

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	401	635

REGISTERED CIVIL ENGINEER	DATE
3-10-14	2-26-14
PLANS APPROVAL DATE	

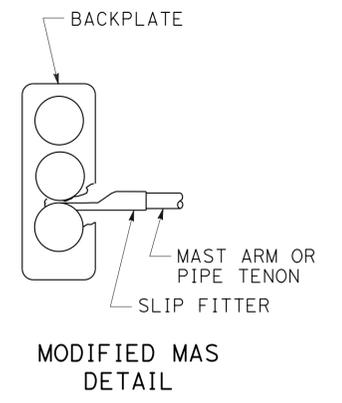
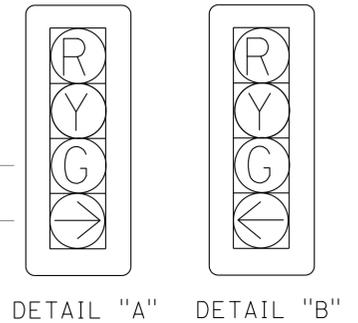
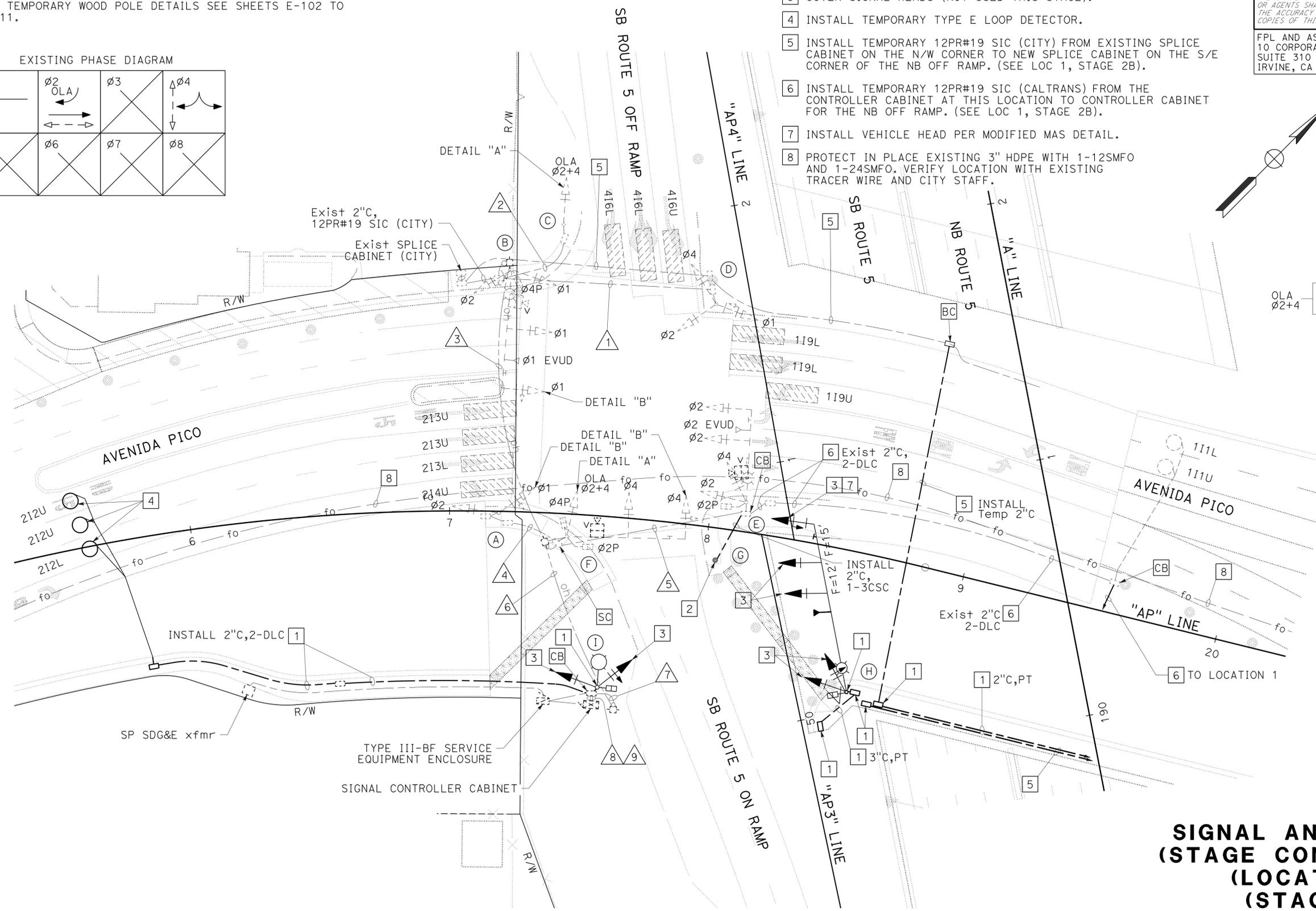
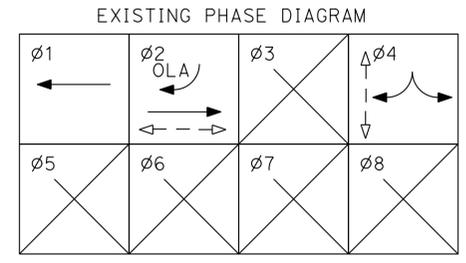
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	--

NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- FOR TEMPORARY POLE AND EQUIPMENT SCHEDULE, AND CONDUIT AND CONDUCTOR SCHEDULE SEE SHEET E-71.
- FOR TEMPORARY WOOD POLE DETAILS SEE SHEETS E-102 TO E-111.

LEGEND: (THIS SHEET ONLY)

- FINAL EQUIPMENT INSTALLED AND PAID FOR IN THIS STAGE. USE FOR STAGE CONSTRUCTION.
- INSTALL TEMPORARY PEDESTRIAN PUSHBUTTON POST.
- COVER SIGNAL HEADS (NOT USED THIS STAGE).
- INSTALL TEMPORARY TYPE E LOOP DETECTOR.
- INSTALL TEMPORARY 12PR#19 SIC (CITY) FROM EXISTING SPLICE CABINET ON THE N/W CORNER TO NEW SPLICE CABINET ON THE S/E CORNER OF THE NB OFF RAMP. (SEE LOC 1, STAGE 2B).
- INSTALL TEMPORARY 12PR#19 SIC (CALTRANS) FROM THE CONTROLLER CABINET AT THIS LOCATION TO CONTROLLER CABINET FOR THE NB OFF RAMP. (SEE LOC 1, STAGE 2B).
- INSTALL VEHICLE HEAD PER MODIFIED MAS DETAIL.
- PROTECT IN PLACE EXISTING 3" HDPE WITH 1-12SMFO AND 1-24SMFO. VERIFY LOCATION WITH EXISTING TRACER WIRE AND CITY STAFF.

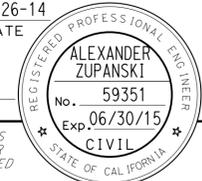


**SIGNAL AND LIGHTING
(STAGE CONSTRUCTION)
(LOCATION 2)
(STAGE 2B)**
SCALE 1" = 20'

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	REVISOR	DATE
Caltrans	ALEXANDER ZUPANSKI	MIKE HONDA	
	CHECKED BY	RICHARD IVY	
	DESIGNED BY		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	402	635

 2-26-14
 REGISTERED CIVIL ENGINEER DATE
 3-10-14
 PLANS APPROVAL DATE


FPL AND ASSOCIATES, INC. ORANGE COUNTY TRANSPORTATION AUTHORITY
 10 CORPORATE PARK SUITE 310 550 SOUTH MAIN STREET
 IRVINE, CA 92606 ORANGE, CA 92863

POLE AND EQUIPMENT SCHEDULE

No.	STANDARD			VEH SIG MTG			PED SIGNAL		PPB		LUMINAIRE	SPECIAL REQUIREMENTS	
	Type	SMA	LMA	Ø	MAST ARM	Ø	POLE	Ø	MTG	Ø			ARROW
(A)	1-A	-	-	-	-	1,2	TV-2-T	-	-	4	→	-	
(B)	26A-4-100	45'	12'	1	2-MAS	1,2	2-SV-1-TA	4	SP-1-T	4	←	HPS 310 W	
(C)	1-A	-	-	-	-	4	TV-1-T	-	-	-	-	-	
(D)	1-A	-	-	-	-	1,2,4	TV-3-TA	-	-	-	-	-	
(E)	24A-3-100	35'	12'	2	2-MAS	2	SV-1-T	2	SP-1-T	-	-	HPS 310 W	
(F)	27-3-100	45'	12'	4	2-MAS	4	SV-1-T	2,4	SP-2-T	2	←	-	
(T)	(G)	PPB POST	-	-	-	-	-	-	-	2	→	-	
(F)	(H)	61-5-100	65'	12'	2	*3-MAS	2,4	SV-2-TD	2	SP-1-T	2	←	LED 165 W
(F)	(I)	15TS	-	12'	-	-	1,2	SV-2-TA	2	SP-1-T	4	→	LED 165 W

ALL EQUIPMENT IS EXISTING UNLESS NOTED OTHERWISE.
 (T) = TEMPORARY.
 (F) = FINAL.
 * = END MAST ARM MOUNT IS MODIFIED PER DETAIL ON SHEET E-70.

CONDUIT AND CONDUCTOR SCHEDULE

CABLE SCHEDULE			CONDUCTOR RUN NUMBER								
CABLE TYPE	STD	PHASE	1	2	3	4	5	6	7	8	9
VEH-PED 12CSC	(A)	Ø1,Ø2	Ø4PPB			1T	1T				
	(B)	Ø1,Ø2,Ø4P	Ø4PPB								
	(C)	Ø4		1T							
	(D)	Ø1,Ø2,Ø4	2T		2T						
PPB 3CSC	(E)	Ø2,Ø4,Ø2P				1					
	(F)	Ø4,Ø2P,Ø4P	Ø2PPB								
	(G)		Ø2PPB				1T	1T	1T	1T	
	(H)										
	(I)										
TOTAL CABLES 12/3 CONDUCTORS			2	1	2	1	1	1	1	1	1
28 CSC			-	-	1T	-	-	1T	1T	1T	-
#10 TYPE B DLC	LIGHTING		-	-	2T	-	2T	2T	2T	-	-
	Ø1		-	-	-	-	2T	2T	2T	-	2T
	Ø2		-	-	-	-	-	-	-	-	2F
TOTAL DLC			-	-	-	-	2	2	2	-	4
VIVDS CABLE	Ø1		-	-	1	-	-	1	1	-	1
	Ø2		-	-	-	-	1T	1T	1T	-	1T
	Ø4		-	-	-	-	1T	1T	-	1T	
	TOTAL		-	-	1	-	1	3	3	-	3
EVUC			-	-	1T	-	1T	2T	2T	-	2T
12PR#19 SIC (CALTRANS)			-	-	-	-	1T	1T	1T	-	1T
12PR#19 SIC (CITY)			1T	-	1T	-	-	1T	1T	1T	-
PERCENT FILL			E	E	-	7%	19%	-	23%	5%	8%
CONDUIT SIZE			2 1/2"	2"	0H	3"	3"	0H	3"	4"F	4"F

ALL CONDUITS AND CONDUCTORS ARE EXISTING UNLESS NOTED OTHERWISE.
 T = TEMPORARY.
 OH = OVERHEAD.
 F = FOR INFORMATION ONLY. CONDUIT, CONDUCTORS/CABLE PER FINAL SIGNAL PLAN.
 E = EXISTING.

**SIGNAL AND LIGHTING
 (STAGE CONSTRUCTION)
 (LOCATION 2)
 (STAGE 2B)**
 NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

 CONSULTANT: FUNCTIONAL SUPERVISOR
 ALEXANDER ZUPANSKI
 CALCULATED/DESIGNED BY
 CHECKED BY
 REVISIONS: 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1
 REVISIONED BY: MIKE HONDA, RICHARD IVY
 DATE REVISIONED:

LAST REVISION: DATE PLOTTED => 07-AUG-2014
 00-00-00 TIME PLOTTED => 06:41

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	406	635

REGISTERED CIVIL ENGINEER DATE 2-26-14

PLANS APPROVAL DATE 3-10-14

ALEXANDER ZUPANSKI
No. 59351
Exp. 06/30/15
CIVIL

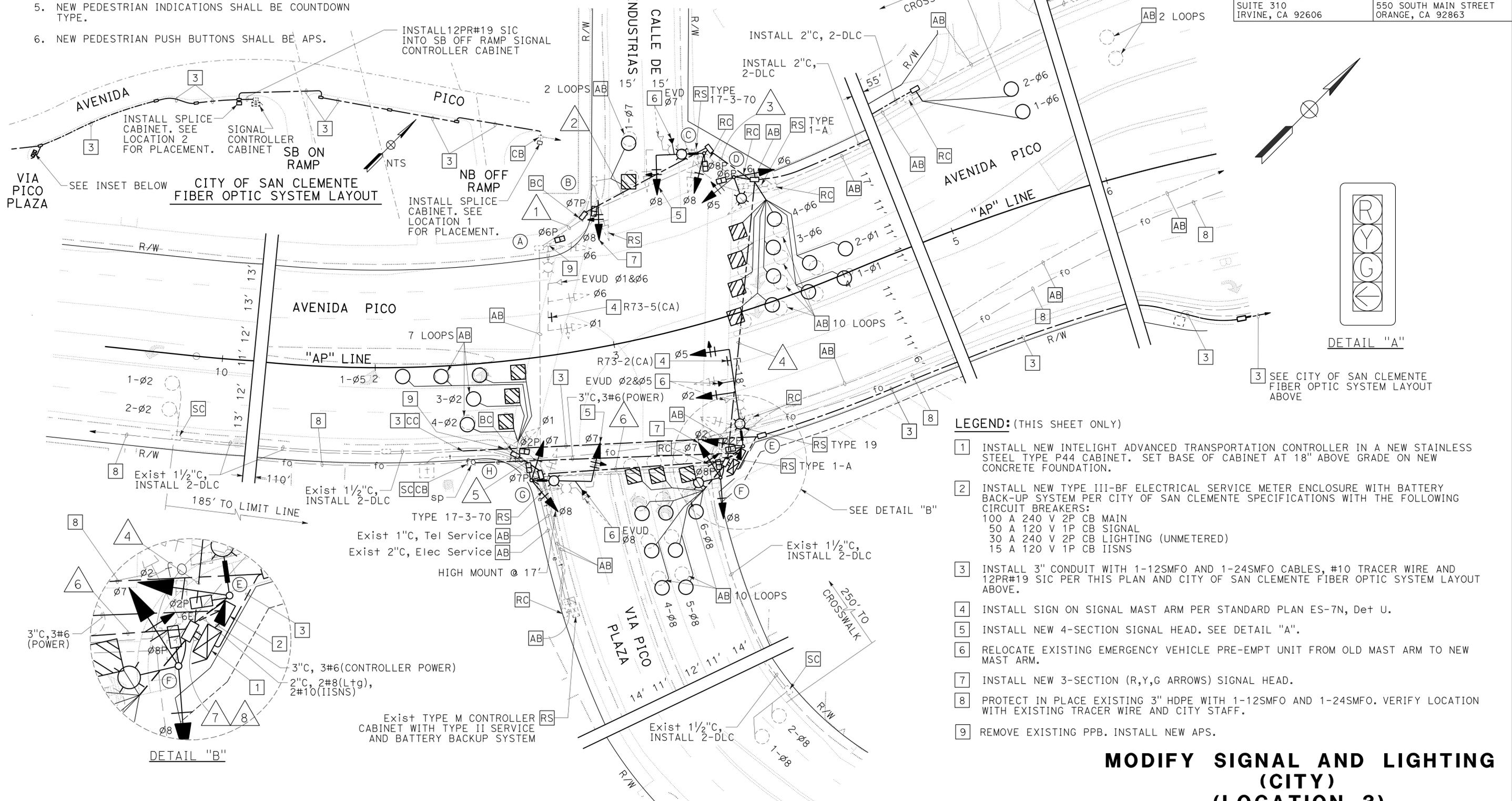
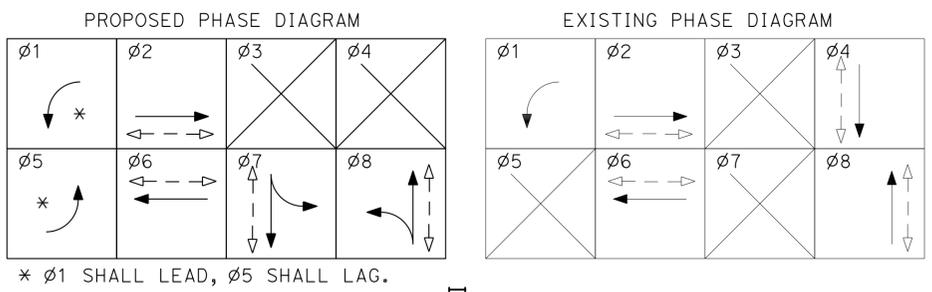
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606

ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863

NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- FOR POLE AND EQUIPMENT SCHEDULE AND CONDUIT AND CONDUCTOR SCHEDULE, SEE SHEET E-76.
- POLES TO BE REMOVED SHALL HAVE THEIR FOUNDATIONS REMOVED COMPLETELY.
- NEW VEHICLE INDICATIONS SHALL HAVE 12" L.E.D. LENSES.
- NEW PEDESTRIAN INDICATIONS SHALL BE COUNTDOWN TYPE.
- NEW PEDESTRIAN PUSH BUTTONS SHALL BE APS.



- LEGEND: (THIS SHEET ONLY)**
- INSTALL NEW INTELLIGHT ADVANCED TRANSPORTATION CONTROLLER IN A NEW STAINLESS STEEL TYPE P44 CABINET. SET BASE OF CABINET AT 18" ABOVE GRADE ON NEW CONCRETE FOUNDATION.
 - INSTALL NEW TYPE III-BF ELECTRICAL SERVICE METER ENCLOSURE WITH BATTERY BACK-UP SYSTEM PER CITY OF SAN CLEMENTE SPECIFICATIONS WITH THE FOLLOWING CIRCUIT BREAKERS:
100 A 240 V 2P CB MAIN
50 A 120 V 1P CB SIGNAL
30 A 240 V 2P CB LIGHTING (UNMETERED)
15 A 120 V 1P CB IISNS
 - INSTALL 3" CONDUIT WITH 1-12SMFO AND 1-24SMFO CABLES, #10 TRACER WIRE AND 12PR#19 SIC PER THIS PLAN AND CITY OF SAN CLEMENTE FIBER OPTIC SYSTEM LAYOUT ABOVE.
 - INSTALL SIGN ON SIGNAL MAST ARM PER STANDARD PLAN ES-7N, Det U.
 - INSTALL NEW 4-SECTION SIGNAL HEAD. SEE DETAIL "A".
 - RELOCATE EXISTING EMERGENCY VEHICLE PRE-EMPT UNIT FROM OLD MAST ARM TO NEW MAST ARM.
 - INSTALL NEW 3-SECTION (R,Y,G ARROWS) SIGNAL HEAD.
 - PROTECT IN PLACE EXISTING 3" HDPE WITH 1-12SMFO AND 1-24SMFO. VERIFY LOCATION WITH EXISTING TRACER WIRE AND CITY STAFF.
 - REMOVE EXISTING PPB. INSTALL NEW APS.

MODIFY SIGNAL AND LIGHTING (CITY) (LOCATION 3)

SCALE 1" = 20'

E-75

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

REVISIONS: 00-00-00 TIME PLOTTED => 06:41

REVISOR: MIKE HONDA, RICHARD IVY, ALEXANDER ZUPANSKI

DATE: [blank]

DESIGNER: [blank]

CHECKER: [blank]

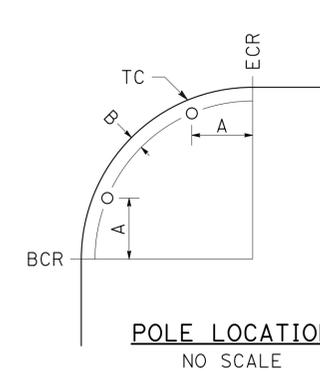
DATE: [blank]

DATE: [blank]

POLE AND EQUIPMENT SCHEDULE

No.	STANDARD			VEH SIG MTG			PED SIGNAL		APS		HPS LUMINAIRE	POLE Loc (ft)		L.E.D. IISNS
	Type	SMA	LMA	∅	MAST ARM	∅	POLE	∅	MTG	∅		ARROW	A	
(A)	(E) 26-4-70	45'	12'	1,6	2-MAS	8	SV-1-T	6	SP-1-T	7	←	250 W	(E) (E)	(N) Calle De Industrias →
(B)	(E) 1-A	-	-	-	-	8	TV-1-T(N)	7	SP-1-CS	6(N)	→	-	(E) (E)	-
(C)	●17-2-100 (N)	20'(N)	12'(N)	8	MAS-4B(N)	8	SV-1-T(N)	8	SP-1-CS (N)	6(N)	←	250 W	8' 5'	(N) Avenida Pico
(D)	15TS (N)	-	12'(N)	-	-	5,6	SV-2-TA(N)	6	SP-1-CS (N)	8(N)	→	250 W (N)	12' 5'	-
(E)	●26A-4-100 (N)	40'(N)	15'(N)	2,5	2-MAS(N)	2	SV-1-T(N)	2	SP-1-CS (N)	8(N)	←	250 W (N)	1' 6'	(N) Via Pico Plaza →
(F)	15TS (N)	-	12'(N)	-	-	7,8	SV-2-TA(N)	8	SP-1-CS (N)	2(N)	→	250 W (N)	1' 5/2'	-
(G)	●19-2-100 (N)	25'(N)	12'(N)	7	MAS-4B(N)	7,8	SV-1-T(N)	7	SP-1-CS (N)	2(N)	←	250 W (N)	7' 6.5'	(N) Avenida Pico
(H)	(E) 1-A	-	-	-	-	1	TV-1-T	2	SP-1-CS	7	→	-	(E) (E)	-

(E) = EXISTING.
 (N) = NEW.
 ● = POT HOLE PRIOR TO ORDERING POLE.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	407	635

2-26-14
DATE

REGISTERED CIVIL ENGINEER
 ALEXANDER ZUPANSKI
 No. 59351
 Exp. 06/30/15
 CIVIL
 STATE OF CALIFORNIA

3-10-14
PLANS APPROVAL DATE

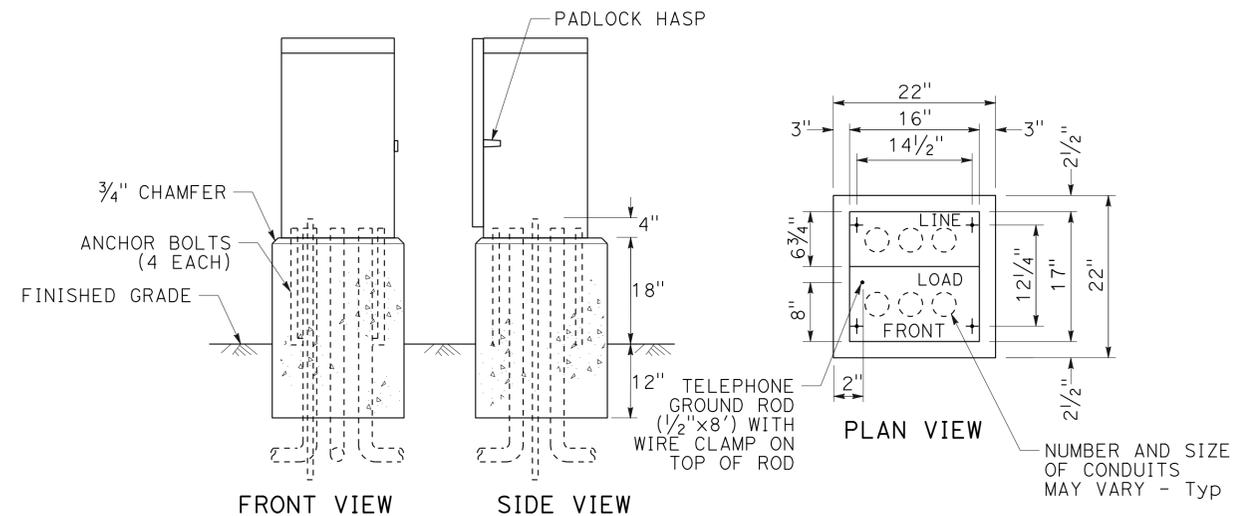
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	--

CONDUIT AND CONDUCTOR SCHEDULE

CONDUCTOR DESIGNATION			RUN NUMBER												
CABLE TYPE	Std (X)	PHASE	NUMBER OF CONDUCTORS												
			1	2	3	4	5	6	7	8					
VEH PED 12CSC	(A)	∅1,∅6,∅6P	∅7	1	1	1	1	1	-	-	-	1	-	-	1
	(B)	∅8,∅7P	∅6	-	-	1	1	1	-	-	-	-	1	-	-
	(C)	∅8,∅8P	∅6	-	-	-	1	1	-	-	-	-	1	-	-
	(D)	∅5,∅6,∅6P	∅8	-	-	-	-	1	-	-	-	-	1	-	-
	(E)	∅2,∅5,∅2P	∅8	-	-	-	-	-	-	-	-	-	1	-	-
	(F)	∅7,∅8,∅8P	∅2	-	-	-	-	-	-	-	-	-	-	1	-
	(G)	∅7,∅8,∅7P	∅2	-	-	-	-	-	-	1	1	1	-	-	-
	(H)	∅1,∅2P	∅7	-	-	-	-	-	1	1	1	1	-	-	-
TOTAL				1	1	2	2	3	3	4	4	1	2	2	8
#8	LIGHTING			2	2	2	2	-	2	-	-	-	-	-	-
	GROUND			1	1	1	1	1	1	1	1	1	1	1	1
	TOTAL			3	3	3	3	1	3	1	1	1	1	1	1
#10	IISNS			2	2	2	2	-	2	-	-	-	-	-	-
	TYPE B DLC	∅1		-	-	-	-	2	-	-	-	-	-	-	2
		∅2		-	-	-	-	-	4	4	-	-	-	-	4
		∅5		-	-	-	-	-	1	1	-	-	-	-	1
		∅6		-	-	-	-	4	-	-	-	-	-	-	4
		∅7		-	1	1	1	-	-	-	-	-	-	-	1
∅8		-	-	-	-	-	-	-	-	-	-	-	5		
TOTAL DLC's PER RUN				-	1	1	7	5	5	-	-	-	-	17	
EVUC	∅1&∅6			1	1	1	1	-	-	-	-	-	-	1	
	∅2&∅5			-	-	-	-	-	-	-	-	-	-	1	
	∅7			-	-	1	1	-	-	-	-	-	-	1	
	∅8			-	-	-	-	-	-	1	-	-	-	4	
TOTAL EVD CABLES				1	1	2	2	-	1	-	-	-	-	4	
PERCENT FILL				29%	21%	27%	27%	17%	21%	25%	22%				
CONDUIT SIZE				2"E	3"	3 1/2"	4"	3"	3 1/2"	4"	4"				

ALL CONDUITS ARE NEW EXCEPT AS NOTED.
 ALL CABLES AND CONDUCTORS ARE NEW.
 E = EXISTING.



SPLICE CABINET NOTES:

- FOUNDATION TO BE 22"x22". ANCHOR BOLT PLACEMENT PER CABINET MAUFACTURER'S TEMPLATE.
- ENCLOSURE SHALL BE FURNISHED WITH A DETACHABLE STAINLESS STEEL BASE.
- ALL FACTORY INSTALLED COMPONENTS SHALL BE U.L. LISTED OR PER PUBLISHED N.E.C. STANDARDS.
- A 3/4" CONSTRUCTION GRADE PLYWOOD SHALL BE FASTENED TO THE REAR WALL. PANEL SHALL BE 12"x24" AND SHALL HAVE A No. U-25 AND R-841 STANDOFF FASTENED IN THE CENTER OF THE PANEL.
- ENCLOSURE, BASE, AND ALL HARDWARE AND APPURTENANCES SHALL BE STAINLESS STEEL INSIDE AND OUT.
- PROVIDE 1 1/2" CONDUIT FOR FUTURE 115 VAC SERVICE.
- PROVIDE GROUND BUS INSIDE SPLICE CABINET.
- CABINET TO CONCRETE FOUNDATION SHALL BE ISOLATED AND A 45 DEGREE BEAD OF URETHANE CAULK SHALL BE PLACED ON OUTSIDE JOINT.

**MODIFY SIGNAL AND LIGHTING
 (CITY)
 (LOCATION 3)
 NO SCALE**

E-76

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	408	635

REGISTERED CIVIL ENGINEER DATE: 2-26-14
 PLANS APPROVAL DATE: 3-10-14

ALEXANDER ZUPANSKI
 No. 59351
 Exp. 06/30/15
 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.

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606
 ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863

LEGEND: (SHEETS E-78 TO E-81)

- 1 TRENCH AND INSTALL CONDUIT IN SOIL. SEE SHEET E-88 FOR DETAILS.
- 2 TRAFFIC SIGNAL CABINET SHOWN FOR REFERENCE ONLY. SEE TRAFFIC SIGNAL (STAGE CONSTRUCTION) PLANS FOR CABINET LOCATION. CONNECT F/O CABLE TO FDU IN CABINET AS LOCATED ON THE TRAFFIC SIGNAL (STAGE CONSTRUCTION) PLANS.
- 3 JACK TEMPORARY TYPE 1 CONDUIT BENEATH ROADWAY. PROTECT IN PLACE AT ALL TIMES DURING CONSTRUCTION FOR TEMPORARY USE. CONDUIT TO BE INSTALLED BELOW EXISTING SURFACE AND NOT TO BE DISTURBED FOR THE DURATION OF CONSTRUCTION. SEE SHEET E-89 FOR JACKING DETAILS.
- 4 RAMP METERING SYSTEM CABINET SHOWN FOR REFERENCE ONLY. SEE RAMP METERING SYSTEM (TEMPORARY) PLANS FOR CABINET LOCATION. CONNECT F/O CABLE TO CABINET AS LOCATED ON THE RAMP METERING SYSTEM (TEMPORARY) PLANS.
- 5 EXISTING EQUIPMENT TO BE REMOVED, SEE COMMUNICATION SYSTEM REMOVAL PLANS.
- 6 INSTALL TEMPORARY WOOD POLE, SEE DETAILS ON SHEETS E-102 TO E-111.
- 7 INSTALL 3" CONDUIT RISER. SEE DETAIL "A" ON DETAILS SHEETS E-105 THROUGH E-114.
- 8 INSTALL SPLICE VAULT AS FINAL INSTALLATION. VAULT TO BE SET AT FINAL ELEVATION. SEE SHEET E-91 FOR SPLICE VAULT DETAILS.
- 9 INSTALL TEMPORARY SPLICE VAULT. SEE SHEET E-92 FOR SPLICE VAULT INSTALLATION DETAILS.
- 10 COIL ADDITIONAL 275' OF 12SMFO IN RMS CONTROLLER CABINET FOR USE IN STAGE 2B.
- 11 SPLICE NEW (TEMPORARY) TYPE A CABLE TO EXISTING TYPE B CABLE. CONTACT CALTRANS ENGINEER (949) 936-3494 FOR DETAILS.
- SPLICE VAULT WITH SPLICE CLOSURE(S)
- SPLICE VAULT
- Exist SPLICE VAULT

GENERAL NOTES: (SHEETS E-78 TO E-81)

- 1. TEMPORARY COMMUNICATION SYSTEM MUST BE CONSTRUCTED AND FULLY FUNCTIONAL PRIOR TO ANY EXCAVATION EXCEPT AS NOTED.
- 2. THE LOCATIONS OF EXISTING ELECTRICAL FACILITIES SUCH AS UNDERGROUND CONDUITS, PULL BOXES, SPLICE VAULTS, AND CONTROLLER CABINETS ARE APPROXIMATE.
- 3. ALL FIBER OPTIC CONDUIT BENDS SHALL BE 4 ft+ RADIUS MINIMUM, AND SHALL BE FACTORY BENDS. ALL OTHER CONDUITS SHALL HAVE A MINIMUM BEND RADIUS OF NO LESS THAN 6 TIMES THE CONDUIT DIAMETER.
- 4. NEW ELECTRICAL EQUIPMENT LOCATIONS SHOWN ON THE PLANS, INCLUDING PULL BOXES AND CONDUIT, ARE APPROXIMATE AND MAY BE CHANGED TO SUIT FIELD CONDITIONS.
- 5. THE LOCATIONS OF EXISTING CONTROLLER CABINETS, SERVICE EQUIPMENT ENCLOSURES, POWER POLES, AND TELEPHONE DEMARCATION BOXES ARE APPROXIMATE.
- 6. FOR TEMPORARY COMMUNICATION SYSTEM DETAILS SEE SHEET E-82.
- 7. CONTRACTOR SHALL PROVIDE EQUIPMENT GROUNDING CONDUCTORS WHICH SHALL RUN CONTINUOUSLY IN ALL NEW AND AFFECTED CIRCUITS. SEE SECTION 86-2.10 OF THE CALTRANS STANDARD SPECIFICATIONS FOR BONDING AND GROUNDING REQUIREMENTS.
- 8. BEFORE REMOVING OR MODIFYING ANY EXISTING ELECTRICAL FACILITIES, THE CONTRACTOR SHALL PROVIDE 72 HOURS ADVANCE WRITTEN NOTICE TO ALL AGENCIES CONCERNED.
- 9. WHEN EXISTING LOOP DETECTORS AND CONDUITS ARE SHOWN IN THE VICINITY OF PROPOSED CONDUIT TRENCHES, THE CONTRACTOR SHALL AVOID DAMAGING THE EXISTING CONDUIT. TRENCHING WITH HAND TOOLS MAY BE REQUIRED.
- 10. INSTALL PULL ROPE AND PLUG ENDS FOR EACH UNUSED INNERDUCTS AND CONDUITS.
- 11. BEFORE ANY DISCONNECTION OF COMMUNICATION AND/OR SERVICE OF ANY EXISTING ELECTRICAL FACILITIES, THE CONTRACTOR SHALL PROVIDE 72 HOUR ADVANCE WRITTEN NOTICE TO CALTRANS AND THE CITY OF SAN CLEMENTE.
- 12. ALL OVERHEAD CABLE SHALL BE SLACK SPANNED WITH 25' Min CLEARANCE AT CROSSINGS OF ROADWAY WITH VEHICULAR TRAVEL AND 16' Min FOR OTHER OVERHEAD SPANS.
- 13. ANY UNUSED FOUNDATIONS AND PULL BOXES SHALL BE REMOVED.

ABBREVIATIONS: (SHEETS E-78 TO E-81)

- TYPE A CABLE 36 SINGLEMODE FIBER OPTIC CABLE
- TYPE D CABLE 12 SINGLEMODE FIBER OPTIC CABLE
- FDU FIBER DISTRIBUTION UNIT

TEMPORARY COMMUNICATION SYSTEM
 NO SCALE
E-77

LAST REVISION DATE PLOTTED => 07-AUG-2014 00-00-00 TIME PLOTTED => 06:42

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	409	635

REGISTERED CIVIL ENGINEER	DATE
<i>[Signature]</i>	2-26-14
PLANS APPROVAL DATE	
3-10-14	

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	--

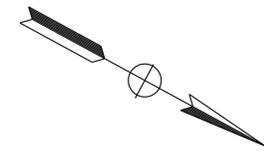
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-77 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

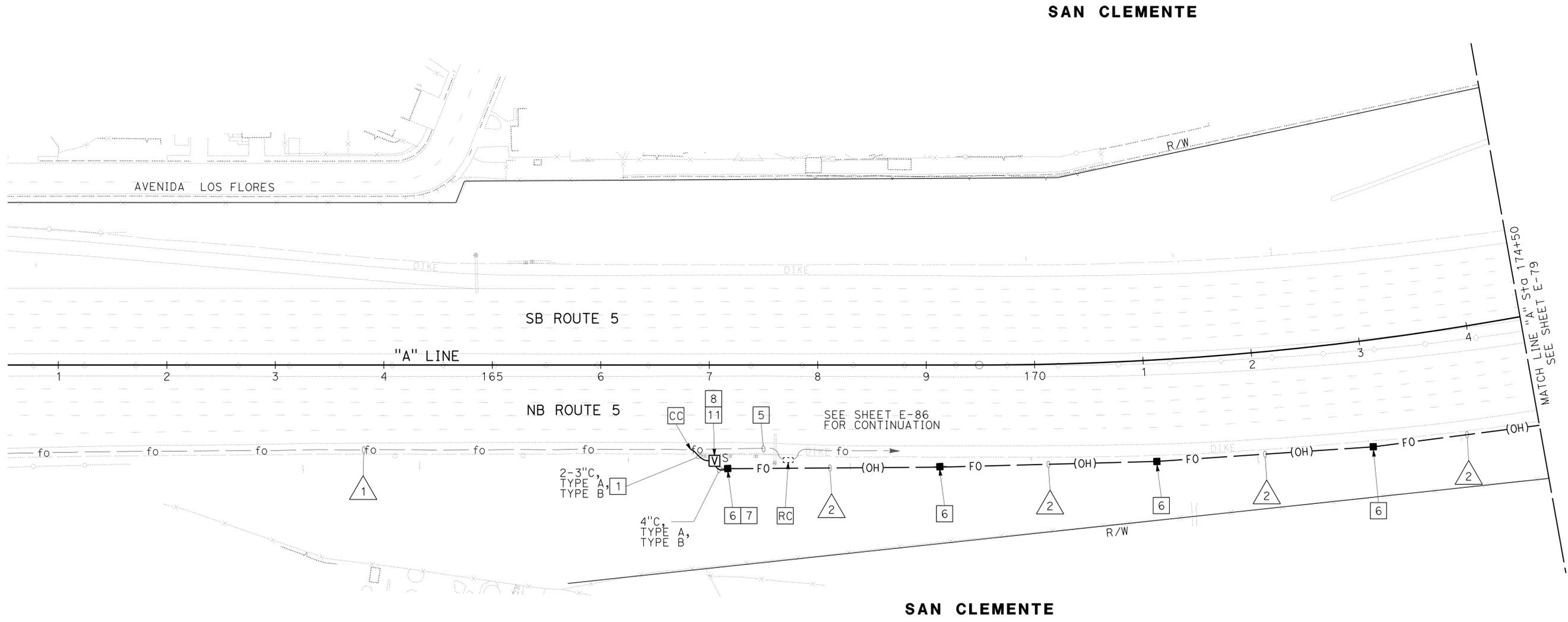
CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	1	2
TYPE A CABLE	1(E)	1
TYPE B CABLE	1(E)	
INNERDUCT SIZE 1"	4(E)	
PULL TAPE	2(E)	
#12 AWG (TRACER WIRE)	1(E)	
CONDUIT SIZE	2-4"(E)	OH

ALL CONDUCTORS AND CONDUIT SHALL BE TEMPORARY UNLESS OTHERWISE NOTED.
(E) = EXISTING
OH = OVERHEAD



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT: FUNCTIONAL SUPERVISOR
ALEXANDER ZUPANSKI
CALCULATED/DESIGNED BY
CHECKED BY
HUBERT KANG
RICHARD IVY
REVISED BY
DATE REVISED



SAN CLEMENTE

SAN CLEMENTE

TEMPORARY COMMUNICATION SYSTEM
SCALE 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

E-78

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	410	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
PLANS APPROVAL DATE			3-10-14		
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

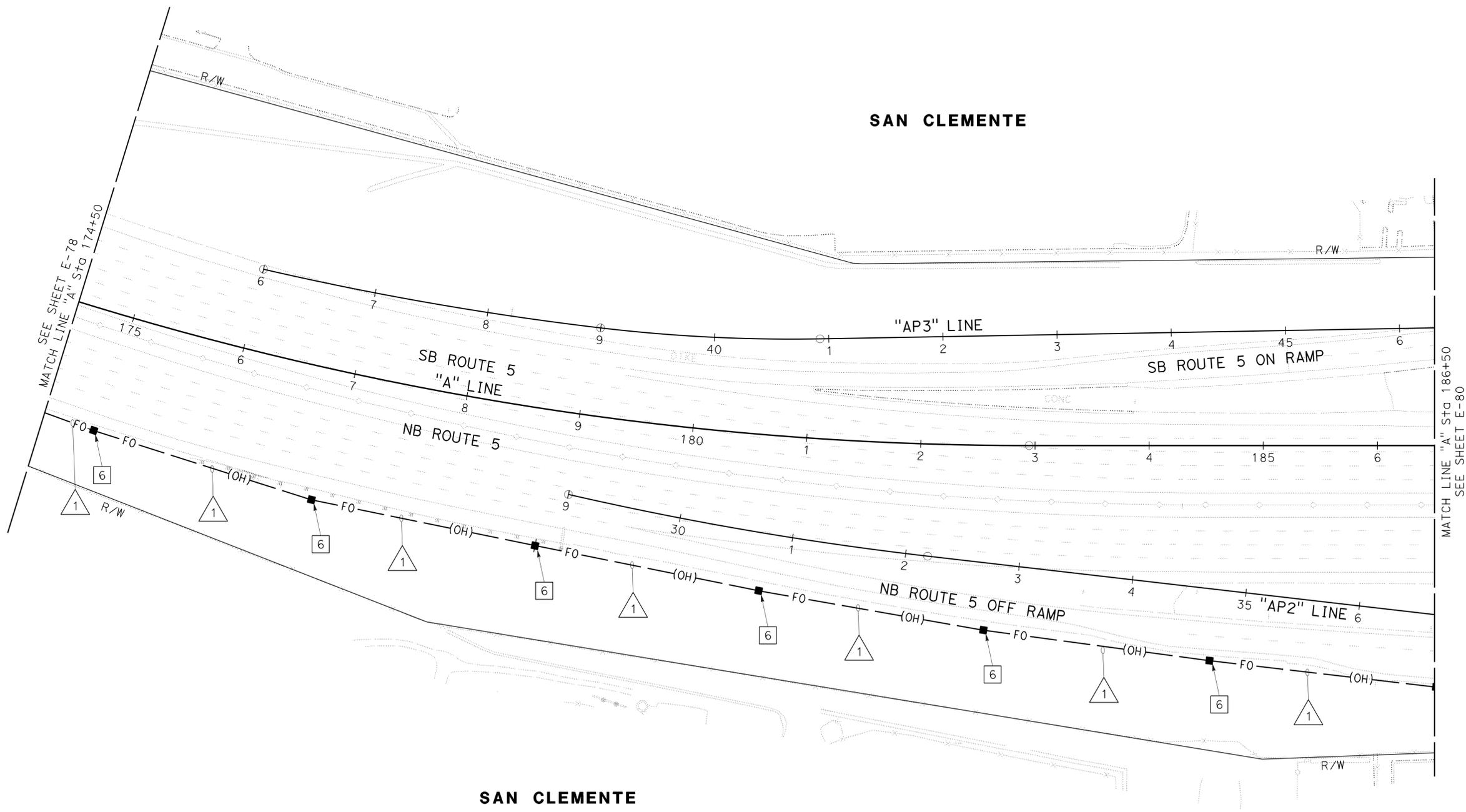
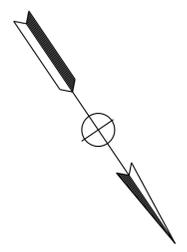
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-77 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	1
TYPE A CABLE	1
CONDUIT SIZE	OH

ALL CONDUCTORS AND CONDUIT SHALL BE TEMPORARY.
OH = OVERHEAD.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
	ALEXANDER ZUPANSKI	HUBERT KANG	HUBERT KANG
	CHECKED BY	DATE	REVISOR
	RICHARD IVY		RICHARD IVY

TEMPORARY COMMUNICATION SYSTEM
SCALE 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

E-79

LAST REVISION | DATE PLOTTED => 07-AUG-2014
00-00-00 | TIME PLOTTED => 06:42

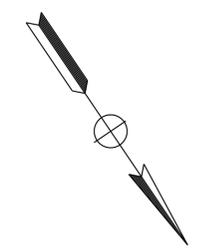
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-77 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	1	2	3	4	5	6	7	8	9	10	11	12
TYPE A CABLE	1	1										
TYPE D CABLE			3	3	1	3	2	1	1	1	1	1
CONDUIT SIZE	OH	3"	4"	3"	2"	OH	2"	OH	3"	3"	OH	OH

ALL CONDUCTORS AND CONDUIT SHALL BE TEMPORARY UNLESS OTHERWISE NOTED.
OH = OVERHEAD.



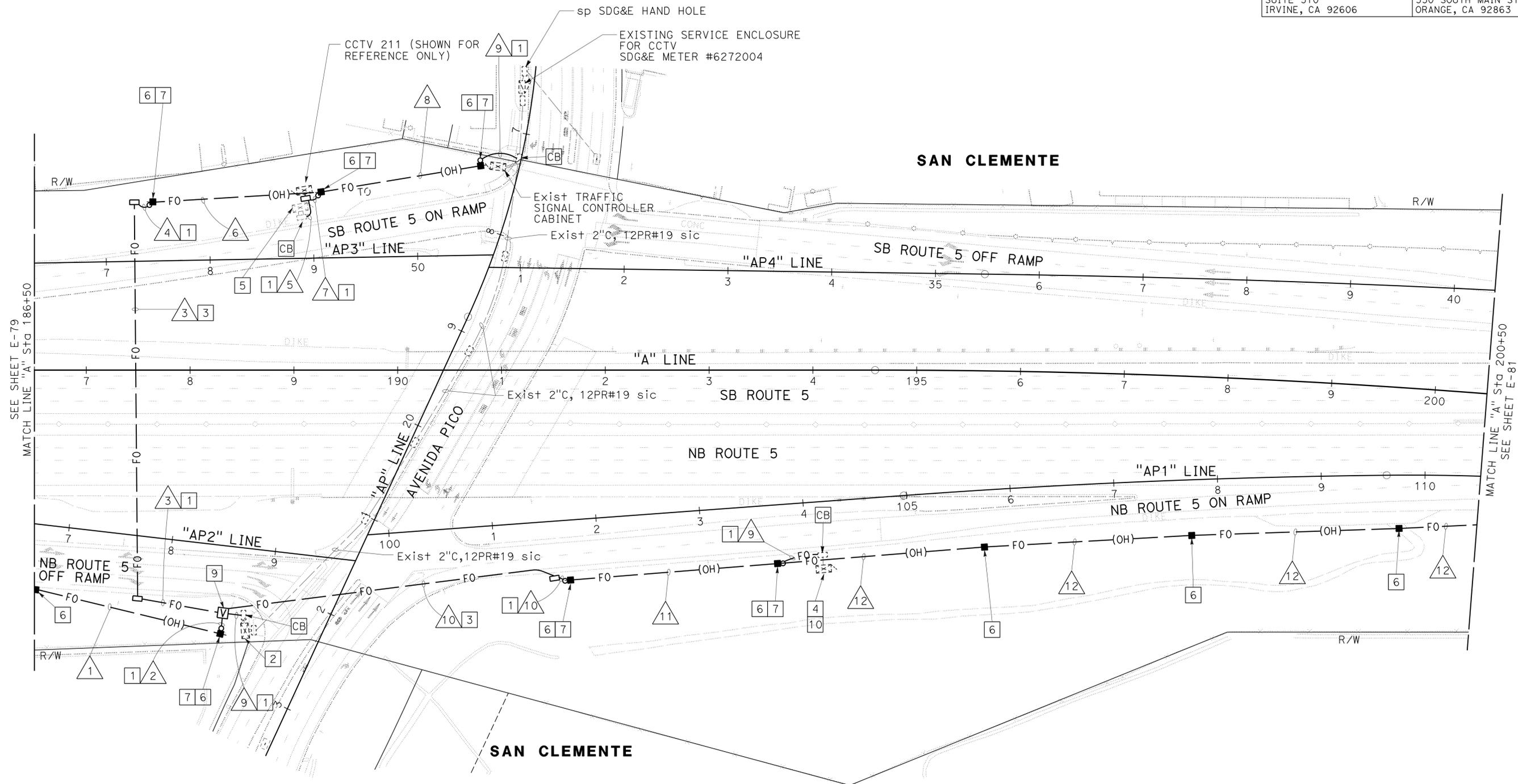
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	411	635

REGISTERED CIVIL ENGINEER DATE 2-26-14

PLANS APPROVAL DATE 3-10-14

ALEXANDER ZUPANSKI
No. 59351
Exp. 06/30/15
CIVIL
STATE OF CALIFORNIA

FPL AND ASSOCIATES, INC. ORANGE COUNTY TRANSPORTATION AUTHORITY
10 CORPORATE PARK SUITE 310 550 SOUTH MAIN STREET
IRVINE, CA 92606 ORANGE, CA 92863



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 CONSULTANT - FUNCTIONAL SUPERVISOR: ALEXANDER ZUPANSKI
 CALCULATED/DESIGNED BY: HUBURT KANG
 CHECKED BY: RICHARD IVY
 REVISED BY: [blank]
 DATE REVISED: [blank]

TEMPORARY COMMUNICATION SYSTEM

SCALE 1" = 50'

E-80

APPROVED FOR ELECTRICAL WORK ONLY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	412	635

REGISTERED CIVIL ENGINEER	DATE
<i>Alexander Zupanski</i>	2-26-14
PLANS APPROVAL DATE	
3-10-14	

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	---

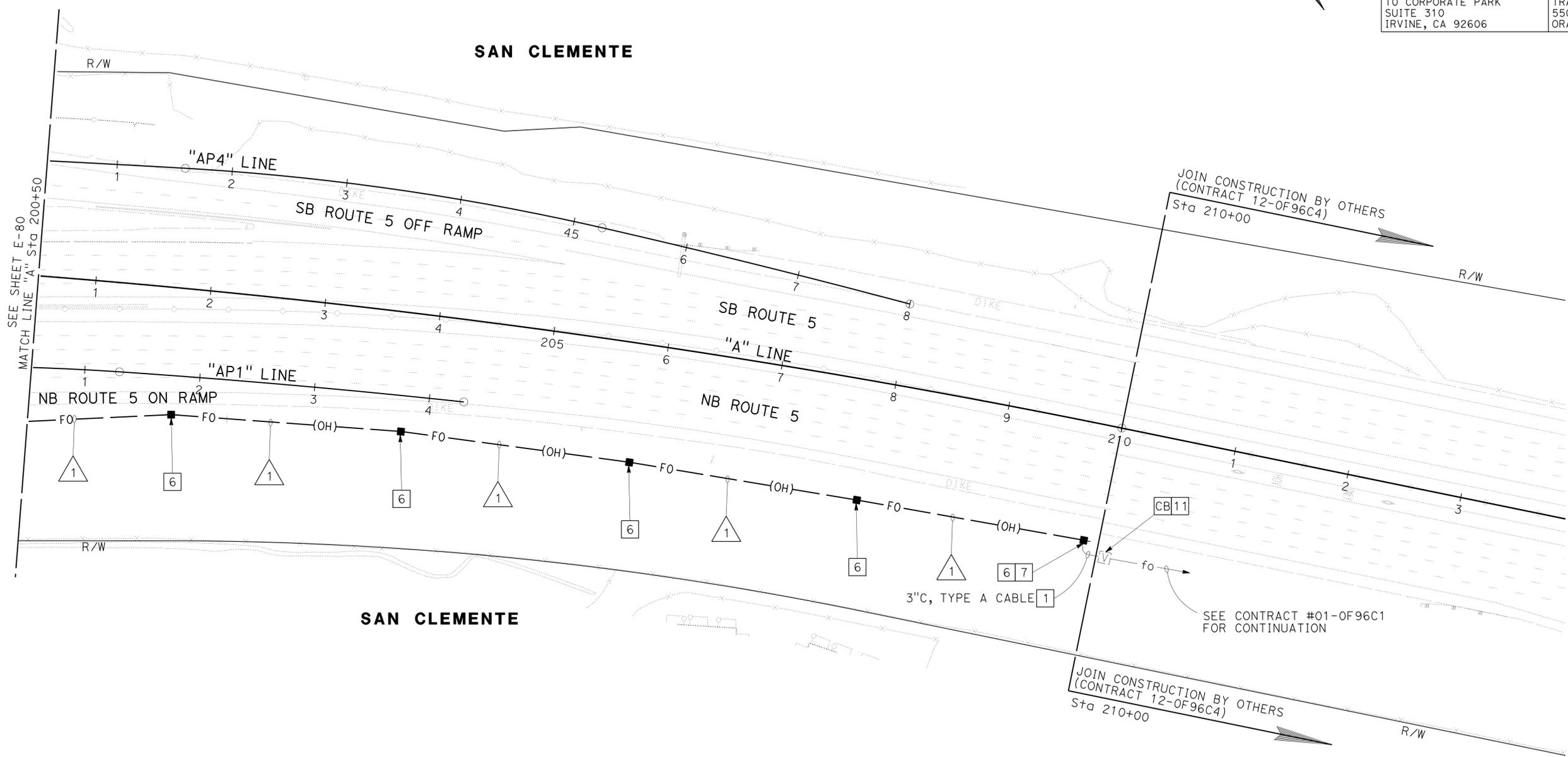
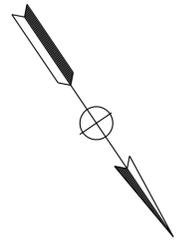
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-77 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	1
TYPE A CABLE	1
CONDUIT SIZE	OH

ALL CONDUCTORS AND CONDUIT SHALL BE TEMPORARY.
OH = OVERHEAD.



TEMPORARY COMMUNICATION SYSTEM
SCALE 1" = 50'

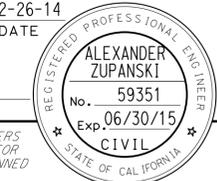
APPROVED FOR ELECTRICAL WORK ONLY

E-81

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 CONSULTANT: FUNCTIONAL SUPERVISOR: ALEXANDER ZUPANSKI
 CALCULATED/DESIGNED BY: HUBERT KANG
 CHECKED BY: RICHARD IVY
 REVISED BY: DATE
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 CONSULTANT - FUNCTIONAL SUPERVISOR
 ALEXANDER ZUPANSKI
 CALCULATED-DESIGNED BY
 CHECKED BY
 HUBERT KANG
 RICHARD IVY
 REVISED BY
 DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	413	635


 REGISTERED CIVIL ENGINEER DATE 2-26-14
 PLANS APPROVAL DATE 3-10-14

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.
 FPL AND ASSOCIATES, INC. ORANGE COUNTY TRANSPORTATION AUTHORITY
 10 CORPORATE PARK SUITE 310 550 SOUTH MAIN STREET
 IRVINE, CA 92606 IRVINE, CA 92863

FIBER ASSIGNMENT TABLE

ROUTE 5 - TYPE B CABLE										
NEW 36 SMFO FIBER No.									EXISTING TYPE B FIBER No.	REMARKS
1-2									<X> 1-2	TMS-2 : HUB 3 - PRIMARY
3-10									<X> 3-10	EXISTING CIRCUIT - PROTECT IN PLACE
11-12									<X> 11-12	FUTURE USE
11-16									<X> 13-18	EXISTING CIRCUIT - PROTECT IN PLACE
									27	VOICE
17-20									<X> 32-35	EXISTING CIRCUIT - PROTECT IN PLACE
21-22									<X> 37-38	EXISTING CIRCUIT - PROTECT IN PLACE
23-24									<X> 46-47	VIDEO CIRCUIT VC-2: HUB 3 - PRIMARY
25									<X> 52	EXISTING CIRCUIT - PROTECT IN PLACE
26-27									<X> 53-54	EXISTING DN #8 TO HUB#3,TMC - PROTECT IN PLACE
28-35									<X> 59-66	EXISTING CIRCUIT - PROTECT IN PLACE

LEGEND: (THIS SHEET)

X - TERMINATED ACTIVE
 0 - TERMINATED SPARE
 < > - ARROW POINTS TO THE DIRECTION OF TRANSMISSION

TEMPORARY COMMUNICATION SYSTEM (DETAILS)
 NO SCALE
E-82

LAST REVISION DATE PLOTTED => 07-AUG-2014 00-00-00 TIME PLOTTED => 06:42

GENERAL NOTES: (SHEETS E-84 TO E-94)

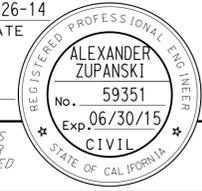
1. THE LOCATIONS OF EXISTING ELECTRICAL FACILITIES SUCH AS UNDERGROUND CONDUITS, PULL BOXES, SPLICE VAULTS, AND CONTROLLER CABINETS ARE APPROXIMATE.
2. ALL FIBER OPTIC CONDUIT BENDS SHALL BE 4 FT RADIUS MINIMUM, AND SHALL BE FACTORY BENDS. ALL OTHER CONDUITS SHALL HAVE A MINIMUM BEND RADIUS OF NO LESS THAN 6 TIMES THE CONDUIT DIAMETER.
3. NEW ELECTRICAL EQUIPMENT LOCATIONS SHOWN ON THE PLANS, INCLUDING PULL BOXES AND CONDUIT, ARE APPROXIMATE AND MAY BE CHANGED TO SUIT FIELD CONDITIONS.
4. THE LOCATIONS OF EXISTING CONTROLLER CABINETS, SERVICE EQUIPMENT ENCLOSURES, POWER POLES, AND TELEPHONE DEMARCATION BOXES ARE APPROXIMATE.
5. FOR COMMUNICATION SYSTEM DETAILS SEE SHEET E-88 TO E-94.
6. PROVIDE EQUIPMENT GROUNDING CONDUCTORS WHICH SHALL RUN CONTINUOUSLY IN ALL NEW AND AFFECTED CIRCUITS. SEE SECTION 86-2.10 OF THE CALTRANS STANDARD SPECIFICATIONS FOR BONDING AND GROUNDING REQUIREMENTS.
7. BEFORE REMOVING OR MODIFYING ANY EXISTING ELECTRICAL FACILITIES, THE CONTRACTOR SHALL PROVIDE 72 HOURS ADVANCE WRITTEN NOTICE TO ALL AGENCIES CONCERNED.
8. WHEN EXISTING LOOP DETECTORS AND CONDUITS ARE SHOWN IN THE VICINITY OF PROPOSED CONDUIT TRENCHES, AVOID DAMAGING THE EXISTING CONDUIT. TRENCHING WITH HAND TOOLS MAY BE REQUIRED.
9. INSTALL PULL TAPE AND PLUG ENDS FOR EACH UNUSED INNERDUCTS AND CONDUITS.
10. BEFORE ANY DISCONNECTION OF COMMUNICATION OR SERVICE OF ANY EXISTING ELECTRICAL FACILITIES, THE CONTRACTOR SHALL PROVIDE 72 HOUR ADVANCE WRITTEN NOTICE TO CALTRANS AND THE CITY OF SAN CLEMENTE.
11. THE MAXIMUM TIME DURING WHICH THE FIBER OPTIC COMMUNICATION SYSTEM MAY REMAIN INACTIVE WHEN MAKING TRANSITION FROM EXISTING TO TEMPORARY AND ALSO FROM TEMPORARY TO PERMANENT, SHALL BE 48 HOURS. FOR ANY ADDITIONAL DOWN-TIME OF THE FIBER OPTIC COMMUNICATION SYSTEM THERE SHALL BE A PENALTY OF \$2000 PER DAY IMPOSED ON YOU.

LEGEND: (SHEETS E-84 TO E-94)

- 1 EXISTING SPLICE VAULT. SEE SHEET E-91 FOR INSTALLATION OF SPLICE VAULT WITH FIBER OPTIC SPLICE CLOSURE(S).
 - 2 TRENCH AND INSTALL CONDUIT IN ASPHALT, SOIL, OR CONCRETE. SEE SHEET E-88 FOR DETAILS.
 - 3 JACK TYPE 1 CONDUIT BENEATH ROADWAY. SEE SHEET E-89 FOR DETAILS.
 - 4 RAMP METERING CABINET SHOWN FOR REFERENCE ONLY, SEE RAMP METERING PLANS FOR CABINET DETAILS. INSTALL 12 SMFO FDU.
 - 5 TRAFFIC SIGNAL CABINET SHOWN FOR REFERENCE ONLY, SEE TRAFFIC SIGNAL PLANS FOR CABINET DETAILS.
 - 6 INSTALL COMMUNICATION CONDUIT IN BRIDGE STRUCTURE. SEE BRIDGE STRUCTURES PLANS FOR BRIDGE CONDUIT ATTACHMENT TYPE AND DETAIL.
 - 7 INSTALL SPLICE VAULT WITH FIBER OPTIC SPLICE CLOSURE(S). SEE SHEET E-91 FOR SPLICE VAULT DETAILS.
 - 8 COIL 50 FEET OF SLACK IN FIBER OPTIC CABLE SPLICE VAULT.
 - 9 INSTALL CONDUIT EXPANSION-DEFLECTION FITTING PER STANDARD PLAN ES-9B, DETAIL X-Y.
 - 10 SPLICE NEW TYPE A CABLE TO EXISTING TYPE A CABLE AND NEW TYPE B CABLE TO EXISTING TYPE B CABLE. COIL 50 FEET OF NEW TYPE C CABLE IN SPLICE VAULT.
 - 11 SPLICE NEW TYPE B CABLE TO EXISTING TYPE B CABLE AND NEW TYPE C CABLE TO EXISTING TYPE C CABLE (FIBER TO FIBER).
- S SPLICE VAULT WITH SPLICE CLOSURE(S)
 SPLICE VAULT
 Exist SPLICE VAULT
 COMMUNICATION PULL BOX. SEE SHEET E-89.

ABBREVIATIONS: (SHEETS E-84 TO E-94)

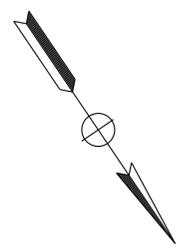
SMFO	SINGLEMODE FIBER OPTIC CABLE
TYPE A CABLE	36 SINGLEMODE FIBER OPTIC CABLE
TYPE B CABLE	72 SINGLEMODE FIBER OPTIC CABLE
TYPE C CABLE	72 SINGLEMODE FIBER OPTIC CABLE
TYPED CABLE	12 SINGLEMODE FIBER OPTIC CABLE
FDU	FIBER DISTRIBUTION UNIT
PDA	POWER DISTRIBUTION ASSEMBLY
CCR	CAMERA CONTROL RECEIVER
S	SPLICE ENCLOSURE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	414	635
			2-26-14		
			REGISTERED CIVIL ENGINEER	DATE	
			3-10-14	PLANS APPROVAL DATE	
					
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	416	635

REGISTERED CIVIL ENGINEER	DATE
<i>[Signature]</i>	2-26-14
PLANS APPROVAL DATE	
3-10-14	

REGISTERED PROFESSIONAL ENGINEER ALEXANDER ZUPANSKI No. 59351 Exp. 06/30/15 CIVIL STATE OF CALIFORNIA	
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863



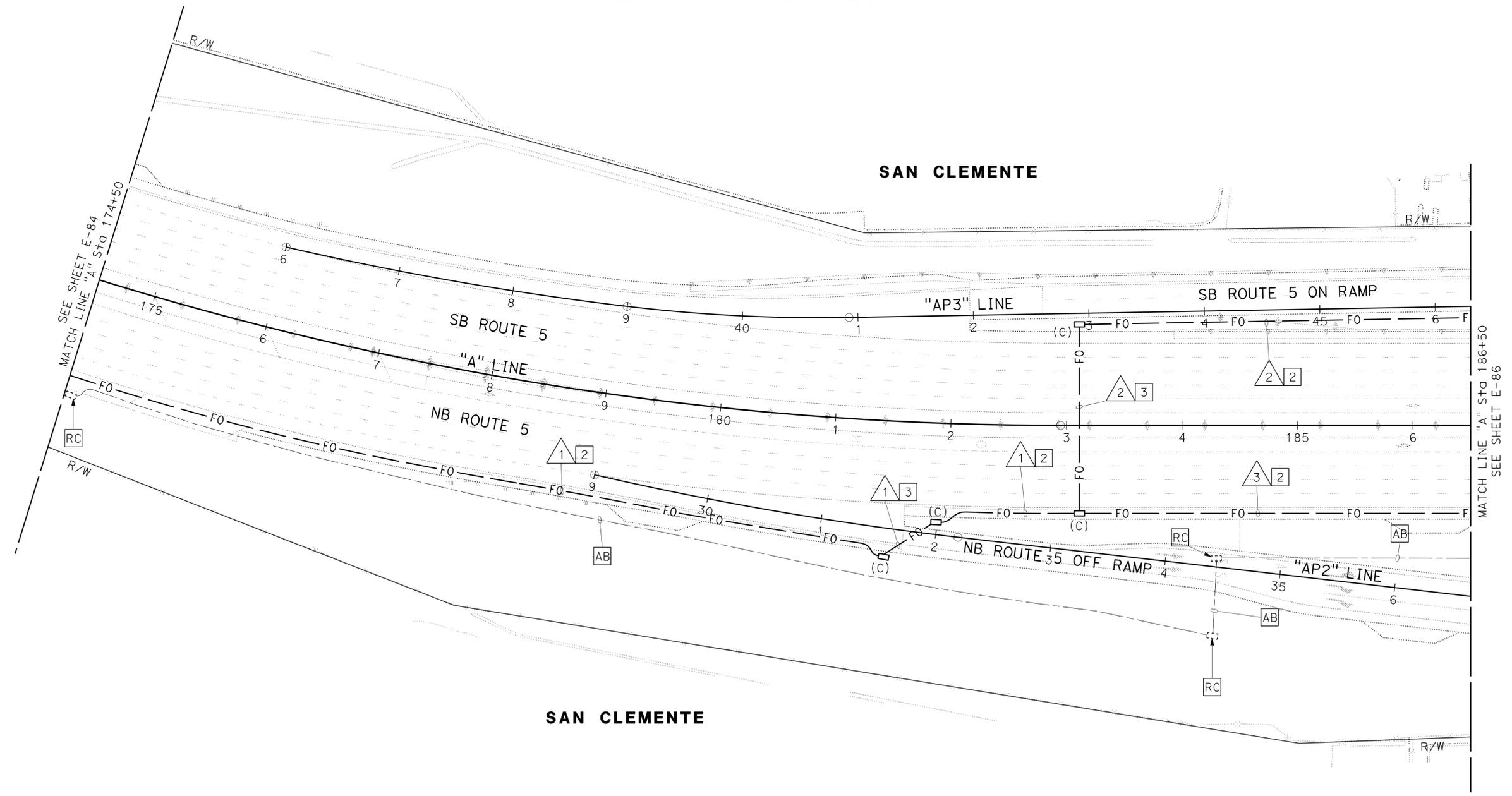
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-83 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	1	2	3
TYPE A CABLE	1		1
TYPE B CABLE	1		1
TYPE C CABLE (SPARE)	1		1
TYPE D CABLE		1	1
INNERDUCT SIZE 1"	4		4
PULL TAPE	1	1	1
#12 AWG (TRACER WIRE)	1	1	1
CONDUIT SIZE	2-4"	3"	3"

ALL CONDUCTORS AND CONDUIT SHALL BE NEW.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 CONSULTANT: FUNCTIONAL SUPERVISOR: ALEXANDER ZUPANSKI
 CALCULATED/DESIGNED BY: HUBURT KANG
 CHECKED BY: RICHARD IVY
 REVISED BY: DATE
 REVISIONS: (x marks)

MODIFY COMMUNICATION SYSTEM
 SCALE 1" = 50'
E-85

APPROVED FOR ELECTRICAL WORK ONLY

LAST REVISION: DATE PLOTTED => 07-AUG-2014
 00-00-00 TIME PLOTTED => 06:42

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	417	635

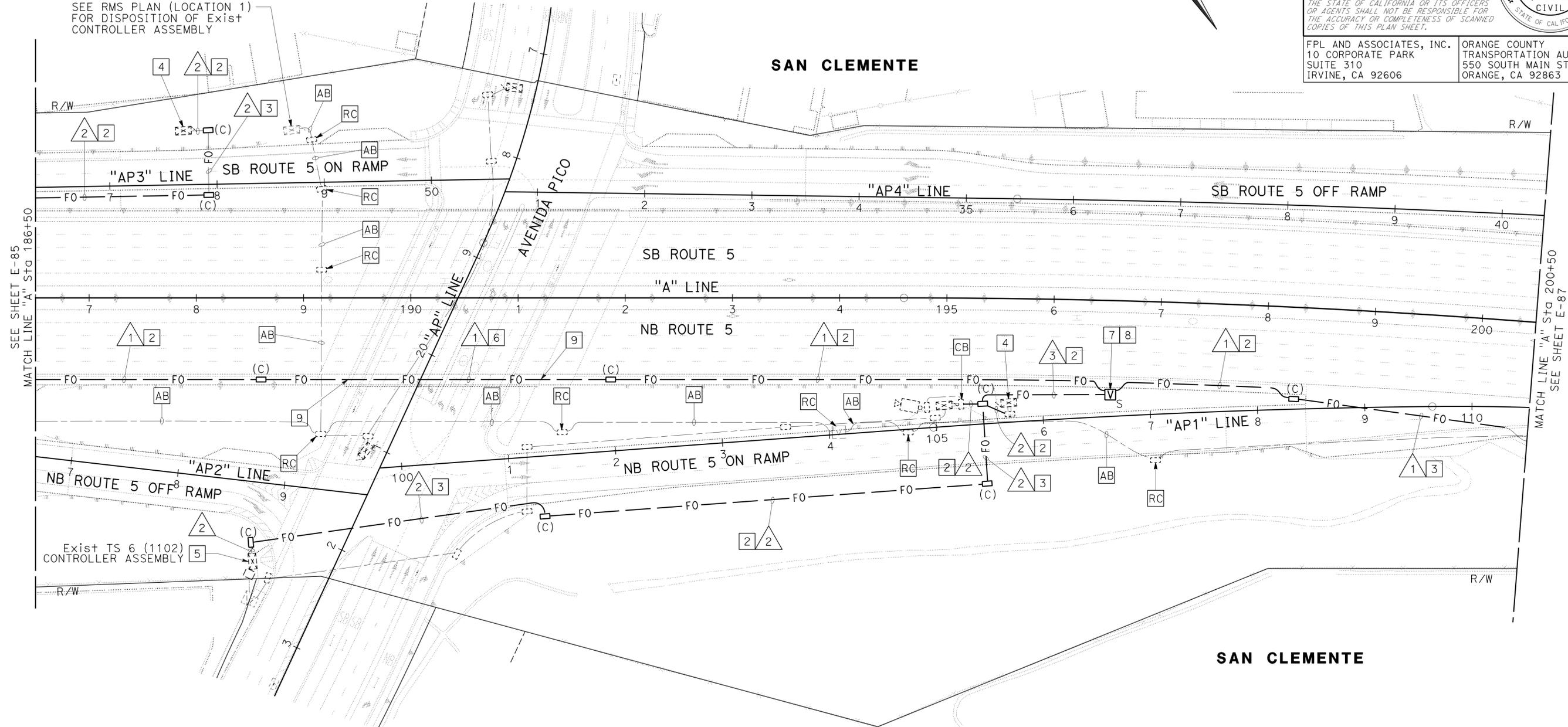
REGISTERED CIVIL ENGINEER DATE 2-26-14
 PLANS APPROVAL DATE 3-10-14
 ALEXANDER ZUPANSKI
 No. 59351
 Exp. 06/30/15
 CIVIL
 STATE OF CALIFORNIA

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606
 ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863

NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-83 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

SEE RMS PLAN (LOCATION 1) FOR DISPOSITION OF Exist CONTROLLER ASSEMBLY



CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	1	2	3
TYPE A CABLE	1		
TYPE B CABLE	1		
TYPE C CABLE (SPARE)	1		
TYPE D CABLE		1	3
INNERDUCT SIZE 1"	4		
PULL TAPE	1	1	1
#12 AWG (TRACER WIRE)	1	1	1
CONDUIT SIZE	2-4"	3"	3"

ALL CONDUCTORS AND CONDUIT SHALL BE NEW.

MODIFY COMMUNICATION SYSTEM
 SCALE 1" = 50'

APPROVED FOR ELECTRICAL WORK ONLY

E-86

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 CONSULTANT - FUNCTIONAL SUPERVISOR
 HUBERT KANG
 RICHARD IVY
 ALEXANDER ZUPANSKI
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	418	635

REGISTERED CIVIL ENGINEER	DATE
<i>[Signature]</i>	2-26-14
PLANS APPROVAL DATE	
3-10-14	

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	--

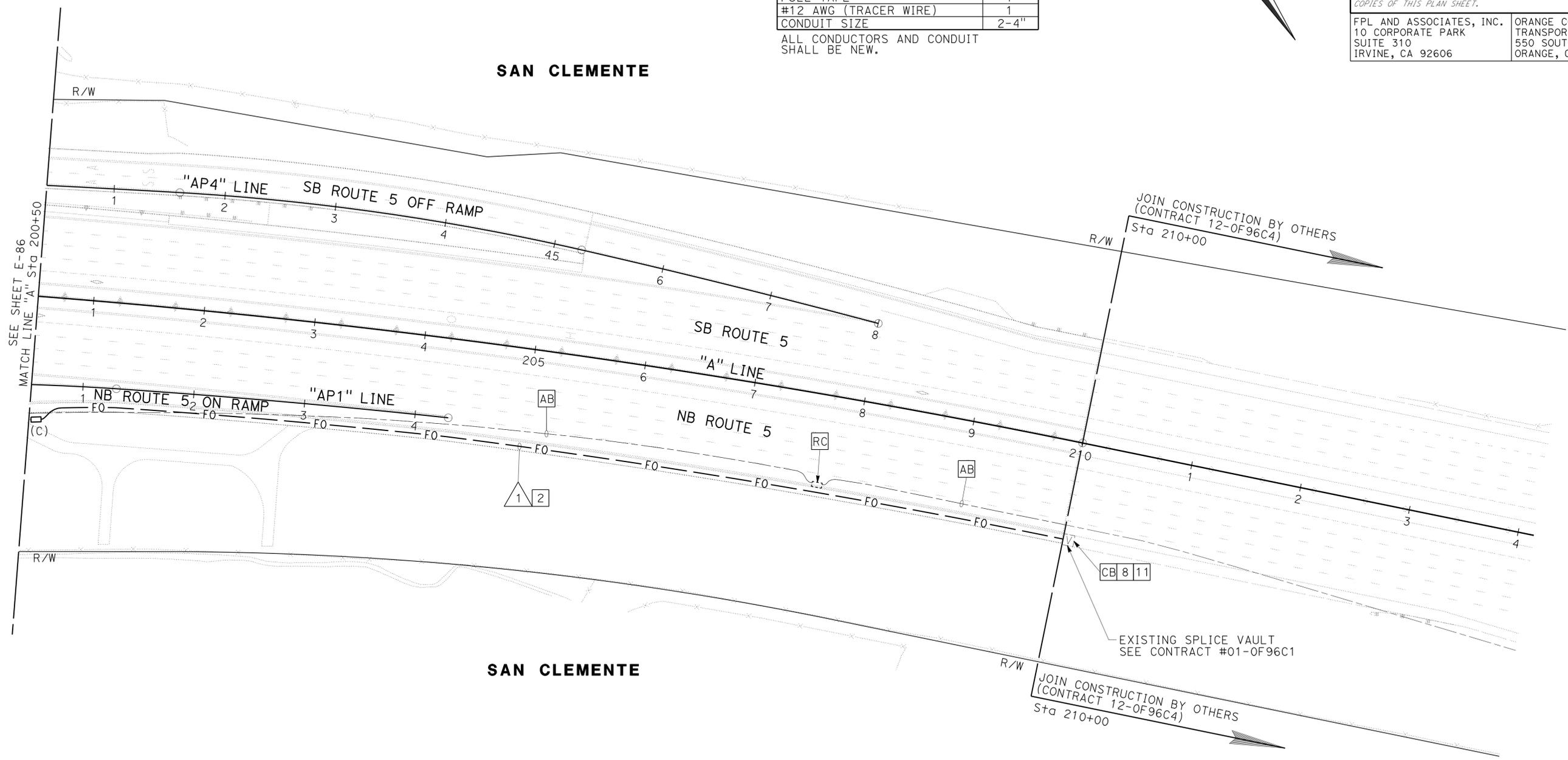
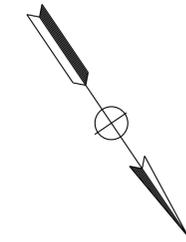
NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-83 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	△
TYPE A CABLE	1
TYPE B CABLE	1
TYPE C CABLE (SPARE)	1
INTERDUCT SIZE 1"	4
PULL TAPE	1
#12 AWG (TRACER WIRE)	1
CONDUIT SIZE	2-4"

ALL CONDUCTORS AND CONDUIT SHALL BE NEW.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT	FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	REVISOR	DATE
Caltrans	ALEXANDER ZUPANSKI	HUBERT KANG	RICHARD IVY			

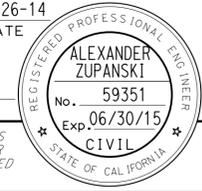
MODIFY COMMUNICATION SYSTEM
SCALE 1" = 50'

E-87

APPROVED FOR ELECTRICAL WORK ONLY

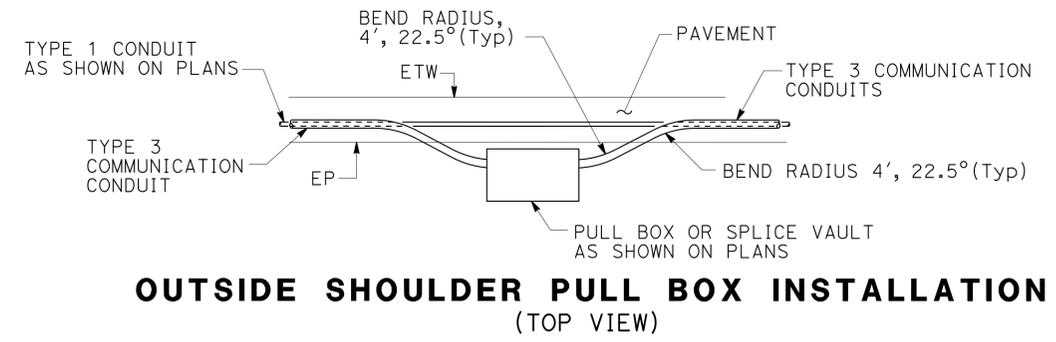
LAST REVISION | DATE PLOTTED => 07-AUG-2014
00-00-00 | TIME PLOTTED => 06:42

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	419	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
PLANS APPROVAL DATE			3-10-14		
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.					
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

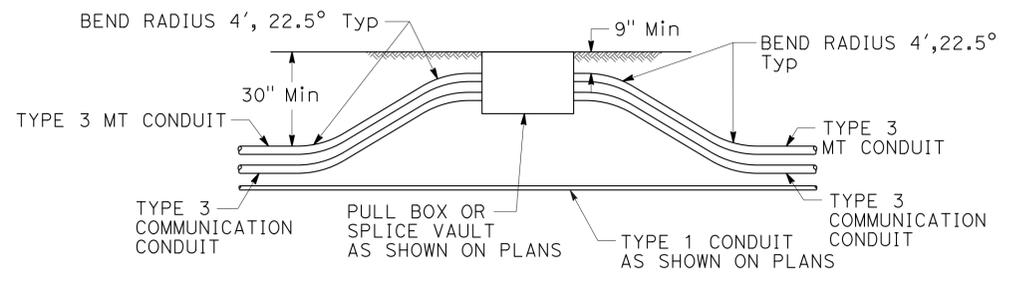


NOTES: (THIS SHEET ONLY)

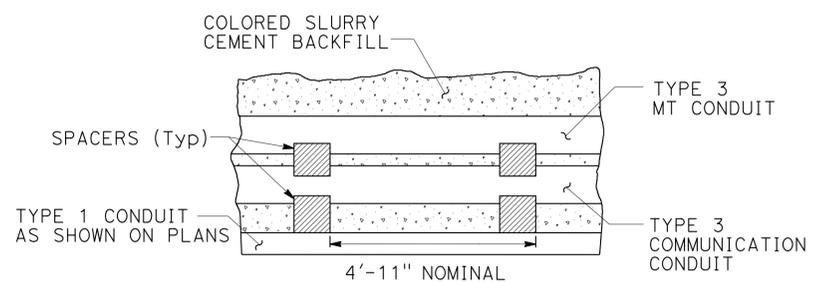
1. REPLACE HMA DIKE IN KIND, AS NECESSARY.
2. TRENCH TO BE CENTERED IN SHOULDER OR AS DIRECTED BY ENGINEER.
3. MAINTAIN 24" MINIMUM COVER AND BACKFILL TRENCH WITH COLORED SLURRY CEMENT BETWEEN PULL BOX AND PAVED SHOULDER.
4. WHERE TRENCH TRANSITIONS FROM ASPHALT TO UNPAVED AREA, EXCEPT AT PULL BOXES, CONDUIT TO GRADUALLY TRANSITION FROM 24" MINIMUM DEPTH TO 30" MINIMUM DEPTH WITHIN THE ASPHALT AREA.
5. 24" MINIMUM COVER MAY BE REDUCED TO 9" MINIMUM COVER IF NEEDED TO CLEAR A STORM DRAIN OR OTHER FIXED OBJECT AS DIRECTED BY RESIDENT ENGINEER.
6. PROVIDE MINIMUM 4'-11" CLEARANCE BETWEEN ANY CONDUIT AND EXISTING STRUCTURE FOUNDATIONS.
7. ANCHOR/RESTRAIN TOP CONDUIT FROM FLOATING DURING COLORED SLURRY CEMENT BACKFILL.
8. CONDUITS SHALL BE INSTALLED IN NEW ASPHALT PAVEMENT AFTER AGGREGATE BASE IS PLACED AND COMPACTED. CONDUIT INSTALLATION MUST PRECEDE ROADWAY PAVING.
9. PULLBOX OR SPLICE VAULT SHALL BE LOCATED WITHIN 1' OF EP, HMA DIKE, RAILING OR AS DIRECTED BY THE ENGINEER.



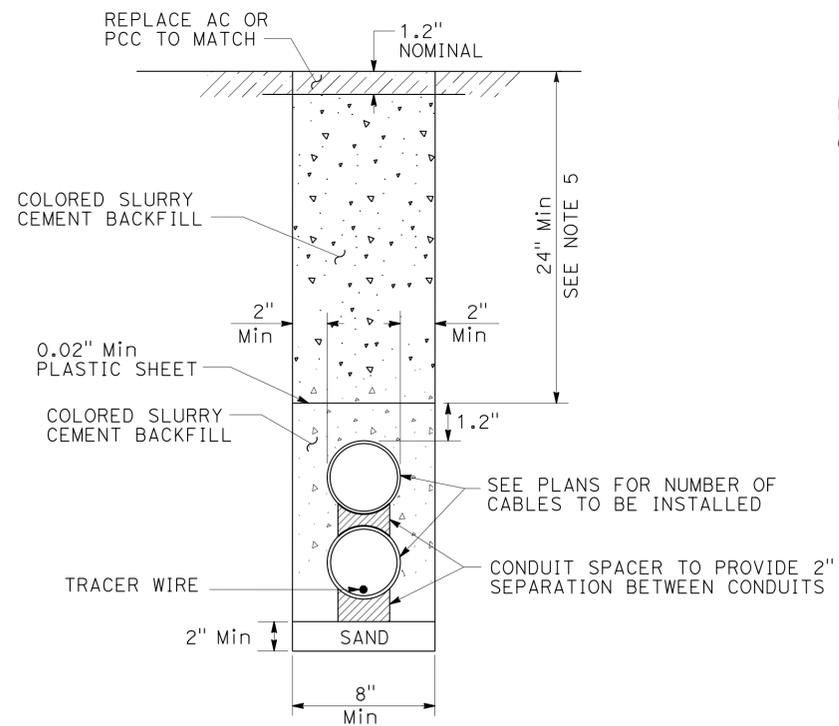
OUTSIDE SHOULDER PULL BOX INSTALLATION (TOP VIEW)



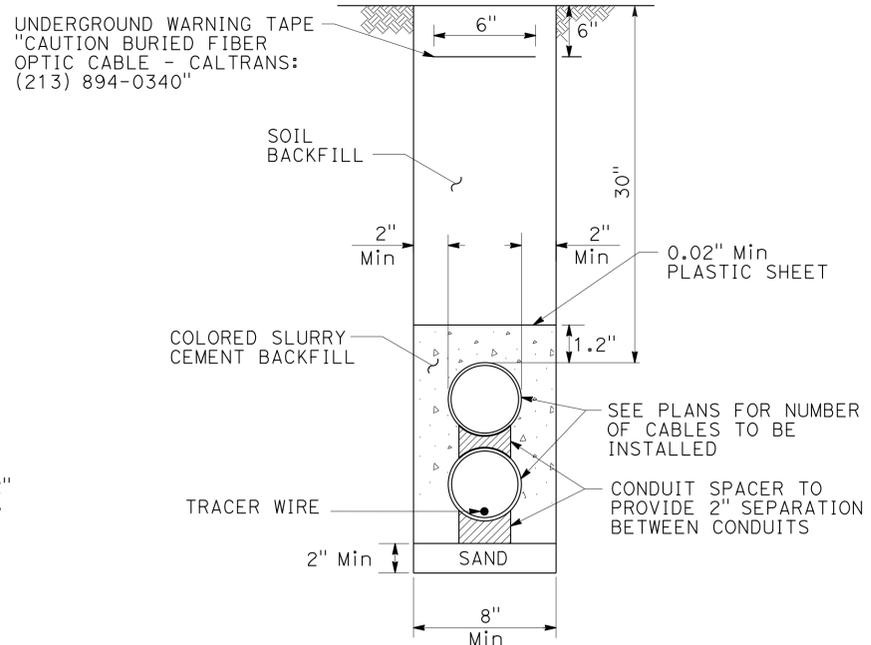
PULL BOX FOR SOIL AREA TRENCHING (ELEVATION)



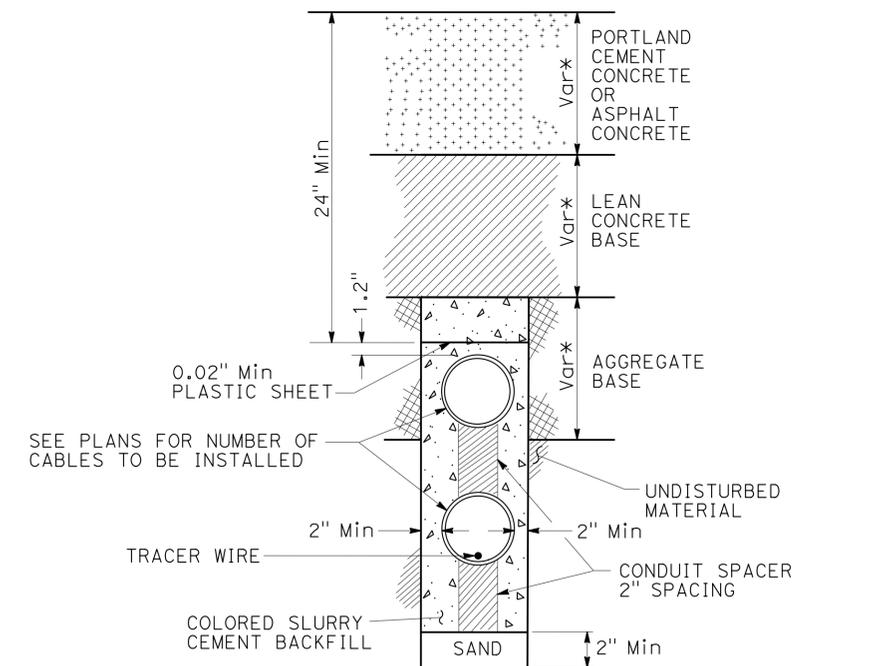
CONDUIT SPACER PLACEMENT (SIDE VIEW)



TRENCH IN PAVEMENT (CONCRETE OR ASPHALT) WITH COMMUNICATION CONDUITS



TRENCH IN SOIL WITH COMMUNICATION CONDUITS



NEW PAVEMENT (PCC OR ASPHALT) WITH COMMUNICATION CONDUITS

(* PAVEMENT THICKNESS, SEE TYPICAL CROSS SECTION PLANS)

MODIFY COMMUNICATION SYSTEM (TRENCH DETAILS)

NO SCALE

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



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT: FUNCTIONAL SUPERVISOR

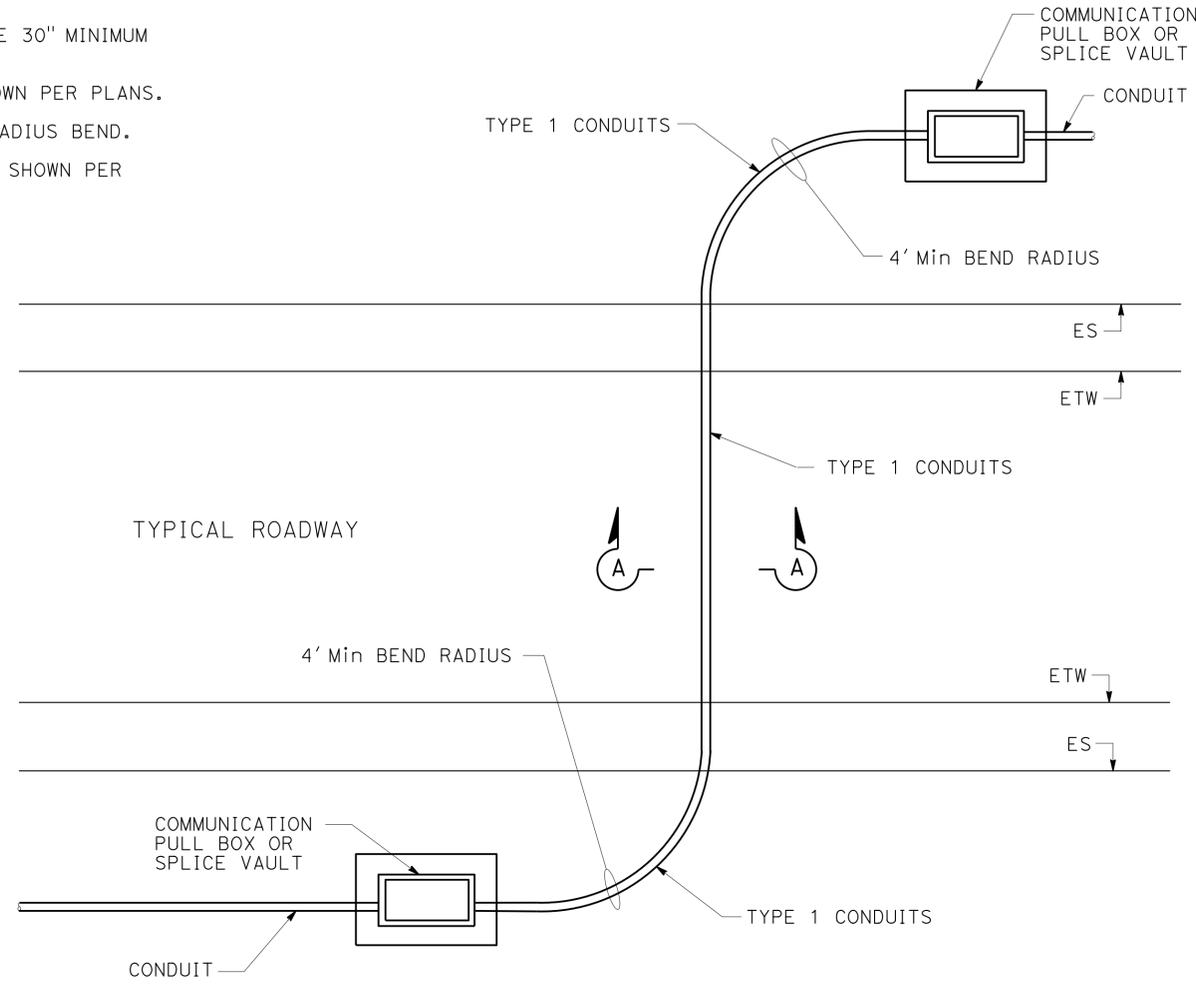
REVISOR: HUBERT KANG

DESIGNER: RICHARD IVY

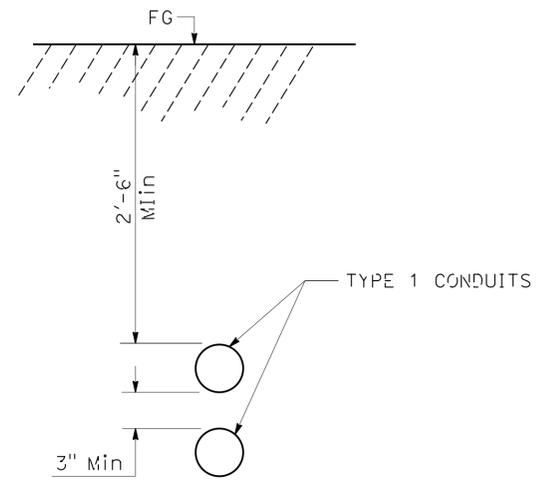
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	420	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
PLANS APPROVAL DATE			3-10-14		
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

NOTES: (THIS SHEET ONLY)

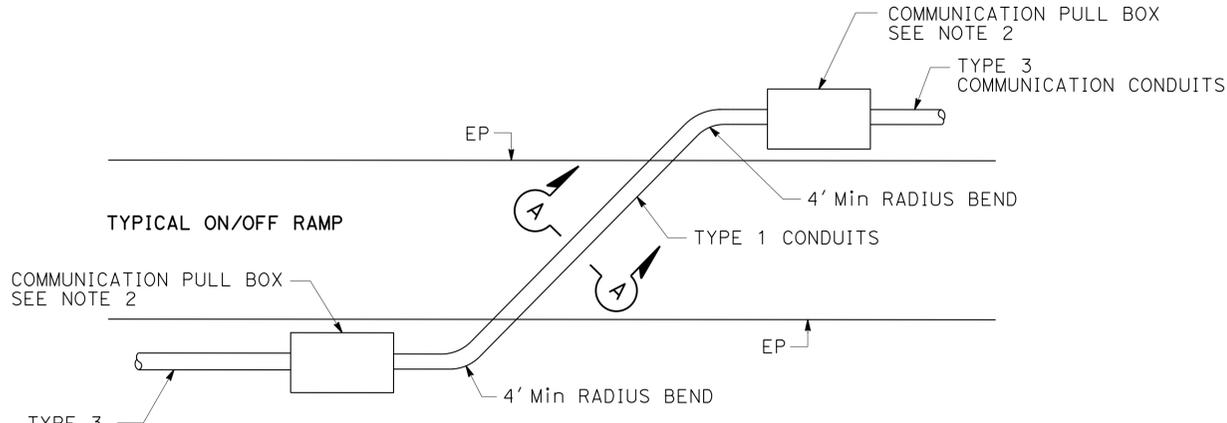
1. ALL JACKED COMMUNICATION CONDUITS SHALL BE 30" MINIMUM BELOW FINISHED GRADE.
2. PLACE PULL BOXES AND SPLICE VAULTS AS SHOWN PER PLANS.
3. ALL BENDS SHALL BE FACTORY BENDS, 4' Min RADIUS BEND.
4. BEND ANGLES AND CONDUIT DIRECTION VARY AS SHOWN PER PLANS.



JACKED COMMUNICATION CONDUIT DETAIL



SECTION A-A



TYPICAL ON/OFF RAMP CROSSING

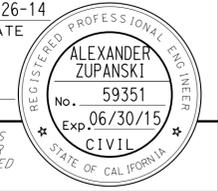
MODIFY COMMUNICATION SYSTEM (JACKING DETAILS)

NO SCALE

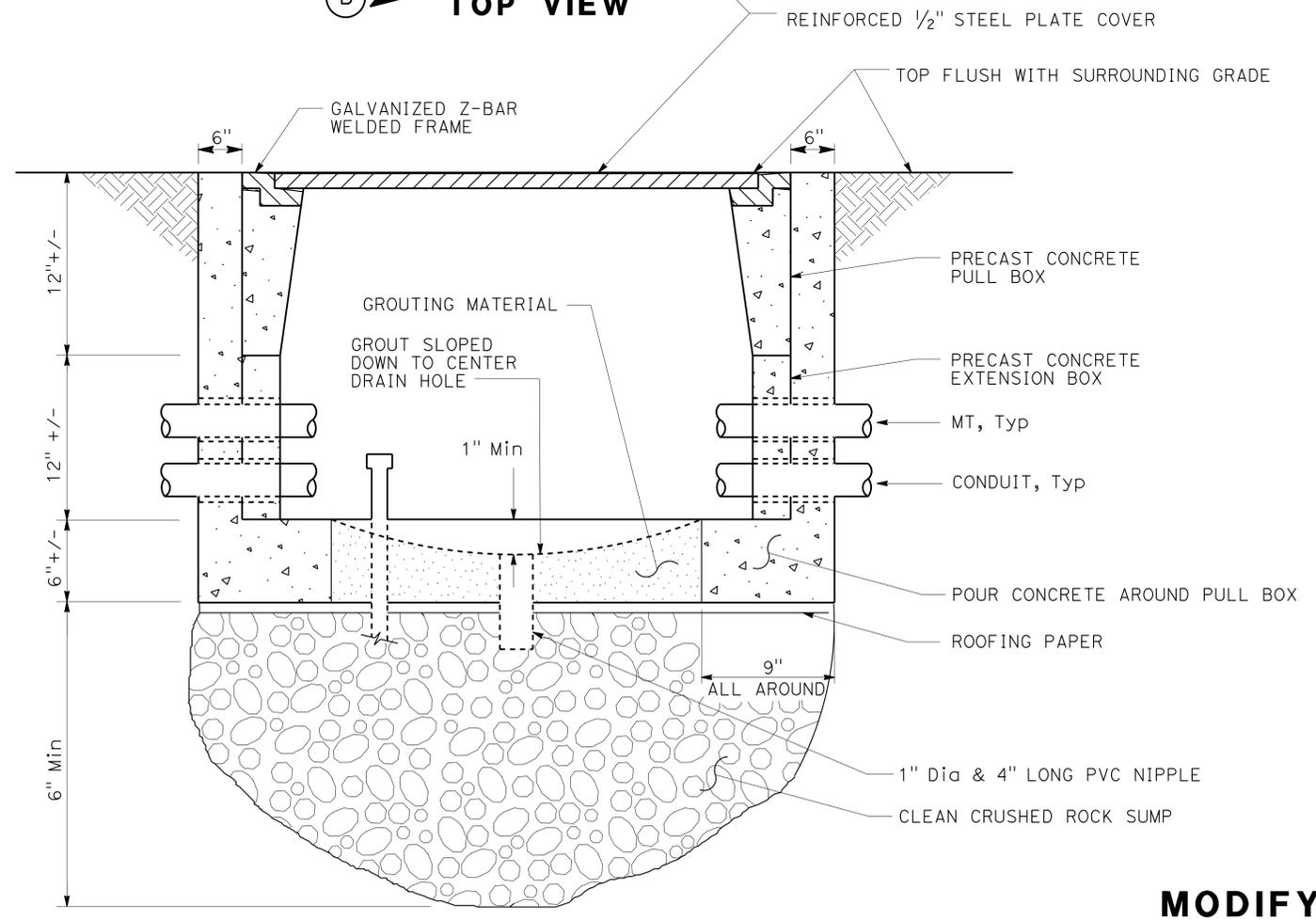
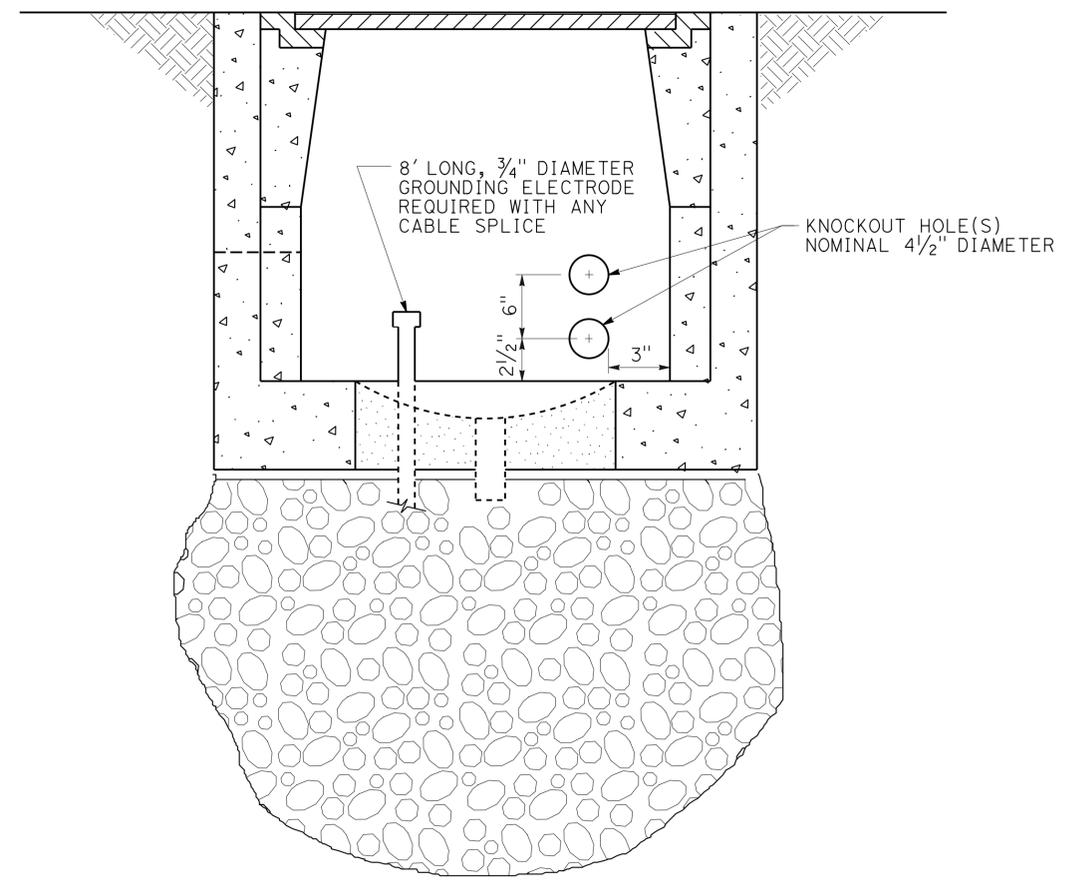
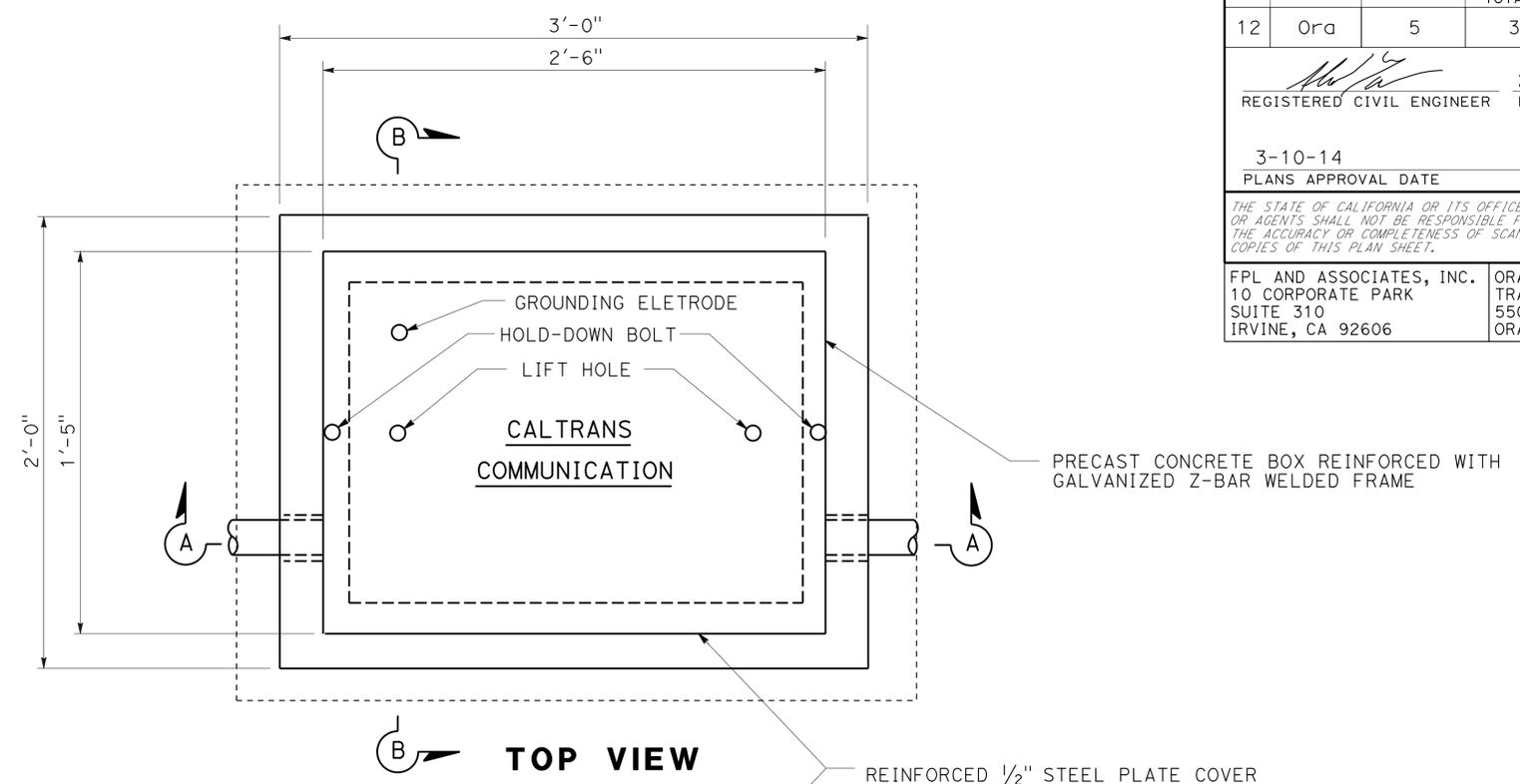
E-89

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
	ALEXANDER ZUPANSKI	HUBURT KANG	HUBURT KANG
	CHECKED BY	DATE	DATE
	RICHARD IVY		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	421	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
3-10-14			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		



- NOTES:** (THIS SHEET ONLY)
- FOR DETAILS NOT SHOWN SEE STD PLAN RSP ES-8A & RSP ES-8B.
 - CONDUITS SHOWN ARE FOR EXAMPLE ONLY. ADDITIONAL CONDUITS MAY BE REQUIRED AS SHOWN ON THE PLAN SHEETS.
 - SEE SPECIAL PROVISIONS REGARDING HOLD-DOWN BOLTS FOR TRAFFIC COVERS.
 - CONDUIT SHALL EXTEND INTO THE PULL BOX A NOMINAL 2" FROM THE INSIDE WALL.



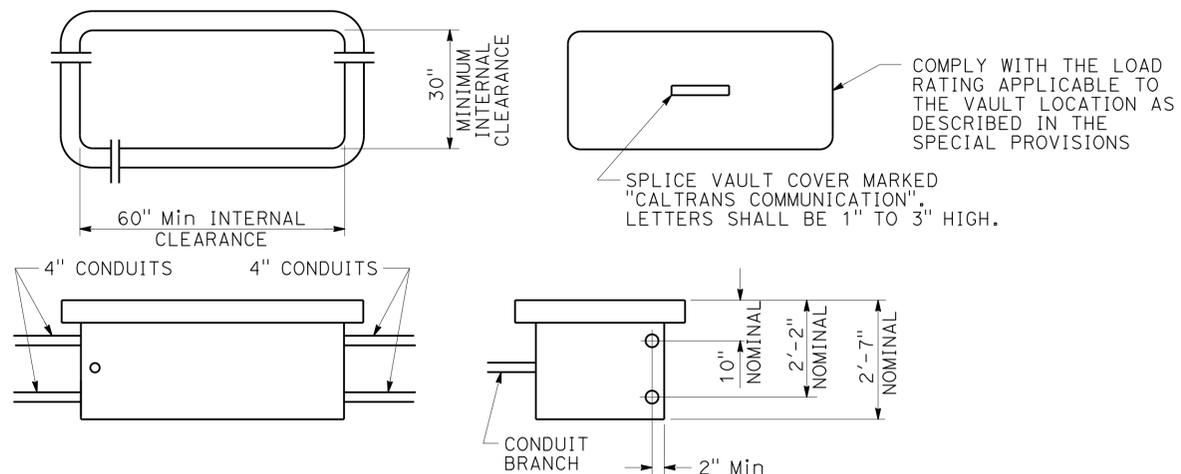
MODIFY COMMUNICATION SYSTEM (PULL BOX DETAIL)
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	REVISOR	DATE
Caltrans	ALEXANDER ZUPANSKI	HUBURT KANG	3-10-14
		RICHARD IVY	

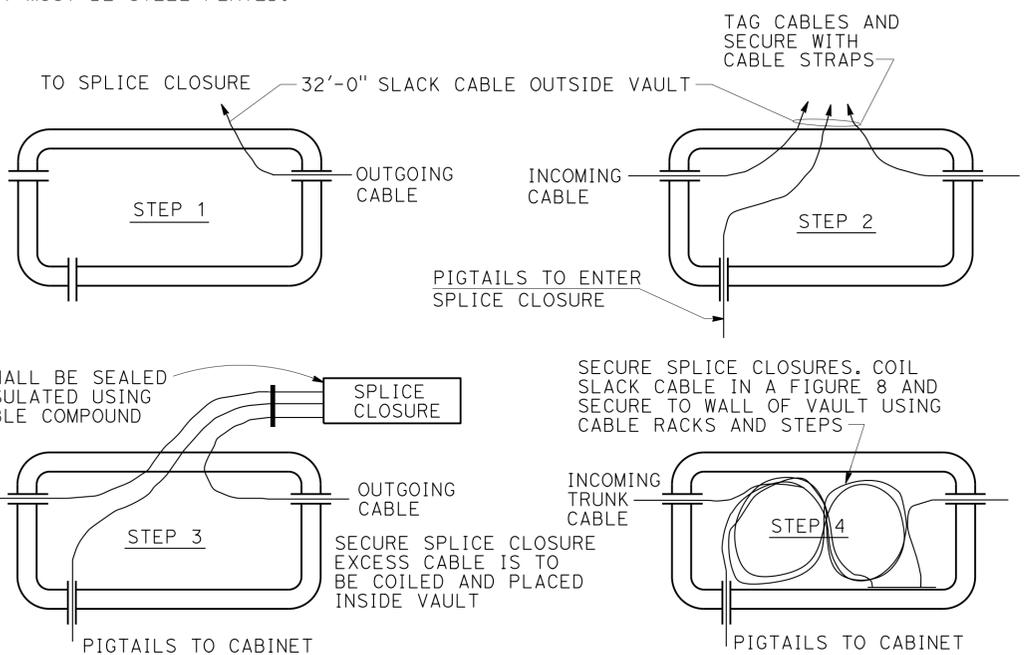
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	422	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
PLANS APPROVAL DATE			3-10-14		
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

NOTES: (THIS SHEET ONLY)

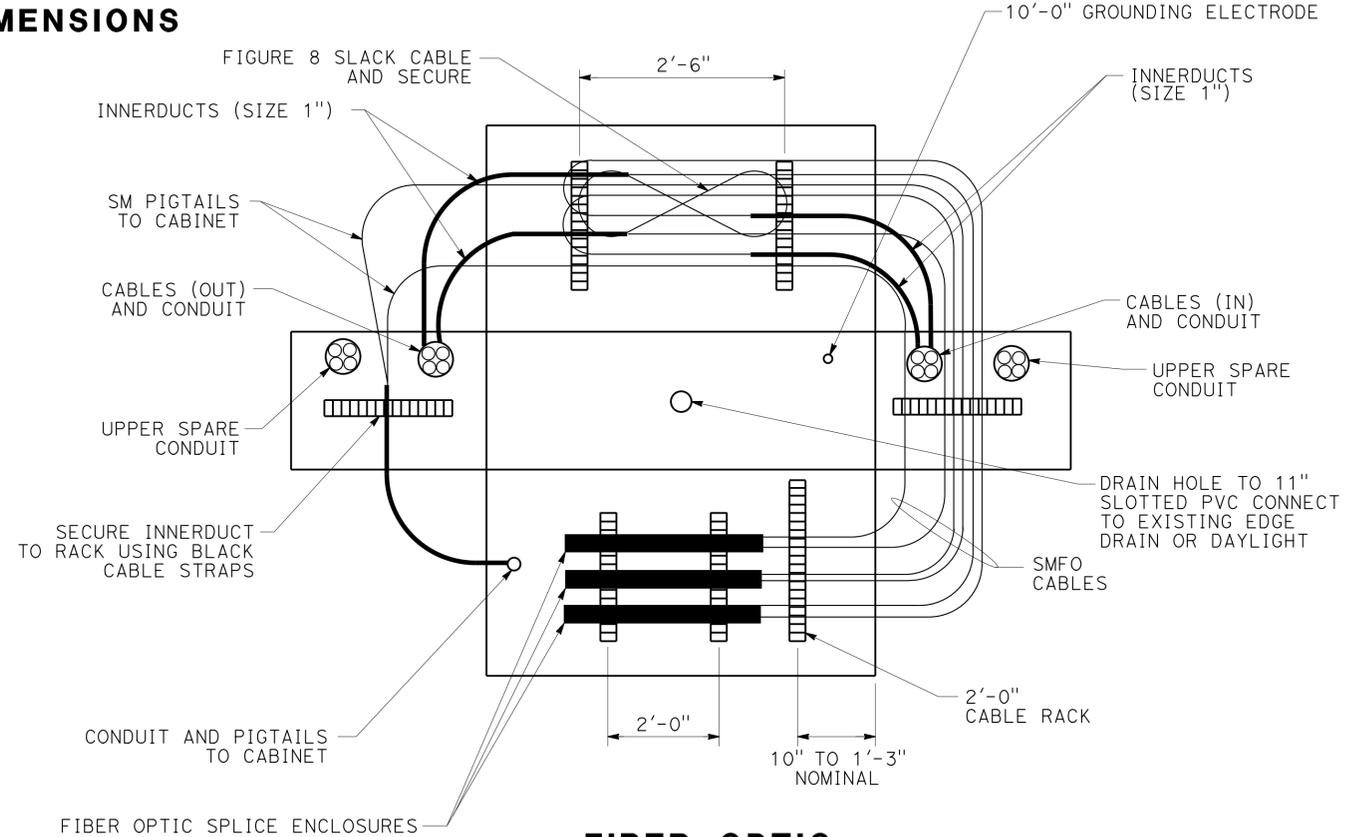
- UPON ACCEPTANCE OF THE WORK, ALL CONDUITS SHALL BE SEALED WITH COMPATIBLE SEALANT MATERIAL.
- ALL GROUND CONNECTIONS SHALL BE COATED WITH OXIDATION PROHIBITING COMPOUND.
- ALL CABLE STRAPS SHALL BE DESIGNED TO WITHSTAND ULTRA-VIOLET EXPOSURE.
- THE VAULT SHALL BE CAULKED AFTER ALL KNOWN ENTRANCES HAVE BEEN MADE.
- INSTALL ALL CABLES IN LOWER SIZE 4" CONDUIT.
- UPPER SIZE 4" CONDUIT IS MT.
- VAULT SHALL HAVE INTEGRAL BASE OR SHALL BE GROUTED PER STANDARD SPECIFICATION OF PULL BOXES.
- NUMBER OF SPLICE CLOSURES AND INNERDUCTS MAY VARY.
- SPLICE VAULT MUST BE STEEL PLATED.



SPLICE VAULT DIMENSIONS



SPLICE PROCEDURE

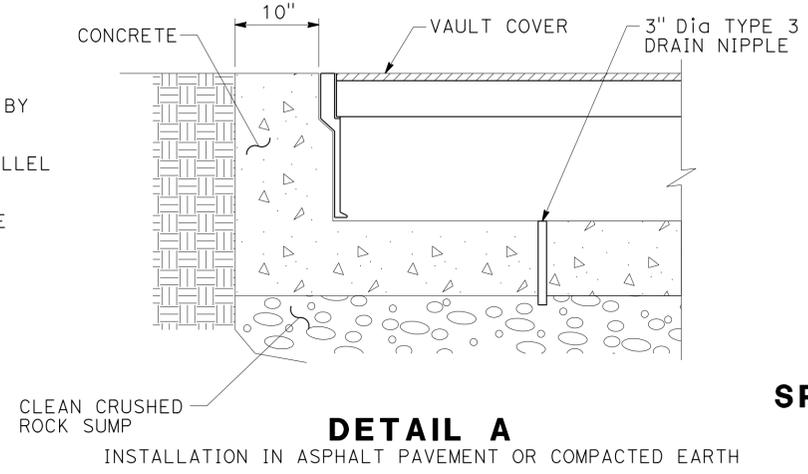


FIBER OPTIC CABLE INSTALLATION

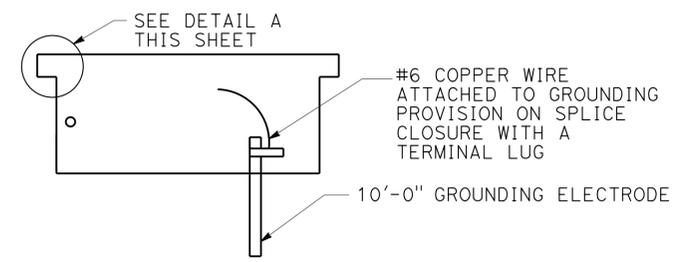
TOP VIEW - WALLS FOLDED DOWN FOR CLARITY

INSTALLATION NOTES:

- CONCRETE RING SHALL BE MINOR CONCRETE.
- PAVEMENT AND SUBGRADE TO BE AS DIRECTED BY THE ENGINEER.
- LONGER SIDE OF SPLICE VAULT MUST BE PARALLEL TO THE DIRECTION OF TRAVEL.
- 10" MINOR CONCRETE BE PLACED BELOW SPLICE VAULT WHEN INSTALLED IN THE SHOULDER.



DETAIL A



SPLICE VAULT INSTALLATION

MODIFY COMMUNICATION SYSTEM (SPLICE VAULT DETAILS)

NO SCALE

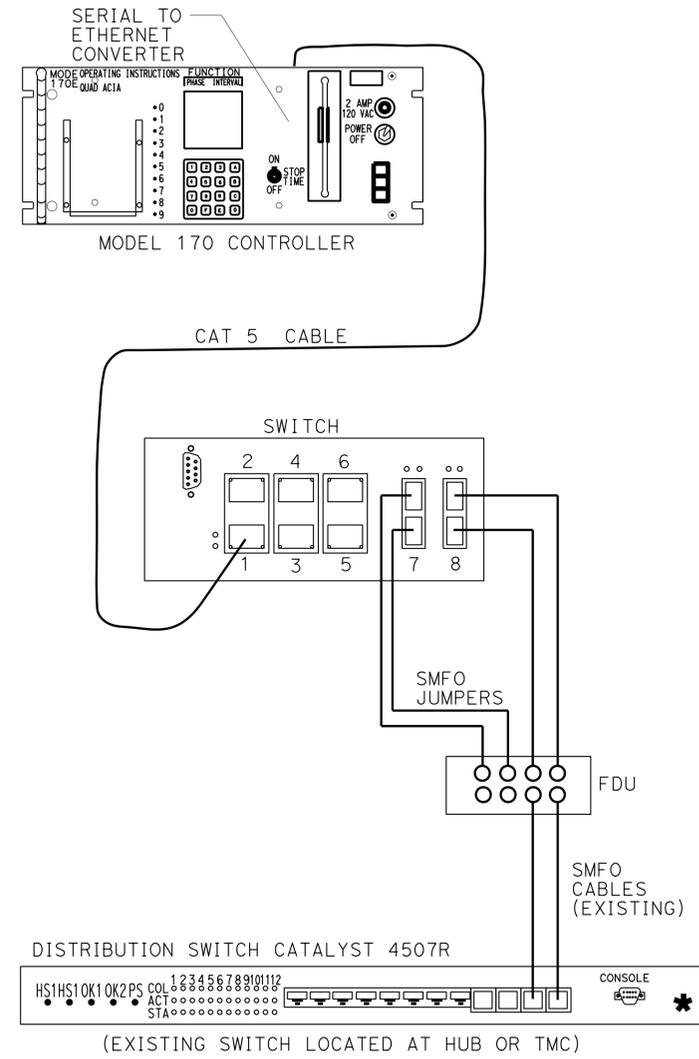
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	423	635

REGISTERED CIVIL ENGINEER	DATE
3-10-14	2-26-14
PLANS APPROVAL DATE	

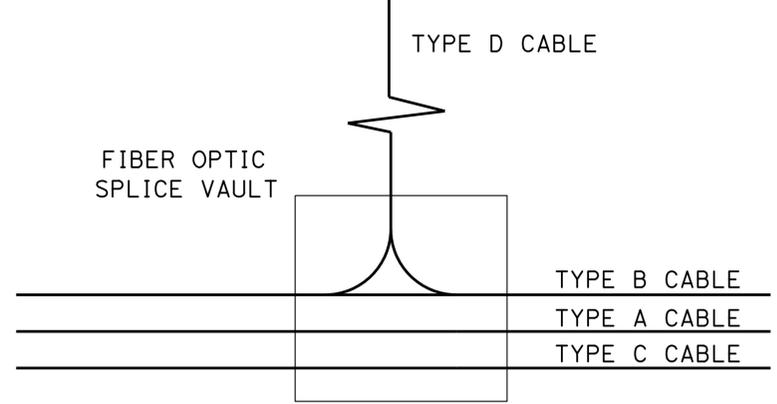
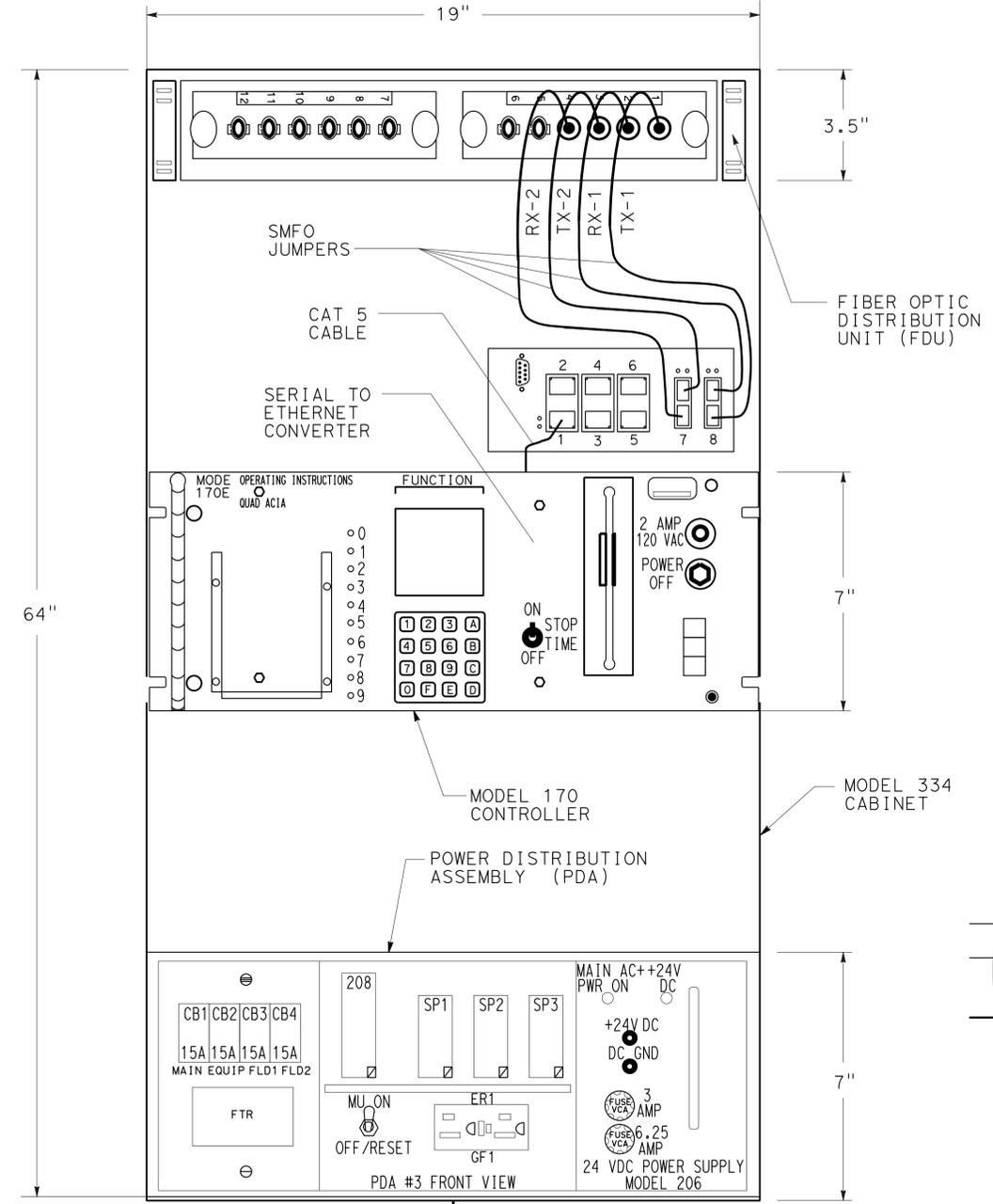
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	--

- NOTES:** (THIS SHEET ONLY)
1. REMOVE MODEL 400 MODEM CARD FROM 170 CONTROLLER.
 2. INSTALL SERIAL TO ETHERNET CONVERTER WITH 5-FOOT CABLE (CAT 5) TO CONTROLLER.
 3. CONNECT OTHER END PLUG OF CAT 5 CABLE TO 1X SOCKET OF SWITCH.
 4. INSTALL 4 SMFO SC JUMPERS BETWEEN SWITCH AND FDU.

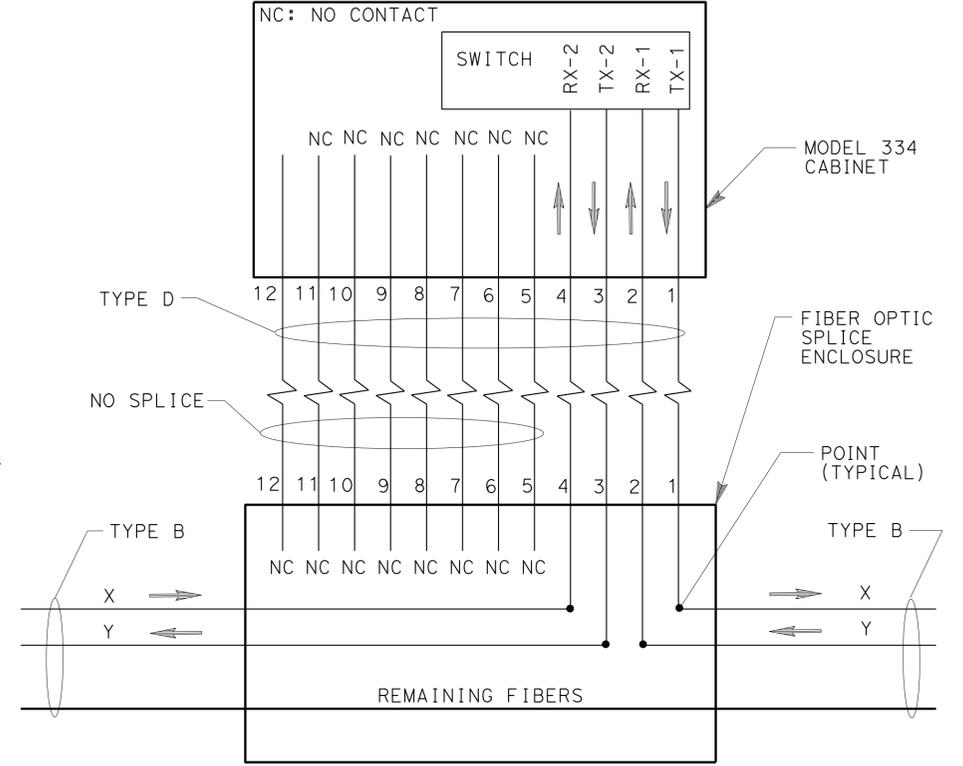
LEGEND:
TX-1: TRANSMIT UPSTREAM TO SWITCH
RX-1: RECEIVE DOWNSTREAM FROM SWITCH
TX-2: TRANSMIT DOWNSTREAM FROM SWITCH
RX-2: RECEIVE UPSTREAM FROM SWITCH



TYPICAL CONNECTION OF FIELD ELEMENTS WITH SMFO (EXISTING)



TYPICAL FIELD ELEMENT CONNECTION (EXISTING)



TYPICAL CONNECTION OF TYPE D TO TYPE B

FIBER ASSIGNMENTS		
	X	Y
TMS - 1	1	2
TS - 1	19	20

MODIFY COMMUNICATION SYSTEM (170 CONTROLLER INTERFACE)

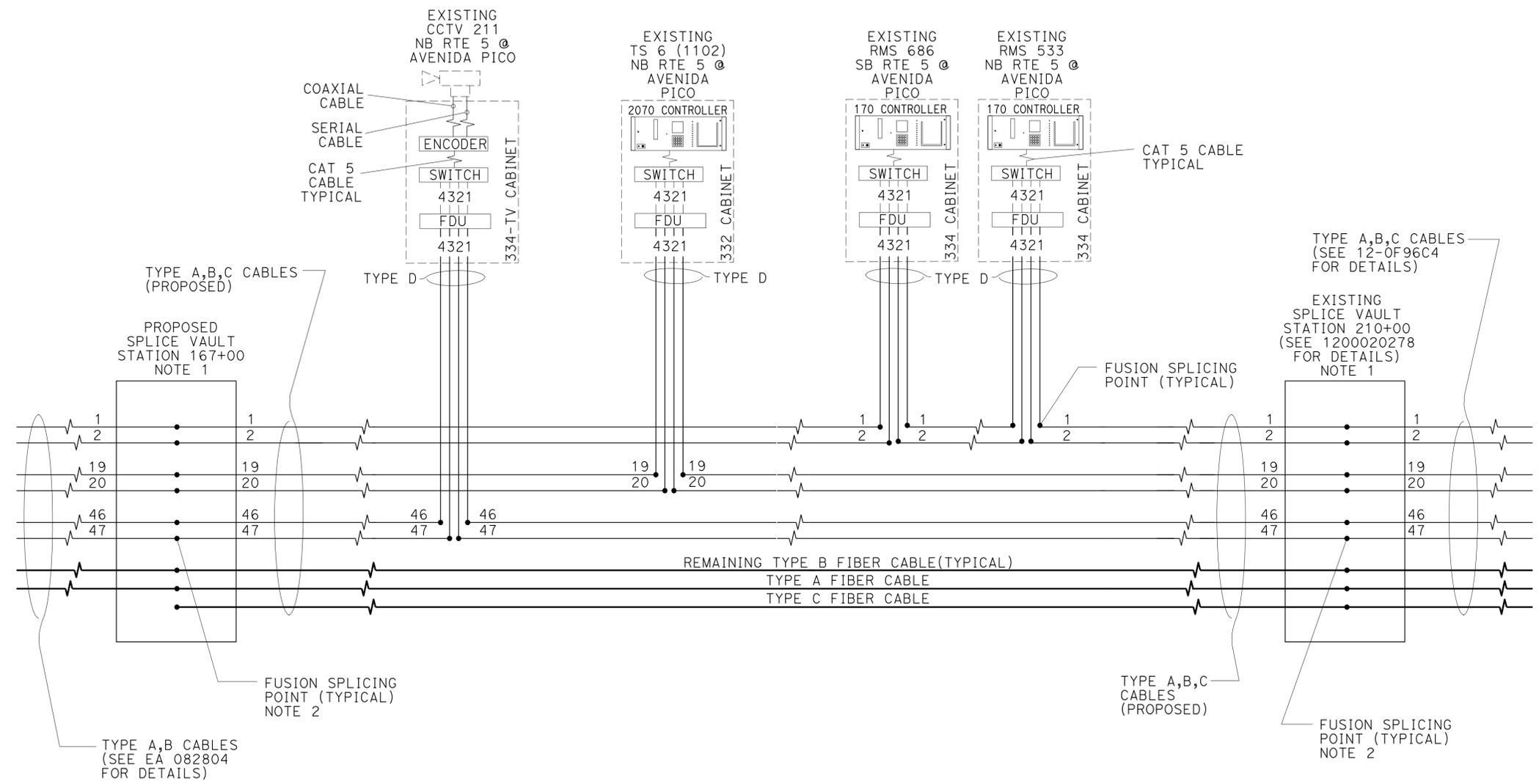
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT: FUNCTIONAL SUPERVISOR: ALEXANDER ZUPANSKI
DESIGNED BY: HUBERT KANG
CHECKED BY: RICHARD IVY
REVISOR: HUBERT KANG
DATE: 7/2/2014

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	424	635
			2-26-14	REGISTERED CIVIL ENGINEER DATE	
			3-10-14	PLANS APPROVAL DATE	
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

NOTES: (THIS SHEET ONLY)

- CONTRACTOR SHALL COIL 70 FOOT SLACK OF TYPE A, TYPE B, TYPE C CABLES AT THIS SPLICE VAULT.
- CONTRACTOR SHALL PERFORM ODR TESTS BEFORE SPLICING FIBER TO FIBER OF EACH PROPOSED CABLE TYPES OF A,B,C TO OTHER CABLE TYPES OF A,B,C, RESPECTIVELY FROM OTHER CONTRACTS.



**MODIFY
COMMUNICATION SYSTEM
(ROUTE 5 FIELD ELEMENTS
SCHEMATIC)**
NO SCALE

E-93

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	REVISOR	DATE
	ALEXANDER ZUPANSKI	HUBERT KANG	
	CHECKED BY	REVISOR	DATE
		RICHARD IVY	

LAST REVISION | DATE PLOTTED => 07-AUG-2014
 00-00-00 | TIME PLOTTED => 06:43

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	425	635

REGISTERED CIVIL ENGINEER	DATE
<i>[Signature]</i>	2-26-14
PLANS APPROVAL DATE	
3-10-14	

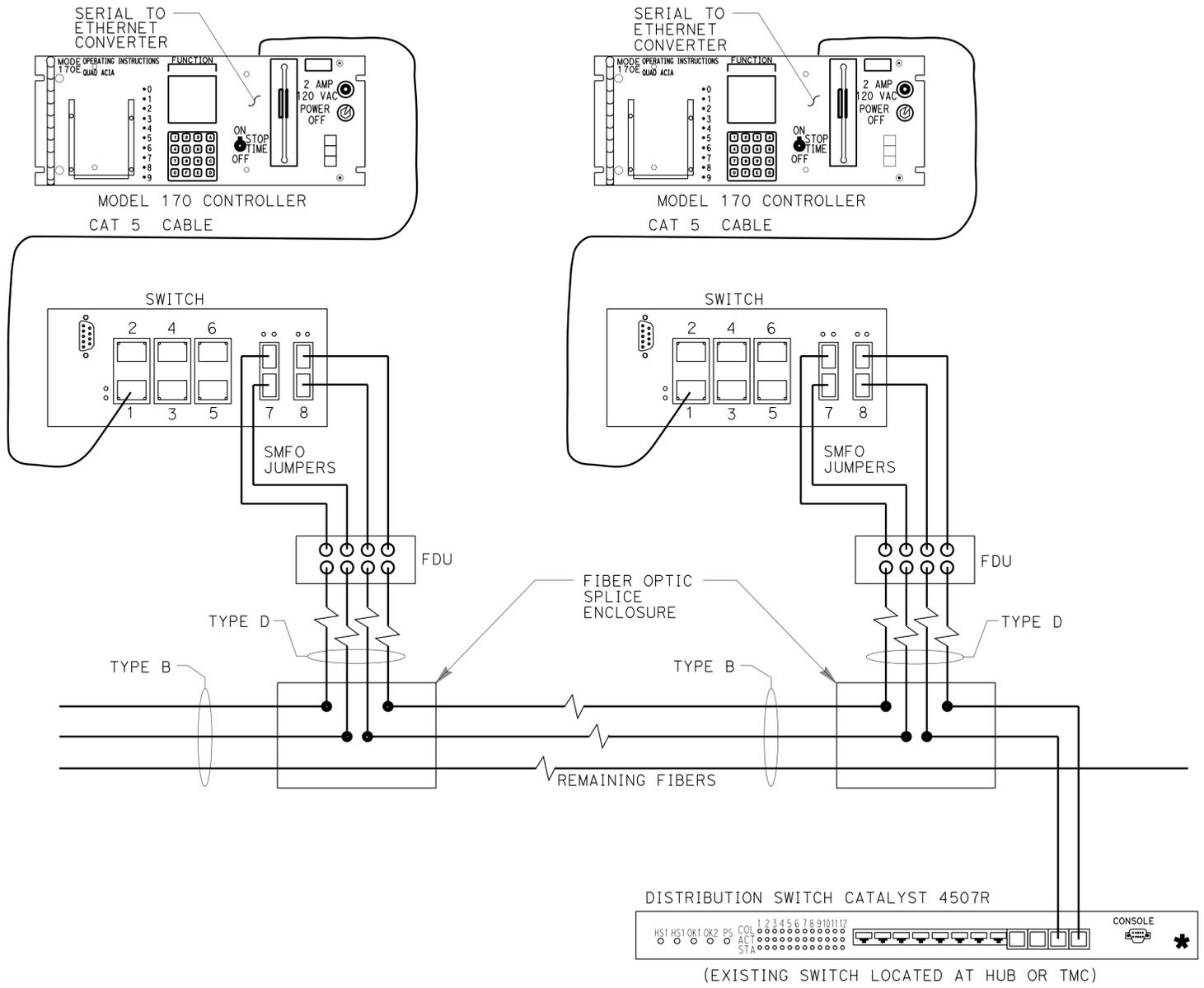
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	---

NOTES: (THIS SHEET ONLY)

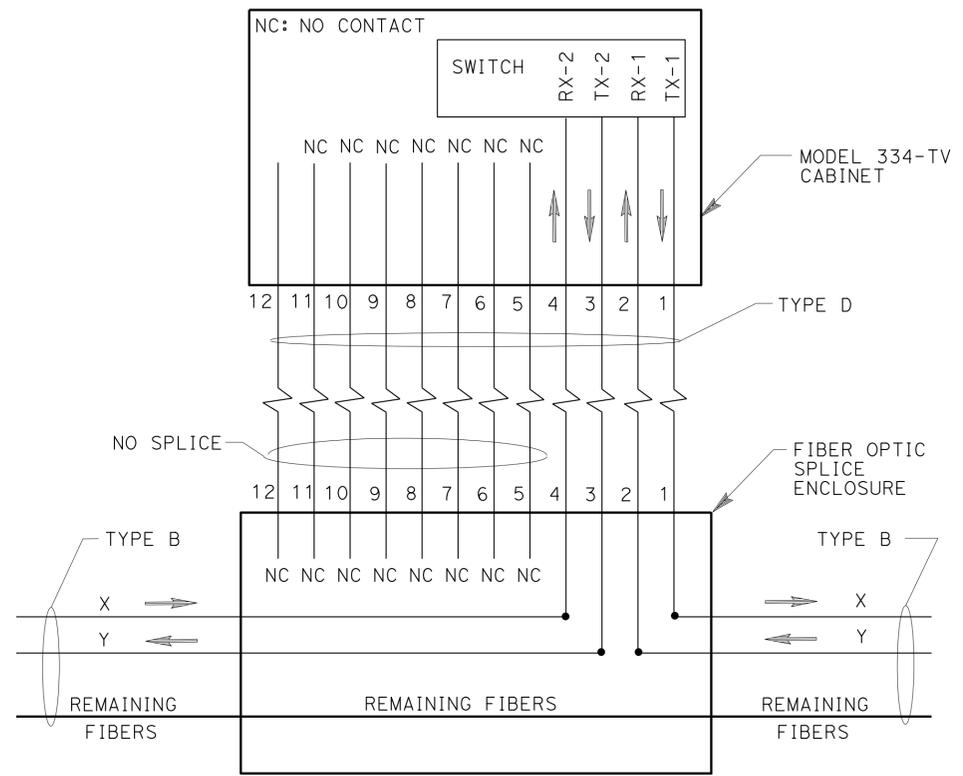
1. REMOVE MODEL 400 MODEM CARD FROM 170 CONTROLLER.
2. INSTALL SERIAL TO ETHERNET CONVERTER WITH 5-FOOT IEC 60603-7 CABLE (CAT 5) TO CONTROLLER.
3. CONNECT OTHER END PLUG OF CAT 5 CABLE TO 1X IEC 60603-7 SOCKET OF SWITCH
4. INSTALL 4 SMFO SC JUMPERS BETWEEN SWITCH AND FDU.

LEGEND:

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



TYPICAL CONNECTION OF FIELD ELEMENTS WITH SMFO (EXISTING)



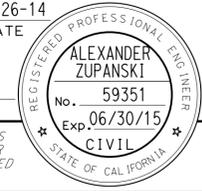
TYPICAL CONNECTION OF TYPE D TO TYPE B

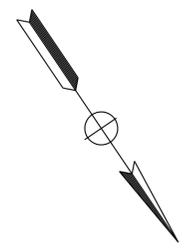
FIBER ASSIGNMENTS		
	X	Y
TMS - 1	1	2
TS - 1	19	20

MODIFY COMMUNICATION SYSTEM (FIBER OPTIC SPLICING FOR TYPE D TO TYPE B DETAIL)

NO SCALE

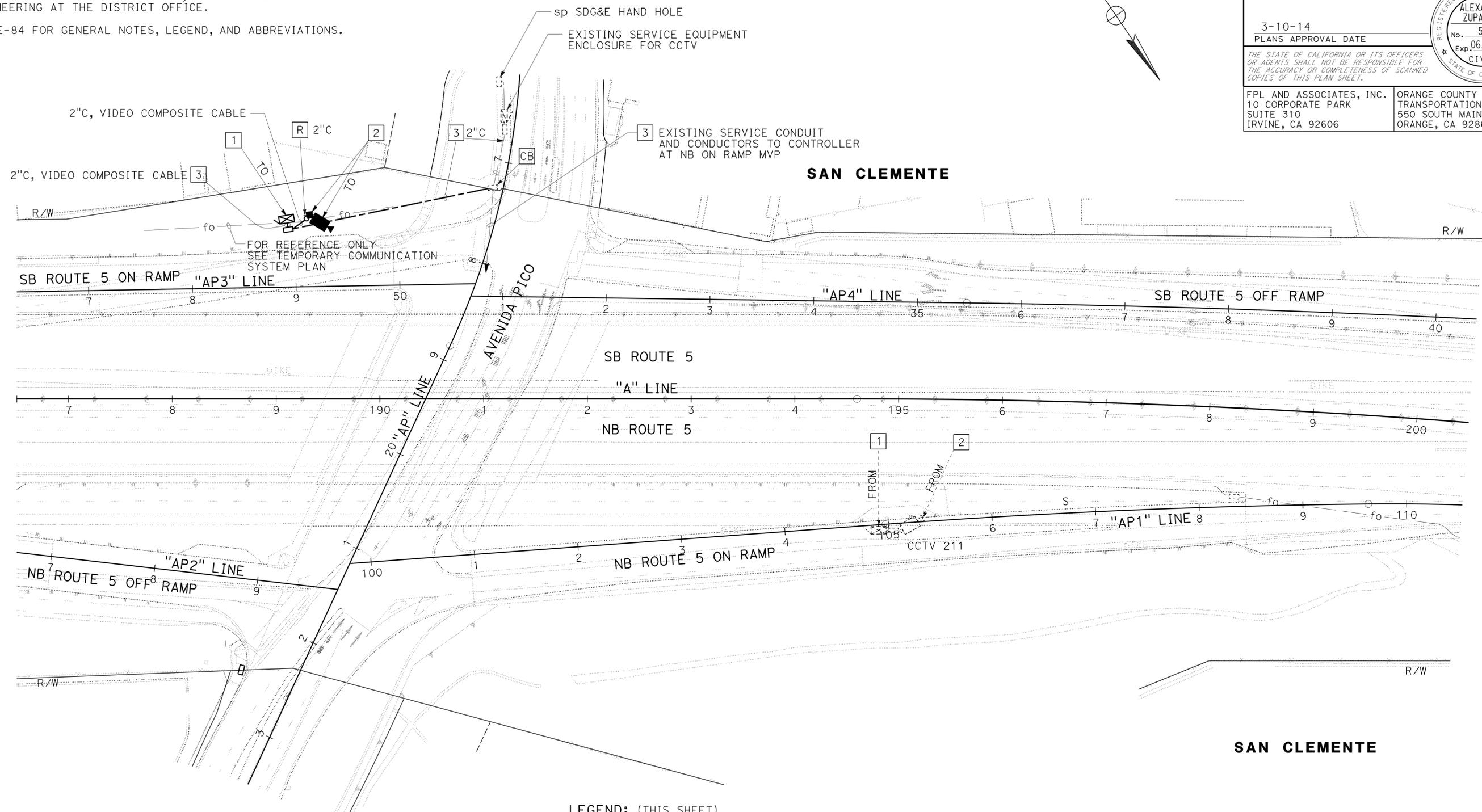
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 CONSULTANT - FUNCTIONAL SUPERVISOR
 HUBERT KANG
 RICHARD IVY
 ALEXANDER ZUPANSKI
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	426	635
			2-26-14	DATE	
REGISTERED CIVIL ENGINEER			DATE		
3-10-14			PLANS APPROVAL DATE		
					
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		



NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-84 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.



LEGEND: (THIS SHEET)

- 1 RELOCATE EXISTING MODEL 334-TV CABINET COMPLETE ON NEW FOUNDATION.
- 2 RELOCATE EXISTING CCTV CAMERA ASSEMBLY TO TEMPORARY WOOD POLE.
- 3 INSTALL 2#6, 1#8 (G), TO RELOCATED CCTV CONTROLLER CABINET FROM SERVICE EQUIPMENT ENCLOSURE.

CLOSED CIRCUIT TELEVISION SYSTEM (STAGE CONSTRUCTION)

SCALE 1" = 50'

E-95

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 Hubert Kang
 Richard Ivy
 Alexander Zupanski
 FPL and Associates, Inc.

LAST REVISION | DATE PLOTTED => 07-AUG-2014
 00-00-00 | TIME PLOTTED => 06:45

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	427	635

REGISTERED CIVIL ENGINEER DATE 2-26-14

PLANS APPROVAL DATE 3-10-14

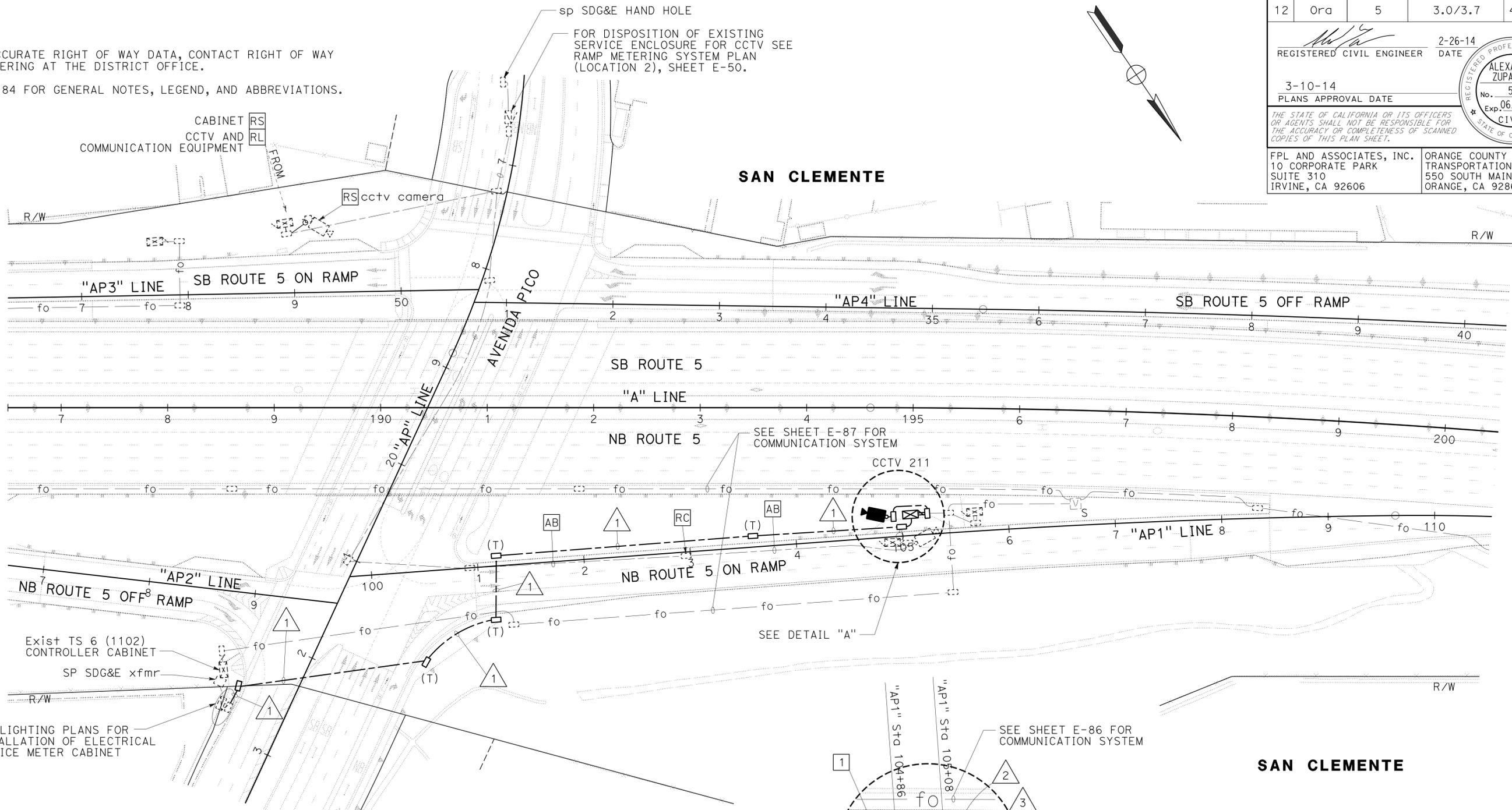
ALEXANDER ZUPANSKI
No. 59351
Exp. 06/30/15
CIVIL

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606

ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863

NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- SEE E-84 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.



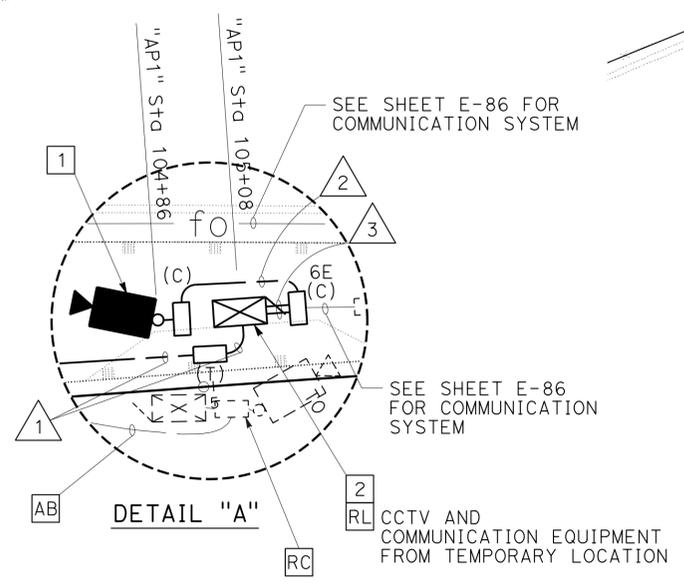
LEGEND: (THIS SHEET)

- INSTALL NEW CCTV TYPE 45 POLE AND CAMERA ASSEMBLY ON NEW FOUNDATION. SEE SHEET E-99 FOR MOUNTING DETAILS.
- INSTALL NEW MODEL 334-TV CABINET ON NEW FOUNDATION. RELOCATE EXISTING CCTV AND ALL COMMUNICATION EQUIPMENT. SEE SHEET E-98 FOR PLACEMENT AND FOUNDATION DETAILS.

CONDUCTOR AND CONDUIT SCHEDULE

AWG OR CABLE	1	2	3
TYPE D CABLE			1
#6 AWG CONTROLLER CABINET	2		
#12 AWG (TRACER WIRE)			1
VIDEO COMPOSITE CABLE		1	1
CONDUIT SIZE	2"	3"	2-3"

ALL CONDUCTORS AND CONDUIT SHALL BE NEW.



CLOSED CIRCUIT TELEVISION SYSTEM

SCALE 1" = 50'

E-96

APPROVED FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

REVISOR BY DATE

HUBERT KANG RICHARD IVY

CALCULATED-DESIGNED BY CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR ALEXANDER ZUPANSKI

USERNAME => s121614
DGN FILE => 1200020277u0096.dgn

RELATIVE BORDER SCALE IS IN INCHES

UNIT 2998

PROJECT NUMBER & PHASE

12000202771

LAST REVISION DATE PLOTTED => 07-AUG-2014
00-00-00 TIME PLOTTED => 06:45

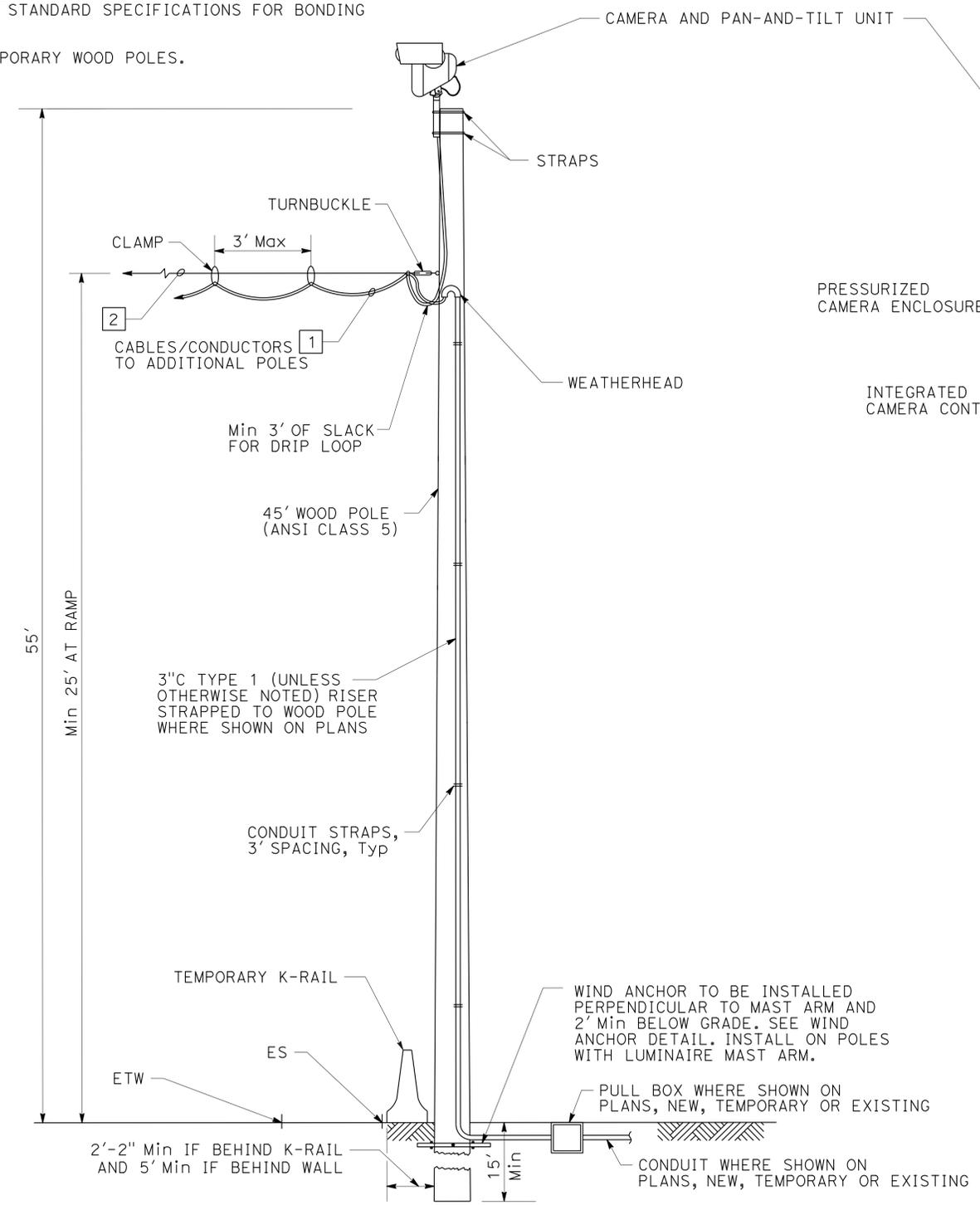
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	428	635

REGISTERED CIVIL ENGINEER	DATE
<i>Alexander Zupanski</i>	2-26-14
PLANS APPROVAL DATE	
3-10-14	

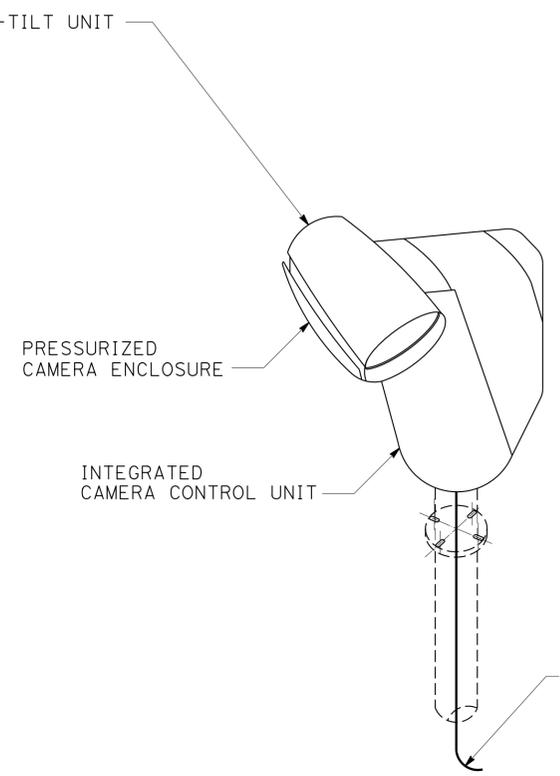
REGISTERED PROFESSIONAL ENGINEER ALEXANDER ZUPANSKI No. 59351 Exp. 06/30/15 CIVIL STATE OF CALIFORNIA	
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863

NOTES:

- WOOD POLES SHALL BE GUYED OR RAKED WHERE NECESSARY.
- OVERHEAD LINE CONSTRUCTION NOT SPECIFICALLY COVERED HEREON SHALL CONFORM WITH THE PROVISIONS OF GENERAL ORDER No. 95 OF PUBLIC UTILITIES COMMISSION.
- CONTRACTOR SHALL PROVIDE EQUIPMENT GROUNDING CONDUCTORS WHICH SHALL RUN CONTINUOUSLY IN ALL NEW AND AFFECTED CIRCUITS. SEE SECTION 86-2.10 OF THE CALTRANS STANDARD SPECIFICATIONS FOR BONDING AND GROUNDING REQUIREMENTS.
- MAXIMUM 200' SPACING BETWEEN TEMPORARY WOOD POLES.

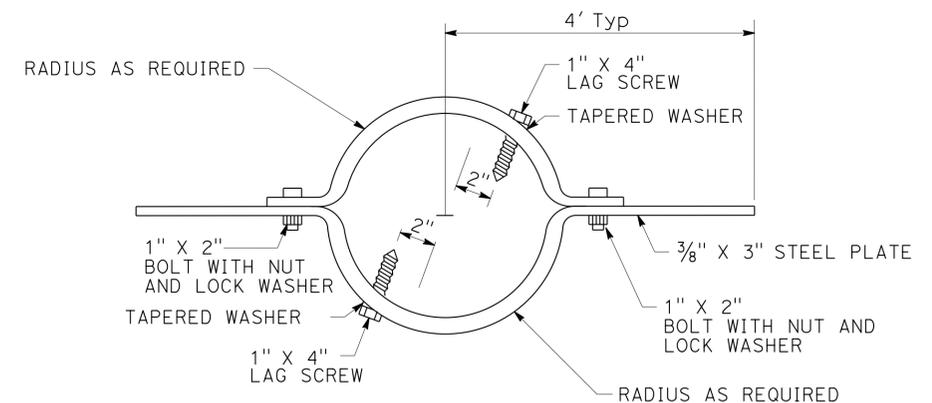


**WOOD POLE MOUNTING
DETAIL "A"**



LEGEND: (THIS SHEET ONLY)

- ALL OVERHEAD CABLE SHALL BE SLACK SPANNED WITH 25' Min CLEARANCE AT CROSSINGS OF ROADWAY WITH VEHICULAR TRAVEL AND 16' Min FOR OTHER OVERHEAD SPANS.
- CABLE SHALL BE SUSPENDED FROM SPAN-WIRE AS FOLLOWS:
 A) ACROSS ROADWAY: 3/8" - SPAN WIRE
 B) OTHER: BARE MESSENGER WIRE



WIND ANCHOR DETAIL

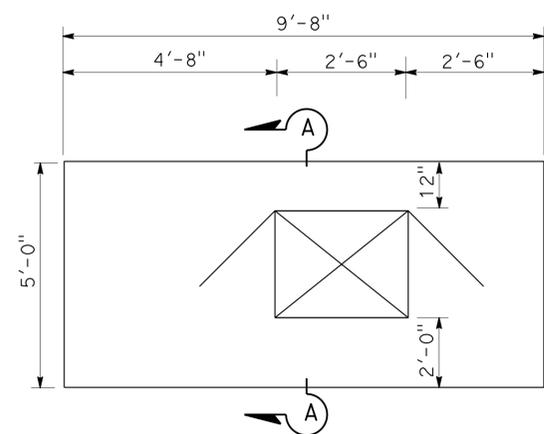
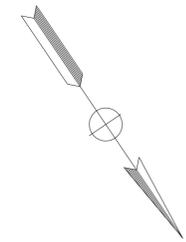
**CLOSED CIRCUIT TELEVISION
(STAGE CONSTRUCTION)
(DETAILS)**

NO SCALE

E-97

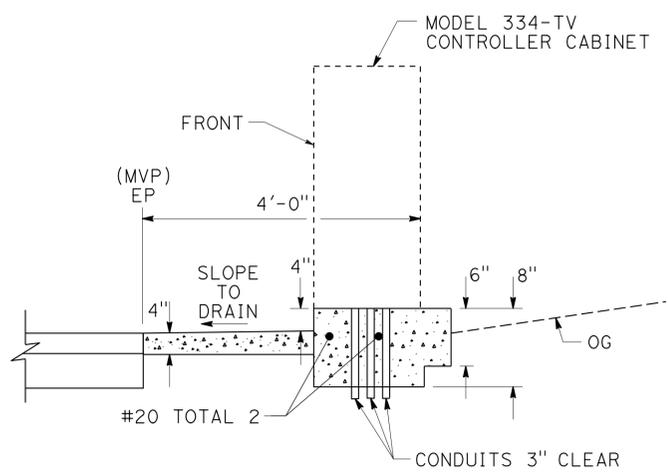
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
Caltrans	ALEXANDER ZUPANSKI	HUBERT KANG	RICHARD IVY
	CHECKED BY	DATE	REVISION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	429	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
PLANS APPROVAL DATE			3-10-14		
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

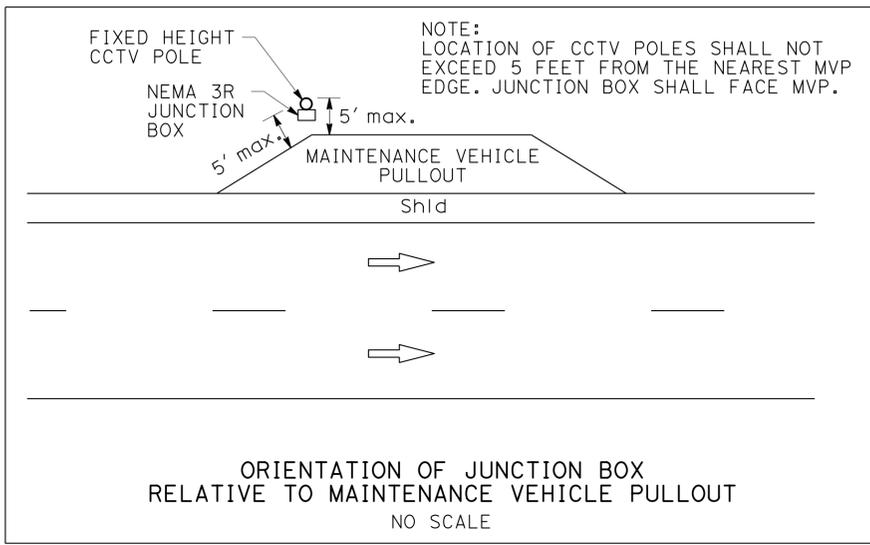


MODEL 334 OR
MODEL 334-TV
CONTROLLER CABINET

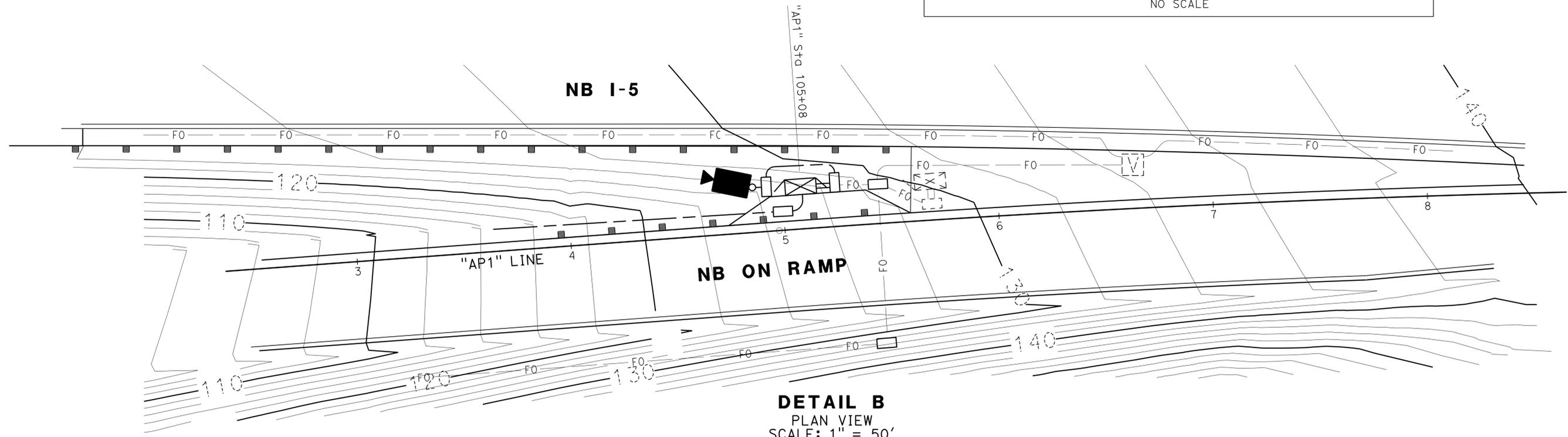
DETAIL A
PLAN VIEW



SECTION A-A
ELEVATION VIEW FOR DETAIL A



ORIENTATION OF JUNCTION BOX
RELATIVE TO MAINTENANCE VEHICLE PULLOUT
NO SCALE



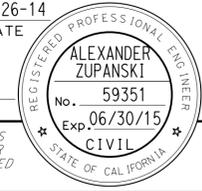
DETAIL B
PLAN VIEW
SCALE: 1" = 50'

**CLOSED CIRCUIT
TELEVISION SYSTEM
(CCTV CABINET DETAILS)**
NO SCALE

E-98

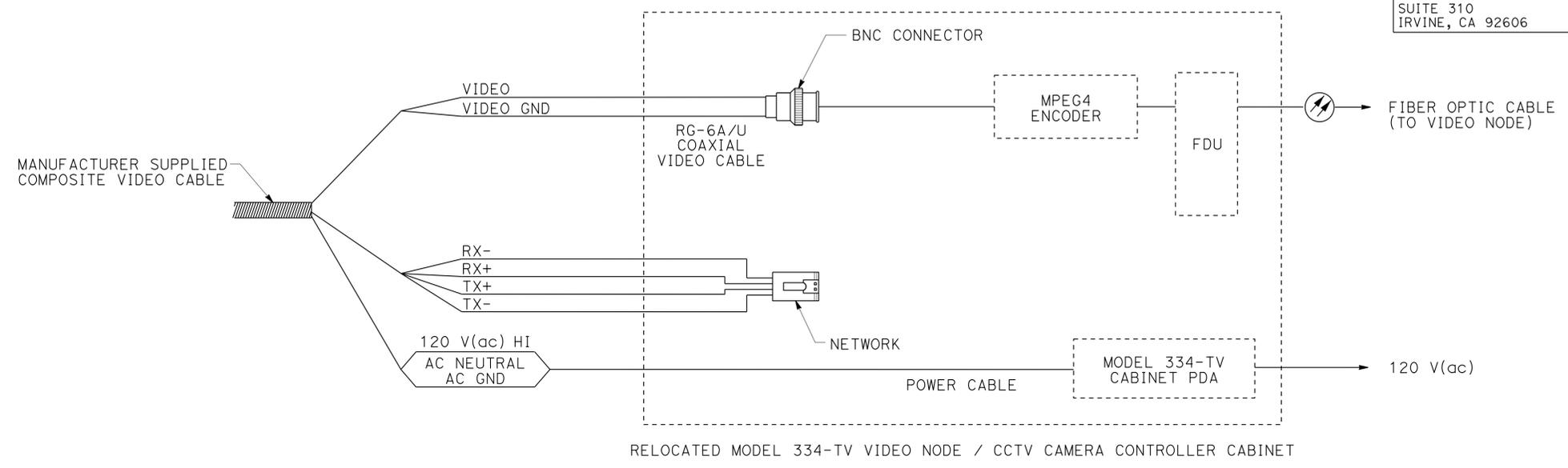
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	REVISOR	DATE
	ALEXANDER ZUPANSKI	HUBERT KANG	
		RICHARD IVY	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	430	635

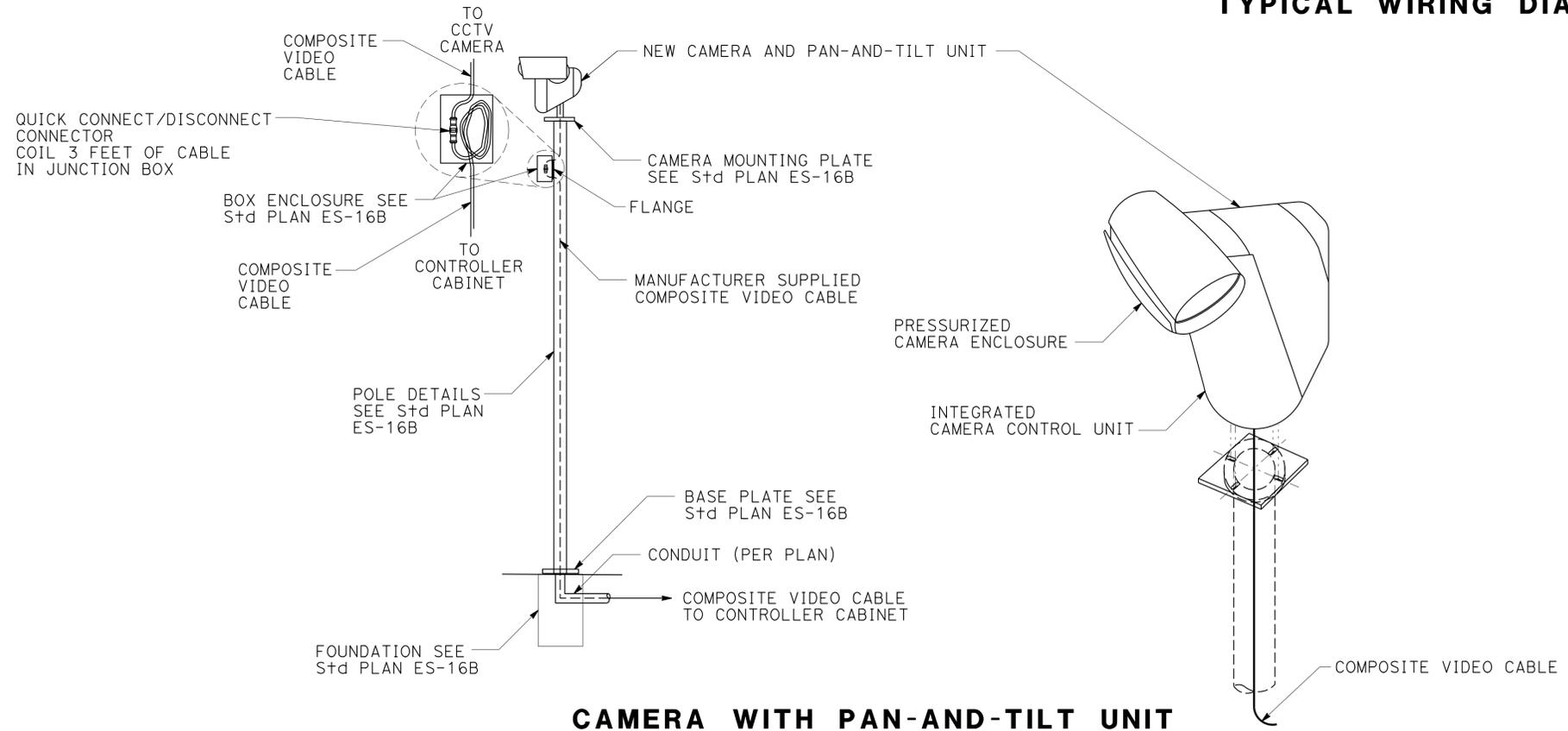
REGISTERED CIVIL ENGINEER	DATE 2-26-14
	
PLANS APPROVAL DATE 3-10-14	
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>	
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863

NOTES: (THIS SHEET ONLY)

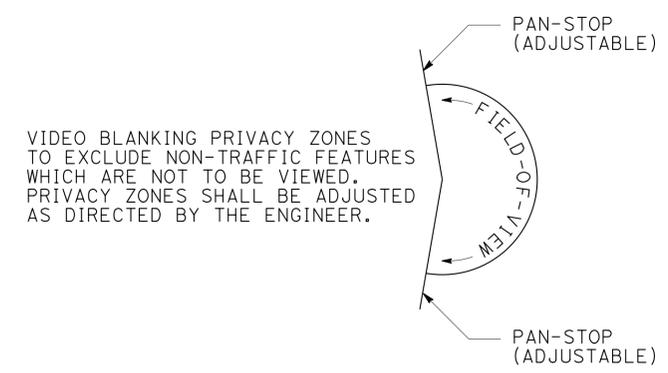
1. THE CONTRACTOR SHALL PROVIDE CABLE LENGTH FROM THE CAMERA ASSEMBLY TO THE LOCAL PATCH PANEL, INCLUDING CONNECTORS, AS SHOWN IN THIS SHEET.
2. THE CONTRACTOR SHALL PROVIDE ALL CABLES FROM THE LOCAL PATCH PANEL TO THE FIBER OPTIC VIDEO TRANSMITTER, FIBER OPTIC CONTROL MODEM AND PDA.
3. ALL CABLES SHALL BE ALUMINUM SHIELDED TO PREVENT CROSS TALK.
4. IN THE CCTV CAMERA CONTROLLER CABINET, THE NUMBER IDENTIFIES THE SPECIFIC CONDUCTOR TO BE USED FOR THE INDICATED FUNCTION.
5. CONNECT ALL DRAIN WIRES OF SHIELDED-CONDUCTORS TO CABINET GROUND AT THE LOCAL PATCH PANEL.
6. INSTALL CONNECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. WATERPROOF ALL CONNECTORS AND CABLES USING WATER-TIGHT GROMMETS, SEALING COMPOUNDS AND TAPE.



TYPICAL WIRING DIAGRAM



CAMERA WITH PAN-AND-TILT UNIT



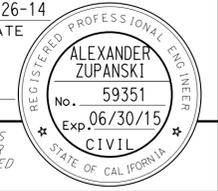
ADJUSTABLE PAN-STOP DETAIL

CLOSED CIRCUIT TELEVISION SYSTEM (CAMERA DETAILS)

NO SCALE

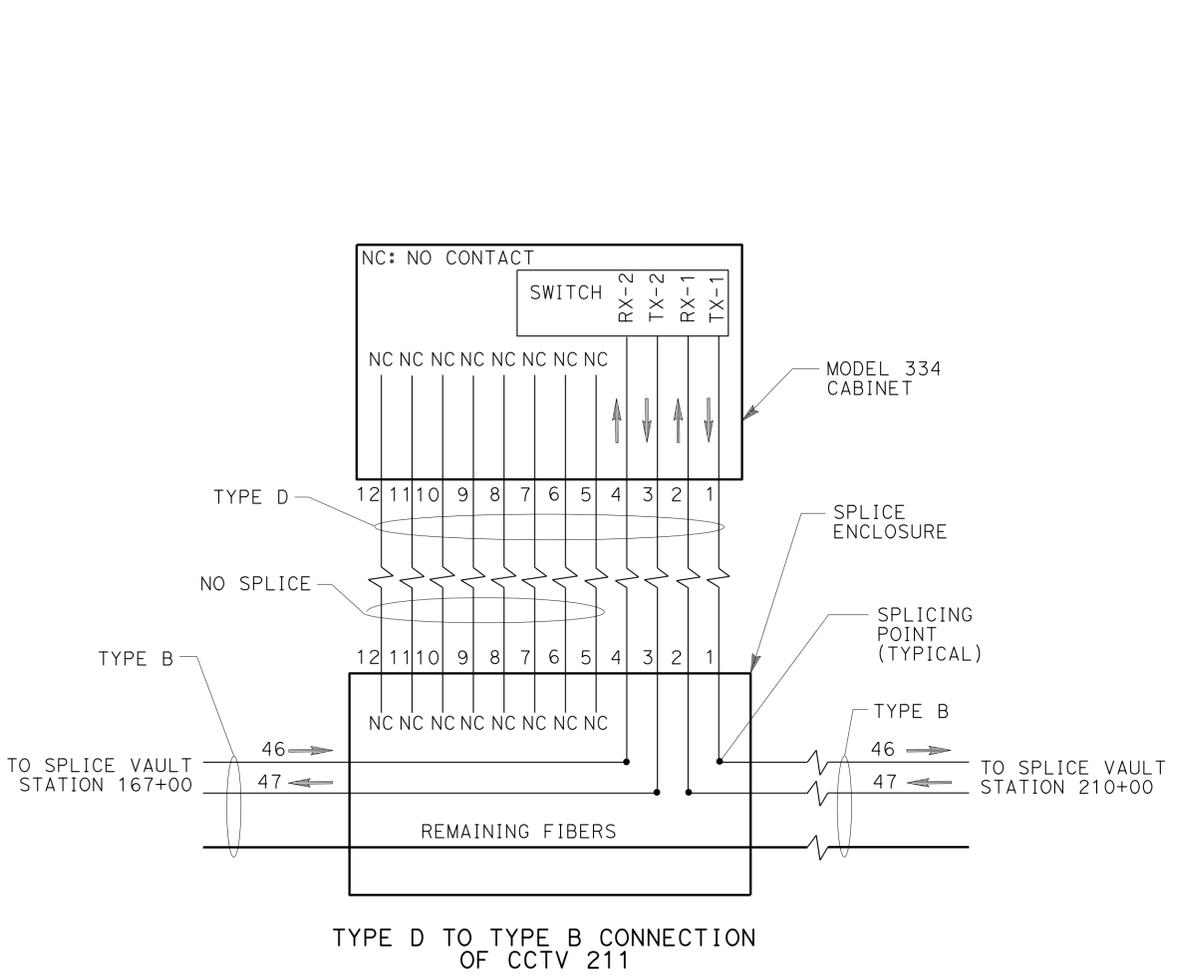
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 Hubert Kang
 Richard Ivy
 Alexander Zupanski
 FPL AND ASSOCIATES, INC.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	431	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
3-10-14			PLANS APPROVAL DATE		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

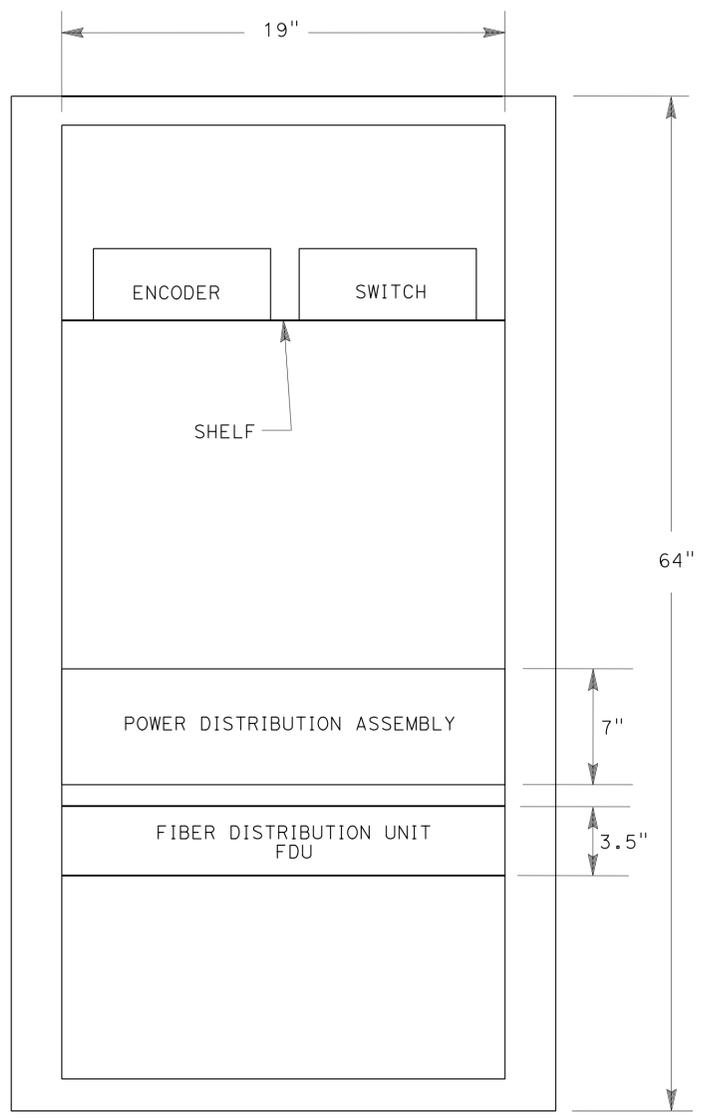
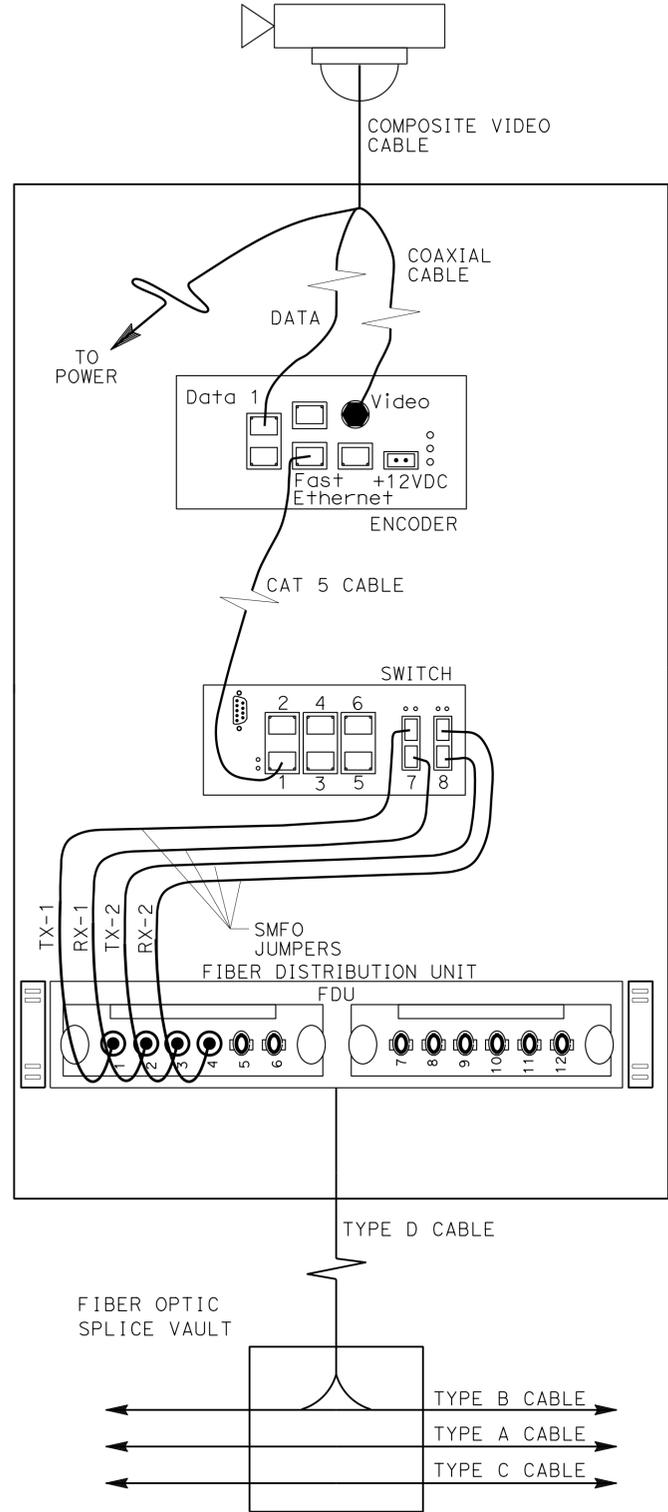


LEGEND:

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



TYPE D TO TYPE B CONNECTION OF CCTV 211



MODEL 334-TV CABINET
EQUIPMENT RACK LAYOUT

CLOSED CIRCUIT TELEVISION SYSTEM (INTERFACE)

NO SCALE

E-100

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	REGISTERED CIVIL ENGINEER	REGISTERED CIVIL ENGINEER	REGISTERED CIVIL ENGINEER
Hubert Kang	Richard Ivy	Alexander Zupanski	
Caltrans			

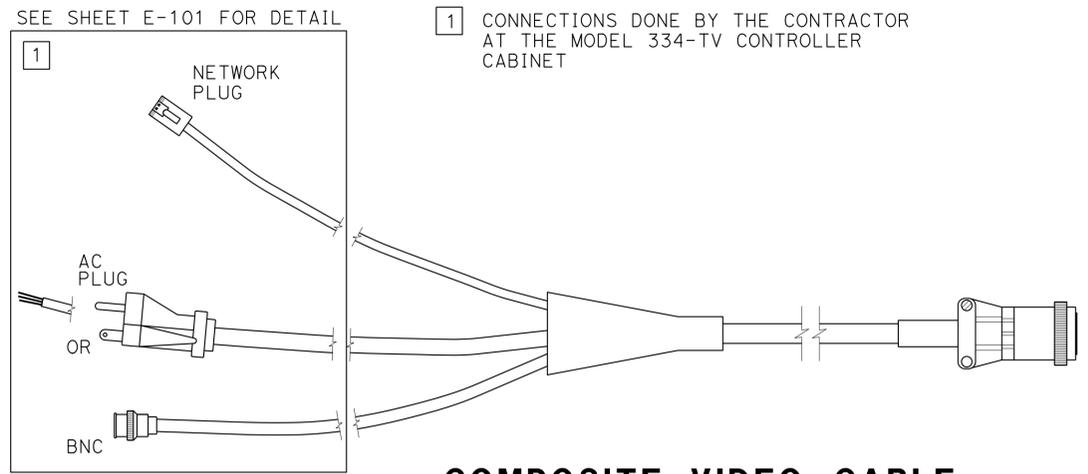
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	432	635

REGISTERED CIVIL ENGINEER	DATE
<i>Alexander Zupanski</i>	2-26-14
PLANS APPROVAL DATE	
3-10-14	

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
--	--

LEGEND: (THIS SHEET ONLY)

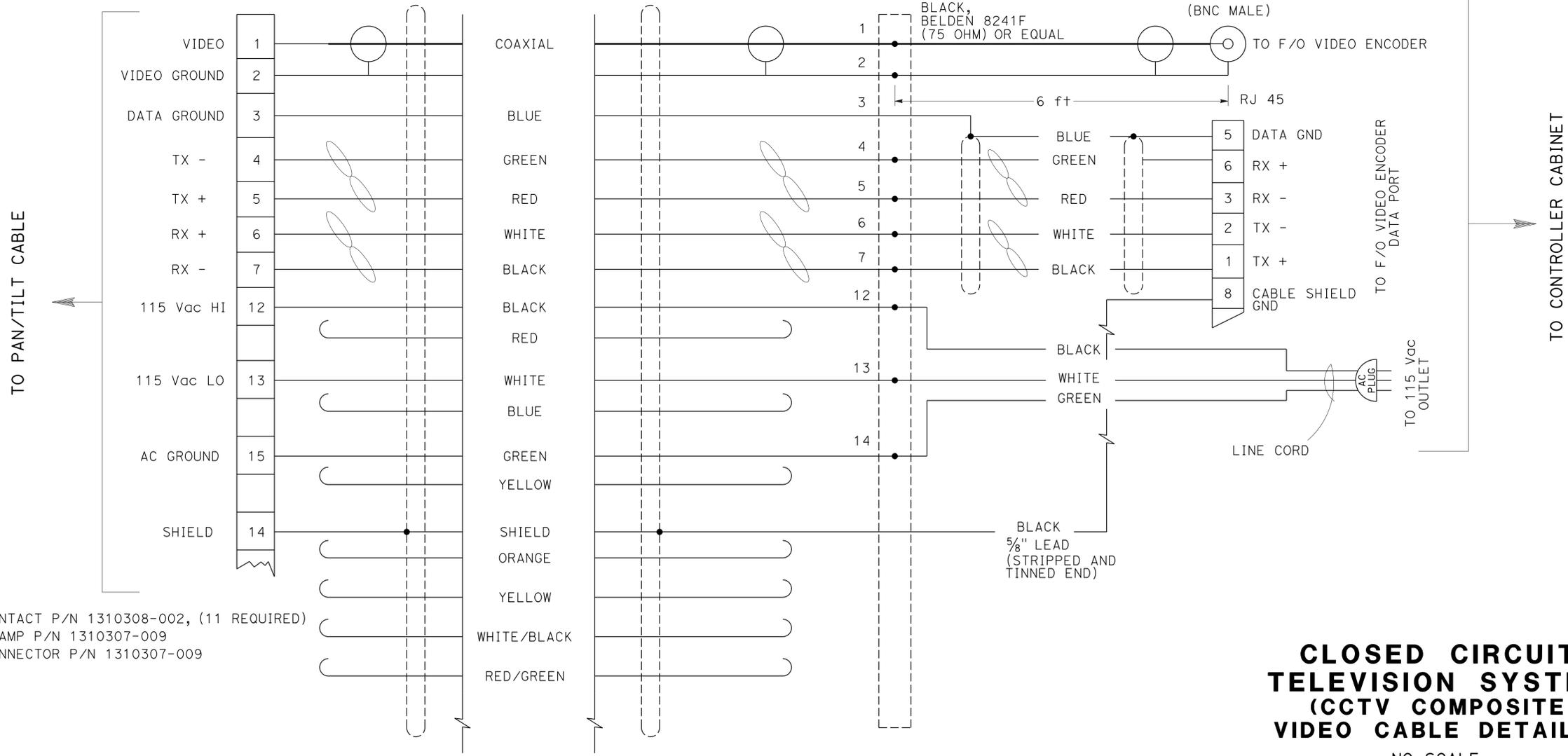
- 1 CONNECTIONS DONE BY THE CONTRACTOR AT THE MODEL 334-TV CONTROLLER CABINET



COMPOSITE VIDEO CABLE

NOTES: (THIS SHEET ONLY)

1. ALL COMPONENTS AND CONNECTORS MUST MEET NEMA TS 2 REQUIREMENTS.
2. THE OVERALL CABLE SHIELD AND DRAIN WIRES SHALL BE PIGTAILED SOLDERED TO A MINIMUM 22 AWG BLACK WIRE ON THE CABINET SIDE.
3. EXPOSED SHIELD/SOLDER INTERFACE SHALL BE TAPED OR PROTECTED BY HEAT SHRINK TUBING.
4. THE GREEN GROUND WIRE SHALL BE TERMINATED TO THE CABINET GROUND BUS.
5. THE SHIELD SHALL ONLY BE GROUNDED AT THE CABINET END. DO NOT GROUND THE SHIELD AT THE CAMERA SIDE TO AVOID GROUND LOOPS.
6. ALL UNUSED CONDUCTORS ARE TO BE FOLDED BACK AND SECURELY TAPED. CONDUCTORS AT THE CCR SIDE SHALL BE PROPERLY PROTECTED AND DRESSED.
7. THE DATA CONDUCTORS SHALL BE THE 2 PAIR, TWISTED WITH OVERALL SHIELD, 26 AWG (FIXED HEIGHT CCTV) OR 22 AWG (HIGH MAST CCTV).
8. THE POWER CONDUCTORS SHALL BE THE 3-CONDUCTOR, 22 AWG (FIXED HEIGHT CCTV) OR 18 AWG (HIGH MAST CCTV).
9. INSTALL THE CABLE/CONDUCTOR WITHOUT SPLICES OR BREAK UNLESS OTHERWISE SHOWN.



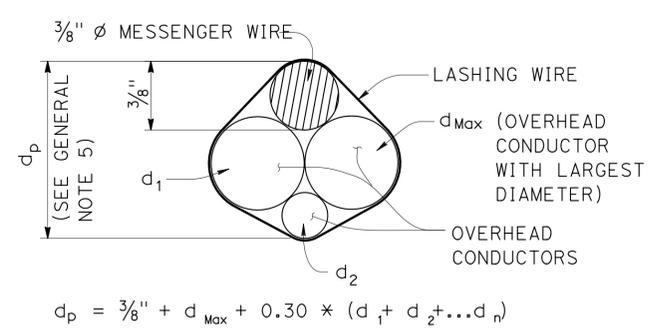
CLOSED CIRCUIT TELEVISION SYSTEM (CCTV COMPOSITE VIDEO CABLE DETAILS)
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT - FUNCTIONAL SUPERVISOR	REVISOR	DATE
Caltrans	ALEXANDER ZUPANSKI	HUBERT KANG	
		RICHARD IVY	

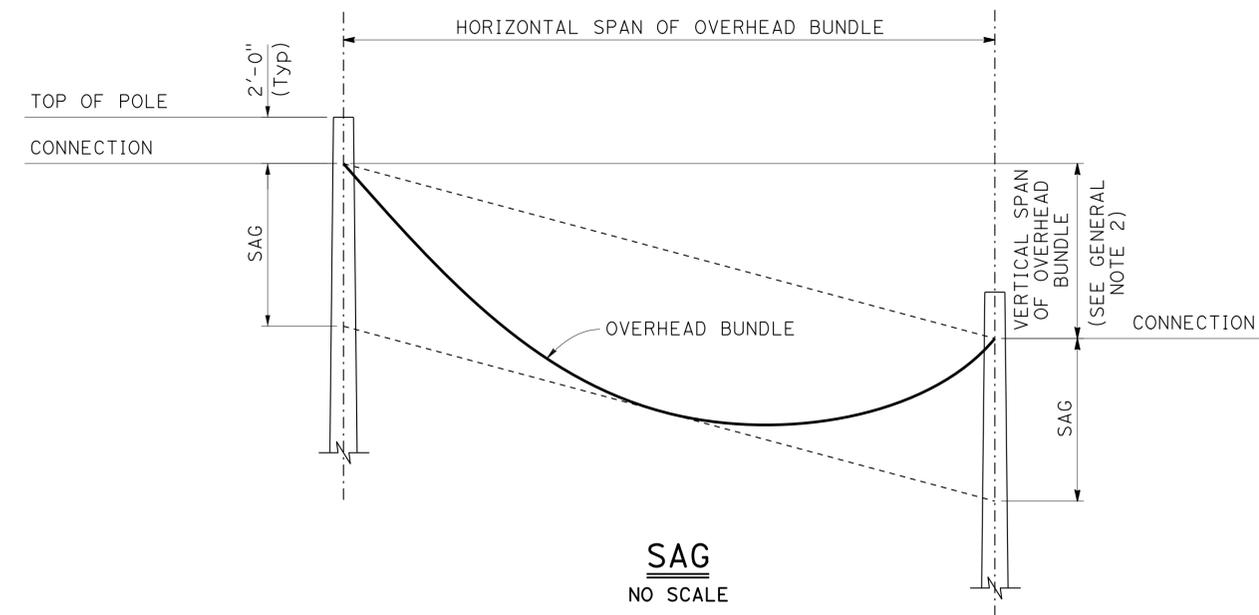
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	433	635

M. Satya P. Mullangi
 REGISTERED CIVIL ENGINEER DATE 2-26-14
 3-10-14
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
 REGISTERED PROFESSIONAL ENGINEER
 SATYA P. MULLANGI
 No. C76064
 Exp. 6/30/14
 CIVIL
 STATE OF CALIFORNIA

OCTA
 550 SOUTH MAIN ST
 ORANGE, CA 92863
 PARSONS
 2201 DUPONT DRIVE, SUITE 200
 IRVINE, CA 92612



PROJECTED DEPTH OF OVERHEAD BUNDLE, (d_p)



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

GROUP LOAD COMBINATIONS:

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

LOADING:

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

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

BASIC DESIGN VALUES:

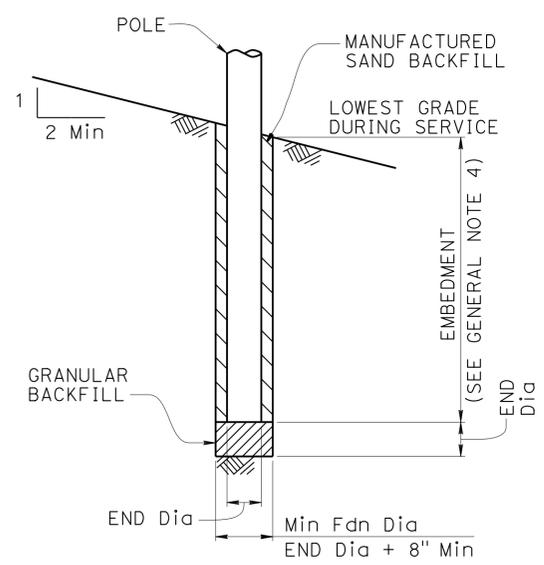
Timber Poles: F_b = 1850 psi
 F_v = 110 psi
 F_{cp} = 230 psi
 F_c = 950 psi
 E = 1500 x 10³ psi

DESIGN WIRE BREAKING STRENGTHS:

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

FOUNDATION DESIGN NOTES:

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



POLE FOUNDATION

GENERAL NOTES:

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

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

NO SCALE

E-102

DESIGN OVERSIGHT	DESIGN BY S. MULLANGI	CHECKED E. Mobo	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	Mohsen Mohseni PROJECT ENGINEER	BRIDGE NO.	TEMPORARY WOOD POLES GENERAL NOTES
SIGN OFF DATE	DETAILS BY P. Johnson	CHECKED E. Mobo			POST MILES	
	QUANTITIES BY J. Fix	CHECKED E. Mobo				

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	434	635

POLE SELECTION TABLE

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

LEGEND

- Wood Pole No Attachments
 - ^A Wood Pole with Attachments
 - OH- Overhead Bundle
- ① CCTV camera assembly or vehicle detection system
 - ② Overhead bundle consisting of a 3/8" Ø messenger wire and overhead conductors and lashing wire.
 - ③ Luminaire with mast arm
 - ④ Pedestrian pushbutton
 - ⑤ Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
 - ⑥ Riser with weather head as required
 - ⑦ Pull box as required
 - ⑧ Grounding as required
 - ⑨ Single section flashing beacon or single sheet sign panel (4 SQFT Max)
 - ⑩ Single sheet sign panel (4' x 4' Max) or signal face with 3 indications
 - ⑪ Flashing beacon control assembly
 - ⑫ NEMA 3R enclosure, 26"(W) x 56"(H) x 12"(D) Max dimensions. Max weight including batteries, 450 lbs
 - ⑬ 25' SQFT Max total photovoltaic panels mounted as shown as required
 - ⑭ 2-section 12" flashing beacon

2-26-14
DATE

REGISTERED CIVIL ENGINEER

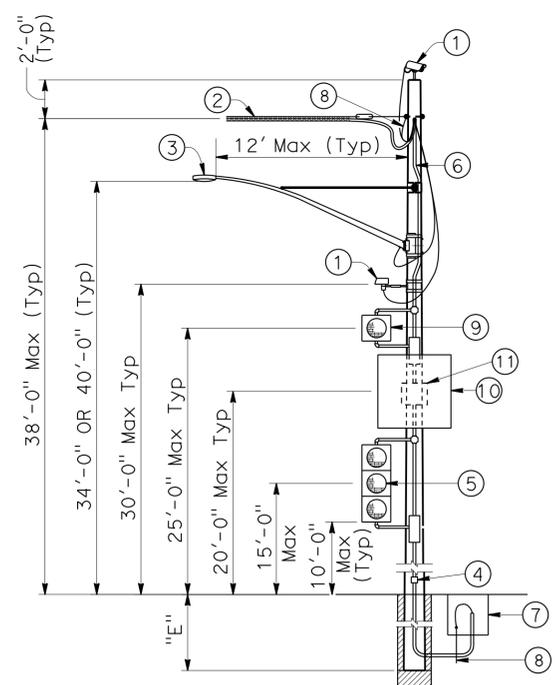
3-10-14
PLANS APPROVAL DATE

SATYA P. MULLANGI
No. C76064
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

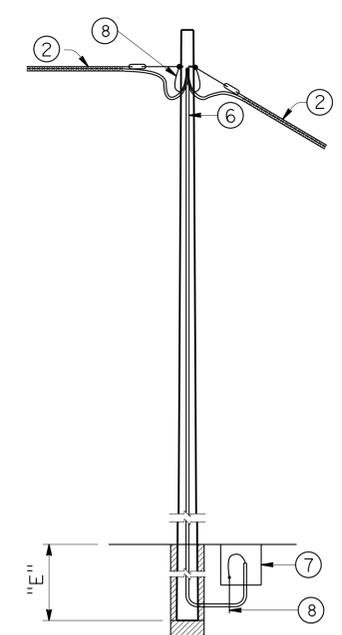
OCTA
550 SOUTH MAIN ST
ORANGE, CA 92863

PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612

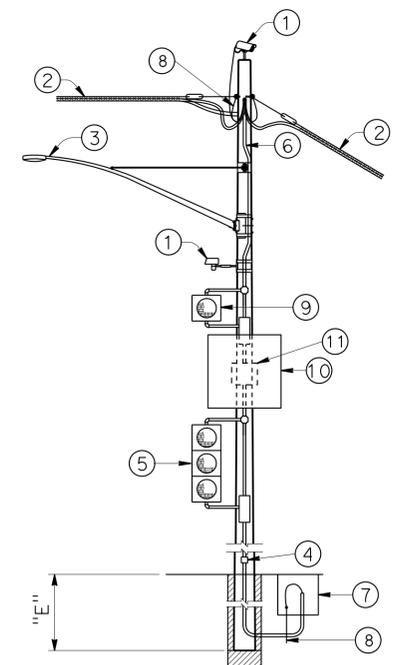
- #### NOTES:
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
 2. Cases 1N, 3N and 4N may substitute the attachments shown in Case 5N if the photovoltaic panel is not included.



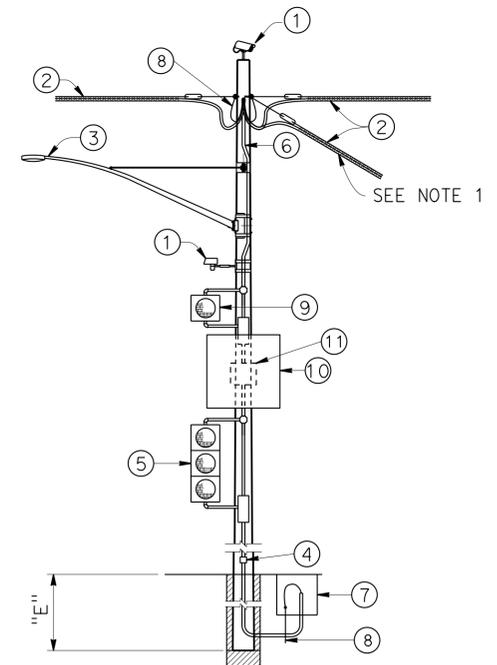
**CASE 1N
POLE AT DEAD END
WITH ATTACHMENTS**
SEE NOTE 2



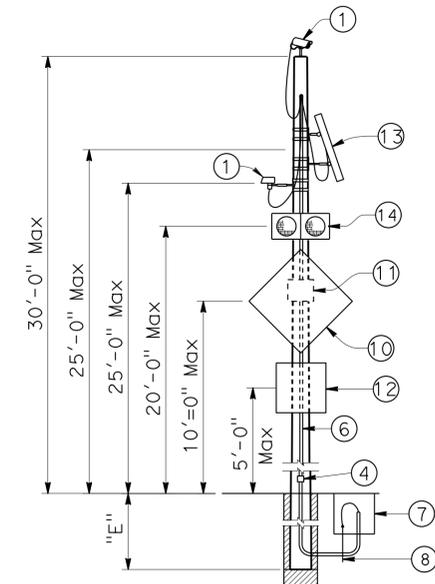
**CASE 2N
POLE AT TANGENT
WITHOUT ATTACHMENTS**



**CASE 3N
POLE AT TANGENT OR CORNER
WITH ATTACHMENTS**
SEE NOTE 2



**CASE 4N
POLE AT JUNCTION
WITH ATTACHMENTS**
SEE NOTE 2



**CASE 5N
POLE WITHOUT OVERHEAD BUNDLE
WITH ATTACHMENTS**

DESIGN OVERSIGHT	DESIGN BY: S. MULLANGI	CHECKED: E. MODO	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER: Mohsen Mohseni	BRIDGE NO.	TEMPORARY WOOD POLES NON-GUYED - NO SIGNALS ON SPANS
SIGN OFF DATE	DETAILS BY: P. Johnson	CHECKED: E. MODO	PROJECT NUMBER & PHASE: 12000202771	CONTRACT NO.: 12-0F96A4	POST MILES	
DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)	QUANTITIES BY: J. Fix	CHECKED: E. MODO	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	NO SCALE E-103
			0 1 2 3	5/28/12 11/15/12 3/04/13 4/26/13	SHEET 2 OF 10	

FILE => 1200020277ua103.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	435	635



REGISTERED CIVIL ENGINEER DATE 2-26-14
 PLANS APPROVAL DATE 3-10-14
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

OCTA
 550 SOUTH MAIN ST
 ORANGE, CA 92863
 PARSONS
 2201 DUPONT DRIVE, SUITE 200
 IRVINE, CA 92612

POLE SELECTION TABLE

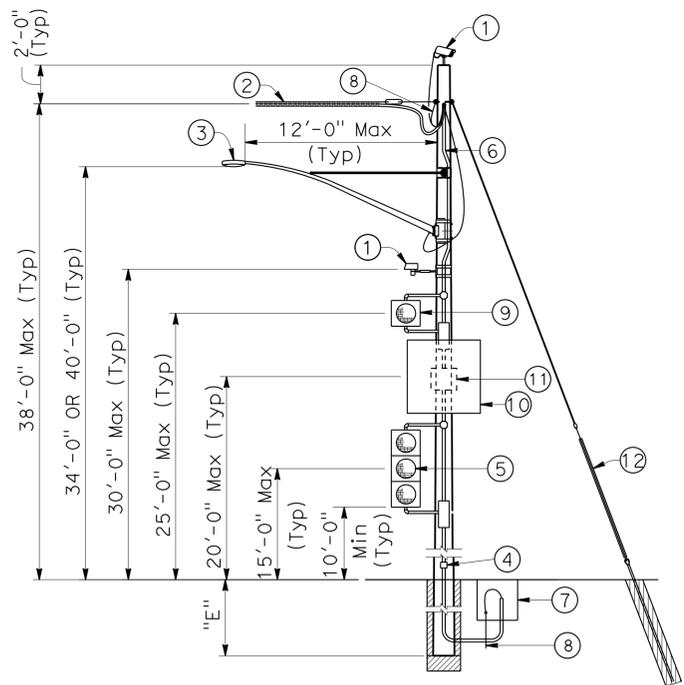
OVERHEAD BUNDLE HORIZONTAL SPAN (Max)	MAXIMUM d _p	CASE 1G				CASE 2G				CASE 3G				CASE 4G			
		1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"
50'	MINIMUM POLE CLASS	H-1	H-1	H-2	H-2	1	1	1	1	1	1	1	H-1	H-2	H-2	H-3	H-3
	POLE EMBEDMENT (E)	10'				9'				9'				11'			
100'	MINIMUM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

LEGEND

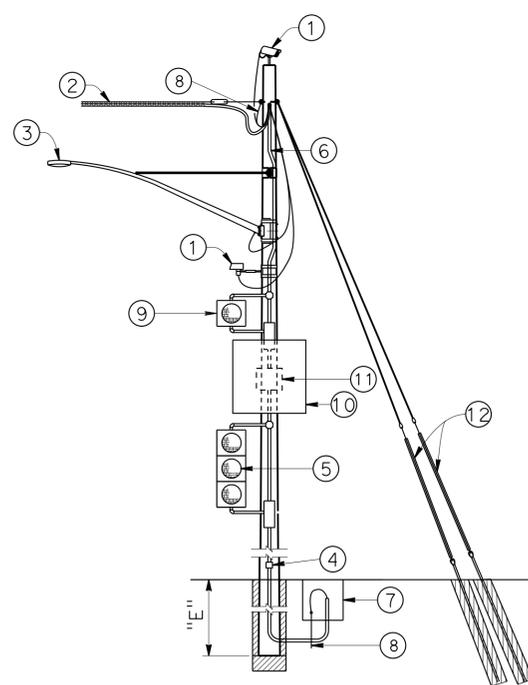
-  Wood Pole with Attachments
-  Overhead Bundle
-  Guy Anchor
- ① CCTV camera assembly or vehicle detection system
- ② Overhead bundle consisting of a 3/8" ø messenger wire and overhead conductors and lashing wire.
- ③ Luminaire with mast arm
- ④ Pedestrian pushbutton
- ⑤ Signal face with 3 indications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

NOTES:

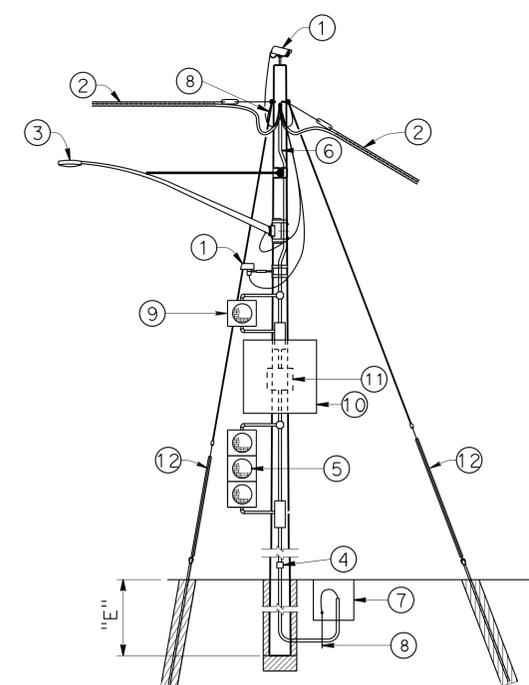
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
2. Guy wire in line with opposing span ± 5°.



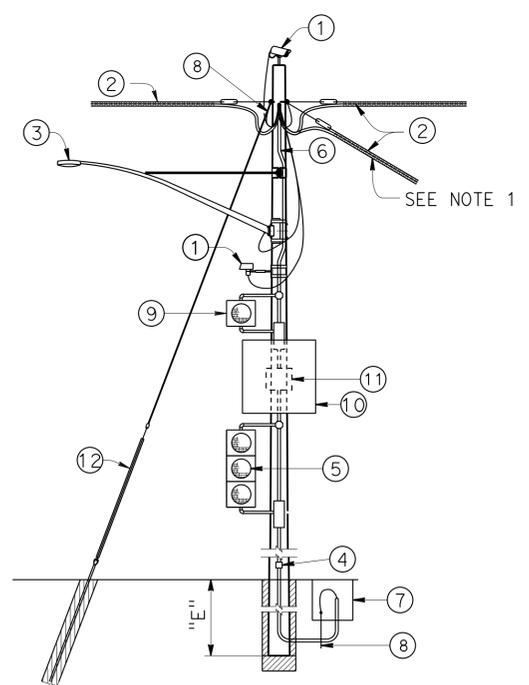
**CASE 1G
POLE AT DEAD END
WITH ATTACHMENTS**



**CASE 2G
POLE AT DEAD END
WITH ATTACHMENTS**



**CASE 3G
POLE AT CORNER
WITH ATTACHMENTS**



**CASE 4G
POLE AT JUNCTION
WITH ATTACHMENTS**

NO SCALE

E-104

DESIGN OVERSIGHT SIGN OFF DATE	DESIGN BY: S. MULLANGI DETAILS BY: P. Johnson QUANTITIES BY: J. Fix	CHECKED E. Mobo CHECKED E. Mobo CHECKED E. Mobo	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER Mohsen Mohseni	BRIDGE NO. POST MILES	TEMPORARY WOOD POLES GUYED - NO SIGNALS ON SPANS
DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	UNIT: PROJECT NUMBER & PHASE: 12000202771 CONTRACT NO.: 12-0F96A4		DISREGARD PRINTS BEARING EARLIER REVISION DATES REVISION DATES: 5/28/12, 11/13/12, 3/04/13, 4/26/13 SHEET 3 OF 10

USERNAME => s121614 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 06:44

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	436	635

REGISTERED CIVIL ENGINEER
 M. Satya Prasad
 2-26-14 DATE
 3-10-14 PLANS APPROVAL DATE
 No. C76064
 Exp. 6/30/14
 CIVIL
 STATE OF CALIFORNIA
 OCTA
 550 SOUTH MAIN ST
 ORANGE, CA 92863
 PARSONS
 2201 DUPONT DRIVE, SUITE 200
 IRVINE, CA 92612

POLE SELECTION TABLE

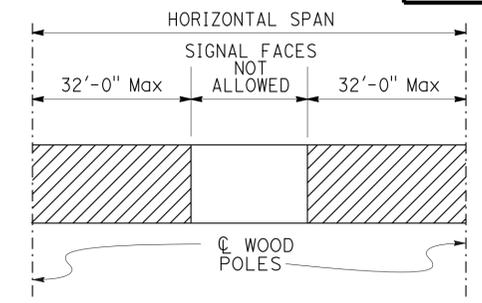
OVERHEAD BUNDLE HORIZONTAL SPAN Max	MAXIMUM d _p	CASE 1GT			CASE 2GT			CASE 3GT		
		1"	1.5"	2.0"	1"	1.5"	2.0"	1"	1.5"	2.0"
50'	MINIMUM POLE CLASS	H-2	H-3	H-3	H-2	H-2	H-2	H-3	H-4	H-4
	POLE EMBEDMENT (E)	10'			10'			11'		
100'	MINIMUM POLE CLASS	H-3	H-3	H-4	H-2	H-3	H-3	H-4	H-4	H-5
	POLE EMBEDMENT (E)	11'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

LEGEND

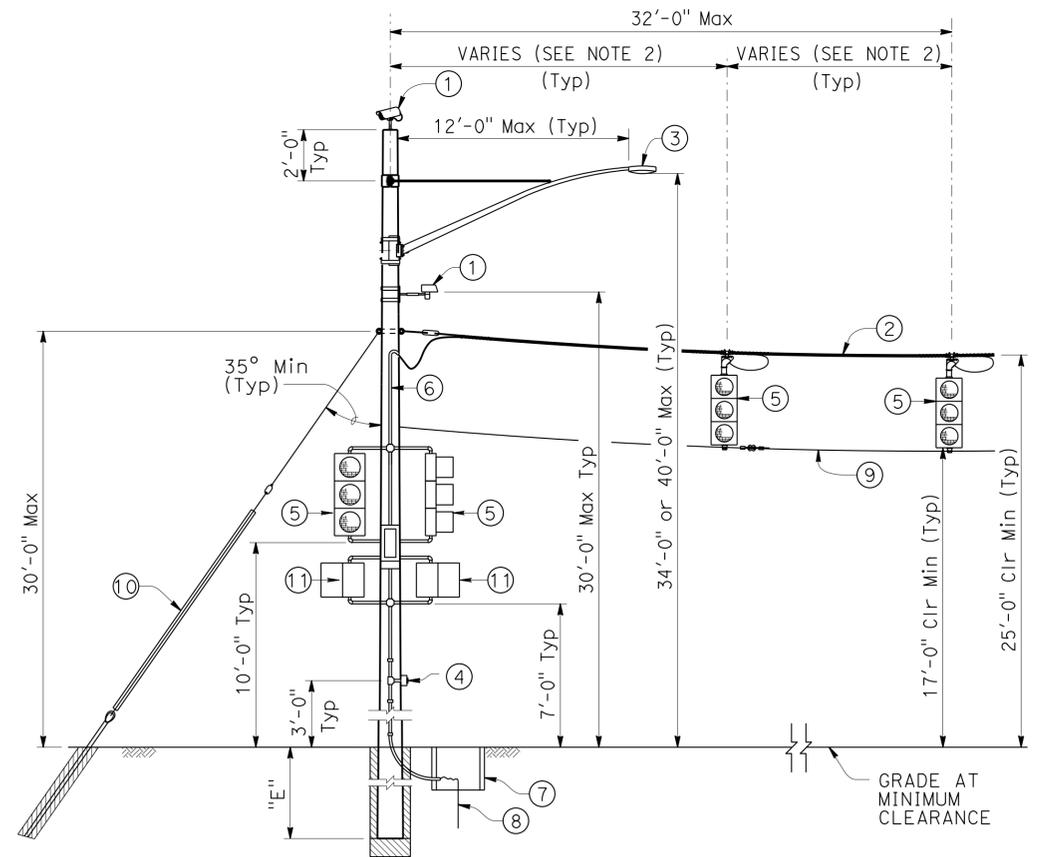
- A Wood Pole with Attachments
- TS- Overhead Bundle with Signal Faces (See Note 2)
- OH- Overhead Bundle
- Guy Anchor
- ① CCTV camera assembly or vehicle detection system
- ② Overhead bundle consisting of 3/8" ø messenger wire and overhead conductors and lashing wire
- ③ Luminaire with mast arm
- ④ Pedestrian pushbutton
- ⑤ Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- ⑥ Riser with weather head as required
- ⑦ Pull box as required
- ⑧ Grounding as required
- ⑨ 3/8" ø tether wire
- ⑩ 1/2" ø guy wire with white guy marker and strain insulator. For anchorage see "TEMPORARY WOOD POLES-DETAILS No. 2" sheet
- ⑪ Pedestrian signal head

NOTES:

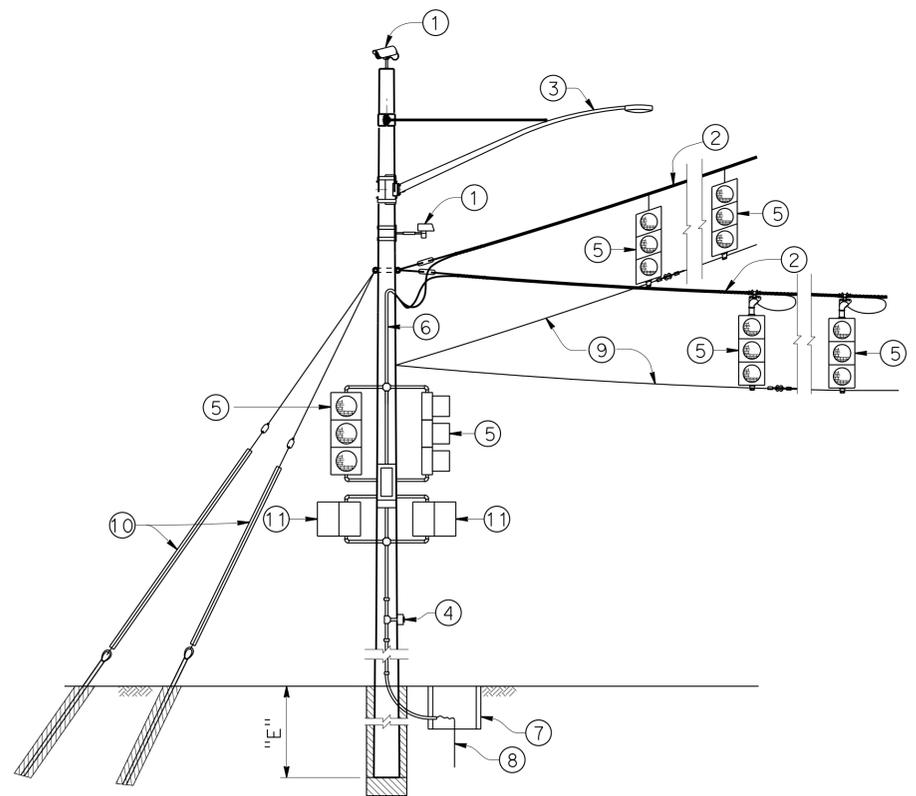
- In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
- Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".
- Guy wire in line with opposing span ± 5°.



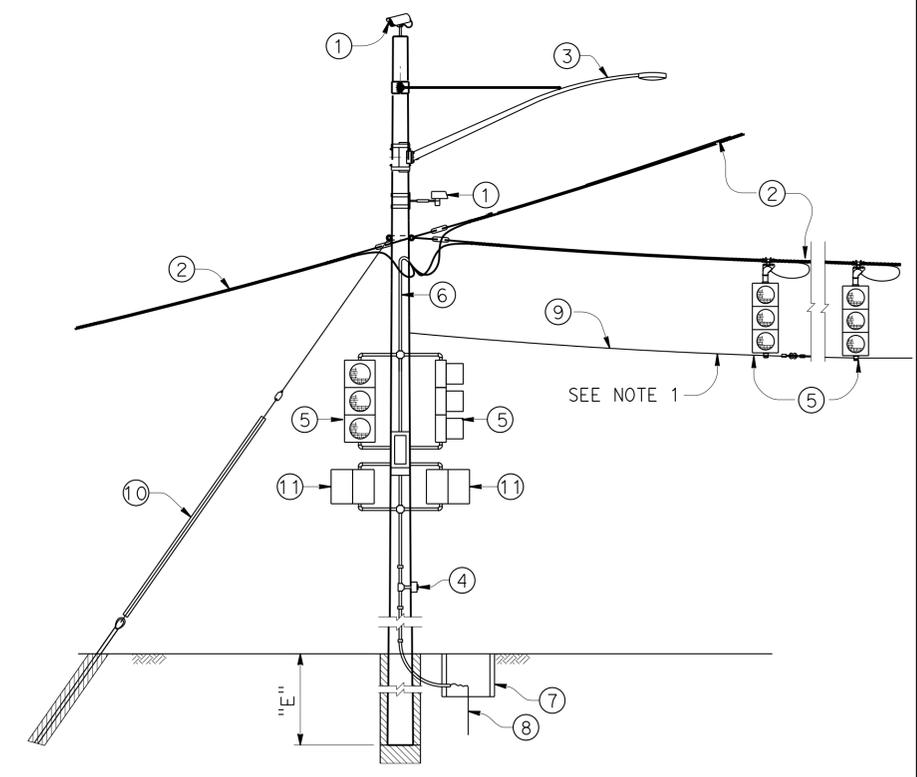
LOCATION OF SIGNAL FACES



CASE 1GT
POLE AT DEAD END WITH ATTACHMENTS



CASE 2GT
POLE AT CORNER WITH ATTACHMENTS



CASE 3GT
POLE AT JUNCTION WITH ATTACHMENTS

DESIGN OVERSIGHT	DESIGN BY S. MULLANGI	CHECKED E. Mobo	BRIDGE NO.	NO SCALE	E-105
SIGN OFF DATE	DETAILS BY P. Johnson	CHECKED E. Mobo	POST MILES		
DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)	QUANTITIES BY J. Fix	CHECKED E. Mobo	PROJECT ENGINEER Mohsen Mohseni	TEMPORARY WOOD POLES GUYED- WITH SIGNAL FACES ON SPANS	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			UNIT: PROJECT NUMBER & PHASE: 12000202771	CONTRACT NO.: 12-0F96A4	REVISION DATES: 5/28/12, 11/13/12, 3/04/13, 4/26/13
FILE => 1200020277ug105.dgn			DISREGARD PRINTS BEARING EARLIER REVISION DATES		SHEET 5 OF 10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	437	635

REGISTERED CIVIL ENGINEER *M. Satya Prasad* DATE 2-26-14

PLANS APPROVAL DATE 3-10-14

SATYA P. MULLANGI
No. C76064
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

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

OCTA
550 SOUTH MAIN ST
ORANGE, CA 92863

PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612

NOTES:

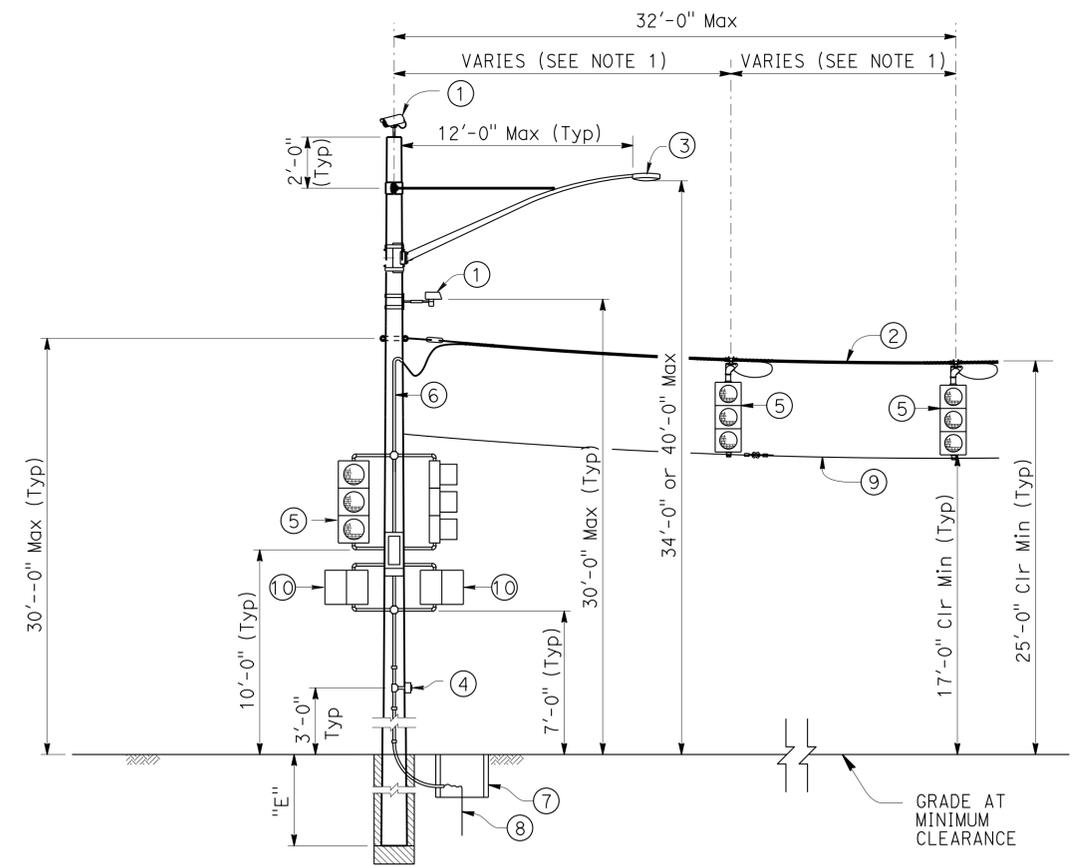
1. Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".

POLE SELECTION TABLE

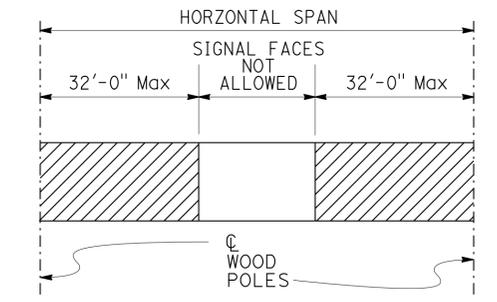
		A ---TS---			
		CASE 1NT			
OVERHEAD BUNDLE HORIZONTAL SPAN (Max)	75'	MAXIMUM d _p	1"	1.5"	2.0"
		MINIMUM POLE CLASS	H-5	H-6	H-6
		POLE EMBEDMENT (E)	13'		

LEGEND

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



CASE 1NT
POLE AT DEAD END WITH ATTACHMENTS



LOCATION OF SIGNAL FACES

NO SCALE

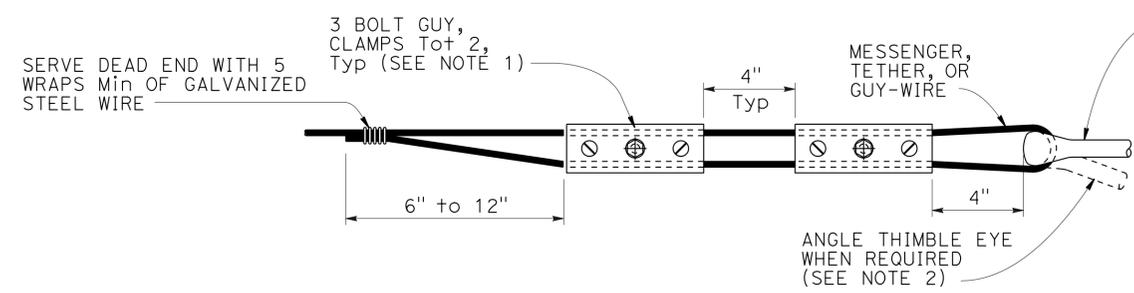
E-106

DESIGN OVERSIGHT	DESIGN BY S. MULLANGI	CHECKED E. Mobo	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	Mohsen Mohseni PROJECT ENGINEER	BRIDGE NO.	TEMPORARY WOOD POLES NON-GUYED- WITH SIGNAL FACES ON SPAN
SIGN OFF DATE	DETAILS BY P. Johnson	CHECKED E. Mobo			POST MILES	
DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)	QUANTITIES BY J. Fix	CHECKED E. Mobo		UNIT: PROJECT NUMBER & PHASE: 12000202771	CONTRACT NO.: 12-0F96A4	

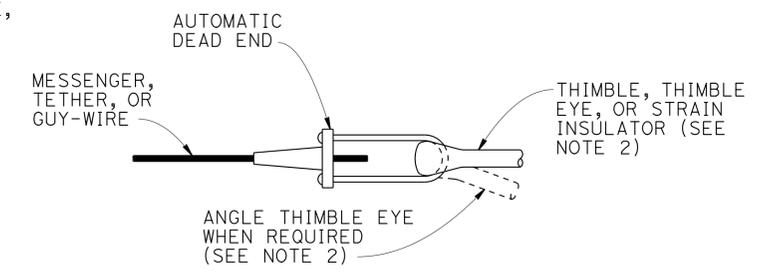
USERNAME => s121614 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 06:44

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	438	635

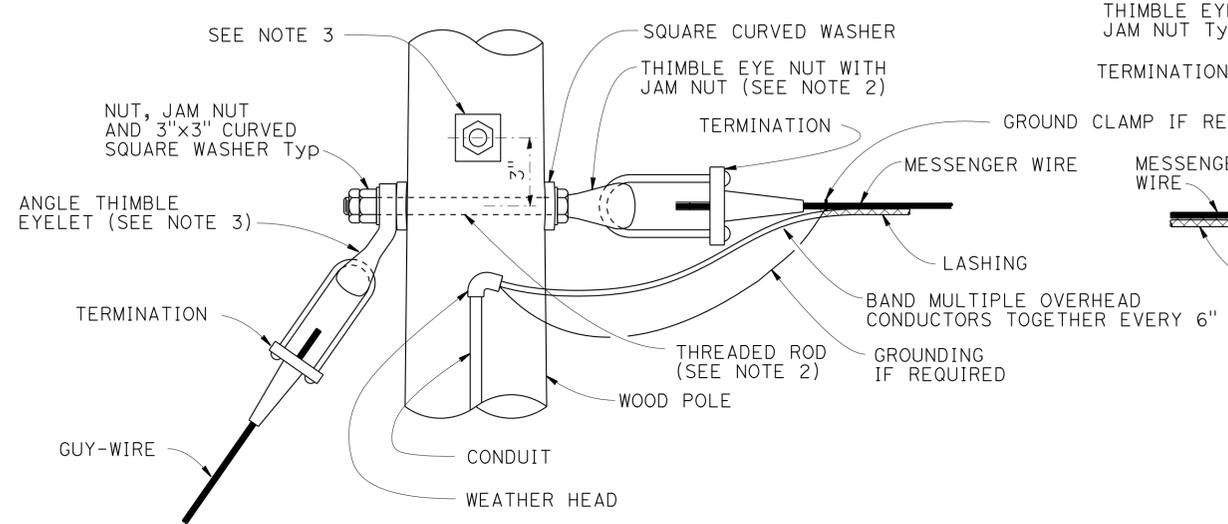
M. Satya P. Mullanji
REGISTERED CIVIL ENGINEER 2-26-14 DATE
3-10-14 PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
OCTA
550 SOUTH MAIN ST
ORANGE, CA 92863
PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612



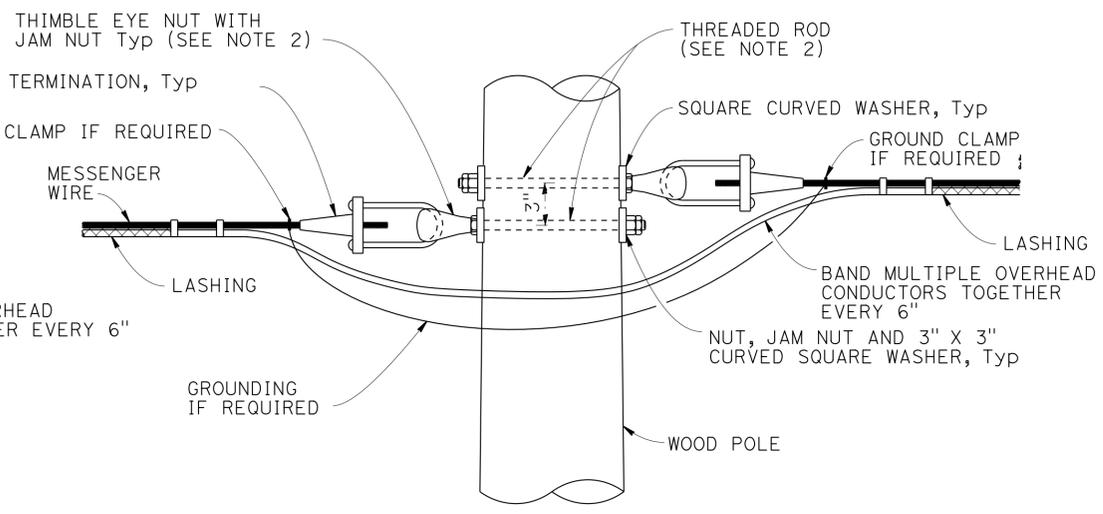
ALTERNATIVE TERMINATION OF MESSENGER WIRES USING GUY CLAMPS



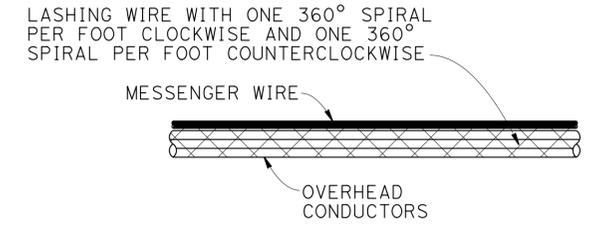
TERMINATION OF WIRES USING AUTOMATIC DEAD END



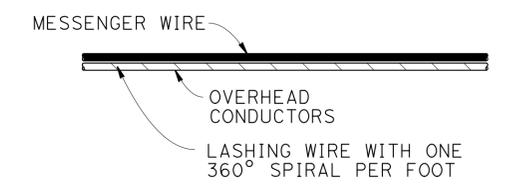
POLE AT DEAD END WITH GUY-WIRE CONNECTION



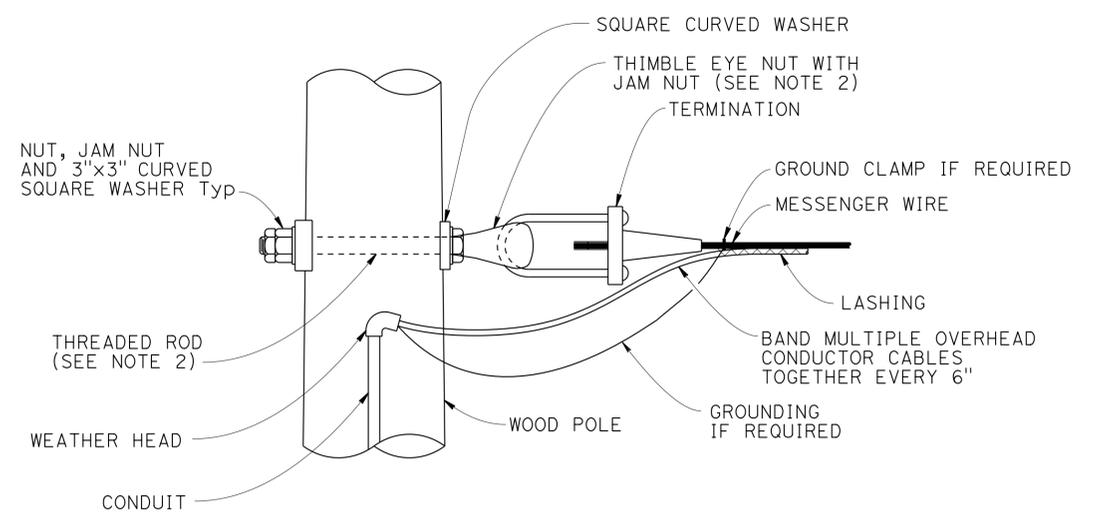
POLE AT TANGENT OR CORNER CONNECTION



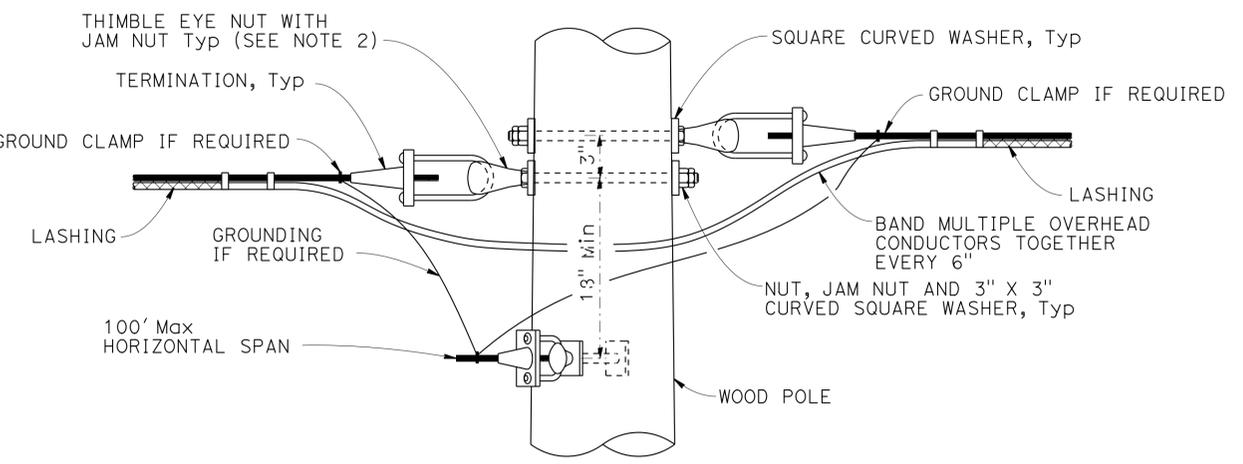
DOUBLE LASHING DETAIL
USE IF d_p IS GREATER THAN $1\frac{1}{2}$ "



TYPICAL LASHING DETAIL
USE IF d_p IS $1\frac{1}{2}$ " OR LESS



POLE AT DEAD END CONNECTION



POLE AT JUNCTION CONNECTION

- NOTES:**
- For guy wires use 3 clamps.
 - Use 5#8" ϕ except 3#4" ϕ at guyed wires
 - Install additional angle thimble eyelet at poles with two guy wires.

NO SCALE **E-107**

DESIGN OVERSIGHT	DESIGN BY S. MULLANGI	CHECKED E. MODO	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION Mohsen Mohseni PROJECT ENGINEER	BRIDGE NO.	TEMPORARY WOOD POLES DETAILS No. 1
SIGN OFF DATE	DETAILS BY P. Johnson	CHECKED E. MODO		POST MILES	
DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)	QUANTITIES BY J. Fix	CHECKED E. MODO		UNIT: PROJECT NUMBER & PHASE: 12000202771 CONTRACT NO.: 12-0F96A4	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			0 1 2 3	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES: 5/28/12, 11/13/12, 3/04/13, 4/26/13 SHEET 6 OF 10

FILE => 1200020277ug107.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	439	635

M. Satya P. Mullangi
REGISTERED CIVIL ENGINEER DATE 2-26-14
3-10-14
PLANS APPROVAL DATE

SATYA P. MULLANGI
No. C76064
Exp. 6/30/14
CIVIL
STATE OF CALIFORNIA

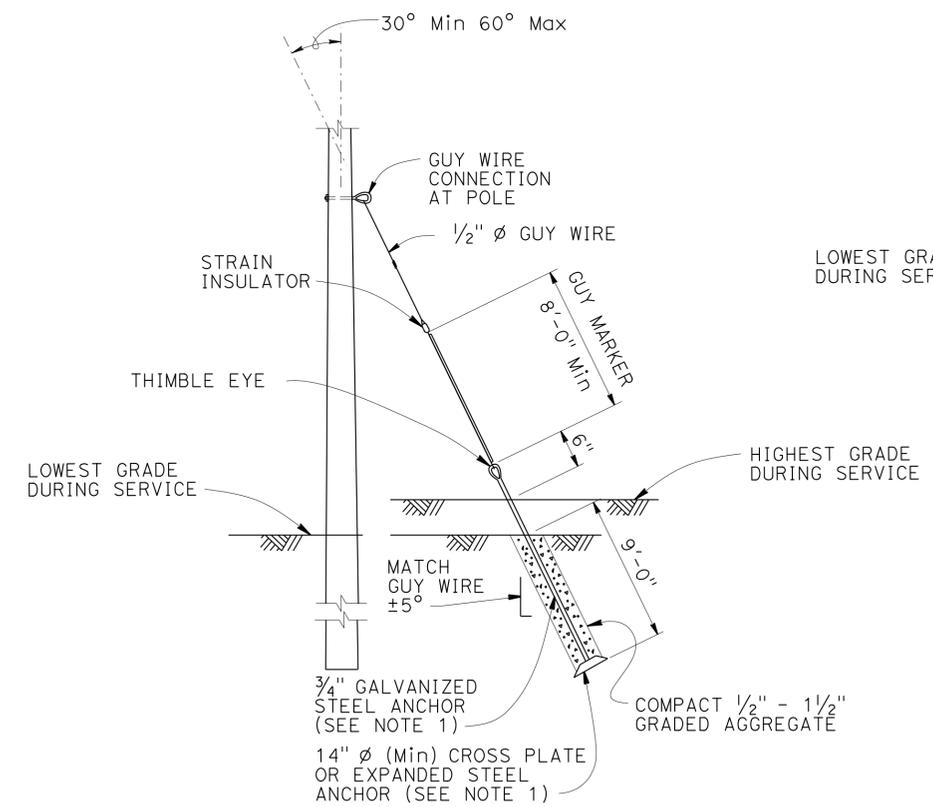
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

OCTA
550 SOUTH MAIN ST
ORANGE, CA 92863

PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612

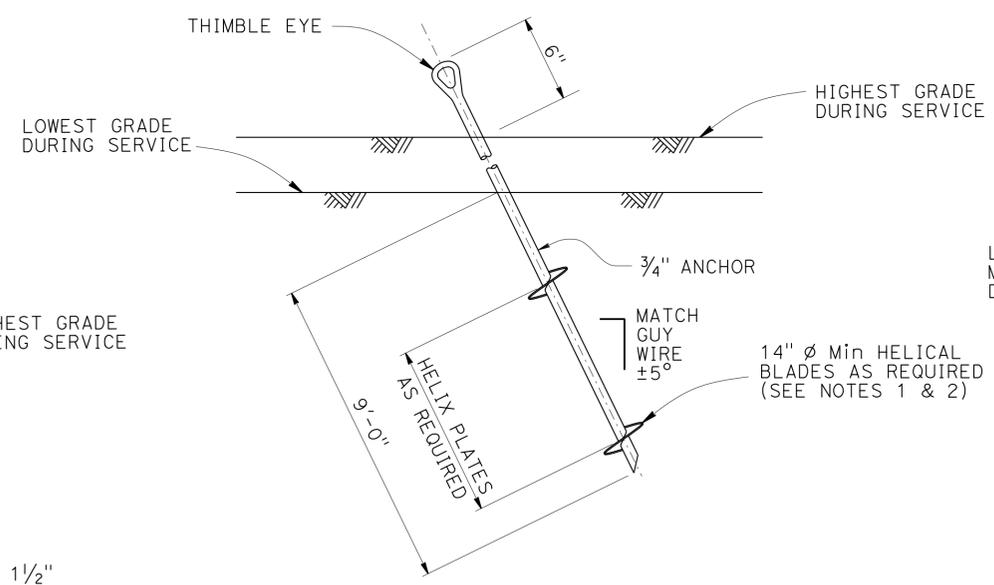
NOTES:

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

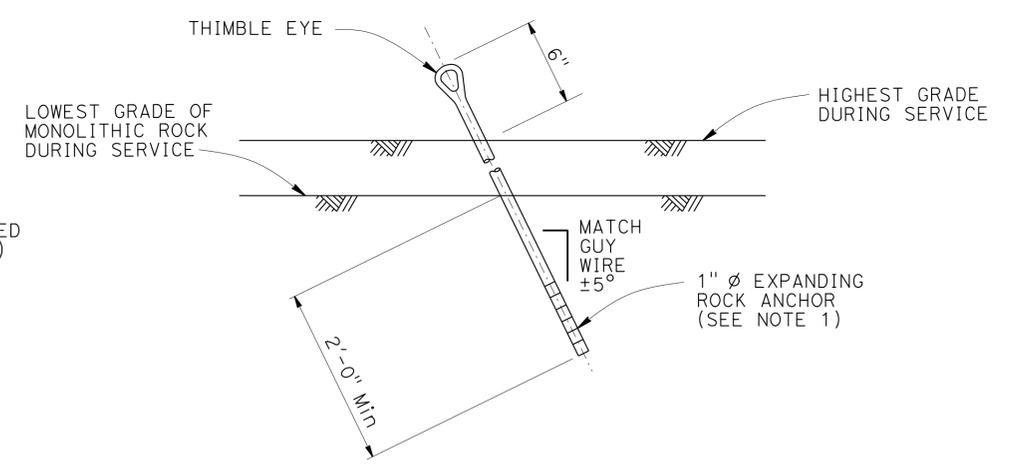


EXPANDED STEEL ANCHOR DETAIL

SEE NOTE 3



HELICAL ANCHOR DETAIL



EXPANDING ROCK ANCHOR DETAIL

NO SCALE

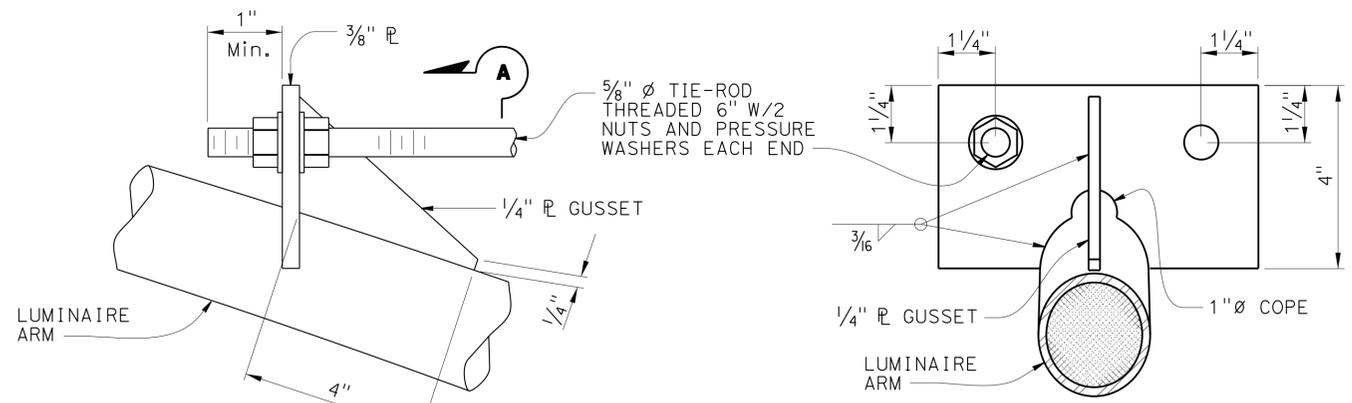
E-108

DESIGN OVERSIGHT	DESIGN BY S. MULLANGI	CHECKED E. Mobo	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	BRIDGE NO.	TEMPORARY WOOD POLES DETAILS No. 2
SIGN OFF DATE	DETAILS BY P. Johnson	CHECKED E. Mobo		PROJECT ENGINEER Mohsen Mohseni	
DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)	QUANTITIES BY J. Fix	CHECKED E. Mobo		POST MILES	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1	2	3	UNIT: PROJECT NUMBER & PHASE: 12000202771 CONTRACT NO.: 12-0F96A4
				DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES: 5/28/12, 11/13/12, 3/04/13, 4/26/13 SHEET 7 OF 10

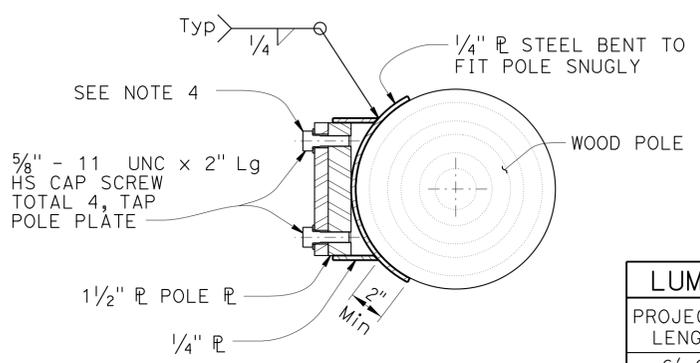
USERNAME => s121614 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 06:44

NOTES:

- Luminaire mast arms must be in compliance with Standard Plan ES-6D with noted modifications.
- Verify pole dimensions at tie-rod attachment height. Fabricate 8" flat bar with "L" dimension to maintain an open gap between flanges in finished installation.
- Not all screw heads and bolt heads are shown for clarity.
- Mast arm not shown for clarity.

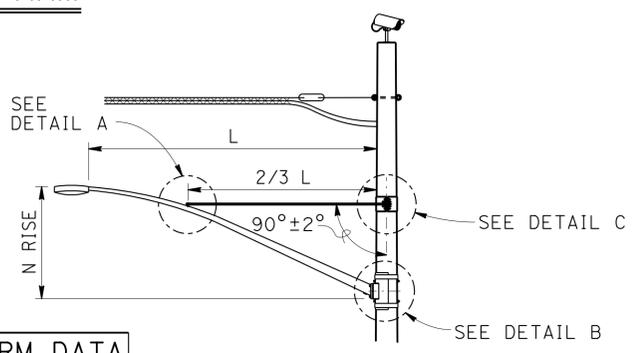


DETAIL A
TIE-ROD AT LUMINAIRE ARM
 NO SCALE

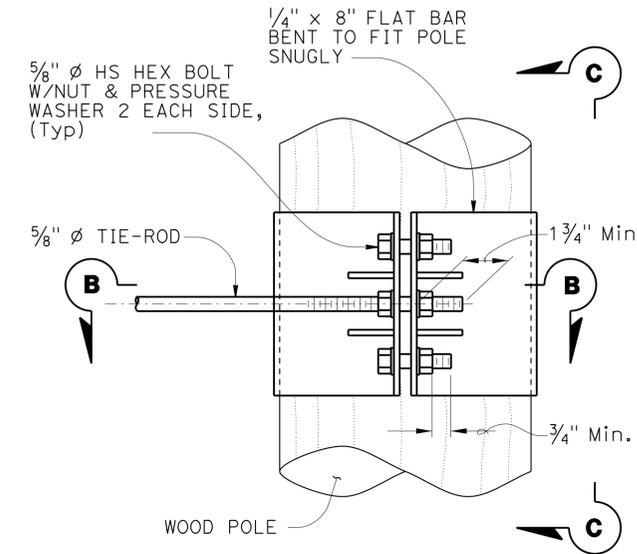


SECTION E-E

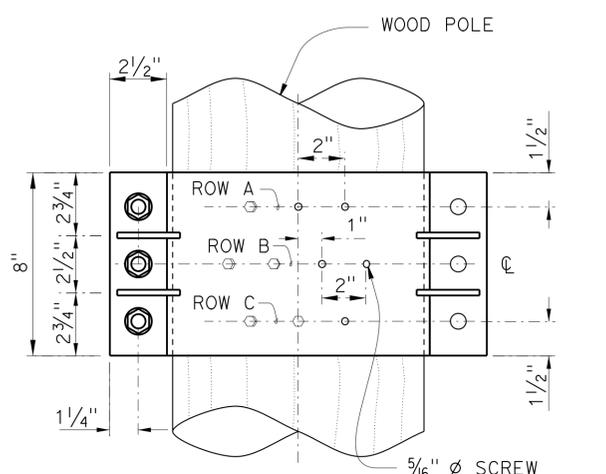
LUMINAIRE MAST ARM DATA			
PROJECTED LENGTH	N RISE	Min OD AT POLE	NOMINAL THICKNESS
6'-0"	2'-0"±	3 1/4"	0.1196"
8'-0"	2'-6"±	3 1/2"	
10'-0"	3'-3"±	3 7/8"	
12'-0"	4'-3"±	3 7/8"	



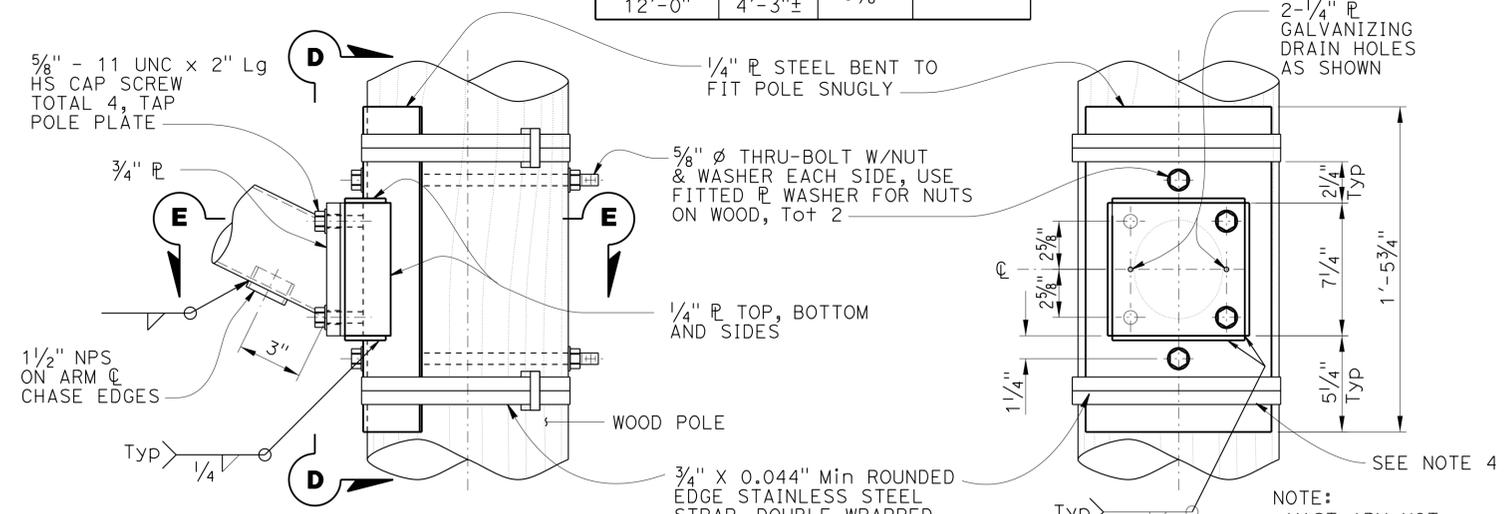
LUMINAIRE MAST ARM



ELEVATION



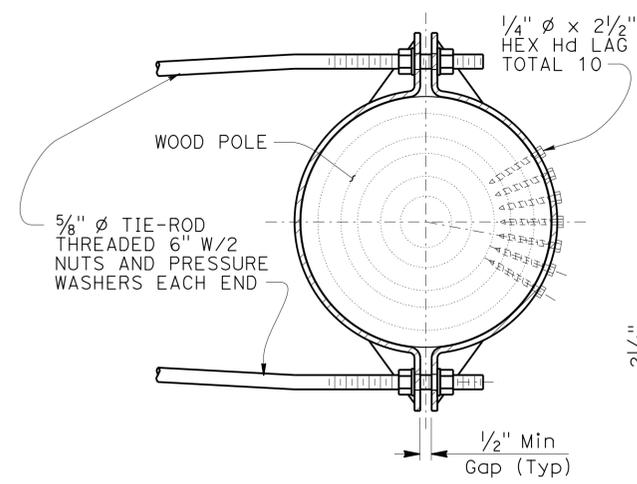
VIEW C-C



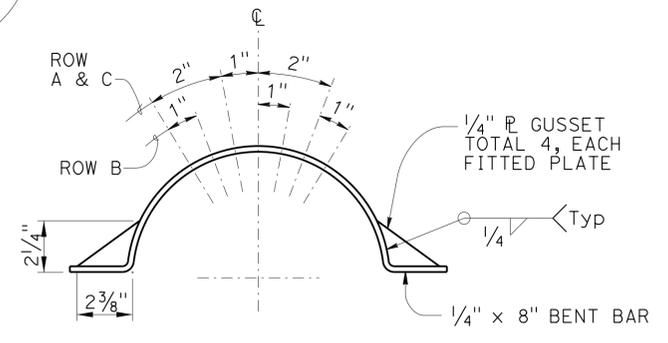
ELEVATION

VIEW D-D

DETAIL B
ARM CONNECTION DETAILS
 NO SCALE



SECTION B-B



LAG SCREW AND GUSSET PLATE LAYOUT

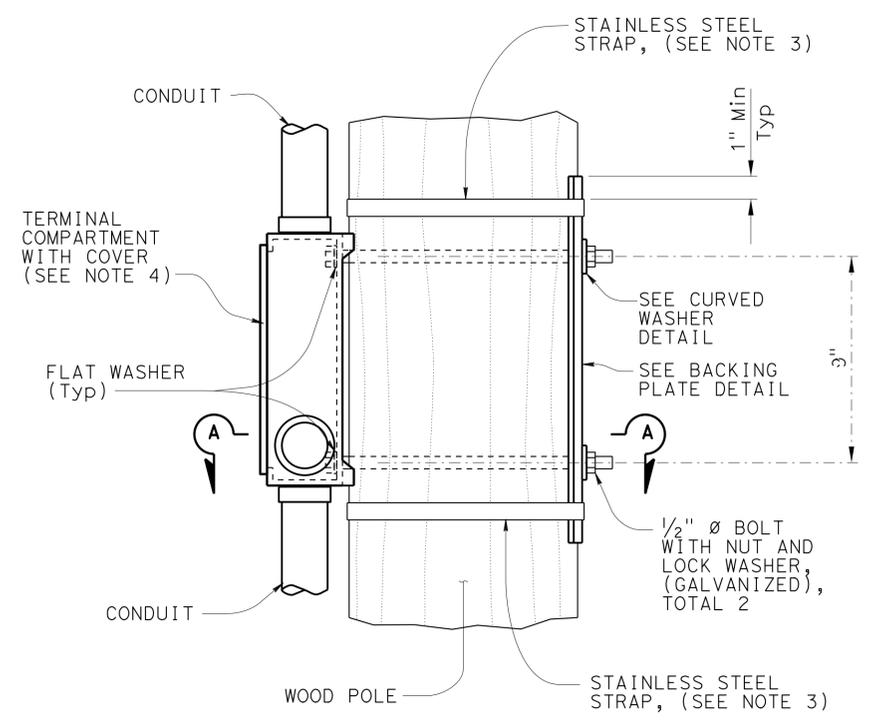
DETAIL C
TIE-ROD AT POLE
 NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	441	635

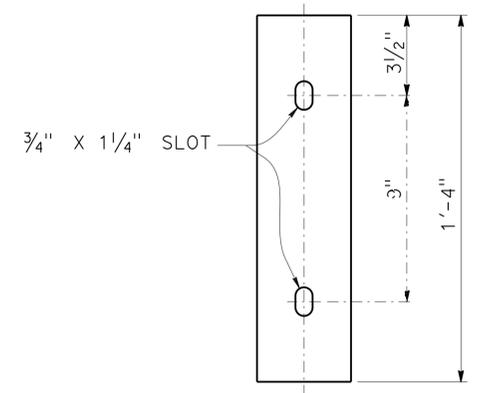
M. Satya P. Mullangi
 REGISTERED CIVIL ENGINEER DATE 2-26-14
 3-10-14
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



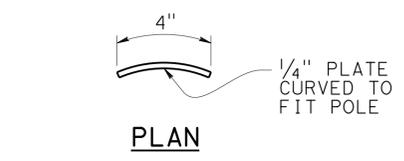
OCTA
 550 SOUTH MAIN ST
 ORANGE, CA 92863
 PARSONS
 2201 DUPONT DRIVE, SUITE 200
 IRVINE, CA 92612



ELEVATION

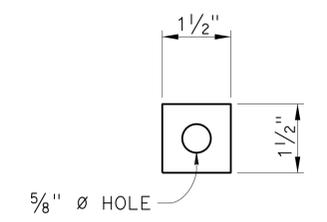


ELEVATION

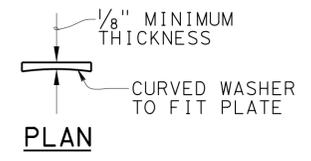


PLAN

BACKING PLATE
DETAIL



ELEVATION

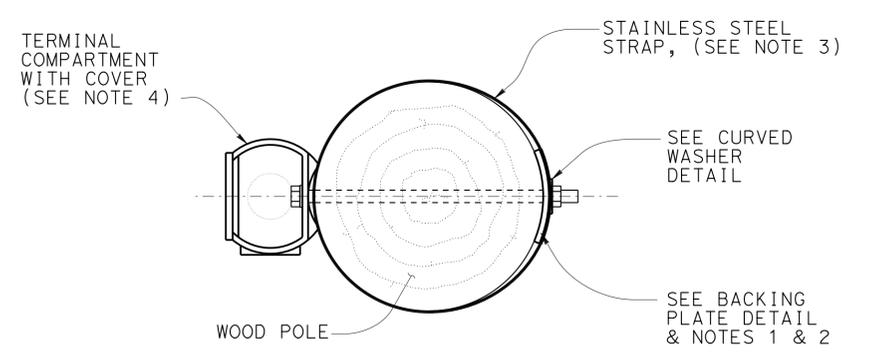


PLAN

CURVED WASHER
DETAIL

NOTES:

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



SECTION A-A

SIDE MOUNTING
TERMINAL COMPARTMENT

NO SCALE

E-110

DESIGN OVERSIGHT
 SIGN OFF DATE

DESIGN	BY S. MULLANGI	CHECKED E. Mobo
DETAILS	BY P. Johnson	CHECKED E. Mobo
QUANTITIES	BY J. Fix	CHECKED E. Mobo

**PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION**

Mohsen Mohseni
 PROJECT ENGINEER

BRIDGE NO.
POST MILES

**TEMPORARY WOOD POLES
DETAILS No. 4**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0	1	2	3
---	---	---	---

UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

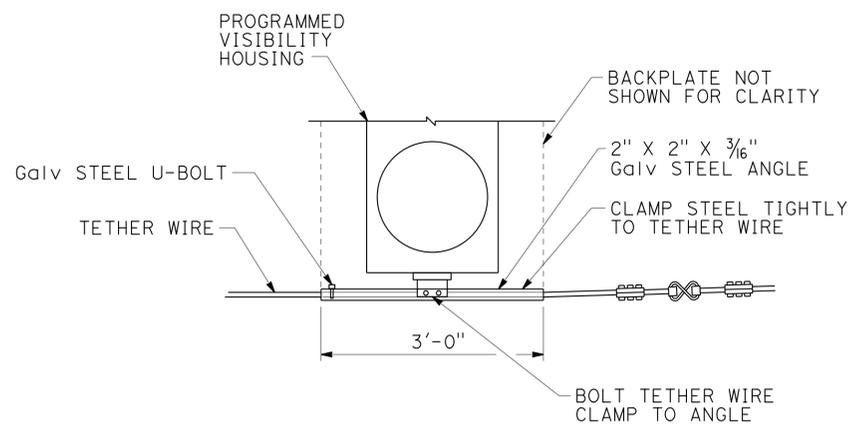
DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12	9	10

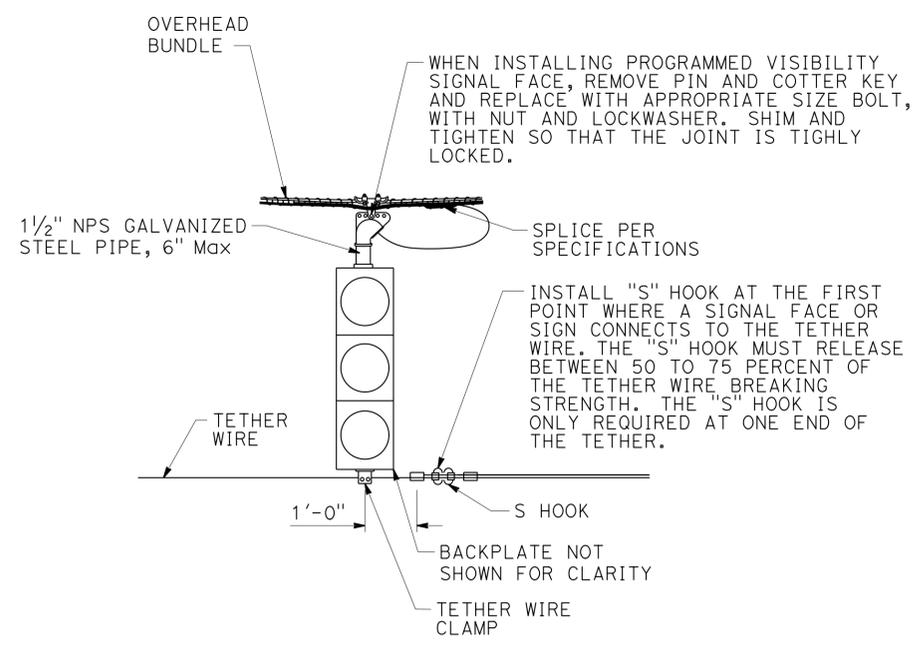
USERNAME => s121614 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 06:44

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	442	635

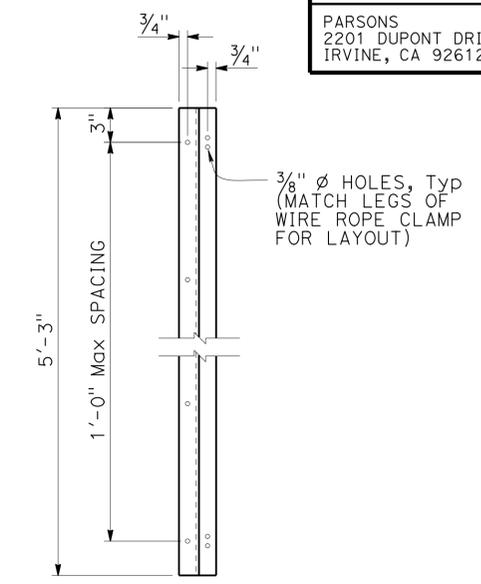
M. Satya P. Mullangi
 REGISTERED CIVIL ENGINEER DATE 2-26-14
 3-10-14
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
 OCTA
 550 SOUTH MAIN ST
 ORANGE, CA 92863
 PARSONS
 2201 DUPONT DRIVE, SUITE 200
 IRVINE, CA 92612



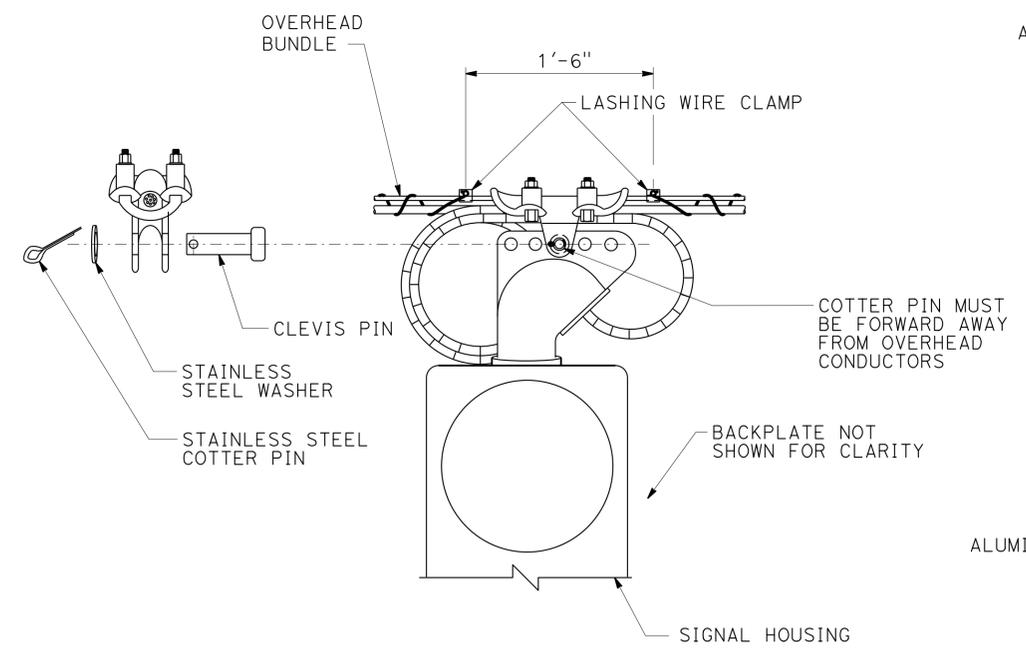
TETHER WIRE ATTACHMENT FOR PROGRAMMED VISIBILITY SIGNAL FACE



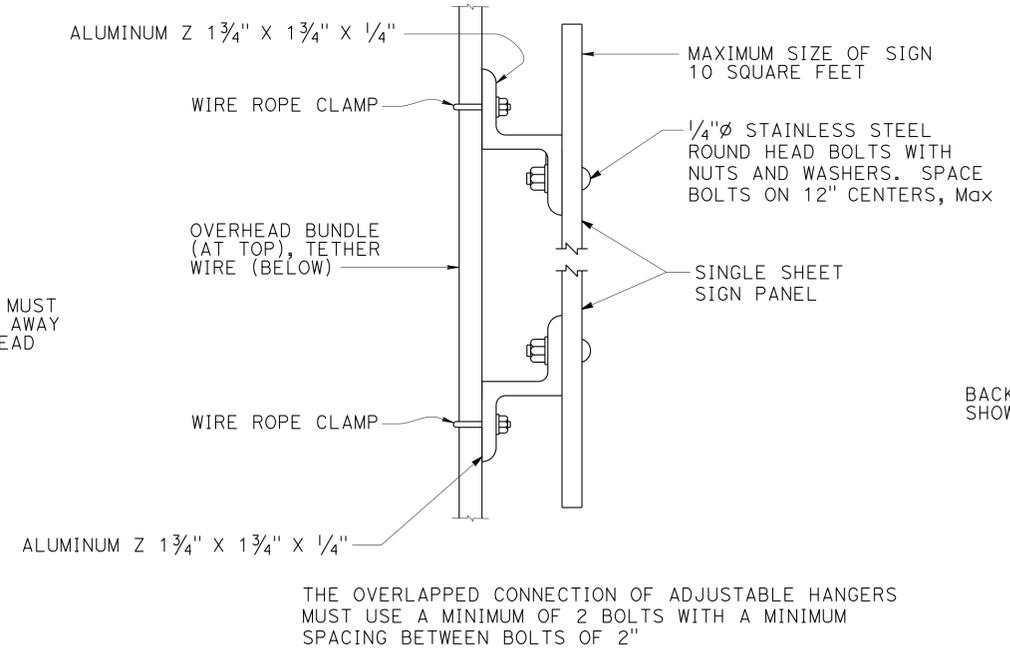
SIGNAL FACE SUPPORT



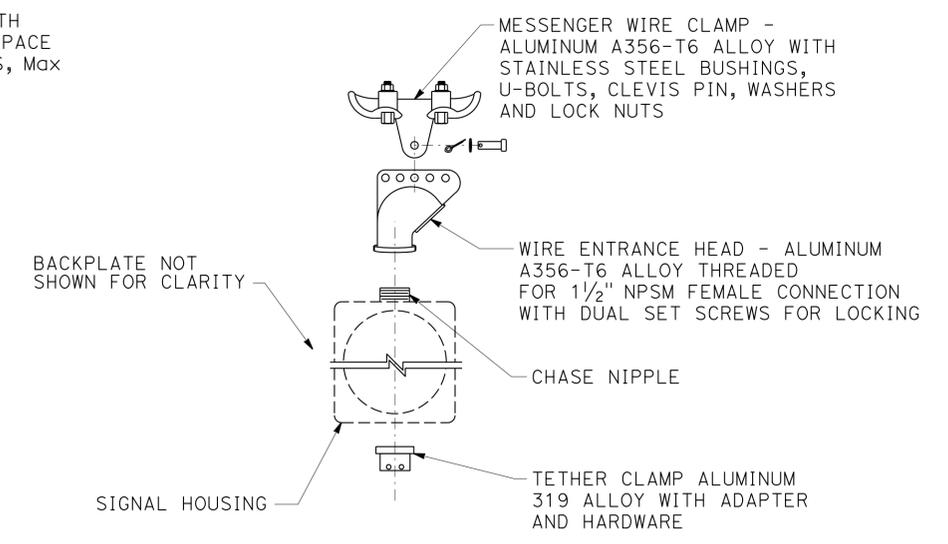
Z-BAR ELEVATION



MESSENGER WIRE CLAMP COTTER PIN DETAIL



SIGN MOUNTING DETAIL



SIGNAL FACE SUPPORT EXPLODED VIEW

NO SCALE **E-111**

DESIGN OVERSIGHT	DESIGN BY S. MULLANGI	CHECKED E. MODO	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION Mohsen Mohseni PROJECT ENGINEER	BRIDGE NO.	TEMPORARY WOOD POLES DETAILS No. 5
SIGN OFF DATE	DETAILS BY P. JOHNSON	CHECKED E. MODO		POST MILES	
DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)	QUANTITIES BY J. FIX	CHECKED E. MODO		UNIT: PROJECT NUMBER & PHASE: 12000202771 CONTRACT NO.: 12-0F96A4 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3 DISREGARD PRINTS BEARING EARLIER REVISION DATES REVISION DATES: 5/28/12, 11/15/12, 3/04/13, 4/26/13 SHEET 10 OF 10 FILE => 1200020277ug111.dgn	

NOTE: NOT SEPARATE PAY ITEMS. DATA SHOWN IS FOR INFORMATION ONLY.

ELECTRICAL SERVICE (IRRIGATION)

SHEET No.	#8 AWG	2" CONDUIT TRENCHED	2" CONDUIT JACKED	PULL BOX	TYPE III-BF SERVICE EQUIPMENT ENCLOSURE
	LF	LF	LF	EA	EA
E-34	2,000	150	300	6	1
TOTAL	2,000	150	300	6	1

LIGHTING (CITY STREET)

SHEET No.	* #8 AWG	* PULL BOX	1" CONDUIT TRENCHED	1 1/2" CONDUIT TRENCHED	1 1/2" CONDUIT JACKED	2" CONDUIT TRENCHED	2" CONDUIT JACKED	* 2" CONDUIT IN BRIDGE	1-C1-28 ELECTROLIER	* 70 W SOFFIT LIGHT
	LF	EA	LF	LF	LF	LF	LF	LF	EA	EA
E-35	5700	13	150	630	250	200	150	700	7	16
TOTAL	5700	13	150	630	250	200	150	700	7	16

* NOTE: INSTALLATION SHALL BE COORDINATED WITH BRIDGE CONSTRUCTION.

LIGHTING AND SIGN ILLUMINATION (STAGE CONSTRUCTION)

STAGE	SHEET No.	#4 AWG	#6 AWG	#8 AWG	Temp WOOD POLE	Temp WOOD POLE W/ LUM	Temp POLE W/ LUM ON Temp Fdn	310 W HPS	Temp PULL BOX	St L+g PULL BOX (T)	No.9A PULL BOX	1 1/2" CONDUIT TRENCHED	2" CONDUIT TRENCHED	2" CONDUIT JACKED	2" CONDUIT IN BRIDGE OR BARRIER	3" CONDUIT JACKED	1 1/2" CONDUIT RISER	3/8" SPAN WIRE	TYPE 30	TYPE 32	TYPE 21D Str	235 W LED	ISL	TYPE III-BF SERVICE EQUIPMENT ENCLOSURE	SC1	XFMR PAD	
		LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	
1A	E-2		420											20													
	E-3																										
	E-4		400											20													
	TOTAL		820											40													
1B	E-5	1,100	-			4		4										580									
	E-6	2,400	1,000		4	2		2	1				10				30	1,200									
	E-7	1,040	1,200		6							25					60	1,000									
	E-8		1,860		2	2	2	4	1								30	930									
	TOTAL	4,440	4,060		12	8	2	10	2				25	10			120	3,710									
1C	E-9	-	1,220		3	3		3		1							30	540	1		1						
	E-10	2,800	1,400		3	2		2		4	5				670		90	270	2			2	2		1		
	E-11	3,200	4,600							3	5		250		580												
	E-12	2,000	1,200		3	1	1	2		7			950				60	350		4		4	2		1		
	TOTAL	8,000	8,420		6	6	1	7		15	10	80	1,700		1,250		180	1,160	3	4	1	7	4		2		
2A	E-13	-	840		3			3										420									
	E-14	-	-		6					1	2		30	50	250			1,200					2		1		
	E-15	660	4,400	1,300	10	1		1		2	3		200				90	1,800				4		1	2	1	
	E-16	200	1,800		2		4			1				100				900				2					
	TOTAL	860	7,040	1,300	21	1	7	4	4	5	5		230	150	250		90	4,320				8		1	4	1	
2B	E-17	300						1	1									150									
	E-18	-	2,400		2			2		4			620				30	1,200									
	E-19	700	1,200	2,000	5					10	2		550	450	500	200	60	900				6		1	3		
	E-20	1,900			1	4	1	5										950									
	TOTAL	2,900	3,600	2,000	8	4	4	8		14	2		1,170	450	500	200	90	3,200				6		1	3		
FINAL	E-29		2,600							5			750						1			1	1		1		
	E-30		9,100							3									1	2		3	3		1		
	E-31		13,800							5			900							1		1				1	
	E-32		13,800							6			900							6		6					
	TOTAL		39,300							19			2,550							2	9		11	4		2	1
GRAND TOTAL		16,200	64,420	3,300	47	19	14	29	4	52	19	105	5,700	600	2,000	200	480	9,050	5	13	1	18	22	2	11	2	

NOTES: FURNISH AND INSTALL ALL EQUIPMENT INCLUDING NEW EQUIPMENT FOUNDATIONS. EQUIPMENT REMOVALS INCLUDE FOUNDATIONS.

ELECTRICAL QUANTITIES

E-112

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	443	635
REGISTERED CIVIL ENGINEER			DATE	2-26-14	
PLANS APPROVAL DATE			3-10-14		
FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 Et Caltrans
 CONSULTANT - FUNCTIONAL SUPERVISOR: ALEXANDER ZUPANSKI
 CALCULATED - DESIGNED BY: [Blank] CHECKED BY: [Blank]
 MIKE HONDA RICHARD IVY
 REVISED BY: [Blank] DATE REVISED: [Blank]

NOTE: NOT SEPARATE PAY ITEMS. DATA SHOWN IS FOR INFORMATION ONLY.

RAMP METERING SYSTEM (STAGE CONSTRUCTION)

LOCATION	STAGE	SHEET No.	AWG			DLC	3#8" SPAN WIRE	TYPE E LOOP DETECTOR	9 CSC	5 CSC	No. 6(T) PULL BOX	No. 9A PULL BOX	PULL BOX (T)	1/2" CONDUIT RISER	2" CONDUIT TRENCHED	2" CONDUIT JACKED	3" CONDUIT JACKED	2" CONDUIT IN BARRIER	4" CONDUIT TRENCHED
			#6 AWG	#10 AWG	#14 AWG														
1	1A	E-37																	
	1B	E-38						2											
	1C	E-39						11			1	4	4		150			1,200	100
	1D	E-40						8											
	2A	E-41						8											
	FINAL	E-42		1,500		1,280	1,440	31	1,100	500		2	4		160	100	170		
TOTAL			1,500		1,280	1,440	60	1,100	500	1	6	8		310	100	170	1,200	100	
2	1A	E-44		60	1,000			1								60			
	1B	E-45																	
	1C	E-46		1,800	800								1		60	60			
	1D	E-47																	
	2A	E-48	1,200	460	2,160	1,300	50							30	350		50		
	2B	E-49	1,600	730	8,360		100				1		4	30	750	100			
FINAL	E-51		680		3,080	6,650	38	1,430	640		4	1			60	160			
TOTAL			3,480	3,050	15,400	7,860	150	39	1,430	640	1	4	6	60	1,160	280	210		
TOTAL			4,980	3,050	16,680	9,300	150	99	2,530	1,140	2	10	14	60	1,470	380	380	1,200	100

RAMP METERING SYSTEM (STAGE CONSTRUCTION)

LOCATION	STAGE	SHEET No.	ELECTRICAL QUANTITIES																			
			Temp TYPE 1A(7') WITH TP-1-T	Temp WOOD POLE	Temp MVDS SENSOR ASSEMBLY	Temp MVDS INPUT/OUTPUT EQUIPMENT	Temp WOOD POLE WITH MVDS SENSOR(S)	MVDS SENSOR(S)	ADJUST MVDS ZONE(S)	Temp METER ON HEAD	Temp 3-SECTION HEAD 12" LENSES	Temp 3-SECTION HEAD 8" LENSES	TYPE 1-A (7')	TYPE 1-A (10')	TYPE 1-A (10') ON BARRIER	TYPE 28-5-100	3-SECTION HEAD (12" LENSES)	3-SECTION HEAD (8" LENSES)	1-SECTION HEAD (8" LENS)	METER-ON INDICATION	CONTROLLER ASSEMBLY	INSTATE-FURNISHED MODEL 334 CABINET ON NEW Fdn
1	1A	E-37		2	2	2																
	1B	E-38							1													
	1C	E-39		1	2	1							1	1		2	2	2			1	1
	1D	E-40																				
	2A	E-41								1												
	FINAL	E-42												2						2		
TOTAL				3	4	3			2				2	1	1	2	2	2	2	1	1	
2	1A	E-44	1	2	2	2																
	1B	E-45							1													
	1C	E-46					1	1														
	1D	E-47							1													
	2A	E-48		2											1	5	2	5		1	1	
	2B	E-49					2						1	2					2			
FINAL	E-51																					
TOTAL			1	4	2	2	3	2	2	2	2	1	2	-	1	5	2	5	2	1	1	
TOTAL			1	7	6	5	3	2	4	2	2	3	3	1	1	7	4	7	4	2	2	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	444	635
			2-26-14	DATE	
REGISTERED CIVIL ENGINEER			DATE		
3-10-14			PLANS APPROVAL DATE		
FPL AND ASSOCIATES, INC.			ORANGE COUNTY TRANSPORTATION AUTHORITY		
10 CORPORATE PARK SUITE 310 IRVINE, CA 92606			550 SOUTH MAIN STREET ORANGE, CA 92863		

ELECTRICAL QUANTITIES (RAMP METERING SYSTEM)

E-113

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT: FUNCTIONAL SUPERVISOR: ALEXANDER ZUPANSKI

DESIGNED BY: MIKE HONDA

CHECKED BY: RICHARD IVY

REVISOR: REVISED BY: DATE REVISED:

Caltrans

LAST REVISION DATE PLOTTED => 07-AUG-2014 00-00-00 TIME PLOTTED => 06:45

NOTE: NOT SEPARATE PAY ITEMS. DATA SHOWN IS FOR INFORMATION ONLY.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	446	635

REGISTERED CIVIL ENGINEER: [Signature] DATE: 2-26-14
 PLANS APPROVAL DATE: 3-10-14

ALEXANDER ZUPANSKI
 No. 59351
 Exp. 06/30/15
 CIVIL

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

FPL AND ASSOCIATES, INC. 10 CORPORATE PARK SUITE 310 IRVINE, CA 92606
 ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863

TEMPORARY COMMUNICATION SYSTEM

SHEET No.	TYPE A CABLE	TYPE D CABLE	#6 AWG	CCTV MULTI CONDUCTOR CABLE	3/8" SPAN WIRE	2" CONDUIT TRENCHED	3" CONDUIT TRENCHED	3" CONDUIT JACKED	3" CONDUIT RISER	4" CONDUIT TRENCHED	4" CONDUIT JACKED	PULL BOX	TEMPORARY SPLICE VAULT	TEMPORARY WOOD POLE	RELOCATE CCTV CAMERA ASSEMBLY	RELOCATE MODEL 334-TV CABINET & CONTROLLER ASSEMBLY
UNIT	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA
E-78	750	-	-	-	750	-	-	-	30	50	-	-	1	4	-	-
E-79	1,200	-	-	-	1,200	-	-	-	-	-	-	-	-	6	-	-
E-80	1,400	2,550	600	60	1,400	50	160	230	120	100	400	4	1	10	1	2
E-81	900	-	-	-	900	-	-	-	-	-	-	-	-	5	-	-
TOTAL	4,250	2,550	600	60	4,250	50	160	230	150	150	400	4	2	25	1	2

CLOSED CIRCUIT TELEVISION SYSTEM (STAGE CONSTRUCTION)

SHEET No.	VIDEO COMPOSITE CABLE	2" CONDUIT JACKED	2" CONDUIT TRENCHED	PULL BOX (C)	CCTV CAMERA ASSEMBLY	MODEL 334-TV CABINET	CCTV TYPE 45 POLE	Temp WOOD POLE
UNIT	LF	LF	LF	EA	EA	EA	EA	EA
E-99	80	80	150	1	1	1	1	1
TOTAL	80	80	150	1	1	1	1	1

MODIFY COMMUNICATION SYSTEM

SHEET No.	TYPE A CABLE	TYPE B CABLE	TYPE C CABLE	TYPE D CABLE	#12 AWG TRACER WIRE	PULL ROPE	4-1" INTERDUCT	3" CONDUIT TRENCHED	3" CONDUIT JACKED	2-4" CONDUIT TRENCHED	2-4" CONDUIT JACKED	4" CONDUIT IN BRIDGE	PULL BOX (C)	SPLICE VAULT	AB CONDUIT	RC PULLBOX
UNIT	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	LF	EA
E-85	750	750	750	-	750	1,500	750	-	-	750	-	-	-	-	760	1
E-86	1,200	1,200	1,200	820	1,700	1,700	1,200	330	160	1,200	70	-	4	-	1,300	3
E-87	1,350	1,350	1,350	2,640	2,640	2,640	1,350	820	220	1,150	-	180	9	1	2,350	13
E-88	950	950	950	-	950	950	950	-	-	950	-	-	1	-	950	1
TOTAL	4,250	4,250	4,250	3,460	6,040	6,040	4,250	1,150	380	4,050	70	180	14	1	5,360	18

CLOSED CIRCUIT TELEVISION SYSTEM

SHEET No.	VIDEO COMPOSITE CABLE	2" CONDUIT JACKED	2" CONDUIT TRENCHED	3" CONDUIT TRENCHED	3" CONDUIT JACKED	PULL BOX (C)	PULL BOX (T)	No. 5 PULL BOX	No. 6E PULL BOX	CCTV TYPE 45 POLE & CAMERA ASSEMBLY	MODEL 334-TV CABINET	AB CONDUIT	RC PULLBOX
UNIT	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	LF	EA
E-99	80	230	500	40	60	1	5	1	1	1	1	900	6
TOTAL	80	230	500	40	60	1	5	1	1	1	1	900	6

ELECTRICAL QUANTITIES (COMMUNICATION SYSTEM AND CCTV)

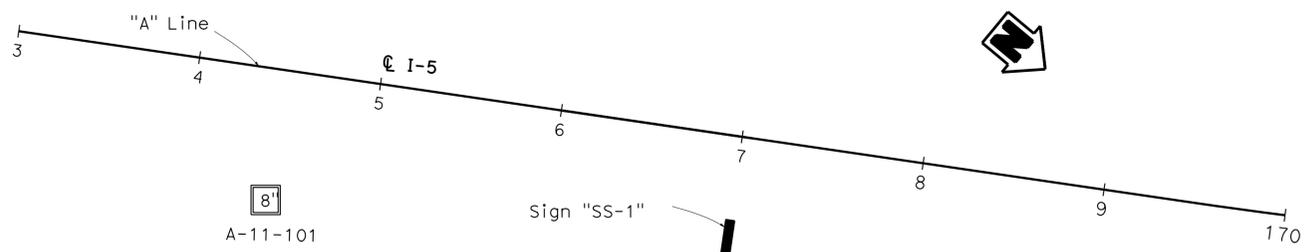
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 CONSULTANT: FUNCTIONAL SUPERVISOR: DAVID LEW
 CALCULATED/DESIGNED BY: CHECKED BY:
 MIKE KAPUSKAR JIANMIN FANG
 REVISED BY: DATE REVISED:

BENCH MARK:
 DESIGNATION: 3Y-38-91 ELEV 252.197' NAVD88

DESCRIBED BY OCS 2003 - FOUND 3 3/4" OCS ALUMINUM BENCH MARK DISK STAMPED "3Y-38-91", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 17 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF INTERSECTION OF AVENIDA PICO AND AVENIDA LA PATA, 50 FT. SOUTHERLY OF THE CENTERLINE OF AVENIDA LA PATA AND 90 FT. EASTERLY OF THE AVENIDA PICO. MONUMENT IS SET LEVEL WITH THE TOP OF THE CURB.

- NOTES:**
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
 - (2) 2.4" samples were taken using a California Modified Sampler.
 - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
 - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.

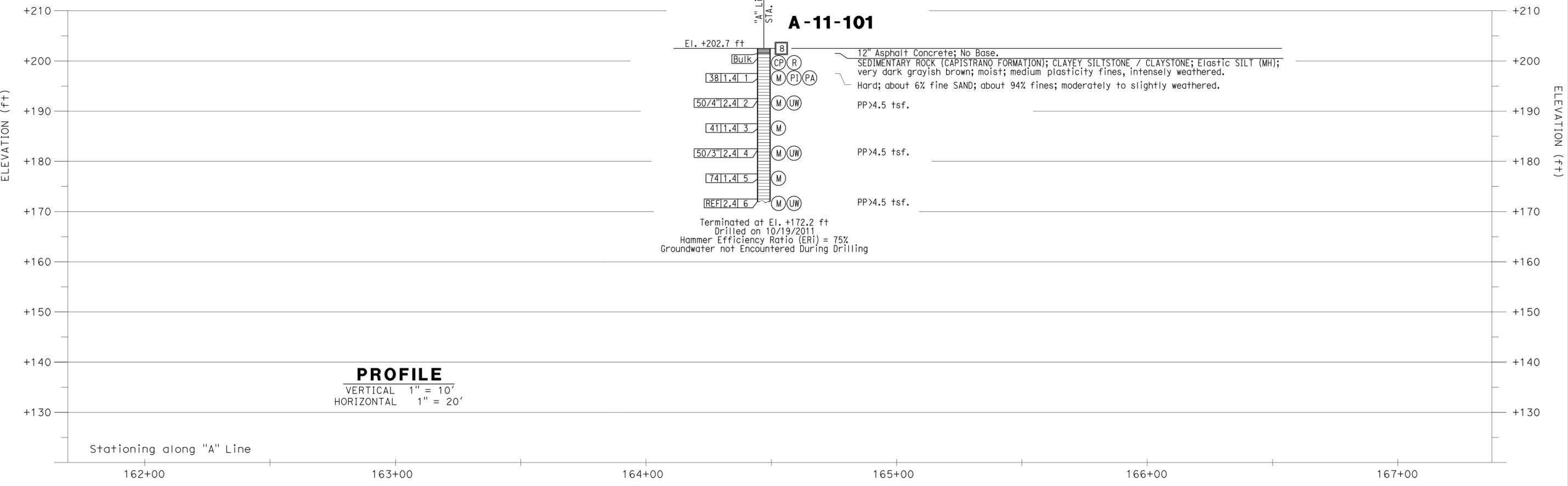
← To San Diego



PLAN

1" = 50'

To Los Angeles →



PROFILE

VERTICAL 1" = 10'
 HORIZONTAL 1" = 20'

Stationing along "A" Line

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	447	635

Mike Kjuska
 GEOTECHNICAL PROFESSIONAL DATE 9-30-13
 3-10-14
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 MIKE KAPUSKAR
 NO. GE 2564
 EXP. 12-31-14
 STATE OF CALIFORNIA
 GEOTECHNICAL

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.

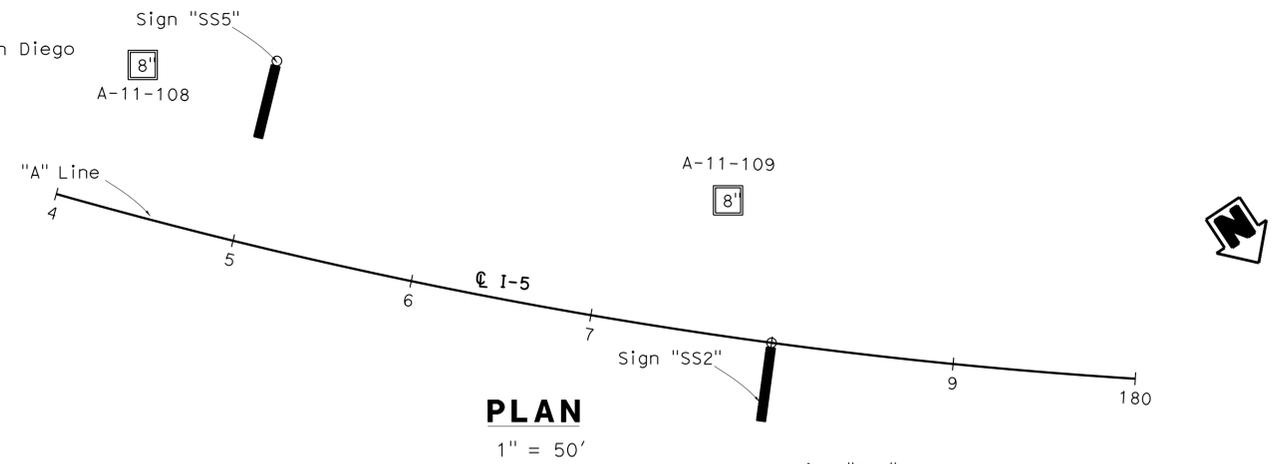
EARTH MECHANICS, INC. 17800 NEWHOPE STREET, SUITE B FOUNTAIN VALLEY, CA 92708	ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863
---	---

**LOG OF TEST BORINGS No. 1
 OVERHEAD SIGN STRUCTURES
 LOTB-1**

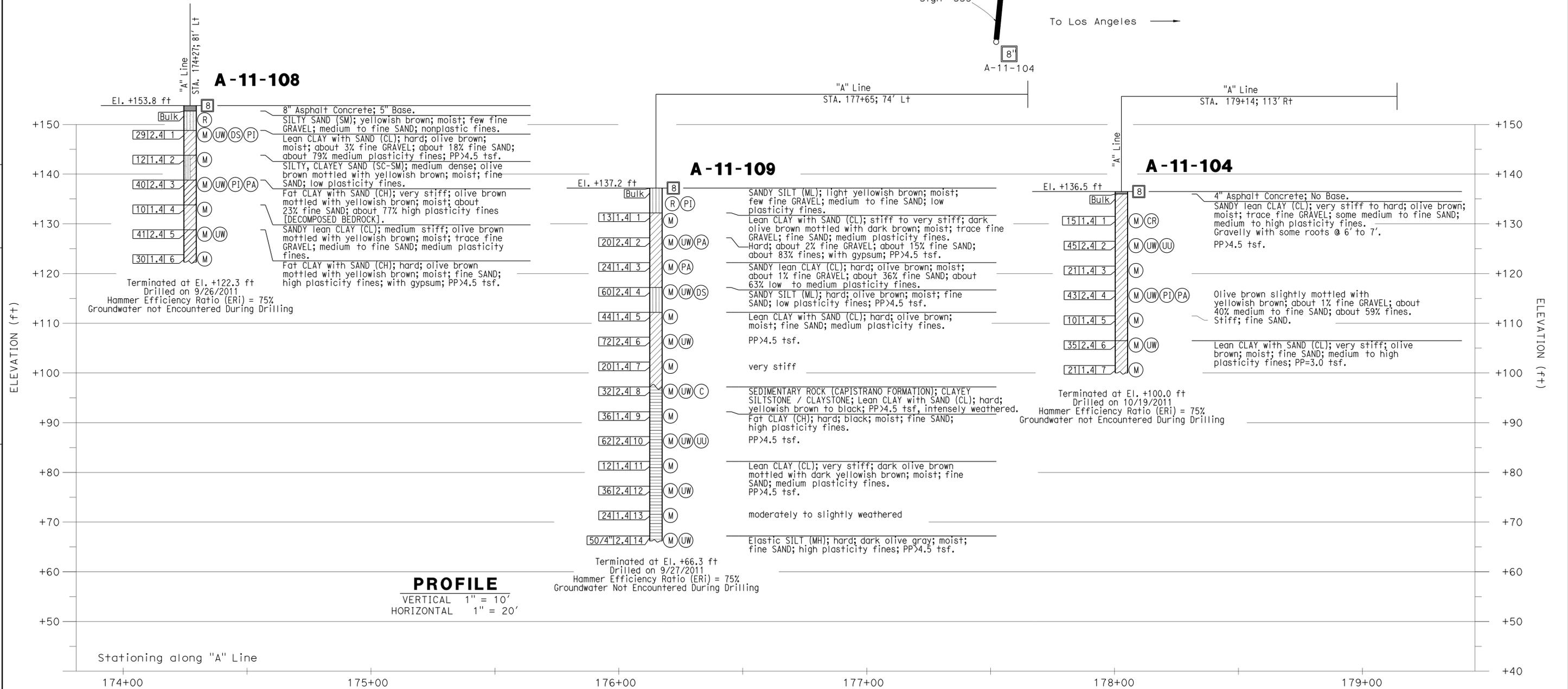
LAST REVISION DATE PLOTTED => 07-AUG-2014
 00-00-00 TIME PLOTTED => 06:45

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	448	635
 GEOTECHNICAL PROFESSIONAL			DATE	9-30-13 3-10-14 PLANS APPROVAL DATE	
					
EARTH MECHANICS, INC. 17800 NEWHOPE STREET, SUITE B FOUNTAIN VALLEY, CA 92708			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		

- NOTES:**
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
 - (2) 2.4" samples were taken using a California Modified Sampler.
 - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
 - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.



PLAN
1" = 50'



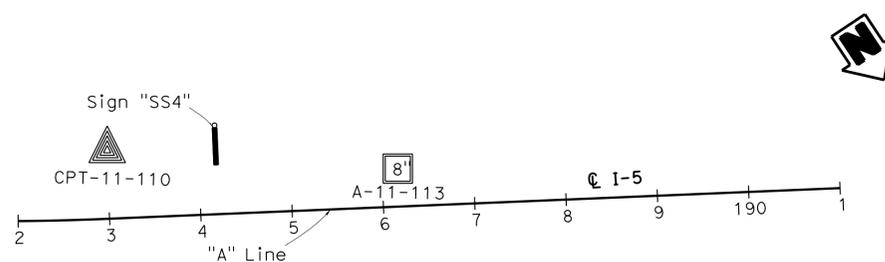
**LOG OF TEST BORINGS No. 2
OVERHEAD SIGN STRUCTURES
LOTB-2**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

 CONSULTANT: MIKE KAPUSKAR
 DESIGNED BY: MIKE KAPUSKAR
 CHECKED BY: JIANMIN FANG
 SUPERVISOR: DAVID LEW

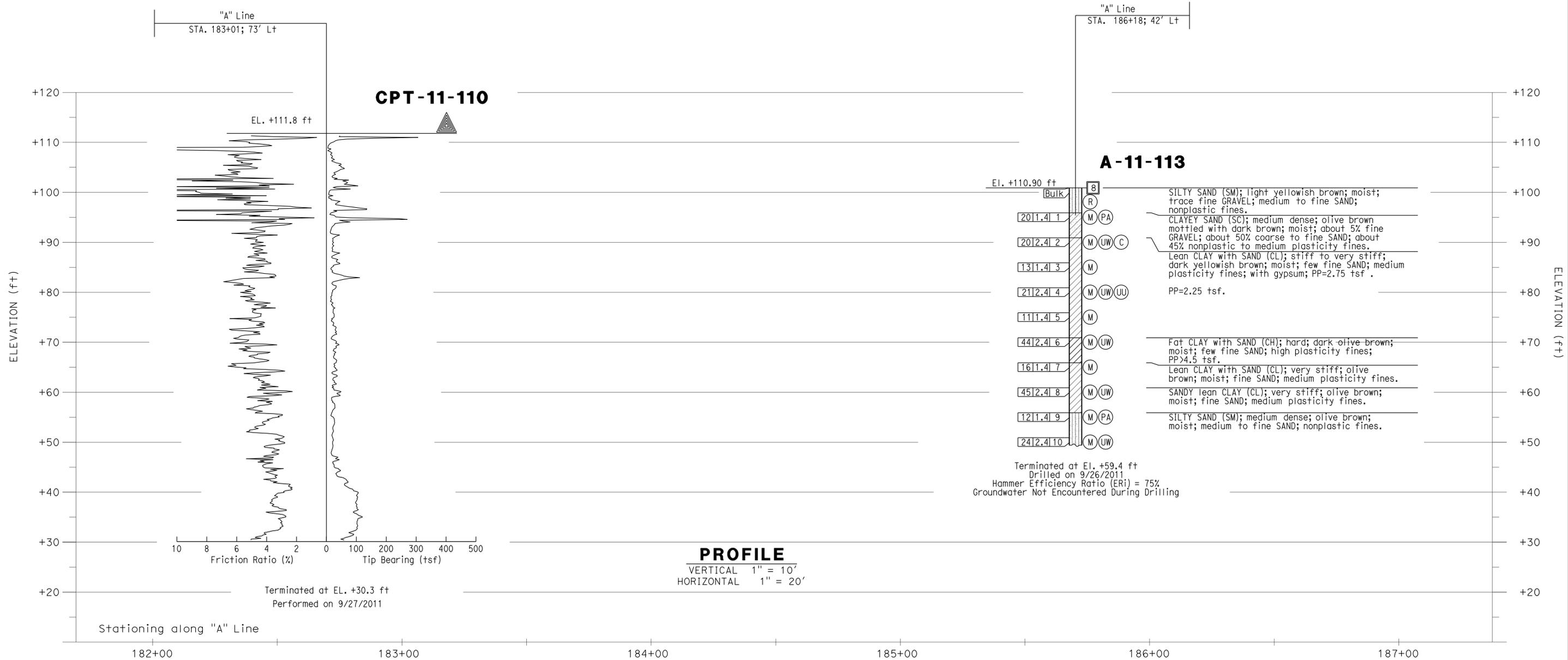
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 CONSULTANT: FUNCTIONAL SUPERVISOR: DAVID LEW
 CALCULATED/DESIGNED BY: MIKE KAPUSKAR
 CHECKED BY: JIANMIN FANG
 REVISED BY: MIKE KAPUSKAR
 DATE: JIANMIN FANG

- NOTES:**
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
 - (2) 2.4" samples were taken using a California Modified Sampler.
 - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
 - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	449	635

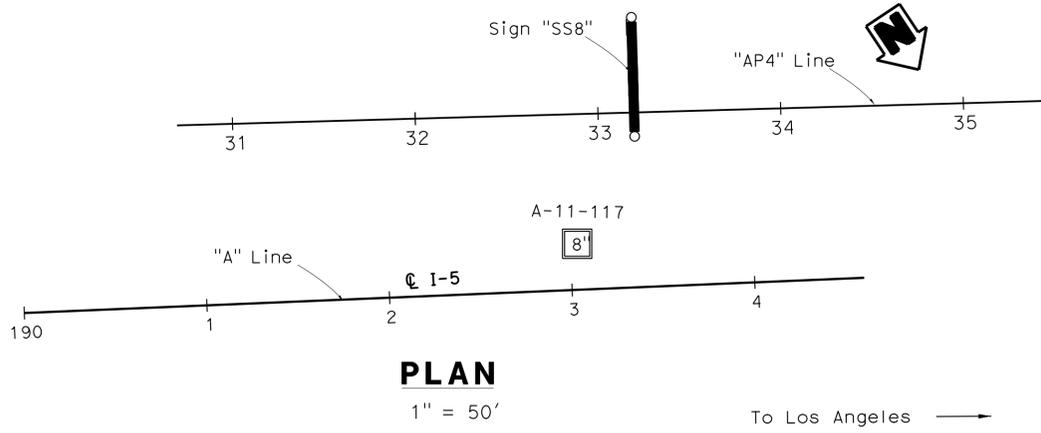
9-30-13
 GEOTECHNICAL PROFESSIONAL DATE
 3-10-14
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.
 EARTH MECHANICS, INC. 17800 NEWHOPE STREET, SUITE B FOUNTAIN VALLEY, CA 92708
 ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863



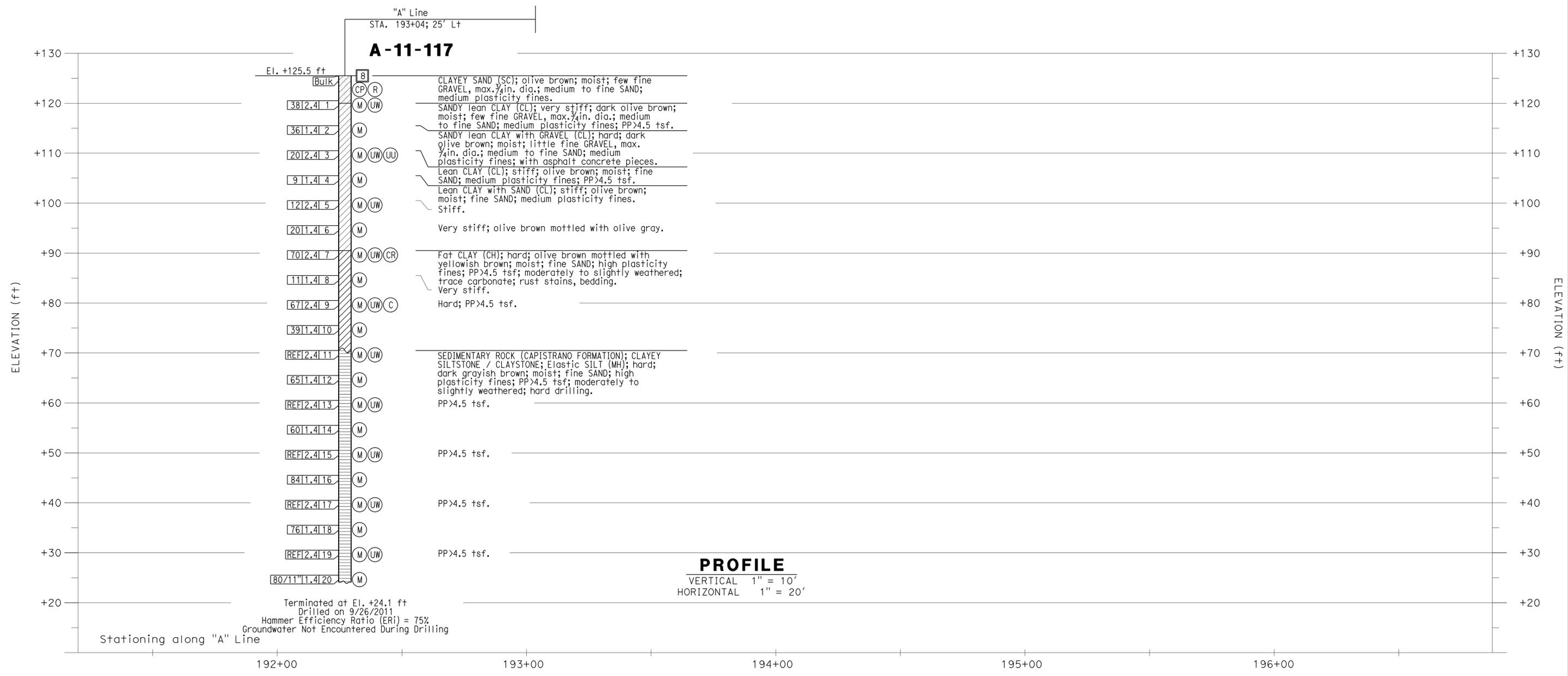
**LOG OF TEST BORINGS No. 3
 OVERHEAD SIGN STRUCTURES
 LOTB-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 CONSULTANT: FUNCTIONAL SUPERVISOR: DAVID LEW
 CALCULATED/DESIGNED BY: MIKE KAPUSKAR
 CHECKED BY: JIANMIN FANG
 REVISED BY: MIKE KAPUSKAR
 DATE: 9-30-13
 REVISIONS: 3-10-14

- NOTES:**
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
 - (2) 2.4" samples were taken using a California Modified Sampler.
 - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
 - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.



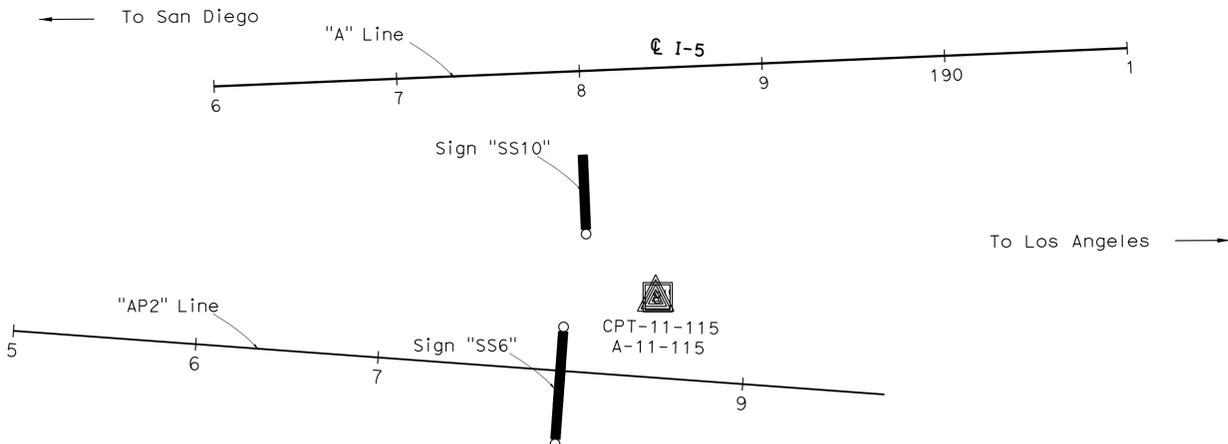
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	450	635
GEOTECHNICAL PROFESSIONAL DATE: 9-30-13 PLANS APPROVAL DATE: 3-10-14			REGISTERED PROFESSIONAL ENGINEER MIKE KAPUSKAR NO. GE 2564 EXP. 12-31-14 STATE OF CALIFORNIA		
EARTH MECHANICS, INC. 17800 NEWHOPE STREET, SUITE B FOUNTAIN VALLEY, CA 92708			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		



**LOG OF TEST BORINGS No. 4
 OVERHEAD SIGN STRUCTURES
 LOTB-4**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 MIKE KAPUSKAR
 JIANMIN FANG
 DAVID LEW

NOTES:
 (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
 (2) 2.4" samples were taken using a California Modified Sampler.
 (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
 (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.

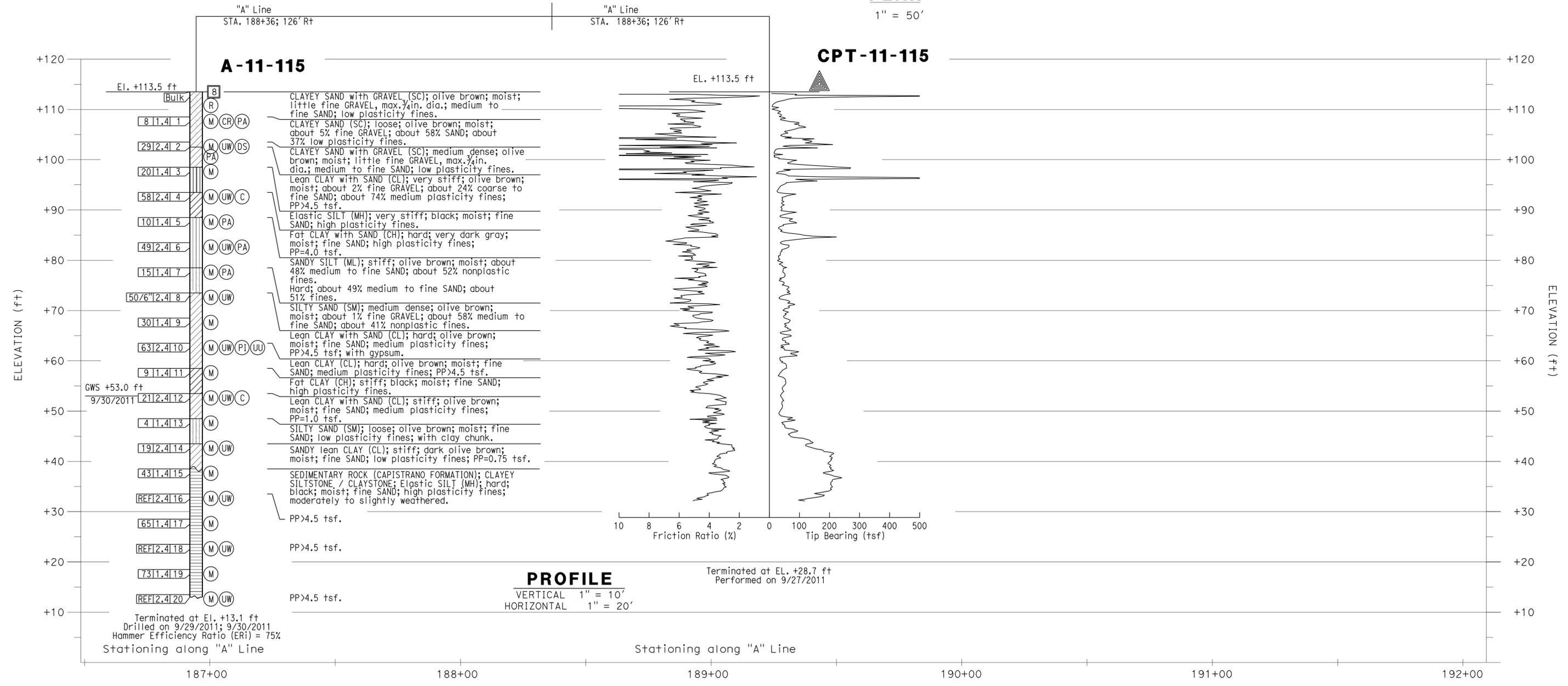


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	451	635

9-30-13
 GEOTECHNICAL PROFESSIONAL DATE
 3-10-14
 PLANS APPROVAL DATE

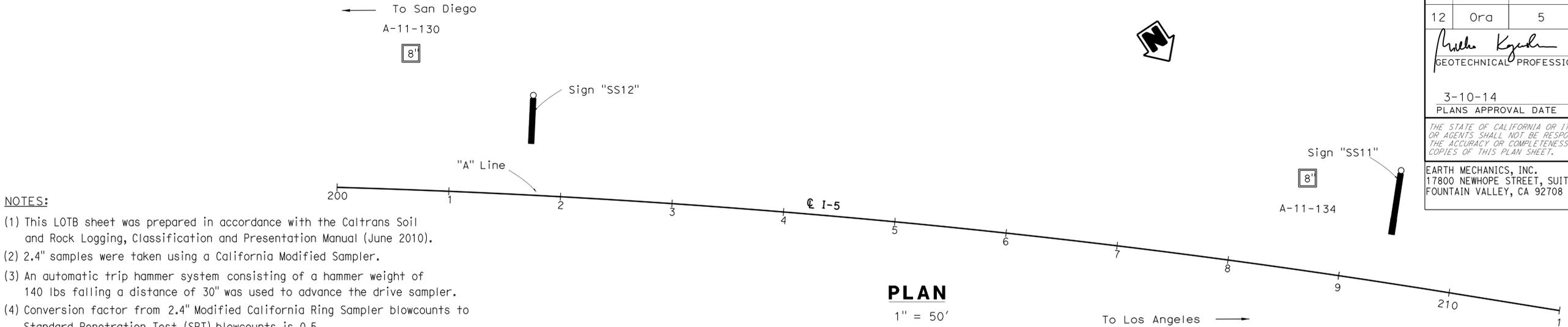
EARTH MECHANICS, INC.
 17800 NEWHOPE STREET, SUITE B
 FOUNTAIN VALLEY, CA 92708

ORANGE COUNTY
 TRANSPORTATION AUTHORITY
 550 SOUTH MAIN STREET
 ORANGE, CA 92863

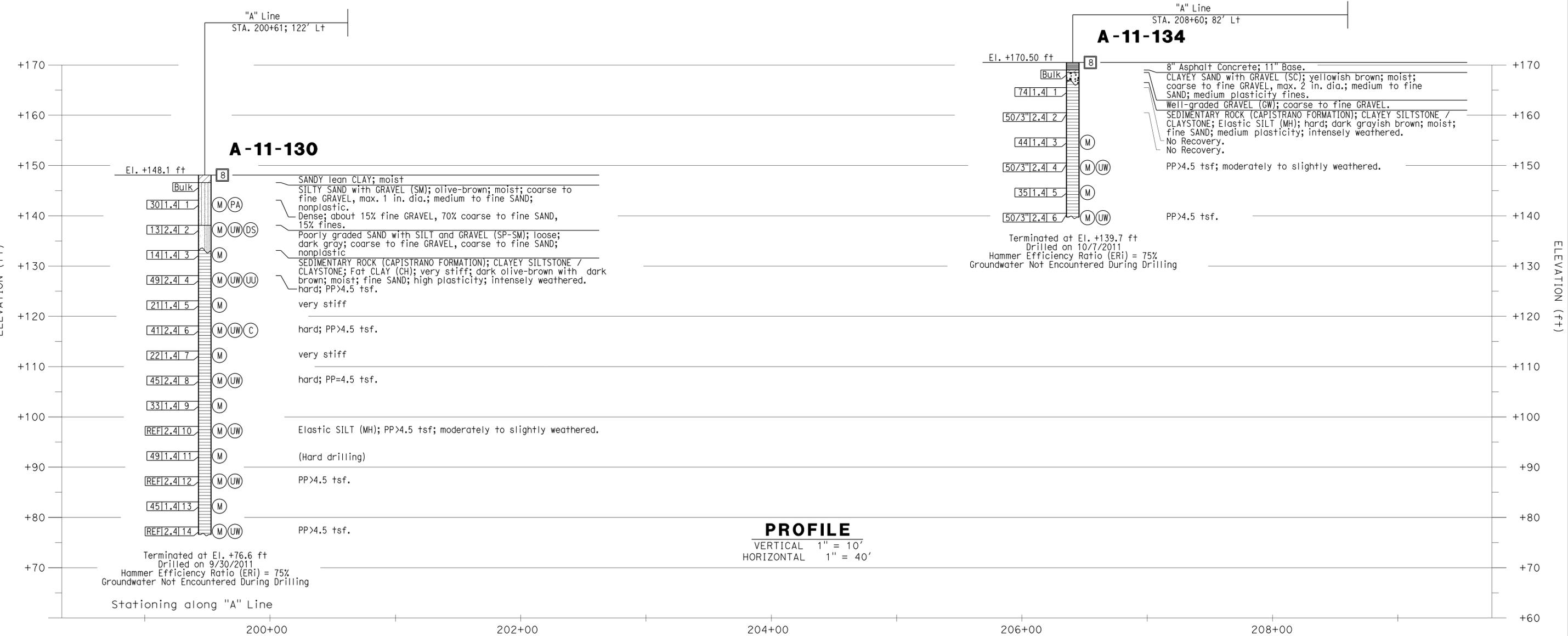


**LOG OF TEST BORINGS No. 5
 OVERHEAD SIGN STRUCTURES
 LOTB-5**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	452	635
 GEOTECHNICAL PROFESSIONAL			9-30-13 DATE		
3-10-14 PLANS APPROVAL DATE					
EARTH MECHANICS, INC. 17800 NEWHOPE STREET, SUITE B FOUNTAIN VALLEY, CA 92708			ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN STREET ORANGE, CA 92863		



- NOTES:**
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
 - (2) 2.4" samples were taken using a California Modified Sampler.
 - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
 - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 Caltrans®
 CONSULTANT: FUNCTIONAL SUPERVISOR: DAVID LEW
 CALCULATED/DESIGNED BY: MIKE KAPUSKAR
 CHECKED BY: JIANMIN FANG
 REVISED BY: DATE
 REVISIONS:

LOG OF TEST BORINGS No. 6
OVERHEAD SIGN STRUCTURES
LOTB-6

LAST REVISION: DATE PLOTTED => 07-AUG-2014
 00-00-00 TIME PLOTTED => 06:45

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

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

	S	
S	SOUTH, SUPPLEMENT	
SAE	STRUCTURE APPROACH EMBANKMENT	
Salv	SALVAGE	
SAPP	STRUCTURAL ALUMINUM PLATE PIPE	
SB	SOUTHBOUND	
SC	SAND CUSHION	
SCSP	SLOTTED CORRUGATED STEEL PIPE	
SD	STORM DRAIN	
Sec	SECOND, SECTION	
Sep	SEPARATION	
SG	SUBGRADE	
Shld	SHOULDER	
Sht	SHEET	
Sim	SIMILAR	
SL	STATION LINE	
SM	SELECTED MATERIAL	
Spec	SPECIAL, SPECIFICATIONS	
SPP	SLOTTED PLASTIC PIPE	
SS	SLOPE STAKE	
SSBM	STRAP AND SADDLE BRACKET METHOD	
SSD	STRUCTURAL SECTION DRAIN	
SSPA	STRUCTURAL STEEL PLATE ARCH	
SSPP	STRUCTURAL STEEL PLATE PIPE	
SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH	
SSRP	STEEL SPIRAL RIB PIPE	
St	STREET	
Sta	STATION	
STBB	SINGLE THRIE BEAM BARRIER	
Std	STANDARD	
Str	STRUCTURE	
Surf	SURFACING	
SW	SIDEWALK, SOUND WALL	
Swr	SEWER	
Sym	SYMMETRICAL	
S4S	SURFACE 4 SIDES	
	T	
T	SEMI-TANGENT	
Tan	TANGENT	
TBB	THRIE BEAM BARRIER	
Tbr	TIMBER	
TC	TOP OF CURB	
TCB	TRAFFIC CONTROL BOX	
TCE	TEMPORARY CONSTRUCTION EASEMENT	
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	
WWL	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
12	Ora	5	3.0/3.7	453	635

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 3-10-14

UNIT OF MEASUREMENT SYMBOLS:

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

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:

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
Ø	NOMINAL DIAMETER
oz	OUNCE
lb	POUND
kip	1,000 POUNDS
cal	CALORIE
ft	FOOT OR FEET
gal	GALLON

* For use on a sign panel only

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ABBREVIATIONS
(SHEET 2 OF 2)**

NO SCALE

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

2010 REVISED STANDARD PLAN RSP A10B

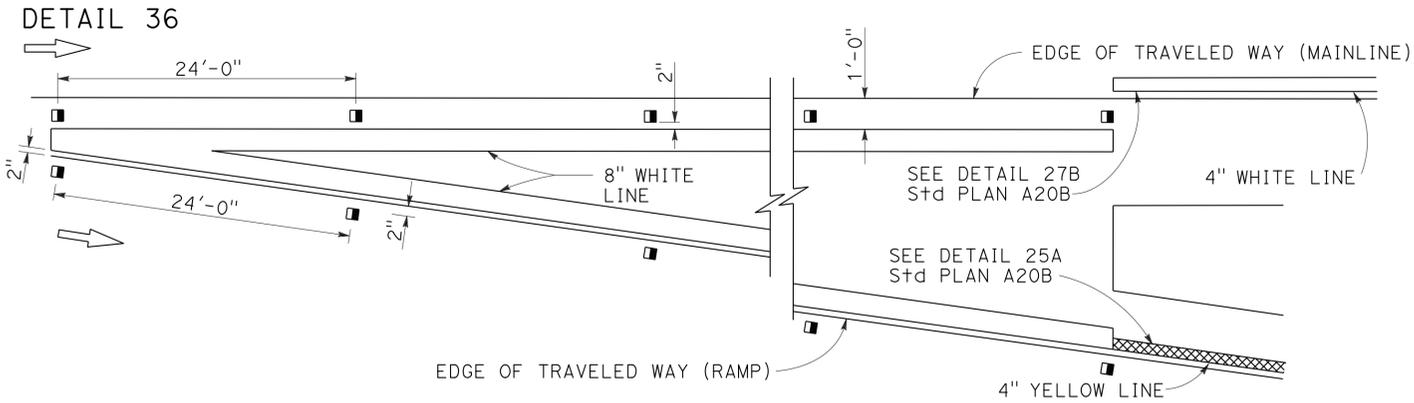
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	454	635

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

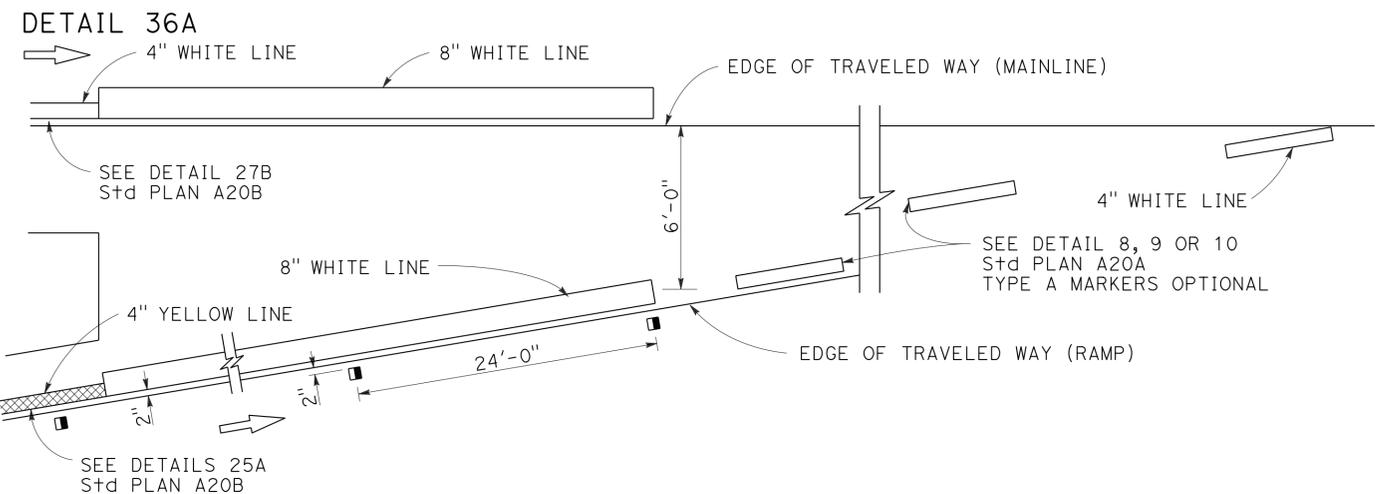
July 19, 2013
 PLANS APPROVAL DATE

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.

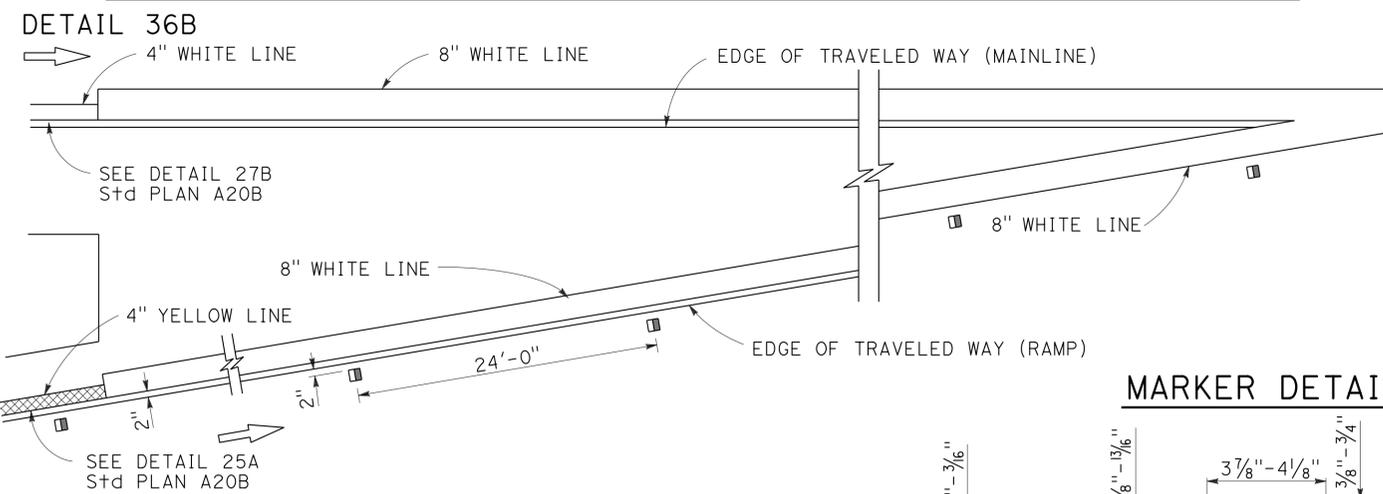
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT



ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT

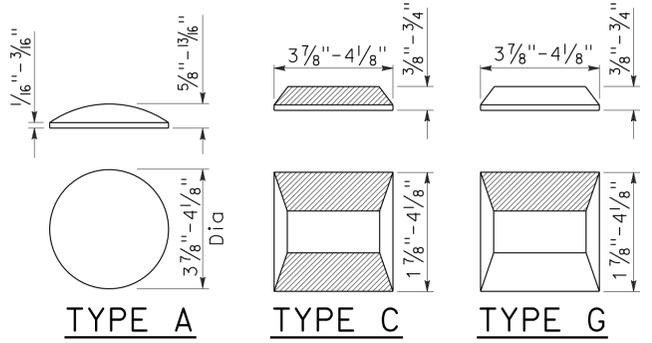


ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT



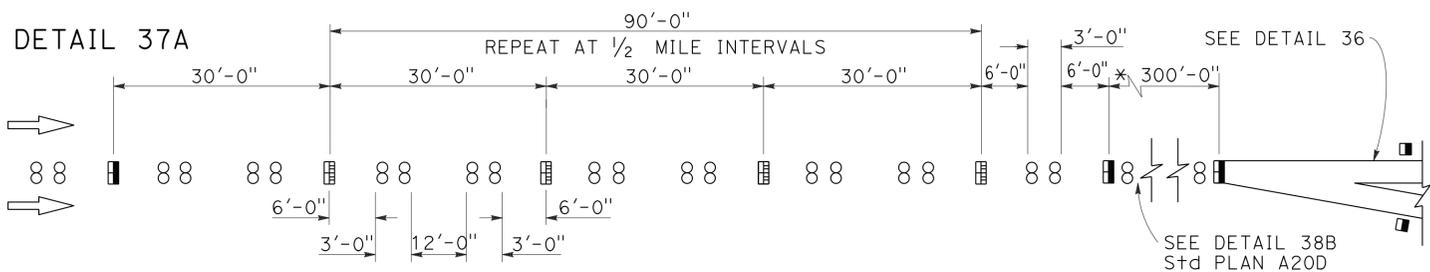
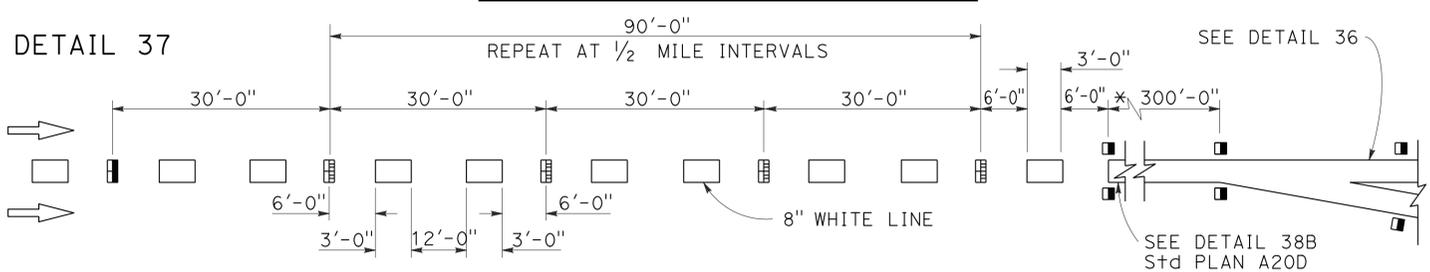
MARKER DETAILS

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



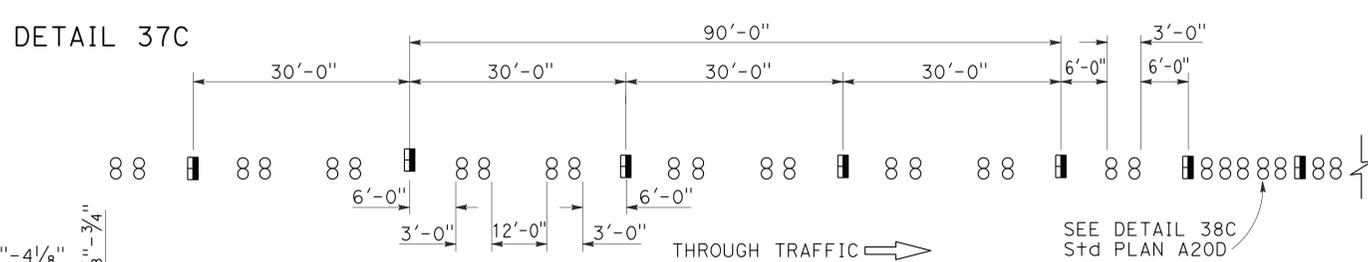
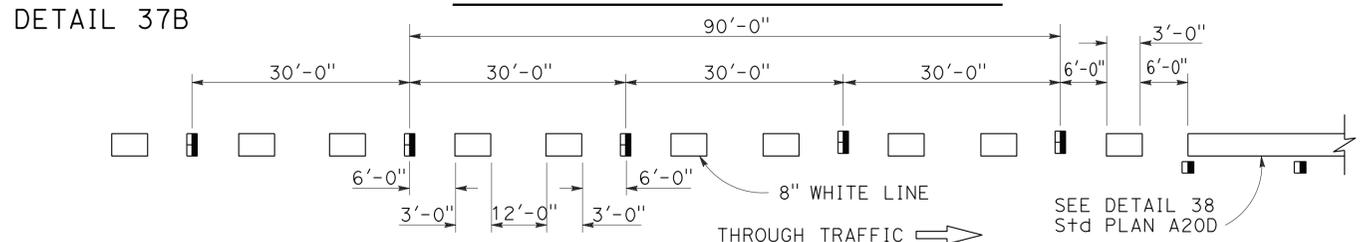
RETROREFLECTIVE FACE

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

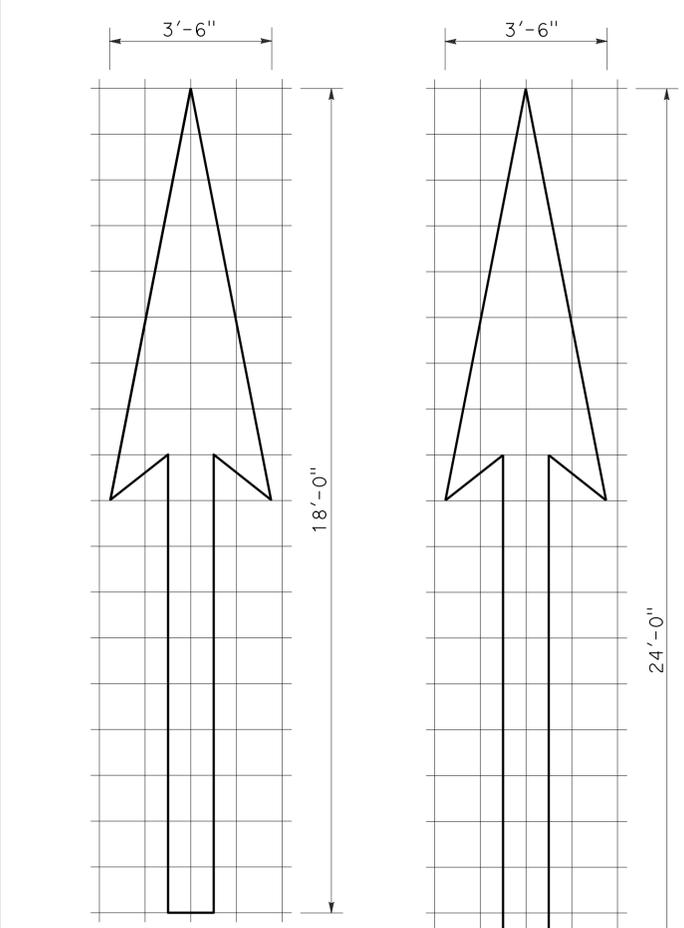
2010 REVISED STANDARD PLAN RSP A20C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	455	635

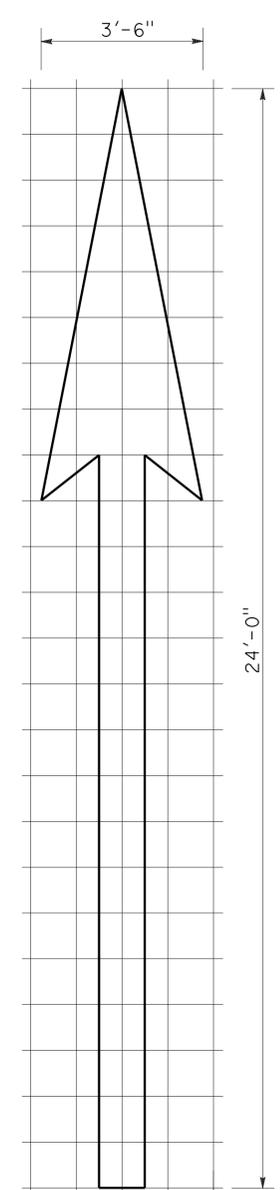
Roberto L. McLaughlin
 REGISTERED CIVIL ENGINEER
 April 20, 2012
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

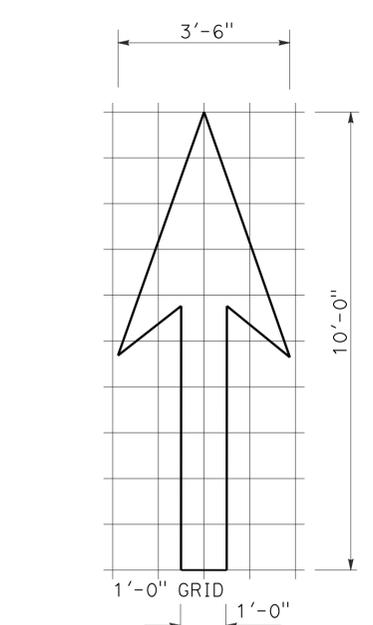
TO ACCOMPANY PLANS DATED 3-10-14



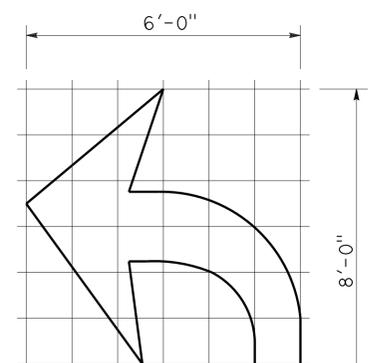
A=25 ft²
TYPE I 18'-0" ARROW



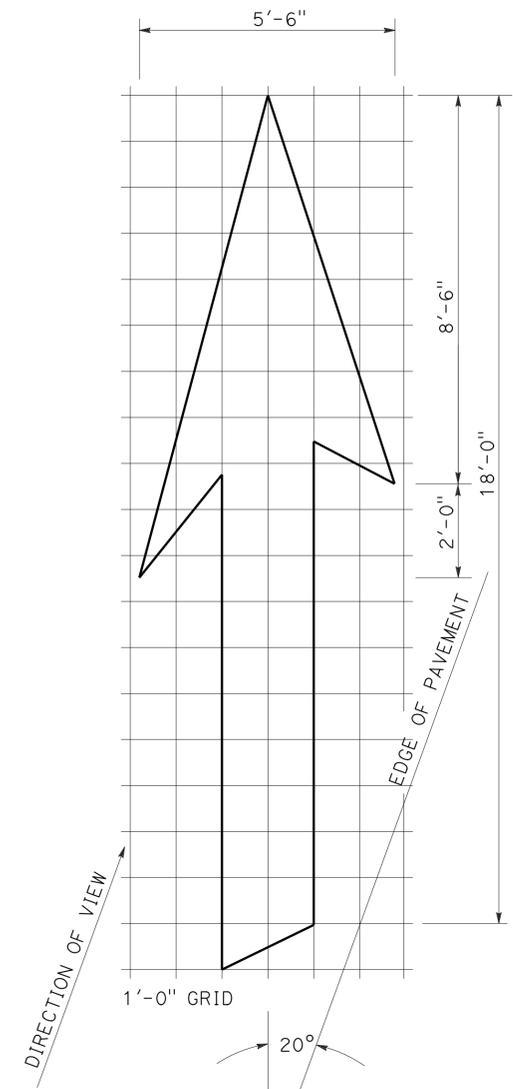
A=31 ft²
TYPE I 24'-0" ARROW



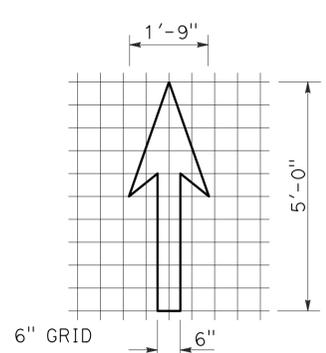
A=14 ft²
TYPE I 10'-0" ARROW



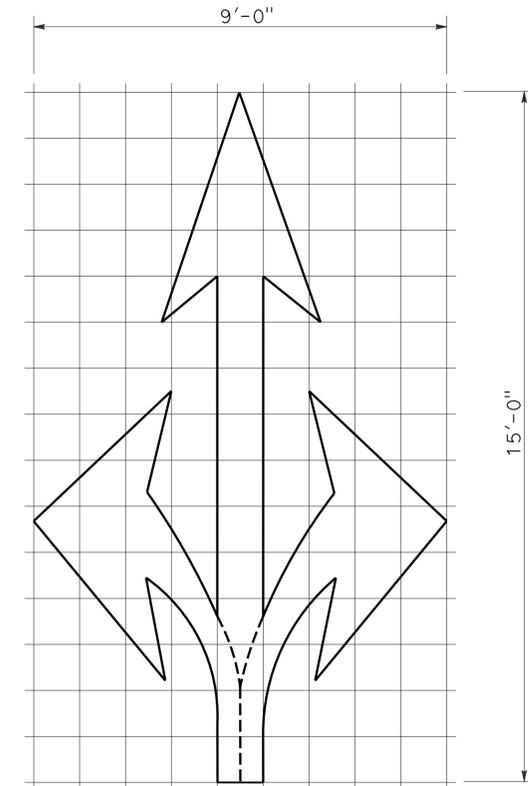
A=15 ft²
TYPE IV (L) ARROW
(For Type IV (R) arrow, use mirror image)



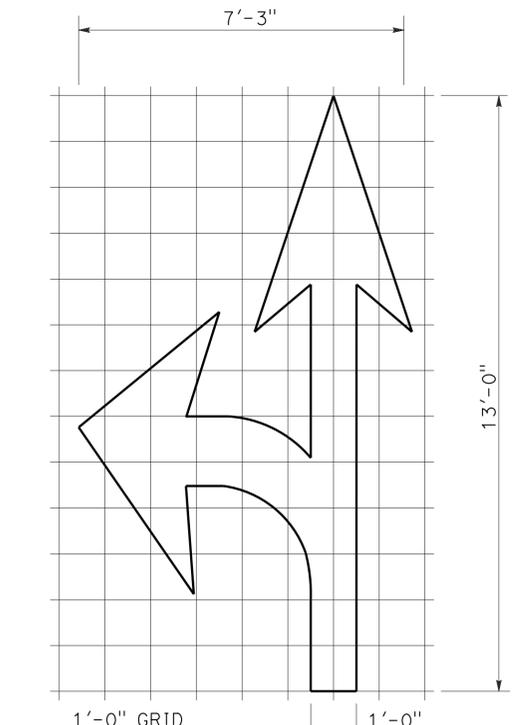
A=42 ft²
TYPE VI ARROW
Right lane drop arrow
(For left lane, use mirror image)



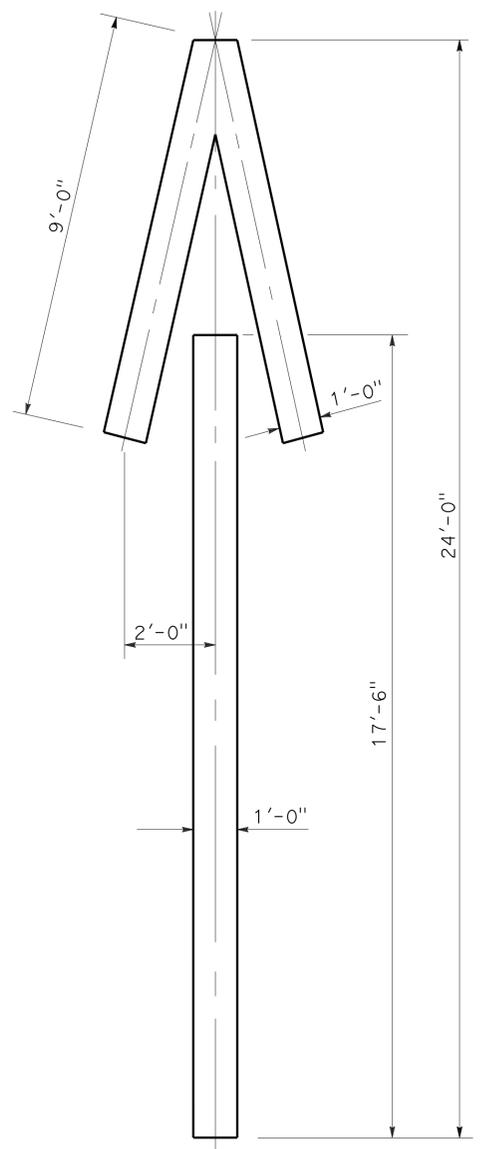
A=3.5 ft²
BIKE LANE ARROW



A=36 ft²
TYPE VIII ARROW



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



A=33 ft²
TYPE V ARROW

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

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

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

REVISED STANDARD PLAN RSP A24A

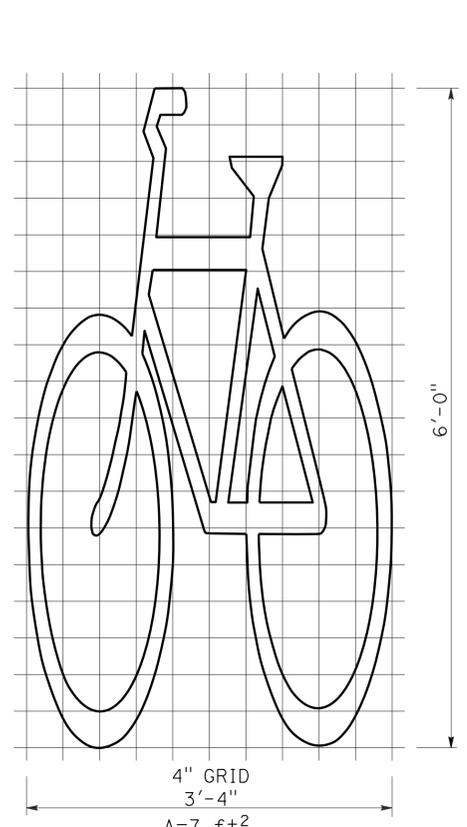
2010 REVISED STANDARD PLAN RSP A24A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	456	635

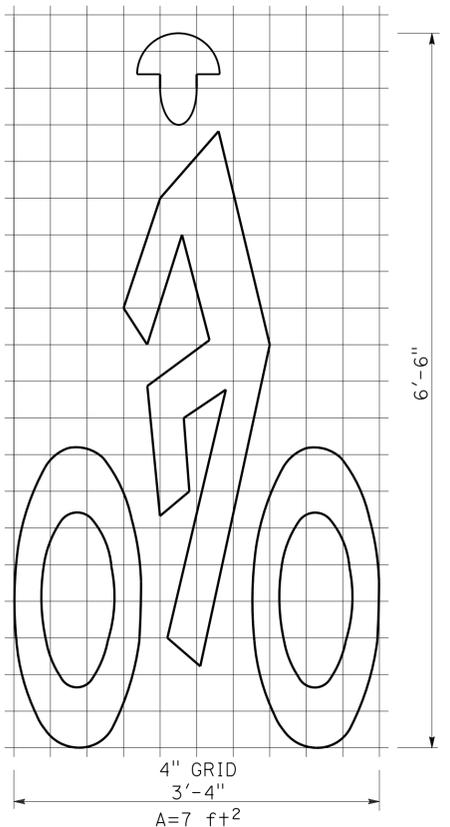
Registered Professional Engineer
 Roberto L. McLaughlin
 No. C40375
 Exp. 3-31-13
 CIVIL
 STATE OF CALIFORNIA

October 19, 2012
 PLANS APPROVAL DATE

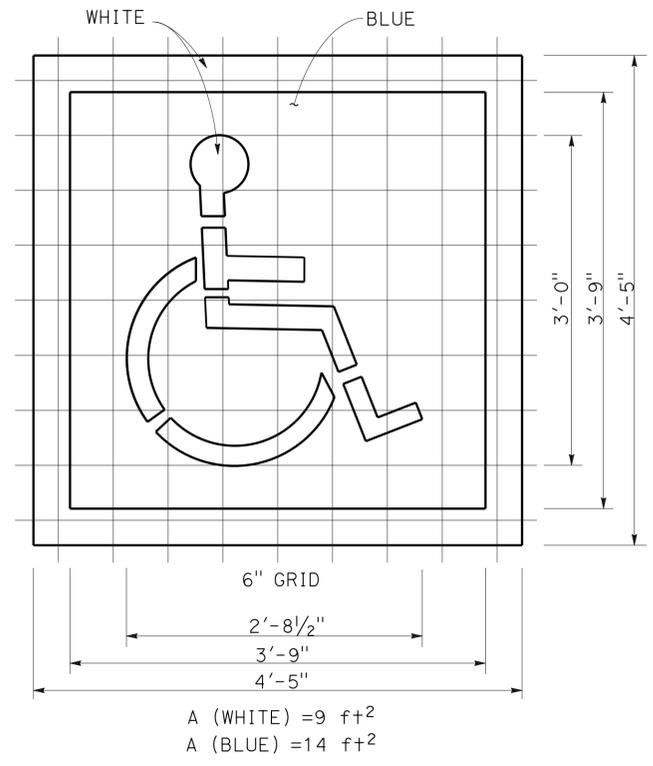
THE STATE OF CALIFORNIA OR ITS OFFICERS
 OR AGENTS SHALL NOT BE RESPONSIBLE FOR
 THE ACCURACY OR COMPLETENESS OF SCANNED
 COPIES OF THIS PLAN SHEET.



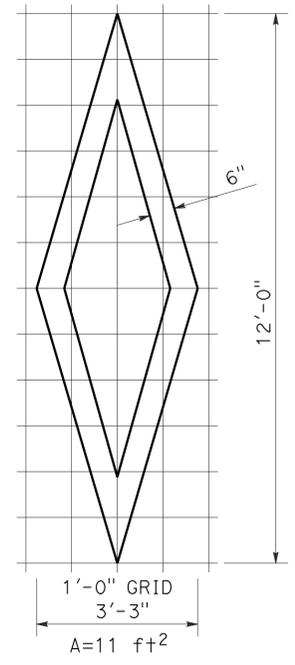
**BIKE LANE SYMBOL
WITHOUT PERSON**



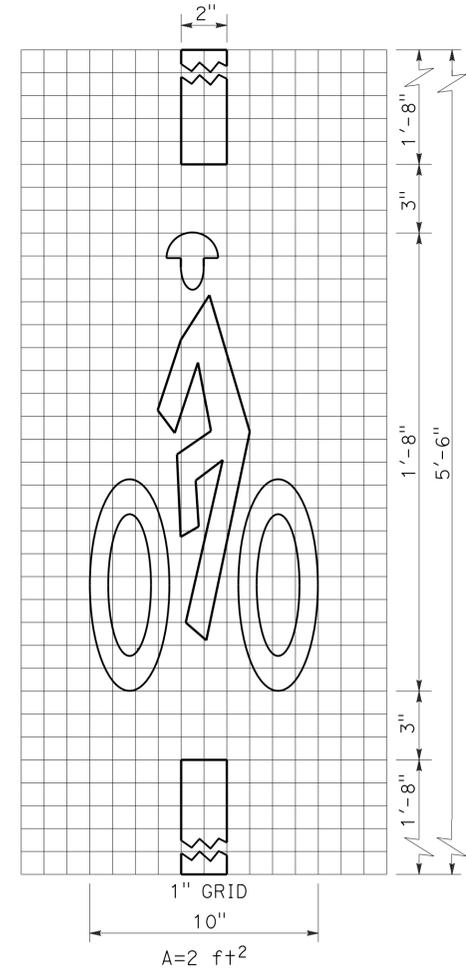
**BIKE LANE SYMBOL
WITH PERSON**



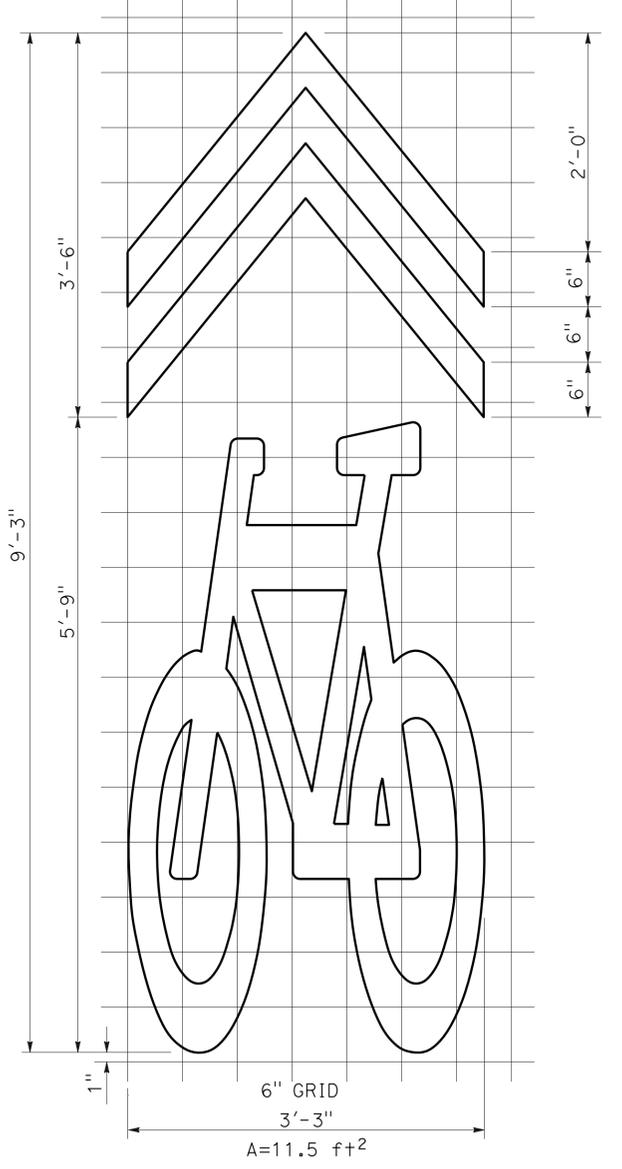
**INTERNATIONAL SYMBOL
OF ACCESSIBILITY (ISA) MARKING**



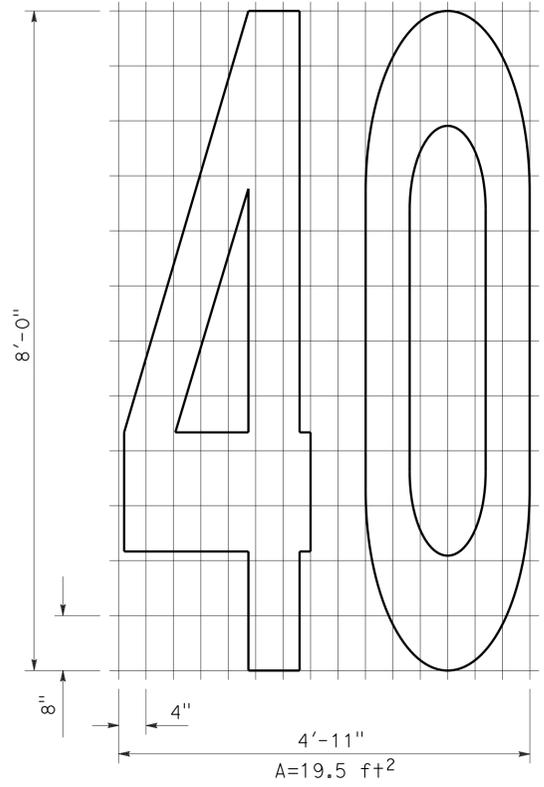
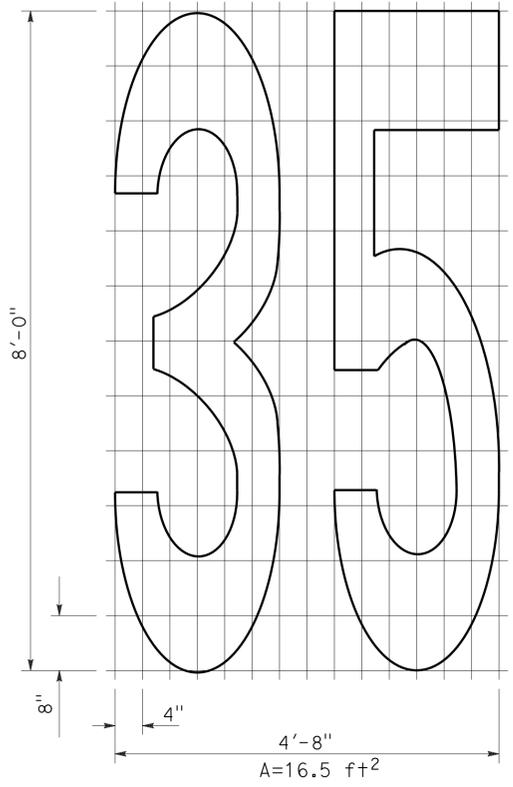
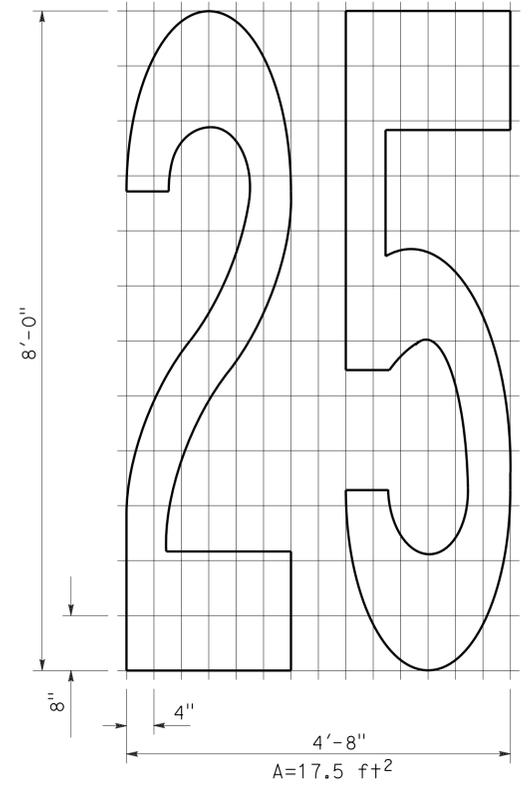
DIAMOND SYMBOL



**BICYCLE LOOP
DETECTOR SYMBOL**



SHARED ROADWAY BICYCLE MARKING



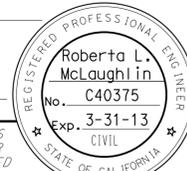
NUMERALS

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

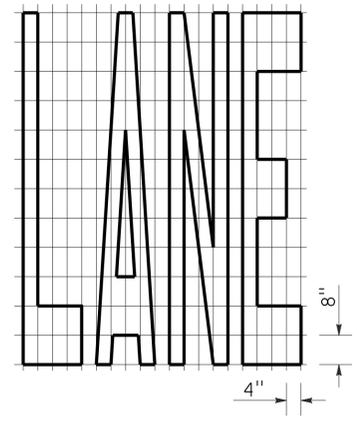
RSP A24C DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A24C
 DATED MAY 20, 2011 - PAGE 15 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A24C

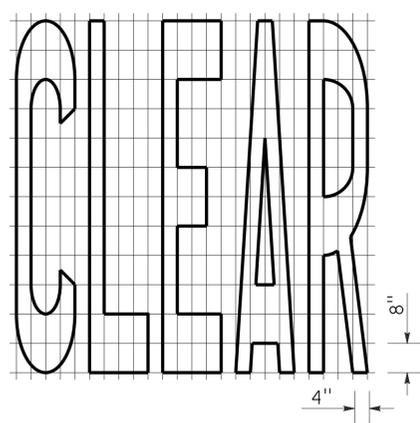
2010 REVISED STANDARD PLAN RSP A24C



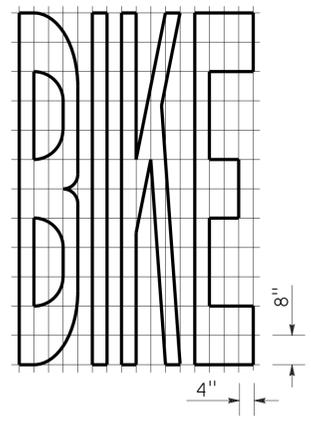
TO ACCOMPANY PLANS DATED 3-10-14



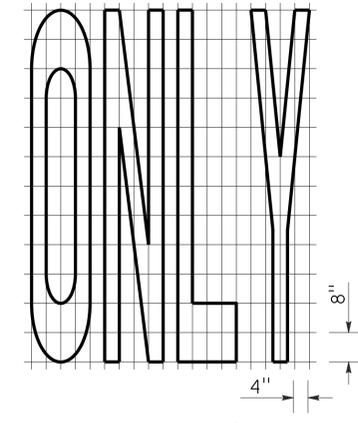
A=24 ft²



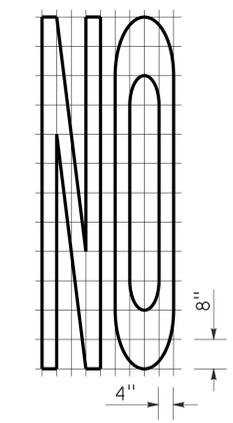
A=27 ft²



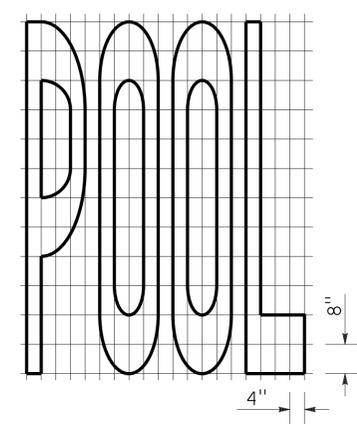
A=21 ft²



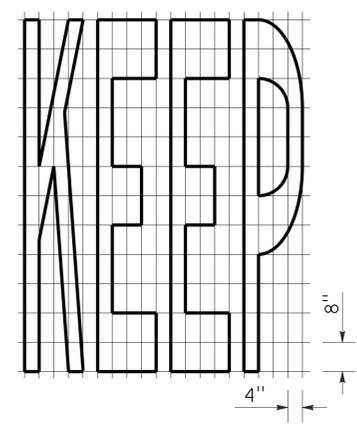
A=22 ft²



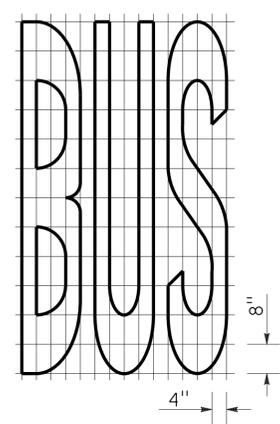
A=14 ft²



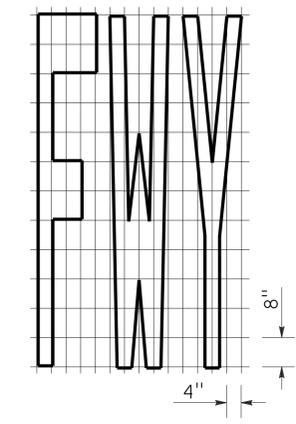
A=23 ft²



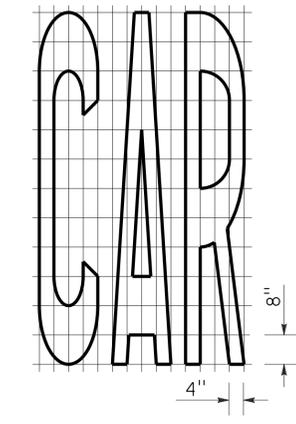
A=24 ft²



A=20 ft²

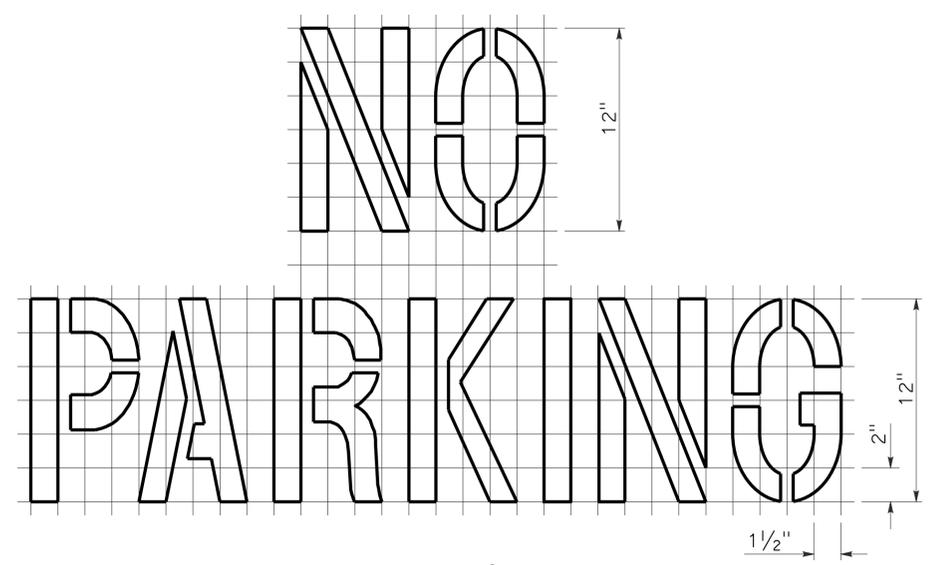


A=16 ft²

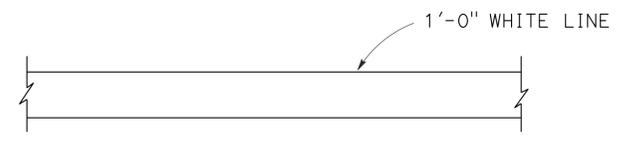


A=17 ft²

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



A=2 ft²
See Notes 6 and 7



LIMIT LINE (STOP LINE)



YIELD LINE

NOTES:

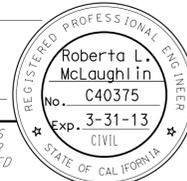
1. If a message consists of more than one word, it should read "UP", i.e., the first word should be nearest the driver.
2. The space between words should be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be 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

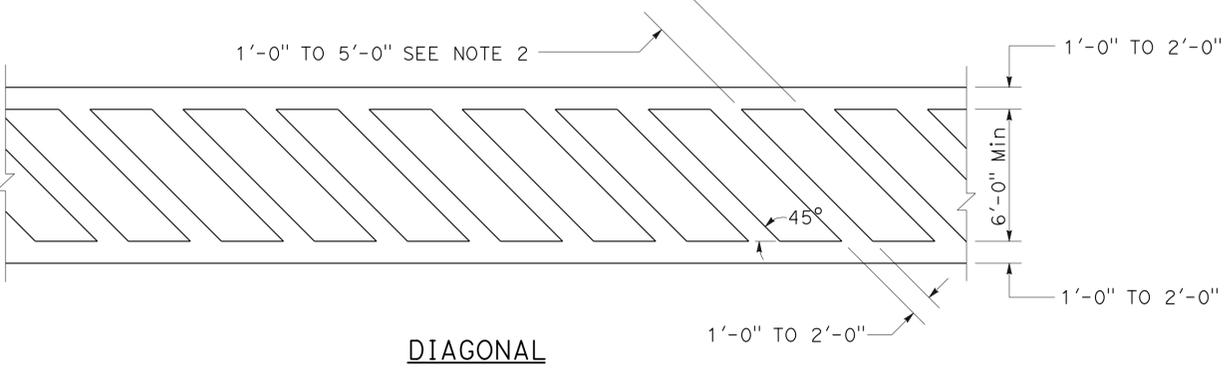
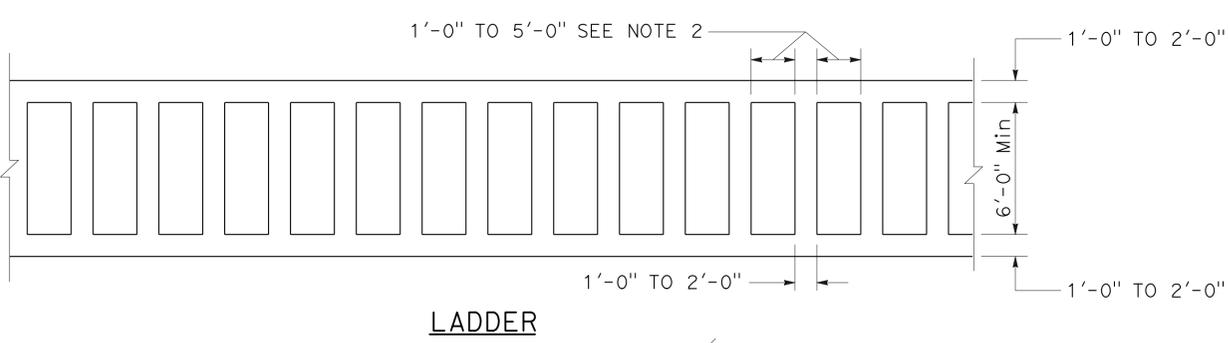
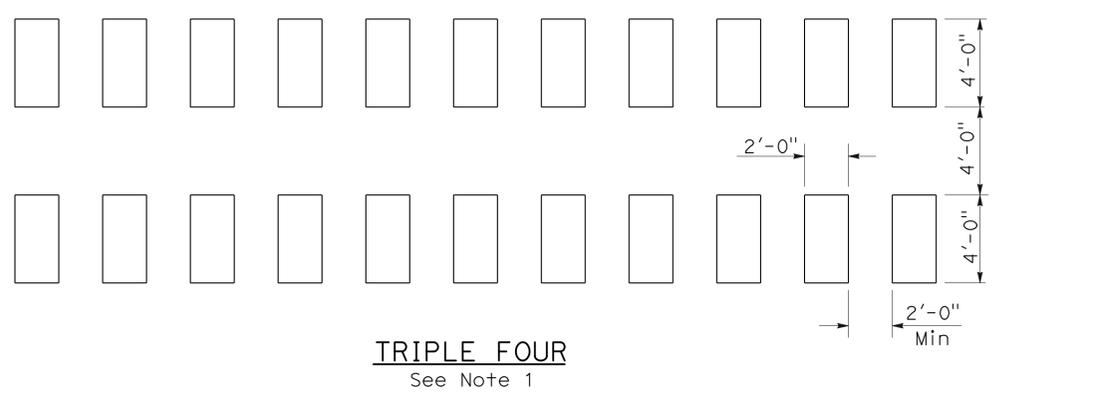
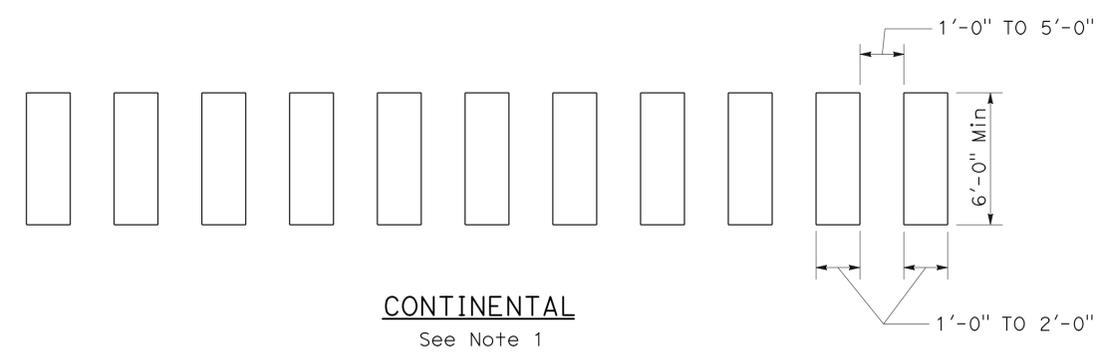
RSP A24E DATED JULY 20, 2012 SUPERSEDES STANDARD PLAN A24E
 DATED MAY 20, 2011 - PAGE 17 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A24E

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	458	635

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

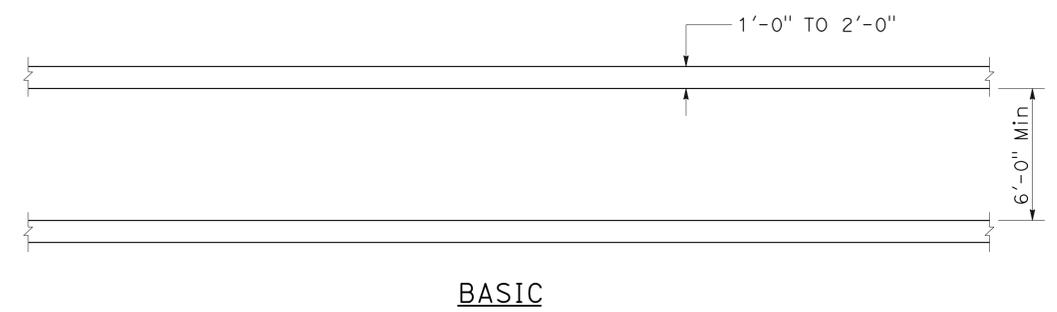
TO ACCOMPANY PLANS DATED 3-10-14



HIGHER VISIBILITY CROSSWALKS

NOTES:

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



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.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	459	635

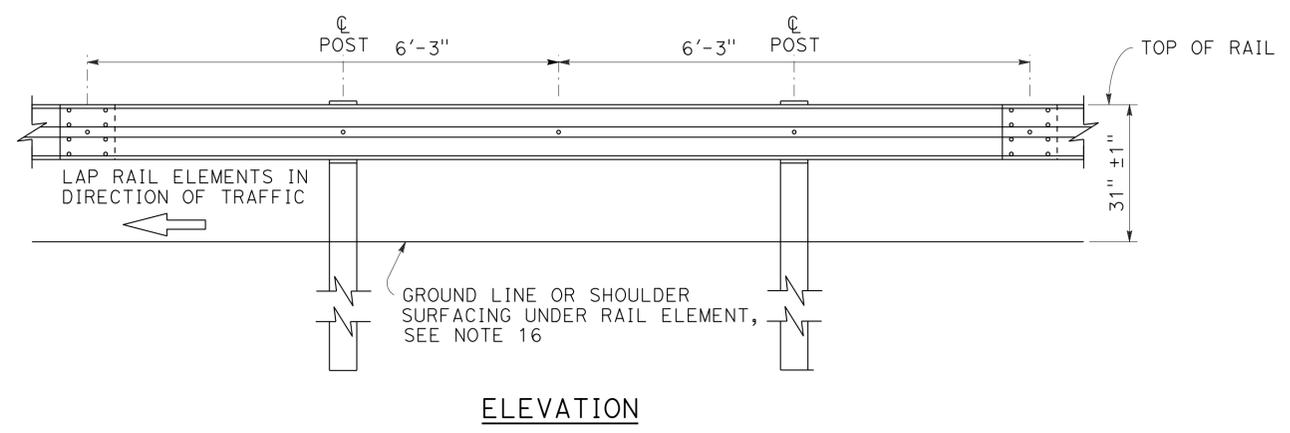
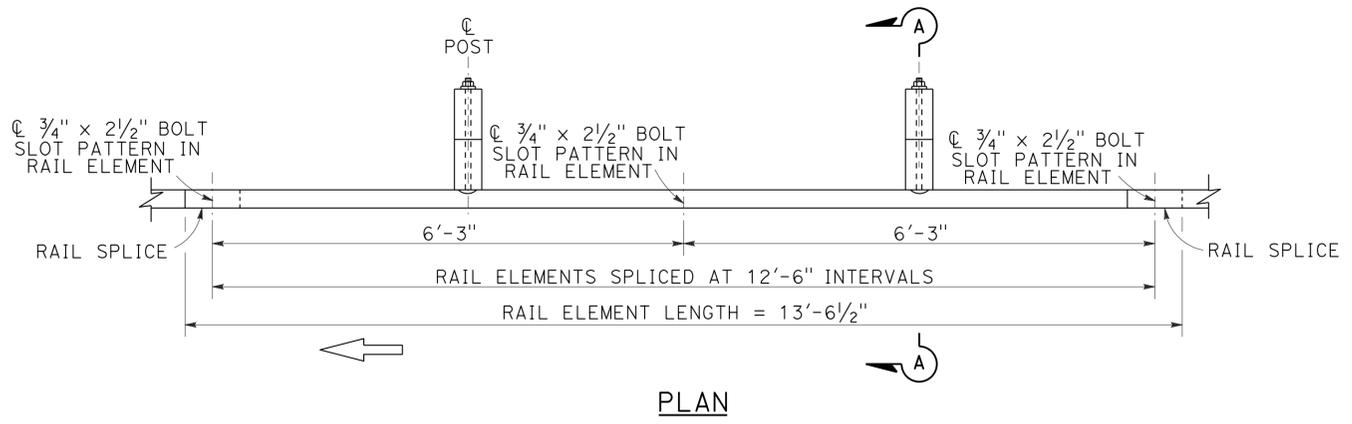
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

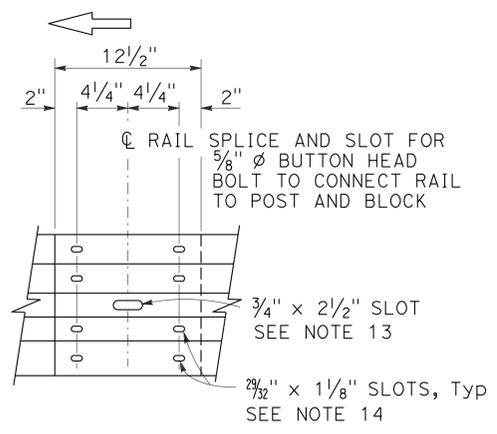
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

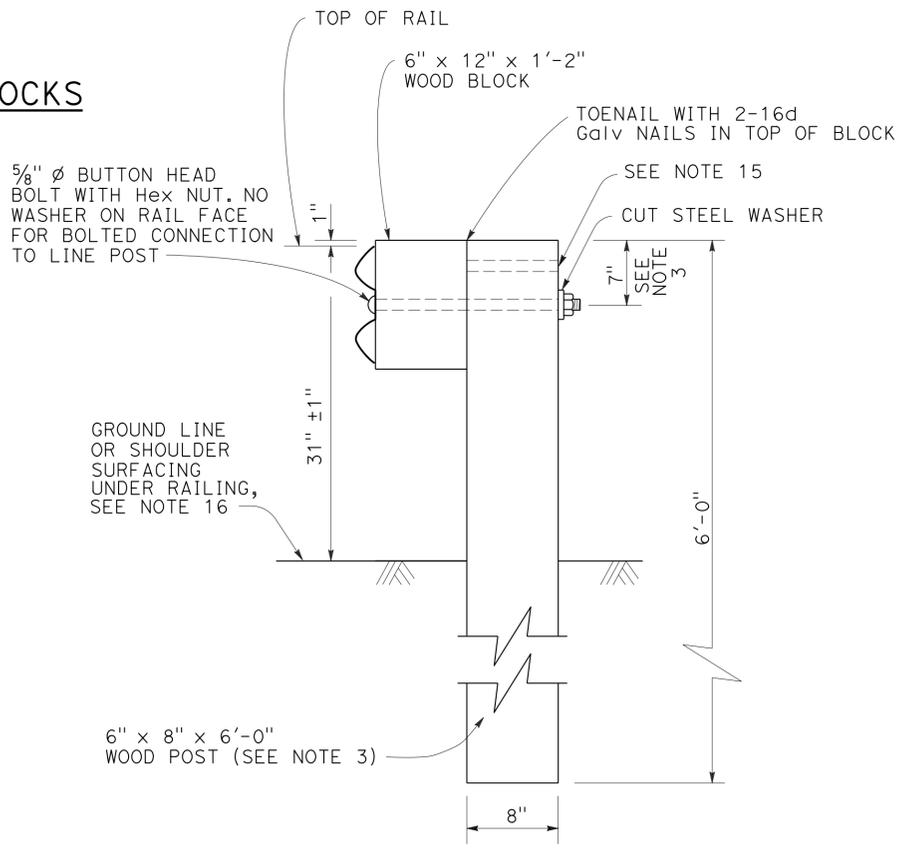
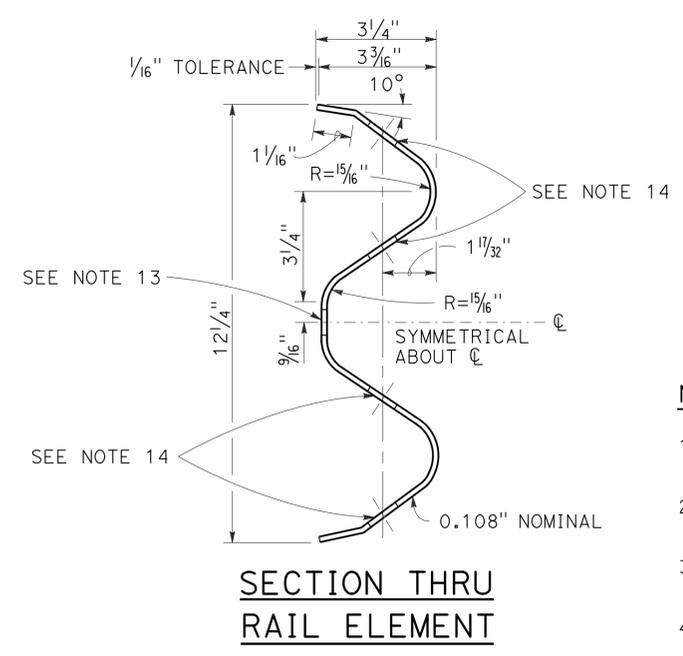
TO ACCOMPANY PLANS DATED 3-10-14



MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



- Connect the over lapped end of the rail elements with 5/8" Ø x 1 3/8" button head oval shoulder splice bolts inserted into the 2 3/32" x 1 1/8" slots and bolted together with 5/8" Ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



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

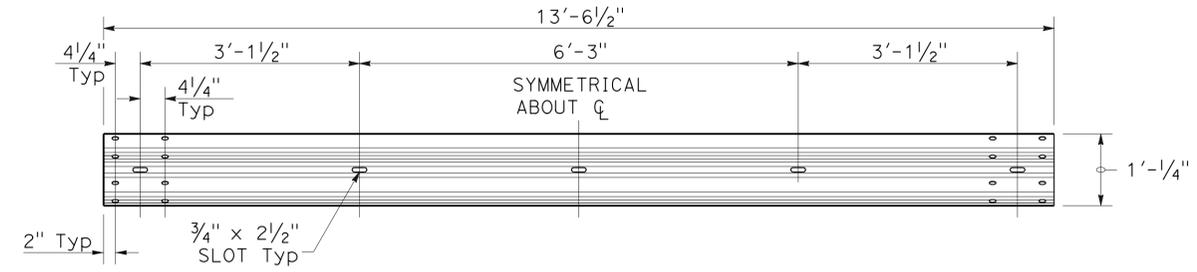
RSP A77L1 DATED JULY 19, 2013 SUPPLEMENTS STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77L1

2010 REVISED STANDARD PLAN RSP A77L1



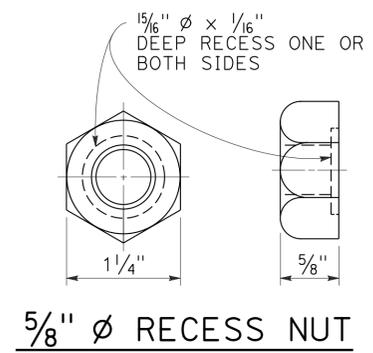
TO ACCOMPANY PLANS DATED 3-10-14



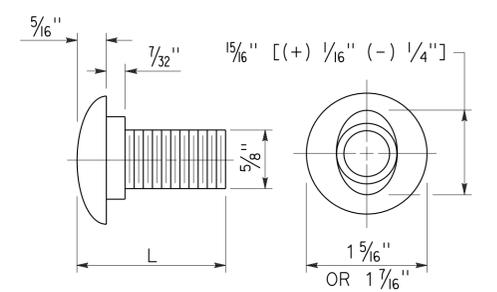
TYPICAL RAIL ELEMENT

NOTE:

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



5/8" Ø RECESS NUT

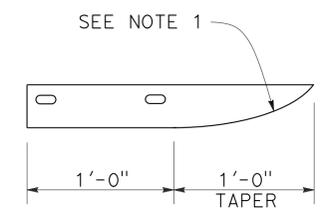


5/8" Ø BUTTON HEAD BOLT

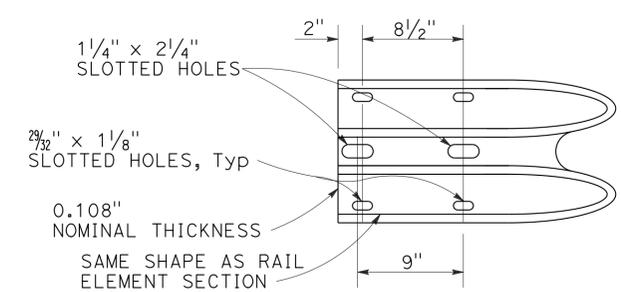
BUTTON HEAD BOLT

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

** For nested rail applications.



PLAN



**ELEVATION
END CAP
(TYPE A)**

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
STANDARD HARDWARE**

NO SCALE

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

REVISED STANDARD PLAN RSP A77M1

2010 REVISED STANDARD PLAN RSP A77M1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	461	635

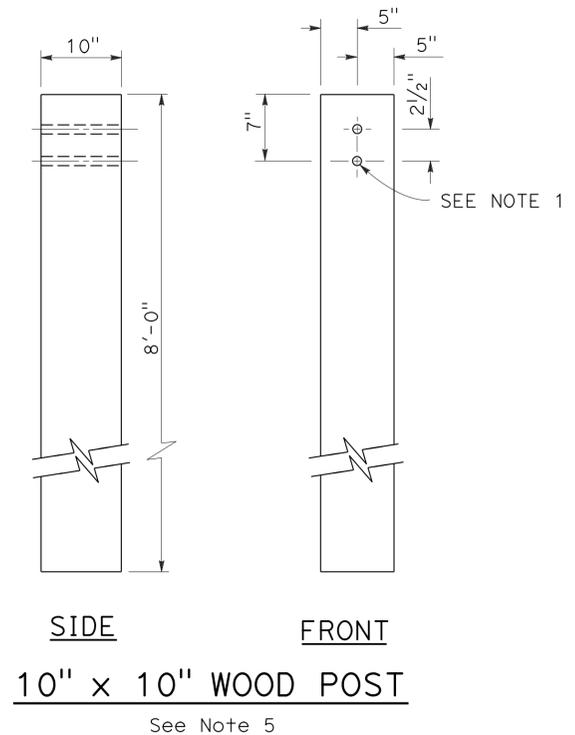
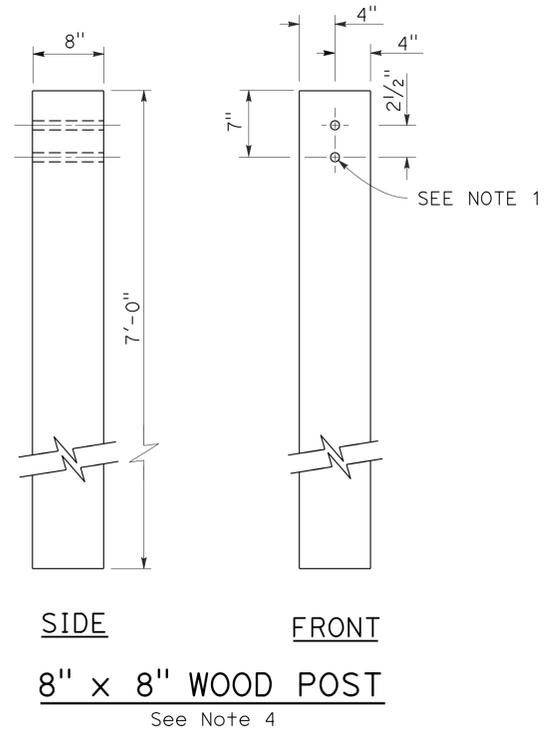
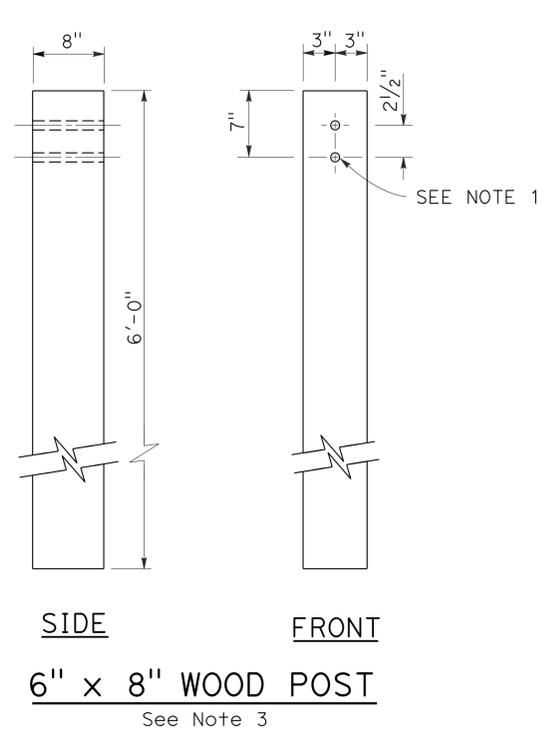
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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.

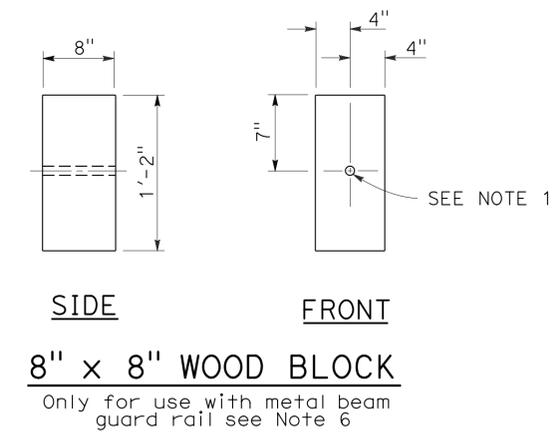
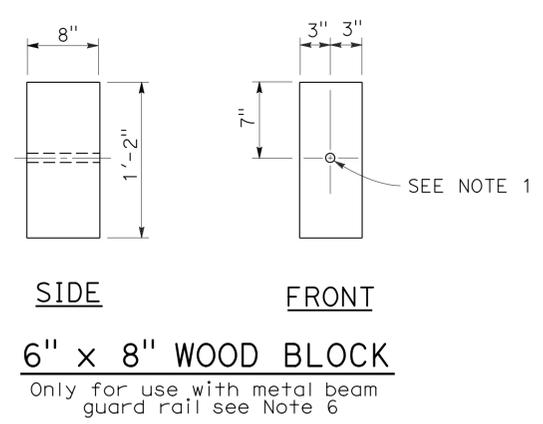
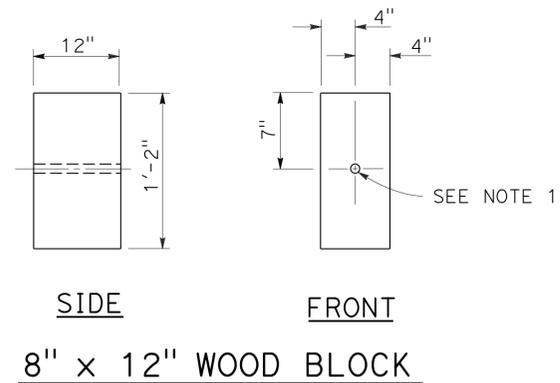
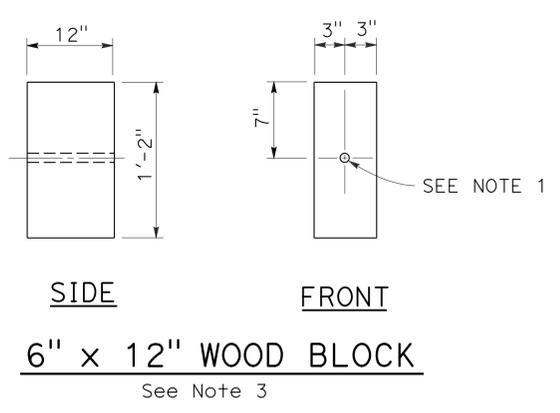
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 3-10-14



NOTES:

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



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77N1

2010 REVISED STANDARD PLAN RSP A77N1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	462	635

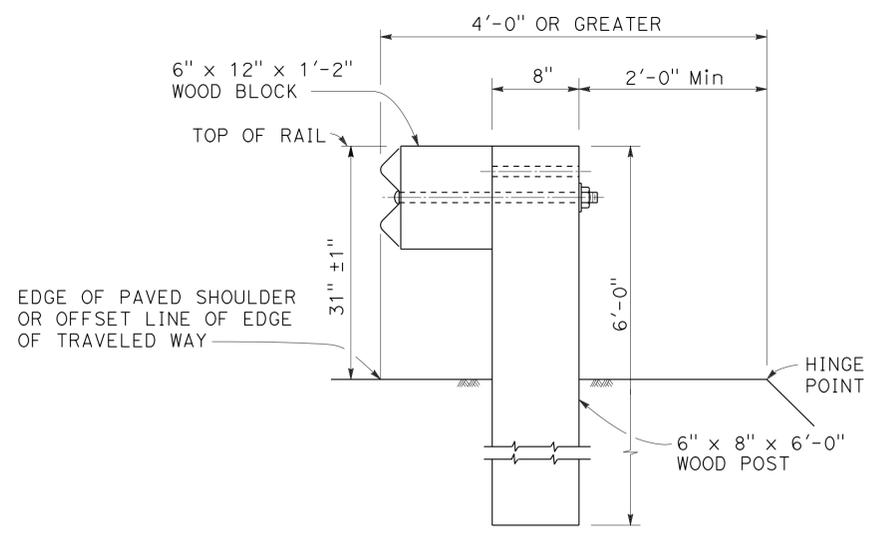
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

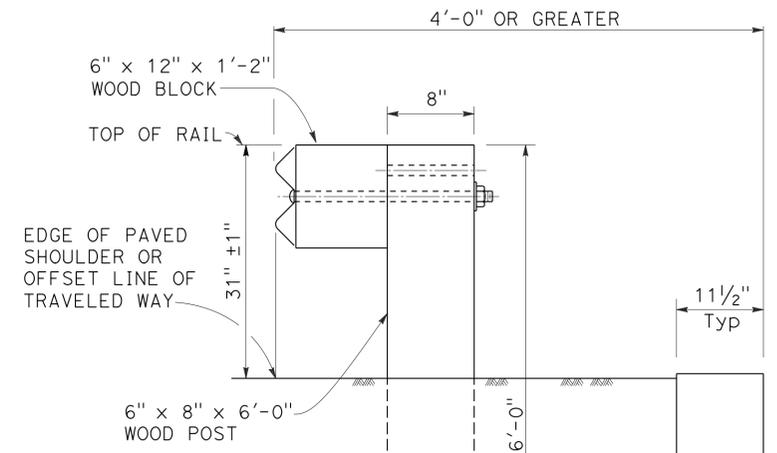
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



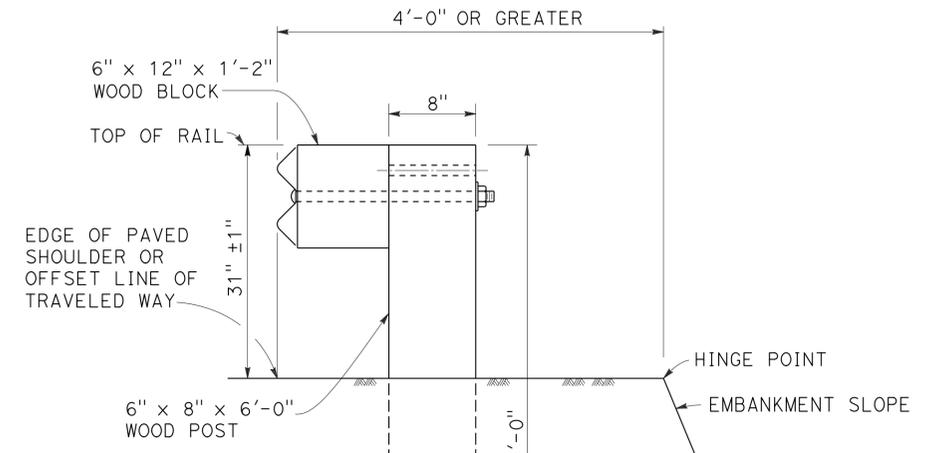
TO ACCOMPANY PLANS DATED 3-10-14



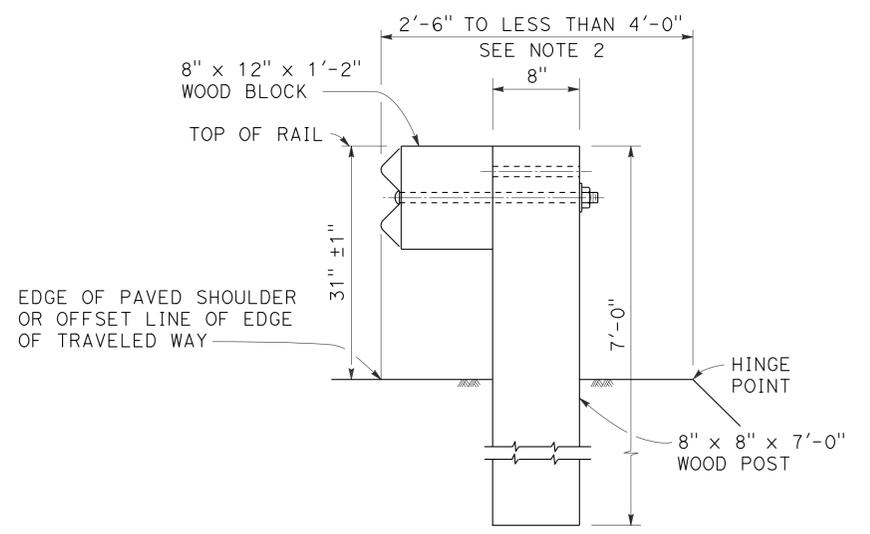
DETAIL A
TYPICAL ROADWAY
INSTALLATION
See Note 1



DETAIL C



DETAIL D



DETAIL B
NARROW ROADWAY
INSTALLATION
See Note 1

POST EMBEDMENT

INSTALLATION AT EARTH RETAINING WALLS

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77N3

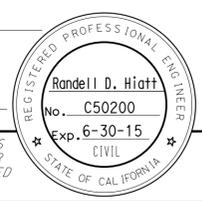
2010 REVISED STANDARD PLAN RSP A77N3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	463	635

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

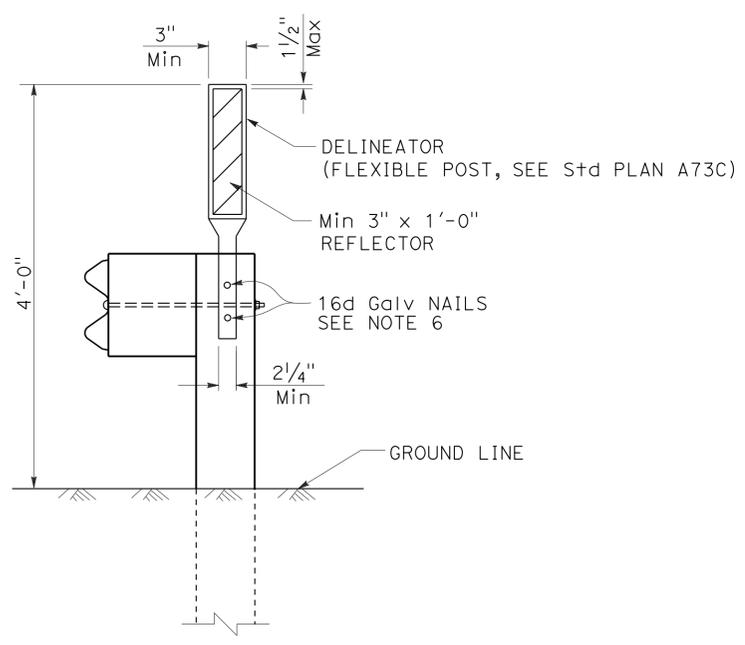
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



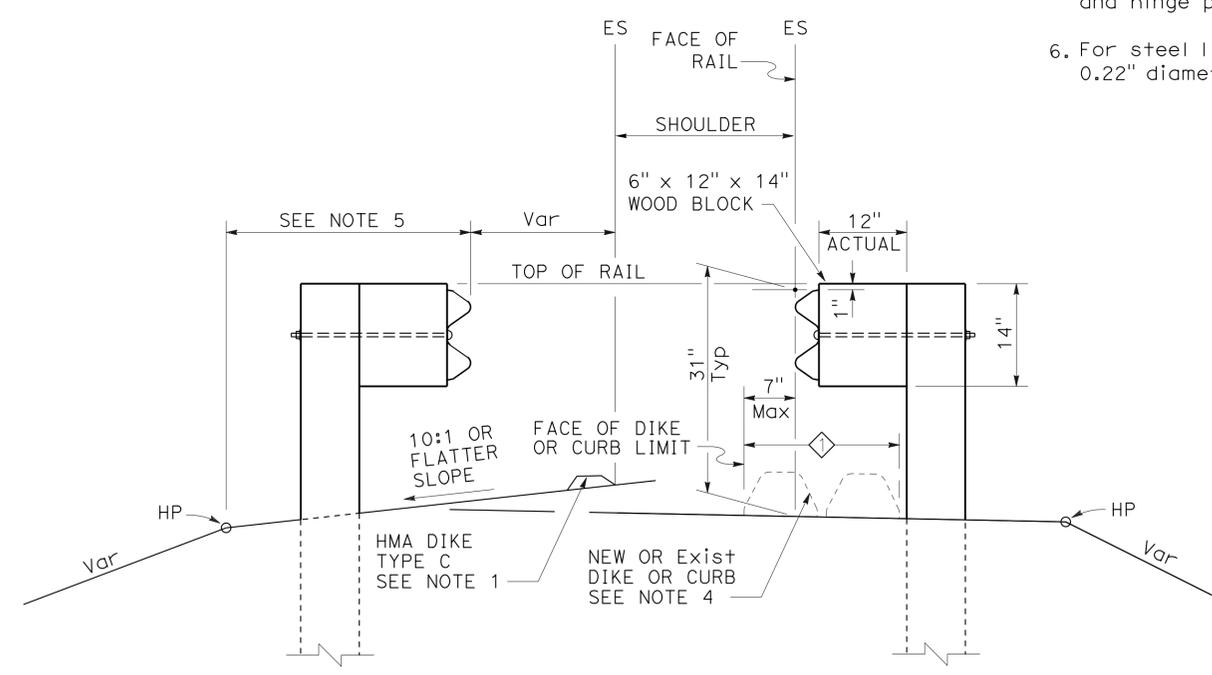
TO ACCOMPANY PLANS DATED 3-10-14

NOTES:

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



MGS DELINEATION
See Note 3



DIKE POSITIONING
See Note 1

◇ PERMISSIBLE DIKE OR CURB PLACEMENT AREA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

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

2010 REVISED STANDARD PLAN RSP A77N4

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	464	635

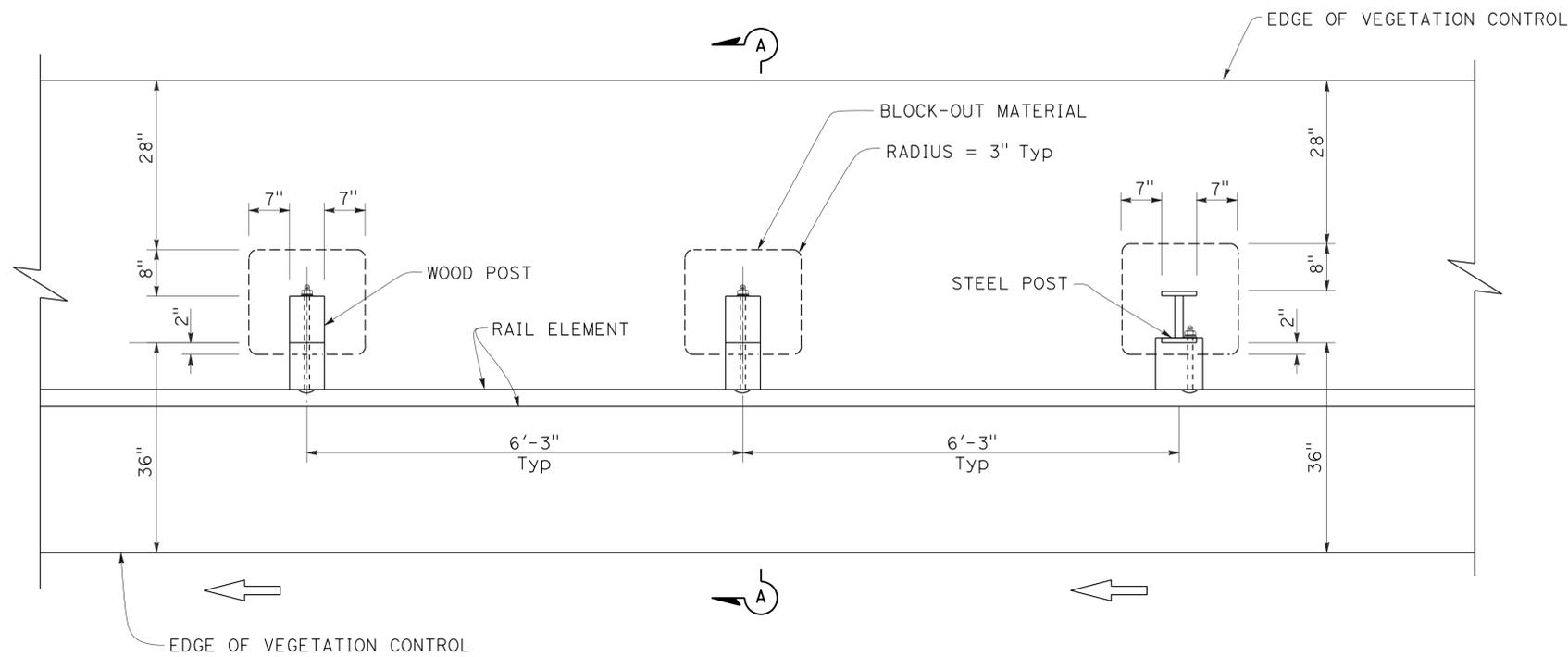
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

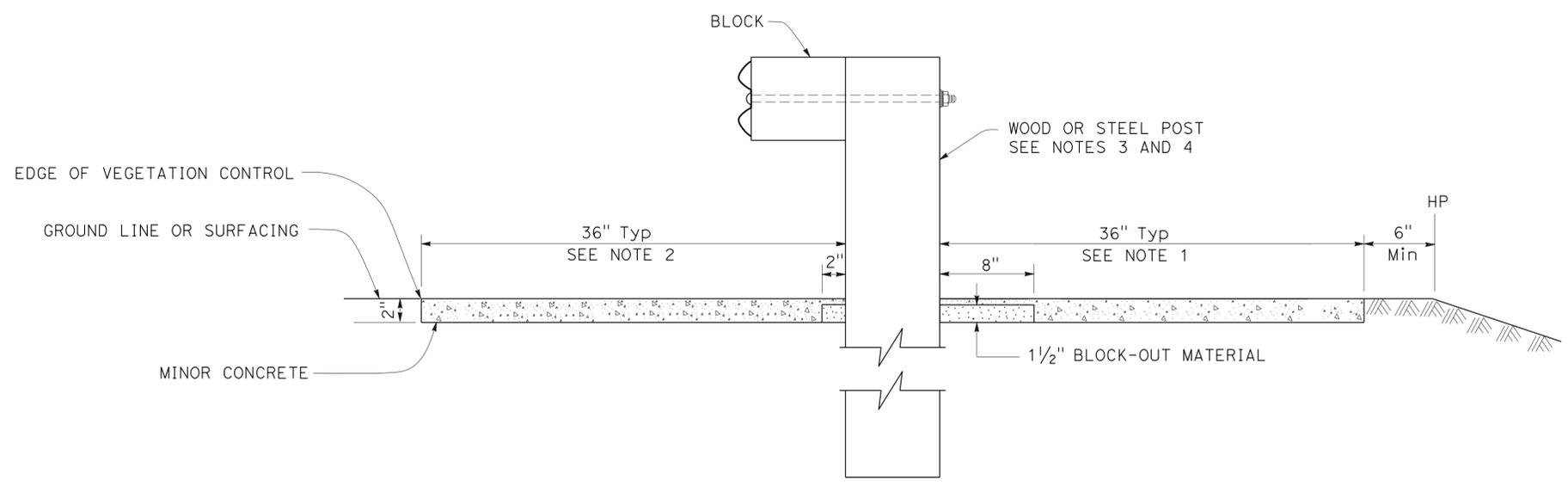
TO ACCOMPANY PLANS DATED 3-10-14



PLAN

NOTES:

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



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

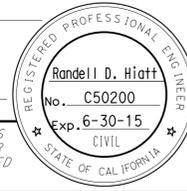
RSP A77N5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N5

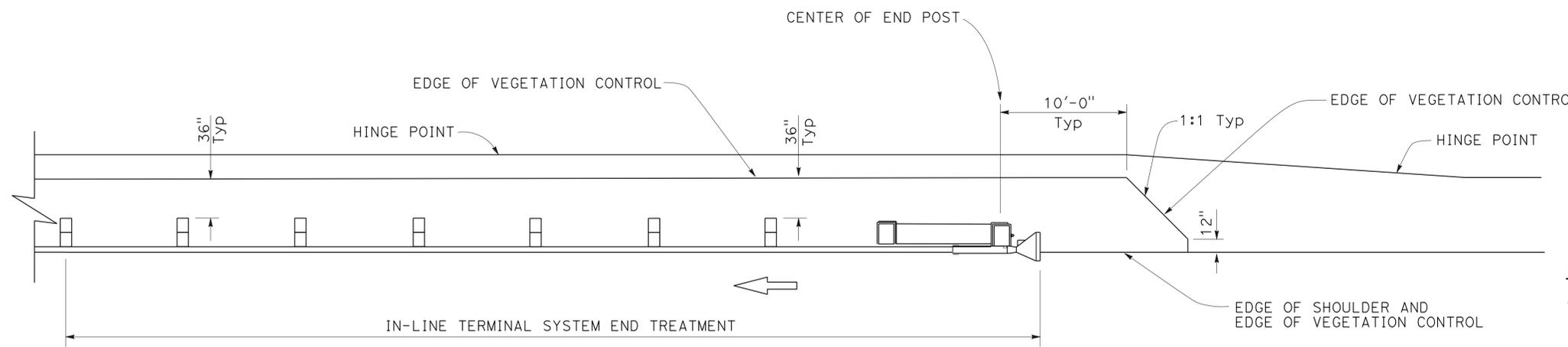
2010 REVISED STANDARD PLAN RSP A77N5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	465	635

RANDALL 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.



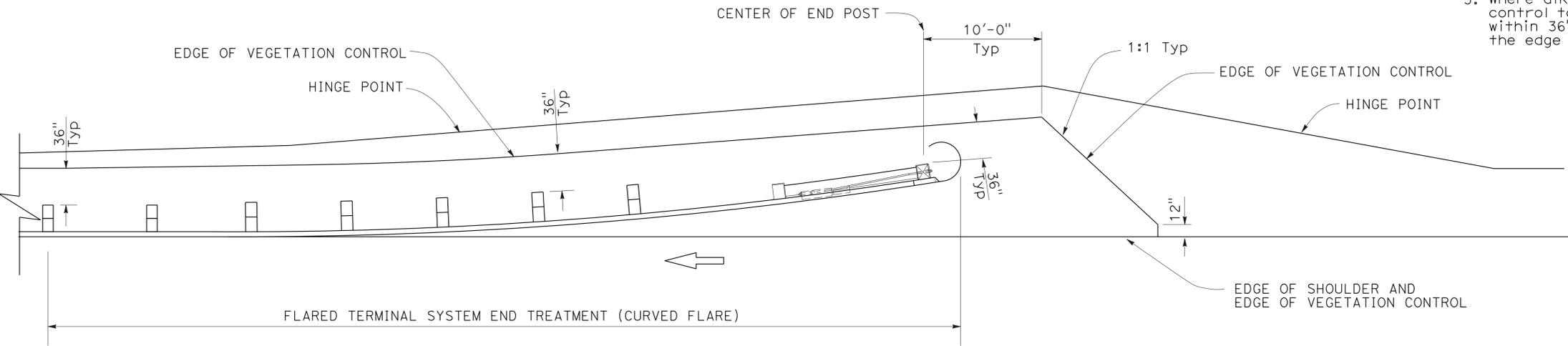
TO ACCOMPANY PLANS DATED 3-10-14



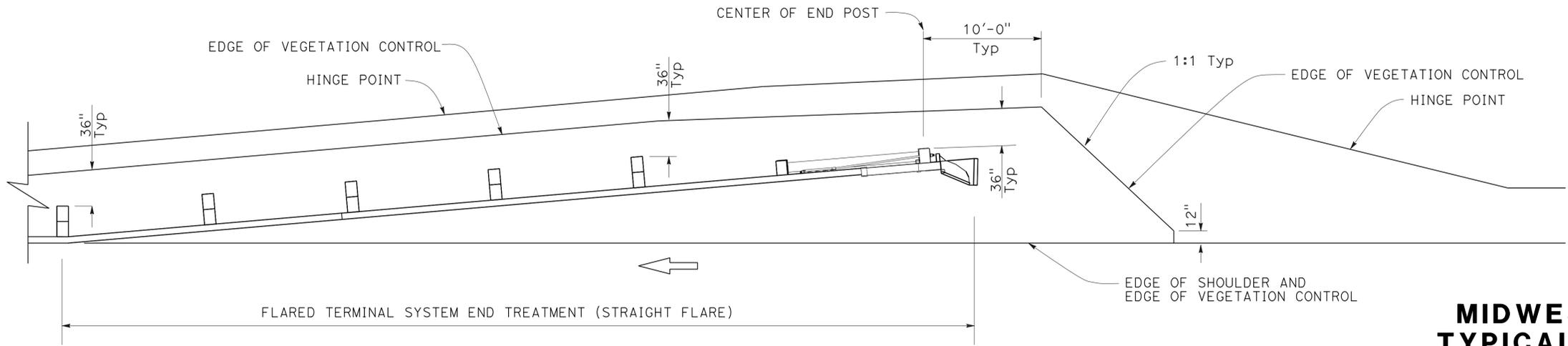
PLAN

NOTES:

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



PLAN



PLAN

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

REVISED STANDARD PLAN RSP A77N6

2010 REVISED STANDARD PLAN RSP A77N6

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	466	635

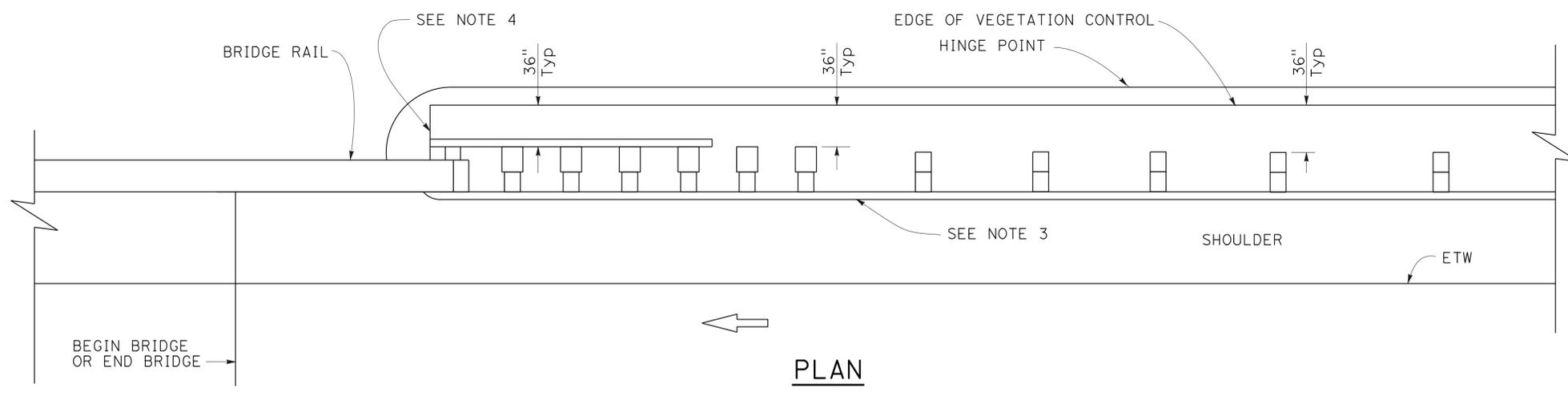
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

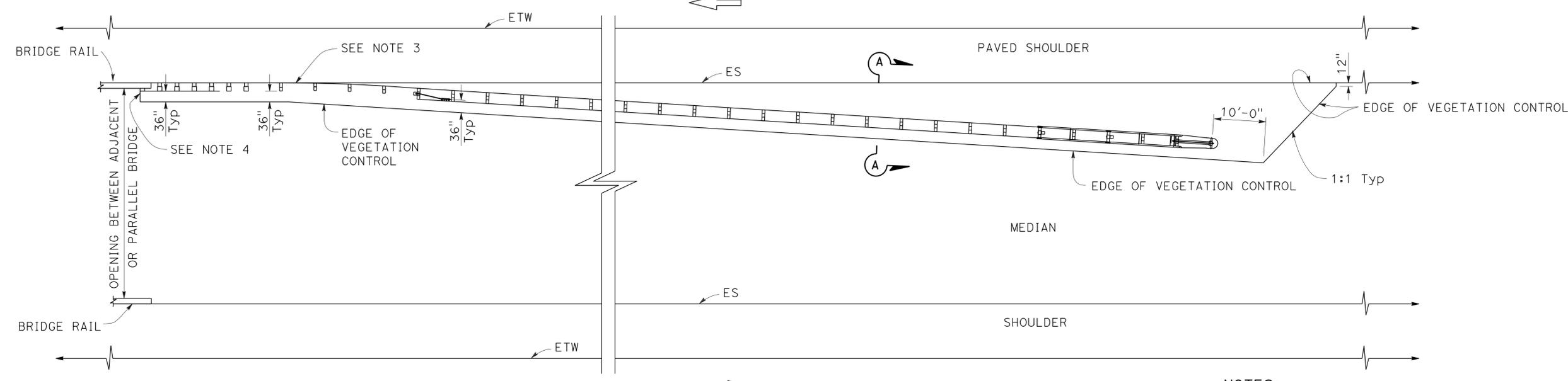
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 3-10-14

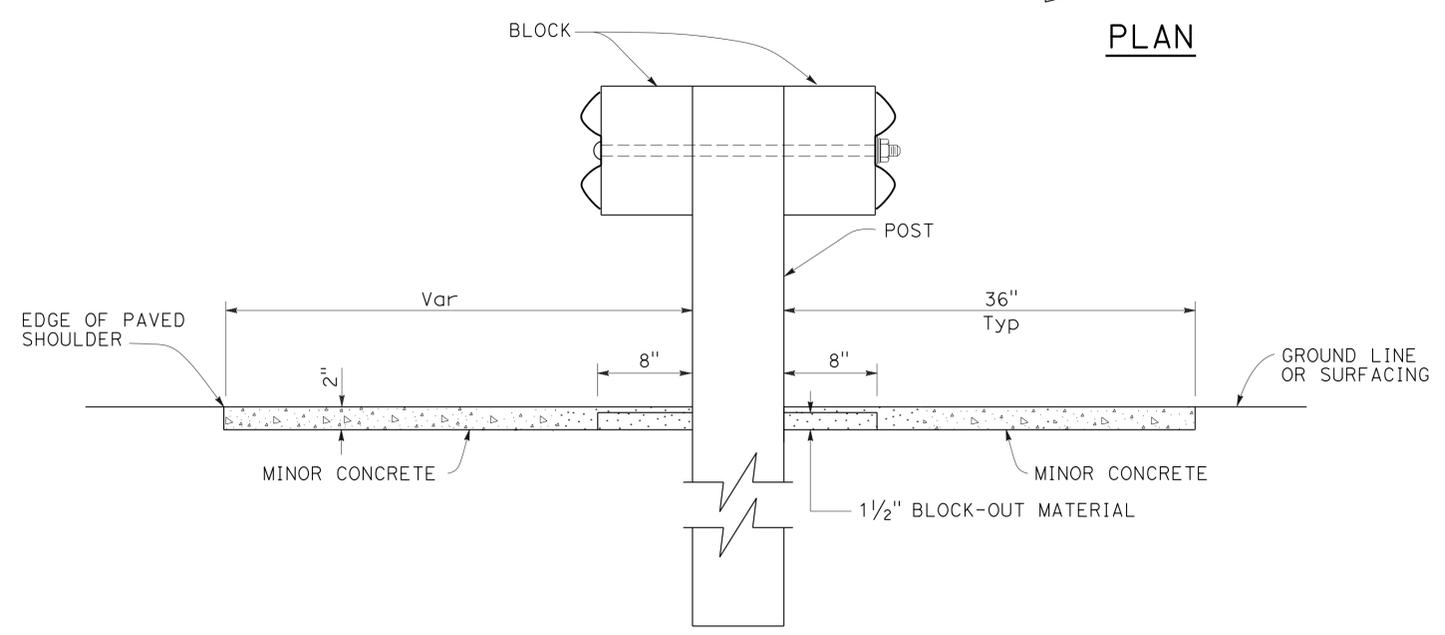
2010 REVISED STANDARD PLAN RSP A77N7



PLAN



PLAN



SECTION A-A

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
AT STRUCTURE APPROACH**

NO SCALE

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

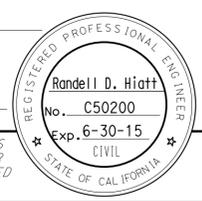
REVISED STANDARD PLAN RSP A77N7

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	467	635

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

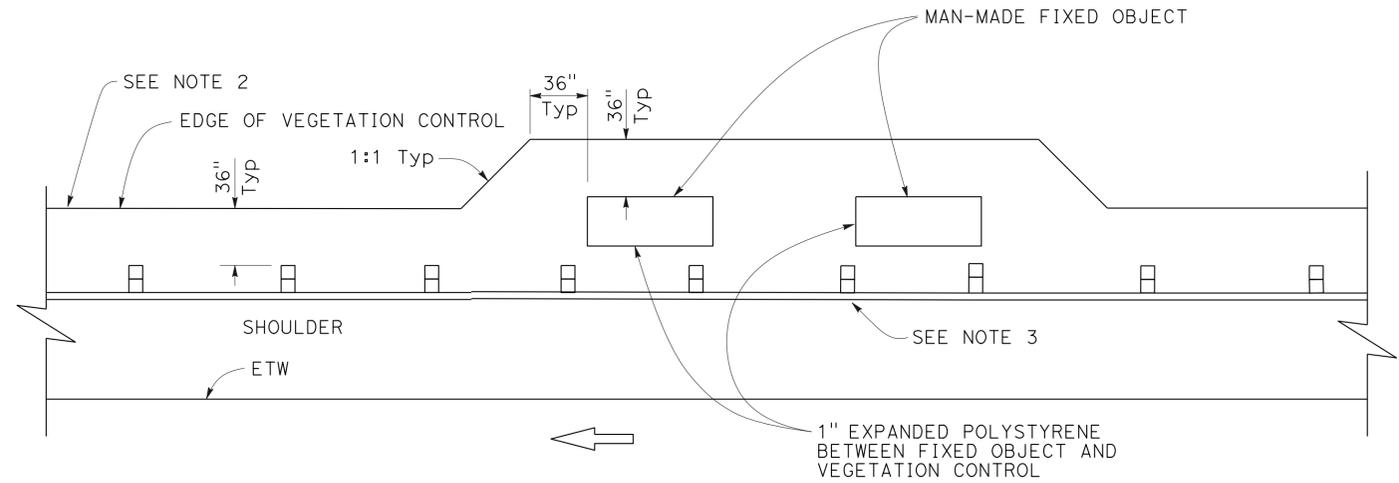
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



TO ACCOMPANY PLANS DATED 3-10-14

NOTES:

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



PLAN
Fixed object(s) on shoulder

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT**

NO SCALE

RSP A77N8 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N8

2010 REVISED STANDARD PLAN RSP A77N8

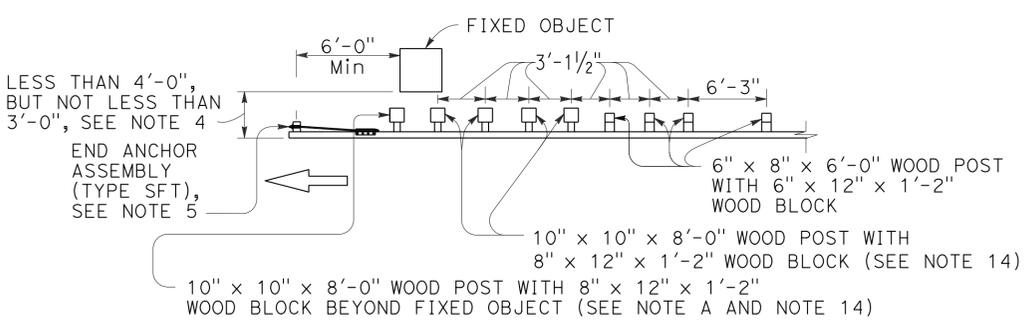
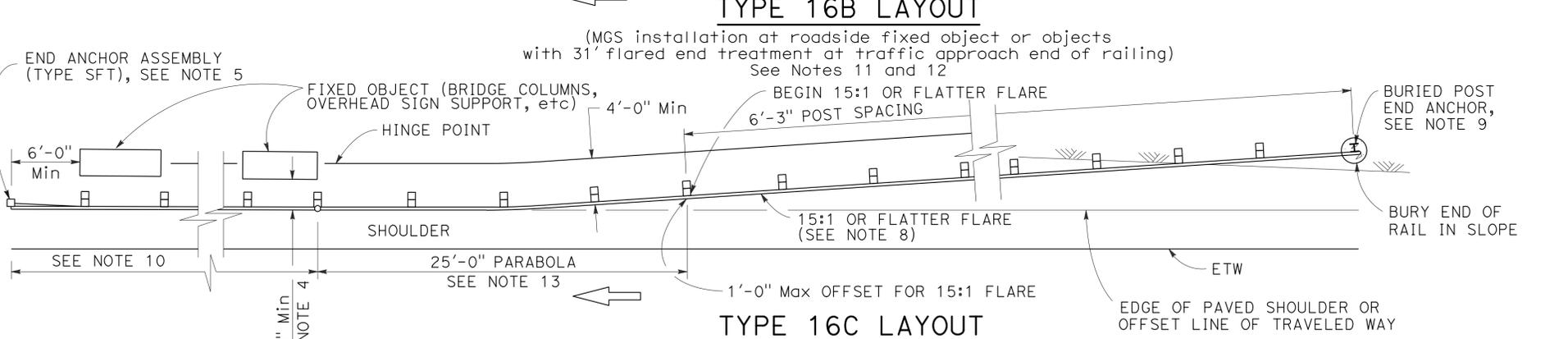
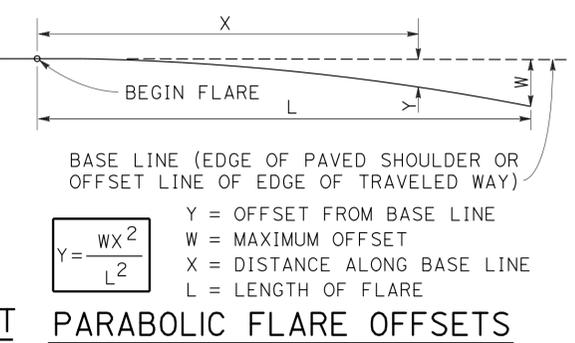
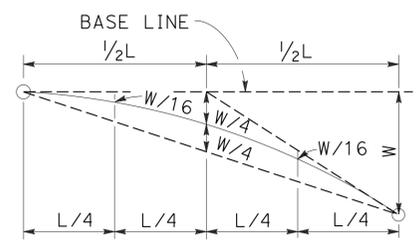
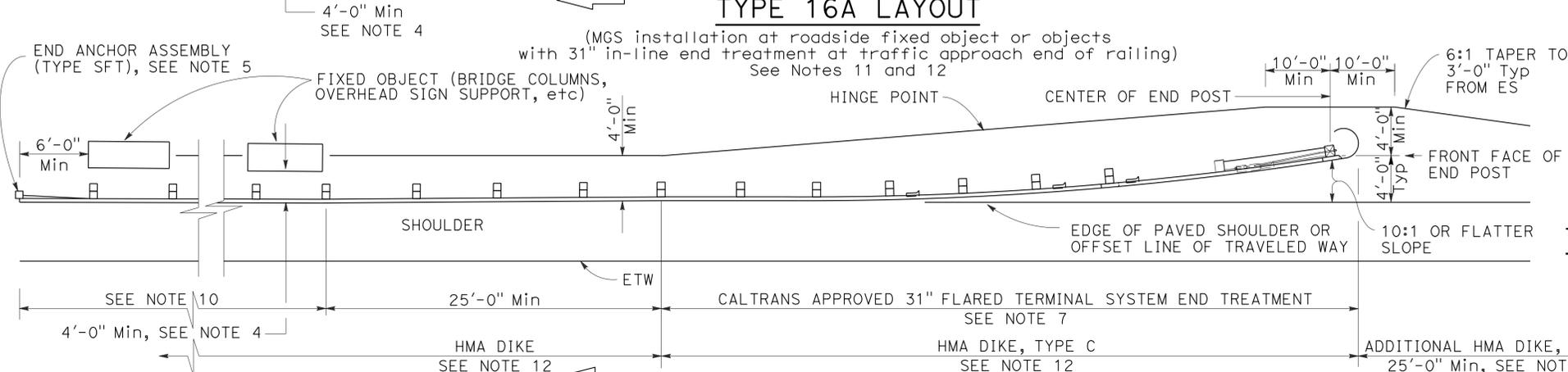
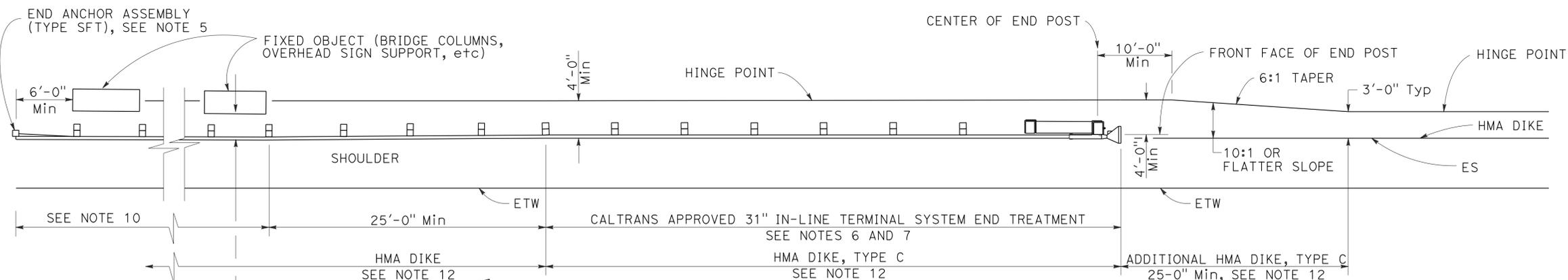
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	469	635

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



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

NOTES:

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

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**

NO SCALE

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

REVISED STANDARD PLAN RSP A77R3

2010 REVISED STANDARD PLAN RSP A77R3

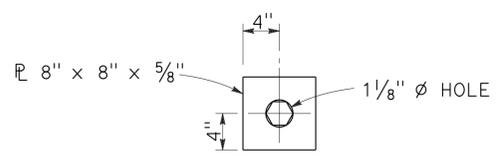
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	470	635

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

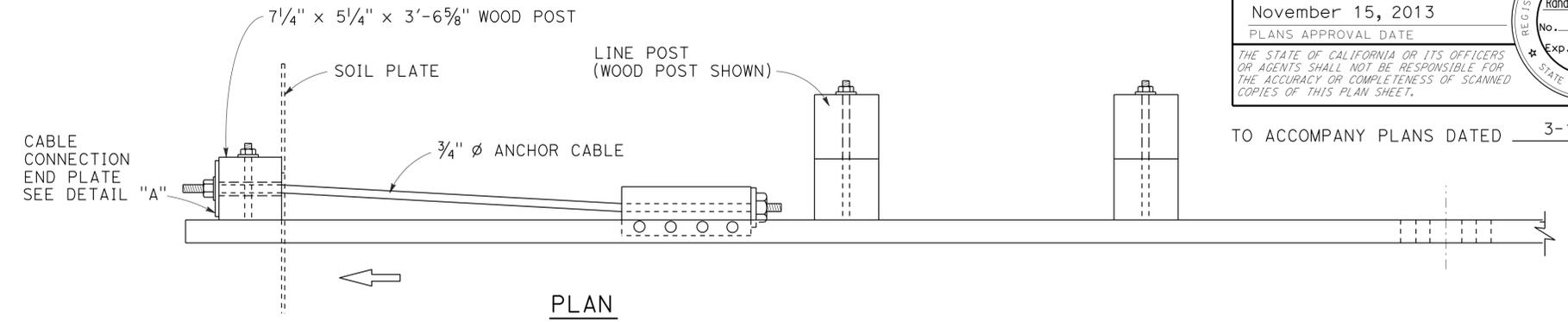
November 15, 2013
PLANS APPROVAL DATE

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.

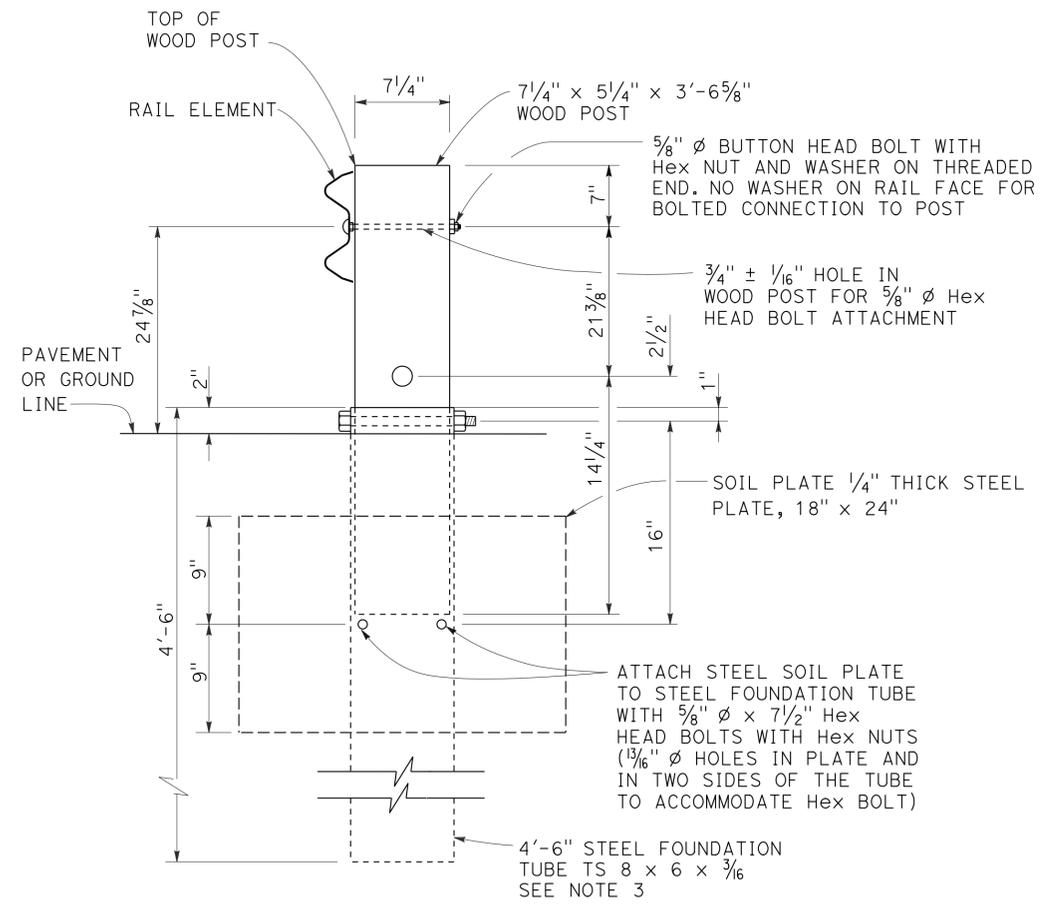
TO ACCOMPANY PLANS DATED 3-10-14



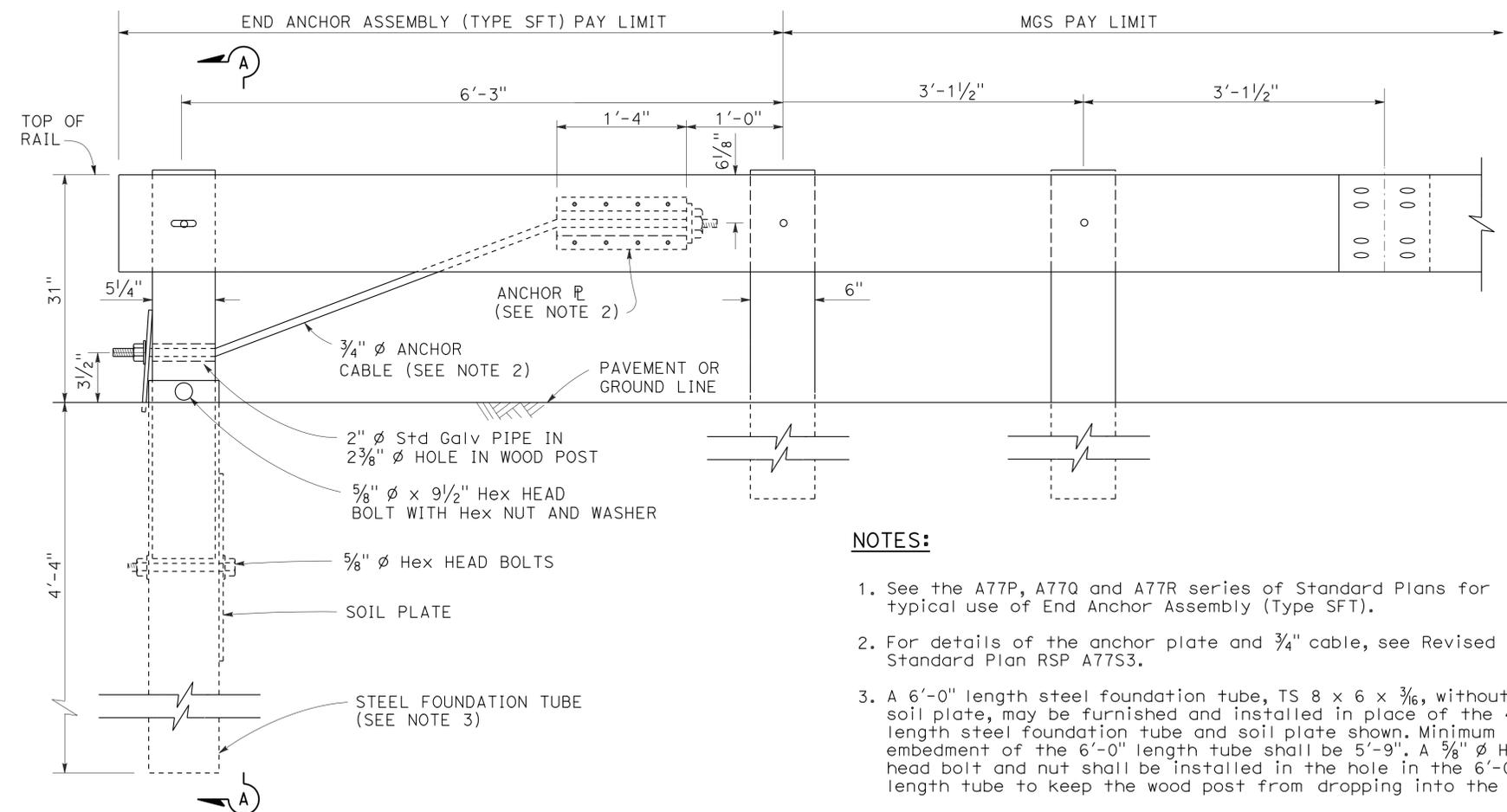
DETAIL "A"
CABLE CONNECTION
END PLATE



PLAN



SECTION A-A



ELEVATION

END ANCHOR
ASSEMBLY (TYPE SFT)
See Note 1

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
END ANCHOR ASSEMBLY
(TYPE SFT)

NO SCALE

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

REVISED STANDARD PLAN RSP A77S1

2010 REVISED STANDARD PLAN RSP A77S1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	471	635

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

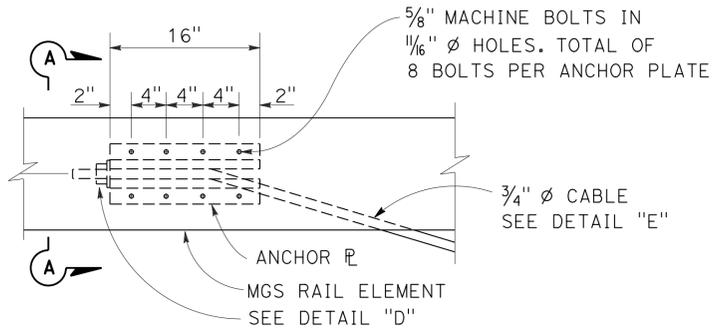
November 15, 2013
PLANS APPROVAL DATE

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.

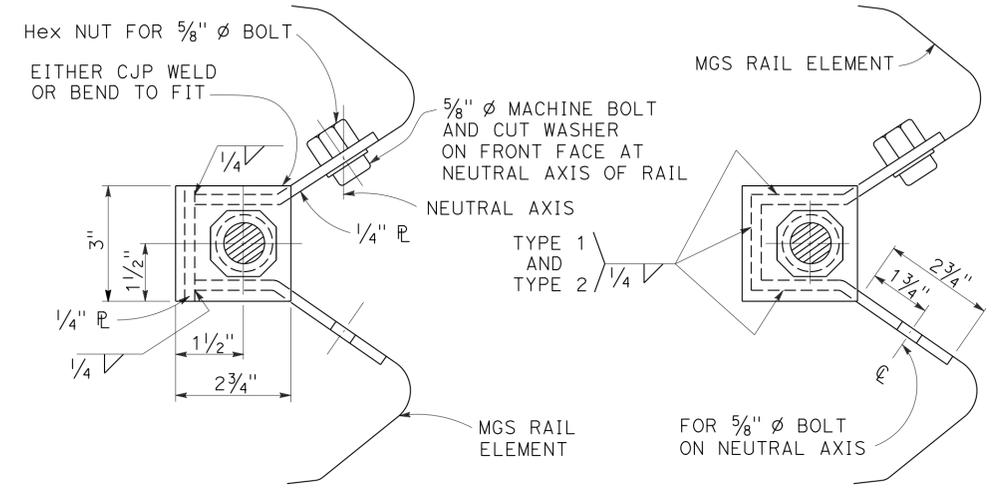


TO ACCOMPANY PLANS DATED 3-10-14

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

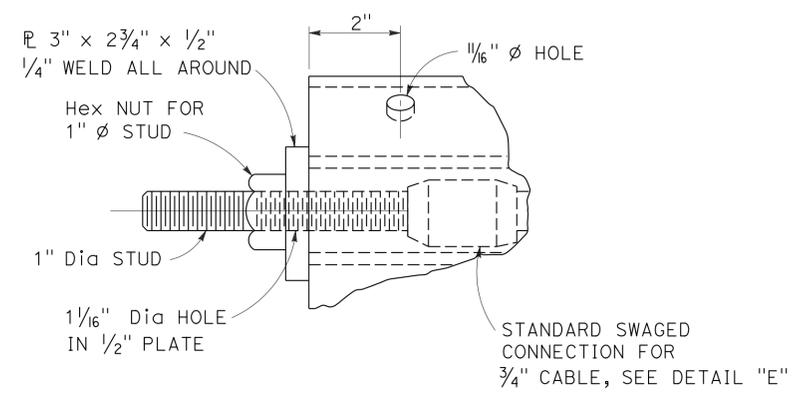


ANCHOR PLATE DETAIL
(MGS shown, TBB similar)

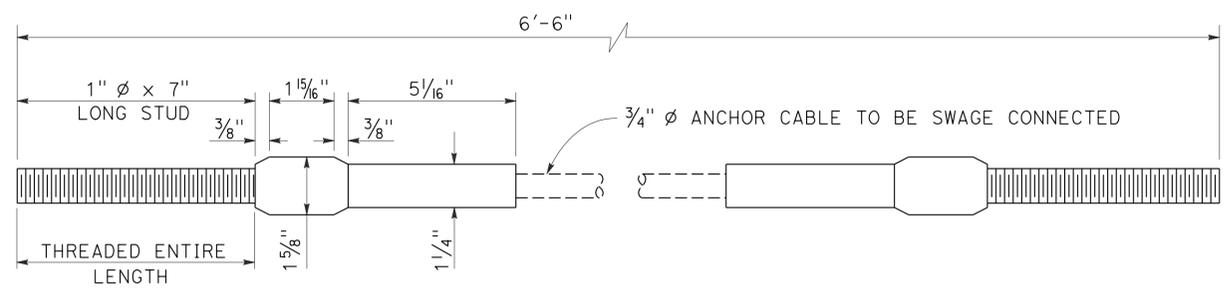


NOTE:
Dimensioning applies to both types.

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



DETAIL "D"



ANCHOR CABLE WITH SWAGED FITTING AND STUD
DETAIL "E"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

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

2010 REVISED STANDARD PLAN RSP A77S3

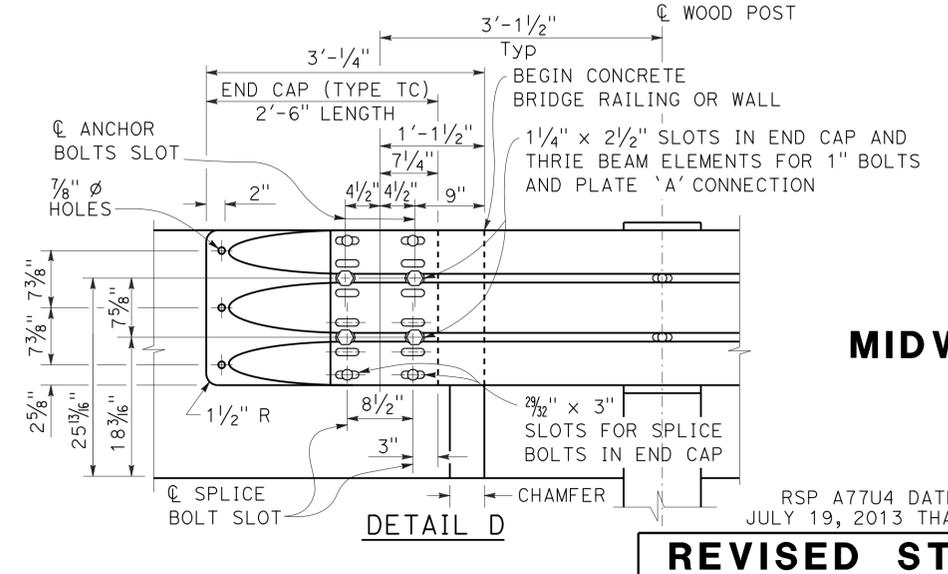
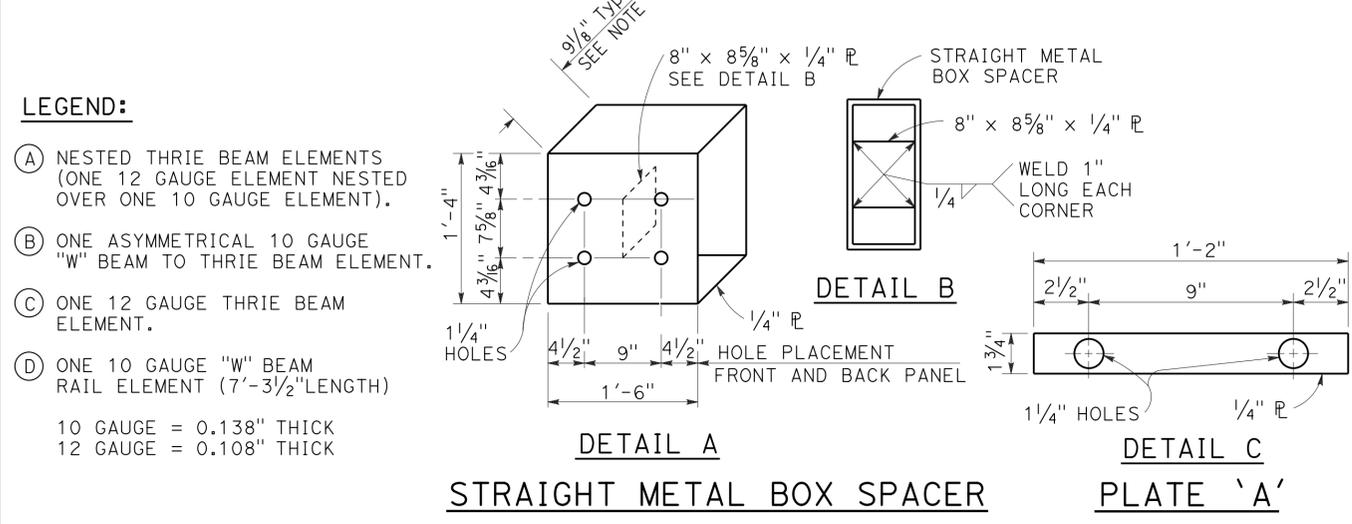
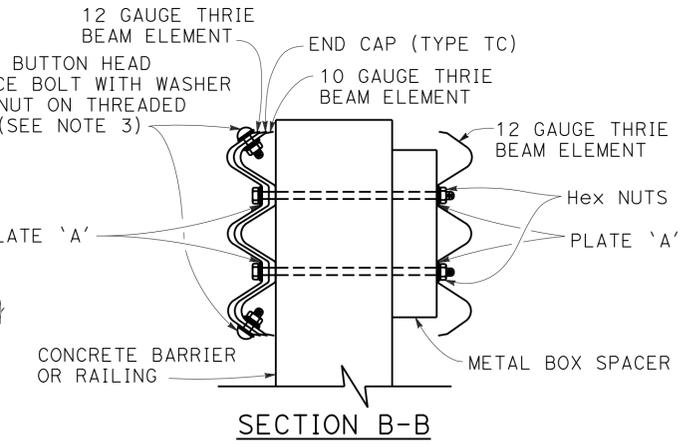
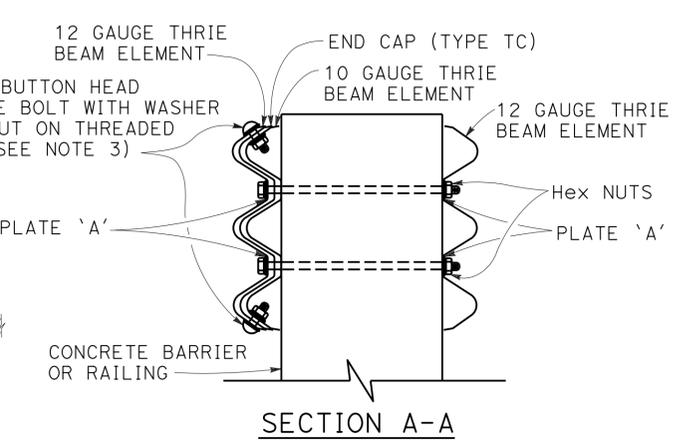
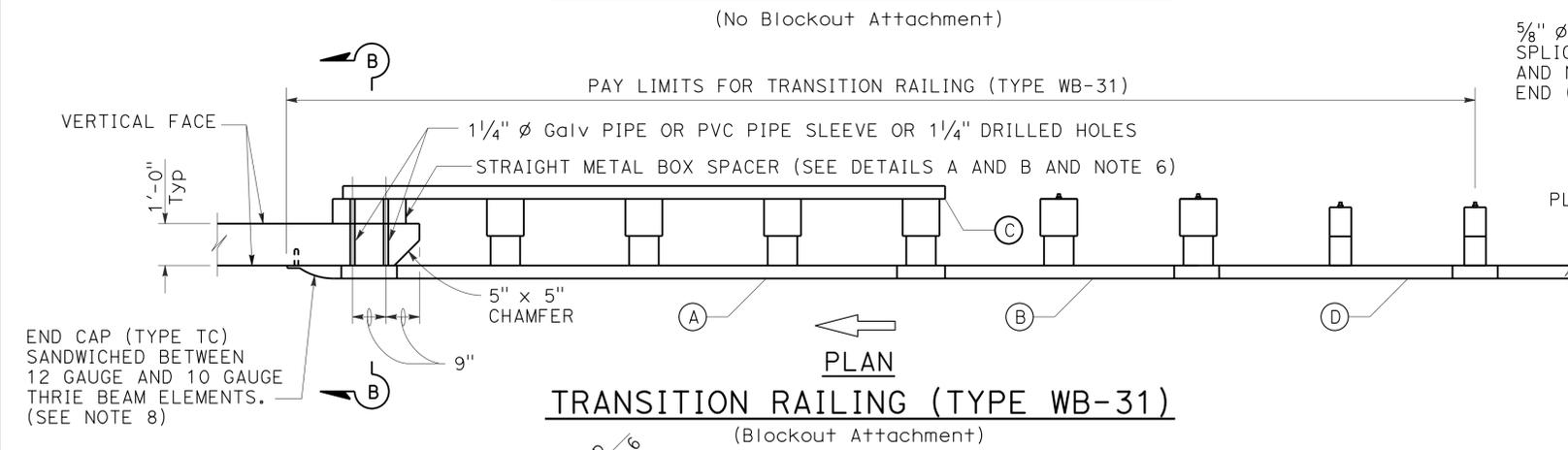
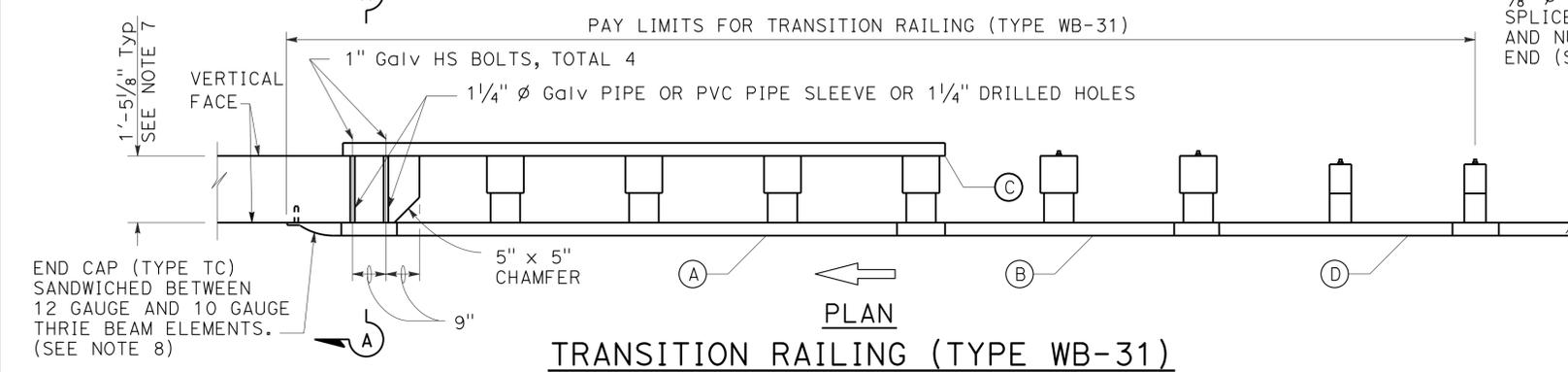
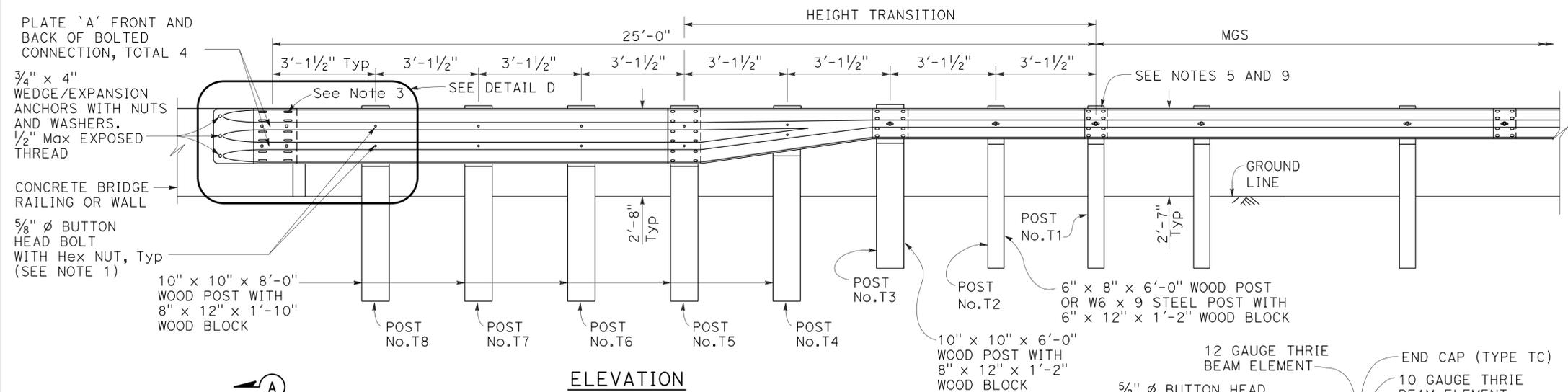
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	472	635

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.

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



- NOTES:** TO ACCOMPANY PLANS DATED 3-10-14
- Use 5/8" ϕ Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
 - 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.
 - Exterior splice bolt holes for rail element splices at Post No. T5 and the connection to the concrete barrier or railing shall be the standard 29/32" x 1 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1 1/4" ϕ . Only the top 4 and the bottom 4 splice bolts with washers and nuts are required for rail splices at Post No. T5 and the connection to the concrete barrier or railing.
 - The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
 - 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.
 - 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.
 - 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.
 - 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.
 - Conform standard railing section height to 31" at Post No. T1 using height transition ratio of 150:1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

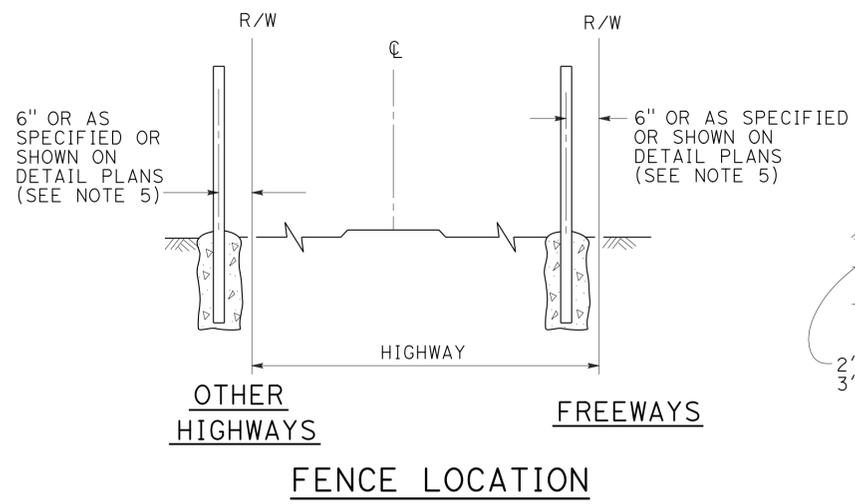
**MIDWEST GUARDRAIL SYSTEM
TRANSITION RAILING
(TYPE WB-31)**

NO SCALE

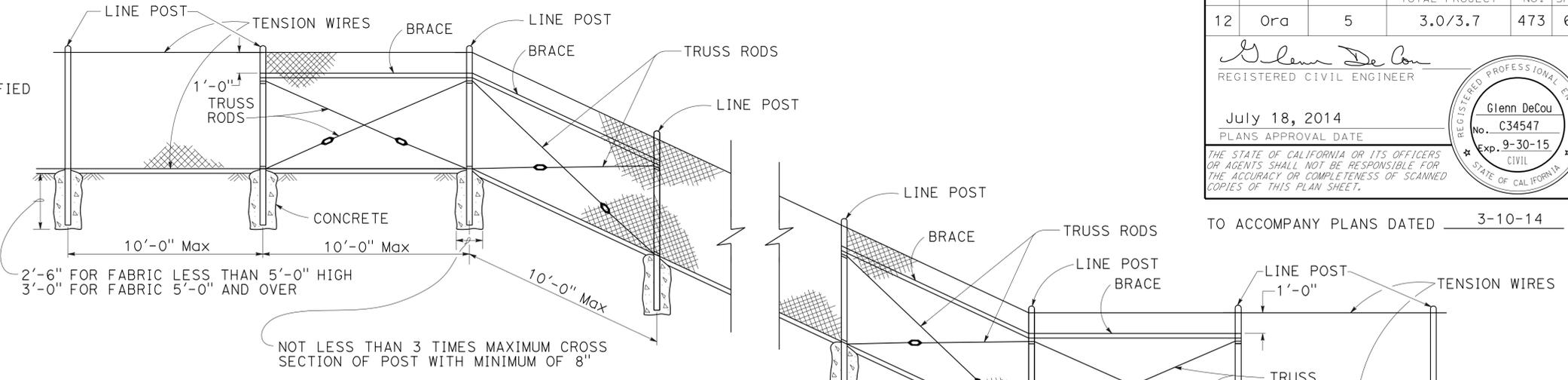
RSP A77U4 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77U4 DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U4

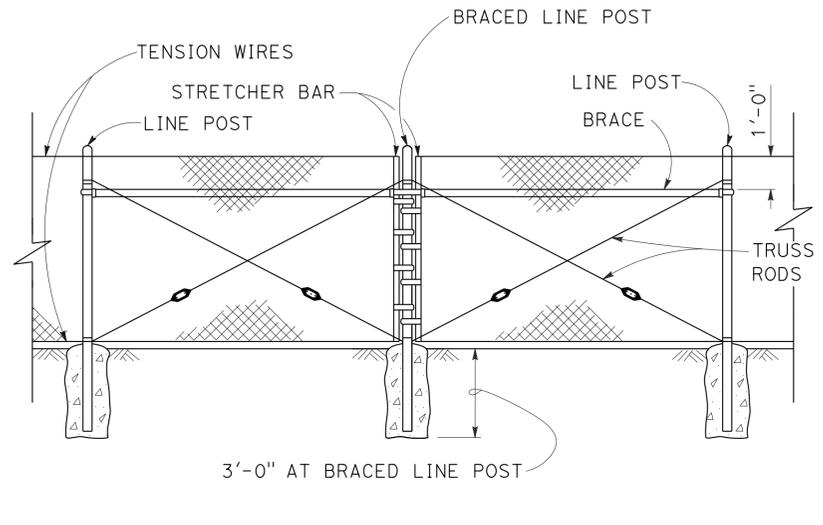
2010 REVISED STANDARD PLAN RSP A77U4



FENCE LOCATION

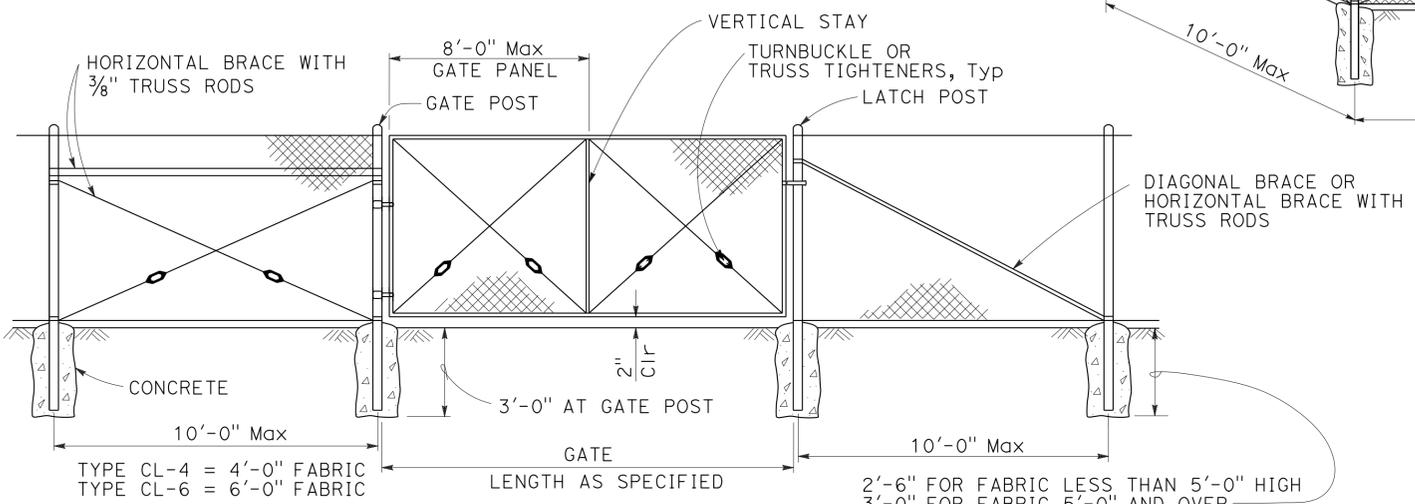


CHAIN LINK FENCE ON SHARP BREAK IN GRADE



BRACED LINE POST INSTALLATION

Braced line post at intervals not exceeding 1000'



CHAIN LINK GATE INSTALLATION

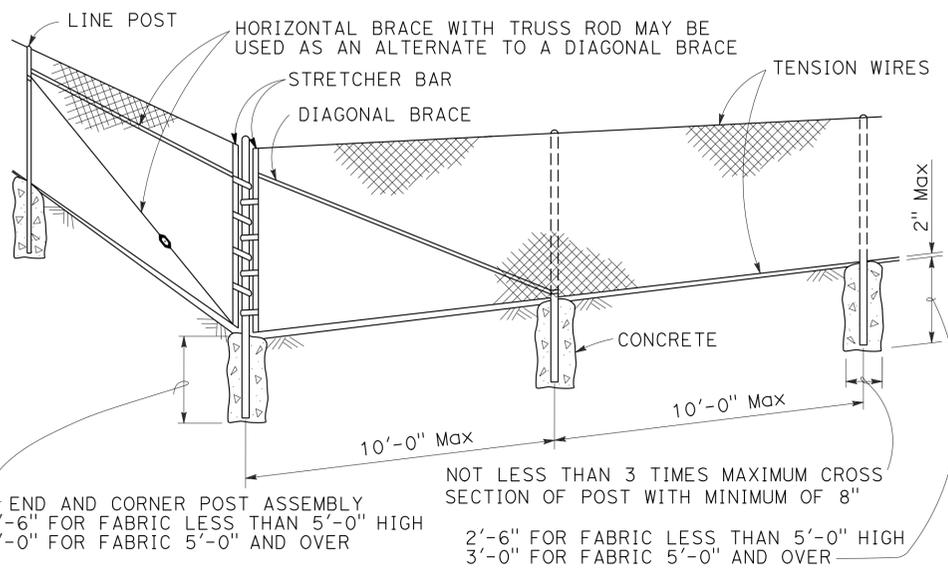
GATE POST			
FENCE HEIGHT	GATE WIDTHS	ROUND OD PIPE	WEIGHT (lb/ft)
6'-0" AND LESS	UP THRU 6'-0"	2.875"	5.80
	OVER 6'-0" THRU 12'-0"	4.500"	10.80
	OVER 12'-0" THRU 18'-0"	5.563"	14.63
OVER 6'-0" TO 8'-0" Max	OVER 18'-0" TO 24'-0" Max	6.625"	18.99
	UP THRU 6'-0"	3.500"	7.58
	OVER 6'-0" THRU 12'-0"	5.563"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

FENCE HEIGHT	TYPICAL MEMBER DIMENSIONS (See Notes)									
	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

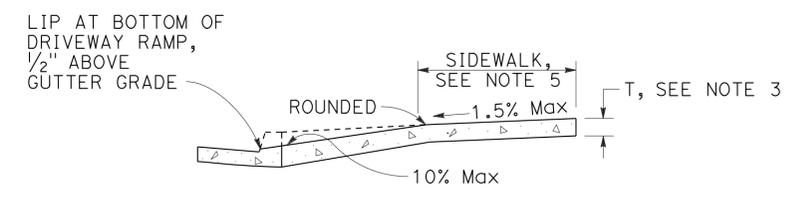
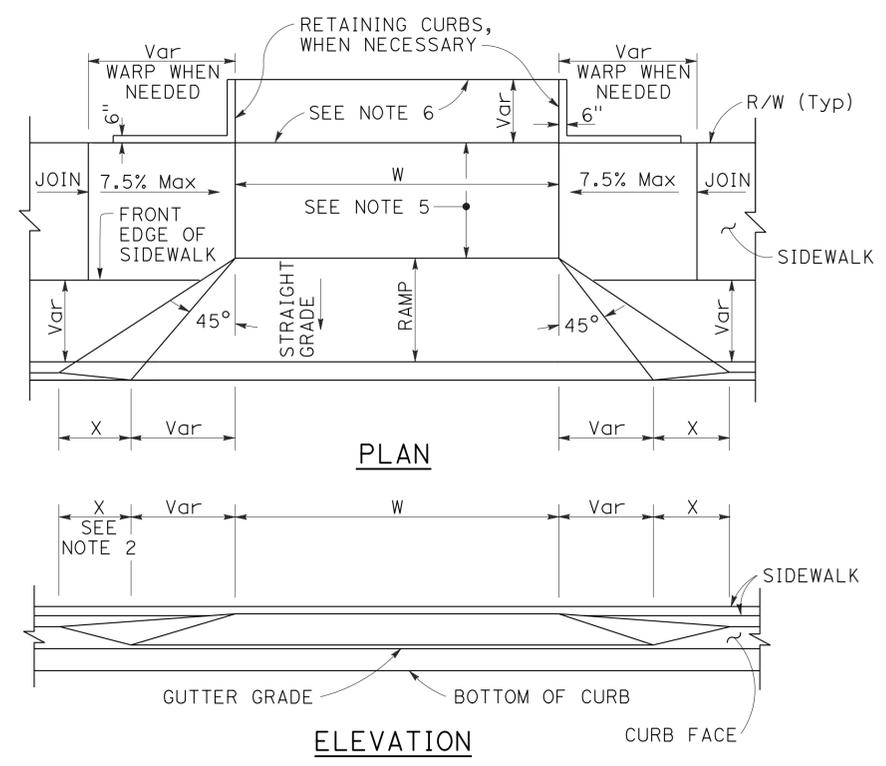
RSP A85 DATED JULY 18, 2014 SUPERSEDES STANDARD PLAN A85
DATED MAY 20, 2011 - PAGE 112 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A85

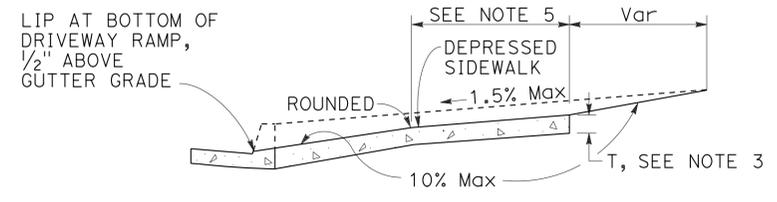
2010 REVISED STANDARD PLAN RSP A85



TO ACCOMPANY PLANS DATED 3-10-14



CASE A
Typical driveway, sidewalk not depressed



CASE B
Driveway with depressed sidewalk

SECTIONS

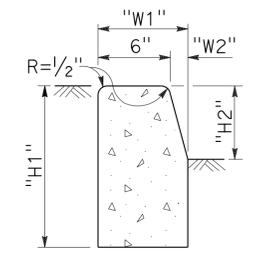
TABLE A

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

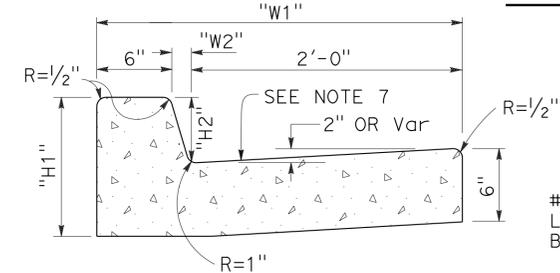
CURB QUANTITIES

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

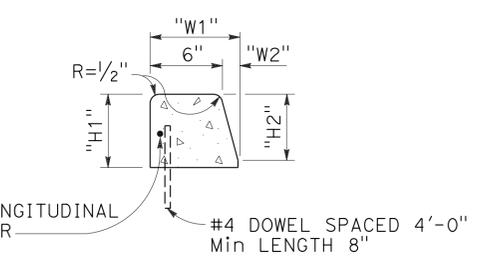
DRIVEWAYS



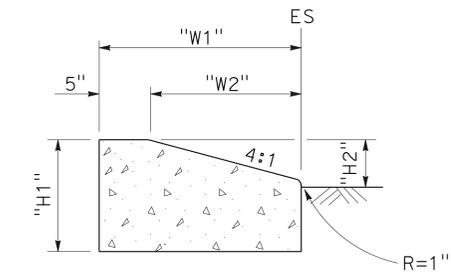
TYPE A1 CURBS
See Table A



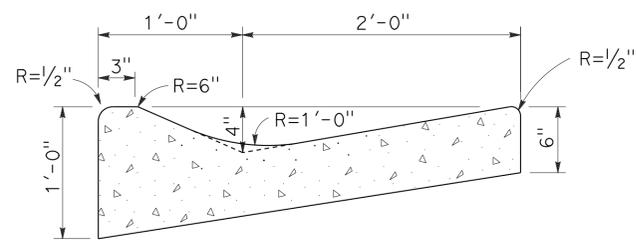
TYPE A2 CURBS
See Table A



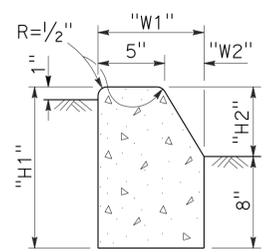
TYPE A3 CURBS
Superimposed on existing pavement
See Table A



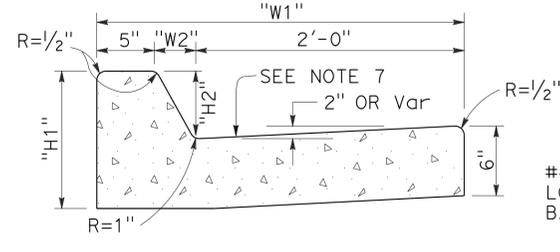
TYPE D CURBS
See Table A



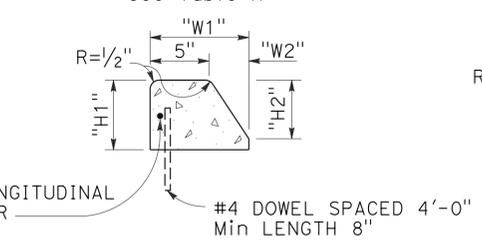
TYPE E CURB



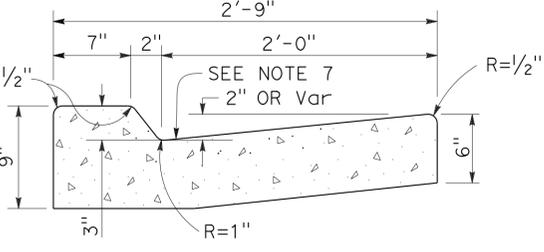
TYPE B1 CURBS
See Table A



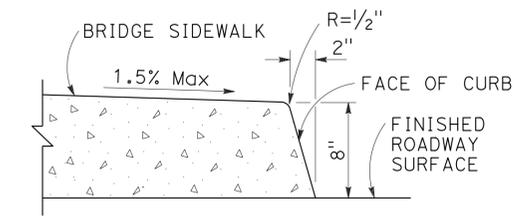
TYPE B2 CURBS
See Table A



TYPE B3 CURBS
Superimposed on existing pavement
See Table A



TYPE B4 CURBS



TYPE H CURB
On Bridges

CURBS

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURBS AND DRIVEWAYS

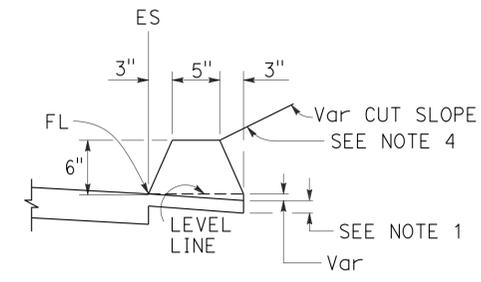
NO SCALE

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

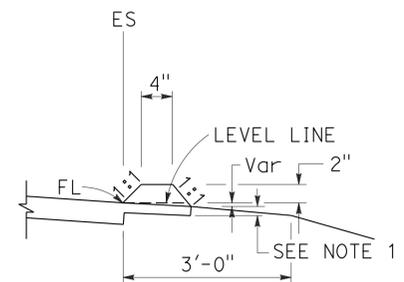
REVISED STANDARD PLAN RSP A87A

2010 REVISED STANDARD PLAN RSP A87A

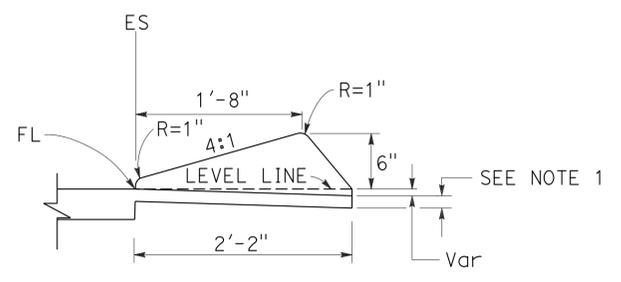
TO ACCOMPANY PLANS DATED 3-10-14



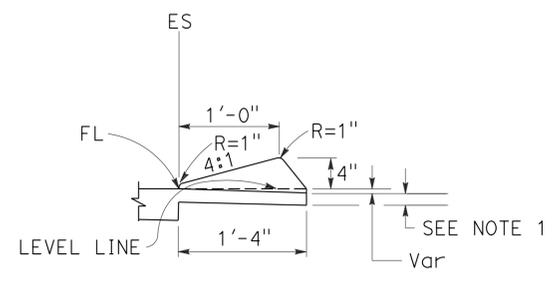
TYPE A
See Note 3



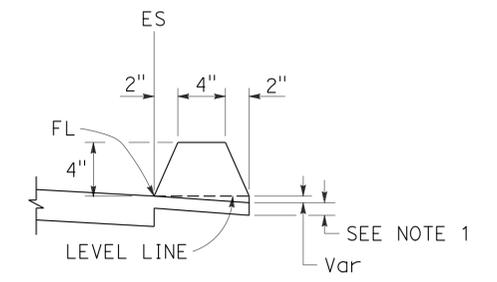
TYPE C



TYPE D

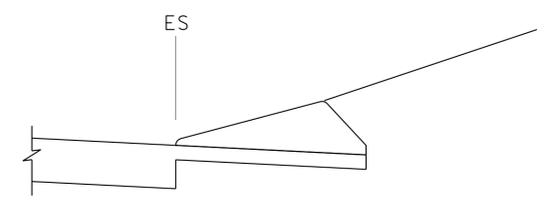


TYPE E

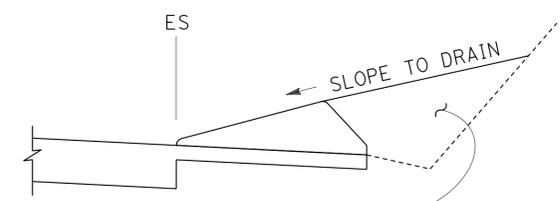


TYPE F
See Note 5

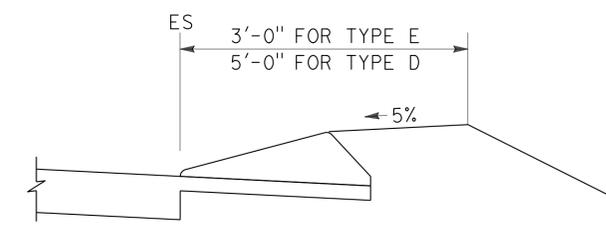
DIKES



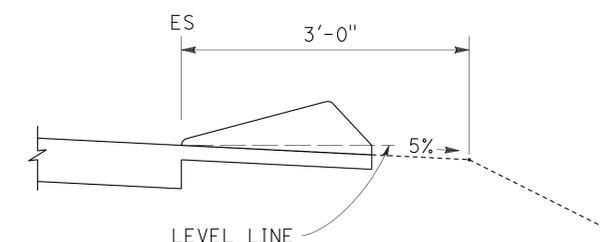
CASE C-1
Cut Slope



CASE C-2
Cut Slope



CASE F



CASE R
See Note 2

TYPE D AND E BACKFILL DETAILS

NOTES:

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

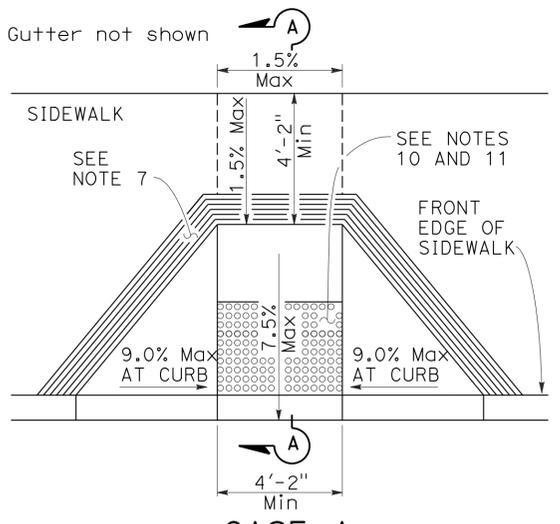
2010 REVISED STANDARD PLAN RSP A87B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	476	635

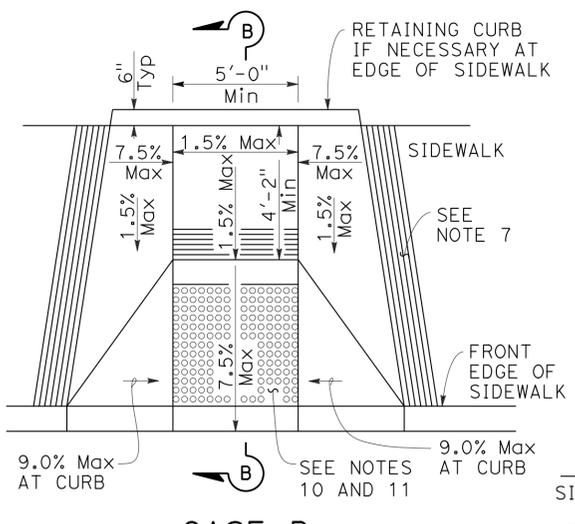
H. David Cordova
 REGISTERED CIVIL ENGINEER
 No. C41957
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE

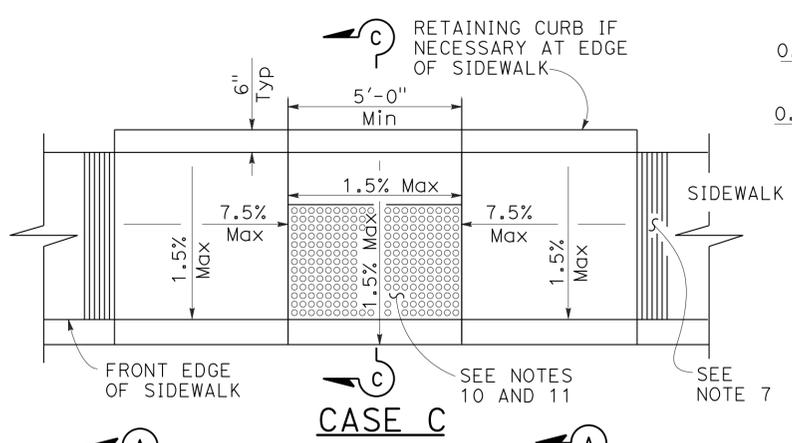
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



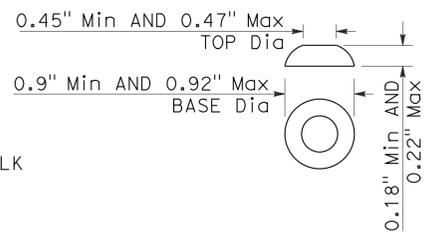
CASE A



CASE B

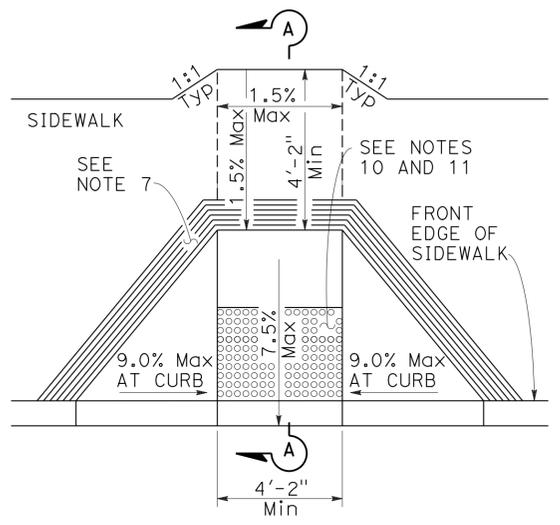


CASE C

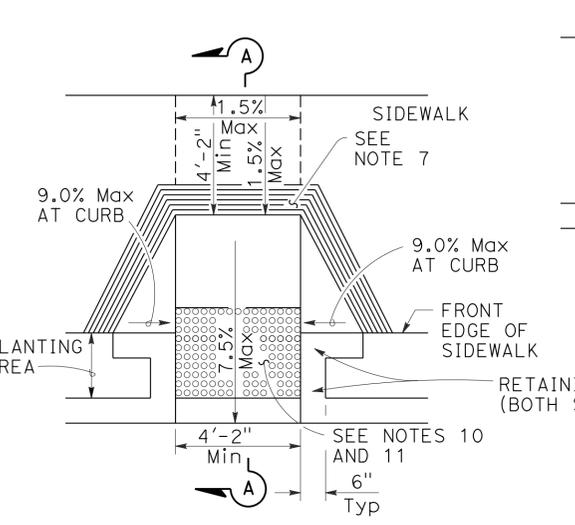


RAISED TRUNCATED DOME

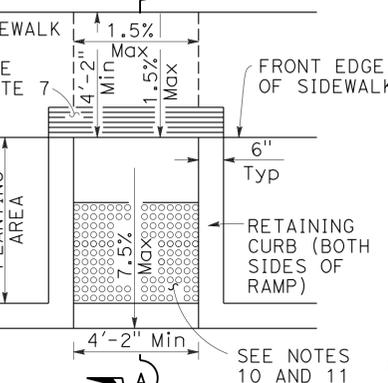
TO ACCOMPANY PLANS DATED 3-10-14



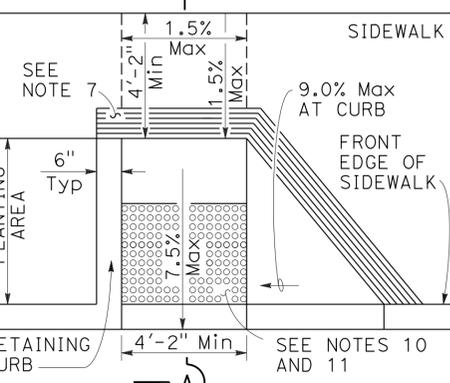
CASE D



CASE E

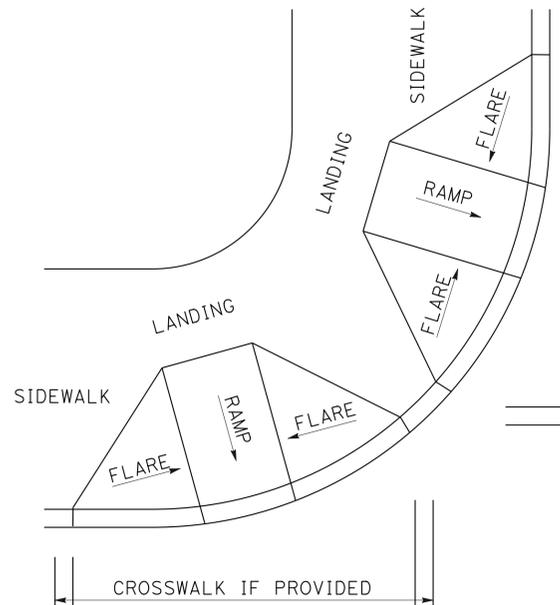


CASE F



CASE G

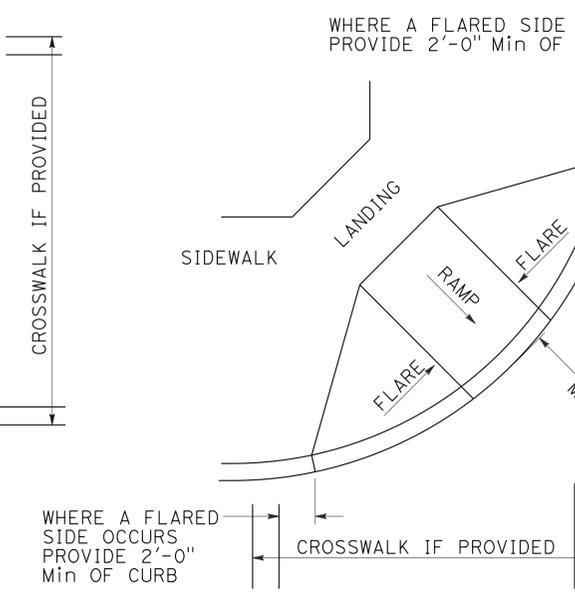
See Note 4



DETAIL A

TYPICAL TWO-RAMP CORNER INSTALLATION

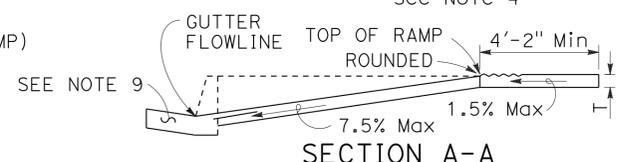
See Note 1



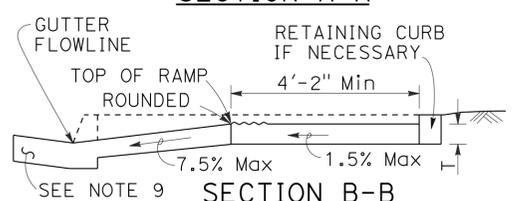
DETAIL B

TYPICAL ONE-RAMP CORNER INSTALLATION

See Notes 1 and 3

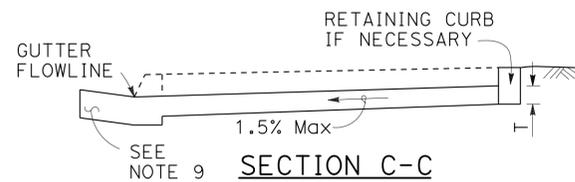


SECTION A-A

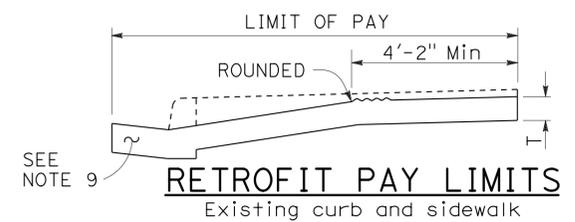


SECTION B-B

Depress entire sidewalk as required

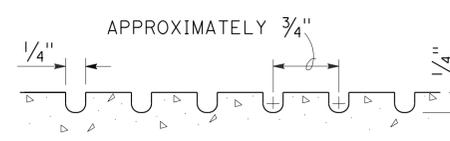


SECTION C-C



RETROFIT PAY LIMITS

Existing curb and sidewalk



GROOVING DETAIL

NOTES:

- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
- If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
- As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
- If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-2".
- Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
- The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
- Transitions from ramps and landing to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
- Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1:20 (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
- Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Standard Specifications.
- The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
- Sidewalk and ramp thickness, "T", shall be 3/2" minimum.
- Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
- Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.



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

See Note 10

CURB RAMP DETAILS
NO SCALE

RSP A88A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A88A DATED MAY 20, 2011 - PAGE 121 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A88A

2010 REVISED STANDARD PLAN RSP A88A

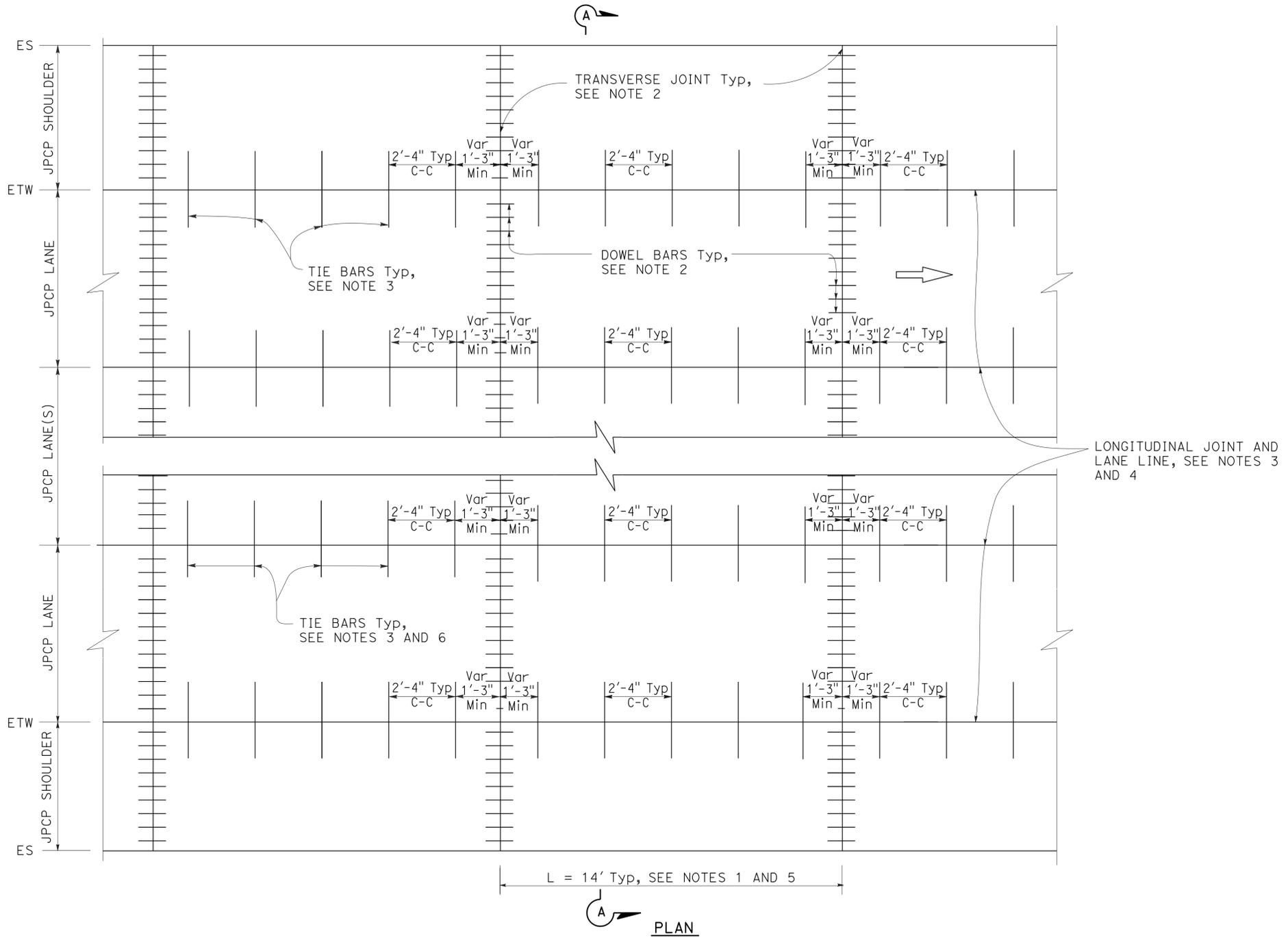
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	477	635

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.

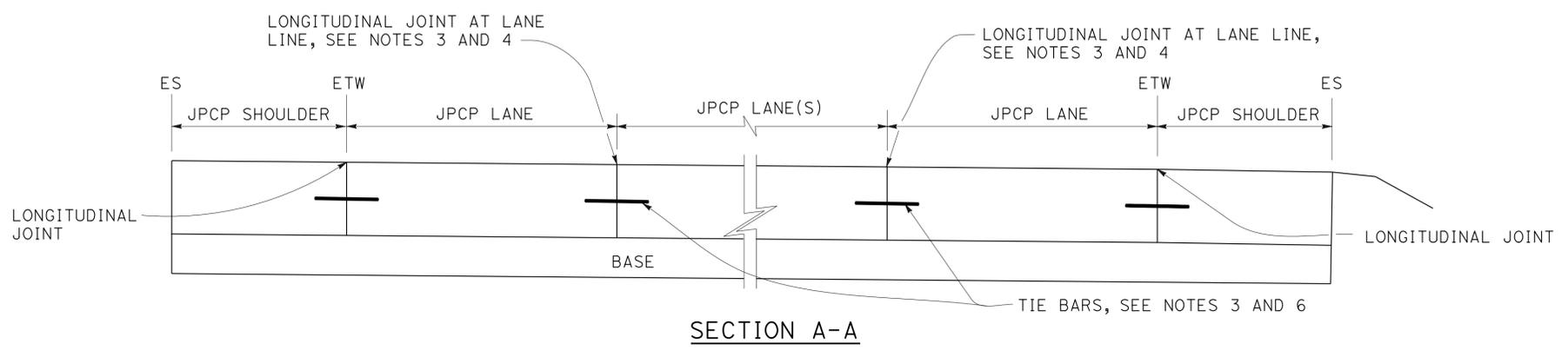
REGISTERED PROFESSIONAL ENGINEER
 William K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 3-10-14



NOTES:

1. Transverse joint spacing may be adjusted to no less than 10' and no more than 14' to conform to bridges, change in pavement type, and hardened concrete pavement.
2. For transverse joint and dowel bar details not shown, see Revised Standard Plan RSP P10.
3. For longitudinal joint and tie bar details not shown, see Revised Standard Plan RSP P15.
4. For additional longitudinal joint layout details, see Revised Standard Plan RSP P18.
5. For joint layout at intersections, see Project Plans.
6. For dowel bars at longitudinal joint. see Revised Standard Plan RSP P18.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**JOINTED PLAIN
 CONCRETE PAVEMENT
 NEW CONSTRUCTION**
 NO SCALE

RSP P1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P1
 DATED MAY 20, 2011 - PAGE 125 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P1

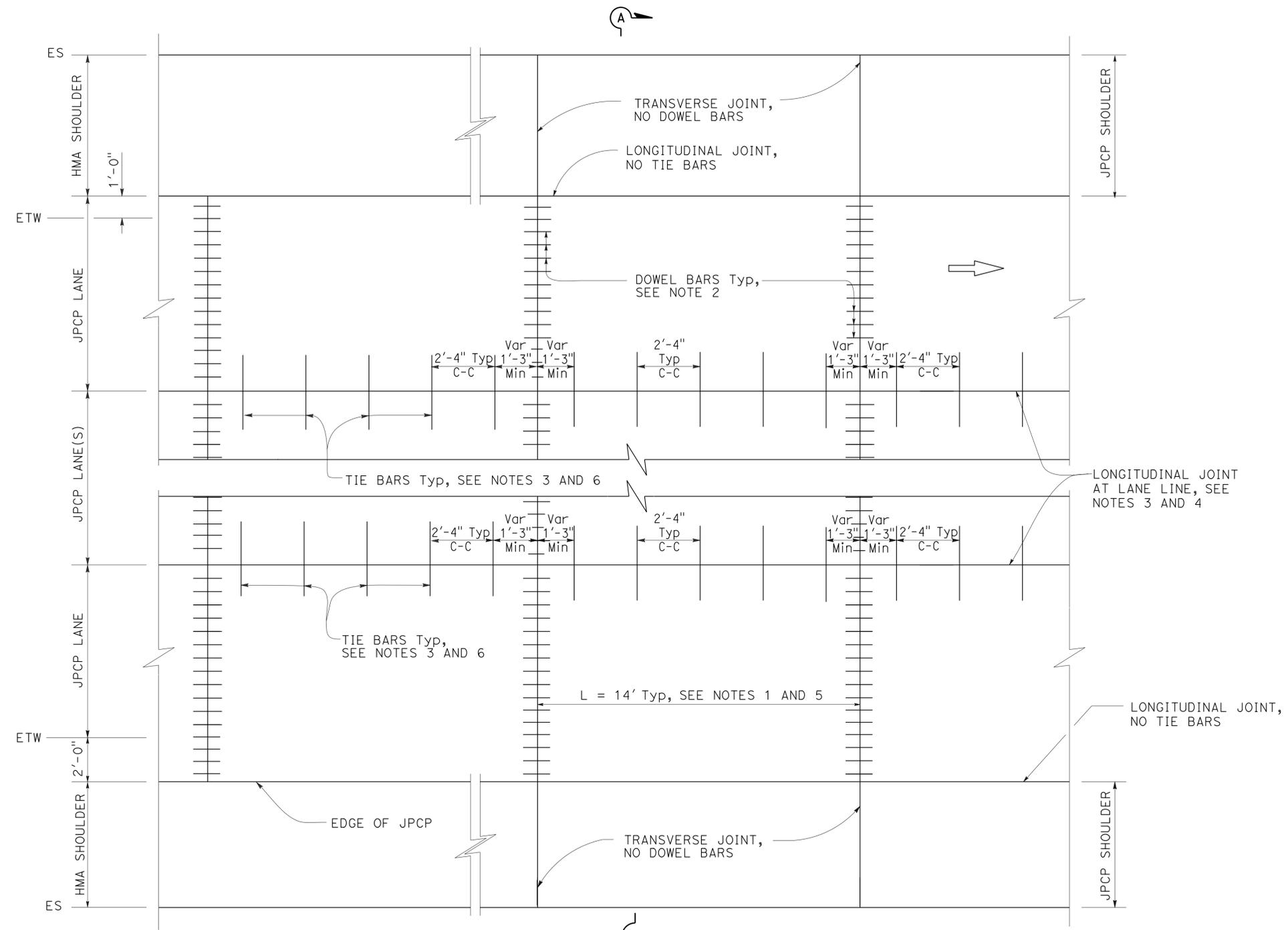
2010 REVISED STANDARD PLAN RSP P1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	478	635

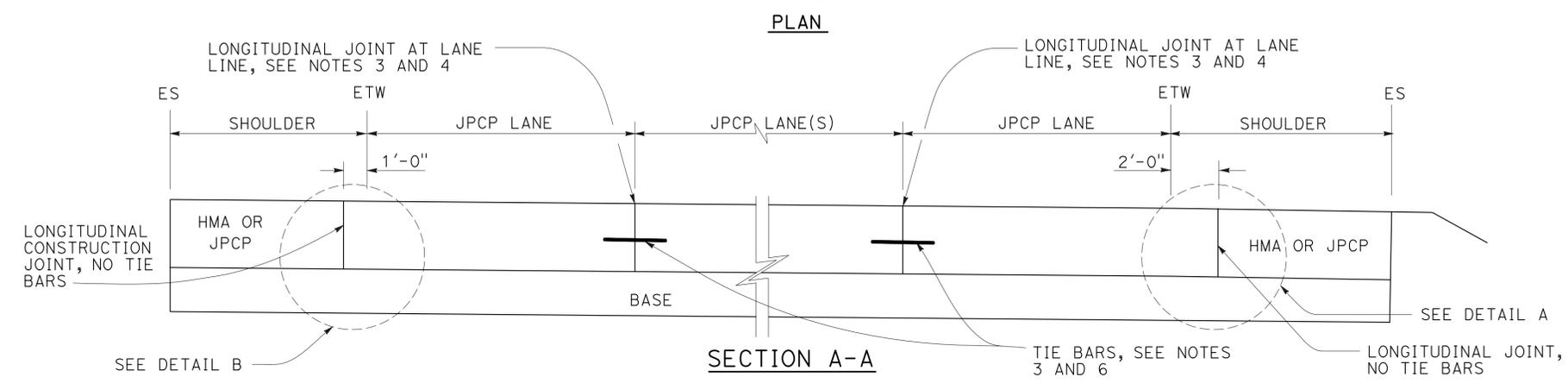
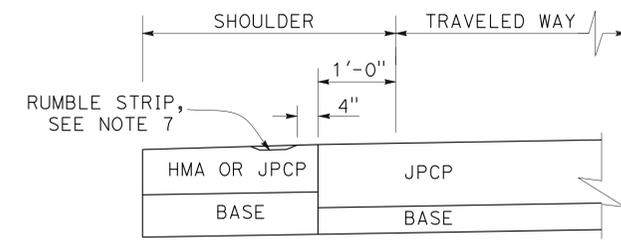
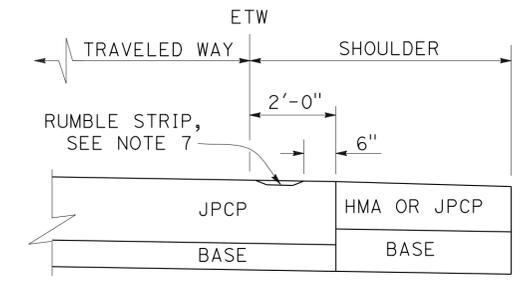
William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE

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.

REGISTERED PROFESSIONAL ENGINEER
 William K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA



- NOTES:** TO ACCOMPANY PLANS DATED 3-10-14
1. Transverse joint spacing may be adjusted to no less than 10' and no more than 14' to conform to bridges, change in pavement type, and hardened concrete pavement.
 2. For transverse joint and dowel bar details not shown, see Revised Standard Plan RSP P10.
 3. For longitudinal joint and tie bar details not shown, see Revised Standard Plan RSP P15.
 4. For additional longitudinal joint layout details, see Revised Standard Plan RSP P18.
 5. For joint layout at intersections, see Project Plans.
 6. For dowel bars at longitudinal joint. see Revised Standard Plan RSP P18.
 7. For limits of rumble strips, see Projects Plans.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**JOINTED PLAIN
 CONCRETE PAVEMENT
 (WIDENED LANE)
 NEW CONSTRUCTION**
 NO SCALE

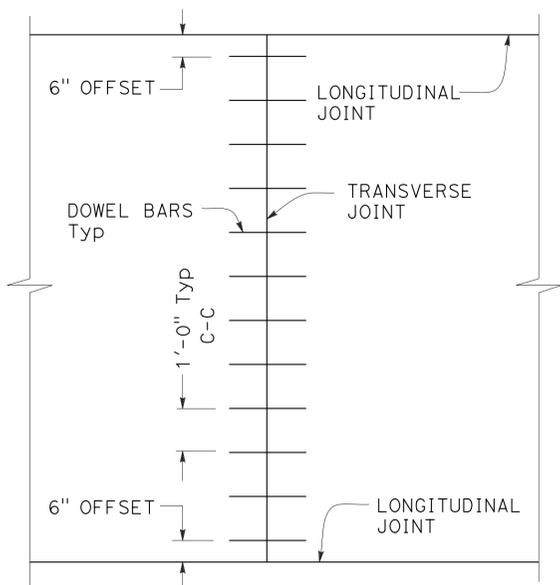
RSP P2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P2 DATED MAY 20, 2011 - PAGE 126 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P2

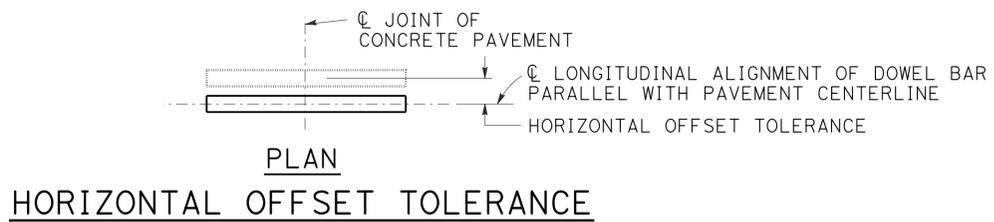
2010 REVISED STANDARD PLAN RSP P2

TO ACCOMPANY PLANS DATED 3-10-14

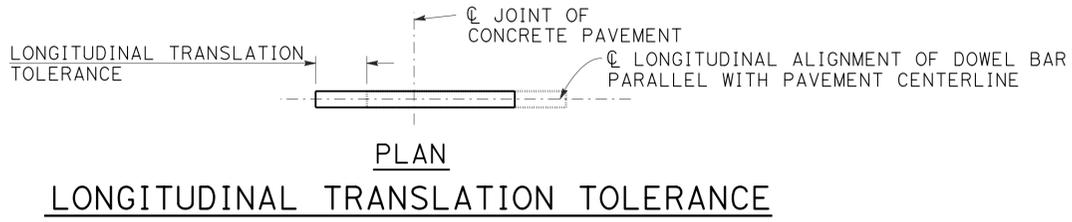
- NOTES:**
- See Revised Standard Plan RSP P1 for typical dowel bar placement and locations.
 - Where fresh concrete pavement is placed against new concrete or existing concrete pavement, rounding the corner of the existing concrete pavement is not required.
 - May also use 3/4" Dia dowel bars 2'-4" ± 1/4" in length. Center the length of dowel bars at the centerline of longitudinal joint.



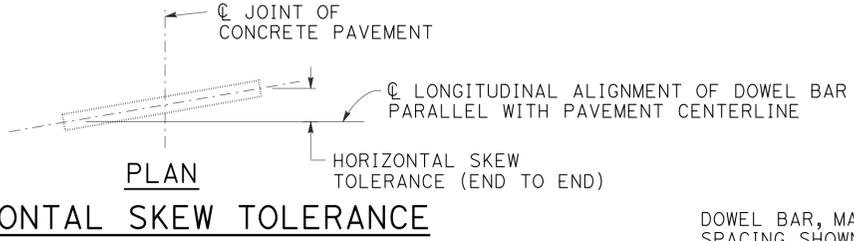
**TRANSVERSE JOINT
DOWEL BAR LAYOUT**



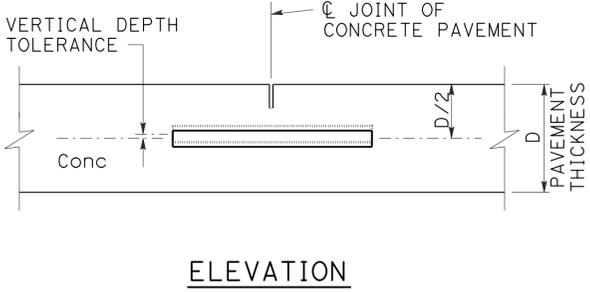
**PLAN
HORIZONTAL OFFSET TOLERANCE**



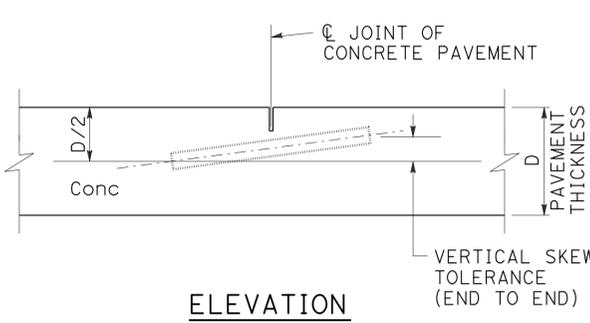
**PLAN
LONGITUDINAL TRANSLATION TOLERANCE**



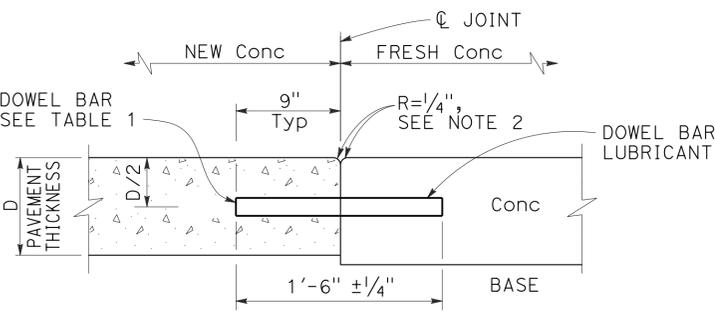
**PLAN
HORIZONTAL SKEW TOLERANCE**



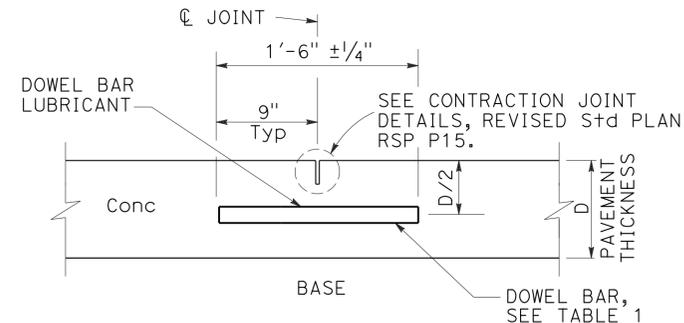
**ELEVATION
VERTICAL DEPTH TOLERANCE**



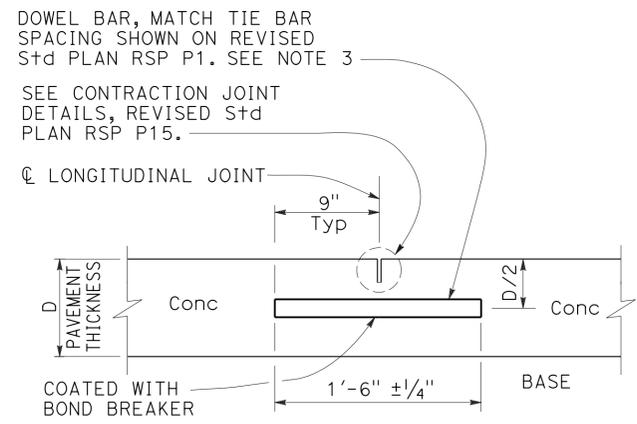
**ELEVATION
VERTICAL SKEW TOLERANCE**



**TRANSVERSE
CONSTRUCTION JOINT DETAIL**



TRANSVERSE CONTRACTION JOINT

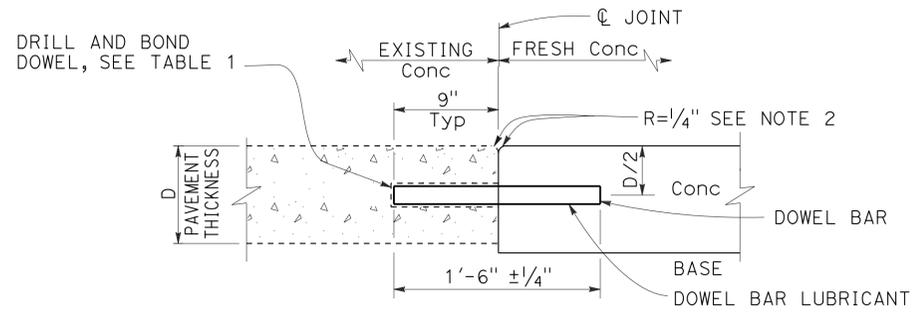


**LONGITUDINAL CONTRACTION
JOINT WITH DOWEL BARS**
See Revised Std Plan RSP P18

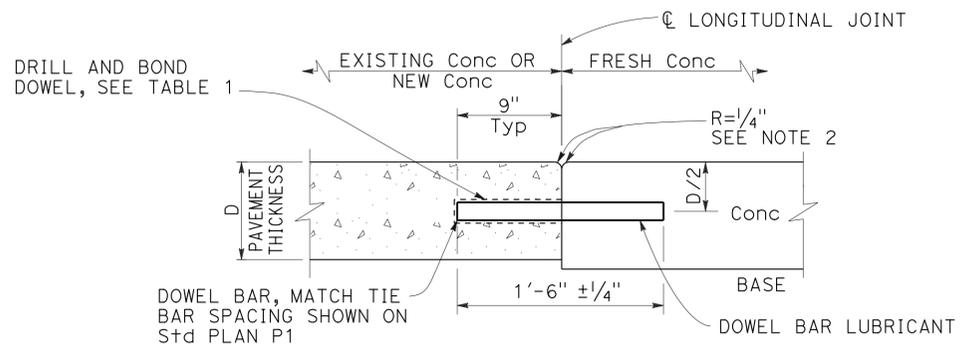
**TABLE 1
DOWEL BAR DIAMETER TABLE**

PAVEMENT THICKNESS	0.65'	> 0.65' - 0.85'	> 0.85'
MINIMUM DOWEL * BAR DIAMETER	1"	1 1/4"	1 1/2"

* The drilled hole diameter must be 1/8" to 3/16" larger than the bar diameter.



**TRANSVERSE CONSTRUCTION JOINT
FOR EXISTING CONCRETE PAVEMENT**



**LONGITUDINAL CONSTRUCTION JOINT
WITH DOWEL BARS**
See Revised Std Plan RSP P18

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CONCRETE PAVEMENT
DOWEL BAR
DETAILS**
NO SCALE

RSP P10 DATED JULY 19, 2013 SUPERSEDES RSP P10 DATED APRIL 20, 2012 AND STANDARD PLAN P10 DATED MAY 20, 2011 - PAGE 131 OF THE STANDARD PLANS BOOK DATED 2010.

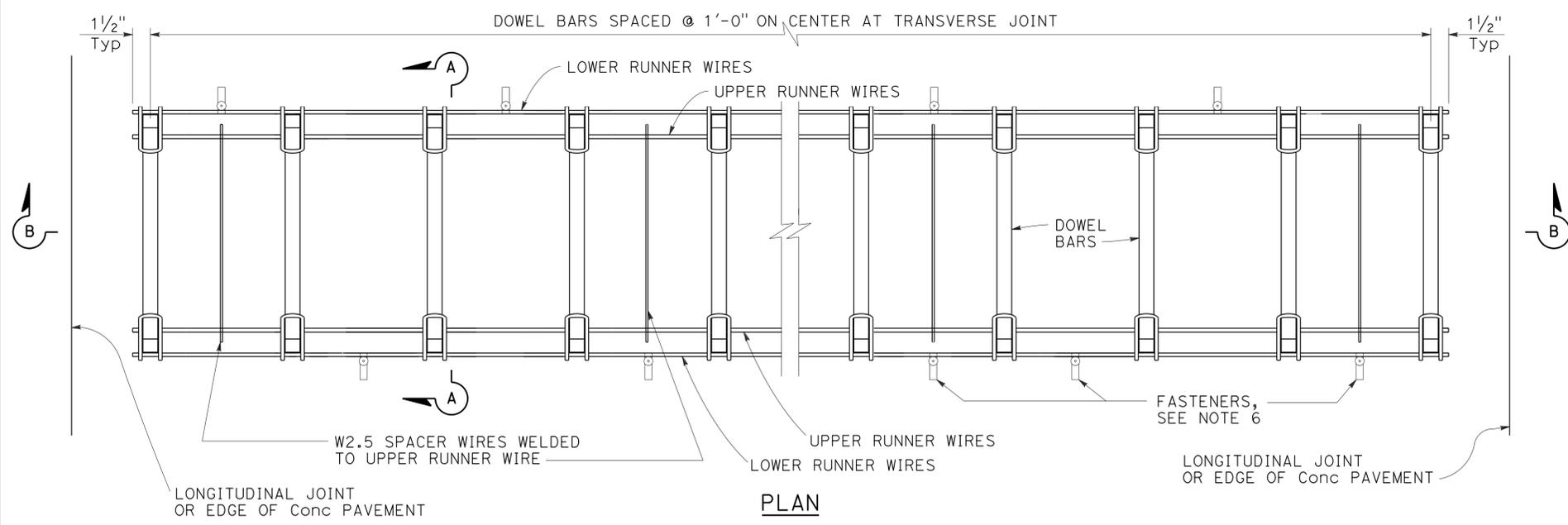
2010 REVISED STANDARD PLAN RSP P10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	480	635

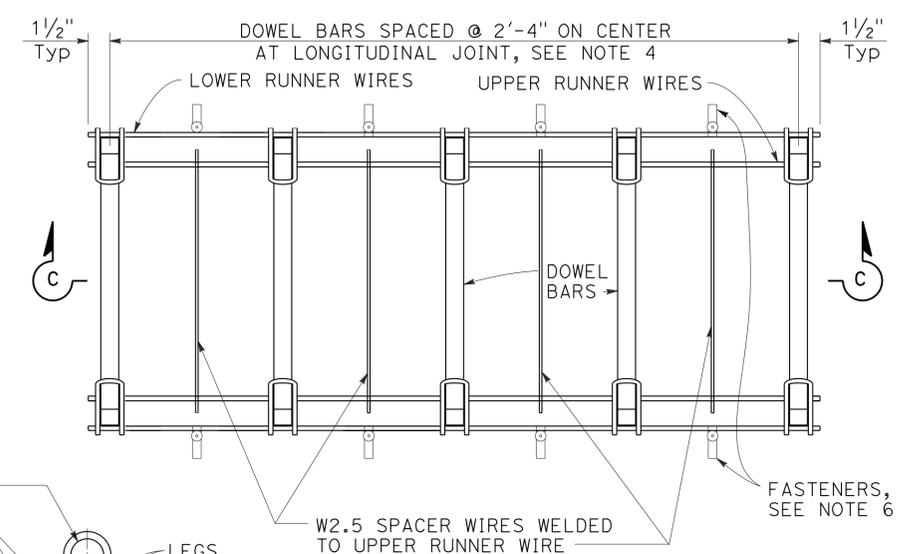
William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
 William K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

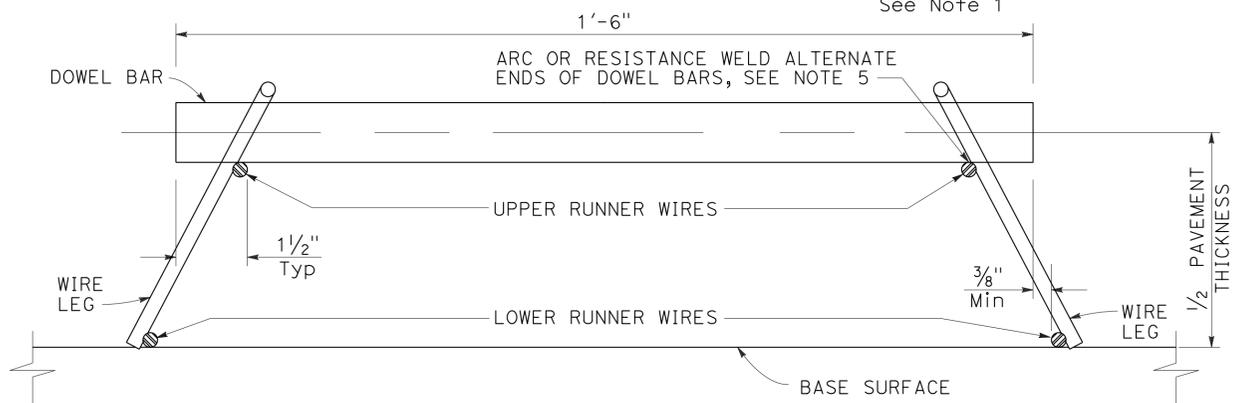
TO ACCOMPANY PLANS DATED 3-10-14



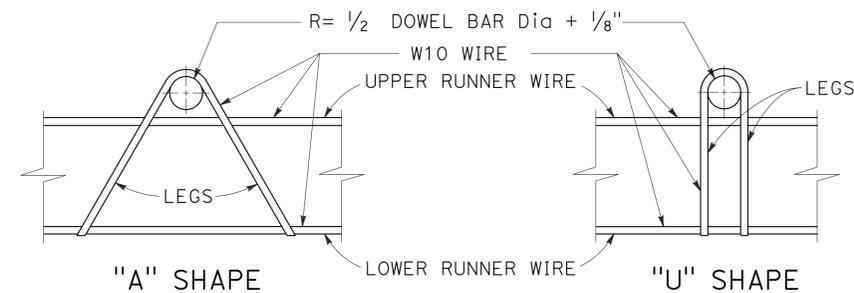
**PLAN
DOWEL BAR BASKET
(TRANSVERSE JOINT)**
See Note 1



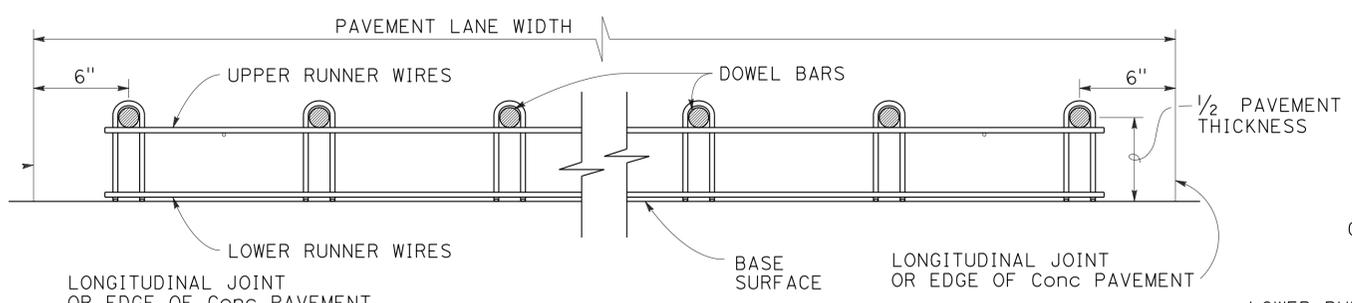
**PLAN
DOWEL BAR BASKET
(LONGITUDINAL JOINT)**
See Note 1



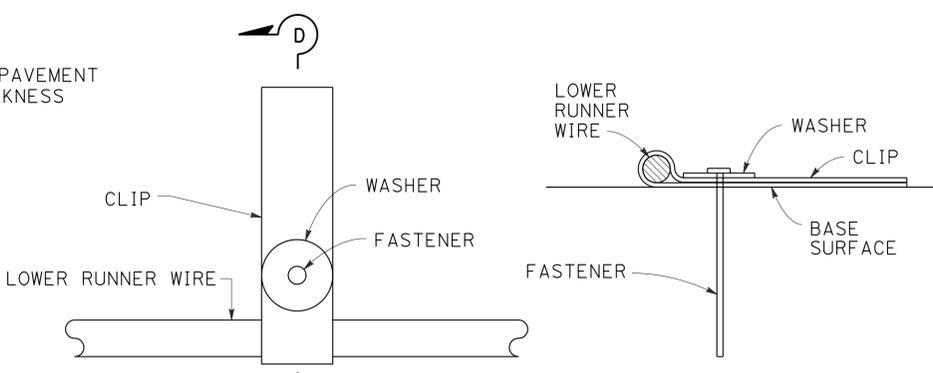
SECTION A-A



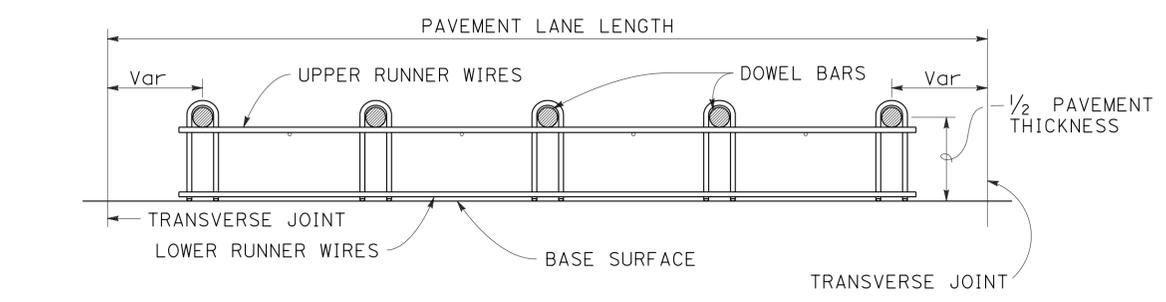
ASSEMBLY FRAME DETAILS



SECTION B-B
See Note 1



FASTENER DETAIL
See Note 6



SECTION C-C
See Notes 1 and 4

NOTES:

- "U" frame shape assembly shown. Use either "U" frame shape or "A" frame shape.
- Wire sizes shown are the minimum required.
- All wire intersections must be resistance welded.
- Use tie bar spacing for longitudinal dowel bar locations. See Revised Standard Plans RSP P1, RSP P2, RSP P3A, and RSP P3B for tie bar requirements.
- Weld may be at the top or bottom of the dowel bar.
- Use anchor pins where soil or granular base is used. See Revised Standard Plan RSP P17 for Anchor Pin Detail.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CONCRETE PAVEMENT
DOWEL BAR BASKET
DETAILS**
NO SCALE

RSP P12 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P12
DATED MAY 20, 2011 - PAGE 132 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P12

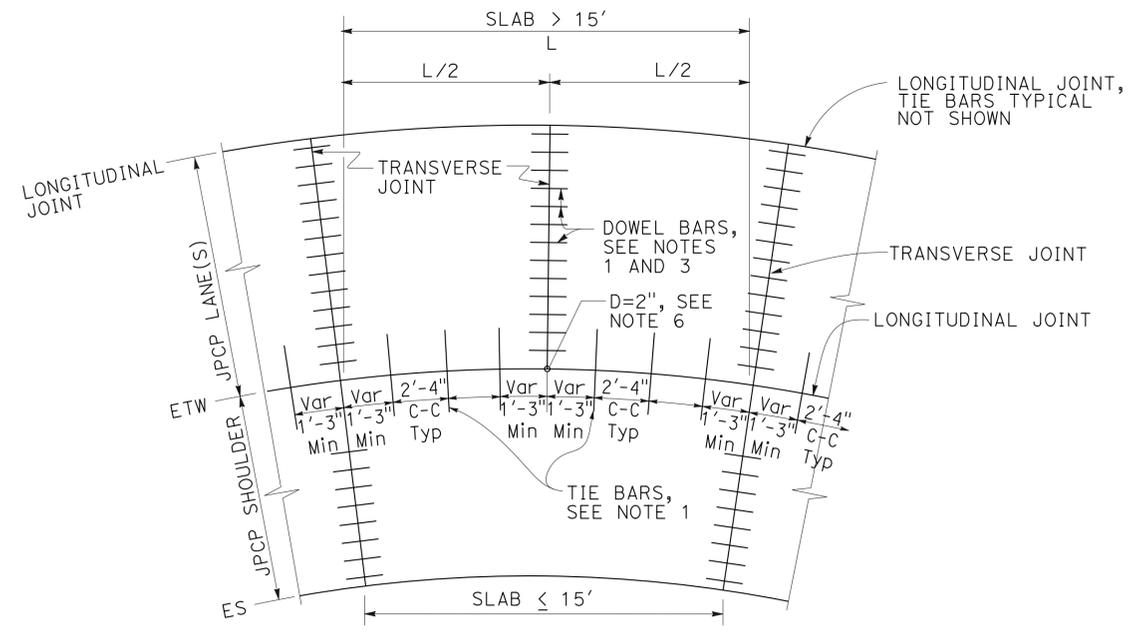
2010 REVISED STANDARD PLAN RSP P12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	481	635

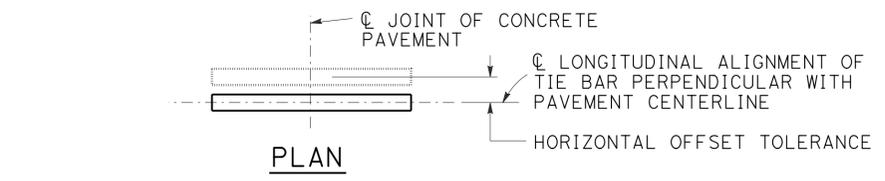
William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
 William K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

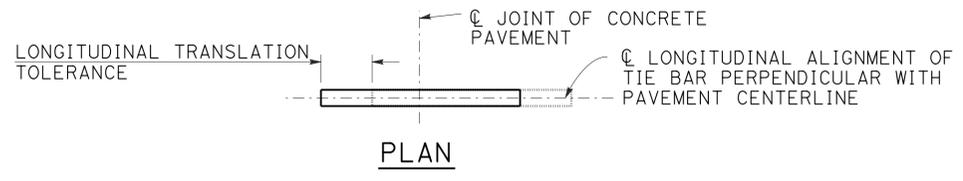
TO ACCOMPANY PLANS DATED 3-10-14



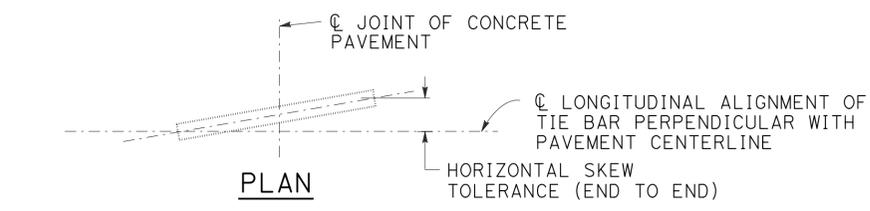
TIE BAR LAYOUT IN CURVED LANES



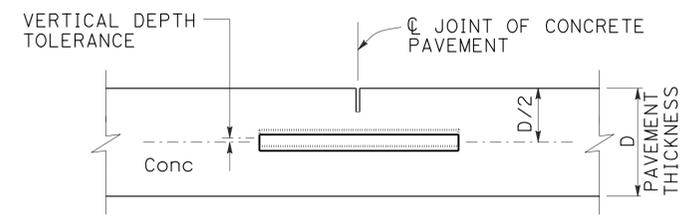
HORIZONTAL OFFSET TOLERANCE



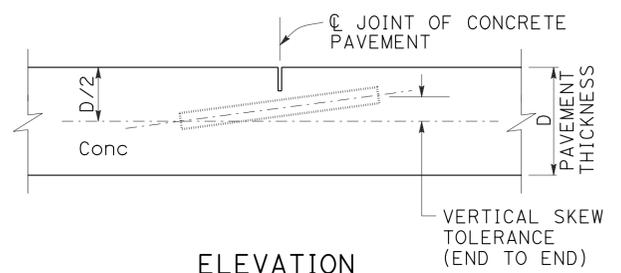
LONGITUDINAL TRANSLATION TOLERANCE



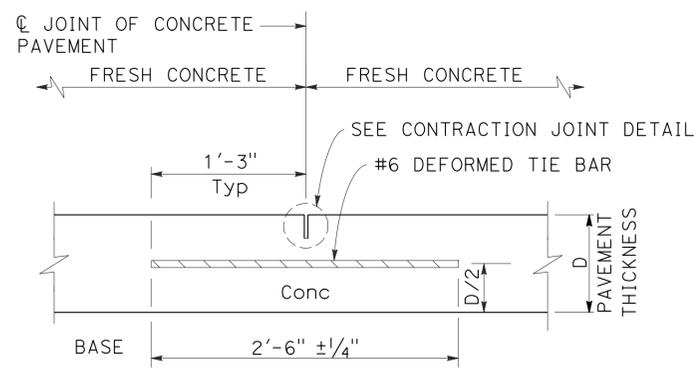
HORIZONTAL SKEW TOLERANCE



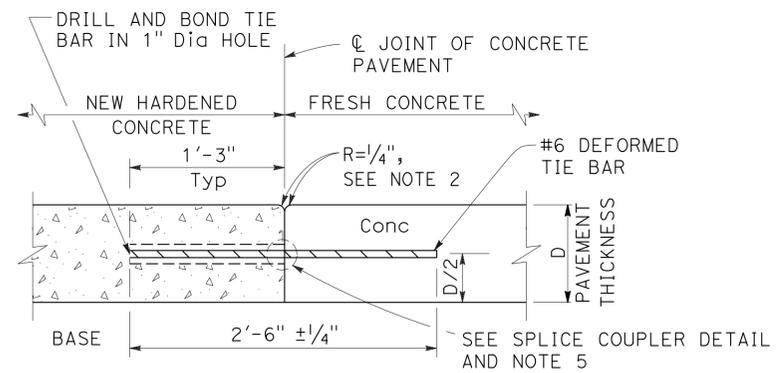
VERTICAL DEPTH TOLERANCE



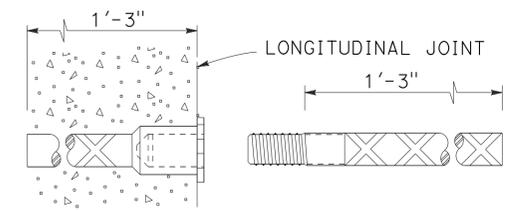
VERTICAL SKEW TOLERANCE



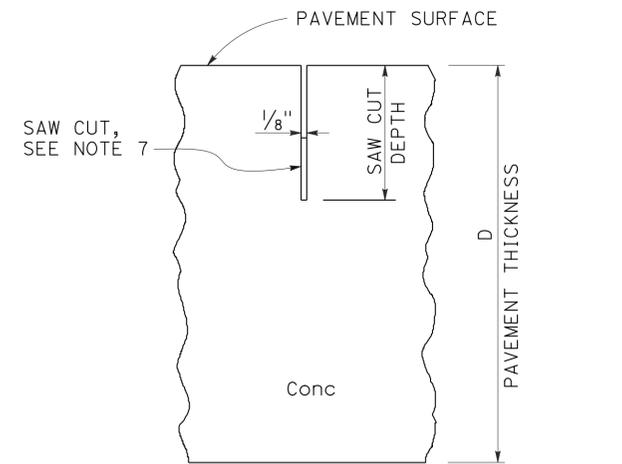
LONGITUDINAL CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



ALTERNATIVE SPLICE COUPLER



CONTRACTION JOINT DETAIL

- NOTES:**
1. See Revised Standard Plan RSP P1 for typical dowel bar and tie bar placement and locations.
 2. Where new pavement is placed against existing concrete pavement, rounding the corner is not required.
 3. For dowel bar sizes, See Revised Standard Plan RSP P10.
 4. Tie bar details apply to inside widenings.
 5. Use either drill and bond or splice couplers.
 6. Full depth drilled hole. Fill hole with filler material.
 7. The bottom of the saw cut must be at least 0.5" clear of any dowel bar, tie bar and bar reinforcement.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CONCRETE PAVEMENT-TIE BAR DETAILS
 NO SCALE

RSP P15 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP P15

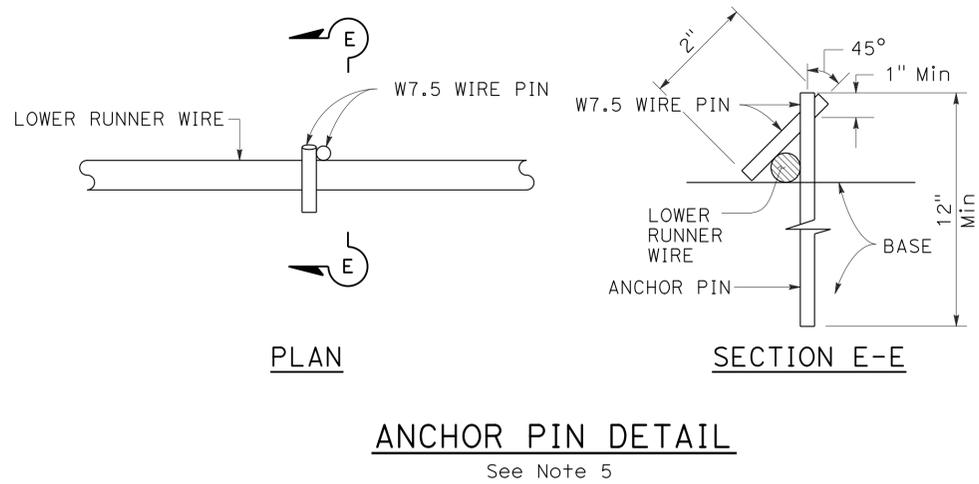
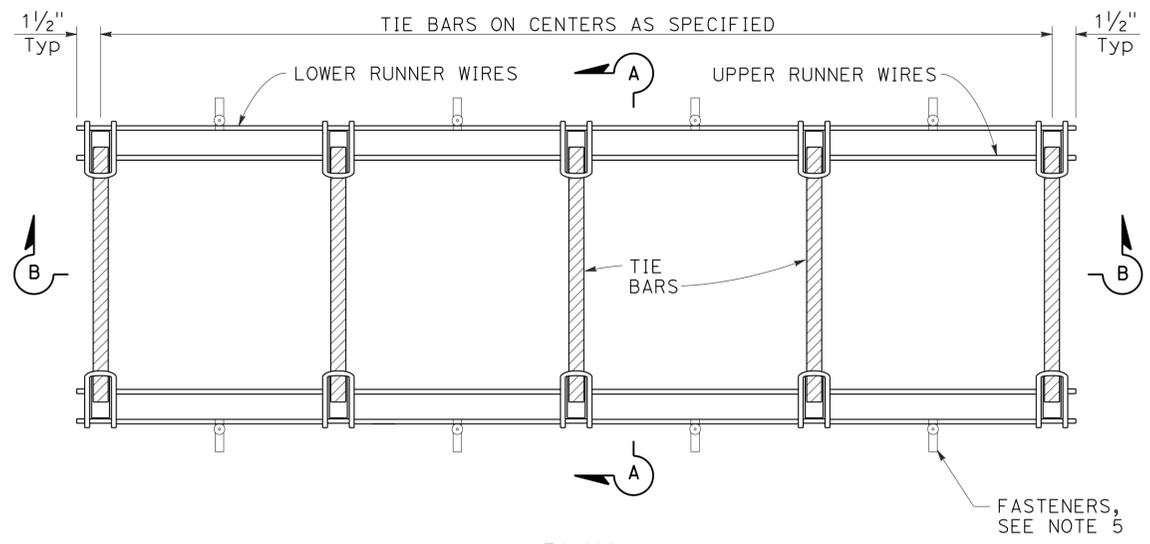
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	482	635

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

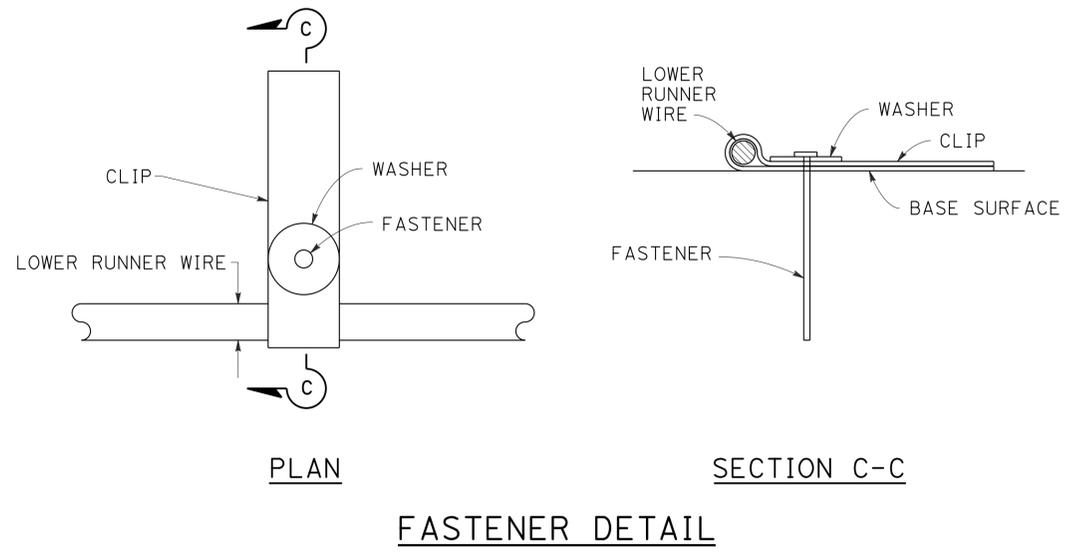
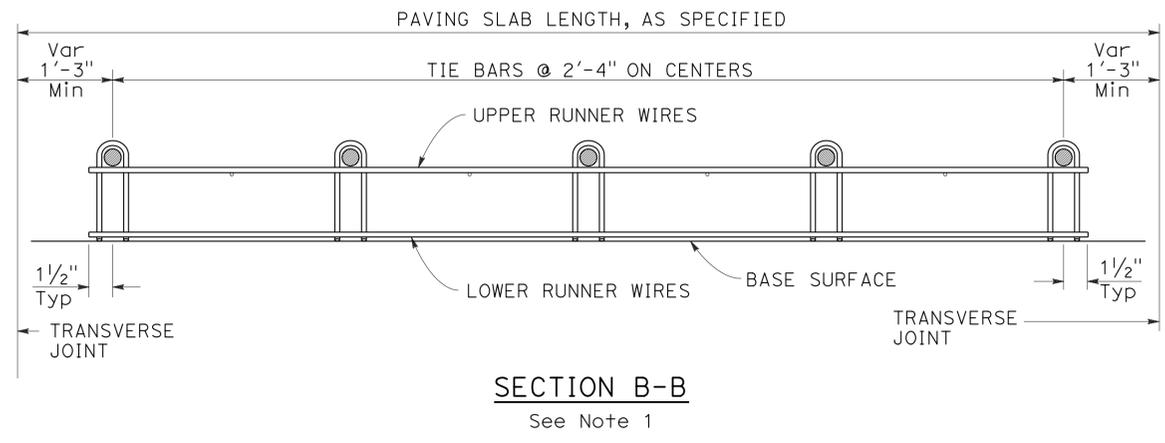
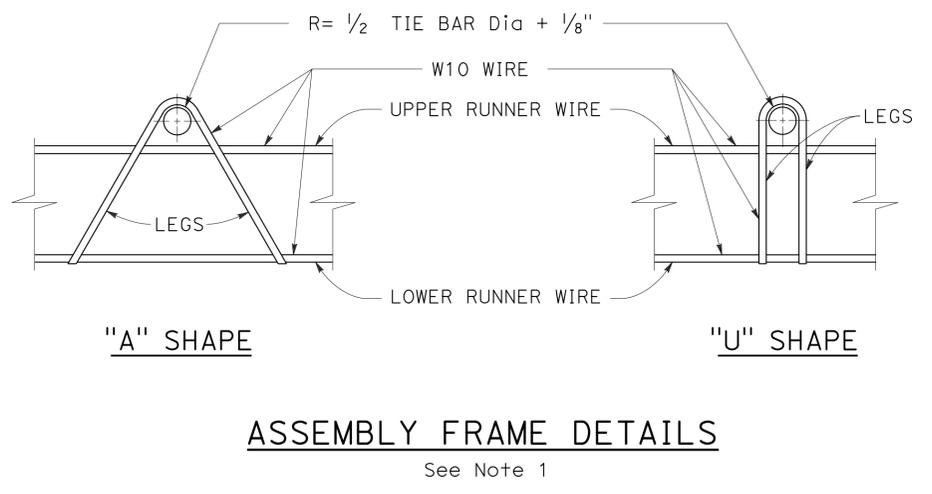
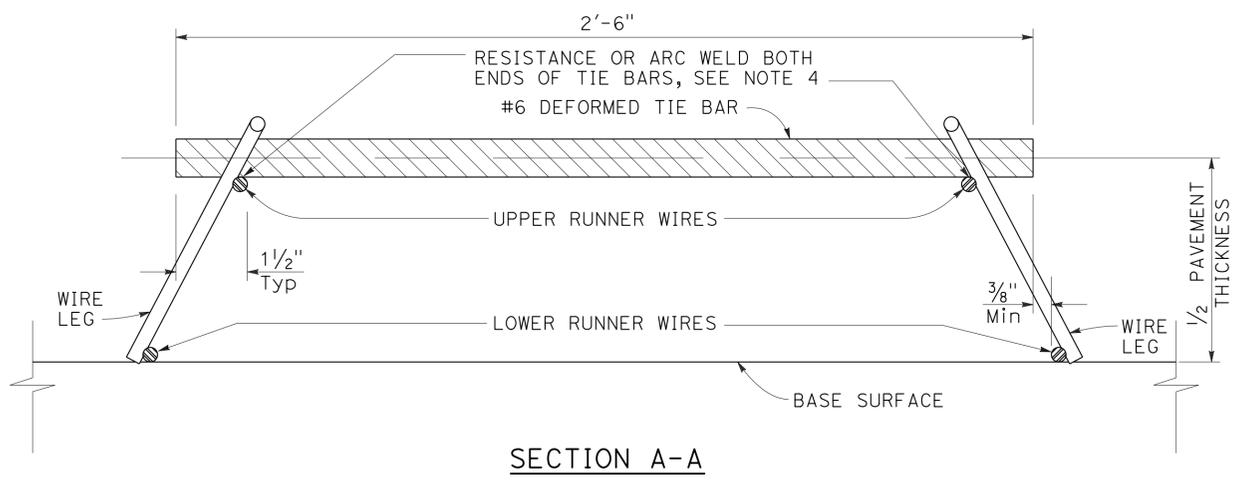
July 19, 2013
 PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED 3-10-14



- NOTES:**
- "U" frame shape assembly shown. Use either "U" frame shape or "A" frame shape.
 - Wire sizes shown are the minimum required.
 - All wire intersections must be resistance welded.
 - Weld may be at top or bottom of tie bars.
 - Use anchor pins where soil or granular base is used.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CONCRETE PAVEMENT
 TIE BAR BASKET
 DETAILS**
 NO SCALE

RSP P17 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P17
 DATED MAY 20, 2011 - PAGE 134 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P17

2010 REVISED STANDARD PLAN RSP P17

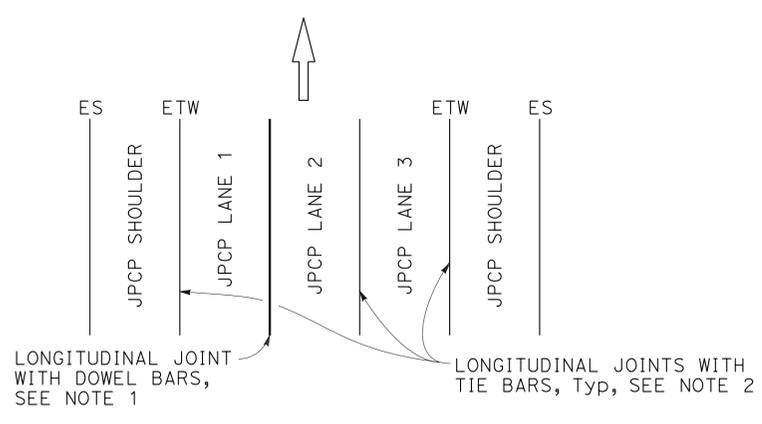
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	483	635

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 STATE OF CALIFORNIA

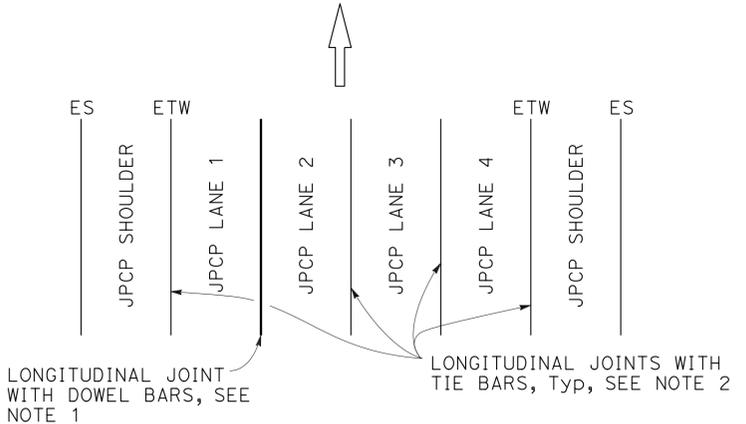
July 19, 2013
 PLANS APPROVAL DATE

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

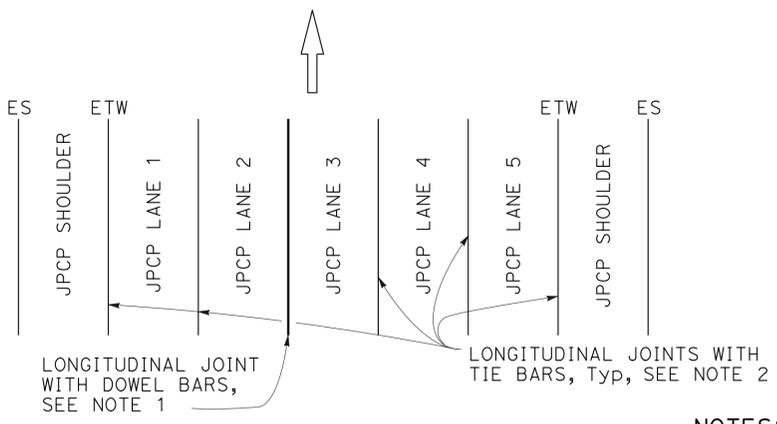
TO ACCOMPANY PLANS DATED 3-10-14



3 LANES WITH CONCRETE SHOULDERS
PLAN



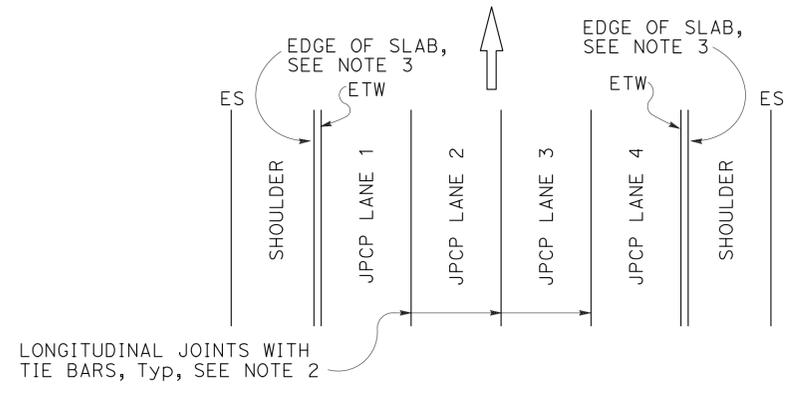
4 LANES WITH CONCRETE SHOULDERS
PLAN



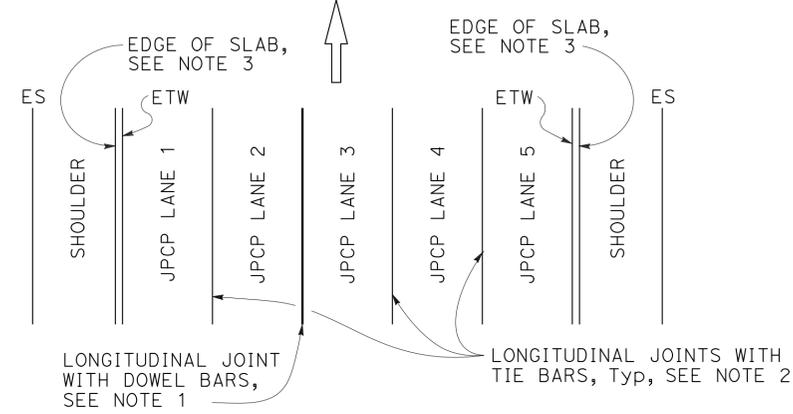
5 LANES WITH CONCRETE SHOULDERS
PLAN

NOTES:

- See Revised Standard Plan RSP P10 for longitudinal joint with dowel bars.
- See Revised Standard Plan RSP P15 for longitudinal joint with tie bars.
- S = Reservoir depth.
 $S = \frac{7}{8}'' \pm \frac{1}{16}''$ for asphalt rubber seals
 $S = \frac{9}{16}'' \pm \frac{1}{16}''$ for silicone seals
 Preformed compression seals must be $\frac{13}{16}''$ wide and $S = \frac{1}{16}'' \pm \frac{1}{16}''$

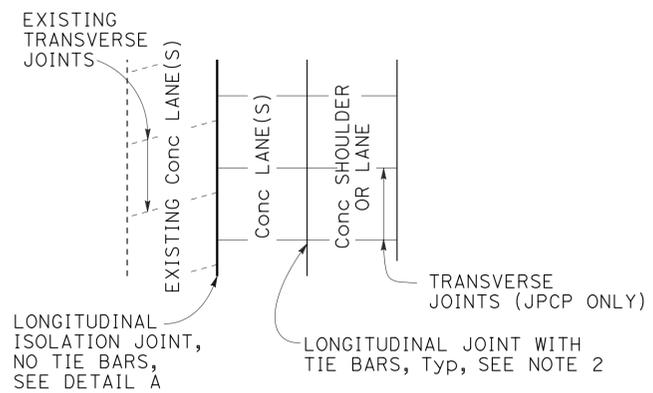


4 LANES OR LESS WITH AC SHOULDERS
PLAN



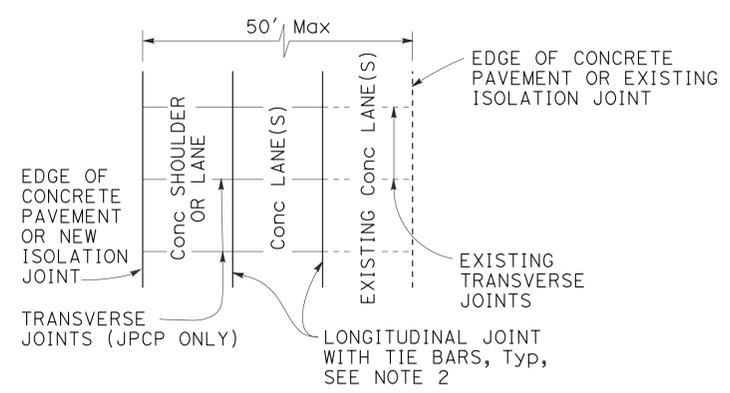
5 LANES WITH AC SHOULDERS
PLAN

NEW CONSTRUCTION
Location of Longitudinal Joints For JPCP



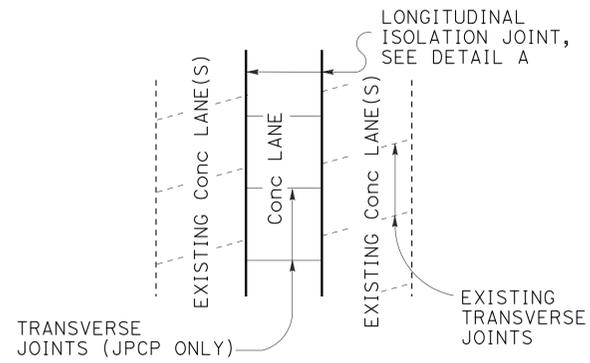
CASE 1
PLAN

Transverse Joints do not align between new and existing.



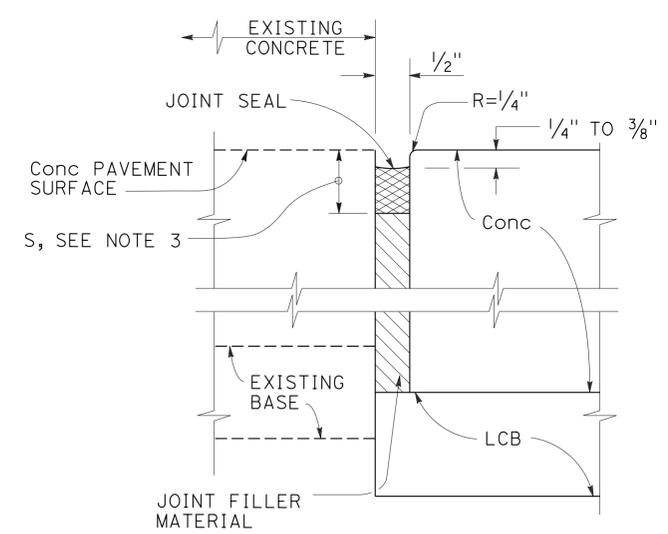
CASE 2
PLAN

Transverse Joints align between new and existing. (For JPCP only)



CASE 3 (INTERIOR LANE REPLACEMENT)
PLAN

Transverse Joints do not align between new and existing.



DETAIL "A"
ISOLATION JOINT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**CONCRETE PAVEMENT
LANE SCHEMATICS
AND ISOLATION JOINT DETAIL**

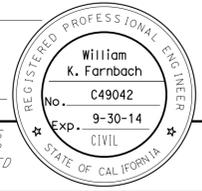
NO SCALE

LANE/SHOULDER ADDITION OR RECONSTRUCTION
For JPCP and CRCP

RSP P18 DATED JULY 19, 2013 SUPERSEDES RSP P18 DATED APRIL 20, 2012 AND STANDARD PLAN P18 DATED MAY 20, 2011 - PAGE 135 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P18

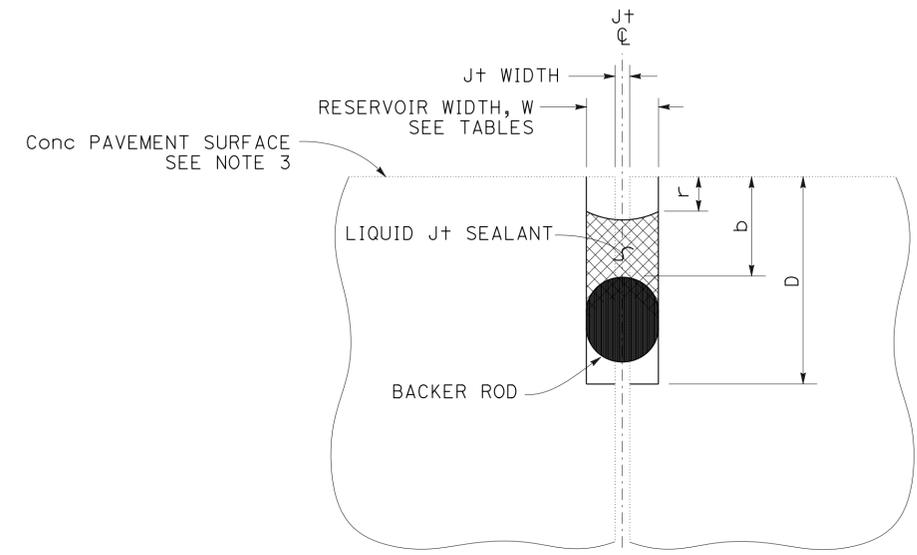
2010 REVISED STANDARD PLAN RSP P18



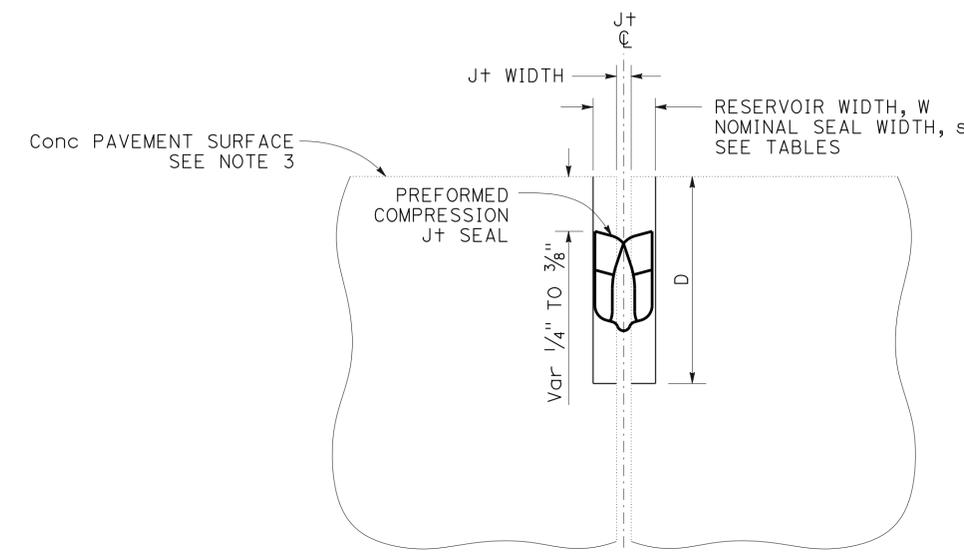
TO ACCOMPANY PLANS DATED 3-10-14

NOTES:

1. Details do not apply to isolation joints and longitudinal construction joints.
2. Tie bars, dowel bars, and bar reinforcement are not shown.
3. Depths are measured from the final concrete pavement surface elevation after any grinding.



LIQUID JOINT SEALANT



PREFORMED COMPRESSION JOINT SEAL

Const SEASON	Min RESERVOIR WIDTH * W ± 1/16"
WINTER	1/4"
SPRING	3/8"
SUMMER	
FALL	

* Minimum reservoir width for replace joint seal = existing joint width + 1/8"

RESERVOIR WIDTH W ± 1/16"	LIQUID JOINT SEALANT DIMENSIONS					
	BACKER ROD NOMINAL Dia *	DEPTHS (ASPHALT RUBBER) **		DEPTHS (SILICONE)		
		RESERVOIR D ± 1/4"	BACKER ROD b ± 1/16"	RESERVOIR D ± 1/4"	BACKER ROD b ± 1/16"	RECESS r ± 1/16"
1/4"	3/8"	1 3/4"	7/8"	1 3/8"	1/2"	1/4"
3/8"	1/2"	1 7/8"	7/8"	1 1/2"	1/2"	1/4"
1/2"	3/4"	2"	7/8"	1 3/4"	9/16"	5/16"
5/8"	7/8"	2 1/4"	1"	2"	5/8"	5/16"
3/4"	1"	2 3/4"	1 1/8"	2 1/4"	3/4"	3/8"
7/8"	1 1/4"	3"	1 1/4"	2 1/2"	13/16"	3/8"
1"	1 1/2"	3 1/4"	1 3/8"	2 5/8"	7/8"	3/8"
1 1/8"	1 1/2"	3 1/2"	1 1/2"	2 13/16"	1"	1/2"

* Larger diameter backer rods may be substituted according to manufacturer recommendations if reservoir depth is increased equivalently.
 ** Asphalt rubber sealant recess depth "r" varies from 1/4" to 3/8"

RESERVOIR WIDTH W ± 1/16"	PREFORMED COMPRESSION JOINT SEAL DIMENSIONS	
	NOMINAL SEAL WIDTH s	RESERVOIR DEPTH D ± 1/4"
1/4"	7/16"	1 1/4"
3/8"	11/16"	1 1/16"
1/2"	13/16"	1 1/16"
5/8"	1"	1 7/8"
3/4"	1 1/4"	2 1/8"
7/8"	1 5/8"	2 5/8"
1"	1 5/8"	2 5/8"
1 1/8"	2"	2 7/8"

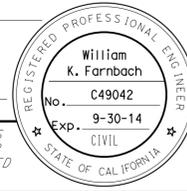
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
JOINT SEALS
 NO SCALE

RSP P20 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P20 DATED MAY 20, 2011 - PAGE 136 OF THE STANDARD PLANS BOOK DATED 2010.

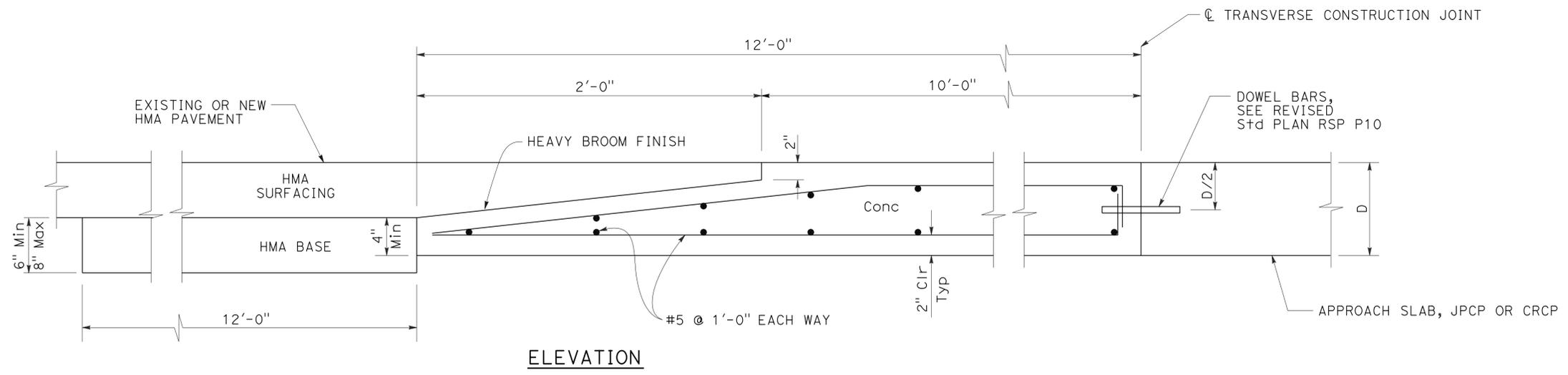
2010 REVISED STANDARD PLAN RSP P20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	485	635

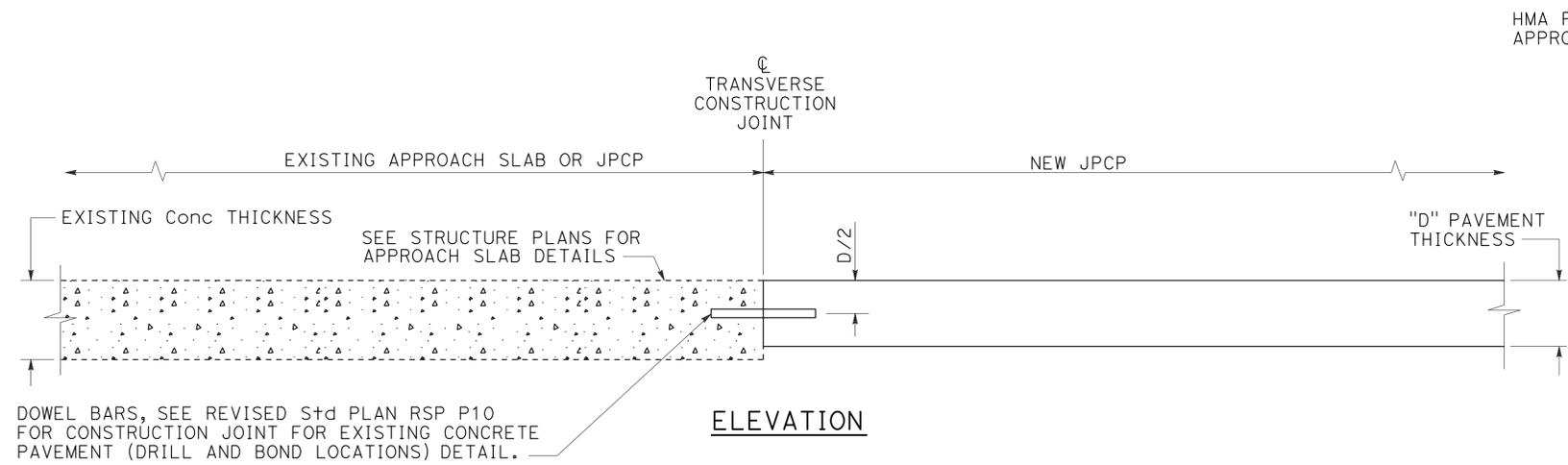
William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



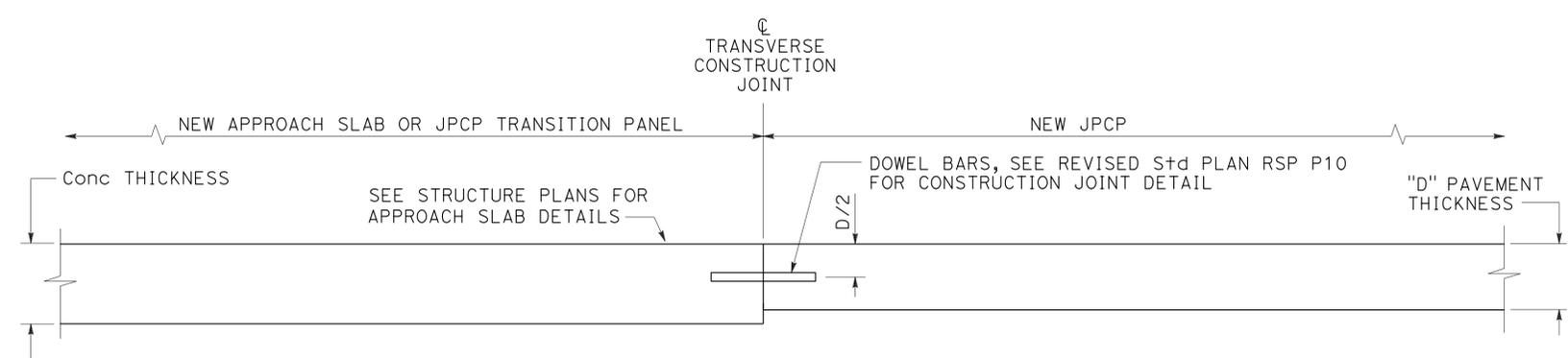
TO ACCOMPANY PLANS DATED 3-10-14



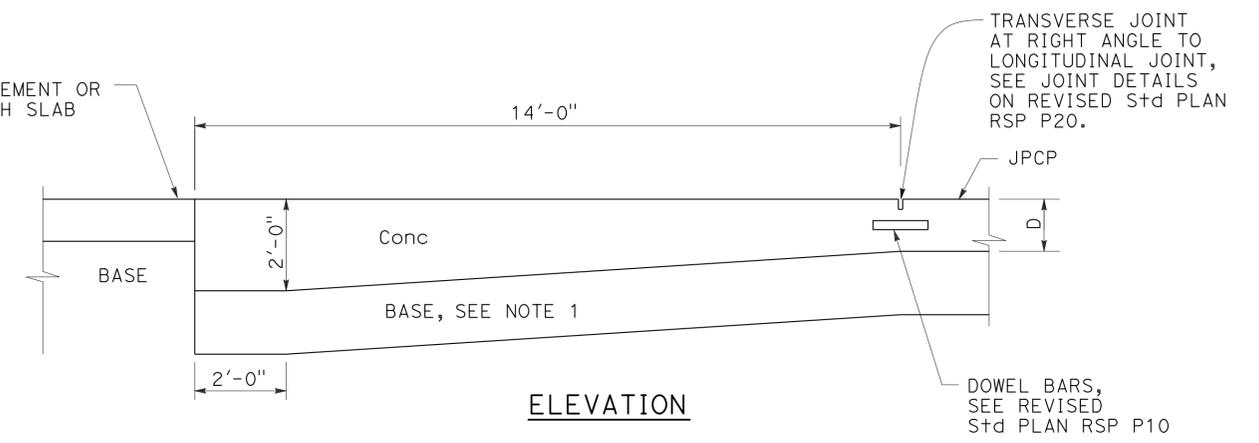
ELEVATION
CONCRETE PAVEMENT TRANSITION PANEL



ELEVATION
TERMINAL JOINT TYPE 1
For Exist JPCP or Approach Slab



ELEVATION
TERMINAL JOINT TYPE 2
For JPCP Transition Panel or Approach Slab



ELEVATION
PAVEMENT END ANCHOR
For HMA Pvmnt or Approach Slab

NOTE:
1. Maintain same base thickness as JPCP.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CONCRETE PAVEMENT-
END PANEL
PAVEMENT TRANSITIONS**

NO SCALE

RSP P30 DATED JULY 19, 2013 SUPERSEDES RSP P30 DATED APRIL 20, 2012 AND STANDARD PLAN P30 DATED MAY 20, 2011 - PAGE 137 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P30

2010 REVISED STANDARD PLAN RSP P30

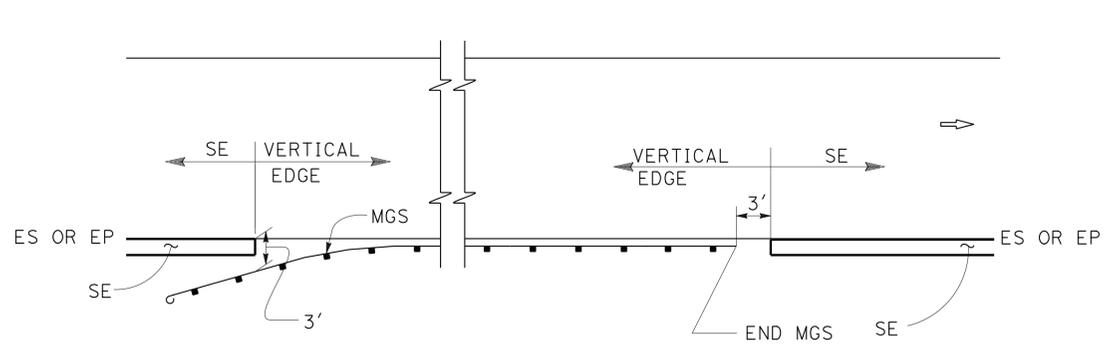
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	486	635

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.

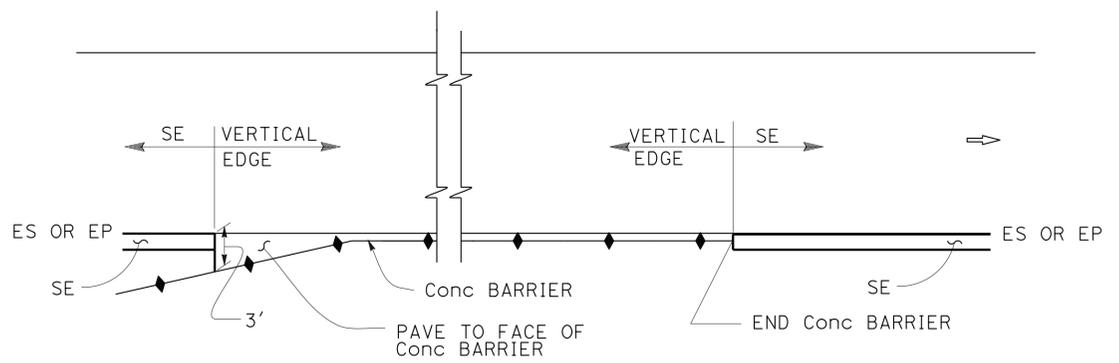
REGISTERED PROFESSIONAL ENGINEER
 Cornelis M. Hakim
 No. C55610
 Exp. 12-31-14
 CIVIL
 STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 3-10-14

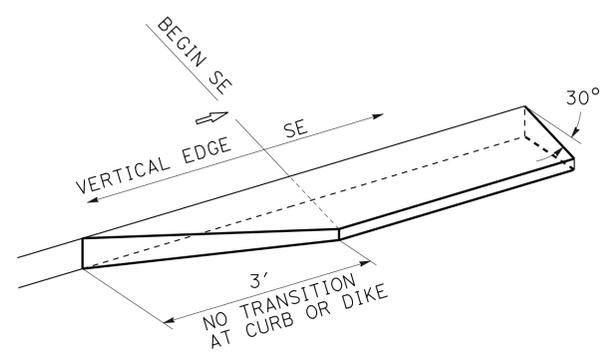
ABBREVIATIONS:
SE SAFETY EDGE



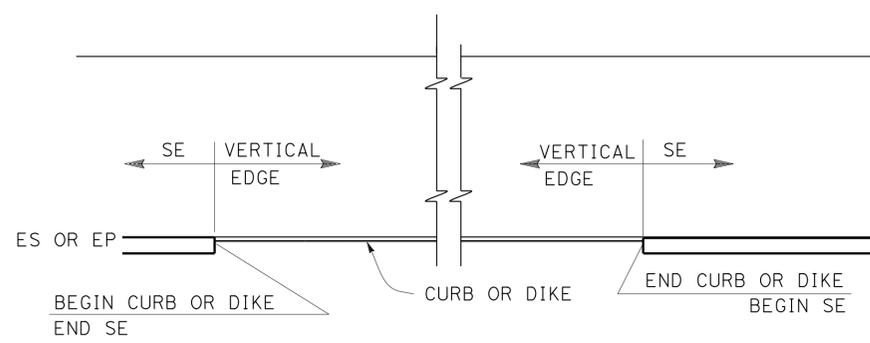
MGS



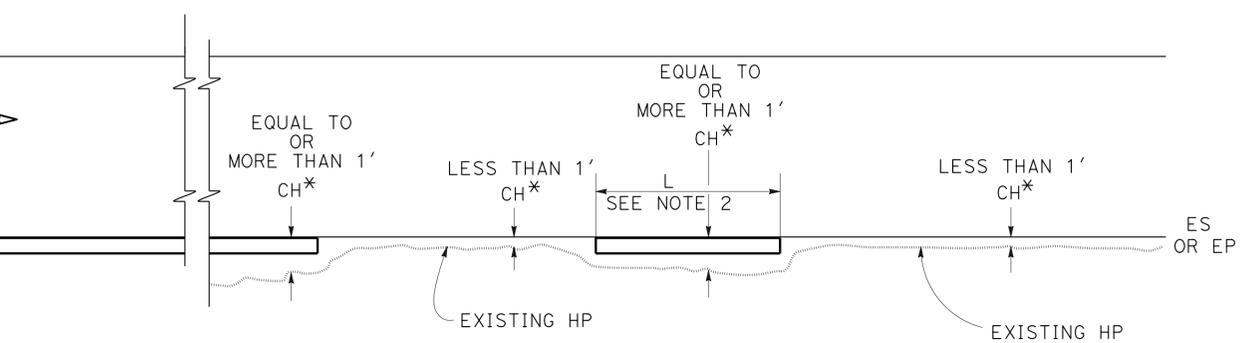
CONCRETE BARRIER



TRANSITION DETAIL FOR CONCRETE ONLY

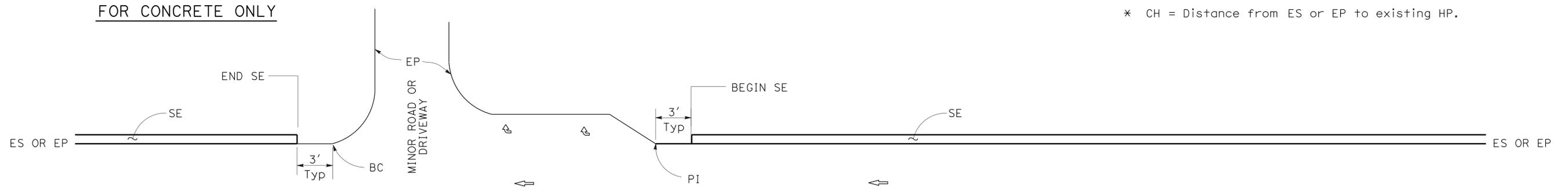


CURB OR DIKE



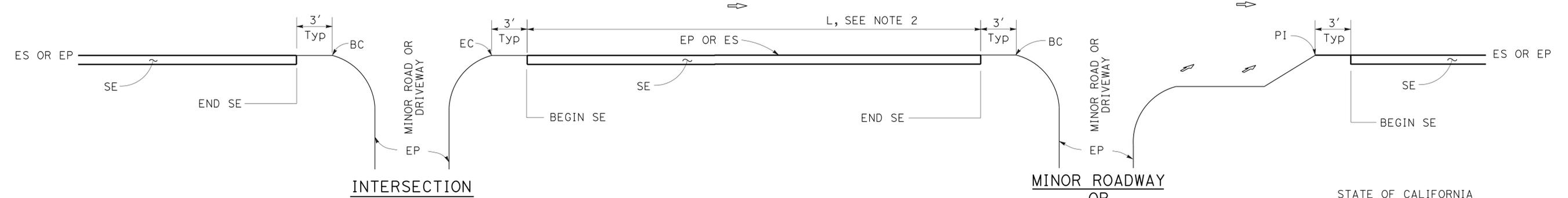
NARROW SIDE SLOPE

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



STATE ROUTE

STATE ROUTE



INTERSECTION

DRIVEWAY AND INTERSECTION

MINOR ROADWAY OR DRIVEWAY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT EDGE TREATMENTS

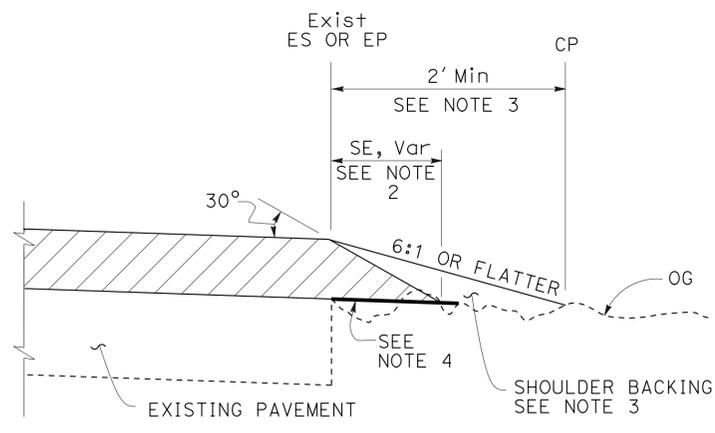
NO SCALE

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

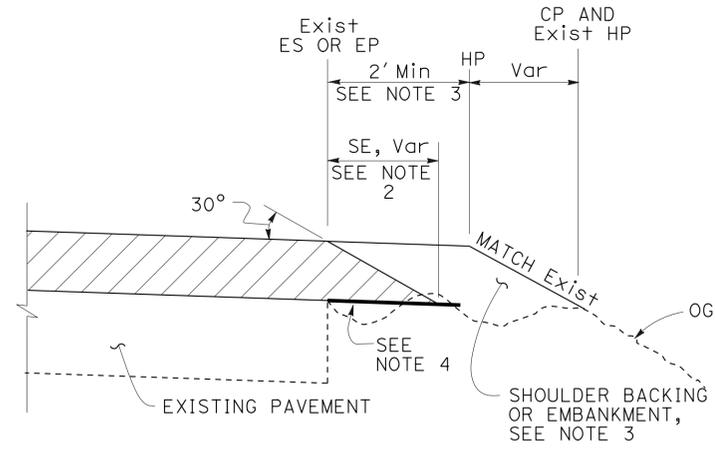
RSP P74 DATED NOVEMBER 15, 2013 SUPERSEDES RSP P74 DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP P74

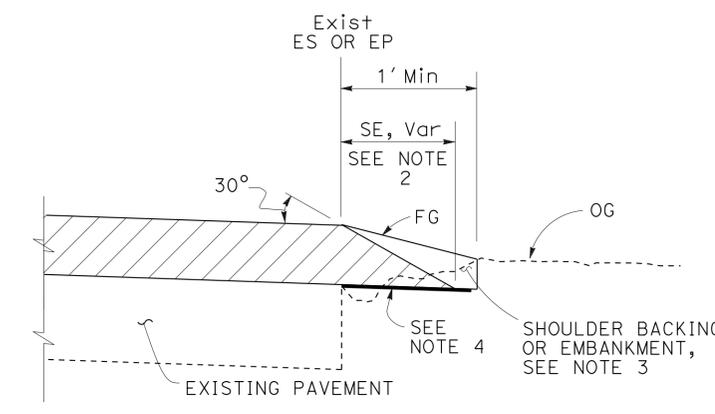
2010 REVISED STANDARD PLAN RSP P75



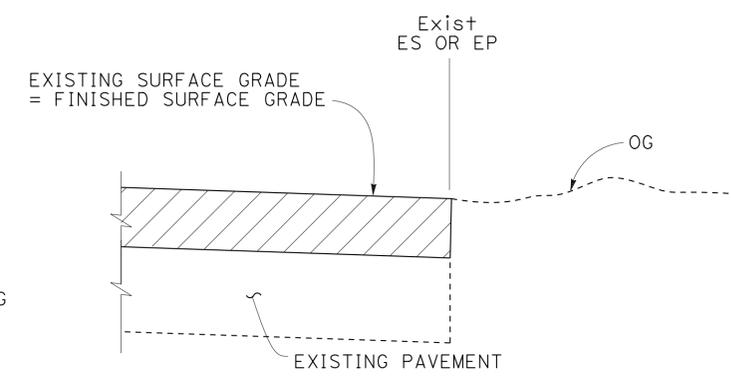
CASE A
Safety Edge



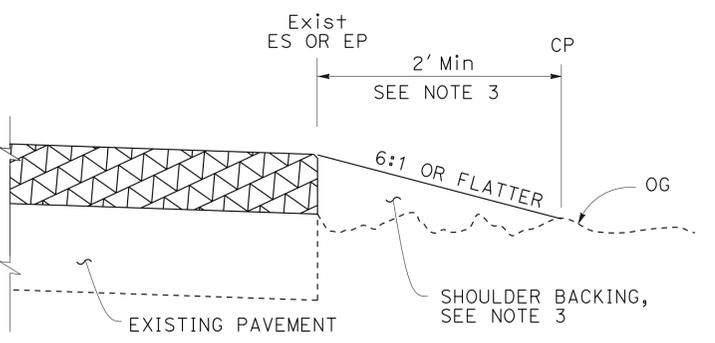
CASE B
Safety Edge



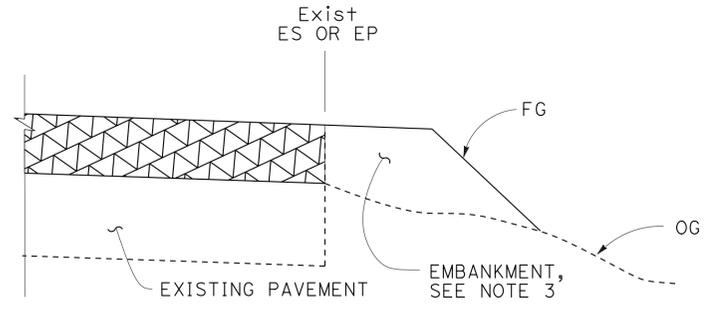
CASE C
Safety Edge



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 safety 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 safety edge. 1' minimum width
 5. Safety edge transverse joint must match overlay transverse joint. End of #6 longitudinal bar must be 2" ± 1/2" clear from transverse joint.
 6. Safety edge is not needed in the area of MGS, barrier, right turn lane and acceleration lane. See Revised Standard Plan RSP P74.

LEGEND:

- HMA OVERLAY
- HMA OR CONCRETE OVERLAY
- CONCRETE OVERLAY

ABBREVIATIONS:

- SE SAFETY EDGE
- TT TOTAL THICKNESS OF SE

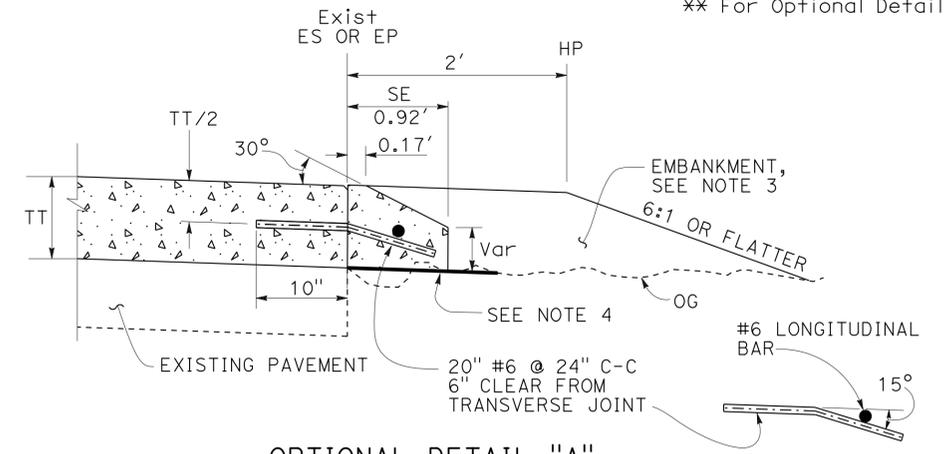
TABLE A
EDGE TREATMENT FOR VARIOUS OVERLAY THICKNESS AND CONDITIONS

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

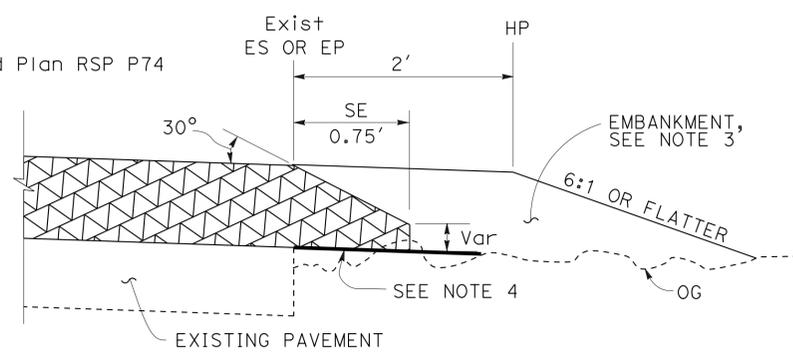
ADDITIONAL HMA OR CONCRETE QUANTITIES FOR SE/SIDE/MILE

TYPICAL CROSS SECTION	TT	TOTAL ADDITIONAL MATERIAL FOR SE/SIDE/MILE		
		HMA (TON)	CONCRETE (CY)*	CONCRETE (CY)**
	0.15'	NA	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



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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PAVEMENT EDGE TREATMENTS- OVERLAYS
NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	488	635

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

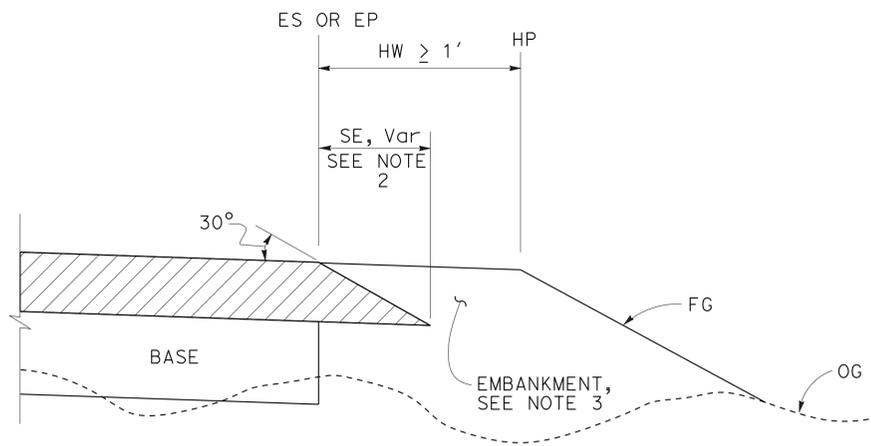
LEGEND:

-  HMA PAVEMENT
-  HMA OR CONCRETE PAVEMENT
-  CONCRETE PAVEMENT

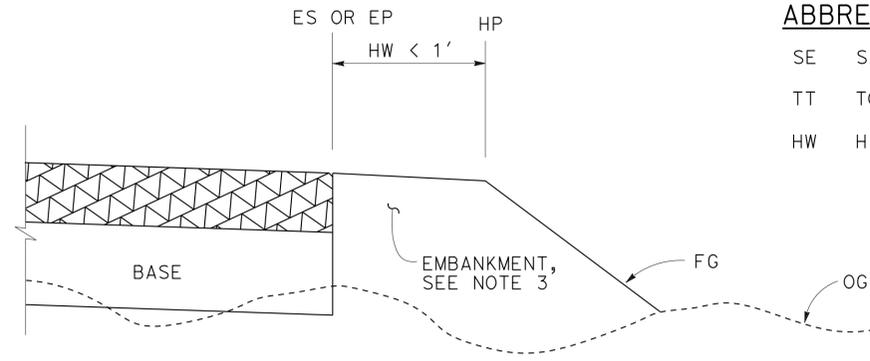
ABBREVIATIONS:

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

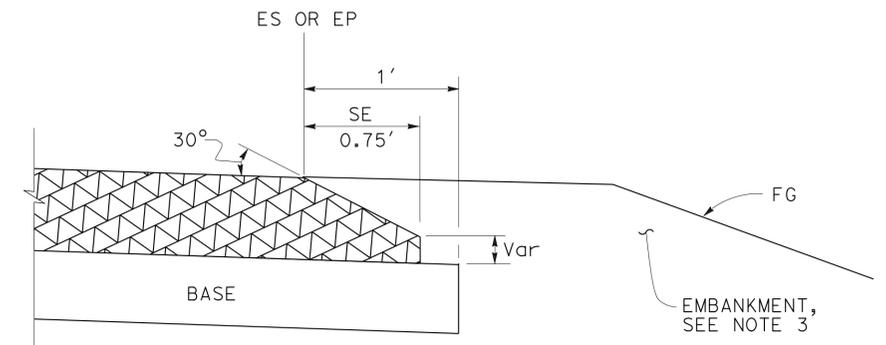
TO ACCOMPANY PLANS DATED 3-10-14



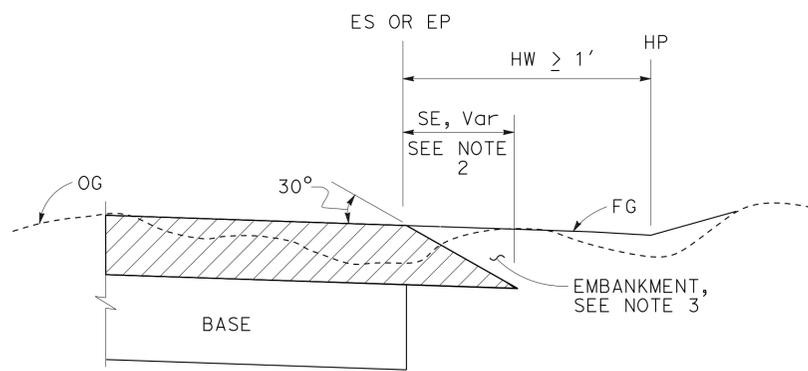
CASE K
Safety Edge - Fill Section, HW $\geq 1'$



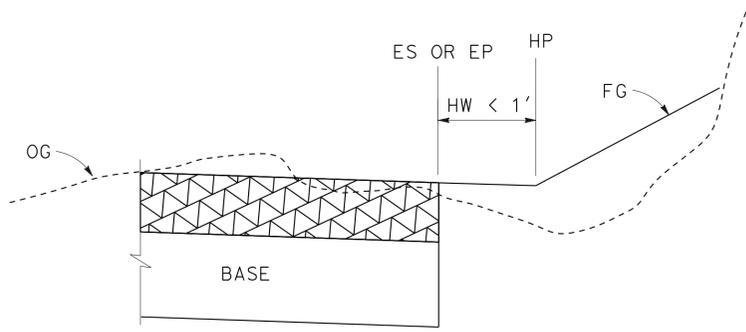
CASE L
Vertical Edge - Fill Section, HW $< 1'$



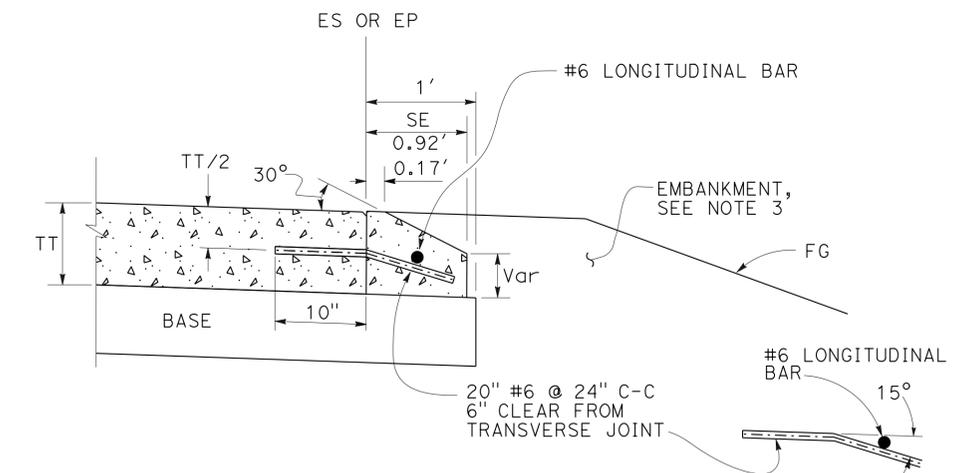
DETAIL "B"
For HMA pavement thickness more than 0.43' or concrete pavement



CASE M
Safety 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 safety 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.
- Safety edge transverse joint must match pavement transverse joint. End of #6 longitudinal bar must be 2" $\pm 1/2$ " clear from transverse joint.
- Safety 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 NOVEMBER 15, 2013 SUPERSEDES 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

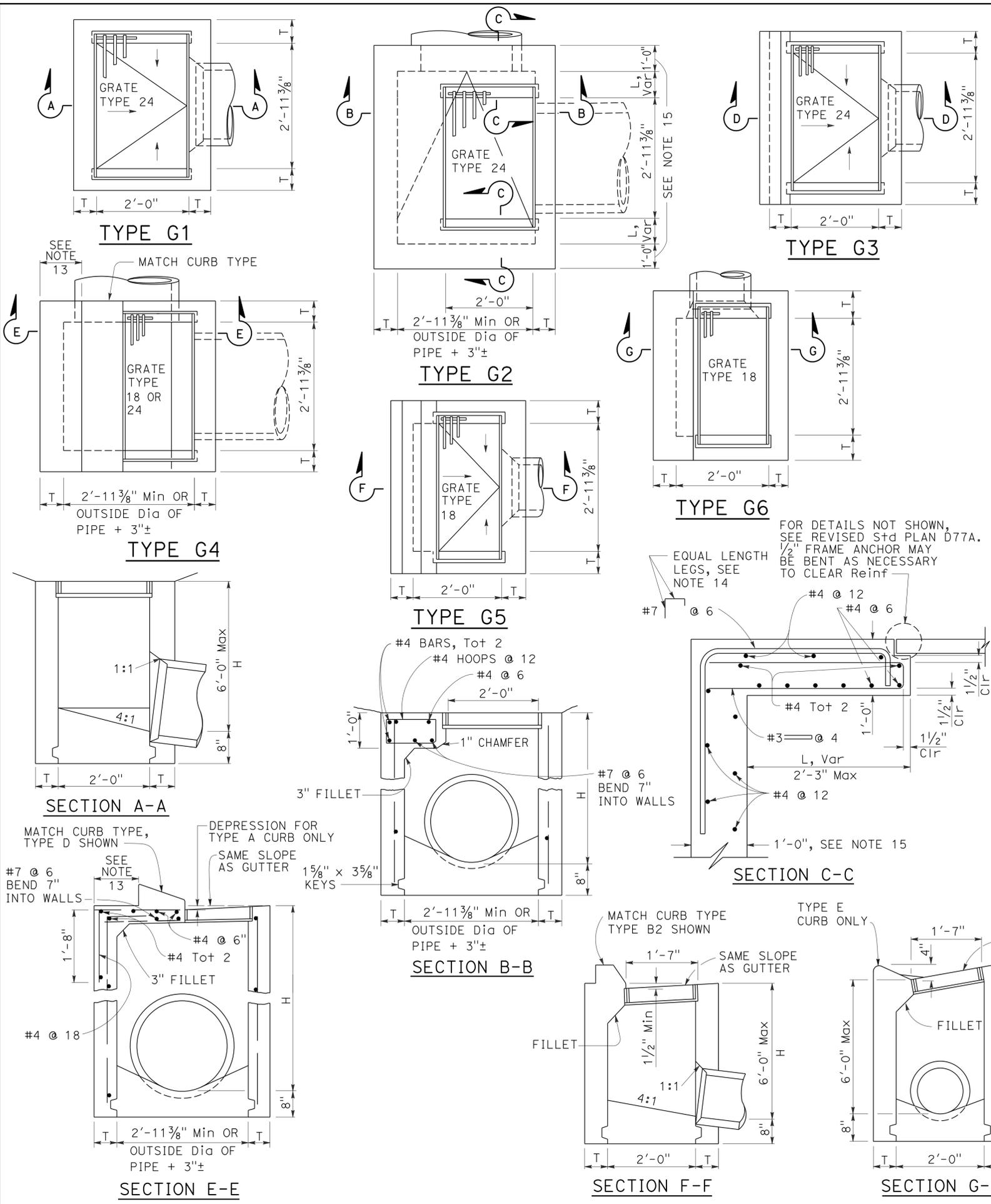
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	489	635

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.



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".

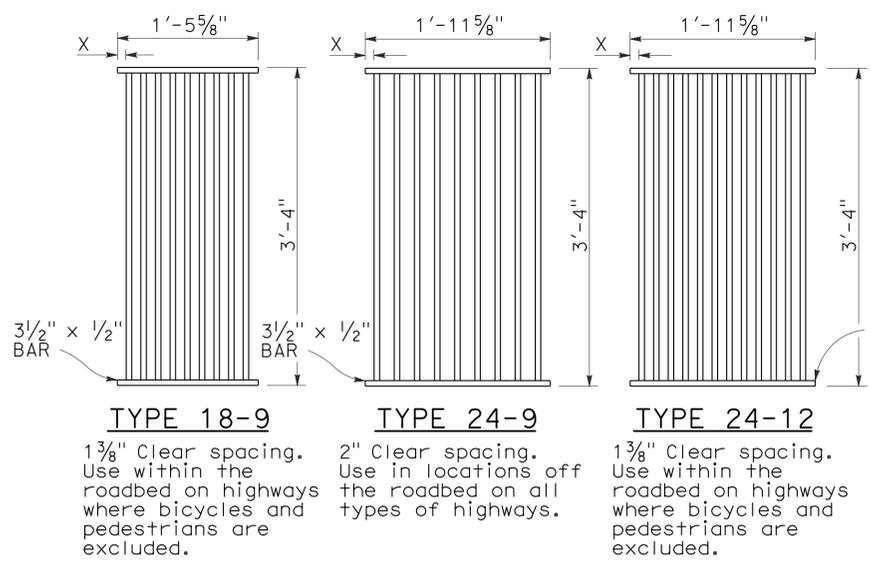
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS
NO SCALE

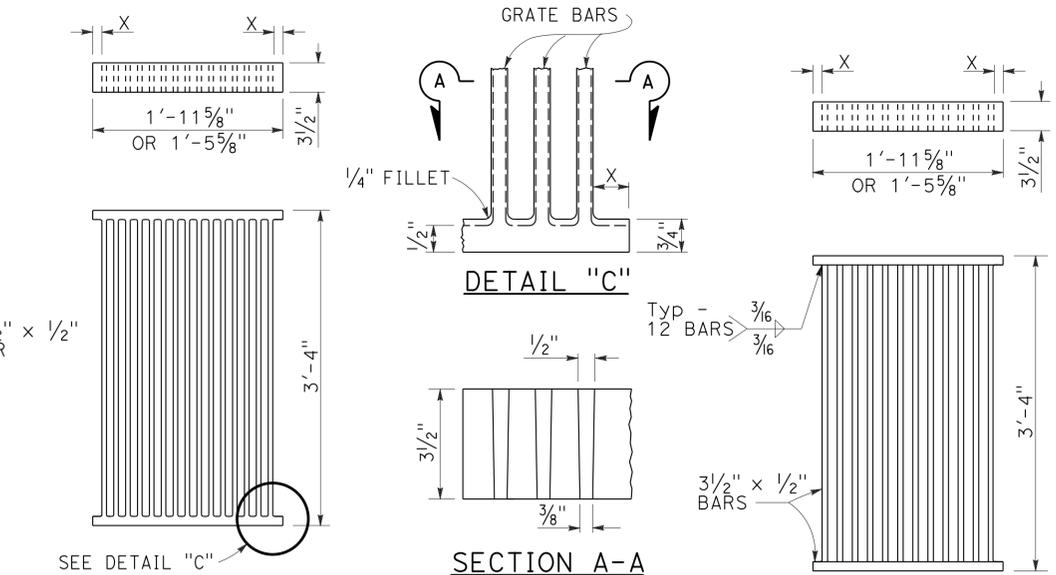
RSP D73 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN D73 DATED MAY 20, 2011 - PAGE 156 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D73

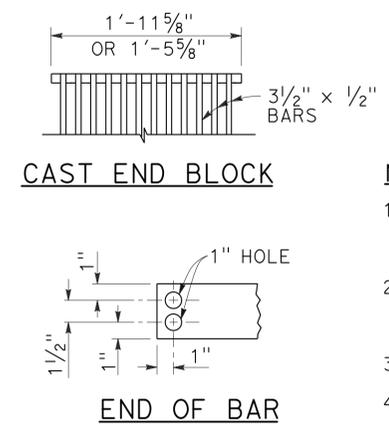
2010 REVISED STANDARD PLAN RSP D73



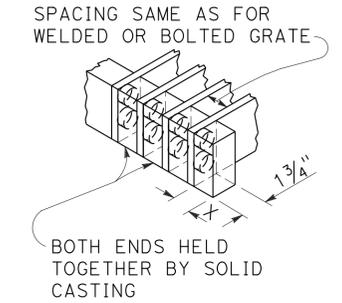
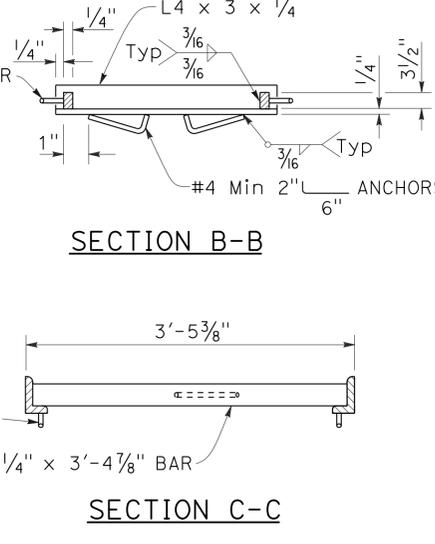
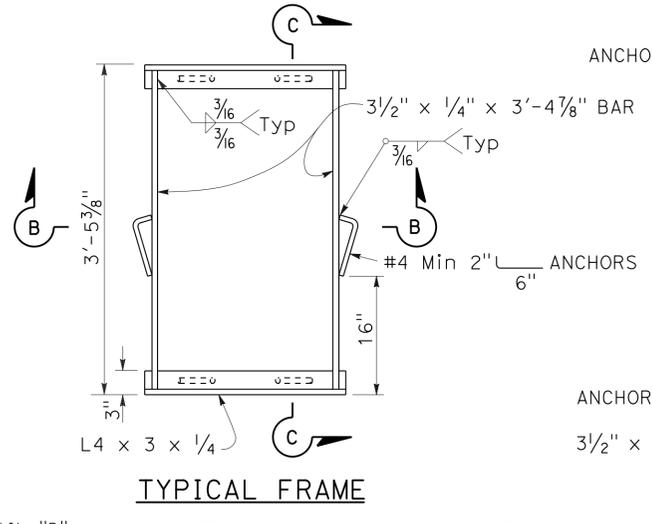
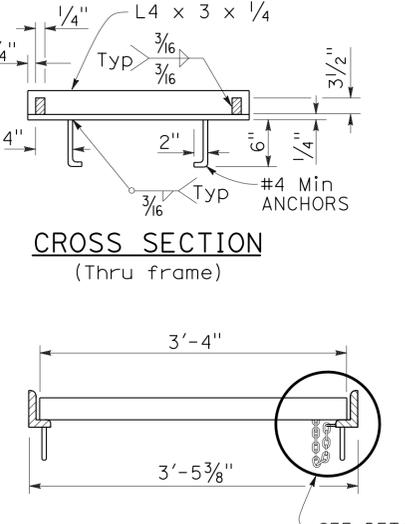
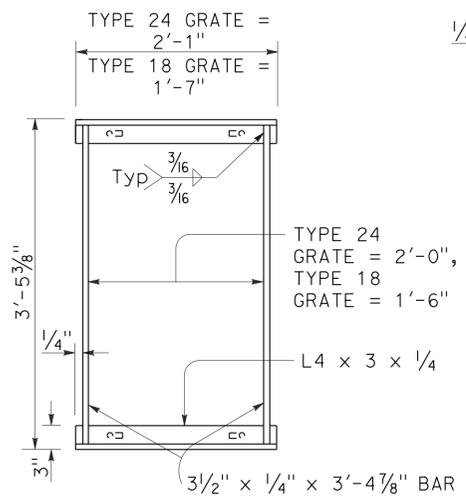
RECTANGULAR GRATE DETAILS
(See table below)



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



- 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.



ALTERNATIVE CAST DUCTILE IRON OR CAST CARBON STEEL END BLOCK GRATE

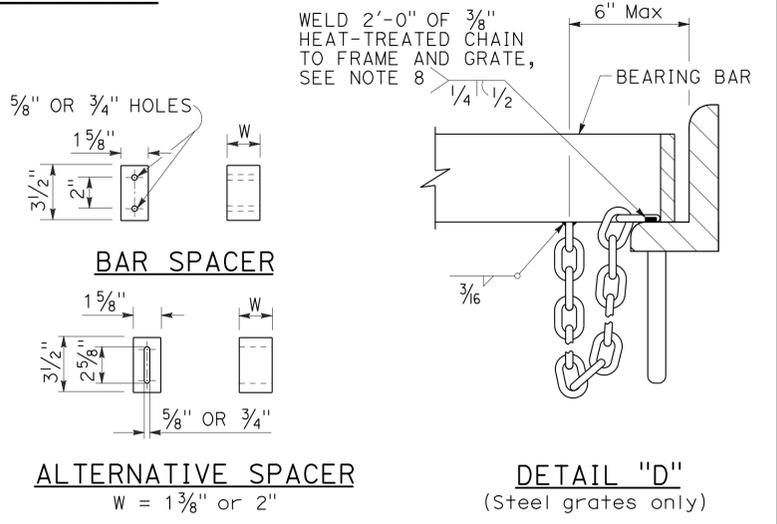
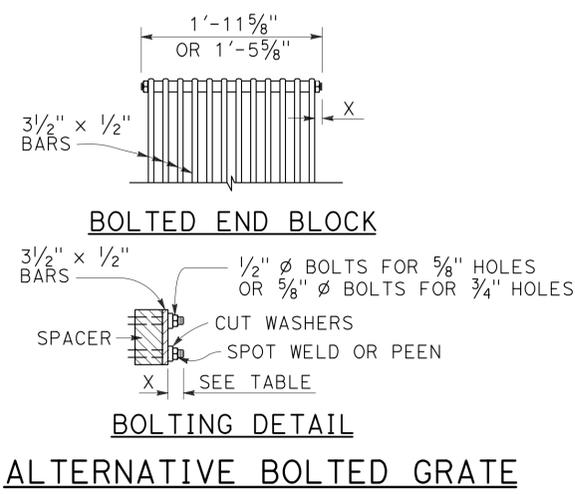
RECTANGULAR FRAME DETAILS
(For all rectangular grates)

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
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



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

GRATE DETAILS No. 1
NO SCALE

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	492	635

Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT

July 19, 2013
 PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED 3-10-14

A

AB AGGREGATE BASE
ABS ACRYLONITRILE-BUTADIENE-STYRENE
AC ASPHALT CONCRETE
ACC ARMOR-CLAD CONDUCTORS
Adj ADJACENT/ADJUSTABLE
AIC AUXILIARY IRRIGATION CONTROLLER
Alt ALTERNATIVE
AMEND AMENDMENT
ARV AIR RELEASE VALVE
AUTO AUTOMATIC
AUX AUXILIARY
AVB ATMOSPHERIC VACUUM BREAKER

B

B&B BALLED AND BURLAPPED
B/B BRASS/BRONZE
B/B/PL BRASS/BRONZE/PLASTIC
B/PL BRASS/PLASTIC
BFM BONDED FIBER MATRIX
Bit C+D BITUMINOUS COATED
BP BOOSTER PUMP
BPA BACKFLOW PREVENTER ASSEMBLY
BPE BACKFLOW PREVENTER ENCLOSURE
BV BALL VALVE

C

C CONDUIT
CAP CORRUGATED ALUMINUM PIPE
CARV COMBINATION AIR RELEASE VALVE
CB COUPLING BAND
CCA CAM COUPLER ASSEMBLY
CEC CONTROLLER ENCLOSURE CABINET
CHDPE CORRUGATED HIGH DENSITY POLYETHYLENE
CL CHAIN LINK
CNC CONTROL AND NEUTRAL CONDUCTORS
Conc CONCRETE
CP COPPER PIPE
CS COMPOST SOCK
CSP CORRUGATED STEEL PIPE
CST CENTER STRIP
CV CHECK VALVE

D

Dia DIAMETER
DIP DUCTILE IRON PIPE
DIT DRIP IRRIGATION TUBING
DG DECOMPOSED GRANITE
DN DIAMETER NOMINAL
DVA DRIP VALVE ASSEMBLY

E

EC EROSION CONTROL
ECTC EROSION CONTROL TECHNOLOGY COUNCIL
Elect ELECTRIC/ELECTRICAL
Elev ELEVATION
ELL ELBOW
ENCL ENCLOSURE
EP EDGE OF PAVEMENT
ES EDGE OF SHOULDER
EST END STRIP
ESTB ESTABLISHMENT
ETW EDGE OF TRAVELED WAY

F

F FULL CIRCLE
F/P FULL/PART CIRCLE
FCV FLOW CONTROL VALVE
FERT FERTILIZER
FG FINISHED GRADE
FH FLEXIBLE HOSE
FIPT FEMALE IRON PIPE THREAD
FIS FERTILIZER INJECTOR SYSTEM
FL FLOW LINE
FR FIBER ROLL
FS FLOW SENSOR
FSC FLOW SENSOR CABLE
FV FLUSH VALVE

G

Galv GALVANIZED
GARV GARDEN VALVE
GARVA GARDEN VALVE ASSEMBLY
GM GRAVEL MULCH
GPH GALLONS PER HOUR
GPM GALLONS PER MINUTE
GSP GALVANIZED STEEL PIPE
GV GATE VALVE

H

H HALF CIRCLE
HDPE HIGH DENSITY POLYETHYLENE
HP HORSEPOWER/HINGE POINT
HPL HIGH PRESSURE LINE
Hwy HIGHWAY

I

IC IRRIGATION CONTROLLER
ICC IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET
ID INSIDE DIAMETER
IFS IRRIGATION FILTRATION SYSTEM
IPS IRON PIPE SIZE
IPT IRON PIPE THREAD
Irr IRRIGATION

L

L LENGTH
Max MAXIMUM
MBGR METAL BEAM GUARD RAILING
MCV MANUAL CONTROL VALVE
MIC MASTER IRRIGATION CONTROLLER
Min MINIMUM
MIPT MALE IRON PIPE THREAD
Misc MISCELLANEOUS
M+I MATERIAL
MVP MAINTENANCE VEHICLE PULLOUT

N

NCN NO COMMON NAME
NL NOZZLE LINE
No. NUMBER
NPT NATIONAL PIPE THREAD

O

O/C ON CENTER
OD OUTSIDE DIAMETER
OL OVERLAP

P

P PART CIRCLE
PB PULL BOX
PCC PORTLAND CEMENT CONCRETE
PE POLYETHYLENE
PK+ PACKET
PL PLASTIC
PLS PURE LIVE SEED
PLT PLANT/PLANTING
PLT ESTB PLANT ESTABLISHMENT
PM POST MILE
PR PRESSURE RATED
PRLV PRESSURE RELIEF VALVE
PRV PRESSURE REGULATING VALVE
PVC POLYVINYL CHLORIDE
Pvmt PAVEMENT

Q

Q QUARTER CIRCLE
QCV QUICK COUPLING VALVE

NOTE:
 For additional abbreviations, see Standard Plans A10A and A10B.

R

R RADIUS
RCP REINFORCED CONCRETE PIPE
RCV REMOTE CONTROL VALVE
RCVM REMOTE CONTROL VALVE (MASTER)
RCVMF REMOTE CONTROL VALVE (MASTER) W/FLOW SENSOR
RCVP REMOTE CONTROL VALVE W/PRESSURE REGULATOR
RCW RECYCLED WATER
RECP ROLLED EROSION CONTROL PRODUCT
REQ REQUIRED
RICS REMOTE IRRIGATION CONTROL SYSTEM
R/W RIGHT OF WAY

S

S SLIP
SCH SCHEDULE
SF STATE-FURNISHED
Shld SHOULDER
Sq SQUARE
SST SIDE STRIP
Sta STATION
Std STANDARD
SW SIDEWALK/SOUND WALL

T

T THIRD CIRCLE/THREAD
TLS TRUCK LOADING STANDPIPE
TQ THREE QUARTER CIRCLE
TRM TURF REINFORCEMENT MAT
TT TWO-THIRDS CIRCLE
TWSA TREE WELL SPRINKLER ASSEMBLY
Typ TYPICAL

U

UG UNDERGROUND

W

W WIDTH
W/ WITH
WM WATER METER
WS WYE STRAINER
WSA WYE STRAINER ASSEMBLY
WSP WELDED STEEL PIPE
WWM WELDED WIRE MESH

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**LANDSCAPE AND
 EROSION CONTROL ABBREVIATIONS**
 NO SCALE

RSP H1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H1
 DATED MAY 20, 2011 - PAGE 218 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H1

2010 REVISED STANDARD PLAN RSP H1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Orca	5	3.0/3.7	493	635

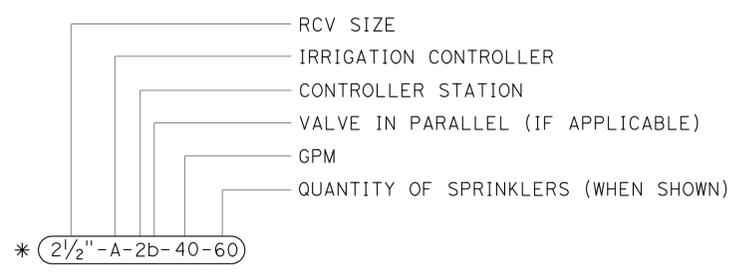

 LICENSED LANDSCAPE ARCHITECT
 November 15, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



TO ACCOMPANY PLANS DATED 3-10-14

EXISTING	NEW	ITEM DESCRIPTION
		WATER METER (WM)
		BACKFLOW PREVENTER ASSEMBLY (BPA)
		BACKFLOW PREVENTER ENCLOSURE (BPE)
		BOOSTER PUMP (BP)
		TRUCK LOADING STANDPIPE (TLS)
		FLOW SENSOR (FS)
		MASTER IRRIGATION CONTROLLER (MIC)
		AUXILIARY IRRIGATION CONTROLLER (AIC)
		IRRIGATION CONTROLLER (IC) IRRIGATION CONTROLLER (IC) (BATTERY) IRRIGATION CONTROLLER (IC) (SOLAR) IRRIGATION CONTROLLER (IC) (TWO WIRE) IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)
		ARMOR-CLAD CONDUCTORS (ACC)
		CONTROL AND NEUTRAL CONDUCTORS (CNC)
		IRRIGATION CONDUIT
		EXTEND IRRIGATION CONDUIT
		DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)
		PLASTIC PIPE (SUPPLY LINE) (MAIN)
		PLASTIC PIPE (SUPPLY LINE) (LATERAL)
		COPPER PIPE (SUPPLY LINE)
		DRIP IRRIGATION TUBING
		REMOTE CONTROL VALVE (RCV) REMOTE CONTROL VALVE (MASTER) (RCVM) REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)
		REMOTE CONTROL VALVE W/PRESSURE REGULATOR (RCVP)
		EXISTING MANUAL CONTROL VALVE (MCV)
		DRIP VALVE ASSEMBLY (DVA)
		WYE STRAINER ASSEMBLY (WSA)

EXISTING	NEW	ITEM DESCRIPTION
		GATE VALVE (GV)
		BALL VALVE (BV)
		QUICK COUPLING VALVE (QCV)
		CAM COUPLER ASSEMBLY (CCA)
		GARDEN VALVE ASSEMBLY (GARVA)
		PRESSURE REGULATING VALVE (PRV)
		PRESSURE RELIEF VALVE (PRLV)
		FLOW CONTROL VALVE (FCV)
		COMBINATION AIR RELEASE VALVE (CARV)
		CHECK VALVE (CV)
		FLUSH VALVE (FV)
		EXISTING NOZZLE LINE W/TURNING UNION
		EXISTING IRRIGATION SYSTEM
		EXISTING IRRIGATION SYSTEM TO BE REMOVED
		CHAIN LINK GATE
		QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
		SPRINKLER W/SPRINKLER PROTECTOR
		CONNECT TO EXISTING SYSTEM
		CAP
		CAP EXISTING
		FIBER ROLL
		COMPOST SOCK



VALVE CODE

* VALVE CODES FOR EXISTING VALVES ARE SHOWN IN A DASHED ENCLOSURE.

RSP H2 DATED NOVEMBER 15, 2013 SUPERSEDES RSP H2 DATED JULY 19, 2013 AND STANDARD PLAN H2 DATED MAY 20, 2011 - PAGE 219 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H2

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE AND EROSION CONTROL SYMBOLS
NO SCALE

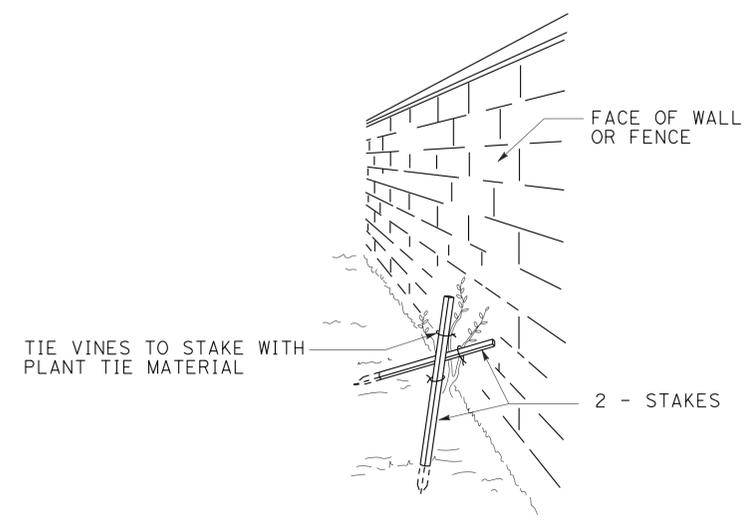
2010 REVISED STANDARD PLAN RSP H2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	494	635

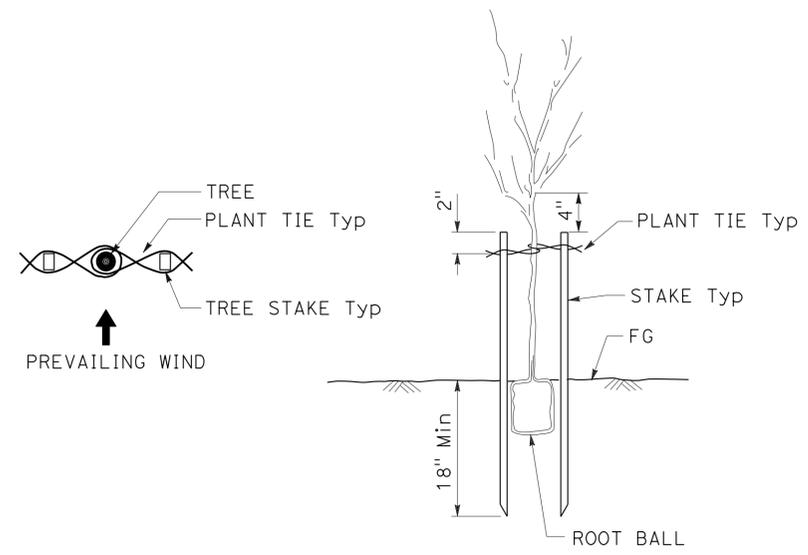
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



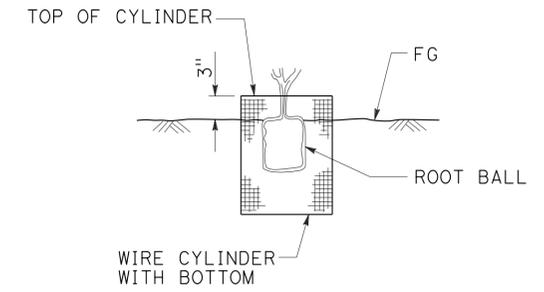
TO ACCOMPANY PLANS DATED 3-10-14



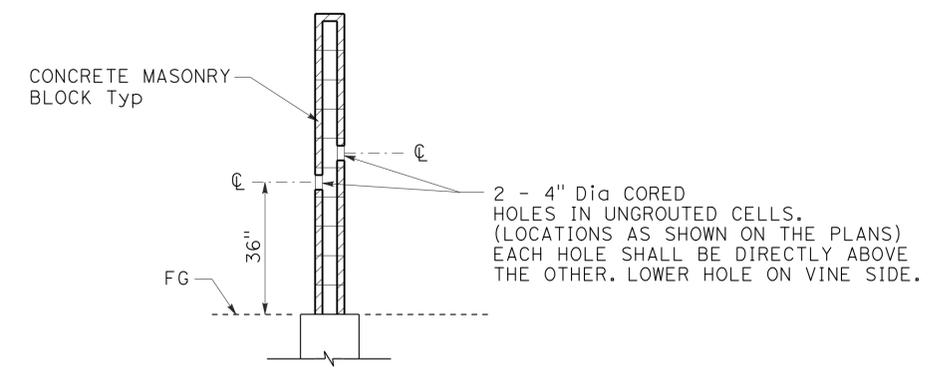
PERSPECTIVE VINE STAKING



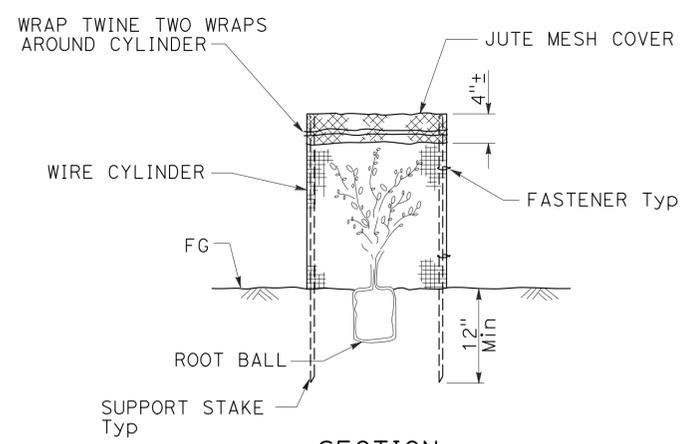
TREE STAKING



SECTION ROOT PROTECTOR



SECTION CORE HOLE (VINE)



SECTION FOLIAGE PROTECTOR

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
 NO SCALE

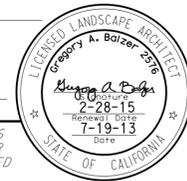
RSP H4 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H4 DATED MAY 20, 2011 - PAGE 221 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H4

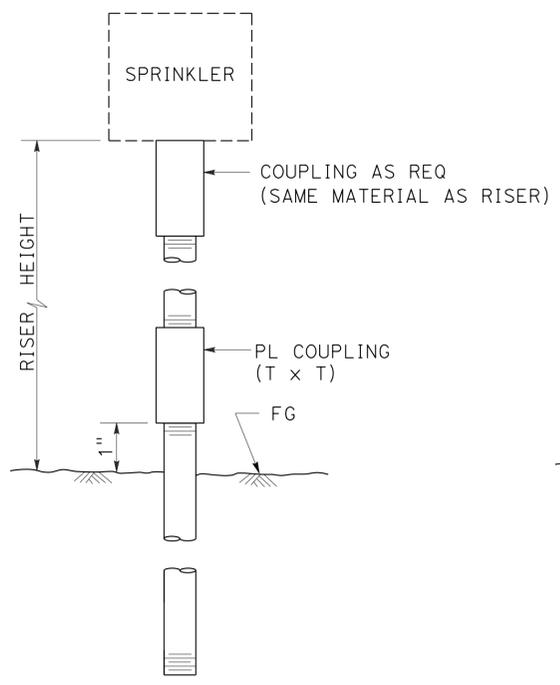
2010 REVISED STANDARD PLAN RSP H4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	495	635

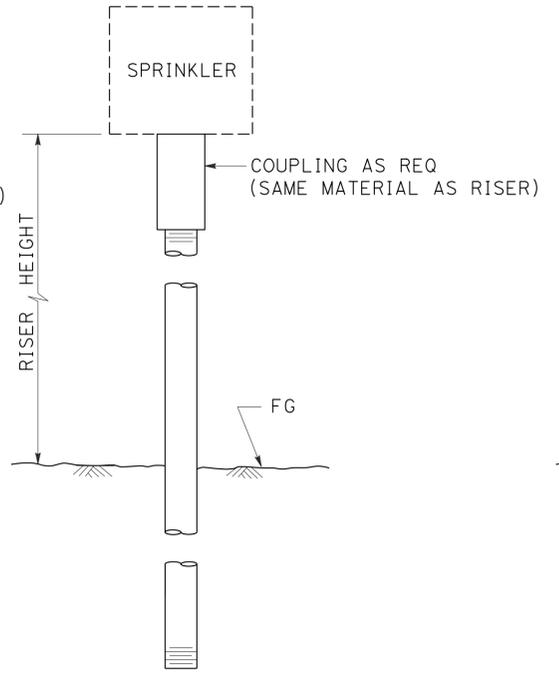
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



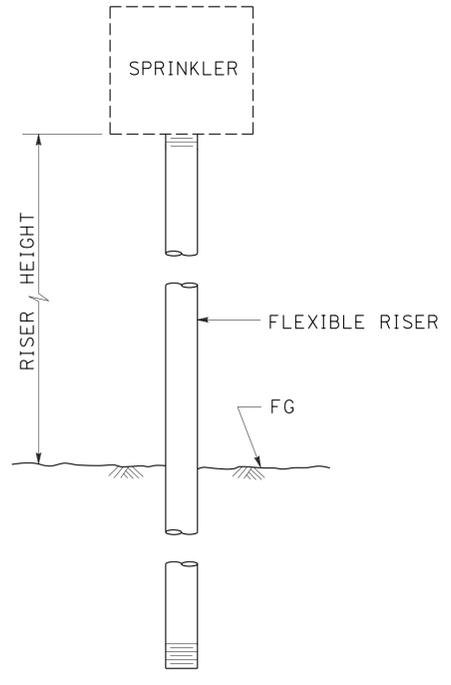
TO ACCOMPANY PLANS DATED 3-10-14



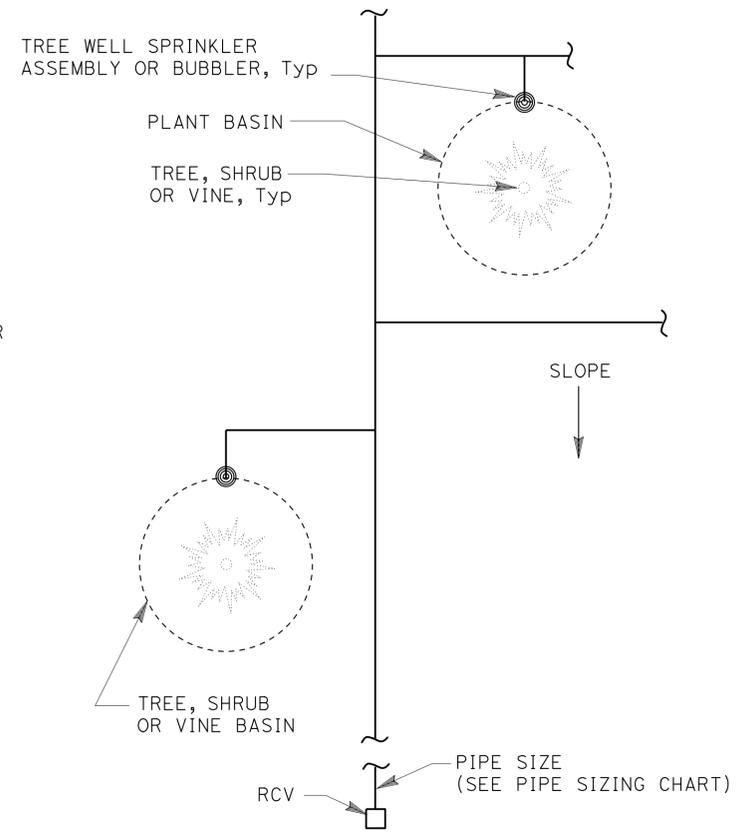
ELEVATION
RISER SPRINKLER
ASSEMBLY TYPE I



ELEVATION
RISER SPRINKLER
ASSEMBLY TYPE II



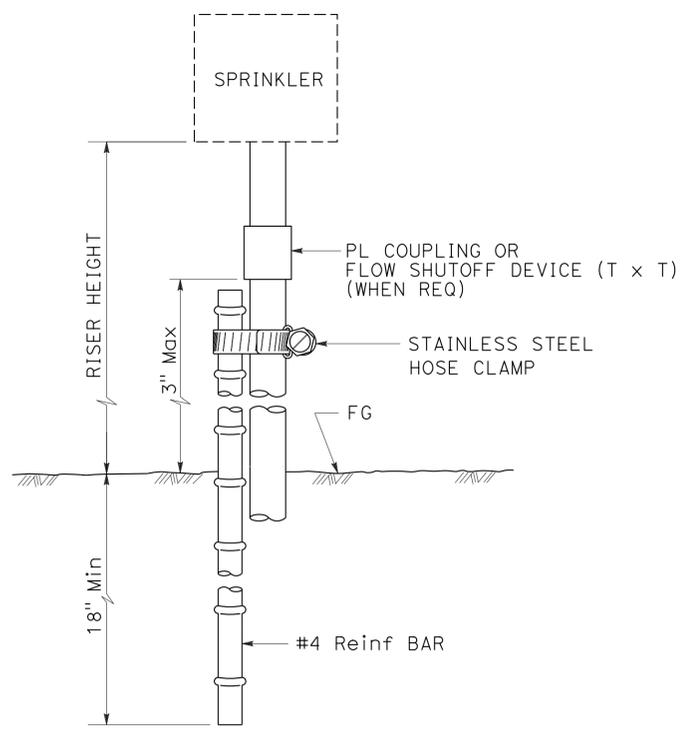
ELEVATION
RISER SPRINKLER
ASSEMBLY TYPE III



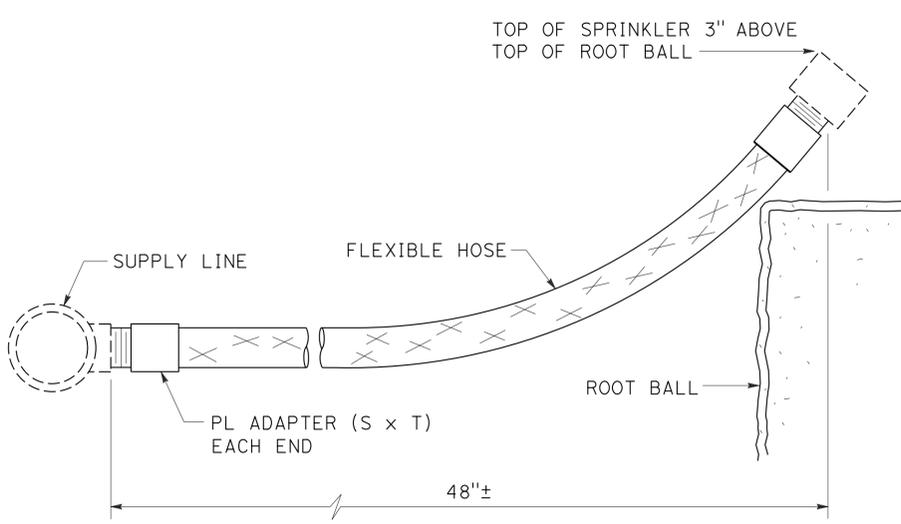
PLAN

NOTES:

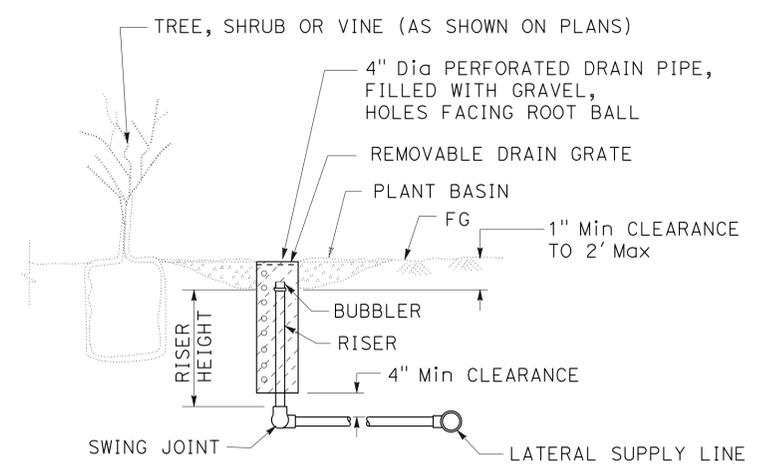
1. Install tree well sprinkler assembly on up-hill side of plant when on slope.
2. Install bubbler within basin.



ELEVATION
RISER SPRINKLER
ASSEMBLY TYPE IV



ELEVATION
RISER SPRINKLER
ASSEMBLY TYPE V



SECTION
TREE WELL SPRINKLER ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS

NO SCALE

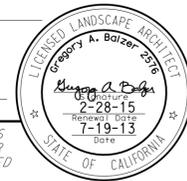
RSP H5 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H5
DATED MAY 20, 2011 - PAGE 222 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H5

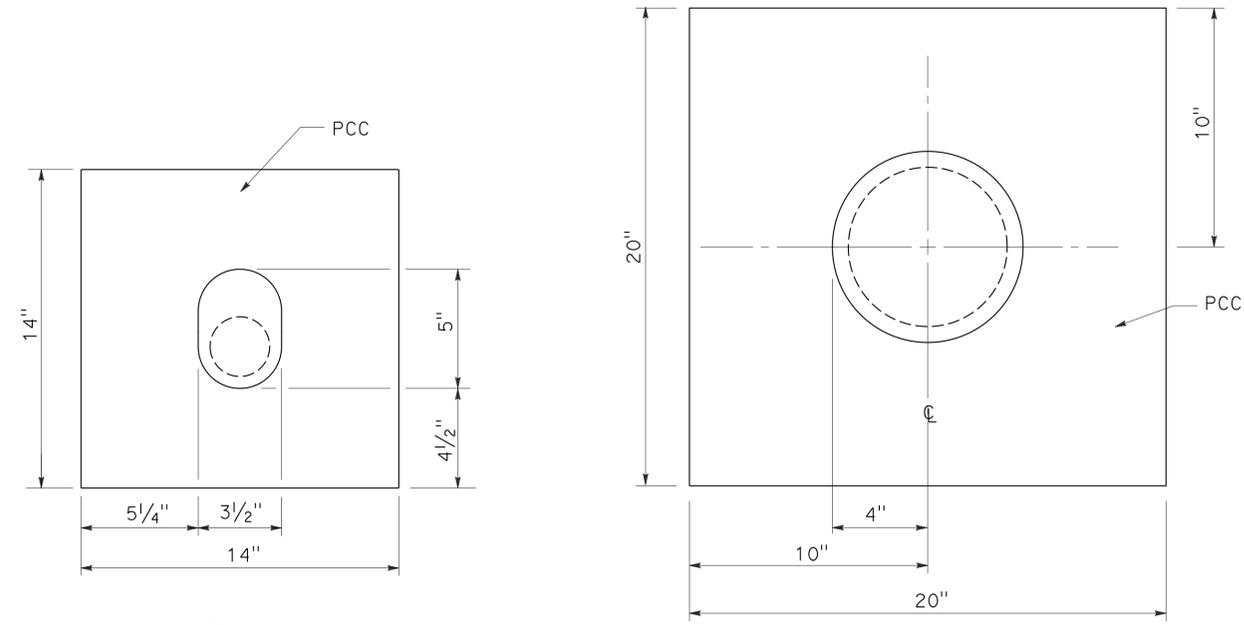
2010 REVISED STANDARD PLAN RSP H5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	496	635

Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

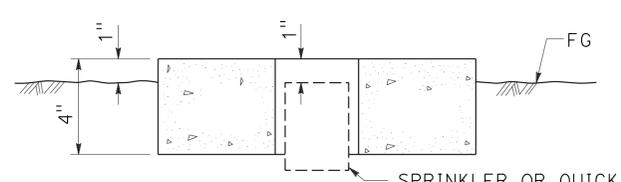


TO ACCOMPANY PLANS DATED 3-10-14



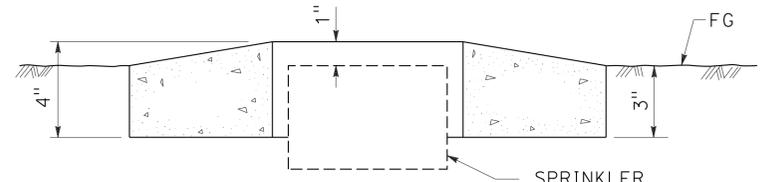
PLAN

PLAN



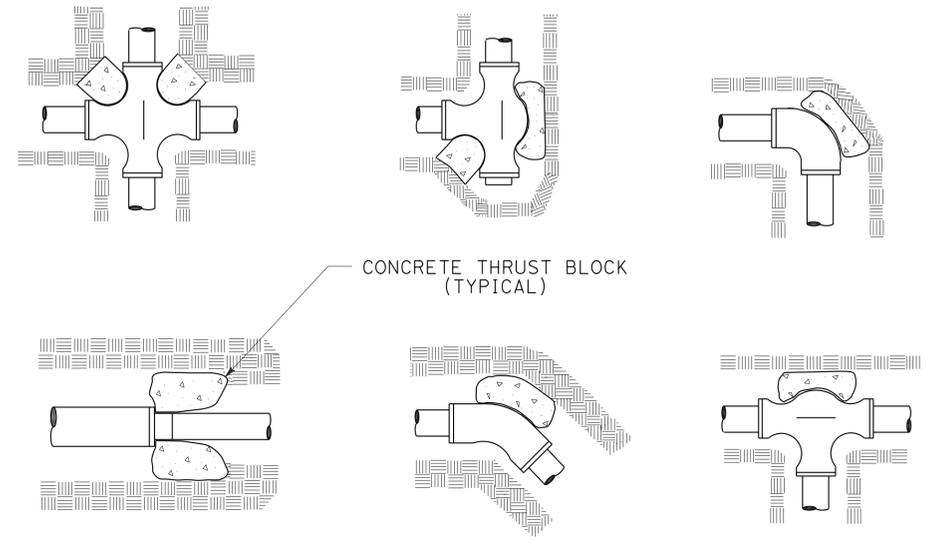
SECTION SPRINKLER OR QUICK COUPLING VALVE

SPRINKLER PROTECTOR TYPE I



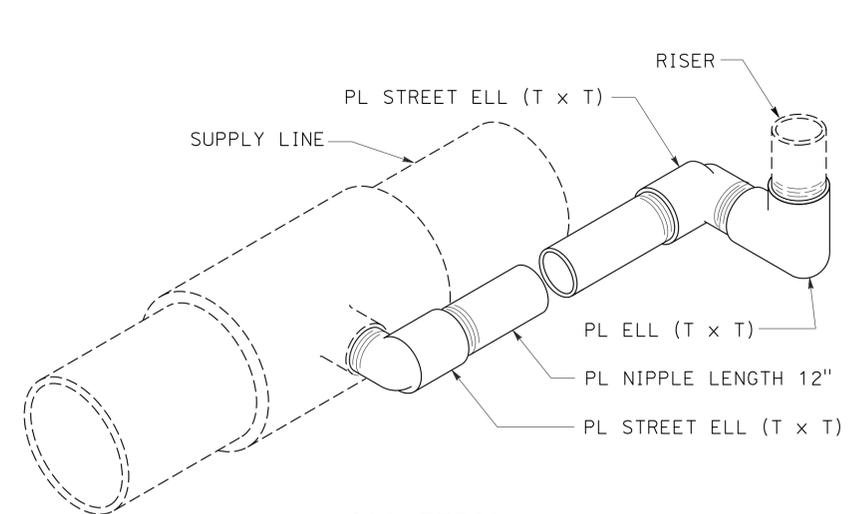
SECTION SPRINKLER

SPRINKLER PROTECTOR TYPE II



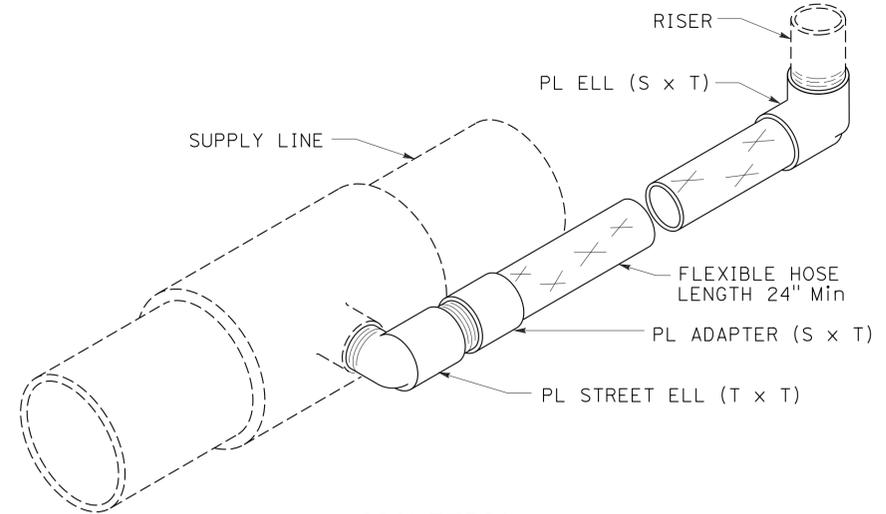
CONCRETE THRUST BLOCK (TYPICAL)

TYPICAL THRUST BLOCKS



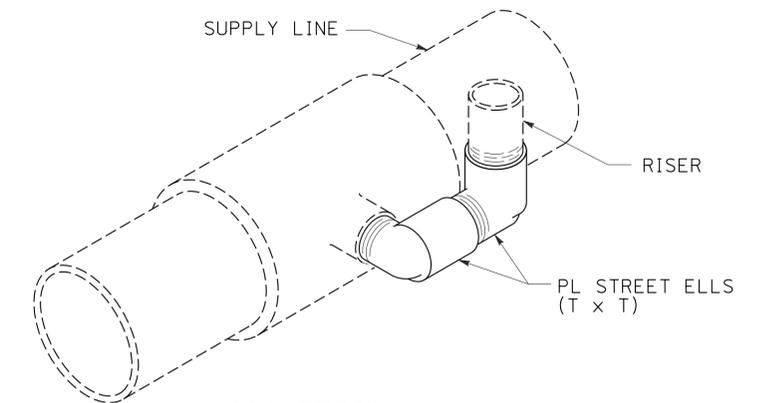
ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE I



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE II



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE III

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS

NO SCALE

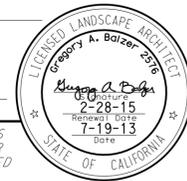
RSP H6 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H6 DATED MAY 20, 2011 - PAGE 223 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H6

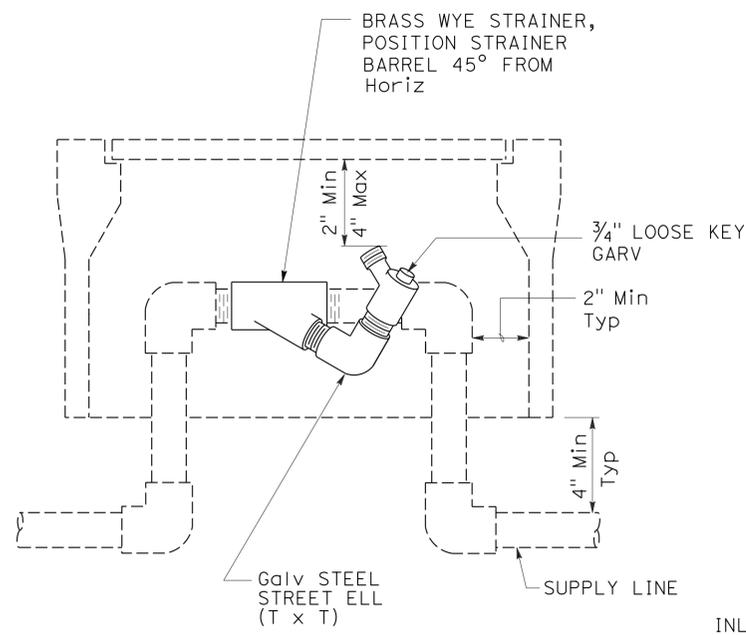
2010 REVISED STANDARD PLAN RSP H6

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	497	635

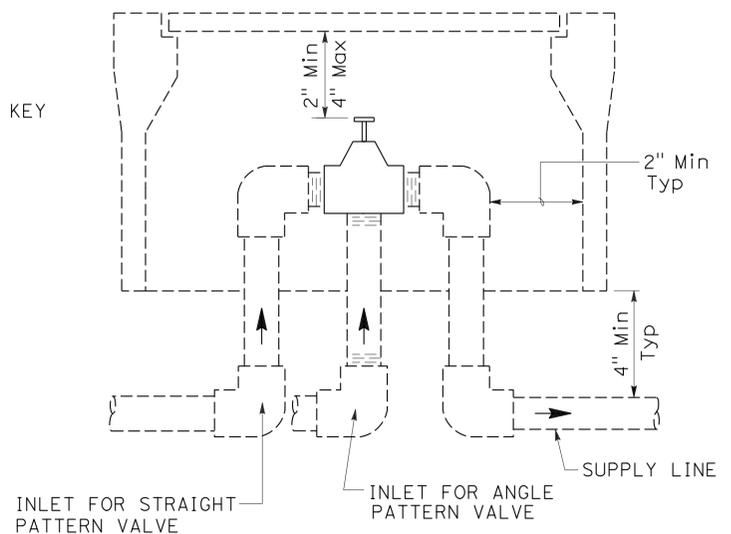
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



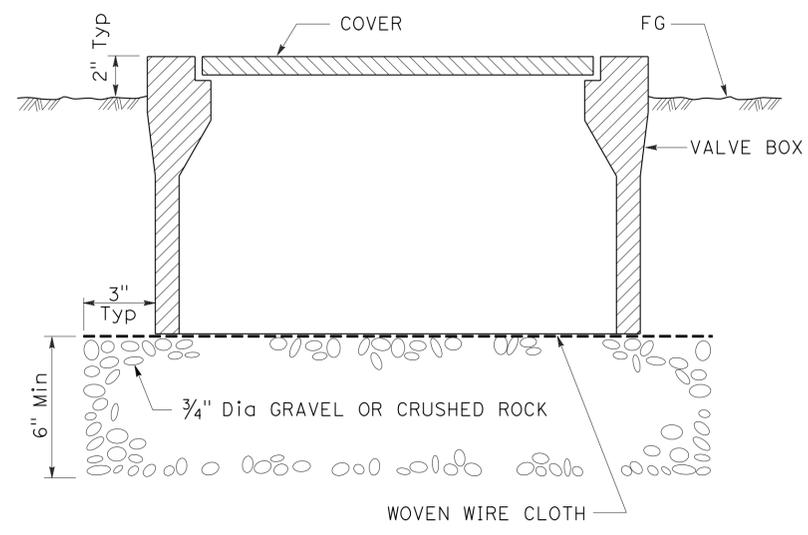
TO ACCOMPANY PLANS DATED 3-10-14



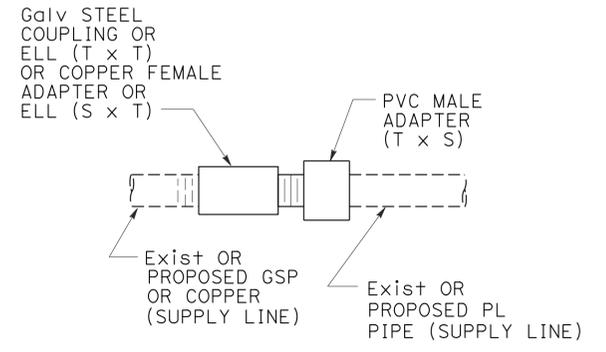
ELEVATION
WYE STRAINER ASSEMBLY



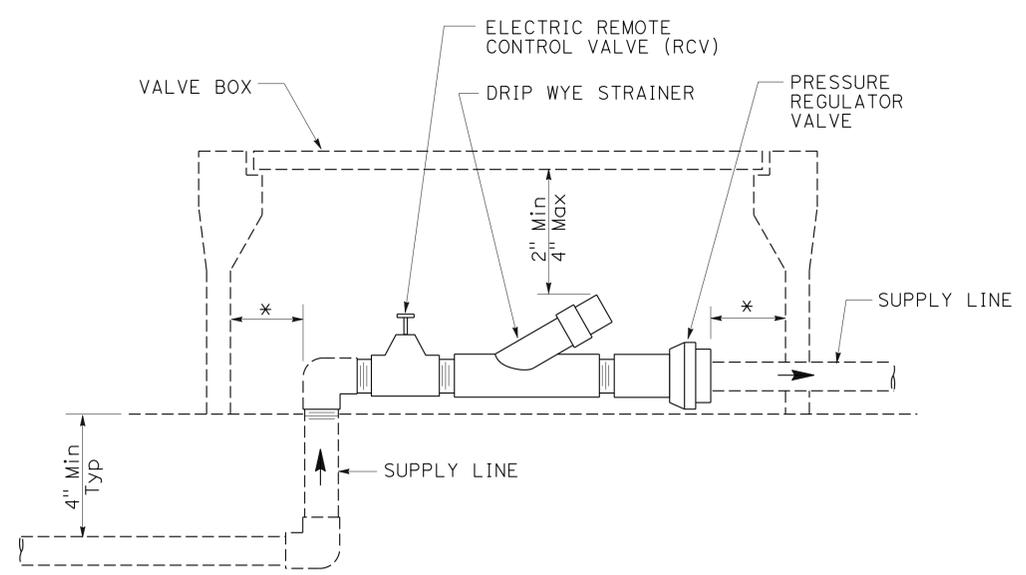
ELEVATION
VALVE



SECTION
VALVE BOX



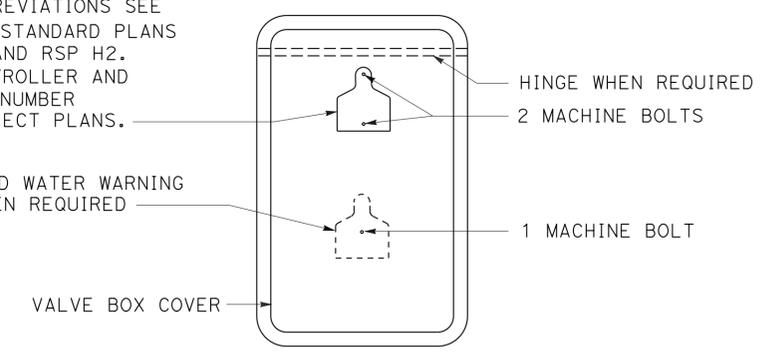
GALVANIZED OR COPPER PIPE CONNECTION TO PLASTIC PIPE



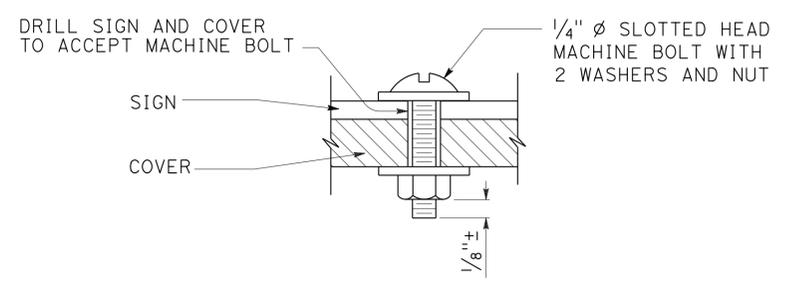
ELEVATION
DRIP VALVE ASSEMBLY

IDENTIFICATION LABEL:
FOR ABBREVIATIONS SEE
REVISED STANDARD PLANS
RSP H1 AND RSP H2.
FOR CONTROLLER AND
STATION NUMBER
SEE PROJECT PLANS.

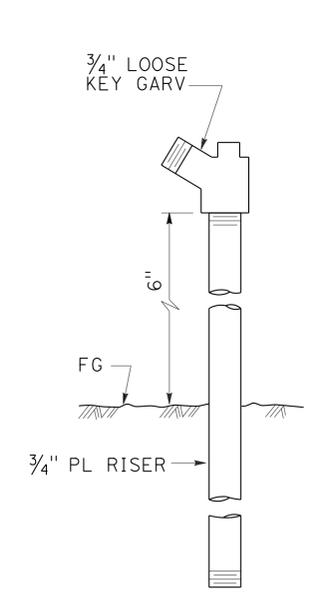
RECYCLED WATER WARNING
SIGN WHEN REQUIRED



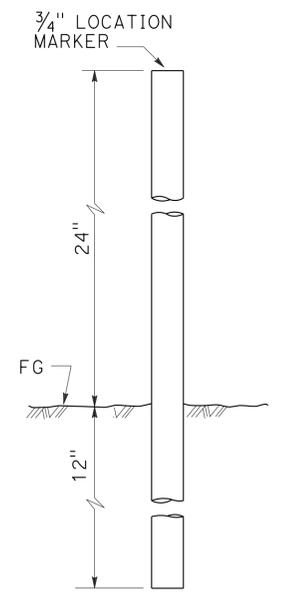
PLAN



SECTION
VALVE BOX IDENTIFICATION



ELEVATION
GARDEN VALVE ASSEMBLY



ELEVATION
LOCATION MARKER

GARDEN VALVE ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

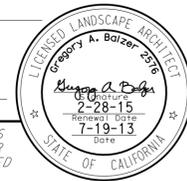
RSP H7 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H7
DATED MAY 20, 2011 - PAGE 224 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H7

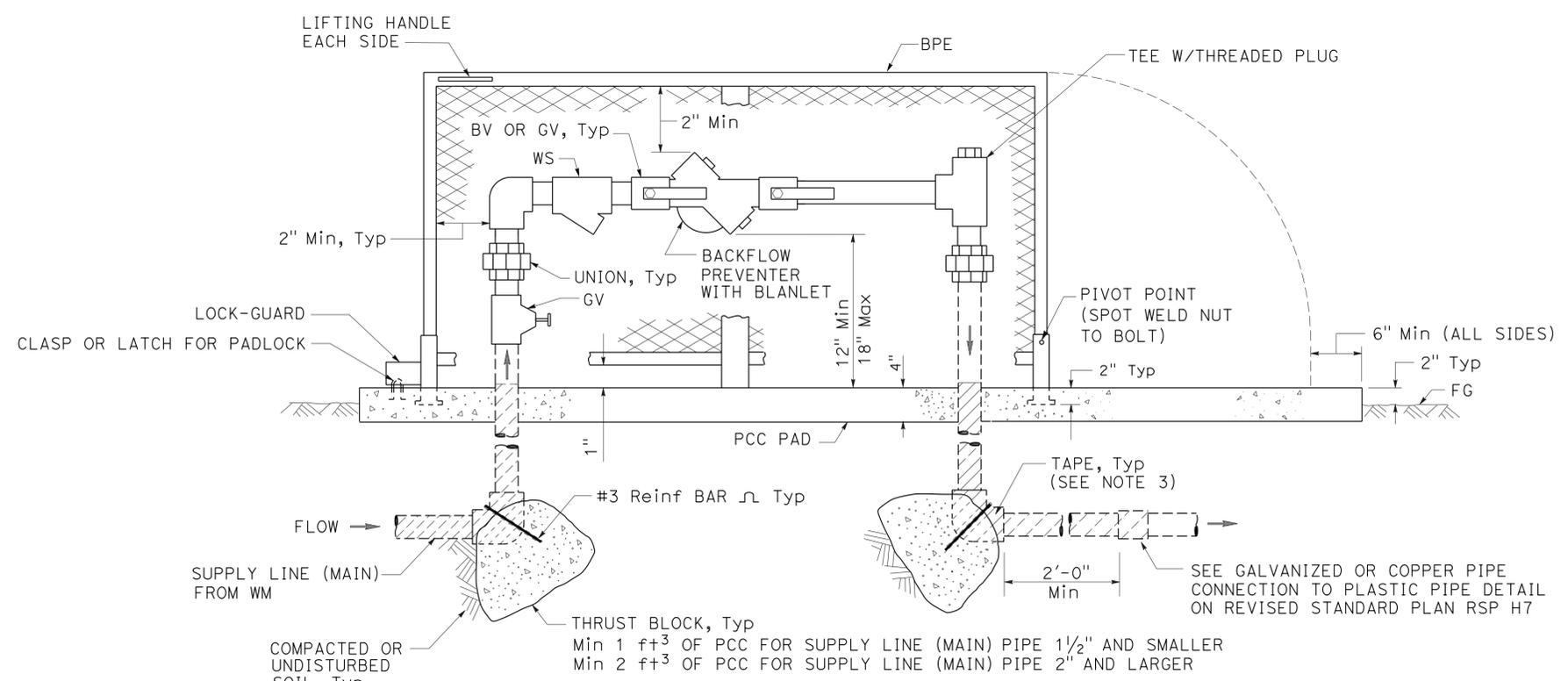
2010 REVISED STANDARD PLAN RSP H7

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	498	635

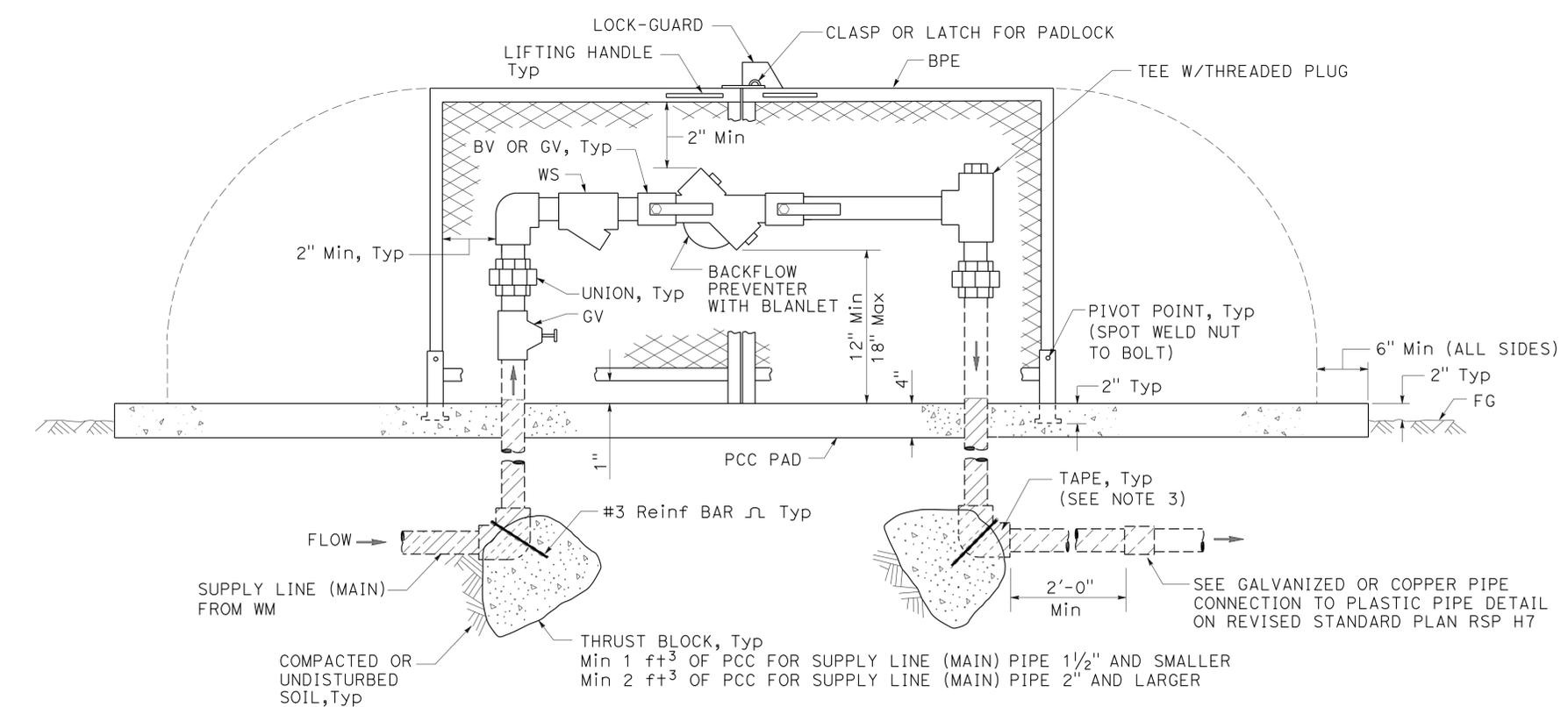
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



TO ACCOMPANY PLANS DATED 3-10-14



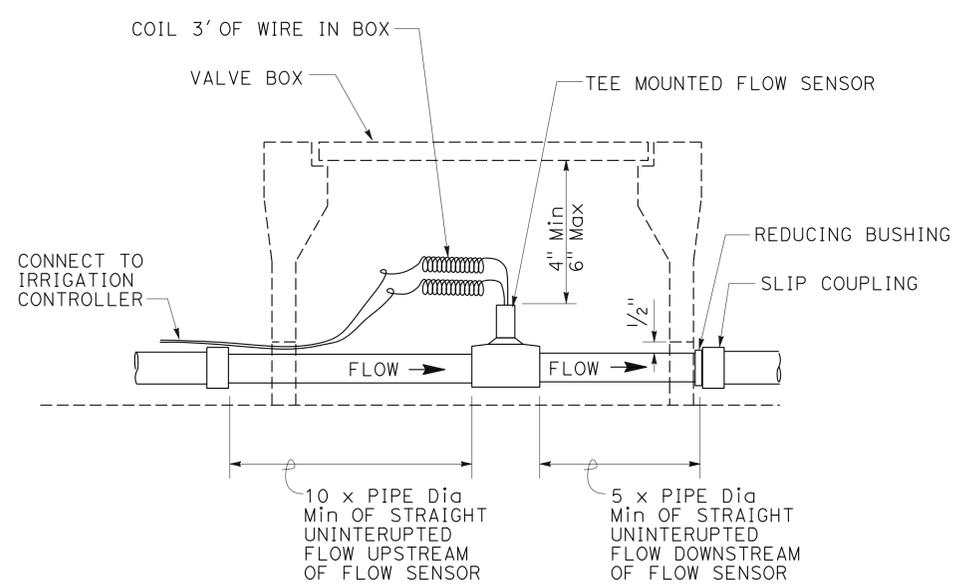
ELEVATION
BACKFLOW PREVENTER ASSEMBLY
 IN ONE PIECE ENCLOSURE



ELEVATION
BACKFLOW PREVENTER ASSEMBLY
 IN TWO PIECE ENCLOSURE

NOTES:

1. Wye strainer and fittings must be the same size as the backflow preventer shown on the plans.
2. Backflow preventer assembly manifold pipe must be the same pipe as the supply line (main) pipe to be installed from the water meter to the backflow preventer assembly.
3. All metal in contact with soil and Portland Cement Concrete must be wrapped with 2" wide plastic backed adhesive polyethylene tape 20 mil thick with 1/2" overlap.



SECTION
FLOW SENSOR

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
 NO SCALE

RSP H8 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H8 DATED MAY 20, 2011 - PAGE 225 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H8

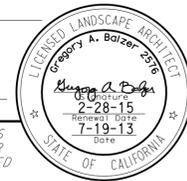
2010 REVISED STANDARD PLAN RSP H8

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	499	635

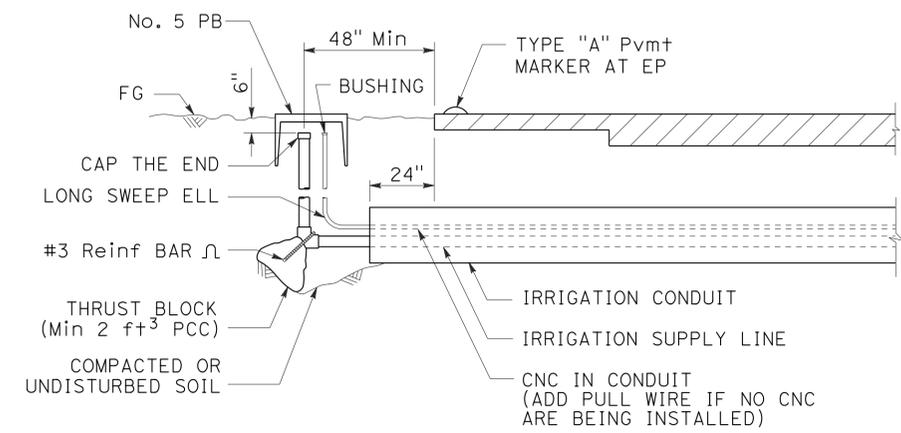
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT

July 19, 2013
 PLANS APPROVAL DATE

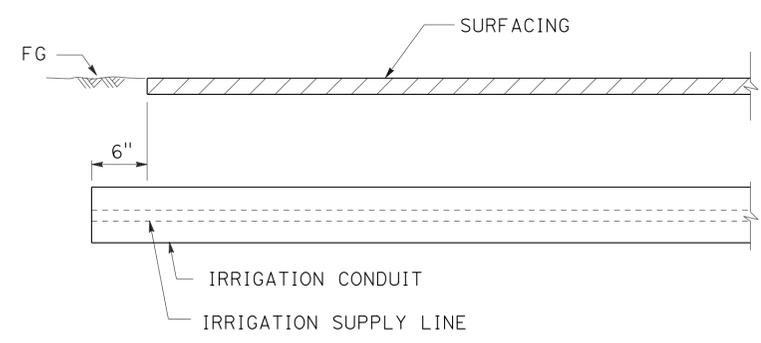
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



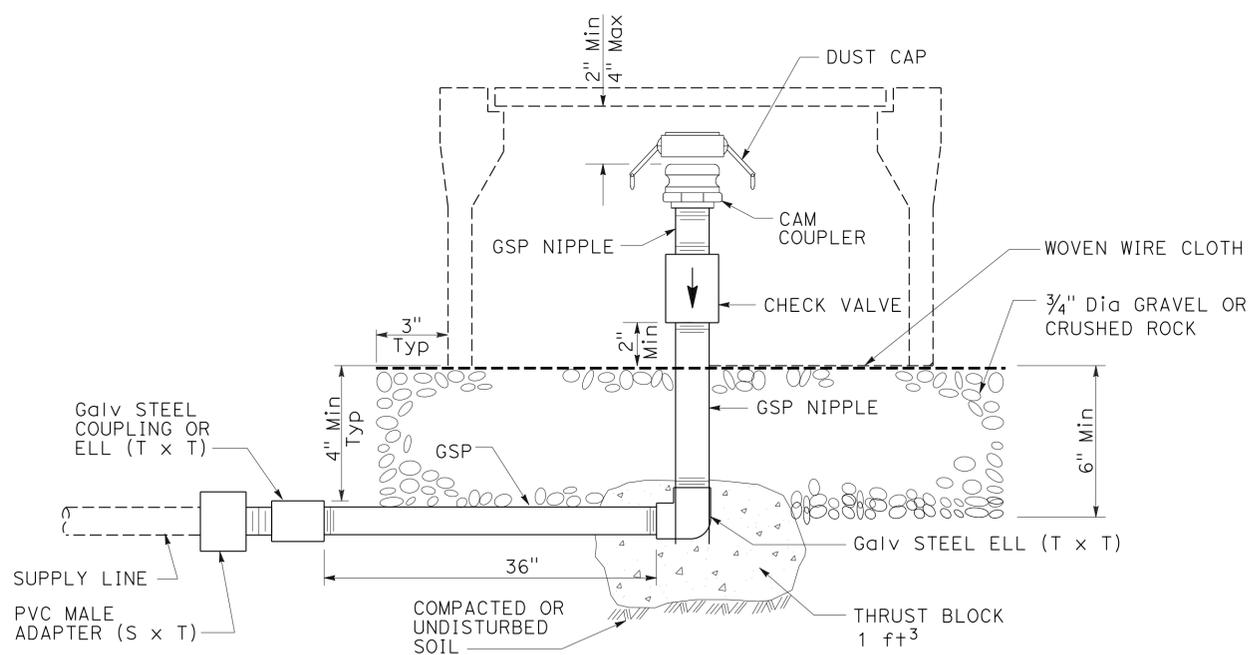
TO ACCOMPANY PLANS DATED 3-10-14



SECTION
IRRIGATION CONDUIT
UNDER TRAVELED WAY



SECTION
IRRIGATION CONDUIT
UNDER SIDEWALKS, DRIVEWAYS AND PATHS



ELEVATION
CAM COUPLER ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
NO SCALE

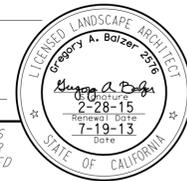
RSP H9 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H9 DATED MAY 20, 2011 - PAGE 226 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H9

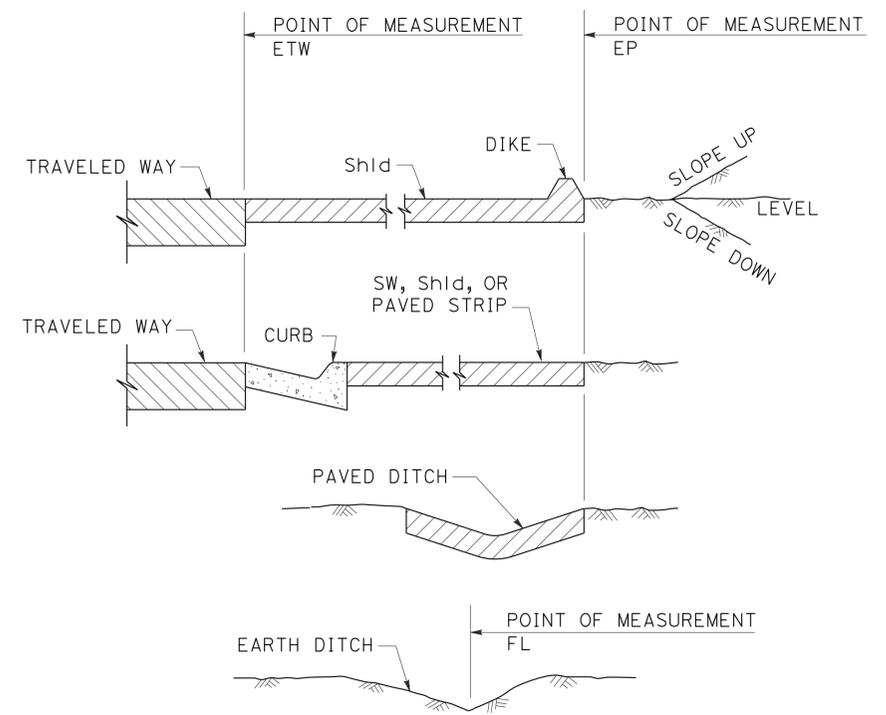
2010 REVISED STANDARD PLAN RSP H9

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	5	3.0/3.7	500	635

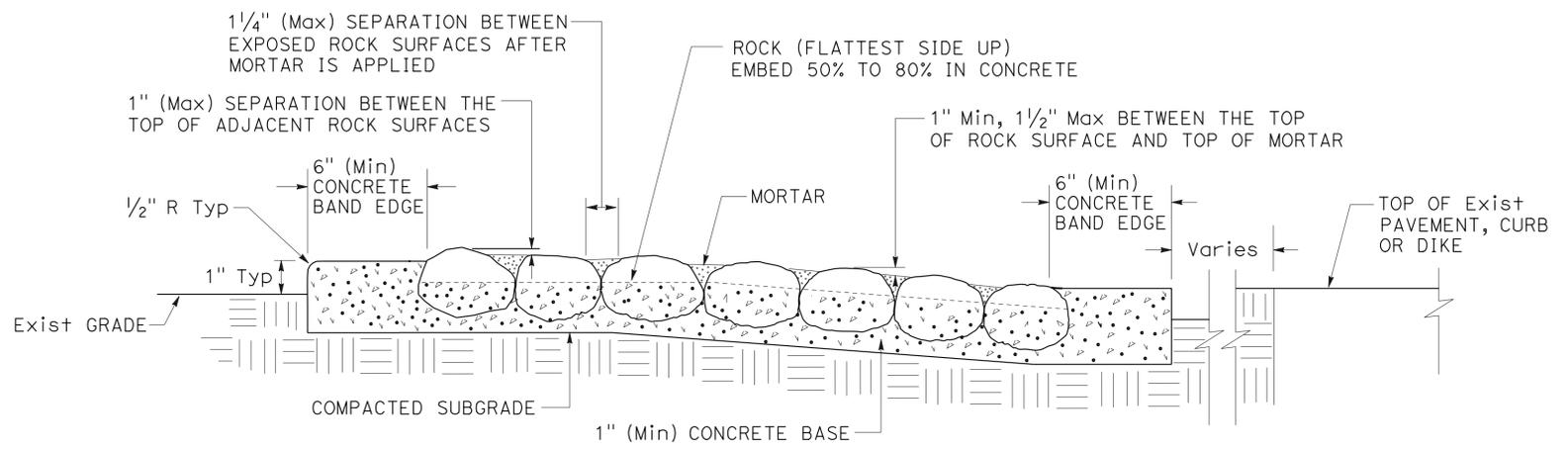
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



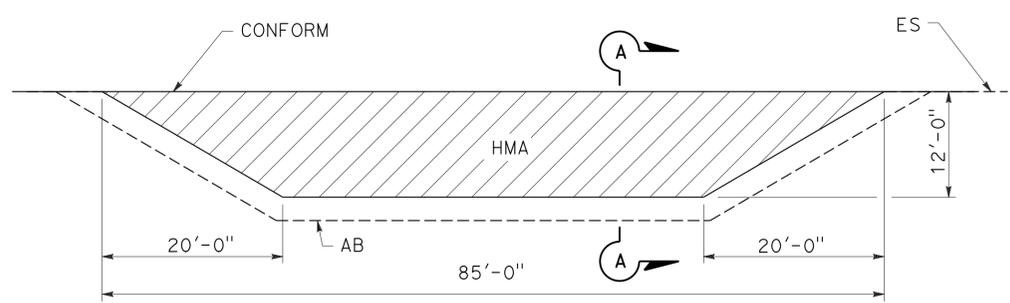
TO ACCOMPANY PLANS DATED 3-10-14



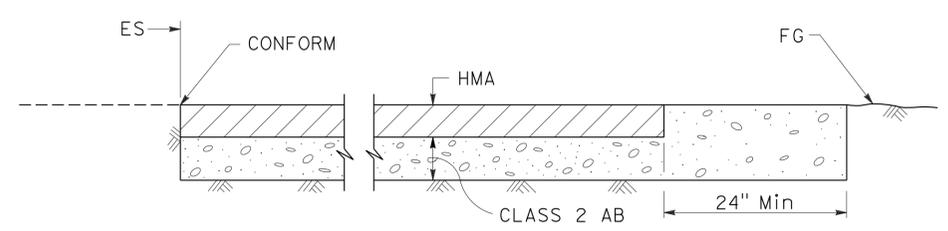
**SECTION
POINTS OF MEASUREMENT**



**SECTION
ROCK BLANKET**



PLAN



**SECTION A-A
MAINTENANCE VEHICLE PULLOUT**

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
 NO SCALE

RSP H9A DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H9A

2010 REVISED STANDARD PLAN RSP H9A