

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: MC 10-20-15
 DATE: 10-20-15

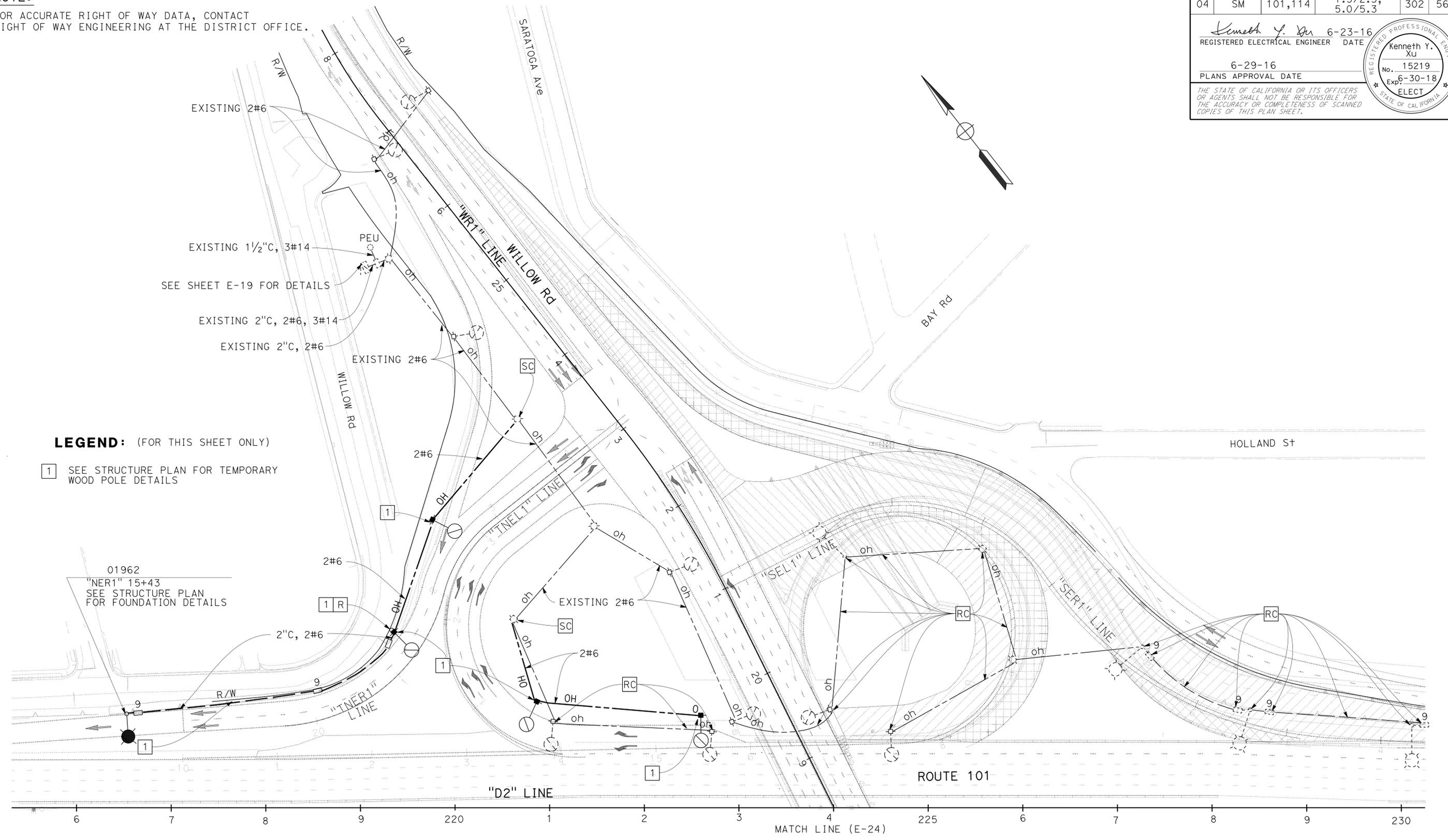
NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	302	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 PLANS APPROVAL DATE

Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA

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



LEGEND: (FOR THIS SHEET ONLY)
 1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS

01962
 "NER1" 15+43
 SEE STRUCTURE PLAN FOR FOUNDATION DETAILS

**LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 1)**

SCALE: 1" = 50'

E-23

APPROVED FOR ELECTRICAL WORK ONLY

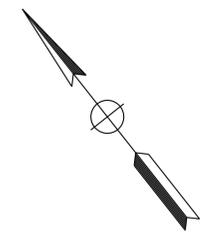
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET E-1

LAST REVISION DATE PLOTTED => 17-AUG-2016
 09-19-15 TIME PLOTTED => 08:25

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: MC 10-20-15
 REVISIONS: DATE REVISED

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



LEGEND: (FOR THIS SHEET ONLY)

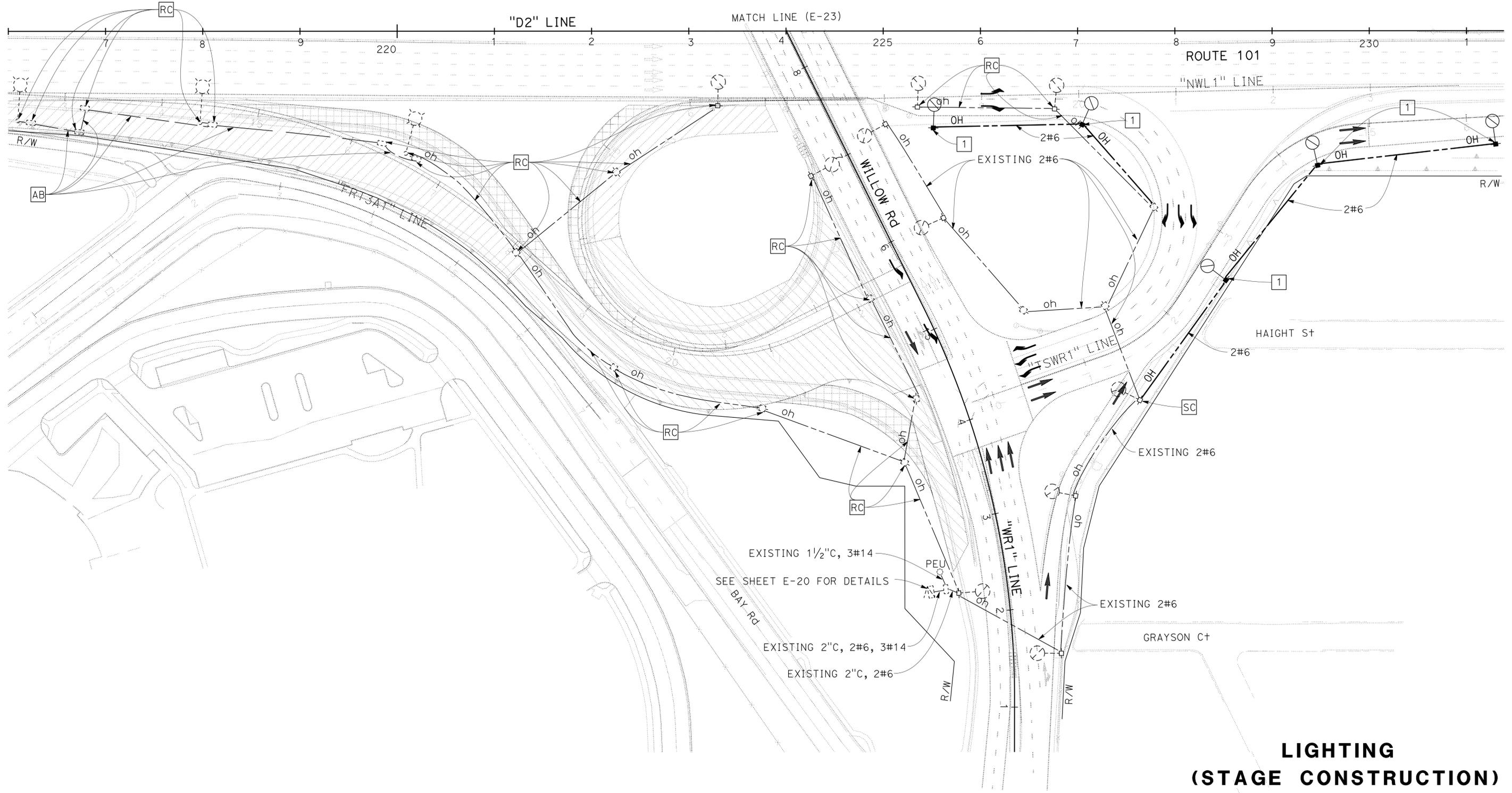
1 SEE STRUCTURE PLAN FOR TEMPORARY
 WOOD POLE DETAILS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	303	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 DATE: 6-23-16
 DATE: 6-29-16
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER: Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 STATE OF CALIFORNIA ELECT

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.



**LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 1)**

SCALE: 1" = 50'

E-24

APPROVED FOR ELECTRICAL WORK ONLY

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

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

FUNCTIONAL SUPERVISOR: KENNETH XU
 CALCULATED/DESIGNED BY: KENNETH XU
 CHECKED BY: MICHELLE CHAN
 REVISIONS:
 MC 10-20-15

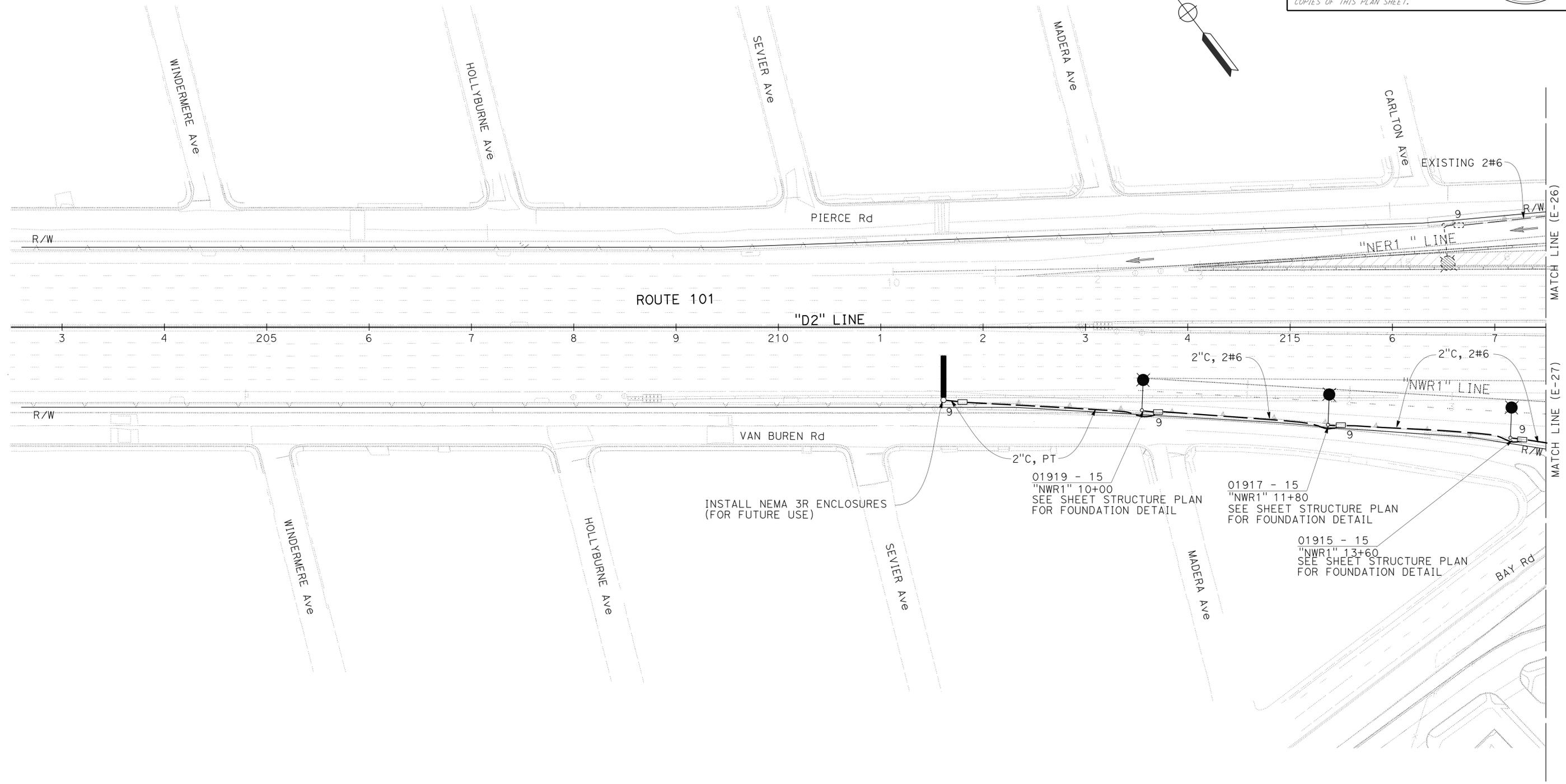
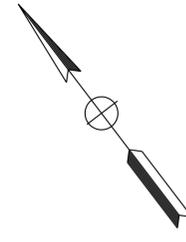
NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	304	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16

REGISTERED PROFESSIONAL ENGINEER: Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT

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.



**LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 2)
 (STAGE 3 PHASE 1 & 2)**

SCALE: 1" = 50'

E-25

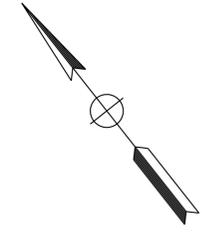
APPROVED FOR ELECTRICAL WORK ONLY

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 REVISIONS:
 MC 10-20-15
 REVISOR: MICHELLE CHAN
 DATE: 10-20-15

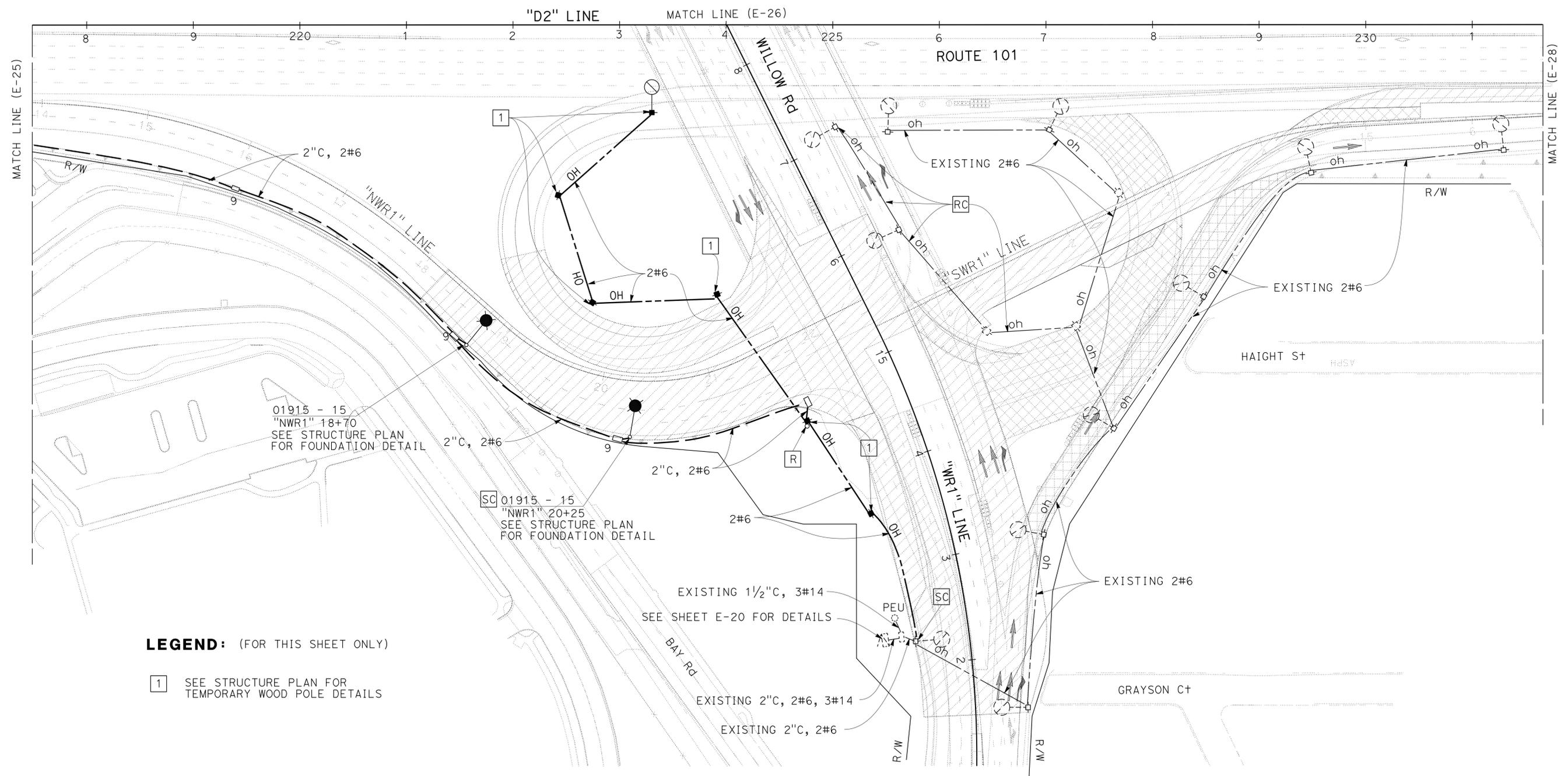
NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	306	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA



LEGEND: (FOR THIS SHEET ONLY)

1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS

01915 - 15
 "NWR1" 18+70
 SEE STRUCTURE PLAN FOR FOUNDATION DETAIL

SC 01915 - 15
 "NWR1" 20+25
 SEE STRUCTURE PLAN FOR FOUNDATION DETAIL

EXISTING 1 1/2" C, 3#14
 SEE SHEET E-20 FOR DETAILS

EXISTING 2" C, 2#6, 3#14

EXISTING 2" C, 2#6

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

**LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 2)
 (STAGE 3 PHASE 1 & 2)**

SCALE: 1" = 50'

E-27



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

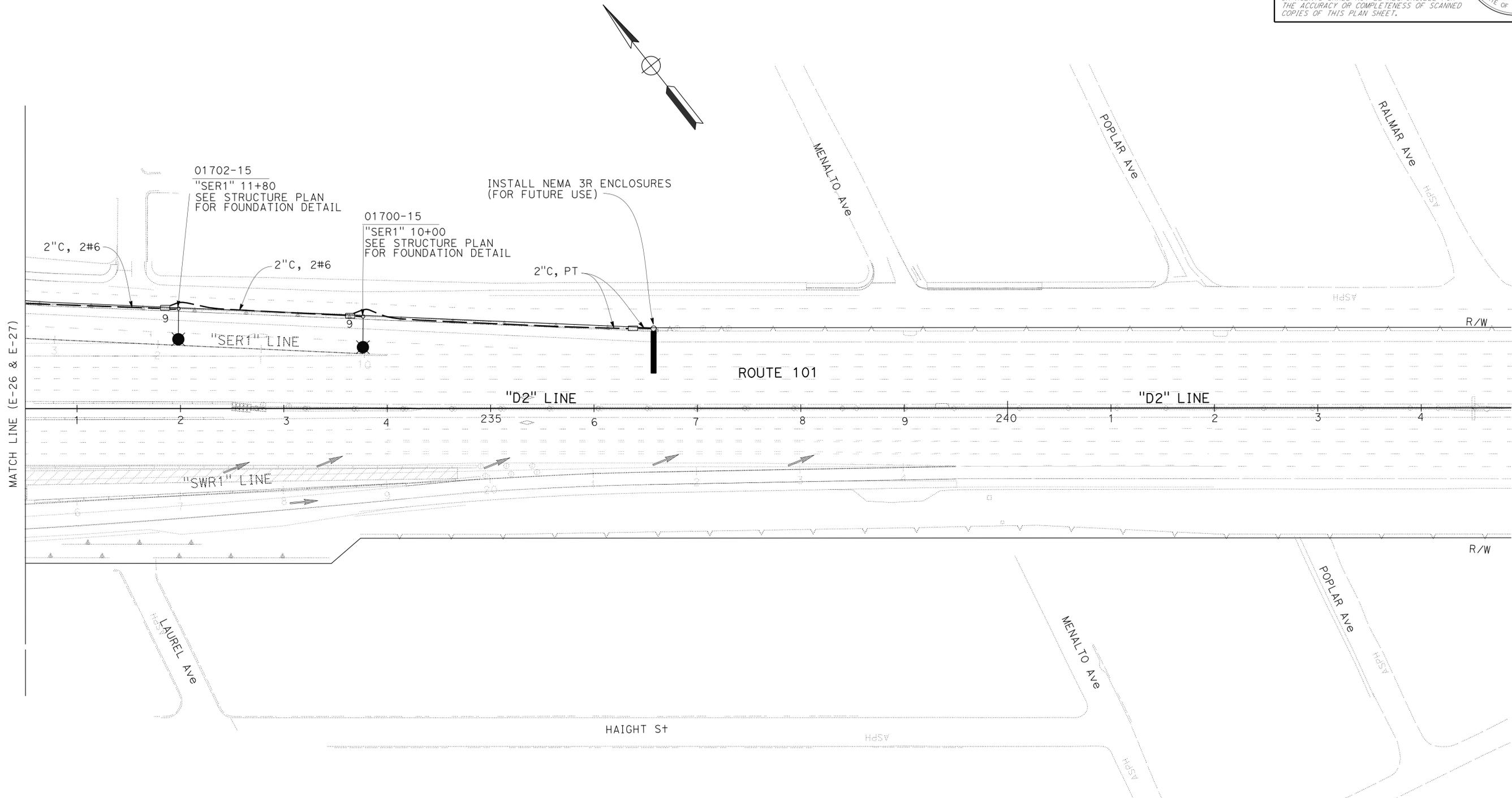
FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: MC 10-20-15

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	307	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16
 No. 15219
 Exp. 6-30-18
 ELECT

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.



**LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 2)
 (STAGE 3 PHASE 1 & 2)**

SCALE: 1" = 50'

E-28

APPROVED FOR ELECTRICAL WORK ONLY

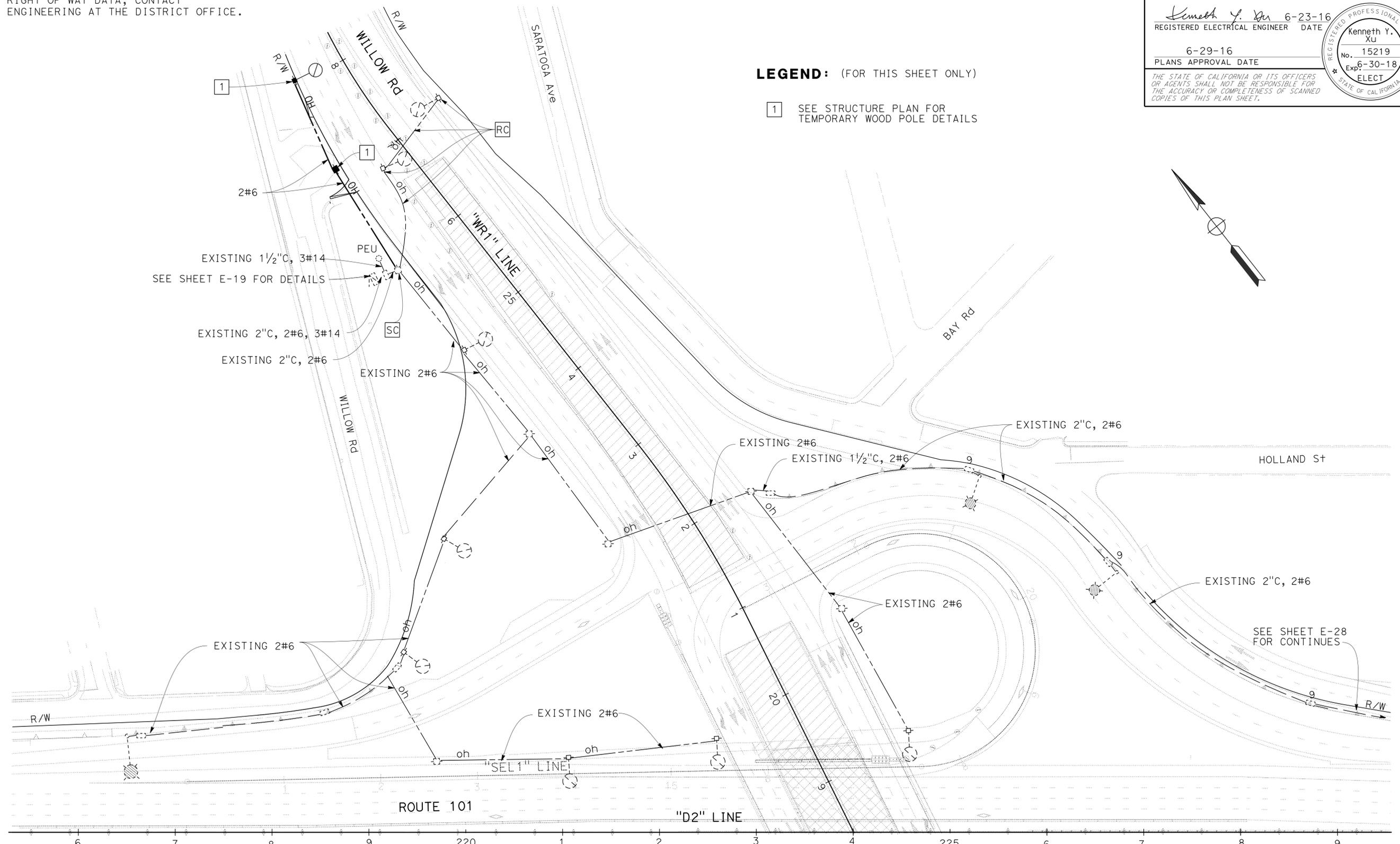
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET E-1

LAST REVISION: 09-21-15
 DATE PLOTTED: 17-AUG-2016
 TIME PLOTTED: 08:26

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR	MC
Caltrans	KENNETH XU	CHECKED BY	DATE REVISED	10-20-15
ELECTRICAL			MICHELLE CHAN	
			KENNETH XU	

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	308	568
			6-23-16	DATE	
			6-29-16	PLANS APPROVAL DATE	
REGISTERED ELECTRICAL ENGINEER Kenneth Y. Xu No. 15219 Exp. 6-30-18 ELECT					
<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: (FOR THIS SHEET ONLY)
 1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS

**LIGHTING
(STAGE CONSTRUCTION)
(STAGE 3 PHASE 2)**

SCALE: 1" = 50'

E-29

APPROVED FOR ELECTRICAL WORK ONLY

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	309	568

<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE	
6-29-16 PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT

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

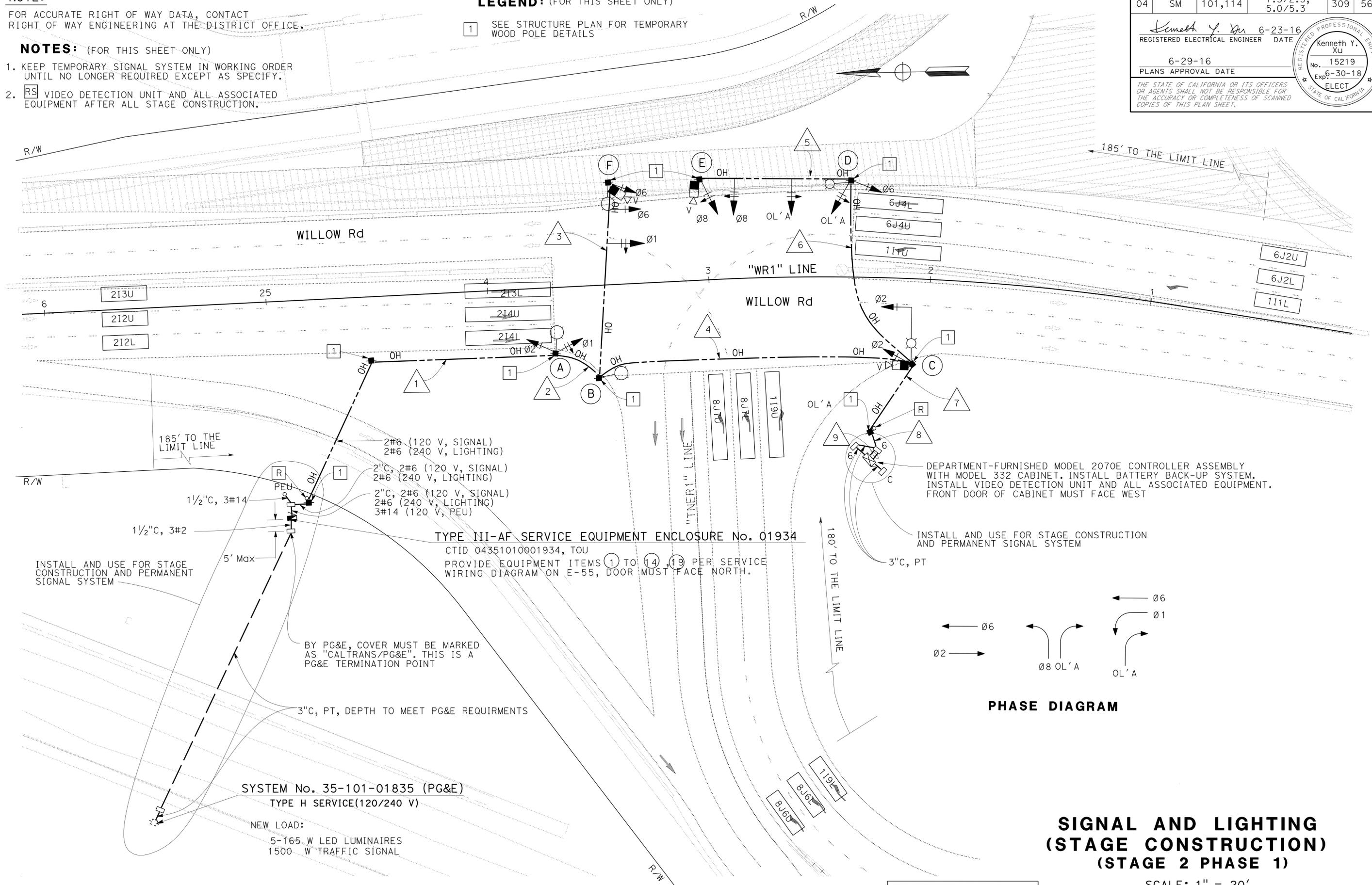
NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND: (FOR THIS SHEET ONLY)

- 1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS

NOTES: (FOR THIS SHEET ONLY)

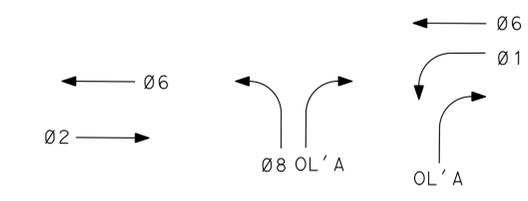
1. KEEP TEMPORARY SIGNAL SYSTEM IN WORKING ORDER UNTIL NO LONGER REQUIRED EXCEPT AS SPECIFY.
2. **RS** VIDEO DETECTION UNIT AND ALL ASSOCIATED EQUIPMENT AFTER ALL STAGE CONSTRUCTION.



DEPARTMENT-FURNISHED MODEL 2070E CONTROLLER ASSEMBLY WITH MODEL 332 CABINET. INSTALL BATTERY BACK-UP SYSTEM. INSTALL VIDEO DETECTION UNIT AND ALL ASSOCIATED EQUIPMENT. FRONT DOOR OF CABINET MUST FACE WEST

INSTALL AND USE FOR STAGE CONSTRUCTION AND PERMANENT SIGNAL SYSTEM

TYPE III-AF SERVICE EQUIPMENT ENCLOSURE No. 01934
 CTID 04351010001934, TOU
 PROVIDE EQUIPMENT ITEMS 1 TO 14, 19 PER SERVICE WIRING DIAGRAM ON E-55, DOOR MUST FACE NORTH.



PHASE DIAGRAM

SIGNAL AND LIGHTING (STAGE CONSTRUCTION) (STAGE 2 PHASE 1)

SCALE: 1" = 20'

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

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
Caltrans	KENNETH XU	MICHELLE CHAN	10-2-15
ELECTRICAL	KENNETH XU	KENNETH XU	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	310	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE

6-29-16
 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
ELECTRICAL

FUNCTIONAL SUPERVISOR
 KENNETH XU

CALCULATED/DESIGNED BY
 CHECKED BY

MICHELLE CHAN
 KENNETH XU

REVISED BY
 DATE REVISED

MC
 10-2-15

CONDUCTOR SCHEDULE	
CONDUCTOR DESIGNATION	NUMBER OF CONDUCTORS
	RUN NUMBER
	1 2 3 4 5 6 7 8 9
No. 14 CONDUCTORS	
OL'A	3 3 3 3 3 3 3 3 3
Ø1	3 3 3 3 3 3 3 3 3
Ø2	3 3 3 3 3 3 3 3 3
Ø6	3 3 3 3 3 3 3 3 3
Ø8	3 3 3 3 3 3 3 3 3
SPARES	3 3 3 3 3 3 3 3 3
TOTAL No. 14	9 9 12 9 12 18 18 18
No. 8 CONDUCTORS	
SIGNAL NEUTRAL	1 1 1 1 1 1 1 1 1
No. 6 CONDUCTORS	
CONTROLLER CABINET (120 V)	2 2 2 2 2 2 2 2 2
LIGHTING (240 V)	2 2 2 2 2 2 2 2 2
TOTAL No. 6	4 4 2 4 2 2 2 2 2
HCC	1 1 1 1 3 3 3
CONDUIT SIZE	- - - - - - - 3 2-3

POLE AND EQUIPMENT SCHEDULE										
LOCATION	STANDARD			VEHICLE SIGNAL MOUNTING		PED SIGNAL MOUNTING	PPB Ø	LED LUMINAIRE (WATTS)	VIDEO DETECTION DEVICE	SPECIAL REQUIREMENT
	TYPE	SMA	LMA	MAST ARM	POLE					
(A)	TEMPORARY WOOD POLE		12		SV-2-T			165		SEE STRUCTURE PLAN FOR DETAILS
(B)	TEMPORARY WOOD POLE		12					165		SEE STRUCTURE PLAN FOR DETAILS
(C)	TEMPORARY WOOD POLE	25	12	MAS	SV-1-T			165	1	SEE STRUCTURE PLAN FOR DETAILS
(D)	TEMPORARY WOOD POLE		12		SV-2-T			165		SEE STRUCTURE PLAN FOR DETAILS
(E)	TEMPORARY WOOD POLE		12		SV-1-T				1	SEE STRUCTURE PLAN FOR DETAILS
(F)	TEMPORARY WOOD POLE		12		SV-1-T			165	1	SEE STRUCTURE PLAN FOR DETAILS

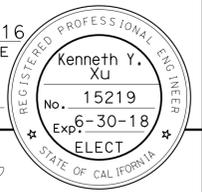
SIGNAL AND LIGHTING
(STAGE CONSTRUCTION)
(STAGE 2 PHASE 1)

LAST REVISION | DATE PLOTTED => 17-AUG-2016
 08-10-15 | TIME PLOTTED => 08:26

STATE OF CALIFORNIA	DEPARTMENT OF TRANSPORTATION	ELECTRICAL
FUNCTIONAL SUPERVISOR	KENNETH XU	
CALCULATED/DESIGNED BY	CHECKED BY	
REVISOR	DATE	REVISION
MC	10-2-15	

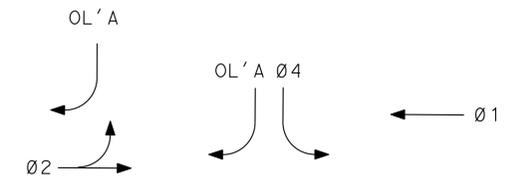
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	311	568
REGISTERED ELECTRICAL ENGINEER			DATE		
Kenneth Y. Xu			6-23-16		
PLANS APPROVAL DATE					
6-29-16					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

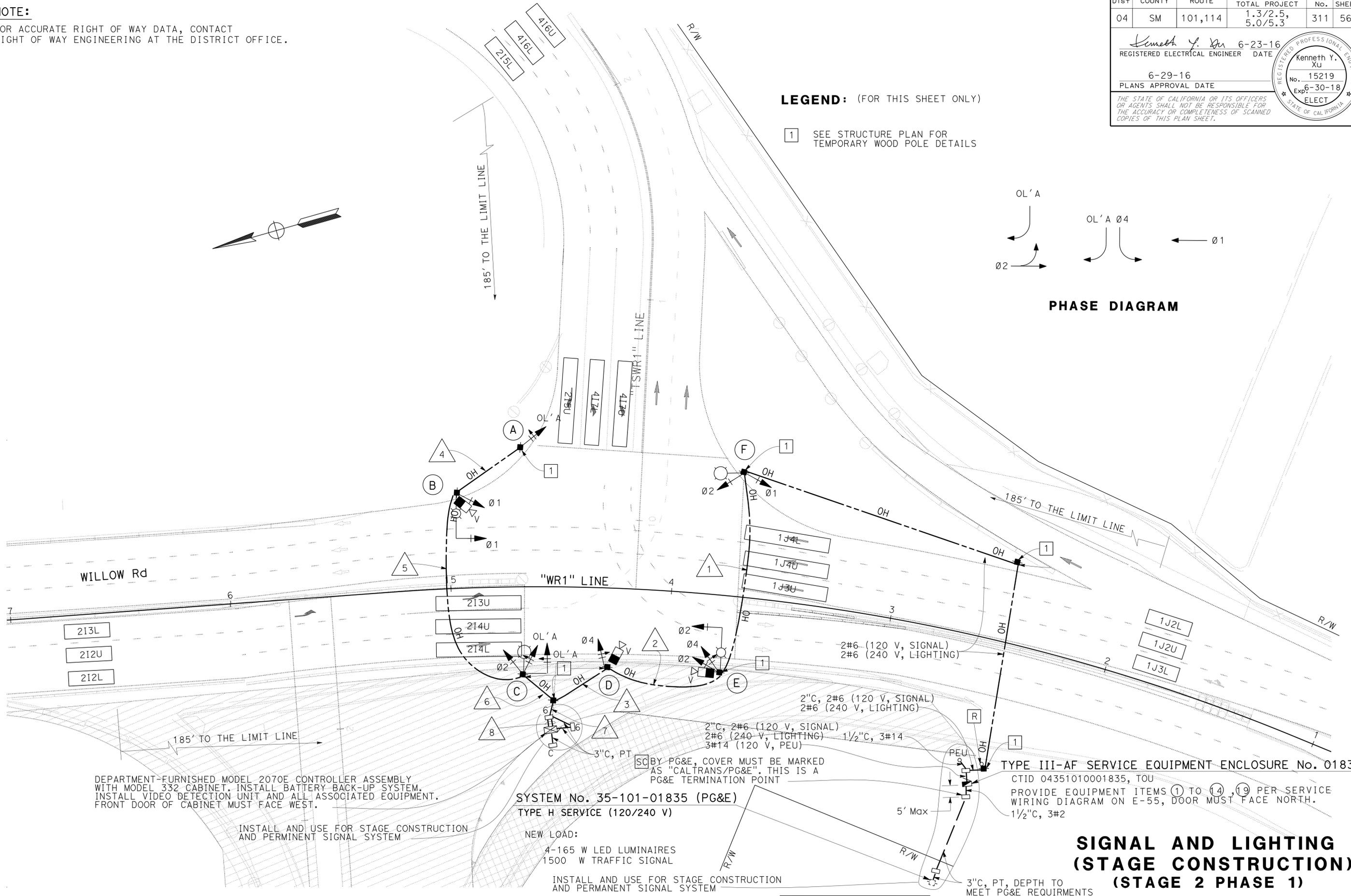


LEGEND: (FOR THIS SHEET ONLY)

1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS



PHASE DIAGRAM



DEPARTMENT-FURNISHED MODEL 2070E CONTROLLER ASSEMBLY WITH MODEL 332 CABINET. INSTALL BATTERY BACK-UP SYSTEM. INSTALL VIDEO DETECTION UNIT AND ALL ASSOCIATED EQUIPMENT. FRONT DOOR OF CABINET MUST FACE WEST.

INSTALL AND USE FOR STAGE CONSTRUCTION AND PERMANENT SIGNAL SYSTEM

SYSTEM No. 35-101-01835 (PG&E)
TYPE H SERVICE (120/240 V)

NEW LOAD:
4-165 W LED LUMINAIRES
1500 W TRAFFIC SIGNAL

INSTALL AND USE FOR STAGE CONSTRUCTION AND PERMANENT SIGNAL SYSTEM

TYPE III-AF SERVICE EQUIPMENT ENCLOSURE No. 01835

CTID 04351010001835, T0U
PROVIDE EQUIPMENT ITEMS ① TO ⑭, ⑰ PER SERVICE WIRING DIAGRAM ON E-55, DOOR MUST FACE NORTH.
1 1/2" C, 3#2

**SIGNAL AND LIGHTING
(STAGE CONSTRUCTION)
(STAGE 2 PHASE 1)**

SCALE: 1" = 20'

E-32

APPROVED FOR ELECTRICAL WORK ONLY

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

LAST REVISION DATE PLOTTED => 17-AUG-2016
09-21-15 TIME PLOTTED => 08:26

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	312	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE

6-29-16
 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
 ELECTRICAL

FUNCTIONAL SUPERVISOR
 KENNETH XU

CALCULATED/DESIGNED BY
 CHECKED BY

MICHELLE CHAN
 KENNETH XU

REVISED BY
 DATE REVISED

MC
 10-2-15

CONDUCTOR SCHEDULE												
CONDUCTOR DESIGNATION	NUMBER OF CONDUCTORS											
	RUN NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
No. 14 CONDUCTORS												
OL'A				3	3	3	3	3				
Ø1	3	3	3		3	3	3	3				
Ø2	3	3	3			3	3	3				
Ø4		3	3				3	3				
SPARES	3	3	3	3	3	3	3	3				
TOTAL No. 14	9	12	12	6	9	12	15	15				
No. 8 CONDUCTORS												
SIGNAL NEUTRAL	1	1	1	1	1	1	1	1				
No. 6 CONDUCTORS												
CONTROLLER CABINET (120 V)	2	2	2				2	2				
LIGHTING (240 V)	2	2	2		2	2						
TOTAL No. 6	4	4	4		2	2	2	2				
HCC		1	2		1	1	3	3				
CONDUIT SIZE	-	-	-	-	-	-	3	2-3				

POLE AND EQUIPMENT SCHEDULE										
LOCATION	STANDARD			VEHICLE SIGNAL MOUNTING		PED SIGNAL MOUNTING	PPB Ø	LED LUMINAIRE (WATTS)	VIDEO DETECTION DEVICE	SPECIAL REQUIREMENT
	TYPE	SMA	LMA	MAST ARM	POLE					
(A)	TEMPORARY WOOD POLE				SV-1-T					SEE STRUCTURE PLAN FOR DETAILS
(B)	TEMPORARY WOOD POLE	20	12	MAS	SV-1-T			165	1	SEE STRUCTURE PLAN FOR DETAILS
(C)	TEMPORARY WOOD POLE	10	12	MAS	SV-2-T			165		SEE STRUCTURE PLAN FOR DETAILS
(D)	TEMPORARY WOOD POLE				SV-1-T				1	SEE STRUCTURE PLAN FOR DETAILS
(E)	TEMPORARY WOOD POLE	20	12	MAS	SV-2-T			165	1	SEE STRUCTURE PLAN FOR DETAILS
(F)	TEMPORARY WOOD POLE		12		SV-2-T			165		SEE STRUCTURE PLAN FOR DETAILS

SIGNAL AND LIGHTING
(STAGE CONSTRUCTION)
(STAGE 2 PHASE 1)



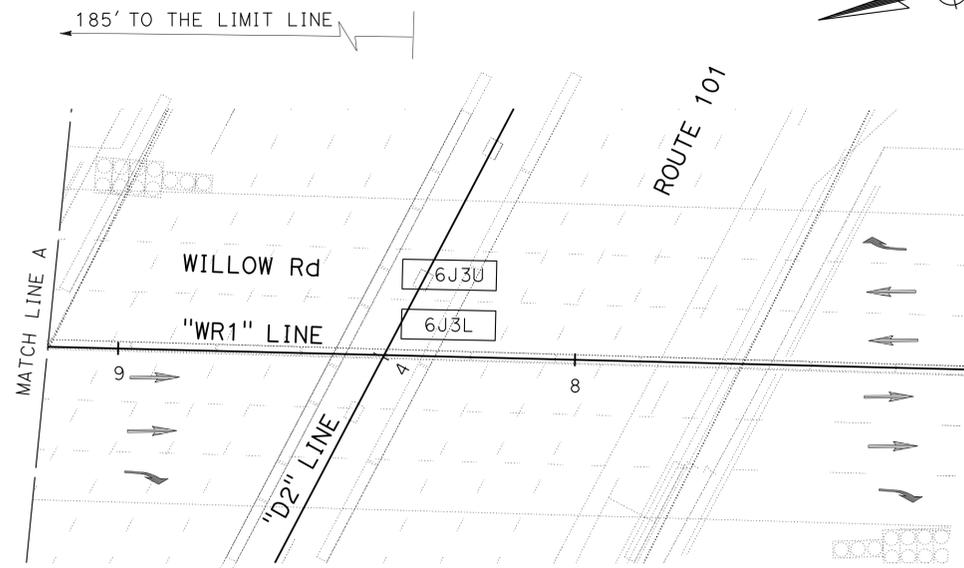
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	313	568

<i>Kenneth Y. Xu</i> 6-23-16	
REGISTERED ELECTRICAL ENGINEER	DATE
6-29-16	
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	Kenneth Y. Xu
No.	15219
Exp.	6-30-18
ELECT	

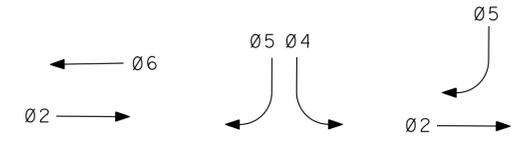
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



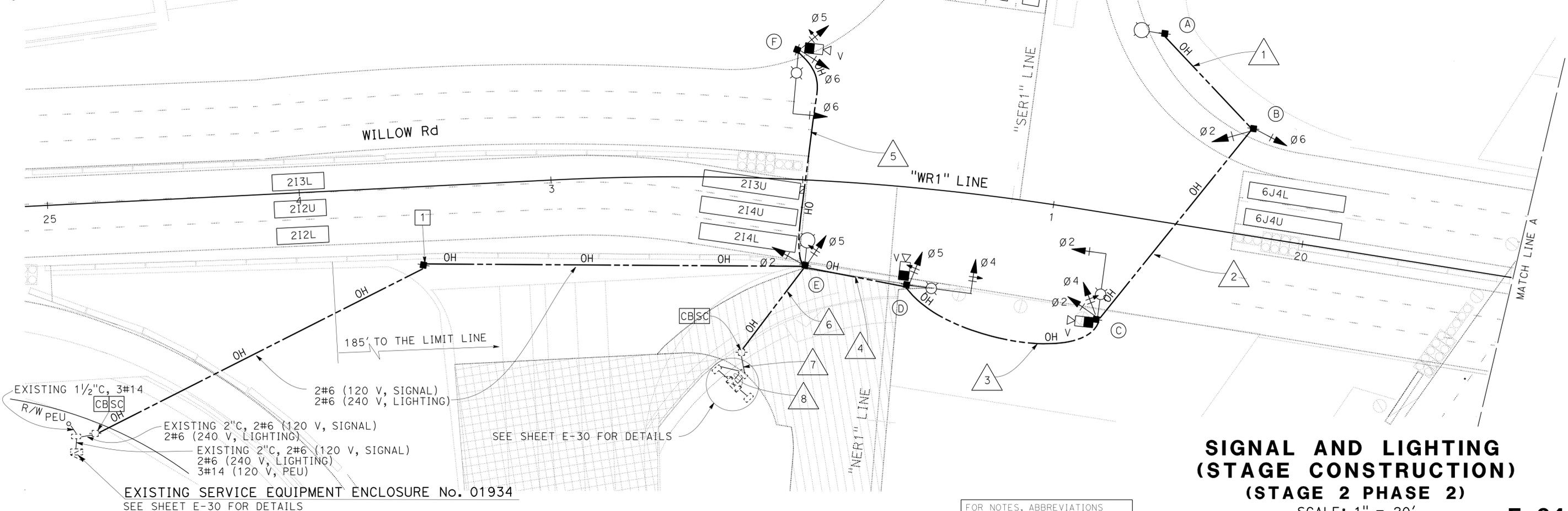
- NOTES:** (FOR THIS SHEET ONLY)
- KEEP TEMPORARY SIGNAL SYSTEM IN WORKING ORDER UNTIL NO LONGER REQUIRED EXCEPT AS SPECIFIED.
 - VIDEO DETECTION UNIT AND ALL ASSOCIATED EQUIPMENT AFTER ALL STAGE CONSTRUCTION.

LEGEND: (FOR THIS SHEET ONLY)

1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS



PHASE DIAGRAM



**SIGNAL AND LIGHTING
(STAGE CONSTRUCTION)
(STAGE 2 PHASE 2)**
SCALE: 1" = 20'

E-34

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
ELECTRICAL
FUNCTIONAL SUPERVISOR: KENNETH XU
REVISOR: MICHELLE CHAN
DATE: 10-2-15
CHECKED BY: KENNETH XU
DESIGNED BY: KENNETH XU

APPROVED FOR ELECTRICAL WORK ONLY

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

LAST REVISION DATE PLOTTED => 17-AUG-2016
09-21-15 TIME PLOTTED => 08:26

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	314	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE

6-29-16
 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
ELECTRICAL

FUNCTIONAL SUPERVISOR
 KENNETH XU

CALCULATED/DESIGNED BY
 CHECKED BY

MICHELLE CHAN
 KENNETH XU

REVISED BY
 DATE REVISED

MC
 10-2-15

CONDUCTOR SCHEDULE												
CONDUCTOR DESIGNATION	NUMBER OF CONDUCTORS											
	RUN NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
No. 14 CONDUCTORS												
Ø2	3	3	3					3	3	3		
Ø4			3	3				3	3	3		
Ø5				3	3			3	3	3		
Ø6	3	3	3	3				3	3	3		
SPARES	3	3	3	3				3	3	3		
TOTAL No. 14	9	12	15	9				15	15	15		
No. 8 CONDUCTORS												
SIGNAL NEUTRAL	1	1	1	1				1	1	1		
No. 6 CONDUCTORS												
CONTROLLER CABINET (120 V)								2	2	2		
LIGHTING (240 V)	2	2	2	2	2							
TOTAL No. 6	2	2	2	2	2				2	2	2	
HCC			1	2	1			3	3	3		
CONDUIT SIZE	-	-	-	-	-			-	3	2-3		

POLE AND EQUIPMENT SCHEDULE										
LOCATION	STANDARD			VEHICLE SIGNAL MOUNTING		PED SIGNAL MOUNTING	PPB Ø	LED LUMINAIRE (WATTS)	VIDEO DETECTION DEVICE	SPECIAL REQUIREMENT
	TYPE	SMA	LMA	MAST ARM	POLE					
(A)	TEMPORARY WOOD POLE		12					235		SEE STRUCTURE PLAN FOR DETAILS
(B)	TEMPORARY WOOD POLE				SV-2-T					SEE STRUCTURE PLAN FOR DETAILS
(C)	TEMPORARY WOOD POLE	25	12	MAS	SV-2-T			165	1	SEE STRUCTURE PLAN FOR DETAILS
(D)	TEMPORARY WOOD POLE	25	12	MAS	SV-1-T			165	1	SEE STRUCTURE PLAN FOR DETAILS
(E)	TEMPORARY WOOD POLE		12		SV-2-T			165		SEE STRUCTURE PLAN FOR DETAILS
(F)	TEMPORARY WOOD POLE	25	12	MAS	SV-2-T			165	1	SEE STRUCTURE PLAN FOR DETAILS

SIGNAL AND LIGHTING
(STAGE CONSTRUCTION)
(STAGE 2 PHASE 2)

LAST REVISION | DATE PLOTTED => 17-AUG-2016
 09-21-15 | TIME PLOTTED => 08:26

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

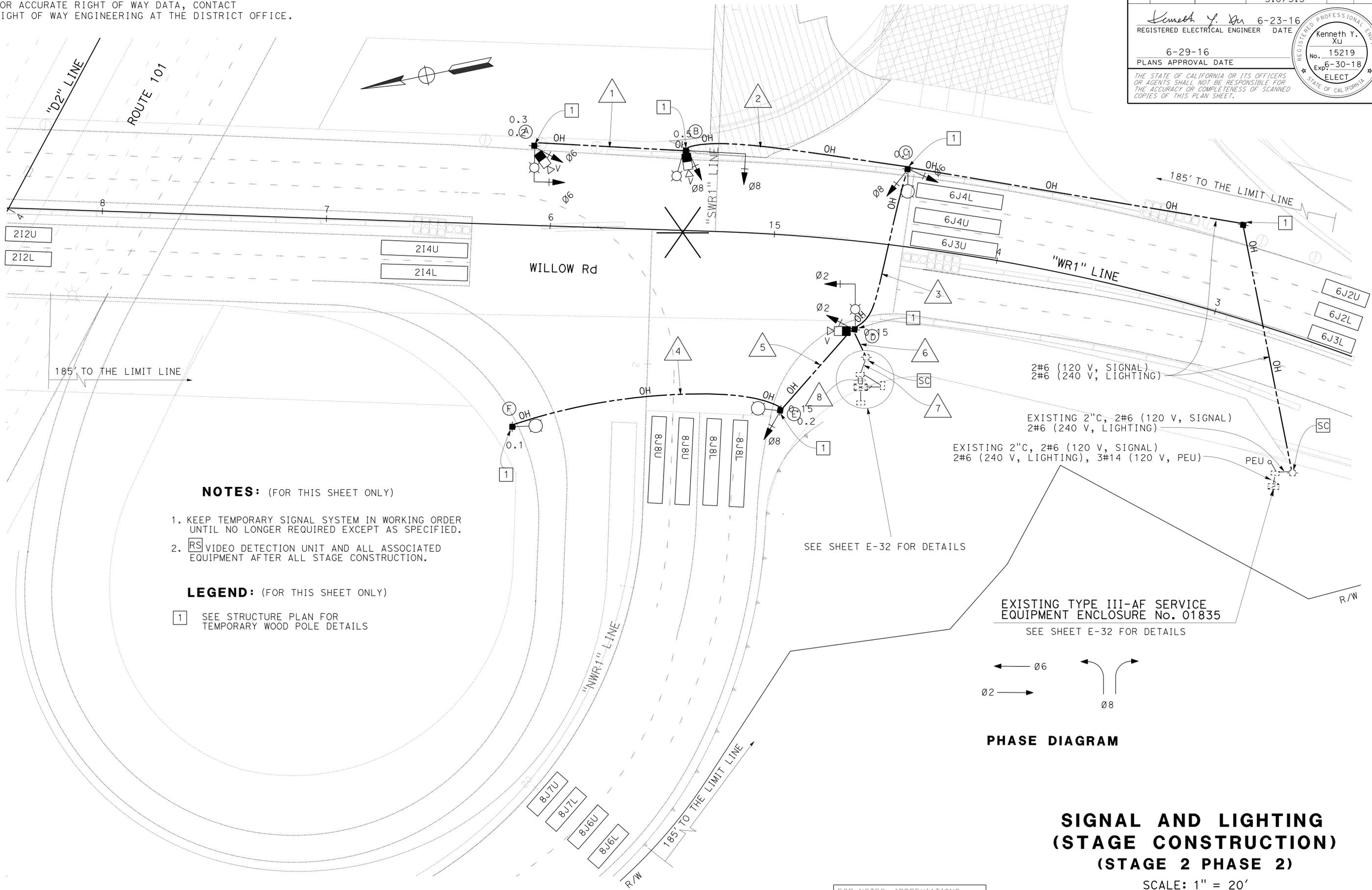
FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: MC 10-2-15

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	315	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16

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

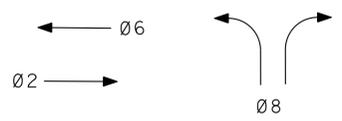


- NOTES:** (FOR THIS SHEET ONLY)
- KEEP TEMPORARY SIGNAL SYSTEM IN WORKING ORDER UNTIL NO LONGER REQUIRED EXCEPT AS SPECIFIED.
 - VIDEO DETECTION UNIT AND ALL ASSOCIATED EQUIPMENT AFTER ALL STAGE CONSTRUCTION.
- LEGEND:** (FOR THIS SHEET ONLY)
- 1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS

EXISTING 2" C, 2#6 (120 V, SIGNAL)
 2#6 (240 V, LIGHTING)

EXISTING 2" C, 2#6 (120 V, SIGNAL)
 2#6 (240 V, LIGHTING), 3#14 (120 V, PEU)

EXISTING TYPE III-AF SERVICE EQUIPMENT ENCLOSURE No. 01835
 SEE SHEET E-32 FOR DETAILS



PHASE DIAGRAM

**SIGNAL AND LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 2)**

SCALE: 1" = 20'

APPROVED FOR ELECTRICAL WORK ONLY

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	316	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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
ELECTRICAL
 FUNCTIONAL SUPERVISOR
 KENNETH XU
 CALCULATED/DESIGNED BY
 CHECKED BY
 MICHELLE CHAN
 KENNETH XU
 REVISED BY
 DATE REVISED
 MC
 10-2-15

CONDUCTOR DESIGNATION	NUMBER OF CONDUCTORS							
	RUN NUMBER							
	1	2	3	4	5	6	7	8
No. 14 CONDUCTORS								
∅2						3	3	3
∅6	3	3	3			3	3	3
∅8		3	3		3	3	3	3
SPARES	3	3	3		3	3	3	3
TOTAL No. 14	6	9	9		6	12	12	12
No. 8 CONDUCTORS								
SIGNAL NEUTRAL	1	1	1		1	1		
TOTAL No. 8	1	1	1		1	1		
No. 6 CONDUCTORS								
CONTROLLER CABINET (120 V)			2			2		
LIGHTING (240 V)	2	2	2	2	2			
TOTAL No. 6	2	2	4	2	2	2		
HCC	1	2	2			3	3	3
CONDUIT SIZE	-	-	-	-	-	-	3	2-3

→ Exist CONDUIT

LOCATION	STANDARD			VEHICLE SIGNAL MOUNTING		PED SIGNAL MOUNTING	PPB ∅	LED LUMINAIRE (WATTS)	VIDEO DETECTION DEVICE	SPECIAL REQUIREMENT
	TYPE	SMA	LMA	MAST ARM	POLE					
Ⓐ	TEMPORARY WOOD POLE	15	12	MAS	SV-1-T			235	1	SEE STRUCTURE PLAN FOR DETAILS
Ⓑ	TEMPORARY WOOD POLE	25	12	MAS	SV-1-T			165	1	SEE STRUCTURE PLAN FOR DETAILS
Ⓒ	TEMPORARY WOOD POLE		12		SV-2-T			165		SEE STRUCTURE PLAN FOR DETAILS
Ⓓ	TEMPORARY WOOD POLE	20	12	MAS	SV-1-T			165	1	SEE STRUCTURE PLAN FOR DETAILS
Ⓔ	TEMPORARY WOOD POLE		12		SV-1-T			235	1	SEE STRUCTURE PLAN FOR DETAILS
Ⓕ	TEMPORARY WOOD POLE		12					165		SEE STRUCTURE PLAN FOR DETAILS

SIGNAL AND LIGHTING
(STAGE CONSTRUCTION)
(STAGE 2 PHASE 2)

LAST REVISION | DATE PLOTTED => 17-AUG-2016
 09-21-15 | TIME PLOTTED => 08:26

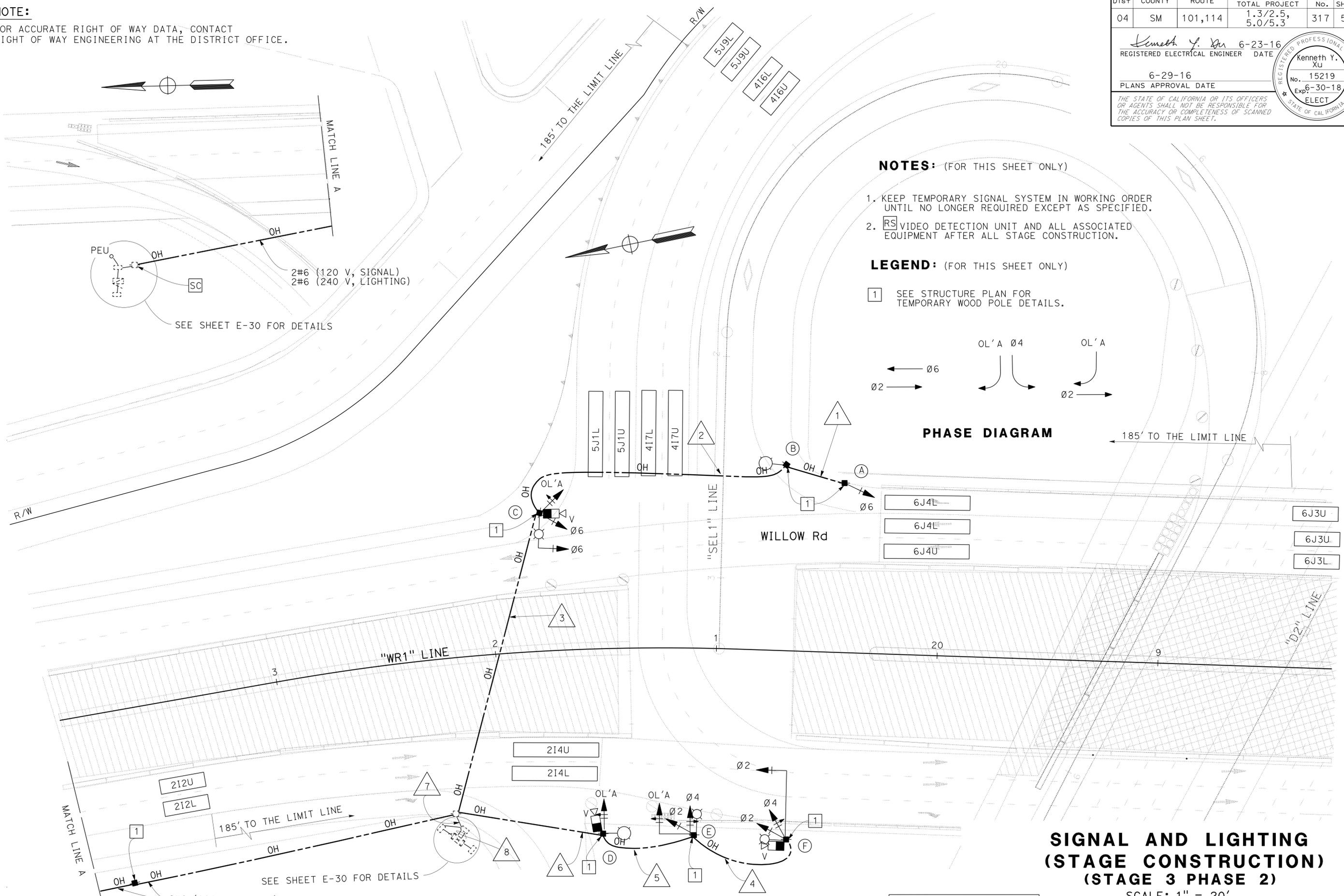
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans **ELECTRICAL**
 FUNCTIONAL SUPERVISOR: KENNETH XU
 REVISIONS: 10-2-15, 10-2-15
 DESIGNED BY: MICHELLE CHAN
 CHECKED BY: KENNETH XU
 PROJECT NUMBER & PHASE: 0400000680U

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

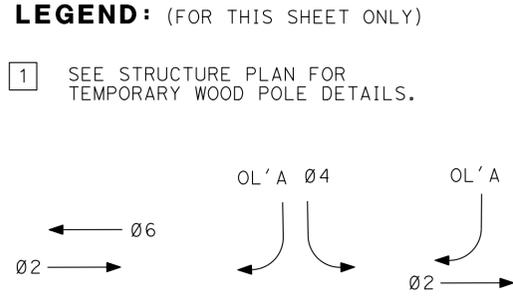
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	317	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16
 No. 15219
 Exp. 6-30-18
 ELECT

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



- NOTES:** (FOR THIS SHEET ONLY)
- KEEP TEMPORARY SIGNAL SYSTEM IN WORKING ORDER UNTIL NO LONGER REQUIRED EXCEPT AS SPECIFIED.
 - RS VIDEO DETECTION UNIT AND ALL ASSOCIATED EQUIPMENT AFTER ALL STAGE CONSTRUCTION.



**SIGNAL AND LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 3 PHASE 2)**
 SCALE: 1" = 20'

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

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	318	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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
 ELECTRICAL
 FUNCTIONAL SUPERVISOR
 KENNETH XU
 CALCULATED/DESIGNED BY
 CHECKED BY
 MICHELLE CHAN
 KENNETH XU
 REVISED BY
 DATE REVISED
 MC
 10-2-15

CONDUCTOR SCHEDULE												
CONDUCTOR DESIGNATION	NUMBER OF CONDUCTORS											
	RUN NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
No. 14 CONDUCTORS												
OL'A			3		3	3	3					
Ø2				3	3	3	3					
Ø4				3	3	3	3					
Ø6	3	3	3				3	3				
SPARES	3	3	3	3	3	3	3	3				
TOTAL No. 14	6	6	9	9	12	12	15	15				
No. 8 CONDUCTORS												
SIGNAL NEUTRAL	1	1	1	1	1	1	1	1				
No. 6 CONDUCTORS												
CONTROLLER CABINET (120 V)							2	2				
LIGHTING (240 V)		2	2	2	2	2						
TOTAL No. 6		2	2	2	2	2	2	2				
HCC			1	1	1	2	3	3				
CONDUIT SIZE	-	-	-	-	-	-	3	2-3				

→ ← Exist CONDUIT

POLE AND EQUIPMENT SCHEDULE										
LOCATION	STANDARD			VEHICLE SIGNAL MOUNTING		PED SIGNAL MOUNTING	PPB Ø	LED LUMINAIRE (WATTS)	VIDEO DETECTION DEVICE	SPECIAL REQUIREMENT
	TYPE	SMA	LMA	MAST ARM	POLE					
(A)	TEMPORARY WOOD POLE				SV-1-T					SEE STRUCTURE PLAN FOR DETAILS
(B)	TEMPORARY WOOD POLE		12					300		SEE STRUCTURE PLAN FOR DETAILS
(C)	TEMPORARY WOOD POLE	15	12	MAS	SV-2-T			300	1	SEE STRUCTURE PLAN FOR DETAILS
(D)	TEMPORARY WOOD POLE		12		SV-1-T			300	1	SEE STRUCTURE PLAN FOR DETAILS
(E)	TEMPORARY WOOD POLE	15	12	MAS	SV-2-T			300		SEE STRUCTURE PLAN FOR DETAILS
(F)	TEMPORARY WOOD POLE	30	12	MAS	SV-2-T			300	1	SEE STRUCTURE PLAN FOR DETAILS

**SIGNAL AND LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 3 PHASE 2)**

LAST REVISION | DATE PLOTTED => 17-AUG-2016
 09-21-15 | TIME PLOTTED => 08:26

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

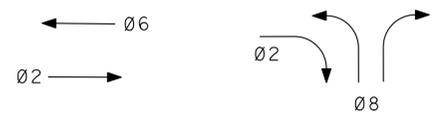
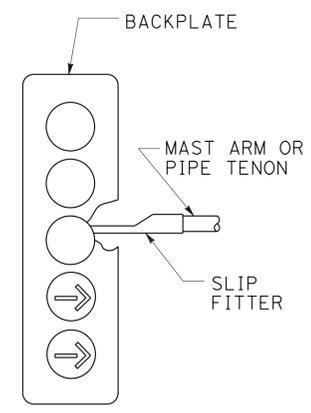
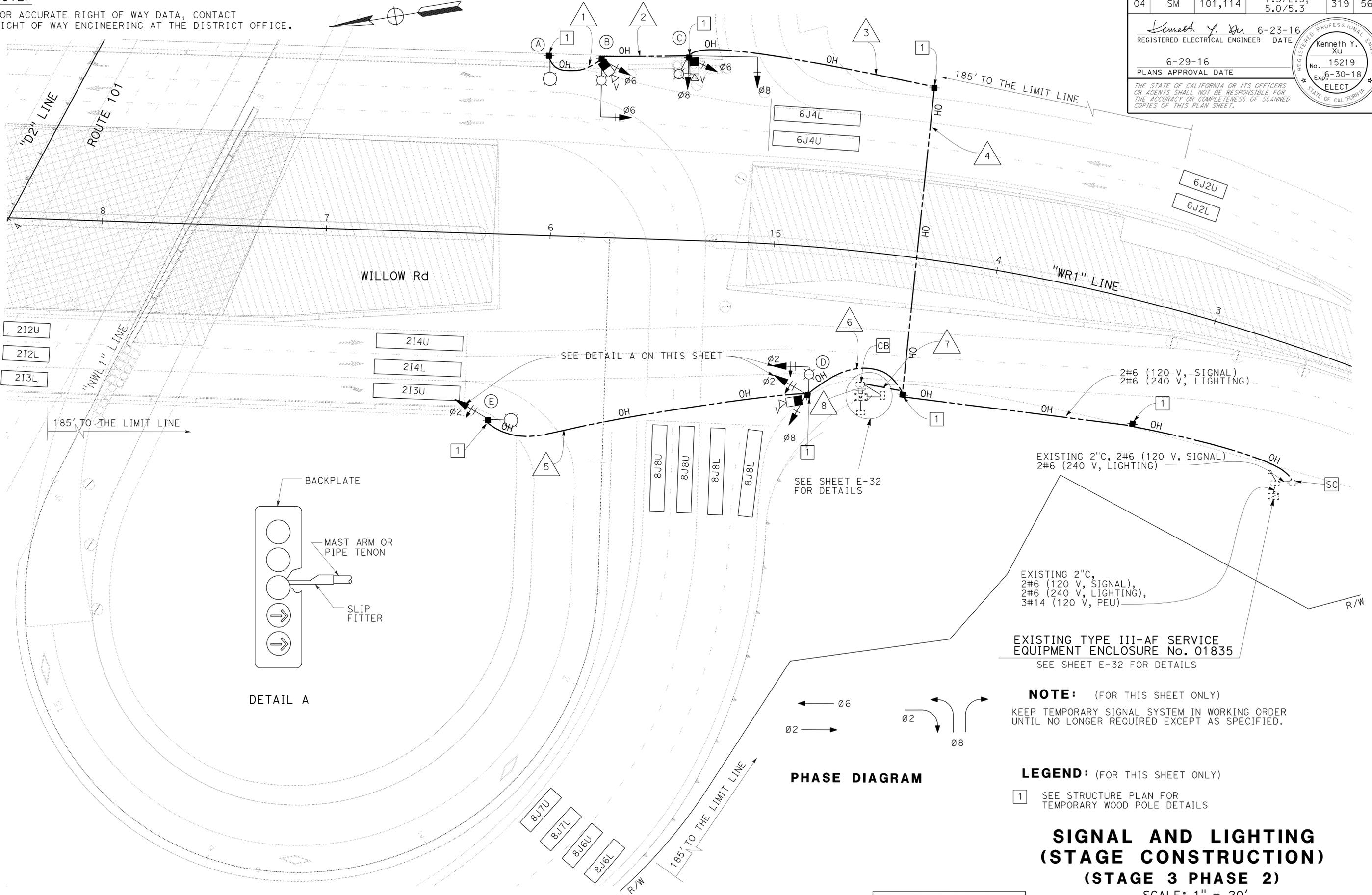
FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: 10-2-15
 MC

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	319	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16

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 THIS SHEET ONLY)
 KEEP TEMPORARY SIGNAL SYSTEM IN WORKING ORDER
 UNTIL NO LONGER REQUIRED EXCEPT AS SPECIFIED.

LEGEND: (FOR THIS SHEET ONLY)
 1 SEE STRUCTURE PLAN FOR
 TEMPORARY WOOD POLE DETAILS

**SIGNAL AND LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 3 PHASE 2)**
 SCALE: 1" = 20'

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

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	320	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE

6-29-16
 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
 ELECTRICAL
 FUNCTIONAL SUPERVISOR
 KENNETH XU
 CALCULATED/DESIGNED BY
 CHECKED BY
 MICHELLE CHAN
 KENNETH XU
 REVISED BY
 DATE REVISED
 MC
 10-2-15

CONDUCTOR DESIGNATION		NUMBER OF CONDUCTORS															
		RUN NUMBER															
		1	2	3	4	5	6	7	8	9	10	11	12				
No. 14 CONDUCTORS																	
Ø2							3	3	3	3							
Ø6		3	3	3						3	3						
Ø8				3	3					3	3	3					
SPARES		3	3	3	3	3	3	3	3								
TOTAL No. 14		6	9	9	6	9	12	12									
No. 8 CONDUCTORS																	
SIGNAL NEUTRAL		1	1	1	1	1	1	1	1								
No. 6 CONDUCTORS																	
CONTROLLER CABINET (120 V)										2	2						
LIGHTING (240 V)		2	2	2	2	2	2	2	2								
TOTAL No. 6		2	2	2	2	2	2	2	2								
HCC			1	2	2					1	3	3					
CONDUIT SIZE		-	-	-	-	-	-	3	2-3								

→ Exist CONDUIT

LOCATION	STANDARD			VEHICLE SIGNAL MOUNTING		PED SIGNAL MOUNTING	PPB	LED LUMINAIRE (WATTS)	VIDEO DETECTION DEVICE	SPECIAL REQUIREMENT
	TYPE	SMA	LMA	MAST ARM	POLE					
Ⓐ	TEMPORARY WOOD POLE		12					300		SEE STRUCTURE PLAN FOR DETAILS
Ⓑ	TEMPORARY WOOD POLE	25	12	MAS	SV-1-T			300	1	SEE STRUCTURE PLAN FOR DETAILS
Ⓒ	TEMPORARY WOOD POLE	30	12	MAS	SV-2-T			300	1	SEE STRUCTURE PLAN FOR DETAILS
Ⓓ	TEMPORARY WOOD POLE	12	12	MAS	SV-2-T			300	1	SEE STRUCTURE PLAN FOR DETAILS
Ⓔ	TEMPORARY WOOD POLE		12		SV-1-T			300		SEE STRUCTURE PLAN FOR DETAILS

**SIGNAL AND LIGHTING
 (STAGE CONSTRUCTION)
 (STAGE 3 PHASE 2)**

LAST REVISION | DATE PLOTTED => 17-AUG-2016
 09-21-15 | TIME PLOTTED => 08:26

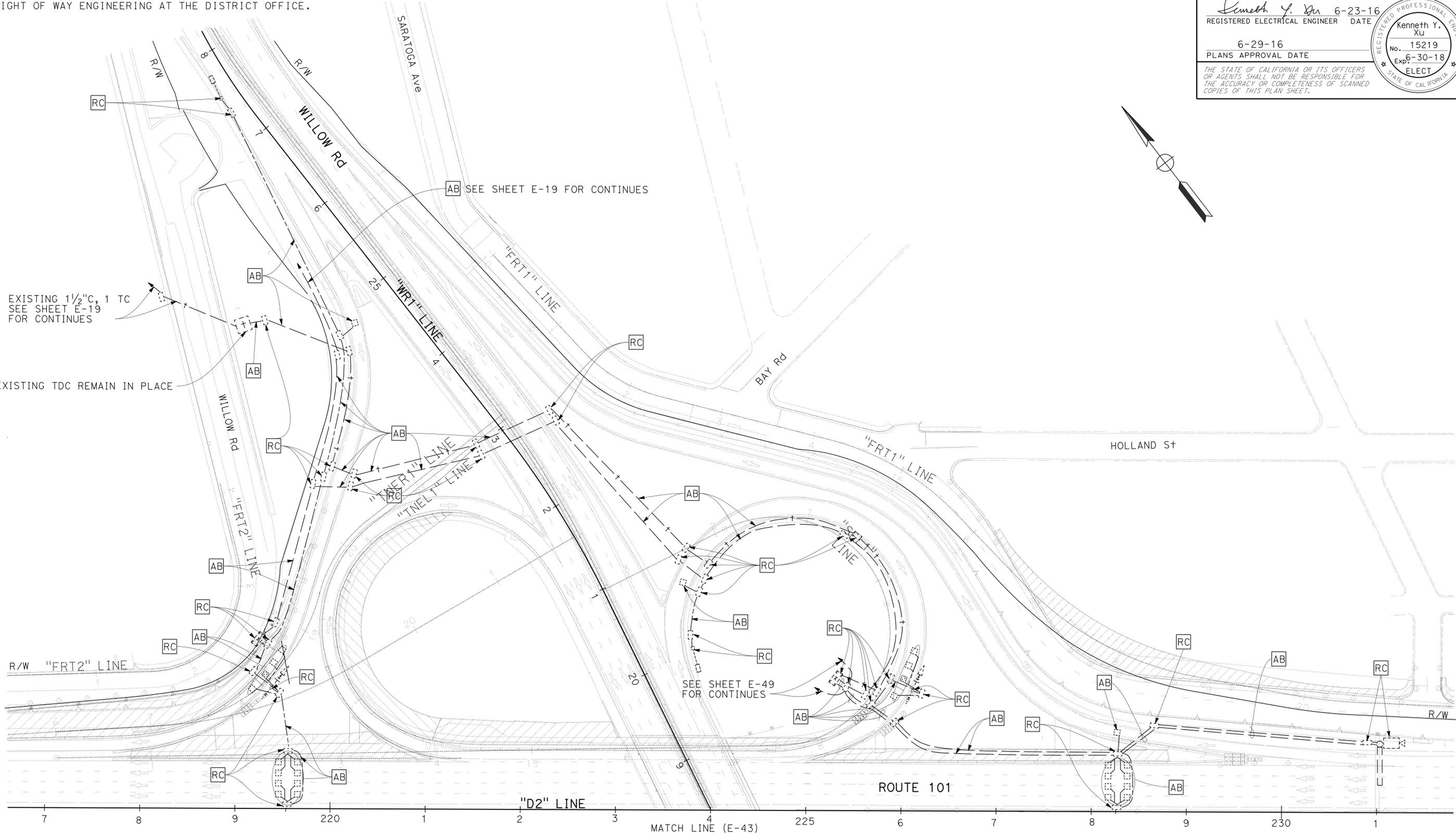
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: MICHELLE CHAN
 DESIGNED BY: KENNETH XU
 REVISIONS: MC 10-2-15
 REVISIONS: DATE REVISED

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	321	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA



**RAMP METERING SYSTEM
 (STAGE CONSTRUCTION)
 (STAGE 1 PHASE 1)**

SCALE: 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

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

E-42

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	322	568

<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE	
6-29-16 PLANS APPROVAL DATE	

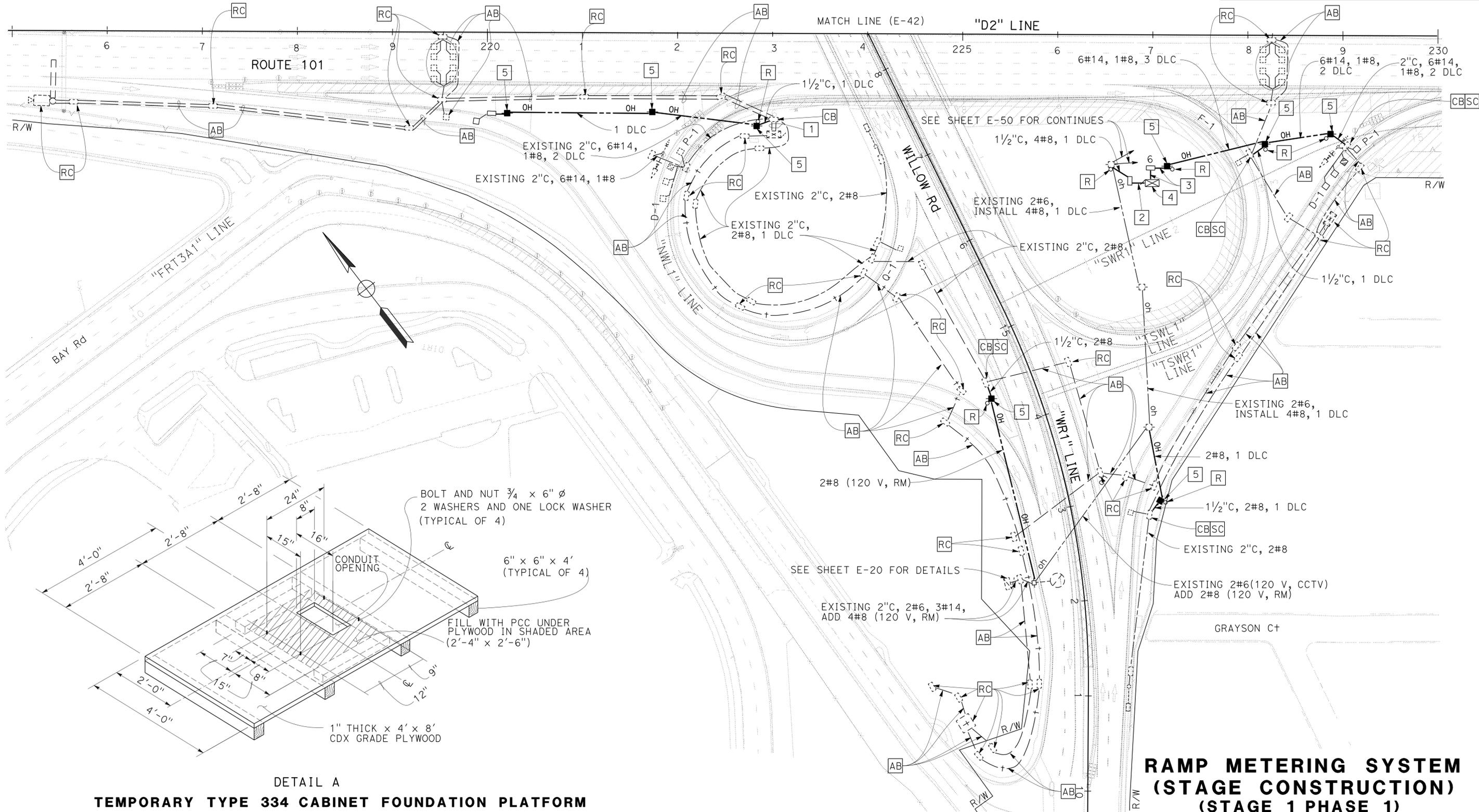
REGISTERED PROFESSIONAL ENGINEER Kenneth Y. Xu No. 15219 Exp. 6-30-18 ELECT

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

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

LEGEND: (FOR THIS SHEET ONLY)

- 1 EXISTING 2-3"C, 2#6, 1 HCC, 12 DLC, 6#14, 1#8, 2#8, RC 1 HCC, 8 DLC, 2#6
- 2 1/2"C, 2#8 (120 V, RM), 2#8 (120 V, FB), 1 DLC
- 3 3"C, 6#14, 1#8, 3 DLC
- 4 DEPARTMENT-FURNISHED MODEL 2070 CONTROLLER ASSEMBLY. USING A MODEL 334 CABINET. SEE DETAIL A ON THIS SHEET FOR FOUNDATION DETAILS. INSTALL ONE GPRS WIRELESS MODEM IN CONTROLLER CABINET, SEE SHEET E-59 FOR DETAILS. FRONT DOOR OF CABINET MUST FACE NORTH.
- 5 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS



DETAIL A
TEMPORARY TYPE 334 CABINET FOUNDATION PLATFORM

RAMP METERING SYSTEM
(STAGE CONSTRUCTION)
(STAGE 1 PHASE 1)

SCALE: 1" = 50'

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

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 DATE REVISION: 10-2-15
 REVISED BY: MC

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

FUNCTIONAL SUPERVISOR
 KENNETH XU

CALCULATED/DESIGNED BY
 CHECKED BY

MICHELLE CHAN
 KENNETH XU

REVISED BY
 DATE REVISED

MC
 10-2-15

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

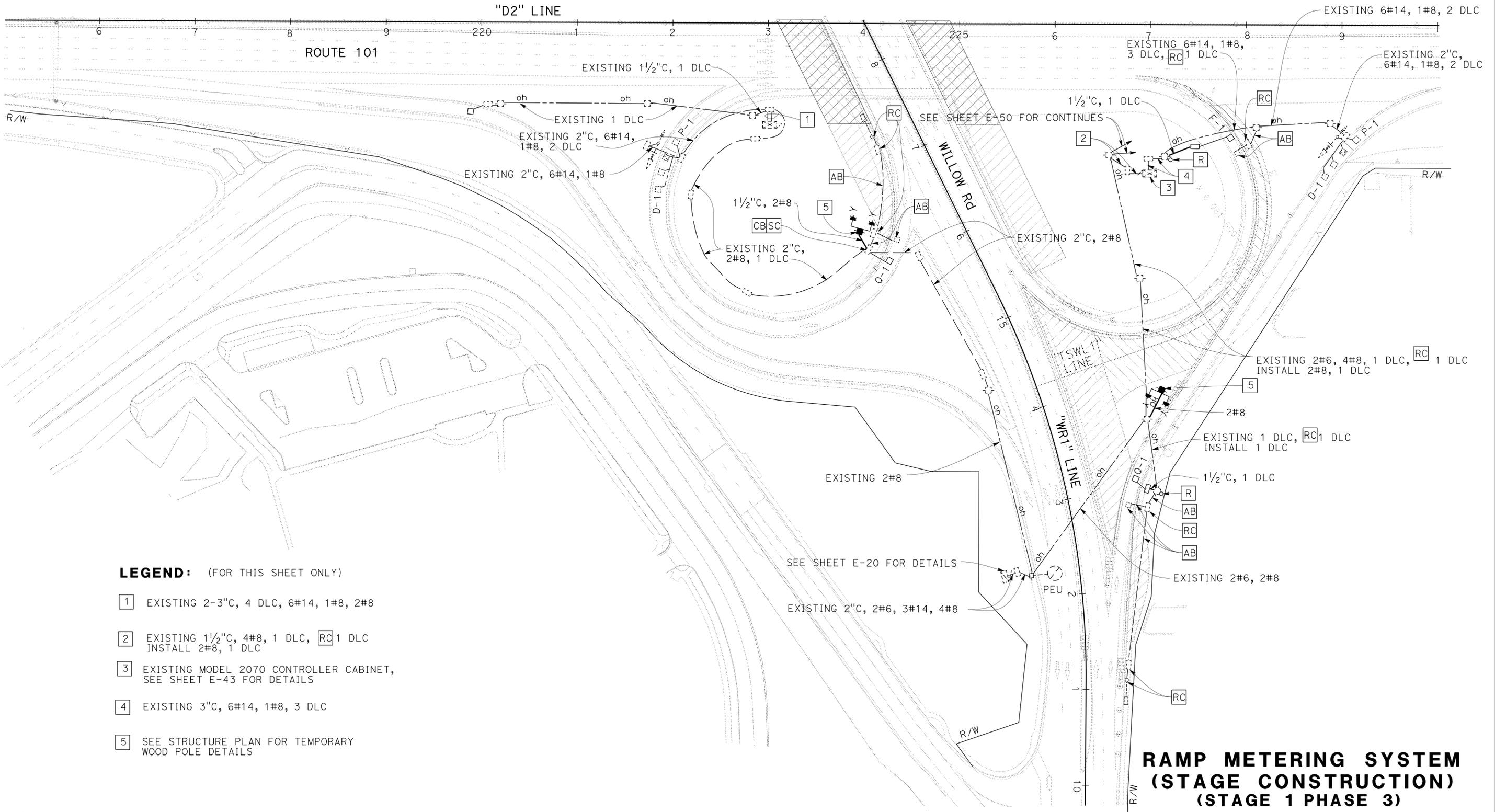
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	323	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE

6-29-16
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT

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



- LEGEND:** (FOR THIS SHEET ONLY)
- 1 EXISTING 2-3"C, 4 DLC, 6#14, 1#8, 2#8
 - 2 EXISTING 1 1/2"C, 4#8, 1 DLC, RC 1 DLC
INSTALL 2#8, 1 DLC
 - 3 EXISTING MODEL 2070 CONTROLLER CABINET,
SEE SHEET E-43 FOR DETAILS
 - 4 EXISTING 3"C, 6#14, 1#8, 3 DLC
 - 5 SEE STRUCTURE PLAN FOR TEMPORARY
WOOD POLE DETAILS

APPROVED FOR ELECTRICAL WORK ONLY

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

**RAMP METERING SYSTEM
 (STAGE CONSTRUCTION)
 (STAGE 1 PHASE 3)**

SCALE: 1" = 50'

E-44

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: MC 10-2-15
 DATE REVISED: 10-2-15

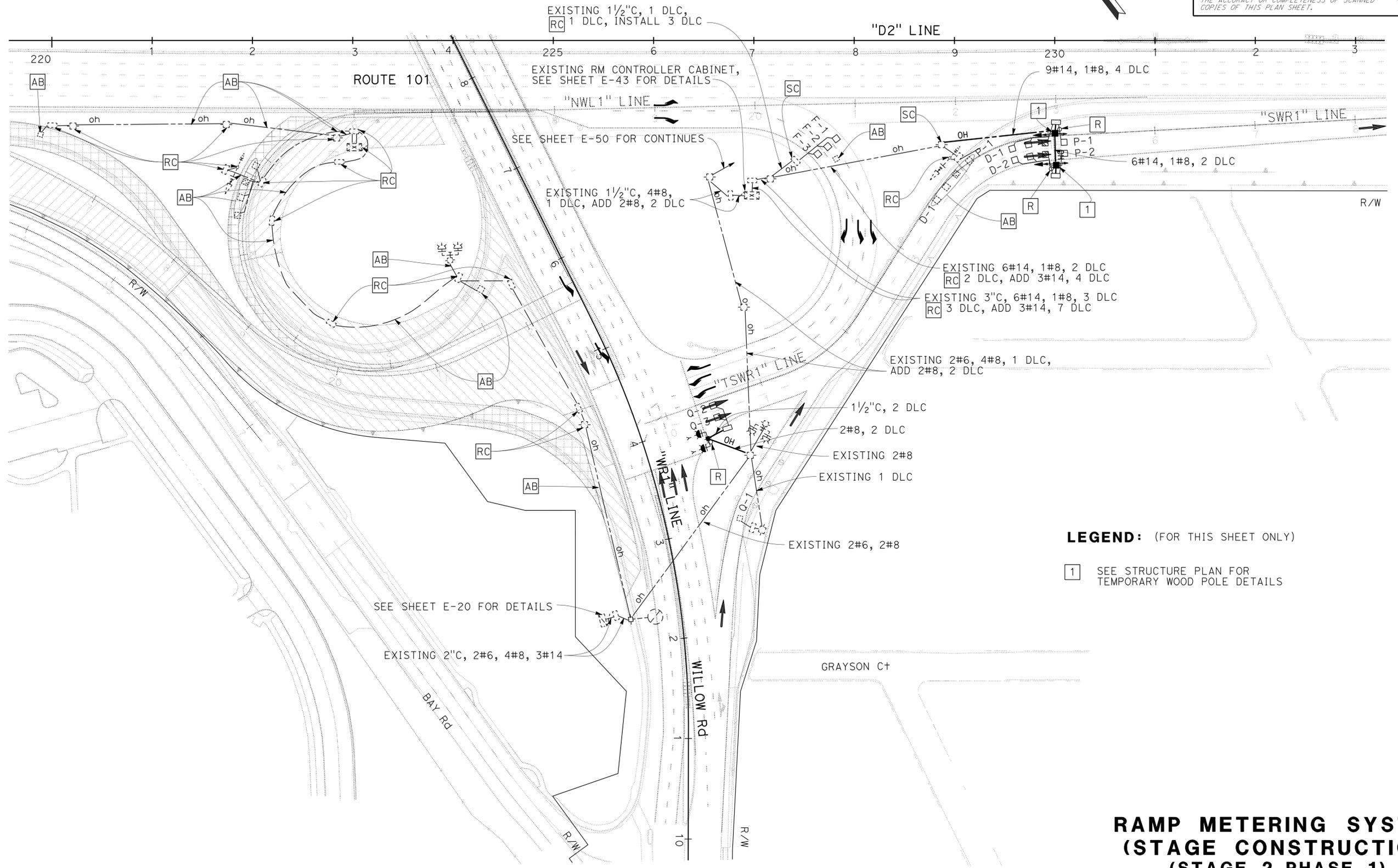
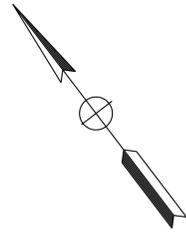
NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	324	568

6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA
 REGISTERED PROFESSIONAL ENGINEER

6-29-16
 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.



LEGEND: (FOR THIS SHEET ONLY)

1 SEE STRUCTURE PLAN FOR
 TEMPORARY WOOD POLE DETAILS

**RAMP METERING SYSTEM
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 1)**

SCALE: 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

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

E-45

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: MC 10-2-15
 REVISOR: MICHELLE CHAN
 DATE: 10-2-15

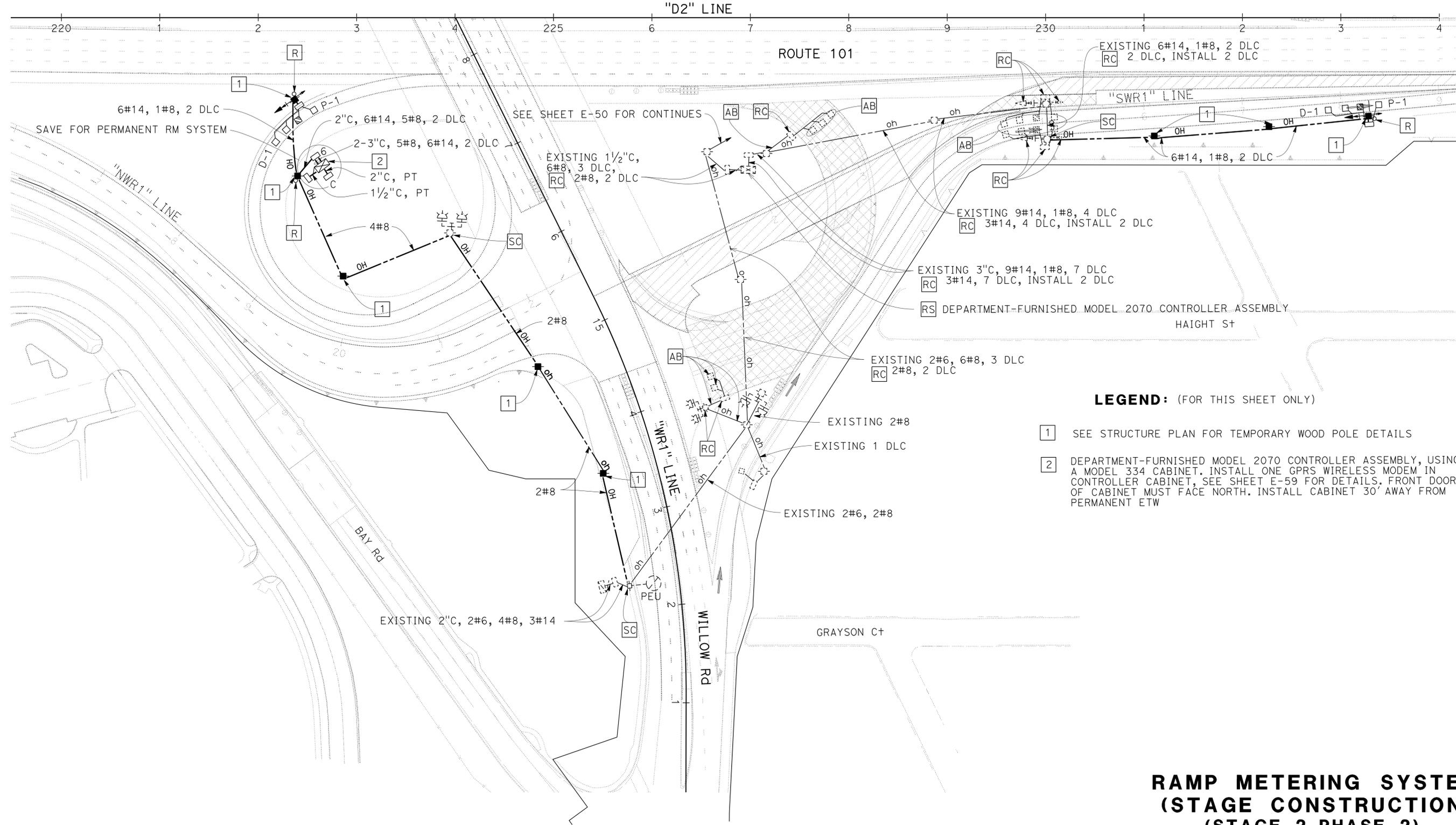
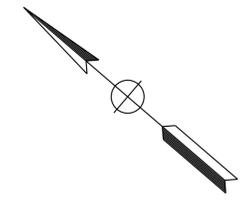
NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	325	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16

REGISTERED PROFESSIONAL ENGINEER: Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT

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



- LEGEND: (FOR THIS SHEET ONLY)**
- 1 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS
 - 2 DEPARTMENT-FURNISHED MODEL 2070 CONTROLLER ASSEMBLY, USING A MODEL 334 CABINET. INSTALL ONE GPRS WIRELESS MODEM IN CONTROLLER CABINET, SEE SHEET E-59 FOR DETAILS. FRONT DOOR OF CABINET MUST FACE NORTH. INSTALL CABINET 30' AWAY FROM PERMANENT ETW

**RAMP METERING SYSTEM
 (STAGE CONSTRUCTION)
 (STAGE 2 PHASE 2)**

SCALE: 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

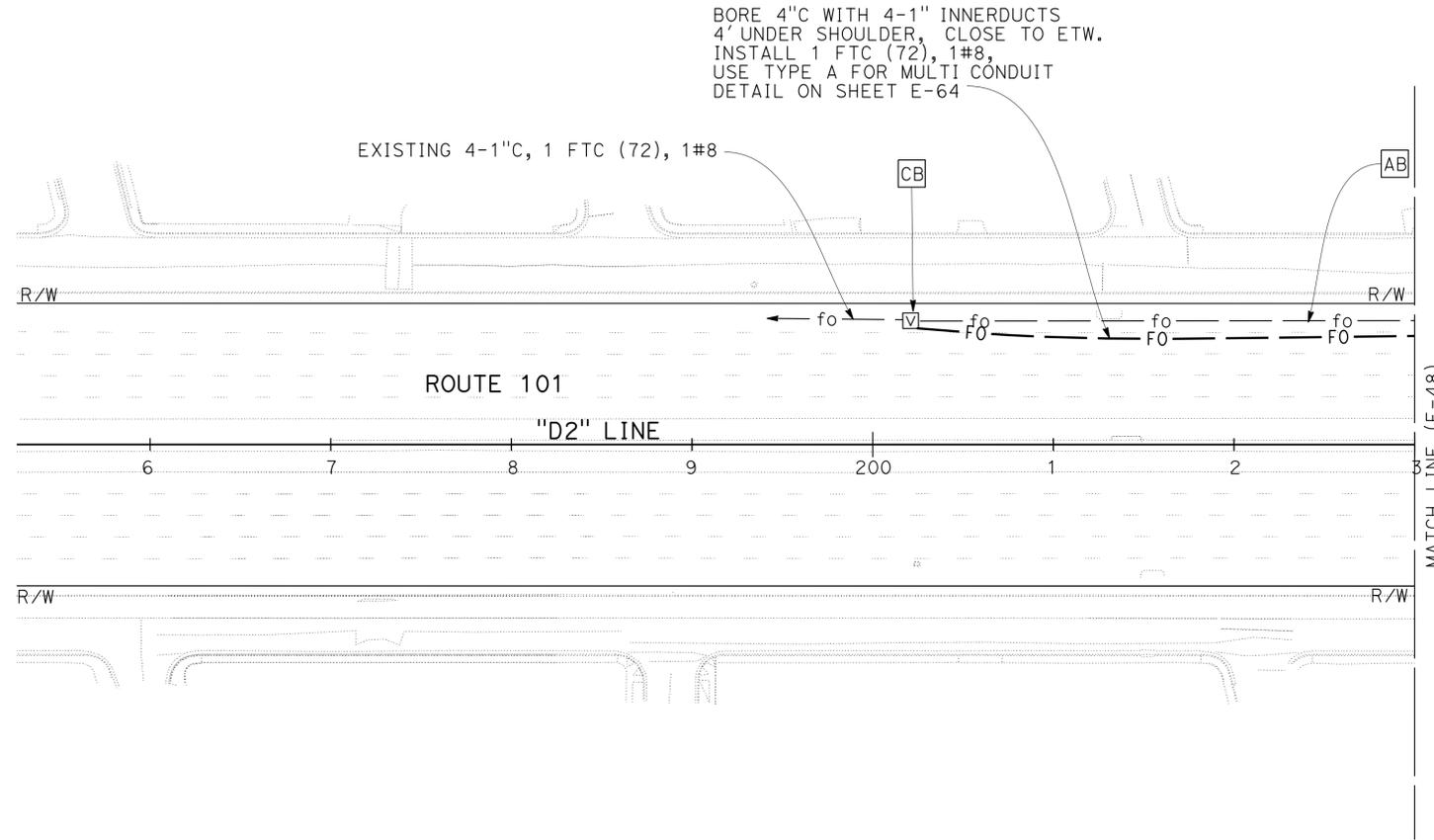
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET E-1

E-46

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION Caltrans ELECTRICAL	FUNCTIONAL SUPERVISOR KENNETH XU	CALCULATED/DESIGNED BY CHECKED BY	MICHELLE CHAN KENNETH XU	REVISED BY DATE REVISED	MC 10-2-15

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

NOTE: (FOR FIBER OPTIC SYSTEM STAGE 1 ONLY)
FIBER OPTIC CABLE DISCONNECTION AND RECONNECTION
IN THE EXISTING VAULT NEAR "D2" LINE Sta 200+10 AND
"D2" LINE Sta 247+90 MUST BE DONE CONCURRENTLY WITHIN
72 HOURS.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	326	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA

**FIBER OPTIC SYSTEM
(STAGE CONSTRUCTION)**

(STAGE 1)

SCALE: 1" = 50'

E-47

APPROVED FOR ELECTRICAL WORK ONLY

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

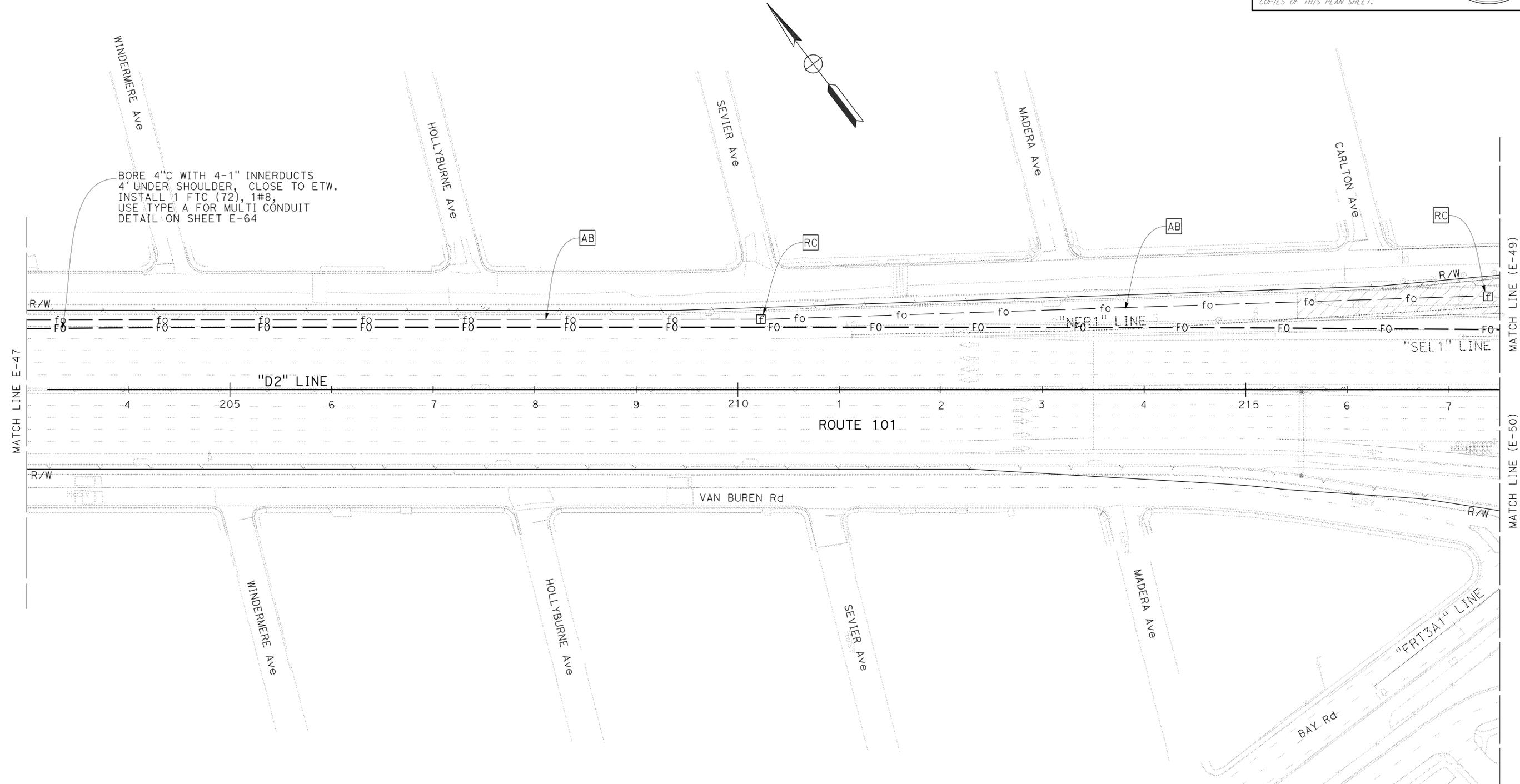
FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: MC 10-2-15

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	327	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16
 No. 15219
 Exp. 6-30-18
 ELECT

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.



BORE 4" C WITH 4-1" INNERDUCTS
 4' UNDER SHOULDER, CLOSE TO ETW.
 INSTALL 1 FTC (72), 1#8,
 USE TYPE A FOR MULTI CONDUIT
 DETAIL ON SHEET E-64

**FIBER OPTIC SYSTEM
 (STAGE CONSTRUCTION)
 (STAGE 1)**

SCALE: 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

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

E-48

LAST REVISION DATE PLOTTED => 17-AUG-2016 09-21-15 TIME PLOTTED => 08:26

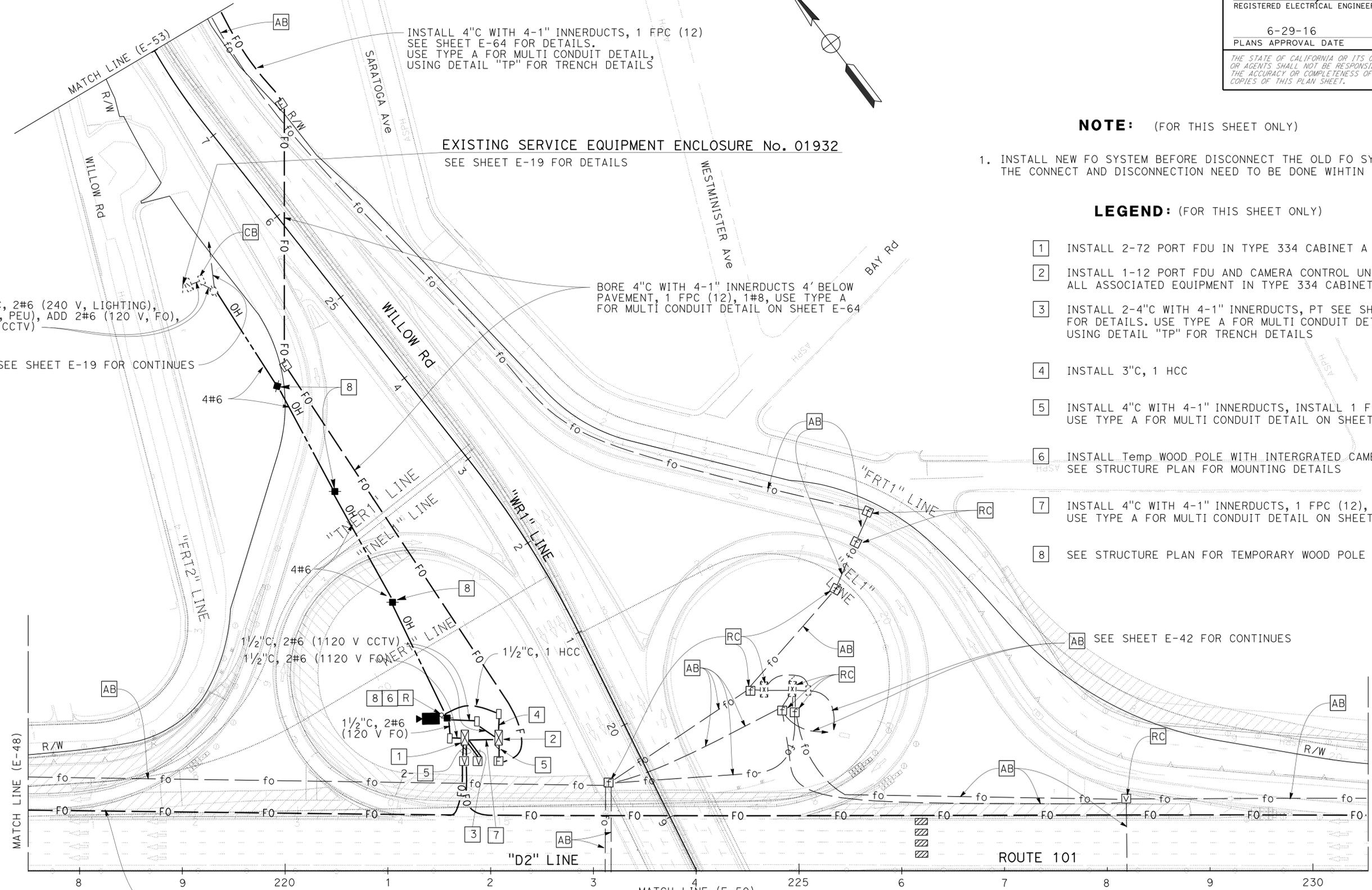
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

FUNCTIONAL SUPERVISOR: KENNETH XU
 CALCULATED/DESIGNED BY: KENNETH XU
 CHECKED BY: MICHELLE CHAN
 REVISED BY: MC
 DATE REVISED: 10-2-15

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	328	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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 THIS SHEET ONLY)

1. INSTALL NEW FO SYSTEM BEFORE DISCONNECT THE OLD FO SYSTEM. THE CONNECT AND DISCONNECTION NEED TO BE DONE WITHIN 72 HOURS.

LEGEND: (FOR THIS SHEET ONLY)

- 1 INSTALL 2-72 PORT FDU IN TYPE 334 CABINET A
- 2 INSTALL 1-12 PORT FDU AND CAMERA CONTROL UNIT AND ALL ASSOCIATED EQUIPMENT IN TYPE 334 CABINET B
- 3 INSTALL 2-4"C WITH 4-1" INNERDUCTS, PT SEE SHEET E-64 FOR DETAILS. USE TYPE A FOR MULTI CONDUIT DETAIL, USING DETAIL "TP" FOR TRENCH DETAILS
- 4 INSTALL 3"C, 1 HCC
- 5 INSTALL 4"C WITH 4-1" INNERDUCTS, INSTALL 1 FPC (12), 1#8, USE TYPE A FOR MULTI CONDUIT DETAIL ON SHEET E-64
- 6 INSTALL Temp WOOD POLE WITH INTERGRATED CAMERA UNIT, SEE STRUCTURE PLAN FOR MOUNTING DETAILS
- 7 INSTALL 4"C WITH 4-1" INNERDUCTS, 1 FPC (12), 1#8, USE TYPE A FOR MULTI CONDUIT DETAIL ON SHEET E-64
- 8 SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS

**FIBER OPTIC SYSTEM
 (STAGE CONSTRUCTION)**

(STAGE 1)
 SCALE: 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

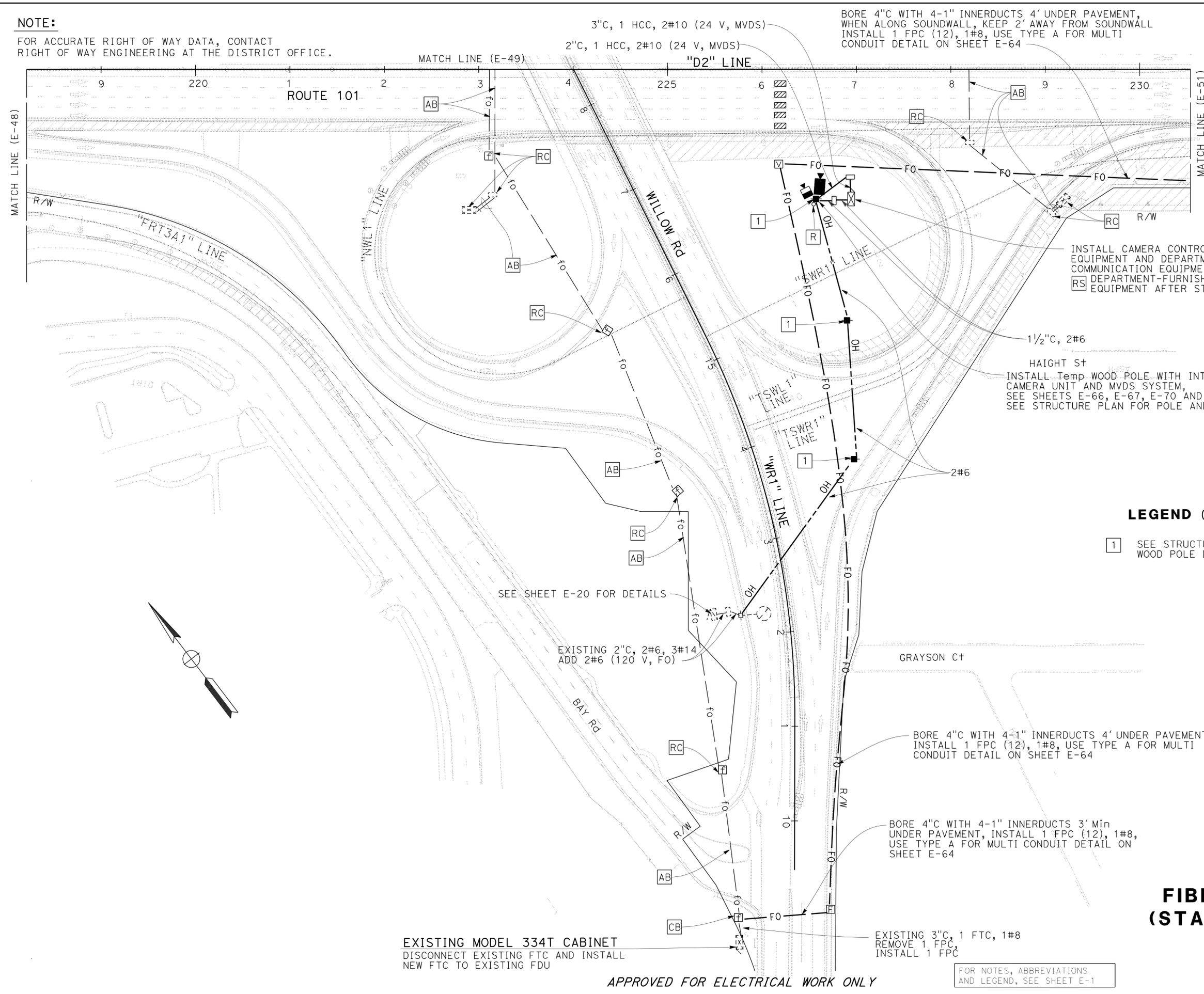
FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 DESIGNED BY: MICHELLE CHAN
 REVISIONS: 10-2-15 (MC)
 DATE REVISED: 10-2-15

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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	329	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16

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.



INSTALL CAMERA CONTROL UNIT, ALL ASSOCIATED EQUIPMENT AND DEPARTMENT-FURNISHED CCTV WIRELESS COMMUNICATION EQUIPMENT IN TYPE 334 CABINET
 [RS] DEPARTMENT-FURNISHED CCTV WIRELESS COMMUNICATION EQUIPMENT AFTER STAGE CONSTRUCTION

1 1/2" C, 2#6
 HAIGHT ST
 INSTALL Temp WOOD POLE WITH INTERGRATED CAMERA UNIT AND MVDS SYSTEM, SEE SHEETS E-66, E-67, E-70 AND E-71 FOR DETAILS, SEE STRUCTURE PLAN FOR POLE AND FOUNDATION DETAILS

LEGEND (FOR THIS SHEET ONLY)

[1] SEE STRUCTURE PLAN FOR TEMPORARY WOOD POLE DETAILS

EXISTING MODEL 334T CABINET
 DISCONNECT EXISTING FTC AND INSTALL NEW FTC TO EXISTING FDU

APPROVED FOR ELECTRICAL WORK ONLY

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

FIBER OPTIC SYSTEM (STAGE CONSTRUCTION)

(STAGE 1)
 SCALE: 1" = 50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

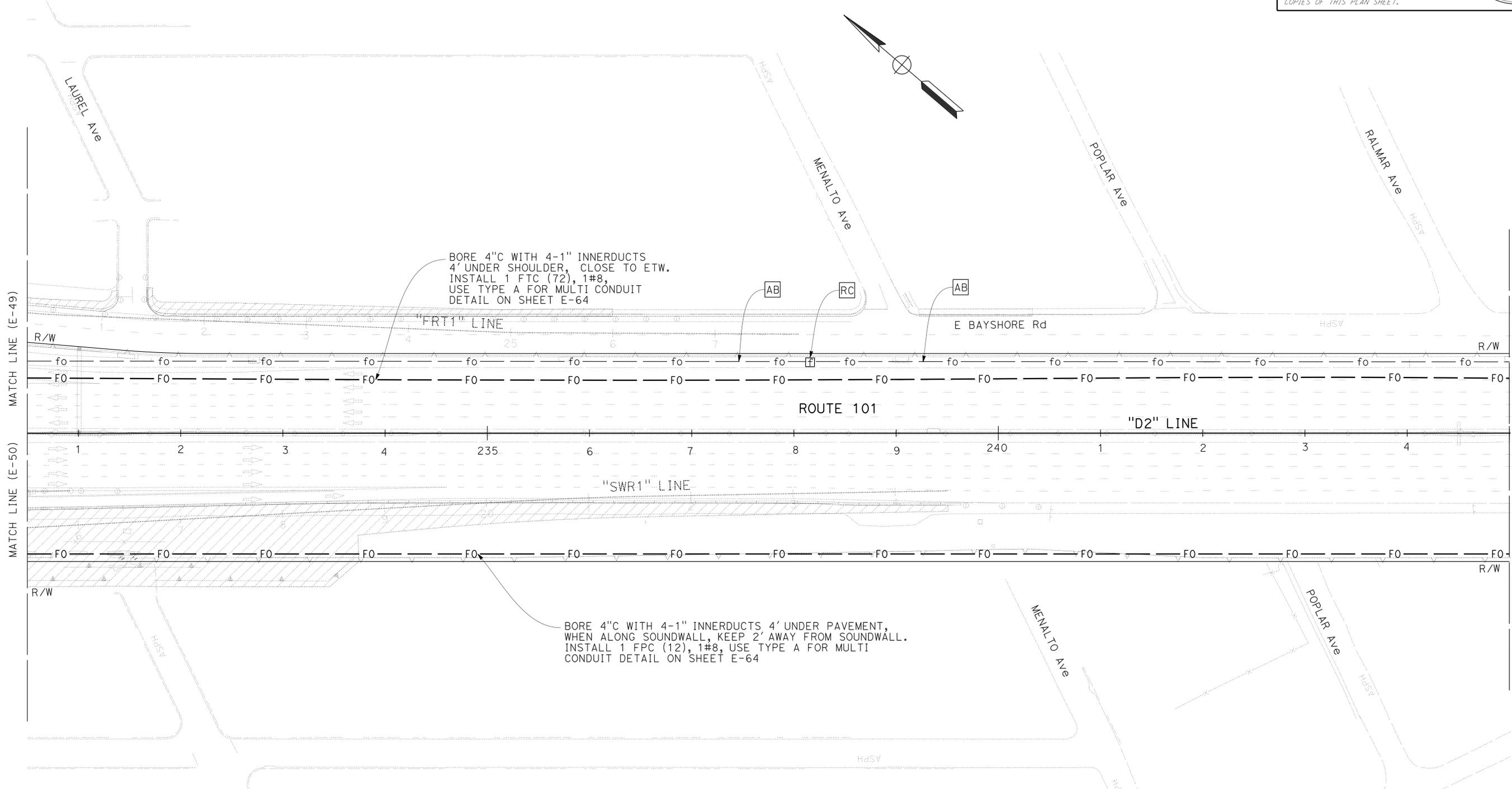
FUNCTIONAL SUPERVISOR: KENNETH XU
 CALCULATED/DESIGNED BY: KENNETH XU
 CHECKED BY: MICHELLE CHAN
 REVISIONS: MC 10-2-15
 REVISIONS: DATE REVISION

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	330	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16
 No. 15219
 Exp. 6-30-18
 ELECT

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.



**FIBER OPTIC SYSTEM
 (STAGE CONSTRUCTION)
 (STAGE 1)
 SCALE: 1" = 50'**

APPROVED FOR ELECTRICAL WORK ONLY

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

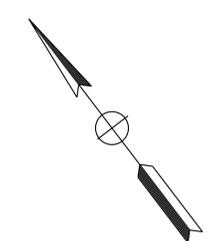
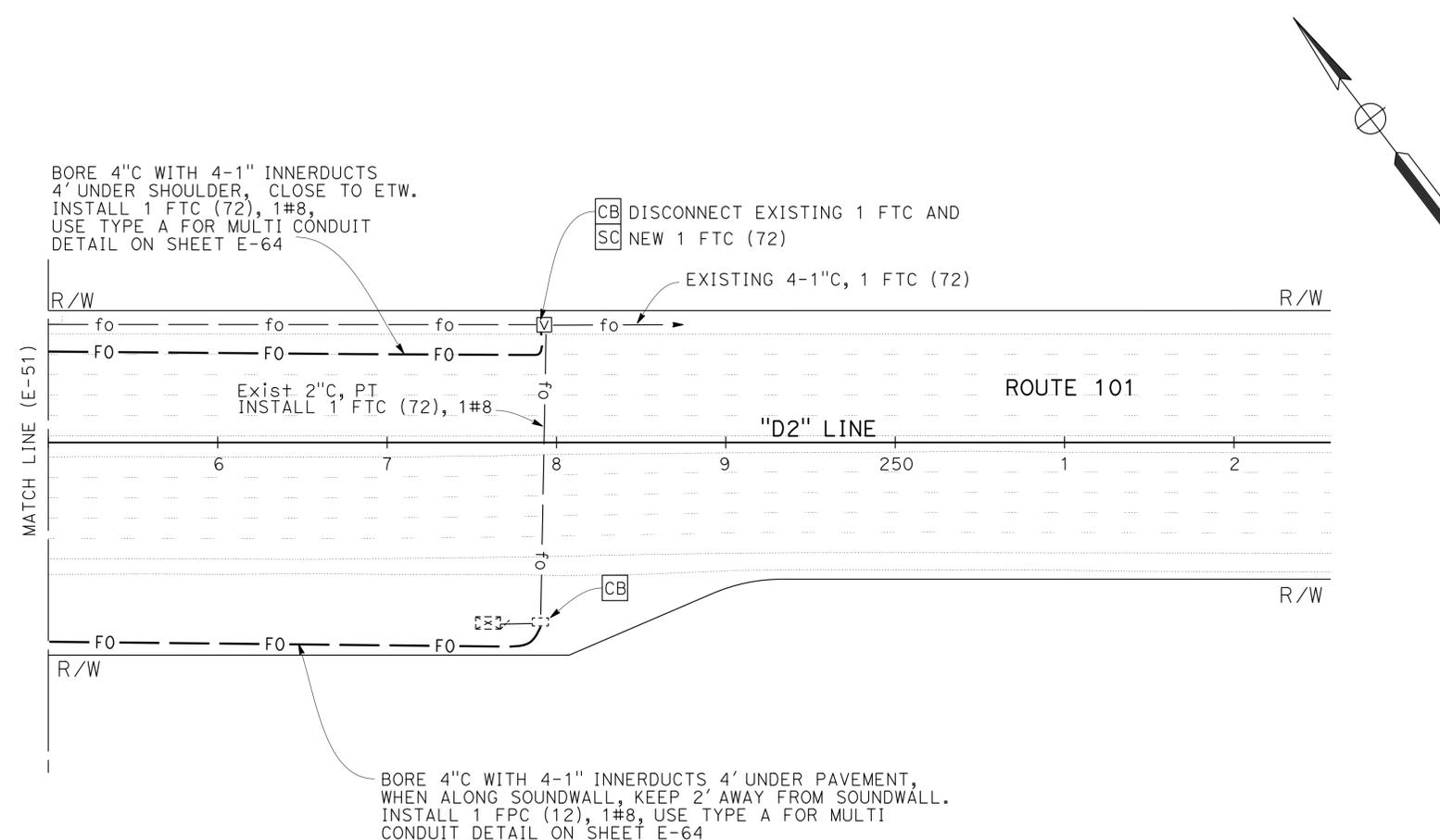
E-51

LAST REVISION: DATE PLOTTED => 17-AUG-2016 09-21-15 TIME PLOTTED => 08:26

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION Caltrans ELECTRICAL	FUNCTIONAL SUPERVISOR KENNETH XU	CALCULATED/DESIGNED BY CHECKED BY	MICHELLE CHAN KENNETH XU	REVISED BY DATE REVISED	MC 10-2-15

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	331	568
			Kenneth Y. Xu REGISTERED ELECTRICAL ENGINEER	6-23-16 DATE	
			6-29-16 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>					



FIBER OPTIC SYSTEM (STAGE CONSTRUCTION)

(STAGE 1)
SCALE: 1" = 50'

E-52

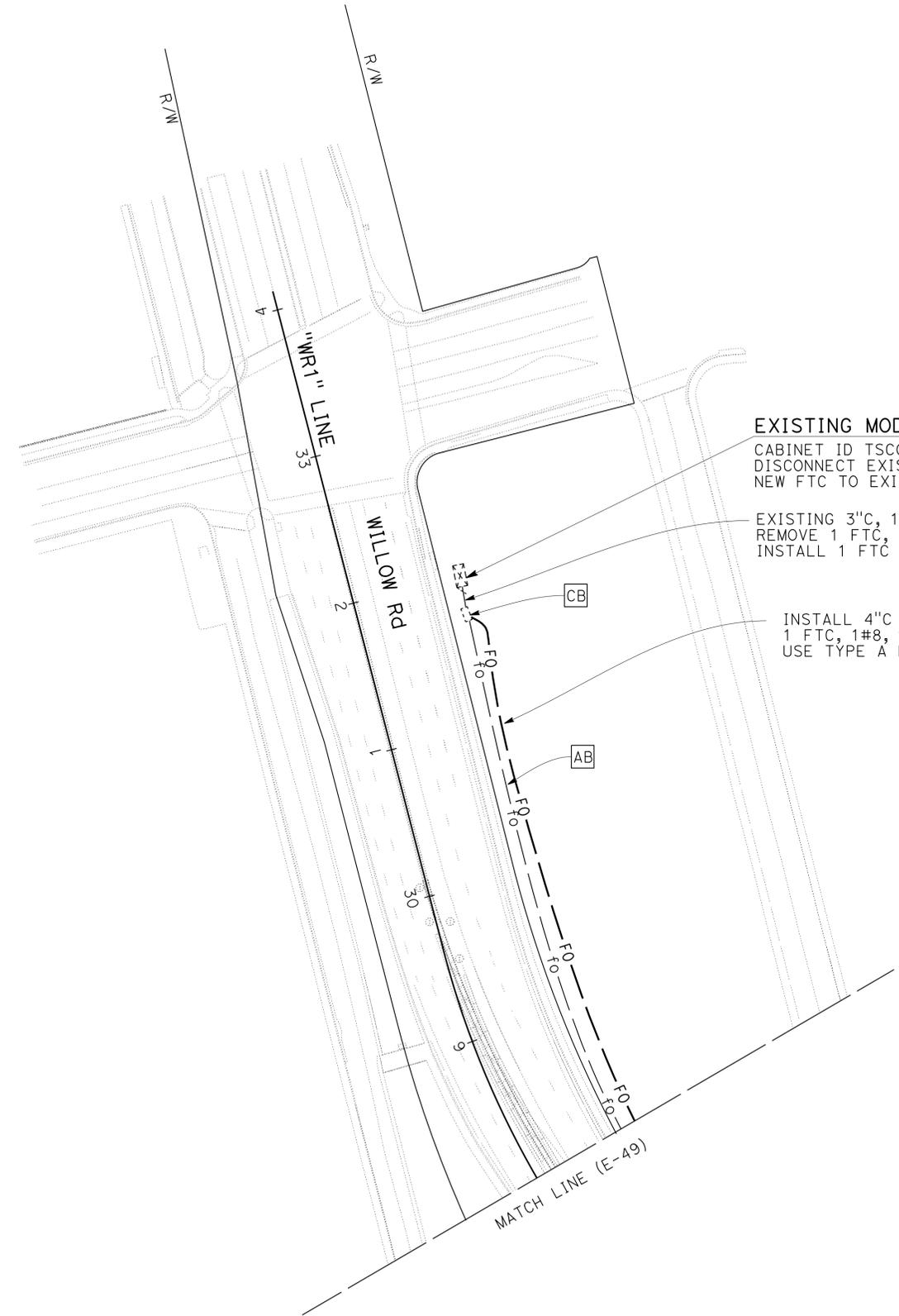
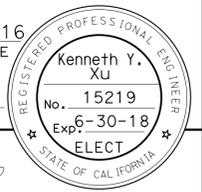
APPROVED FOR ELECTRICAL WORK ONLY

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION Caltrans ELECTRICAL	FUNCTIONAL SUPERVISOR KENNETH XU	CALCULATED-DESIGNED BY CHECKED BY	MICHELLE CHAN KENNETH XU	REVISED BY DATE REVISED	MC 10-2-15

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

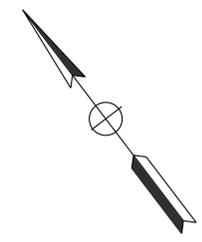
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	332	568
			Kenneth Y. Xu REGISTERED ELECTRICAL ENGINEER	6-23-16 DATE	
			6-29-16 PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					



EXISTING MODEL 334T CABINET
CABINET ID TSC050
DISCONNECT EXISTING FTC AND INSTALL
NEW FTC TO EXISTING FDU

EXISTING 3"C, 1 FTC, 1#8
REMOVE 1 FTC,
INSTALL 1 FTC

INSTALL 4"C WITH 4-1" INNERDUCTS,
1 FTC, 1#8, SEE SHEET E-64 FOR DETAILS.
USE TYPE A FOR MULTI CONDUIT DETAIL



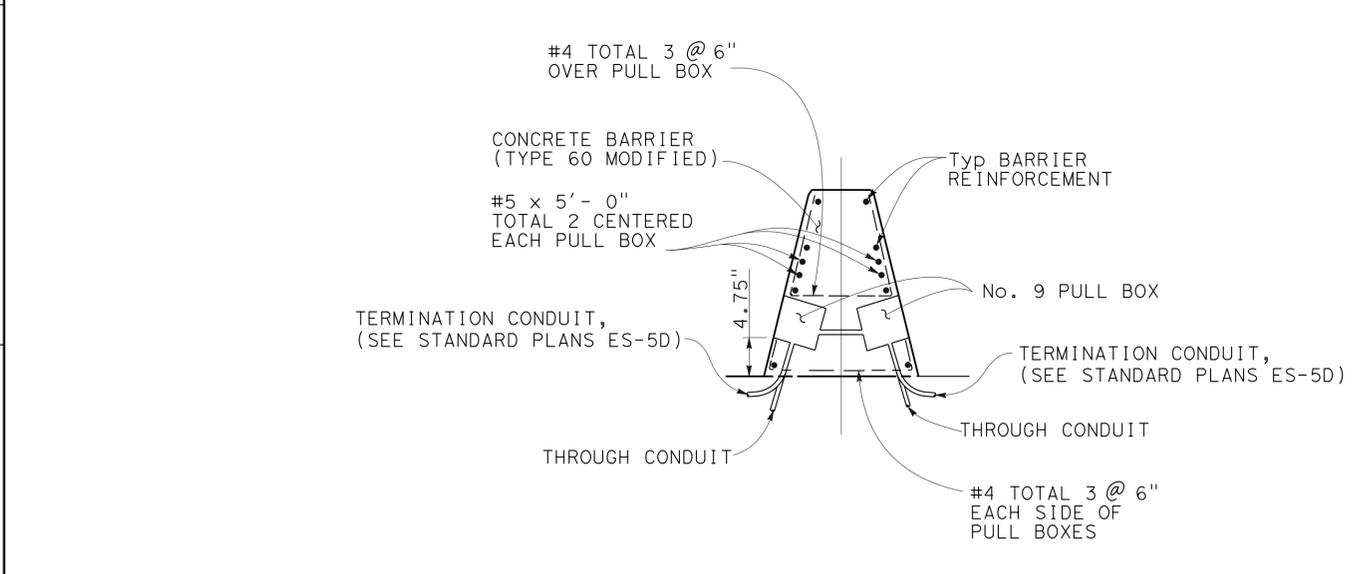
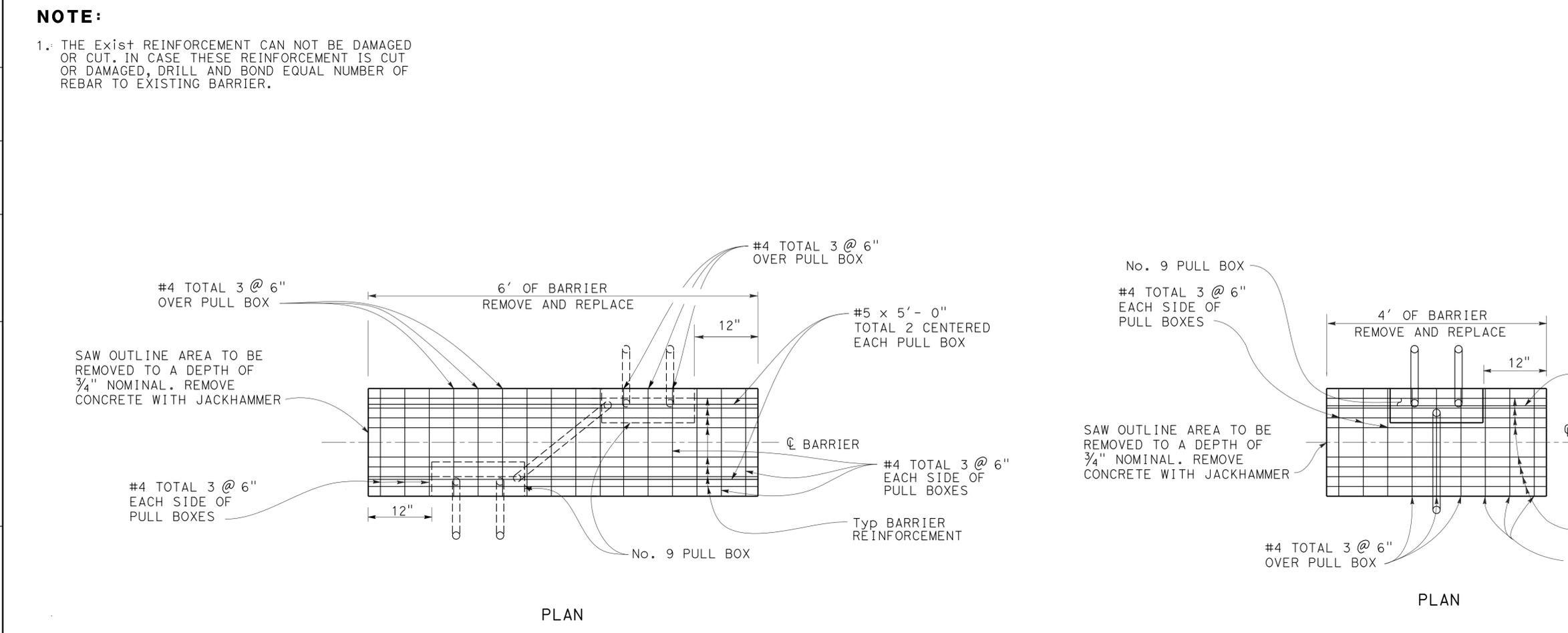
**FIBER OPTIC SYSTEM
(STAGE CONSTRUCTION)**

(STAGE 1)
SCALE: 1" = 50'

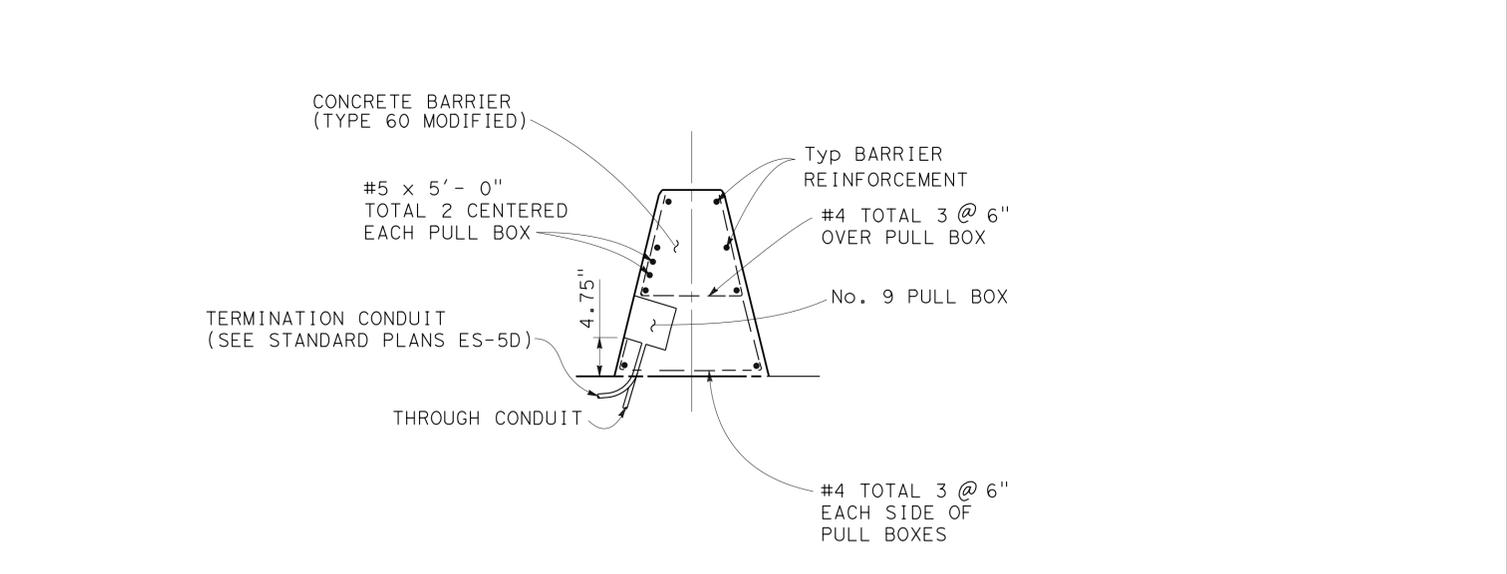
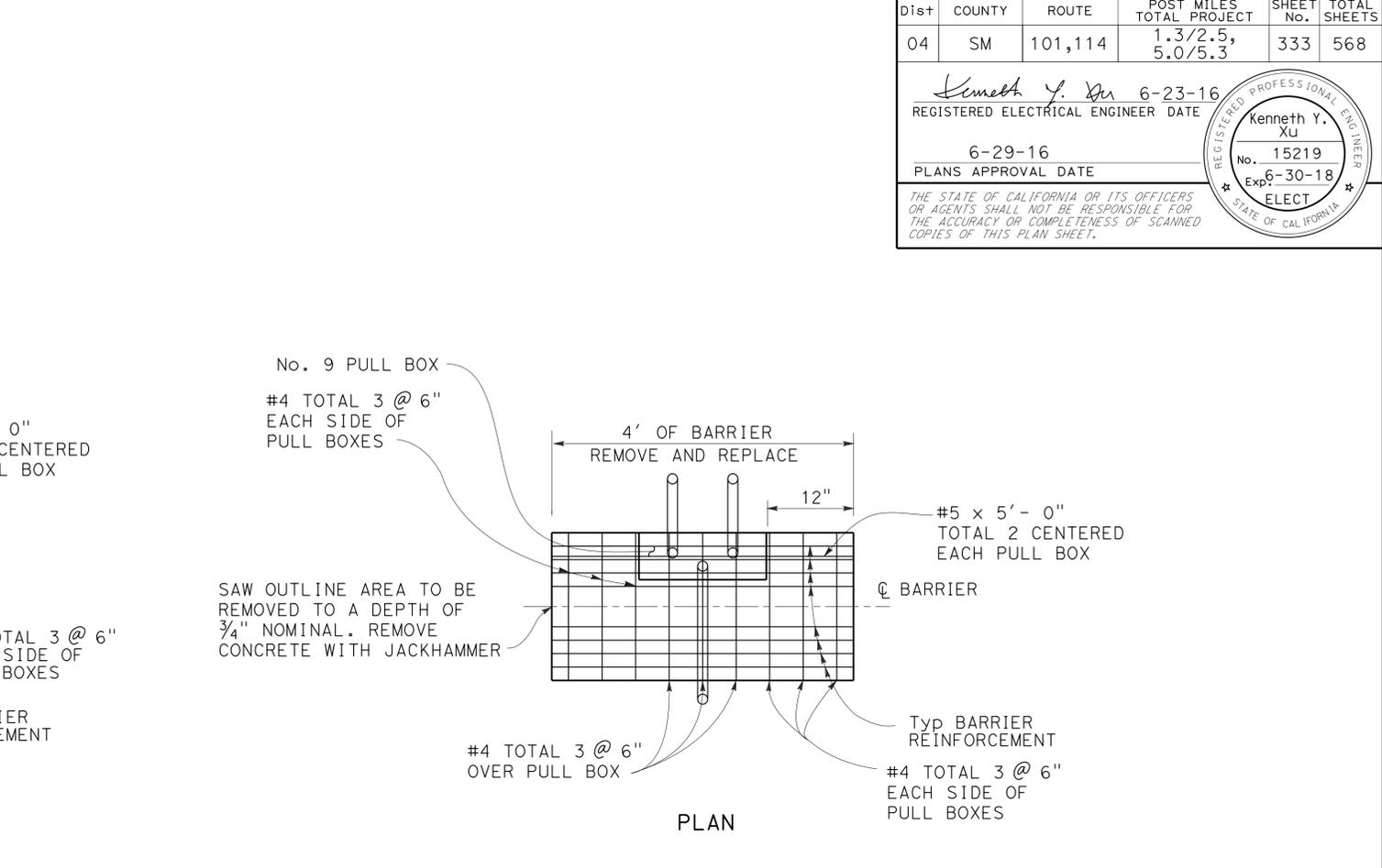
APPROVED FOR ELECTRICAL WORK ONLY

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL



CONDUIT AND No. 9 DOUBLE PULL BOX INSTALLATION IN MEDIAN BARRIER



CONDUIT AND No. 9 SINGLE PULL BOX INSTALLATION IN MEDIAN BARRIER

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	333	568

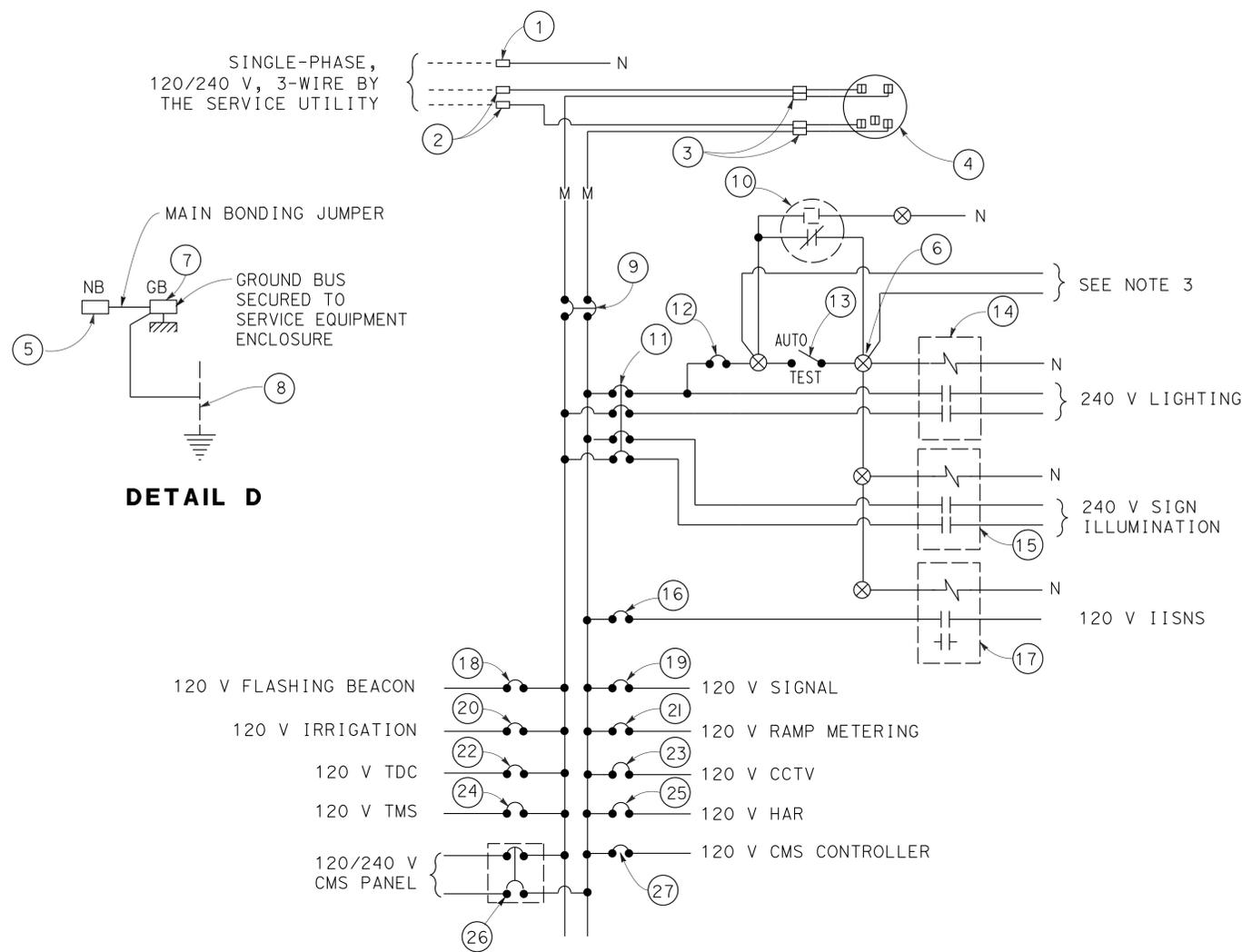
REGISTERED ELECTRICAL ENGINEER DATE 6-23-16
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT

PLANS APPROVAL DATE 6-29-16

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.

ELECTRICAL DETAILS
 NO SCALE

LAST REVISION DATE PLOTTED => 17-AUG-2016 08-14-15 TIME PLOTTED => 08:26



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)
 DETAIL C

- NOTES:** (FOR THIS SHEET ONLY)
- VOLTAGE RATINGS OF SERVICE EQUIPMENT MUST CONFORM TO THE SERVICE VOLTAGES INDICATED ON THE PLANS.
 - UNLESS OTHERWISE INDICATED ON THE PLANS, SERVICE EQUIPMENT ITEMS MUST BE PROVIDED FOR EACH SERVICE EQUIPMENT ENCLOSURE AS SHOWN.
 - CONNECT TO REMOTE TEST SWITCH MOUNTED ON SIGN POST OR STRUCTURE WHEN REQUIRED.
 - ITEM No. (1) AND (5) MUST BE ISOLATED FROM THE CABINET.
 - METER SOCKETS MUST MEET SERVICE UTILITY REQUIREMENTS.
 - THE LANDING LUG MUST BE SUITABLE FOR MULTIPLE CONDUCTORS.
 - PHOTOELECTRIC CONTROL MUST BE TYPE II.
 - SERVICE UTILITY WILL INSTALL THE TIME-OF-USE METER IF APPLICABLE.
 - UNLESS OTHERWISE NOTED, THE MAXIMUM NUMBER OF SINGLE-POLE CIRCUIT BREAKER SPACES IN THE ENCLOSURE IS FOURTEEN.
 - SEE STANDARD PLANS ES-2D FOR OTHER DETAILS.

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

ITEM No.	COMPONENT	NAMEPLATE DESCRIPTION	ITEM No.	COMPONENT	NAMEPLATE DESCRIPTION
(1)	NEUTRAL LUG		(15)	30 A, 2P, NO CONTACTOR	
(2)	LANDING LUG		(16)	15 A, 120 V, 1P, CB	IISNS
(3)	TEST BYPASS FACILITY		(17)	30 A, 2P, NO CONTACTOR	
(4)	METER SOCKET AND SUPPORT		(18)	15 A, 120 V, 1P, CB	FLASHING BEACON
(5)	NEUTRAL BUS		(19)	50 A, 120 V, 1P, CB	SIGNALS
(6)	TERMINAL BLOCK		(20)	20 A, 120 V, 1P, CB	IRRIGATION
(7)	GROUND BUS		(21)	30 A, 120 V, 1P, CB	RAMP METERING
(8)	GROUNDING ELECTRODE		(22)	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
(9)	100 A, 240 V, 2P, CB	MAIN BREAKER	(23)	30 A, 120 V, 1P, CB	CCTV
(10)	PHOTOELECTRIC UNIT (NOTE 7)		(24)	30 A, 120 V, 1P, CB	TMS
(11)	30 A, 240 V, 4P, CB	LIGHTING AND SIGN ILLUMINATION	(25)	30 A, 120 V, 1P, CB	HAR
(12)	15 A, 120 V, 1P, CB	LIGHTING AND SIGN ILLUMINATION CONTROL	(26)	30 A, 240 V, 2P, CB	CMS PANEL
(13)	15 A, 120 V, 1P, TEST SWITCH	TEST SWITCH	(27)	30 A, 120 V, 1P, CB	CMS CONTROLLER
(14)	60 A, 2P, NO CONTACTOR				

(SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-A SERIES)

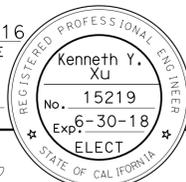
ELECTRICAL DETAILS

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 REVISIONS: 10-2-15
 MC

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	335	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 PLANS APPROVAL DATE

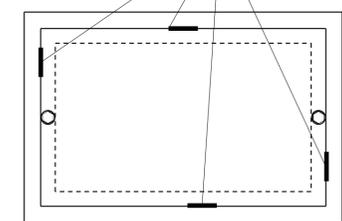


THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

1. WELDING MUST COMPLY WITH STANDARD SPECIFICATION SECTION 75.
2. CONDUITS ENTERING THE PULL BOX MUST BE ENCASED IN PCC (3" ALL AROUND), PCC ENCASEMENT MUST EXTEND 5'-6" FROM THE PULL BOX.
3. PULL BOXES FOR ELECTROLIERS, POST AND SIGNAL STANDARDS MUST BE LOCATED WITHIN 5'-0" FROM THE STATION OF THE ADJACENT ELECTROLIER, POST OR SIGNAL STANDARD.
4. FOR ADDITIONAL NOTES AND DETAILS, SEE STANDARD PLANS RSP ES-8B.

WELD PLATE COVER TO E-BAR FRAME WITH A MINIMUM 3" WELD, SEE NOTE 1



TOP VIEW

TRAFFIC PULL BOX WELDING DETAIL

ELECTRICAL DETAILS

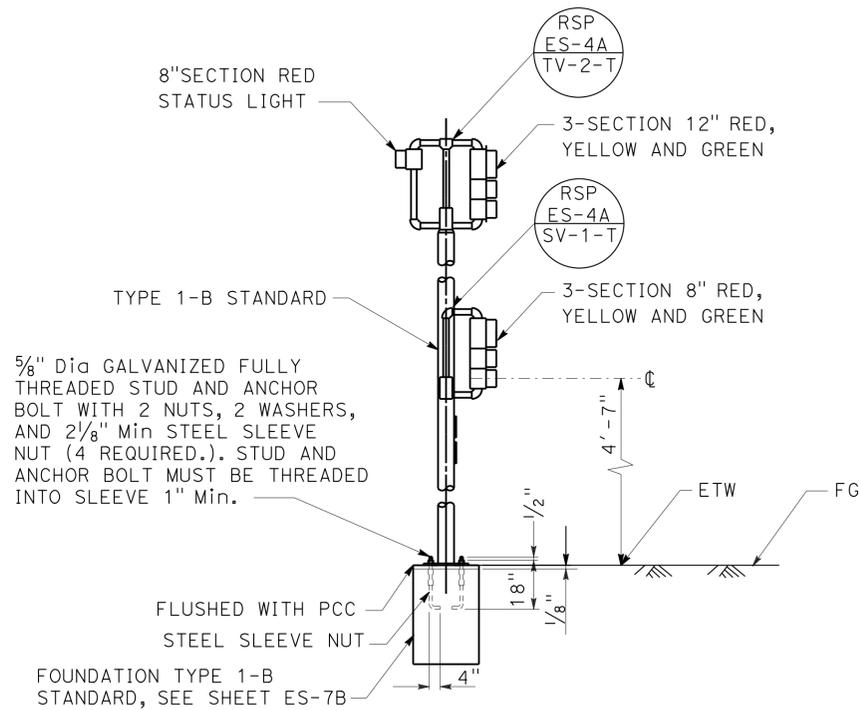
NO SCALE

E-56

SIGNAL CONDUCTORS FOR RAMP METERS MUST BE COLOR CODED AS FOLLOWS:

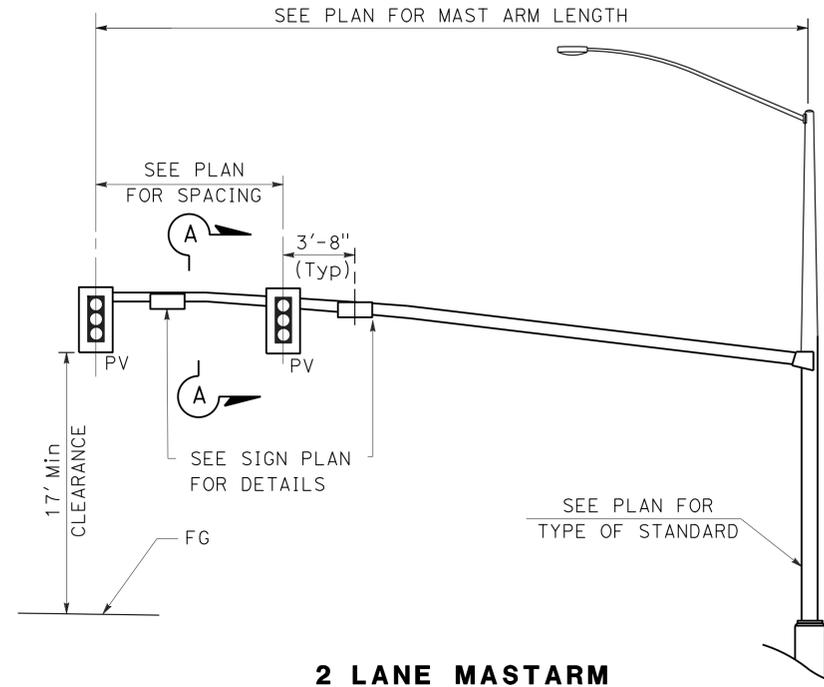
PHASE	BASE	STRIPE	BAND	SYMBOLS
1	RE, YE, BRN	NONE		1
2	RE, YE, BRN	BLACK		2
3	RE, YE, BRN	PURPLE		3
4	RE, YE, BRN	ORANGE		4

DETAIL "CONDUCTOR COLOR CODING"

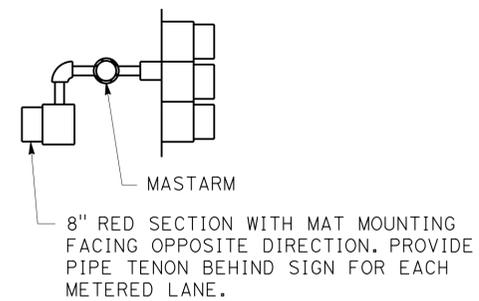


**DETAIL "SIG"
RAMP METER SIGNAL, POLE MOUNTED**

**RAMP METERING 1-B STANDARD AND
CONDUCTOR COLOR CODING**



**DETAIL "MA"
RAMP METER SIGNAL, MAST ARM MOUNTED**

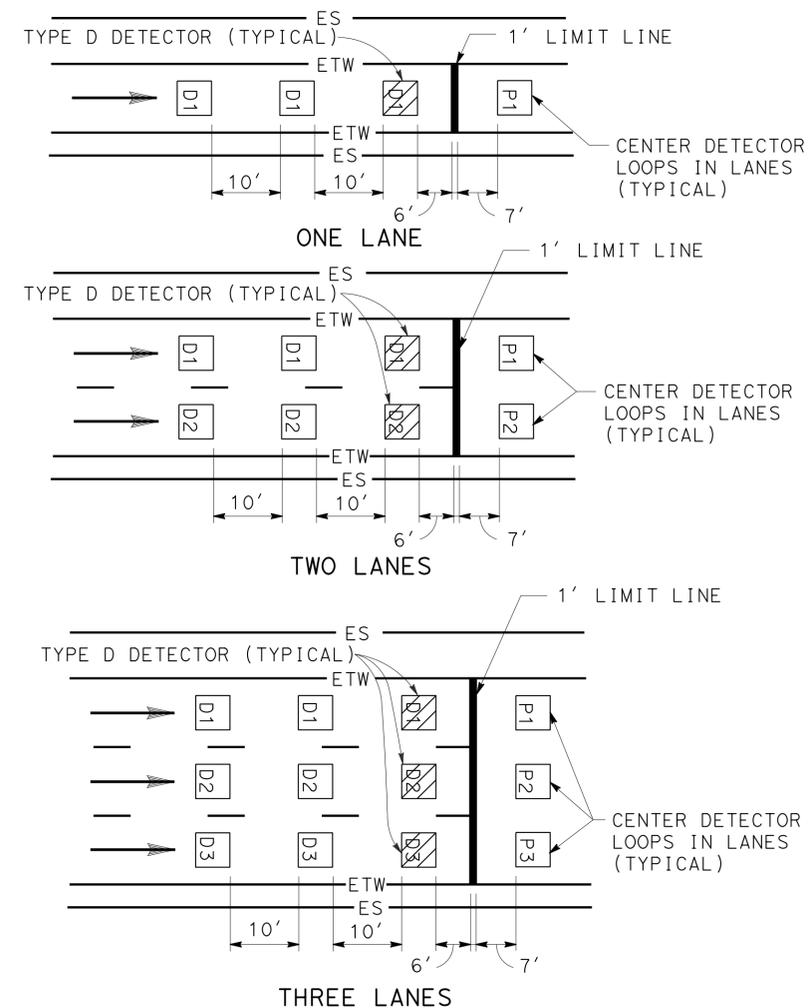


SECTION B
SECTION A-A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	337	568

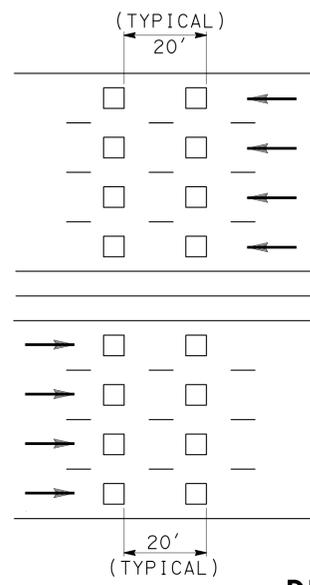
<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE	
6-29-16 PLANS APPROVAL DATE	
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>	

REGISTERED PROFESSIONAL ENGINEER
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA



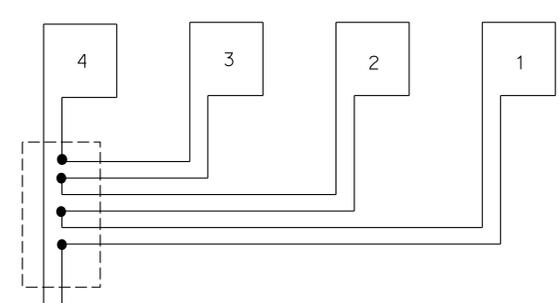
**DETAIL "RM"
RAMP METERING STATION**

- RAMP METERING STATION NOTES:**
- SEE RSP ES-5A, ES-5B, AND ES-13A FOR ADDITIONAL DETAILS.
 - DLC CONDUCTORS MUST BE SPLICED TO THE LOOP CONDUCTORS IN THE NEAREST PULL BOX.
 - ALL SPLICES MUST BE TYPE "S" OR TYPE "ST" AS REQUIRED.
 - LOCATION OF TYPE 1 STANDARDS MUST BE APPROXIMATELY 3 FEET FROM THE EDGE OF SHOULDER AND 12 INCHES DOWNSTREAM OF THE LIMIT LINE.

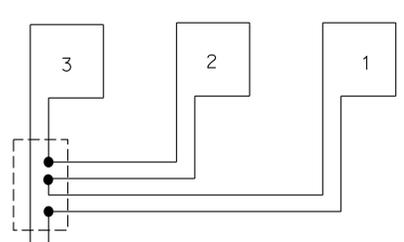


**DETAIL "TM"
TRAFFIC MONITORING STATION**

- TRAFFIC MONITORING STATION NOTES:**
- FREEWAY MAINLINE DETECTOR DESIGNATION:
- N = NORTHBOUND LANES (NB)
 - S = SOUTHBOUND LANES (SB)
 - E = EASTBOUND LANES (EB)
 - W = WESTBOUND LANES (WB)
- NUMBER OF LANES FROM LEFT WITH RESPECT TO DIRECTION OF TRAFFIC:
- 1 = FIRST LANE FROM LEFT
 - 2 = SECOND LANE FROM LEFT
 - 3 = THIRD LANE FROM LEFT
 - 4 = FOURTH LANE FROM LEFT
- NUMBER OF DETECTOR IN THE SAME LANE:
- 1 = ENTERING DETECTOR
 - 2 = LEAVING DETECTOR

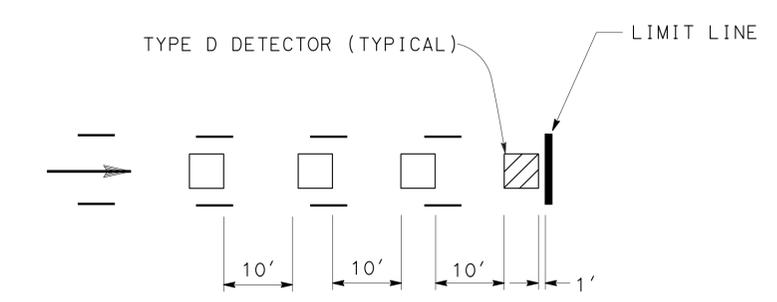


TYPICAL LOOP CONNECTIONS
DASHED LINES REPRESENT THE PULL BOX



TYPICAL LOOP CONNECTIONS
DASHED LINES REPRESENT THE PULL BOX

- RAMP DETECTOR DESIGNATION:**
- D = DEMAND DETECTOR
 - P = PASSAGE DETECTOR
 - Q = QUEUE DETECTOR
 - F = OFFRAMP DETECTOR
- 1 = FIRST LANE FROM LEFT
- 2 = SECOND LANE FROM LEFT



**DETAIL "SIG"
INTERSECTION SIGNAL**

INTERSECTION SIGNAL LOOP PLACEMENT

**RAMP METERING AND TRAFFIC MONITORING
DETECTOR SPACING AND DESIGNATION**

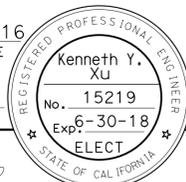
ELECTRICAL DETAILS
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 REVISIONS: 10-2-15
 DESIGNED BY: MICHELLE CHAN
 DATE REVISION: 10-2-15
 MC

LAST REVISION: DATE PLOTTED => 17-AUG-2016
 07-15-15 TIME PLOTTED => 08:27

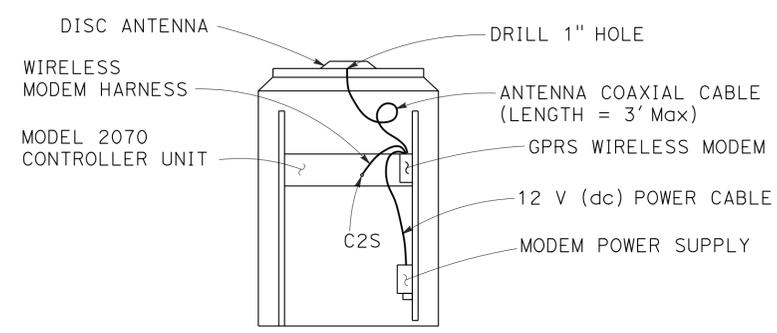
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	338	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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
ELECTRICAL
 FUNCTIONAL SUPERVISOR
 KENNETH XU
 CALCULATED/DESIGNED BY
 CHECKED BY
 MICHELLE CHAN
 KENNETH XU
 REVISED BY
 DATE REVISED
 MC
 10-2-15



REAR VIEW OF THE MODEL 334 CONTROLLER CABINET
GPRS WIRELESS MODEM AND ANTENNA INSTALLATION DETAIL

CONTRACTOR'S WORK IN THE CONTROLLER CABINET

1. PROVIDE THE GPRS MODEM AND WIRELESS MODEM HARNESS TO THE ENGINEER 30 WORKING DAYS BEFORE INSTALLATION. THE ENGINEER WILL RETURN THE PROGRAMMED MODEM, WITH PDP CONTEXT AND APN, AND HARNESS WITHIN 15 WORKING DAYS.
2. DRILL 1" HOLE THROUGH THE TOP OF THE CABINET. ATTACH THE ANTENNA ON THE CABINET AS DIRECTED BY THE MANUFACTURER.
3. MOUNT THE MODEM UNIT ON THE CABINET REAR MOUNTING RAIL WITH MOUNTING BRACKET PROVIDED BY THE MANUFACTURER.
4. MOUNT THE MODEM 12 V (dc) POWER SUPPLY DIRECTLY TO CABINET.
5. CONNECT POWER CABLE TO 12 V (dc) POWER ADAPTER.
6. CONNECT THE ANTENNA COAXIAL CABLE TO THE MODEM.
7. CONNECT MODEM HARNESS BETWEEN THE MODEM AND THE MODEL 2070 CONTROLLER UNIT AS SHOWN.
8. RECORD THE SERIAL NUMBER OF THE MODEM ON THE CHECK LIST SHEET.

COMMUNICATION SERIAL CABLE TYPE D

1. PIN OUT DIAGRAM
 AMP 201360-2-ND DB9-P
 L _____ 2
 K _____ 3
 N _____ 5
 D
 H
 J 1,4,6,7,8,9 N/C
 M
2. CONSTRUCT AND INSTALL COMMUNICATION CABLE, SEE SPECIAL PROVISIONS FOR CABLE TYPE AND OTHER INFORMATION.

GENERAL PACKET RADIO SYSTEM (WIRELESS MODEM INSTALLATION DETAILS)

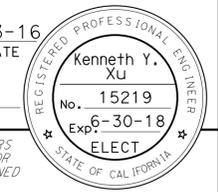
ELECTRICAL DETAILS

NO SCALE

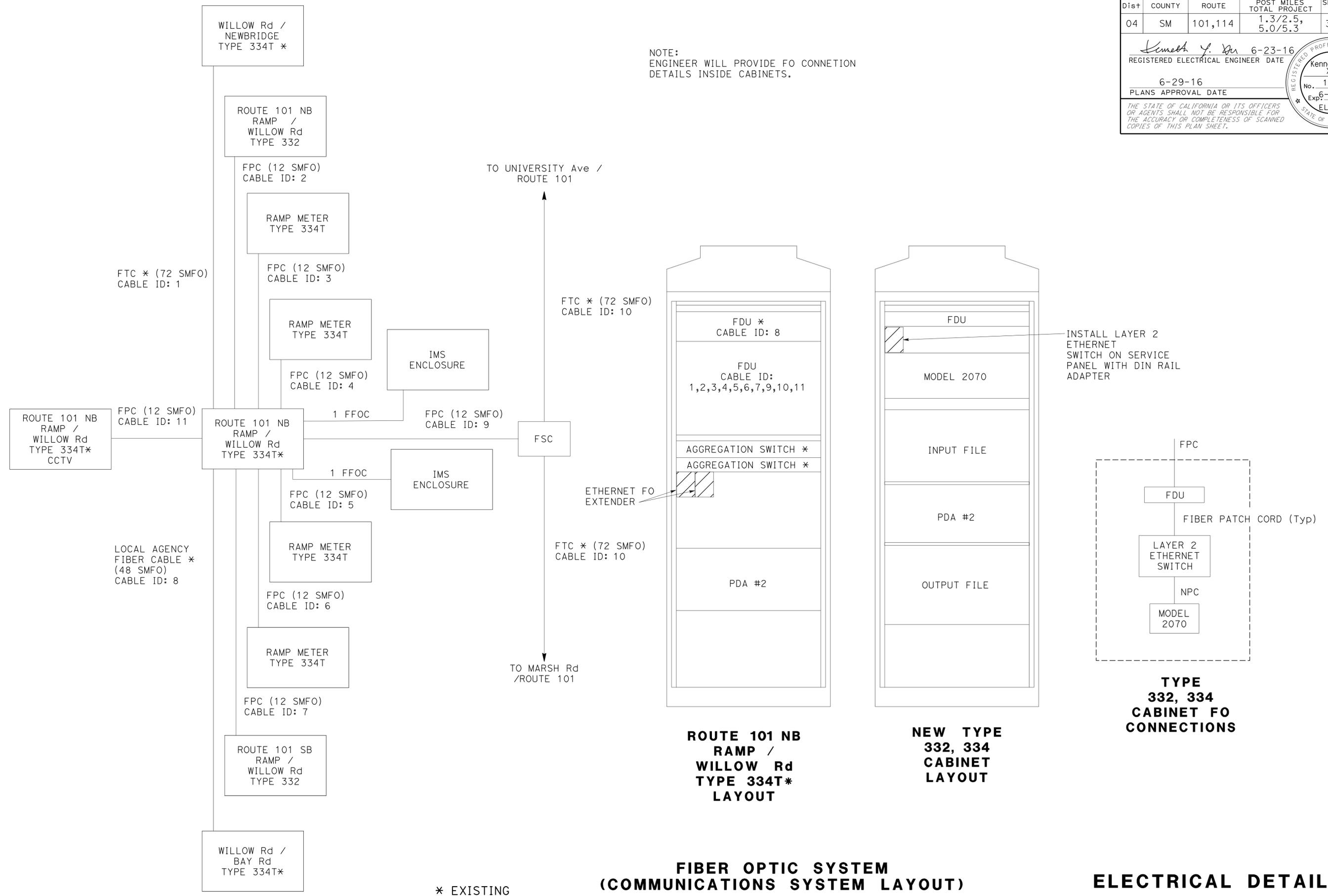
LAST REVISION DATE PLOTTED => 17-AUG-2016
 09-21-15 TIME PLOTTED => 08:27

DESIGNED BY	MC
REVISOR	REVISOR
DATE	10-2-15
CHECKED BY	KENNETH XU
DESIGNED BY	MICHELLE CHAN
REVISOR	KENNETH XU
DATE	
CHECKED BY	
DESIGNED BY	
REVISOR	
DATE	
CHECKED BY	
DESIGNED BY	
REVISOR	
DATE	
CHECKED BY	
DESIGNED BY	
REVISOR	
DATE	
CHECKED BY	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	339	568
			REGISTERED ELECTRICAL ENGINEER DATE		
			6-23-16		
			PLANS APPROVAL DATE		
			6-29-16		
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:
 ENGINEER WILL PROVIDE FO CONNETION DETAILS INSIDE CABINETS.



**FIBER OPTIC SYSTEM
 (COMMUNICATIONS SYSTEM LAYOUT)**

ELECTRICAL DETAILS

NO SCALE

* EXISTING

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	340	568

REGISTERED ELECTRICAL ENGINEER
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT

6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE

6-29-16
 PLANS APPROVAL DATE

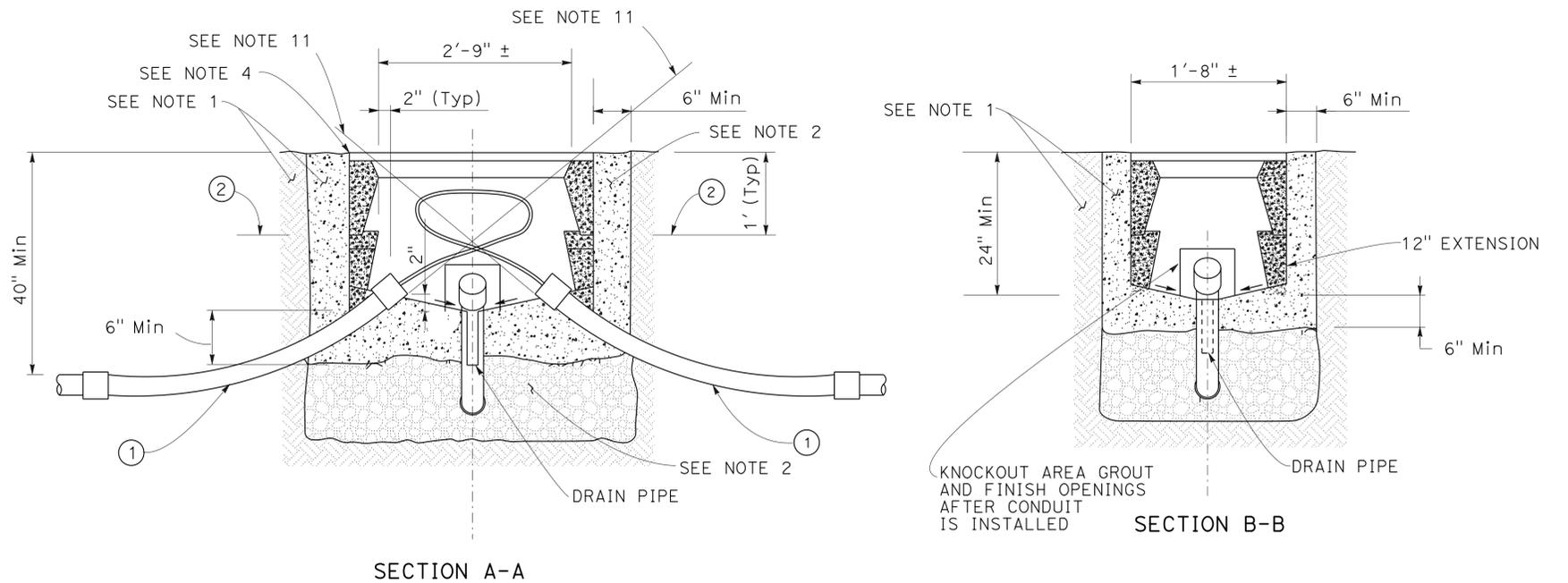
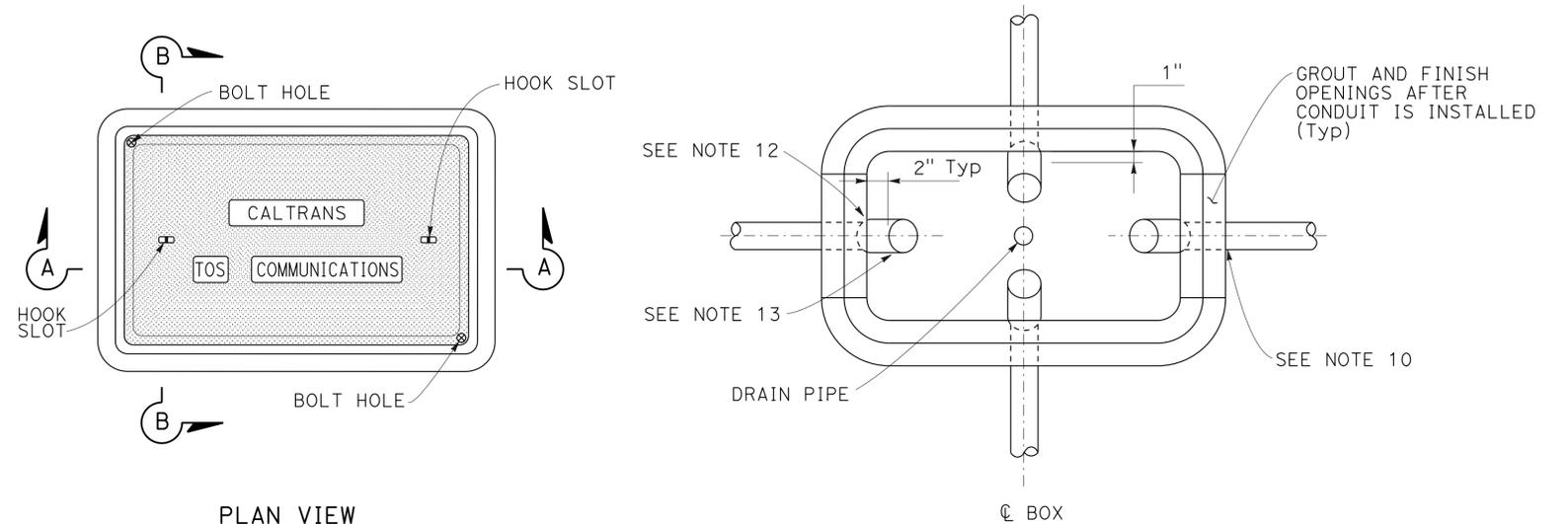
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES: (THIS SHEET ONLY)

- CONCRETE MUST BE PLACED AROUND AND UNDER PULL BOXES (6" MINIMUM) AND MUST CONTAIN A MINIMUM OF 550 LB OF PORTLAND CEMENT PER CUBIC YARD.
- PORTLAND CEMENT CONCRETE FLOOR OVER CLEAN CRUSHED ROCK SUMP. BOTTOM OF PULL BOX MUST BE SLOPED TOWARD DRAIN PIPE FOR DRAINAGE AND MUST HAVE SMOOTH FINISH.
- PULL BOX MUST BE PRECAST OF STEEL REINFORCED PORTLAND CEMENT CONCRETE. PULL BOX COVER MUST BE POLYMER CONCRETE. PULL BOX AND COVER MUST SUPPORT MINIMUM TEST LOAD OF 25,000 lbs IF BOX IS LOCATED IN TRAVEL WAY, PULL BOX AND COVER MUST CONFORM VERTICAL PROOF-LOAD STRENGTH REQUIREMENT PER SECTION 86-2.06.
- IF APPLICABLE, PULL BOX HEIGHT ABOVE EXISTING DIRT GRADE MUST PERMIT 1" OF FUTURE SURFACE LANDSCAPING. WHEN PULL BOX IS INSTALLED IN EXISTING SIDEWALK, PULL BOX COVER MUST SIT FLUSH WITH THE PAVEMENT.
- LOCKING MECHANISM MUST BE PROVIDED FOR COVER. TWO 3/8" Ø BRASS OR STAINLESS STEEL STUB BOLTS NUTS, AND WASHERS. 2 PER BOX, RECESS IN COVER FOR NUT.
- "CALTRANS TOS COMMUNICATIONS" MUST BE CASTED ON THE TOP FACE OF ALL COVERS.
- MINIMUM PULL BOX DEPTH WITH EXTENSION MUST BE 20".
- SEE PLAN SHEETS FOR NUMBER AND SIZE OF CONDUIT.
- CONDUITS MUST ENTER THROUGH KNOCKOUTS. IF MORE THAN 3 CONDUITS ARE REQUIRED IN SAME KNOCKOUT, KNOCKOUT MUST BE WIDENED TO 3/8" MORE THAN THE COMBINED CONDUIT WIDTH.
- CONDUIT FROM THE TYPICAL BORE OR TRENCH SECTION MUST NOT DEFLECT BY MORE THAN 1' PER 10' FROM THE ALIGNMENT PRECEDING OR THE FOLLOWING THE PULL BOX.
- BOTTOM OF CONDUIT CENTERLINE MUST BE ALIGNED TO EXIT TOP OF PULL BOX TO FACILITATE CABLE PULLING. IF EXISTING CONDUIT USED, MODIFY CONDUIT SWEEP (IF NEEDED) AS SHOWN. IF NEW CONDUIT USED, INSTALL CONDUIT ELBOW AS SHOWN.
- EXCESS CONDUIT FOR ALL CONDUIT ENDS MUST BE CUT BACK TO PROVIDE STUB ENDS OF 1" MINIMUM TO 2" MAXIMUM.
- METALLIC CONDUIT MUST HAVE THREADED METALLIC BUSHINGS. PVC AND HDPE CONDUITS MUST HAVE BELL ENDS.
- INSTALL CAPS OR DUCT PLUGS FOR ALL CONDUITS.
- CONDUITS AND PULL BOXES CONTAINING FIBER OPTIC CABLE MUST HAVE PERMANENT MARKERS AS SHOWN ON DRAWING SHEET E-63.

LEGEND: (THIS SHEET ONLY)

- 45 DEGREE ELBOW, 3' RADIUS Min ELBOW AND COUPLING MAY NOT BE NECESSARY FOR NEW CONDUIT INSTALLED BY DIRECTIONAL BORING. NEW CONDUIT INSTALLED BY DIRECTIONAL BORING MUST ENTER THE PULL BOX WITH BENDING RADIUS OF 3' Min.
- WARNING TAPE (FOR NEW CONDUIT IF INSTALLED BY TRENCHING).



FIBER OPTIC PULL BOX

ELECTRICAL DETAILS

NO SCALE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	341	568

<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE	
6-29-16 PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER Kenneth Y. Xu No. 15219 Exp. 6-30-18 ELECT
--

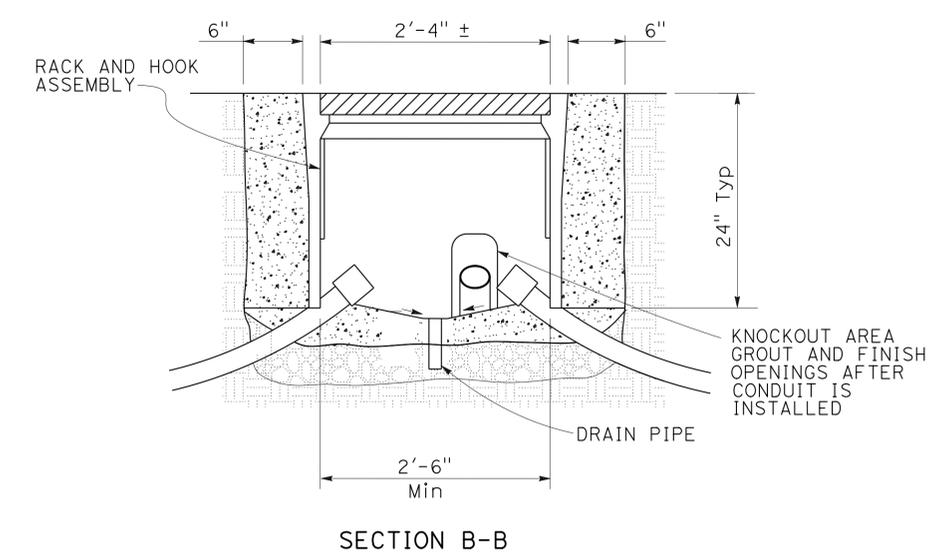
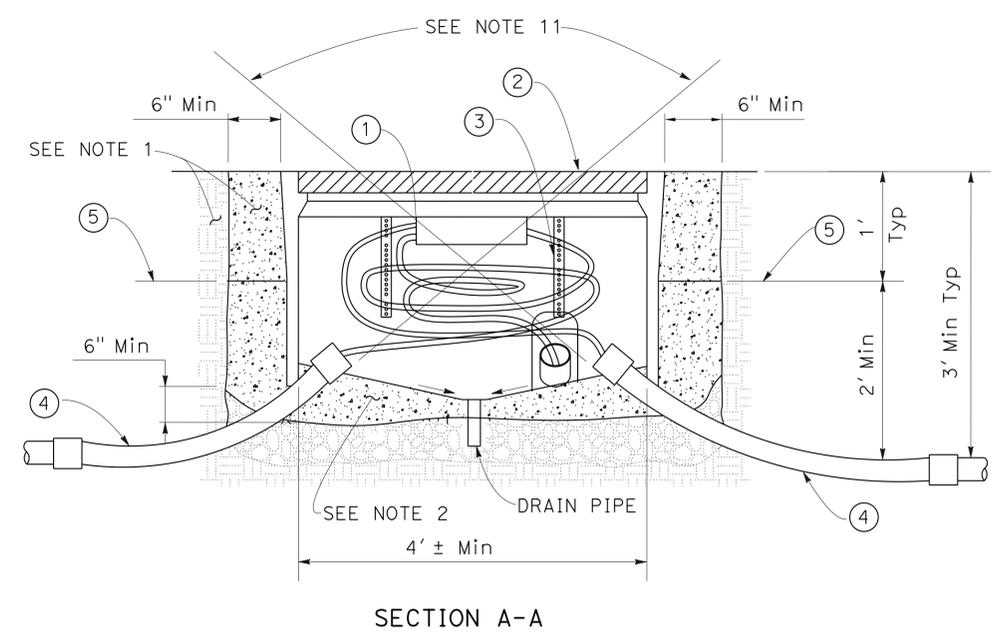
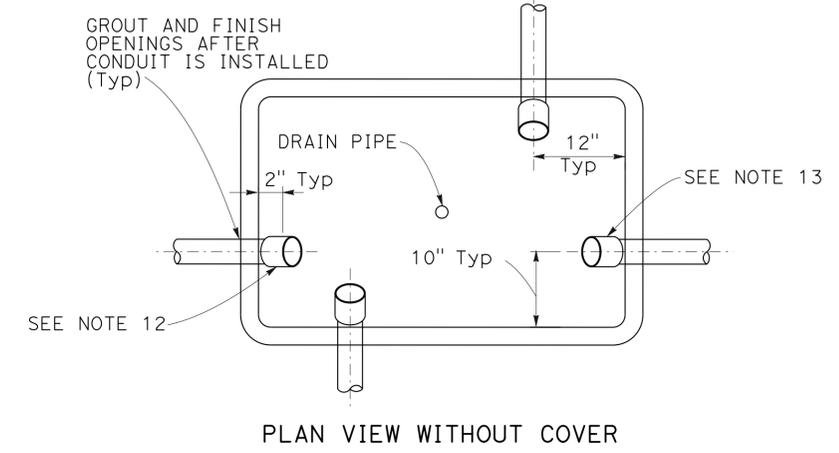
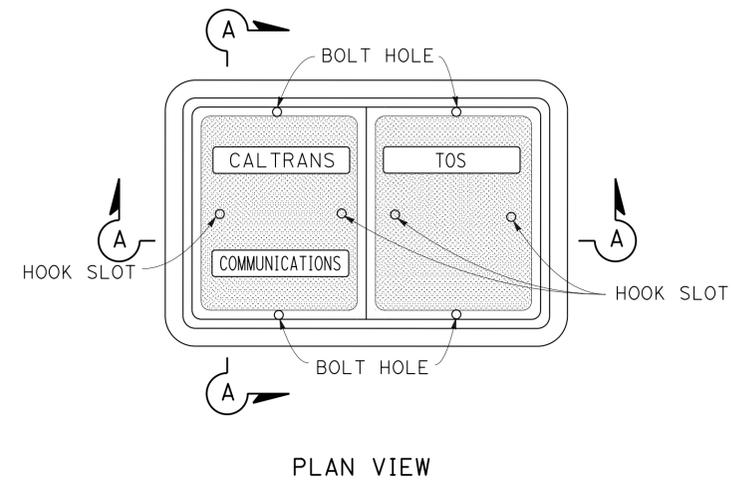
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES: (THIS SHEET ONLY)

- BACKFILL ACCORDING TO SECTION 19. CONCRETE MUST BE PLACED AROUND AND UNDER VAULT (6" MINIMUM) AND MUST CONTAIN A MINIMUM OF 550 LB OF PORTLAND CEMENT PER CUBIC YARD.
- PORTLAND CEMENT CONCRETE FLOOR OVER CLEAN CRUSHED ROCK SUMP PER DETAIL RSP ES-8A BOTTOM OF VAULT MUST BE SLOPED TOWARD THE DRAIN PIPE AND MUST HAVE A SMOOTH FINISH.
- MINIMUM VAULT DEPTH MUST BE 20". IF NECESSARY, AN EXTENSION MAY BE USED TO MEET THE REQUIREMENT.
- VAULT, VAULT EXTENSION AND VAULT COVER MUST BE QUAZITE OR APPROVED EQUIVALENT, AND SUPPORT MINIMUM TEST LOAD OF 25,000 LBS. IF VAULT IS LOCATED IN TRAVEL WAY, VAULT AND COVER AND COVER MUST CONFORM VERTICAL PROOF LOAD STRENGTH REQUIREMENT PER SECTION 86-2.06.
- LOCKING MECHANISM MUST BE PROVIDED FOR COVER. TWO 3/8" Ø BRASS OR STAINLESS STEEL STUD BOLTS NUTS, AND WASHERS, 4 PER BOX. RECESS IN COVER FOR NUT.
- "CALTRANS TOS COMMUNICATIONS" MUST BE CASTED ON THE TOP FACE OF ALL COVERS.
- IF APPLICABLE, VAULT HEIGHT ABOVE EXISTING DIRT GRADE MUST PERMIT 1" OF FUTURE SURFACE LANDSCAPING. WHEN VAULT IS INSTALLED IN EXISTING SIDEWALK, VAULT COVER MUST SIT FLUSH WITH THE PAVEMENT.
- SEE PLAN SHEETS FOR NUMBER AND SIZE OF CONDUIT.
- CONDUITS MUST ENTER THROUGH, KNOCKOUTS. IF MORE THAN 3 CONDUITS ARE REQUIRED IN SAME KNOCKOUT, KNOCKOUT MUST BE WIDENED TO 3/8" MORE THAN THE COMBINED CONDUIT WIDTH.
- TRUNK LINE CONDUITS FROM THE TYPICAL BORE OR TRENCH SECTION MUST NOT DEFLECT BY MORE THAN 1' PER 10' FROM THE ALIGNMENT PRECEDING OR FOLLOWING VAULT ENTRANCE/EXIT.
- BOTTOM OF CONDUIT CENTERLINE MUST BE ALIGNED TO EXIT TOP OF VAULT TO FACILITATE CABLE PULLING. IF EXISTING CONDUIT USED, MODIFY CONDUIT TO MATCH SWEEP AS SHOWN. IF NEW CONDUIT USED, INSTALL CONDUIT ELBOW AS SHOWN.
- EXCESS CONDUIT FOR ALL CONDUIT ENDS MUST BE CUT BACK TO PROVIDE STUB ENDS OF 1" MINIMUM TO 2" MAXIMUM.
- METALLIC CONDUITS MUST HAVE THREADED METALLIC BUSHINGS. PVC AND HDPE CONDUITS MUST HAVE BELL ENDS.
- INSTALL CAPS OR DUCT PLUGS FOR ALL CONDUITS.
- VAULT MUST BE FURNISHED WITH TWO RACKS AND HOOKS INSTALLED ON EACH OF THE TWO LONG SIDES.
- SPLICE ENCLOSURES IN FIBER OPTIC VAULT MUST BE USED ONLY WHERE IS SHOWN. SPLICE ENCLOSURE MUST BE ATTACHED TO THE RACK AND HOOK SYSTEM ON THE SAME SIDE AS THE FIBER OPTIC CABLE. THE SPLICE ENCLOSURE MUST BE ANGLED TO FACILITATE MINIMUM BENDING RADIUS IN THE CABLE.
- ALL FIBER OPTIC VAULT MUST HAVE PERMANENT MARKERS AS SHOWN ON SHEET E-63.

LEGEND:

- FIBER OPTIC SPLICE ENCLOSURE.
- FIBER OPTIC VAULT COVER.
- RACK AND HOOK ASSEMBLY, SEE NOTE 15.
- 45 DEGREE ELBOW, 3' RADIUS Min ELBOW AND COUPLING MAY NOT BE NECESSARY FOR NEW CONDUIT INSTALLED BY DIRECTIONAL BORING, NEW CONDUIT INSTALLED BY DIRECTIONAL DRILLING MUST ENTER PULL BOX WITH A BENDING RADIUS OF 3' MINIMUM.
- WARNING TAPE (FOR NEW CONDUIT INSTALLED BY TRENCHING).



FIBER OPTIC VAULT

ELECTRICAL DETAILS

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 MICHELLE CHAN
 KENNETH XU
 KENNETH XU
 KENNETH XU
 ELECTRICIAN

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	342	568
<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE					
6-29-16			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>					

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

FUNCTIONAL SUPERVISOR
 KENNETH XU

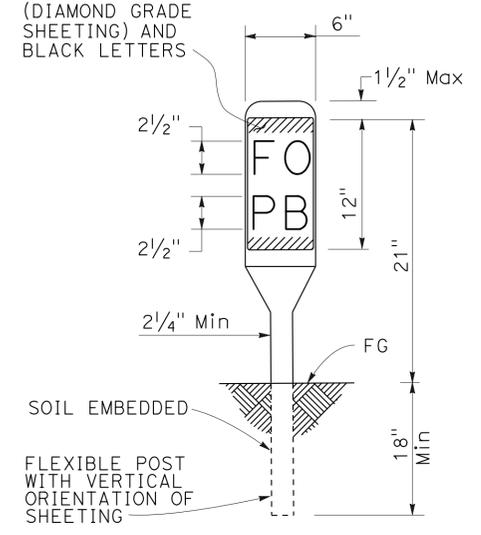
CALCULATED/DESIGNED BY
 MICHELLE CHAN

CHECKED BY
 KENNETH XU

REVISOR BY
 MC

DATE REVISED
 10-2-15

CALTRANS STANDARD
 TYPE K-2 OBJECT
 MARKER WITH 6" x 12"
 YELLOW REFLECTIVE
 BACKGROUND
 (DIAMOND GRADE
 SHEETING) AND
 BLACK LETTERS

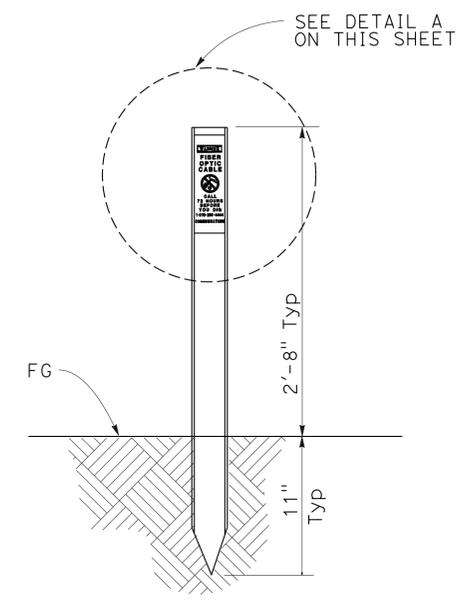


VAULT OR PULL BOX MARKER

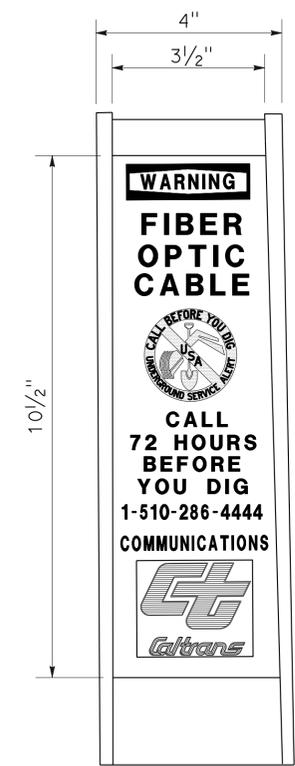
NOTE: IN UNPAVED AREAS, INSTALL ONE MARKER 1 FOOT AWAY FROM EACH VAULT OR PULL BOX IN WHICH FIBER OPTIC CABLE IS INSTALLED.



**CABLE MARKER
 PAVED AREAS**



**CABLE MARKER
 UNPAVED AREAS**



DETAIL A

PERMANENT FIBER OPTIC MARKERS

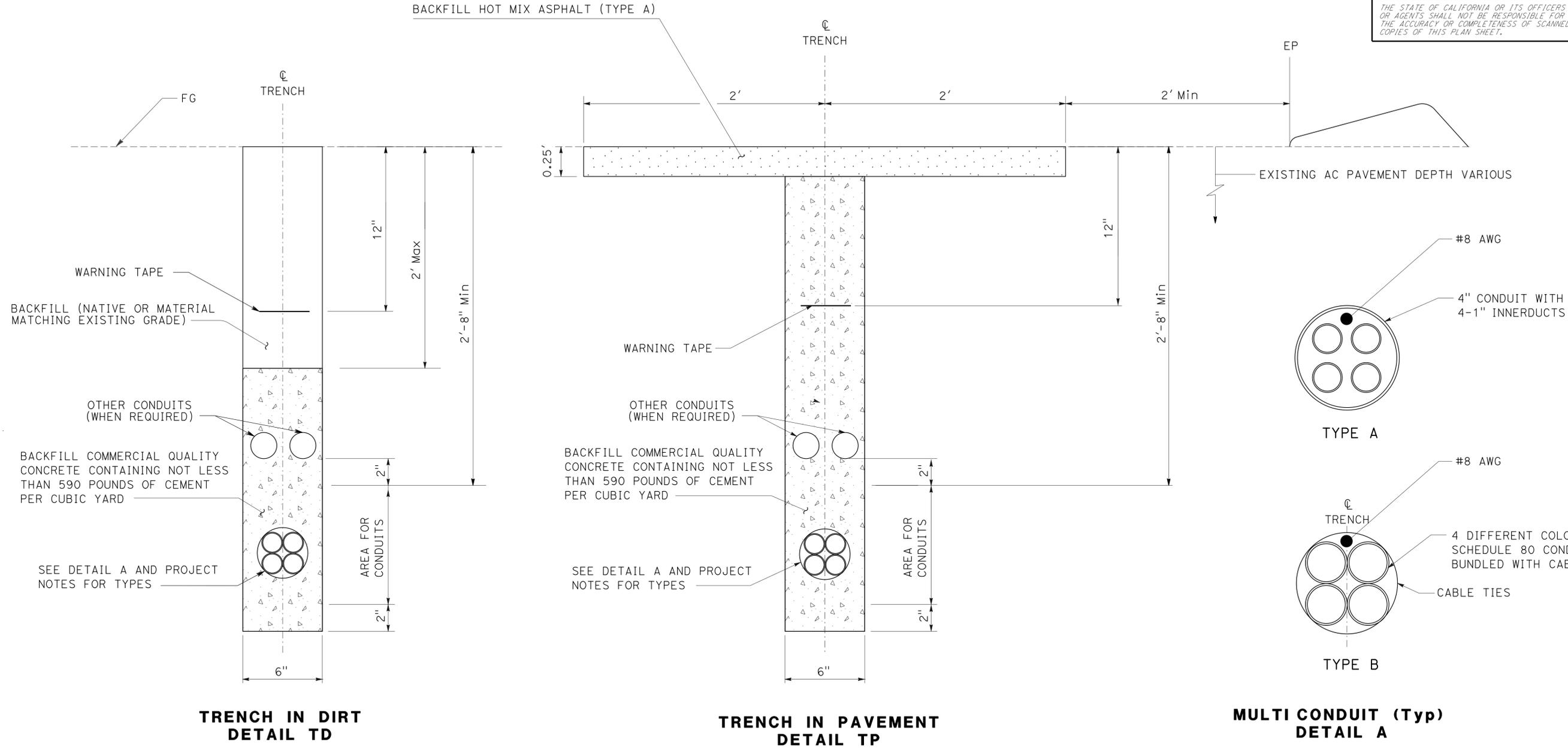
ELECTRICAL DETAILS

NO SCALE



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	343	568
<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE					
6-29-16			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>					

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR	MC
Caltrans	KENNETH XU	KENNETH XU	10-2-15	
ELECTRICAL				



(NOT USE ON FREEWAY RAMP, FREEWAY LANE OR FREEWAY TO FREEWAY CONNECTOR RAMP)

FIBER OPTIC CONDUIT AND TRENCH DETAILS

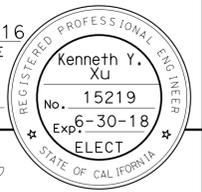
ELECTRICAL DETAILS

NO SCALE

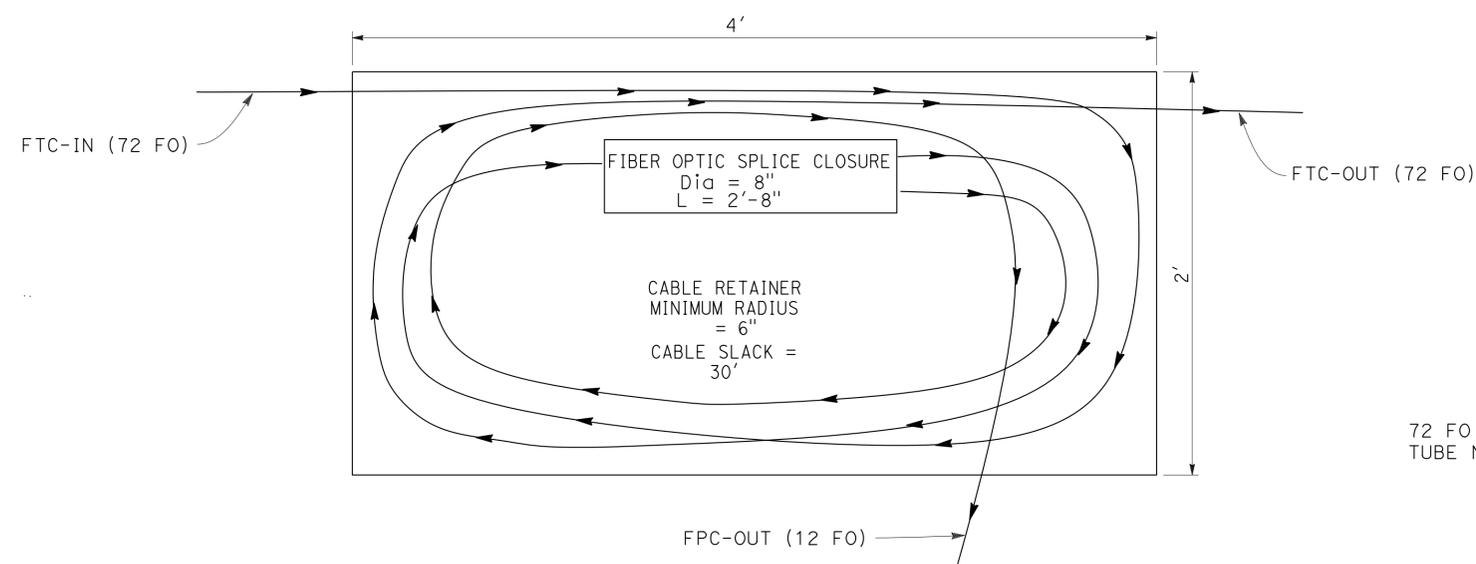
E-64

LAST REVISION DATE PLOTTED => 17-AUG-2016 08-14-15 TIME PLOTTED => 08:27

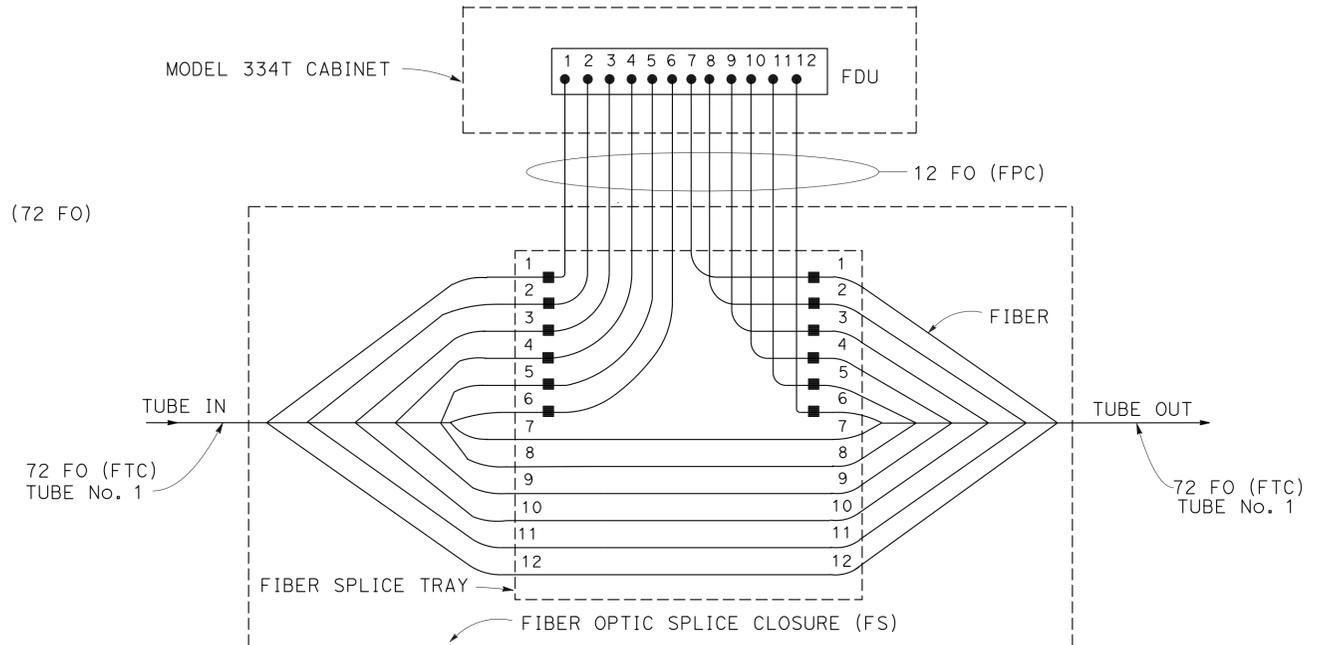
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	344	568
			<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE		
			6-29-16 PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	MC
Caltrans	10-2-15
ELECTRICAL	
FUNCTIONAL SUPERVISOR	REVISOR
KENNETH XU	DATE
	REVISOR
	DATE
CALCULATED/DESIGNED BY	CHECKED BY
	KENNETH XU



FIBER OPTIC VAULT SPLICE DETAIL



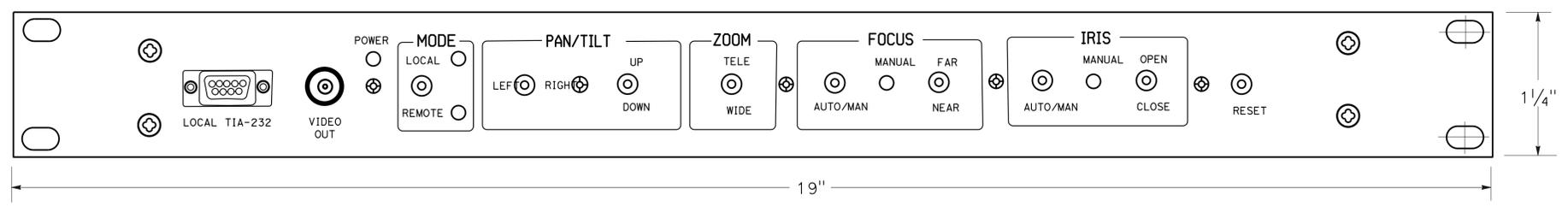
FIBER OPTIC SPLICE CLOSURE DETAIL (TYPICAL)

**FIBER OPTIC SYSTEM
SPLICE CLOSURE**

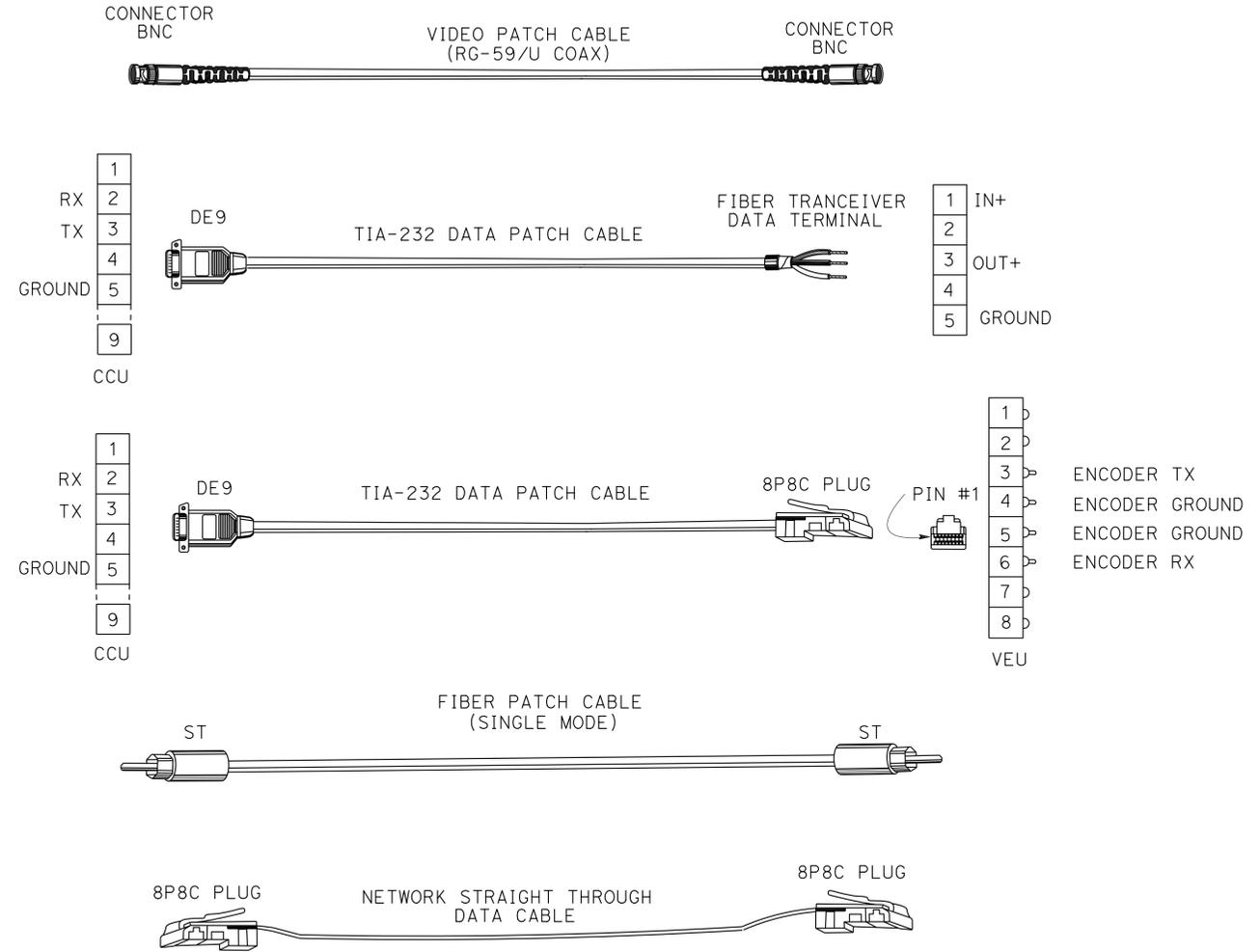
ELECTRICAL DETAILS

NO SCALE

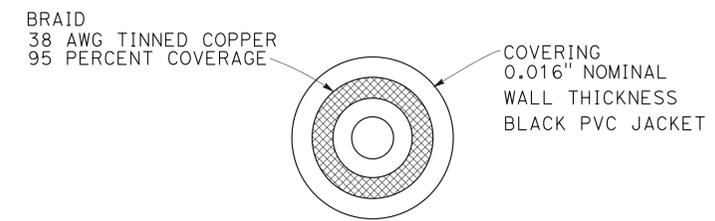
E-65



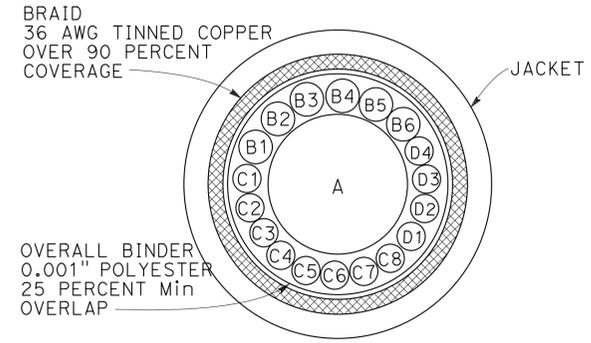
CCU FRONT PANEL LAYOUT



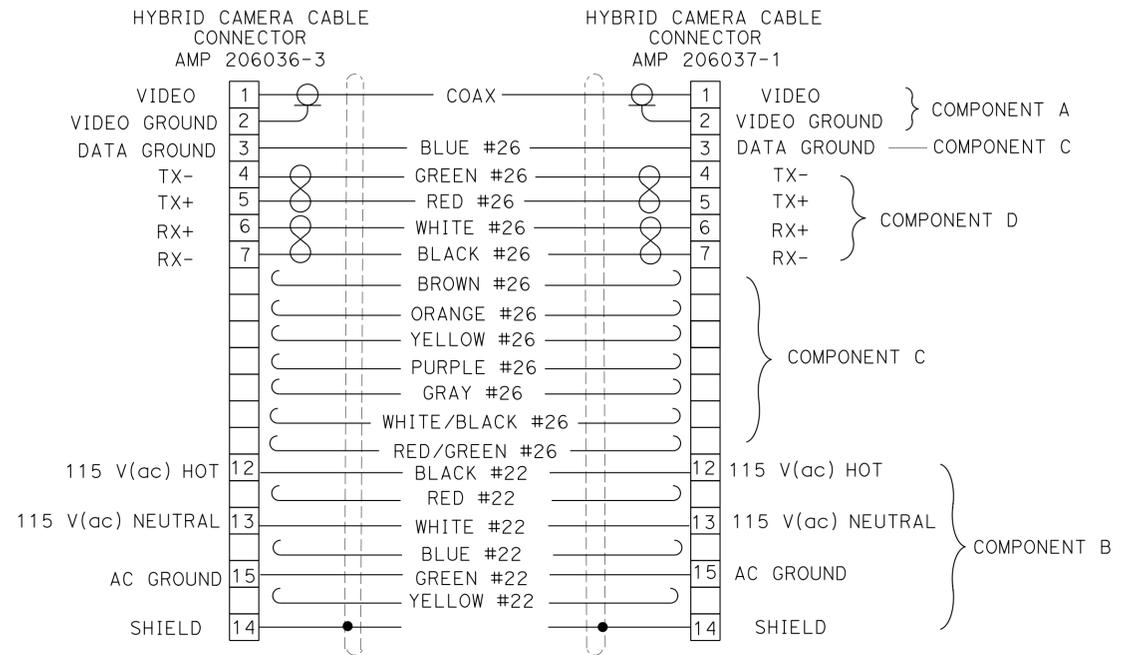
INTERFACE CABLE DETAILS



COMPONENT A



HYBRID CAMERA CABLE CROSS SECTION



COMPONENT	CONDUCTOR	DESCRIPTION
A	COAX	75 OHM, RG-59/U TYPE, STANDARD ANALOG VIDEO CABLE, 0.242" NOMINAL DIAMETER
B	6 CONDUCTOR	22 AWG, COPPER INSULATED CONDUCTOR, 0.048" NOMINAL DIAMETER, COLOR CODED: B1-BLACK, B2-RED, B3-GREEN, B4-WHITE, B5-BLUE, B6-YELLOW
C	8 CONDUCTOR	26 AWG, COPPER INSULATED CONDUCTOR, 0.037" NOMINAL DIAMETER, COLOR CODED: C1-BROWN, C2-BLUE, C3-ORANGE, C4-YELLOW, C5-PURPLE, C6-GRAY, C7-WHITE/BLACK, C8-RED/GREEN
D	4 CONDUCTOR	26 AWG, COPPER INSULATED CONDUCTOR, 0.037" NOMINAL DIAMETER, COLOR CODED: D1-BLACK AND WHITE, D2-RED AND GREEN

HYBRID CAMERA CABLE AND CONNECTORS DETAIL

CCTV MOUNTING DETAILS

ELECTRICAL DETAILS

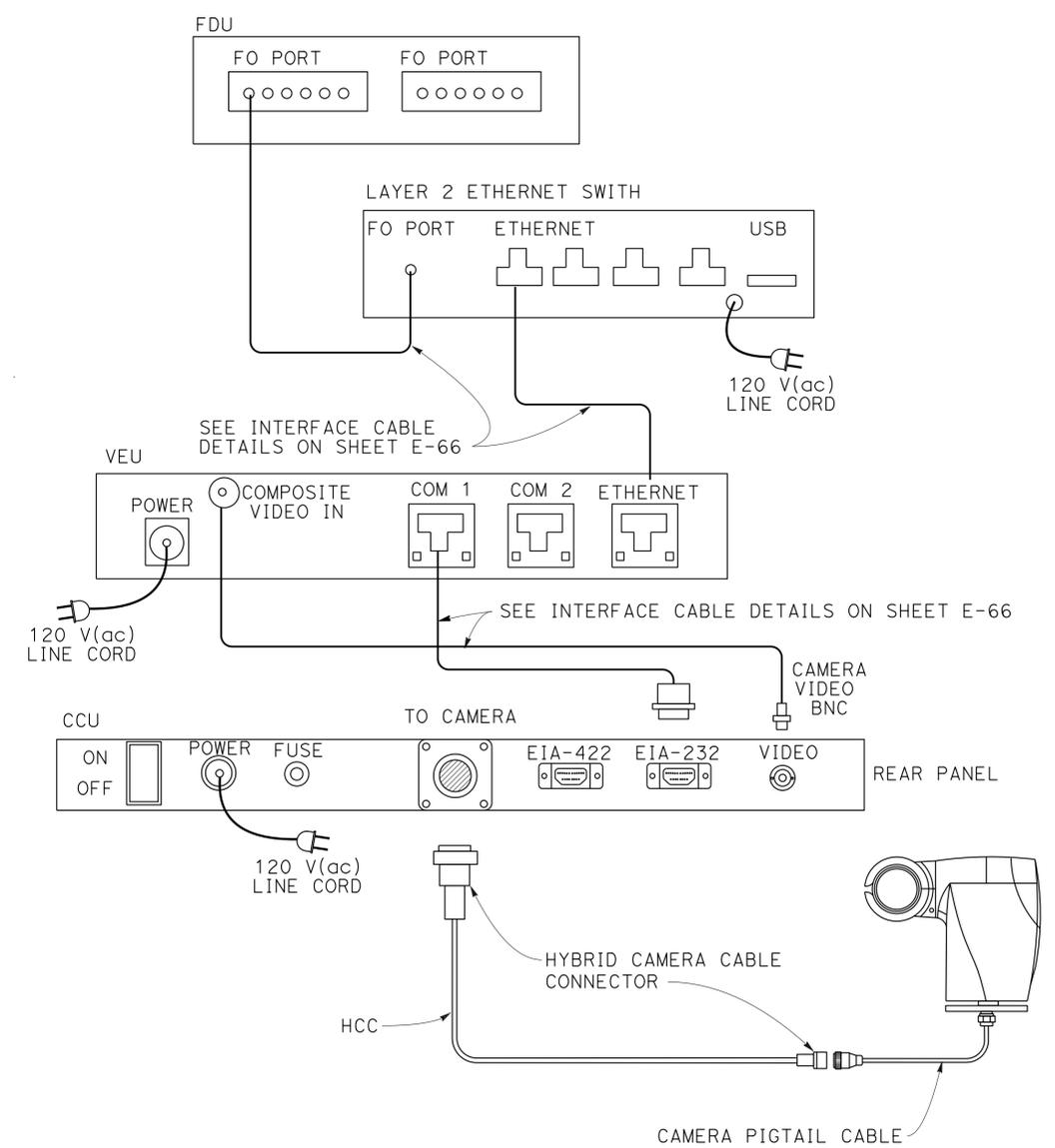
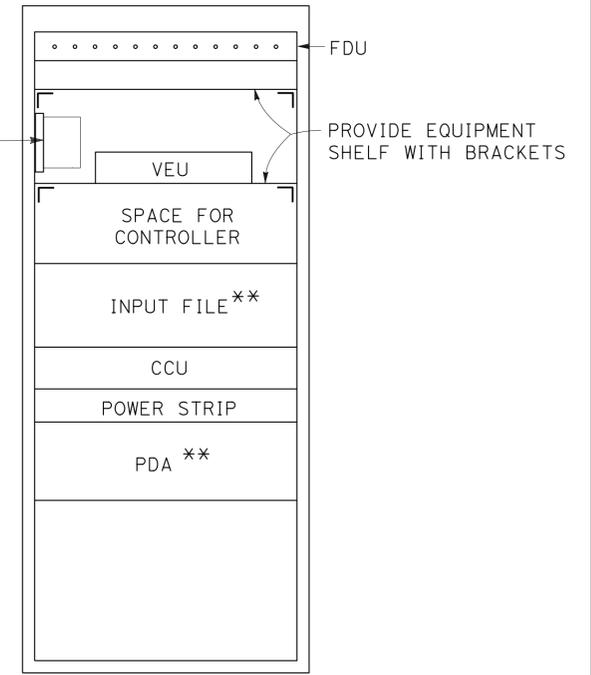
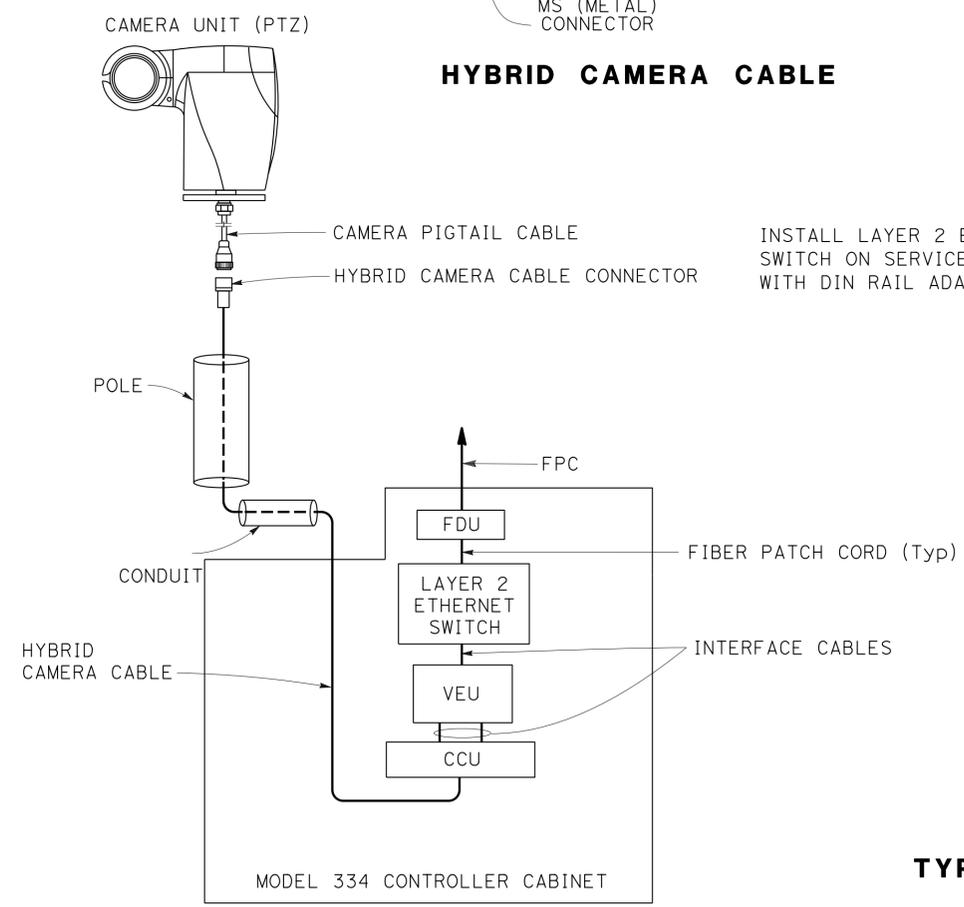
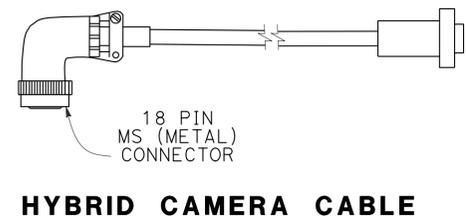
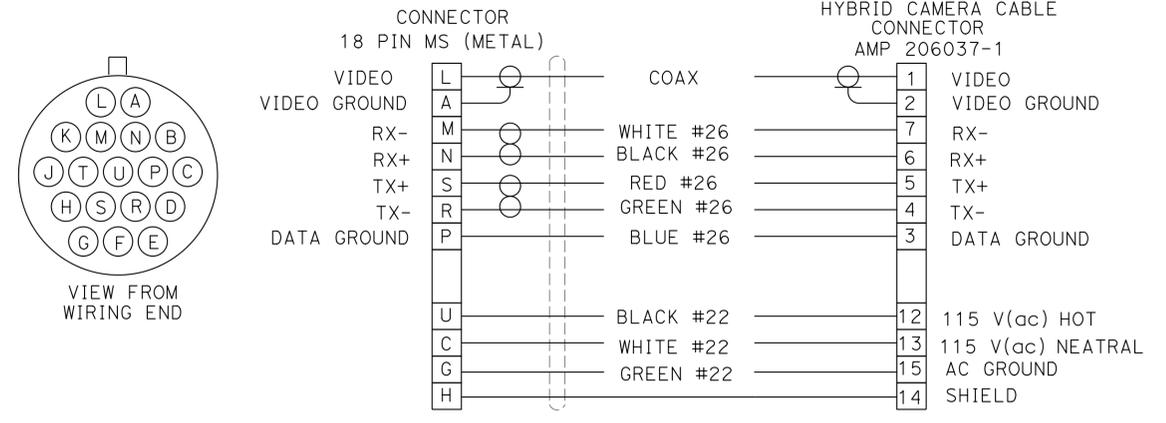
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 CALCULATED/DESIGNED BY: MICHELLE CHAN
 DATE REVISED: 10-2-15
 REVISED BY: MC

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	346	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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
Kenneth Y. Xu
No. 15219
Exp. 6-30-18
ELECT
STATE OF CALIFORNIA



CCTV SYSTEM LAYOUT

CCTV SYSTEM BLOCK DIAGRAM

TYPE 334 CONTROLLER CABINET LAYOUT (FRONT VIEW)

ELECTRICAL DETAILS

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 REVISIONS: MC, 10-2-15
 REVISIONS: MICHELLE CHAN, KENNETH XU
 REVISIONS: CALCULATED/DESIGNED BY, CHECKED BY

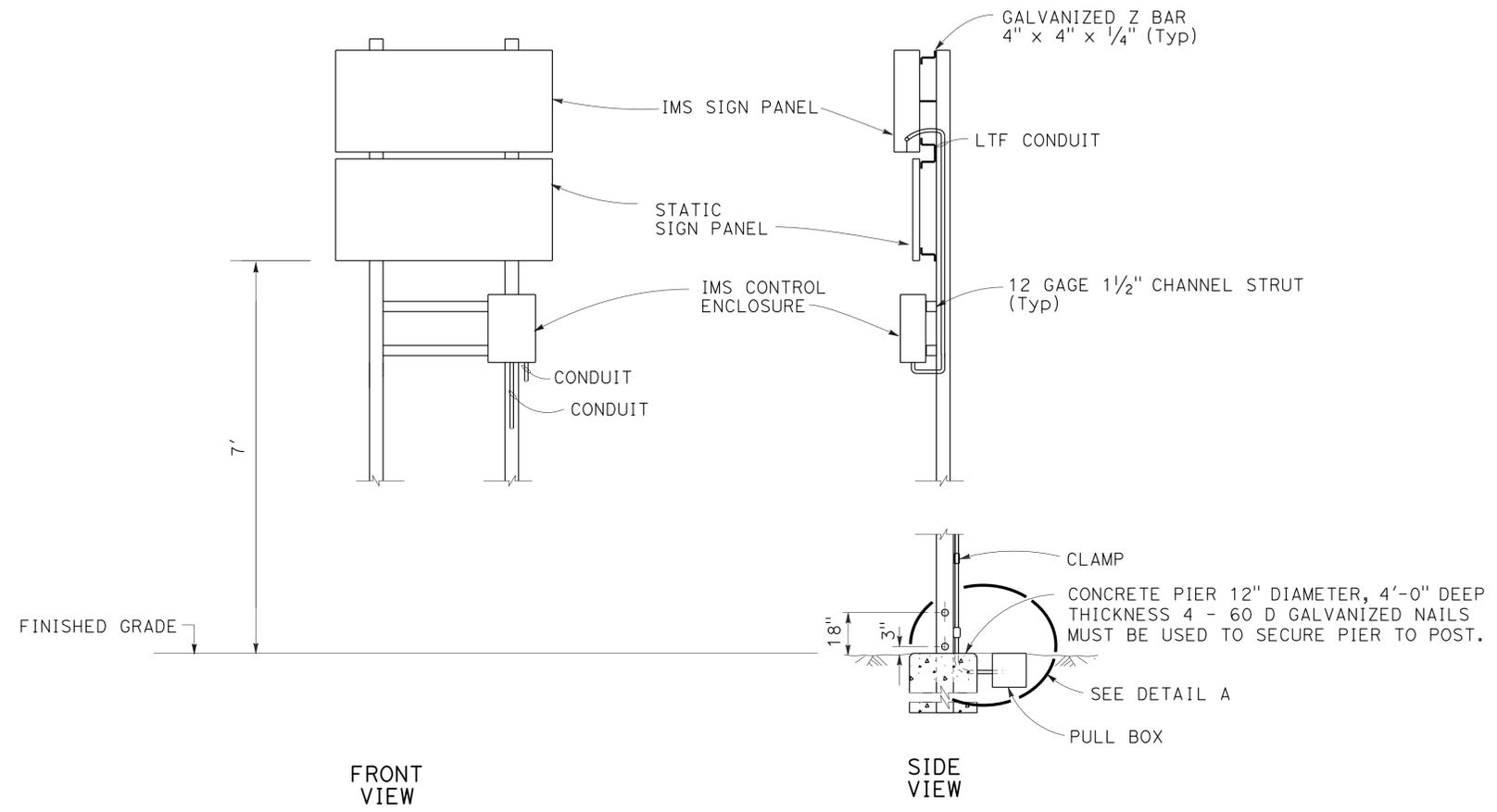
LAST REVISION: DATE PLOTTED => 17-AUG-2016
 10-28-15 TIME PLOTTED => 08:27

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	347	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA

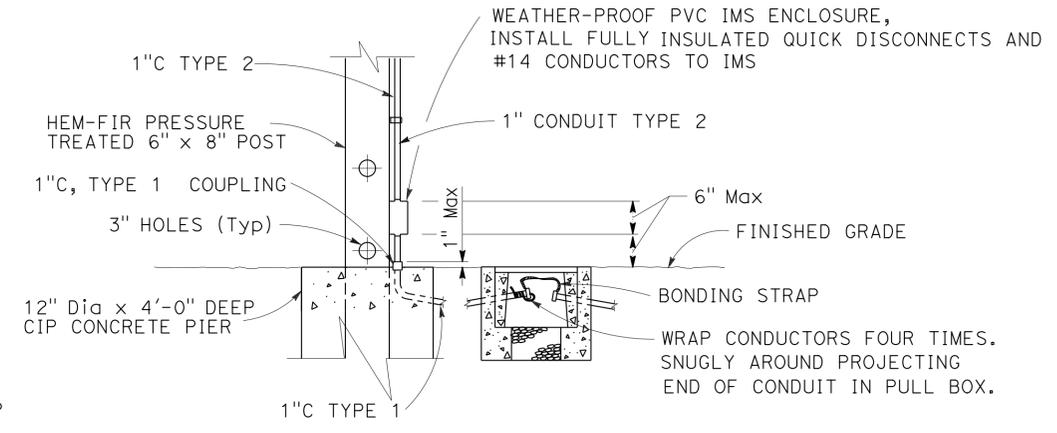
THE STATE OF CALIFORNIA OR ITS OFFICERS
 OR AGENTS SHALL NOT BE RESPONSIBLE FOR
 THE ACCURACY OR COMPLETENESS OF SCANNED
 COPIES OF THIS PLAN SHEET.



FRONT VIEW

SIDE VIEW

IMS ASSEMBLY ON WOOD POST



DETAIL A

CONDUIT BREAKAWAY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans **ELECTRICAL**
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CALCULATED/DESIGNED BY: KENNETH XU
 CHECKED BY: KENNETH XU
 REVISOR: MICHELLE CHAN
 DATE: 10-2-15
 MC

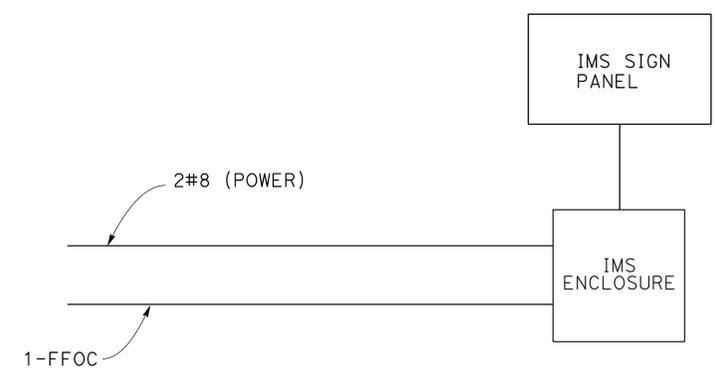
LAST REVISION | DATE PLOTTED => 17-AUG-2016
 09-21-15 | TIME PLOTTED => 08:27

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	348	568

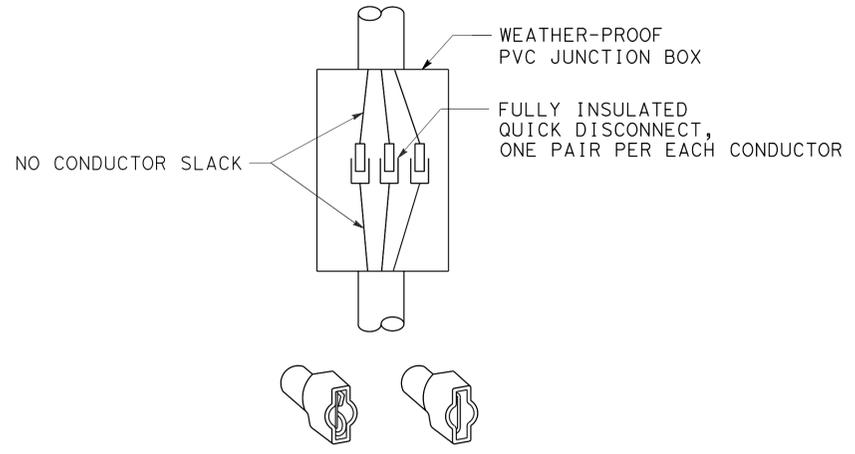
Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 PLANS APPROVAL DATE

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.

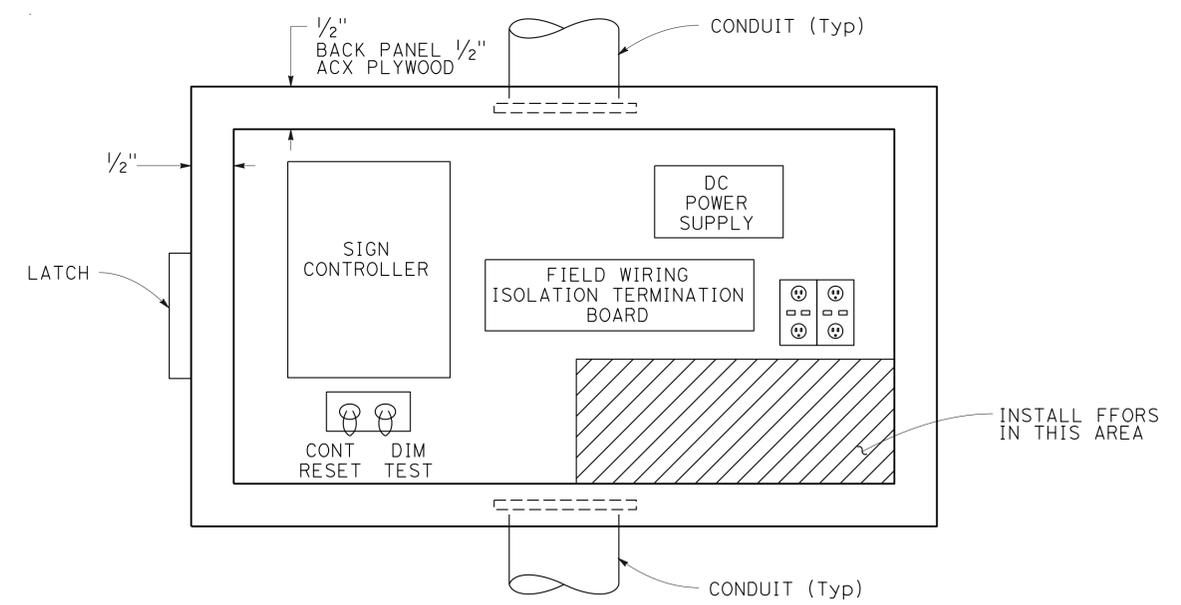
REGISTERED PROFESSIONAL ENGINEER
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA



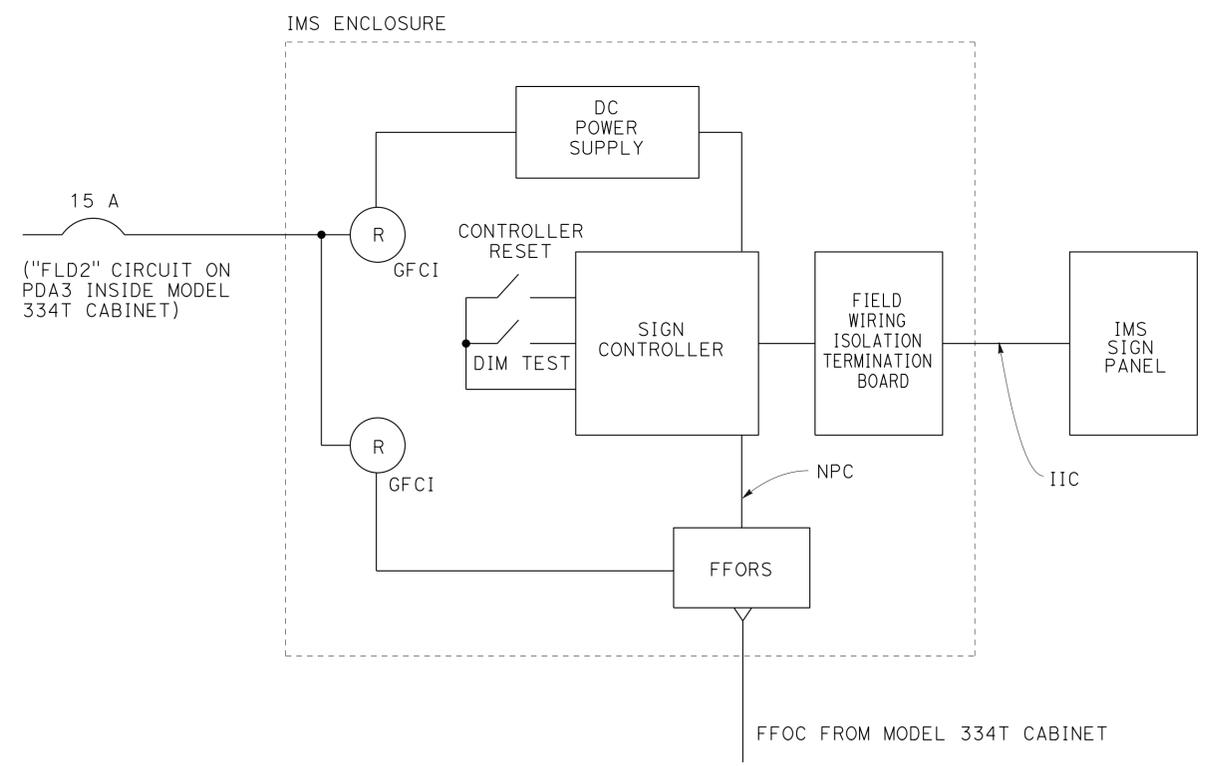
BLOCK DIAGRAM



FULLY INSULATED QUICK DISCONNECTS



IMS ENCLOSURE LAYOUT
FRONT VIEW
(DOOR REMOVED FOR CLARITY)



WIRING DIAGRAM

IMS ASSEMBLY DETAIL

ELECTRICAL DETAILS

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 REVISIONS: MC 10-2-15
 REVISIONS: MICHELLE CHAN, KENNETH XU
 CALCULATED/DESIGNED BY: KENNETH XU
 CHECKED BY:

LAST REVISION: DATE PLOTTED => 17-AUG-2016
 10-28-15 TIME PLOTTED => 08:27

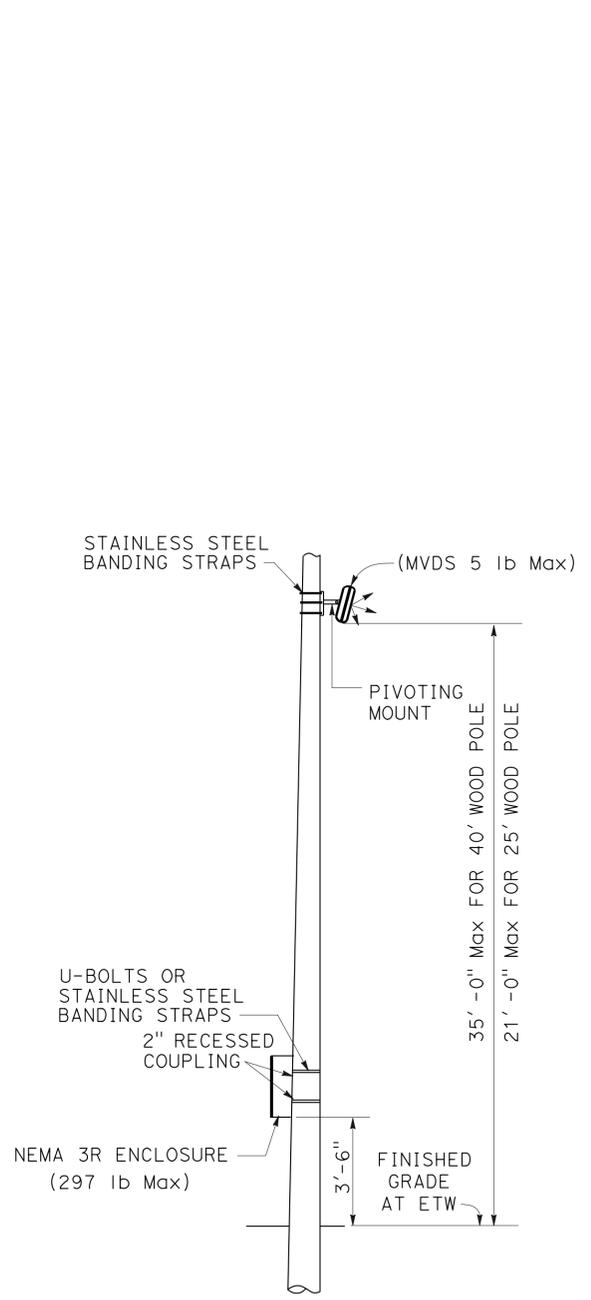
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	349	568

<i>Kenneth Y. Xu</i>	6-23-16
REGISTERED ELECTRICAL ENGINEER	DATE
6-29-16	
PLANS APPROVAL DATE	

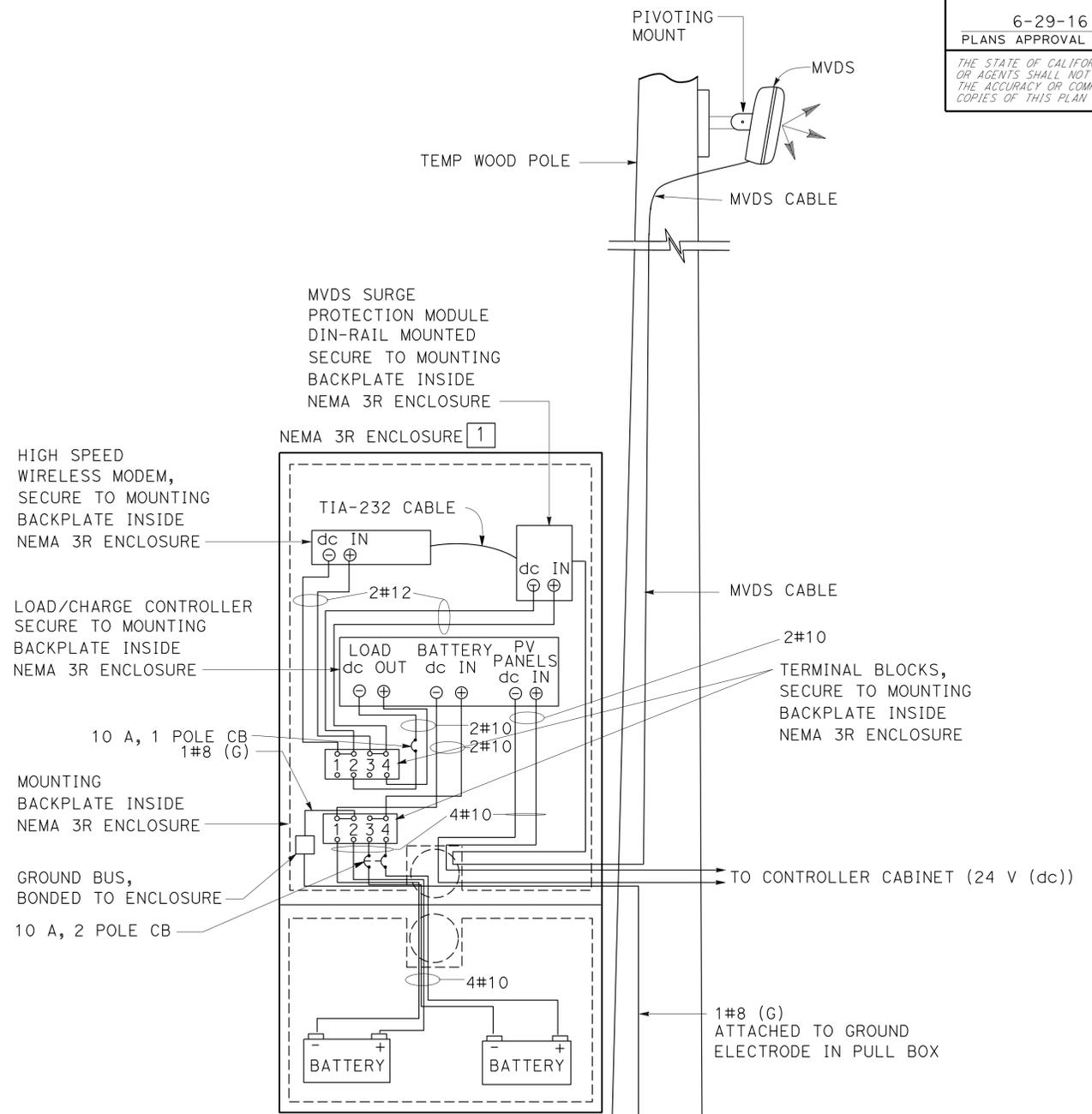
REGISTERED PROFESSIONAL ENGINEER
Kenneth Y. Xu
No. 15219
Exp. 6-30-18
ELECT

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 SEE SHEET E-71 FOR NEMA 3R ENCLOSURE DETAILS.



DETAIL A



DETAIL B

**MICROWAVE VEHICLE DETECTION SYSTEM
 (POLE MOUNTED EQUIPMENT ENCLOSURE
 AND EQUIPMENT LAYOUT)**

ELECTRICAL DETAILS

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
Caltrans	KENNETH XU	MICHELLE CHAN	10-2-15
ELECTRICAL	KENNETH XU	MC	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	350	568

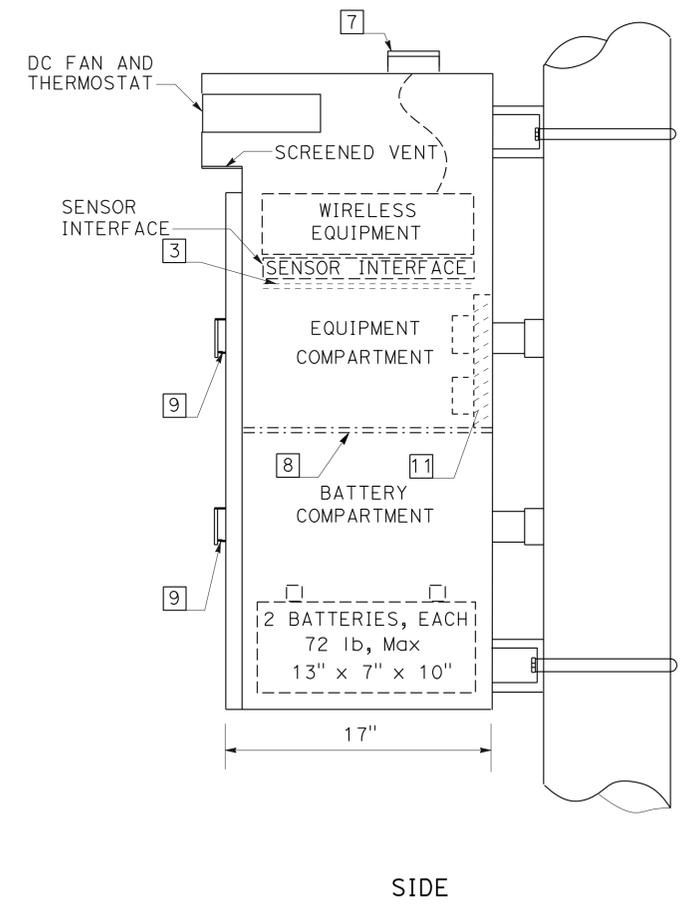
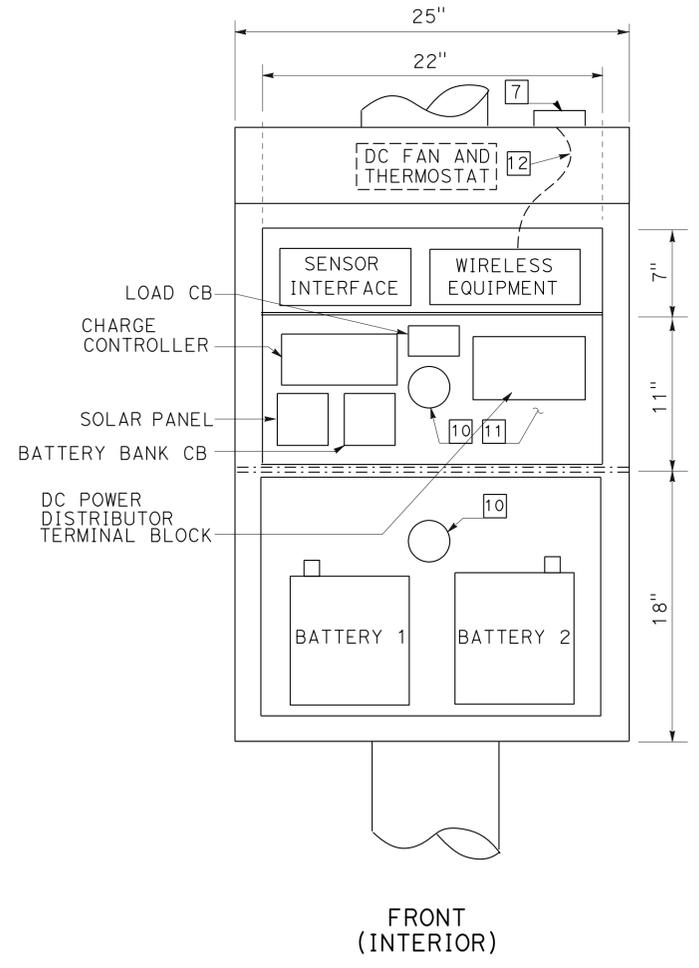
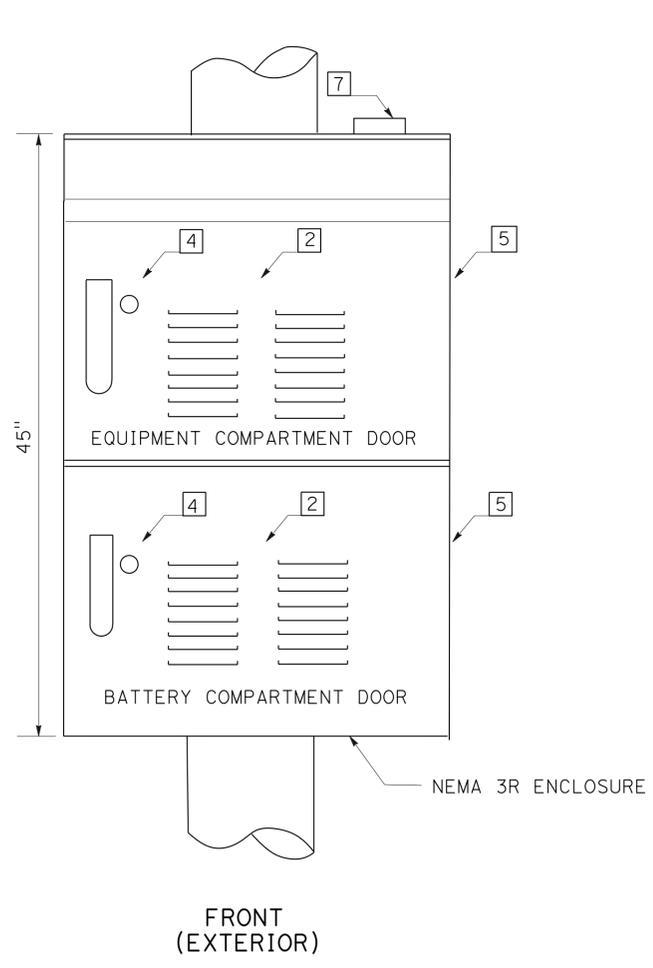
Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 PLANS APPROVAL DATE

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
 Kenneth Y. Xu
 No. 15219
 Exp. 6-30-18
 ELECT
 STATE OF CALIFORNIA

NOTES: (THIS SHEET ONLY)

- 1 VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING MATERIAL.
- 2 FILTERED VENTILATION LOUVERS.
- 3 ALUMINUM SHELF REQUIRED FOR EQUIPMENT. 2" SPACE BETWEEN SHELF AND ENCLOSURE BACK WALL REQUIRED.
- 4 KEY LOCK AND THREE POINT LOCKING SYSTEM MUST BE INTEGRATED WITH DOOR HANDLE. ROLLERS MUST BE IN CONJUNCTION WITH THE THREE POINT LOCKING SYSTEM.
- 5 DOOR HINGE.
- 6 SEE EQUIPMENT WIRING CONNECTION DIAGRAM ON SHEET E-70.
- 7 INSTALL ANTENNA FOR HIGH SPEED WIRELESS MODEM.
- 8 ALUMINUM SHELF REQUIRED TO PROVIDE SEPARATION OF THE EQUIPMENT AND BATTERY COMPARTMENTS. THE SHELF EDGE EXTEND TO ALL FOUR ENCLOSURE WALLS. THE SHELF AND ENCLOSURE WALLS MUST BE SEALED.
- 9 DOOR HANDLE TO ENCLOSURE PADLOCK LATCH.
- 10 SEAL OPENING AROUND CONDUCTORS.
- 11 BACKPLATE.
- 12 INSTALL ANTENNA CABLE FOR HIGH SPEED WIRELESS MODEM.



**MICROWAVE VEHICLE DETECTION SYSTEM
(POLE MOUNTED EQUIPMENT ENCLOSURE
AND EQUIPMENT LAYOUT)**

ELECTRICAL DETAILS

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 REVISIONS: MICHELLE CHAN, KENNETH XU
 DESIGNED BY: KENNETH XU
 CHECKED BY: KENNETH XU
 REVISED BY: MC
 DATE REVISED: 10-2-15

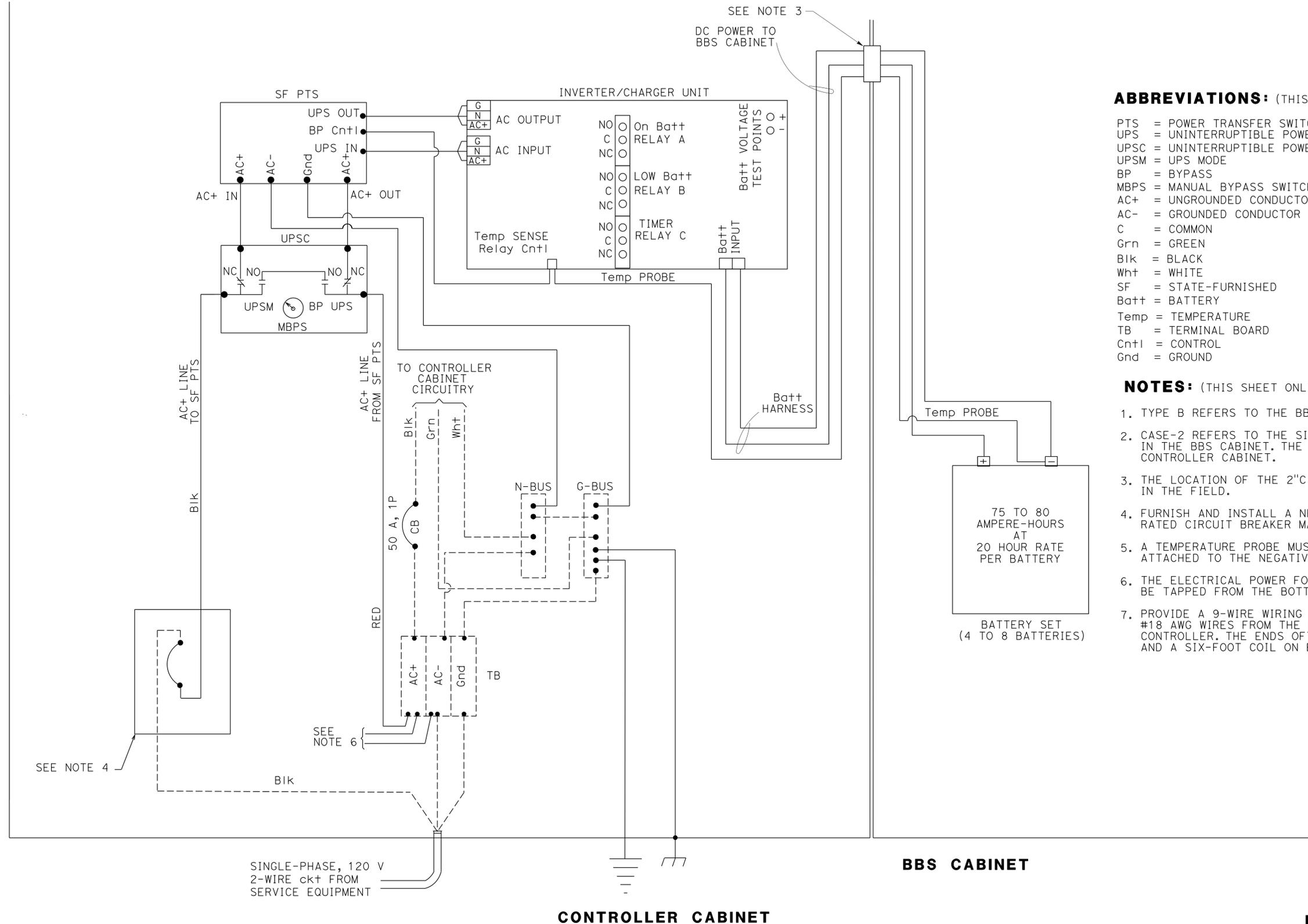
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	351	568
Kenneth Y. Xu 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE					
6-29-16			PLANS APPROVAL DATE		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

ABBREVIATIONS: (THIS SHEET ONLY)

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

NOTES: (THIS SHEET ONLY)

1. TYPE B REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER B.
2. CASE-2 REFERS TO THE SITUATION WHEN ONLY THE BATTERIES ARE INSTALLED IN THE BBS CABINET. THE REMAINING EQUIPMENT IS PLACED IN THE CONTROLLER CABINET.
3. THE LOCATION OF THE 2" C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE MUST BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET MUST BE TAPPED FROM THE BOTTOM OF THE TB IN THE CONTROLLER CABINET.
7. PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OF THE CONDUCTORS MUST BE INSULATED WITH TAPE AND A SIX-FOOT COIL ON EACH END.



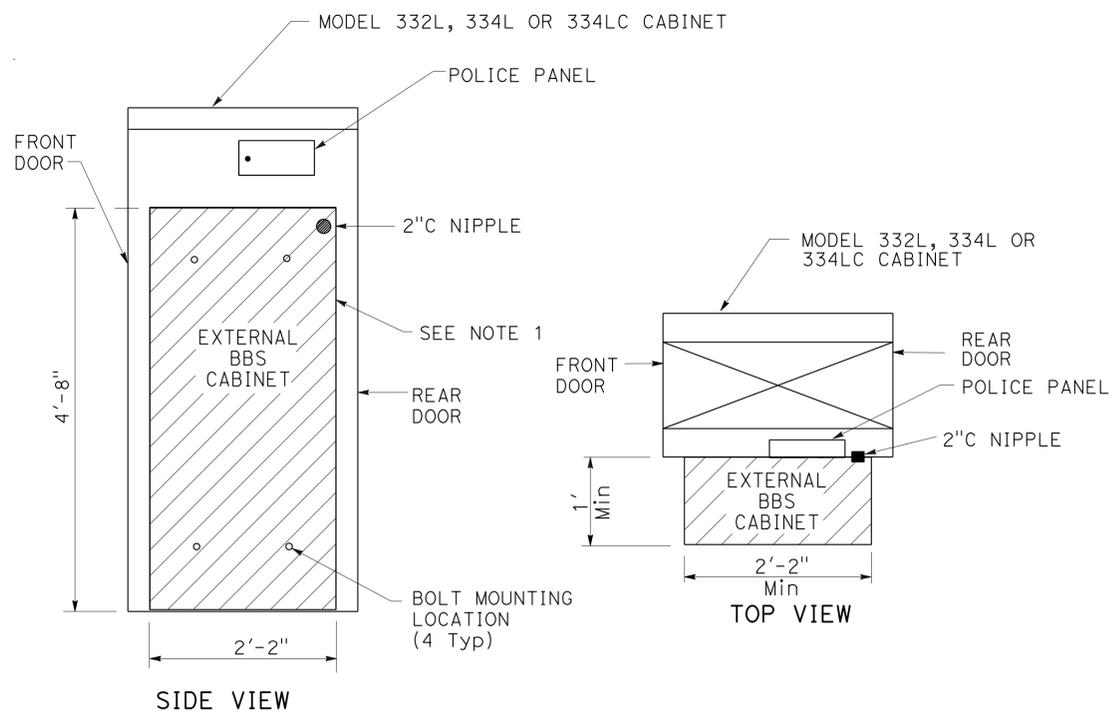
CONTROLLER CABINET
BBS POWER CONNECTION DIAGRAM,
TYPE B, CASE-2

ELECTRICAL DETAILS

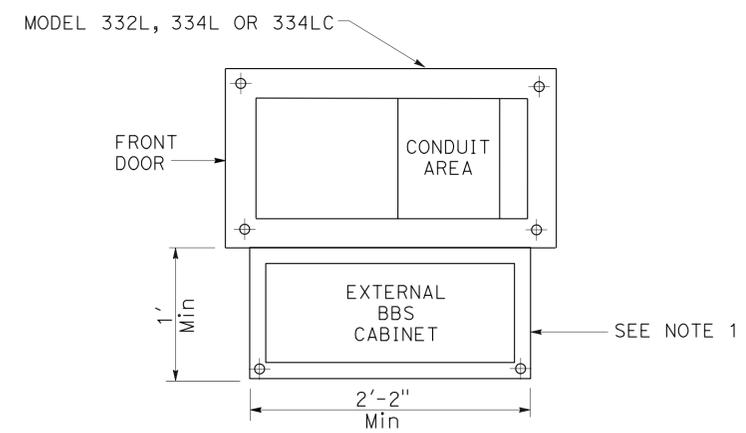
NO SCALE

E-72

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	352	568
<i>Kenneth Y. Xu</i> 6-23-16 REGISTERED ELECTRICAL ENGINEER DATE			Kenneth Y. Xu No. 15219 Exp. 6-30-18 ELECT		
6-29-16			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>					



EXTERNAL BBS CABINET MOUNTED TO THE MODEL 332L, 334L OR 334LC CABINET

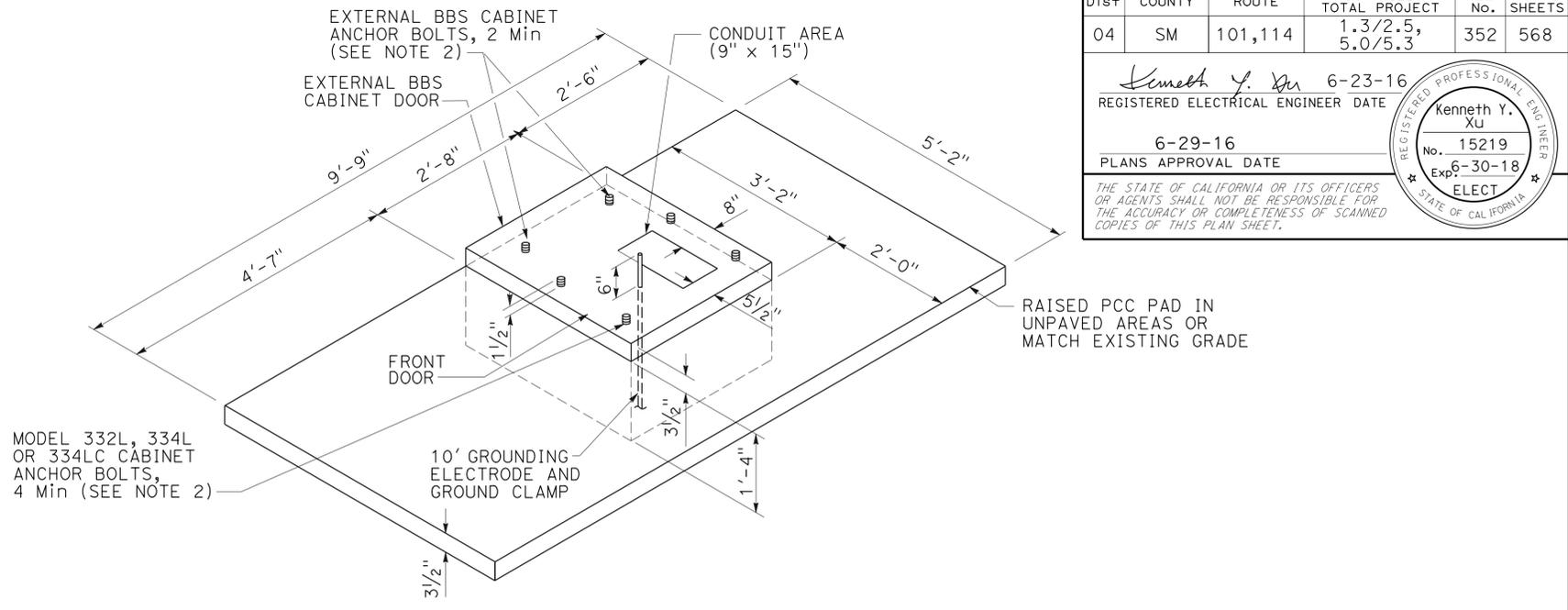


BASE PLAN FOR BBS MOUNTED TO THE MODEL 332L, 334L OR 334LC CABINET

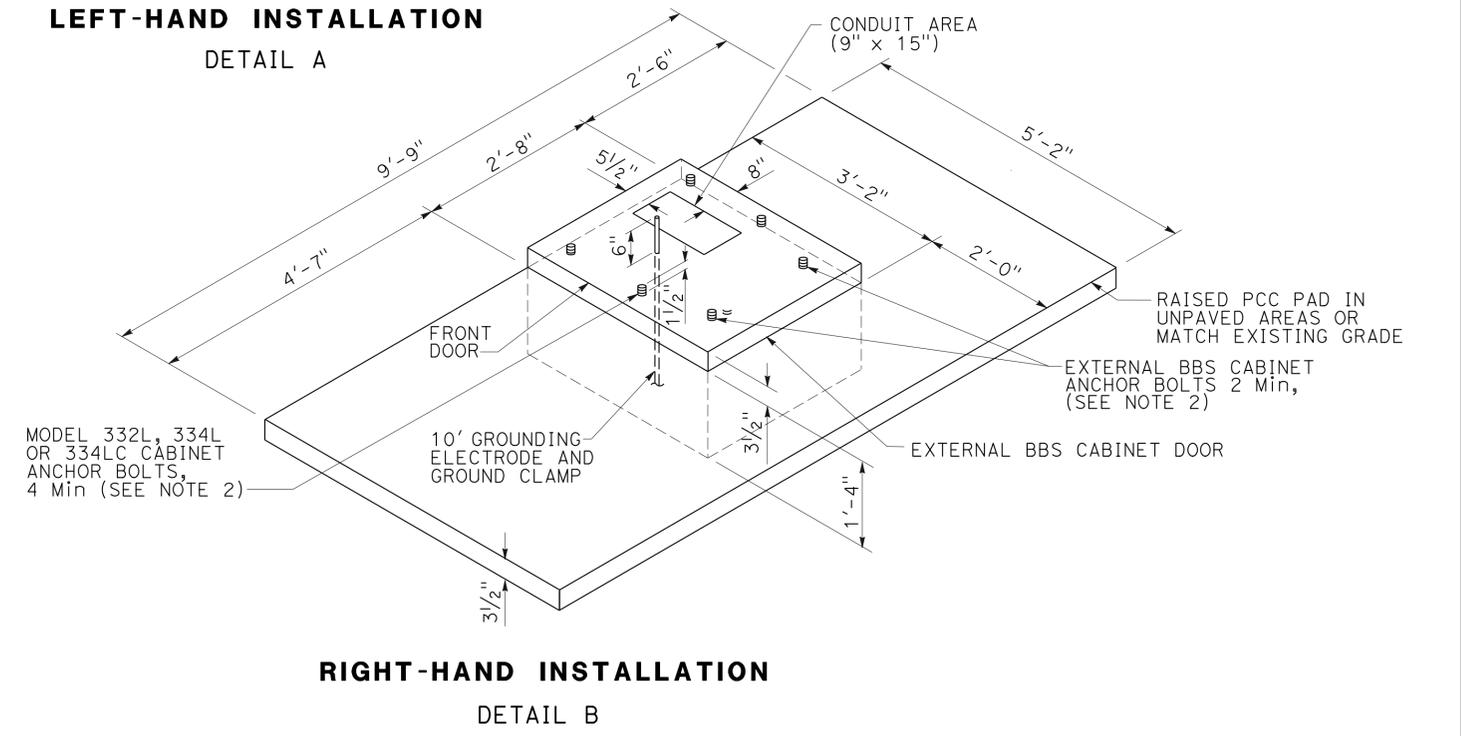
(FOR DIMENSIONS AND DETAILS NOT SHOWN, SEE SHEET A6-1 TO A6-4, CABINET HOUSING DETAILS OF THE TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATION (TEES))

NOTES: (FOR THIS SHEET ONLY)

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



LEFT-HAND INSTALLATION DETAIL A



RIGHT-HAND INSTALLATION DETAIL B

MODIFIED MODEL 332L, 334L OR 334LC CABINET FOUNDATION DETAIL FOR BATTERY BACKUP SYSTEM (BBS)

(FOR ADDITIONAL NOTES, SEE SHEET ES-3C OF THE STANDARD PLANS FOR MODEL 332L, 334L OR 334LC CABINETS)

BATTERY BACKUP SYSTEM FOUNDATION DETAILS

ELECTRICAL DETAILS
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - ELECTRICAL
 Michelle Chan, Kenneth Xu, Theresa A. Gabriel, Kenneth Y. Xu
 10-2-15, 6-29-16

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL

FUNCTIONAL SUPERVISOR: KENNETH XU
 CALCULATED/DESIGNED BY: KENNETH XU
 CHECKED BY: KENNETH XU
 REVISIONS:
 MC: 10-2-15
 REVISED BY: MICHELLE CHAN
 DATE REVISED: 10-2-15

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

SC BY PG&E. COVER MUST BE MARKED AS "CALTRANS/PG&E". THIS IS A PG&E TERMINATION POINT

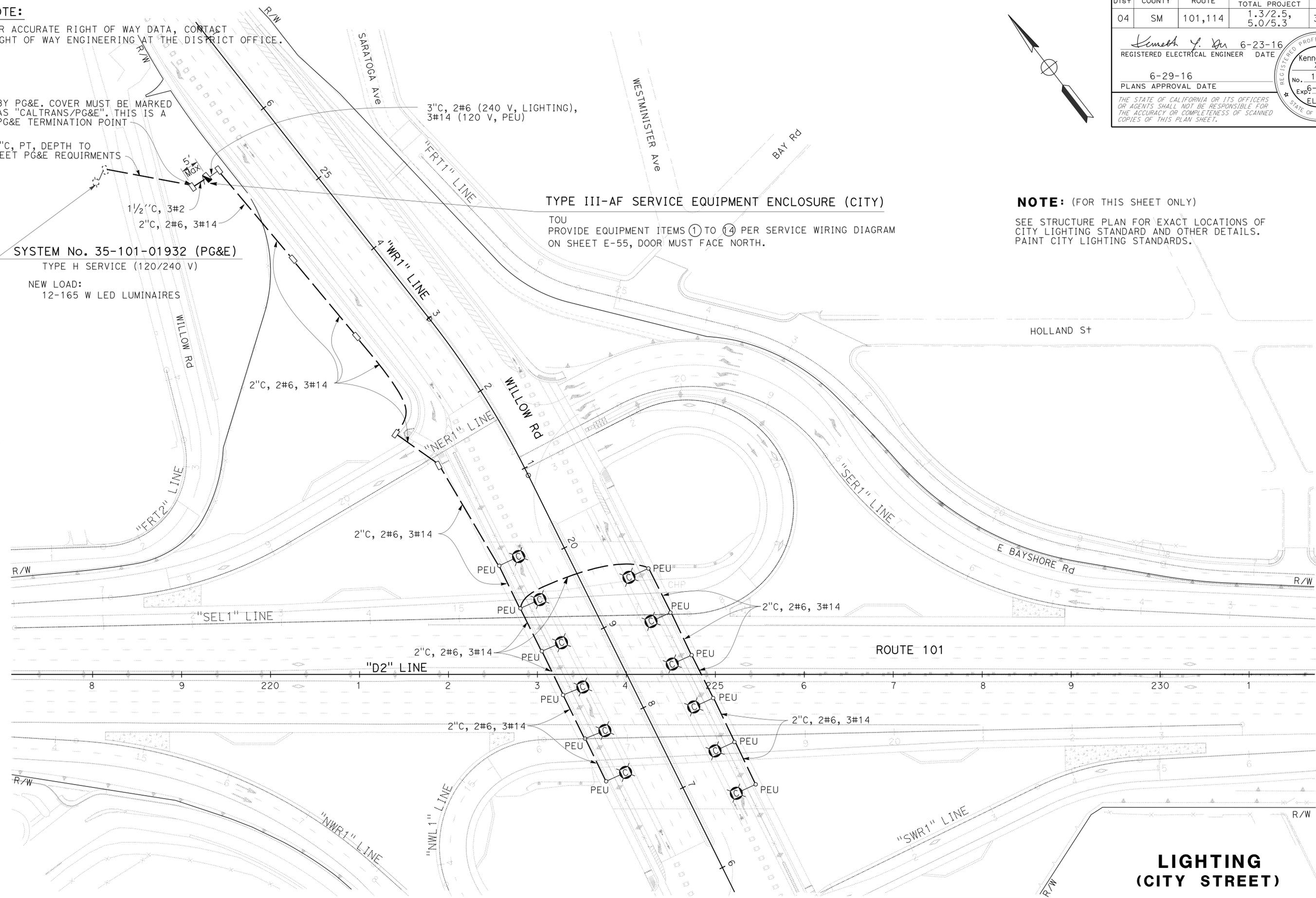
3" C, PT, DEPTH TO MEET PG&E REQUIREMENTS

SYSTEM No. 35-101-01932 (PG&E)
 TYPE H SERVICE (120/240 V)

NEW LOAD:
 12-165 W LED LUMINAIRES

TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (CITY)
 TOU
 PROVIDE EQUIPMENT ITEMS ① TO ⑭ PER SERVICE WIRING DIAGRAM ON SHEET E-55, DOOR MUST FACE NORTH.

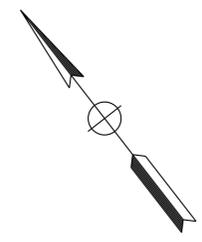
NOTE: (FOR THIS SHEET ONLY)
 SEE STRUCTURE PLAN FOR EXACT LOCATIONS OF CITY LIGHTING STANDARD AND OTHER DETAILS. PAINT CITY LIGHTING STANDARDS.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	353	568

REGISTERED ELECTRICAL ENGINEER: Kenneth Y. Xu
 DATE: 6-23-16
 PLANS APPROVAL DATE: 6-29-16
 No. 15219
 Exp. 6-30-18
 ELECT

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.



APPROVED FOR ELECTRICAL WORK ONLY

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

LIGHTING
(CITY STREET)

SCALE: 1" = 50'

E-74

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	354	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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:

ITEMS SHOWN IN THESE TABLES ARE NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

LIGHTING

SHEET No.	CONDUIT		PULL BOX					CONDUCTOR		LUMINAIRE		STANDARD		PEU	NEMA 3R ENCLOSURE
	1 1/2"	2"	#5	#5(T)	#5(TW)	#6(TW)	#9	#6	#14	165 W LED	235 W LED	TYPE 15	TYPE 30		
	ft		EA					ft		EA					
E-2	50			1											1
E-4	1865	630	2		11		2	1	5500	200	1		5	1	2
E-5	1900	830			16		3	2	6200	600	2		4	1	2
E-7	50	20		2				1							1

SIGNAL AND LIGHTING (LOCATION 1)

SHEET No.	CONDUIT				PULL BOX			CONDUCTOR				LOOP		DLC	STANDARD						
	1 1/2"	2"	2 1/2"	3"	#5	#6	#9	#6	#8	#14	SIC	TYPE A	TYPE D	TYPE B	15TS	21TS	1-B	29A-5-100	24A-3-100	61A-5-100	
	ft				EA			ft				EA		ft	EA						
E-8	400				2						450										
E-9	600	250			5			900			650	4		480							
E-10	300	430	125	280		13	3	300	2000	8000	100	44	15	7000	1	4	1		1		1

SIGNAL AND LIGHTING (LOCATION 1) CONTINUATION

SHEET No.	LUMINAIRE		SIGNAL MOUNT			SIGNAL MOUNT MAST	SIGNAL	APS	LED COUNT DOWN PED SIGNAL	PED SIGNAL MOUNT
	165 W LED	300 W LED	SV-1-T	SV-2-T	TV-1-T	3-12"			SP-1-T	
E-8										
E-9										
E-10	1	6	4	1	1	3	18	4	4	

SIGNAL AND LIGHTING (LOCATION 2)

SHEET No.	CONDUIT				PULL BOX			CONDUCTOR				LOOP		DLC	STANDARD								
	1 1/2"	2"	2 1/2"	3"	#5	#6	#9	#6	#8	#14	SIC	TYPE A	TYPE D	TYPE B	15TS	21TS	1-B	29A-5-100	24A-3-100	61A-5-100	18-1-100	17A-2-100	
	ft				EA			ft				EA		ft	EA								
E-12	210	600	260	100		12	3		1800	7000	100	44	15	5200		4		1		1		1	
E-13	850				2	1		640			500	4		720									

SIGNAL AND LIGHTING (LOCATION 2) CONTINUATION

SHEET No.	LUMINAIRE			SIGNAL MOUNT			SIGNAL MOUNT MAST	SIGNAL	APS	LED COUNT DOWN PED SIGNAL	PED SIGNAL MOUNT	
	165 W LED	235 W LED	300 W LED	SV-1-T	SV-2-T	TV-1-T	3-12"				SP-1-T	TP-1-T
E-12		3			5			4	18	4	4	3
E-13												1

ELECTRICAL QUANTITIES

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 ELECTRICAL
 FUNCTIONAL SUPERVISOR: KENNETH XU
 CHECKED BY: KENNETH XU
 MICHELLE CHAN
 KENNETH XU
 REVISOR: MC
 DATE: 10-20-15



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	355	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE
 6-29-16
 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:
ITEMS SHOWN IN THESE TABLES ARE NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

RAMP METERING SYSTEM

SHEET No.	CONDUIT				PULL BOX			CONDUCTOR			LOOP		DLC	STANDARD				LUMINAIRE	TYPE 334 CABINET	SIGNAL MOUNT MAST	SIGNAL		
	1 1/2"	2"	2 1/2"	3"	#5	#6	#9	#6	#8	#14	TYPE A	TYPE D	TYPE B	15-FBF	1-B	19-4-100	26A-4-100	235 W LED			3-12"	1-8"	
	ft				EA			ft			EA		ft	EA									
E-15	1320	1800	20	320	21		7	7	5300	4000	3500	34	4	6500	6	2	1		1	2	2	4	4
E-16	1750	1450	250	80	23	5	6	7	4650	3700	2900	34	4	7560	6	2		1	1	1	2	4	4

FIBER OPTIC SYSTEM

SHEET No.	CONDUIT					PULL BOX			CONDUCTOR					CCTV	IMS	FDU	LAYER 2 ETHERNET SWITCH	ETHERNET FO EXTENDER	
	1"	1 1/2"	2"	3"	4"	#5(T)	FO	#9	#6	#8	HCC	FFOC	FPC (12)						
	ft					EA			ft					EA					
E-17	4100	1120	530	600	1020	8		1	2140	740	860	360	3530	1	1	5	4	3	
E-18	4840		320		1210	1	1	1		330			1210		1	3	3	1	

LIGHTING (STAGE CONSTRUCTION)

SHEET No.	CONDUIT			PULL BOX		CONDUCTOR			LUMINAIRE LED	TEMP WOOD POLE	TEMP WOOD POLE WITH LUMINAIRE MASTARM	PEU	TYPE III-A SERVICE	REMOVE STANDARD	REMOVE TEMP WOOD POLE	TYPE 21 STANDARD	NEMA 3R ENCLOSURE
	1 1/2"	2"	3"	#5	#9	#2	#6	#14	165W	235W							
	ft			EA		ft			EA								
E-19	100	100	700	2		10	3000	60	3		6	8	1	1	3		
E-20	100	200	500	3		30	4000	60	5		9	7	1	1	3		
E-21							2180		5		2	1			2		
E-22							2040		3		2	3			3		
E-23							1620		6			4			3	8	
E-24							1740		5			5			3	10	
E-25		600			4		800			3							1
E-26	20	710		1	3		3220		2	2	3	2			4	3	
E-27		840		1	3		2540		1	2	5	1				2	
E-28		620		1	2		660			2						2	1
E-29							440		1			1					

SIGNAL AND LIGHTING

SHEET No.	CONDUIT			PULL BOX		CONDUCTOR				TEMP WOOD POLE WITH LUMINAIRE MASTARM	TEMP WOOD POLE	LUMINAIRE LED			STANDARD	SIGNAL MOUNT		SIGNAL MOUNT MAST	SIGNAL		PEU	TYPE III-A SERVICE	VIDEO DETECTION SYSTEM
	1 1/2"	2"	3"	#5	#6	#6	#8	#14	HCC			165W	235W	300W	19-1-100	SV-1-T	SV-2-T		3-12"	5-12"			
	ft			EA		ft				EA													
E-30	20	20	180	3	2	1820	480	5570	500		5				1	3	2	1	12		1		3
E-32	20	40	65	4	6	1940	310	3170	280		4				3	3	3	3	12		1		3
E-34						1560	375	4485	480		5		1	4	1	4	3	3	12				
E-36						2120	320	2580	520		6		1	4	2		4	1	3	9			
E-38						1620	320	4220	580		5					2	3	3	11				
E-40						2000	520	4140	990		5					2	2	3	6	3			

ELECTRICAL QUANTITIES

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 ELECTRICAL
 Kenneth Xu
 Functional Supervisor
 Kenneth Xu
 Checked By
 Michelle Chan
 Kenneth Xu
 Revised By
 MC
 10-20-15
 Date Revised

LAST REVISION | DATE PLOTTED => 17-AUG-2016
 10-28-15 | TIME PLOTTED => 08:28

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	356	568

Kenneth Y. Xu 6-23-16
 REGISTERED ELECTRICAL ENGINEER DATE

6-29-16
 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:

ITEMS SHOWN IN THESE TABLES ARE NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

RAMP METERING SYSTEM (STAGE CONSTRUCTION)

SHEET No.	CONDUIT			PULL BOX		CONDUCTOR		LOOP		DLC	TEMP WOOD POLE WITH FB	TEMP WOOD POLE	MODEL 2070 CONTROLLER ASSEMBLY	SIGNAL		REMOVE CONTROLLER CABINET	REMOVE TYPE 1 STANDARD	REMOVE CCTV UNIT	RS MODEL 2070 CONTROLLER ASSEMBLY		
	1 1/2"	2"	3"	#5	#6	#8	#14	TYPE A	TYPE D	TYPE B				3-12"	1-8"						
	ft			EA		ft		EA		ft				EA							
E-42																2	4				
E-43	60		20	2	1	2430	1380	1		1300		8	1			1	1	1			
E-44				2		730		3		450	2										
E-45	30			2		1110	1500	11	2	2250	1	2		2	2	1	1				
E-46	10	40	20	4	1	2260	2880	6	2	1680		8	1	2	2		2		1		

FIBER OPTIC SYSTEM (STAGE CONSTRUCTION)

SHEET No.	CONDUIT					PULL BOX			CONDUCTOR					TEMP WOOD POLE	TYPE 334 CABINET	DEPARTMENT- FURNISHED CCTV WIRELESS COMMUNICAITON EQUIPMENT	CCTV	MVDS SYSTEM	RS CCTV WIRELESS COMMUNICAITON EQUIPMENT					
	1"	1 1/2"	2"	3"	4"	#5	FO	FO VAULT	#6	#8	#10	HCC	FPC (72)											
	ft					EA			ft											EA				
E-47	1120				280					280			280											
E-48	6000				1500					1500			1500											
E-49	8960				2240	3	5			2240		120	2240	4	2		1							
E-50	5400	200	50	10	1350	2	1	1	1000	1350	100	100	1350	3	1	1	1	1	1					
E-51	1200				300					3000			3000											
E-52	2400				600					800			800											
E-53	1400				350					350			350											

LIGHTING (CITY STREET)

SHEET No.	CONDUIT			PULL BOX	CONDUCTOR			LUMINAIRE	CITY LIGHITNG STANDARD	PEU	TYPE III-A SERVICE ENCLOSURE
	1 1/2"	2"	3"	#5	#2	#6	#14	235 W LED			
	ft			EA	ft			EA			
E-74	20	1300	100	6	70	2600	3900	12	12	12	1

ELECTRICAL QUANTITIES

E-77



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

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

	S	
S	SOUTH, SUPPLEMENT	
SAE	STRUCTURE APPROACH EMBANKMENT	
Salv	SALVAGE	
SAPP	STRUCTURAL ALUMINUM PLATE PIPE	
SB	SOUTHBOUND	
SC	SAND CUSHION	
SCSP	SLOTTED CORRUGATED STEEL PIPE	
SD	STORM DRAIN	
Sec	SECOND, SECTION	
Sep	SEPARATION	
SG	SUBGRADE	
Shld	SHOULDER	
Sht	SHEET	
Sim	SIMILAR	
ℒ	STATION LINE	
SM	SELECTED MATERIAL	
Spec	SPECIAL, SPECIFICATIONS	
SPP	SLOTTED PLASTIC PIPE	
SS	SLOPE STAKE	
SSBM	STRAP AND SADDLE BRACKET METHOD	
SSD	STRUCTURAL SECTION DRAIN	
SSPA	STRUCTURAL STEEL PLATE ARCH	
SSPP	STRUCTURAL STEEL PLATE PIPE	
SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH	
SSRP	STEEL SPIRAL RIB PIPE	
St	STREET	
Sta	STATION	
STBB	SINGLE THRIE BEAM BARRIER	
Std	STANDARD	
Str	STRUCTURE	
Surf	SURFACING	
SW	SIDEWALK, SOUND WALL	
Swr	SEWER	
Sym	SYMMETRICAL	
S4S	SURFACE 4 SIDES	
	T	
T	SEMI-TANGENT	
Tan	TANGENT	
TBB	THRIE BEAM BARRIER	
Tbr	TIMBER	
TC	TOP OF CURB	
TCB	TRAFFIC CONTROL BOX	
TCE	TEMPORARY CONSTRUCTION EASEMENT	
TeI	TELEPHONE	
Temp	TEMPORARY	
TG	TOP OF GRADE	
Tot	TOTAL	
TP	TELEPHONE POLE	
TPB	TREATED PERMEABLE BASE	
TPM	TREATED PERMEABLE MATERIAL	
Trans	TRANSITION	

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	357	568

Grace M. Tsushima
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED 6-29-16

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

TABLE A

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

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

TABLE B

SYMBOL USED	DEFINITIONS
ksi	KIPS PER SQUARE INCH
ksf	KIPS PER SQUARE FOOT
psi	POUNDS PER SQUARE INCH
psf	POUNDS PER SQUARE FOOT
lb/ft ³ , pcf	POUNDS PER CUBIC FOOT
tsf	TONS PER SQUARE FOOT
mph, MPH *	MILES PER HOUR
∅	NOMINAL DIAMETER
oz	OUNCE
lb	POUND
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.

2010 REVISED STANDARD PLAN RSP A10B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3	358	568


 CERTIFIED ENGINEERING GEOLOGIST
 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 GEOLOGIST
 CHRIS A. RISDEN
 No. 2541
 Exp. 9-30-17
 STATE OF CALIFORNIA

CEMENTATION	
DESCRIPTION	CRITERIA
WEAK	CRUMBLES OR BREAKS WITH HANDLING OR LITTLE FINGER PRESSURE.
MODERATE	CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE.
STRONG	WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE.

ABBREVIATION:

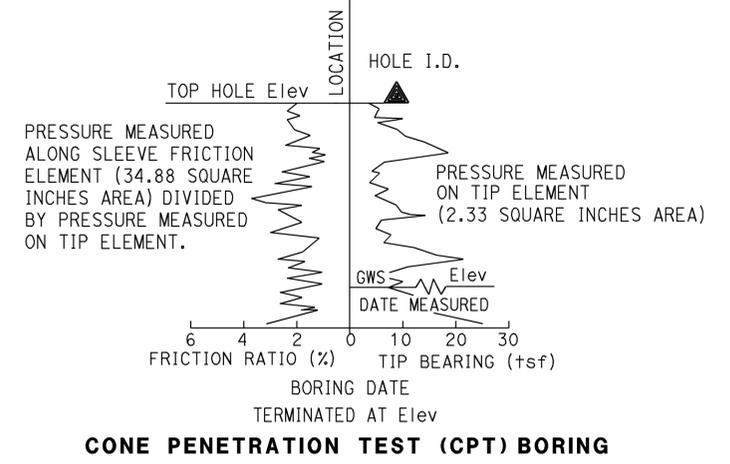
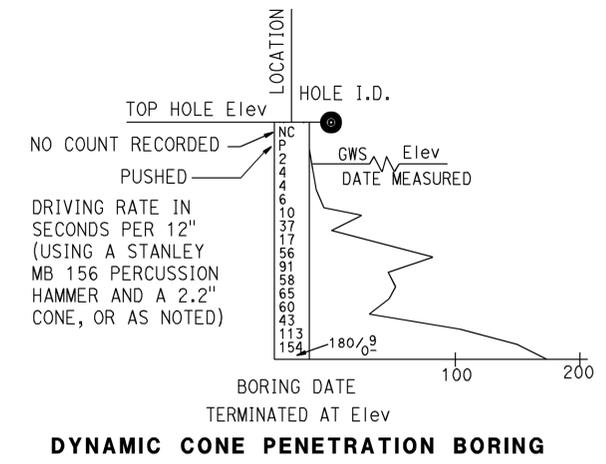
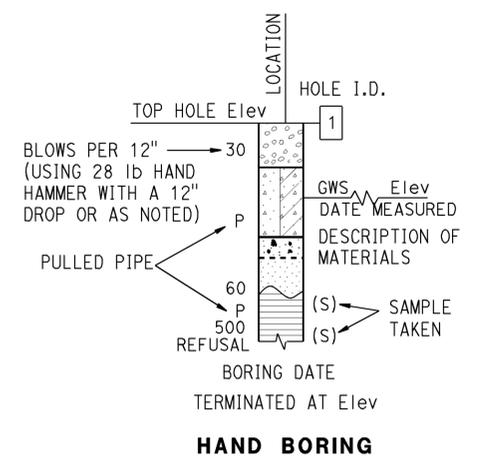
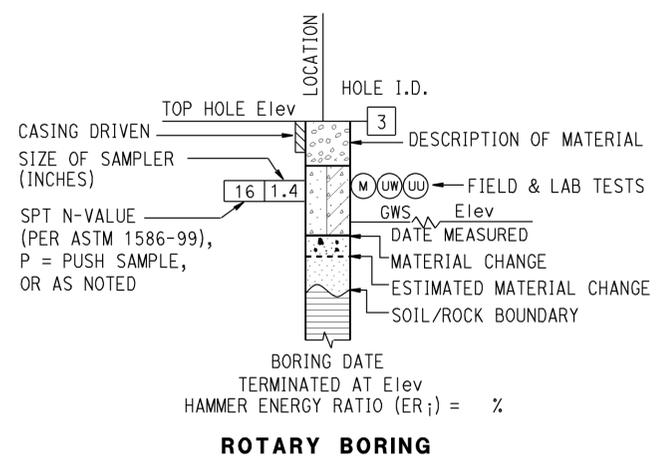
GWS = Ground Water Surface

TO ACCOMPANY PLANS DATED 6-29-16

BOREHOLE IDENTIFICATION		
SYMBOL	HOLE TYPE	DESCRIPTION
	A	AUGER BORING (HOLLOW OR SOLID STEM BUCKET)
	R	ROTARY DRILLED BORING (CONVENTIONAL)
	RW	ROTARY DRILLED WITH SELF-CASING WIRE-LINE
	RC	ROTARY CORE WITH CONTINUOUSLY-SAMPLED, SELF-CASING WIRE-LINE
	P	ROTARY PERCUSSION BORING (AIR)
	R	ROTARY DRILLED DIAMOND CORE
	RC	ROTARY DRILLED DIAMOND CORE, CONTINUOUSLY SAMPLED
	HD	HAND DRIVEN (1-INCH SOIL TUBE)
	HA	HAND AUGER
	D	DYNAMIC CONE PENETRATION BORING
	CPT	CONE PENETRATION TEST (ASTM D 5778)
	O	OTHER (NOTE ON LOTB)

Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS				
DESCRIPTION	SHEAR STRENGTH (tsf)	POCKET PENETROMETER MEASUREMENT, PP, (tsf)	TORVANE MEASUREMENT, TV, (tsf)	VANE SHEAR MEASUREMENT, VS, (tsf)
VERY SOFT	LESS THAN 0.12	LESS THAN 0.25	LESS THAN 0.12	LESS THAN 0.12
SOFT	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
MEDIUM STIFF	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
STIFF	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
VERY STIFF	1 - 2	2 - 4	1 - 2	1 - 2
HARD	GREATER THAN 2	GREATER THAN 4	GREATER THAN 2	GREATER THAN 2



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LEGEND - SOIL (SHEET 1 OF 2)
 NO SCALE

RSP A10F DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN A10F DATED MAY 20, 2011 - PAGE 6 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A10F

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	359	568

Chris A. Risden
 CERTIFIED ENGINEERING GEOLOGIST
 October 30, 2015
 PLANS APPROVAL DATE

REGISTERED GEOLOGIST
 CHRIS A. RISDEN
 No. 2541
 Exp. 9-30-17
 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.

TO ACCOMPANY PLANS DATED 6-29-16

GROUP SYMBOLS AND NAMES					
GRAPHIC/SYMBOL	GROUP NAMES	GRAPHIC/SYMBOL	GROUP NAMES	GRAPHIC/SYMBOL	GROUP NAMES
	GW WELL-GRADED GRAVEL WELL-GRADED GRAVEL WITH SAND		CL LEAN CLAY LEAN CLAY WITH SAND LEAN CLAY WITH GRAVEL SANDY LEAN CLAY SANDY LEAN CLAY WITH GRAVEL GRAVELLY LEAN CLAY GRAVELLY LEAN CLAY WITH SAND		GW-GM WELL-GRADED GRAVEL WITH SILT WELL-GRADED GRAVEL WITH SILT AND SAND
	GP POORLY-GRADED GRAVEL POORLY-GRADED GRAVEL WITH SAND				
	GW-GC WELL-GRADED GRAVEL WITH CLAY (OR SILTY CLAY) WELL-GRADED GRAVEL WITH CLAY AND SAND (OR SILTY CLAY AND SAND)		CL-ML SILTY CLAY SILTY CLAY WITH SAND SILTY CLAY WITH GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY WITH GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY WITH SAND		GP-GM POORLY-GRADED GRAVEL WITH SILT POORLY-GRADED GRAVEL WITH SILT AND SAND
	GM SILTY GRAVEL SILTY GRAVEL WITH SAND		ML SILT SILT WITH SAND SILT WITH GRAVEL SANDY SILT SANDY SILT WITH GRAVEL GRAVELLY SILT GRAVELLY SILT WITH SAND		GC CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
	SW WELL-GRADED SAND WELL-GRADED SAND WITH GRAVEL		OL ORGANIC LEAN CLAY ORGANIC LEAN CLAY WITH SAND ORGANIC LEAN CLAY WITH GRAVEL SANDY ORGANIC LEAN CLAY SANDY ORGANIC LEAN CLAY WITH GRAVEL GRAVELLY ORGANIC LEAN CLAY GRAVELLY ORGANIC LEAN CLAY WITH SAND		SP POORLY-GRADED SAND POORLY-GRADED SAND WITH GRAVEL
	SW-SC WELL-GRADED SAND WITH CLAY (OR SILTY CLAY) WELL-GRADED SAND WITH CLAY AND GRAVEL (OR SILTY CLAY AND GRAVEL)		CH FAT CLAY FAT CLAY WITH SAND FAT CLAY WITH GRAVEL SANDY FAT CLAY SANDY FAT CLAY WITH GRAVEL GRAVELLY FAT CLAY GRAVELLY FAT CLAY WITH SAND		SP-SM POORLY-GRADED SAND WITH SILT POORLY-GRADED SAND WITH SILT AND GRAVEL
	SM SILTY SAND SILTY SAND WITH GRAVEL		MH ELASTIC SILT ELASTIC SILT WITH SAND ELASTIC SILT WITH GRAVEL SANDY ELASTIC SILT SANDY ELASTIC SILT WITH GRAVEL GRAVELLY ELASTIC SILT GRAVELLY ELASTIC SILT WITH SAND		SC CLAYEY SAND CLAYEY SAND WITH GRAVEL
	PT PEAT		OH ORGANIC ELASTIC SILT ORGANIC ELASTIC SILT WITH SAND ORGANIC ELASTIC SILT WITH GRAVEL SANDY ORGANIC ELASTIC SILT SANDY ORGANIC ELASTIC SILT WITH GRAVEL GRAVELLY ORGANIC ELASTIC SILT GRAVELLY ORGANIC ELASTIC SILT WITH SAND		SM SILTY SAND SILTY SAND WITH GRAVEL
	OL/OH ORGANIC SOIL ORGANIC SOIL WITH SAND ORGANIC SOIL WITH GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL WITH GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL WITH SAND		SW SWELL POTENTIAL (ASTM D4546)		UC UNCONFINED COMPRESSION-SOIL (ASTM D2166) UNCONFINED COMPRESSION-ROCK (ASTM D7012 - METHOD C)
	UW UNIT WEIGHT (ASTM D7263 - METHOD B)		UNCONSOLIDATED UNDRAINED TRIAXIAL (ASTM D2850)		UNCONFINED COMPRESSION-SOIL (ASTM D2166) UNCONFINED COMPRESSION-ROCK (ASTM D7012 - METHOD C)

FIELD AND LABORATORY TESTING	
(C)	CONSOLIDATION (ASTM D2435)
(CL)	COLLAPSE POTENTIAL (ASTM D4546)
(CP)	COMPACTION CURVE (CTM 216)
(CR)	CORROSIIVITY TESTING (CTM 643, CTM 422, CTM 417)
(CU)	CONSOLIDATED UNDRAINED TRIAXIAL (ASTM D4767)
(DS)	DIRECT SHEAR (ASTM D3080)
(EI)	EXPANSION INDEX (ASTM D4829)
(M)	MOISTURE CONTENT (ASTM D2216)
(OC)	ORGANIC CONTENT-% (ASTM D2974)
(P)	PERMEABILITY (CTM 220)
(PA)	PARTICLE SIZE ANALYSIS (ASTM D422)
(PI)	PLASTICITY INDEX (AASHTO T 90) LIQUID LIMIT (AASHTO T 89)
(PL)	POINT LOAD INDEX (ASTM D5731)
(PM)	PRESSURE METER
(R)	R-VALUE (CTM 301)
(SE)	SAND EQUIVALENT (CTM 217)
(SG)	SPECIFIC GRAVITY (AASHTO T 100)
(SL)	SHRINKAGE LIMIT (ASTM D4943)
(SW)	SWELL POTENTIAL (ASTM D4546)
(UC)	UNCONFINED COMPRESSION-SOIL (ASTM D2166) UNCONFINED COMPRESSION-ROCK (ASTM D7012 - METHOD C)
(UU)	UNCONSOLIDATED UNDRAINED TRIAXIAL (ASTM D2850)
(UW)	UNIT WEIGHT (ASTM D7263 - METHOD B)

APPARENT DENSITY OF COHESIONLESS SOILS	
DESCRIPTION	SPT N ₆₀ (BLOWS / 12 INCHES)
VERY LOOSE	0 - 5
LOOSE	5 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	GREATER THAN 50

MOISTURE	
DESCRIPTION	CRITERIA
DRY	NO DISCERNABLE MOISTURE
MOIST	MOISTURE PRESENT, BUT NO FREE WATER
WET	VISIBLE FREE WATER

PERCENT OR PROPORTION OF SOILS	
DESCRIPTION	CRITERIA
TRACE	PARTICLES ARE PRESENT BUT ESTIMATED TO BE LESS THAN 5%
FEW	5% - 10%
LITTLE	15% - 25%
SOME	30% - 45%
MOSTLY	50% - 100%

PARTICLE SIZE		
DESCRIPTION	SIZE	
BOULDER	GREATER THAN 12"	
COBBLE	3" - 12"	
GRAVEL	COARSE	3/4" - 3"
	FINE	1/5" - 3/4"
SAND	COARSE	1/16" - 1/5"
	MEDIUM	1/64" - 1/16"
	FINE	1/300" - 1/64"
SILT AND CLAY	LESS THAN 1/300"	

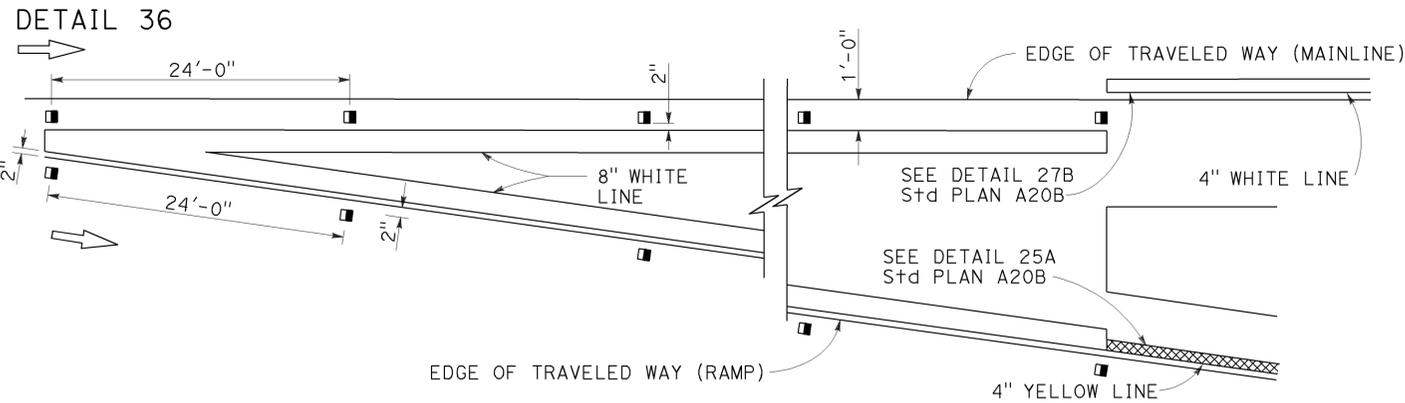
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LEGEND - SOIL
(SHEET 2 OF 2)
 NO SCALE

RSP A10G DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN A10G DATED MAY 20, 2011 - PAGE 7 OF THE STANDARD PLANS BOOK DATED 2010.

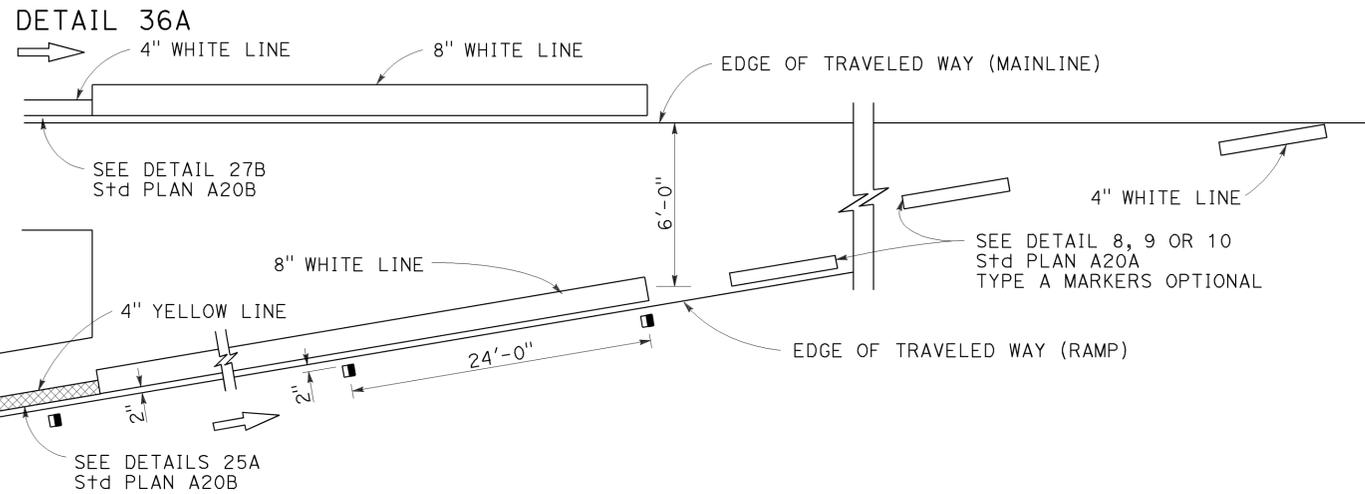
REVISED STANDARD PLAN RSP A10G

2010 REVISED STANDARD PLAN RSP A10G

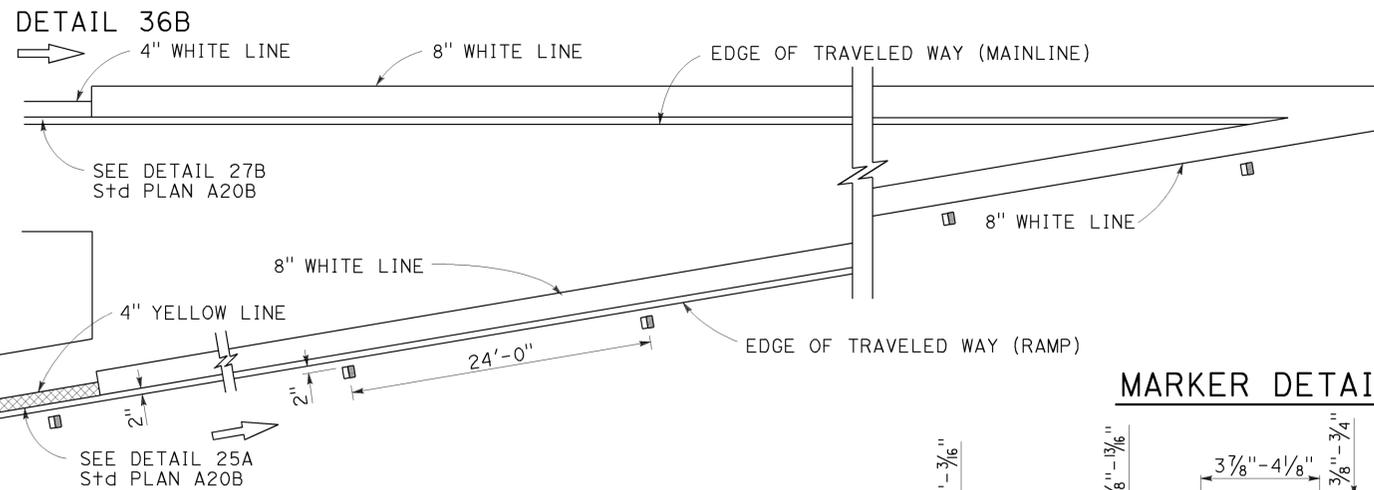
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT



ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT



ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

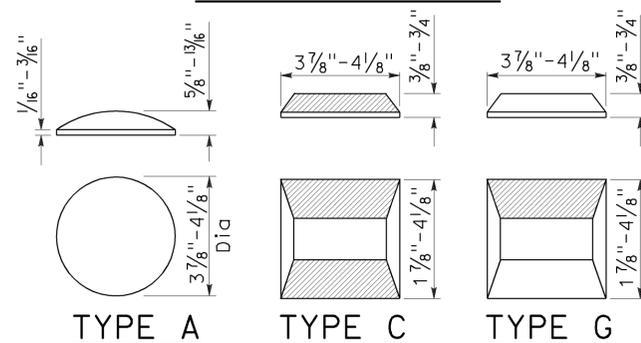


MARKER DETAILS

LEGEND:

MARKERS

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



RETROREFLECTIVE FACE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	360	568

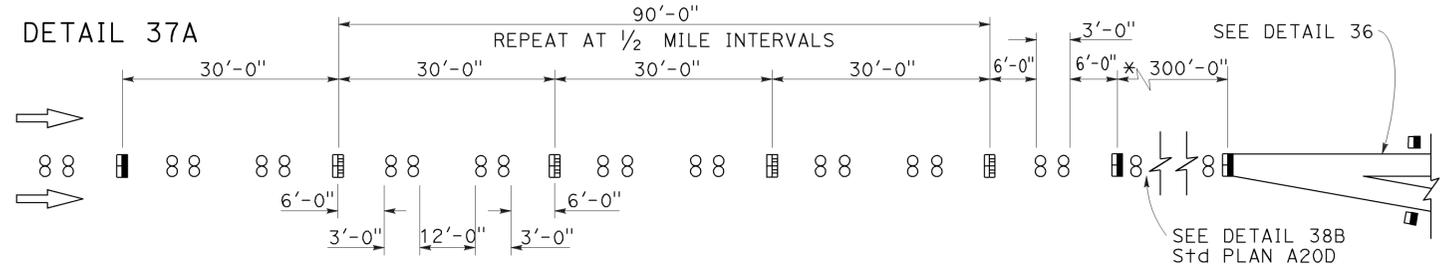
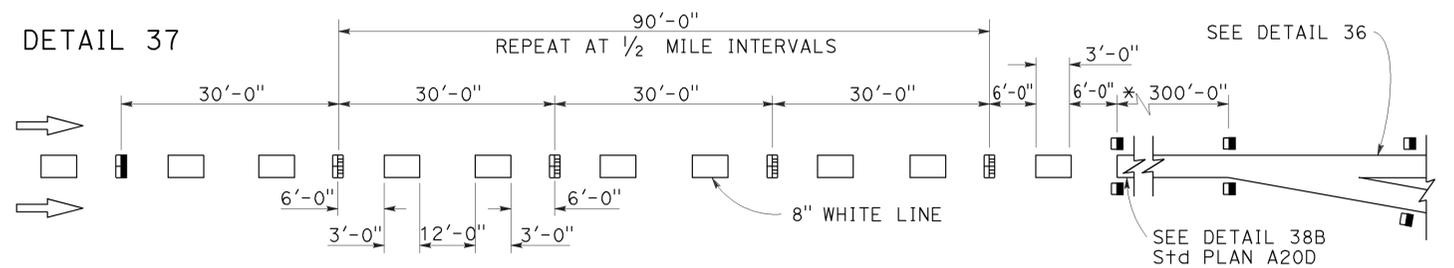
Roberta L. McLaughlin
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE

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

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

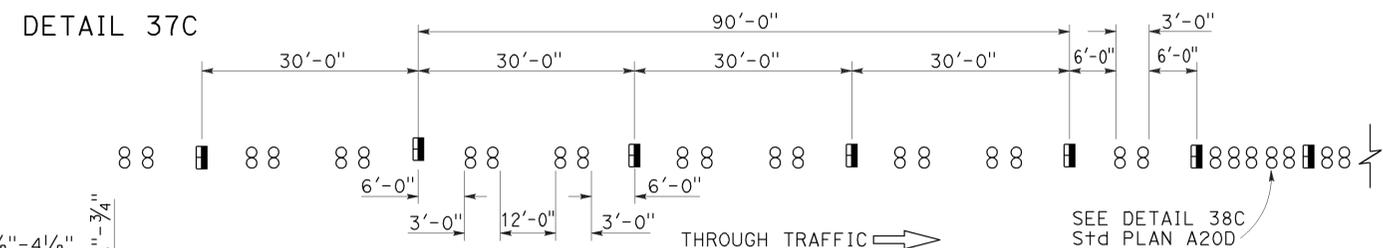
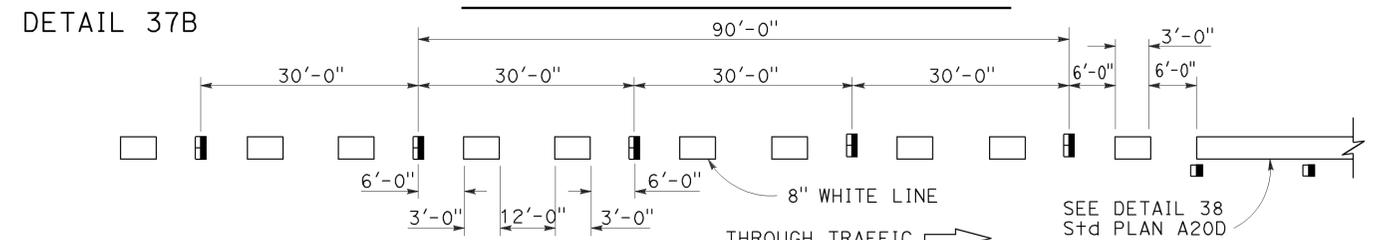
TO ACCOMPANY PLANS DATED 6-29-16

LANE DROP AT EXIT RAMP



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

LANE DROP AT INTERSECTIONS



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINE TYPICAL DETAILS

NO SCALE

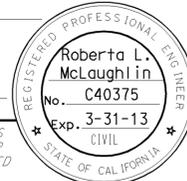
RSP A20C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A20C DATED MAY 20, 2011 - PAGE 11 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A20C

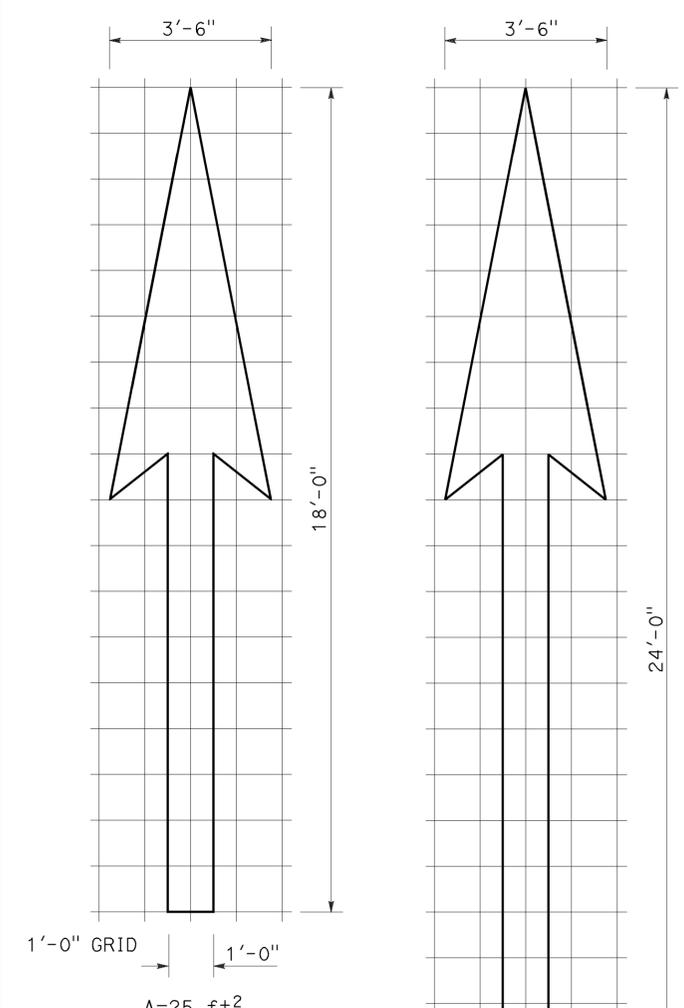
2010 REVISED STANDARD PLAN RSP A20C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	361	568

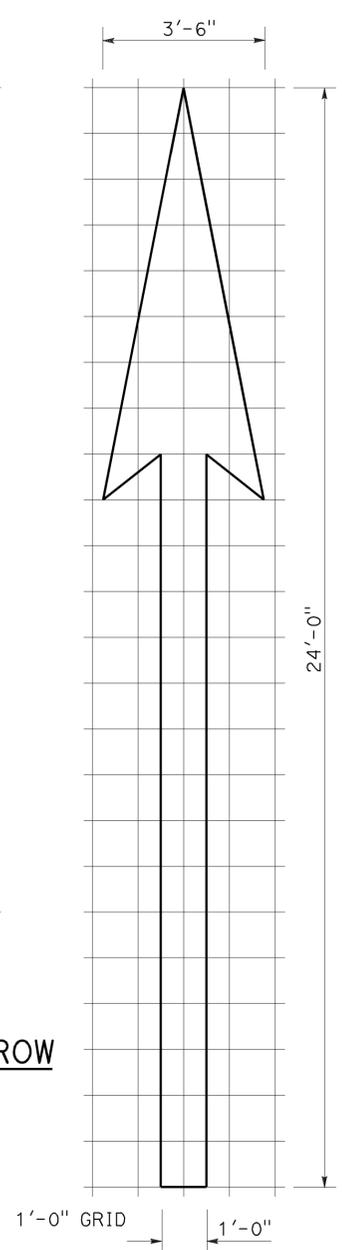
Robert L. McLaughlin
 REGISTERED CIVIL ENGINEER
 April 20, 2012
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



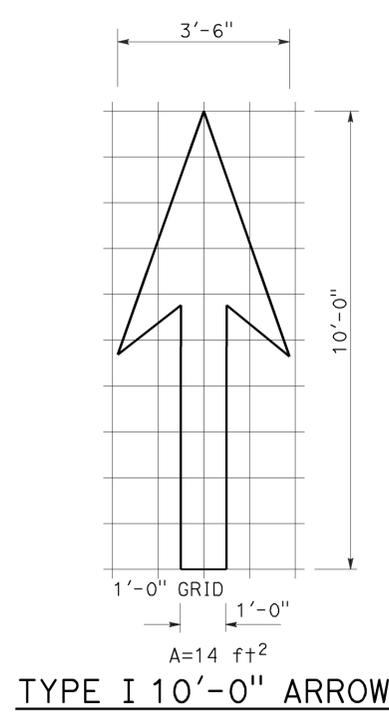
TO ACCOMPANY PLANS DATED 6-29-16



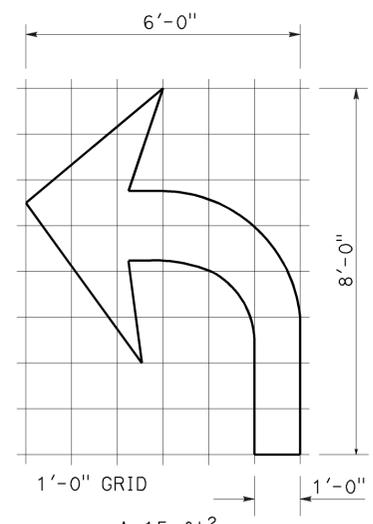
TYPE I 18'-0" ARROW



TYPE I 24'-0" ARROW

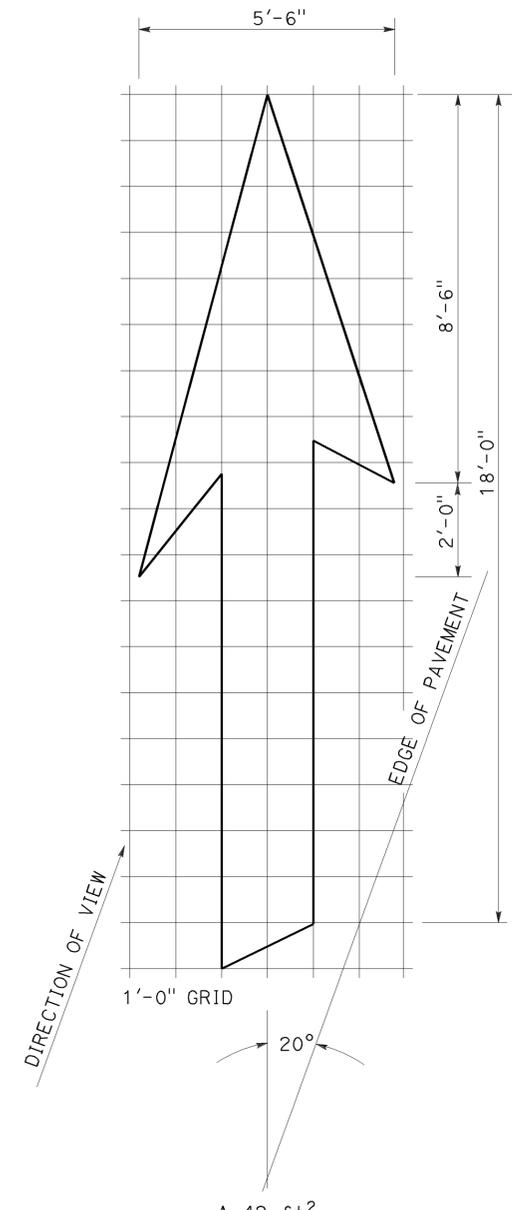


TYPE I 10'-0" ARROW



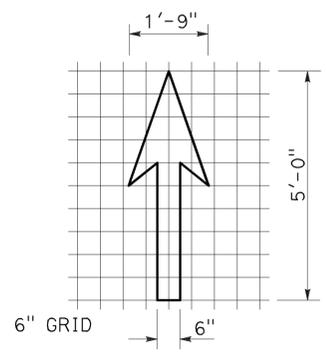
TYPE IV (L) ARROW

(For Type IV (R) arrow, use mirror image)

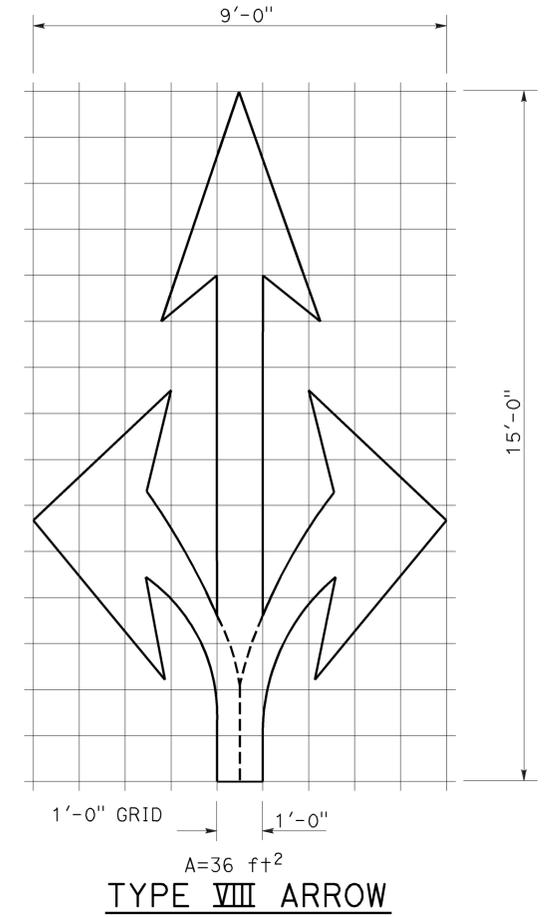


TYPE VI ARROW

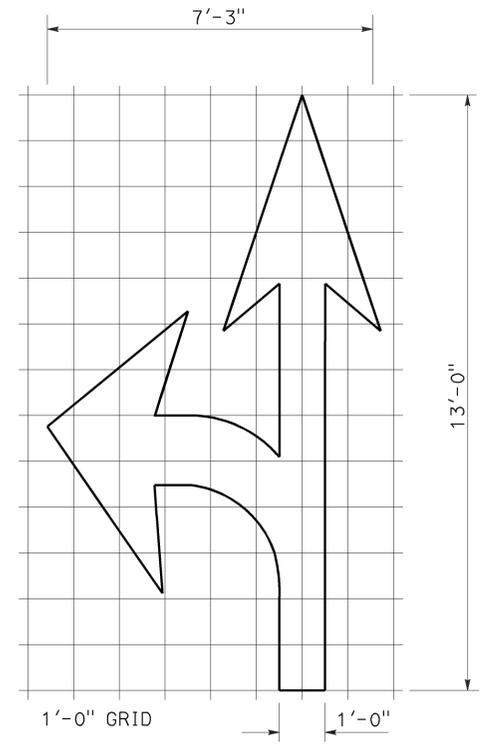
Right lane drop arrow
(For left lane, use mirror image)



BIKE LANE ARROW

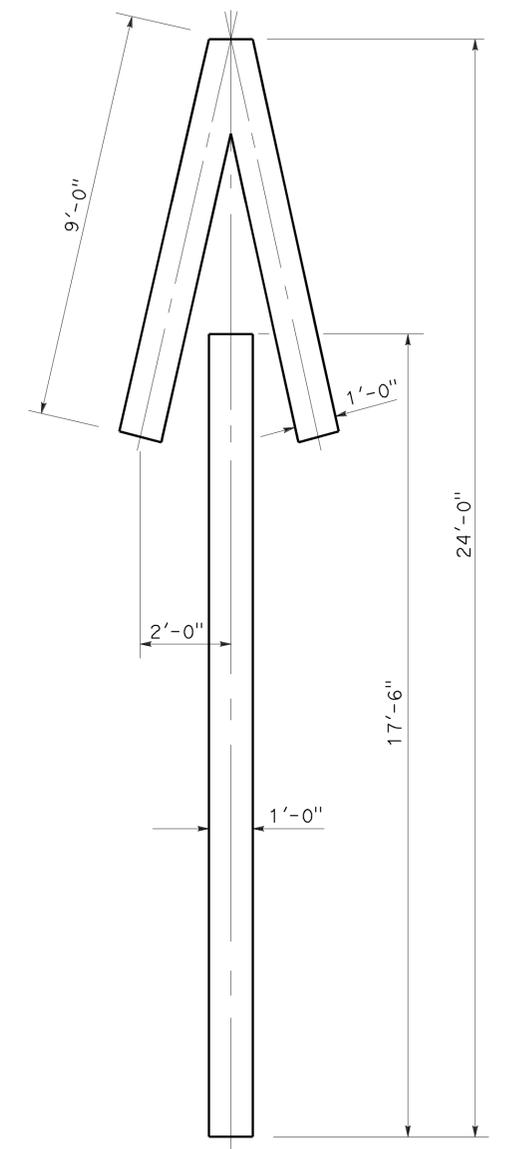


TYPE VIII ARROW



TYPE VII (L) ARROW

(For Type VII (R) arrow, use mirror image)



TYPE V ARROW

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

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

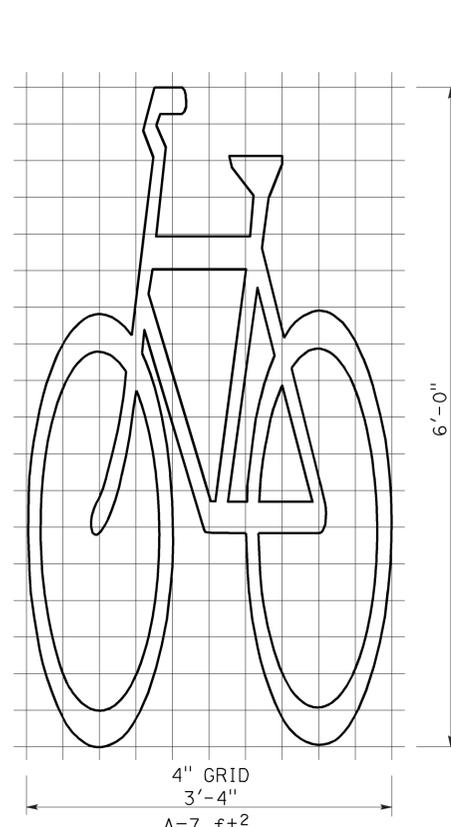
RSP A24A DATED APRIL 20, 2012 SUPERSEDES STANDARD PLAN A24A DATED MAY 20, 2011 - PAGE 13 OF THE STANDARD PLANS BOOK DATED 2010.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	362	568

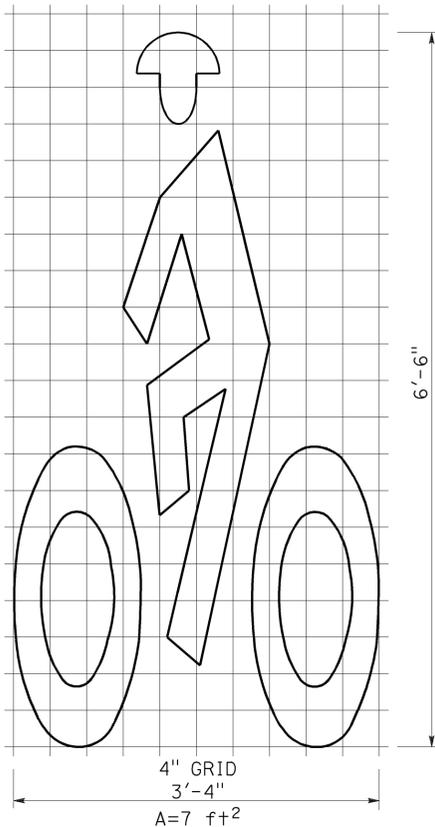
Registered Professional Engineer
 Roberto L. McLaughlin
 No. C40375
 Exp. 3-31-13
 CIVIL
 STATE OF CALIFORNIA

October 19, 2012
 PLANS APPROVAL DATE

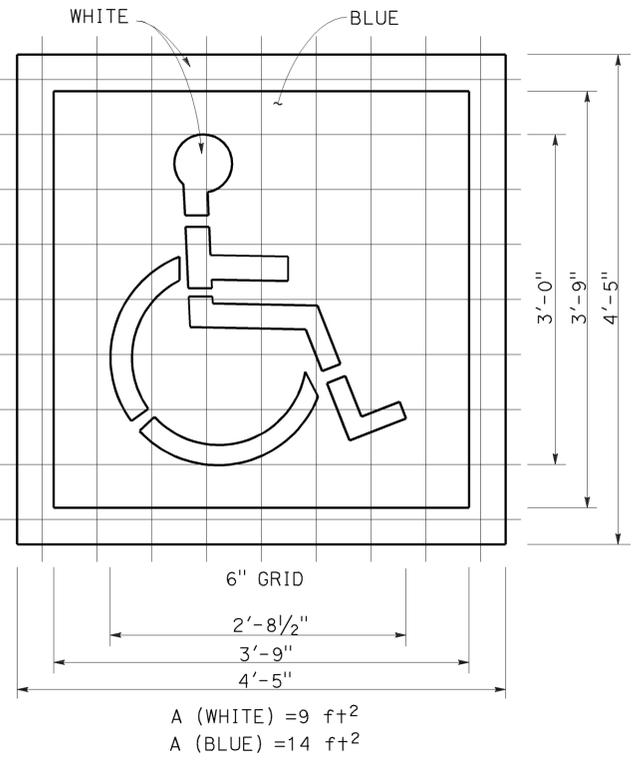
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



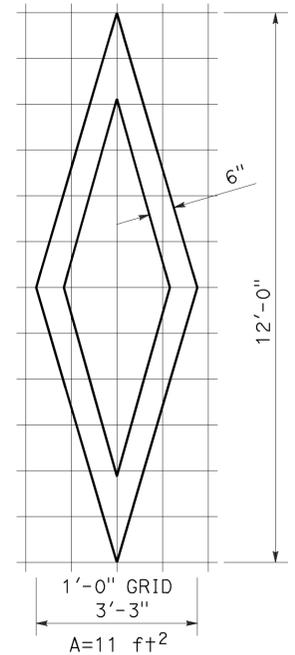
BIKE LANE SYMBOL WITHOUT PERSON



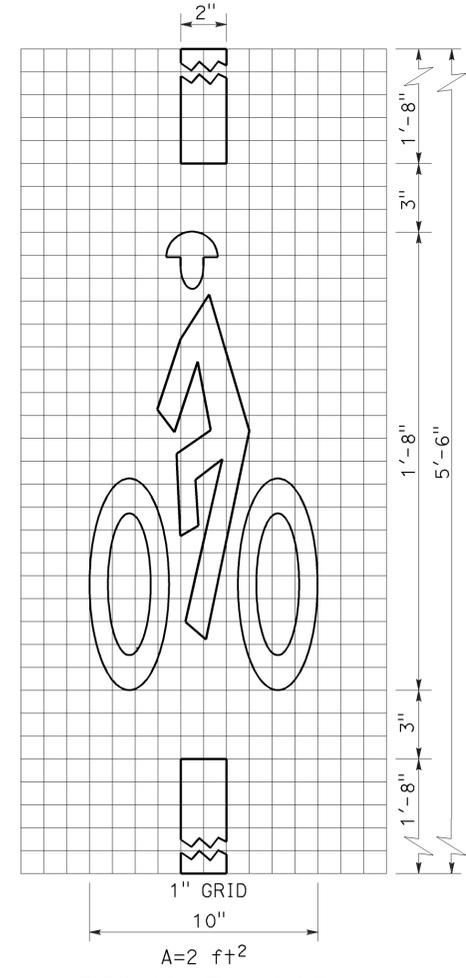
BIKE LANE SYMBOL WITH PERSON



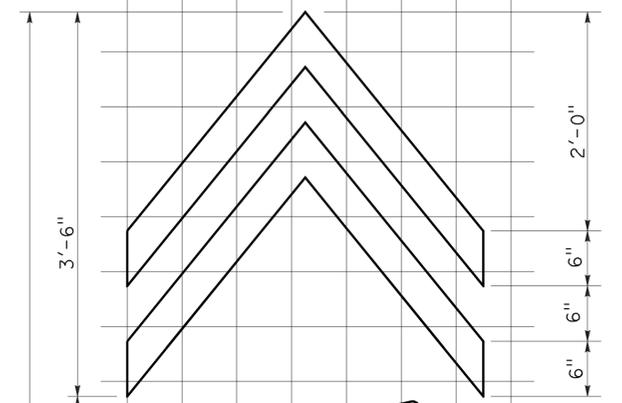
INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) MARKING



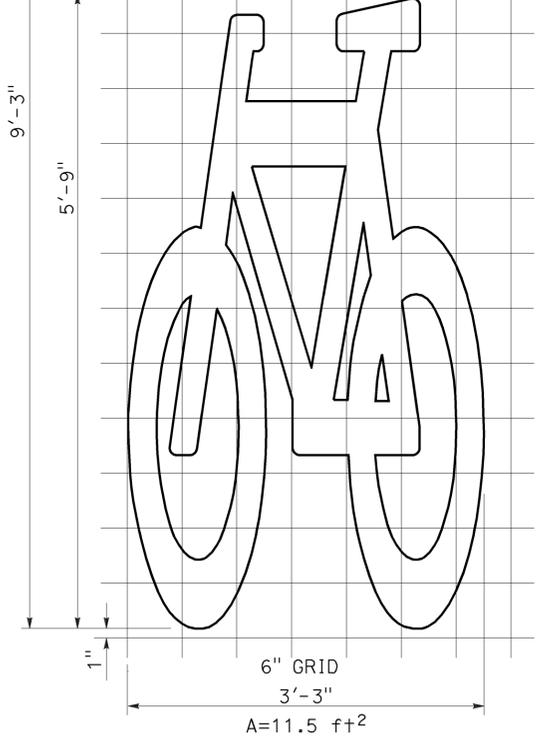
DIAMOND SYMBOL



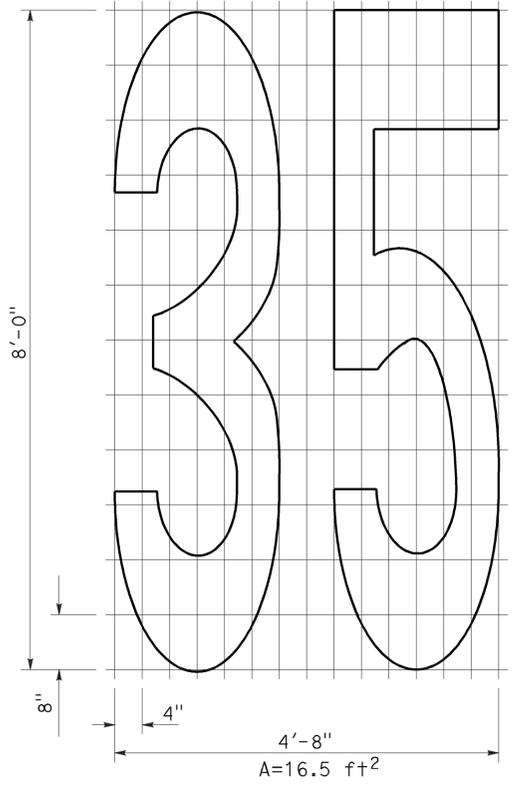
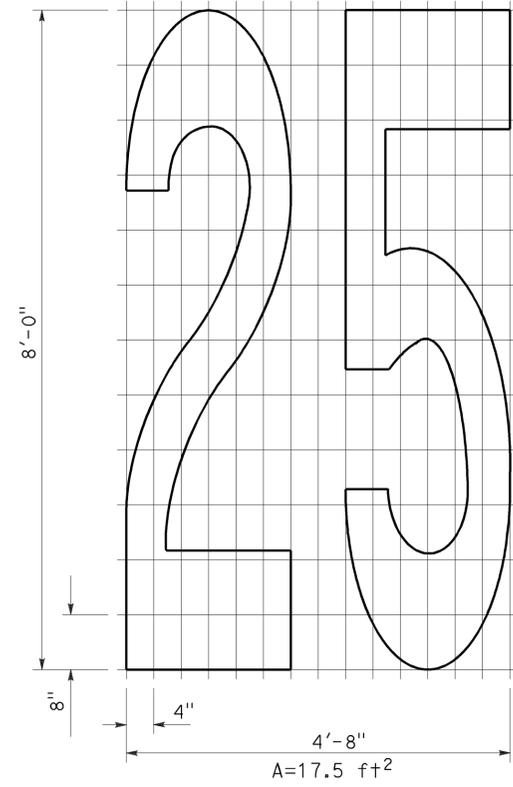
BICYCLE LOOP DETECTOR SYMBOL



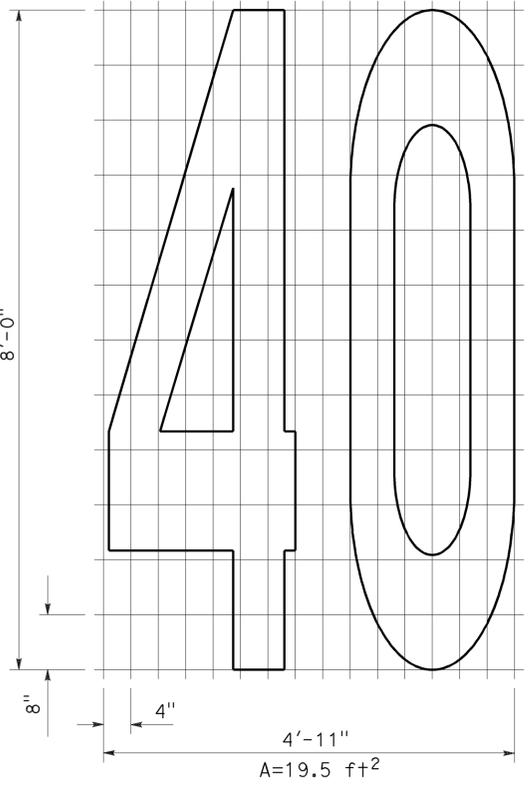
SHARED ROADWAY BICYCLE MARKING



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



NUMERALS

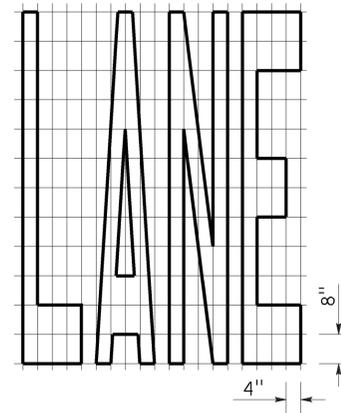


RSP A24C DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A24C DATED MAY 20, 2011 - PAGE 15 OF THE STANDARD PLANS BOOK DATED 2010.

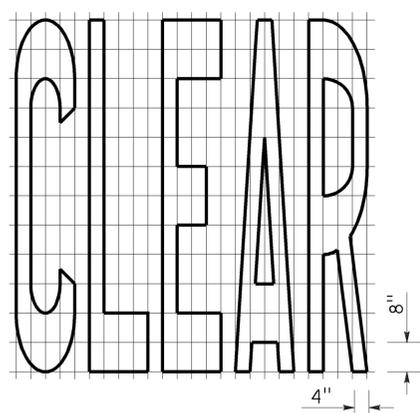
2010 REVISED STANDARD PLAN RSP A24C

TO ACCOMPANY PLANS DATED 6-29-16

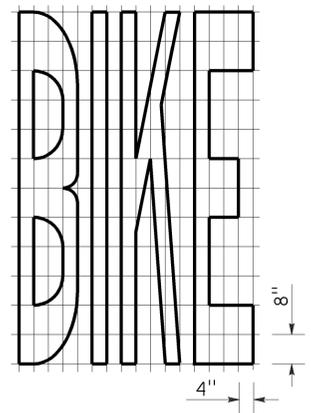
2010 REVISED STANDARD PLAN RSP A24E



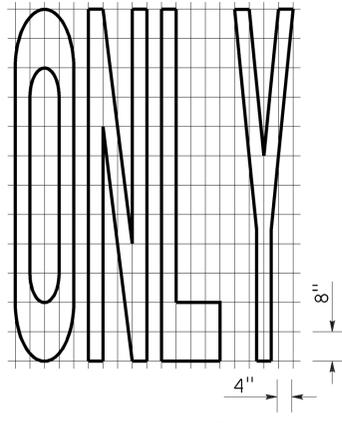
A=24 ft²



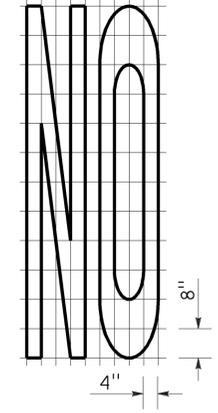
A=27 ft²



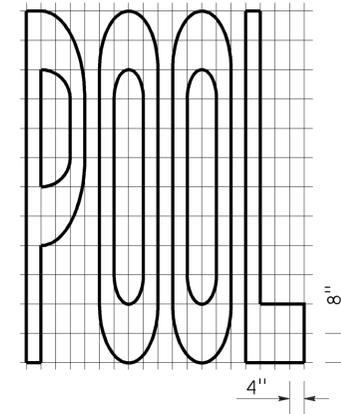
A=21 ft²



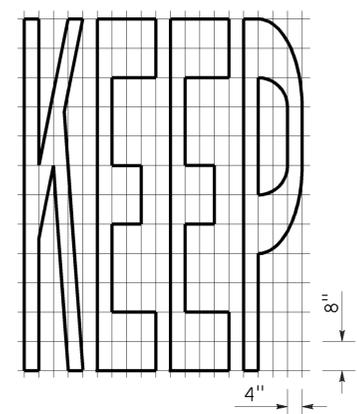
A=22 ft²



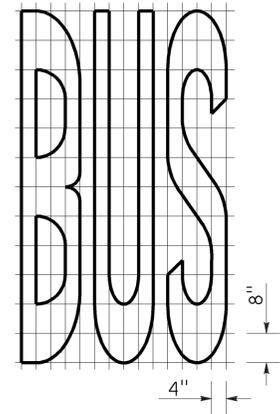
A=14 ft²



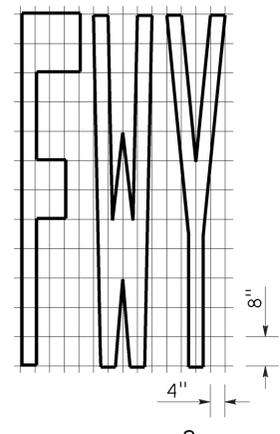
A=23 ft²



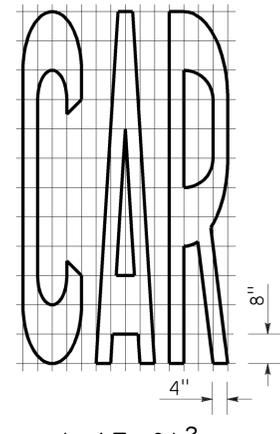
A=24 ft²



A=20 ft²

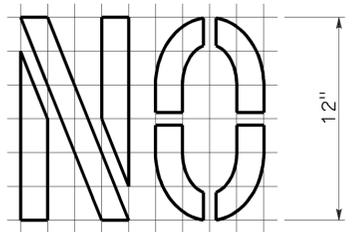


A=16 ft²



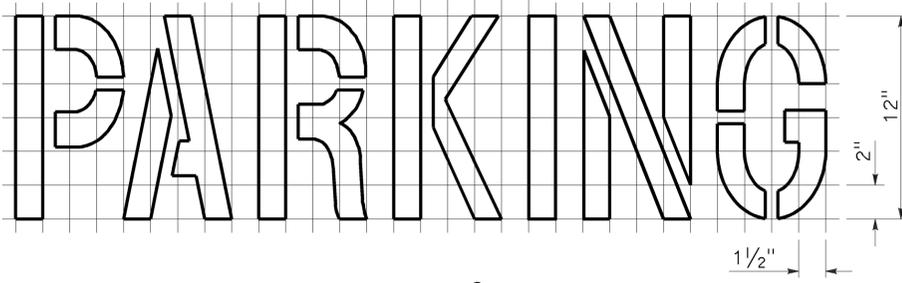
A=17 ft²

WORD MARKINGS			
ITEM	ft²	ITEM	ft²
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16



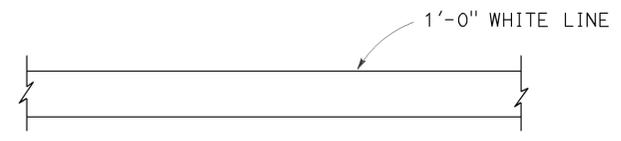
A=2 ft²

See Notes 6 and 7

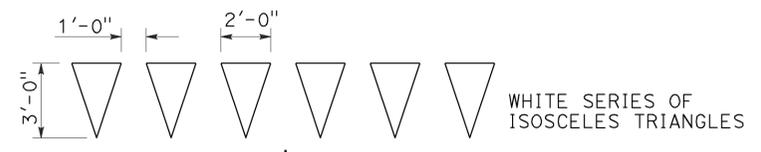


A=2 ft²

See Notes 6 and 7



LIMIT LINE (STOP LINE)



YIELD LINE

NOTES:

1. If a message consists of more than one word, it should read "UP", i.e., the first word should be nearest the driver.
2. The space between words should be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.
5. The words "NO PARKING" pavement marking is to be used for parking facilities. For typical locations of markings, see Standard Plans A90A and A90B.
6. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

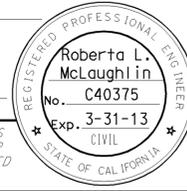
**PAVEMENT MARKINGS
WORDS, LIMIT AND YIELD LINES**

NO SCALE

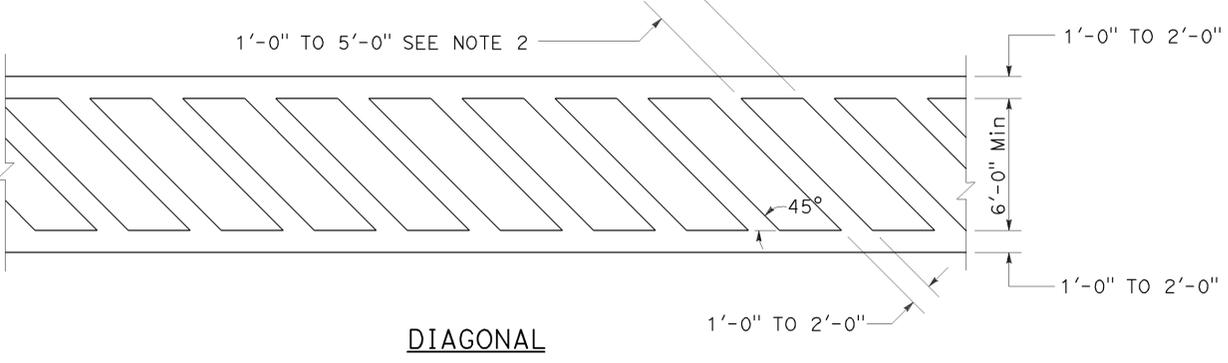
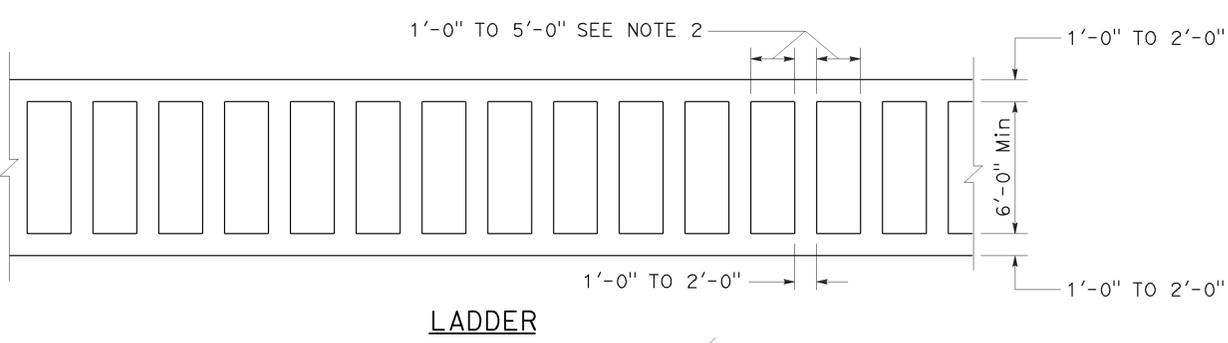
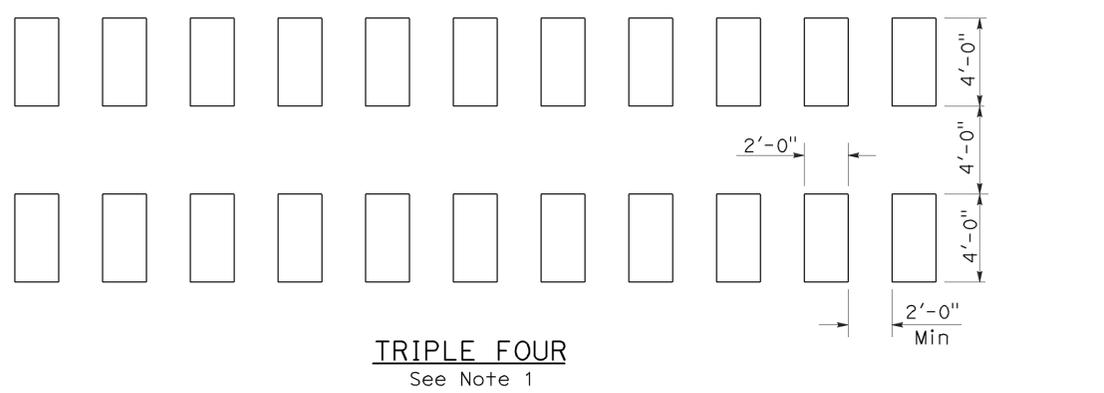
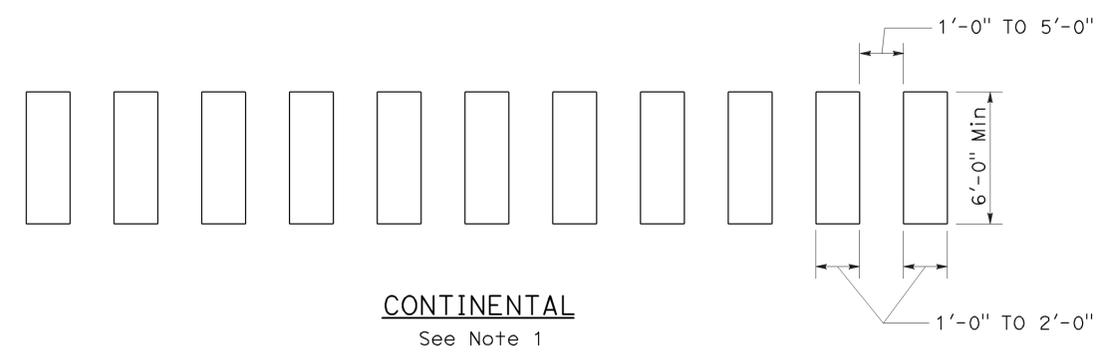
RSP A24E DATED JULY 20, 2012 SUPERSEDES STANDARD PLAN A24E
DATED MAY 20, 2011 - PAGE 17 OF THE STANDARD PLANS BOOK DATED 2010.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	364	568

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



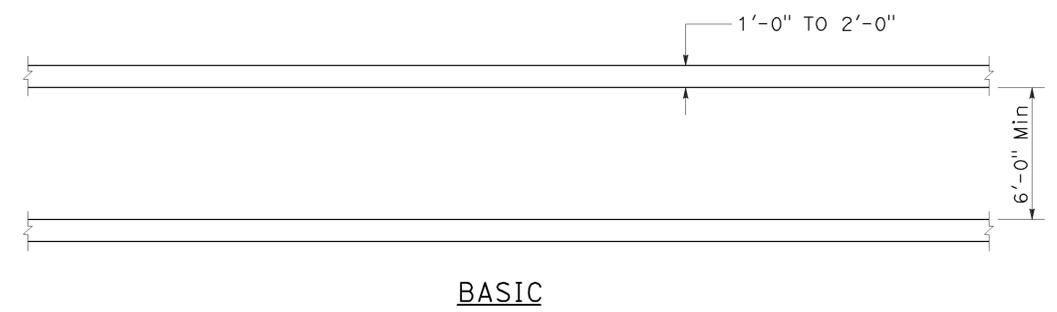
TO ACCOMPANY PLANS DATED 6-29-16



HIGHER VISIBILITY CROSSWALKS

NOTES:

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



BASIC

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**PAVEMENT MARKINGS
CROSSWALKS**

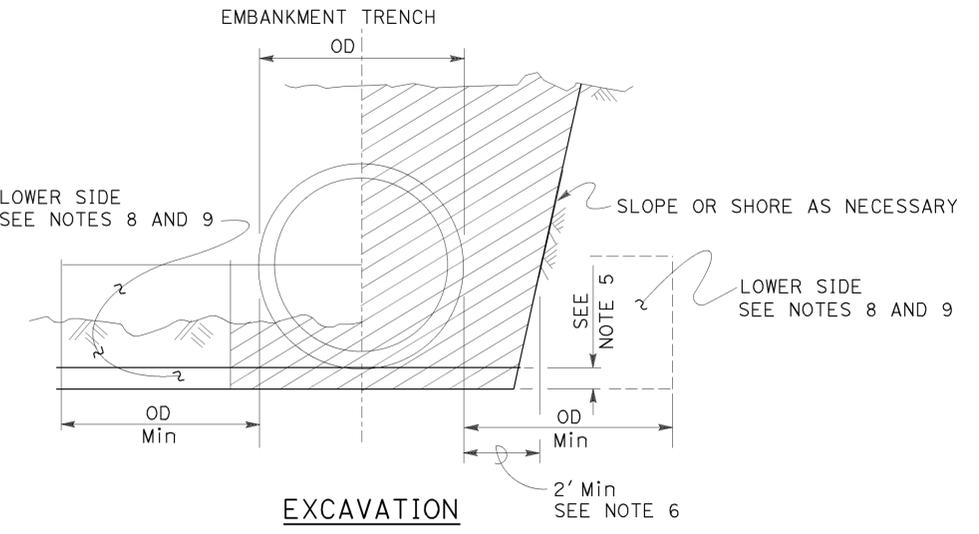
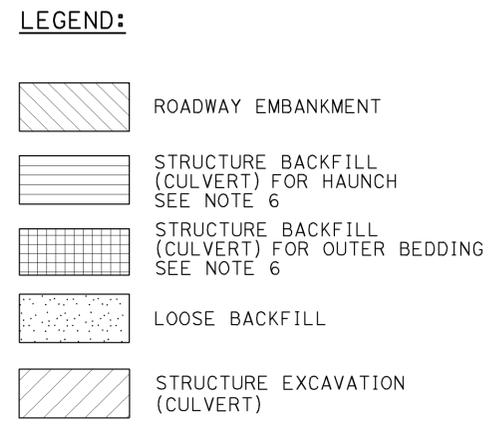
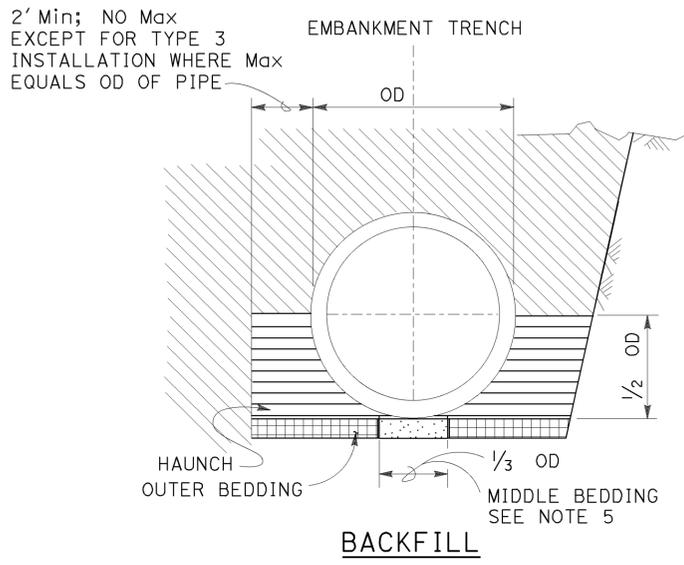
NO SCALE
RSP A24F DATED JULY 20, 2012 SUPPLEMENTS THE
STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A24F

TO ACCOMPANY PLANS DATED 6-29-16

DESIGN NOTES:

- Design: AASHTO LRFD Bridge Design Specifications, 4th edition with California Amendments. ACPA DESIGN DATA 1, October 2007. INDIRECT DESIGN METHOD
- Soil: w Fe = 162 pcf Installation Type 1
 w Fe = 168 pcf Installation Types 2 & 3
 w = Unit weight of soil (pcf)
 Fe = Soil-structure interaction factor



INSTALLATION TYPE 1:

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 30 and the maximum percentage passing the No. 200 sieve size shall be 12.

INSTALLATION TYPE 2:

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 25.

INSTALLATION TYPE 3:

The haunch and outer bedding shall be compacted to a minimum 85 percent relative compaction. 90 percent relative compaction will be required where the fill over the pipe is less than 4'-0" or 1/2 OD. In addition, the minimum sand equivalent in these areas shall be 25 and the material shall not contain rocks, broken concrete, or other solid material exceeding 3" in greatest dimension.

INSTALLATION TYPE 1

MINIMUM CLASS AND D-LOAD	COVER	
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max
CLASS II 1000D	14.9'	12.9'
CLASS III 1350D	15.0' - 21.9'	13.0' - 18.9'
CLASS III SPECIAL 1700D	22.0' - 27.9'	19.0' - 24.9'
CLASS IV 2000D	28.0' - 32.9'	25.0' - 29.9'
CLASS IV SPECIAL 2500D	33.0' - 41.9'	30.0' - 38.9'
CLASS I 3000D	42.0' - 49.9'	39.0' - 46.9'
CLASS I SPECIAL 3600D	50.0' - 60.0'	47.0' - 58.0'

INSTALLATION TYPE 2

MINIMUM CLASS AND D-LOAD	COVER	
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max
CLASS II 1000D	11.9'	9.9'
CLASS III 1350D	12.0' - 15.9'	10.0' - 14.9'
CLASS III SPECIAL 1700D	16.0' - 20.9'	15.0' - 19.9'
CLASS IV 2000D	21.0' - 24.9'	20.0' - 23.9'
CLASS IV SPECIAL 2500D	25.0' - 31.9'	24.0' - 30.9'
CLASS I 3000D	32.0' - 37.9'	31.0' - 37.9'
CLASS I SPECIAL 3600D	38.0' - 46.0'	38.0' - 46.0'

INSTALLATION TYPE 3

MINIMUM CLASS AND D-LOAD	COVER	
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max
CLASS II 1000D	8.9'	5.9'
CLASS III 1350D	9.0' - 11.9'	6.0' - 10.9'
CLASS III SPECIAL 1700D	12.0' - 15.9'	11.0' - 13.9'
CLASS IV 2000D	16.0' - 18.9'	14.0' - 17.9'
CLASS IV SPECIAL 2500D	19.0' - 24.9'	18.0' - 22.9'
CLASS I 3000D	25.0' - 29.9'	23.0' - 28.9'
CLASS I SPECIAL 3600D	30.0' - 36.0'	29.0' - 35.0'

NOTES:

- Unless otherwise shown on the plans or specified in the special provision, the Contractor shall have the option of selecting the class of RCP and the type of installation to be used, provided the height of cover does not exceed the value shown for the RCP selected.
 Example: 24" RCP culvert with maximum cover of 24'-0" the options are:
 a) Class III Special or stronger with Installation Type 1.
 b) Class IV or stronger with Installation Type 2.
 c) Class IV Special or stronger with Installation Type 3.
 Cover is defined as the maximum vertical distance from top of the pipe to finished grade within the length of any given culvert.
- The class of RCP and Installation Type selected shall be the same throughout the length of any given culvert.
- The "length of any culvert" is defined as the culvert between:
 a) Successive drainage structure (inlets, junction boxes, headwalls, etc.).
 b) A drainage structure and the inlet or outlet end of the culvert.
 c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
- Oval and arch shaped RCP shall not be used.
- Bedding depth: 1/25 OD Min, not less than 3".
- Slurry cement backfill may be substituted for backfill in the outer bedding and haunch areas. If slurry is used, the outer and middle beddings shall be omitted. Prior to installation, the soil under the middle 1/3 of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of 1/25 OD, but not less than 3". Where slurry cement backfill is used, clear distance to trench wall may be reduced as set forth in the Standard Specifications.
- Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimum.
- Lower side shall be suitable material as determined by the Engineer. Otherwise it shall be considered unsuitable as set forth in of the Standard Specifications. See Note 9.
- Where the pipe is placed in a trench, if the trench walls are sloped at 5 vertical to 1 horizontal or steeper for at least 90 percent of the trench height or up to not less than 12" from the grading plane, the firmness of the soil in the lower side need not be considered.
- Non-reinforced precast concrete pipe sizes 3'-0" or smaller may be placed under installation Types 1, 2 or 3.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**EXCAVATION AND BACKFILL
 CONCRETE PIPE CULVERTS
 INDIRECT DESIGN METHOD**
 NO SCALE

RSP A62DA DATED JULY 18, 2014 SUPERSEDES STANDARD PLAN A62DA
 DATED MAY 20, 2011 - PAGE 24 OF THE STANDARD PLANS BOOK DATED 2010.

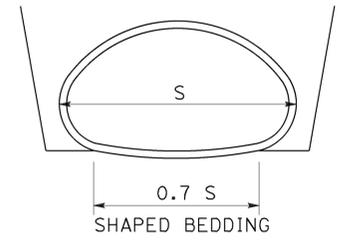
2010 REVISED STANDARD PLAN RSP A62DA

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	366	568

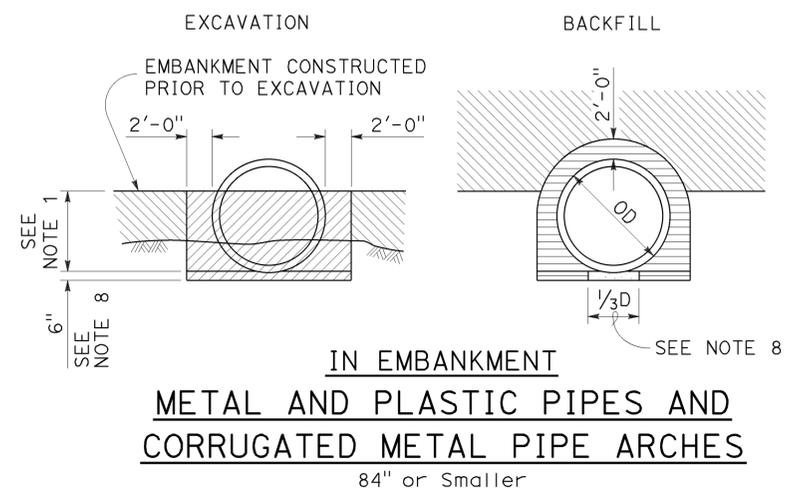
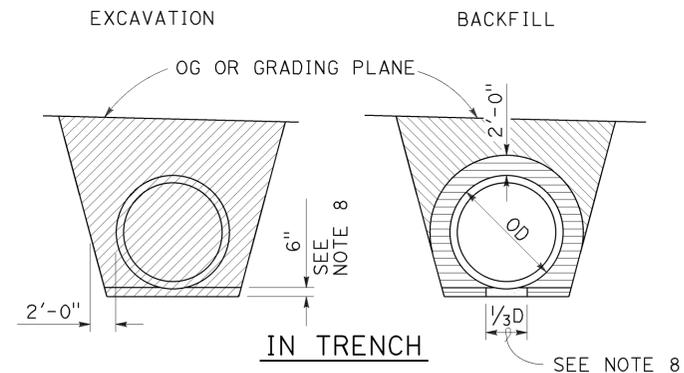
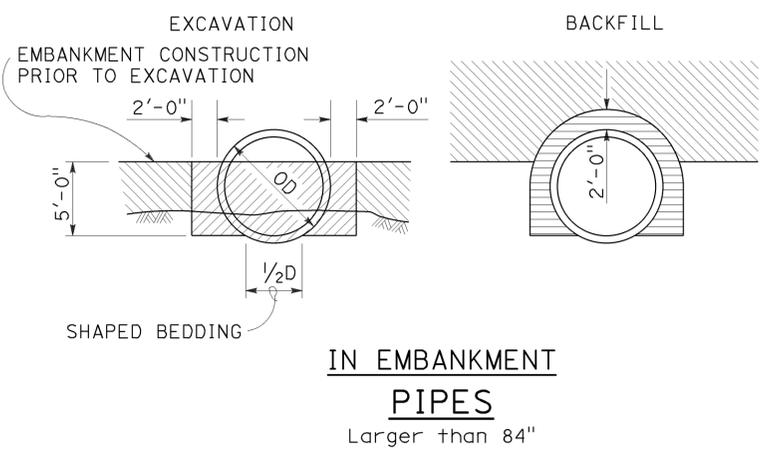
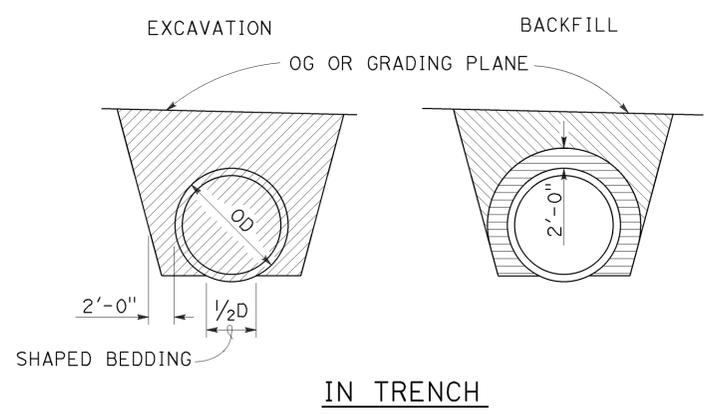
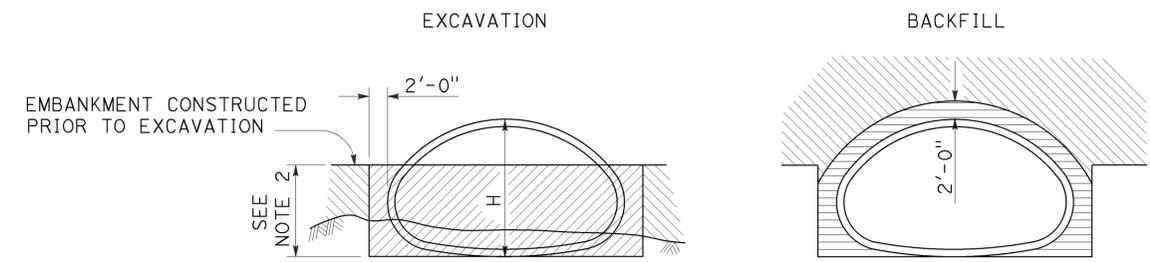
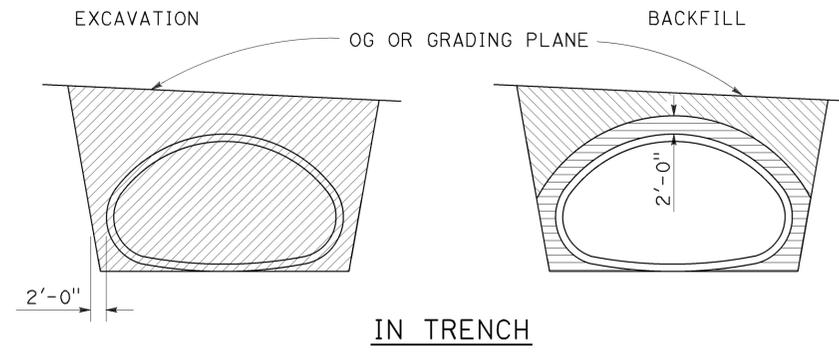
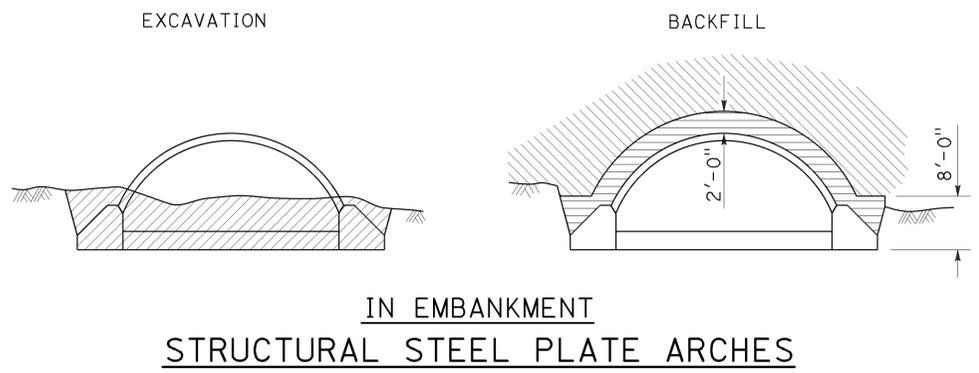
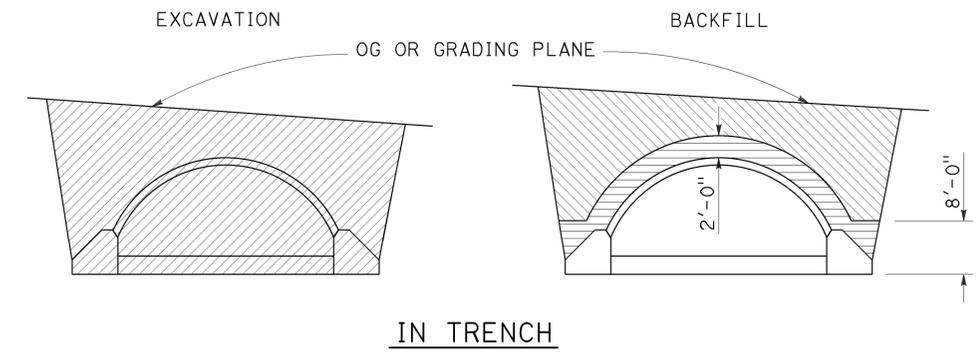
REGISTERED CIVIL ENGINEER
 October 30, 2015
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
 Carl M. Duan
 No. C59976
 Exp. 6-30-16
 CIVIL
 STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-29-16



SHAPED BEDDING
S = Larger than 84"



NOTES:

1. PIPES: 30" minimum for diameters up to and including 42" then 2/3 diameter but no more than 60" required. CORRUGATED METAL PIPE ARCHES: 30" maximum.
2. 2/3 H up to 60" maximum.
3. Slope or shore excavation sides as necessary.
4. Backfill shall be placed full width of excavation except as noted.
5. Diagrams do not apply to overside drains.
6. Dimensions shown are minimum.
7. Construction strutting of structural steel plate pipe, arches and vehicular undercrossing to be used when shown on the project plans. When shown, see Standard Plan D88A for strutting requirements.
8. Excavation below pipe and 80% relative compaction requirements for plastic pipes only.
9. D is the inside diameter (ID) of the pipe.

LEGEND

	STRUCTURE EXCAVATION (CULVERT)		ROADWAY EMBANKMENT
	STRUCTURE BACKFILL (CULVERT) 95% RELATIVE COMPACTION		STRUCTURE BACKFILL (CULVERT) 80% RELATIVE COMPACTION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**EXCAVATION AND BACKFILL
METAL AND PLASTIC CULVERTS**

NO SCALE

RSP A62F DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN A62F DATED MAY 20, 2011 - PAGE 26 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A62F

2010 REVISED STANDARD PLAN RSP A62F

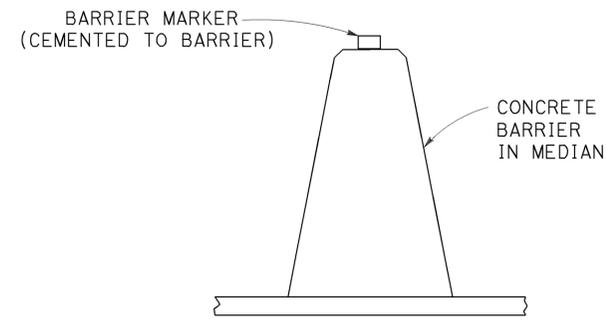
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	367	568

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

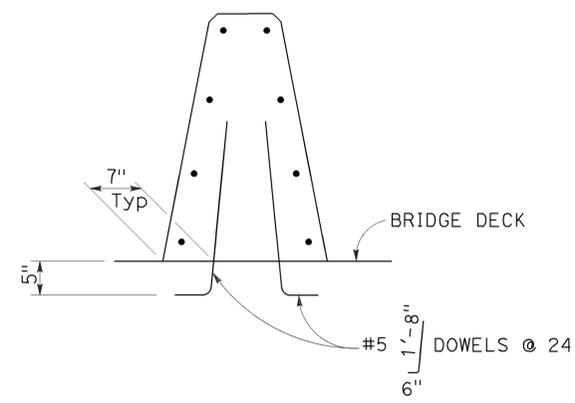
October 30, 2015
PLANS APPROVAL DATE

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.

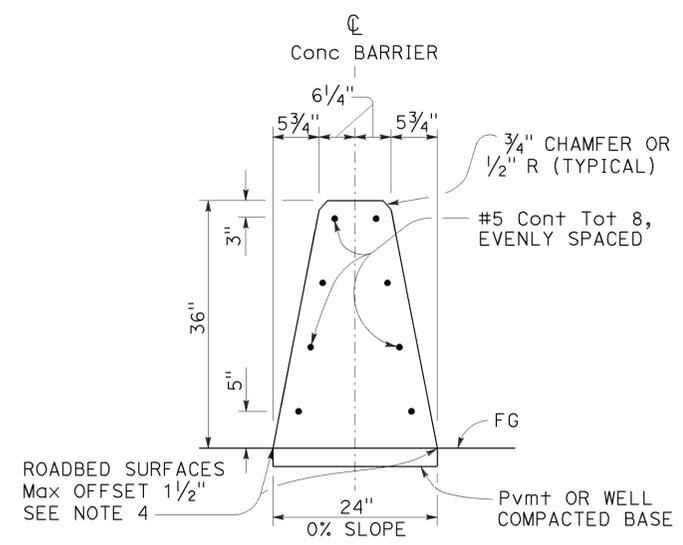
TO ACCOMPANY PLANS DATED 6-29-16



CONCRETE BARRIER TYPE 60 DELINEATION
See Note 5



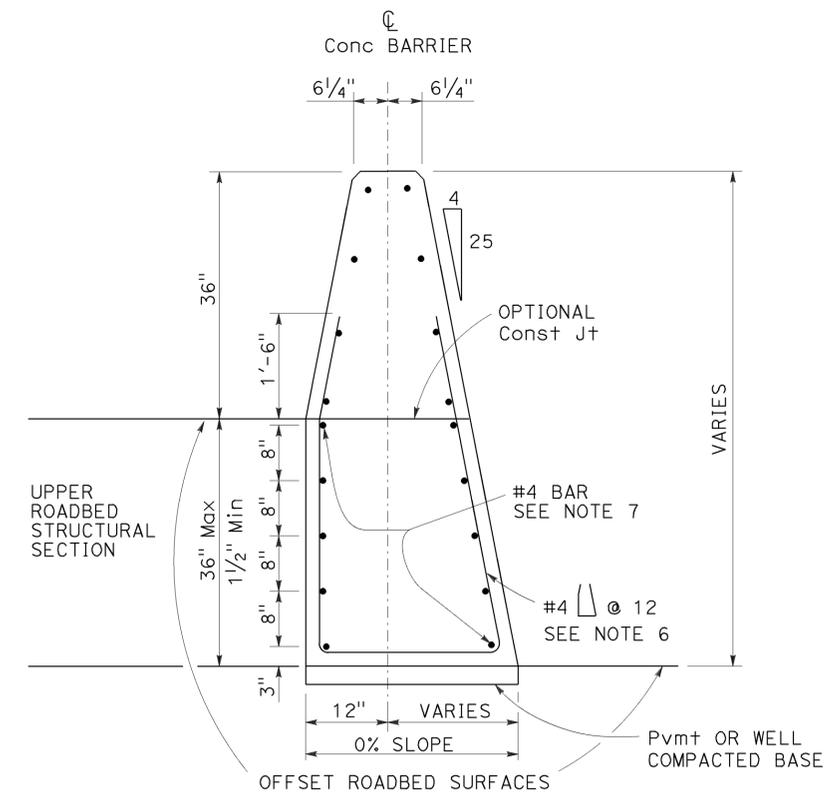
CONCRETE BARRIER TYPE 60A
Details similar to Type 60 except as noted.



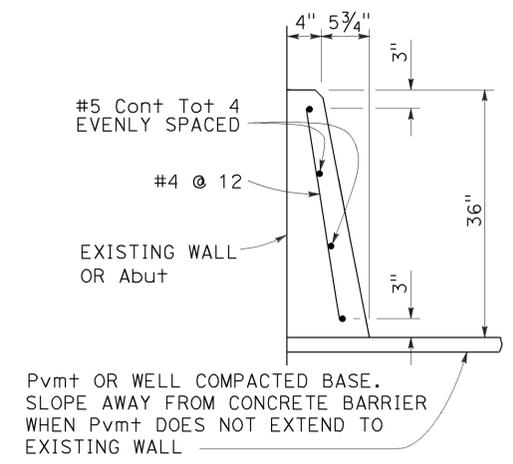
CONCRETE BARRIER TYPE 60

NOTES:

- See Standard Plan A76B for details of Concrete Barrier Type 60 end anchors, connection to structures and transitions to Concrete Barrier Type 50 and Concrete Barrier Type 60S.
- See Revised Standard Plan RSP A76C for Concrete Barrier Type 60 transitions at bridge column and sign pedestals.
- Where glare screen is required on Concrete Barrier Type 60, use Concrete Barrier Type 60G.
- Where roadbed offset is greater than 1 1/2", see Concrete Barrier Type 60C.
- See Project Plans for barrier delineation locations.
- Reinforcing stirrup not required for roadbed offsets less than 1'-0".
- For roadbed surfaces offset greater than 1 1/2" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.



CONCRETE BARRIER TYPE 60C
Details similar to Type 60 except as noted.
Use concrete barrier end anchor when necessary.
36" roadbed surfaces offset shown.



CONCRETE BARRIER TYPE 60D

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONCRETE BARRIER TYPE 60
NO SCALE

RSP A76A DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN A76A DATED MAY 20, 2011 - PAGE 34 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A76A

2010 REVISED STANDARD PLAN RSP A76A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2-5.0/5.3'	368	568

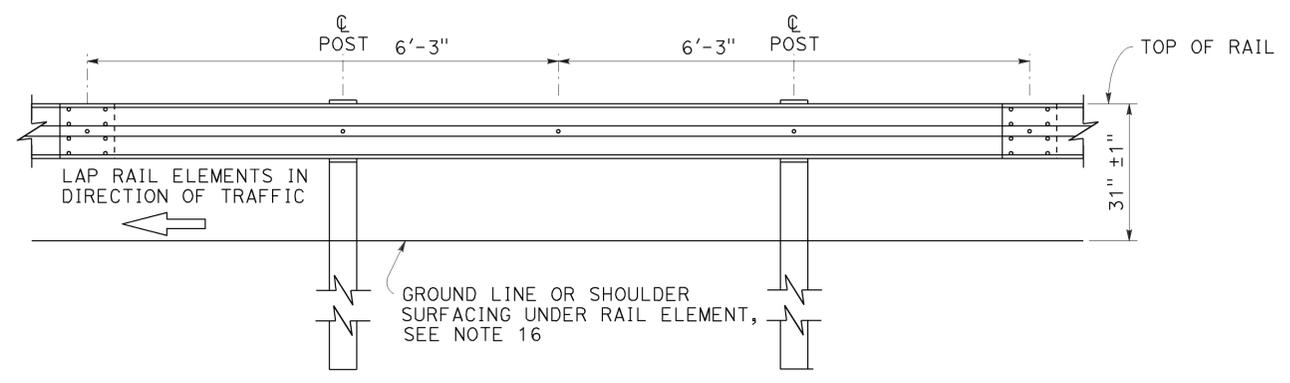
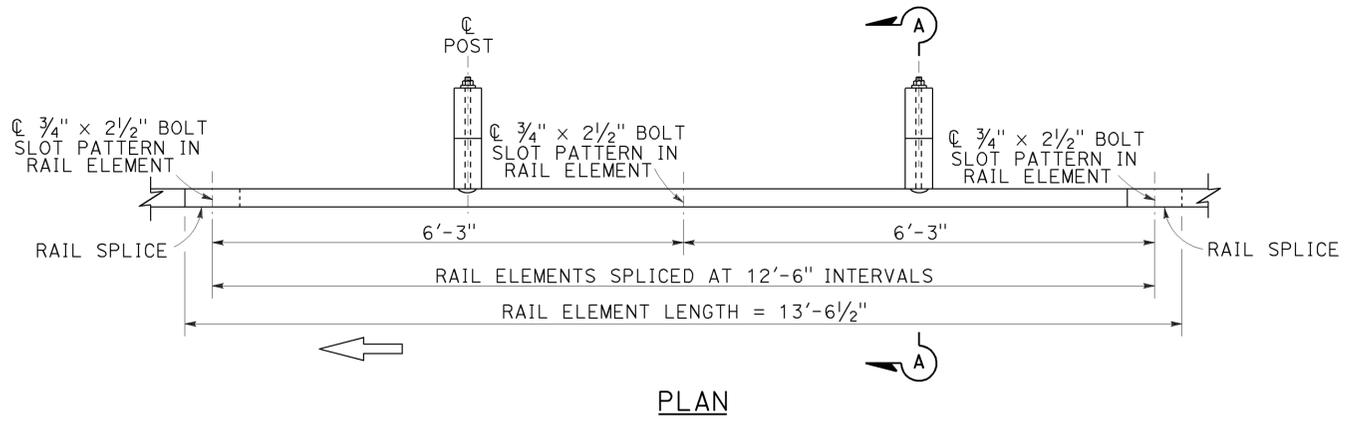
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

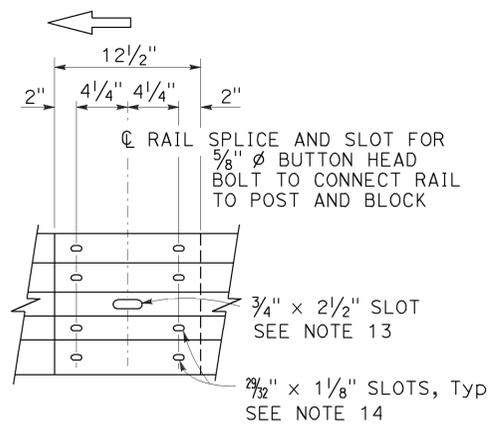
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

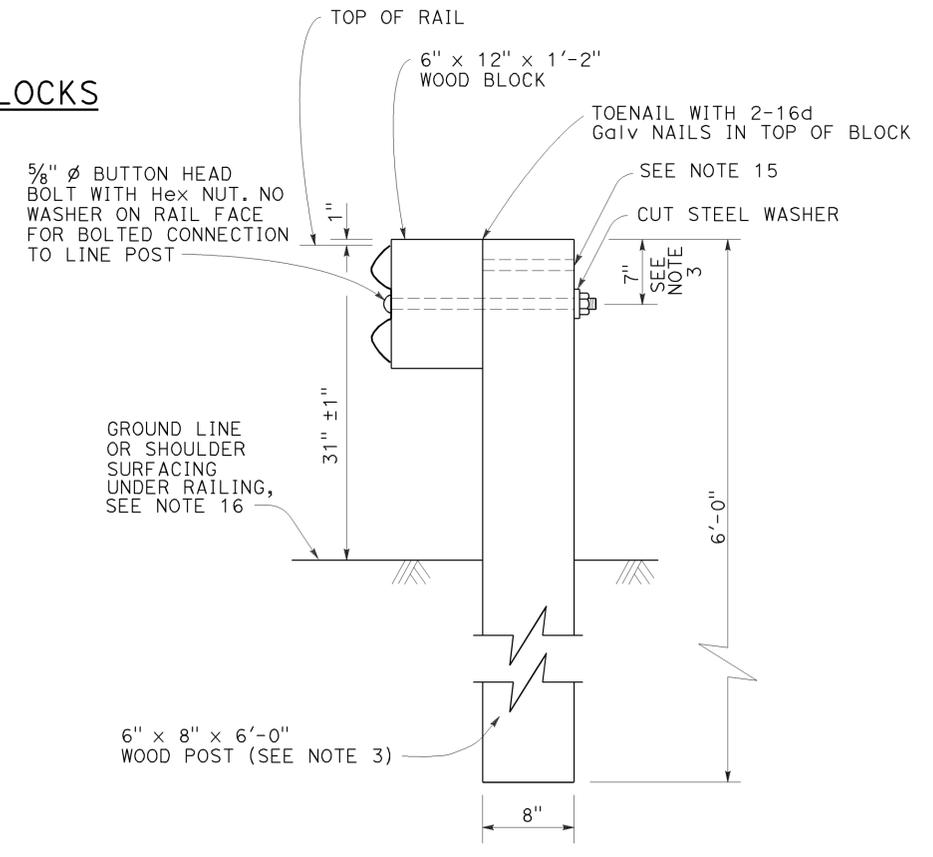
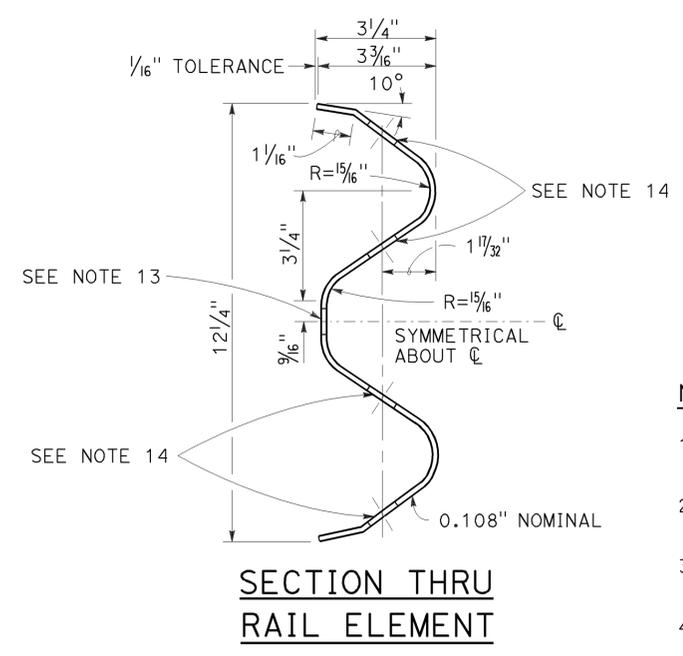
TO ACCOMPANY PLANS DATED 6-29-16



MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



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



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

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

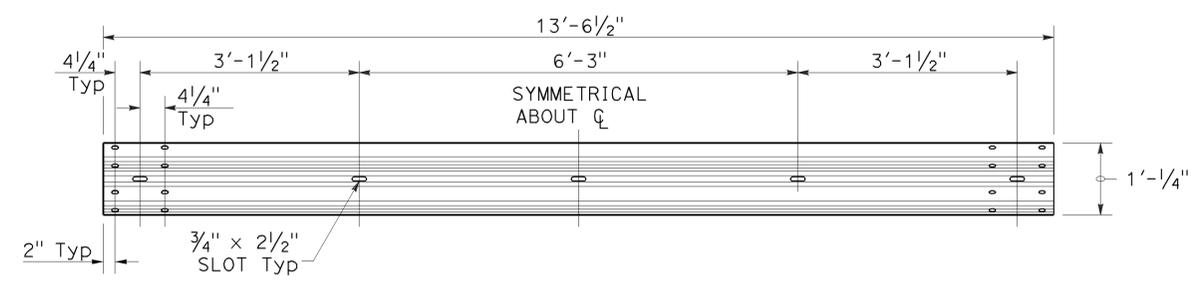
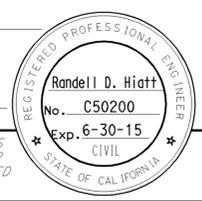
MIDWEST GUARDRAIL SYSTEM
STANDARD RAILING SECTION
(WOOD POST WITH WOOD BLOCK)

NO SCALE

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

REVISED STANDARD PLAN RSP A77L1

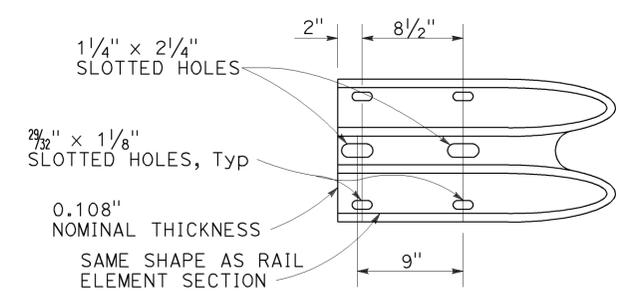
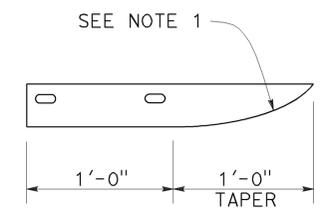
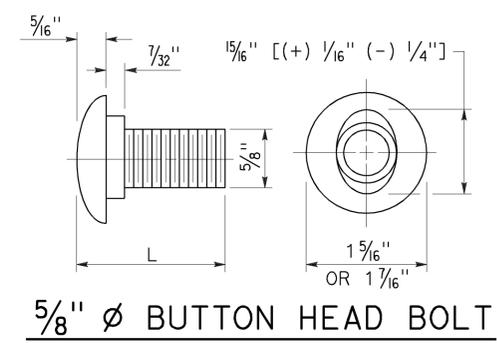
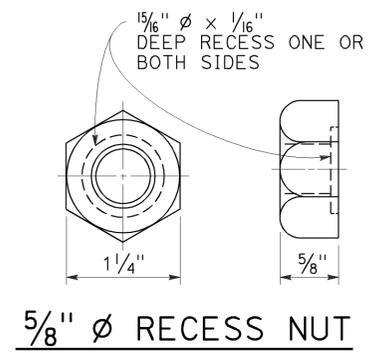
2010 REVISED STANDARD PLAN RSP A77L1



TYPICAL RAIL ELEMENT

NOTE:

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



BUTTON HEAD BOLT

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

** For nested rail applications.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
STANDARD HARDWARE**

NO SCALE

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

REVISED STANDARD PLAN RSP A77M1

2010 REVISED STANDARD PLAN RSP A77M1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	370	568

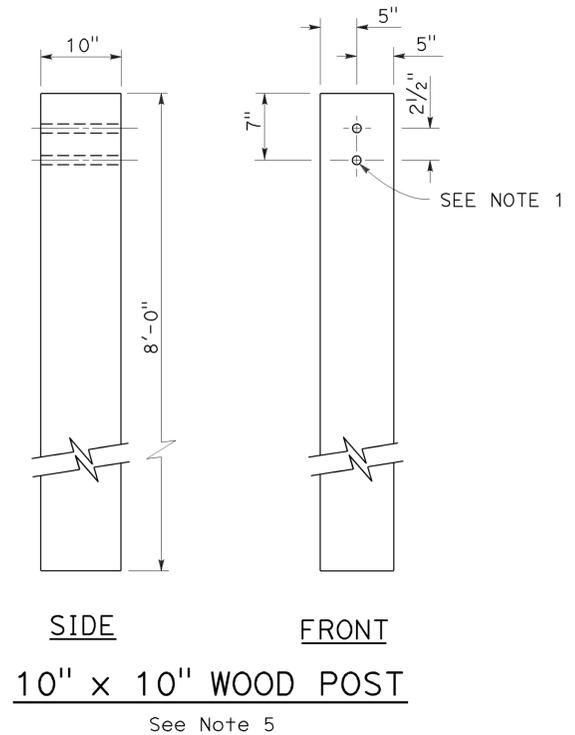
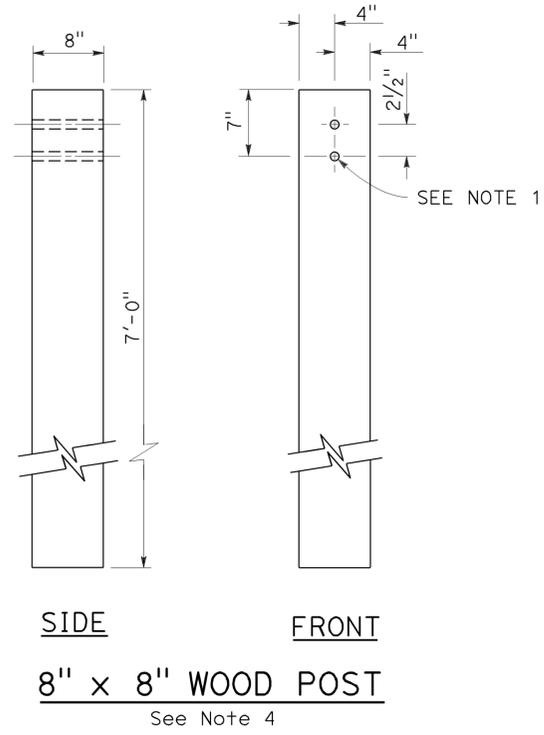
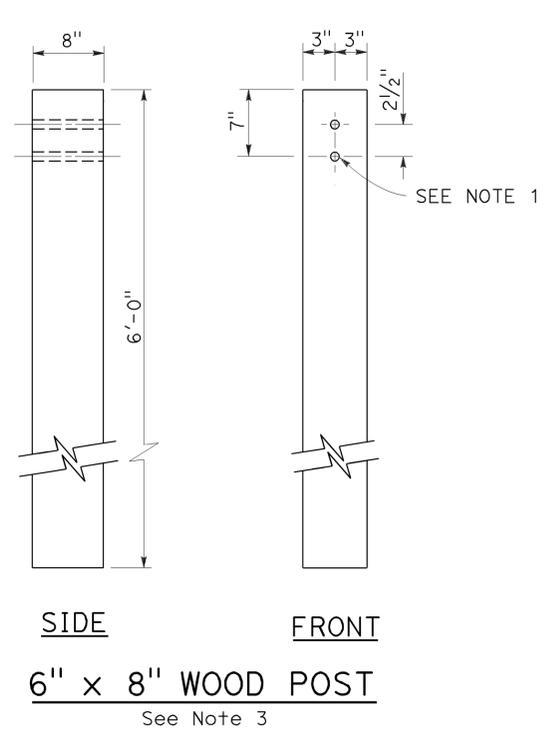
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

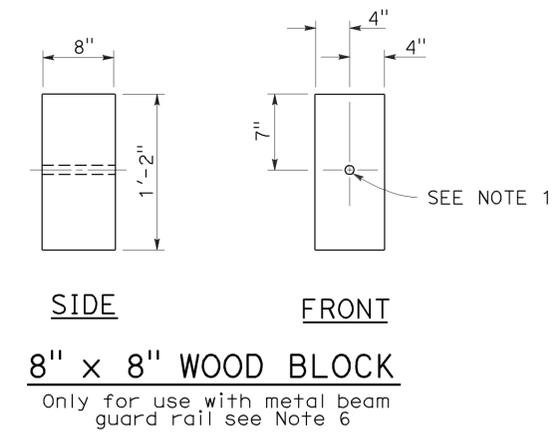
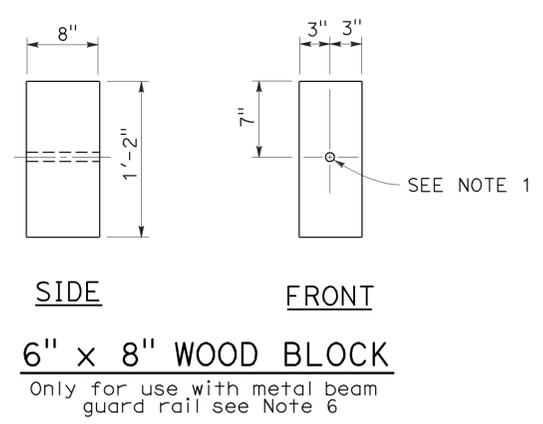
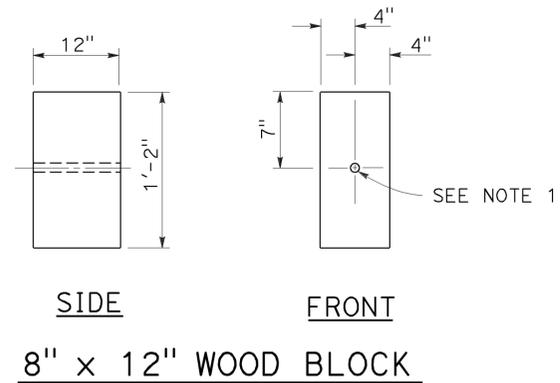
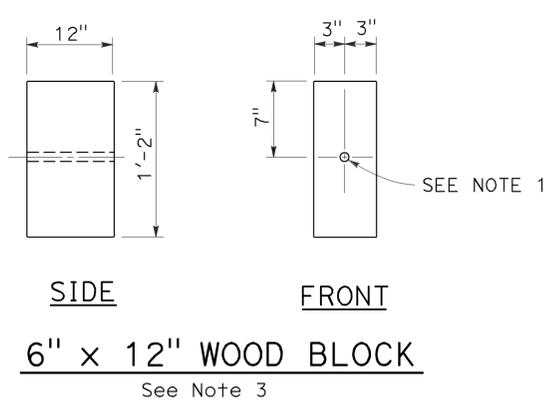
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-29-16



NOTES:

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



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77N1

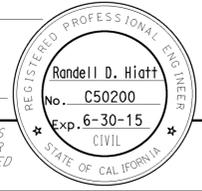
2010 REVISED STANDARD PLAN RSP A77N1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	371	568

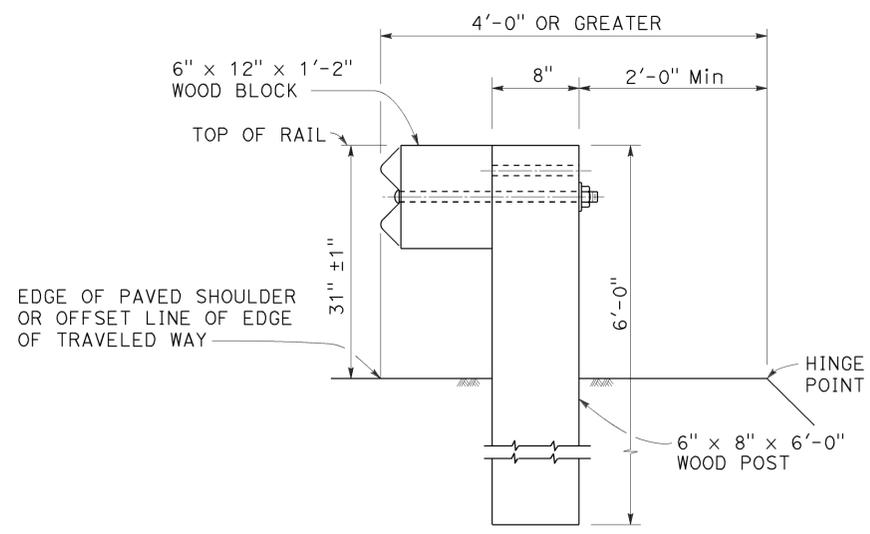
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

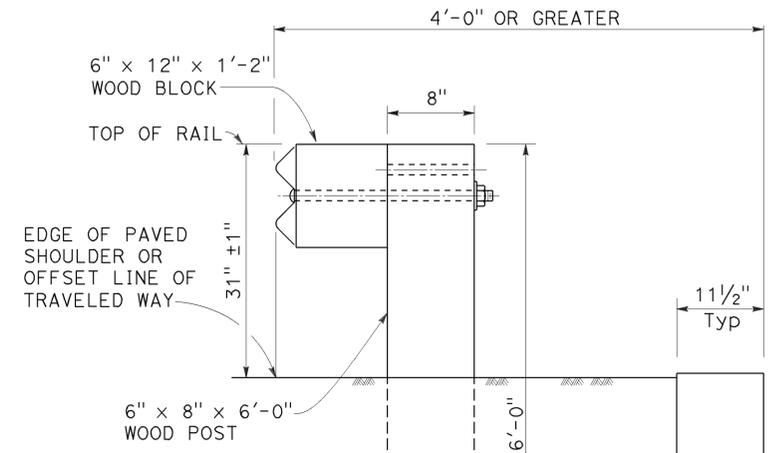
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



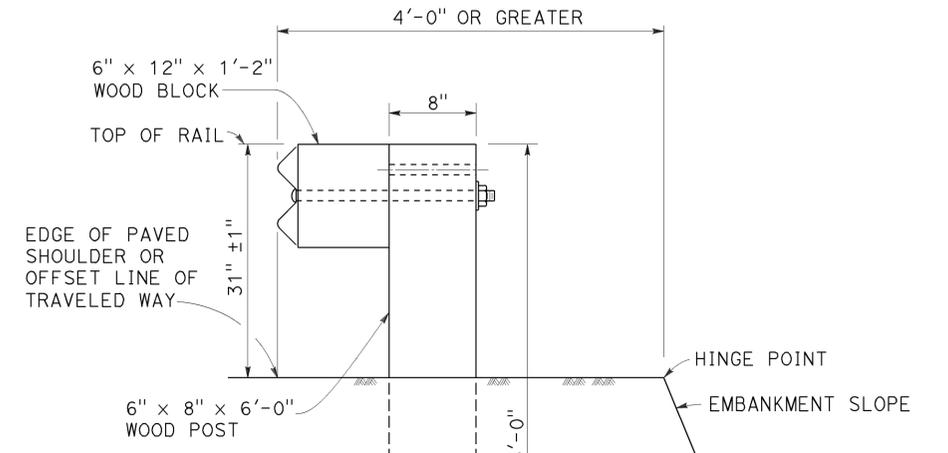
TO ACCOMPANY PLANS DATED 6-29-16



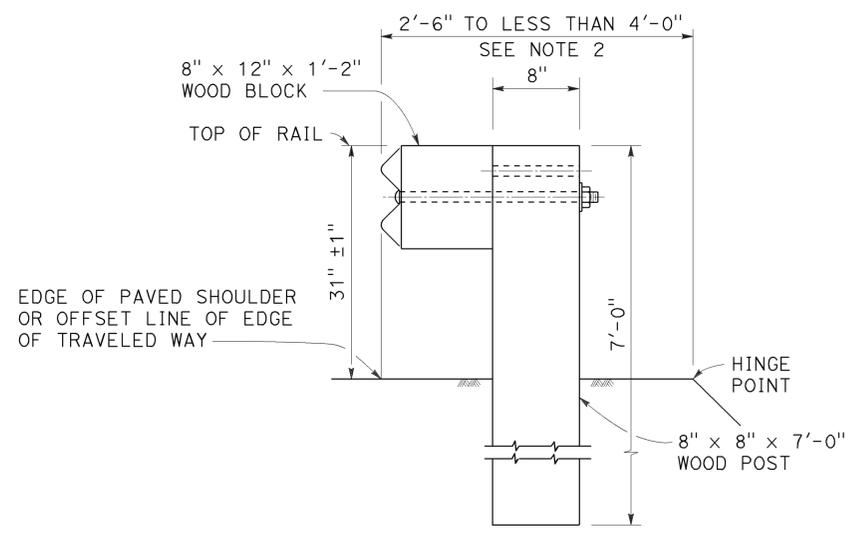
DETAIL A
TYPICAL ROADWAY
INSTALLATION
See Note 1



DETAIL C
INSTALLATION AT EARTH RETAINING WALLS



DETAIL D



DETAIL B
NARROW ROADWAY
INSTALLATION
See Note 1

POST EMBEDMENT

NOTES:

1. These installation details also applicable to steel line post installations. For Detail A, C, and D, where steel line post installations are constructed, W6 x 8.5 or W6 x 9 steel post, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For Detail B, where steel line post installations are constructed, W6 x 15 steel post, 8'-0" in length, with 8" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For additional installation details, see Revised Standard Plan RSP A77L1 and RSP A77L2.
2. Where the distance between the face of the rail and the hinge point is less than 2'-6", see the Project Plans for special details.
3. For dike positioning with MGS installations, see Revised Standard Plan RSP A77N4.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
TYPICAL LINE POST
EMBEDMENT AND
HINGE POINT OFFSET DETAILS

NO SCALE

RSP A77N3 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77N3
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N3

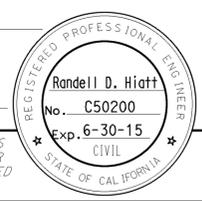
2010 REVISED STANDARD PLAN RSP A77N3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	372	568

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

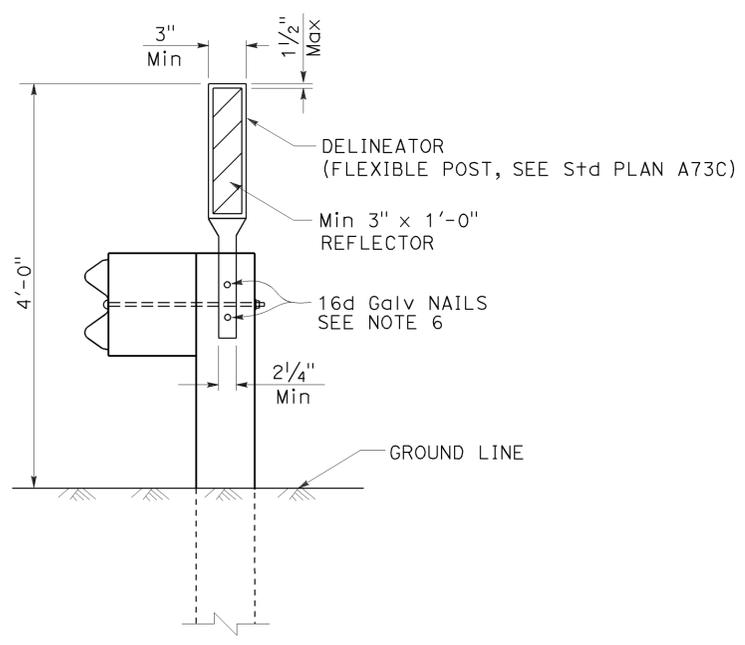
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



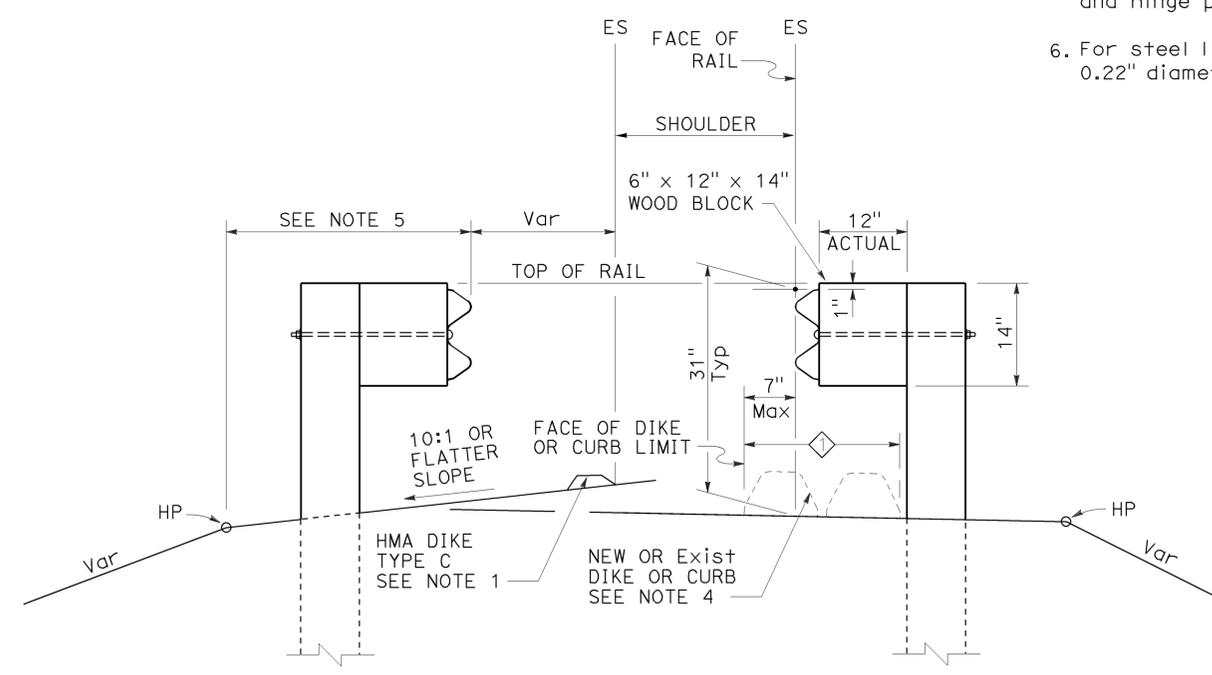
TO ACCOMPANY PLANS DATED 6-29-16

NOTES:

1. When necessary to place dike more than 7" in front of face of MGS, only Type C dike may be used. For dike details, see Revised Standard Plan RSP A87B.
2. For standard railing post embedment, see Revised Standard Plan RSP A77N3.
3. MGS delineation to be used where shown on the Project Plans.
4. When dike or curb is placed under MGS, the maximum height of the dike or curb shall be 6". Mountable dike should not be used. For dike and curb details, see Revised Standard Plans RSP A87A and RSP A87B.
5. For details of typical distance between the face of rail and hinge point, see Revised Standard Plan RSP A77N3.
6. For steel line posts, use 1/4" - 20 self-tapping screws in 0.22" diameter holes or 1/4" bolts in 3/32" diameter holes.



MGS DELINEATION
See Note 3



DIKE POSITIONING
See Note 1

◇ PERMISSIBLE DIKE OR CURB PLACEMENT AREA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL RAILING DELINEATION
AND DIKE POSITIONING DETAILS**
NO SCALE

RSP A77N4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N4

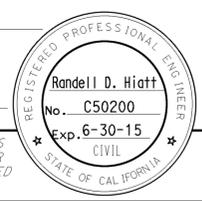
2010 REVISED STANDARD PLAN RSP A77N4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	373	568

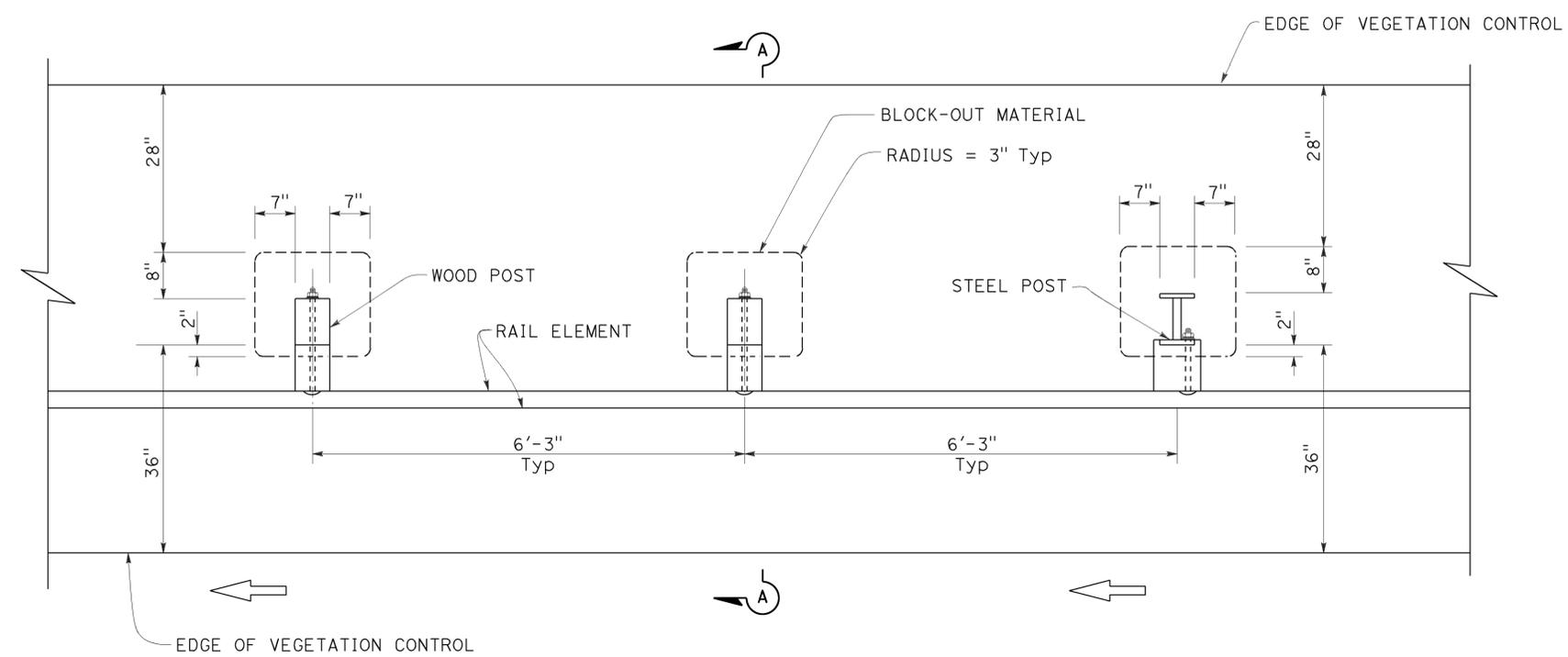
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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



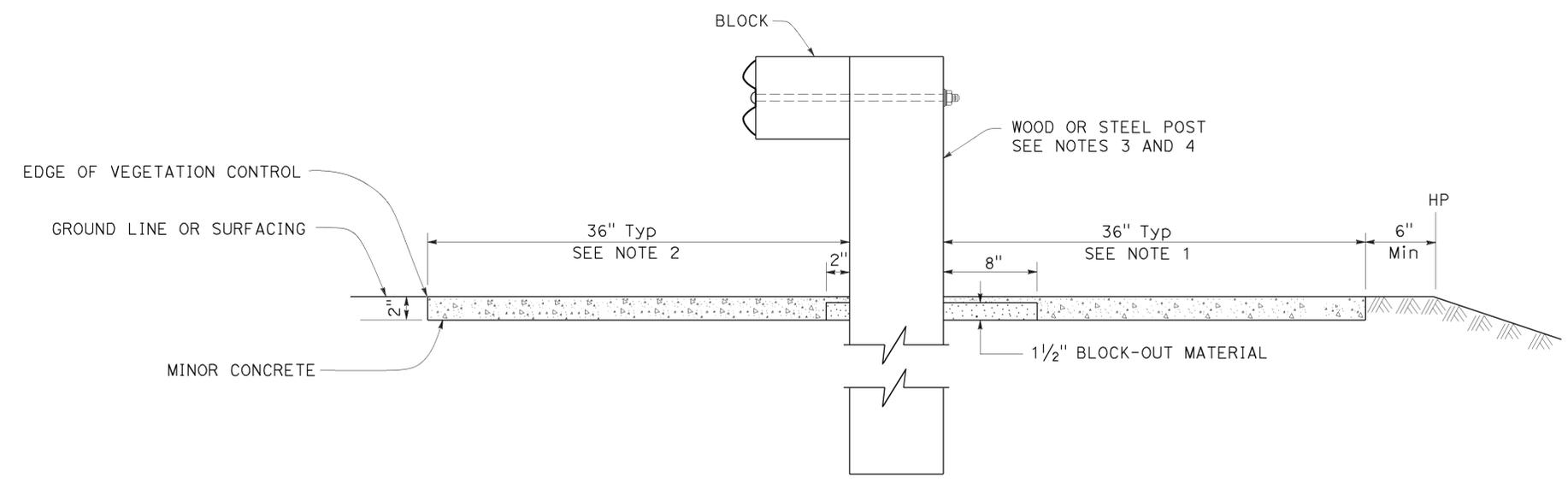
TO ACCOMPANY PLANS DATED 6-29-16



PLAN

NOTES:

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



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77N5

2010 REVISED STANDARD PLAN RSP A77N5

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	374	568

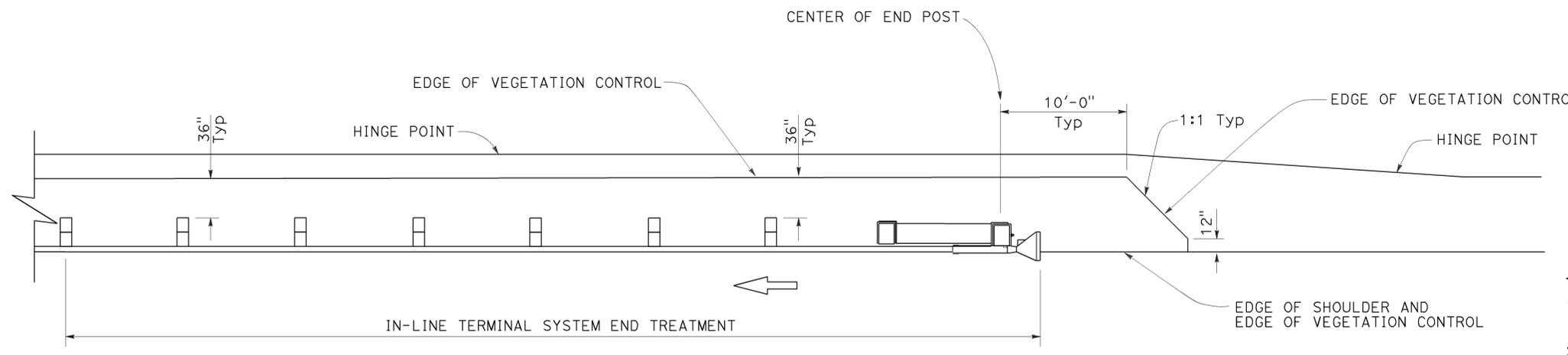
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

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

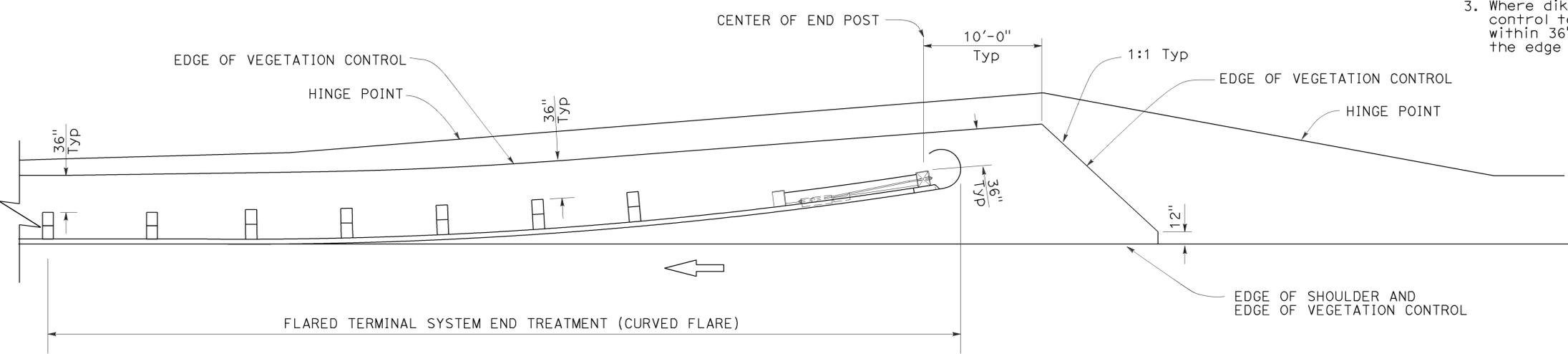
TO ACCOMPANY PLANS DATED 6-29-16



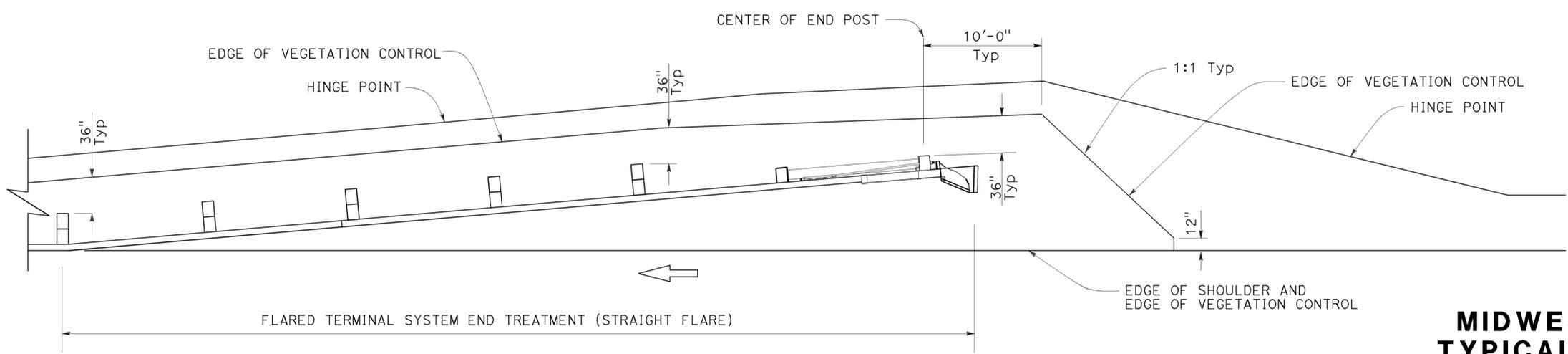
PLAN

NOTES:

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



PLAN



PLAN

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
FOR TERMINAL SYSTEM END TREATMENTS**

NO SCALE

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

REVISED STANDARD PLAN RSP A77N6

2010 REVISED STANDARD PLAN RSP A77N6

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	375	568

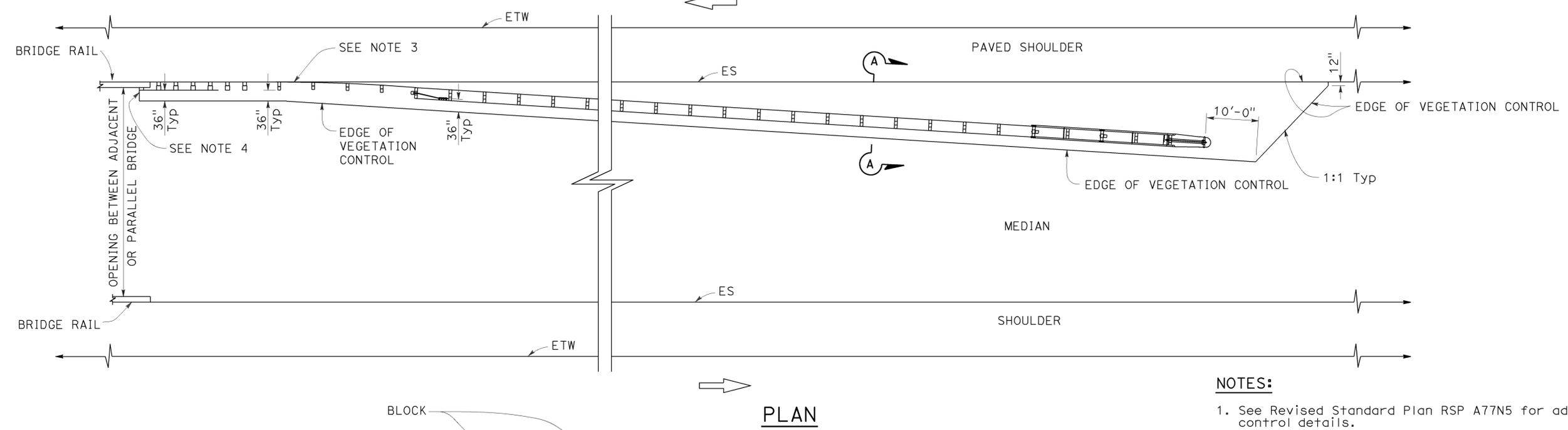
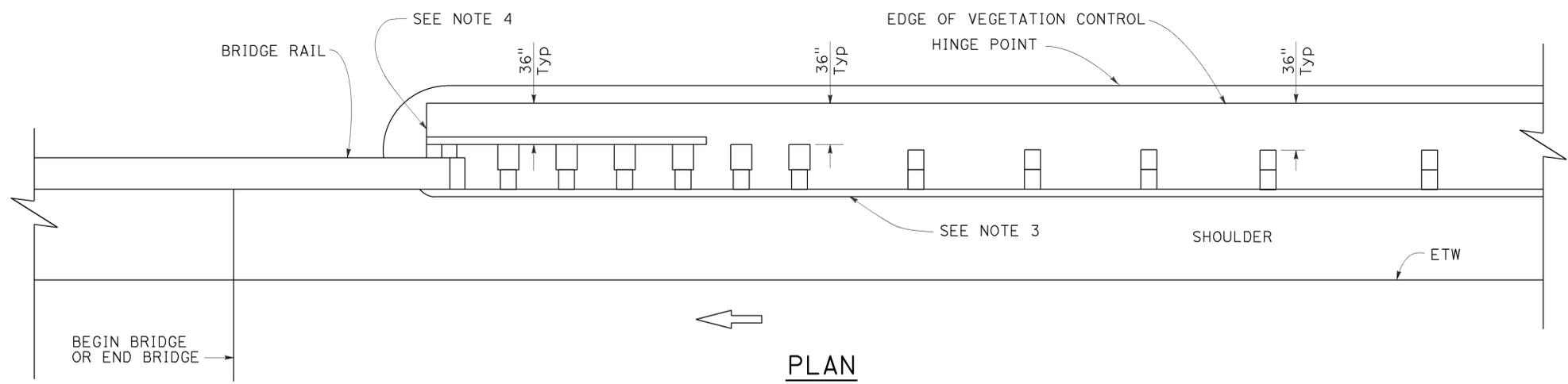
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

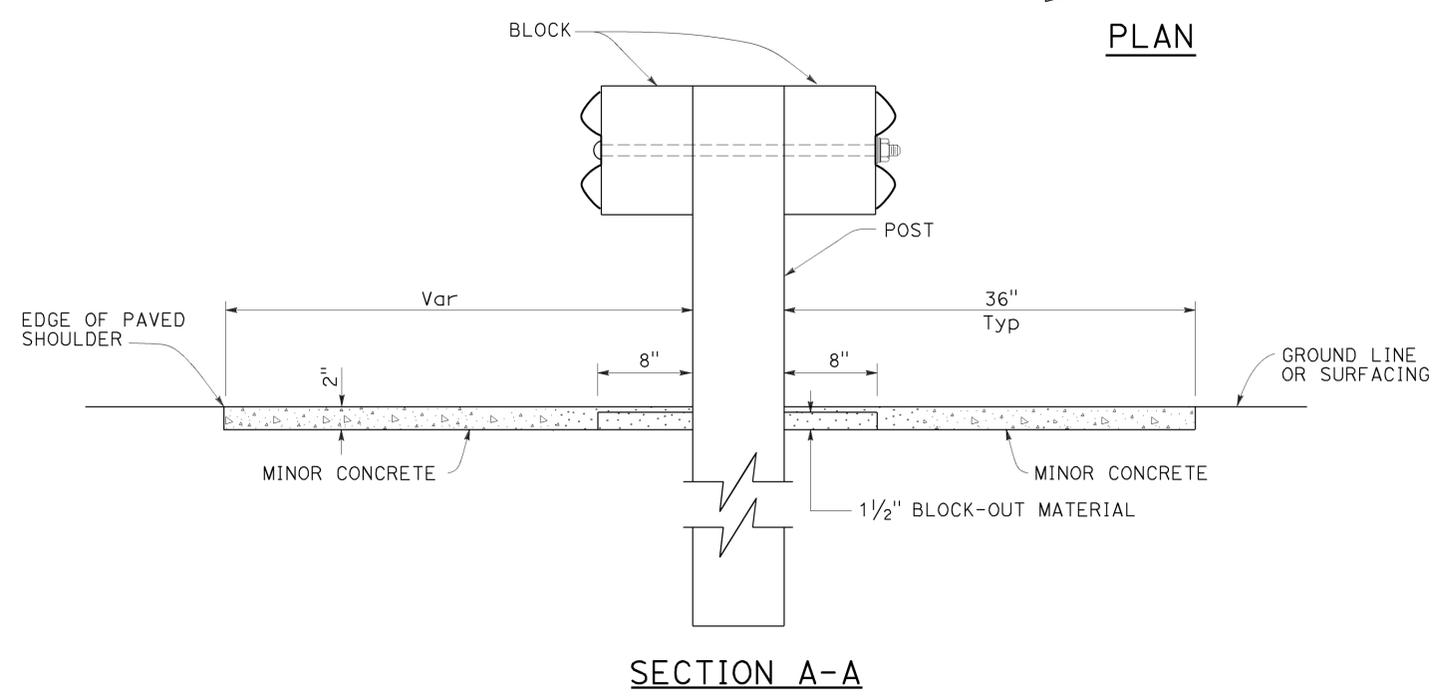
TO ACCOMPANY PLANS DATED 6-29-16

2010 REVISED STANDARD PLAN RSP A77N7



NOTES:

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



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

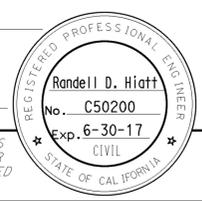
REVISED STANDARD PLAN RSP A77N7

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	376	568

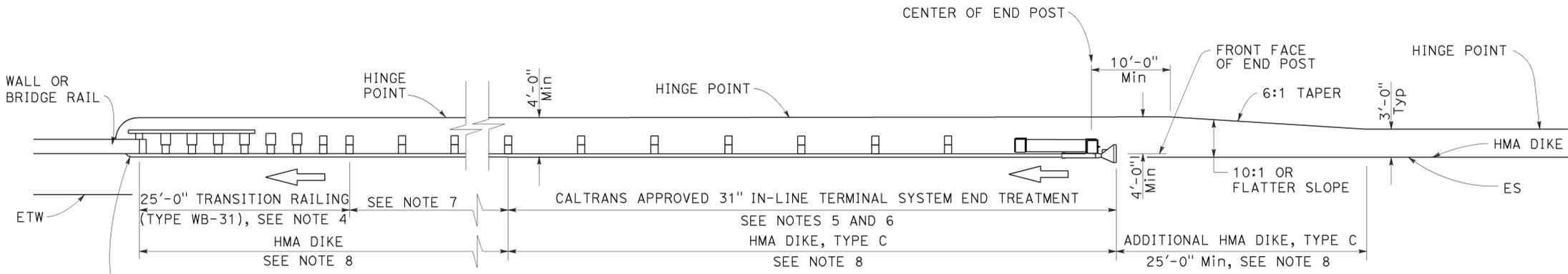
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

August 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.

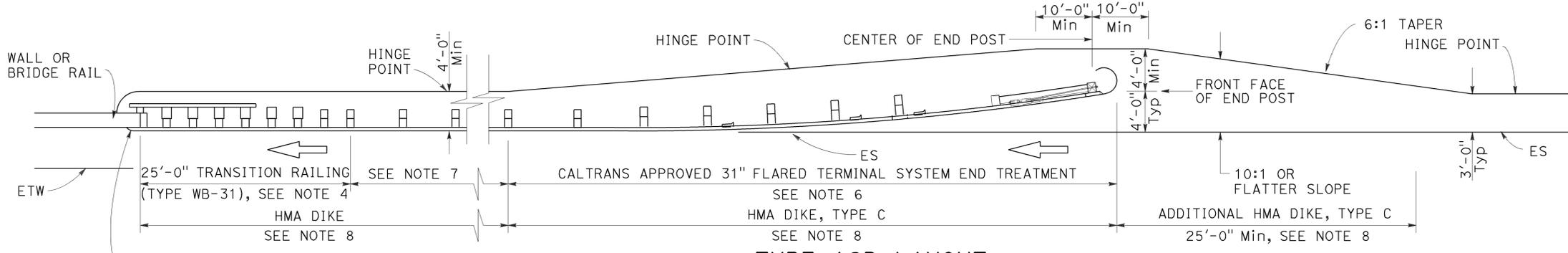


TO ACCOMPANY PLANS DATED 6-29-16



TYPE 12A LAYOUT

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



TYPE 12B LAYOUT

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

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12A and 12B Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatment. A 12.5 degree angle of departure can be drawn on the Project Plans from the edge of traveled way through the outer most point of the fixed object to determine the additional length of railing needed.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12A or Type 12B Layouts are typically used:
 - To the right of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - To the left of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
 - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Revised Standard Plan RSP A77Q3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
- For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77U1 and RSP A77U2 and Connection Detail FF on Revised Standard Plans RSP A77V1 and RSP A77V2.
- For additional details of a typical connection to walls or abutments, see Revised Standard Plan RSP A77U3.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
STRUCTURE APPROACH**

NO SCALE

RSP A77Q1 DATED AUGUST 14, 2015 SUPERSEDES RSP A77Q1 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A77Q1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	377	568

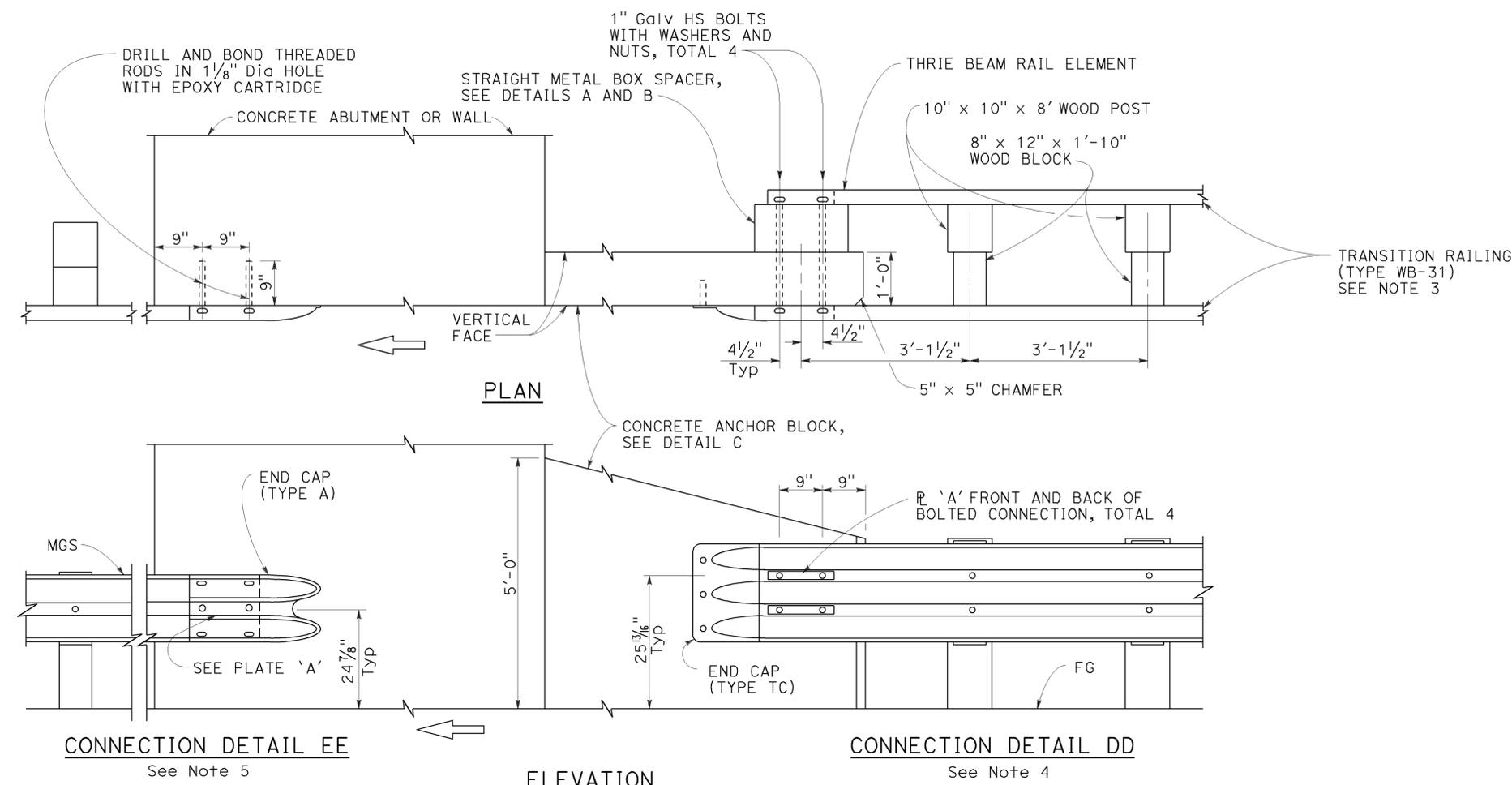
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

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

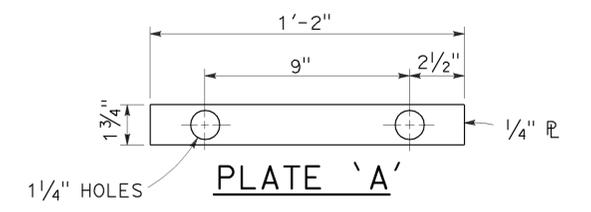
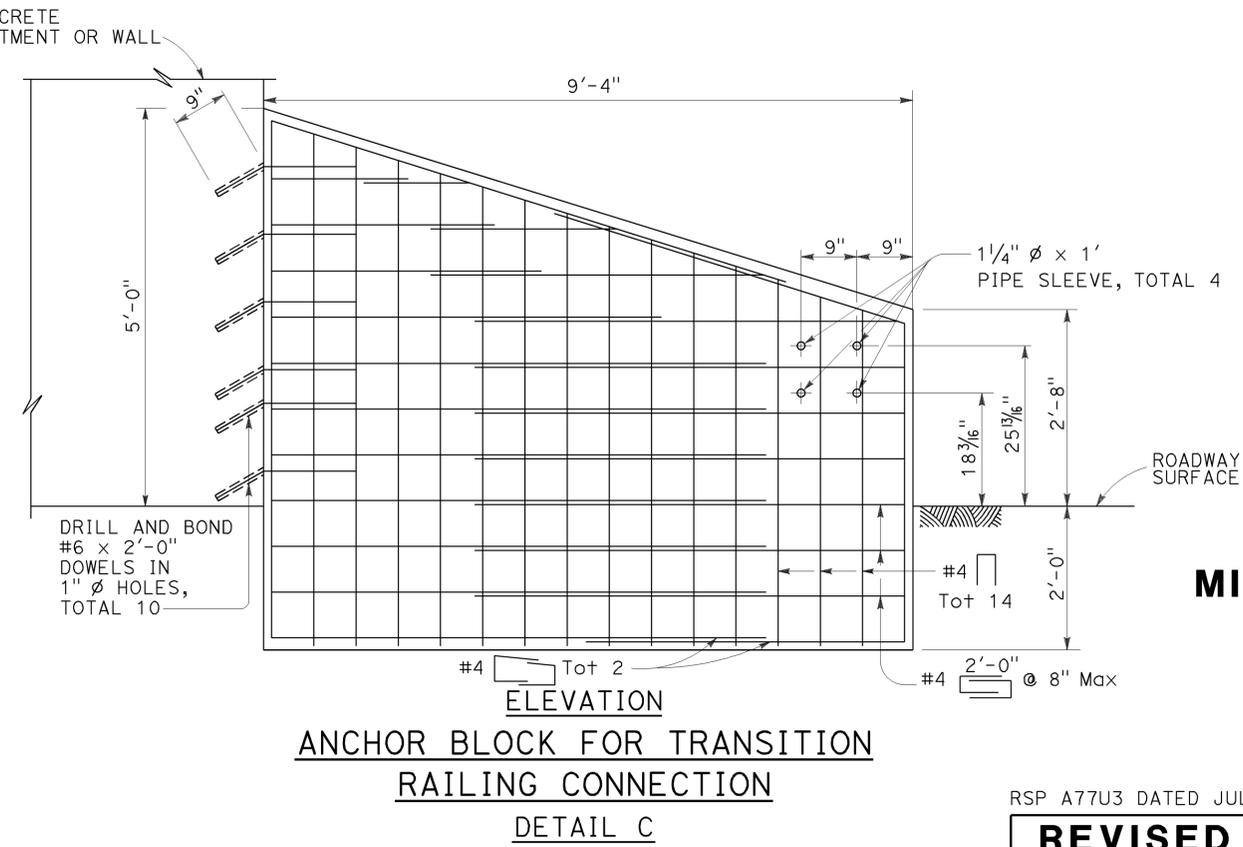
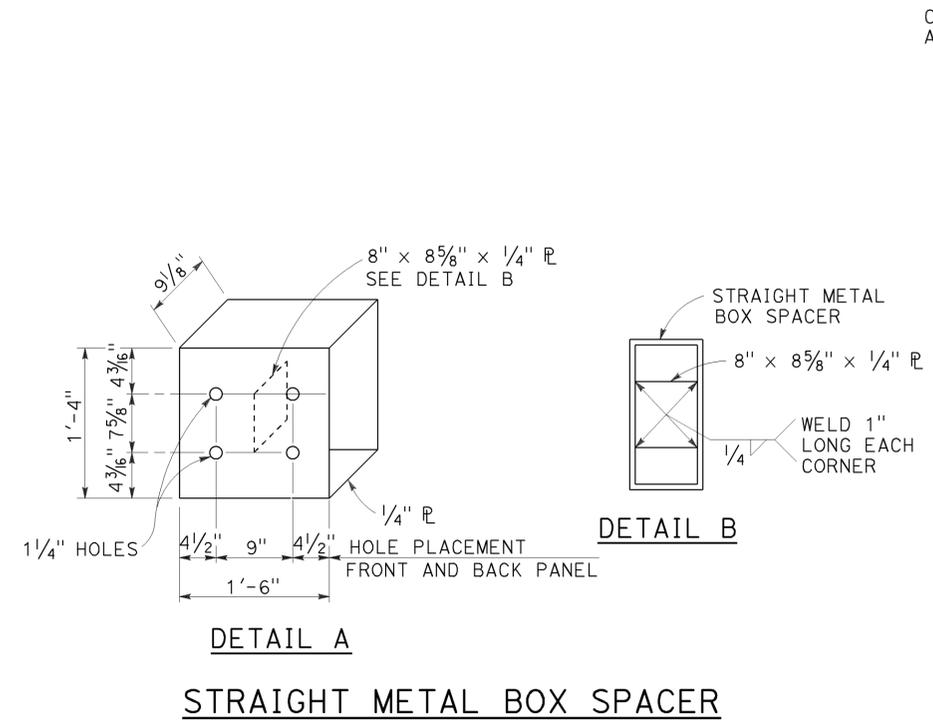
TO ACCOMPANY PLANS DATED 6-29-16



NOTES:

1. These connection details apply to abutments and walls.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete anchor block.
4. For typical use of Connection Details DD, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1 and Layout Types 12C and 12D on Revised Standard Plan RSP A77Q2.
5. For typical use of Connection Detail EE, see Layout Type 12D on Revised Standard Plan RSP A77Q2 and Layout Type 12DD on Revised Standard Plan RSP A77Q5.

MIDWEST GUARDRAIL SYSTEM CONNECTION TO ABUTMENT OR WALL



MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO ABUTMENTS AND WALLS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

NO SCALE

RSP A77U3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U3

2010 REVISED STANDARD PLAN RSP A77U3

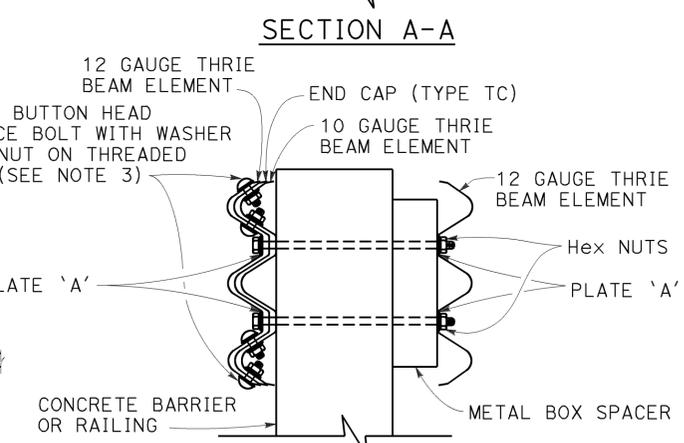
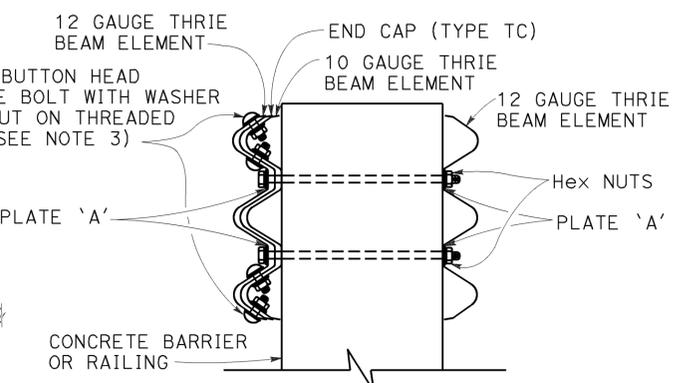
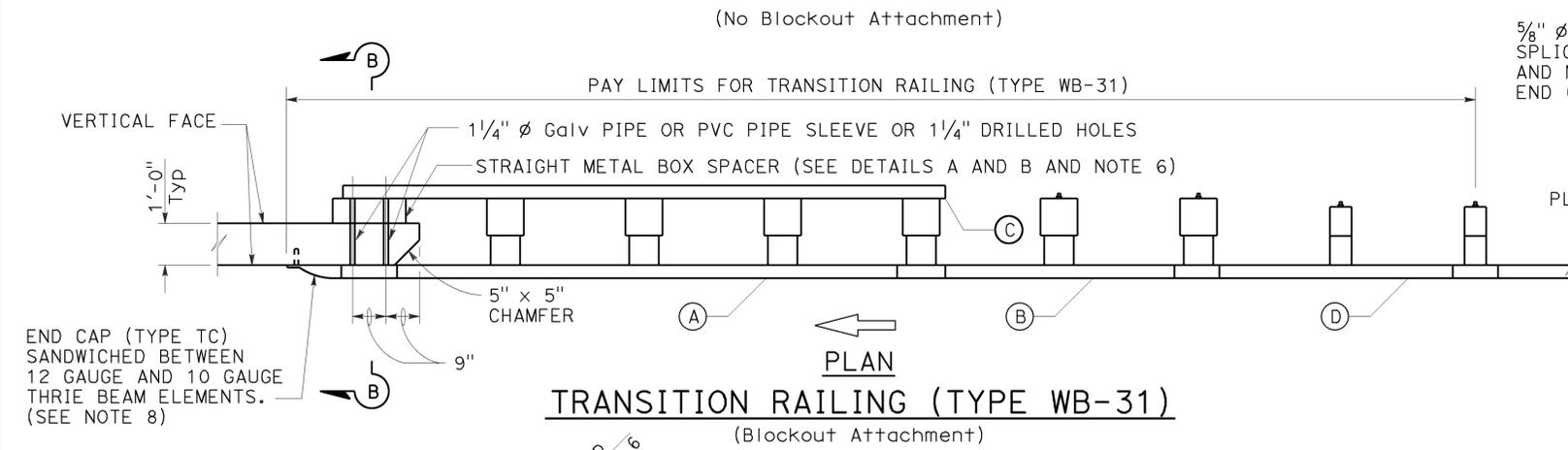
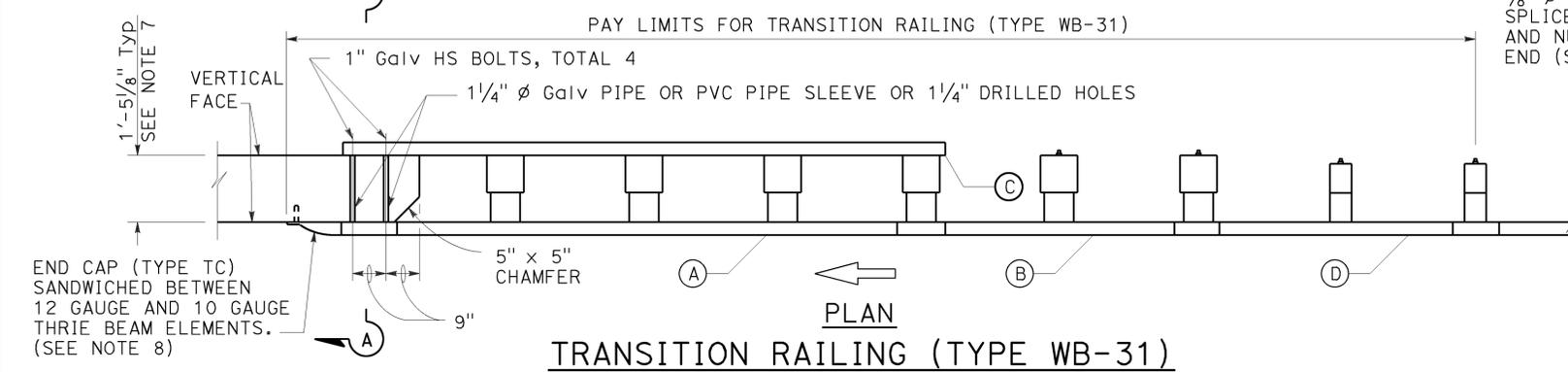
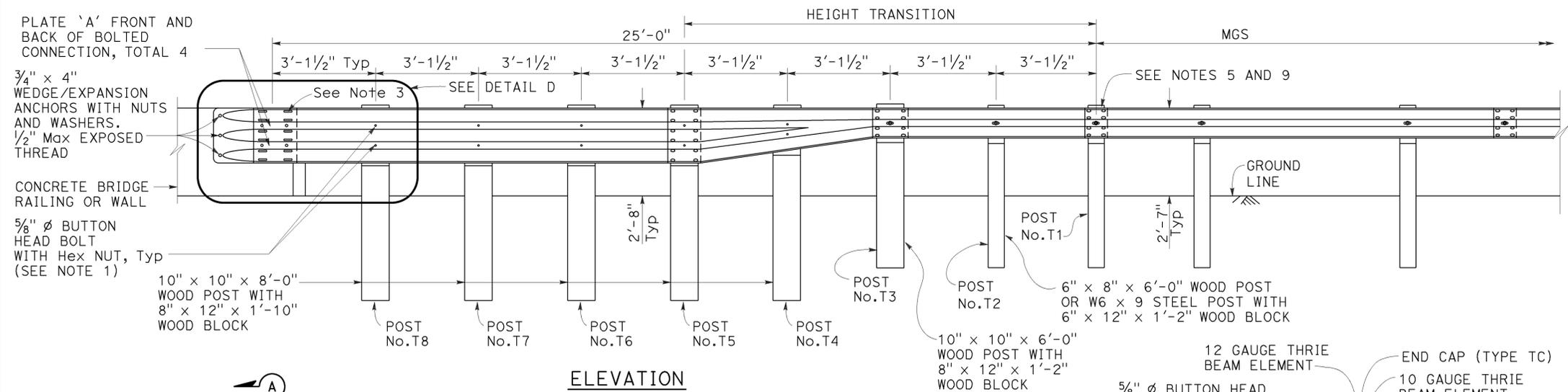
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3	378	568

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

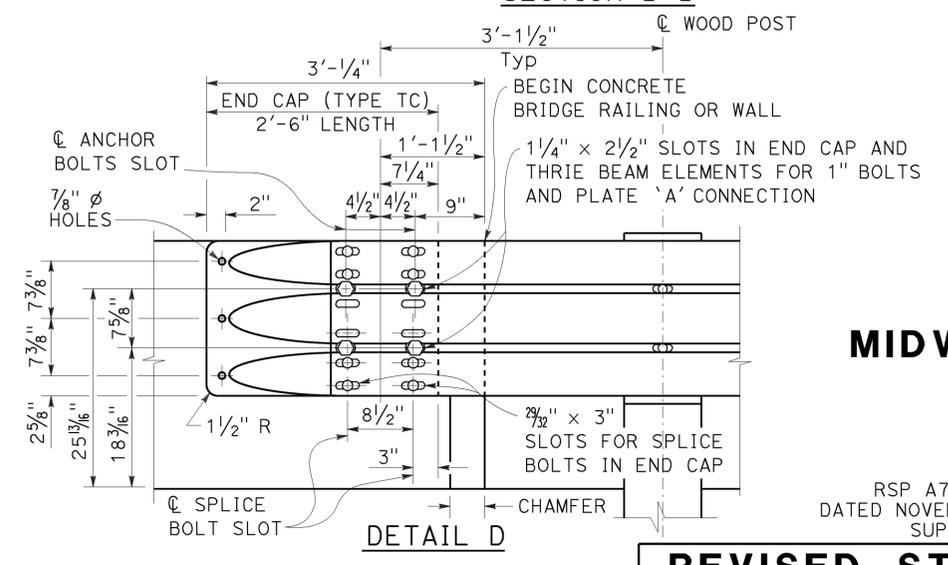
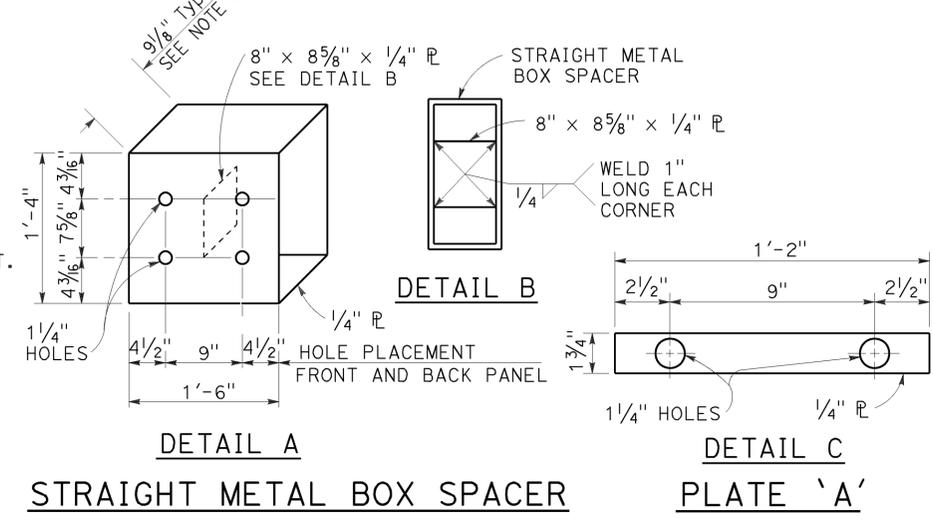
January 23, 2015
PLANS APPROVAL DATE

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



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



- NOTES:** TO ACCOMPANY PLANS DATED 6-29-16
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 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 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
04	SM	101,114	1.3/2.5, 5.0/5.3'	380	568

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

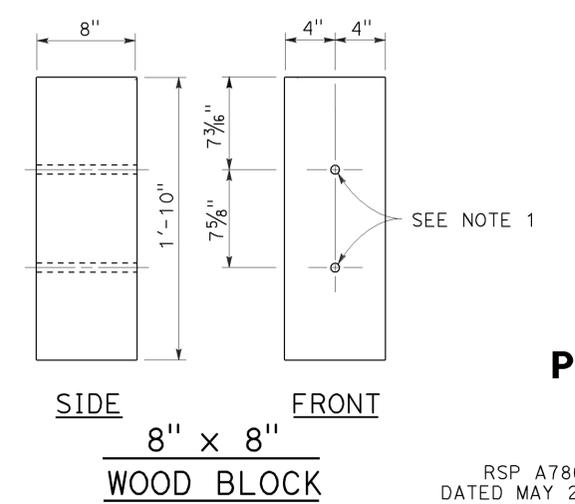
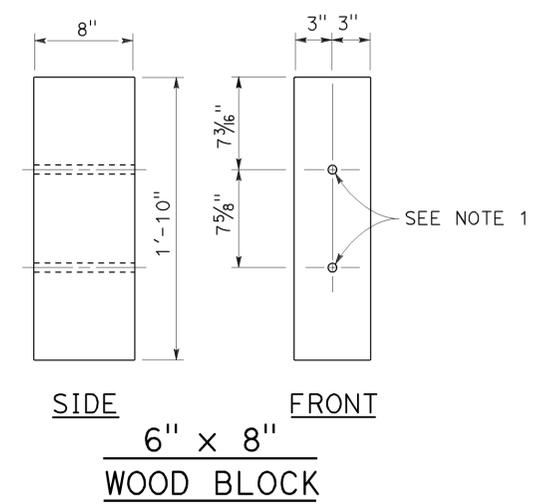
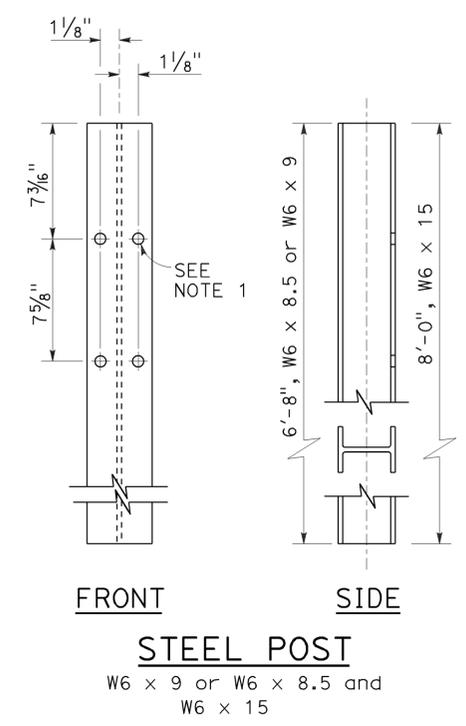
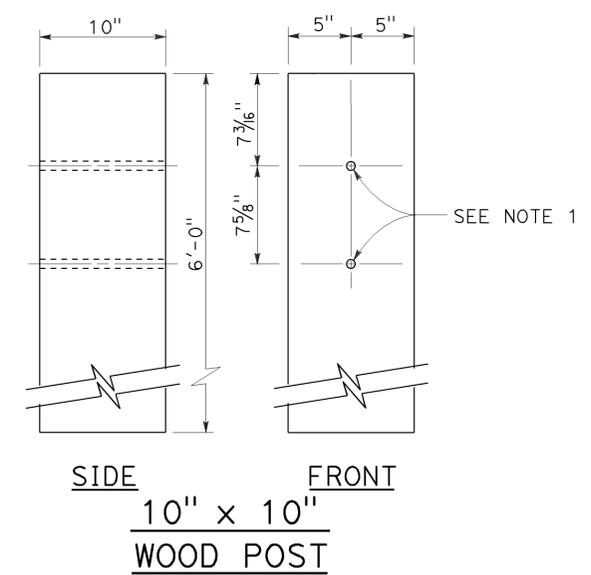
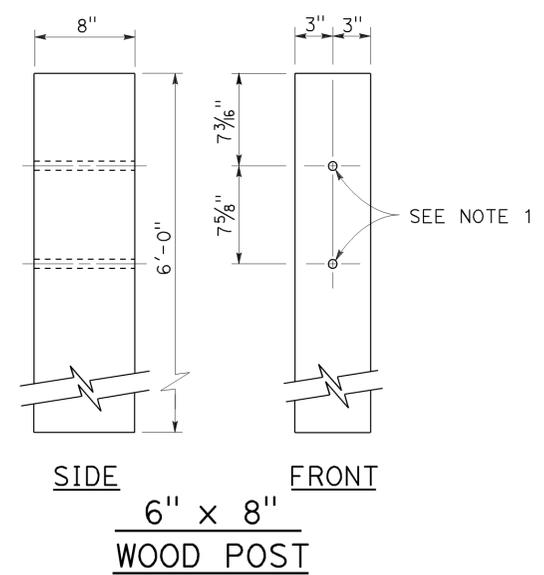
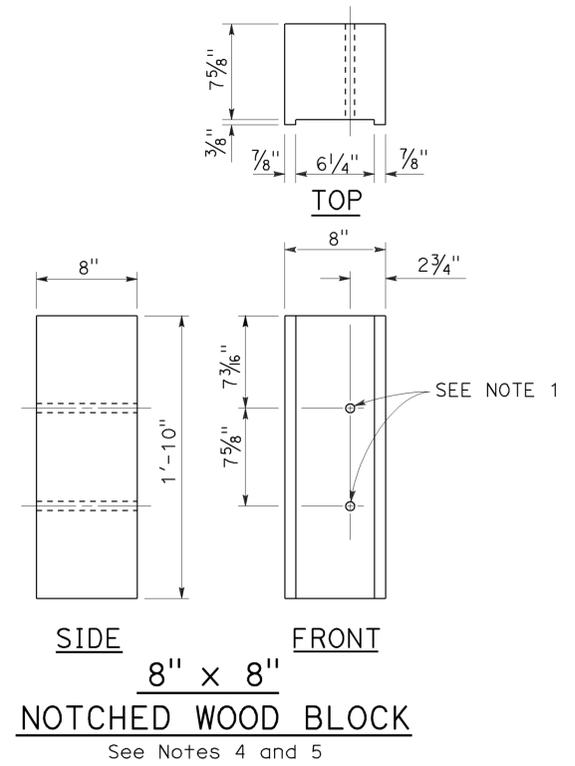
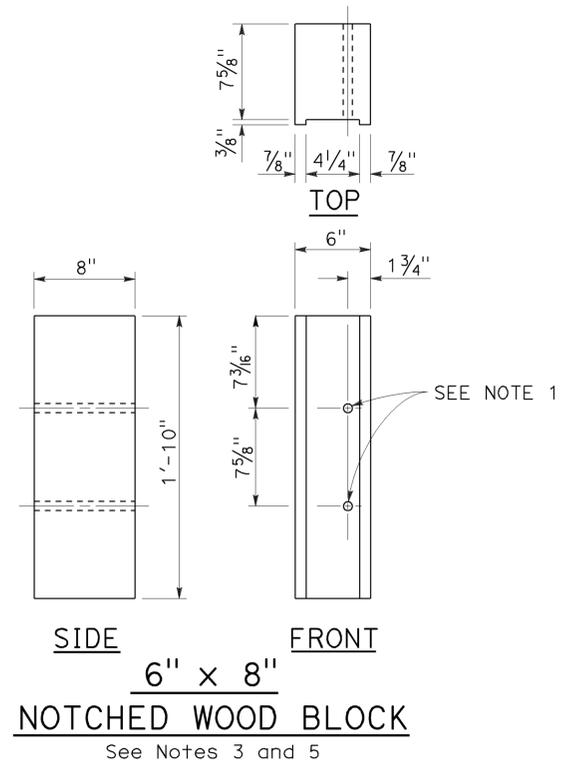
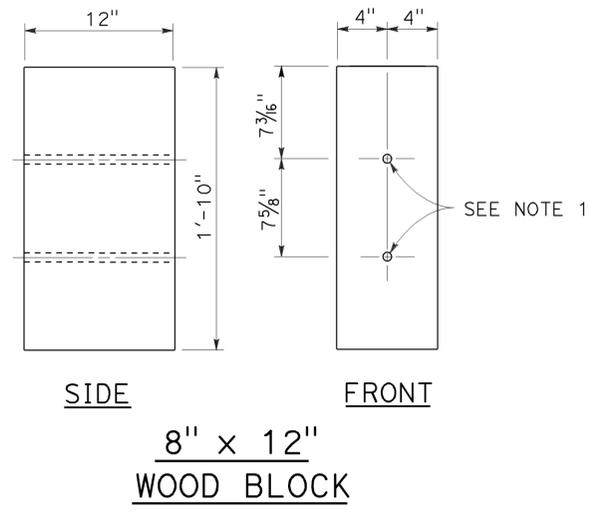
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

TO ACCOMPANY PLANS DATED 6-29-16

NOTES:

1. All holes in steel post to be $\frac{13}{16}$ " Dia maximum. Holes in wood posts and wood blocks to be $\frac{3}{4}$ " Dia $\pm \frac{1}{16}$ ".
2. Dimensions shown for wood post are nominal.
3. For use with W6 x 8.5 or W6 x 9 steel post.
4. For use with W6 x 15 steel post.
5. Notched face of block faces steel post.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

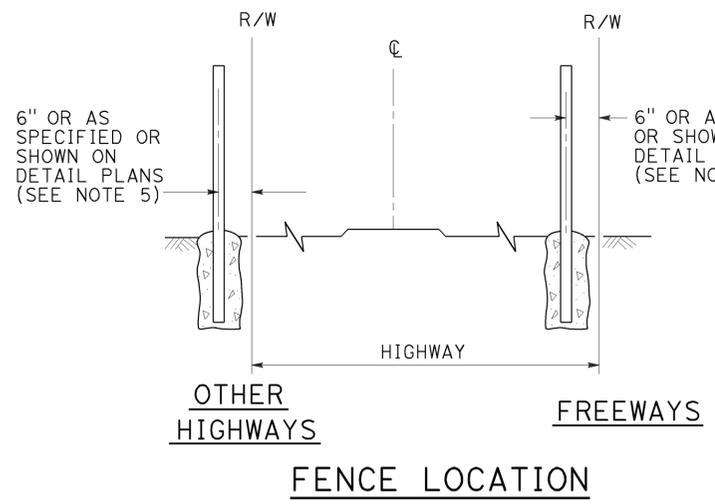
**THRIE BEAM BARRIER
POST AND BLOCK DETAILS**

NO SCALE

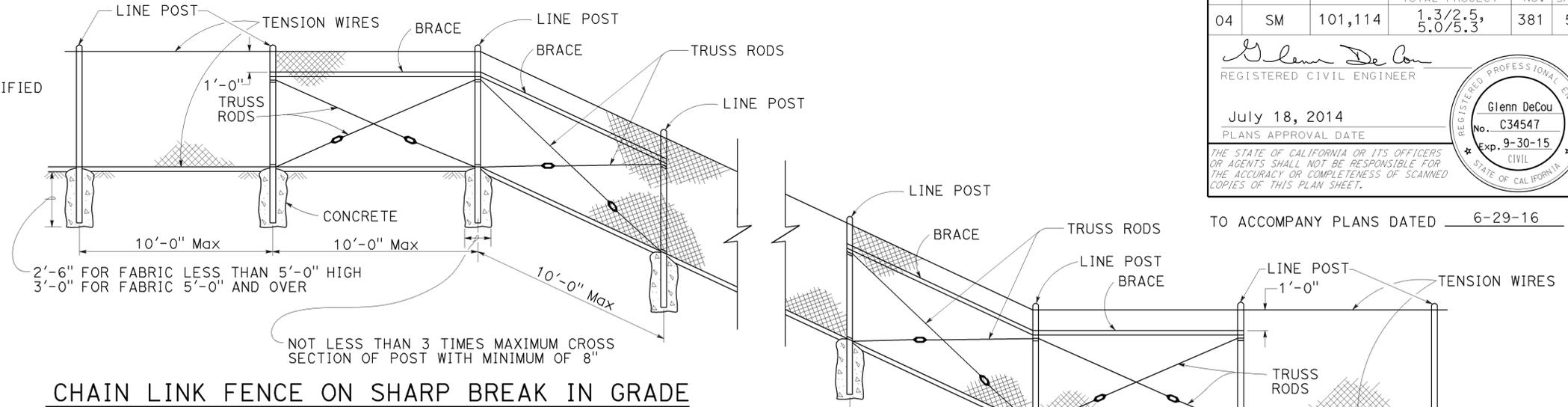
RSP A78C2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78C2
DATED MAY 20, 2011 - PAGE 92 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A78C2

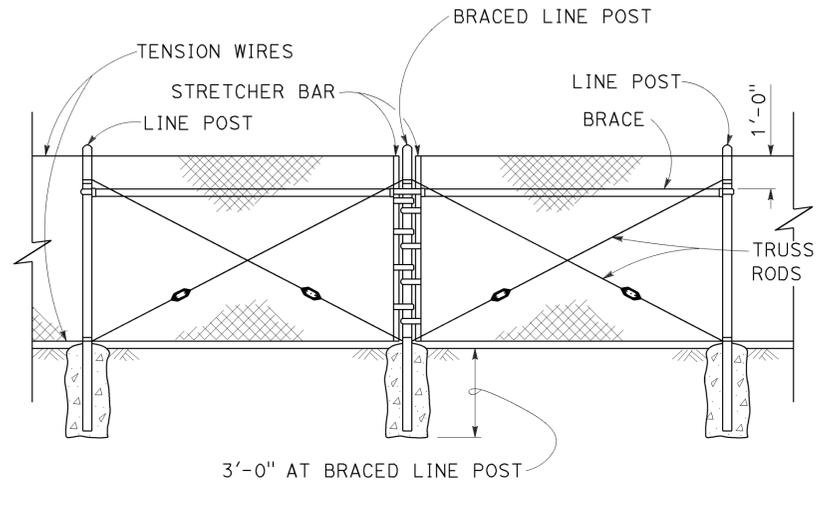
2010 REVISED STANDARD PLAN RSP A78C2



FENCE LOCATION

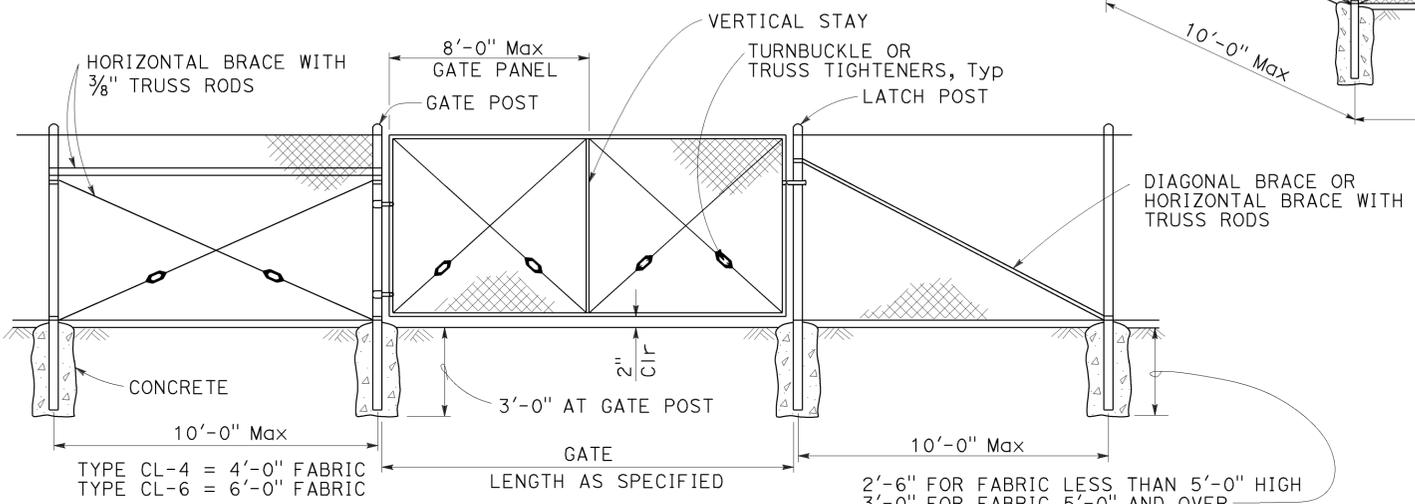


CHAIN LINK FENCE ON SHARP BREAK IN GRADE



BRACED LINE POST INSTALLATION

Braced line post at intervals not exceeding 1000'



CHAIN LINK GATE INSTALLATION

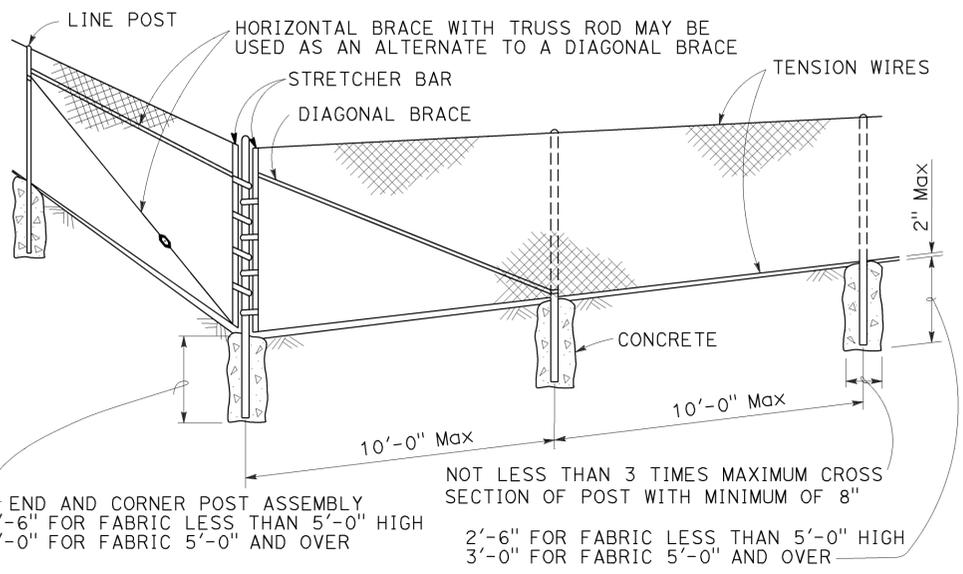
GATE POST			
FENCE HEIGHT	GATE WIDTHS	ROUND OD PIPE	WEIGHT (lb/ft)
6'-0" AND LESS	UP THRU 6'-0"	2.875"	5.80
	OVER 6'-0" THRU 12'-0"	4.500"	10.80
	OVER 12'-0" THRU 18'-0"	5.563"	14.63
OVER 6'-0" TO 8'-0" Max	OVER 18'-0" TO 24'-0" Max	6.625"	18.99
	UP THRU 6'-0"	3.500"	7.58
	OVER 6'-0" THRU 12'-0"	5.563"	14.63
	OVER 12'-0" THRU 18'-0"	6.625"	18.99
	OVER 18'-0" TO 24'-0" Max	8.625"	28.58

Above post dimensions and weights are minimums. Larger sizes may be used upon approval.

NOTES:

- The table below shows minimum sized posts and braces complying with the specifications. Larger or heavier post and brace sizes may be used upon approval.
- Sections shown in the tables must also comply with the strength requirements and other provisions of the Specifications.
- Other sections which comply with the strength requirements and other provisions of the Specifications may be used upon approval.
- Options exercised shall be uniform on any one project.
- Offset to be 2'-0" at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 20'-0" long.
- See Revised Standard Plan RSP A85B for Brace, Stretcher Bar, and Truss Tightener Details.

TYPICAL MEMBER DIMENSIONS (See Notes)										
FENCE HEIGHT	LINE POSTS				END, LATCH AND CORNER POSTS		BRACES			
	ROUND OD PIPE	WEIGHT (lb/ft)	ROLL FORMED		ROUND OD PIPE	WEIGHT (lb/ft)	ROUND OD PIPE	WEIGHT (lb/ft)	ROLL FORMED	
			SECTION	WEIGHT (lb/ft)					SECTION	WEIGHT (lb/ft)
6'-0" AND LESS	1.900"	2.72	1.875" x 1.625"	1.85	2.375"	3.65	1.66"	2.27	1.625" x 1.25"	1.35
OVER 6'-0" TO 8'-0" Max	2.375"	3.65	2.25" x 1.70"	2.78	2.875"	5.80	1.66"	2.27	1.625" x 1.25"	1.35



CORNER POST

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE
NO SCALE

RSP A85 DATED JULY 18, 2014 SUPERSEDES STANDARD PLAN A85 DATED MAY 20, 2011 - PAGE 112 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A85

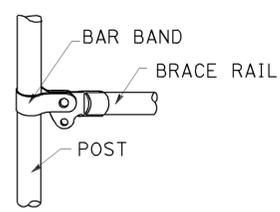
2010 REVISED STANDARD PLAN RSP A85

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	382	568

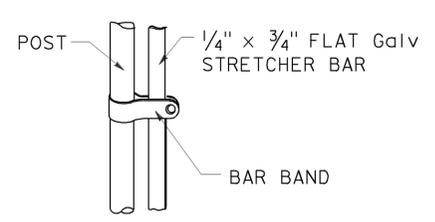
Glenn DeCou
 REGISTERED CIVIL ENGINEER
 No. C34547
 Exp. 9-30-13
 CIVIL
 STATE OF CALIFORNIA

October 19, 2012
 PLANS APPROVAL DATE

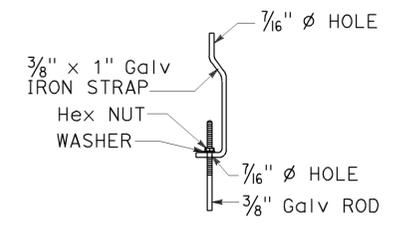
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



BRACE RAIL



STRETCHER BAR

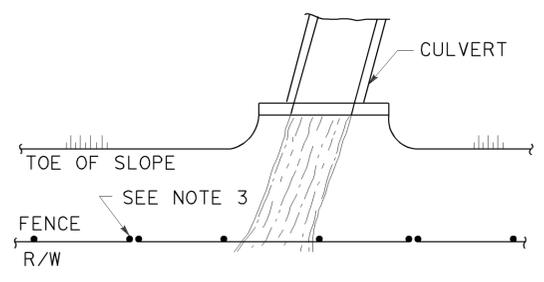


TRUSS TIGHTENER

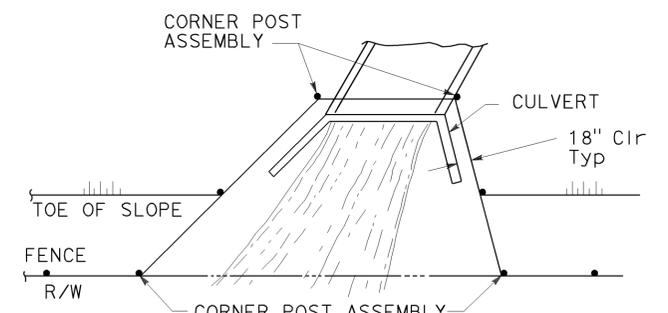
NOTES:

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

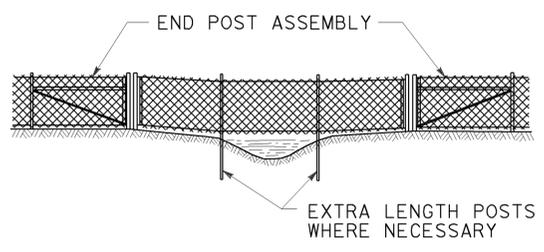
TO ACCOMPANY PLANS DATED 6-29-16



PLAN

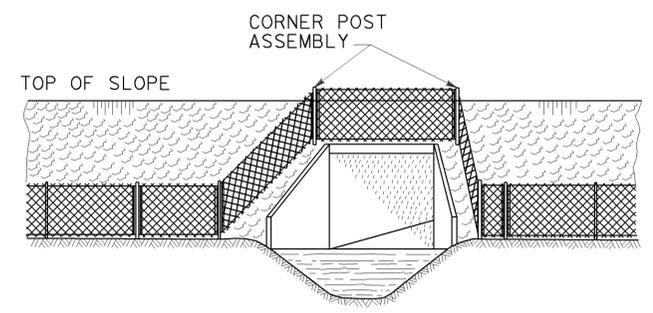


PLAN



ELEVATION

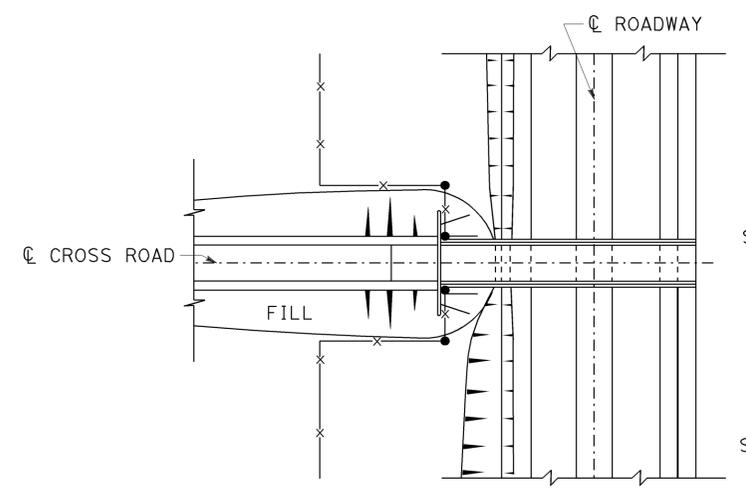
INSTALLATION OVER STREAM



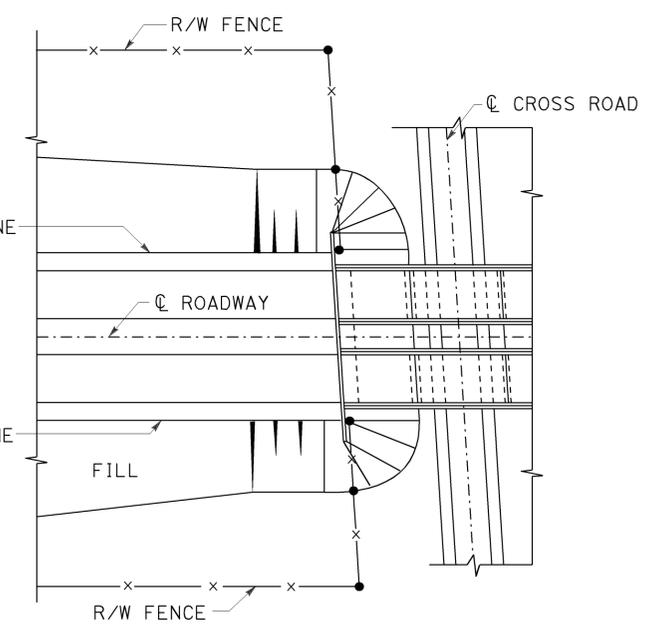
ELEVATION

INSTALLATION AROUND HEADWALL

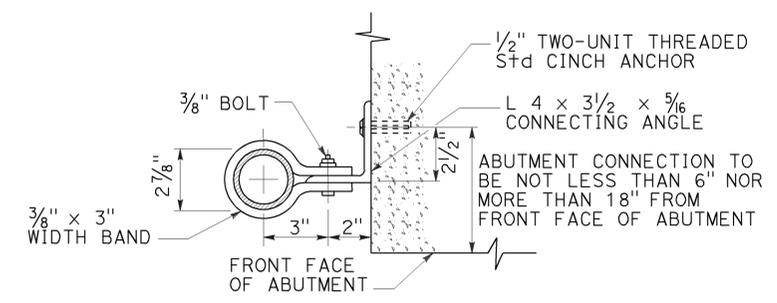
See Note 4



PLAN OF ROADWAY - OVERCROSSING



PLAN OF ROADWAY - UNDERCROSSING



ABUTMENT CONNECTION

TYPICAL INSTALLATION AT BRIDGES

ABUTMENT CONNECTION TO BE NOT LESS THAN 6" NOR MORE THAN 18" FROM FRONT FACE OF ABUTMENT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK FENCE DETAILS

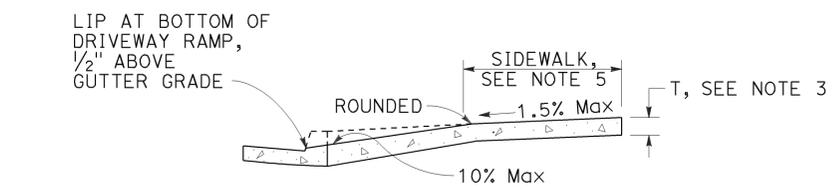
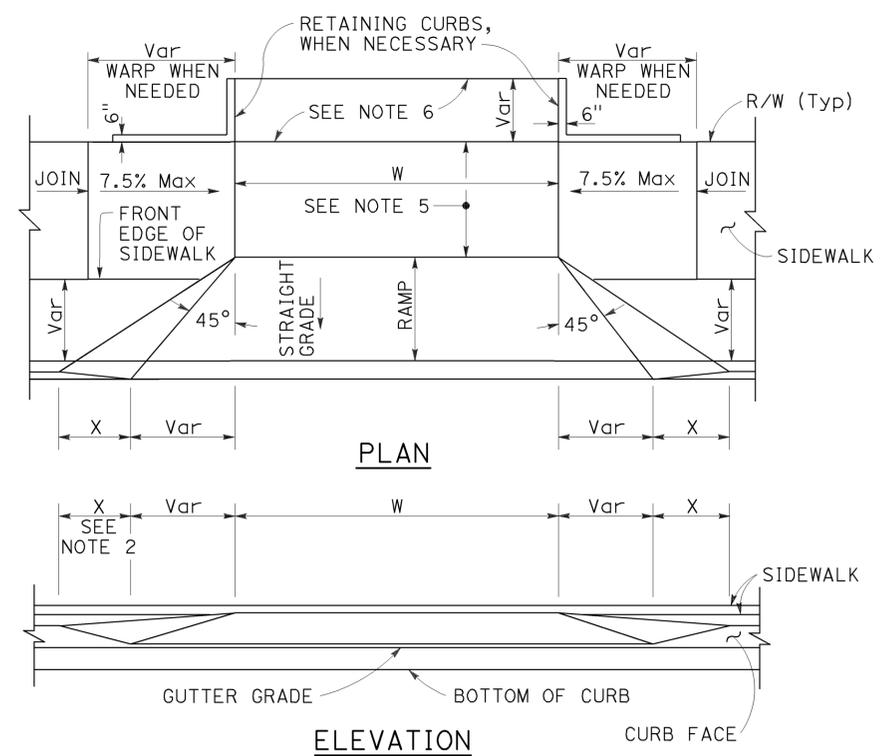
NO SCALE

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

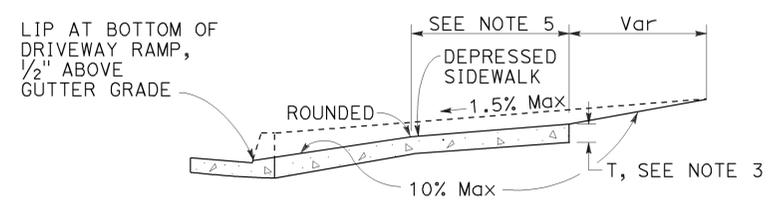
REVISED STANDARD PLAN RSP A85B

2010 REVISED STANDARD PLAN RSP A85B

TO ACCOMPANY PLANS DATED 6-29-16



CASE A
Typical driveway, sidewalk not depressed



CASE B
Driveway with depressed sidewalk

SECTIONS

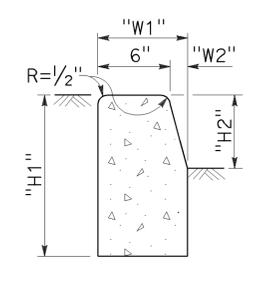
TABLE A

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

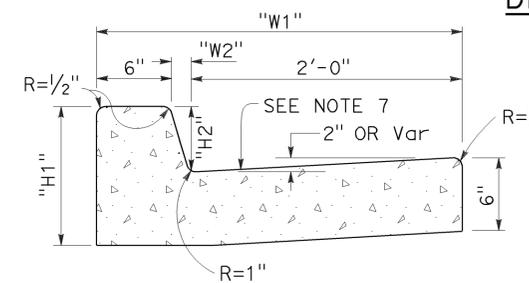
CURB QUANTITIES

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

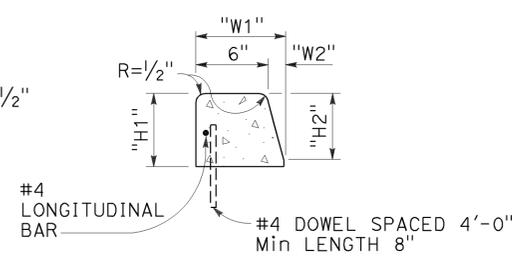
DRIVEWAYS



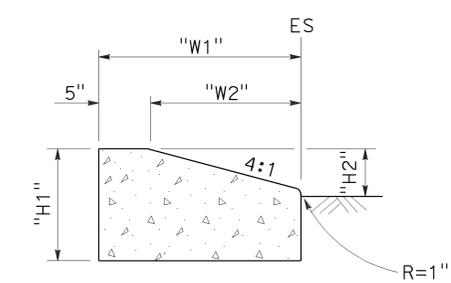
TYPE A1 CURBS
See Table A



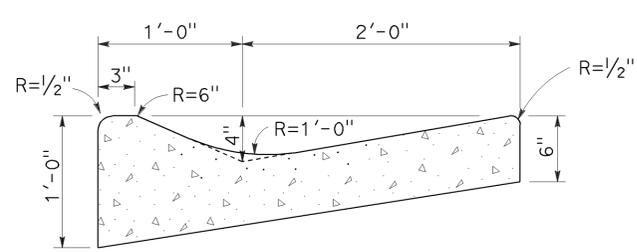
TYPE A2 CURBS
See Table A



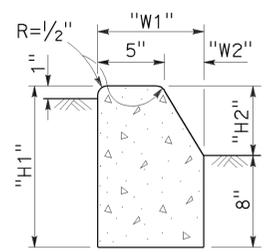
TYPE A3 CURBS
Superimposed on existing pavement
See Table A



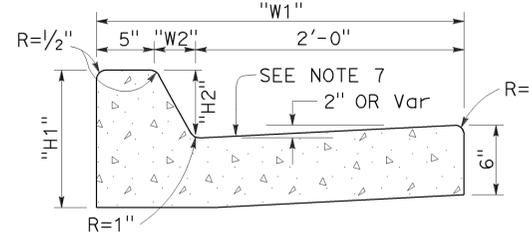
TYPE D CURBS
See Table A



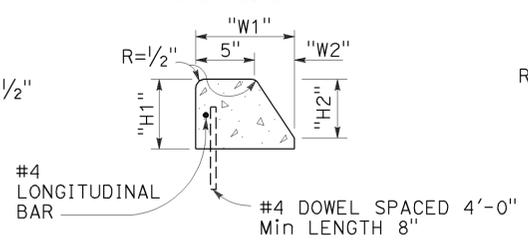
TYPE E CURB



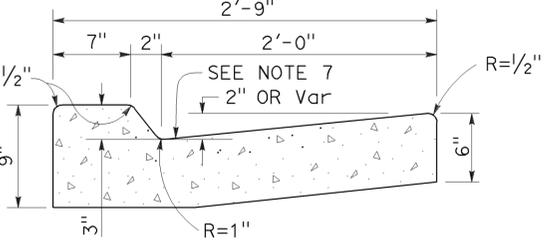
TYPE B1 CURBS
See Table A



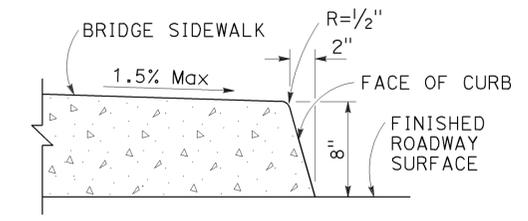
TYPE B2 CURBS
See Table A



TYPE B3 CURBS
Superimposed on existing pavement
See Table A



TYPE B4 CURBS



TYPE H CURB
On Bridges

CURBS

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

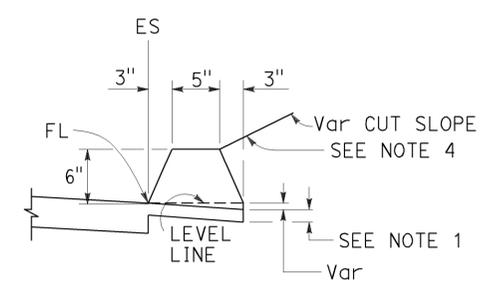
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURBS AND DRIVEWAYS

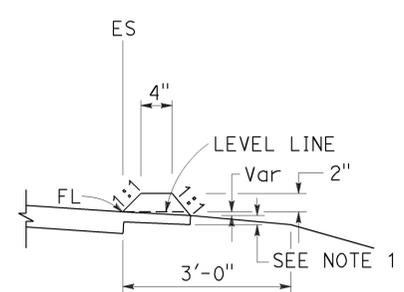
NO SCALE

2010 REVISED STANDARD PLAN RSP A87A

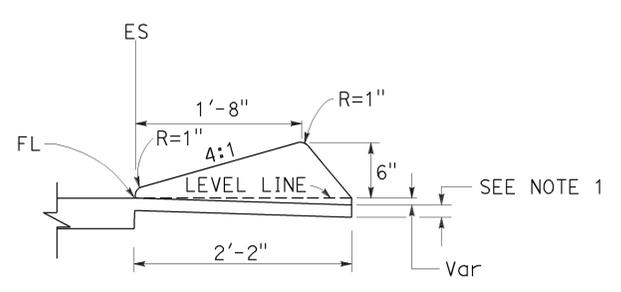
TO ACCOMPANY PLANS DATED 6-29-16



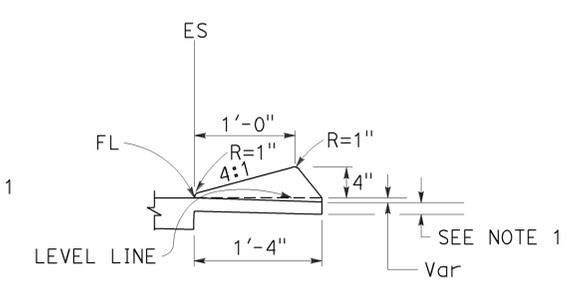
TYPE A
See Note 3



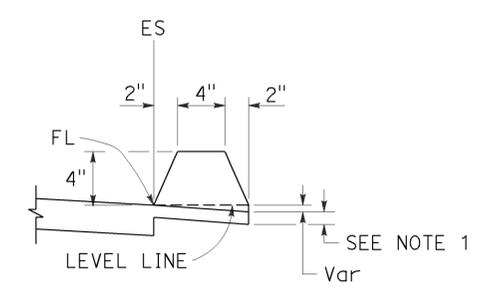
TYPE C



TYPE D

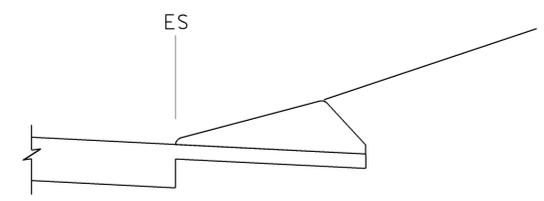


TYPE E

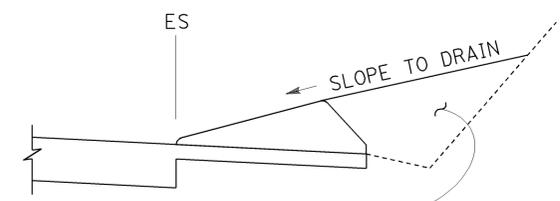


TYPE F
See Note 5

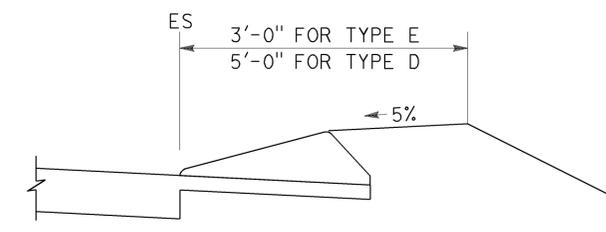
DIKES



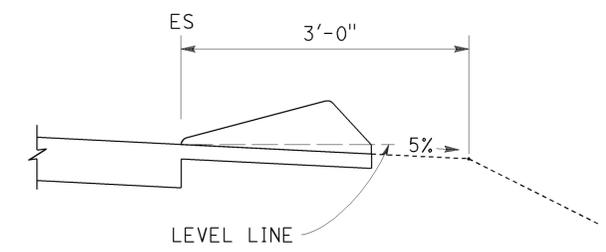
CASE C-1
Cut Slope



CASE C-2
Cut Slope



CASE F



CASE R
See Note 2

TYPE D AND E BACKFILL DETAILS

NOTES:

1. For HMA shoulders only, extend top layer of HMA placed on the shoulder under dike with no joint at the ES. For projects with OGFC shoulders, do not extend OGFC under dike. See project plans for modified dike detail.
2. Case R applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
3. Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
4. Fill and compact with excavated material to top of dike.
5. Use Type F dike, where dike is required with guard railing installations. See Revised Standard Plan RSP A77N4 for dike positioning details.

DIKE QUANTITIES

TYPE	CUBIC YARDS PER LINEAR FOOT
A	0.0135
C	0.0038
D	0.0293
E	0.0130
F	0.0066

Quantities based on 5% cross slope.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

HOT MIX ASPHALT DIKES

NO SCALE

RSP A87B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A87B
DATED MAY 20, 2011 - PAGE 120 OF THE STANDARD PLANS BOOK DATED 2010.

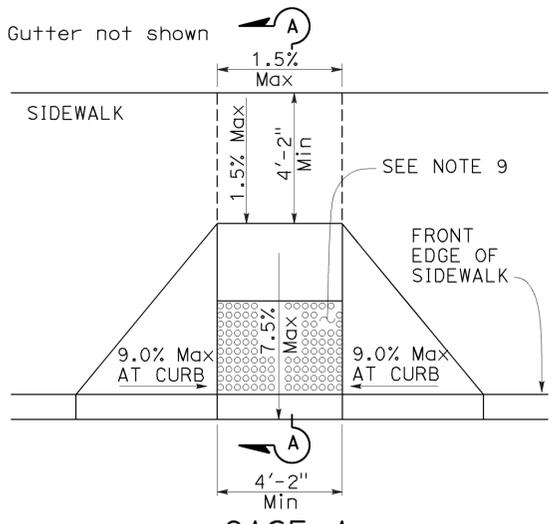
REVISED STANDARD PLAN RSP A87B

2010 REVISED STANDARD PLAN RSP A87B

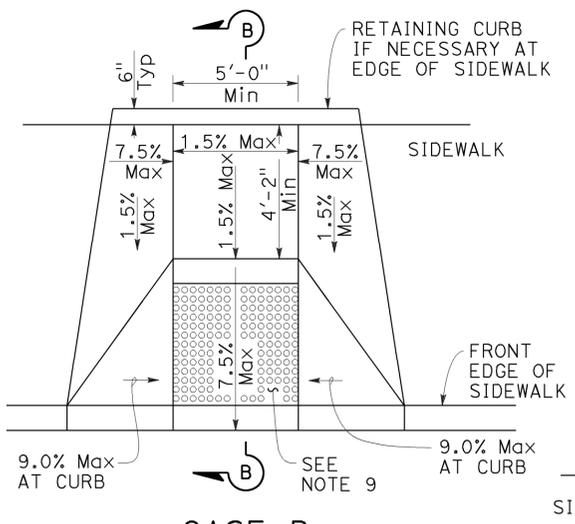
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	385	568

H. David Cordova
 REGISTERED CIVIL ENGINEER
 No. C41957
 Exp. 3-31-16
 CIVIL
 STATE OF CALIFORNIA

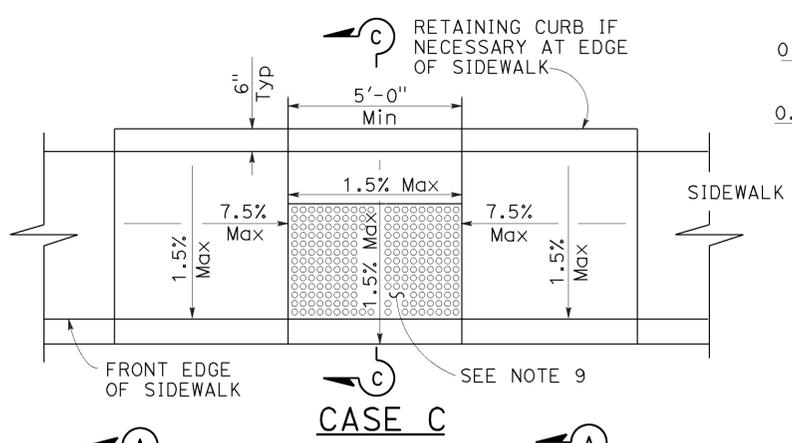
July 3, 2015
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



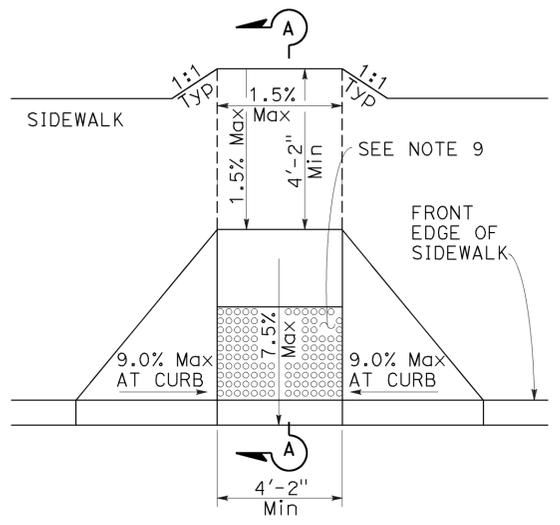
CASE A



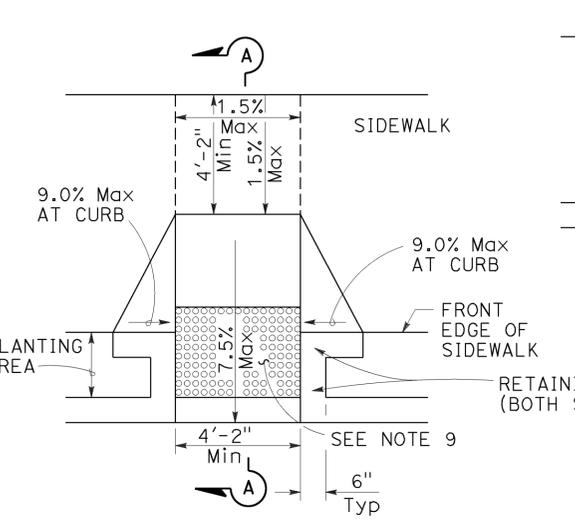
CASE B



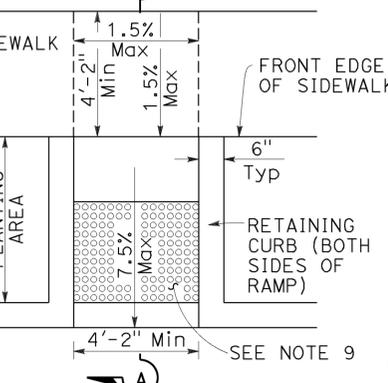
CASE C



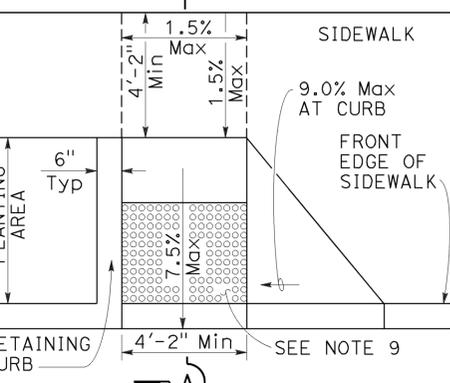
CASE D



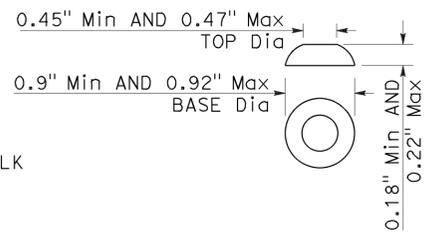
CASE E



CASE F



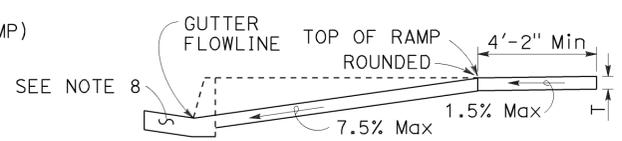
CASE G



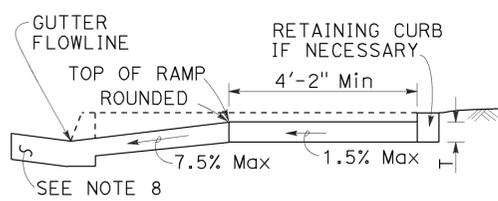
RAISED TRUNCATED DOME

NOTES:

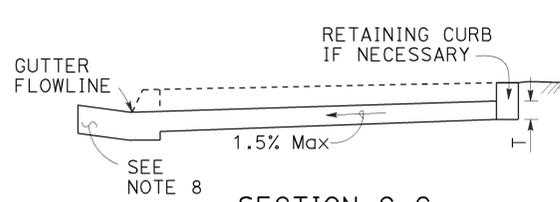
- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions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



SECTION A-A



SECTION B-B

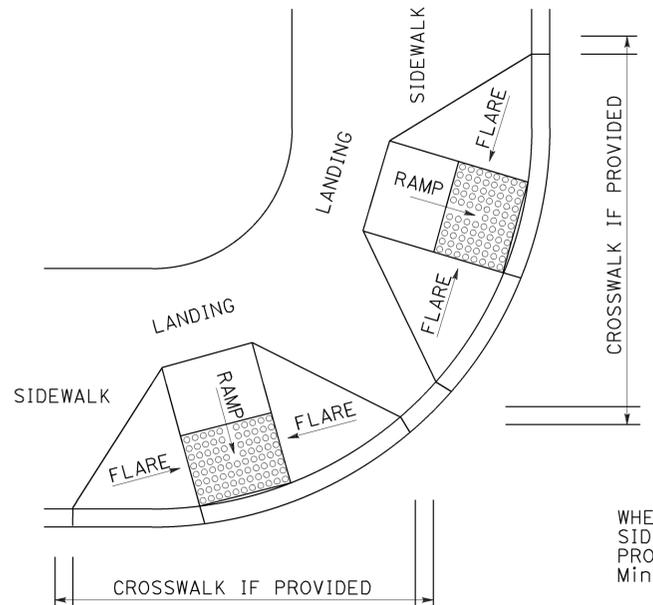


SECTION C-C



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

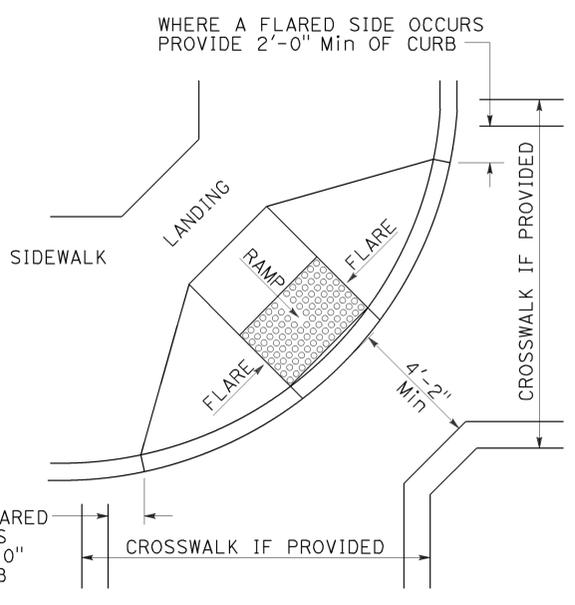
See Note 9



DETAIL A

TYPICAL TWO-RAMP CORNER INSTALLATION

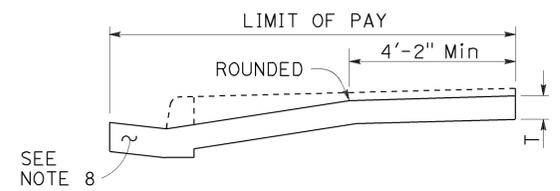
See Note 1



DETAIL B

TYPICAL ONE-RAMP CORNER INSTALLATION

See Notes 1 and 3



RETROFIT PAY LIMITS

Existing curb and sidewalk

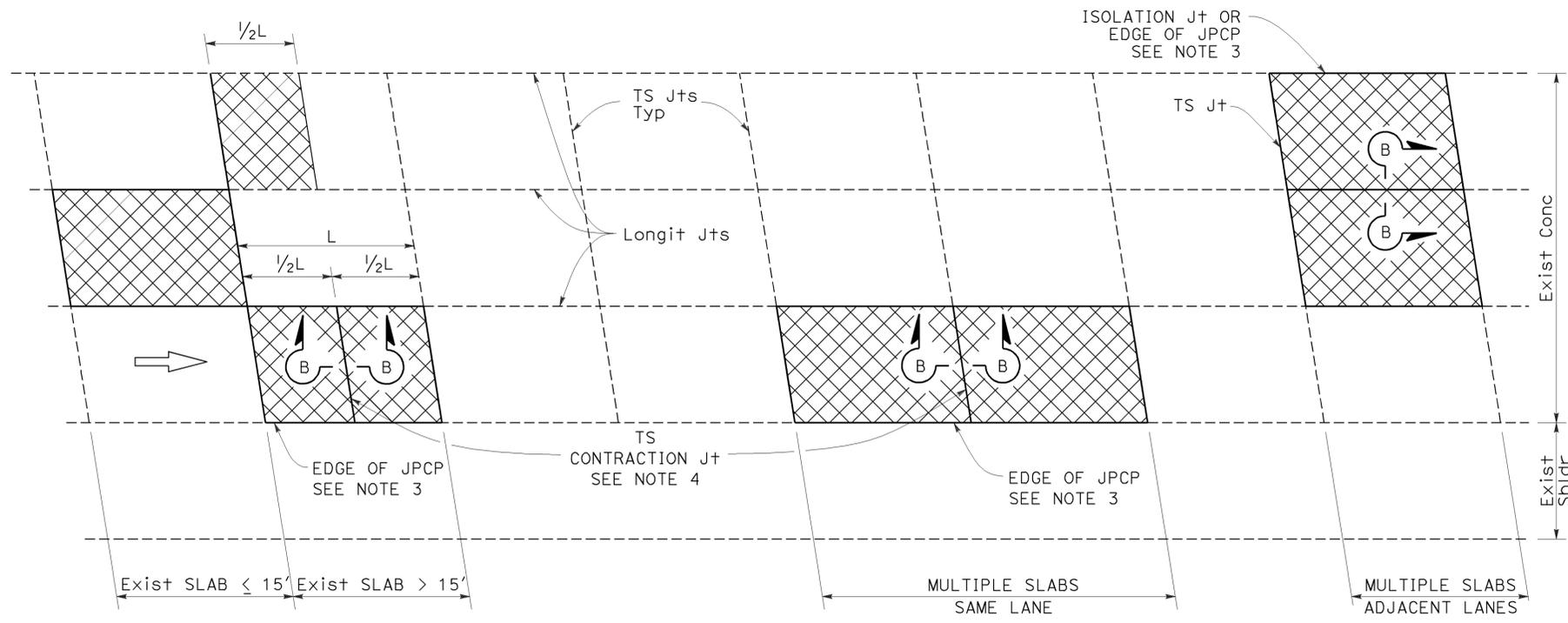
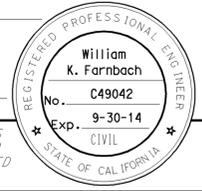
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CURB RAMP DETAILS
NO SCALE

RSP A88A DATED JULY 3, 2015 SUPERSEDES RSP A88A DATED MARCH 21, 2014 AND RSP A88A DATED JULY 19, 2013 AND STANDARD PLAN A88A DATED MAY 20, 2011 - PAGE 121 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A88A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	386	568

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



PLAN

LEGEND:

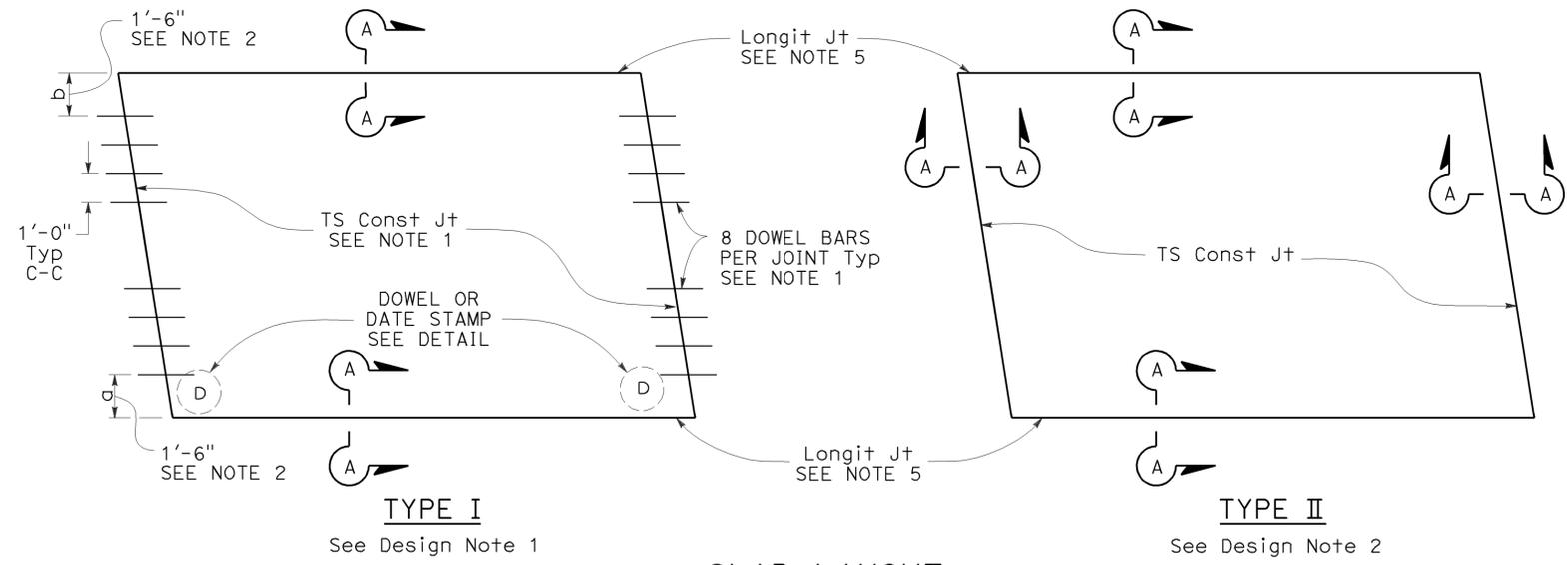
- RSC RAPID STRENGTH CONCRETE
- INDIVIDUAL SLAB REPLACEMENT WITH RSC

NOTES:

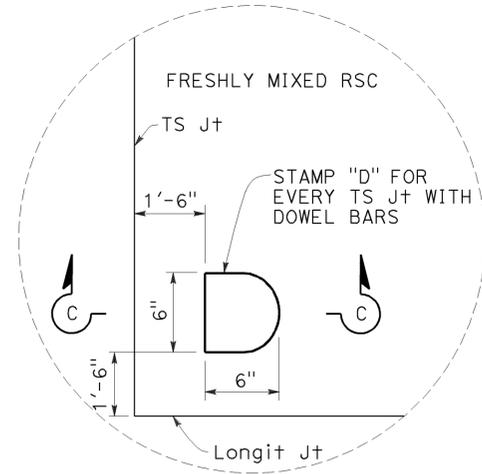
1. For details not shown, see Revised Standard Plan RSP P10.
2. Where the existing outside shoulder is asphalt concrete pavement, "a" = 1'-0" and "b" = 2'-0".
3. Use side forms where edge of RSC pavement is adjacent to asphalt concrete.
4. Transverse contraction joint to match skew of existing joint. Omit dowel bars.
5. Do not place tie bars at longitudinal joints.

DESIGN NOTES:

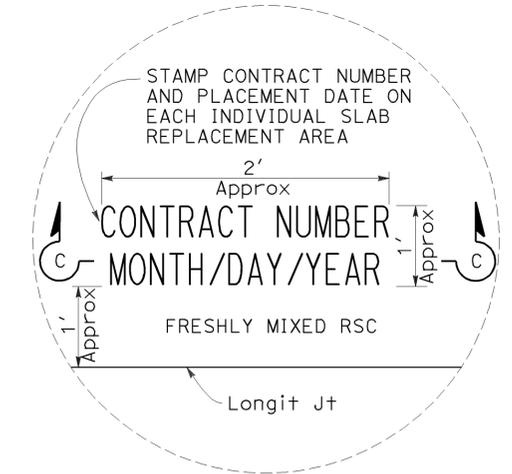
1. For concrete slab repair with at least 5 years design life.
2. For short term repairs < 5 yrs design life or for slab replacements with cracking and seating.



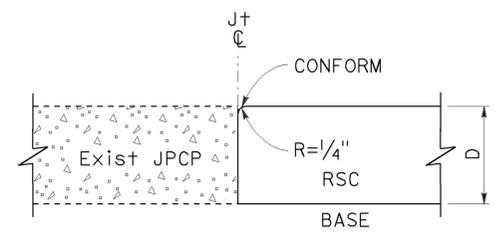
SLAB LAYOUT



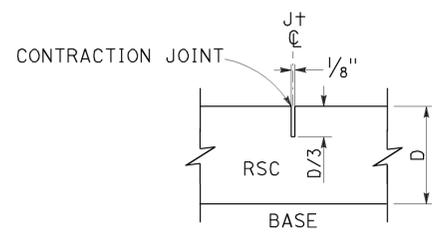
DOWEL STAMP DETAIL



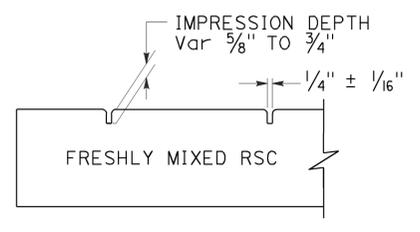
DATE STAMP DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

INDIVIDUAL SLAB REPLACEMENT WITH RAPID STRENGTH CONCRETE

NO SCALE

RSP P8 DATED JULY 19, 2013 SUPERSEDES RSP P8 DATED APRIL 20, 2012 AND STANDARD PLAN P8 DATED MAY 20, 2011 - PAGE 130 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P8

2010 REVISED STANDARD PLAN RSP P8

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	387	568

Srikanth N. Balasubramanian
REGISTERED CIVIL ENGINEER

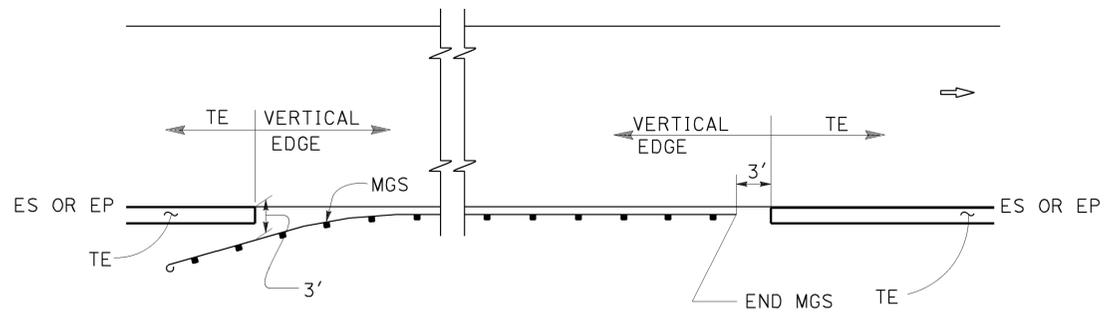
October 30, 2015
PLANS APPROVAL DATE

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.

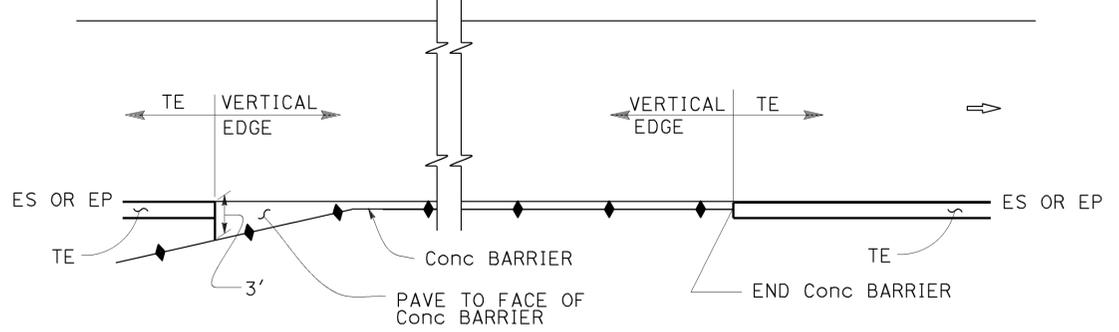
REGISTERED PROFESSIONAL ENGINEER
Srikanth N. Balasubramanian
No. C56426
Exp. 6-30-17
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 6-29-16

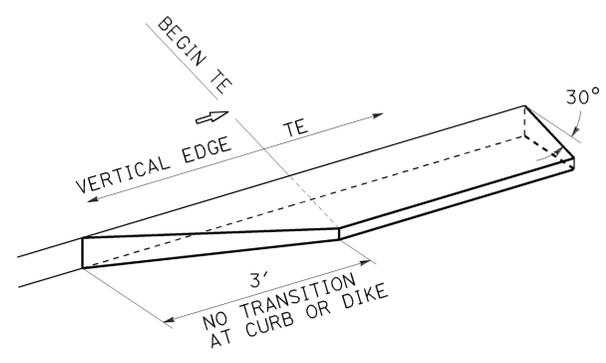
ABBREVIATIONS:
TE TAPERED EDGE



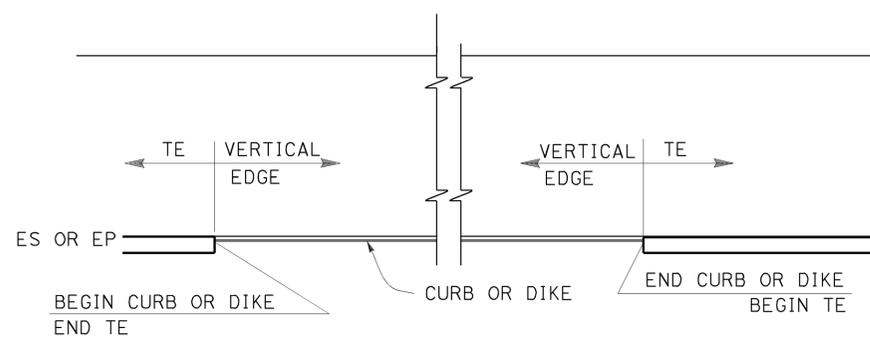
MGS



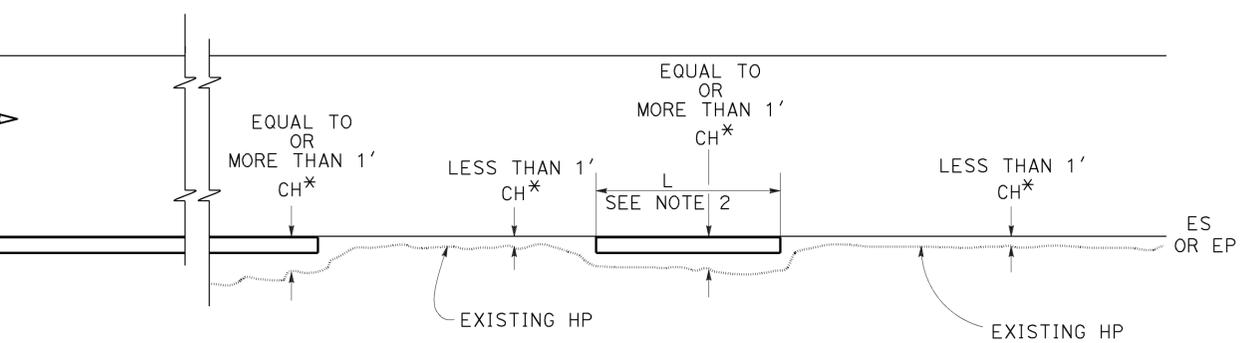
CONCRETE BARRIER



TRANSITION DETAIL FOR CONCRETE ONLY

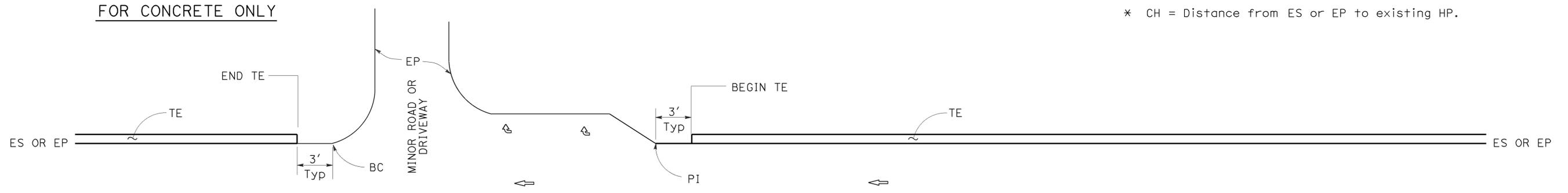


CURB OR DIKE



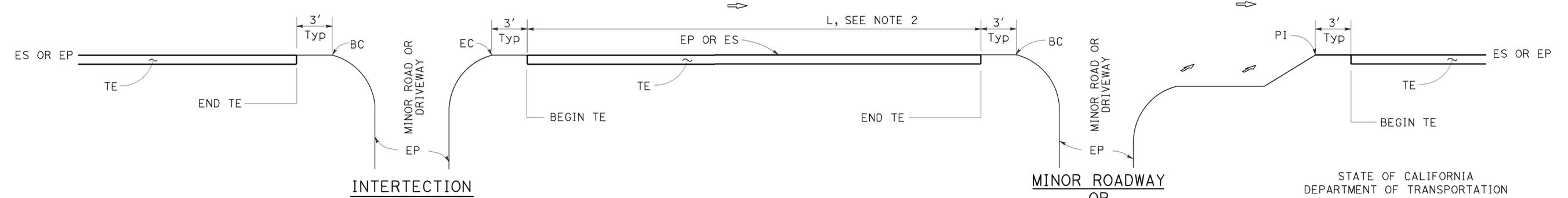
NARROW SIDE SLOPE

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



STATE ROUTE

STATE ROUTE



INTERSECTION

DRIVEWAY AND INTERSECTION

MINOR ROADWAY OR DRIVEWAY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT EDGE TREATMENTS

NO SCALE

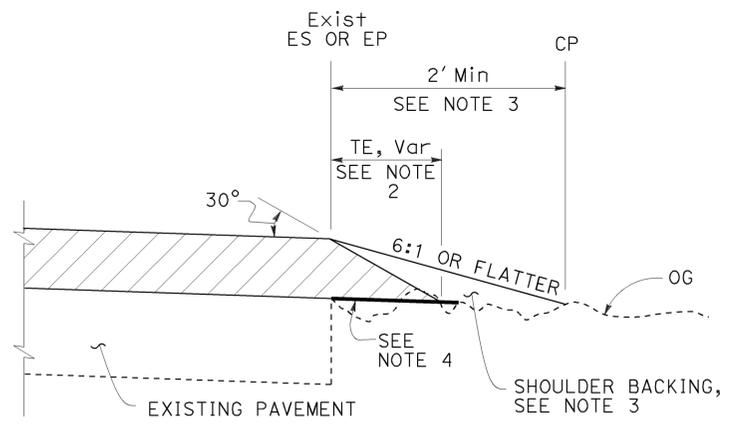
NOTES:

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

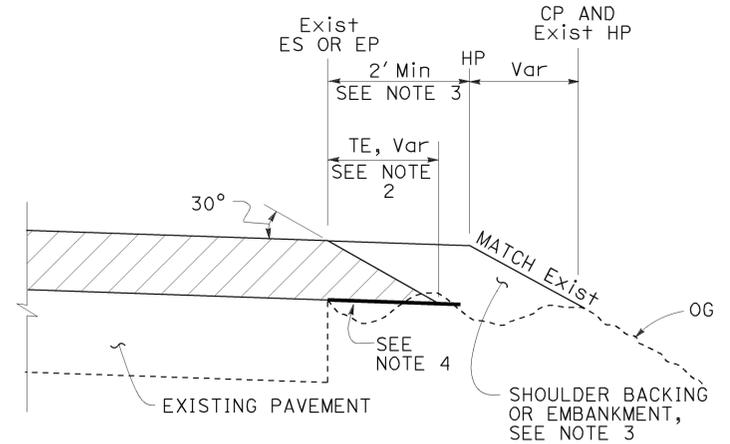
RSP P74 DATED OCTOBER 30, 2015 SUPERSEDES RSP P74 DATED NOVEMBER 15, 2013 AND RSP P74 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P74

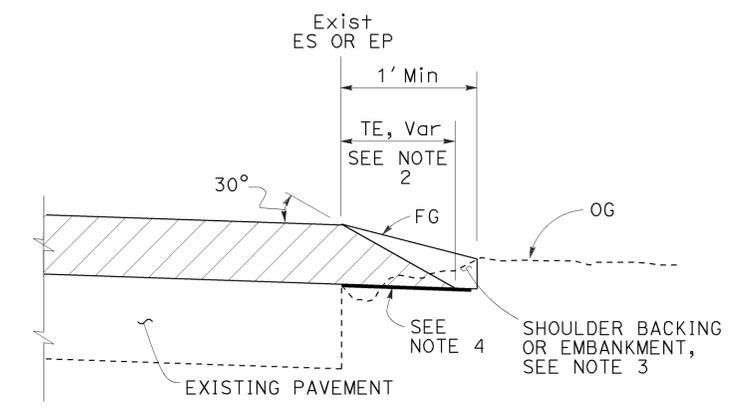
2010 REVISED STANDARD PLAN RSP P74



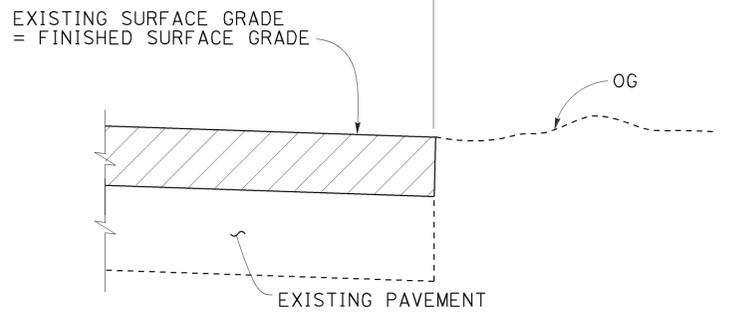
CASE A
Tapered Edge



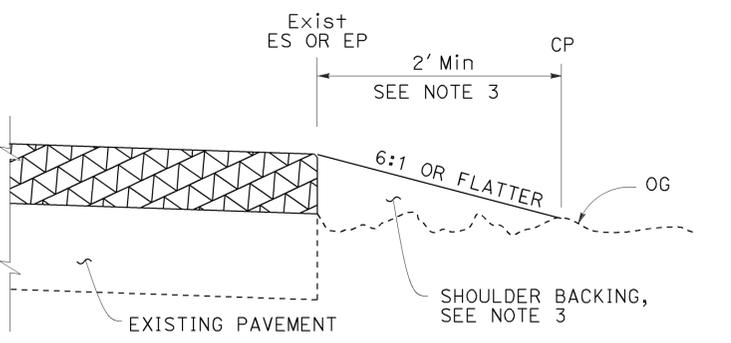
CASE B
Tapered Edge



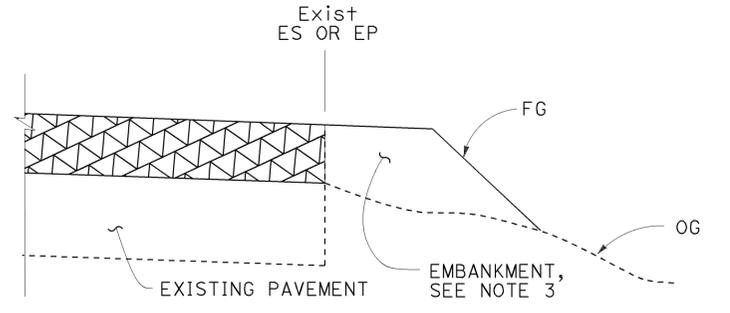
CASE C
Tapered Edge



CASE D
Vertical Edge

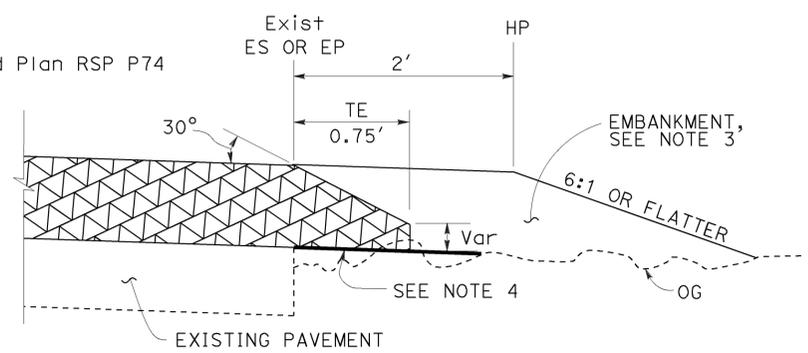


CASE E
Vertical Edge



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

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



DETAIL "A"
For HMA overlay thickness more than 0.43' or concrete overlay

LEGEND:

HMA OVERLAY

HMA OR CONCRETE OVERLAY

CONCRETE OVERLAY

ABBREVIATIONS:

TE TAPERED EDGE

TT TOTAL THICKNESS OF TE

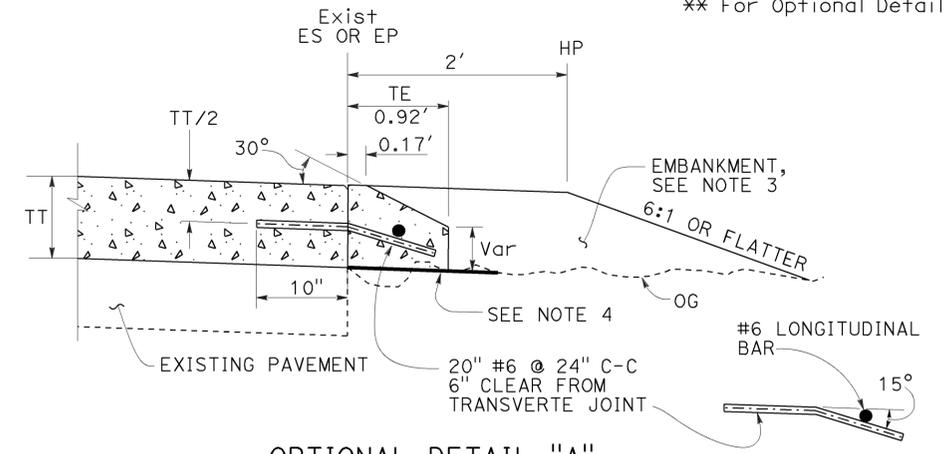
TABLE A
EDGE TREATMENT FOR VARIOUS OVERLAY THICKNESS AND CONDITIONS

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

ADDITIONAL HMA OR CONCRETE QUANTITIES FOR TE/SIDE/MILE

TYPICAL CROSS SECTION	TT	TOTAL ADDITIONAL MATERIAL FOR TE/SIDE/MILE		
		HMA (TON)	CONCRETE (CY)*	CONCRETE (CY)**
	0.15'	7.7	NA	NA
	0.20'	13.7	NA	NA
	0.30'	30.9	NA	NA
	0.40'	54.9	NA	NA
	0.45'	69.4	NA	NA
	0.50'	84.2	NA	NA
	0.60'	113.9	NA	NA
	0.70'	143.6	70.9	94.2
	0.80'	173.3	85.6	112.2
	0.90'	203.0	100.3	130.2
	1.00'	232.7	114.9	148.2
	1.10'	262.4	129.6	166.2
1.20'	292.1	144.3	184.2	

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



OPTIONAL DETAIL "A"
For concrete overlay
See Note 5

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT EDGE TREATMENTS- OVERLAYS

NO SCALE

RSP P75 DATED OCTOBER 30, 2015 SUPERSEDES RSP P75 DATED NOVEMBER 15, 2013 AND RSP P75 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP P75

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	389	568

Srikanth N. Balasubramanian
REGISTERED CIVIL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

Srikanth N. Balasubramanian
No. C56426
Exp. 6-30-17
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.

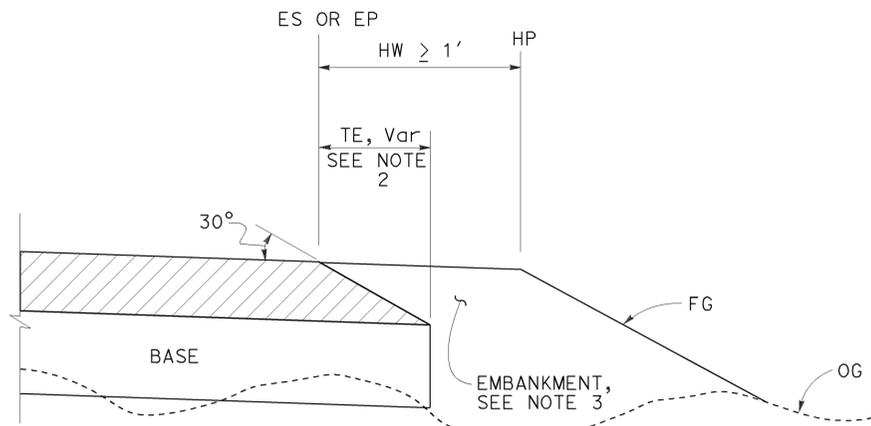
LEGEND:

-  HMA PAVEMENT
-  HMA OR CONCRETE PAVEMENT
-  CONCRETE PAVEMENT

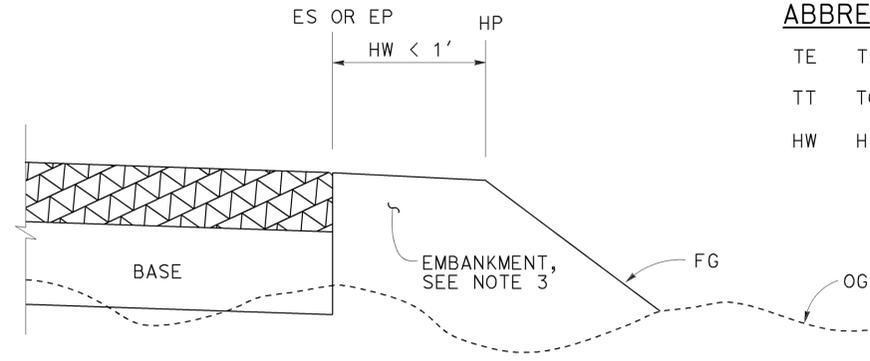
ABBREVIATIONS:

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

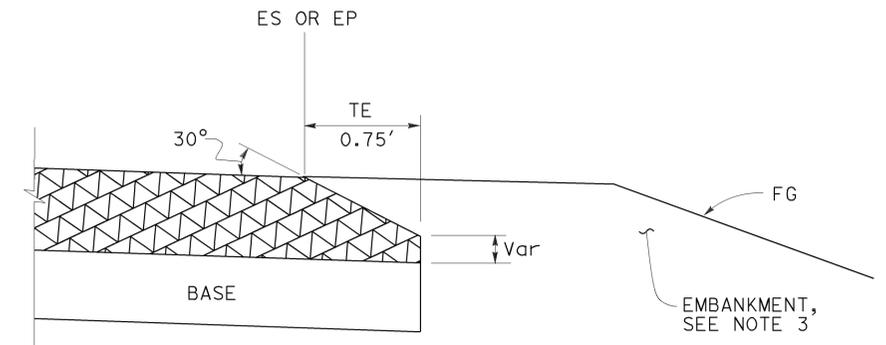
TO ACCOMPANY PLANS DATED 6-29-16



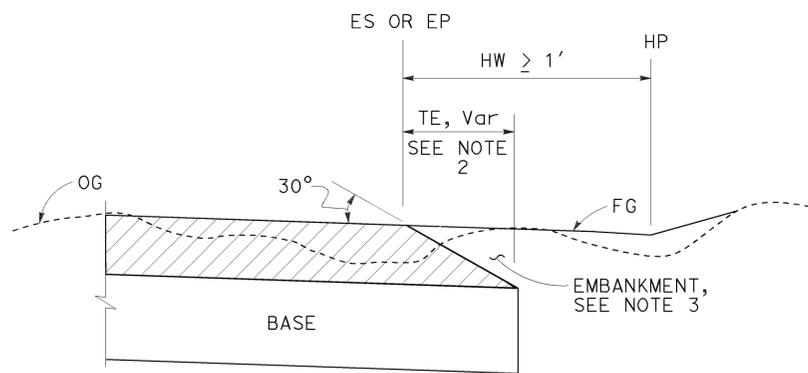
CASE K
Tapered Edge - Fill Section, HW $\geq 1'$



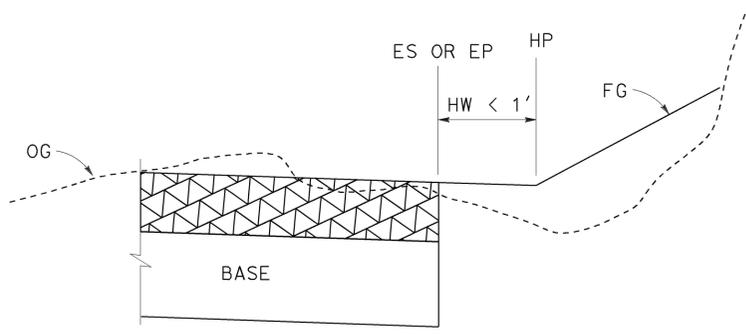
CASE L
Vertical Edge - Fill Section, HW $< 1'$



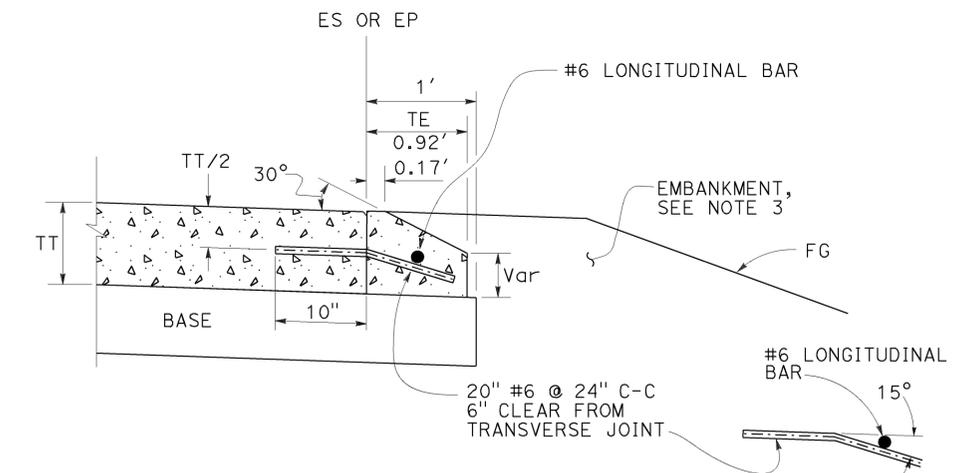
DETAIL "B"
For HMA pavement thickness more than 0.43' or concrete pavement



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



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



OPTIONAL DETAIL "B"
For concrete pavement
See Note 4

FILL SECTION

CUT SECTION

NOTES:

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

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

RSP P76 DATED OCTOBER 30, 2015 SUPERSEDES RSP P76 DATED NOVEMBER 15, 2013 AND RSP P76 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P76

2010 REVISED STANDARD PLAN RSP P76

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	390	568

Glenn DeCou
REGISTERED CIVIL ENGINEER

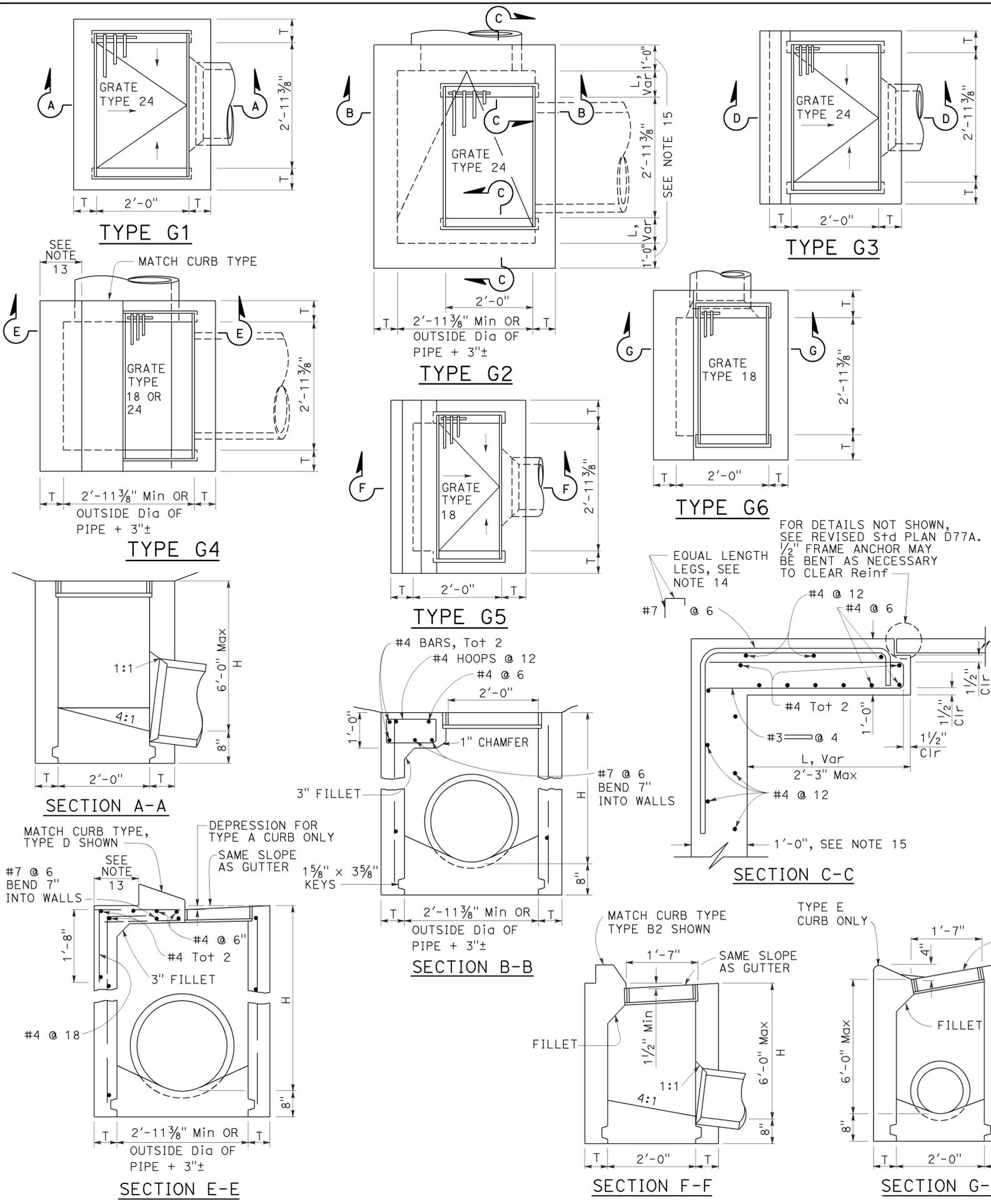
October 19, 2012
PLANS APPROVAL DATE

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

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

6-29-16

2010 REVISED STANDARD PLAN RSP D73



NOTES:

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

TABLE A

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

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

NOTE A:

Maximum allowable height 6'-0".

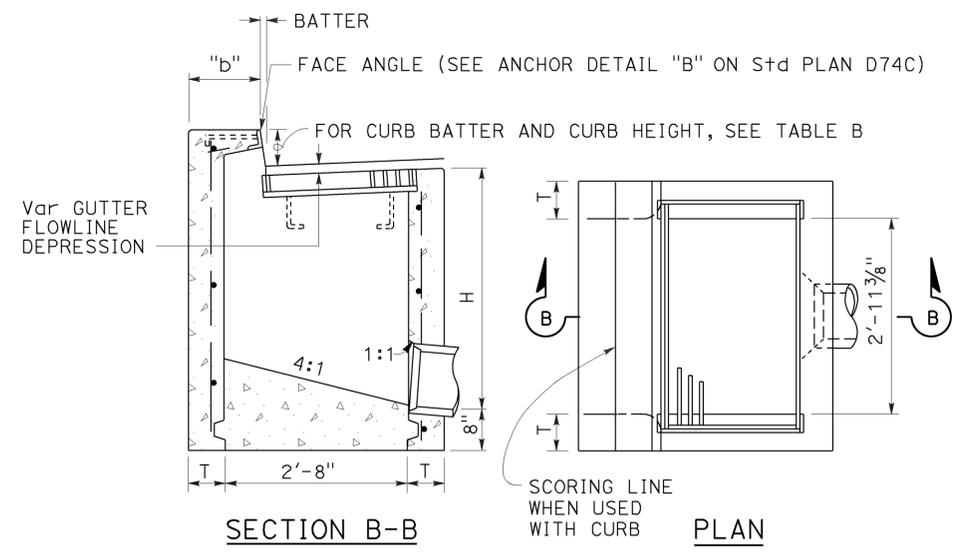
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS
NO SCALE

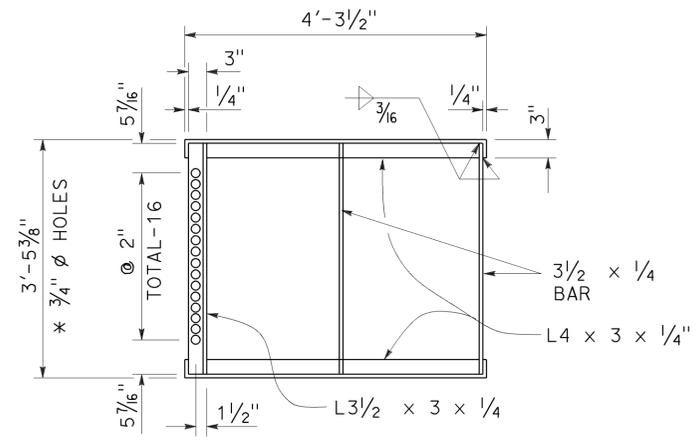
RSP D73 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN D73 DATED MAY 20, 2011 - PAGE 156 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D73

TO ACCOMPANY PLANS DATED 6-29-16

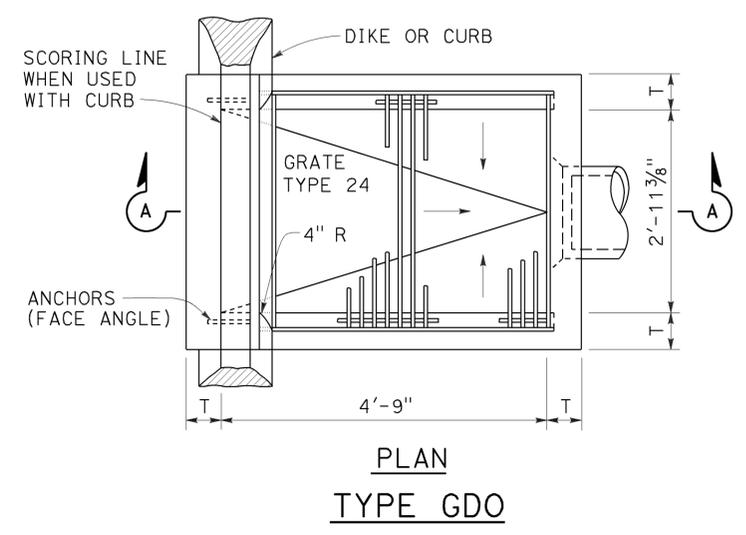


TYPE GO

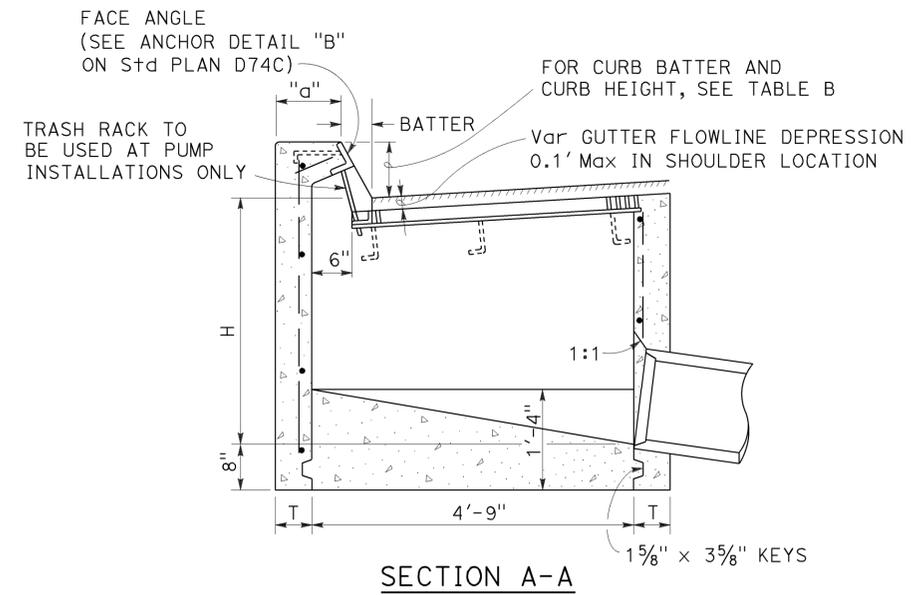


* 3/4" ϕ Holes required only with trash rack

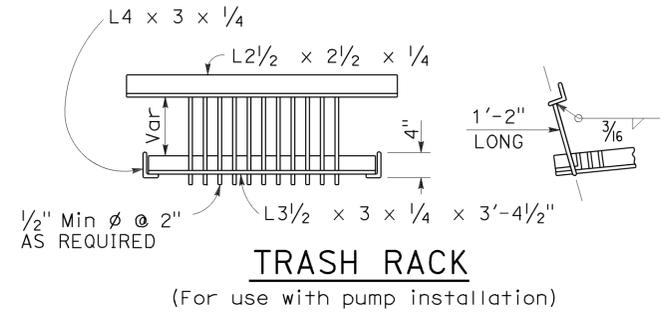
GRATE FRAME FOR TYPE GDO INLET



PLAN TYPE GDO



SECTION A-A



TRASH RACK
(For use with pump installation)

TABLE A
CONCRETE QUANTITIES

TYPE	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
GO	1.24	0.245	3.39	0.346
GDO	1.62	0.322	4.36	0.446

Table based on 8" floor slab, and curb type giving highest quantity of concrete. no deductions or adjustments are to be made to these quantities because of pipe openings, different floor alternatives or different curb type.

TABLE B

CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION
A1-6	6"	1 1/2"	T+7 1/2"	T+6 1/2"
A1-8	8"	2"	T+7"	T+6"
B1-6	6"	4"	T+5"	T+4"
TYPE A DIKE	6"	3"	T+6"	T+5"

NOTES:

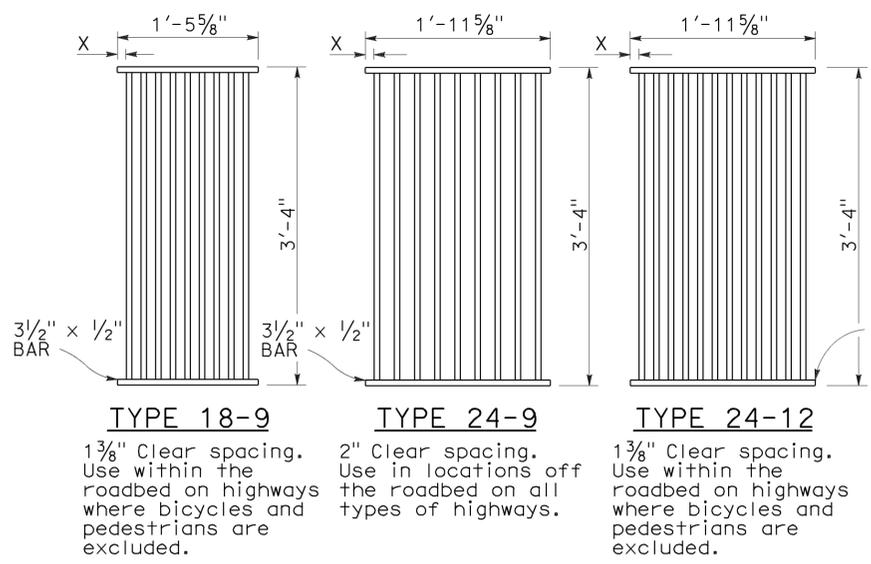
- "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undeepressed.
- For "T" wall thickness, see Table A below.
- Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits shall be reinforced with #4 @ 18"± centers placed 1/2" clear to inside of box unless otherwise shown.
- Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom.
- Steps - None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below top of inlet. The distance between steps shall not exceed 1'-0" and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Step inserts may be substituted for the bar steps. Step Inserts shall comply with State Industrial Safety requirements. See Standard Plan D74C for step details.
- When shown on the project plans, place a 3/4" plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
- Pipe(s) can be placed in any wall.
- Curb section shall match adjacent curb.
- Basin floors shall have wood trowel finish and shall slope toward the outlet pipe as shown.
- See Revised Standard Plans RSP D77A and RSP D77B for grate and frame details and weights of miscellaneous iron and Steel.
- See Standard Plan D78A for gutter depression details.
- Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
- Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
- Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet and concrete poured in one continuous operation. Precast inlets shall have mortared pipe connections conforming to details for Type GCP inlets on Revised Standard Plan RSP D75B. See Standard Specifications for mortar composition.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DRAINAGE INLETS
NO SCALE

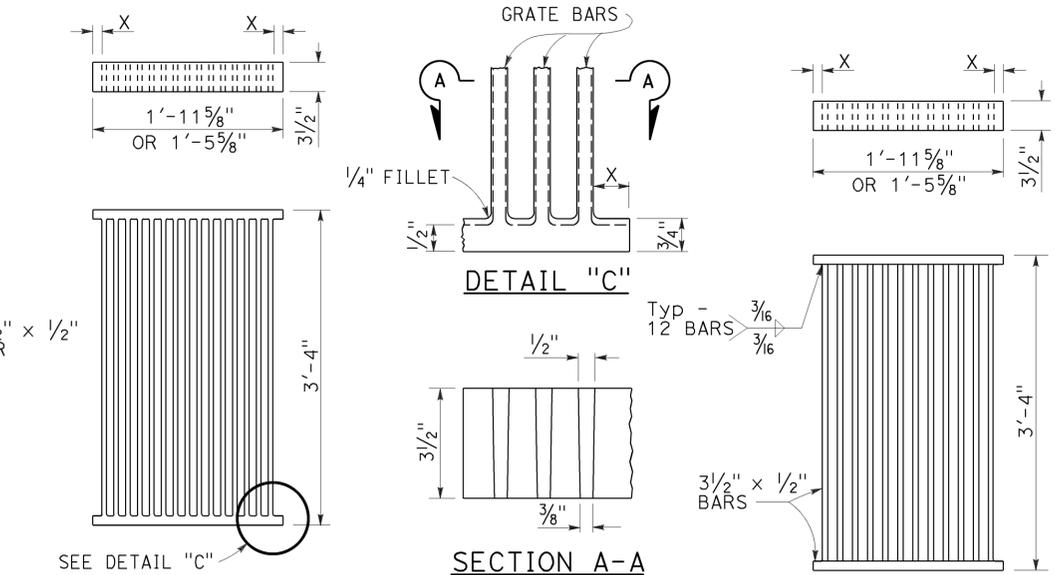
RSP D74B DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN D74B DATED MAY 20, 2011 - PAGE 159 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D74B

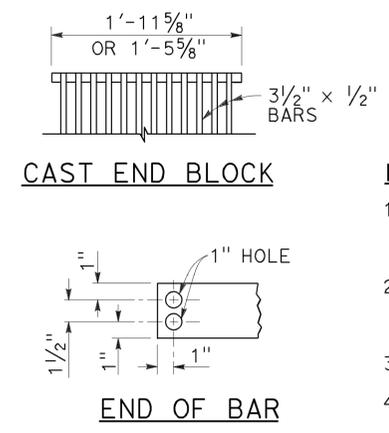
2010 REVISED STANDARD PLAN RSP D74B



RECTANGULAR GRATE DETAILS
(See table below)

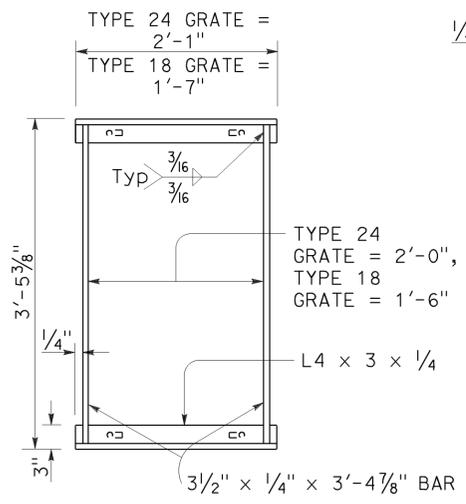


ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE
ALTERNATIVE WELDED GRATE

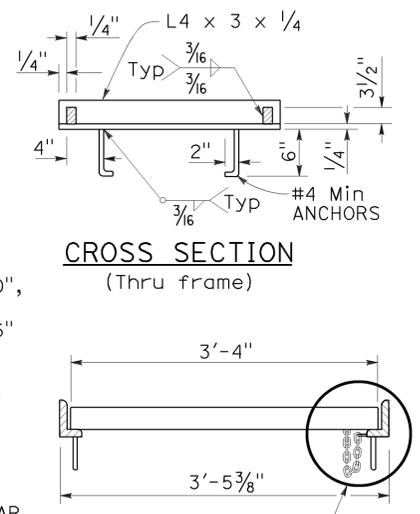


CAST END BLOCK
END OF BAR

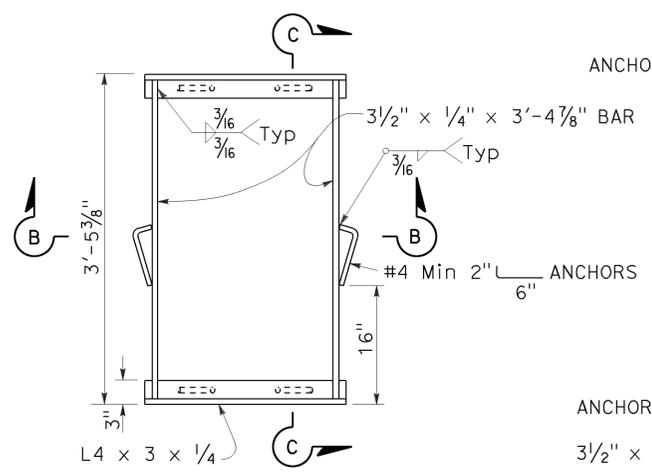
- NOTES:**
- Grate type numbers refer to approximate width of grate in inches and number of bars, respectively.
 - Contractor has the option of using cast ductile iron, cast carbon steel, welded, bolted, or cast end block grate.
 - Rounded top of bars optional on all grates.
 - Pipe inlets with a grate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



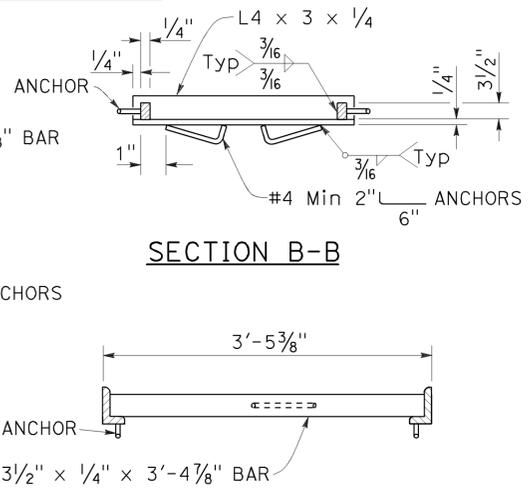
TYPICAL FRAME



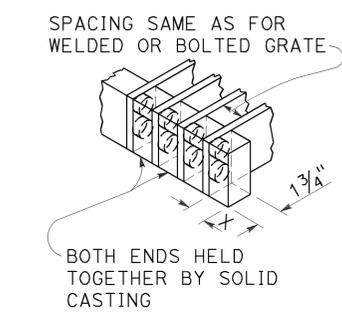
CROSS SECTION (Thru frame)
LONGITUDINAL SECTION (Thru frame and grate)



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



SECTION B-B
SECTION C-C



ALTERNATIVE CAST DUCTILE IRON OR CAST CARBON STEEL END BLOCK GRATE

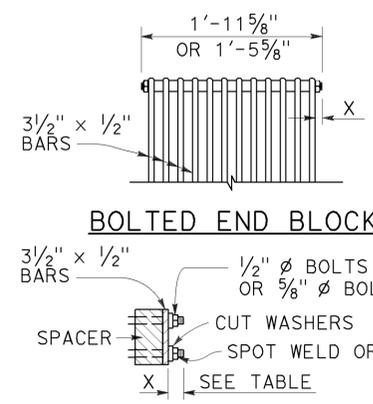
RECTANGULAR FRAME DETAILS
(For all rectangular grates)

GRATE BAR SPACING TABLE

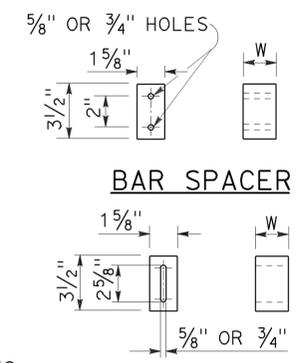
TYPE	NO. OF BARS	CLEAR BAR SPACING	X
18-9	9	1 3/8"	1 1/16"
24-9	9	2"	1 9/16"
24-12	12	1 3/8"	1 1/4"

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

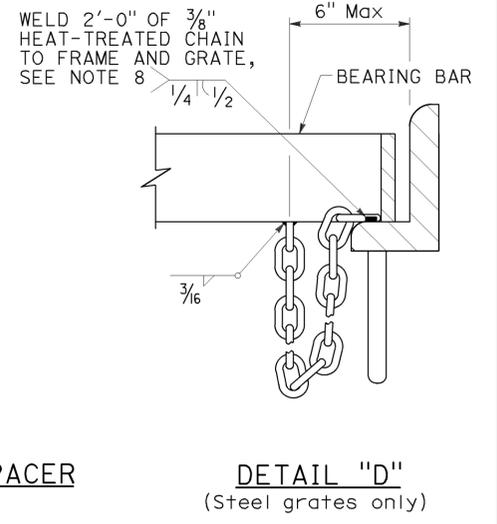
INLET TYPE	GRATE TYPE	NO. OF GRATES	WEIGHT LB
GDO	24-12	2	634
GOL-7	24-12	1	326
GOL-10	24-12	1	326
G0,G1,G2,G3,G4 (TYPE 24)	24-9	1	263
	24-12	1	326
G4 (TYPE 18),G5,G6	18-9	1	249
GT1	18-9	2	498
GT2	18-9	2	498
GT3	24-12	2	652
GT4	24-12	2	652
TRASH RACK			22
GRATE CHAIN			3



BOLTED END BLOCK
BOLTING DETAIL
ALTERNATIVE BOLTED GRATE



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



DETAIL "D"
(Steel grates only)

GRATE DETAILS No. 1
NO SCALE

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

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

REVISED STANDARD PLAN RSP D77A

2010 REVISED STANDARD PLAN RSP D77A

DESIGN NOTES:

Design Specifications:
AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments.

Loading:
Live load: (AASHTO LRFD 3.6.1.2)
HL-93 consists of design truck or design tandem and design lane load.

Impact Factor: (Apply to roof slab only)
 $IM = 33(1.0 - 0.125D_e) \geq 0\%$ (AASHTO LRFD 3.6.2.2)
 D_e = minimum depth of earth cover

Earth load:
Earth pressure for two conditions:
140 pcf vertical, 42 pcf horizontal
140 pcf vertical, 140 pcf horizontal

Load Factors:
AASHTO LRFD Table 3.4.1.1 & Table 3.4.1.2

Unit stresses:
 $f'_c = 3600$ psi
 $f_y = 60,000$ psi

Distribution "d" bars:
Up to and including 10'-0" cover
Express as a percentage of main positive reinforcement required: $\frac{100}{\sqrt{s}}$, Max 50%,
Over 10'-0" cover,
4 @ 12 maximum

Shear:
 $V_c = \{2.14\sqrt{f'_c} + 4600 \frac{A_s V_{ud_e}}{b d_e M_u}\} b \cdot d_e \leq 4.0 \sqrt{f'_c} b \cdot d_e$ (Pounds)
 V_c shall not be less than $3.00 \sqrt{f'_c} b \cdot d_e$ for frame members and $2.5 \sqrt{f'_c} b \cdot d_e$ for simply supported members.

Exclusion:
Compressive reinforcement and negative moment reduction (for continuity) do not apply.
Axial loading on members has not been considered.

CONSTRUCTION NOTES:

Construction loads:
Strutting required as shown on Standard Plan D88.
Strutting may be required on culvert extensions when existing parapet is removed.

Expansion joints:
Invert:
No expansion joints shall be permitted.

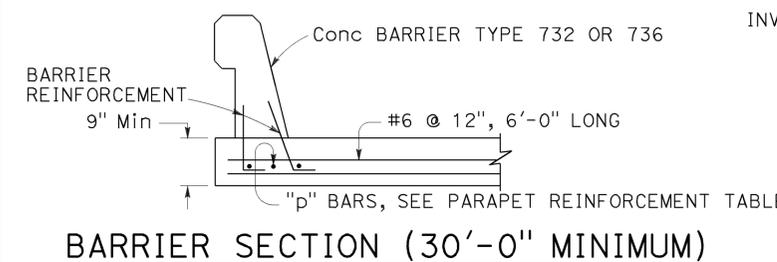
Roof and Walls:
When cover is less than span length-
Place 1/2" premolded expansion joint filler at 30'-0" ± centers outside the paved roadway lanes and place Bridge Detail 3-2, Standard Plan B0-3, at 30'-0" centers under paved roadway lanes.
When cover is more than span length-
Place 1/2" premolded expansion joint filler at 30'-0" ± centers and additional 1/2" premolded expansion joints at locations of change in foundation character, as directed by the Engineer.

Construction joints:
Temporary joints may be permitted if normal (or radial) to ϕ of RCB. Otherwise, the contractor is to submit a proposal for consideration.

Cutoff walls:
4'-0" cutoff walls are to be provided at inlet and/or outlet unless adjacent channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant.

Earthwork:
See Standard Plan A62E.

Backfill:
See Standard Specifications, except that the difference in level of backfill (against outside walls) shall not exceed 2'-0".



GENERAL NOTES:

Designation:
Standard single or multiple box culverts are shown on plans as span times height with maximum cover over roof thus: 8' x 5' RCB with 10' or double 10' x 5' RCB with 20', followed by alternatives.

Alternatives:
Single cell: Invert will be sloped unless "trapezoidal invert", "flat invert" or "V invert" is included in designation.
Multiple cell: Invert will be vee unless "flat invert" is specified. Ends of culvert will be rounded unless "square ends" are designated. Parapets will be as shown unless designated in plans. Such designations may be different for inlet and outlet ends.

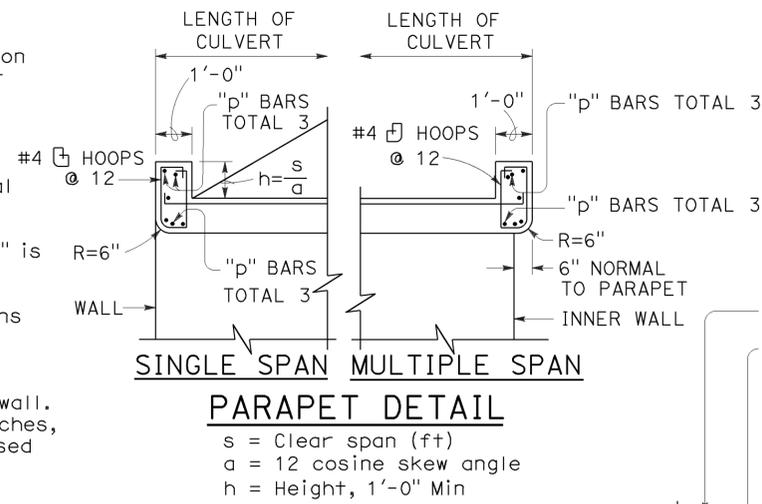
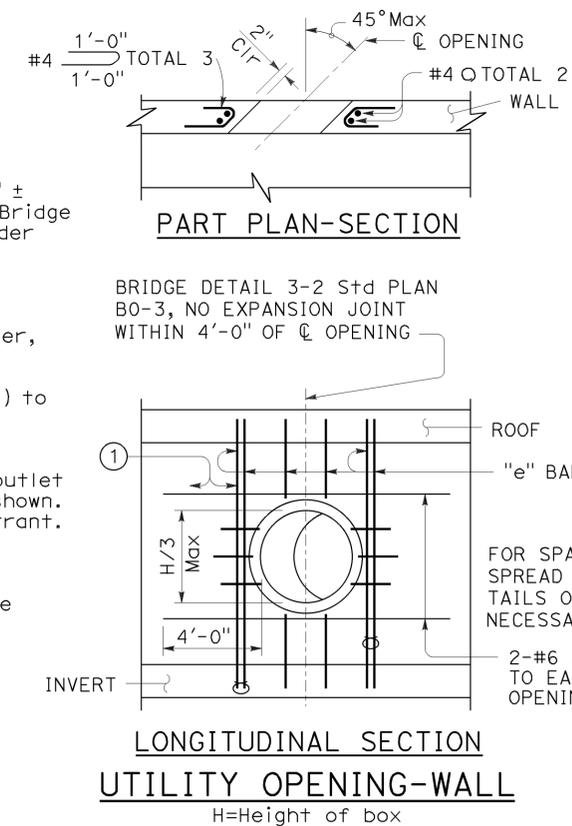
Quantities:
Quantities do not include the following:
• Concrete for parapet, paving notches and cut-off wall.
• Reinforcement for 2% splices, parapets, paving notches, cut-off wall and additional required bars for exposed top slab (D-80, Note 9).

Reinforcement placement:
Main reinforcement is to be placed transversely or, for curved culverts, radially. When radial, reinforcing spacing of the "a", "f" and "g" bars is measured along the centerline. Stagger splices not shown. Hooks may be rotated or tilted, as necessary, for clearance.

Special reinforcement coverage:
Box standard plans are not to be used for culverts in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

Special design:
Required for culverts with conditions, loads, design bearing pressures or sizes greater than those given on this plan or Standard Plans D80 & D81. Also required for multiple cell culverts with unequal spans. For culverts with railroad loading, see the current AREMA design specification.

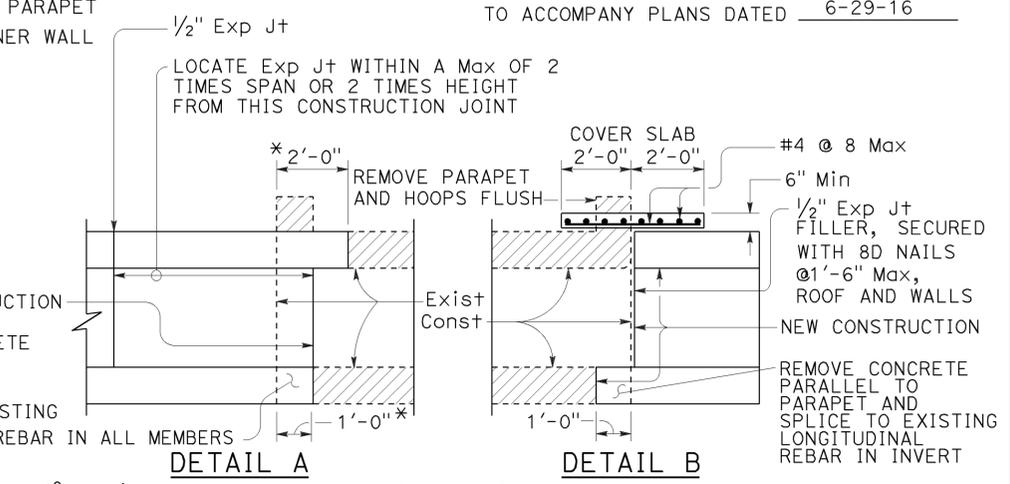
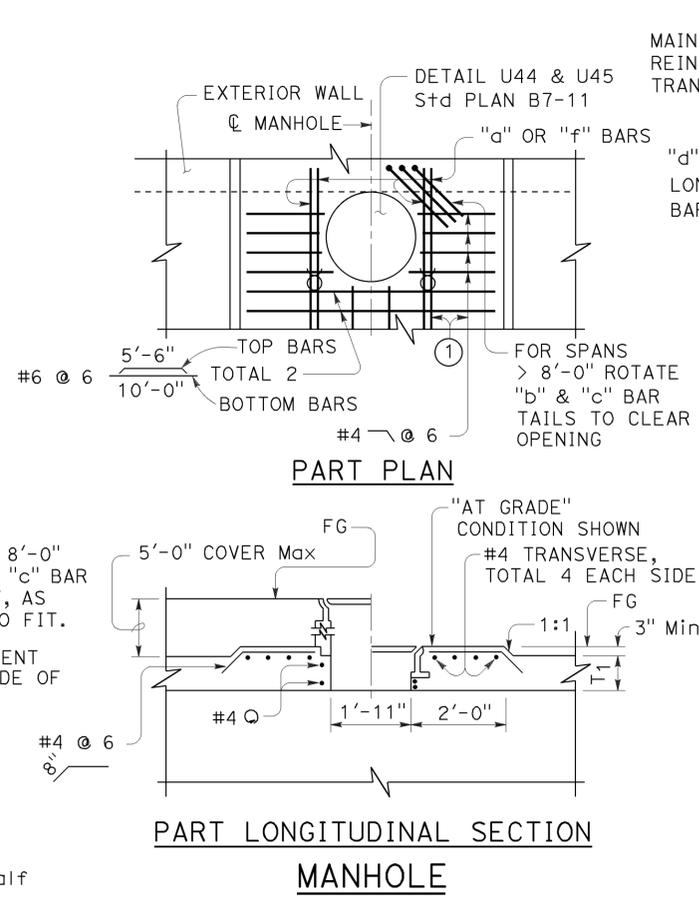
3 or more cells:
For culverts with more than two cells, use dimensions and reinforcement for the standard "double box culvert" and adjust quantities accordingly.



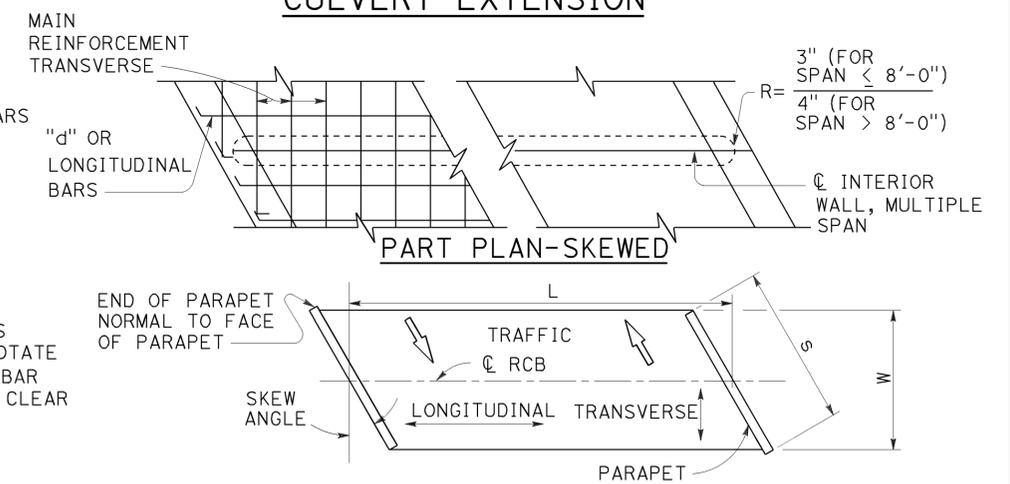
PARAPET "p" BARS

SPAN	SKEW ANGLE TO		
	0° TO 15°	16° TO 30°	31° TO 45°
4'	#4	#4	#4
6'	#4	#4	#5
8'	#4	#5	#6
10'	#5	#6	#7
12'	#6	#7	#8
14'	#7	#8	#9

PARAPET REINFORCEMENT



CULVERT EXTENSION



RCB TERMINOLOGY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS

NO SCALE

RSP D82 DATED JULY 18, 2014 SUPERSEDES STANDARD PLAN D82 DATED MAY 20, 2011 - PAGE 174 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D82

2010 REVISED STANDARD PLAN RSP D82

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3	394	568

REGISTERED CIVIL ENGINEER
Carl M. Duan
No. C59976
Exp. 6-30-16
CIVIL
STATE OF CALIFORNIA

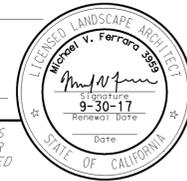
July 18, 2014
PLANS APPROVAL DATE

TO ACCOMPANY PLANS DATED 6-29-16

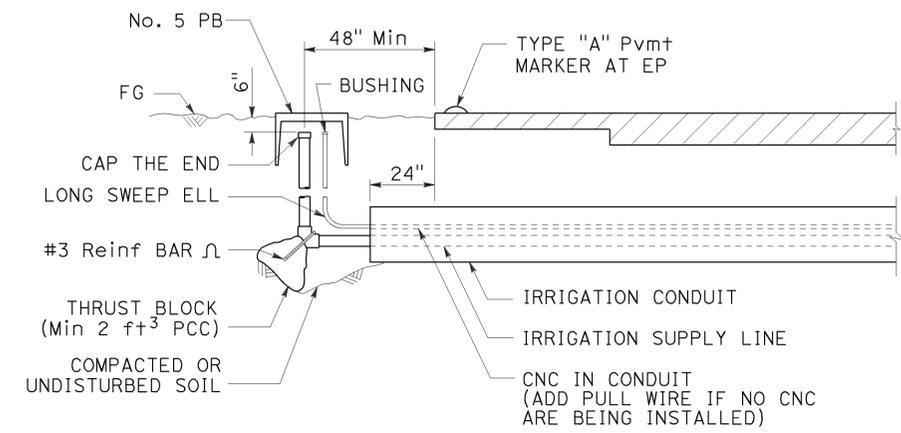
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	395	568

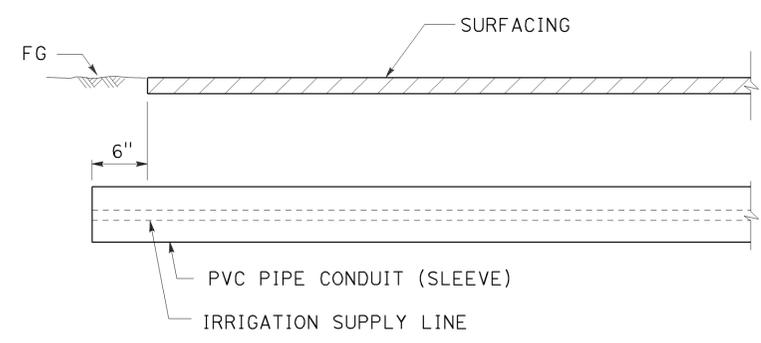
Signature: *Michael V. Ferraro*
 LICENSED LANDSCAPE ARCHITECT
 April 15, 2016
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



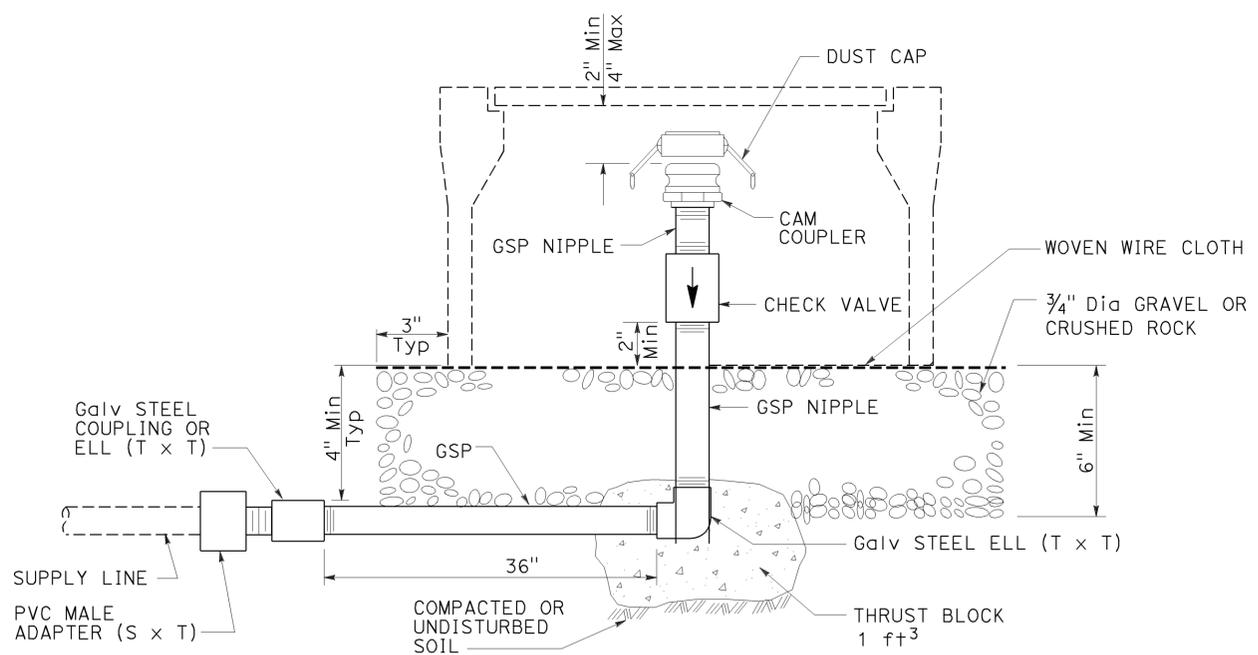
TO ACCOMPANY PLANS DATED 6-29-16



SECTION
IRRIGATION CONDUIT
UNDER TRAVELED WAY



SECTION
PVC PIPE CONDUIT (SLEEVE)
UNDER SIDEWALKS, DRIVEWAYS AND PATHS



ELEVATION
CAM COUPLER ASSEMBLY

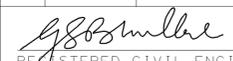
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
NO SCALE

RSP H9 DATED APRIL 15, 2016 SUPERSEDES RSP H9 DATED JULY 19, 2013 AND STANDARD PLAN H9 DATED MAY 20, 2011 - PAGE 226 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H9

2010 REVISED STANDARD PLAN RSP H9

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	396	568


 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE



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

TO ACCOMPANY PLANS DATED 6-29-16

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
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

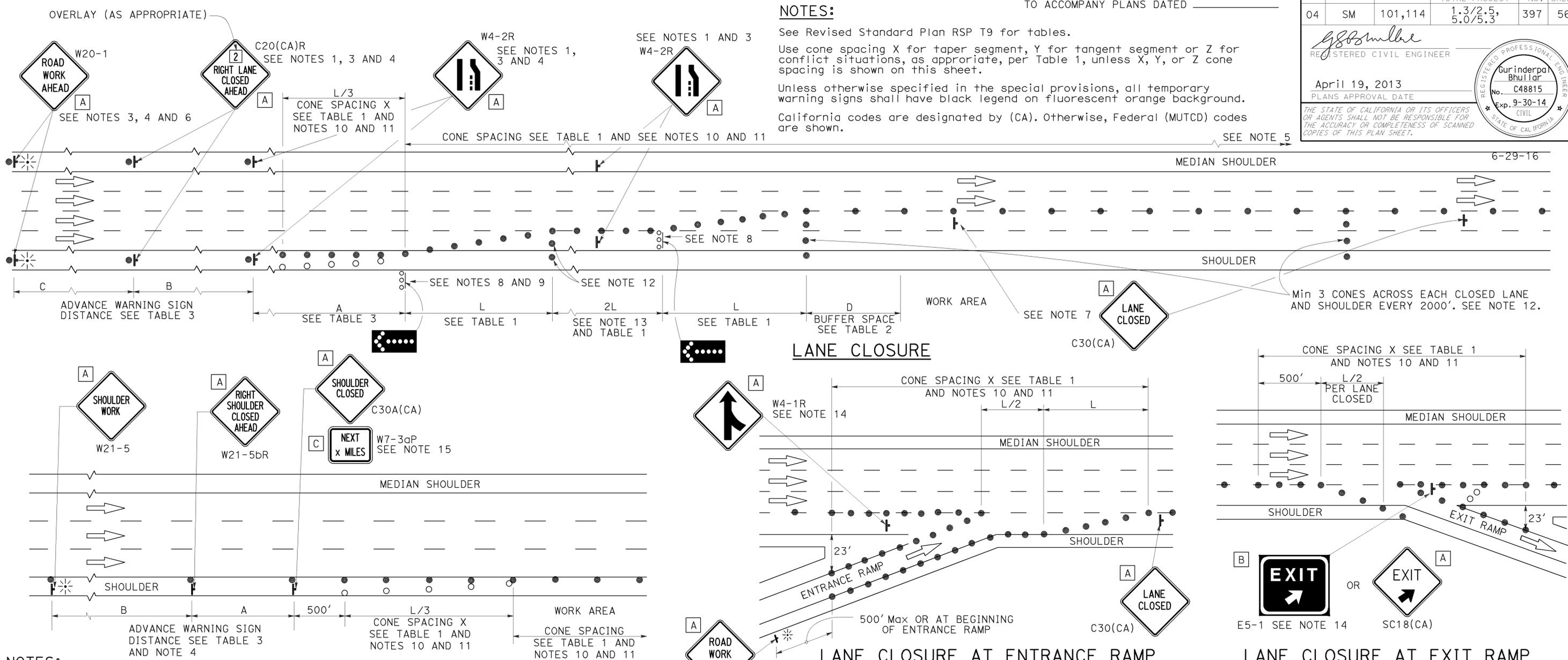
RSP T9 DATED JULY 19, 2013 SUPERSEDES RSP T9 DATED APRIL 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP T9

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	397	568

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.

2010 REVISED STANDARD PLAN RSP T10



NOTES:
 TO ACCOMPANY PLANS DATED _____
 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.

- NOTES:**
1. Median lane closures shall conform to the details as shown except that C20(CA)L and W4-2L signs shall be used.
 2. At least one person shall be assigned to provide full time maintenance of traffic control devices for lane closures.
 3. Duplicate sign installations are not required:
 - a) On opposite shoulder if at least one-half of the available lanes remain open to traffic.
 - b) In the median if the width of the median shoulder is less than 8' and the outside lanes are to be closed.
 4. 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.
 5. 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**
6. 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)L and W4-2L signs shall be used.
 7. Place a C30(CA) sign every 2000' throughout length of lane closure.
 8. One flashing arrow sign for each lane closed. The flashing arrow signs shall be Type I.
 9. 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.
 10. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
 11. Portable delineators, placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.

12. 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.
13. 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.
14. Unless otherwise specified in the special provisions, the E5-1 or SC18(CA) and W4-1 signs shall be used as shown.
15. 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	398	568

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

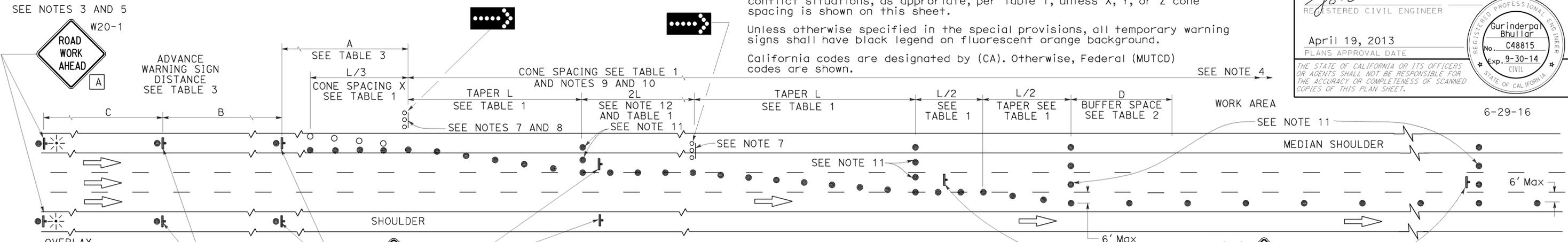
April 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES: See Revised Standard Plan RSP T9 for tables.

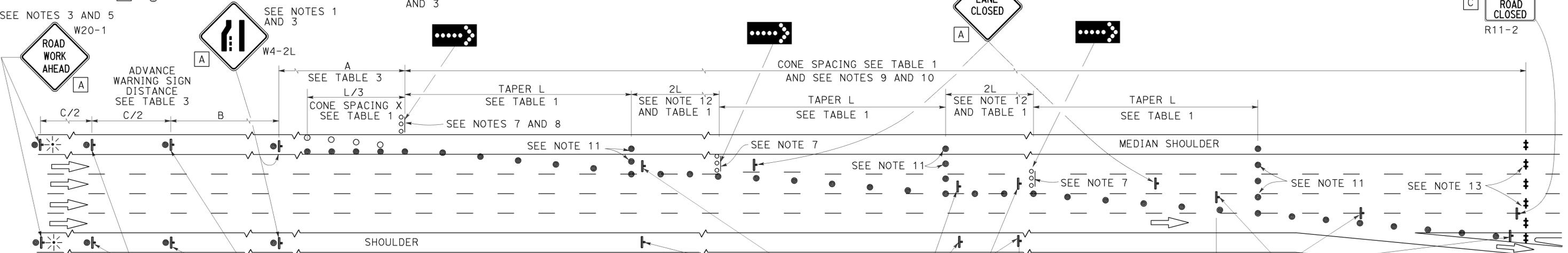
Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

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.



LANE CLOSURE WITH PARTIAL SHOULDER USE



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

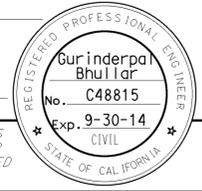
**TRAFFIC CONTROL SYSTEM
FOR LANE CLOSURES ON
FREEWAYS AND EXPRESSWAYS**

NO SCALE

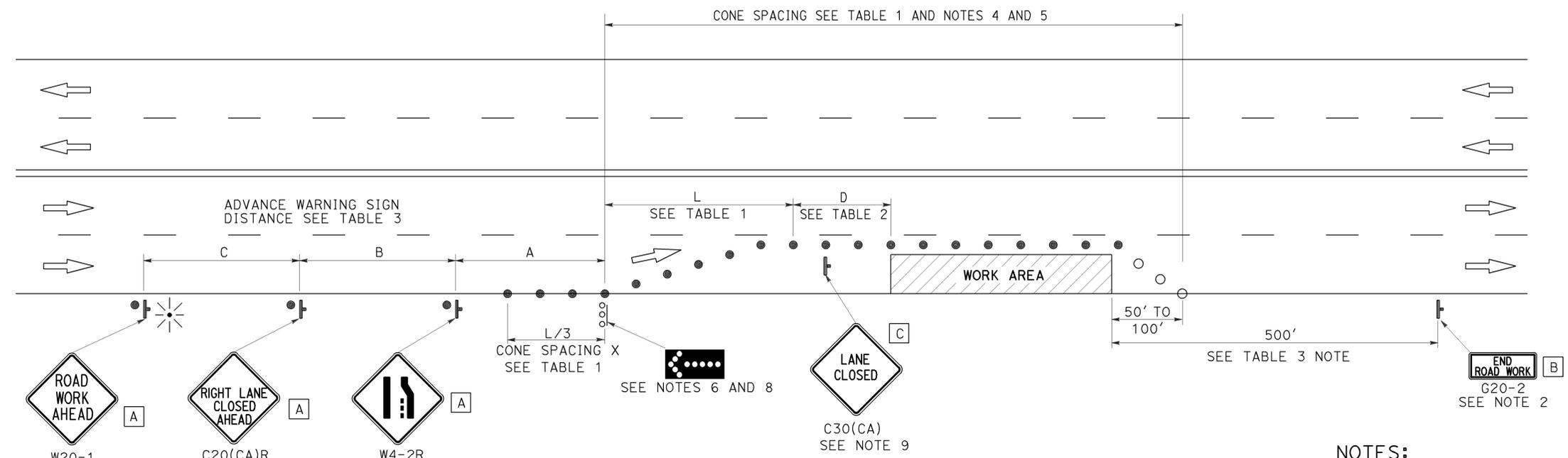
RSP T10A DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T10A DATED MAY 20, 2011 - PAGE 238 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T10A

2010 REVISED STANDARD PLAN RSP T10A



TO ACCOMPANY PLANS DATED 6-29-16



TYPICAL LANE CLOSURE

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.

NOTES:

- Each advance warning 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. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
- A G20-2 "END ROAD WORK" sign, 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.
- 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.
- Flashing arrow sign shall be either Type I or Type II.
- For approach speeds over 50 mph, use the "Traffic Control System for Lane Closure On Freeways And Expressways" plan for lane closure details and requirements.
- 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.
- Place a C30(CA) sign every 2000' throughout length of lane closure.
- 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 closure unless, otherwise directed by the Engineer.

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 36" x 18"
- C 30" x 30"

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**TRAFFIC CONTROL SYSTEM
 FOR LANE CLOSURE ON
 MULTILANE CONVENTIONAL
 HIGHWAYS**

NO SCALE

RSP T11 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T11 DATED MAY 20, 2011 - PAGE 239 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T11

2010 REVISED STANDARD PLAN RSP T11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	101,114	1.3/2.5, 5.0/5.3'	400	568

REGISTERED CIVIL ENGINEER
 April 19, 2013
 PLANS APPROVAL DATE
 Gurinderpal Bhullar
 No. C48815
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEGEND

- TRAFFIC CONE
- ⌋ TEMPORARY TRAFFIC CONTROL SIGN
- ⋯ FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- ⊛ PORTABLE FLASHING BEACON

SIGN PANEL SIZE (Min)

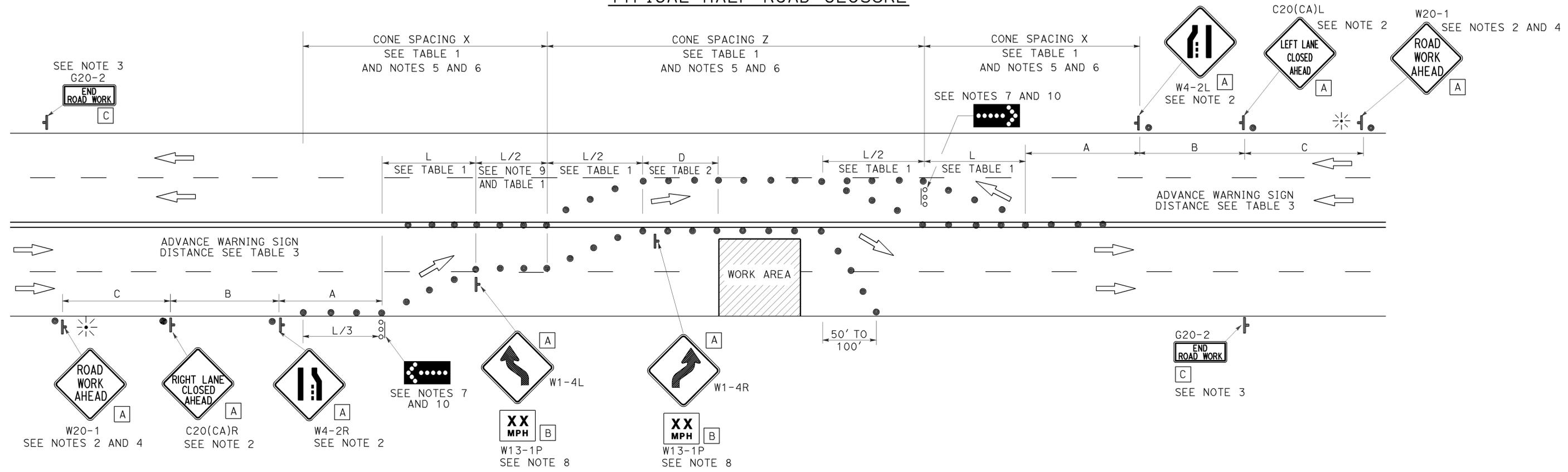
- A 48" x 48"
- B 24" x 24"
- C 36" x 18"

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.

TO ACCOMPANY PLANS DATED 6-29-16

TYPICAL HALF ROAD CLOSURE



NOTES:

1. At least one person shall be assigned to provide full time maintenance of traffic control devices for lane closure unless, otherwise directed by the Engineer.
2. Each advance warning sign in each direction of travel 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.
3. A G20-2 "END ROAD WORK" sign, 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.
4. 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.
5. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
6. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime closures only.
7. Flashing arrow signs shall be either Type I or Type II.
8. Advisory speed will be determined by the Engineer. The W13-1P Plaque will not be required when advisory speed is more than the posted or maximum speed limit.
9. Unless otherwise specified in the special provisions, the tangent (L/2) shall be used.
10. 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.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**TRAFFIC CONTROL SYSTEM
 FOR HALF ROAD CLOSURE ON
 MULTILANE CONVENTIONAL
 HIGHWAYS AND EXPRESSWAYS**
 NO SCALE

RSP T12 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T12
 DATED MAY 20, 2011 - PAGE 240 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T12

2010 REVISED STANDARD PLAN RSP T12