPE	TS VALLEY VIEW	TS VALLEY VIEW	RMS 306 VALLEY VIEW	TMS 5028 EB HOLDER	CMS 80 EB HOLDER	RMS 314 WB KNOTT	TS WB KNOTT	RMS 313 WB KNOTT	RMS 307 EB KNOTT	TS EB KNOTT	RMS 308 EB KNOTT	RMS 311 WB BEACH	TS WB BEACH	RMS 312 WB BEACH	RMS 309 EB BEACH	TS EB BEACH	RMS 310 EB BEACH	SPLICE VAULT STATION 371+20	TYPE C (E) FIBER No.	HUB 2 THRU DATA NODE AT BROOKHURST	REMARKS
	0>	1-56																					<<>	1-56		
65-66	<<	57-58	<X>			<X>	<X>					<X>			<X>		<X>						<X>	57-58	<X>	TS 91
67-68	<<	59-60		<X>	<X>			<X>	<X>		<X>		<X>										<X>	59-60	<X>	TMS 91
69-70	<<	61-62												<X>		<X>				<X>			<X>	61-62	<X>	TMS 92
71-72	<<	63-64								<X>													<X>	63-64	<X>	CMS 91
		65-72																					<X>	65-72		

### TYPE A CABLE

FIBER LOOP BACK	CABLE NODE LA/ORA COUNTY LINE	FIBER No.	SPLICE VAULT STATION 371+20	TYPE A (E) FIBER No.	REMARKS
5-8	<<	1-4	<<	1-4	
		5-8	<<	5-8	
	0>	9-36	<<	9-36	

### TYPE B CABLE

FIBER LOOP BACK	SPLICE VAULT STATION 241+20	FIBER No.	CCTV 43 EB VALLEY VIEW	CCTV 44 EB KNOTT	CCTV 2 WB BEACH	SPLICE VAULT STATION 371+20	TYPE B (E) FIBER No.	HUB 2 THRU DATA NODE AT BROOKHURST	REMARKS
	0>	0-60				<X>	0-60		
63-64	<<	61-62	<X>	<X>	<X>	<X>	61-62	<X>	CCTV 91
		63-64				<X>	63-64		
	0>	65-72				<X>	65-72		

### CABLE NODE I-5/SR-91

FIBER OPTIC CABLES GOING EAST ON SR-91			CABLE NODE	FIBER OPTIC CABLES GOING SOUTH ON I-5 TO HUB 1 (I-5/ LA VETA)		
TYPE C (E)	TYPE B (E)	TYPE A (E)		TYPE A (E)	TYPE B (E)	TYPE C (E)
		5-8	<<	3-6		
	63-64		<<		63-64	
65-72			<<			65-72

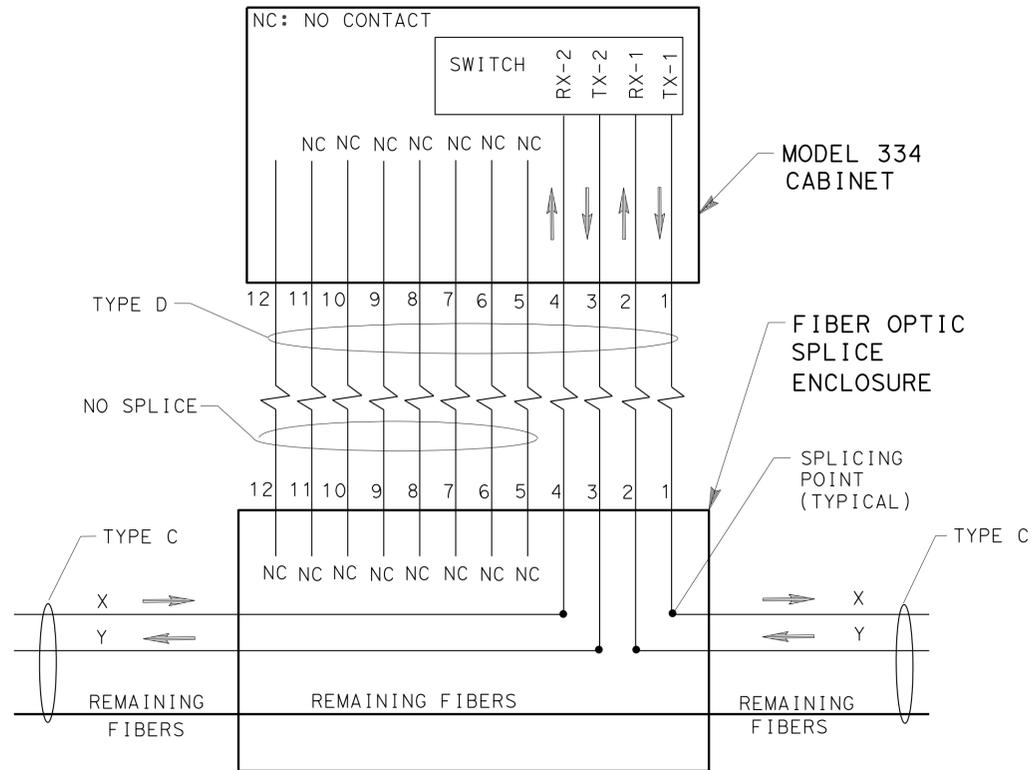
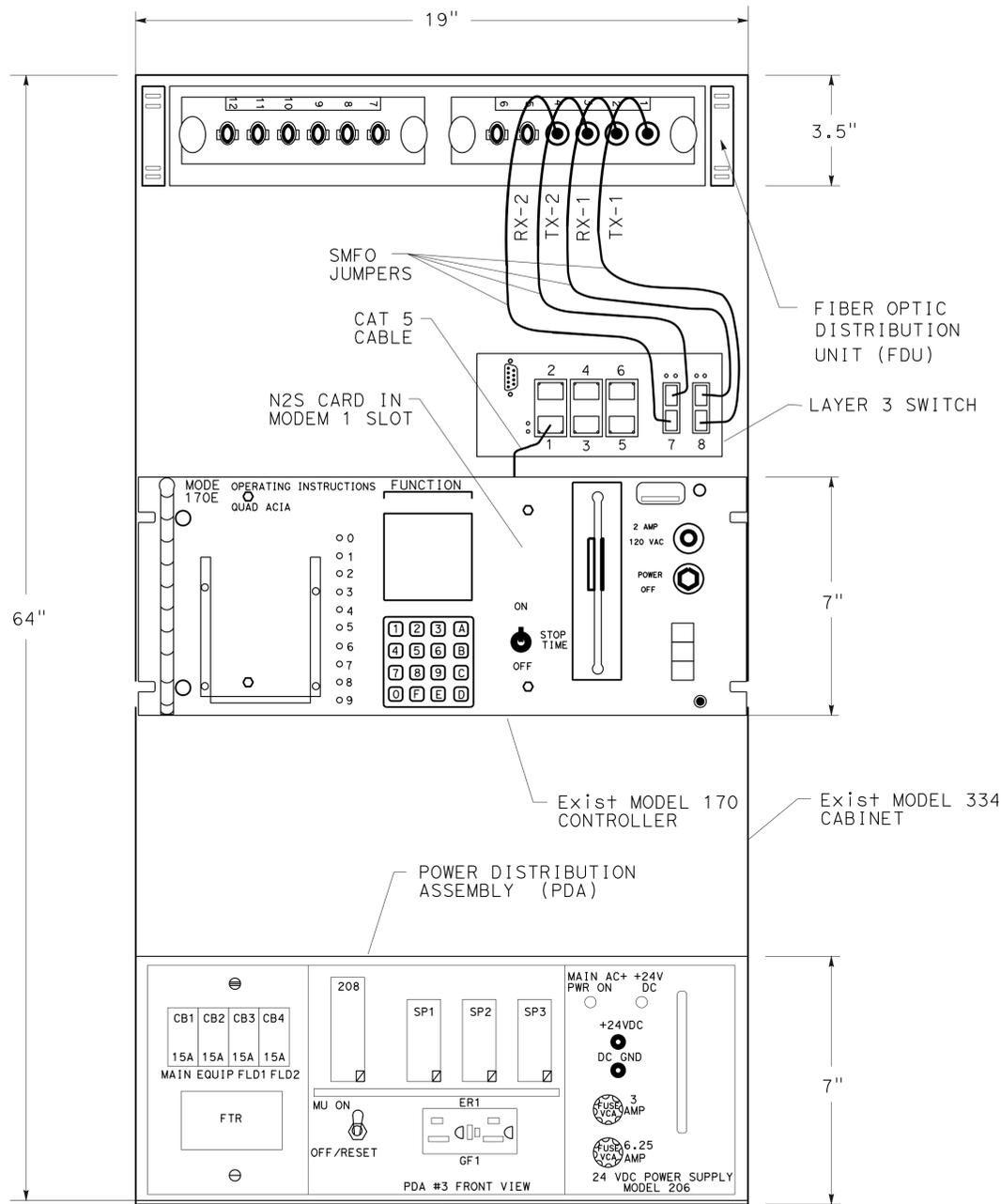
**LEGEND:**

- <X> - TERMINATE ACTIVE
  - <0> - TERMINATE SPARE
  - <<> - FO JUMPER
  - (E) - EXISTING
- SPLICE NEW TYPE A, B, C CABLE TO EXIST TYPE A, B, C CABLE FIBER TO FIBER

### (FIBER ASSIGNMENT TABLE)

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1

## COMMUNICATION SYSTEM



TYPICAL CONNECTION OF  
TYPE D TO TYPE C

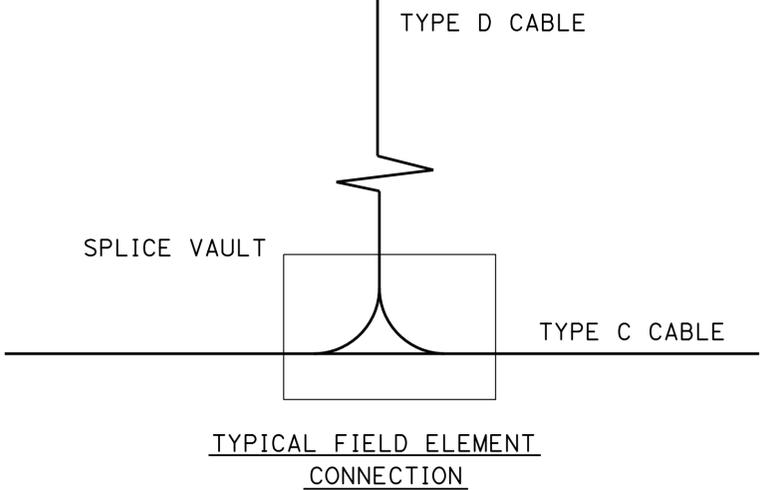
FIBER ASSIGNMENTS		
	X	Y
TMS - 91	59	60
TMS - 92	61	62
TS - 91	57	58

**NOTES:**

1. REMOVE MODEL 400 MODEM CARD FROM MODEL 170 CONTROLLER.
2. INSTALL DIGI N2S CARD WITH 5-FOOT RJ-45 CABLE (CAT 5) TO MODEM SLOT OF MODEL 170 CONTROLLER.
3. CONNECT OTHER END PLUG OF CAT 5 CABLE TO 1X RJ-45 SOCKET OF SWITCH
4. INSTALL 4 SMFO JUMPERS BETWEEN SWITCH AND FDU.

**LEGEND:**

- TX-1: TRANSMIT UPSTREAM TO SWITCH
- RX-1: RECEIVE DOWNSTREAM FROM SWITCH
- TX-2: TRANSMIT DOWNSTREAM FROM SWITCH
- RX-2: RECEIVE UPSTREAM FROM SWITCH



FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1

**COMMUNICATION SYSTEM**  
NO SCALE

**(TS/TMS/RMS CONTROLLER INTERFACE)**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
Caltrans ELECTRICAL SYSTEMS

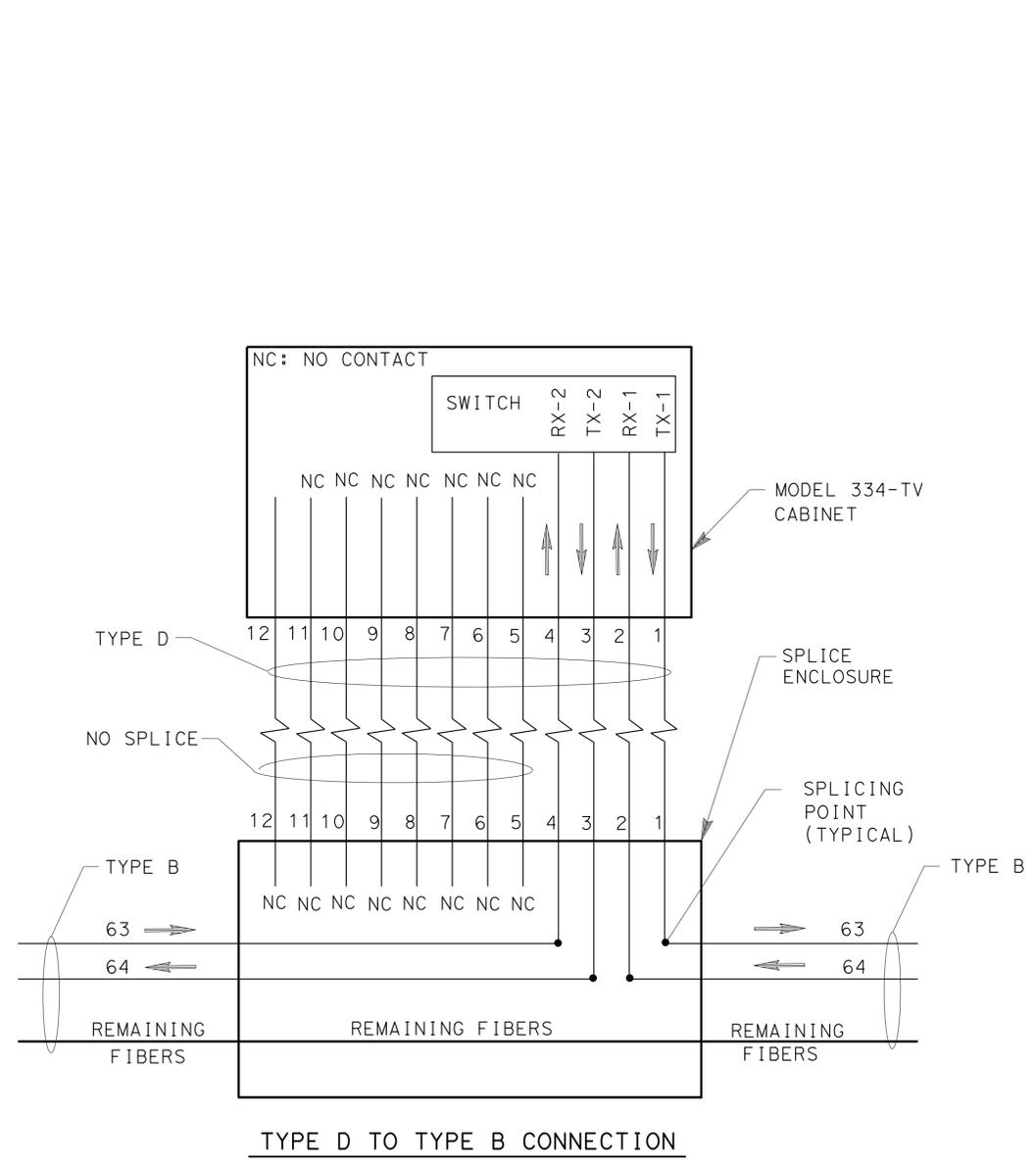
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10-16-15 TIME PLOTTED => 08:12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	38	77

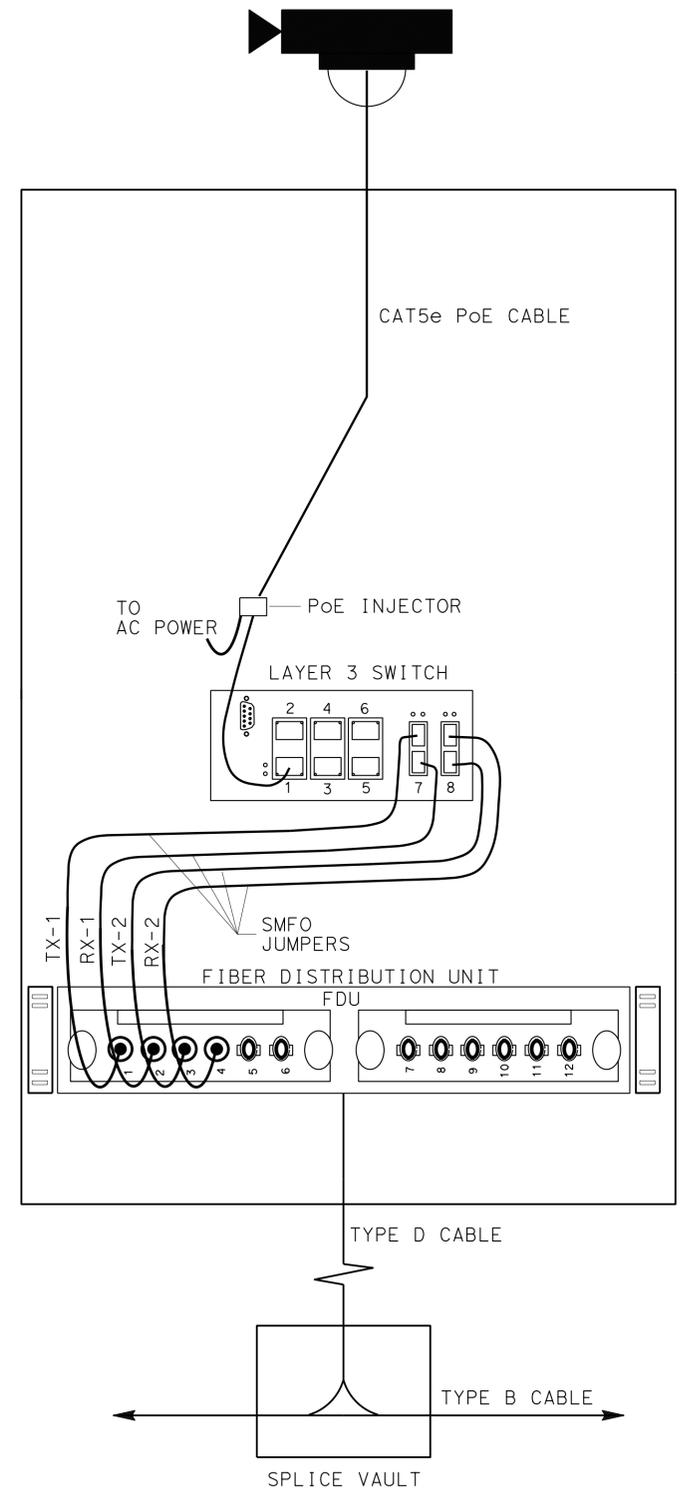
Peter Ngo 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
**PETER NGO**  
 No. E. 16503  
 Exp 9/30/17  
 ELECTRICAL  
 STATE OF CALIFORNIA

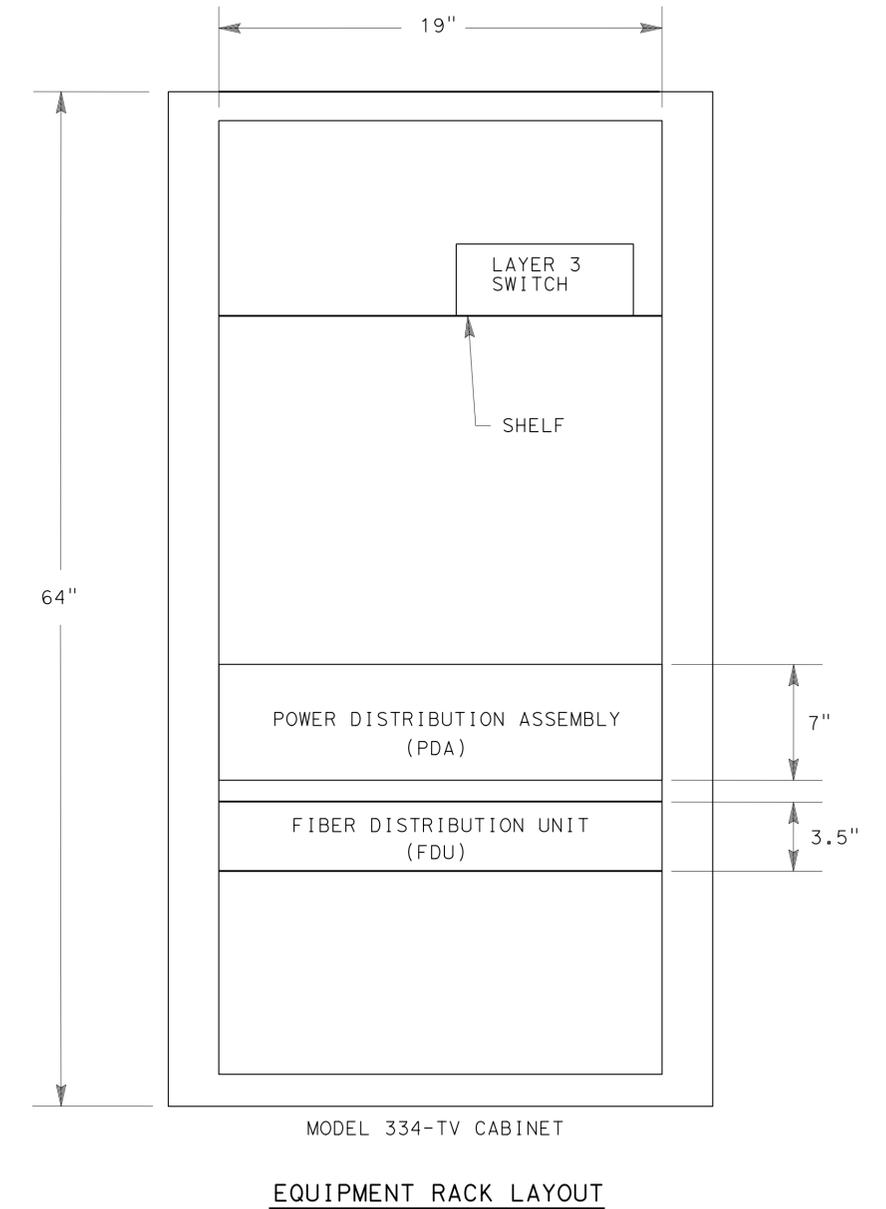
**LEGEND:**  
 TX-1: TRANSMIT UPSTREAM TO SWITCH  
 RX-1: RECEIVE DOWNSTREAM FROM SWITCH  
 TX-2: TRANSMIT DOWNSTREAM FROM SWITCH  
 RX-2: RECEIVE UPSTREAM FROM SWITCH



**(CCTV INTERFACE)**



**TYPICAL FIELD ELEMENT CONNECTION**



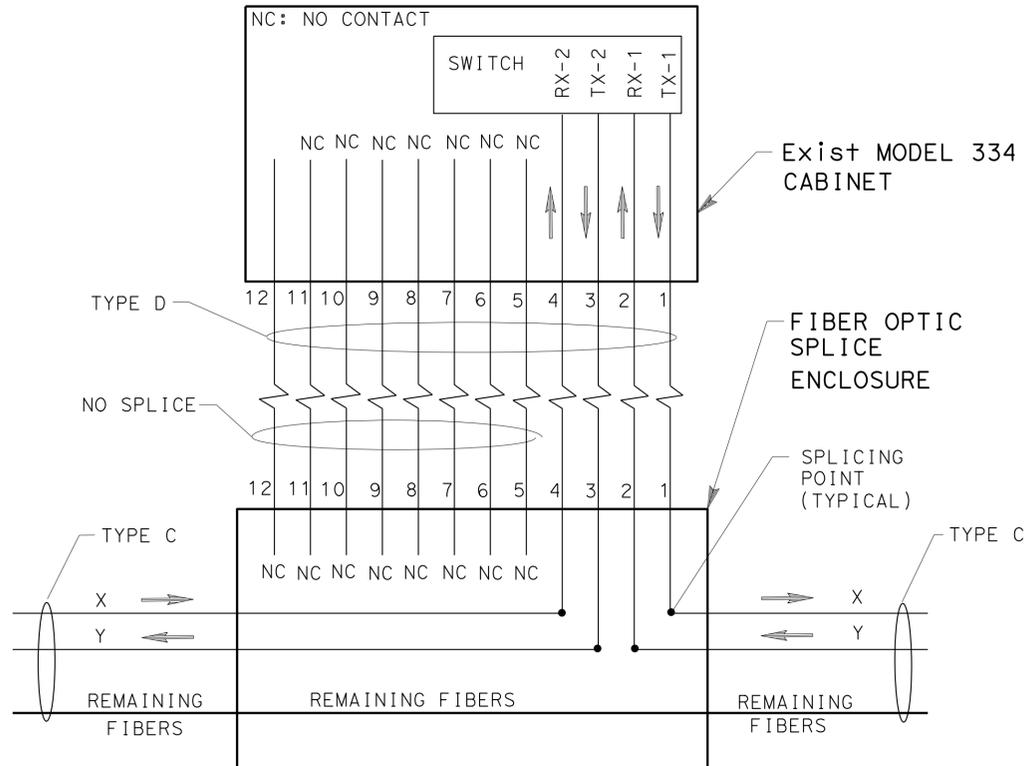
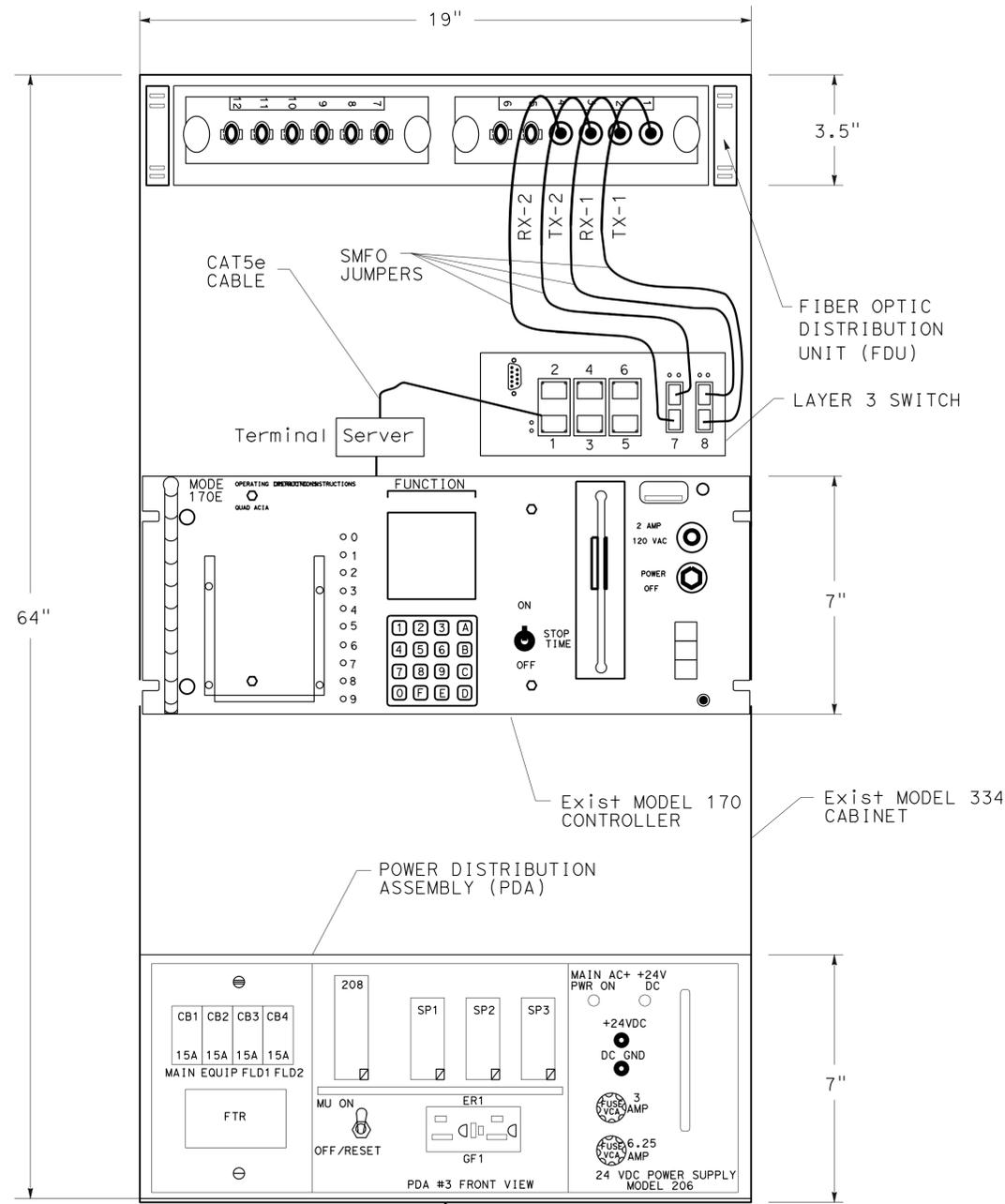
**COMMUNICATION SYSTEM**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL SYSTEMS  
 PETER NGO  
 PAULINE NGUYEN  
 FEDRICO HORMOZI

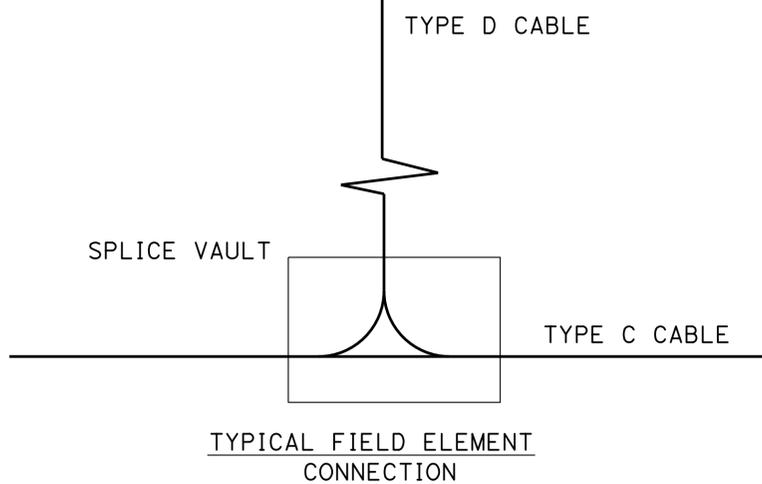
FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1

LAST REVISION DATE PLOTTED => 09-MAR-2016  
 10-16-15 TIME PLOTTED => 08:12



FIBER ASSIGNMENTS		
	X	Y
CMS	63	64

- NOTES:**
- REMOVE MODEL 400 MODEM CARD FROM MODEL 170 CONTROLLER.
  - INSTALL TERMINAL SERVER WITH A 5-FOOT CAT5e CABLE WITH RJ-45 CONNECTOR AND A SERIAL CABLE.
  - INSTALL 4 SMFO SC JUMPERS BETWEEN SWITCH AND FDU.
- LEGEND:**
- TX-1: TRANSMIT UPSTREAM TO SWITCH
  - RX-1: RECEIVE DOWNSTREAM FROM SWITCH
  - TX-2: TRANSMIT DOWNSTREAM FROM SWITCH
  - RX-2: RECEIVE UPSTREAM FROM SWITCH



**COMMUNICATION SYSTEM**  
NO SCALE

**(CMS 170 CONTROLLER INTERFACE)**

FOR NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET E-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL SYSTEMS  
 FUNCTIONAL SUPERVISOR: FEDRICO HORMOZI  
 CHECKED BY: PAULINE NGUYEN  
 DESIGNED BY: PETER NGO  
 REVISIONS: PAULINE NGUYEN, PETER NGO

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	40	77

<i>Peter Ngo</i>	12-07-15
REGISTERED ELECTRICAL ENGINEER	DATE
12-14-15	
PLANS APPROVAL DATE	

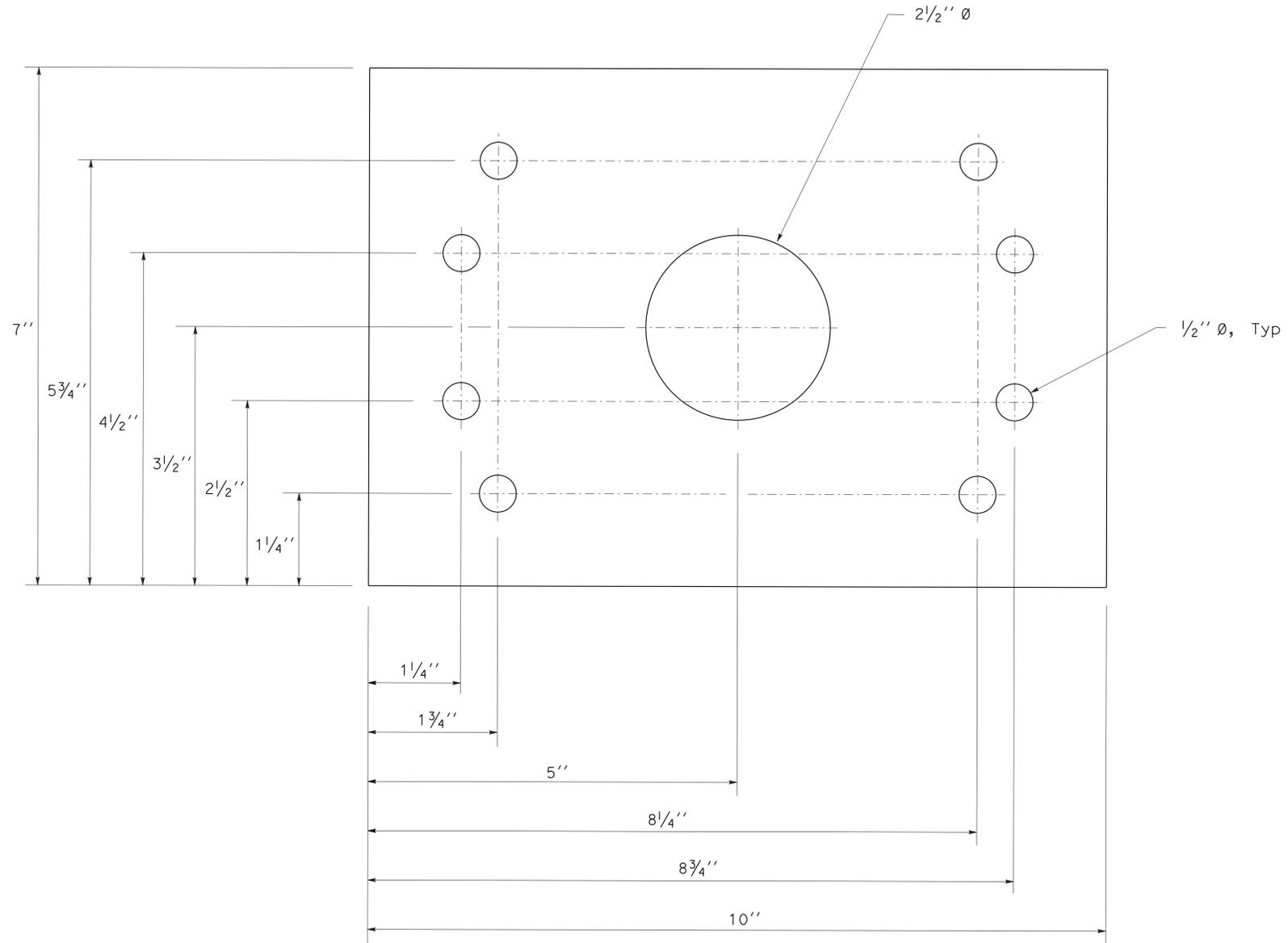
  

REGISTERED PROFESSIONAL ENGINEER
PETER NGO
No. E. 16503
Exp. 9/30/17
ELECTRICAL
STATE OF CALIFORNIA

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. DEBURR ALL SHARP EDGES.
2. ROUND AND SMOOTH ALL CORNERS.
3. MATERIAL MUST BE GALVANIZED AFTER FABRICATION.
4. USE  $\frac{3}{8}$ " - 16 X 4" STAINLESS STEEL HEXAGONAL HEAD BOLT AND LOCK NUT;  
 $\frac{5}{16}$ " STAINLESS STEEL FLAT WASHER MOUNTING HARDWARE.



**LOWERING RING RETAINER PLATE**

MATERIAL:  $\frac{1}{4}$ " MILD STEEL PLATE

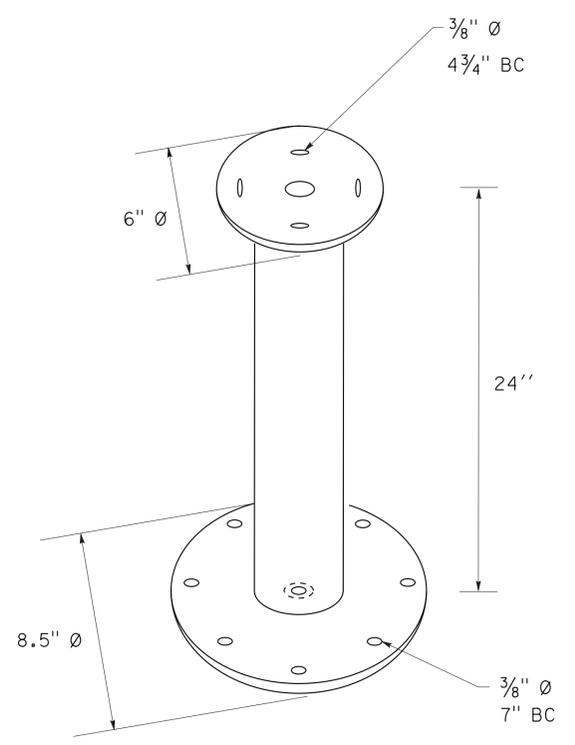
**(HIGH MAST CCTV - LOWERING RING RETAINER DETAILS)**

**COMMUNICATION SYSTEM**

NO SCALE

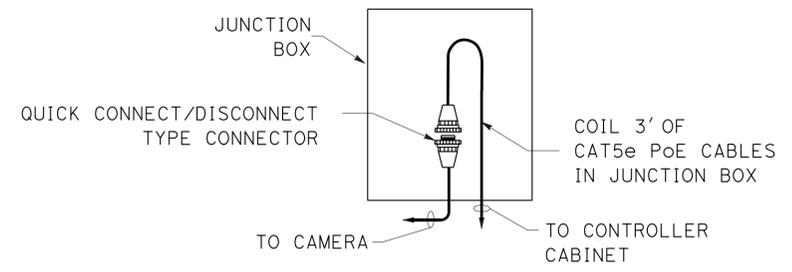
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR
<b>Caltrans</b> ELECTRICAL SYSTEMS	FEDRICO HORMOZI	CHECKED BY	DATE
		CHARLIE KAY	
		FEDRICO HORMOZI	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ord	91	R20.6/R20.7 R0.0/R2.8	41	77
Peter Ngo		12-07-15		REGISTERED ELECTRICAL ENGINEER DATE	
12-14-15		PLANS APPROVAL DATE			
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
REGISTERED PROFESSIONAL ENGINEER PETER NGO No. E 16503 Exp 9/30/17 ELECTRICAL STATE OF CALIFORNIA					

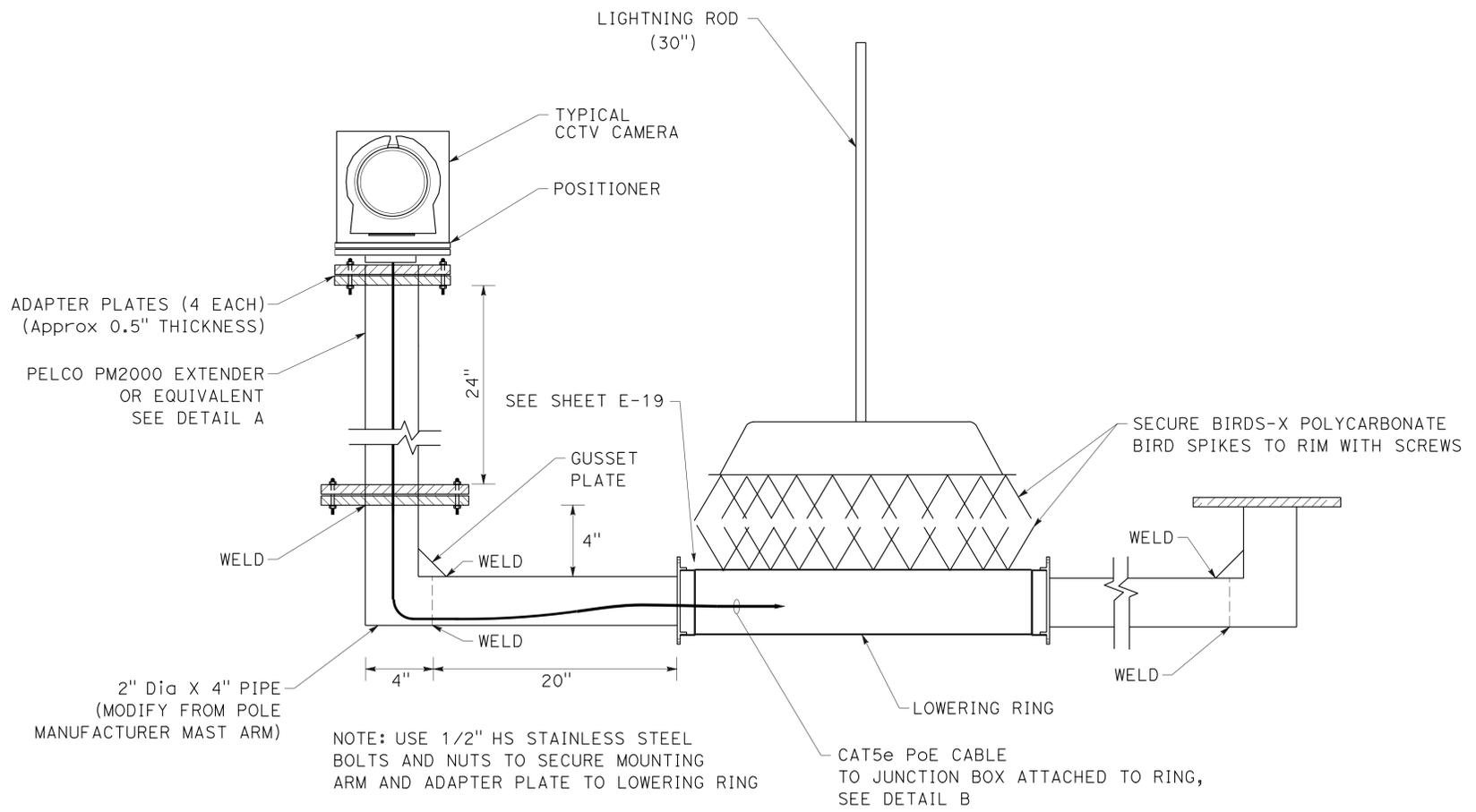


**CCTV CAMERA EXTENSION  
DETAIL A**

MATERIAL: ALUMINUM  
WEIGHT: 5 LB  
FINISH: GRAY POLYESTER POWDER COAT



**WIRING DETAIL INSIDE JUNCTION BOX**



**CCTV CAMERA ASSEMBLY MOUNTING DETAIL  
AND ALUMINUM COVER FOR RING ASSEMBLY  
FOR HIGH MAST CCTV POLE  
WITH BIRD SPIKES**

NOTE: USE 1/2" HS STAINLESS STEEL BOLTS AND NUTS TO SECURE MOUNTING ARM AND ADAPTER PLATE TO LOWERING RING

CAT5e PoE CABLE TO JUNCTION BOX ATTACHED TO RING, SEE DETAIL B

**(CCTV MOUNTING DETAILS)**

**COMMUNICATION SYSTEM**

NO SCALE

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

REVISOR BY DATE

PETER NGO  
PAULINE NGUYEN

CALCULATED/DESIGNED BY CHECKED BY

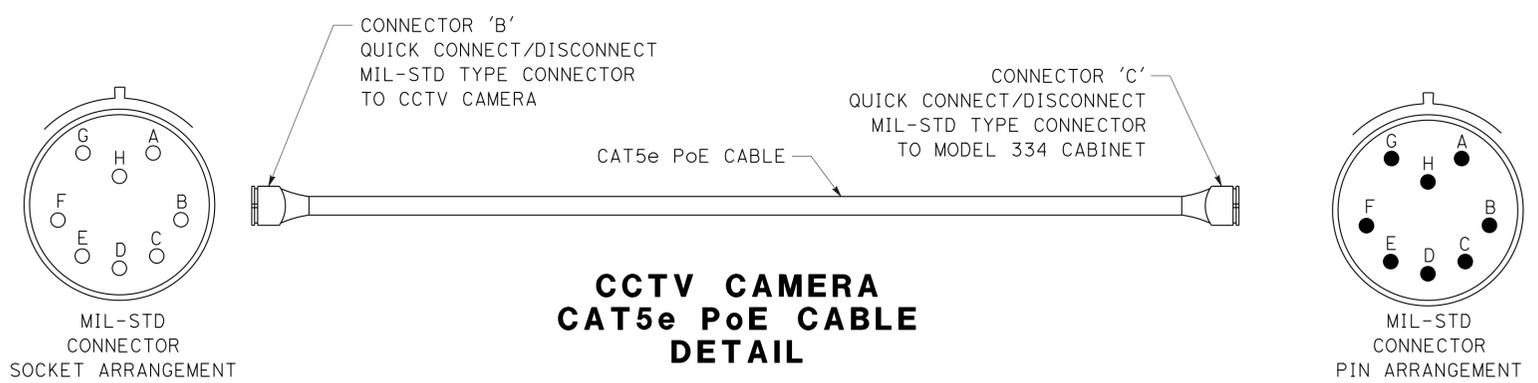
CONSULTANT FUNCTIONAL SUPERVISOR  
FEDRICO HORMOZI

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
10-16-15 TIME PLOTTED => 08:12

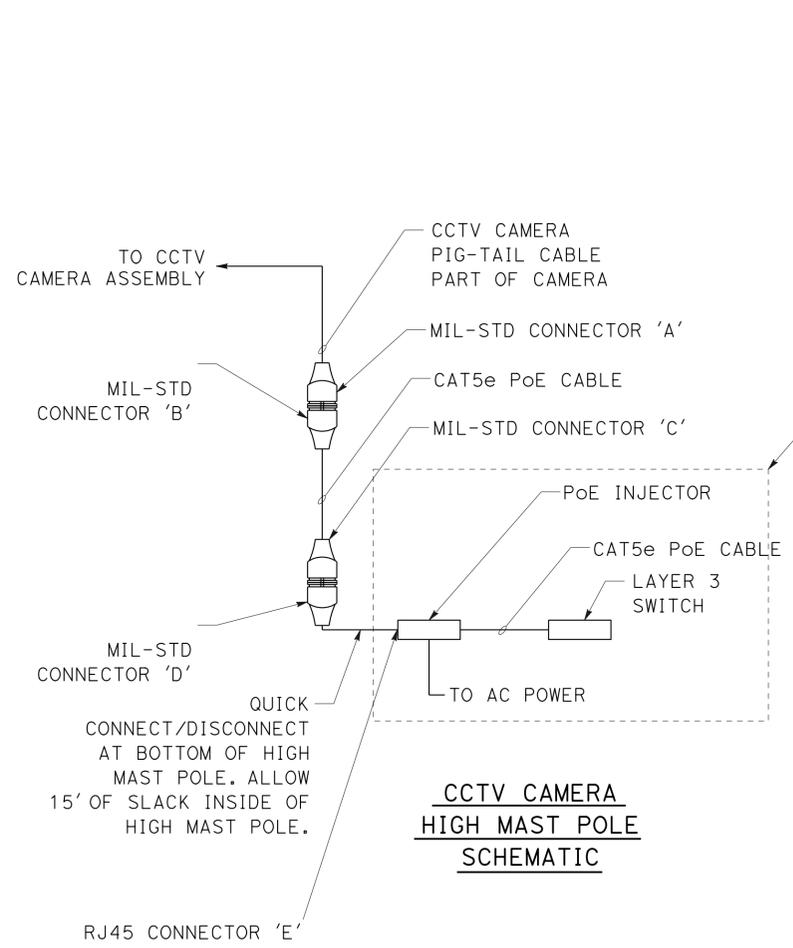


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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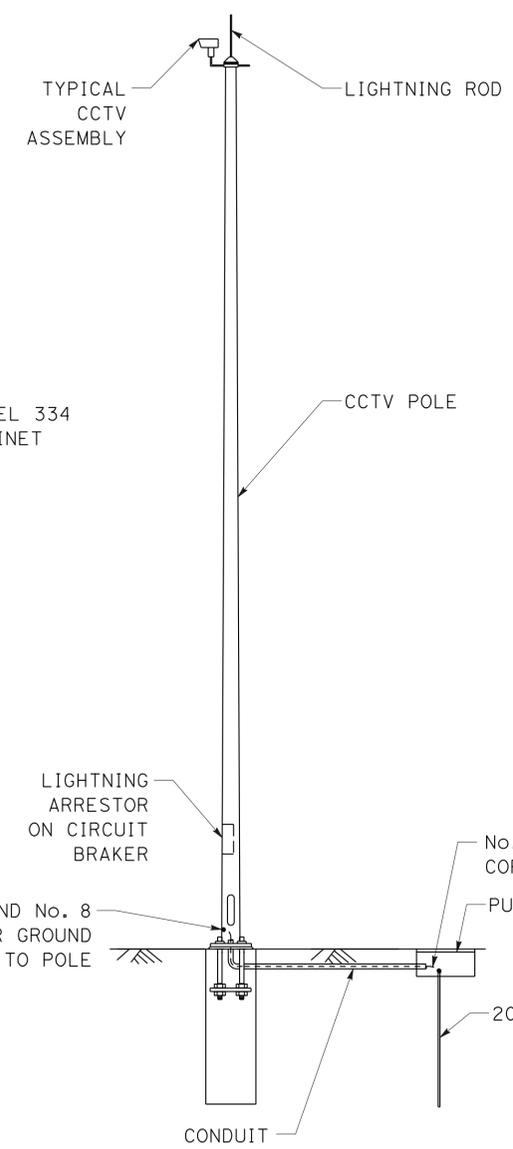
REGISTERED ELECTRICAL ENGINEER DATE: 12-07-15  
 REGISTERED ELECTRICAL ENGINEER: PETER NGO  
 No. E 16503  
 Exp 9/30/17  
 PLANS APPROVAL DATE: 12-14-15  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



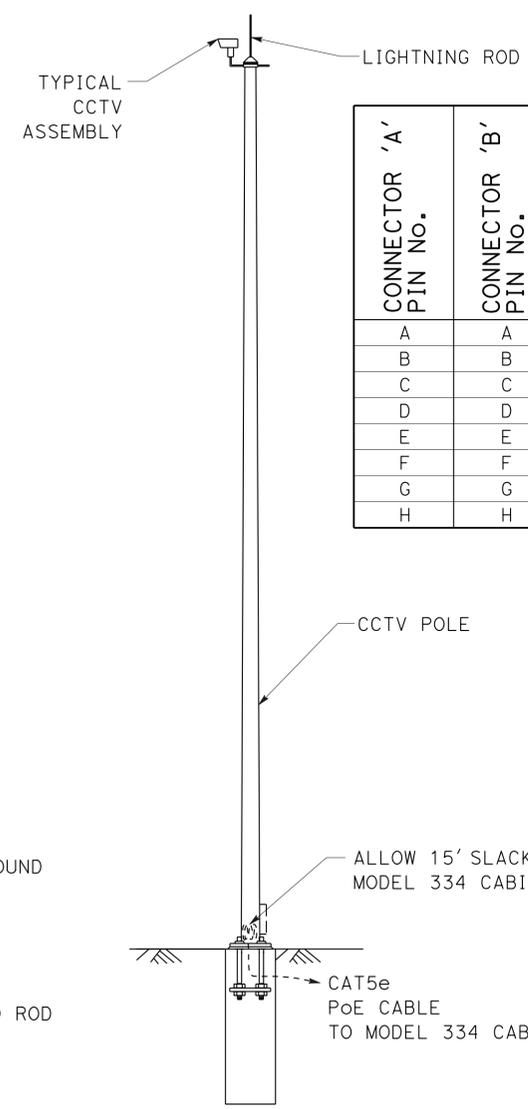
**CCTV CAMERA  
CAT5e PoE CABLE  
DETAIL**



**CCTV CAMERA  
HIGH MAST POLE  
SCHEMATIC**



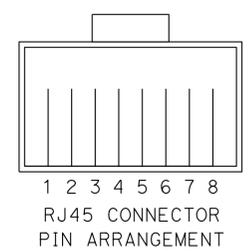
**HIGH MAST POLE  
LIGHTNING ARRESTOR  
DETAIL**



**HIGH MAST POLE  
CABLE DETAIL**

CONNECTOR 'A' PIN No.	CONNECTOR 'B' PIN No.	CONNECTOR 'C' PIN No.	CONNECTOR 'D' PIN No.	CONNECTOR 'E' PIN No.	WIRE COLOR	FUNCTION
A	A	A	A	1	WHITE/ORANGE	ETHERNET RX +
B	B	B	B	2	ORANGE	ETHERNET RX -
C	C	C	C	3	WHITE/GREEN	ETHERNET TX +
D	D	D	D	4	BLUE	DC +
E	E	E	E	5	WHITE/BLUE	DC +
F	F	F	F	6	GREEN	ETHERNET TX -
G	G	G	G	7	WHITE/BROWN	DC -
H	H	H	H	8	BROWN	DC -

**CCTV CAMERA  
CAT5e PoE CABLE  
PIN-OUT DETAIL**



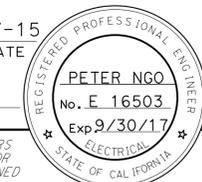
**(HIGH MAST CCTV DETAILS)**

**COMMUNICATION SYSTEM**

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL SYSTEMS  
 FUNCTIONAL SUPERVISOR: FEDRICO HORMOZI  
 CALCULATED/DESIGNED BY: PETER NGO  
 CHECKED BY: PAULINE NGUYEN  
 REVISED BY: PETER NGO  
 DATE REVISED: PAULINE NGUYEN

LAST REVISION | DATE PLOTTED => 09-MAR-2016  
 10-16-15 TIME PLOTTED => 08:12

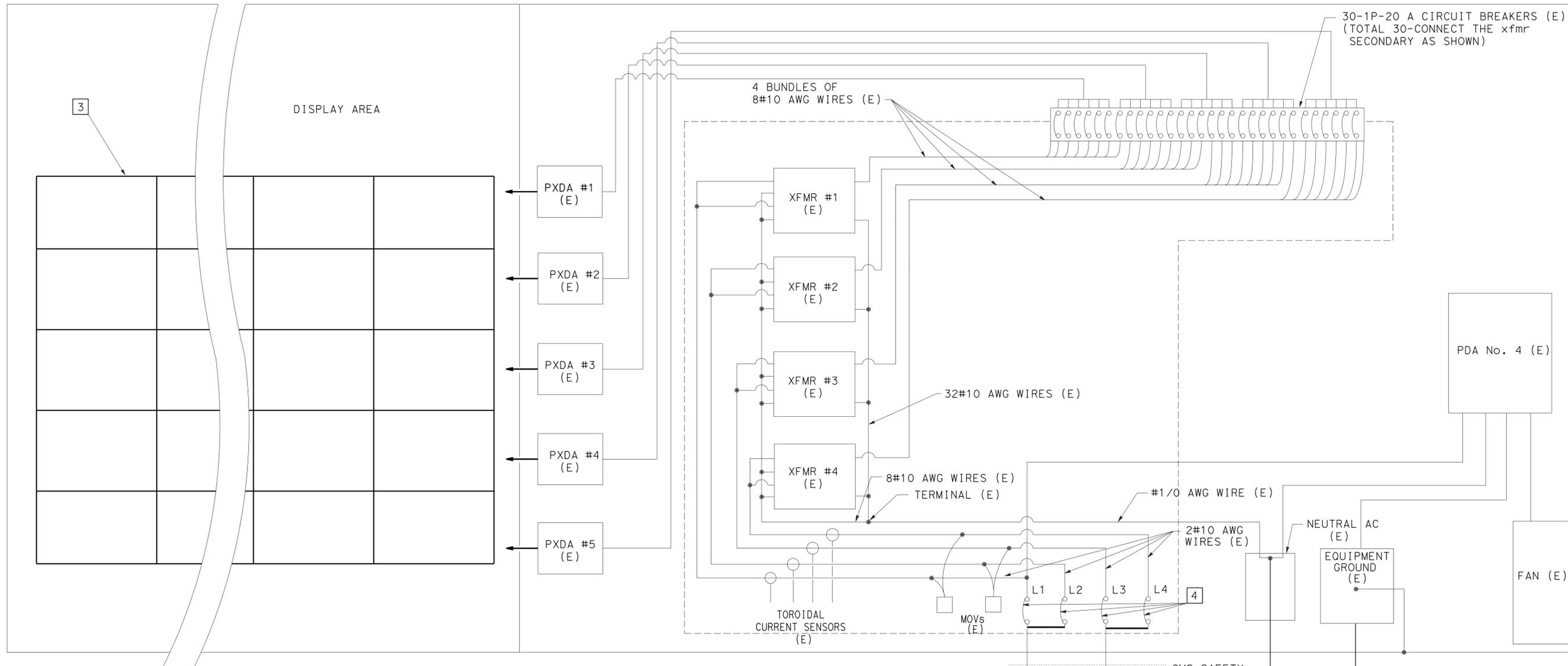
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	44	77
Peter Ngo REGISTERED ELECTRICAL ENGINEER DATE 12-07-15					
12-14-15 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

**LEGEND:**

- 1 EXISTING MODEL 334-C CABINET TO REMAIN.
- 2 EXISTING 120/240 V METERED SERVICE IN TYPE III-BF SERVICE EQUIPMENT ENCLOSURE.  
 RC EXISTING 4-80 A, 120 V, 1P CB. INSTALL 2-30 A, 120 V, 1P CB.  
 2-30 A CIRCUIT BREAKERS MUST BE GANGED-OPERATED. SEE NEW CIRCUIT BREAKER DETAIL ON SHEET E-7.
- 3 RC EXISTING 60 XENON PIXEL MATRIX MODULES. INSTALL 60 LED PIXEL MATRIX MODULES.  
 CONNECT EXISTING CONNECTORS TO LED MODULES.
- 4 REPLACE L1, L2, L3 AND L4 WITH 4-30 A, 120 V, 1P CB.  
 JUMPER L1 TO L2, AND L3 TO L4.

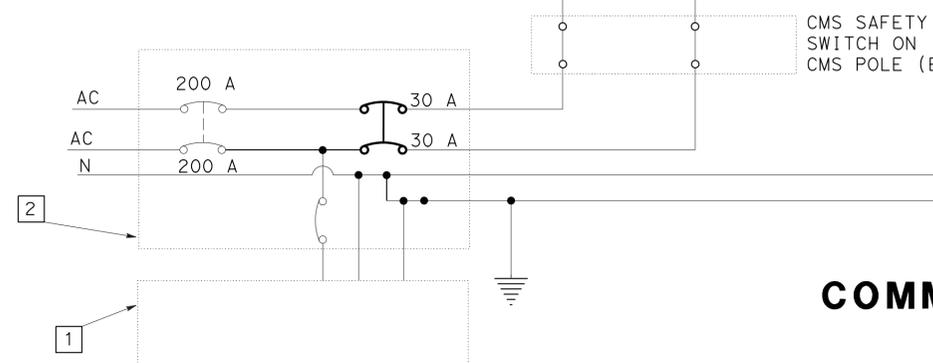
**NOTES**

- 1. CONTRACTOR MUST VERIFY THAT THE POWER FOR THE CMS HAS BEEN SHUT OFF BEFORE PERFORMING ANY WORK ON THE SYSTEM. THE CMS POWER MUST REMAIN OFF, UNLESS OTHERWISE ORDERED TO TURN IT ON DURING TESTING BY STATE FORCES.
- 2. CONTRACTOR MUST COMPLY WITH NATIONAL ELECTRICAL CODE AND CALTRANS STANDARD SPECIFICATIONS AND STANDARD PLANS
- 3. CONTRACTOR MUST LAY TARPULIN OR SAFETY NET OVER THE LENGTH OF THE CMS WALKWAY TO PREVENT ACCIDENTAL DROP OF TOOLS OR SMALL OBJECTS ONTO THE ROADWAY. THE TARPULIN OR SAFETY NET MUST BE SECURED.



**ABBREVIATIONS**

- (E) EXISTING
- MOV METAL-OXIDE VARISTOR
- (N) NEW
- xfmr TRANSFORMER
- PDA POWER DISTRIBUTION ASSEMBLY
- PXDA PIXEL DRIVER ASSEMBLY



**(CMS MODEL 500 (XENON) SYSTEM WIRING DIAGRAM)**

**COMMUNICATION SYSTEM**

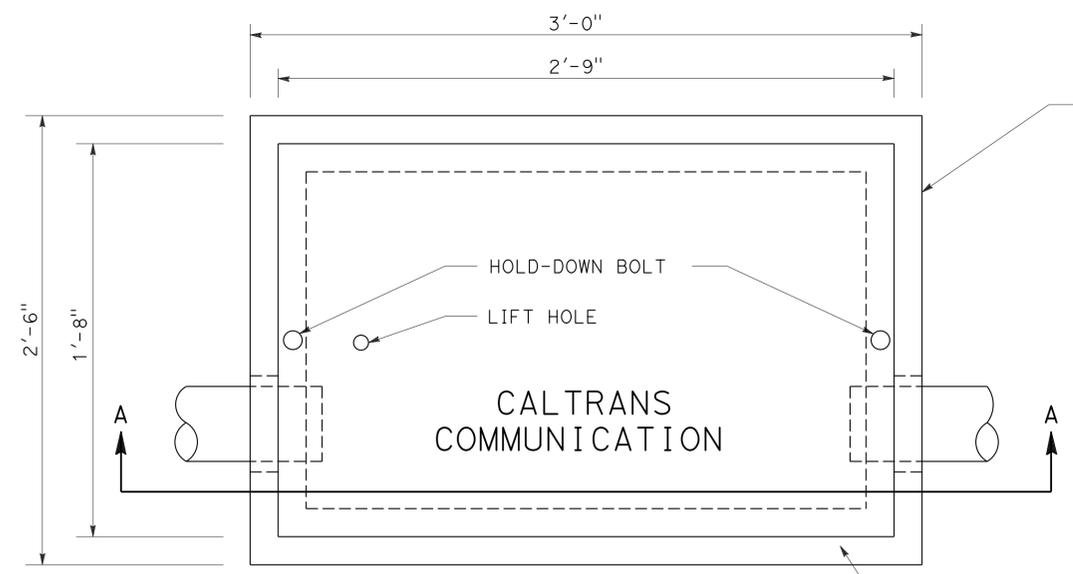
NO SCALE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	45	77

Vanessa Van Truong 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 V.V. TRUONG  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

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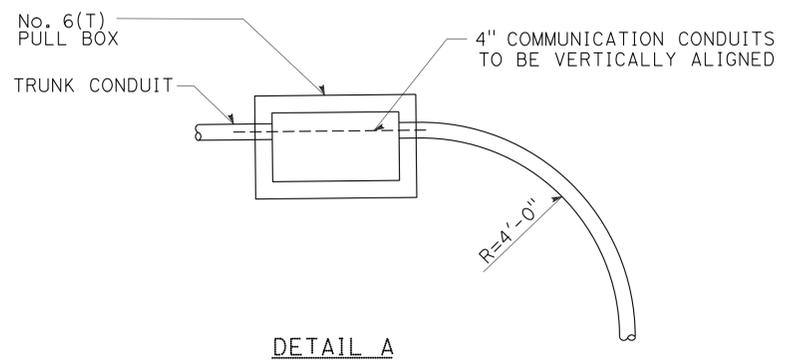


PRECAST CONCRETE BOX REINFORCED WITH GALVANIZED Z-BAR WELDED FRAME

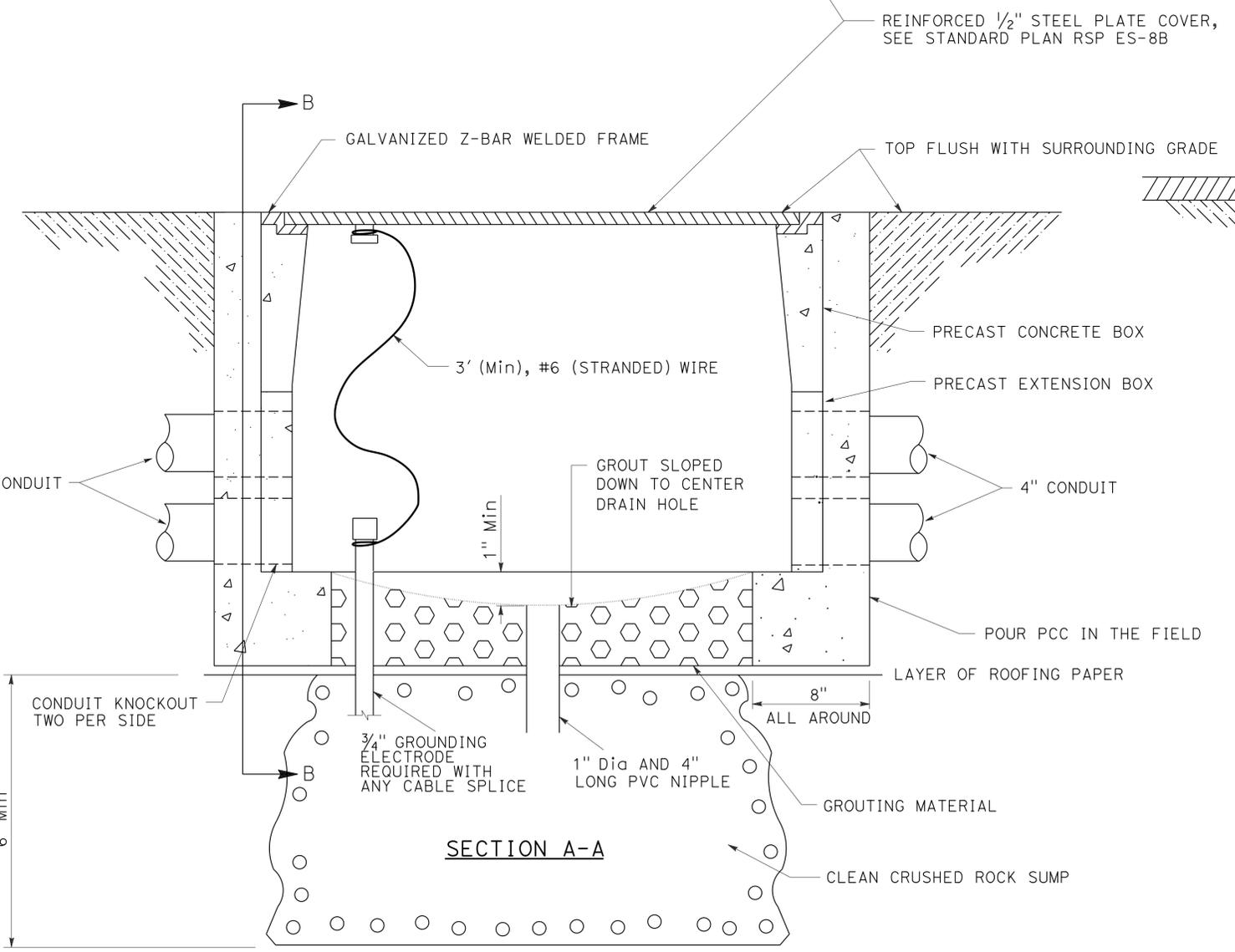
**NOTES:**

1. ADDITIONAL CONDUIT ENTRANCES AS SHOWN IN THE PLANS.
2. SEE SPECIAL PROVISIONS REGARDING HOLD DOWN BOLTS FOR TRAFFIC COVERS.
3. 4'-0" x 5'-0" CONCRETE PAD WITH PULL BOX IN CENTER MUST BE INSTALLED FLUSH WITH PULL BOX COVER.
4. FOR NOTES, LEGEND, AND ABBREVIATIONS, SEE SHEET E-1.

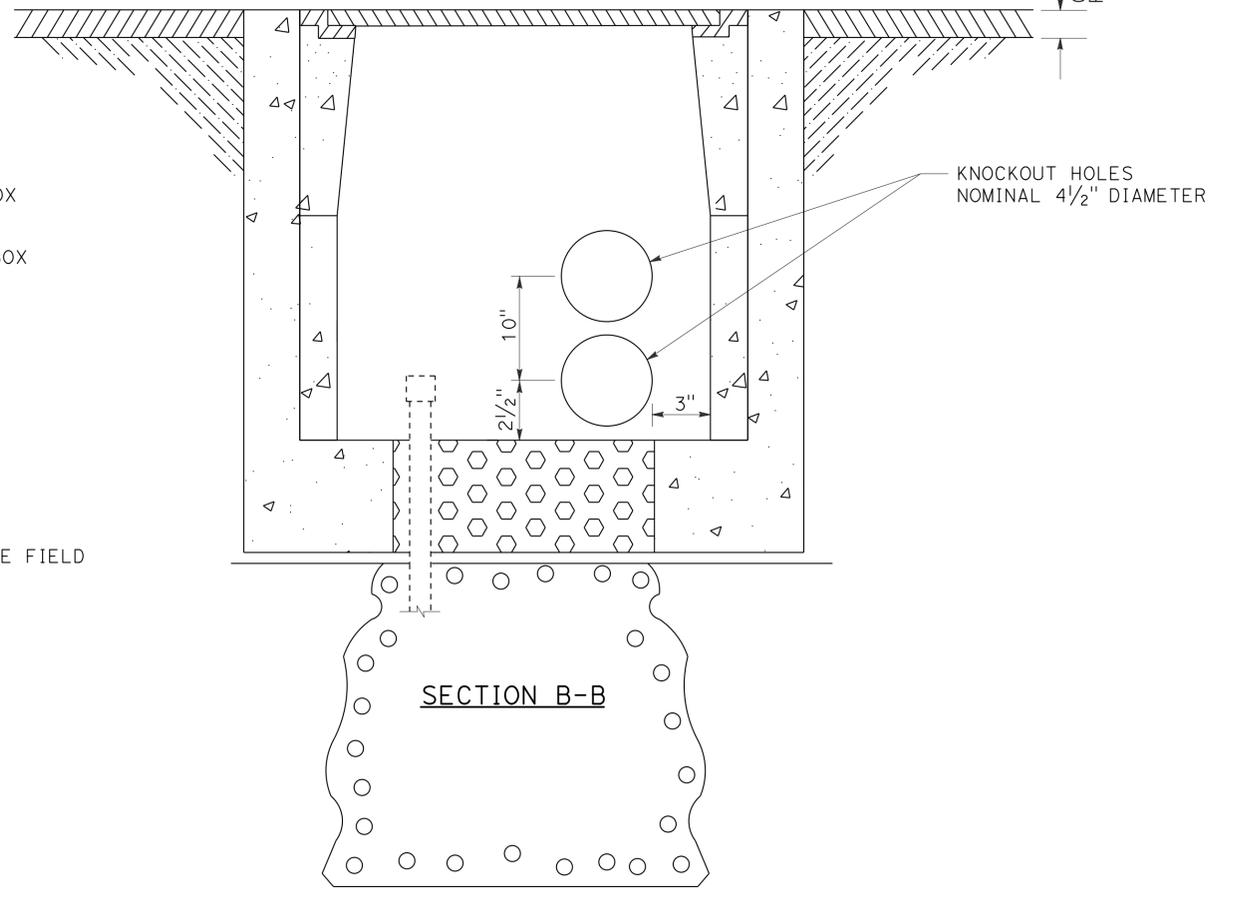
**TOP VIEW**



**DETAIL A**



**SECTION A-A**



**SECTION B-B**

**COMMUNICATION SYSTEM**

NO SCALE

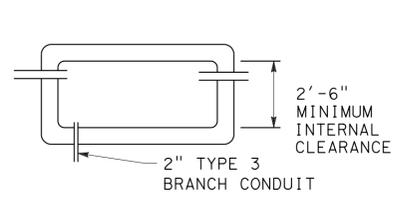
**(COMMUNICATION PULL BOX DETAILS)**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 CALCULATED/DESIGNED BY: SHAHRAM SHAHRIARI  
 CHECKED BY:  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI  
 REVISED BY: DATE  
 REVISIONS:

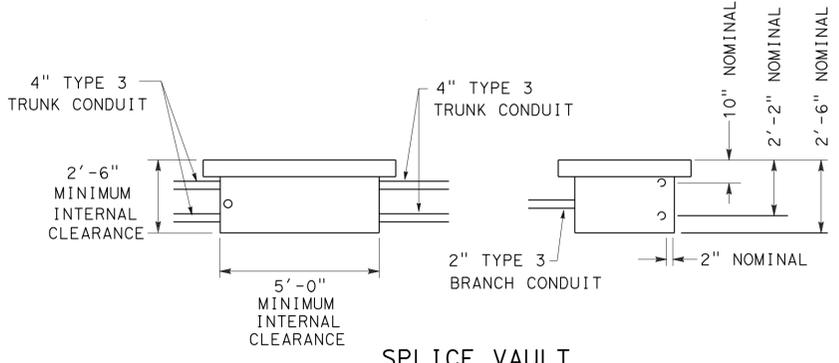
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	46	77

Vanessa Van Truong 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

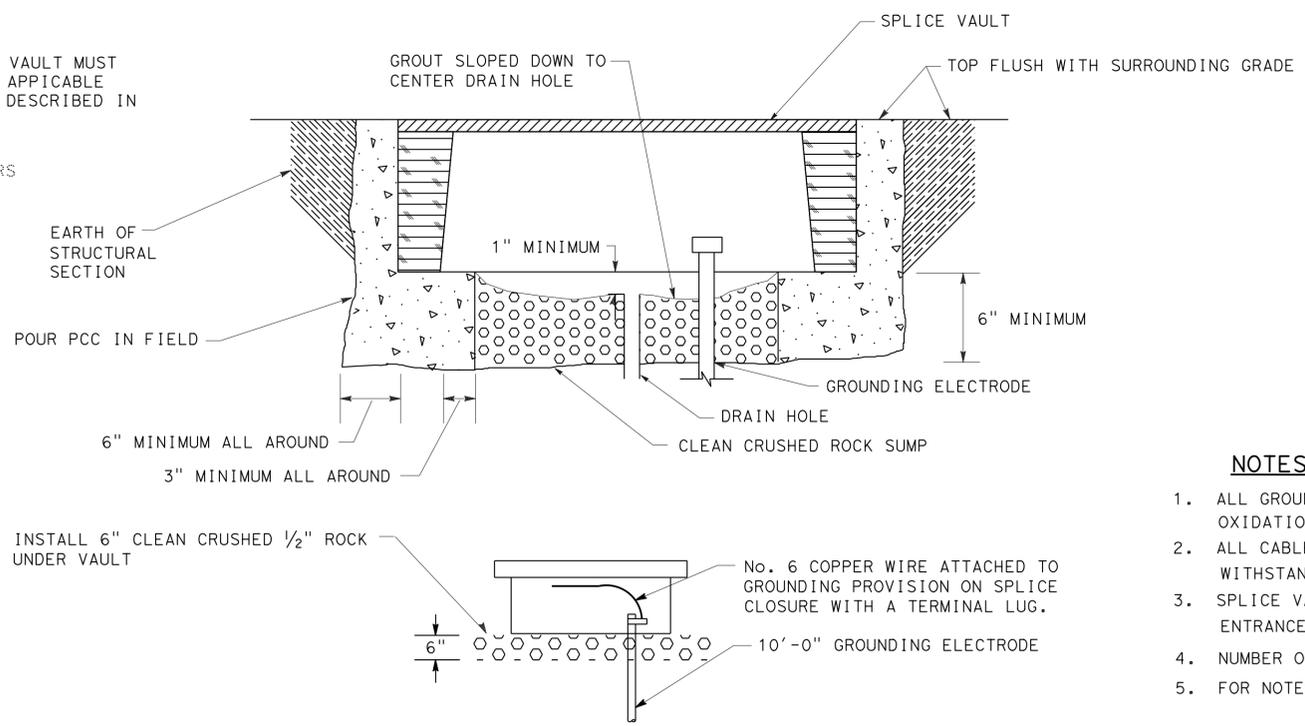
REGISTERED PROFESSIONAL ENGINEER
V.V. TRUONG
No. E 13983
Exp 6/30/16
ELECTRICAL
STATE OF CALIFORNIA



THE FRAME AND LID OF SPLICE VAULT MUST COMPLY WITH THE LOAD RATING APPLICABLE TO SPLICE VAULT LOCATION AS DESCRIBED IN THE SPECIAL PROVISIONS. SPLICE VAULT COVER MARKED "TOS COMMUNICATION". LETTERS TO BE 3" MAXIMUM HIGH

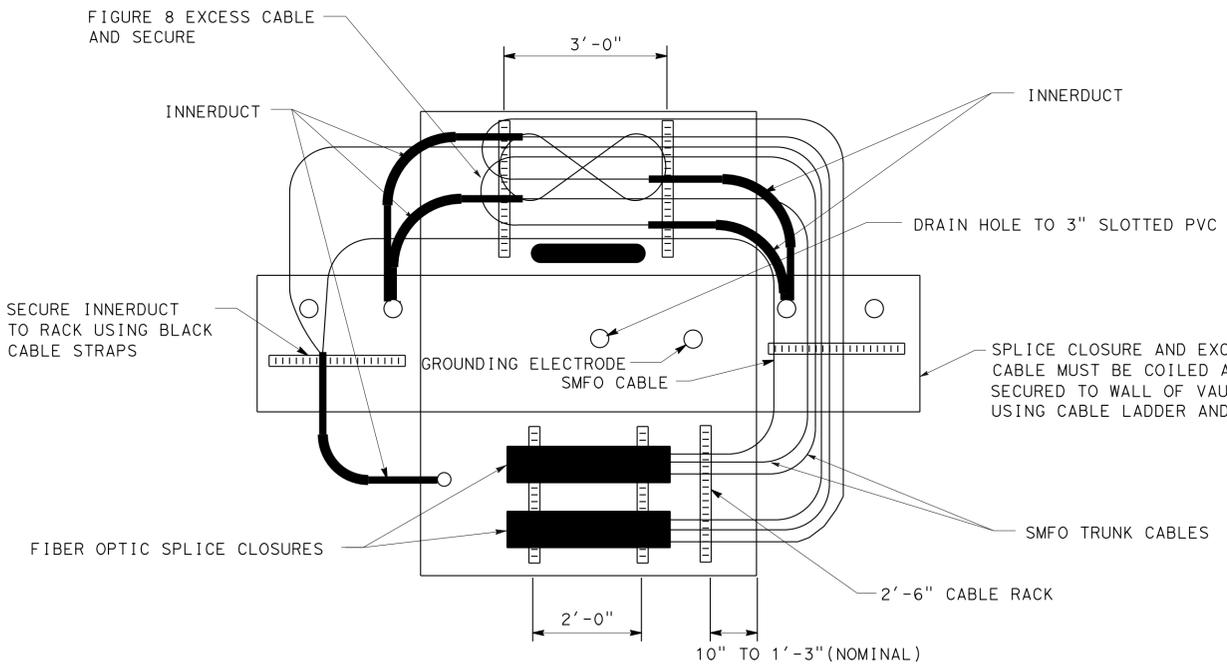


**SPLICE VAULT**



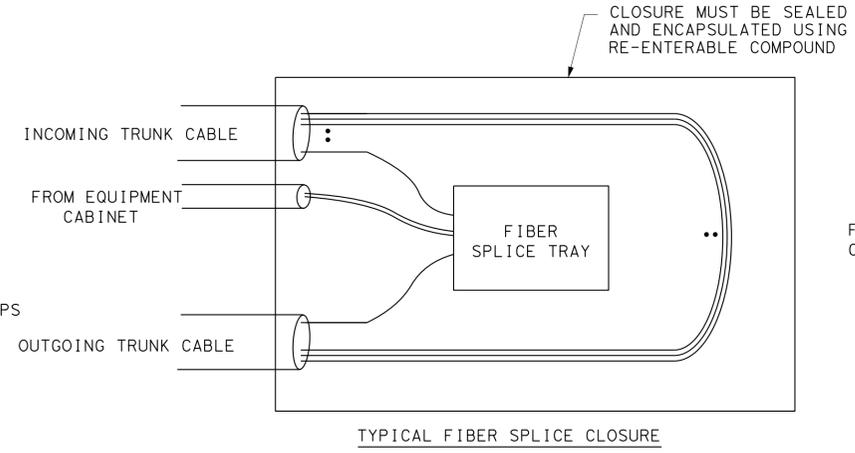
**SPLICE VAULT INSTALLATION**

- NOTES:**
1. ALL GROUND CONNECTIONS MUST BE COATED WITH OXIDATION PROHIBITING COMPOUND.
  2. ALL CABLE STRAPS MUST BE DESIGNED TO WITHSTAND ULTRA-VIOLET EXPOSURE.
  3. SPLICE VAULT MUST BE CAULKED AFTER ALL KNOWN ENTRANCES HAVE BEEN MADE.
  4. NUMBER OF SPLICE CLOSURES MAY VARY.
  5. FOR NOTES, LEGEND AND ABBREVIATIONS, SEE SHEET E-1.

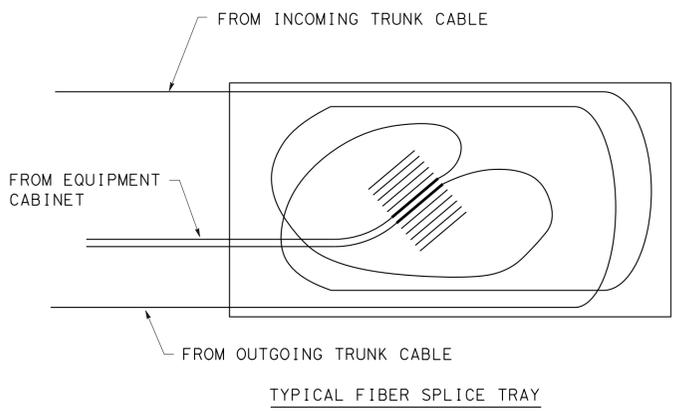


**CABLE INSTALLATION**

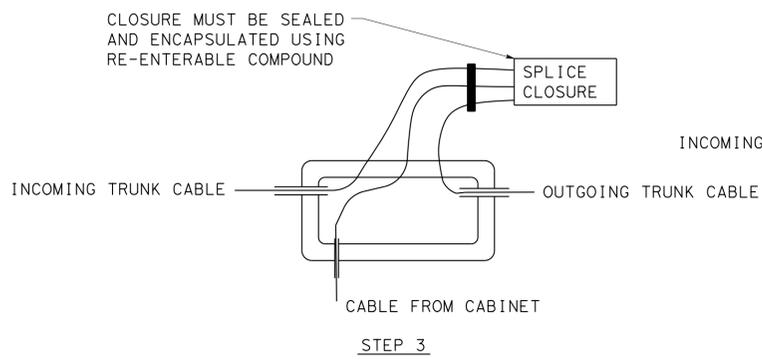
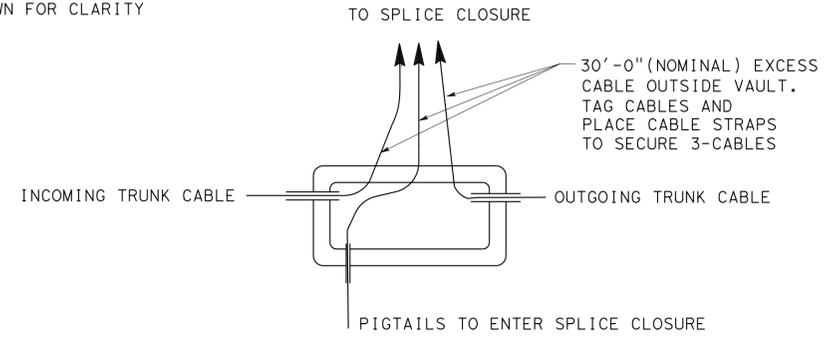
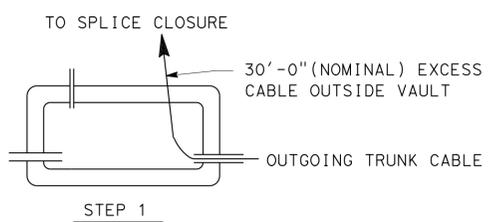
TOP VIEW - WALLS FOLDED DOWN FOR CLARITY



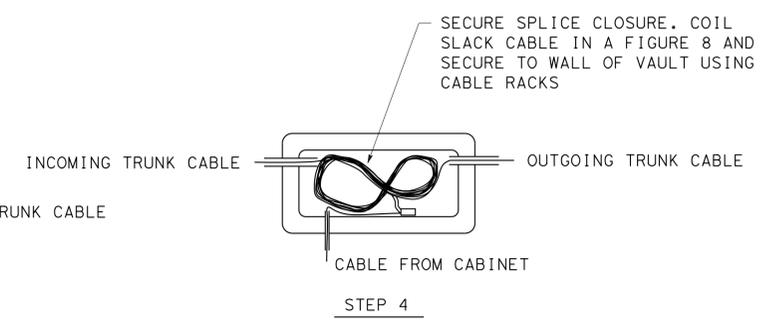
**TYPICAL FIBER SPLICE CLOSURE**



**TYPICAL FIBER SPLICE TRAY**



**SPLICE PROCEDURE**



**(SPLICE VAULT DETAILS)**

**COMMUNICATION SYSTEM**

SCALE: 1" = 50'

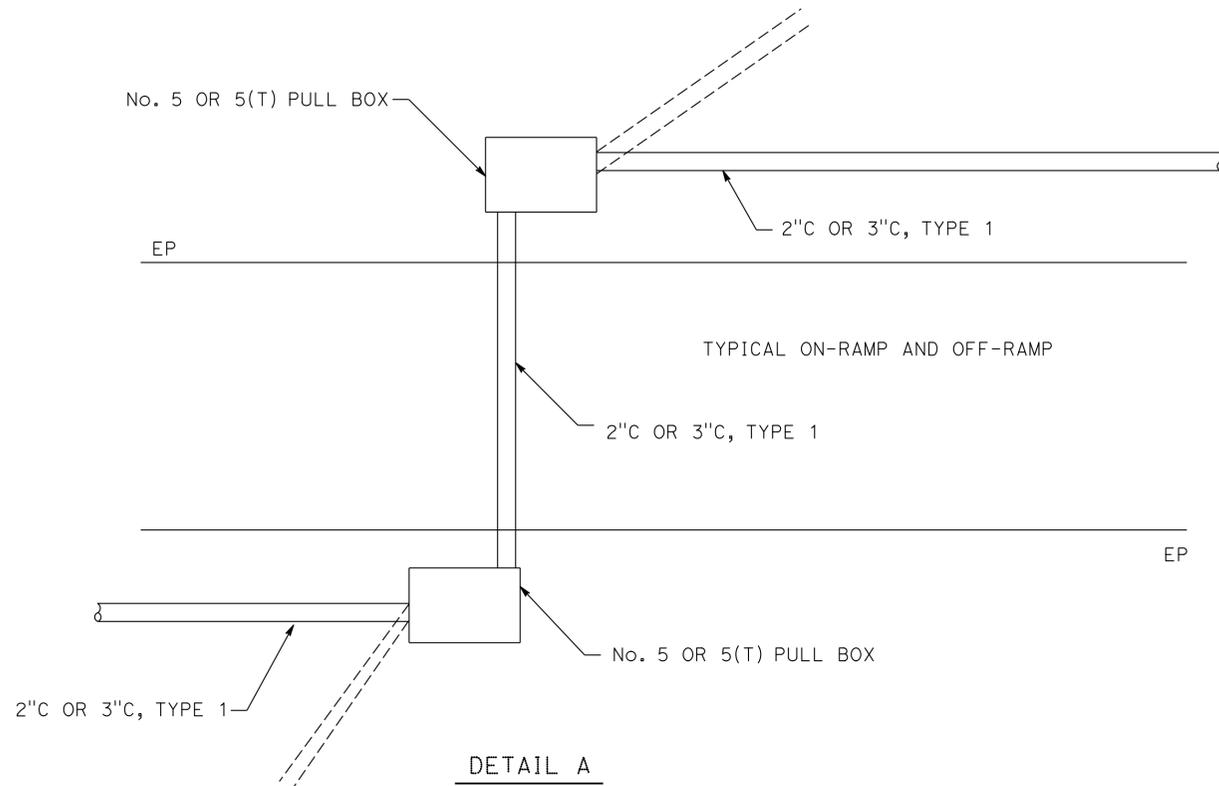
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 FUNCTIONAL SUPERVISOR: SHAHRAM SHAHRIARI  
 DESIGNED BY: VANESSA TRUONG  
 CHECKED BY: SHAHRAM SHAHRIARI  
 REVISED BY: DATE  
 REVISIONS: 12-07-15, 12-14-15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	47	77

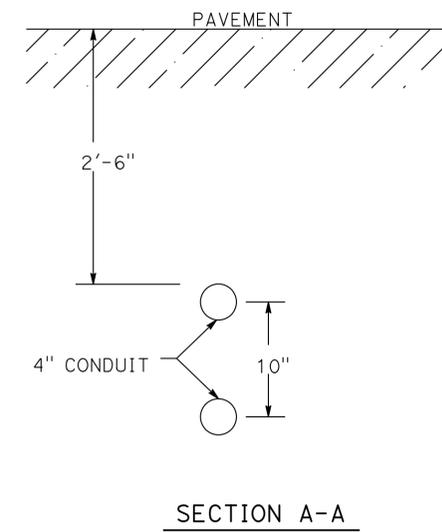
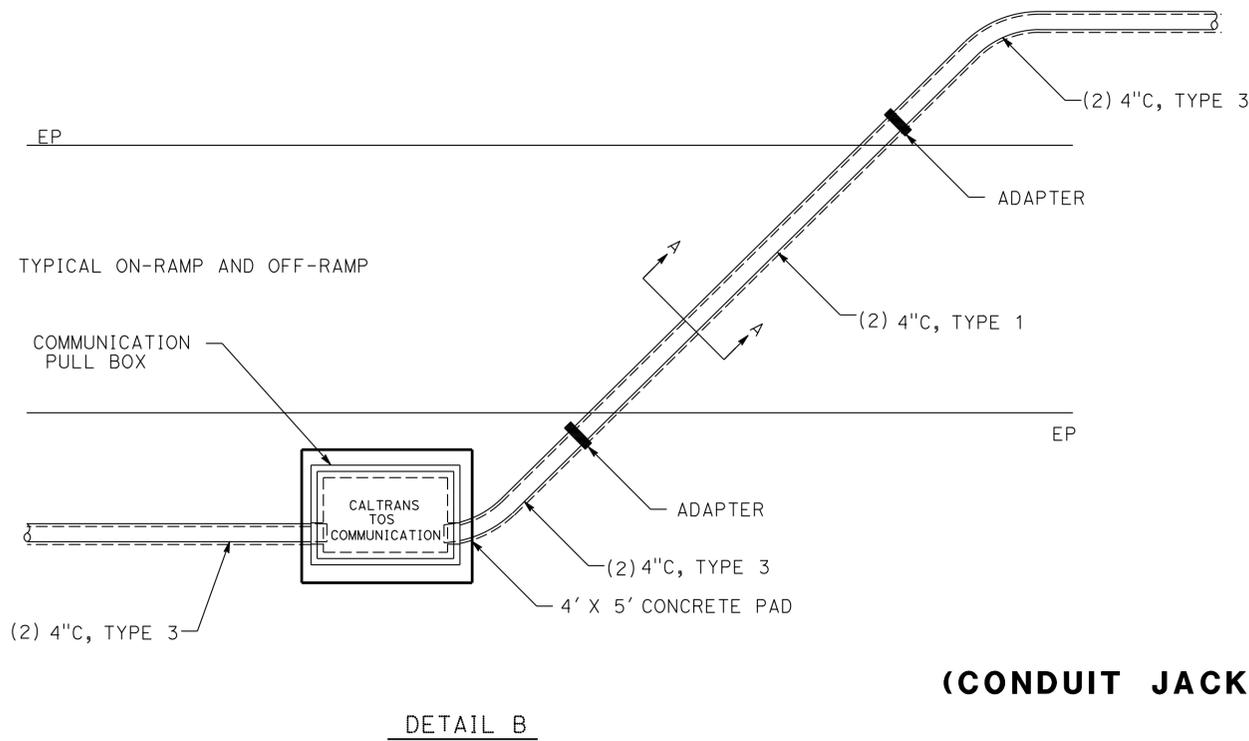
*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 V.V. TRUONG  
 No. E 13983  
 Exp 6/30/16  
 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 CONDUITS MUST BE 2'-6" BELOW FINISHED GRADE.
  2. ALL BENDS MUST BE FACTORY BENDS.
  3. BEND ANGLES AND CONDUIT DIRECTION VARY AS SHOWN IN PLANS.

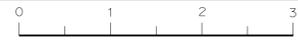


**(CONDUIT JACKING DETAILS)**

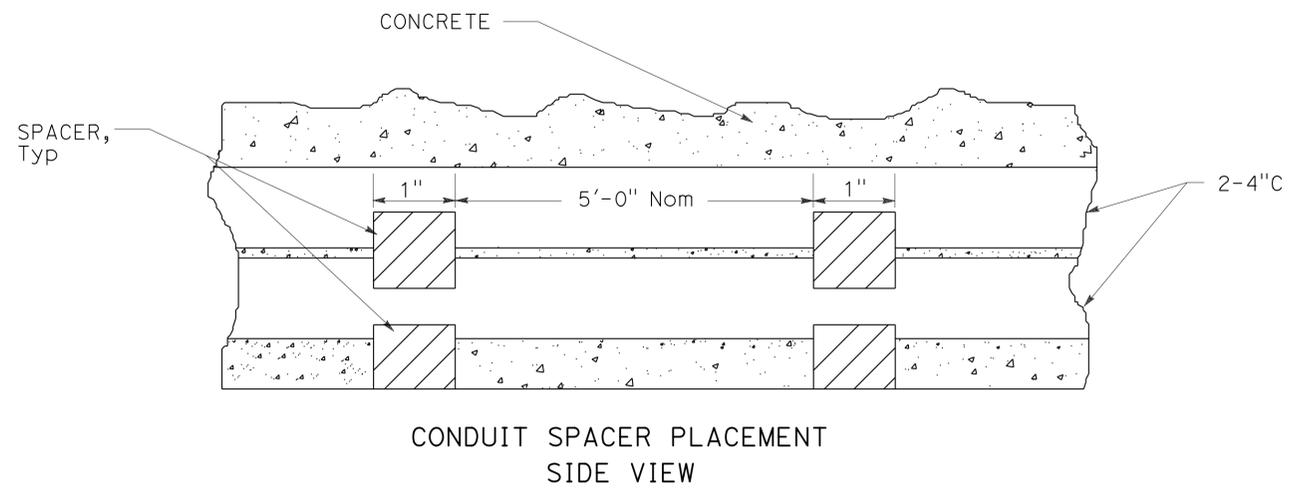
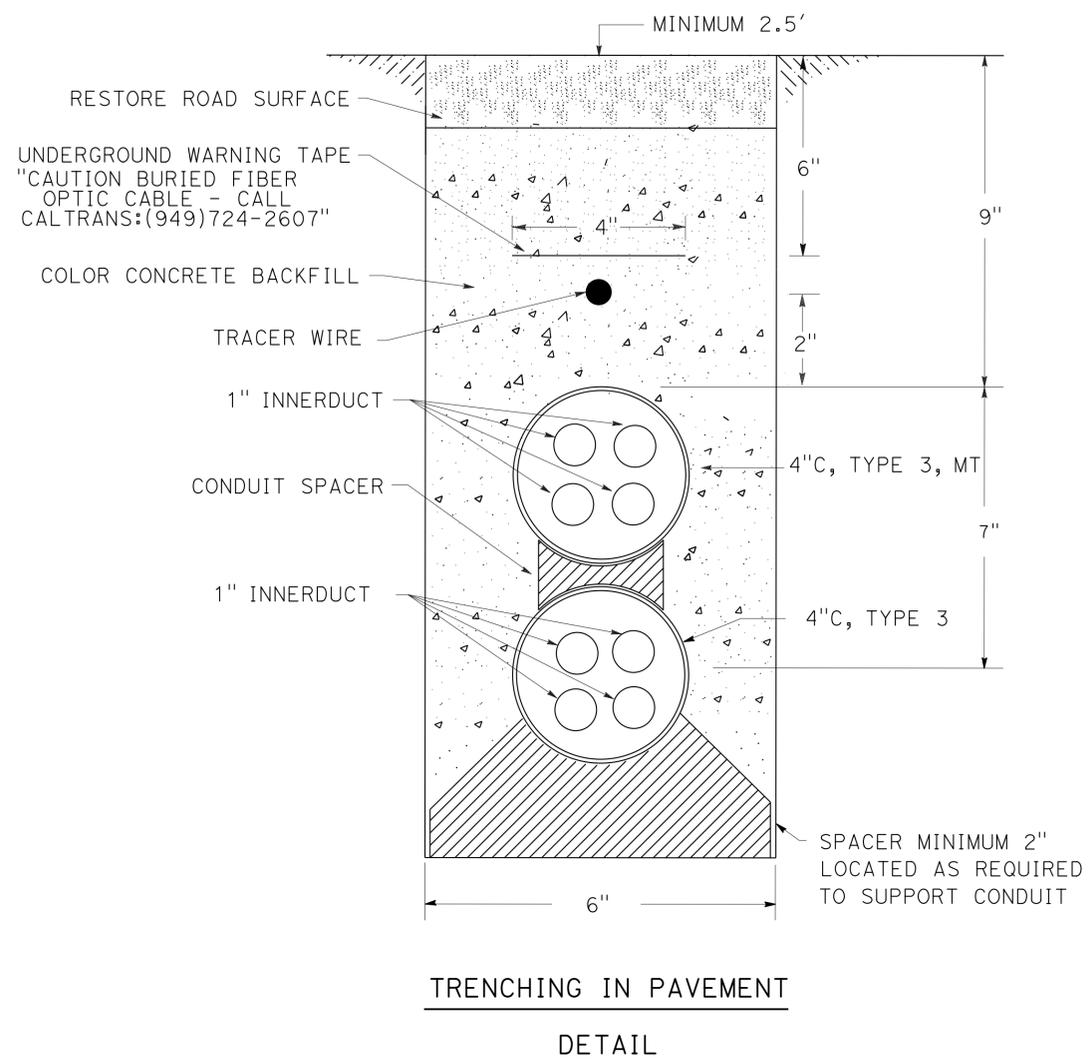
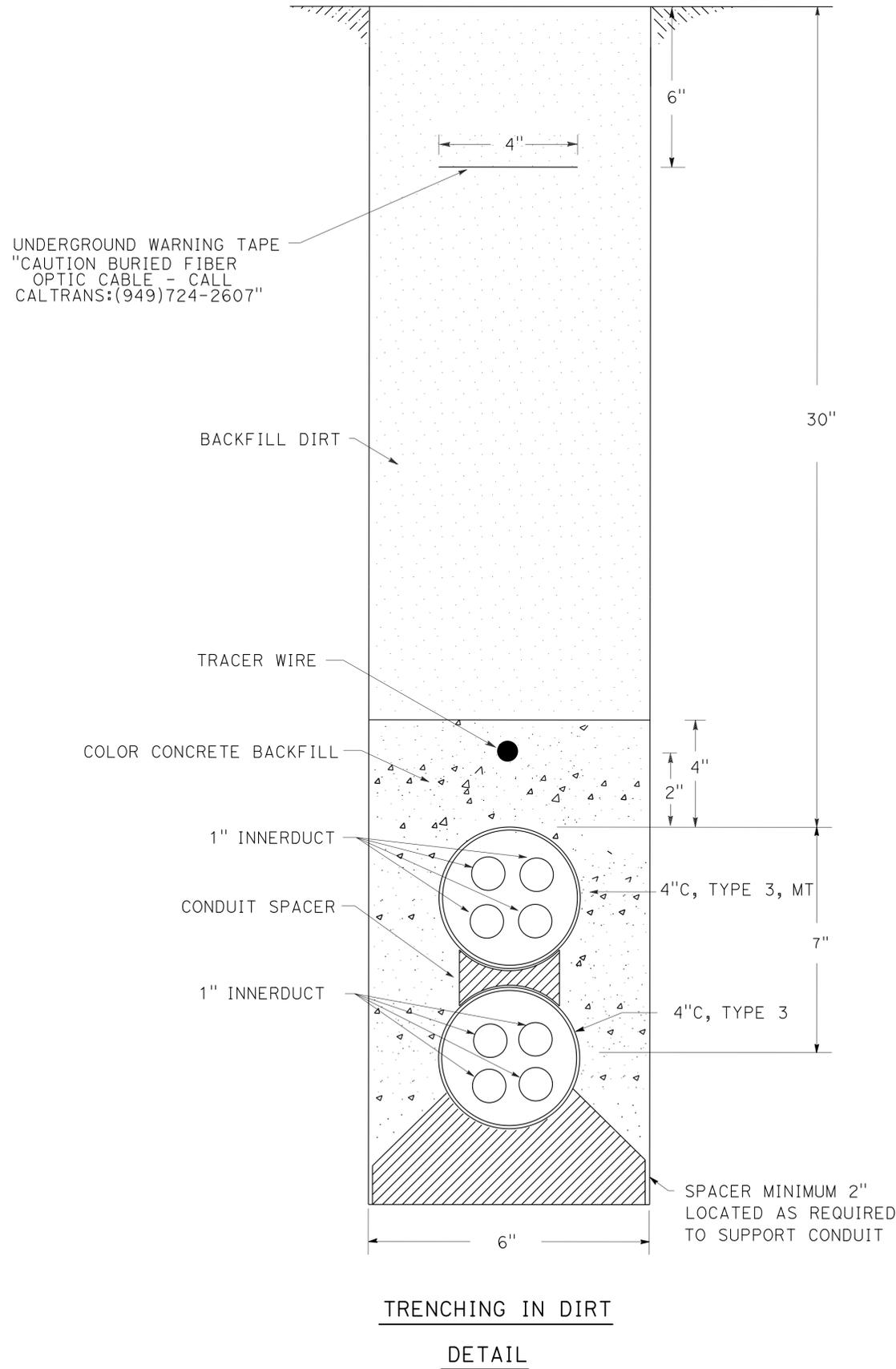
**COMMUNICATION SYSTEM**

SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
<b>Caltrans</b> <b>ELECTRICAL DESIGN</b>	SHAHRAM SHAHRIARI	VANESSA TRUONG	12-07-15
	SHAHRAM SHAHRIARI	SHAHRAM SHAHRIARI	12-14-15



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	48	77
<i>Vanessa Van Truong</i> 12-07-15 REGISTERED ELECTRICAL ENGINEER DATE					
12-14-15 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.		



**(CONDUIT TRENCHING DETAILS)**

**COMMUNICATION SYSTEM**

NO SCALE

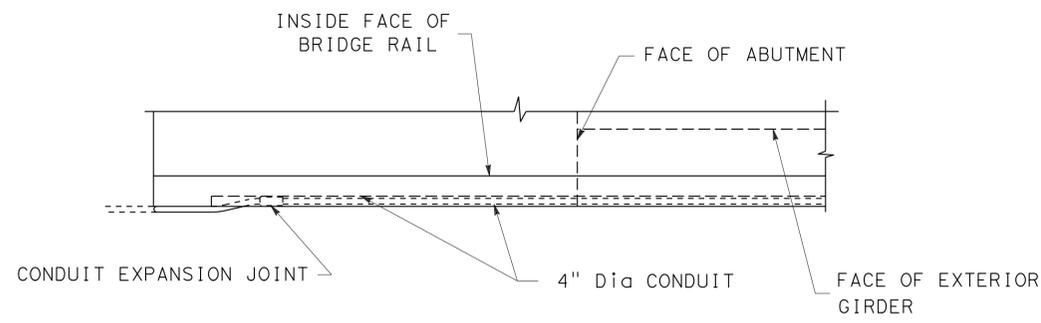
**E-27**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN  
 VANESSA TRUONG  
 SHAHRAM SHAHRIARI  
 SHAHRAM SHAHRIARI

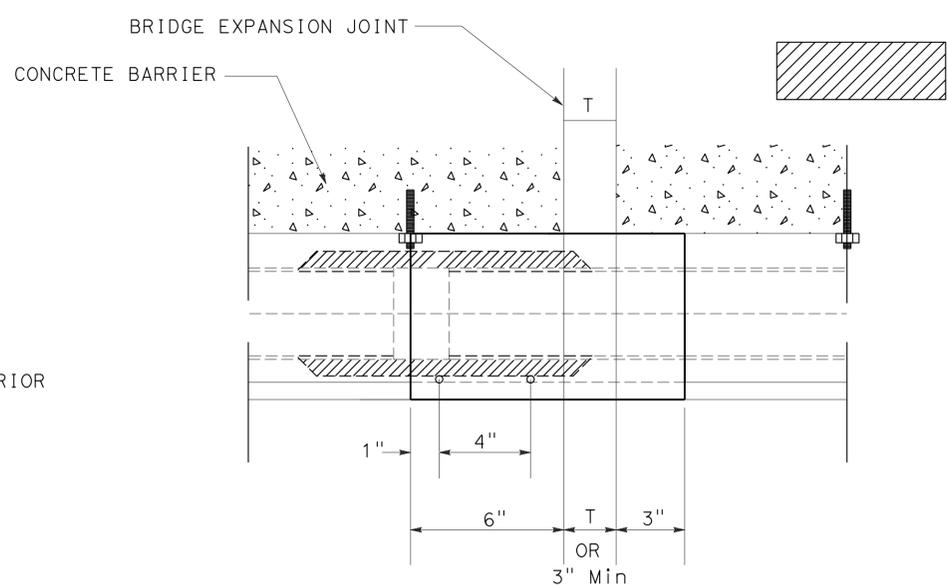
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	49	77

Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS  
 OR AGENTS SHALL NOT BE RESPONSIBLE FOR  
 THE ACCURACY OR COMPLETENESS OF SCANNED  
 COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
 KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL  
 STATE OF CALIFORNIA



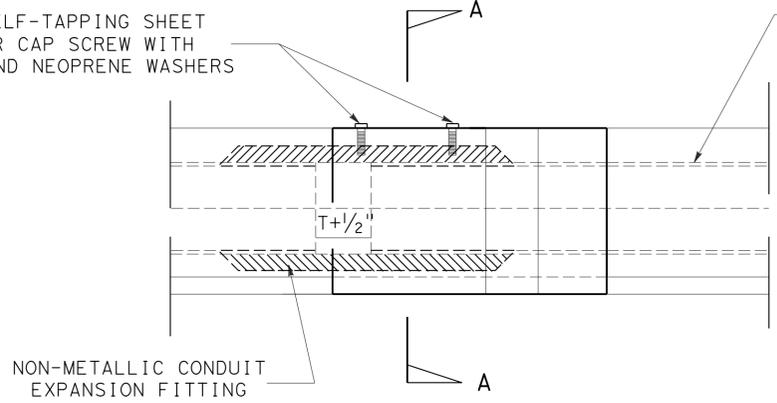
TYPICAL PLAN CONDUIT ON BACK OF RAIL



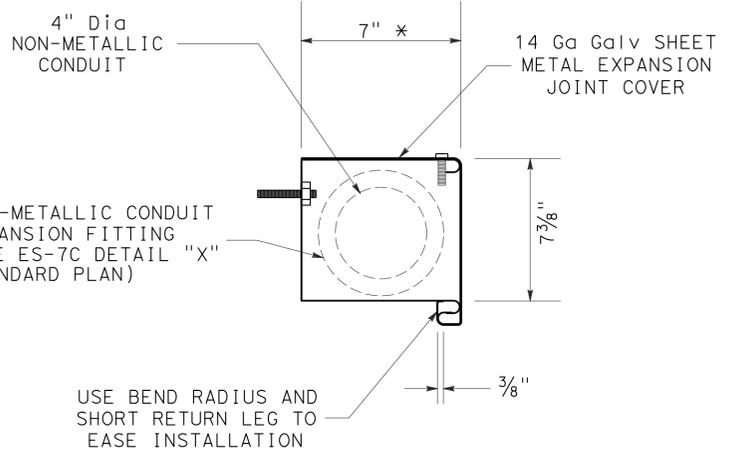
PART PLAN

\* MAY VARY TO CLEAR CONCRETE BARRIER AND TO FIT OVER "ENCLOSURE AND COVER"

No 14 SELF-TAPPING SHEET METAL OR CAP SCREW WITH STEEL AND NEOPRENE WASHERS



ELEVATION  
(CONCRETE BARRIER NOT SHOWN)

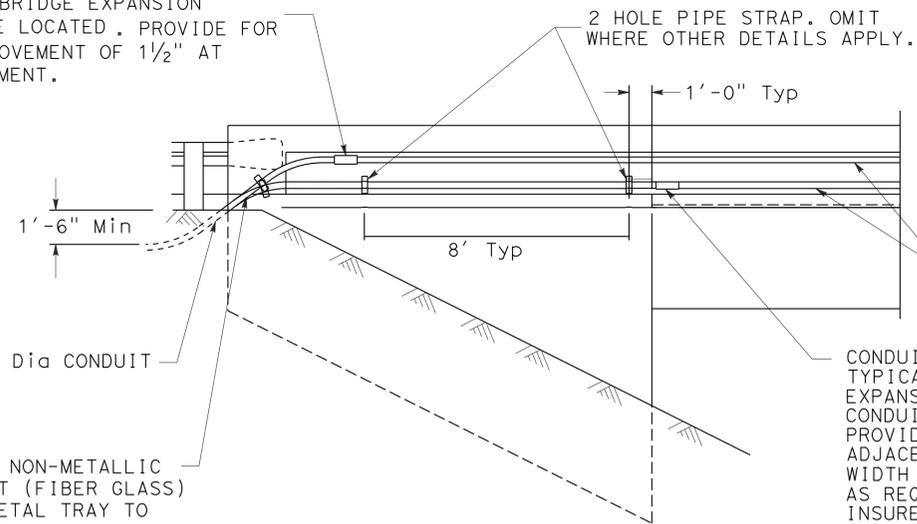


SECTION A-A

EXPANSION JOINT COVER ENCLOSURE AND COVER - TYPE A

DETAIL "B"

CONDUIT EXPANSION JOINT TYPICAL LOCATION FOR ABUTMENTS WHERE NO BRIDGE EXPANSION JOINTS ARE LOCATED. PROVIDE FOR MINIMUM MOVEMENT OF 1/2" AT EACH ABUTMENT.



WING WALL ELEVATION

DETAIL "A"  
SEE NOTE 1

CONDUIT ON BACK OF RAIL (ENCLOSURE NOT SHOWN FOR CLARITY) SEE NOTE 2

CONDUIT EXPANSION JOINT. TYPICAL LOCATION AT BRIDGE EXPANSION JOINTS. CONDUIT EXPANSION FITTING SHALL PROVIDE FOR MOVEMENTS ACCORDING TO ADJACENT BRIDGE EXPANSION JOINT WIDTH "T". SUPPORT OR SHIM CONDUIT AS REQUIRED FOR PROPER ALIGNMENT TO INSURE CORRECT OPERATION OF CONDUIT EXPANSION FITTINGS. FIX CONDUIT TO SUPPORTS AT MINIMUM OF ONE LOCATION BETWEEN CONDUIT EXPANSION JOINTS. (SEE STANDARD PLAN ES-7C DETAIL "X" FOR DETAILS NOT SHOWN.)

NOTES (FOR SHEETS E-28, E-29, E-30)

1. FOR DETAILS NOT SHOWN, SEE "STANDARD PLAN".
2. SEE SHEETS E-2, E-3 AND E-12 FOR LOCATION.
3. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION.
4. CONTRACTOR TO PROVIDE CONDUIT LAYOUT AND ATTACHMENT LOCATION BEFORE INSTALLATION.
5. SAW CUT SLOPE PAVING AS REQUIRED TO TRENCH, REPLACE SLOPE PAVING AFTER BACKFILL.
6. ALL HANGERS AND STRAPS TO BE GALVANIZED AFTER FABRICATION.

(CONDUIT ATTACHMENT DETAILS 1)

FOR NOTES AND LEGEND, SEE SHEET E-1

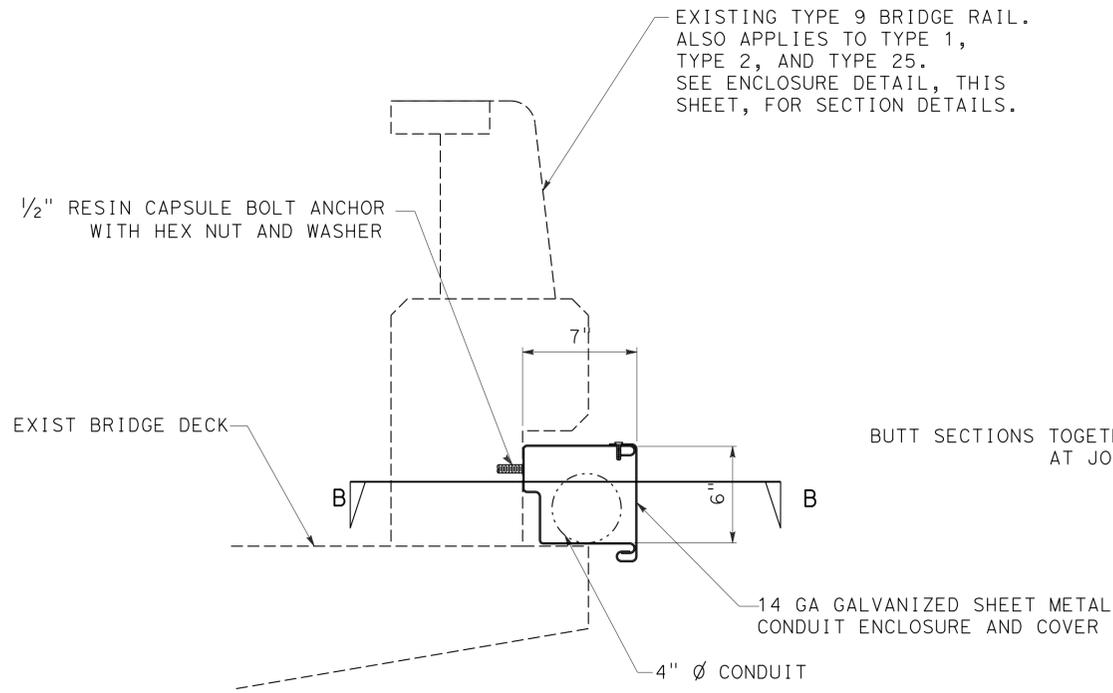
COMMUNICATION SYSTEM

NO SCALE

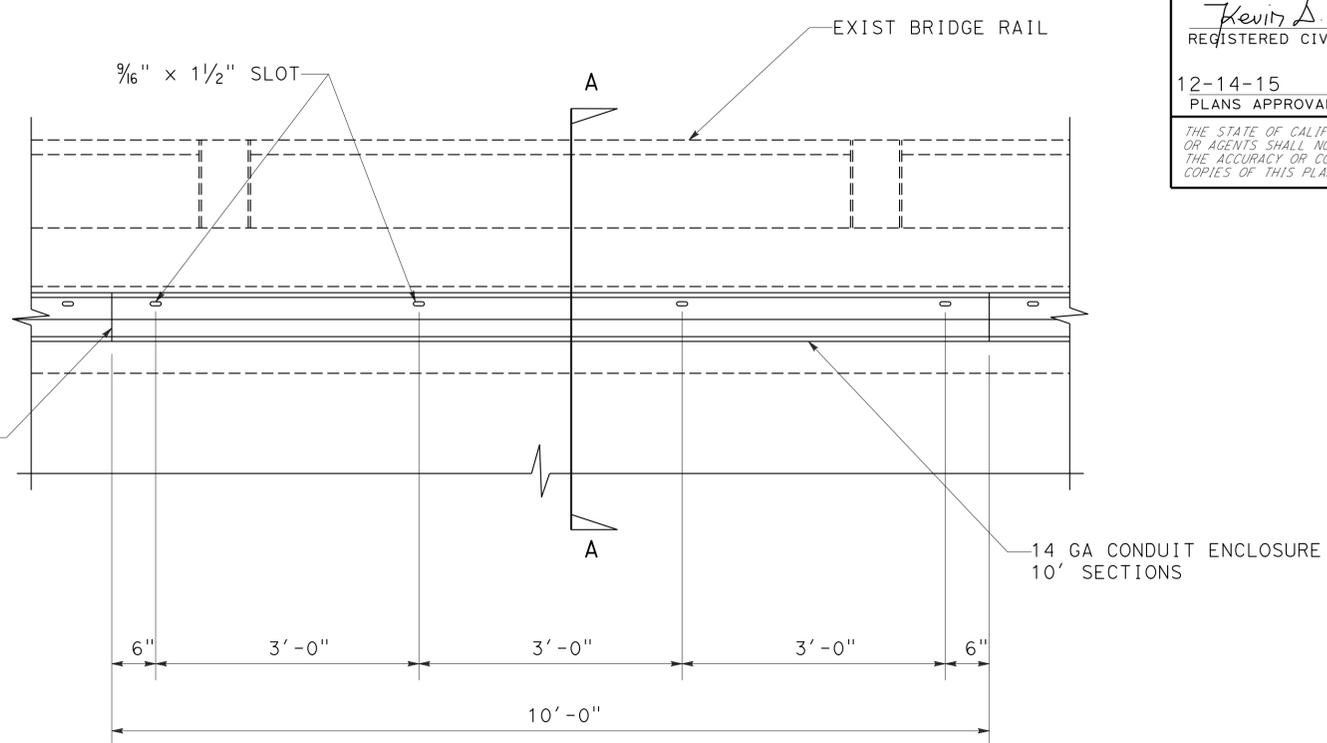
E-28

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 CALCULATED/DESIGNED BY: [blank]  
 CHECKED BY: [blank]  
 MINH PHAM  
 KEVIN PHAM  
 REVISED BY: [blank] DATE: [blank]  
 REVISIONS: [blank]

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	50	77
Kevin D. Pham REGISTERED CIVIL ENGINEER			12-07-15 DATE		
12-14-15 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>					

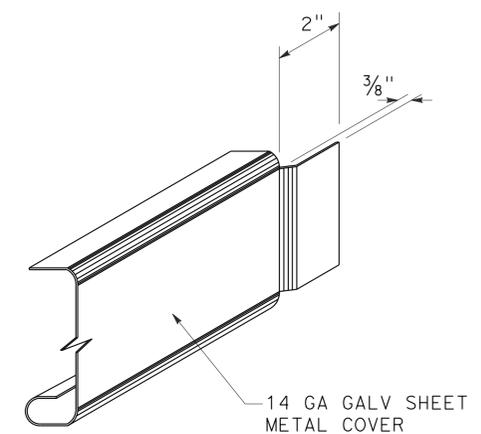


**SECTION A-A**



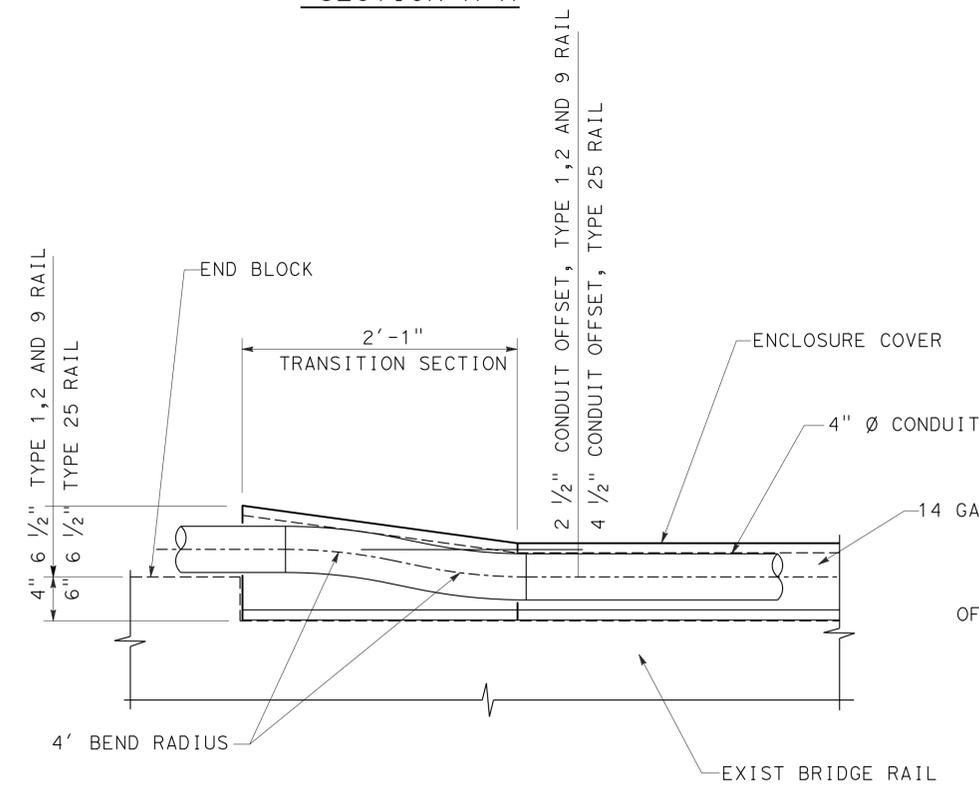
**ELEVATION**

NOTE: COVER NOT SHOWN FOR CLARITY



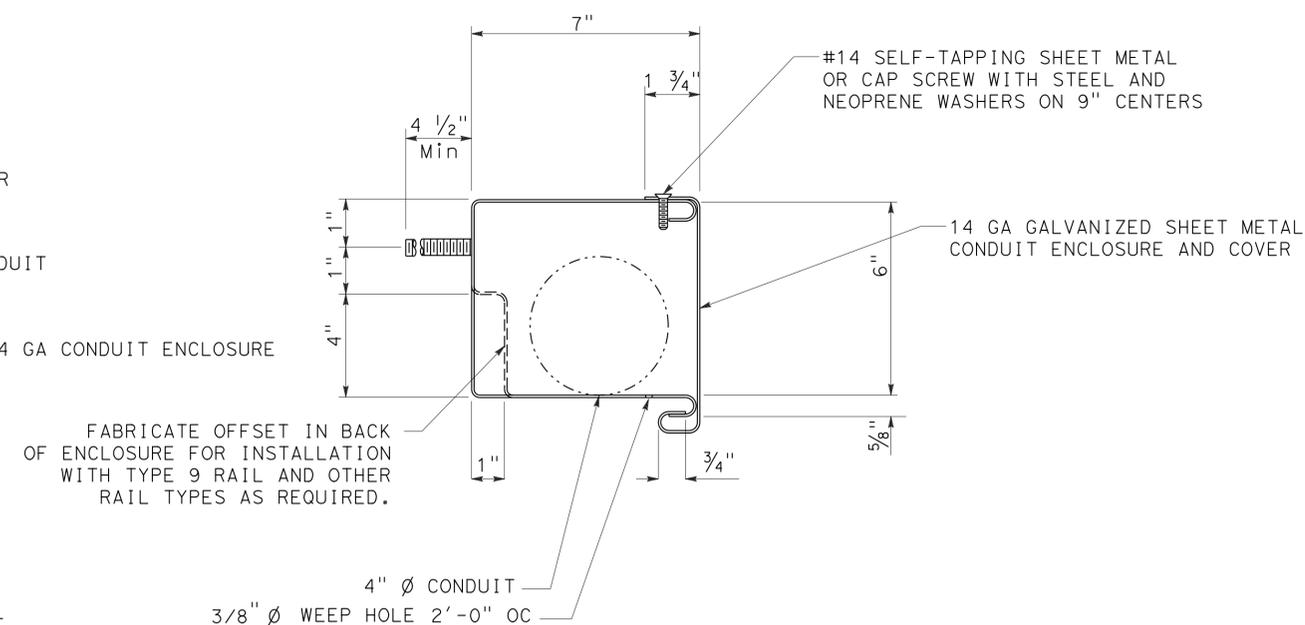
**COVER OVERLAP DETAIL**

NOTE: OVERLAP DETAIL ONE END ONLY NOT REQUIRED AT BRIDGE EXPANSION JOINTS., SEE SHEET E-28, DETAIL "B" FOR " EXPANSION JOINT COVER"



**SECTION B-B**

NOTE: TRANSITION SECTION ONLY REQUIRED FOR RAILS WITH END BLOCKS.



**ENCLOSURE DETAIL**

BACK OF RAIL ENCLOSURE AND COVER, TYPE A (RAIL TYPE 1, 2, 9, AND 25). ATTACH ENCLOSURE TO OUTSIDE OF BRIDGE RAIL. PLACE CONDUIT WITHIN ENCLOSURE AND INSTALL COVER.

ENCLOSURE AND COVER TYPE A  
DETAIL "D"  
SEE NOTE 2

**(CONDUIT ATTACHMENT DETAILS 2)**

FOR NOTES AND LEGEND, SEE SHEET E-1

**COMMUNICATION SYSTEM**  
NO SCALE

**E-29**

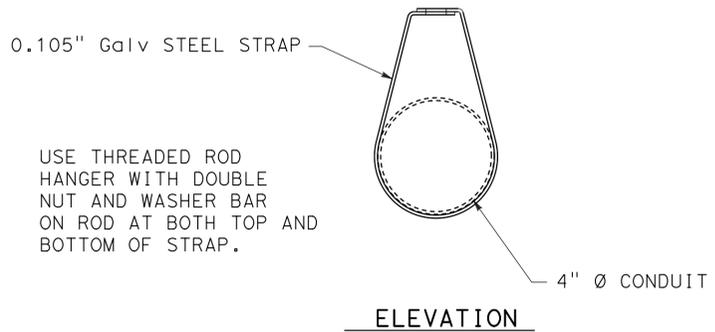
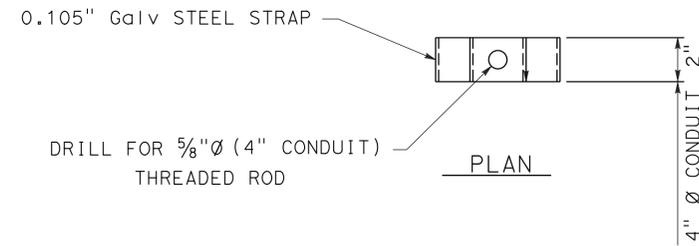
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN DIVISION
FUNCTIONAL SUPERVISOR	CHRISTOPHER LE
CALCULATED/DESIGNED BY	CHECKED BY
MINH PHAM	KEVIN PHAM
REVISOR	DATE
REVISOR	DATE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	51	77

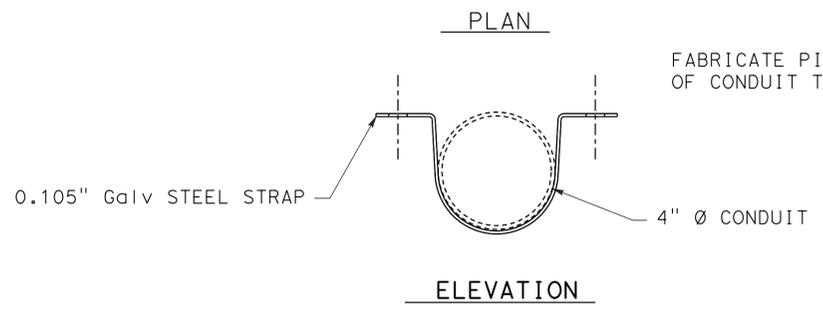
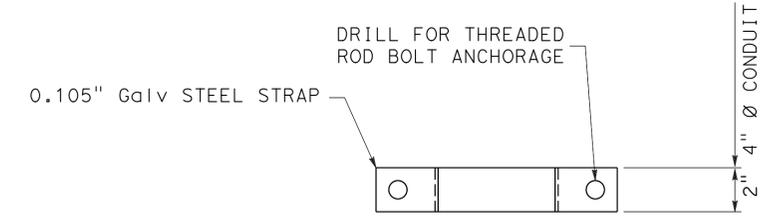
Kevin D. Pham 12-07-15  
 REGISTERED CIVIL ENGINEER DATE  
 12-14-15  
 PLANS APPROVAL DATE

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

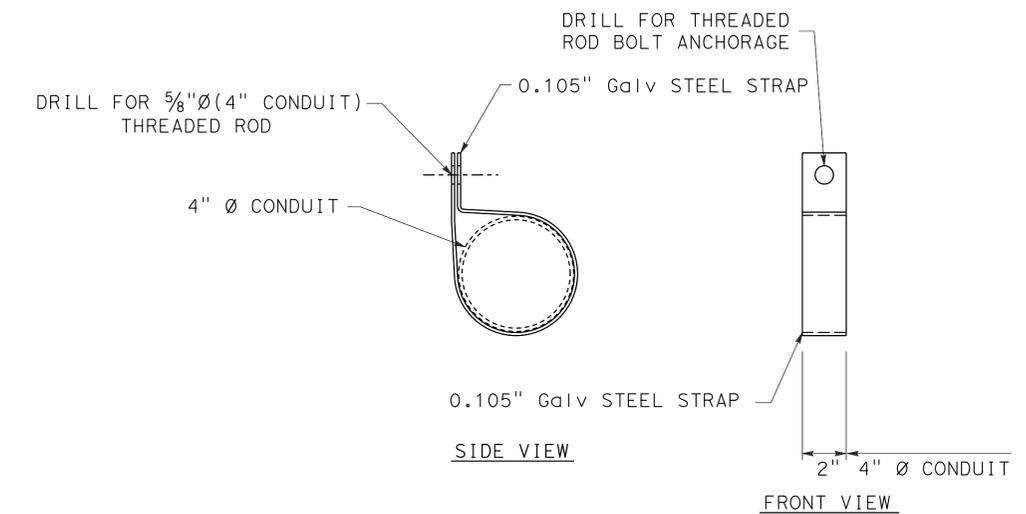
REGISTERED PROFESSIONAL ENGINEER  
 KEVIN D PHAM  
 No. C61965  
 Exp. 9-30-17  
 CIVIL  
 STATE OF CALIFORNIA



PIPE HANGER STRAP DETAIL



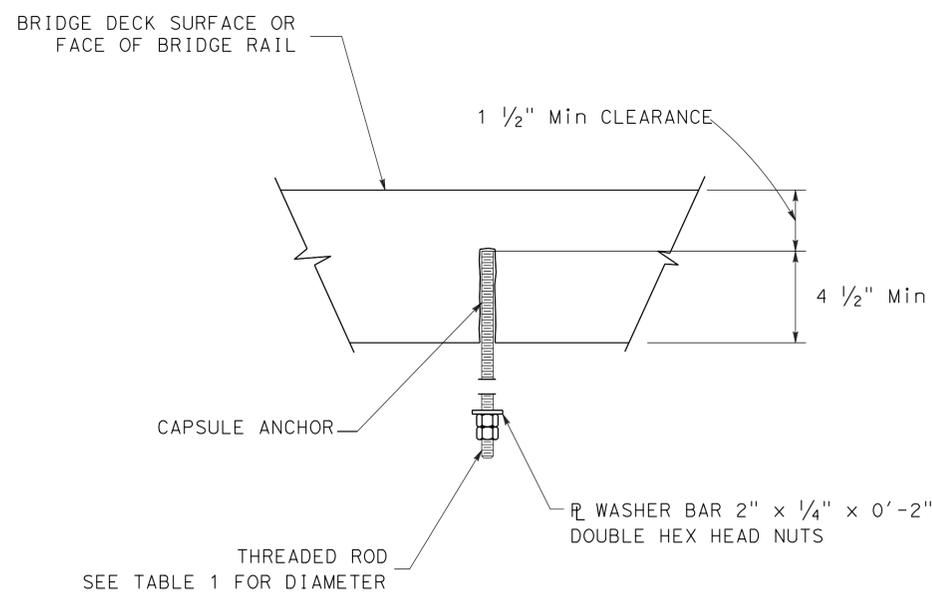
TWO HOLE PIPE STRAP



ONE HOLE PIPE STRAP

TABLE I

THREADED ROD AND PIPE HANGER STRAP SIZE	
CONDUIT Dia	4"
THREADED ROD Dia	5/8"
STRAP (THICKNESS AND WIDTH)	0.105 x 2"
Max SUPPORT SPACING	10' O.C.



RESIN CAPSULE TYPE BOLT ANCHORAGE

NOTE: RESIN CAPSULE ANCHORAGE IS SUBJECT TO APPROVAL OF ENGINEER. INSTALLATION PROCEDURES AND HOLE DIAMETERS SHALL COMPLY WITH MANUFACTURE'S INSTRUCTIONS. HORIZONTAL INSTALLATION DETAILS ARE SIMILAR.

(CONDUIT ATTACHMENT DETAILS 3)

FOR NOTES AND LEGEND, SEE SHEET E-1

COMMUNICATION SYSTEM  
NO SCALE

E-30

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 DESIGN DIVISION  
 FUNCTIONAL SUPERVISOR: CHRISTOPHER LE  
 MINH PHAM  
 KEVIN PHAM  
 REVISOR: MINH PHAM  
 DATE: 12-07-15  
 DESIGNED BY: KEVIN PHAM  
 CHECKED BY: KEVIN PHAM  
 USERNAME => s127956  
 DGN FILE => 1214000038ua030.dgn  
 BORDER LAST REVISED 7/2/2010



UNIT 3003

PROJECT NUMBER & PHASE

12140000381

LAST REVISION: DATE PLOTTED => 09-MAR-2016  
 10-14-15 TIME PLOTTED => 08:12

# COMMUNICATION SYSTEM

No.	BEES ITEM	SHEET No.	QUANTITIES												
			E-2	E-3	E-4	E-5	E-6	E-7	E-8	E-9	E-10	E-11	E-12	E-13	
1	2-4"C, EACH WITH 4-1" INNERDUCT (TRENCH)	LF	1200	930	1375	1450	1400	1450	1200	710	1500	1280	1200	360	
2	2-4"C, EACH WITH 4-1" INNERDUCT (JACK)	LF	165	60	55	70			50	110	60	80	130		
3	2-4"C, EACH WITH 4-1" INNERDUCT (STRAP)	LF	350	260									250		
4	3"C (TRENCH)	LF				50			80				300		
5	3" (JACK)	LF								330			220		
6	2"C (TRENCH)	LF		630	10	480			40				660		
7	2"C (JACK)	LF		330		275				550			660		
8	4-1" INNERDUCT FOR EXISTING 4"C	LF	770	550	200					550		300	440	400	
9	TYPE A CABLE	LF	1700	1550	1540	1500	1400	1450	1250	1100	1560	1500	1600	560	
10	TYPE B CABLE	LF		420	1540	1500	1400	1450	1250	1100	1560	1500	1600	560	
11	TYPE C CABLE	LF		420	1540	1500	1400	1450	1250	1100	1560	1500	1600	560	
12	TYPE D CABLE	LF		1200	10	730			500				3630		
13	PULL ROPE	LF	12000	9400	7350	7250	7000	7250	6250	5000	7800	7550	7800	2800	
14	No. 5(T) OR No. 5 PULL BOX	EA		4		4				12			12		
15	No. 6 PULL BOX	EA				1			1	1					
16	COMMUNICATION PULL BOX	EA	3	3	1	1	2	1	2	1	2	1	4		
17	SPLICE VAULT	EA		1		1			1				1		
18	FIBER OPTIC SPLICE ENCLOSURE	EA		1		2			1				3	3	
19	RC Exist TELEPHONE DEMARCATION CABINET	EA		1		1			1				2		
20	MODEL 334-TV CABINET AND FOUNDATION	EA				1				1					
21	CCTV 15 POLE	EA								1					
22	HM CCTV 60 AND FOUNDATION	EA				1									
23	LOWERING DEVICE WITH MODIFIED CCTV MOUNTING ARM	EA				1									
24	30 A CIRCUIT BREAKER	EA				2			4						
25	CAMERA	EA				1				1			1		
26	CAT5e PoE CABLE AND #8(GROUND)	LF				100				200			100		
27	2#6	LF				300			70	400					
28	INTERFACE EQUIPMENT FOR CCTV	EA				1				1			1		
29	INTERFACE EQUIPMENT FOR RMS, TMS, TS	EA		2	1	3			1				6		
30	INTERFACE EQUIPMENT FOR CMS	EA							1						
31	2#12	LF								10					
32	120/240V TYPE III-BF SERVICE EQUIPMENT ENCLOSURE 100 A CB, 3-30 A CB, 2-30 A CB	EA								1					
33	RC Exist XENON MODULE. INSTALL LED MODULE	EA							60						
34	RC Exist 20 A CIRCUIT BREAKER	EA				1			1				1	2	
35	RC Exist 80 A CIRCUIT BREAKER	EA							4						
36	RC Exist TYPE E SERVICE	EA								1					
37	RC Exist CAMERA	EA											1		
38	RL Exist MODEL 170 CONTROLLER CABINET	EA							1						
39	RC PULL BOX	EA							1						
39	DLC	LF							3000						
40	RC 12#1	LF							550						

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	52	77

*Vanessa Van Truong* 12-07-15  
 REGISTERED ELECTRICAL ENGINEER DATE

12-14-15  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS  
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 COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
**V.V. TRUONG**  
 No. E 13983  
 Exp 6/30/16  
 ELECTRICAL  
 STATE OF CALIFORNIA

**NOTE:**

- ELECTRICAL QUANTITY INFORMATION ON THIS SHEET IS FOR DESIGNER USE ONLY. DO NOT USE FOR BIDDING PURPOSES.

## ELECTRICAL QUANTITIES

**E-31**

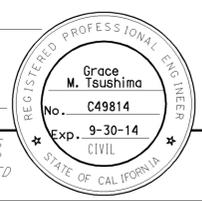


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	53	77

*Grace M. Tsushima*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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



TO ACCOMPANY PLANS DATED 12-14-15

**UNIT OF MEASUREMENT SYMBOLS:**

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

**TABLE A**

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

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

**TABLE B**

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

\* For use on a sign panel only

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ABBREVIATIONS  
(SHEET 2 OF 2)**

NO SCALE

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

**REVISED STANDARD PLAN RSP A10B**

Maint	MAINTENANCE
Max	MAXIMUM
MB	METAL BEAM
MBB	METAL BEAM BARRIER
MBGR	METAL BEAM GUARD RAILING
Med	MEDIAN
MGS	MIDWEST GUARDRAIL SYSTEM
MH	MANHOLE
Min	MINIMUM
Misc	MISCELLANEOUS
Misc I & S	MISCELLANEOUS IRON AND STEEL
Mkr	MARKER
Mod	MODIFIED, MODIFY
Mon	MONUMENT
MP	METAL PLATE
MPGR	METAL PLATE GUARD RAILING
MR	MOVEMENT RATING
MSE	MECHANICALLY STABILIZED EMBANKMENT
Mt	MOUNTAIN, MOUNT
MtI	MATERIAL
MVP	MAINTENANCE VEHICLE PULLOUT
N	NORTH
NB	NORTHBOUND
No.	NUMBER (MUST HAVE PERIOD)
Nos.	NUMBERS (MUST HAVE PERIOD)
NPS	NOMINAL PIPE SIZE
NS	NEAR SIDE
NSP	NEW STANDARD PLAN
NTS	NOT TO SCALE
Obir	OBLITERATE
OC	OVERCROSSING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OG	ORIGINAL GROUND
OGAC	OPEN GRADED ASPHALT CONCRETE
OGFC	OPEN GRADED FRICTION COURSE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
O-O	OUT TO OUT
Opp	OPPOSITE
OSD	OVERSIDE DRAIN
p	PAGE
PAP	PERFORATED ALUMINUM PIPE
PB	PULL BOX
PC	POINT OF CURVATURE, PRECAST
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN
PCP	PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PEC	PERMIT TO ENTER AND CONSTRUCT
Ped	PEDESTRIAN
Ped OC	PEDESTRIAN OVERCROSSING
Ped UC	PEDESTRIAN UNDERCROSSING
Perm MtI	PERMEABLE MATERIAL

Maint	MAINTENANCE
Max	MAXIMUM
MB	METAL BEAM
MBB	METAL BEAM BARRIER
MBGR	METAL BEAM GUARD RAILING
Med	MEDIAN
MGS	MIDWEST GUARDRAIL SYSTEM
MH	MANHOLE
Min	MINIMUM
Misc	MISCELLANEOUS
Misc I & S	MISCELLANEOUS IRON AND STEEL
Mkr	MARKER
Mod	MODIFIED, MODIFY
Mon	MONUMENT
MP	METAL PLATE
MPGR	METAL PLATE GUARD RAILING
MR	MOVEMENT RATING
MSE	MECHANICALLY STABILIZED EMBANKMENT
Mt	MOUNTAIN, MOUNT
MtI	MATERIAL
MVP	MAINTENANCE VEHICLE PULLOUT
N	NORTH
NB	NORTHBOUND
No.	NUMBER (MUST HAVE PERIOD)
Nos.	NUMBERS (MUST HAVE PERIOD)
NPS	NOMINAL PIPE SIZE
NS	NEAR SIDE
NSP	NEW STANDARD PLAN
NTS	NOT TO SCALE
Obir	OBLITERATE
OC	OVERCROSSING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OG	ORIGINAL GROUND
OGAC	OPEN GRADED ASPHALT CONCRETE
OGFC	OPEN GRADED FRICTION COURSE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
O-O	OUT TO OUT
Opp	OPPOSITE
OSD	OVERSIDE DRAIN
p	PAGE
PAP	PERFORATED ALUMINUM PIPE
PB	PULL BOX
PC	POINT OF CURVATURE, PRECAST
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN
PCP	PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PEC	PERMIT TO ENTER AND CONSTRUCT
Ped	PEDESTRIAN
Ped OC	PEDESTRIAN OVERCROSSING
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Perm MtI	PERMEABLE MATERIAL

PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
Pkwy	PARKWAY
PL, PL	PLATE
P/L	PROPERTY LINE
PM	POST MILE, TIME FROM NOON TO MIDNIGHT
PN	PAVING NOTCH
POC	POINT OF HORIZONTAL CURVE
POT	POINT OF TANGENT
POVC	POINT OF VERTICAL CURVE
PP	PIPE PILE, PLASTIC PIPE, POWER POLE
PPL	PREFORMED PERMEABLE LINER
PPP	PERFORATED PLASTIC PIPE
PRC	POINT OF REVERSE CURVE
PRF	PAVEMENT REINFORCING FABRIC
PRVC	POINT OF REVERSE VERTICAL CURVE
PS&E	PLANS, SPECIFICATIONS AND ESTIMATES
PS, P/S	PRESTRESSED
PSP	PERFORATED STEEL PIPE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
Pvmt	PAVEMENT
Qty	QUANTITY
R	RADIUS
R & D	REMOVE AND DISPOSE
R & S	REMOVE AND SALVAGE
R/C	RATE OF CHANGE
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCPA	REINFORCED CONCRETE PIPE ARCH
Rd	ROAD
Reinf	REINFORCED, REINFORCEMENT, REINFORCING
Rel	RELOCATE
Repl	REPLACEMENT
Ret	RETAINING
Rev	REVISED, REVISION
Rdwy	ROADWAY
RHMA	RUBBERIZED HOT MIX ASPHALT
Riv	RIVER
RM	ROAD-MIXED
RP	RADIUS POINT, REFERENCE POINT
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION, REVISED STANDARD PLAN
Rt	RIGHT
Rte	ROUTE
RW	REDWOOD, RETAINING WALL
R/W	RIGHT OF WAY
Rwy	RAILWAY

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	54	77

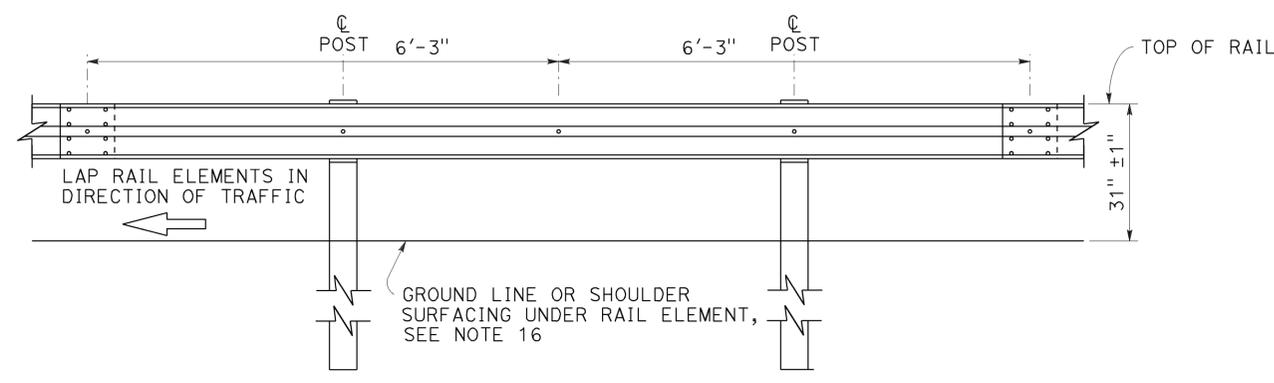
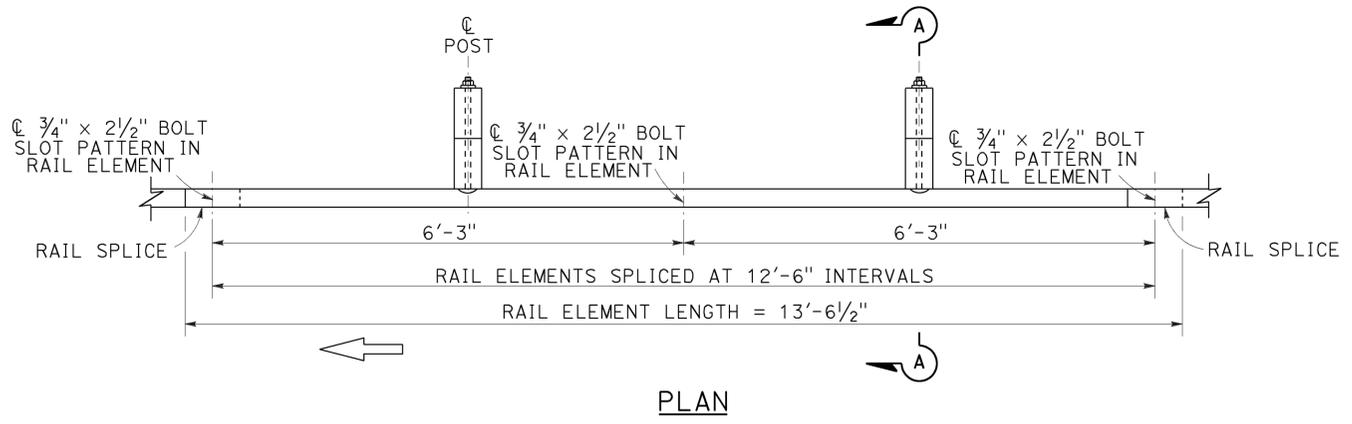
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

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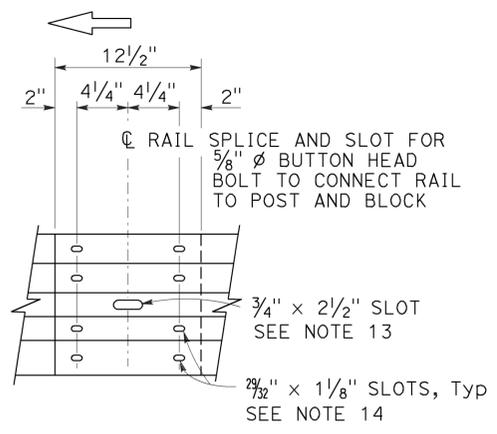
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-14-15



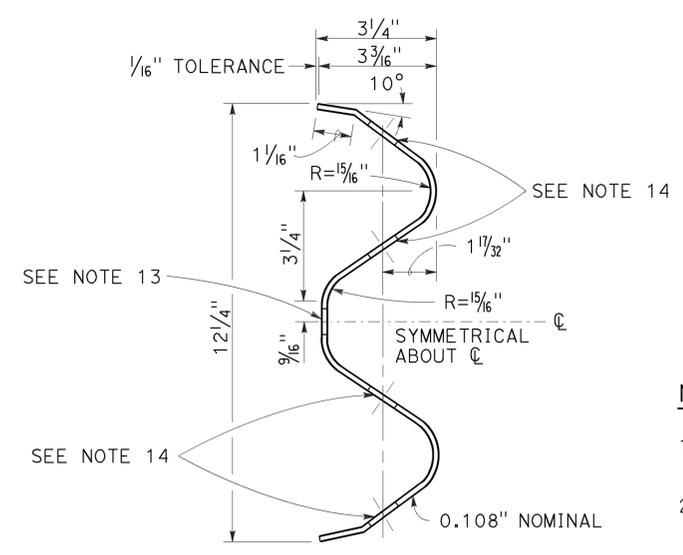
**ELEVATION**

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

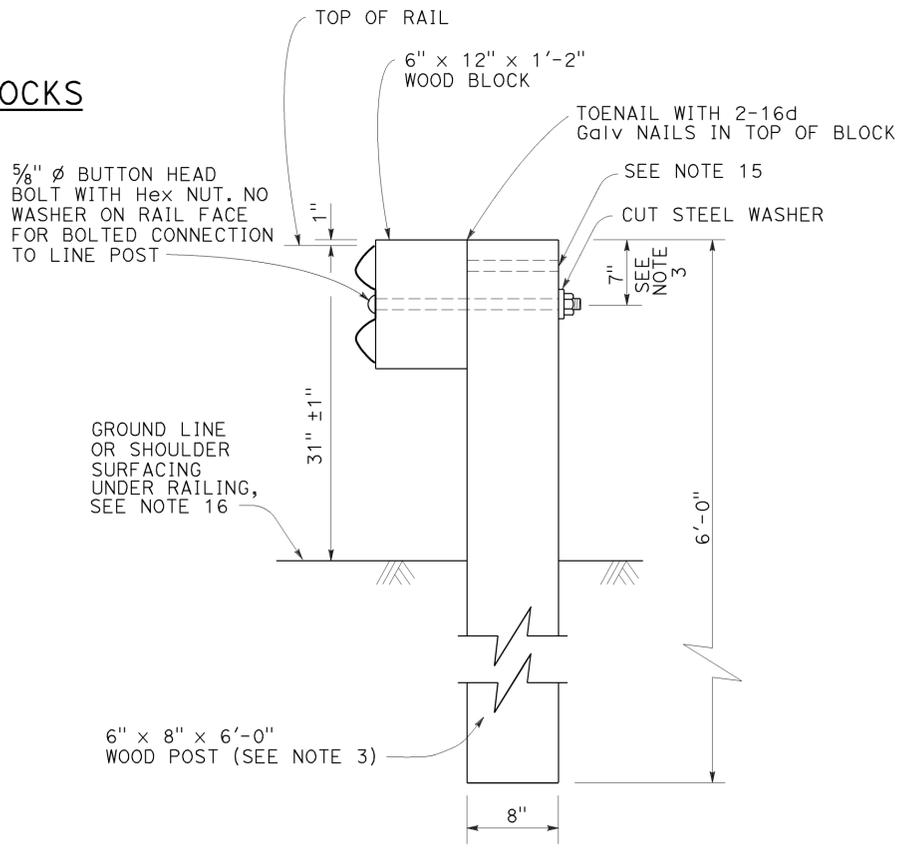


**ELEVATION  
RAIL ELEMENT SPLICE DETAIL**

- Connect the over lapped end of the rail elements with  $\frac{5}{8}$ "  $\phi$  x  $1\frac{3}{8}$ " button head oval shoulder splice bolts inserted into the  $\frac{7}{32}$ " x  $1\frac{1}{8}$ " slots and bolted together with  $\frac{5}{8}$ "  $\phi$  recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



**SECTION THRU  
RAIL ELEMENT**



**SECTION A-A  
TYPICAL WOOD LINE  
POST INSTALLATION**

See Note 4

**NOTES:**

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

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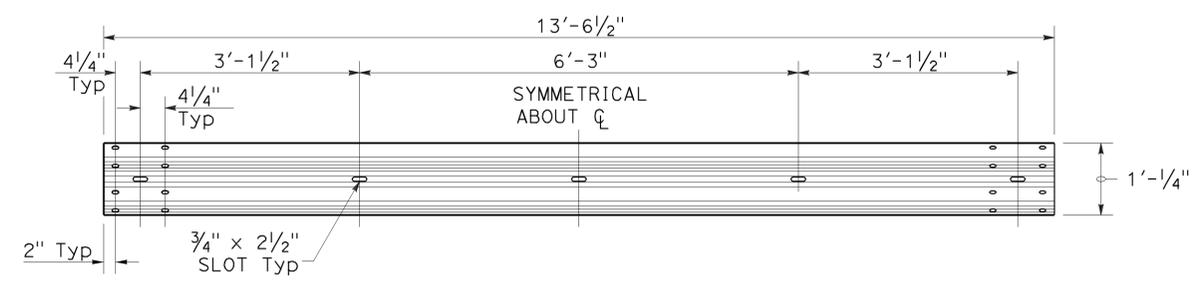
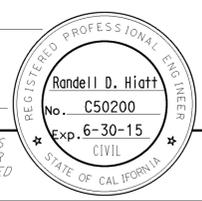
**MIDWEST GUARDRAIL SYSTEM  
STANDARD RAILING SECTION  
(WOOD POST WITH  
WOOD BLOCK)**

NO SCALE

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

**REVISED STANDARD PLAN RSP A77L1**

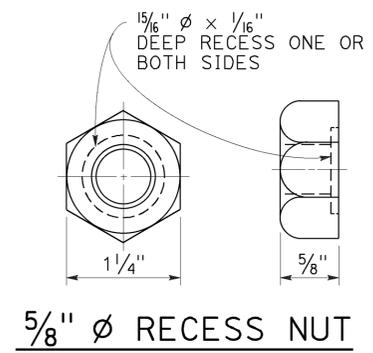
2010 REVISED STANDARD PLAN RSP A77L1



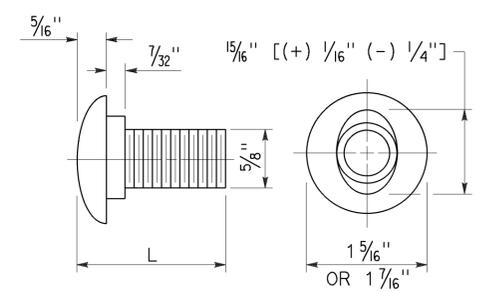
**TYPICAL RAIL ELEMENT**

**NOTE:**

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



**5/8" Ø RECESS NUT**

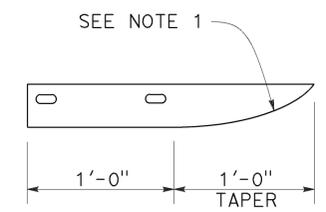


**5/8" Ø BUTTON HEAD BOLT**

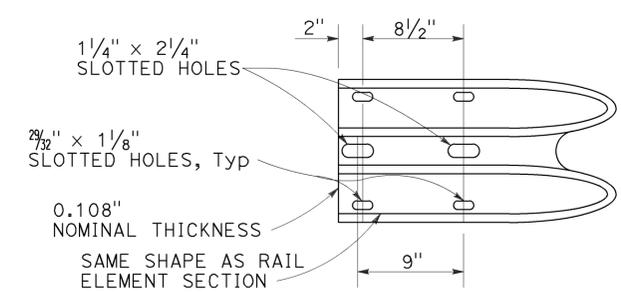
**BUTTON HEAD BOLT**

L	THREAD LENGTH
1 3/8"	FULL THREAD LENGTH
2"	FULL THREAD LENGTH
10"	4" Min THREAD LENGTH
18"	4" Min THREAD LENGTH
20"	4" Min THREAD LENGTH
22"	4" Min THREAD LENGTH
26"	4" Min THREAD LENGTH
36"	4" Min THREAD LENGTH
** 2 3/4"	2" Min THREAD LENGTH
** 19"	4" Min THREAD LENGTH

\*\* For nested rail applications.



**PLAN**



**ELEVATION  
END CAP  
(TYPE A)**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
STANDARD HARDWARE**

NO SCALE

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

**REVISED STANDARD PLAN RSP A77M1**

2010 REVISED STANDARD PLAN RSP A77M1

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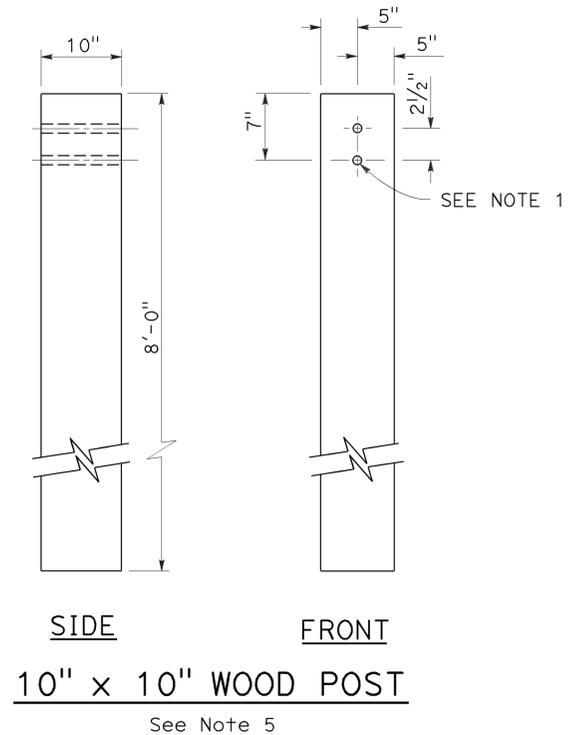
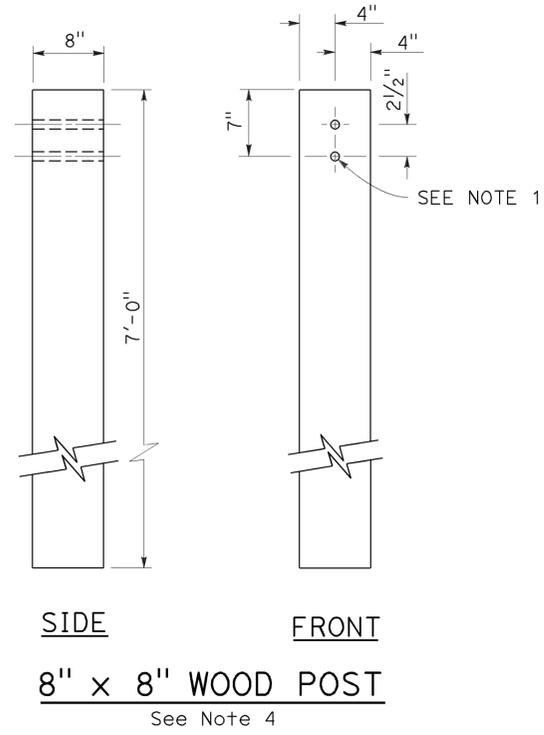
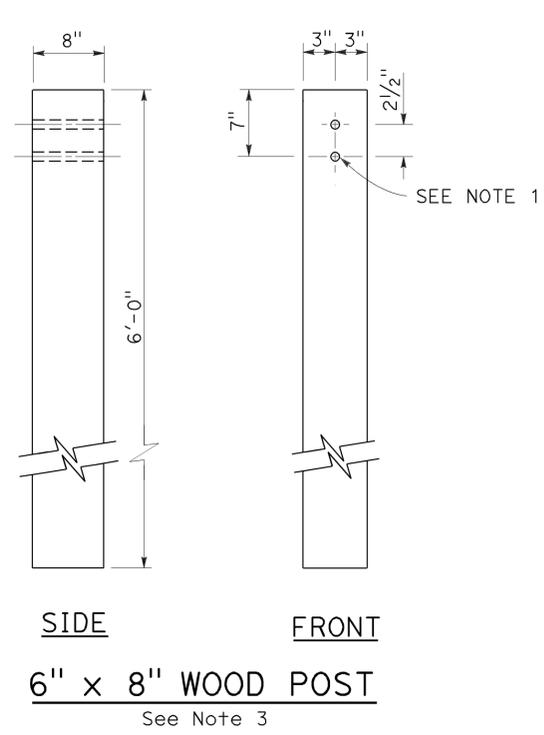
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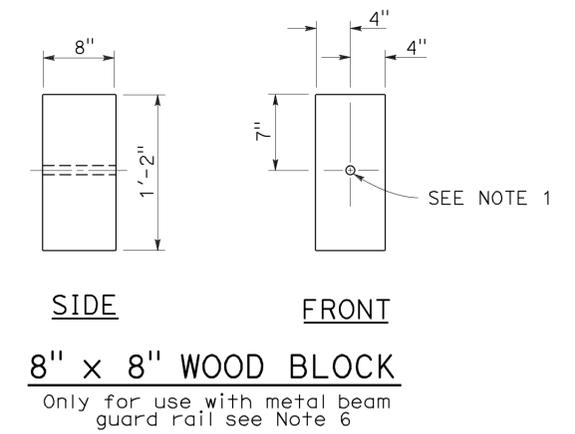
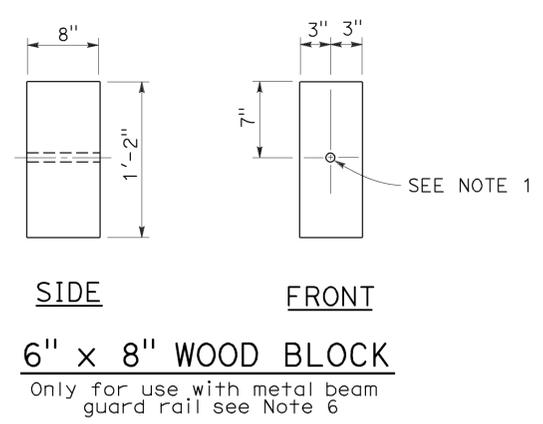
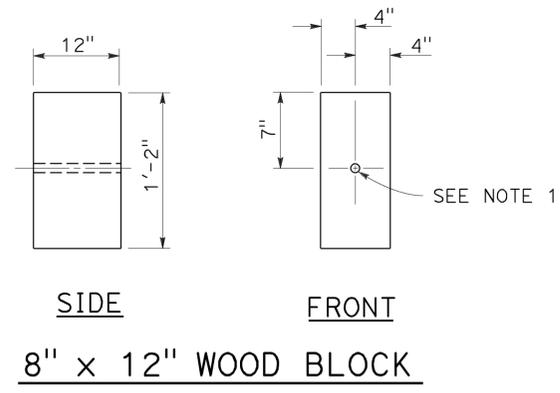
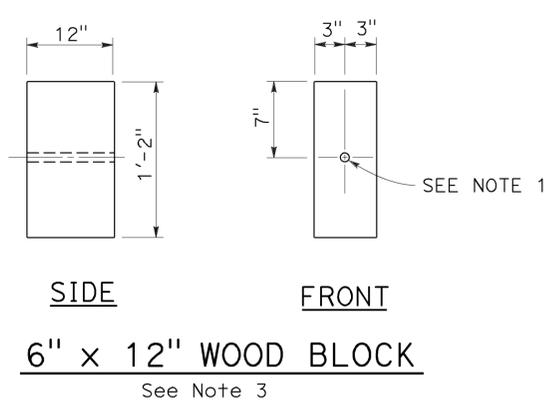
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TO ACCOMPANY PLANS DATED 12-14-15



**NOTES:**

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



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

**REVISED STANDARD PLAN RSP A77N1**

2010 REVISED STANDARD PLAN RSP A77N1

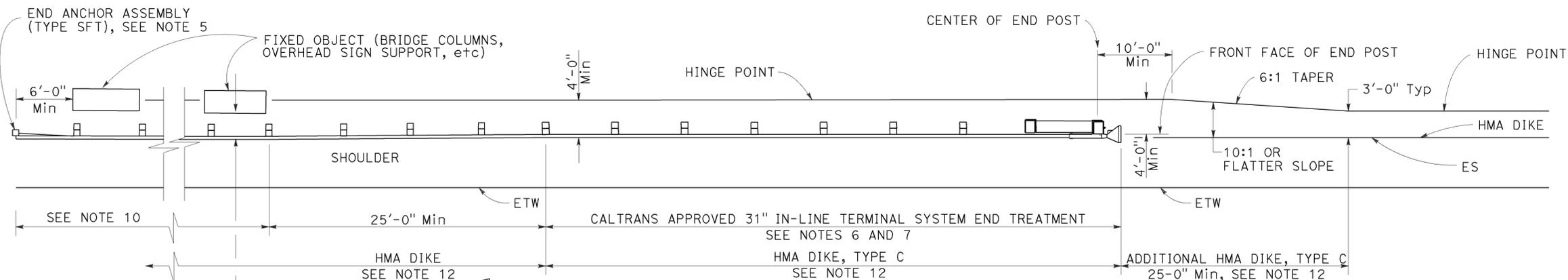
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	57	77

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

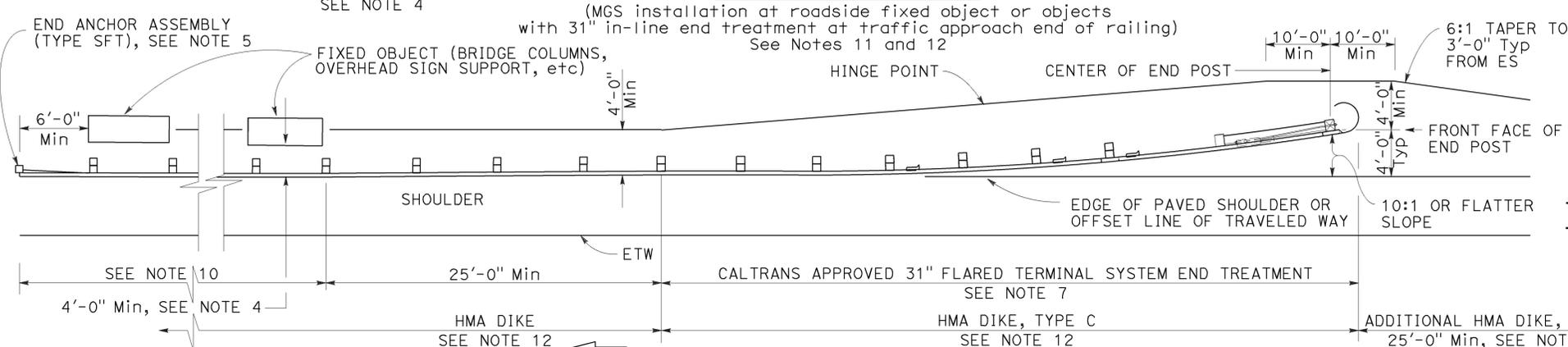
July 19, 2013  
PLANS APPROVAL DATE

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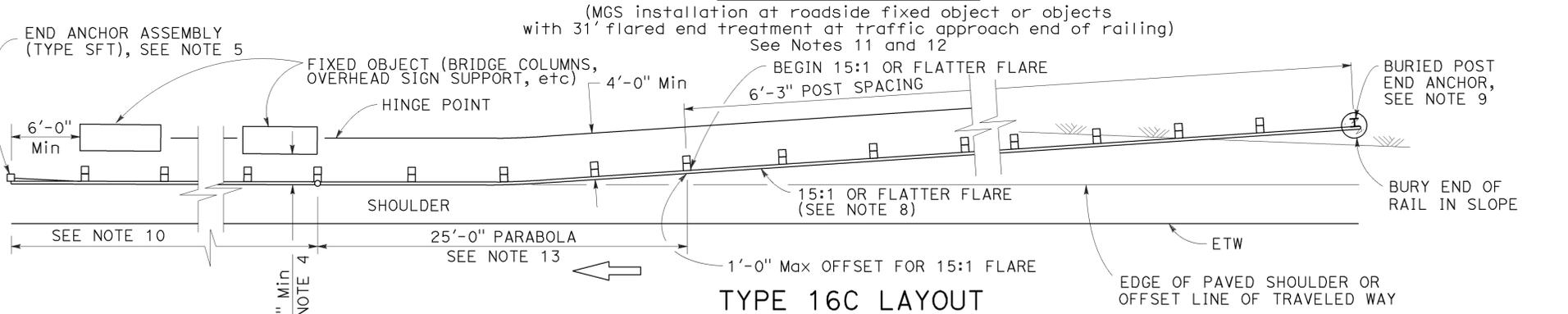
NO. C50200  
EXP. 6-30-15  
CIVIL  
STATE OF CALIFORNIA



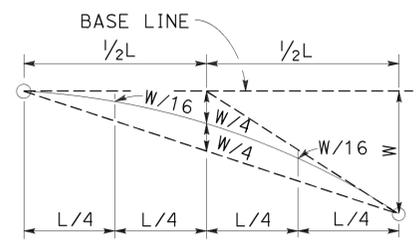
**TYPE 16A LAYOUT**



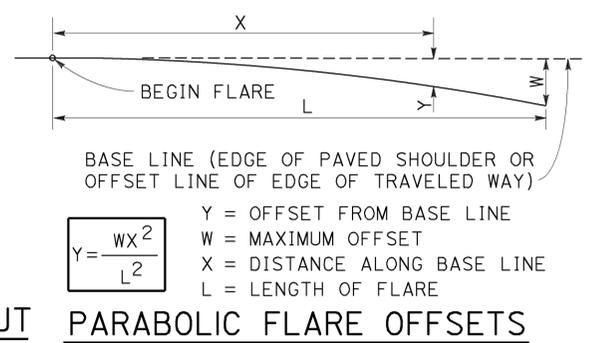
**TYPE 16B LAYOUT**



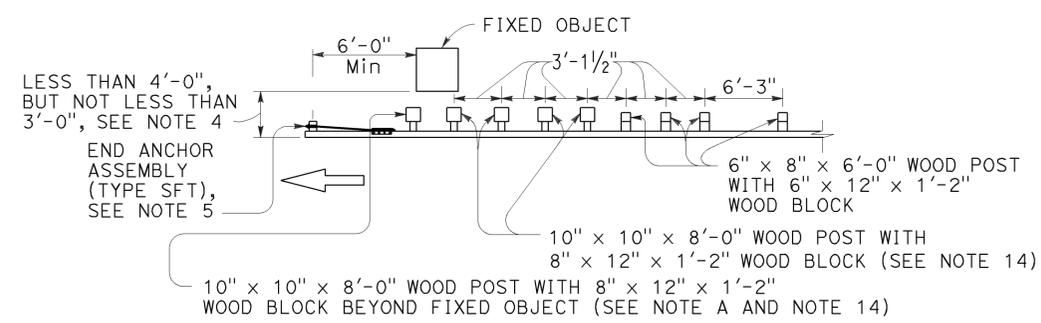
**TYPE 16C LAYOUT**



**TYPICAL PARABOLIC LAYOUT**



**PARABOLIC FLARE OFFSETS**



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

**STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT**

**NOTES:**

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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
TYPICAL LAYOUTS FOR  
ROADSIDE FIXED OBJECTS**

NO SCALE

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

**REVISED STANDARD PLAN RSP A77R3**

2010 REVISED STANDARD PLAN RSP A77R3

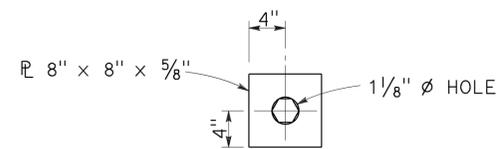
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	58	77

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

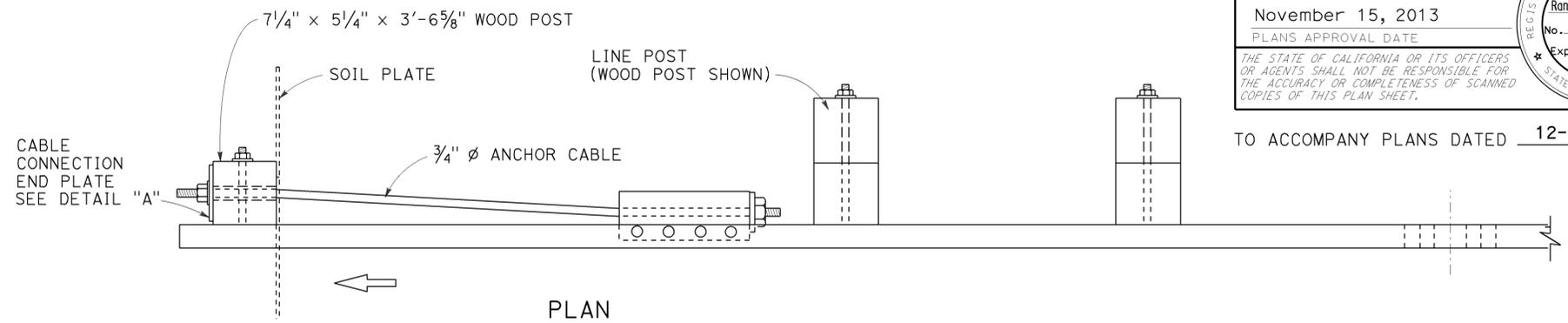
November 15, 2013  
PLANS APPROVAL DATE

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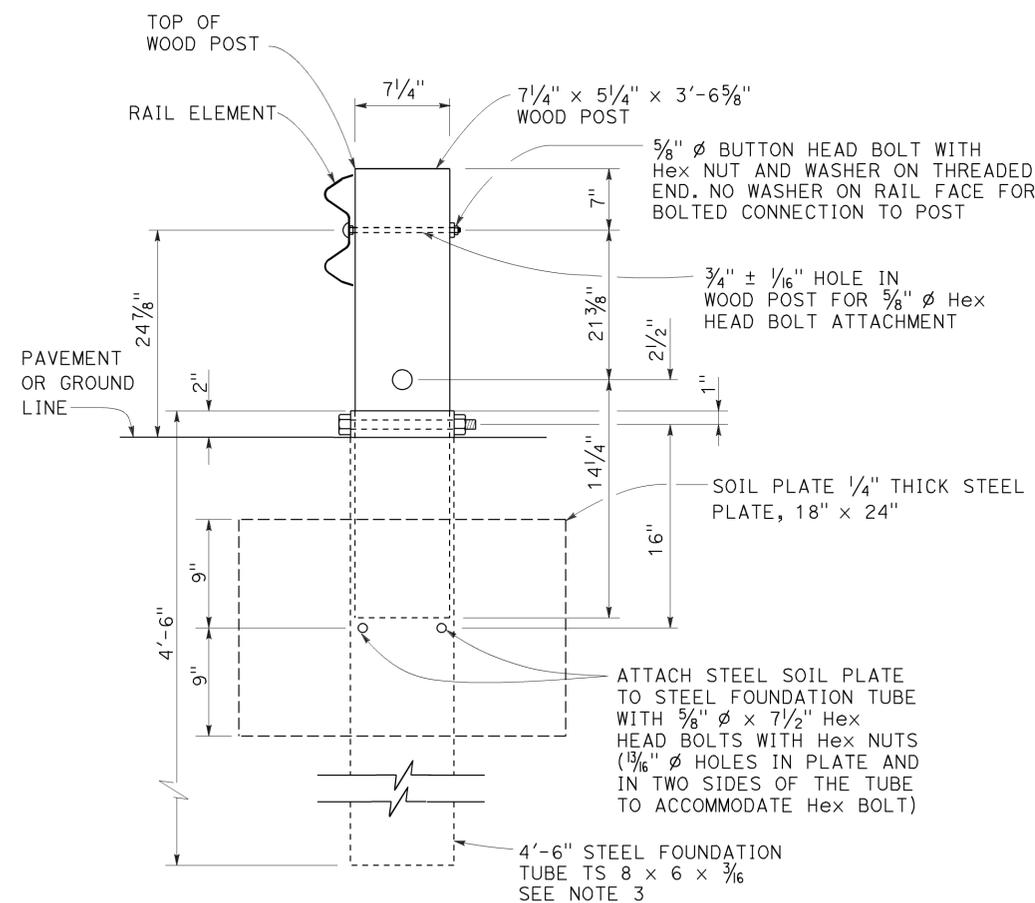
TO ACCOMPANY PLANS DATED 12-14-15



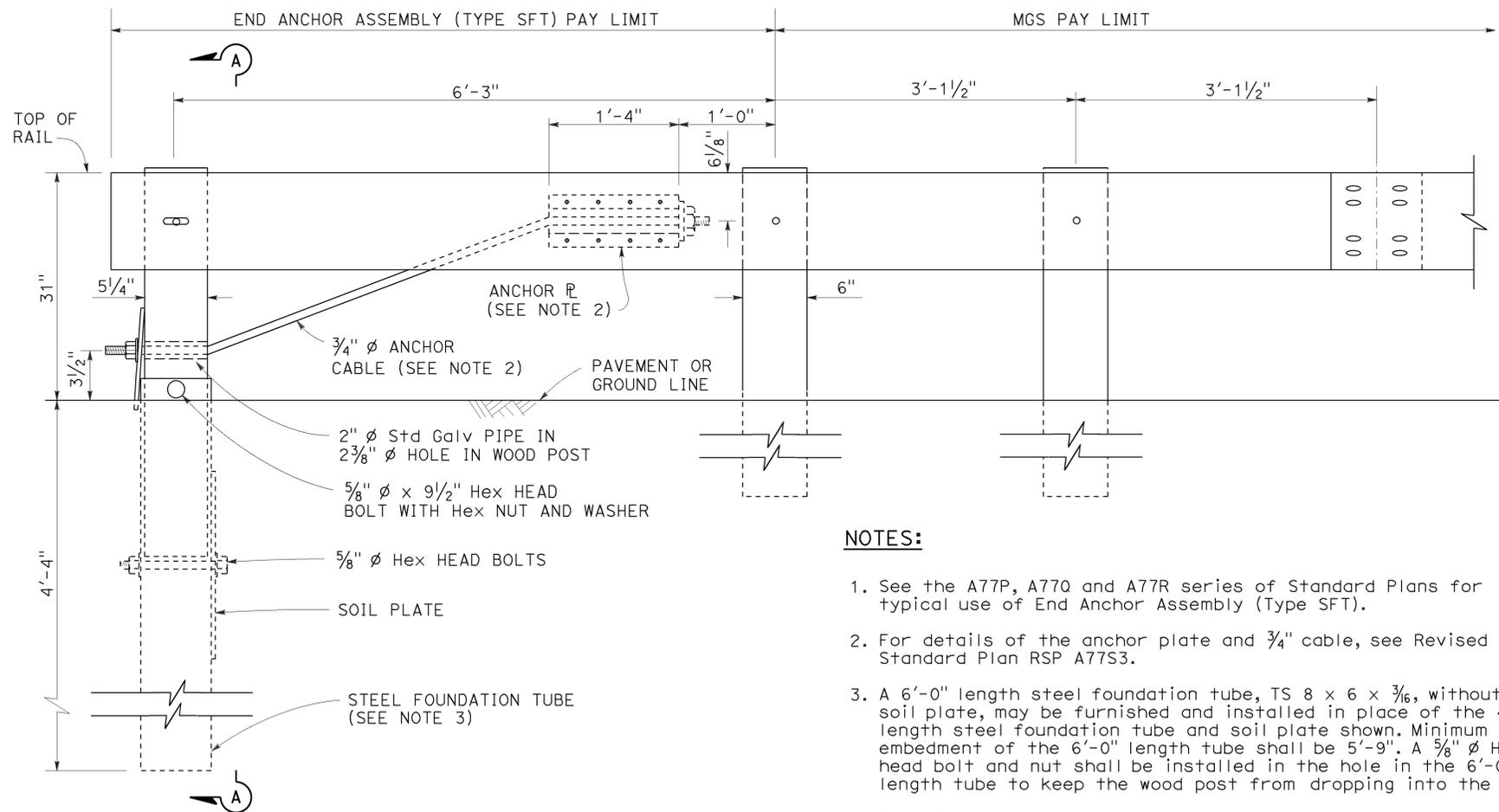
**DETAIL "A"**  
**CABLE CONNECTION**  
**END PLATE**



**PLAN**



**SECTION A-A**



**ELEVATION**

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

See Note 1

**NOTES:**

1. See the A77P, A77Q and A77R series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 3/4" cable, see Revised Standard Plan RSP A77S3.
3. A 6'-0" length steel foundation tube, TS 8 x 6 x 3/16, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" diameter hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. Install line post, steel foundation tube and soil plate in soil.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM**  
**END ANCHOR ASSEMBLY**  
**(TYPE SFT)**

NO SCALE

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

**REVISED STANDARD PLAN RSP A77S1**

2010 REVISED STANDARD PLAN RSP A77S1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	59	77

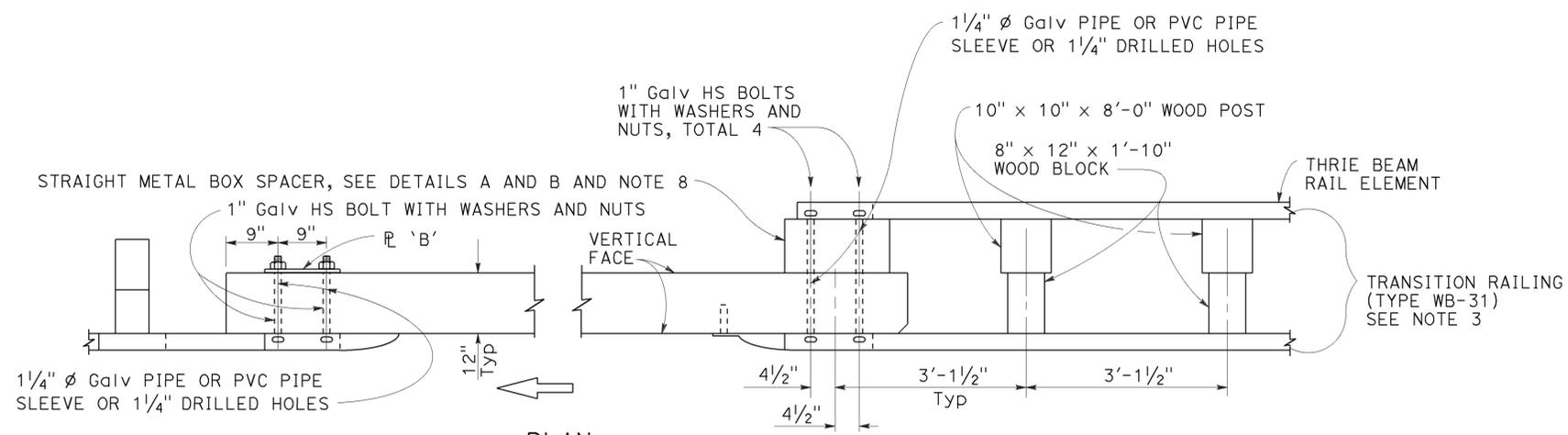
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

July 19, 2013  
PLANS APPROVAL DATE

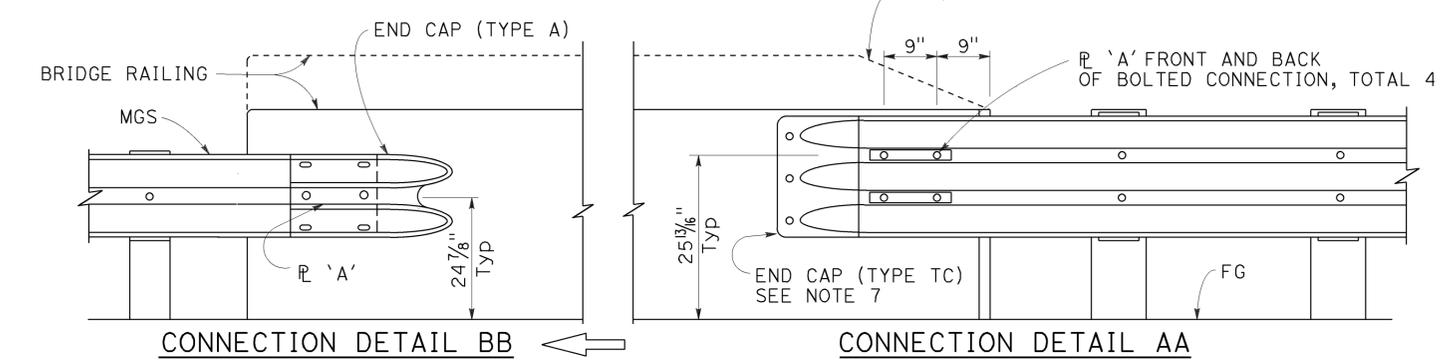
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REGISTERED PROFESSIONAL ENGINEER  
*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-15  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-14-15



**PLAN**

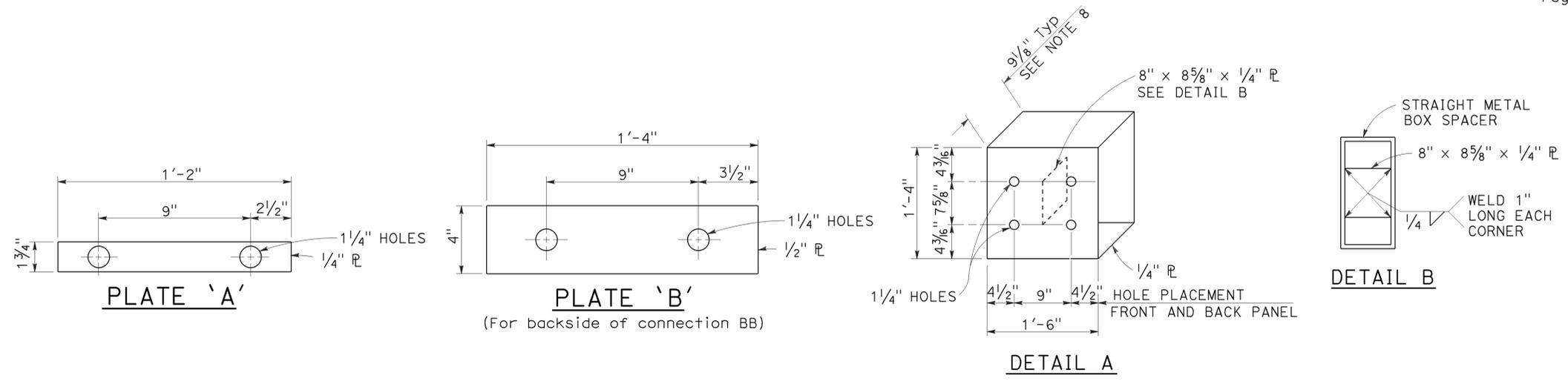


**ELEVATION**

**MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK**

**NOTES:**

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



**STRAIGHT METAL BOX SPACER**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS**  
**DETAILS No. 1**

NO SCALE

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

**REVISED STANDARD PLAN RSP A77U1**

2010 REVISED STANDARD PLAN RSP A77U1

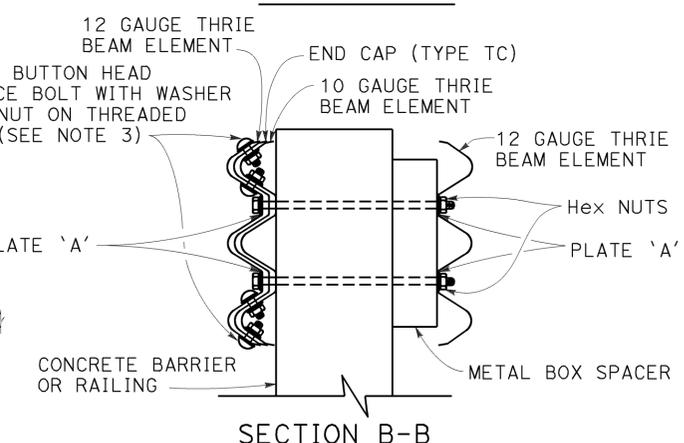
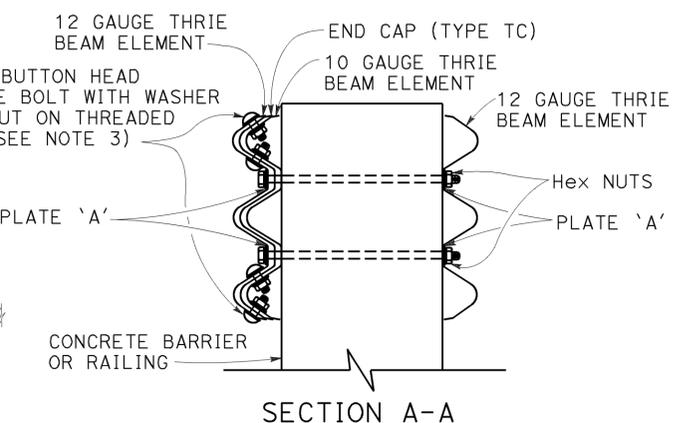
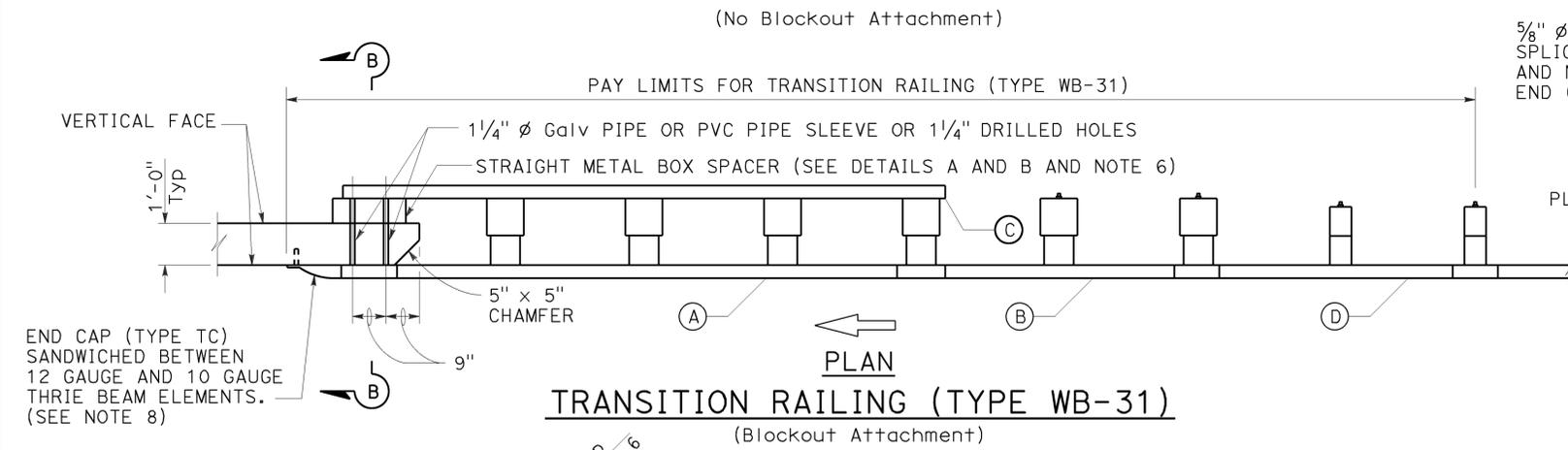
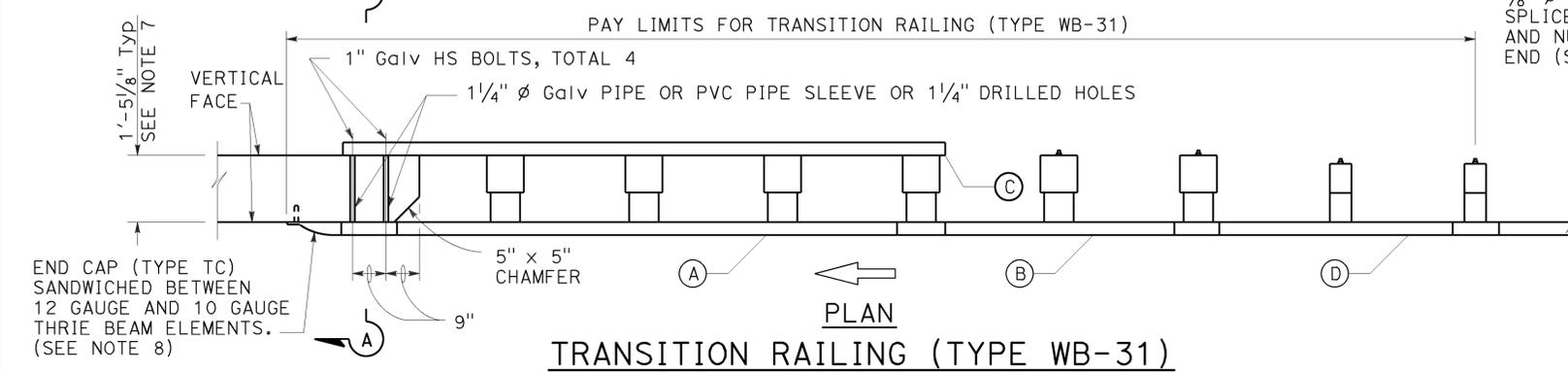
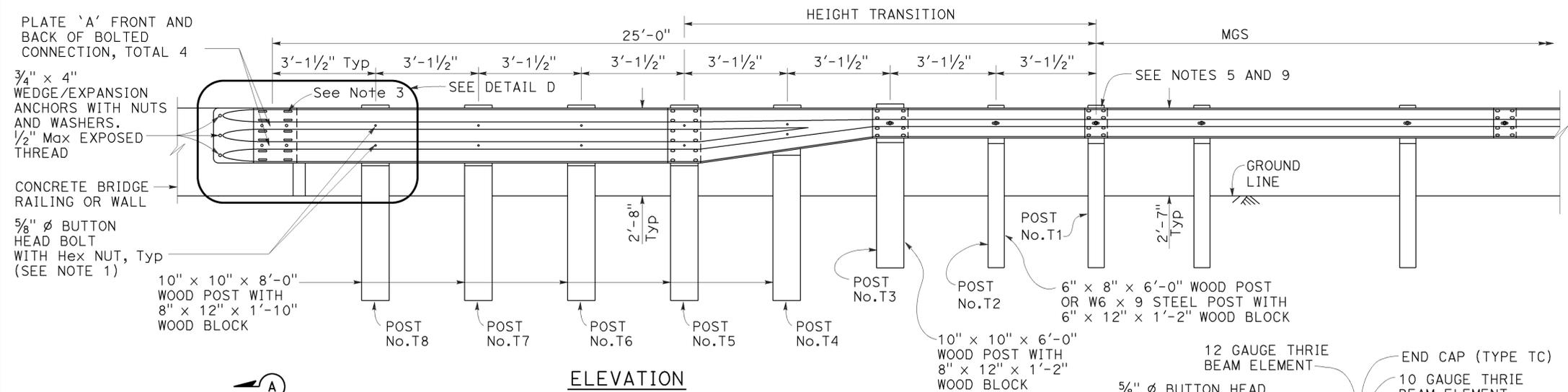
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	60	77

**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

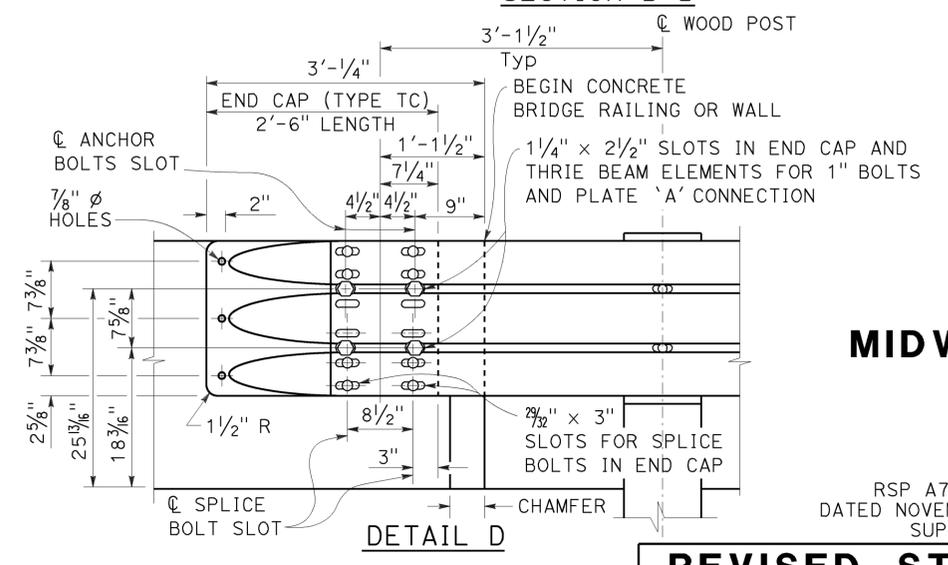
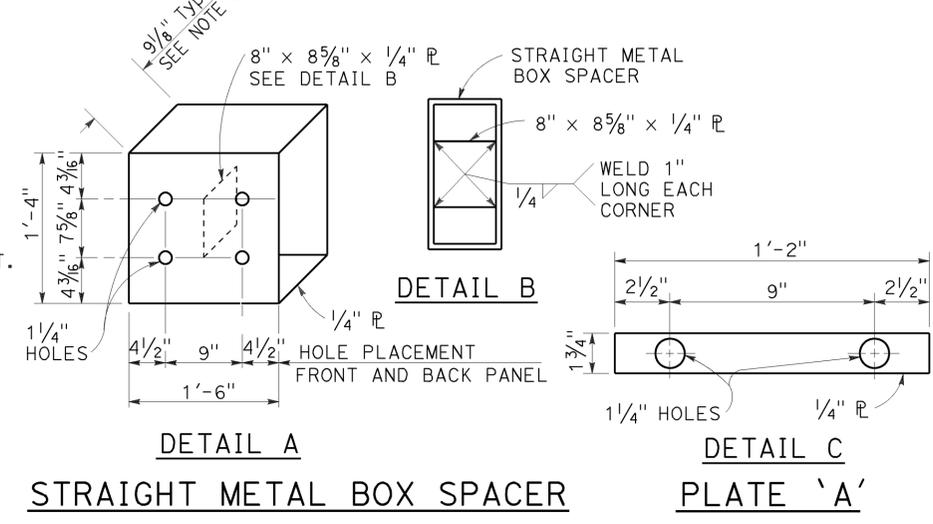
January 23, 2015  
PLANS APPROVAL DATE

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



- LEGEND:**
- (A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT).
  - (B) ONE ASYMMETRICAL 10 GAUGE "W" BEAM TO THRIE BEAM ELEMENT.
  - (C) ONE 12 GAUGE THRIE BEAM ELEMENT.
  - (D) ONE 10 GAUGE "W" BEAM RAIL ELEMENT (7'-3/2" LENGTH)
- 10 GAUGE = 0.138" THICK  
12 GAUGE = 0.108" THICK



- NOTES:** TO ACCOMPANY PLANS DATED 12-14-15
1. Use 5/8" Ø Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
  2. The nested rail elements, end cap, and 'W' beam to thrie beam element may be spliced together prior to bolting the elements to the wood post and concrete barrier or railing.
  3. Exterior splice bolt holes for rail element splices at Post No. T5 and the connection to the concrete barrier or railing shall be the standard 29/32" x 1 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1 1/4" Ø. Only the top 4 and the bottom 4 splice bolts with washers and nuts are required for rail splices at Post No. T5 and the connection to the concrete barrier or railing.
  4. The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
  5. Typically, the railing connected to Transition Railing (Type WB-31) will be either standard railing section of MGS with height transition ratio of 150:1 or a Caltrans approved 31" end treatment attached to Post No. T1.
  6. The depth of the metal box spacer varies from the 9/8" to 1 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 21 1/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1 1/2", metal plates similar to Plate 'A' are to be used as spacers.
  7. Where the width of the concrete railing or wall is greater than 17 1/8", wood blocks are to be used to fill the space created between the backside of Posts No. T5 through No. T8 and the rear thrie beam element. These wood blocks shall be 8" in width and 1'-2" in length. The dimension between the front thrie beam element and the rear thrie beam element is to match the width of the concrete railing or wall.
  8. End cap may be installed over 12 gauge and 10 gauge thrie beam elements where transition railing is installed on the departure end of bridge railing.
  9. Conform standard railing section height to 31" at Post No. T1 using height transition ratio of 150:1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
TRANSITION RAILING  
(TYPE WB-31)**

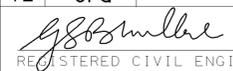
NO SCALE

RSP A77U4 DATED JANUARY 23, 2015 SUPERSEDES RSP A77U4 DATED NOVEMBER 15, 2013 AND RSP A77U4 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A77U4**

2010 REVISED STANDARD PLAN RSP A77U4

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	61	77

  
 REGISTERED CIVIL ENGINEER  
 July 19, 2013  
 PLANS APPROVAL DATE



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TO ACCOMPANY PLANS DATED 12-14-15

TABLE 1

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

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

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

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

TABLE 2

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

\* - Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph  
 \*\* - Longitudinal buffer space or flagger station spacing  
 \*\*\* - Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

TABLE 3

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

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

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## TRAFFIC CONTROL SYSTEM TABLES FOR LANE AND RAMP CLOSURES

NO SCALE

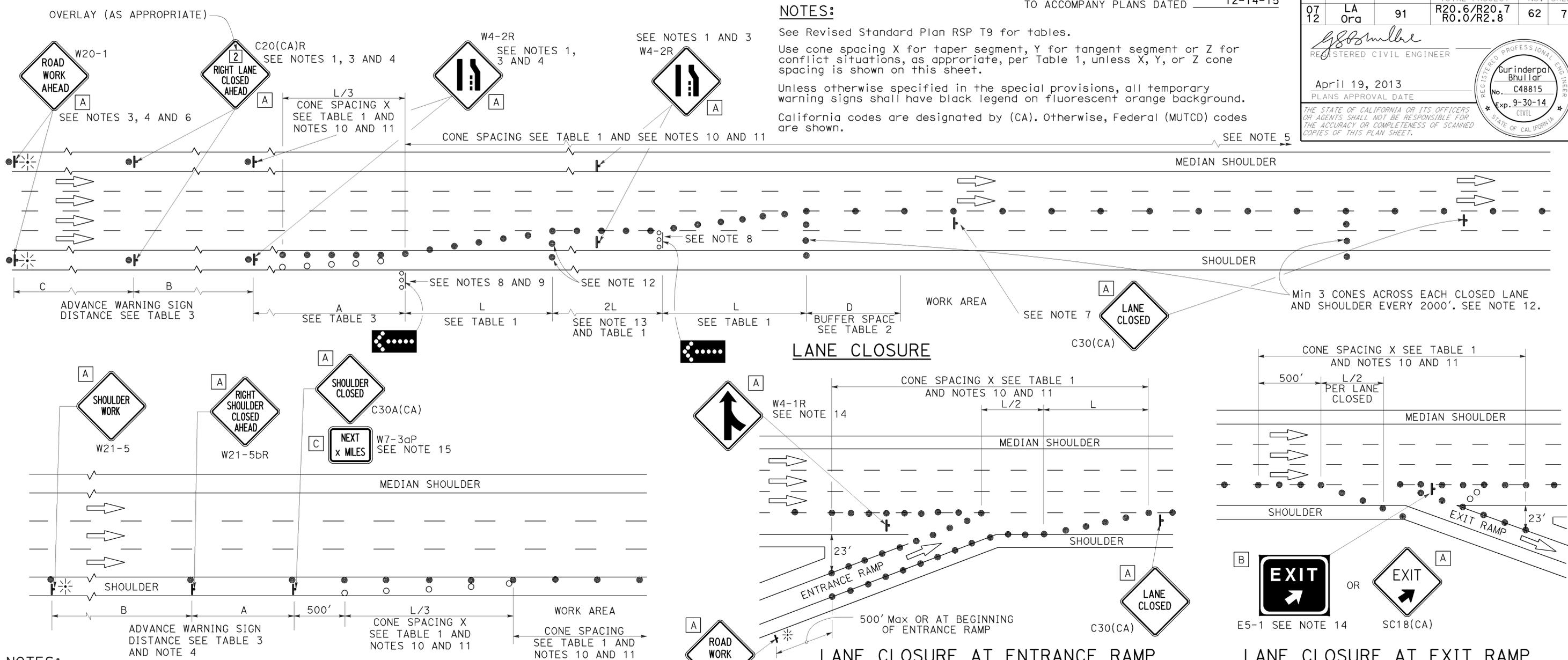
RSP T9 DATED JULY 19, 2013 SUPERSEDES RSP T9 DATED APRIL 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP T9

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	62	77

REGISTERED CIVIL ENGINEER  
 April 19, 2013  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 Gurinderpal Bhullar  
 No. C48815  
 Exp. 9-30-14  
 CIVIL  
 STATE OF CALIFORNIA



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

- SHOULDER CLOSURE**
- If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT \_\_\_\_\_ MILES", use a C20(CA) sign for the first advance warning sign.
  - Place a C30(CA) sign every 2000' throughout length of lane closure.
  - One flashing arrow sign for each lane closed. The flashing arrow signs shall be Type I.
  - A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at top of crest vertical curve or on a horizontal curve.
  - All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
  - Portable delineators, placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.

- Unless otherwise specified in the special provisions, a minimum of 3 cones shall be placed transversely across each closed lane and shoulder at each location where a taper across a traffic lane ends and every 2000' as shown on the "Lane Closure" detail. Two Type II barricades may be used instead of the 3 cones. The transverse alignment of the cones or barricades on the closed shoulder may be shifted from the transverse alignment to provide access to the work.
- Unless otherwise specified in the special provisions, the 2L tangent shown along lane lines shall be used between the L tapers required for each closed traffic lane.
- Unless otherwise specified in the special provisions, the E5-1 or SC18(CA) signs shall be used as shown.
- A W7-3aP "NEXT \_\_\_\_\_ MILES" plaque must be used if the shoulder closure extends beyond the distance that can be perceived by road users.

**LEGEND**

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

**SIGN PANEL SIZE (Min)**

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

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON FREEWAYS AND EXPRESSWAYS

NO SCALE

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

### REVISED STANDARD PLAN RSP T10

2010 REVISED STANDARD PLAN RSP T10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
0712	LA Ora	91	R20.6/R20.7 R0.0/R2.8	63	77

REGISTERED CIVIL ENGINEER  
 April 19, 2013  
 PLANS APPROVAL DATE

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

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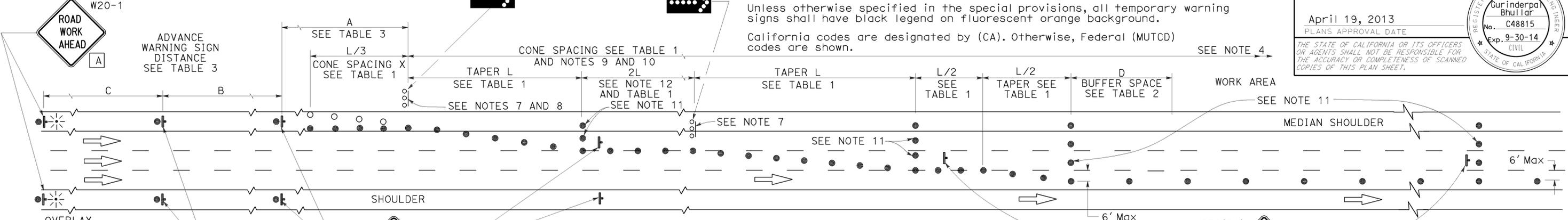
**NOTES:** See Revised Standard Plan RSP T9 for tables.

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

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

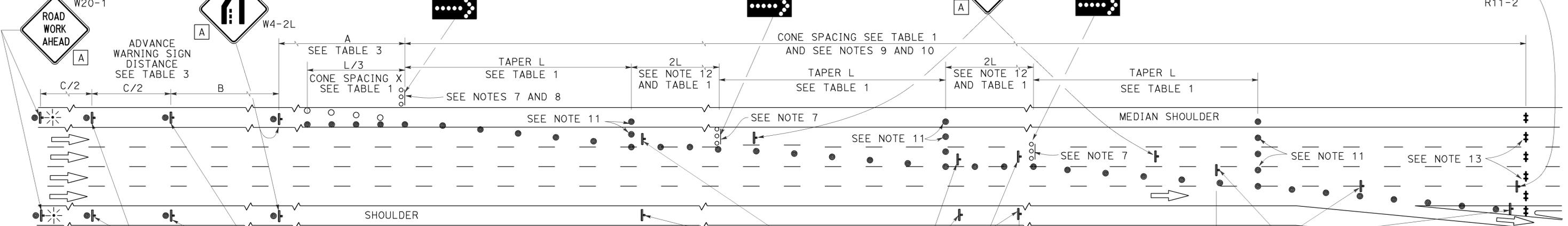
California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

SEE NOTES 3 AND 5



**LANE CLOSURE WITH PARTIAL SHOULDER USE**

SEE NOTES 3 AND 5



**COMPLETE CLOSURE**

**NOTES:**

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

**SIGN PANEL SIZE (Min)**

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

**LEGEND**

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

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL SYSTEM  
 FOR LANE CLOSURES ON  
 FREEWAYS AND EXPRESSWAYS**

NO SCALE

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

**REVISED STANDARD PLAN RSP T10A**

2010 REVISED STANDARD PLAN RSP T10A

# TYPICAL RAMP CLOSURES

## SIGN PANEL SIZE (Min)

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

## LEGEND

- TRAFFIC CONE
- † TEMPORARY TRAFFIC CONTROL SIGN
- ‡ BARRICADES
- ⚡ PORTABLE FLASHING BEACON

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Orca	91	R20.6/R20.7 R0.0/R2.8	64	77

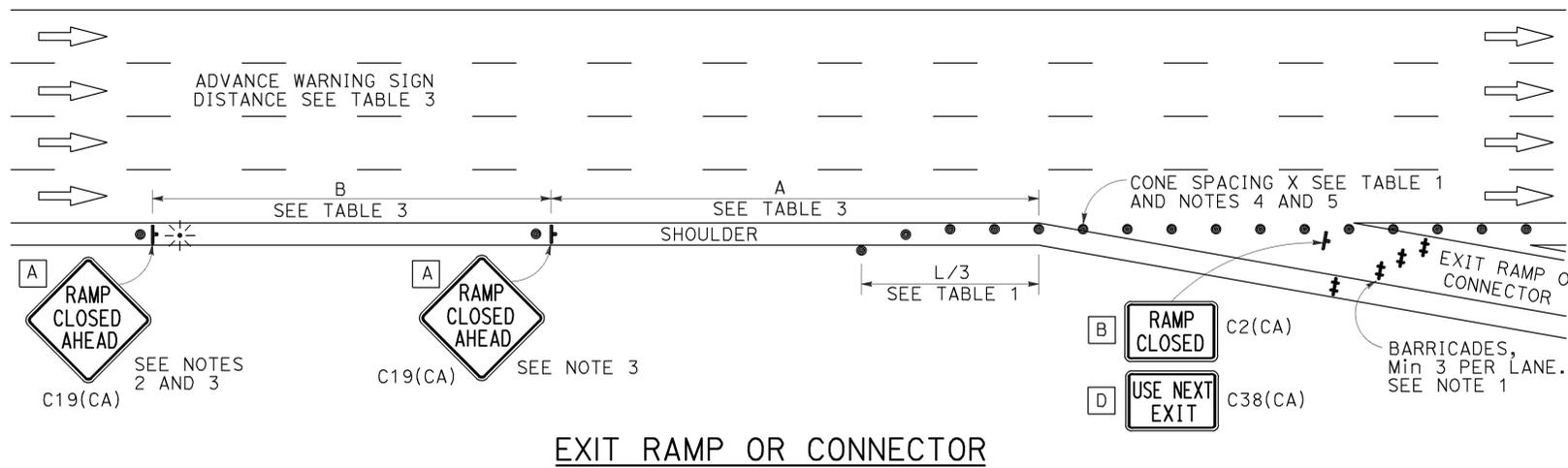
*Gurinderpal Bhullar*  
 REGISTERED CIVIL ENGINEER  
 April 19, 2013  
 PLANS APPROVAL DATE  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

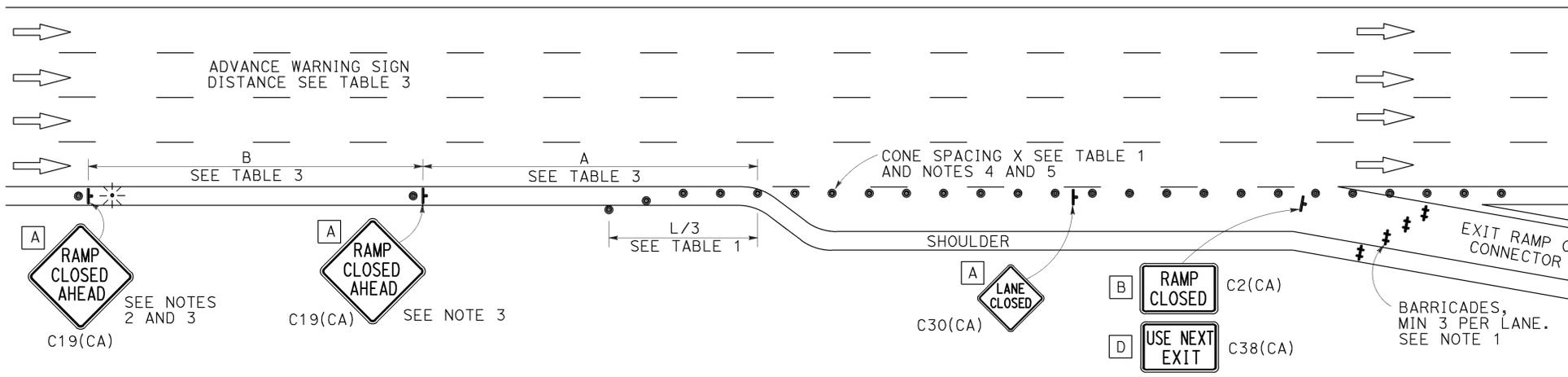
TO ACCOMPANY PLANS DATED 12-14-15

## NOTES:

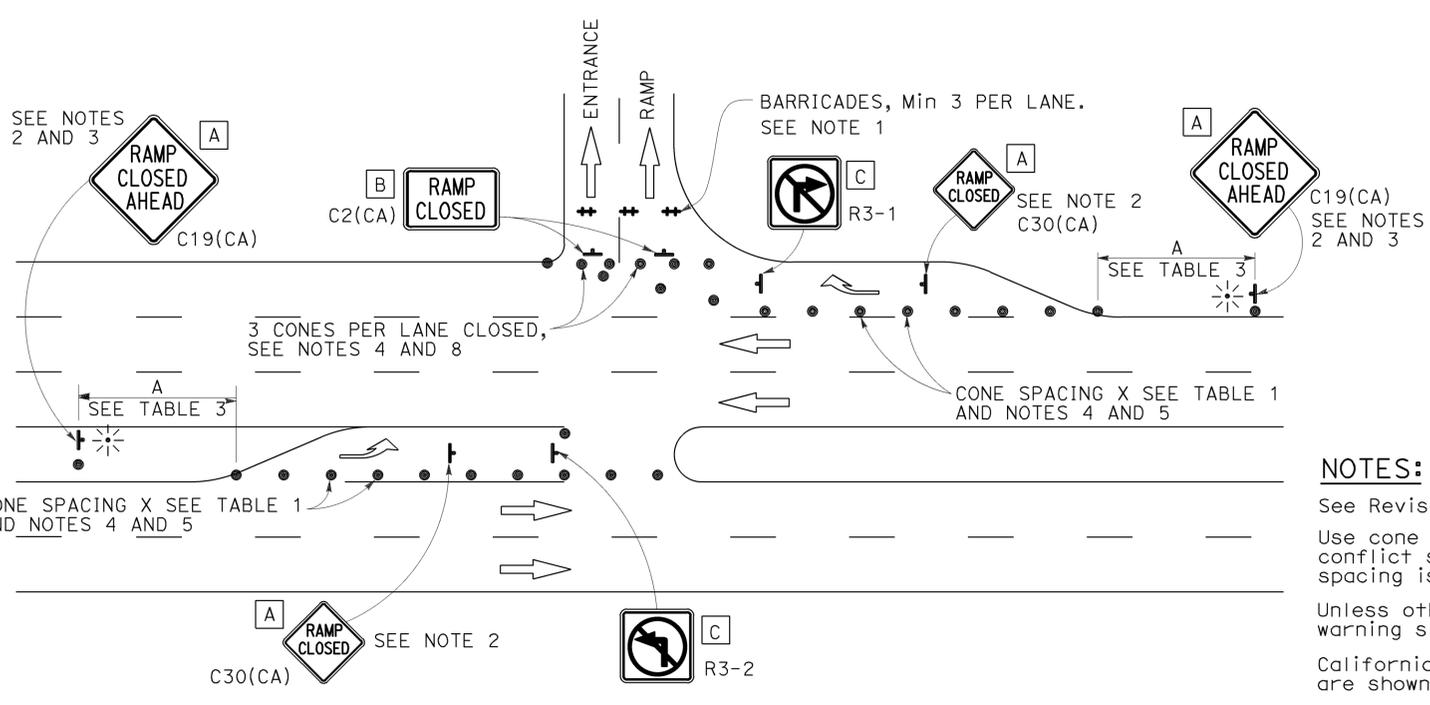
- Barricades shall be Type I, II, or III for closures lasting one week or less and Type III for closures lasting longer than one week.
- In addition to placing the C19(CA) "RAMP CLOSED AHEAD" and C30(CA) "RAMP CLOSED" signs, black on orange overlay plates with the word "CLOSED" may be mounted, as directed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



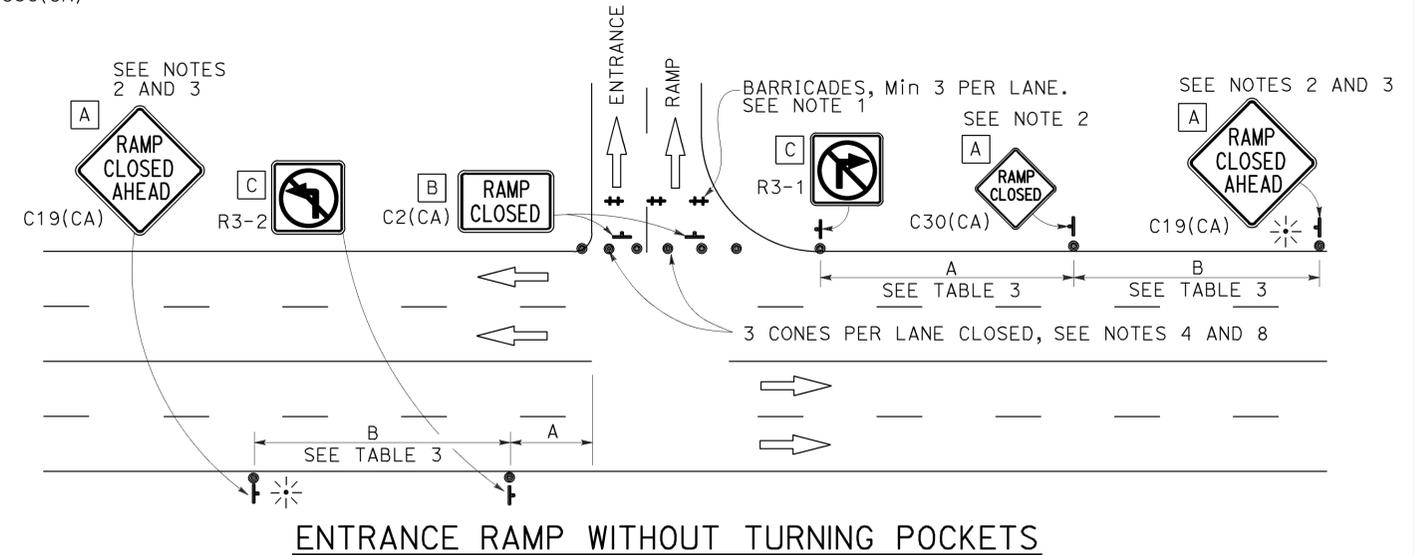
EXIT RAMP OR CONNECTOR



EXIT RAMP OR CONNECTOR WITH ADDITIONAL LANE



ENTRANCE RAMP WITH TURNING POCKETS



ENTRANCE RAMP WITHOUT TURNING POCKETS

## NOTES:

- See Revised Standard Plan RSP T9 for tables.
- Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.
- Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.
- California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**TRAFFIC CONTROL SYSTEM  
 FOR RAMP CLOSURE**  
 NO SCALE

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

**REVISED STANDARD PLAN RSP T14**

2010 REVISED STANDARD PLAN RSP T14

**LEGEND:**

<b>AB</b>	ABANDON. IF APPLIED TO CONDUIT, REMOVE CONDUCTORS
<b>BC</b>	INSTALL PULL BOX IN EXISTING CONDUIT RUN
<b>BP</b>	PEDESTRIAN BARRICADE, TYPE AS INDICATED ON PLAN
<b>CB</b>	INSTALL CONDUIT INTO EXISTING PULL BOX
<b>CC</b>	CONNECT NEW AND EXISTING CONDUIT. REMOVE EXISTING CONDUCTORS AND INSTALL CONDUCTORS AS INDICATED
<b>CF</b>	CONDUIT TO REMAIN FOR FUTURE USE. REMOVE CONDUCTORS. INSTALL PULL TAPE
<b>DH</b>	DETECTOR HANDHOLE
<b>FA</b>	FOUNDATION TO BE ABANDONED
<b>IS</b>	INSTALL SIGN ON SIGNAL MAST ARM
<b>NS</b>	NO SLIP BASE ON STANDARD
<b>PEC</b>	PHOTOELECTRIC CONTROL
<b>PEU</b>	PHOTOELECTRIC UNIT
<b>RC</b>	EQUIPMENT OR MATERIAL TO BE REMOVED AND BECOME THE PROPERTY OF THE CONTRACTOR
<b>RE</b>	REMOVE ELECTROLIER, FUSES AND BALLAST. TAPE ENDS OF CONDUCTORS
<b>RL</b>	RELOCATE EQUIPMENT
<b>RR</b>	REMOVE AND REUSE EQUIPMENT
<b>RS</b>	REMOVE AND SALVAGE EQUIPMENT
<b>SC</b>	SPLICE NEW TO EXISTING CONDUCTORS
<b>SD</b>	SERVICE DISCONNECT
<b>TSP</b>	TELEPHONE SERVICE POINT

**ABBREVIATIONS**

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

**MISCELLANEOUS ELECTROLIERS**

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

**NOTES:**

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

**STANDARD ELECTROLIER**

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	65	77
 REGISTERED ELECTRICAL ENGINEER Theresa Gabriel No. E15129 Exp. 6-30-16 ELECTRICAL STATE OF CALIFORNIA					
October 30, 2015 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

TO ACCOMPANY PLANS DATED 12-14-15

**SOFFIT AND WALL-MOUNTED LUMINAIRES**

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

**NOTE:**

Arrow indicates "street side" of luminaire.

COMMONLY USED SYMBOLS FOR UNITED STATES CUSTOMARY UNITS OF MEASUREMENT:

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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)**

NO SCALE

RSP ES-1A DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-1A DATED JULY 19, 2013 AND STANDARD PLAN ES-1A DATED MAY 20, 2011 - PAGE 425 OF THE STANDARD PLANS BOOK DATED 2010.

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

2010 REVISED STANDARD PLAN RSP ES-1A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	66	77

*Theresa Gabriel*  
REGISTERED ELECTRICAL ENGINEER

October 30, 2015  
PLANS APPROVAL DATE

Theresa  
Aziz Gabriel  
No. E15129  
Exp. 6-30-16  
ELECTRICAL  
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 12-14-15

**CONDUIT**

**SIGNAL EQUIPMENT**

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

NEW	EXISTING	
		PEDESTRIAN SIGNAL HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD (WITH BACKPLATE AND 3-SECTIONS: RED, YELLOW AND GREEN)
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
		MODIFICATIONS OF BASIC SYMBOL: "L" INDICATES ALL NON-ARROW SECTIONS LOUVERED "LG" INDICATES LOUVERED GREEN SECTION ONLY "PV" INDICATES ALL 12" SECTIONS PROGRAMMED VISIBILITY "8" INDICATES ALL 8" SECTIONS (ONLY WHEN SPECIFIED)

**SIGNAL EQUIPMENT Cont**

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

**SERVICE EQUIPMENT**

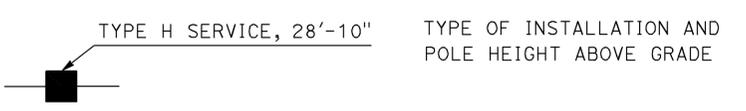
NEW	EXISTING	
---OH---	---oh---	OVERHEAD LINES
		WOOD POLE, "U" INDICATES UTILITY OWNED
		POLE GUY WITH ANCHOR
		UTILITY TRANSFORMER - GROUND MOUNTED
		SERVICE EQUIPMENT ENCLOSURE TYPE. DOOR INDICATES FRONT OF ENCLOSURE
		TELEPHONE DEMARCATION CABINET

		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW AND GREEN LEFT ARROW SECTIONS
		VEHICLE SIGNAL HEAD CONSISTING OF RED AND YELLOW SECTIONS WITH AN UP GREEN ARROW SECTION
		VEHICLE SIGNAL HEAD (5 SECTION) CONSISTING OF RED, YELLOW AND GREEN SECTIONS WITH YELLOW AND GREEN RIGHT ARROW SECTIONS
		TYPE 15TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		STANDARD WITH LUMINAIRE AND SIGNAL MAST ARMS AND ATTACHED VEHICLE SIGNAL HEADS
		TYPE 1 STANDARD WITH ATTACHED VEHICLE SIGNAL HEADS
		STANDARD WITH A SIGNAL MAST ARM, ATTACHED VEHICLE SIGNAL HEADS AND INTERNALLY ILLUMINATED STREET NAME SIGN
		CONTROLLER ASSEMBLY. DOOR INDICATES FRONT OF CABINET

**NOTES:**

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

**POLE-MOUNTED SERVICE DESIGNATION**



**FLASHING BEACON**

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

**ILLUMINATED OVERHEAD SIGN**

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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(LEGEND AND ABBREVIATIONS)**

NO SCALE

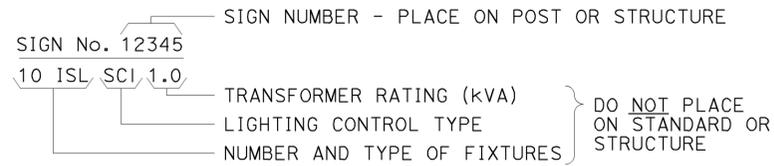
RSP ES-1B DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-1B DATED JULY 19, 2013 AND STANDARD PLAN ES-1B DATED MAY 20, 2011 - PAGE 426 OF THE STANDARD PLANS BOOK DATED 2010.

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

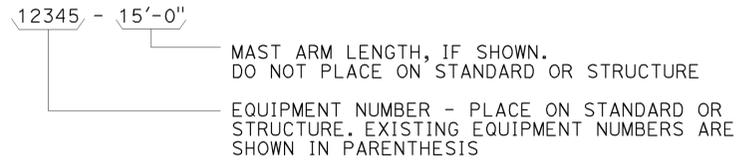
2010 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

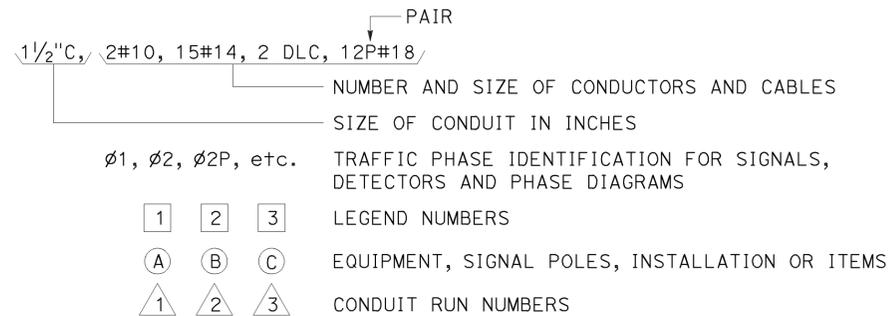
#### ILLUMINATED SIGN IDENTIFICATION NUMBER:



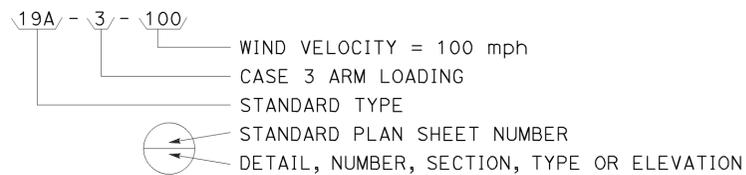
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



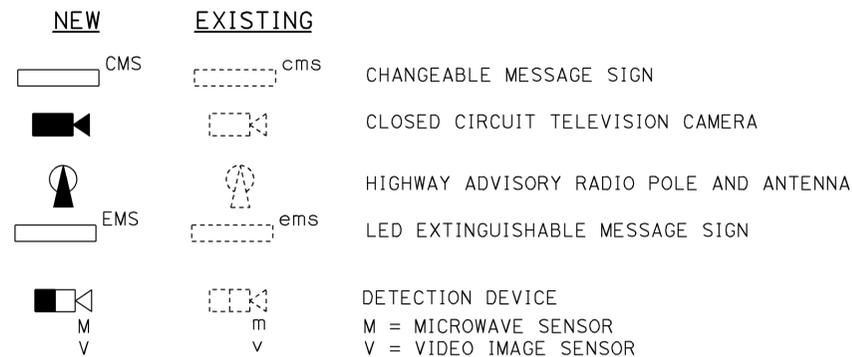
#### CONDUIT AND CONDUCTOR IDENTIFICATION:



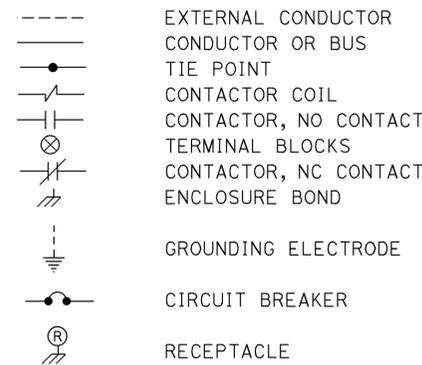
#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



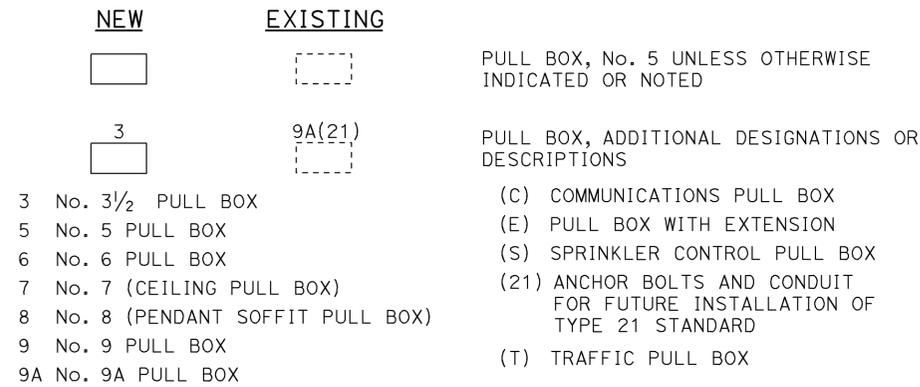
### MISCELLANEOUS EQUIPMENT



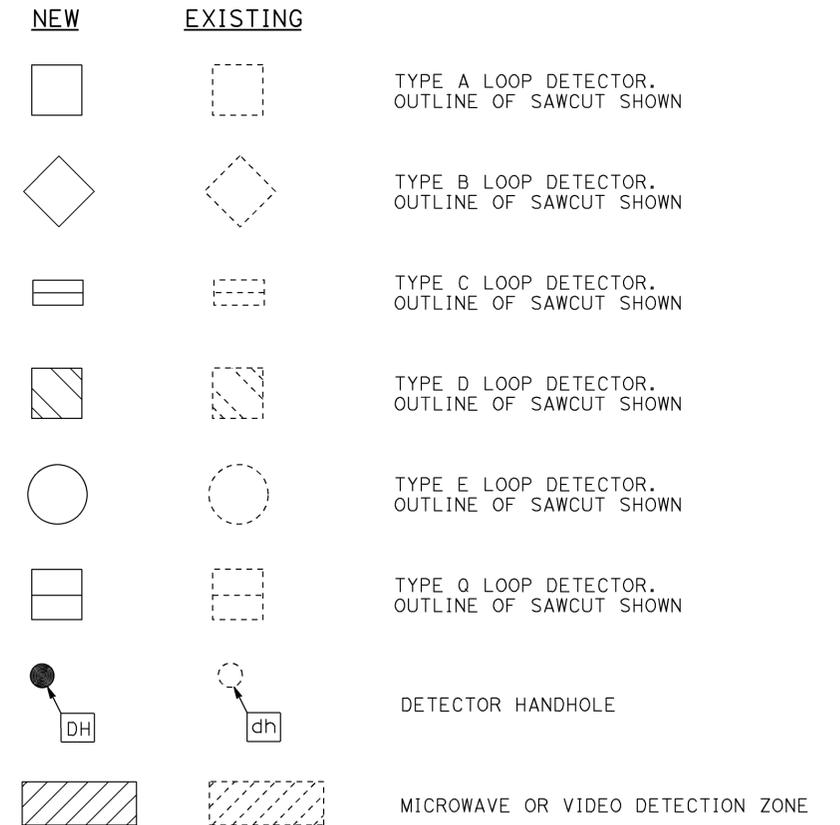
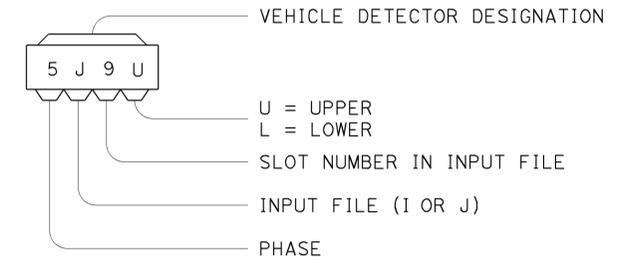
### WIRING DIAGRAM LEGEND



### PULL BOXES



### VEHICLE DETECTORS



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

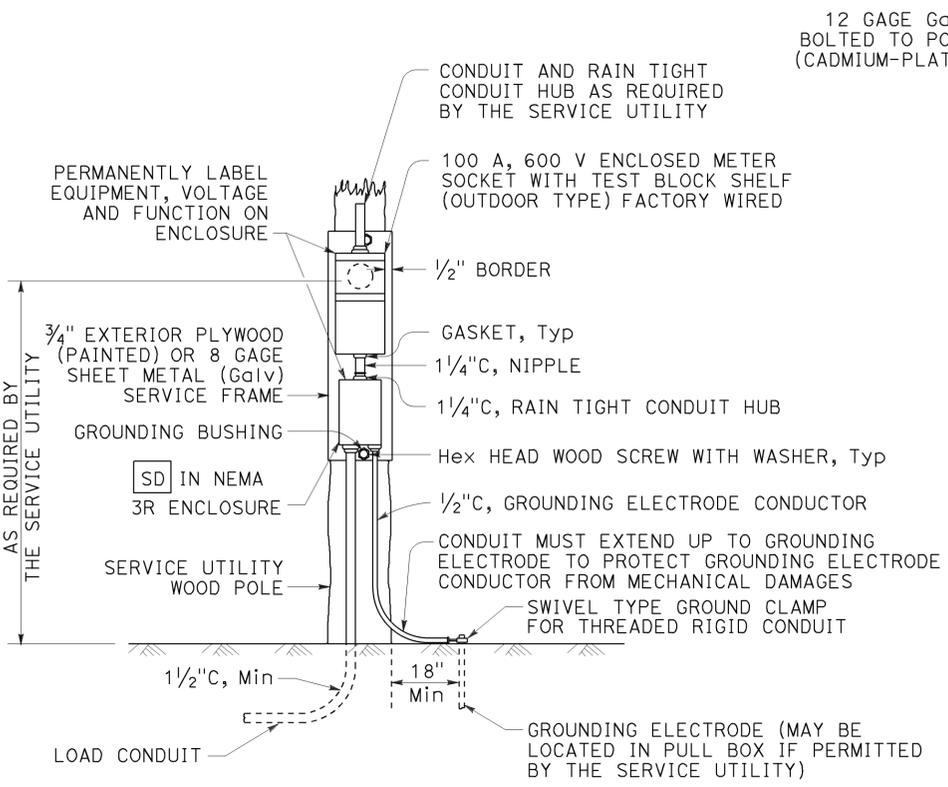
NO SCALE

RSP ES-1C DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-1C DATED JULY 19, 2013 AND STANDARD PLAN ES-1C DATED MAY 20, 2011 - PAGE 427 OF THE STANDARD PLANS BOOK DATED 2010.

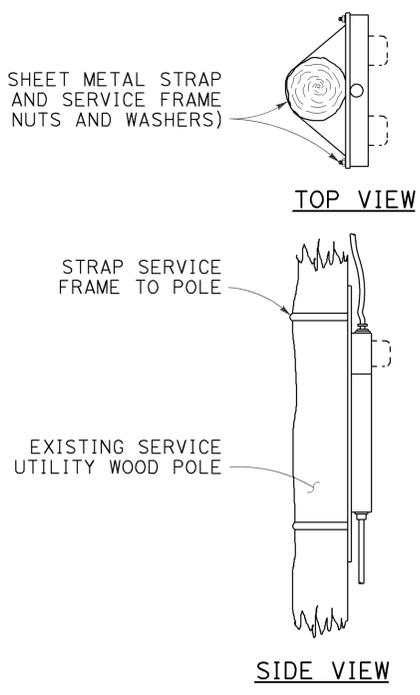
**REVISED STANDARD PLAN RSP ES-1C**

2010 REVISED STANDARD PLAN RSP ES-1C

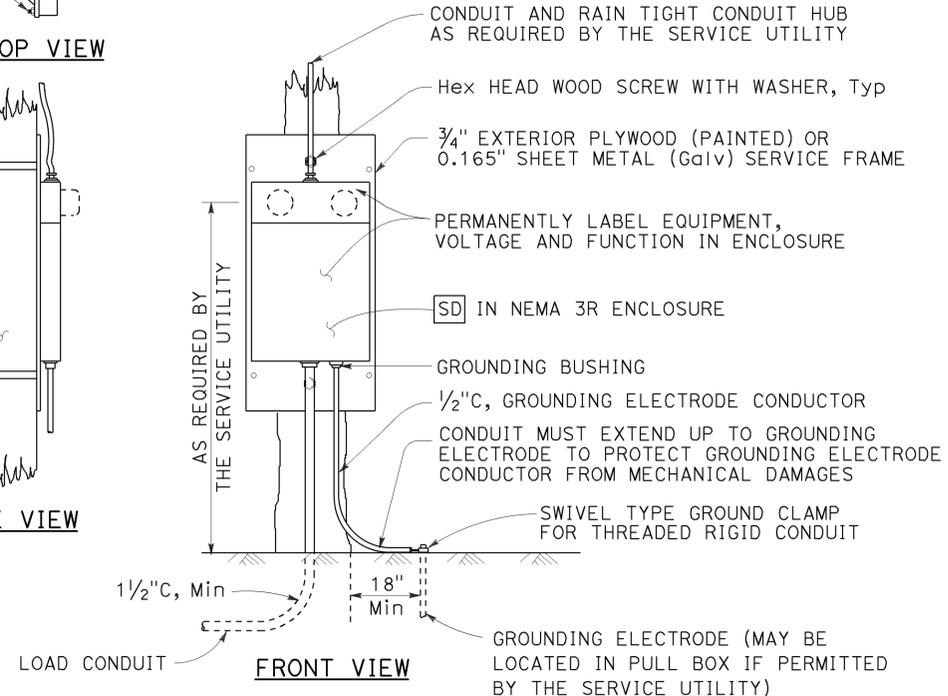
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	68	77
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER October 30, 2015 PLANS APPROVAL DATE <small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
TO ACCOMPANY PLANS DATED <u>12-14-15</u>					



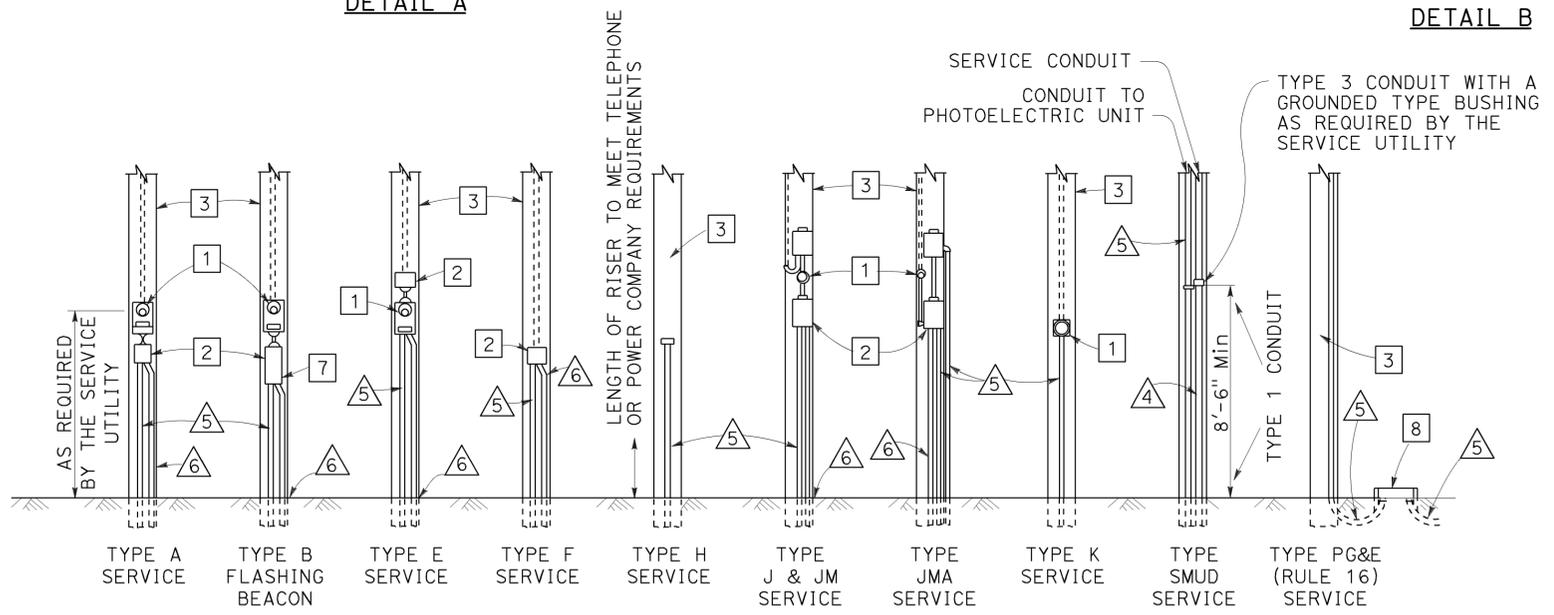
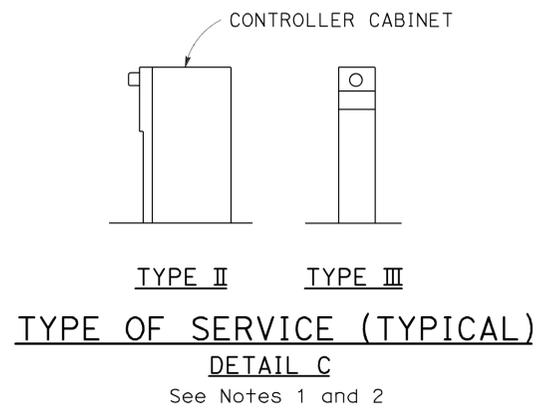
**TYPE SCE-1**  
**DETAIL A**



**TYPE SCE-2**  
**DETAIL B**

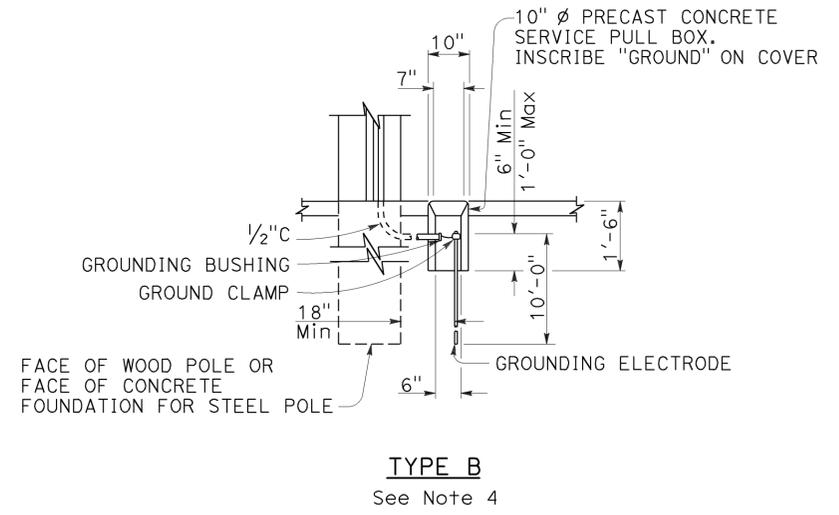
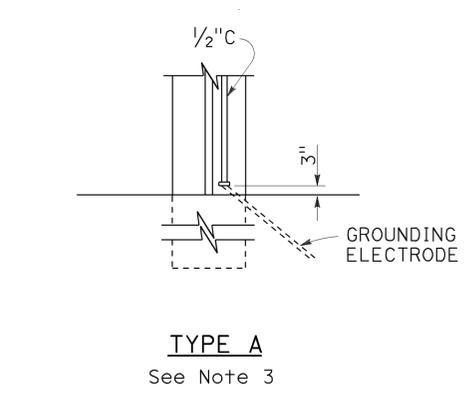


**FRONT VIEW**



- LEGEND:**
- 1 METER SOCKET.
  - 2 SERVICE ENCLOSURE WITH A MINIMUM 60 A RATED MAIN CIRCUIT BREAKER, UNLESS OTHERWISE SHOWN.
  - 3 A. UTILITY OWNED POLE. THE SERVICE UTILITY WILL FURNISH AND INSTALL REQUIRED SERVICE RISER, PEU WITH CONDUCTORS AND OTHER EQUIPMENT AS NEEDED.  
B. STATE OWNED POLE. THE CONTRACTOR SHALL FURNISH AND INSTALL REQUIRED SERVICE RISER AND EQUIPMENT.
  - 4 2" C, SERVICE CONDUIT MUST HAVE A GROUNDED TYPE BUSHING INSTALLED AT UPPER END OF THE METALLIC POLE RISER CONDUIT. A GROUNDING CONDUCTOR MUST BE ATTACHED TO THE BUSHING, CARRIED THROUGH THE CONDUIT RUN AND ATTACHED TO THE SERVICE EQUIPMENT ENCLOSURE'S GROUNDING ELECTRODE.
  - 5 CONDUIT, LENGTH AND SIZE AS REQUIRED.
  - 6 1/2" C, 1#6. SEE DETAIL E.
  - 7 FLASHING BEACON CONTROL ASSEMBLY.
  - 8 SERVICE PULL BOX, No. 5 UNLESS OTHERWISE NOTED, FURNISHED AND INSTALLED BY THE CONTRACTOR. SERVICE UTILITY SHALL DETERMINE THE EXACT LOCATION.

**POLE MOUNTED SERVICE INSTALLATIONS**  
**DETAIL D**



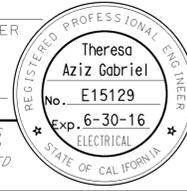
**SERVICE GROUNDING**  
**DETAIL E**

- NOTES:**
- Type II service equipment enclosure mounted on the side of a controller cabinet.
  - Type III complete free-standing service equipment enclosure.
  - Ground clamp and required fittings must be accessible. Conduit must extend to protect grounding electrode conductor from mechanical damage.
  - Use where service utility requires 18" clearance between grounding electrode and the pole or service equipment enclosure. Installation shown is for sidewalk or paved areas. In unpaved areas, omit special service pull box and locate ground clamp above ground or locate ground clamp in nearest pull box.

RSP ES-2A DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-2A DATED MAY 20, 2011 - PAGE 428 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP ES-2A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	69	77
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER October 30, 2015 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



TO ACCOMPANY PLANS DATED 12-14-15

NOTES:

1. 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.
2. 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.
3. 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.
4. 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.
5. Type III-AR and Type III-BR service equipment enclosure 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.

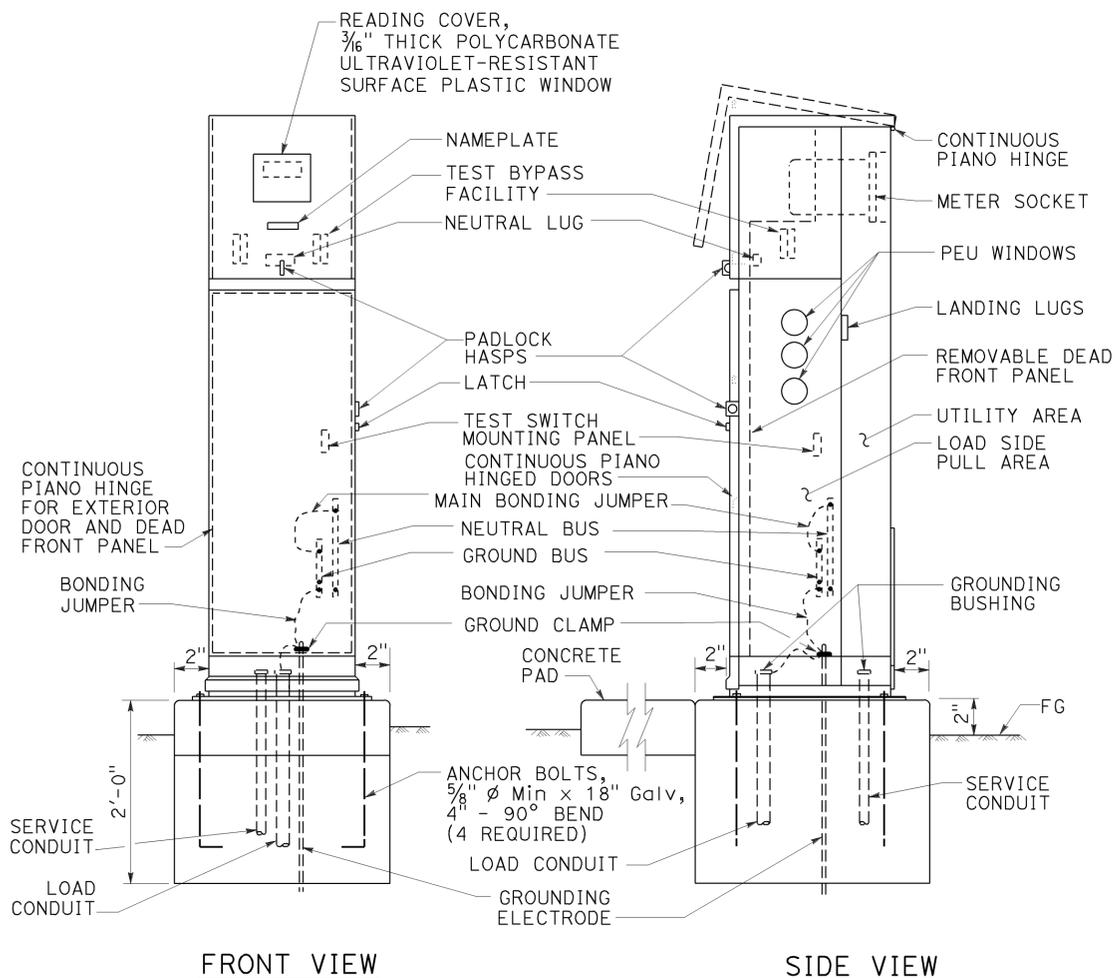
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(SERVICE EQUIPMENT ENCLOSURE  
NOTES TYPE III SERIES)**

NO SCALE

RSP ES-2C DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-2C DATED MAY 20, 2011 - PAGE 430 OF THE STANDARD PLANS BOOK DATED 2010.

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

2010 REVISED STANDARD PLAN RSP ES-2C

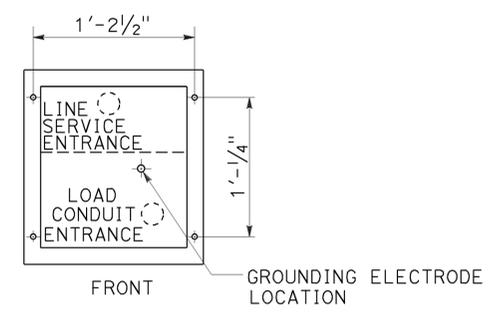


FRONT VIEW

SIDE VIEW

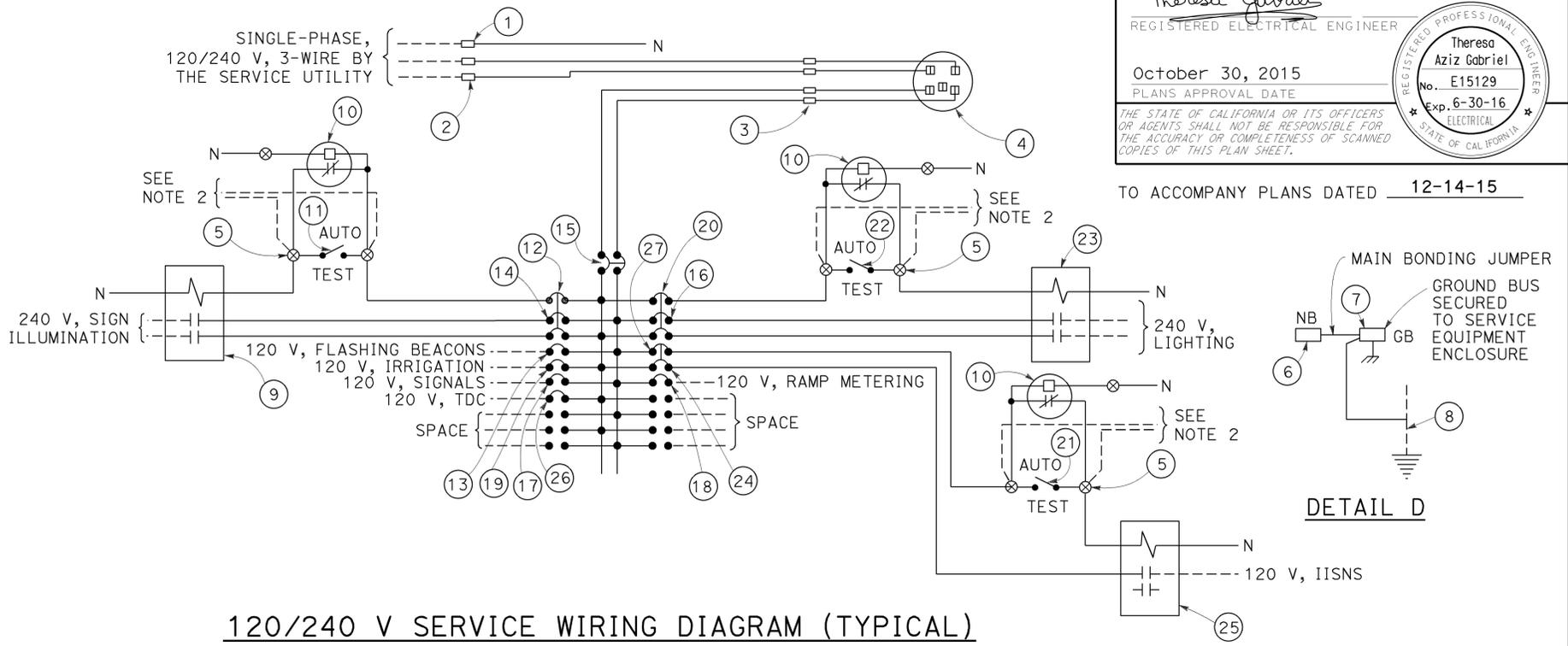
**TYPE III-BF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)**

DETAIL A



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

DETAIL B



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

DETAIL C

**TYPE III-B SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)**

ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
①	NEUTRAL LUG		⑭	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
②	LANDING LUG		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	15 A, 1P, TEST SWITCH	IISNS TEST SWITCH
⑨	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	㉒	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
⑩	PHOTOELECTRIC UNIT (NOTE 4)	PEU	㉓	60 A, 2P, NO 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, 2P, NO CONTACTOR	IISNS
⑬	15 A, 120 V, 1P, CB	FLASHING BEACON	㉖	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
			㉗	15 A, 120 V, 1P, CB	IISNS CONTROL

**NOTES:**

- 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 ① and ⑥ shall be isolated from the service equipment enclosure.
- Type I photoelectric control shall be used unless otherwise indicated on the plans.
- Item ⑫, ⑳ and ㉗ shall be ganged operated CB.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS  
(SERVICE EQUIPMENT ENCLOSURE AND  
TYPICAL WIRING DIAGRAM,  
TYPE III-B SERIES)**

NO SCALE

RSP ES-2E DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-2E DATED MAY 20, 2011 - PAGE 432 OF THE STANDARD PLANS BOOK DATED 2010.

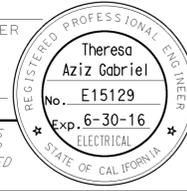
**REVISED STANDARD PLAN RSP ES-2E**

2010 REVISED STANDARD PLAN RSP ES-2E

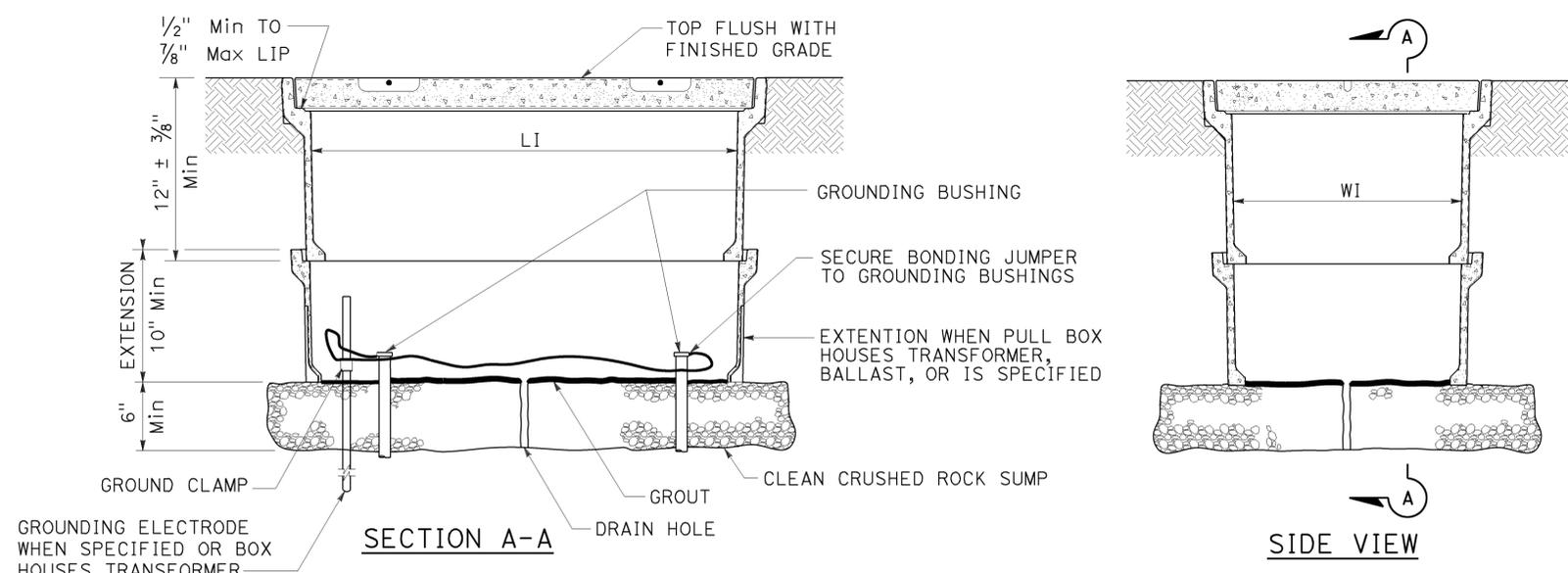


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	72	77

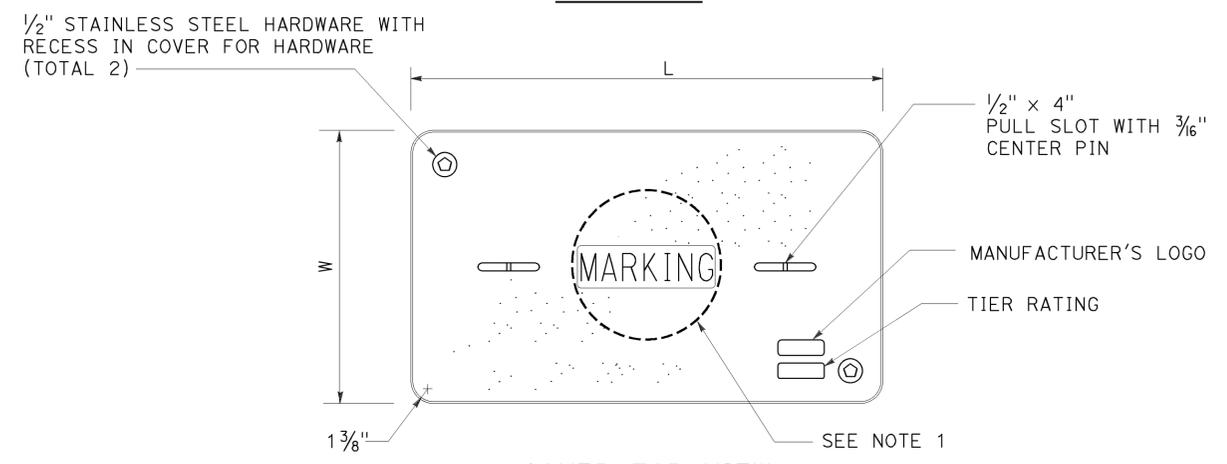
Theresa Gabriel  
 REGISTERED ELECTRICAL ENGINEER  
 October 30, 2015  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



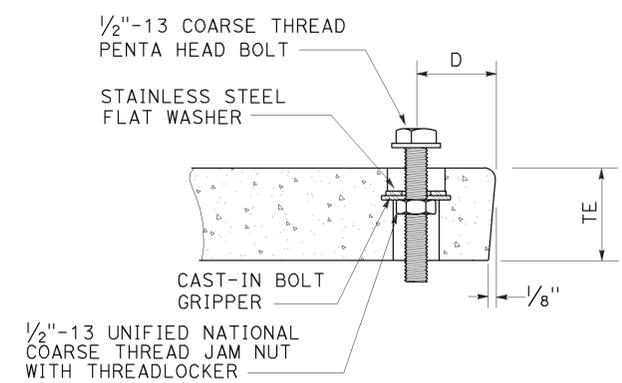
TO ACCOMPANY PLANS DATED 12-14-15



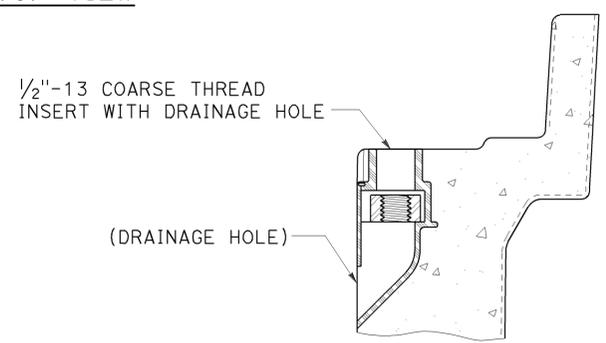
**INSTALLATION DETAILS**  
**DETAIL A**



**COVER TOP VIEW**



**TYPICAL COVER CAPTIVE BOLT**  
**OR SIMILAR**



**TYPICAL THREADED INSERT**  
**OR SIMILAR**

**NOTES:**

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

DIMENSION TABLE										
PULL BOX	PULL BOX			COVER						
	MINIMUM DEPTH BOX	MINIMUM DEPTH EXTENSION	MINIMUM WEIGHT	LI Min	WI Min	TE	D	L	W	MINIMUM WEIGHT
No. 3 1/2	12"	N/A	40 lb	1' - 3"	9"	1 3/4"	1 3/4"	1'-3 1/4" - 1'-3 3/8"	10" - 10 1/8"	30 lb
No. 5	12"	10"	55 lb	1' - 8"	11"	2"	1 3/4"	1'-11 1/4"	1'-1 3/4"	60 lb
No. 6	12"	10"	70 lb	2' - 4 1/4"	1' - 3 1/4"	2"	2"	2'-6 1/2"	1'-5 1/2"	85 lb

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS**  
**(NON-TRAFFIC PULL BOX)**  
NO SCALE

RSP ES-8A DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-8A DATED JULY 19, 2013 AND RSP ES-8A DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-8A**

2010 REVISED STANDARD PLAN RSP ES-8A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	73	77

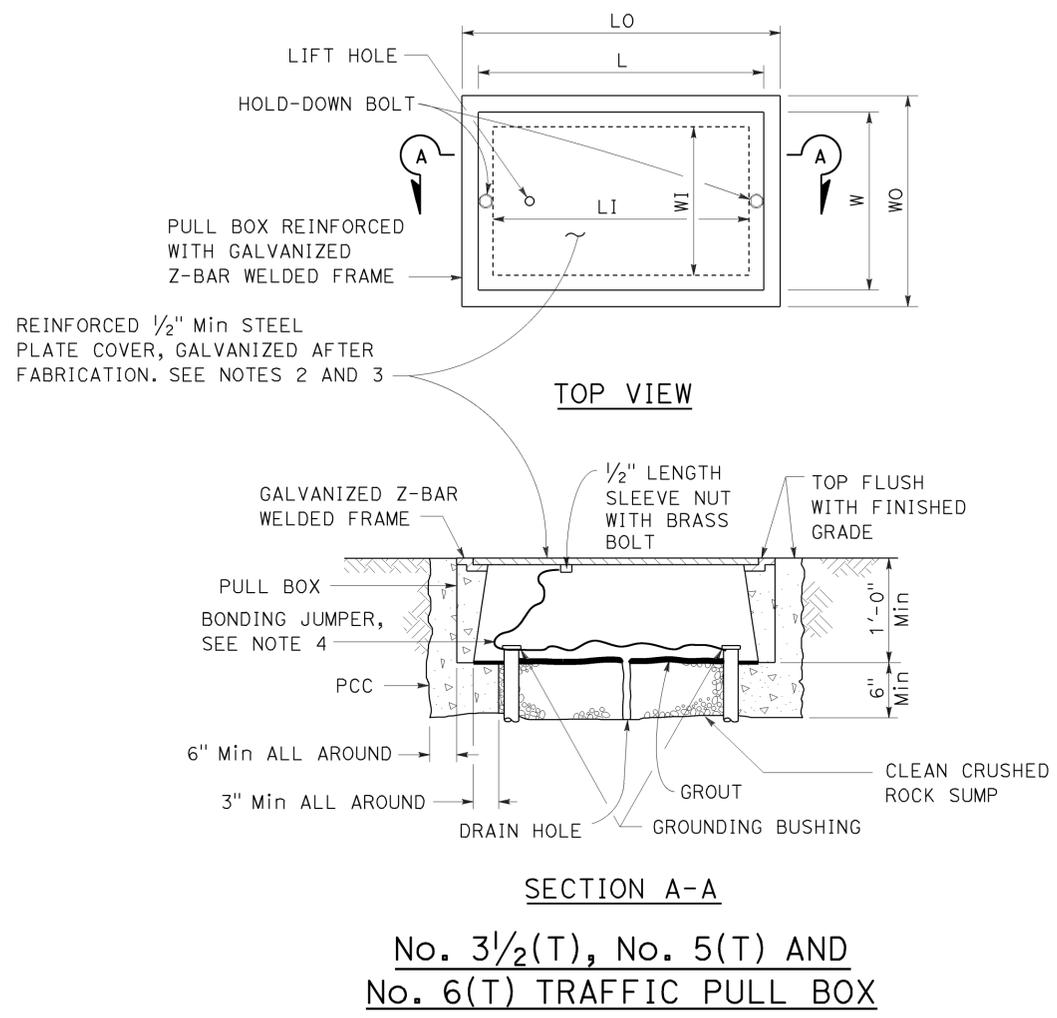
Theresa Gabriel  
REGISTERED ELECTRICAL ENGINEER

October 30, 2015  
PLANS APPROVAL DATE

Theresa Aziz Gabriel  
No. E15129  
Exp. 6-30-16  
ELECTRICAL  
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 12-14-15



**NOTES:**

- Traffic pull box shall be provided with steel cover and special concrete footing. Steel cover shall have embossed non-skid pattern.
- Steel reinforcing shall be as regularly used in the standard products of the respective manufacturer.
- Pull box covers shall be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" Sprinkler control circuits, 50 V or less; "CALTRANS" On all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service.
  - No. 3 1/2(T) pull box.
    - "SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
    - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
  - No. 5(T) or 6(T) pull box.
    - "TRAFFIC SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
    - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
    - "LIGHTING-HIGH VOLTAGE" - Lighting or sign lighting circuits where voltage is above 600 V.
    - "IRRIGATION" - Circuits to irrigation controller 120 V or more.
    - "RAMP METER" - Ramp meter circuits.
    - "COUNT STATION" - Count or speed monitor circuits.
    - "COMMUNICATION" - Communication circuits.
    - "TOS COMMUNICATIONS" - TOS communications line.
    - "TOS POWER" - TOS power.
    - "TDC POWER" - Telephone demarcation cabinet power.
    - "CCTV" - Closed circuit television circuits.
    - "TMS" - Traffic monitoring station circuits.
    - "CMS" - Changeable message sign circuits.
    - "HAR" - Highway advisory radio circuits.
    - "BOOSTER PUMP" - Booster pump circuit.
- Bonding jumper for metal covers shall be 3' long, minimum.
- The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be 1/8" greater.
- Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within 1/8".

PULL BOX	PULL BOX				COVER			
	MINIMUM * THICKNESS	MINIMUM DEPTH BOX AND EXTENSION	LO	LI	WO	WI	L **	W **
No. 3 1/2(T)	1 1/2"	1'-0"	1'-10" - 1'-11"	1'-5" - 1'-6 1/2"	1'-3" - 1'-4"	10" - 1'-0"	1'-8" - 1'-8 1/2"	1'-1" - 1'-2"
No. 5(T)	1 3/4"	1'-0"	2'-5" - 2'-6"	2'-0" - 2'-1"	1'-6" - 1'-7"	1'-1" - 1'-2"	2'-3" - 2'-3 1/2"	1'-4" - 1'-4 1/2"
No. 6(T)	2"	1'-0"	2'-11" - 3'-1"	2'-6" - 2'-7"	1'-10" - 2'-0"	1'-5" - 1'-6"	2'-9" - 2'-9 1/2"	1'-8" - 1'-8 1/2"

\* EXCLUDING CONDUIT WEB \*\* TOP DIMENSION

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(TRAFFIC PULL BOX)**  
NO SCALE

RSP ES-8B DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-8B DATED JULY 19, 2013 AND RSP ES-8B DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-8B**

2010 REVISED STANDARD PLAN RSP ES-8B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	74	77

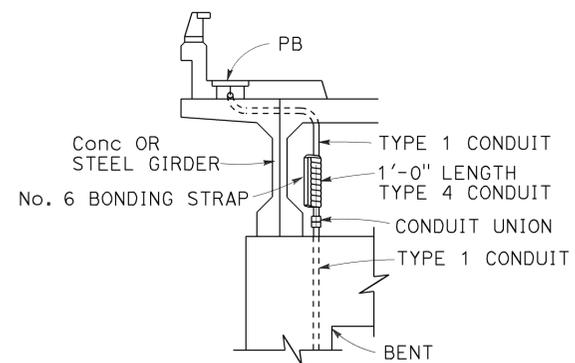
*Jagwinder & Co*  
REGISTERED ELECTRICAL ENGINEER

October 30, 2015  
PLANS APPROVAL DATE

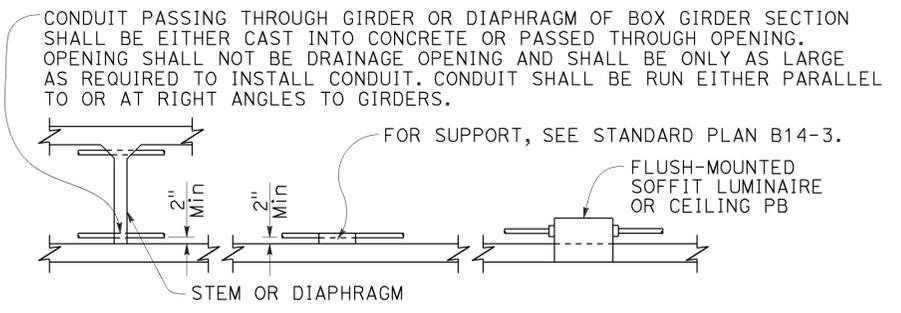
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
Jagwinder S. Gill  
No. E18551  
Exp. 12-31-16  
ELECTRICAL  
STATE OF CALIFORNIA

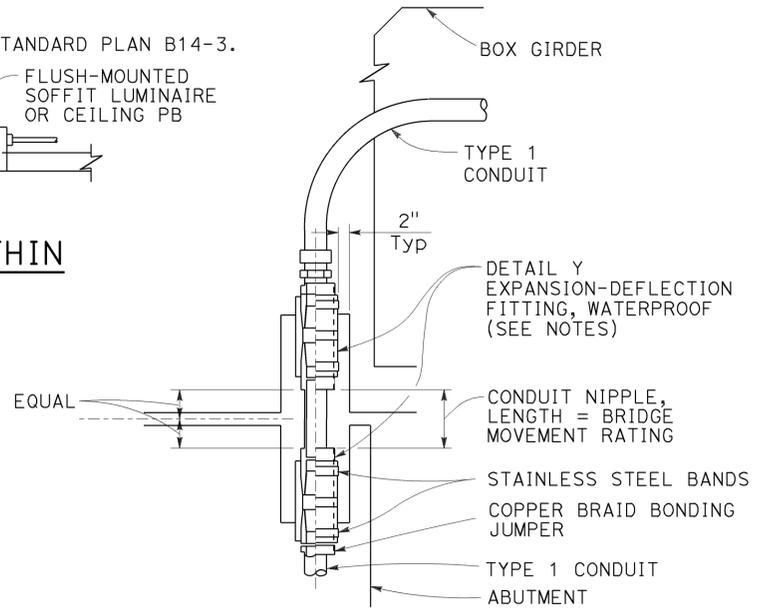
TO ACCOMPANY PLANS DATED 12-14-15



**CONDUIT RISER CONNECTION**  
**DETAIL R**

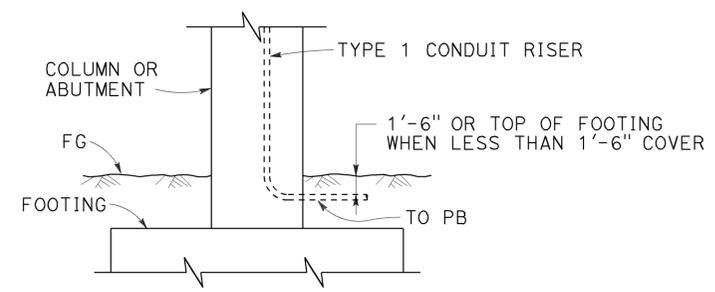


**CONDUIT INSTALLATION WITHIN BOX GIRDER SECTIONS**  
**DETAIL S**

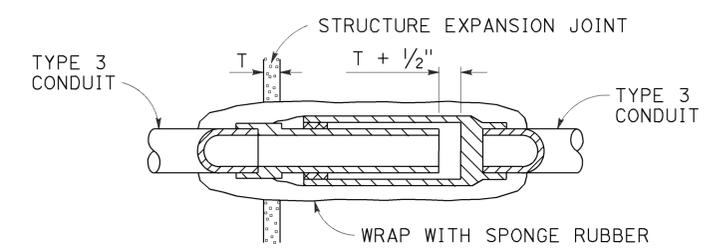


- NOTES:**
1. Fitting and pocket required only where movement can occur between girder and abutment.
  2. Fill pocket around fitting with resilient waterproof compound.

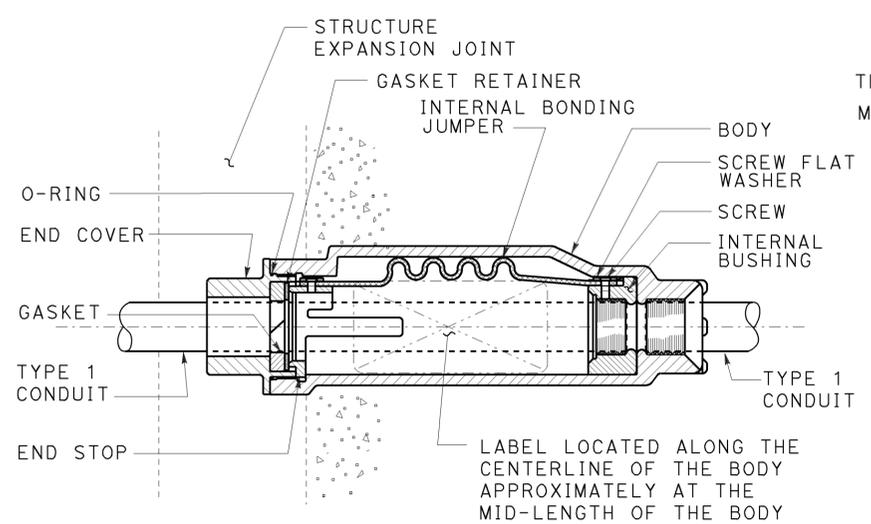
**CONDUIT RISER CONNECTION AT COLUMN, ABUTMENT OR STRUCTURE WING WALL**  
**DETAIL U**



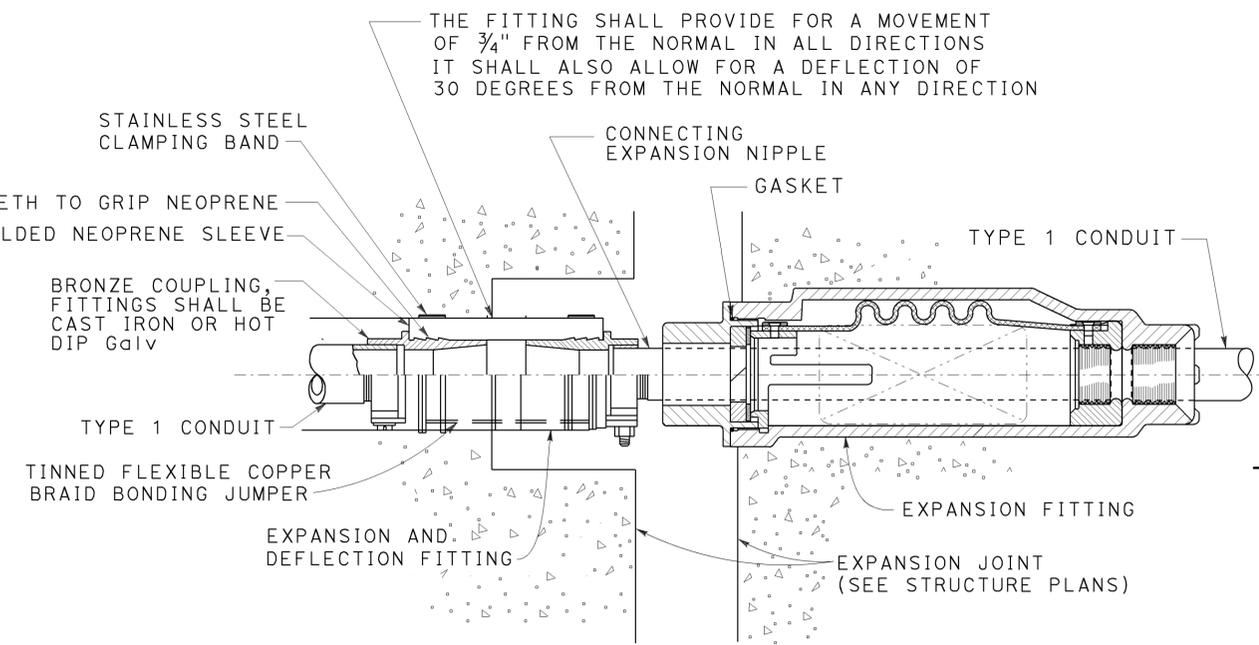
**LOWER END OF CONDUIT RISER AT COLUMN OR ABUTMENT**  
**DETAIL T**



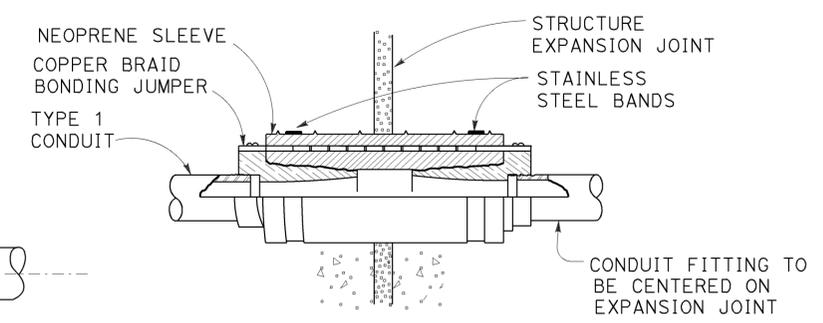
**NON-METALLIC CONDUIT EXPANSION FITTING INSTALLATION DETAIL**  
**DETAIL V**  
To be used only when shown or specified on Project Plans



**CONDUIT EXPANSION FITTING**  
**DETAIL X**



**COMBINATION EXPANSION-DEFLECTION FITTINGS METALLIC CONDUIT INSTALLATION**  
**DETAIL XY**



**CONDUIT EXPANSION-DEFLECTION FITTING**  
**DETAIL Y**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS (CONDUIT RISER AND EXPANSION FITTING, STRUCTURE INSTALLATIONS)**  
NO SCALE

RSP ES-9B DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-9B DATED MAY 20, 2011 - PAGE 482 OF THE STANDARD PLANS BOOK DATED 2010.

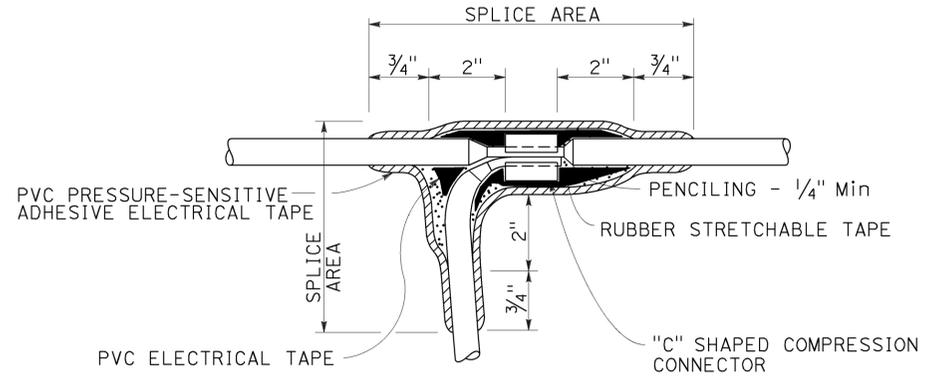
**REVISED STANDARD PLAN RSP ES-9B**

2010 REVISED STANDARD PLAN RSP ES-9B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07 12	LA Ora	91	R20.6/R20.7 R0.0/R2.8	75	77
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER					
October 30, 2015 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

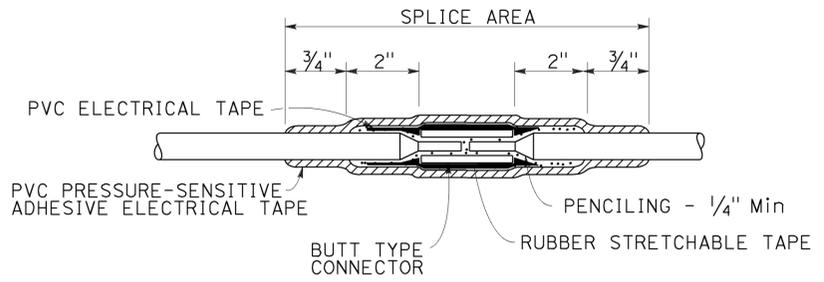


TO ACCOMPANY PLANS DATED 12-14-15



**TYPE C SPLICE**

See Note 3

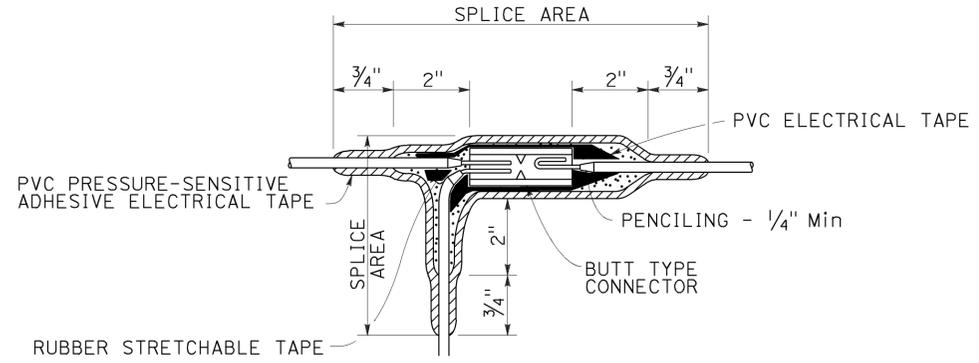


**TYPE S SPLICE**

See Note 4

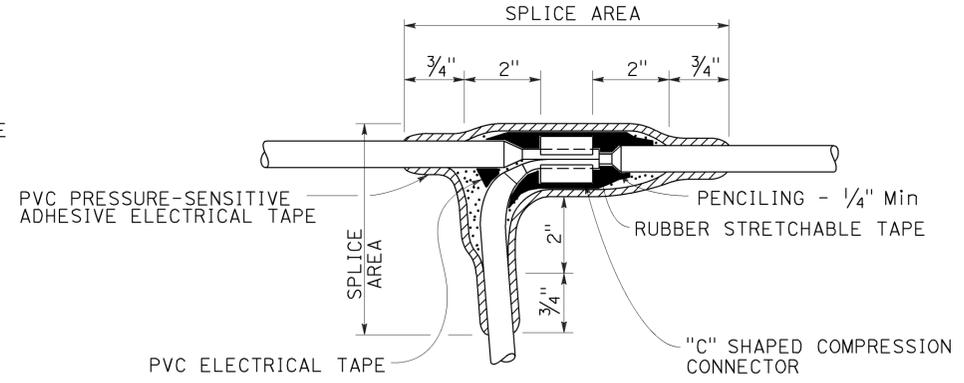
**NOTES:**

1. Dimensions are minimum.
2. Rubber tapes shall be rolled after application.
3. Between 1 free-end and 1 through conductor.
4. Between 2 free-end conductors.
5. Between 3 free-end conductors.



**TYPE ST SPLICE**

See Note 5



**TYPE T SPLICE**

See Note 5

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(SPLICING DETAILS)**

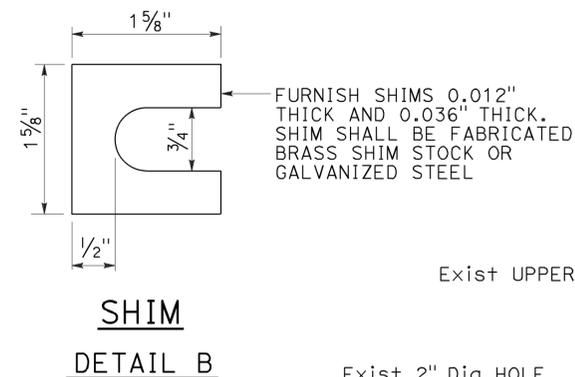
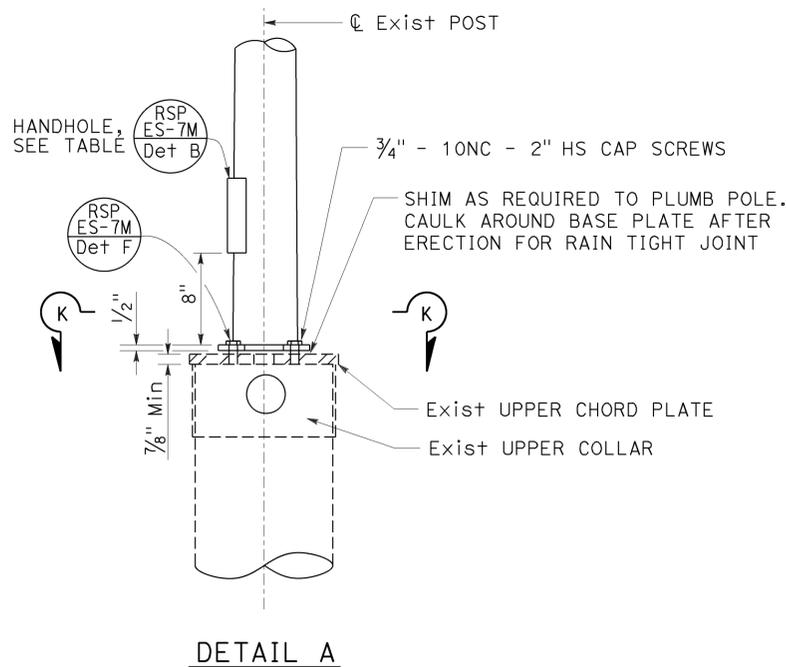
NO SCALE

RSP ES-13A DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-13A DATED  
MAY 20, 2011 - PAGE 491 OF THE STANDARD PLANS BOOK DATED 2010.

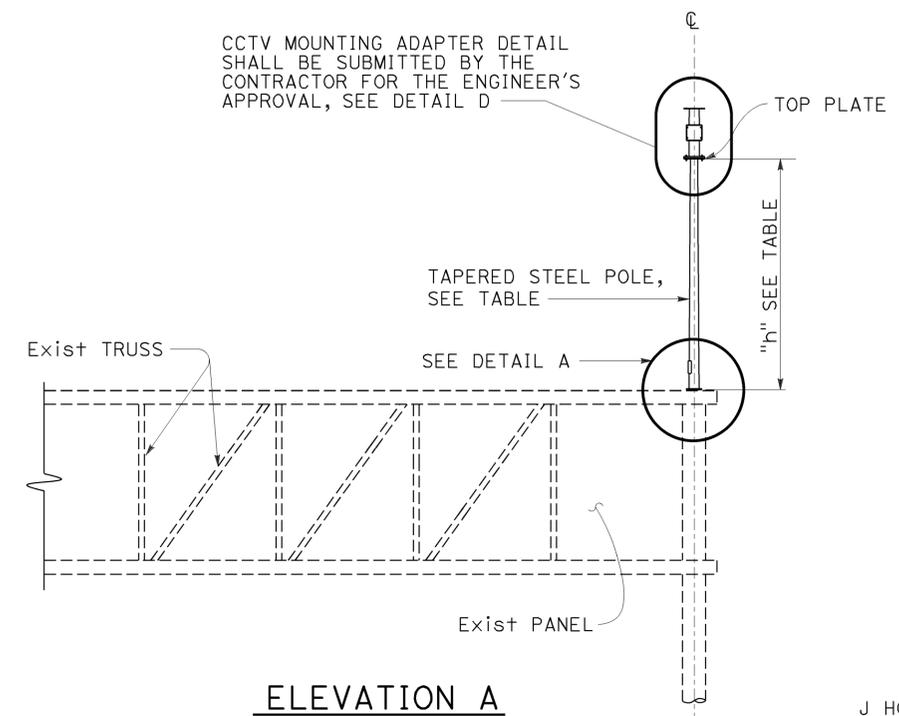
**REVISED STANDARD PLAN RSP ES-13A**

2010 REVISED STANDARD PLAN RSP ES-13A

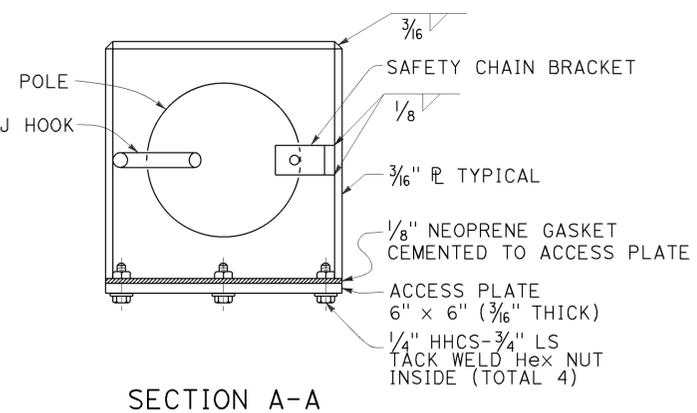
POLE EXTENSION TYPE	POLE DATA				HANDHOLE SIZE
	HEIGHT "h"	Min OD		THICKNESS	
		BASE	TOP		
CCTV 5	5'	4 <sup>9</sup> / <sub>16</sub> "	3 <sup>3</sup> / <sub>4</sub> "	0.1793"	3" x 5"
CCTV 10	10'	5 <sup>1</sup> / <sub>4</sub> "			
CCTV 15	15'	5 <sup>5</sup> / <sub>16</sub> "			



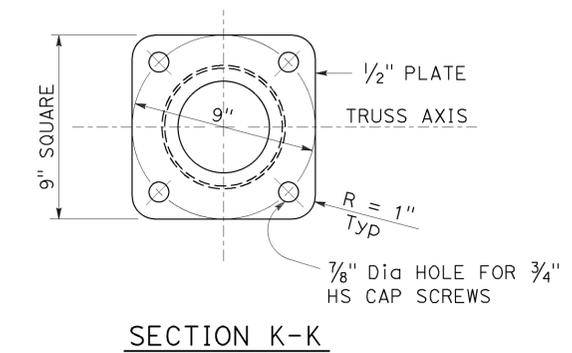
FURNISH SHIMS 0.012" THICK AND 0.036" THICK. SHIM SHALL BE FABRICATED BRASS SHIM STOCK OR GALVANIZED STEEL



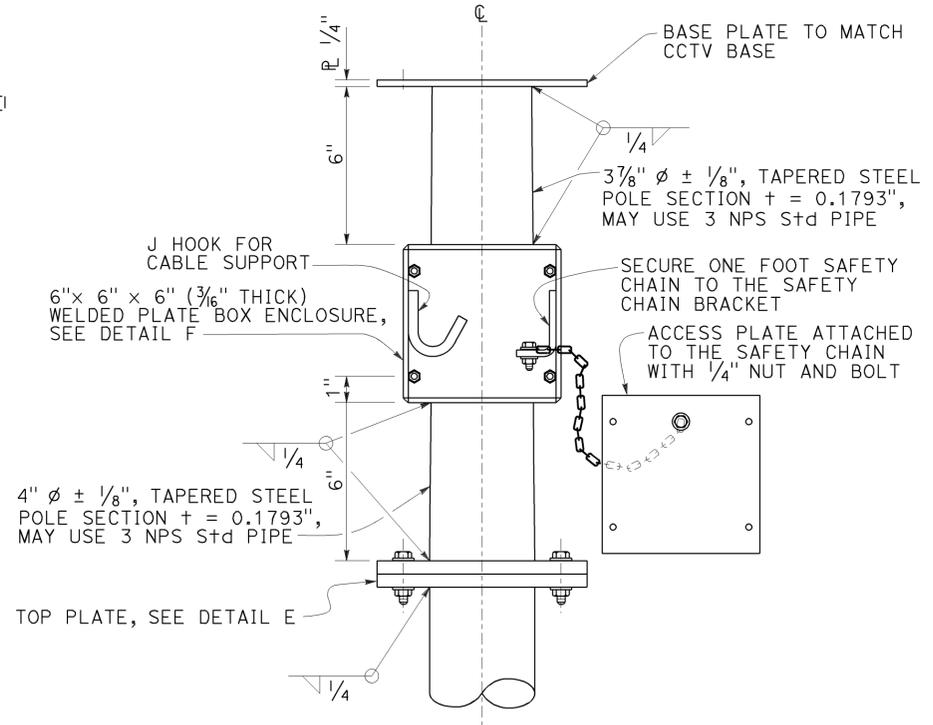
**ELEVATION A**



**SECTION A-A**



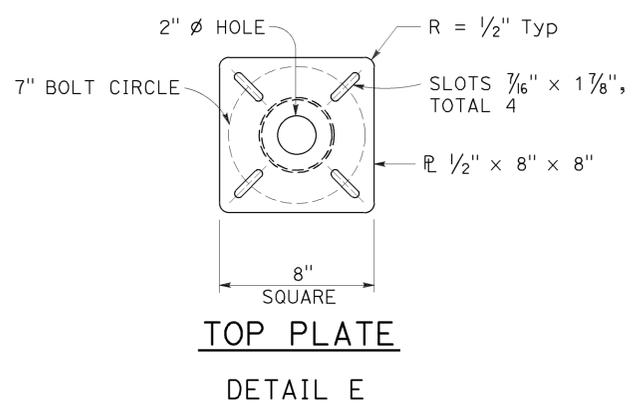
**SECTION K-K**



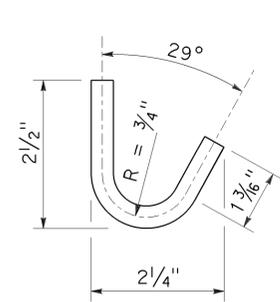
**CLOSED CIRCUIT TELEVISION MOUNTING ADAPTER**

**NOTES:**

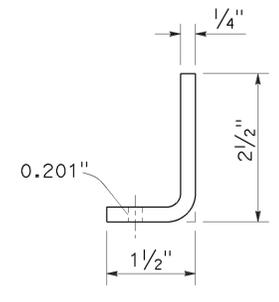
1. Verify controlling field dimensions before ordering or fabricating any material.
2. Bolt hole locations may vary at the discretion of the Engineer.
3. See Std Plan S13.
4. Wind Loadings (3-second gust) : 100 mph.
5. Unit Stresses (Structural Steel):
  - a. fy = 55,000 psi (tapered steel tube)
  - b. fy = 50,000 psi (unless otherwise noted)



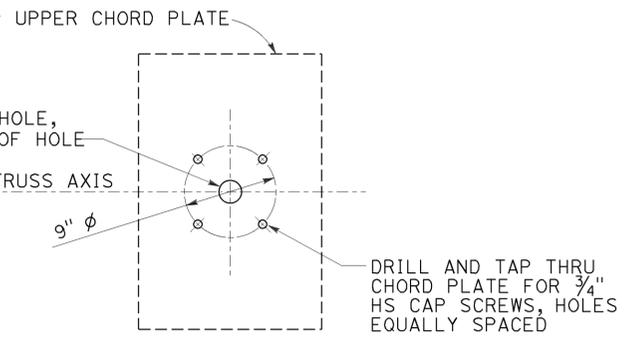
**TOP PLATE**  
**DETAIL E**



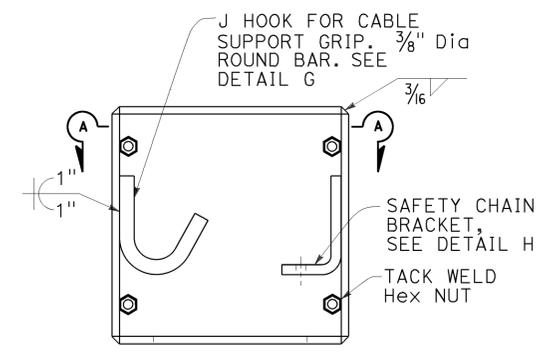
**J HOOK**  
**DETAIL G**



**SAFETY CHAIN BRACKET**  
**DETAIL H**



**UPPER CHORD PLATE**  
**DETAIL C**  
See Note 3



**BOX ENCLOSURE**  
**DETAIL F**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
0712	LA Ora	91	R20.6/R20.7 R0.0/R2.8	76	77

Stanley P. Johnson  
REGISTERED CIVIL ENGINEER

October 30, 2015  
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER  
Stanley P. Johnson  
No. C57793  
Exp. 3-31-16  
CIVIL  
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 12-14-15

**ELECTRICAL SYSTEMS**  
**(CLOSED CIRCUIT TELEVISION,**  
**5' TO 15' OVERHEAD SIGN MOUNTED POLE)**

NO SCALE  
RSP ES-16A DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-16A DATED MAY 20, 2011 - PAGE 500 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-16A**

2010 REVISED STANDARD PLAN RSP ES-16A

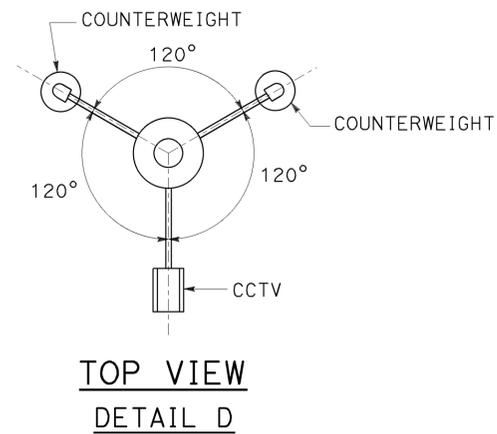
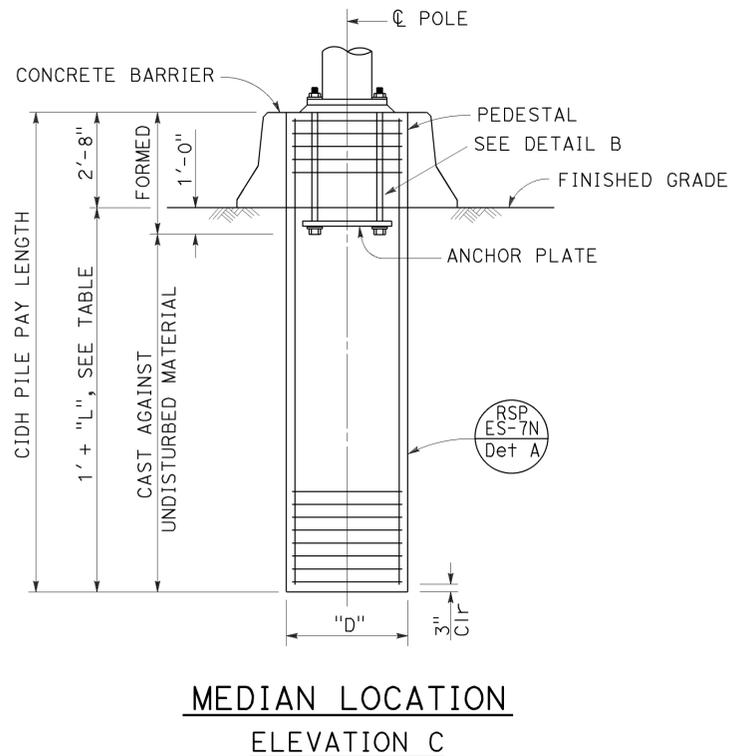
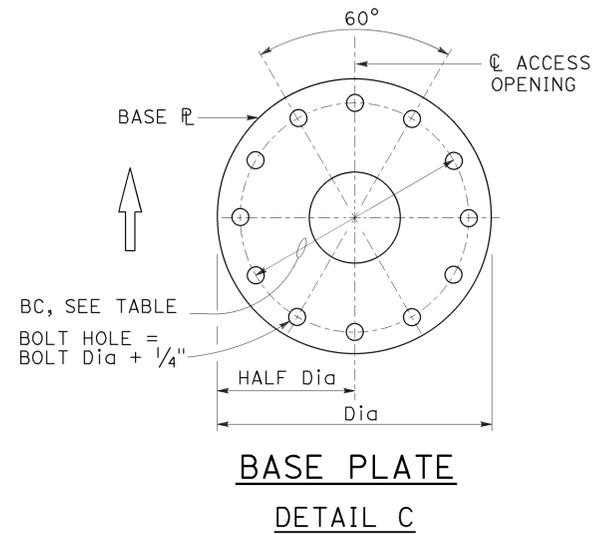
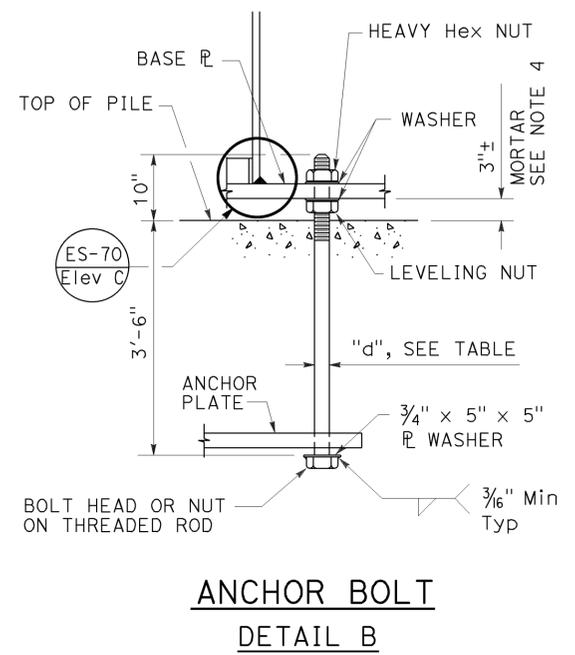
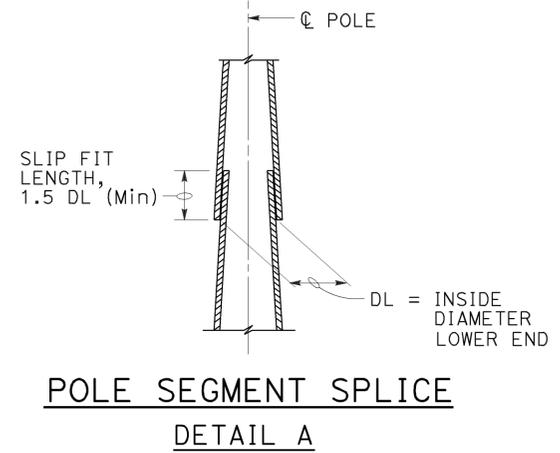
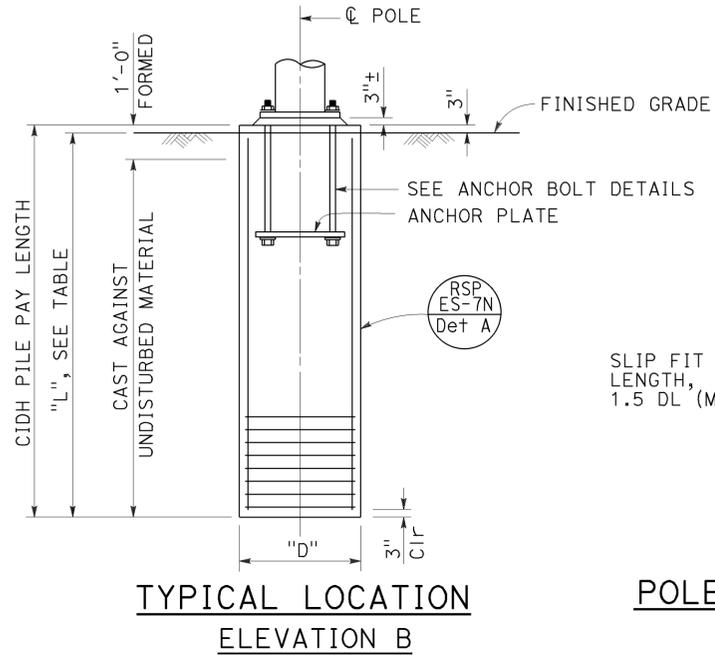
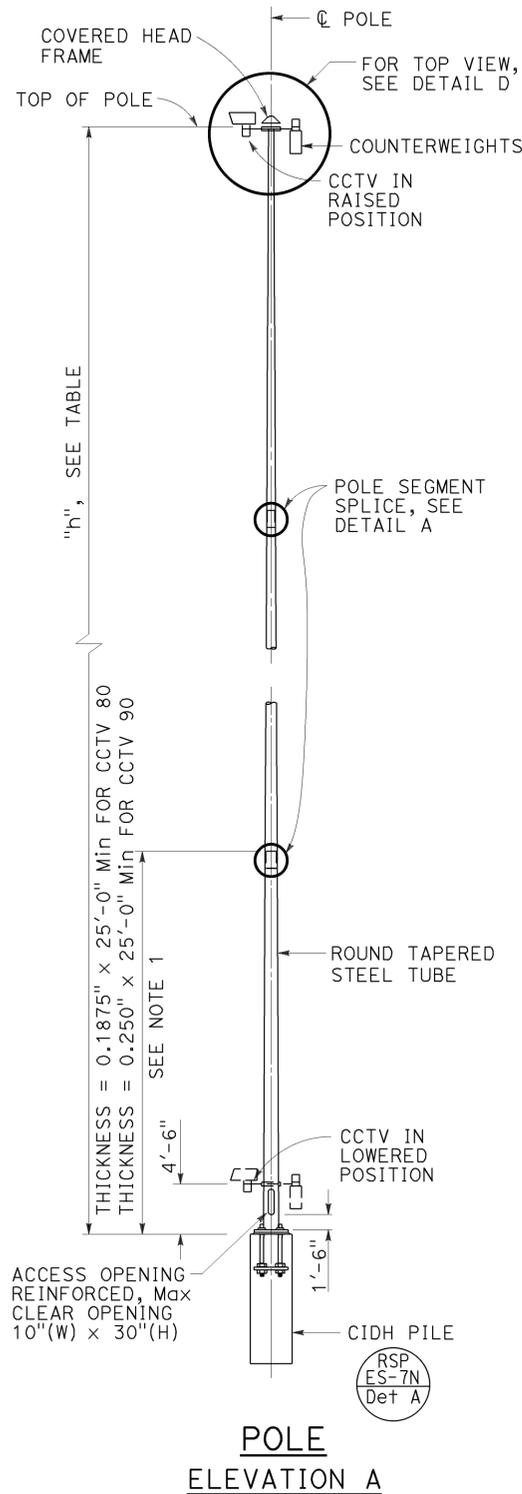
POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH PILE DATA			
	HEIGHT "h"	Min OD		Min THICKNESS	Dia	THICKNESS	ANCHOR BOLT SIZE		BC = BOLT CIRCLE	"D"	"L"	PILE Reinf
		BASE	TOP				TOTAL	"d"				
HM CCTV 50	50'	18"	9 3/4"	0.3125" *	28"	3"	12	1 1/2"	23"	3'-6"	12'	13 - #7
HM CCTV 60	60'	20"	10 1/4"		30"							
HM CCTV 70	70'	22"	10 1/16"	33"	27"							
HM CCTV 80	80'	24"	11 1/16"	35"	29"							
HM CCTV 90	90'											

\* LOWER POLE SEGMENT THICKNESS, SEE POLE DETAILS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
0712	LA Ora	91	R20.6/R20.7 R0.0/R2.8	77	77

Stanley P. Johnson  
 REGISTERED CIVIL ENGINEER  
 October 30, 2015  
 PLANS APPROVAL DATE  
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TO ACCOMPANY PLANS DATED 12-14-15



**NOTES:**

1. Pole details shall suit the lowering device and this foundation plan. Pole details shall be submitted to the Engineer for approval.
2. For closed circuit television details, see Electrical Plans.
3. Foundation design is based on a maximum wind velocity of 80 mph.
4. For central void and drain holes in mortar, see Standard Plan ES-6B detail N.
5. Wind Loadings (fastest mile): 80 mph
6. Unit Stress (Structural Steel):  
 fy = 55,000 psi (tapered steel tube)  
 fy = 50,000 psi (unless otherwise noted)
7. Access opening shall be located on the downstream side of traffic unless otherwise determined by the Engineer.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS  
(CLOSED CIRCUIT TELEVISION,  
50' TO 90' HIGH MAST POLE)**

NO SCALE

RSP ES-16C DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-16C DATED MAY 20, 2011 - PAGE 502 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-16C**

2010 REVISED STANDARD PLAN RSP ES-16C